ASTRO

VG series Terminal Commands

Instruction Manual

Ver1.28

Supporting Models : VG-870/VG-871/VG-870A/VG-871A/
VG-870B/VG-871B/VG-873/VG-874/
VG-876/ VG-877/ VG-878/ VG-878-A/ VG-879/
VG-880/VG-881/VG-882(-A)/VG-884

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2020.1

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VG-880/VG-881/VG-882(-A)/VG-884

ASTRODESIGN, Inc

CONTENTS

Concerning the configuration of this manual

This instruction manual contains the terminal commands used by the VG-870 series. It describes the setting methods, precautions and other matters using the configuration shown below. Read through the manual carefully to ensure that the operations are performed correctly and the settings are established correctly.

● Please read this first!
Chapter 1 CONCERNING THE TERMINAL COMMANDS This chapter gives an outline of the terminal commands.
● VG-870 series terminal commands
Chapter 2 INDIVIDUAL FORMATS FOR VG CONTROL COMMANDS This chapter describes the control commands of the VG-870 series.
Chapter 3 INDIVIDUAL FORMATS FOR VG DRAWING COMMANDS This chapter describes the drawing commands of the VG-870 series.
● Previous VG Series
Chapter 4 INDIVIDUAL FORMATS FOR CONTROL COMMANDS This chapter describes the control commands of the previous VG series.
Chapter 5 INDIVIDUAL DRAWING COMMAND FORMATS This chapter describes the drawing commands of the previous VG series.
● Examples of how to use the commands
Chapter 6 EXAMPLES OF USAGE This chapter gives example of how to use the terminal commands.

1 CONCERNING THE TERMINAL COMMANDS

1.1 Introduction

The terminal mode is provided for controlling the VG generator from an external computer (such as a personal computer). The commands and data are transmitted and received through the RS-232C serial input/output port or through the LAN port.

By using the terminal mode, it is possible to register program data, execute programs, turn patterns ON or OFF and perform other operations which are virtually identical to their corresponding manual operations. In addition, functions for writing straight lines, circles, dots, etc. are supported with graphic commands.

As in the past, the commands and data are transmitted and received through the RS-232C serial input/output port or through the LAN port.

Although a different communication format is now used, the communication specifications, connection configuration, error statuses and other specifications remain virtually unchanged from before.

This manual describes the terminal commands which are supported by the VG-870, A, B, VG-871, A, B, VG-872-C, VG-873, VG-874, VG-876, VG-877, VG-878, VG-878-A, VG-879, VG-880, VG-881 VG-882 and VG-884 generators.

Also the terminal commands of the VG-848 series (hereafter indicated as the “old VG models”) are described.

1.2 Communication specifications

1.2.1 RS-232C

■ Communication parameters

Communication system	Asynchronous system
Interface	RS-232C
Baud rate	9600/19200/38400/57600/115200 bps **Note) 115200 bps rate is not supported by VG-870 or VG-871.**
Data length	8 bits, fixed
Stop bits	1 or 2
Parity	None, even or odd
Flow control	None

Fig. 1-2-1

■ Connectors

Computer end

Pin No.	Signal
2	RXD (Received data)
3	TXD (Transmitted data)
5	GND (Signal ground)
7	RTS (Request to send)
8	CTS (Clear to send)

VG-870 end

Pin No.	Signal
2	TXD (Transmitted data)
3	RXD (Received data)
5	GND (Signal ground)
7	CTS (Clear to send)
8	RTS (Request to send)

Fig. 1-2-2

1.2.2 LAN

■ **Communication parameters**

10BASE-T, 100BASE-TX

■ **Connectors**

RJ-45

1.3 Connection configuration

1.3.1 RS-232C

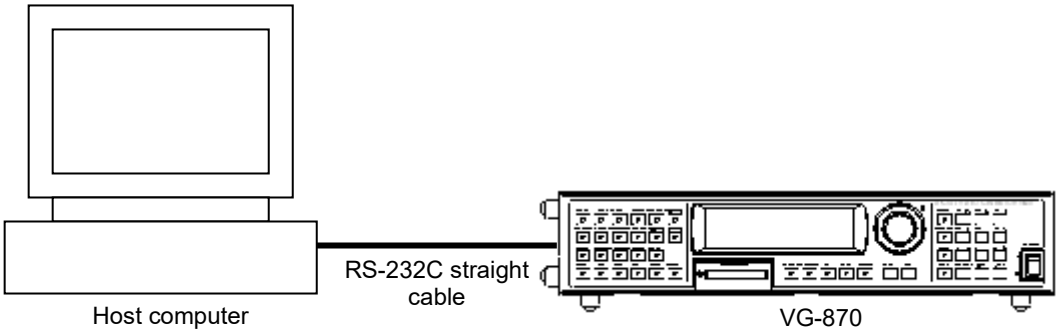


Fig. 1-3-1

1.3.2 LAN

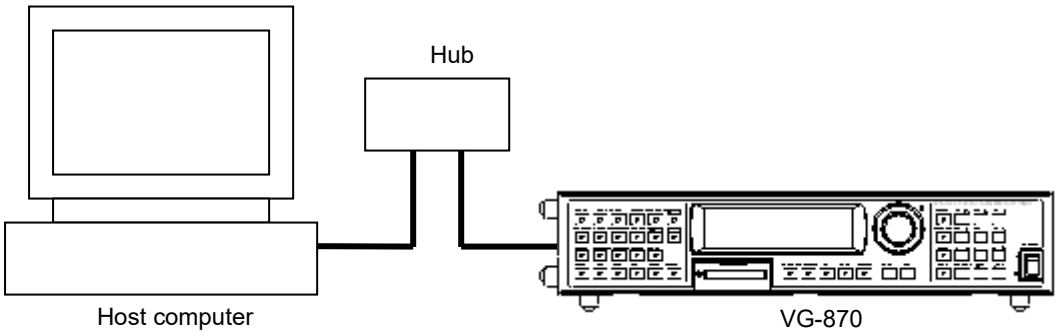


Fig. 1-3-2

1.4 Differences in commands from conventional VG series

The following commands used by the old VG models are not supported by the VG-870.

Command	Function	Remarks
SPbPrD [92H]	Color difference coefficient data registration	
PbPrDNAMES3 [93H]	Color difference coefficient data name registration	
COLOR [26H]	Color bar color setting	
GBITBLT [DAH]	1-bit plane copying	
G8BITBLT [E9H]	Color planes (8-bit planes) copy	
Extended command	Extended function command	

1.5 Description of terms used

Term	Description
Auto display data	The length of the interval (in seconds) after the patterns have been output until the next program is run as well as the sequence of the numbers of the programs to be run when the VG generator is operated in the auto display mode are set as parameters. The sequence of program numbers can be set in a 3-block format. If, for instance, program numbers 01, 02 and 03 are to be output first followed by program numbers 07, 08 and 09 after which the programs are to be repeated from 01, then 01-03 is set in the first block, 07-09 is set in the second block, and 00-00 is set in the third block.
Pattern select data	This data is for selecting which pattern is to be output if programs are run when the VG generator is operated in the direct display or auto display mode. Bear in mind that “R, “, “G” and “B” must be entered in the data: otherwise, the data will be registered without color.
Buffer RAM	The VG generator calls one of the programs registered on the Compact Flash card (or internal flash memory) to its execution RAM first, and it then executes the contents of the program. This RAM is called the buffer RAM.
1-program data	This is the increment of the data which is registered on the Compact Flash card (or internal flash memory). The 1-program data consists of the H timing data, V timing data, output condition data, pattern select data and various pattern data.
User character	This refers to the characters which can be created and registered by the user. The size of these characters is 64 by 64 dots.
Character plane	This is the plane on which 1-bit drawing with a single color is accomplished. *** It was referred to as the “graphic plane” in the previous terminal commands.**
Graphic plane	This is the plane on which drawings with 256 colors are displayed. *** It was referred to as the “color plane” in the previous terminal commands.**

Fig. 1-5

1.6 Transmission control characters, data and error commands

Character	HEX code	Description
ENQ	05H	Request to start terminal mode
EOT	04H	Request to end terminal mode
ACK	06H	Positive acknowledge character
NAK	15H	Negative acknowledge character
STX	02H	Transmission text (command) start
ETB	17H	Transmission text (data) end
ETX	03H	Transmission text (command, data) end
TRDT	10H	When data is to be transmitted, this command is placed at the head of the block before it is transmitted.
ESTS	11H	When an error status is to be transmitted, an error number is transmitted with this command preceding it.
EXTCMD	FFH	Extended command identification code (* Added with old VG models)
VG4CMD	FDH	New command identification code

Fig. 1-6

1.7 Error statuses

Error code	Description
“00”	This error occurs when an attempt has been made to write data when the memory card was not installed.
“01”	This error occurs when the program which was input is disabled when direct display or a program was executed.
“02”	Dot Clock is outside the specified range.
“03”	Front Porch of the horizontal timing data is outside the specified range. [H Period ≥ Hsync + Hbackp + Hdisp (dot)]
“05”	HD of the horizontal timing data is outside the specified range. [H Period ≥ HDstart + HDwidth (dot)]
"07"	Period of the horizontal timing data is outside the specified range.
"08"	Disp of the horizontal timing data is outside the specified range.
"09"	Sync of the horizontal timing data is outside the specified range.
"10"	Back Porch of the horizontal timing data is outside the specified range.
"11"	Blanking of the horizontal timing data is outside the specified range.
"12"	The horizontal frequency of the horizontal timing data is outside the specified range.
"13"	An error other than the ones above occurred in the vertical timing data.
“16”	This error occurs when the correct data was not set in the output condition data.
“17”	This error occurs when the correct data was not set in the character pattern data.
“18”	This error occurs when the correct data was not set in the crosshatch pattern data.
“19”	This error occurs when the correct data was not set in the dot pattern data.
“20”	This error occurs when the correct data was not set in the circle pattern data.
“21”	This error occurs when the correct data was not set in the burst pattern data.
“22”	This error occurs when the correct data was not set in the window pattern data.
“23”	This error occurs when the correct data was not set in the color bar pattern data.
“24”	This error occurs when there is an error in a parameter.
“25”	This error occurs when there is an error in the data.
“26”	This error occurs when the sync signals have not been set.
“27”	There is an error in the video level and sync level data.
“30”	A timeout occurred during communication in the terminal mode.
“31”	An undefined command was received in the terminal mode.
“32”	A timeout occurred in vertical sync interrupt wait.
“33”	There is an error in the program number.
“34”	There is an error in the group number.
“35”	There is an error in the user character code.
“40”	The memory card has not been installed.
“43”	There is an error in the optional pattern number.
“44”	Trouble with FAT for optional patterns created by the user
“45”	Unregistered optional pattern created by the user
“46”	There is an error in the image data number.
“47”	Trouble with FAT for image data
“48”	The image data has not been registered.
“50”	The function cannot be used because the keys are locked.
“51”	The cursor pattern has not been selected.
“52”	Invalid EDID optional pattern
“56”	There is an error in the gray scale pattern data.
“57”	There is an error in the optional pattern data.
“59”	There is an error in the cursor pattern data.
“60”	There is an error in the program name data.
“61”	There is an error in the graphic color data.
“62”	There is an error in the action data.
“64”	Vtotal of the vertical timing data is outside the specified range.
“65”	Vdisp of the vertical timing data is outside the specified range.
“66”	Vsync of the vertical timing data is outside the specified range.

“67”	Vbackp of the vertical timing data is outside the specified range.
“68”	The front porch of the vertical timing data is outside the specified range. (Vtotal ≥ Vsync + Vbackp + Vdisp)
“69”	The blanking period of the vertical timing data is outside the specified range.
“70”	The vertical frequency of the vertical timing data is outside the specified range.
“71”	VDstart + VDline of the vertical timing data are outside the specified range. (Vtotal ≥ VDstart + VDline)
“72”	EQPfp of the vertical timing data is outside the specified range.
“73”	EQPbp of the vertical timing data is outside the specified range.
“74”	An error other than the ones above occurred in the vertical timing data.
“75”	A timeout occurred in DDC1.
“76”	An ACK error occurred in DDC1.
“78”	An ACK error occurred in DDC2.
“80”	An error occurred in Macrovision.
“81”	An error occurred in a simple moving image.
“82”	There is an error in the header information of the EDID data.
“83”	Check sum error in the EDID data.
“84”	There is an error in the header information and check sum of the EDID data.
“85”	There is an error in the YPbPr coefficients.
“86”	There is an error in the audio data number.
“87”	Trouble in FAT for the audio data
“88”	Unregistered audio data
“90”	The wrong EDID port is used for lip sync.
“91”	The delay time for lip sync was set longer than the ON (or OFF) time.
“92”	Invalid EDID latency for lip sync.
“93”	A setting other than Inter-PCM/DCD has been selected for Audio Source for lip sync or it is set to Sweep.

Fig. 1-7

1.8 Command formats

Two types of formats are used for the commands sent to the VG generator: the new commands and old commands. There are two types of old commands: ones which are compatible with the VG generators available in the past, and the extended commands which are used by the VG-848 series.

1.8.1 New commands

(1) Without parameters

STX	VG4CMD	Command 1	Command 2	ETX

(2) With parameters

STX	VG4CMD	Command 1	Command 2	Parameters	ETX

VG4CMD: New command identification code (FDH)

1.8.2 Old commands

Compatible commands (Conventional commands)

STX	Command	ETX

or

STX	Command	Parameters	ETX

Extended commands (* Used by the VG-848 series)

STX	EXTCMD	Model code	Command	ETX

or

STX	EXTCMD	Model code	Command	Parameters	ETX

EXTCMD: Extended command identification code (FFH)

Model codes: VG generator model codes
(47H = VG-848, 48H = VG-835, 49H = VG-849/849A/849B, 4AH = VG-858, 4BH = VG-830, 4CH = VG-857, 4DH = VG-859/859A/859B, 4EH = VG-837, 4FH = VG-835-A, 50H = VG-849C, 51H = VG-859C, 52H = VG-835-B, 53H = VG-849C-A)

1.9 Basic formats

1.9.1 When setting commands are sent

Command transmission from computer to VG generator (PC → VG)

STX	VG4CMD	Command 1	Command 2	ETX

or

STX	VG4CMD	Command 1	Command 2	Parameters	ETX

Return value from VG generator to computer after command transmission (PC ← VG)

ACK

or

STX	ESTS	Error code	ETX

When data is required, transmission is as shown below only when the commands were sent and ACK was returned. (PC → VG)

STX	TRDT	Data	ETB

or

STX	TRDT	Data	ETX

Return value from VG generator to computer after data transmission (PC ← VG)

ACK

or

STX	ESTS	Error code	ETX

Fig. 1-9-1

1.9.2 When the get command is sent

Command transmission from computer to VG generator (PC → VG)

STX	VG4CMD	Command 1	Command 2	ETX

or

STX	VG4CMD	Command 1	Command 2	Parameters	ETX

Return value from VG generator to computer after command transmission (PC ← VG)

ACK

or

STX	ESTS	Error code	ETX

Reception is as shown below only when ACK is returned. (PC ← VG)

STX	TRDT	Data	ETB

or

STX	TRDT	Data	ETX

Fig. 1-9-2

1.10 Communication protocol

1.10.1 Type 1

This is the sequence when the terminal commands are started.

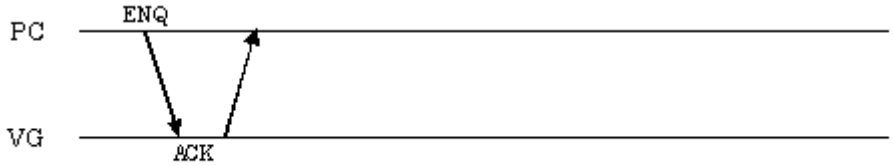


Fig. 1-10-1-1

Flow	Command	Send/receive direction
1	ENQ	Send
2	ACK	Receive

Fig. 1-10-1-2

1.10.2 Type 2

This is the sequence when commands consisting of only a command and parameters (if required) only are transmitted.

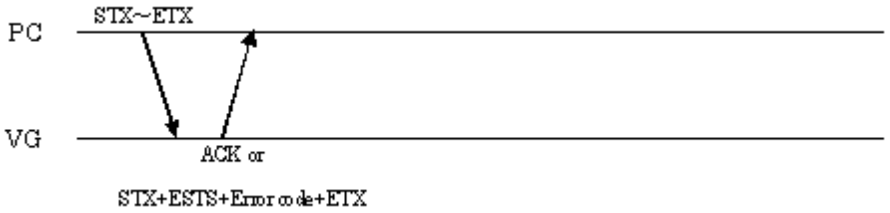


Fig. 1-10-2-1

Flow	Command				Send/receive direction
1	STX	Command*	(Parameters)	ETX	Send
2a (Successful)	ACK				Receive
2b (Failed)	STX	ESTS	Error code	ETX	Receive

Fig. 1-10-2-2

* It is assumed here that the following three codes are entered in the command portion.

VG4CMD	Command 1	Command 2

1.10.3 Type 3

This is the sequence for receiving the VG data.

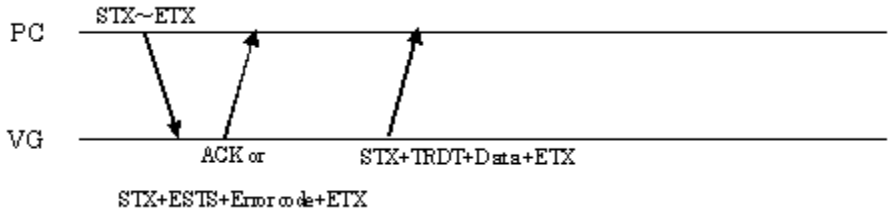


Fig. 1-10-3-1

Flow	Command				Send/receive direction
1	STX	Command*1	(Parameters)	ETX	Send
2a (Successful)	ACK				Receive
2b (Failed)	STX	ESTS	Error code	ETX	Receive
3	STX	TRDT	Data	ETX	Receive

Fig. 1-10-3-2

Note 1) It is assumed here that the following three codes are entered in the command portion.

VG4CMD	Command 1	Command 2

Note 2) The flow is terminated at 2b if communication failed.

1.10.4 Type 4

This is the sequence for sending the VG data.

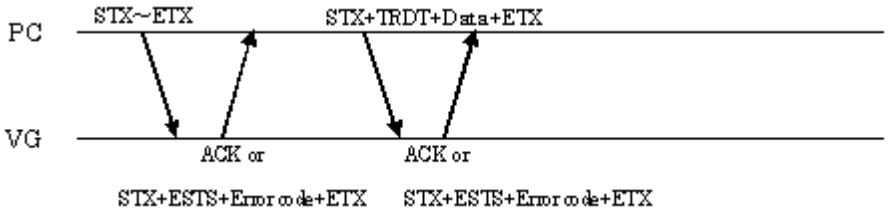


Fig. 1-10-4-1

Flow	Command				Send/receive direction
1	STX	Command*1	(Parameters)	ETX	Send
2a (Successful)	ACK				Receive
2 b (Failed)	STX	ESTS	Error code	ETX	Receive
3	STX	TRDT	Data	ETX	Send
4a (Successful)	ACK				Receive
4b (Failed)	STX	ESTS	Error code	ETX	Receive

Fig. 1-10-4-2

Note1) It is assumed here that the following three codes are entered in the command portion.

VG4CMD	Command 1	Command 2

Note2) The flow is terminated at 2b if communication failed.

1.10.5 Type 5

This is the sequence for receiving the VG data. The data must be received for the desired number of times.

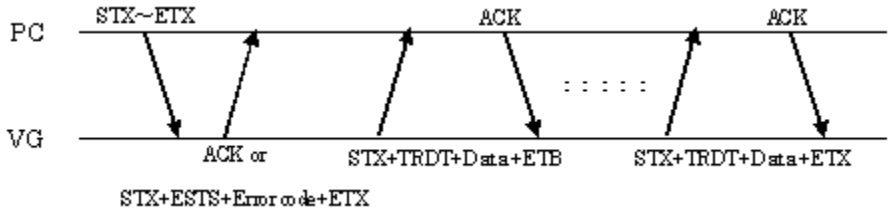


Fig. 1-10-5-1

Flow	Command				Send/receive direction
1	STX	Command*1	(Parameters)	ETX	Send
2a (Successful)	ACK				Receive
2b (Failed)	STX	ESTS	Error code	ETX	Receive
3	STX	TRDT	Data	ETB	Receive
4	ACK				Send
3 and 4 are repeated for the desired number of times.					
n-1	STX	TRDT	Data	ETX	Receive
n	ACK				Receive

Fig. 1-10-5-2

Note1) It is assumed here that the following three codes are entered in the command portion.

VG4CMD	Command 1	Command 2

Note 2) The flow is terminated at 2b if communication failed.

1.10.6 Type 6

This is the sequence for sending the VG data. The data must be sent for the desired number of times.

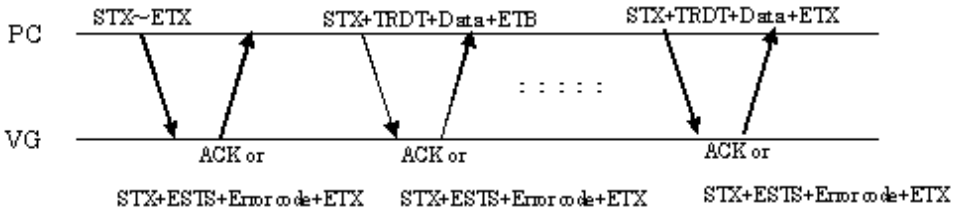


Fig. 1-10-6-1

Flow	Command				Send/receive direction
1	STX	Command*1	(Parameters)	ETX	Send
2a (Successful)	ACK				Receive
2b (Failed)	STX	ESTS	Error code	ETX	Receive
3	STX	TRDT	Data	ETB	Send
4a (Successful)	ACK				Receive
4b (Failed)	STX	ESTS	Error code	ETX	Receive
3 and 4a or 4b are repeated for the desired number of times.					
n-1	STX	TRDT	Data	ETX	Send
na (Successful)	ACK				Receive
nb (Failed)	STX	ESTS	Error code	ETX	Receive

Fig. 1-10-6-2

Note1) It is assumed here that the following three codes are entered in the command portion.

VG4CMD	Command 1	Command 2

Note2) The flow is terminated at 2b or 4b if communication failed.

1.10.7 Type 7

This is the sequence for receiving the VG data. Unlike with type 3, “TRDT” is not received.

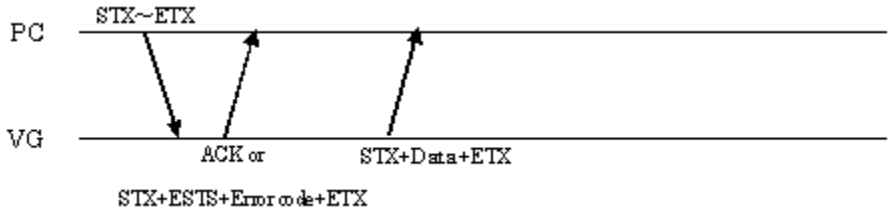


Fig. 1-10-7-1

Flow	Command				Send/receive direction
1	STX	Command*1	(Parameters)	ETX	Send
2a (Successful)	ACK				Receive
2b (Failed)	STX	ESTS	Error code	ETX	Receive
3	STX	Data		ETX	Receive

Fig. 1-10-7-2

Note1) It is assumed here that the following three codes are entered in the command portion.

VG4CMD	Command 1	Command2

Note2) The flow is terminated at 2b if communication failed.

1.11 Precaution drawing command

Drawing command for graphic plane (in previous terminal command, it was referred as color plane) please remind about following issues.

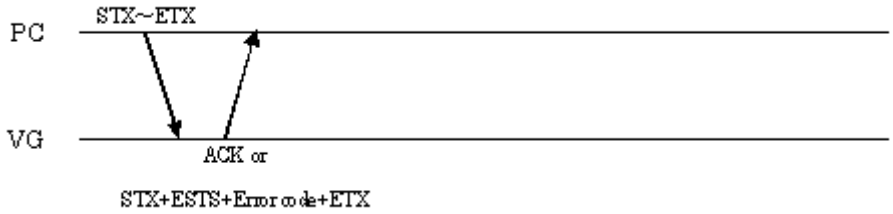
1. Pattern cannot be displayed with other pattern
   If you execute the graphic plane drawing command when you are displaying pattern by VG’s front panel or remote controller, for example color bar, pattern will be abnormal.
2. Before executing the graphic plane drawing command, please execute the clear command (GRACLR4 {28H 40H}: Graphic plain clear).
3. Color table for graphic plain drawing command, will be 0 to 255.

2 INDIVIDUAL FORMATS FOR VG CONTROL COMMANDS

2.1 SHT4 [20H 20H]: H timing data registration

Function: This command registers the H timing data of the program whose number has been designated. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

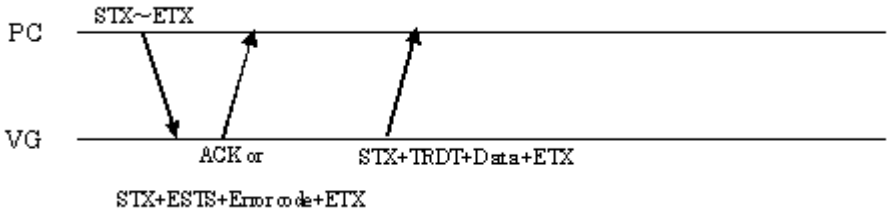
STX	1 byte	02H
VG4CMD	1 byte	FDH
SHT4	2 bytes	20H 20H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
µs/dot	1 byte	“0” = µs, “1” = dot
,	1 byte	2CH (Delimiter)
Repetition	1 to 2 bytes	“1” to “10”
,	1 byte	2CH (Delimiter)
DOT CLOCK	1 to 10 bytes	“0” to “999999999” (in 1 Hz increments)
,	1 byte	2CH (Delimiter)
H-PERIOD	1 to 5 bytes	“0” to “65535” (0 to 655.35 with µs)
,	1 byte	2CH (Delimiter)
H-DISPLAY	1 to 5 bytes	“0” to “65535” (0 to 655.35 with µs)
,	1 byte	2CH (Delimiter)
H-SYNC	1 to 5 bytes	“0” to “65535” (0 to 655.35 with µs)
,	1 byte	2CH (Delimiter)
H-BACK-PORCH	1 to 5 bytes	“0” to “65535” (0 to 655.35 with µs)
,	1 byte	2CH (Delimiter)
HD-START	1 to 5 bytes	“0” to “65535” (0 to 655.35 with µs)
,	1 byte	2CH (Delimiter)
HD-WIDTH	1 to 5 bytes	“0” to “65535” (0 to 655.35 with µs)
ETX	1 byte	03H

Fig. 2-1-1

2.2 LHT4 [20H 21H]: H timing data readout

Function: This command reads the H timing data of the program whose number has been designated. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LHT4	2 bytes	20H 21H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-2-1

Data:

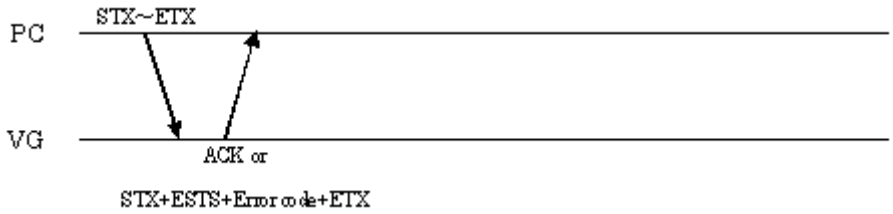
STX	1 byte	02H
TRDT	1 byte	10H
µs/dot	1 byte	“0” = µs, “1” = dot
,	1 byte	2CH (Delimiter)
Repetition	1 to 2 bytes	“1” to “10”
,	1 byte	2CH (Delimiter)
DOT CLOCK	1 to 10 bytes	“0” to “999999999” (in 1 Hz increments)
,	1 byte	2CH (Delimiter)
H-PERIOD	1 to 5 bytes	“0” to “65535” (0 to 655.35 with µs)
,	1 byte	2CH (Delimiter)
H-DISPLAY	1 to 5 bytes	“0” to “65535” (0 to 655.35 with µs)
,	1 byte	2CH (Delimiter)
H-SYNC	1 to 5 bytes	“0” to “65535” (0 to 655.35 with µs)
,	1 byte	2CH (Delimiter)
H-BACK-PORCH	1 to 5 bytes	“0” to “65535” (0 to 655.35 with µs)
,	1 byte	2CH (Delimiter)
HD-START	1 to 5 bytes	“0” to “65535” (0 to 655.35 with µs)
,	1 byte	2CH (Delimiter)
HD-WIDTH	1 to 5 bytes	“0” to “65535” (0 to 655.35 with µs)
ETX	1 byte	03H

Fig. 2-2-2

2.3 SVT4 [20H 22H]: V timing data registration

Function: This command registers the V timing data of the program whose number has been designated. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SVT4	2 bytes	20H 22H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
SCAN MODE	1 byte	“0” = NO INTER, “1” = INTER & sync, “2” = INTER & VIDEO, “3” = Progressive Segmented Frame
,	1 byte	2CH (Delimiter)
SERRATION	1 byte	“0” = OFF, “1” = 0.5H, “2” = 1H, “3” = EXOR
,	1 byte	2CH (Delimiter)
ENQ ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
V-TOTAL	1 to 5 bytes	“0” to “99995” (0 to 9999.5H)
,	1 byte	2CH (Delimiter)
V-SYNC	1 to 3 bytes	“0” to “995” (0 to 99.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
ENQ-FP	1 to 3 bytes	“0” to “995” (0 to 99.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
ENQ-BP	1 to 3 bytes	“0” to “995” (0 to 99.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
V-BACK-PORCH	1 to 5 bytes	“0” to “99995” (0 to 9999.5H)
,	1 byte	2CH (Delimiter)
V-DISPLAY	1 to 4 bytes	“0” to “9999” (0 to 9999H)
,	1 byte	2CH (Delimiter)
VD-START	1 to 5 bytes	“0” to “99995” (0 to 9999.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
VD-WIDTH	1 to 5 bytes	“0” to “99995” (0 to 9999.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
V-TOTAL2	1 to 5 bytes	“0” to “99995” (0 to 9999.5H)
,	1 byte	2CH (Delimiter)
V-SYNC2	1 to 3 bytes	“0” to “995” (0 to 99.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
ENQ-FP2	1 to 3 bytes	“0” to “995” (0 to 99.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
ENQ-BP2	1 to 3 bytes	“0” to “995” (0 to 99.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
V-BACK-PORCH2	1 to 5 bytes	“0” to “99995” (0 to 9999.5H)
,	1 byte	2CH (Delimiter)
V-DISPLAY2	1 to 4 bytes	“0” to “9999” (0 to 9999H)
,	1 byte	2CH (Delimiter)
VD-START2	1 to 5 bytes	“0” to “99995” (0 to 9999.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
VD-WIDTH2	1 to 5 bytes	“0” to “99995” (0 to 9999.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)

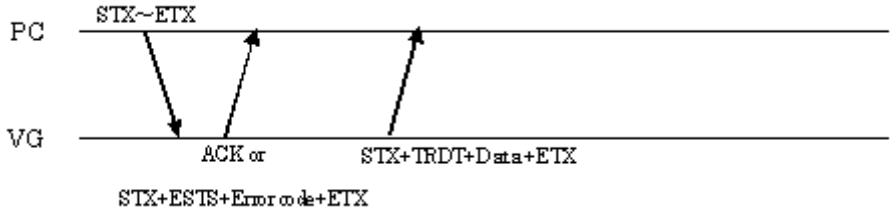
TV Mode	1 to 2 bytes	“0” = Other “1” = NTSC “2” = PAL “3” = SECAM “4” = HDTV1080 “5” = Reserved “6” = NTSC-M “7” = NTSC-443 “8” = PAL-M “9” = PAL-60 “10” = PAL-N “11” = PAL-Nc “12” = HDTV1250AUS “13” = HDTV1250 “14” = HDTV1152AUS “15” = Reserved “16” = Reserved “17” = HDTV720
,	1 byte	2CH (Delimiter)
Reserved	32 bytes	Reserved (fixed to all 0)
ETX	1 byte	03H

Fig. 2-3-1

2.4 LVT4 [20H 23H]: V timing data readout

Function: This command reads the V timing data of the program whose number has been designated. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LHT4	2 bytes	20H 23H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-4-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
SCAN MODE	1 byte	“0” = NO INTER, “1” = INTER & sync, “2” = INTER & VIDEO, “3” = Progressive Segmented Frame
,	1 byte	2CH (Delimiter)
SERRATION	1 byte	“0” = OFF, “1” = 0.5H, “2” = 1H, “3” = EXOR
,	1 byte	2CH (Delimiter)
ENQ ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
V-TOTAL	1 to 5 bytes	“0” to “99995” (0 to 9999.5H)
,	1 byte	2CH (Delimiter)
V-SYNC	1 to 3 bytes	“0” to “995” (0 to 99.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
ENQ-FP	1 to 3 bytes	“0” to “995” (0 to 99.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
ENQ-BP	1 to 3 bytes	“0” to “995” (0 to 99.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
V-BACK-PORCH	1 to 5 bytes	“0” to “99995” (0 to 9999.5H)
,	1 byte	2CH (Delimiter)
V-DISPLAY	1 to 4 bytes	“0” to “9999” (0 to 9999H)
,	1 byte	2CH (Delimiter)
VD-START	1 to 5 bytes	“0” to “99995” (0 to 9999.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
VD-WIDTH	1 to 5 bytes	“0” to “99995” (0 to 9999.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
V-TOTAL2	1 to 5 bytes	“0” to “99995” (0 to 9999.5H)
,	1 byte	2CH (Delimiter)
V-SYNC2	1 to 3 bytes	“0” to “995” (0 to 99.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
ENQ-FP2	1 to 3 bytes	“0” to “995” (0 to 99.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
ENQ-BP2	1 to 3 bytes	“0” to “995” (0 to 99.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
V-BACK-PORCH2	1 to 5 bytes	“0” to “99995” (0 to 9999.5H)
,	1 byte	2CH (Delimiter)
V-DISPLAY2	1 to 4 bytes	“0” to “9999” (0 to 9999H)

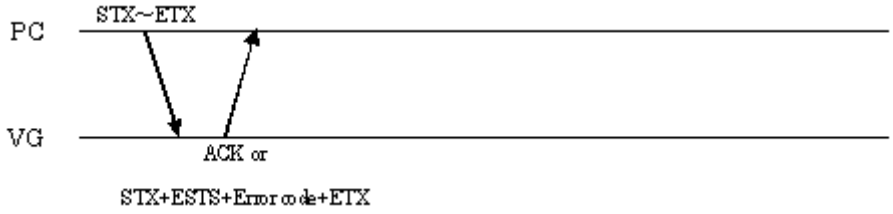
,	1 byte	2CH (Delimiter)
VD-START2	1 to 5 bytes	“0” to “99995” (0 to 9999.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
VD-WIDTH2	1 to 5 bytes	“0” to “99995” (0 to 9999.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
TV Mode	1 or 2 bytes	“0” = Other “1” = NTSC “2” = PAL “3” = SECAM “4” = HDTV1080 “5” = Reserved “6” = NTSC-M “7” = NTSC-443 “8” = PAL-M “9” = PAL-60 “10” = PAL-N “11” = PAL-Nc “12” = HDTV1250AUS “13” = HDTV1250 “14” = HDTV1152AUS “15” = Reserved “16” = Reserved “17” = HDTV720
,	1 byte	2CH (Delimiter)
Reserved	32 bytes	Reserved (All 0)
ETX	1 byte	03H

Fig. 2-4-2

2.5 SOT4 [20H 24H]: Output condition data registration

Function: This command registers the output condition data of the program whose number has been designated. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SOT4	2 bytes	20H 24H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
YPbPr	1 byte	“0” = OFF (RGB), “1” = ON (YPbPr)
,	1 byte	2CH (Delimiter)
YPbPrNo	1 byte	“0” to “5” 0 to 3, 5: Fixed data is used. 4: The values in coefficient tables below are used.
,	1 byte	2CH (Delimiter)
Color difference coefficient YR	1 to 5 bytes	“0” to “10000” Total value of YG + YB must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient YG	1 to 5 bytes	“0” to “10000” Total value of YR + YB must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient YB	1 to 5 bytes	“0” to “10000” Total value of YR + YG must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient CbR	1 to 4 bytes	“0” to “5000” Total value of CbG + CbB must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient CbG	1 to 4 bytes	“0” to “5000” Total value of CbR + CbB must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient CbB	1 to 4 bytes	“0” to “5000” Total value of CbR + CbG must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient CrR	1 to 4 bytes	“0” to “5000” Total value of CrR + CrG must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient CrG	1 to 4 bytes	“0” to “5000” Total value of CrR + CrB must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient CrB	1 to 4 bytes	“0” to “5000” Total value of CrR + CrG must be set to under 10000.
,	1 byte	2CH (Delimiter)
HS ON/OFF	1 byte	“0” = OFF, “1” = ON ***1**
,	1 byte	2CH (Delimiter)
HS MODE	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
HS Sel	1 byte	“0” = HS, “1” = CS
,	1 byte	2CH (Delimiter)
VS ON/OFF	1 byte	“0” = OFF, “1” = ON ***1**
,	1 byte	2CH (Delimiter)

VS MODE	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
CS ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
CS MODE	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
CS Sel	1 byte	“0” = CS, “1” = HS, “2” = VS
,	1 byte	2CH (Delimiter)
CV ON/OFF	1 byte	“0” = OFF, “1” = ON ***1**
,	1 byte	2CH (Delimiter)
CV MODE	1 byte	“1” = R, “2” = G, “3” = RG, “4” = B, “5” = RB, “6” = GB, “7” = “RGB”
,	1 byte	2CH (Delimiter)
Analog Video Level	1 to 3 bytes	“5” to “120” (0.05 to 1.20 V)
,	1 byte	2CH (Delimiter)
Analog Setup Level	1 to 3 bytes	“0” to “25” (0.00 to 0.25 V)
,	1 byte	2CH (Delimiter)
Analog Sync Level	1 to 3 bytes	“0” to “60” (0.00 to 0.60 V)
,	1 byte	2CH (Delimiter)
Out Bit Len	1 or 2 bytes	“8” to “16” * “8” to “12” in case of VG-882 ,884 and VG-878/-A
,	1 byte	2CH (Delimiter)
HDCP Disp Port	1 byte	“0” = Disable “1” = DVI “2” = PC (DVI) “3” = HDMI1 “4” = HDMI2 "5" = TV-DVI "6"=DisplayPort1 "7"=DisplayPort2 "8"=iTMDS1-1 "9"=iTMDS1-2 "10"=iTMDS2-1 "11"=iTMDS2-2 "12"=HDMI3 * VG-882,883, 876, 878/-A, 879 "13"=HDMI4 * VG-882,883, 876, 878/-A, 879 Below is for VG-876,879 "14"=HDMI5 "15"=HDMI6 "16"=HDMI7 "17"=HDMI8 "18"=HDMI9 "19"=HDMI10 "20"=HDMI11 "21"=HDMI12 "22"=HDMI13 "23"=HDMI14 "24"=HDMI15 "25"=HDMI16 "26"=DisplayPort3 "27"=DisplayPort4 "28"=DisplayPort5 "29"=DisplayPort6 "30"=DisplayPort7 "31"=DisplayPort8 "32"=HDBaseT1 "33"=HDBaseT2 "34"=HDBaseT3 "35"=HDBaseT4 "36"=HDBaseT5 "37"=HDBaseT6 "38"=HDBaseT7 "39"=HDBaseT8 "40"=HDBaseT9 "41"=HDBaseT10 "42"=HDBaseT11 "43"=HDBaseT12 "44"=HDBaseT13 "45"=HDBaseT14 "46"=HDBaseT15 "47"=HDBaseT16
,	1 byte	2CH (Delimiter)
D-Connector Line1	1 byte	“0” = 480, “1” = 720, “2” = 1080, "3" = Auto
,	1 byte	2CH (Delimiter)
D-Connector Line2	1 byte	“0” = Interlace, “1" = Progressive, "2" = Auto
,	1 byte	2CH (Delimiter)
D-Connector Line3	1 byte	“0” = 4:3, “1” = 4:3LB, “2” = 16:9, "3" = Auto
,	1 byte	2CH (Delimiter)
Reserved	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
PC-BNC ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
PC-DSub ON/OFF	1 byte	“0” = OFF, “1” = ON

,	1 byte	2CH (Delimiter)
DVI-A ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
DVI-D ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
VBS ON/OFF	1 byte	“0” = OFF, “1” = ON
,		2CH (Delimiter)
BNC ON/OFF	1 byte	“0” = OFF, “1” = ON
,		2CH (Delimiter)
S-Connector ON/OFF	1 byte	“0” = OFF, “1” = ON
,		2CH (Delimiter)
D-Connector ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
TV-DSUB ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
SCART1 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
SCART2 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
HDMI1 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
HDMI2 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
DVI-D1 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
DVI-D2 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
LVDS-D1 ON/OFF	1 byte	“0” = OFF, “1” = ON * LVDS1 and LVDS2 are the same.
,	1 byte	2CH (Delimiter)
LVDS-D2 ON/OFF	1 byte	“0” = OFF, “1” = ON * LVDS1 and LVDS2 are the same.
,	1 byte	2CH (Delimiter)
LVDS-D3 ON/OFF	1 byte	“0” = OFF, “1” = ON * LVDS3 and LVDS4 are the same.
,	1 byte	2CH (Delimiter)
LVDS-D4 ON/OFF	1 byte	“0” = OFF, “1” = ON * LVDS3 and LVDS4 are the same.
,	1 byte	2CH (Delimiter)
PARA1 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
PARA2 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
PARA3 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
PARA4 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
S-Connector	1 byte	“0” = Normal (4:3 normally output) “1” = LetterBox “2” = Sqeeze "3" = Auto
,	1 byte	2CH (Delimiter)
DVI Dual Link Mode	1 byte	“0” = Single (Auto) “1” = Dual (8 bits) “2” = Single (8 bits) “3” = Single (16 bits)
,	1 byte	2CH (Delimiter)
DVI Ctl0	1 byte	“0” = Low, “1” = High
,	1 byte	2CH (Delimiter)
DVI Ctl1	1 byte	“0” = Low, “1” = High
,	1 byte	2CH (Delimiter)
Aspect Mode	1 byte	“0” = 4:3 “1” = 16:9 “2” = Reso “3” = User "4" = 4:3 LB
,	1 byte	2CH (Delimiter)
Aspect H	1 to 3 bytes	“1” to “255”

,	1 byte	2CH (Delimiter)
Aspect V	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
HDCP Enable	1 byte	“0” = Disable, “1” = Enable
,	1 byte	2CH (Delimiter)
Level Mode1 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode2 (PC All)	1 byte	“0” = FULL, “1” = LIMITED
,	1 byte	2CH (Delimiter)
Level Mode3 (TV All)	1 byte	“0” = FULL, “1” = LIMITED
,	1 byte	2CH (Delimiter)
Level Mode4 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode5 (DVI)	1 byte	“0” = FULL, “1” = LIMITED
,	1 byte	2CH (Delimiter)
Level Mode6 (LVDS)	1 byte	“0” = FULL, “1” = LIMITED
,	1 byte	2CH (Delimiter)
Level Mode7 (Parallel)	1 byte	“0” = FULL, “1” = LIMITED
,	1 byte	2CH (Delimiter)
Level Mode8 (HDMI)	1 byte	“0” = FULL, “1” = LIMITED
,	1 byte	2CH (Delimiter)
Level Mode9 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode10 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode11 (DisplayPort)	1 byte	"0"=FULL "1"=LIMITTED
,	1 byte	2CH (Delimiter)
Level Mode12 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode13 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode14（iTMDS）	1 byte	"0"=FULL "1"=LIMITTED
,	1 byte	2CH（Delimiter）
Level Mode15 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode16 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Signal Name Disp On	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
DisplayPort1 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
DisplayPort2 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
TV-DVI Digital ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
iTMDS1 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
iTMDS2 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
V-by-One HS1 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
V-by-One HS 2 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
iTMDS-Quad 1 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
iTMDS-Quad 2 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
SDI 1&2 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
SDI 3&4 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)

Digital Video Level	1 to 5 bytes	"0" to "65535" * In case of VG-882, 883, it is "0" to"4095"
,	1 byte	2CH (Delimiter)
Digital Video Level Bit Mode	1 to 2 bytes	"8" - "16" * In case of VG-882, 883, it is "8" - "12"
,	1 byte	2CH (Delimiter)
HDMI3 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
HDMI4 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
HDCP Authentication Version	1 byte	"0"=Auto "1"=HDCP1.4 "2"=HDCP2.2
ETX	1 byte	03H

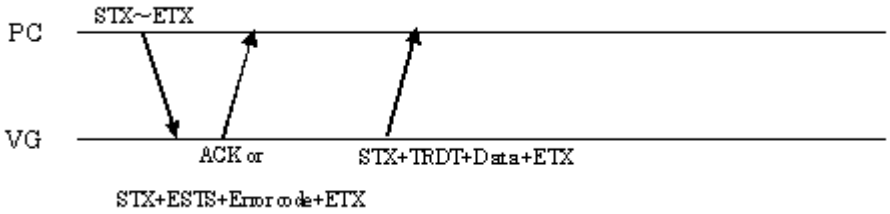
Fig. 2-5-1

***1 When using CV with VG-876, 877, 878 /-A, 879, please do not turn off HS, VS.**

2.6 LOT4 [20H 25H]: Output condition data readout

Function: This command reads the output condition data of the designated program. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LOT4	2 bytes	20H 25H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-6-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
YPbPr	1 byte	“0” = OFF (RGB), “1” = ON (YPbPr)
,	1 byte	2CH (Delimiter)
YPbPrNo	1 byte	“0” to “5” 0 to 3, 5: Fixed data is used. 4: The values in coefficient tables below are used.
,	1 byte	2CH (Delimiter)
Color difference coefficient YR	1 to 5 bytes	“0” to “10000” Total value of YG + YB must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient YG	1 to 5 bytes	“0” to “10000” Total value of YR + YB must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient YB	1 to 5 bytes	“0” to “10000” Total value of YR + YG must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient CbR	1 to 4 bytes	“0” to “5000” Total value of CbG + CbB must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient CbG	1 to 4 bytes	“0” to “5000” Total value of CbR + CbB must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient CbB	1 to 4 bytes	“0” to “5000” Total value of CbR + CbG must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient CrR	1 to 4 bytes	“0” to “5000” Total value of CrR + CrG must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient CrG	1 to 4 bytes	“0” to “5000” Total value of CrR + CrB must be set to under 10000.
,	1 byte	2CH (Delimiter)
Color difference coefficient CrB	1 to 4 bytes	“0” to “5000” Total value of CrR + CrG must be set to under 10000.
,	1 byte	2CH (Delimiter)
HS ON/OFF	1 byte	“0” = OFF, “1” = ON

,	1 byte	2CH (Delimiter)
HS MODE	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
HS Sel	1 byte	“0” = HS, “1” = CS
,	1 byte	2CH (Delimiter)
VS ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
VS MODE	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
CS ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
CS MODE	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
CS Sel	1 byte	“0” = CS, “1” = HS, “2” = VS
,	1 byte	2CH (Delimiter)
CV ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
CV MODE	1 byte	“1” = R, “2” = G, “3” = RG, “4” = B, “5” = RB, “6” = GB, “7” = “RGB”
,	1 byte	2CH (Delimiter)
Analog Video Level	1 to 3 bytes	“5” to “120” (0.05 to 1.20 V)
,	1 byte	2CH (Delimiter)
Analog Setup Level	1 to 3 bytes	“0” to “25” (0.00 to 0.25 V)
,	1 byte	2CH (Delimiter)
Analog Sync Level	1 to 3 bytes	“0” to “60” (0.00 to 0.60 V)
,	1 byte	2CH (Delimiter)
Out Bit Len	1 or 2 bytes	“8” to “16” * “8” to “12” in case of VG-882,884 and VG-878/-A
,	1 byte	2CH (Delimiter)
HDCP Disp Port	1 byte	“0” = Disable “1” = DVI “2” = PC (DVI) “3” = HDMI1 “4” = HDMI2 "5" = TV-DVI "6"=DisplayPort1 "7"=DisplayPort2 "8"=iTMDS1-1 "9"=iTMDS1-2 "10"=iTMDS2-1 "11"=iTMDS2-2 "12"=HDMI3 * VG-882,883,876, 878/-A, 879 "13"=HDMI4 * VG-882,883,876, 878/-A, 879 Below is for VG-876, 879 "14"=HDMI5 "15"=HDMI6 "16"=HDMI7 "17"=HDMI8 "18"=HDMI9 "19"=HDMI10 "20"=HDMI11 "21"=HDMI12 "22"=HDMI13 "23"=HDMI14 "24"=HDMI15 "25"=HDMI16 "26"=DisplayPort3 "27"=DisplayPort4 "28"=DisplayPort5 "29"=DisplayPort6 "30"=DisplayPort7 "31"=DisplayPort8 "32"=HDBaseT1 "33"=HDBaseT2 "34"=HDBaseT3 "35"=HDBaseT4 "36"=HDBaseT5 "37"=HDBaseT6 "38"=HDBaseT7 "39"=HDBaseT8 "40"=HDBaseT9 "41"=HDBaseT10 "42"=HDBaseT11 "43"=HDBaseT12 "44"=HDBaseT13 "45"=HDBaseT14 "46"=HDBaseT15 "47"=HDBaseT16
,	1 byte	2CH (Delimiter)
D-Connector Line1	1 byte	“0” = 480, “1” = 720, “2” = 1080, "3" = Auto
,	1 byte	2CH (Delimiter)
D-Connector Line2	1 byte	“0” = Interlace, “1” = Progressive, "2" = Auto
,	1 byte	2CH (Delimiter)

D-Connector Line3	1 byte	“0” = 4:3, “1” = 4:3LB, “2” = 16:9, "3" = Auto
,	1 byte	2CH (Delimiter)
Reserved	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
PC-BNC ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
PC-DSub ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
DVI-A ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
DVI-D ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
VBS ON/OFF	1 byte	“0” = OFF, “1” = ON
,		2CH (Delimiter)
BNC ON/OFF	1 byte	“0” = OFF, “1” = ON
,		2CH (Delimiter)
S-Connector ON/OFF	1 byte	“0” = OFF, “1” = ON
,		2CH (Delimiter)
D-Connector ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
TV-DSUB ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
SCART1 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
SCART2 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
HDMI1 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
HDMI2 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
DVI-D1 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
DVI-D2 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
LVDS-D1 ON/OFF	1 byte	“0” = OFF, “1” = ON * LVDS1 and LVDS2 are the same.
,	1 byte	2CH (Delimiter)
LVDS-D2 ON/OFF	1 byte	“0” = OFF, “1” = ON * LVDS1 and LVDS2 are the same.
,	1 byte	2CH (Delimiter)
LVDS-D3 ON/OFF	1 byte	“0” = OFF, “1” = ON * LVDS3 and LVDS4 are the same.
,	1 byte	2CH (Delimiter)
LVDS-D4 ON/OFF	1 byte	“0” = OFF, “1” = ON * LVDS3 and LVDS4 are the same.
,	1 byte	2CH (Delimiter)
PARA1 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
PARA2 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
PARA3 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
PARA4 ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
S-Connector	1 byte	“0” = Normal (4:3 normally output) “1” = LetterBox “2” = Sqeeze "3" = Auto
,	1 byte	2CH (Delimiter)
DVI Dual Link Mode	1 byte	“0” = Single (Auto) “1” = Dual (8 bits) “2” = Single (8 bits) “3” = Single (16 bits)
,	1 byte	2CH (Delimiter)
DVI Ctl0	1 byte	“0” = Low, “1” = High
,	1 byte	2CH (Delimiter)
DVI Ctl1	1 byte	“0” = Low, “1” = High
,	1 byte	2CH (Delimiter)

Aspect Mode	1 byte	“0” = 4:3 “1” = 16:9 “2” = Reso “3” = User "4" = 4:3LB
,	1 byte	2CH (Delimiter)
Aspect H	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Aspect V	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
HDCP Enable	1 byte	“0” = Disable, “1” = Enable
,	1 byte	2CH (Delimiter)
Level Mode1 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode2 (PC All)	1 byte	“0” = FULL, “1” = LIMITED
,	1 byte	2CH (Delimiter)
Level Mode3 (TV All)	1 byte	“0” = FULL, “1” = LIMITED
,	1 byte	2CH (Delimiter)
Level Mode4 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode5 (DVI)	1 byte	“0” = FULL, “1” = LIMITED
,	1 byte	2CH (Delimiter)
Level Mode6 (LVDS)	1 byte	“0” = FULL, “1” = LIMITED
,	1 byte	2CH (Delimiter)
Level Mode7 (Parallel)	1 byte	“0” = FULL, “1” = LIMITED
,	1 byte	2CH (Delimiter)
Level Mode8 (HDMI)	1 byte	“0” = FULL, “1” = LIMITED
,	1 byte	2CH (Delimiter)
Level Mode9 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode10 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode11 (DisplayPort)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode12 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode13 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode14（iTMDS）	1 byte	"0"=FULL "1"=LIMITTED
,	1 byte	2CH（Delimiter）
Level Mode15 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Level Mode16 (Reserved)	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Signal Name Disp On	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
DisplayPort1 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
DisplayPort2 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
TV-DVI Digital ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
iTMDS1 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
iTMDS2 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH(Delimiter)
V-by-One HS1 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH(Delimiter)
V-by-One HS 2 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH(Delimiter)
iTMDS-Quad 1 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH(Delimiter)

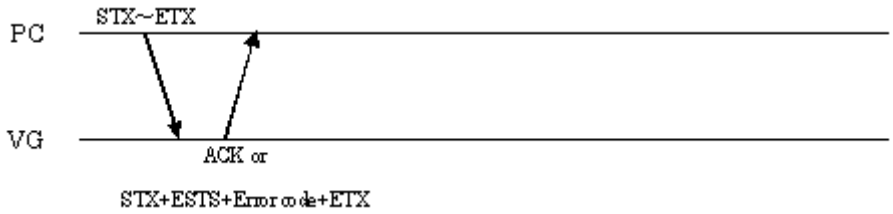
iTMDS-Quad 2 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH(Delimiter)
SDI 1&2 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
SDI 3&4 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
Digital Video Level	1 to 5 bytes	"0" - "65535" * In case of VG-882, 883, it is "0" to"4095"
,	1 byte	2CH (Delimiter)
Digital Video Level Bit Mode	1 to 2 bytes	"8" - "16" * In case of VG-882, 883, it is "8" to"12"
,	1 byte	2CH (Delimiter)
HDMI3 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
HDMI4 ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
HDCP Authentication Version	1 byte	“0”=Auto, “1”=HDCP1.4, “2”=HDCP2.2
ETX	1 byte	03H

Fig. 2-6-2

2.7 SPAR4 [20H 26H]: Parallel data registration

Function: This command registers the parallel data of the designated program. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SPAR4	2 bytes	20H 26H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
HD Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
VD Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
CS Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Clock Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Disp Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Dual Mode	1 byte	“0” = Single (Auto) “1” = Dual (8 bits) “2” = Single (8 bits) “3” = Single (16 bits)
,	1 byte	2CH (Delimiter)
Ch1 Output Data	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch1 Output Clock	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch1 Output Sync	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch1 Output Power	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch1 Data Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Ch1 SW1	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch1 SW2(Reserve)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch1 SW3(Reserve)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch2 Output Data	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch2 Output Clock	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch2 Output Sync	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch2 Output Power	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch2 Data Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Ch2 SW1	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)

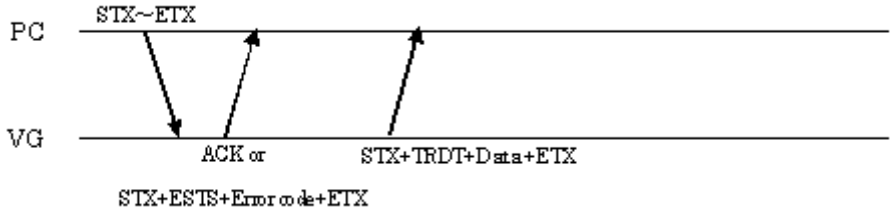
Ch2 SW2	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch2 SW3	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch3 Output Data (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch3 Output Clock (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch3 Output Sync (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch3 Output Power (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch3 Data Polarity (Reserved)	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Ch3 SW1 (Reserved)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch3 SW2 (Reserved)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch3 SW3 (Reserved)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch4 Output Data (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch4 Output Clock (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch4 Output Sync (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch4 Output Power (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch4 Data Polarity (Reserved)	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Ch4 SW1 (Reserved)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch4 SW2 (Reserved)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch4 SW3 (Reserved)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
ETX	1 byte	03H

Fig. 2-7-1

2.8 LPAR4 [20H 27H]: Parallel data readout

Function: This command reads the parallel data of the designated program. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LPAR4	2 bytes	20H 27H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-8-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
HD Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
VD Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
CS Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Clock Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Disp Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Dual Mode	1 byte	“0” = Single (Auto) “1” = Dual (8 bits) “2” = Single (8 bits) “3” = Single (16 bits)
,	1 byte	2CH (Delimiter)
Ch1 Output Data	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch1 Output Clock	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch1 Output Sync	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch1 Output Power	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch1 Data Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Ch1 SW1	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch1 SW2(Reserve)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch1 SW3(Reserve)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch2 Output Data	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch2 Output Clock	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)

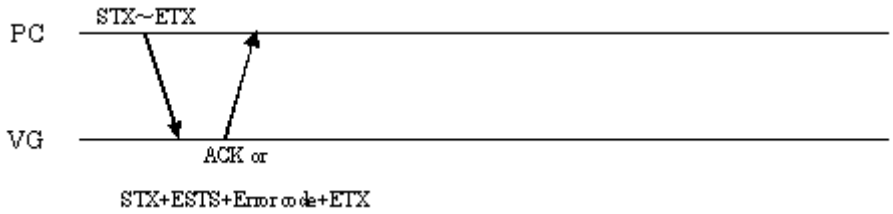
Ch2 Output Sync	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch2 Output Power	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch2 Data Polarity	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Ch2 SW1	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch2 SW2	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch2 SW3	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch3 Output Data (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch3 Output Clock (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch3 Output Sync (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch3 Output Power (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch3 Data Polarity (Reserved)	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Ch3 SW1 (Reserved)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch3 SW2 (Reserved)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch3 SW3 (Reserved)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch4 Output Data (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch4 Output Clock (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch4 Output Sync (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch4 Output Power (Reserved)	1 byte	“0” = Hi-Z, “1” = ON
,	1 byte	2CH (Delimiter)
Ch4 Data Polarity (Reserved)	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
Ch4 SW1 (Reserved)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch4 SW2 (Reserved)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
,	1 byte	2CH (Delimiter)
Ch4 SW3 (Reserved)	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = Low, “4” = High
ETX	1 byte	03H

Fig. 2-8-2

2.9 SLVDS4 [20H 28H]: LVDS data registration

Function: This command registers the LVDS data of the designated program. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

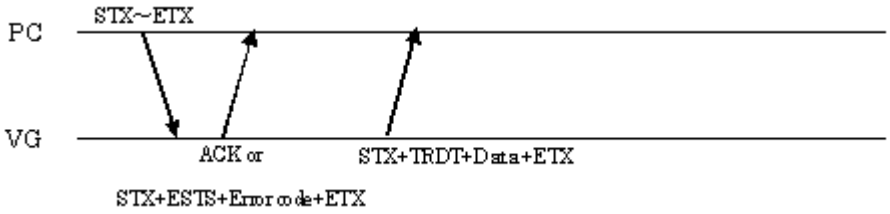
STX	1 byte	02H
VG4CMD	1 byte	FDH
SLVDS4	2 bytes	20H 28H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Dual Mode	1 byte	“0” = Single (Auto) “1” = Dual (Auto) “2” = Quad (10 bits) “3” = Single (10 bits) “4” = Single (Mbits) “5” = Dual (10 bits) “6” = Dual (Mbits)
,	1 byte	2CH (Delimiter)
Split Mode	1 byte	“0” = None “1” = Split into 2 (Valid at Dual or Quad setting) “2” = Split into 4 (Valid at Quad setting)
,	1 byte	2CH (Delimiter)
Control 1	1 byte	“0” = LOW, “1” = HIGH
,	1 byte	2CH (Delimiter)
Control 2	1 byte	“0” = LOW, “1” = HIGH
,	1 byte	2CH (Delimiter)
Control 3	1 byte	“0” = LOW, “1” = HIGH
,	1 byte	2CH (Delimiter)
Control 4	1 byte	“0” = LOW, “1” = HIGH
LVDS Select	1 byte	"0"=DEF1(DISM) "1"=DEF2(OpenLDI) "2"=USER1 "3"=USER2 "4"=USER3 "5"=refer Program
,	1 byte	2CH (Delimiter)
Reserved1	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved2	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved3	1 byte	Fixed at “0”
ETX	1 byte	03H

Fig. 2-9-1

2.10 LLVDS4 [20H 29H]: LVDS data readout

Function: This command reads the LVDS data of the designated program. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LLVDS4	2 bytes	20H 29H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-10-1

Data:

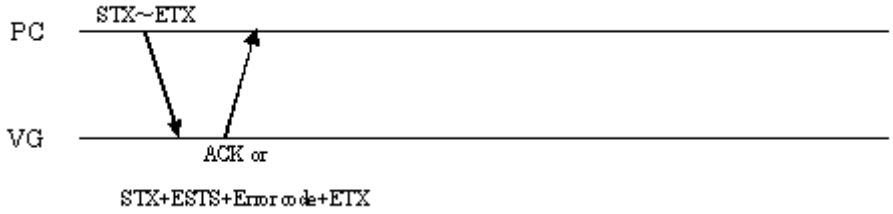
STX	1 byte	02H
TRDT	1 byte	10H
Dual Mode	1 byte	“0” = Single (Auto) “1” = Dual (Auto) “2” = Quad (10 bits) “3” = Single (10 bits) “4” = Single (Mbits) “5” = Dual (10 bits) “6” = Dual (Mbits)
,	1 byte	2CH (Delimiter)
Split Mode	1 byte	“0” = None “1” = Split into 2 (Valid at Dual or Quad setting) “2” = Split into 4 (Valid at Quad setting)
,	1 byte	2CH (Delimiter)
Control 1	1 byte	“0” = LOW, “1” = HIGH
,	1 byte	2CH (Delimiter)
Control 2	1 byte	“0” = LOW, “1” = HIGH
,	1 byte	2CH (Delimiter)
Control 3	1 byte	“0” = LOW, “1” = HIGH
,	1 byte	2CH (Delimiter)
Control 4	1 byte	“0” = LOW, “1” = HIGH
LVDS Select	1 byte	"0"=DEF1(DISM) "1"=DEF2(OpenLDI) "2"=USER1 "3"=USER2 "4"=USER3 "5"=refer Program
,	1 byte	2CH (Delimiter)
Reserved1	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved2	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved3	1 byte	Fixed at “0”
ETX	1 byte	03H

Fig. 2-10-2

2.11 SPTS4 [20H 2AH]: Pattern select data registration

Function: This command registers the pattern select data of the designated program. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SPTS4	2 bytes	20H 2AH
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Pattern select code #1	1 or 2 bytes	“0” to “99”
,	1 byte	2CH (Delimiter)
Pattern select code #2	1 or 2 bytes	“0” to “99”
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Pattern select code #N	1 or 2 bytes	“0” to “99”
ETX	1 byte	03H

Fig. 2-11-1

Concerning the pattern select codes

Code	Pattern
0	R
1	G
2	B
3	INV
6	Character Plane
7	OPT
8	Checker
9	Aspect
10	Raster
11	Moonscape
12	Sweep
13	Ramp
14	Gray Scale
15	ColorBar
17	Name
18	Cursor
19	Window
24	Burst
25	Circle
26	×

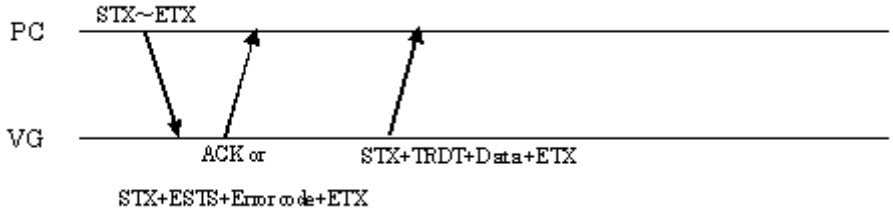
27	＋
28	□
29	DOTS
30	CROSS
31	CHARA

Fig. 2-11-2

2.12 LPTS4 [20H 2BH]: Pattern select data readout

Function: This command reads the pattern select data of the designated program. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LPTS4	2 bytes	20H 2BH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-12-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Pattern select code #1	1 or 2 bytes	“0” to “99”
,	1 byte	2CH (Delimiter)
Pattern select code #2	1 or 2 bytes	“0” to “99”
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Pattern select code #N	1 or 2 bytes	“0” to “99”
ETX	1 byte	03H

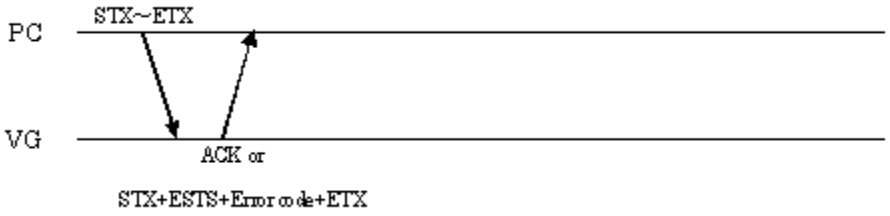
Fig. 2-12-2

For details concerning the pattern select codes, refer to Fig. 2-11-2.

2.13 SPT4 [20H 2CH]: Pattern data registration

Function: This command registers the pattern data of the designated program. It selects the pattern block to be set as a parameter and sends the corresponding data. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SPT4	2 bytes	20H 2CH
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Pattern block No.	1 or 2 bytes	“1” = Foreground color “2” = Character “3” = Crosshatch “4” = Dot “5” = Circle “6” = Burst “7” = Window “8” = Cursor “9” = Pattern name “10” = Color bar “11” = Gray scale “12” = Ramp “13” = Sweep “14” = Monoscope “15” = Raster “16” = Checker “17” = Optional pattern “18” = Background color “19” = Aspect ratio
,	1 byte	2CH (Delimiter)
Pattern data	? bytes	Refer to Figs. 2-13-2 to 16.
ETX	1 byte	03H

Fig. 2-13-1

(1) Graphic color data

R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”

Fig. 2-13-2

(2) Character data

Character format	1 byte	“0” = Character List, “1” = All 1 Chara, “2” = Corner & Center
,	1 byte	2CH (Delimiter)
Character font	1 byte	“0” = 5×7, “1” = 7×9, “2” = 16×16 “3” = 32x32, “4” = 64x64
,	1 byte	2CH (Delimiter)
Character code	2 bytes	“20” to “FF”
,	1 byte	2CH (Delimiter)
H cell size	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
V cell size	1 to 3 bytes	“1” to “255”

Fig. 2-13-3

(3) Crosshatch data

Mode	1 byte	“0” = No. of lines, “1” = dot
,	1 byte	2CH (Delimiter)
Format	1 byte	“0” = From the center, “1” = From the top left
,	1 byte	2CH (Delimiter)
H interval	1 to 4 bytes	“0” to “9999”
,	1 byte	2CH (Delimiter)
V interval	1 to 4 bytes	“0” to “9999”
,	1 byte	2CH (Delimiter)
H line width	1 or 2 bytes	“1” to “15”
,	1 byte	2CH (Delimiter)
V line width	1 or 2 bytes	“1” to “15”

Fig. 2-13-4

(4) Dot data

Mode	1 byte	“0” = No. of lines, “1” = dot
,	1 byte	2CH (Delimiter)
Format	1 byte	“0” = From the center, “1” = From the top left
,	1 byte	2CH (Delimiter)
H interval	1 to 4 bytes	“0” to “9999”
,	1 byte	2CH (Delimiter)
V interval	1 to 4 bytes	“0” to “9999”
,	1 byte	2CH (Delimiter)
Size	1 or 2 bytes	“1” to “15”
,	1 byte	2CH (Delimiter)
Shape	1 byte	“0” = Round “1” = Square

Fig. 2-13-5

(5) Circle data

Circle format	1 byte	“0” to “6”

Fig. 2-13-6

(6) Burst data

Burst format	1 byte	“0” = L → R, “1” = L ← R, “2” = L ← C → R, “3” = L → C ← R, “4” = T → B, “5” = T ← B, “6” = T ← C → B, “7” = T → C ← B
,	1 byte	2CH (Delimiter)
Interval	1 or 2 bytes	“1” to “99”
,	1 byte	2CH (Delimiter)
Step	1 or 2 bytes	“1” to “99”

Fig. 2-13-7

(7) Window data

Window mode	1 byte	“0” = %, “1” = dot
,	1 byte	2CH (Delimiter)
Format	1 or 2 bytes	“0” = 1Window, “1” = 4Window, “2” = 9Window, “3” = 16Window, “4” = 25Window, “5” = 64Window, “6” = V3Window, “7” = H3Window, “14” = UserPOS, “17” = UserPOS2
,	1 byte	2CH (Delimiter)
H width	1 to 4 bytes	% = “1” to “1000” (0.1 to 100.0%), dot = “1” to “9999”
,	1 byte	2CH (Delimiter)
V width	1 to 4 bytes	% = “1” to “1000” (0.1 to 100.0%), dot = “1” to “9999”
,	1 byte	2CH (Delimiter)
R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”
,	1 byte	2CH (Delimiter)
H-Pos 1	1 to 3 bytes	“0” to “100” (0 to 100%)
,	1 byte	2CH (Delimiter)
V-Pos 1	1 to 3 bytes	“0” to “100” (0 to 100%)
,	1 byte	2CH (Delimiter)
H-Pos 2	1 to 3 bytes	“0” to “100” (0 to 100%)
,	1 byte	2CH (Delimiter)
V-Pos 2	1 to 3 bytes	“0” to “100” (0 to 100%)

Fig. 2-13-8

(8) Cursor data

Shape	1 byte	“0” = 5×5, “1” = Full cross, “2” = Vertical line, "3"=dot
,	1 byte	2CH (Delimiter)
Flicker	1 byte	“0” = None, “1” = 1 V, “2” = 2 V, “3” = 4 V, “4” = 8 V, “5” = 16 V, “6” = 32 V, “7” = 64 V
,	1 byte	2CH (Delimiter)
Coordinate display	1 byte	“0” = None “1” = Type 1, “2” = Type 2
,	1 byte	2CH (Delimiter)
Step amount	1 byte	“0” = 1 dot, “1” = 10 dots, “2” = 100 dots
,	1 byte	2CH (Delimiter)
R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Background R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Background G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Background B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”
,	1 byte	2CH (Delimiter)
Sub-pixel mode	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Overlay setting	1 byte	“0” = OFF (Background color provided on background) “1” = ON (Other selected pattern provided on background)
,	1 byte	2CH (Delimiter)
Cross point color	1 byte	“0” = Normal (Not set to black) “1” = Space (Set to black)
,	1 byte	2CH（Delimiter）
Cursor 2Mode	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH（Delimiter）
R Cursor 2Mode	1 to 5 byte	"0" to "65535"

,	1 byte	2CH（Delimiter）
G Cursor 2Mode	1 to 5 byte	"0" to "65535"
,	1 byte	2CH（Delimiter）
B Cursor 2Mode	1 to 5 byte	"0" to "65535"

Fig. 2-13-9

(9) Pattern name

Type	1 byte	“0” = Name “1” = TIM LIST “2” = HDMI LIST “3” = HDCP LIST “4” = CEC “5” = DDC_CI “6” = EDID “7” = EDID (HEX) "8" = Image "9" = OPT User "10" = DP "11" = DP (HEX) "12"=SubTitle, “13”= HDMI-ARC "14"=HDMI-HEC "15"=SCDC "16"=SCDC(HEX)
,	1 byte	2CH (Delimiter)
Position	1 byte	“0” = Center, “1” = L-T, “2” = L-B, “3” = R-T, “4” = R-B, “5” = C-T, “6” = C-B
,	1 byte	2CH (Delimiter)
Font	1 byte	“0” = 5×7, “1” = 7×9, “2” = 16×16 “3” = 32x32, “4” = 64x64
,	1 byte	2CH (Delimiter)
Length	1 or 2 bytes	“1” to “20”
,	1 byte	2CH (Delimiter)
Format	1 byte	“0” = Program number + Program name “1” = Program number + Pattern name “2” = Program number + Program name + Pattern name “3” = Program number + Program name + H/V period + Resolution + DotClock
,	1 byte	2CH (Delimiter)
String	20 bytes	* 20 ASCII characters (When the string contains fewer than 20 characters, enter a space or spaces after the characters to bring the number of characters up to 20)
,	1 byte	2CH (Delimiter)
Over Scan H	1 or 2 bytes	“1” to “20” (%)
,	1 byte	2CH (Delimiter)
Over Scan V	1 or 2 bytes	“1” to “20” (%)
,	1 byte	2CH（Delimiter）
DP Block No	1 byte	"0" to "7"

Fig. 2-13-10

(10) Color bar data

TYPE	1 byte	“0” = Custom (Refer to the color bar parameters), “1” = 100/100-H “2” = 100/75-H “3” = 75/75-H “4” = SMPTE “5” = RGBW-V “6” = xvYCC (4%) “7” = xvYCC (8%) “8” = xvYCC (12%)
,	1 byte	2CH (Delimiter)
MODE	1 byte	“0” = %, “1” = dot
,	1 byte	2CH (Delimiter)
Number of lines repeated	1 or 2 bytes	“1” to “16”
,	1 byte	2CH (Delimiter)

H width	1 to 4 bytes	% = “1” to “1000” (0.1 to 100.0%) dot = “1” to “9999”
,	1 byte	2CH (Delimiter)
V width	1 to 4 bytes	% = “1” to “1000” (0.1 to 100.0%) dot = “1” to “9999”
,	1 byte	2CH (Delimiter)
Direction H/V	1 byte	“0” = Horizontal, “1” = Vertical, “2” = Repeated horizontally, “3” = Repeated vertically
,	1 byte	2CH (Delimiter)
Color specification	1 byte × 16	“0” = None, “1” = R, “2” = G, “3” = RG, “4” = B, “5” = RB, “6” = GB, “7” = RGB
,	1 byte	2CH (Delimiter)
Level 0	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 1	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 2	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 3	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 4	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 5	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 6	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 7	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 8	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 9	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 10	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 11	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 12	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 13	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 14	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 15	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)

Fig. 2-13-11

(11) Gray scale data

Type	1 byte	“0” = Refer to the parameters “1” = 8STEP-H “2” = 16STEP-H “3” = 32STEP-H “4” = 8STEP-V “5” = 16STEP-V “6” = 32STEP-V
,	1 byte	2CH (Delimiter)
MODE	1 byte	“0” = %, “1” = dot
,	1 byte	2CH (Delimiter)
Valid number	1 or 2 bytes	“1” to “16”
,	1 byte	2CH (Delimiter)
H width	1 to 4 bytes	% = “1” to “1000” (0.1 to 100.0%) dot = “1” to “9999”
,	1 byte	2CH (Delimiter)
V width	1 to 4 bytes	% = “1” to “1000” (0.1 to 100.0%) dot = “1” to “9999”
,	1 byte	2CH (Delimiter)
Direction H/V	1 byte	“0” = Horizontal & V, “1” = Vertical & H”, “2” = Horizontal, “3” = Vertical
,	1 byte	2CH (Delimiter)
Level 0	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 1	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 2	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 3	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 4	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 5	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 6	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 7	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 8	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 9	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 10	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 11	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 12	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 13	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 14	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 15	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”

Fig. 2-13-12

(12) Ramp data

Type	1 byte	“0” = Refer to the parameters “1” = LINEAR-H “2” = RGB1 “3” = TURN-H “4” = LINEAR-V “5” = RGB2 “6” = Invalid “7” = LINEAR-256 “8” = RGB3 “9” = LINEAR-GR “10” = LINEAR-BR “11” = LINEAR-BG “12” = LINEAR-RG “13” = LINEAR-RB “14” = LINEAR-GB “15” = LINEAR-HV "16" = Limited-H "17" = Limited-V "18"=H2-UpUp "19"=H2-DownUp "20"=H2-UpDown "21"=H2-DownDown "22"=V2-UpUp "23"=V2-DownUp "24"=V2-UpDown "25"=V2-DownDown
,	1 byte	2CH (Delimiter)
Direction	1 byte	“0” = H, “1” = V
,	1 byte	2CH (Delimiter)
Number of gray scales	1 byte	“1” to “4”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”
,	1 byte	2CH (Delimiter)
Start level of gray scale 1	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
End level of gray scale 1	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Number of line 1 gradations	1 to 4 bytes	“1” to “8192”
,	1 byte	2CH (Delimiter)
Start level of gray scale 2	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
End level of gray scale 2	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Number of line 2 gradations	1 to 4 bytes	“1” to “8192”
,	1 byte	2CH (Delimiter)
Start level of gray scale 3	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
End level of gray scale 3	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Number of line 3 gradations	1 to 4 bytes	“1” to “8192”
,	1 byte	2CH (Delimiter)
Start level of gray scale 4	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
End level of gray scale 4	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Number of line 4 gradations	1 to 4 bytes	“1” to “8192”

Fig. 2-13-13

(13) Sweep data

Type	1 byte	“1” = MBURST100 “2” = MBURST50 “3” = SWEEP

Fig. 2-13-14

(14) Monoscope data

Type	1 byte	“1” = PR-133 “2” = PR-133COL “3” = MONOSCOPE “4” = PHILIPS “5” = CHINA "6" = APDC “7” = SDI-CHK
,	1 byte	2CH (Delimiter)
APDC Type	1 byte	"1"=APDC1 "2"=APDC2 "3"=APDC3 "4"=APDC4 "5"=APDC5 ***Only when APDC is set by the type, it becomes effective.**
,	1 byte	2CH (Delimiter)
APDC 4K Mode	1 byte	"0"=4K Mode 1 "1"=4K Mode 2 ***Only when APDC is set by the type, it becomes effective.**

Fig. 2-13-15

(15) Raster data

Type	1 byte	“0” = Refer to the parameters “1” = White “2” = Red “3” = Green “4” = Blue “5” = Black “6” = 50%Gray
,	1 byte	2CH (Delimiter)
R	1 to 3 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G	1 to 3 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B	1 to 3 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”

Fig. 2-13-16

(16) Checker data

Type	1 byte	“1” = DOT×DOT “2” = BLK×BLK “3” = SubPixel
,	1 byte	2CH (Delimiter)
Xsize of dot × dot	1 byte	“1” to “8”
,	1 byte	2CH (Delimiter)
Ysize of dot × dot	1 byte	“1” to “8”
,	1 byte	2CH (Delimiter)
Number of BLK × BLK blocks in X direction	1 or 2 bytes	“2” to “16”
,	1 byte	2CH (Delimiter)
Number of BLK × BLK blocks in Y direction	1 or 2 bytes	“2” to “16”
,	1 byte	2CH（Delimiter）
Checker color assignment	1 byte	"0"=OFF(Default color) "1"=ON(Refer CHECKER color data)
,	1 byte	2CH（Delimiter）
SubPixelSize X	1 byte	"0" to "3"
,	1 byte	2CH（Delimiter）
SubPixelSize Y	1 byte	"0" to "3"
,	1 byte	2CH（Delimiter）
Reserve1	1 byte	"0" FIX
,	1 byte	2CH（Delimiter）
Reserve2	1 byte	"0"FIX
,	1 byte	2CH（Delimiter）
Color0 R	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Color0 G	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Color0 B	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Color1 R	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Color1 G	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Color1 B	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Edit Bit Mode	1 to 2 bytes	"8" to "16"

Fig. 2-13-17

(17) Optional pattern data

Internal optional pattern code	1 to 3 bytes	“1” to “200”
,	1 byte	2CH (Delimiter)
User optional pattern code	1 to 3 bytes	“1” to “200” ***Below is for VG-876,877,878/-A,879** "1" to "999"
,	1 byte	2CH (Delimiter)
Image data code	1 to 3 bytes	“1” to “200” ***Below is for VG-876,877,878/-A,879** "1" to "999"
,	1 byte	2CH (Delimiter)
Optional pattern type	1 byte	“0” = Internally fixed, “1” = Created by user, “2” = Image data
,	1 byte	2CH（Delimiter）
Movie data code	1 to 3 bytes	"1" to "200"

Fig. 2-13-18

(18) Background color data

R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”

Fig. 2-13-19

(19) Aspect ratio

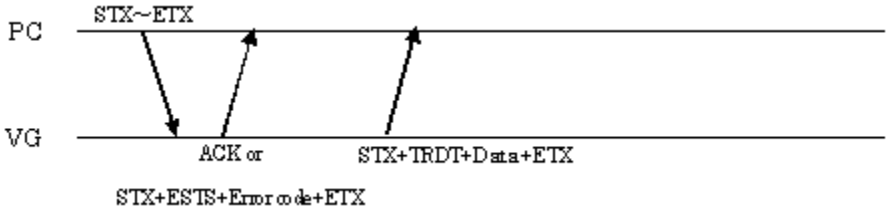
Type	1 byte	“1” = OverScan, “2” = AFD

Fig. 2-13-20

2.14 LPT4 [20H 2DH]: Pattern data readout

Function: This command reads the pattern data of the designated program. It selects the pattern block to be set as a parameter and receives the corresponding data. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LPT4	2 bytes	20H 2DH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
,	1 byte	2CH (Delimiter)
Pattern block No.	1 or 2 bytes	“1” = Foreground color “2” = Character “3” = Crosshatch “4” = Dot “5” = Circle “6” = Burst “7” = Window “8” = Cursor “9” = Pattern name “10” = Color bar “11” = Gray scale “12” = Ramp “13” = Sweep “14” = Monoscope “15” = Raster “16” = Checker “17” = Optional pattern “18” = Background color “19” = Aspect ratio
ETX	1 byte	03H

Fig. 2-14-1

Data:

(1) Graphic color data

STX	1 byte	02H
TRDT	1 byte	10H
R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”

Fig. 2-14-2

(2) Character data

STX	1 byte	02H
TRDT	1 byte	10H
Character format	1 byte	“0” = Character List, “1” = All 1 Chara, “2” = Corner & Center
,	1 byte	2CH (Delimiter)
Character font	1 byte	“0” = 5×7, “1” = 7×9, “2” = 16×16 “3” = 32x32, “4” = 64x64
,	1 byte	2CH (Delimiter)
Character code	2 bytes	“20” to “FF”
,	1 byte	2CH (Delimiter)
H cell size	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
V cell size	1 to 3 bytes	“1” to “255”

Fig. 2-14-3

(3) Crosshatch data

STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	“0” = No. of lines, “1” = dot
,	1 byte	2CH (Delimiter)
Format	1 byte	“0” = From the center, “1” = From the top left
,	1 byte	2CH (Delimiter)
H interval	1 to 4 bytes	“0” to “9999”
,	1 byte	2CH (Delimiter)
V interval	1 to 4 bytes	“0” to “9999”
,	1 byte	2CH (Delimiter)
H line width	1 or 2 bytes	“1” to “15”
,	1 byte	2CH (Delimiter)
V line width	1 or 2 bytes	“1” to “15”

Fig. 2-14-4

(4) Dot data

STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	“0” = No. of lines, “1” = dot
,	1 byte	2CH (Delimiter)
Format	1 byte	“0” = From the center, “1” = From the top left
,	1 byte	2CH (Delimiter)
H interval	1 to 4 bytes	“0” to “9999”
,	1 byte	2CH (Delimiter)
V interval	1 to 4 bytes	“0” to “9999”
,	1 byte	2CH (Delimiter)
Size	1 or 2 bytes	“1” to “15”
,	1 byte	2CH (Delimiter)
Shape	1 byte	“0” = Round, “1” = Square

Fig. 2-14-5

(5) Circle data

STX	1 byte	02H
TRDT	1 byte	10H
Circle format	1 byte	“0” to “6”

Fig. 2-14-6

(6) Burst data

STX	1 byte	02H
TRDT	1 byte	10H
Burst format	1 byte	“0” = L → R, “1” = L ← R, “2” = L ← C → R “3” = L → C ← R, “4” = T → B, “5” = T ← B “6” = T ← C → B, “7” = T → C ← B
,	1 byte	2CH (Delimiter)
Interval	1 or 2 bytes	“01” to “99”
,	1 byte	2CH (Delimiter)
Step	1 or 2 bytes	“01” to “99”

Fig. 2-14-7

(7) Window data

STX	1 byte	02H
TRDT	1 byte	10H
Window mode	1 byte	“0” = %, “1” = dot
,	1 byte	2CH (Delimiter)
Format	1 or 2 bytes	“0” = 1Window, “1” = 4Window, “2” = 9Window, “3” = 16Window, “4” = 25Window, “5” = 64Window, “6” = V3Window, “7” = H3Window, “14” = UserPOS, “17” = 1 window + size, variable in any way
,	1 byte	2CH (Delimiter)
H width	1 to 4 bytes	% = “1” to “1000” (0.1 to 100.0%), dot = “1” to “9999”
,	1 byte	2CH (Delimiter)
V width	1 to 4 bytes	% = “1” to “1000” (0.1 to 100.0%), dot = “1” to “9999”
,	1 byte	2CH (Delimiter)
R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”
,	1 byte	2CH (Delimiter)
H-Pos 1	1 to 3 bytes	“0” to “100” (0 to 100%)
,	1 byte	2CH (Delimiter)
V-Pos 1	1 to 3 bytes	“0” to “100” (0 to 100%)
,	1 byte	2CH (Delimiter)
H-Pos 2	1 to 3 bytes	“0” to “100” (0 to 100%)
,	1 byte	2CH (Delimiter)
V-Pos 2	1 to 3 bytes	“0” to “100” (0 to 100%)

Fig. 2-14-8

(8) Cursor data

STX	1 byte	02H
TRDT	1 byte	10H
Shape	1 byte	“0” = 5×5, “1” = Full cross, “2” = Vertical line “3” = dot
,	1 byte	2CH (Delimiter)
Flicker	1 byte	“0” = None, “1” = 1 V, “2” = 2 V, “3” = 4 V, “4” = 8 V, “5” = 16 V, “6” = 32 V, “7” = 64 V
,	1 byte	2CH (Delimiter)
Coordinate display	1 byte	“0” = None, “1” = Type 1, “2” = Type 2
,	1 byte	2CH (Delimiter)
Step amount	1 byte	“0” = 1 dot, “1” = 10 dots, “2” = 100 dots
,	1 byte	2CH (Delimiter)
R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Background R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Background G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Background B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”
,	1 byte	2CH (Delimiter)
Sub-pixel mode	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Overlay setting	1 byte	“0” = OFF (Background color provided on background) “1” = ON (Other selected pattern provided on background)
,	1 byte	2CH (Delimiter)
Cross point color	1 byte	“0” = Normal (Not set to black) “1” = Space (Set to black)
,	1 byte	2CH (Delimiter)
Cursor 2Mode	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
R Cursor 2Mode	1-5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G Cursor 2Mode	1-5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B Cursor 2Mode	1-5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)

Fig. 2-14-9

(9) Pattern name

STX	1 byte	02H
TRDT	1 byte	10H
Type	1 byte	“0” = Name “1” = TIM LIST “2” = HDMI LIST “3” = HDCP LIST “4” = CEC “5” = DDC_CI “6” = EDID “7” = EDID (HEX) "8" = Image "9" = OPT User "10" = DP "11" = DP (HEX) "12"=SubTitle “13”= HDMI-ARC "14"=HDMI-HEC "15"=SCDC "16"=SCDC(HEX)
,	1 byte	2CH (Delimiter)
Position	1 byte	“0” = Center, “1” = L-T, “2” = L-B, “3” = R-T, “4” = R-B, “5” = C-T, “6” = C-B
,	1 byte	2CH (Delimiter)
Font	1 byte	“0” = 5×7, “1” = 7×9, “2” = 16×16 “3” = 32x32, “4” = 64x64
,	1 byte	2CH (Delimiter)
Length	1 or 2 bytes	“1” to “20”
,	1 byte	2CH (Delimiter)
Format	1 byte	“0” = Program number + Program name “1” = Program number + Pattern name “2” = Program number + Program name + Pattern name “3” = Program number + Program name + H/V period + Resolution + DotClock
,	1 byte	2CH (Delimiter)
String	20 bytes	* 20 ASCII characters (When the string contains fewer than 20 characters, enter a space or spaces after the characters to bring the number of characters up to 20)
,	1 byte	2CH (Delimiter)
Over Scan H	1 or 2 bytes	“1” to “20” (%)
,	1 byte	2CH (Delimiter)
Over Scan V	1 or 2 bytes	“1” to “20” (%)
,	1 byte	2CH（Delimiter）
DP Block No	1 byte	"0" to "7"

Fig. 2-14-10

(10) Color bar data

STX	1 byte	02H
TRDT	1 byte	10H
TYPE	1 byte	“0” = Custom (Refer to the color bar parameters) “1” = 100/100-H “2” = 100/75-H “3” = 75/75-H “4” = SMPTE “5” = RGBW-V “6” = xvYCC (4%) “7” = xvYCC (8%) “8” = xvYCC (12%)
,	1 byte	2CH (Delimiter)
MODE	1 byte	“0” = %, “1” = dot
,	1 byte	2CH (Delimiter)
Number of lines repeated	1 or 2 bytes	“1” to “16”
,	1 byte	2CH (Delimiter)
H width	1 to 4 bytes	% = “1” to “1000” (0.1 to 100.0%), dot = “1” to “9999”
,	1 byte	2CH (Delimiter)
V width	1 to 4 bytes	% = “1” to “1000” (0.1 to 100.0%), dot = “1” to “9999”

,	1 byte	2CH (Delimiter)
Direction H/V	1 byte	“0” = Horizontal, “1” = Vertical, “2” = Repeated horizontally, “3” = Repeated vertically
,	1 byte	2CH (Delimiter)
Color specification	1 byte × 16	“0” = None, “1” = R, “2” = G, “3” = RG, “4” = B, “5” = RB, “6” = GB, “7” = RGB
,	1 byte	2CH (Delimiter)
Level 0	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 1	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 2	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 3	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 4	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 5	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 6	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 7	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 8	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 9	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 10	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 11	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 12	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 13	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 14	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)
,	1 byte	2CH (Delimiter)
Level 15	1 to 4 bytes	“0” to “1000” (0.0 to 100.0%)

Fig. 2-14-11

(11) Gray scale data

STX	1 byte	02H
TRDT	1 byte	10H
Type	1 byte	“0” = Refer to the parameters “1” = 8STEP-H “2” = 16STEP-H “3” = 32STEP-H “4” = 8STEP-V “5” = 16STEP-V “6” = 32STEP-V
,	1 byte	2CH (Delimiter)
MODE	1 byte	“0” = %, “1” = dot
,	1 byte	2CH (Delimiter)
Valid number	1 or 2 bytes	“1” to “16”
,	1 byte	2CH (Delimiter)
H width	1 to 4 bytes	% = “1” to “1000” (0.1 to 100.0%), dot = “1” to “9999”
,	1 byte	2CH (Delimiter)
V width	1 to 4 bytes	% = “1” to “1000” (0.1 to 100.0%), dot = “1” to “9999”
,	1 byte	2CH (Delimiter)
Direction H/V	1 byte	“0” = Horizontal & V, “1” = Vertical & H”, “2” = Horizontal, “3” = Vertical
,	1 byte	2CH (Delimiter)
Level 0	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 1	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 2	1 to 5 bytes	“0” to “65535”

,	1 byte	2CH (Delimiter)
Level 3	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 4	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 5	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 6	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 7	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 8	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 9	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 10	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 11	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 12	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 13	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 14	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Level 15	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”

Fig. 2-14-12

(12) Ramp data

Type	1 byte	“0” = Refer to the parameters “1” = LINEAR-H “2” = RGB1 “3” = TURN-H “4” = LINEAR-V “5” = RGB2 “6” = Invalid “7” = LINEAR-256 “8” = RGB3 “9” = LINEAR-GR “10” = LINEAR-BR “11” = LINEAR-BG “12” = LINEAR-RG “13” = LINEAR-RB “14” = LINEAR-GB “15” = LINEAR-HV "16" = Limited-H "17" = Limited-V "18"=H2-UpUp "19"=H2-DownUp "20"=H2-UpDown "21"=H2-DownDown "22"=V2-UpUp "23"=V2-DownUp "24"=V2-UpDown "25"=V2-DownDown
,	1 byte	2CH (Delimiter)
Direction	1 byte	“0” = H, “1” = V
,	1 byte	2CH (Delimiter)
Number of gray scales	1 byte	“1” to “4”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”
,	1 byte	2CH (Delimiter)
Start level of gray scale 1	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
End level of gray scale 1	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)

Number of line 1 gradations	1 to 4 bytes	“1” to “8192”
,	1 byte	2CH (Delimiter)
Start level of gray scale 2	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
End level of gray scale 2	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Number of line 2 gradations	1 to 4 bytes	“1” to “8192”
,	1 byte	2CH (Delimiter)
Start level of gray scale 3	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
End level of gray scale 3	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Number of line 3 gradations	1 to 4 bytes	“1” to “8192”
,	1 byte	2CH (Delimiter)
Start level of gray scale 4	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
End level of gray scale 4	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Number of line 4 gradations	1 to 4 bytes	“1” to “8192”

Fig. 2-14-13

(13) Sweep data

STX	1 byte	02H
TRDT	1 byte	10H
Type	1 byte	“1” = MBURST100 “2” = MBURST50, “3” = SWEEP

Fig. 2-14-14

(14) Monoscope data

STX	1 byte	02H
TRDT	1 byte	10H
Type	1 byte	“1” = PR-133 “2” = PR-133COL, “3” = MONOSCOPE “4” = PHILIPS, “5” = CHINA "6" = APDC, “7” =SDI-CHK
,	1 byte	2CH (Delimiter)
APDC Type	1 byte	"1"=APDC1 "2"=APDC2 "3"=APDC3 "4"=APDC4 "5"=APDC5
,	1 byte	2CH (Delimiter)
APDC 4K Mode	1 byte	"0"=4K Mode 1 "1"=4K Mode 2

Fig. 2-14-15

(15) Raster data

STX	1 byte	02H
TRDT	1 byte	10H
Type	1 byte	“0” = Refer to the parameters “1” = White “2” = Red “3” = Green “4” = Blue “5” = Black “6” = 50%Gray
,	1 byte	2CH (Delimiter)
R	1 to 3 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G	1 to 3 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B	1 to 3 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”

Fig. 2-14-16

(16) Checker data

STX	1 byte	02H
TRDT	1 byte	10H
Type	1 byte	“1” = DOT×DOT “2” = BLK×BLK “3” = SubPixel
,	1 byte	2CH (Delimiter)
Xsize of dot × dot	1 byte	“1” to “8”
,	1 byte	2CH (Delimiter)
Ysize of dot × dot	1 byte	“1” to “8”
,	1 byte	2CH (Delimiter)
Number of BLK × BLK blocks in X direction	1 or 2 bytes	“2” to “16”
,	1 byte	2CH (Delimiter)
Number of BLK × BLK blocks in Y direction	1 or 2 bytes	“2” to “16”
,	1 byte	2CH（Delimiter）
Checker color assign	1 byte	"0"=OFF(default color) "1"=ON(Refer the CHECKER color data)
,	1 byte	2CH（Delimiter）
SubPixelSize X	1 byte	"0" to "3"
,	1 byte	2CH（Delimiter）
SubPixelSize Y	1 byte	"0" to "3"
,	1 byte	2CH（Delimiter）
Reserved1	1 byte	"0"Fix
,	1 byte	2CH（Delimiter）
Reserved2	1 byte	"0"Fix
,	1 byte	2CH（Delimiter）
Color0 R	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Color0 G	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Color0 B	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Color1 R	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Color1 G	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Color1 B	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Edit Bit Mode	1 to 2 bytes	"8" to "16"

Fig. 2-14-17

(17) Optional pattern data

STX	1 byte	02H
TRDT	1 byte	10H
Internal optional pattern code	1 to 3 bytes	“1” to “200”
,	1 byte	2CH (Delimiter)
User optional pattern code	1 to 3 bytes	“1” to “200” ***Below is for VG-876,877,878/-A,879** "1" to "999"
,	1 byte	2CH (Delimiter)
Image data code	1 to 3 bytes	“1” to “200” ***Below is for VG-876,877,878/-A,879** "1" to "999"
,	1 byte	2CH (Delimiter)
Optional pattern type	1 byte	“0” = Internally fixed, “1” = Created by user, “2” = Image data
,	1 byte	2CH（Delimiter）
Moving data code	1 to 3 bytes	"1" to "200"

Fig. 2-14-18

(18) Background color data

STX	1 byte	02H
TRDT	1 byte	10H
R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Edit Bit Mode	1 or 2 bytes	“8” to “16”

Fig. 2-14-19

(19) Aspect ratio

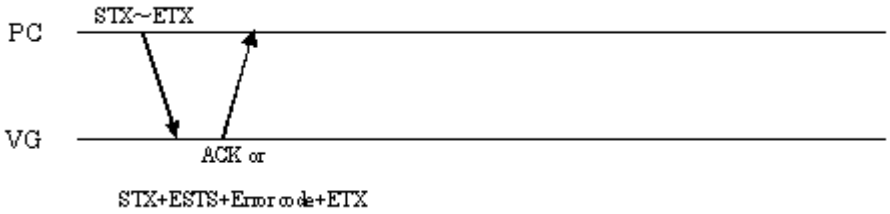
STX	1 byte	02H
TRDT	1 byte	10H
Type	1 byte	“1” = OverScan, “2” = AFD

Fig. 2-14-20

2.15 SACT4 [20H 2EH]: Action data registration

Function: This command registers the action data of the designated program. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SACT4	2 bytes	20H 2EH
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Window level	1 byte	“0” = Not provided, “1” = Provided
,	1 byte	2CH (Delimiter)
Window flicker	1 byte	“0” = Not provided, “1” = Provided
,	1 byte	2CH (Delimiter)
Character scroll	1 byte	“0” = Not provided, “1” = Provided
,	1 byte	2CH (Delimiter)
Graphic scroll	1 byte	“0” = Not provided, “1” = Provided
,	1 byte	2CH (Delimiter)
Window scroll	1 byte	“0” = Not provided, “1” = Provided
,	1 byte	2CH (Delimiter)
Character scroll mode	1 byte	“0” = Left, “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right
,	1 byte	2CH (Delimiter)
Graphic scroll mode	1 byte	“0” = Left, “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right, “8” = Move display position
,	1 byte	2CH (Delimiter)
Character pattern interval 1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Character pattern interval 2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern interval 3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern interval 4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step H1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Character pattern step H2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step H3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step H4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step V1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Character pattern step V2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step V3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step V4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)

Group pattern interval 1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Group pattern interval 2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern interval 3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern interval 4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step H1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Group pattern step H2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step H3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step H4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step V1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Group pattern step V2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step V3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step V4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Number of group pattern repetitions H	1 or 2 bytes	“1” to “15”
,	1 byte	2CH (Delimiter)
Number of group pattern repetitions V	1 or 2 bytes	“1” to “15”
,	1 byte	2CH (Delimiter)
Window scroll mode	1 or 2 bytes	“0” = Left, “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right, “8” = LR, “9” = UD, “10” = Random
,	1 byte	2CH (Delimiter)
Window interval 1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Window interval 2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window interval 3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window interval 4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step H1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step H2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step H3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step H4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step V1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step V2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step V3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step V4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window level change direction	1 byte	“0” = Low → High, “1” = High → Low
,	1 byte	2CH (Delimiter)
Window level change interval	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Window level change step	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)

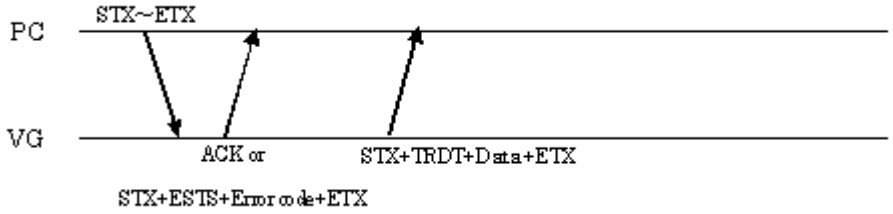
Character pull-down mode	1 byte	“0” = User, “1” = 60i → 60i, “2” = 24p → 60i, “3” = 25p → 50i, “4” = 30p → 60i
,	1 byte	2CH (Delimiter)
Group pull-down mode	1 byte	“0” = User, “1” = 60i → 60i, “2” = 24p → 60i, “3” = 25p → 50i, “4” = 30p → 60i
,	1 byte	2CH (Delimiter)
Window pull-down mode	1 byte	“0” = User, “1” = 60i → 60i, “2” = 24p → 60i, “3” = 25p → 50i, “4” = 30p → 60i
,	1 byte	2CH (Delimiter)
Window flicker interval	1 to 3 bytes	“1” to “255”
,	1 byte	2CH（Delimiter）
Subtitle scroll	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH（Delimiter）
Subtitle scroll mode	1 byte	"0"=Left "1"=Right "2"=Up "3"=Down "4"=Top left "5"=Bottom left "6"=Top right "7"=Bottom right
,	1 byte	2CH（Delimiter）
Subtitle pattern interval1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern interval2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern interval3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern interval4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern step H1	1 to 4 bytes	"1" to "4095"
,	1 byte	2CH（Delimiter）
Subtitle pattern step H2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern step H3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern step H4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern step V1	1 to 4 bytes	"1" to "4095"
,	1 byte	2CH（Delimiter）
Subtitle pattern step V2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern stepV3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern stepV4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pulldown mode	1 byte	"0=User "1=60i->60i "2=24p->60i "3=25p->50i "4=30p->60i
ETX	1 byte	03H

Fig. 2-15-1

2.16 LACT4 [20H 2FH]: Action data readout

Function: This command reads the action data of the designated program. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LACT4	2 bytes	20H 2FH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-16-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Window level	1 byte	“0” = Not provided, “1” = Provided
,	1 byte	2CH (Delimiter)
Window flicker	1 byte	“0” = Not provided, “1” = Provided
,	1 byte	2CH (Delimiter)
Character scroll	1 byte	“0” = Not provided, “1” = Provided
,	1 byte	2CH (Delimiter)
Graphic scroll	1 byte	“0” = Not provided, “1” = Provided
,	1 byte	2CH (Delimiter)
Window scroll	1 byte	“0” = Not provided, “1” = Provided
,	1 byte	2CH (Delimiter)
Character scroll mode	1 byte	“0” = Left, “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right
,	1 byte	2CH (Delimiter)
Graphic scroll mode	1 byte	“0” = Left, “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right, “8” = Move display position
,	1 byte	2CH (Delimiter)
Character pattern interval 1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Character pattern interval 2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern interval 3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern interval 4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step H1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Character pattern step H2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step H3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step H4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)

Character pattern step V1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Character pattern step V2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step V3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step V4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern interval 1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Group pattern interval 2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern interval 3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern interval 4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step H1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Group pattern step H2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step H3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step H4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step V1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Group pattern step V2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step V3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step V4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Number of group pattern repetitions H	1 or 2 bytes	“1” to “15”
,	1 byte	2CH (Delimiter)
Number of group pattern repetitions V	1 or 2 bytes	“1” to “15”
,	1 byte	2CH (Delimiter)
Window scroll mode	1 or 2 bytes	“0” = Left, “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right, “8” = LR, “9” = UD, “10” = Random
,	1 byte	2CH (Delimiter)
Window interval 1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Window interval 2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window interval 3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window interval 4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step 1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step 2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step 3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step 4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step V1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step V2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step V3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step V4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window level change direction	1 byte	“0” = Low → High, “1” = High → Low

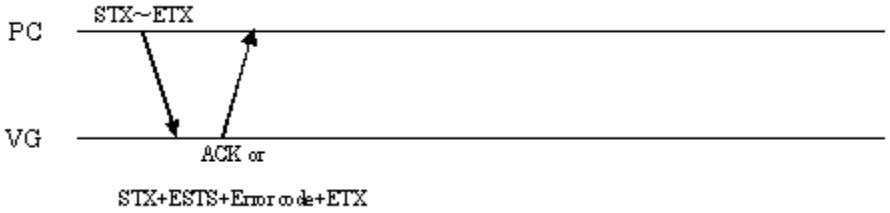
,	1 byte	2CH (Delimiter)
Window level change interval	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Window level change step	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Character pull-down mode	1 byte	“0” = User, “1” = 60i → 60i, “2” = 24p → 60i, “3” = 25p → 50i, “4” = 30p → 60i
,	1 byte	2CH (Delimiter)
Group pull-down mode	1 byte	“0” = User, “1” = 60i → 60i, “2” = 24p → 60i, “3” = 25p → 50i, “4” = 30p → 60i
,	1 byte	2CH (Delimiter)
Window pull-down mode	1 byte	“0” = User, “1” = 60i → 60i, “2” = 24p → 60i, “3” = 25p → 50i, “4” = 30p → 60i
,	1 byte	2CH (Delimiter)
Window flicker interval	1 to 3 bytes	“1” to “255”
,	1 byte	2CH（Delimiter）
Subtitle scroll	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH（Delimiter）
Subtitle scroll mode	1 byte	"0"=Left "1"=Right "2"=Up "3"=Down "4"=Upper left "5"=Bottom left "6"=Upper right "7"=Bottom right
,	1 byte	2CH（Delimiter）
Subtitle pattern interval 1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern interval 2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern interval3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern interval4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern step H1	1 to 4 bytes	"1" to "4095"
,	1 byte	2CH（Delimiter）
Subtitle pattern stepH2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern step H3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern step H4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern step V1	1 to 4 bytes	"1" to "4095"
,	1 byte	2CH（Delimiter）
Subtitle pattern stepV2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern step V3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern stepV4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pull down mode	1 byte	"0=User "1=60i->60i "2=24p->60i "3=25p->50i "4=30p->60i
ETX	1 byte	03H

Fig. 2-16-2

2.17 SWLF4 [20H 30H]: Window level flicker data registration

Function: This command registers the window level flicker data of the designated program. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

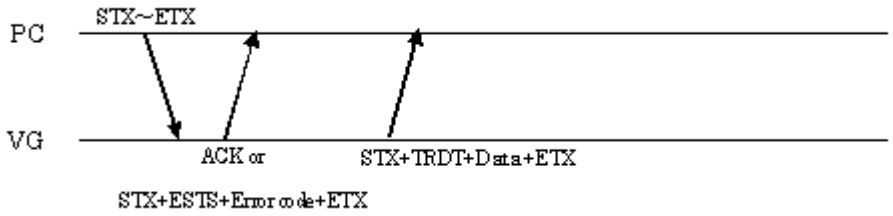
STX	1 byte	02H	
VG4CMD	1 byte	FDH	
SWLF4	2 bytes	20H 30H	
Program number	1 to 4 bytes	“0” to “1000”, “9999”	
,	1 byte	2CH (Delimiter)	
Window level flicker	1 byte	“0” = Not provided, “1” = Provided	
,	1 byte	2CH (Delimiter)	
Number of data N	1 to 3 bytes	“1” to “16”	
,	1 byte	2CH (Delimiter)	
Bit mode	1 or 2 bytes	“8” to “16”	
,	1 byte	2CH (Delimiter)	#1
Time	1 to 4 bytes	“1” to “9999” (“0” = Not registered)	
,	1 byte	2CH (Delimiter)	
Level-R	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
Level-G	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
Level-B	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	#N
Time	1 to 3 bytes	“1” to “9999” (“0” = Not registered)	
,	1 byte	2CH (Delimiter)	
Level-R	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
Level-G	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
Level-B	1 to 5 bytes	“0” to “65535”	
ETX	1 byte	03H	

Fig. 2-17-1

2.18 LWFL4 [20H 31H]: Window level flicker data readout

Function: This command reads the window level flicker data of the designated program. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LWLF4	2 bytes	20H 31H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-18-1

Data:

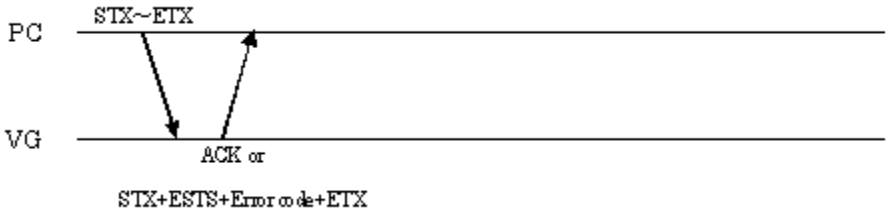
STX	1 byte	02H	
TRDT	1 byte	10H	
Window level flicker	1 byte	“0” = Not provided, “1” = Provided	
,	1 byte	2CH (Delimiter)	
Number of data N	1 to 3 bytes	“1” to “16”	
,	1 byte	2CH (Delimiter)	
Bit mode	1 or 2 bytes	“8” to “16”	
,	1 byte	2CH (Delimiter)	#1
Time	1 to 4 bytes	“1” to “9999” (“0” = Not registered)	
,	1 byte	2CH (Delimiter)	
Level-R	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
Level-G	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
Level-B	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	#N
Time	1 to 3 bytes	“1” to “255” (“0” = Not registered)	
,	1 byte	2CH (Delimiter)	
Level-R	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
Level-G	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
Level-B	1 to 5 bytes	“0” to “65535”	
ETX	1 byte	03H	

Fig. 2-18-2

2.19 SAAD4 [20H 32H]: Audio data registration (Analog)

Function: This command registers the audio data of the designated program No. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

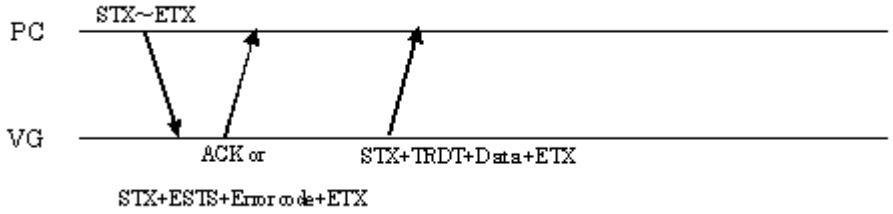
STX	1 byte	02H
VG4CMD	1 byte	FDH
SAAD4	2 bytes	20H 32H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Freq L (Hz)	2 to 5 bytes	“20” to “20000” = 20 Hz to 20000 Hz *** In case of VG-882,884,878/-A** “100” to “20000” = 100 Hz to 20000 Hz
,	1 byte	2CH (Delimiter)
Freq R (Hz)	2 to 5 bytes	“20” to “20000” = 20 Hz to 20000 Hz *** In case of VG-882,884,878/-A** “100” to “20000” = 100 Hz to 20000 Hz
,	1 byte	2CH (Delimiter)
Level L (mV)	1 to 4 bytes	“0” to “4000” = 0 mV to 4000 mV (in 50 mV increments)
,	1 byte	2CH (Delimiter)
Level R (mV)	1 to 4 bytes	“0” to “4000” = 0 mV to 4000 mV (in 50 mV increments)
,	1 byte	2CH (Delimiter)
Mode	1 byte	“0” = OFF, “1” = Internal sine wave, “2” = WAV
,	1 byte	2CH (Delimiter)
Sweep Mode	1 byte	“0” = OFF, “1” = Frequency
,	1 byte	2CH (Delimiter)
	2 to 3 bytes	“40” to “340” msec (in 20 ms increments)
Reserved		* To be left as is. To be modified later.
,	1 byte	2CH (Delimiter)
Sweep Time	1 or 2 bytes	“0” to “15”
,	1 byte	2CH (Delimiter)
Sweep Frequency Min	3 to 5 bytes	“200” to “20000” Hz (in 100 Hz increments)
,	1 byte	2CH (Delimiter)
Sweep Frequency Max	3 to 5 bytes	“200” to “20000” Hz (in 100 Hz increments)
,	1 byte	2CH (Delimiter)
	3 to 5 bytes	“200” to “19800” Hz (in 100 Hz increments)
Reserved		* To be left as is. To be modified later.
ETX	1 byte	03H

Fig. 2-19-1

2.20 LAAD4 [20H 33H]: Audio data readout (Analog)

Function: This command reads the audio data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LAAD4	2 bytes	20H 33H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-20-1

Data:

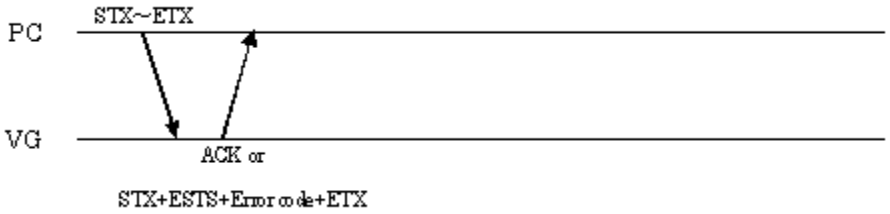
STX	1 byte	02H
TRDT	1 byte	10H
Freq L (Hz)	2 to 5 bytes	“20” to “20000” = 20 Hz to 20000 Hz *** In case of VG-882,884,878/-A** “100” to “20000” = 100 Hz to 20000 Hz
,	1 byte	2CH (Delimiter)
Freq R (Hz)	2 to 5 bytes	“20” to “20000” = 20 Hz to 20000 Hz *** In case of VG-882,884,878/-A** “100” to “20000” = 100 Hz to 20000 Hz
,	1 byte	2CH (Delimiter)
Level L (mV)	1 to 4 bytes	“0” to “4000” = 0 mV to 4000 mV (in 50 mV increments)
,	1 byte	2CH (Delimiter)
Level R (mV)	1 to 4 bytes	“0” to “4000” = 0 mV to 4000 mV (in 50 mV increments)
,	1 byte	2CH (Delimiter)
Mode	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Sweep Mode	1 byte	“0” = OFF, “1” = Frequency
,	1 byte	2CH (Delimiter)
	2 or 3 bytes	“40” to “340” msec (in 20 ms increments)
Reserved		* To be left as is. To be modified later.
,	1 byte	2CH (Delimiter)
Sweep Time	1 or 2 bytes	“0” to “15”
,	1 byte	2CH (Delimiter)
Sweep Frequency Min	3 to 5 bytes	“200” to “20000” Hz (in 100 Hz increments)
,	1 byte	2CH (Delimiter)
Sweep Frequency Max	3 to 5 bytes	“200” to “20000” Hz (in 100 Hz increments)
,	1 byte	2CH (Delimiter)
	3 to 5 bytes	“200” to “19800” Hz (in 100 Hz increments)
Reserved		* To be left as is. To be modified later.
ETX	1 byte	03H

Fig. 2-20-2

2.21 SDAD4 [20H 34H]: Audio data registration (Digital)

Function: This command registers the audio data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SDAD4	2 bytes	20H 34H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Audio Sample	1 byte	“0” = 48 KHz “1” = 44.1 KHz “2” = 32 KHz “3” = 88.2 KHz “4” = 96 KHz “5” = 176.4 KHz “6” = 192 KHz “7” = 352.8 KHz “8” = 384 KHz “9” = 705.6 KHz “10” = 768 KHz * In case of VG-882 "0"=48KHz "1"=44.1KHz "2"=32KHz
,	1 byte	2CH (Delimiter)
Audio Source	1 byte	“0” = OFF “1” = Ext.OPTICAL “2” = Ext.COAXIAL “3” = Ext.Analog PCM “4” = Internal PCM “5” = Ext.Analog DSD “6” = Internal DSD “7” = Internal IEC “8” = Ext.I2S Non L-PCM "9" = Ext.I2S L-PCM "10"=Int.L-PCM(Flash) * In case of VG-882 "0"=OFF "4"=Int.L-PCM
,	1 byte	2CH (Delimiter)
Audio Width	1 byte	“0” = 16 bits, “1” = 20 bits, “2” = 24 bits
,	1 byte	2CH (Delimiter)
Output level input mode	1 byte	“0” = dB, “1” = Bit
,	1 byte	2CH (Delimiter)
Audio Internal Level 1	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 2	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 3	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 4	1 to 7 bytes	“0” to “8388607”

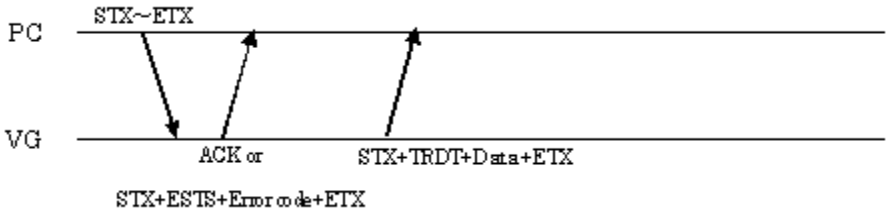
,	1 byte	2CH (Delimiter)
Audio Internal Level 5	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 6	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 7	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 8	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Freq 1	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, 100 Hz to “1/2 of frequency set by Audio Sample” For 1,3, 5, 7 ch.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 2	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, 100 Hz to “1/2 of frequency set by Audio Sample” For 2, 4, 6, 8 ch.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 3	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, no setting.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 4	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, no setting.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 5	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, no setting.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 6	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, no setting.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 7	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, no setting.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 8	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, no setting.
,	1 byte	2CH (Delimiter)
Audio Data No 1	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 2	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 3	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 4	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 5	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 6	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 7	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 8	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio LPCM	1 byte × 8	“0” = OFF, “1” = ON (1CH to 8CH)
ETX	1 byte	03H

Fig. 2-21-1

2.22 LDAD4 [20H 35H]: Audio data readout (Digital)

Function: This command reads the audio data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LAAD4	2 bytes	20H 35H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-22-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Audio Sample	1 byte	“0” = 48 KHz “1” = 44.1 KHz “2” = 32 KHz “3” = 88.2 KHz “4” = 96 KHz “5” = 176.4 KHz “6” = 192 KHz “7” = 352.8 KHz “8” = 384 KHz “9” = 705.6 KHz “10” = 768 KHz * In case of VG-882 "0"=48KHz "1"=44.1KHz "2"=32KHz
,	1 byte	2CH (Delimiter)
Audio Source	1 byte	“0” = OFF “1” = Ext.OPTICAL “2” = Ext.COAXIAL “3” = Ext.Analog PCM “4” = Internal PCM “5” = Ext.Analog DSD “6” = Internal DSD “7” = Internal IEC “8” = Ext.I2S Non L-PCM "9" = Ext.I2S L-PCM "10"=Int.L-PCM(Flash) * In case of VG-882 "0"=OFF "4"=Int.L-PCM
,	1 byte	2CH (Delimiter)
Audio Width	1 byte	“0” = 16 bits, “1” = 20 bits, “2” = 24 bits
,	1 byte	2CH (Delimiter)
Output level input mode	1 byte	“0” = dB, “1” = Bit
,	1 byte	2CH (Delimiter)

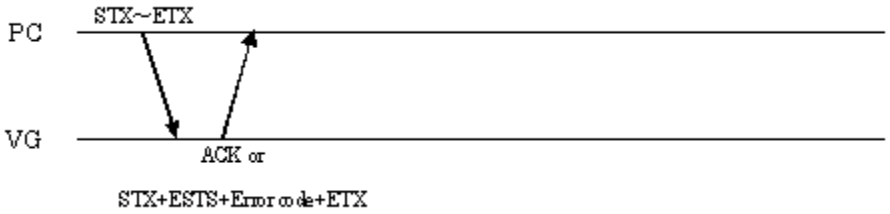
Audio Internal Level 1	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 2	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 3	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 4	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 5	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 6	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 7	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Level 8	1 to 7 bytes	“0” to “8388607”
,	1 byte	2CH (Delimiter)
Audio Internal Freq 1	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, 100 Hz to “1/2 of frequency set by Audio Sample” For 1,3, 5, 7 ch.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 2	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, 100 Hz to “1/2 of frequency set by Audio Sample” For 2, 4, 6, 8 ch.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 3	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, no setting.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 4	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, no setting.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 5	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, no setting.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 6	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, no setting.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 7	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, no setting.
,	1 byte	2CH (Delimiter)
Audio Internal Freq 8	2 to 5 bytes	20 Hz to “1/2 of frequency set by Audio Sample” * In case of VG-882, no setting.
,	1 byte	2CH (Delimiter)
Audio Data No 1	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 2	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 3	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 4	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 5	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 6	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 7	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio Data No 8	1 or 2 bytes	“1” to “99” audio data No.
,	1 byte	2CH (Delimiter)
Audio LPCM	1 byte × 8	“0” = OFF, “1” = ON (1CH to 8CH)
ETX	1 byte	03H

Fig. 2-22-2

2.23 SHDMI4 [20H 36H]: HDMI data registration

Function: This command registers the HDMI data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SHDMI4	2 bytes	20H 36H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
HDMI Mode	1 byte	“1” = HDMI, “2” = DVI, “4” = Auto
,	1 byte	2CH (Delimiter)
Video Format	1 byte	“0” = RGB “1” = YCbCr444 “2” = YCbCr422 “3” = YCbCr420 ***2**
,	1 byte	2CH (Delimiter)
Audio Out	1 byte	“0” = OFF, “1” = ON (All channels ON/OFF)
,	1 byte	2CH (Delimiter)
Video Width	1 byte	“0” = Single (Auto) “1” = Single (8 bits) “2” = Single (10 bits) “3” = Single (12 bits)
,	1 byte	2CH (Delimiter)
Scramble ***3**	1 byte	“0”=ON (3.4G over), “1”=OFF “2”=ON, “3”=Refer EDID
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI、"1"=HDBaseT
,	1 byte	2CH (Delimiter)
TMDS or FRL	1 byte	"0"=TMDS "1"=FRL
,	1 byte	2CH (Delimiter)
Rate Per lane	1 byte	"0"=Auto(Refer EDID) "1"=3Gbps 3Lanes "2"=6Gbps 3Lanes "3"=6Gbps 4Lanes "4"=8Gbps 4Lanes "5"=10Gbps 4Lanes "6"=12Gbps 4Lanes
,	1 byte	2CH (Delimiter)
FFE Levels	1 byte	"0"～"3"
,	1 byte	2CH (Delimiter)
DSC Mode	1 byte	"0"=OFF "1"=Refer Rate Per Lane "2"=Refer EDID
,	1 byte	2CH (Delimiter)
+5V Enable	1 byte	"0"=Disable "1"=Enable
ETX	1 byte	03H

Fig. 2-23-1

*1: The ranges of the settings are as listed below by video format.

Video Format	Setting range
RGB	“0” to “255”
YCbCr444	“0” to “255”
YCbCr422 (16 bits)	“0” to “255”
YCbCr422 (20 bits)	“0” to “1023”
YCbCr422 (24 bits)	“0” to “4095”

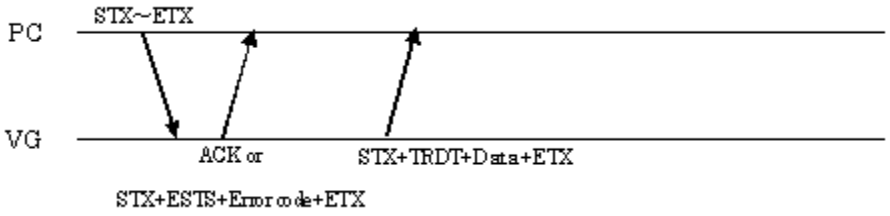
*2: VG-882, 884 are not supported.

*3: Available only for VG-876,877,878/-A and 879.

2.24 LHDMI4 [20H 37H]: HDMI data acquisition

Function: This command gets the HDMI data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out the data from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LHDMI4	2 bytes	20H 37H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT
ETX	1 byte	03H

Fig. 2-24-1

As shown below, if you skip Data Type setting of HDMI or HDBaseT , HDMI data is received.

STX	1 byte	02H
VG4CMD	1 byte	FDH
LHDMI4	2 bytes	20H 37H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-24-2

Data:

STX	1 byte	02H
TRDT	1 byte	10H
HDMI Mode	1 byte	“1” = HDMI, “2” = DVI, “4” = Auto
,	1 byte	2CH (Delimiter)
Video Format	1 byte	“0” = RGB “1” = YCbCr444 “2” = YCbCr422 “3” = YCbCr420 ***2**
,	1 byte	2CH (Delimiter)
Audio Out	1 byte	“0” = OFF, “1” = ON (All channels ON/OFF)
,	1 byte	2CH (Delimiter)
Video Width	1 byte	“0” = Single (Auto) “1” = Single (8 bits) “2” = Single (10 bits) “3” = Single (12 bits)
,	1 byte	2CH (Delimiter)
Scramble ***3**	1 byte	“0”=ON (3.4G over), “1”=OFF “2”=ON, “3”=Refer EDID
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT * The one set by the command parameter is returned.
,	1 byte	2CH (Delimiter)
TMDS or FRL	1 byte	"0"=TMDS "1"=FRL
,	1 byte	2CH (Delimiter)

Rate Per lane	1 byte	"0"=Auto(Refer EDID) "1"=3Gbps 3Lanes "2"=6Gbps 3Lanes "3"=6Gbps 4Lanes "4"=8Gbps 4Lanes "5"=10Gbps 4Lanes "6"=12Gbps 4Lanes
,	1 byte	2CH (Delimiter)
FFE Levels	1 byte	"0"～"3"
,	1 byte	2CH (Delimiter)
DSC Mode	1 byte	"0"=OFF "1"=Refer Rate Per Lane "2"=Refer EDID
,	1 byte	2CH (Delimiter)
+5V Enable	1 byte	"0"=Disable "1"=Enable
ETX	1 byte	03H

Fig. 2-24-3

*1: The ranges of the settings are as listed below by video format.

Video Format	Setting range
RGB	“0” to “255”
YCbCr444	“0” to “255”
YCbCr422 (16 bits)	“0” to “255”
YCbCr422 (20 bits)	“0” to “1023”
YCbCr422 (24 bits)	“0” to “4095”

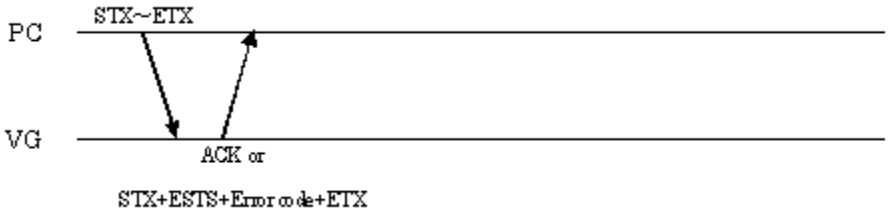
*2: VG-882, 884 are not supported.

*3: Available only for VG-876,877,878/-A and 879.

2.25 SIF4 [20H 38H]: InfoFrame data registration

Function: This command registers the InfoFrame data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SIF4	2 bytes	20H 38H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
AVI On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
SPD On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
Audio On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
MPEG On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
AVI Type	1 byte	“2” = 2
,	1 byte	2CH (Delimiter)
AVI Ver	1 byte	“1” = 1, “2” = 2, “3”=3
,	1 byte	2CH (Delimiter)
AVI Scan Info	1 byte	“0” = No Data, “1” = Over, “2” = Under
,	1 byte	2CH (Delimiter)
AVI Bar Info	1 byte	“0” = Not valid, “1” = Vert, “2” = Horiz, “3” = Vert&Horiz
,	1 byte	2CH (Delimiter)
AVI Active Format Info	1 byte	“0” = No Data, “1” = Valid
,	1 byte	2CH (Delimiter)
AVI RGB or YCbCr	1 byte	“0” = RGB, “1” = YCbCr422, “2” = YCbCr444 “3”=YCbCr420, “4”=Reserved1, “5”=Reserved2 “6”=Reserved3, “7”=IDO-Defined
,	1 byte	2CH (Delimiter)
AVI Active Frame Aspect	1 byte	“0” = Picture, “1” to “9”
,	1 byte	2CH (Delimiter)
AVI Picture Aspect	1 byte	“0” = No Data, “1” = 4:3, “2” = 16:9
,	1 byte	2CH (Delimiter)
AVI Colorimetry	1 byte	“0” = No Data “1” = SMPTE “2” = ITU709 "3" = Extend
,	1 byte	2CH (Delimiter)
AVI Video Code	1 to 3 bytes	"0" to "155" * "127" = Video Code 127 "128" = Video Code 193 to "155" = Video Code 219
,	1 byte	2CH (Delimiter)
AVI Repetition	1 or 2 bytes	“1” to “10”
,	1 byte	2CH (Delimiter)
AVI TopBar	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
AVI BottomBar	1 to 5 bytes	“0” to “65535”

,	1 byte	2CH (Delimiter)
AVI LBar	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
AVI RBar	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
AVI Scaling	1 byte	“0” = Unknown, “1” = Horiz, “2” = Vert, “3” = Horiz&Vert
,	1 byte	2CH (Delimiter)
AVI QuantRange	1 byte	“0” = Default, “1” = Limited, “2” = Full
,	1 byte	2CH (Delimiter)
AVI ExtColor	1 byte	"0"=xvYCC601 "1"=xvYCC709 "2"=sYCC601 "3"=AdobeYCC601 "4"=AdobeRGB “5”=ITU-R BT.2020 Y’cC’bcC’rc “6”=ITU-R BT.2020 R’ G’ B’ or Y’ C’bCr
,	1 byte	2CH (Delimiter)
AVI ITContent	1 byte	“0” = No Data, “1” = IT Content
,	1 byte	2CH (Delimiter)
SPD Type	1 byte	“3” = 3
,	1 byte	2CH (Delimiter)
SPD Ver	1 byte	“1” = 1, “2” = 2
,	1 byte	2CH (Delimiter)
SPD Vendor Name	8 bytes	* 8 ASCII characters (When the string contains fewer than 8 characters, enter a space (0x20) etc to make it 8 characters). * NULL (0x00) setting is also possible.
,	1 byte	2CH (Delimiter)
SPD Product	16 bytes	* 16 ASCII characters (When the string contains fewer than 16 characters, enter a space (0x20) etc to make it 16 characters). * NULL (0x00) setting is also possible.
,	1 byte	2CH (Delimiter)
SPD Source Device	1 byte	"0"=unknown "1"=DigiSTB "2"=DVD "3"=DVHS "4"=HDD "5"=DVC "6"=DSC "7"=CD "8"=Game "9"=PC "10"=Blu-Ray(BD) "11"=Super Audio CD "12"=HD DVD "13"=PMP
,	1 byte	2CH (Delimiter)
Audio Type	1 byte	“4” = 4
,	1 byte	2CH (Delimiter)
Audio Ver	1 byte	“1” = 1
,	1 byte	2CH (Delimiter)
Audio Channel Count	1 byte	“0” = Refer, “1” = 2ch, “2” = 3ch, “3” = 4ch, “4” = 5ch, “5” = 6ch, “6” = 7ch, “7” = 8ch
,	1 byte	2CH (Delimiter)

Audio Coding Type	1 byte	"0"=Refer "1"=IEC60958 "2"=AC3 "3"=MPEG1 "4"=MP3 "5"=MPEG2 "6"=AAC "7"=DTS "8"=ATRAC "9"=DSD ISO/IEC 14496-3 "10"=E-AC-3 ATSC A/52B "11"=DTS-HD DVD Forum DTSHD "12"=MLP DVD Forum MLP "13"=DST ISO/IEC 14496-3 "14"=WMA Pro WMA Pro Decoder "15"=Refer to Audio Coding Extension Type
,	1 byte	2CH (Delimiter)
Audio Sample Size	1 byte	“0” = Refer, “1” = 16 bits, “2” = 20 bits, “3” = 24 bits
,	1 byte	2CH (Delimiter)
Audio Sample Freq	1 byte	“0” = Refer, “1” = 32 kHz, “2” = 44.1 kHz, “3” = 48 kHz, “4” = 88.2 kHz, “5” = 96 kHz, “6” = 176.4 kHz, “7” = 192 kHz
,	1 byte	2CH (Delimiter)
Audio Channel Alloc	1 or 2 bytes	“0” to “31”
,	1 byte	2CH (Delimiter)
Audio Level Shift	1 or 2 bytes	“0” to “15” dB
,	1 byte	2CH (Delimiter)
Audio Down-mix	1 byte	“0” = Permitted, “1” = Prohibited
,	1 byte	2CH (Delimiter)
MPEG Type	1 byte	“5” = 5
,	1 byte	2CH (Delimiter)
MPEG Ver	1 byte	“1” = 1
,	1 byte	2CH (Delimiter)
MPEG Frame	1 byte	“0” = Unknown, “1” = I Pic, “2” = B Pic, “3” = P Pic
,	1 byte	2CH (Delimiter)
MPEG Field Repeat	1 byte	“0” = New, “1” = Repeated
,	1 byte	2CH (Delimiter)
MPEG Bit Rate	1 to 10 bytes	“0” to “4294967295” Hz
,	1 byte	2CH (Delimiter)
AVI IT Content Type	1 byte	"0"=Graphics "1"=Photo "2"=Cinema "3"=Game
,	1 byte	2CH (Delimiter)
AVI YCC Quantization Range	1 byte	"0"=Limited Range "1"=Full Range
,	1 byte	2CH (Delimiter)
Audio LFE playback level	1 byte	"0"=unknown "1"=0dB playback "2"=+10dB playback
,	1 byte	2CH (Delimiter)
Audio Coding Type Extension	1 byte	"1"=HE-AAC "2"=HE-AACv2 "3"=Mpeg Surround "4"=MPEG-4 HE AAC "5"=MPEG-4 HE AAC v2 "6"=MPEG-4 AAC LC "7"=DRA "8"=MPEG-4 HE AAC + MPEG Surround "9"=Reserve "10"=MPEG-4 AAC LC + MPEG Surround
,	1 byte	2CH (Delimiter)
Chk Sum Mode	1 byte	"0"=auto, "1"=Manual
,	1 byte	2CH (Delimiter)
Chk Sum	1 to 2 bytes	"0" - "FF" * Effective when ChkSumMode=auto
,	1 byte	2CH (Delimiter)
Info Len	1 to 2 bytes	"0" - "15"
,	1 byte	2CH (Delimiter)

Data Byte 14	1 to 2 bytes	"0" - "FF"
,	1 byte	2CH (Delimiter)
Data Byte 15	1 to 2 bytes	"0" - "FF"
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0" = HDMI, "1"= DisplayPort, "2"= HDBaseT
,	1 byte	2CH (Delimiter)
AVI Additional Colorimetry	1 byte	"0"=DCI-P3 R'G'B'(D65) "1"=DCI-P3 R'G'B'(theater) "2"=ITU-R BT.2100 ICTCP
,	1 byte	2CH (Delimiter)
Speaker Mask 1 ***1**	8 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Speaker Mask 2 ***2**	8 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Speaker Mask 3 ***3**	4 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Channel Index 1 ***4**	8 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Channel Index 2 ***5**	8 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Channel Index 3 ***6**	8 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Channel Index 4 ***7**	8 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
ETX	1 byte	03H

Fig. 2-25-1

***1** The contents of the setting data are as follows

1	2	3	4	5	6	7	8	BYTE
FL/FR	LFE1	FC	BL/BR	BC	FLC/FRC	RLC/RRC	FLW/FRW	

Example)"10110010"

ON	OFF	ON	ON	OFF	OFF	ON	OFF

***2** The contents of the setting data are as follows

1	2	3	4	5	6	7	8	BYTE
TpFL/TpFR	TpC	TpFC	LS/RS	LFE2	TpBC	SiL/SiR	TpSiL/TpSiR	

Example)"00011011"

OFF	OFF	OFF	ON	ON	OFF	ON	ON

***3** The contents of the setting data are as follows

1	2	3	4	BYTE
TpBL/TpBR	BtFC	BtFL/BtFR	TpLS/TpRS	

Example)"1011"

ON	OFF	ON	ON

***4** The contents of the setting data are as follows

1	2	3	4	5	6	7	8	BYTE
CID00	CID01	CID02	CID03	CID04	CID05	CID06	CID07	

Example)"01110011"

OFF	ON	ON	ON	OFF	OFF	ON	ON

***5** The contents of the setting data are as follows

1	2	3	4	5	6	7	8	BYTE
CID08	CID09	CID10	CID11	CID12	CID13	CID14	CID15	

Example)"10100001"

ON	OFF	ON	OFF	OFF	OFF	OFF	ON

***6** The contents of the setting data are as follows

1	2	3	4	5	6	7	8	BYTE
CID16	CID17	CID18	CID19	CID20	CID21	CID22	CID23	

Example)"00100111"

OFF	OFF	ON	OFF	OFF	ON	ON	ON

***7** The contents of the setting data are as follows

1	2	3	4	5	6	7	8	BYTE
CID24	CID25	CID26	CID27	CID28	CID29	CID30	CID31	

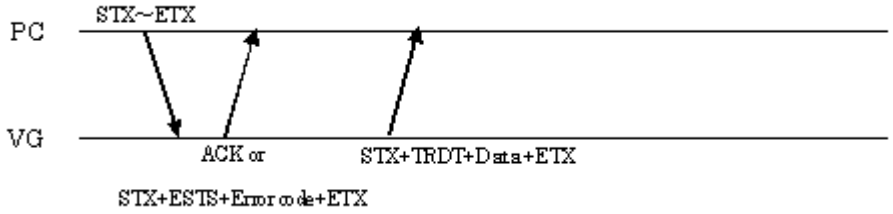
Example)"10010110"

ON	OFF	OFF	ON	OFF	ON	ON	OFF

2.26 LIF4 [20H 39H]: InfoFrame data acquisition

Function: This command gets the InfoFrame data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out the data from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LIF4	2 bytes	20H 39H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0" = HDMI, "1"= DisplayPort, "2"= HDBaseT
ETX	1 byte	03H

Fig. 2-26-1

As shown below, if you skip setting of HDMI ,DP and HDBaseT, HDMI InfoFrame data is received.

STX	1 byte	02H
VG4CMD	1 byte	FDH
LIF4	2 bytes	20H 39H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-26-2

Data:

STX	1 byte	02H
TRDT	1 byte	10H
AVI On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
SPD On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
Audio On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
MPEG On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
AVI Type	1 byte	“2” = 2
,	1 byte	2CH (Delimiter)
AVI Ver	1 byte	“1” = 1, “2” = 2, “3”=3
,	1 byte	2CH (Delimiter)
AVI Scan Info	1 byte	“0” = No Data, “1” = Over, “2” = Under
,	1 byte	2CH (Delimiter)
AVI Bar Info	1 byte	“0” = Not valid, “1” = Vert, “2” = Horiz, “3” = Vert&Horiz
,	1 byte	2CH (Delimiter)
AVI Active Format Info	1 byte	“0” = No Data, “1” = Valid
,	1 byte	2CH (Delimiter)
AVI RGB or YCbCr	1 byte	“0” = RGB, “1” = YCbCr422, “2” = YCbCr444 “3”=YCbCr420, “4”=Reserved1, “5”=Reserved2 “6”=Reserved3, “7”=IDO-Defined
,	1 byte	2CH (Delimiter)
AVI Active Frame Aspect	1 byte	“0” = Picture “1” to “9”
,	1 byte	2CH (Delimiter)

AVI Picture Aspect	1 byte	“0” = No Data, “1” = 4:3, “2” = 16:9
,	1 byte	2CH (Delimiter)
AVI Colorimetry	1 byte	“0” = No Data “1” = SMPTE “2” = ITU709 "3" = Extend
,	1 byte	2CH (Delimiter)
AVI Video Code	1 or 2 bytes	"0" to "155" * "127" = Video Code 127 "128" = Video Code 193 to "155" = Video Code 219
,	1 byte	2CH (Delimiter)
AVI Repetition	1 or 2 bytes	“1” to “10”
,	1 byte	2CH (Delimiter)
AVI TopBar	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
AVI BottomBar	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
AVI LBar	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
AVI RBar	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
AVI Scaling	1 byte	“0” = Unknown, “1” = Horiz, “2” = Vert, “3” = Horiz&Vert
,	1 byte	2CH (Delimiter)
AVI QuantRange	1 byte	“0” = Default, “1” = Limited, “2” = Full
,	1 byte	2CH (Delimiter)
AVI ExtColor	1 byte	"0"=xvYCC601 "1"=xvYCC709 "2"=sYCC601 "3"=AdobeYCC601 "4"=AdobeRGB “5”=ITU-R BT.2020 Y’cC’bcC’rc “6”=ITU-R BT.2020 R’ G’ B’ or Y’ C’bCr
,	1 byte	2CH (Delimiter)
AVI ITContent	1 byte	“0” = No Data, “1” = IT Content
,	1 byte	2CH (Delimiter)
SPD Type	1 byte	“3” = 3
,	1 byte	2CH (Delimiter)
SPD Ver	1 byte	“1” = 1, “2” = 2
,	1 byte	2CH (Delimiter)
SPD Vendor Name	8 bytes	* 8 ASCII characters * If NULL (0x00) is set, values of NULL itself and values after the NULL value can not be acquired.
,	1 byte	2CH (Delimiter)
SPD Product	16 bytes	* 16 ASCII characters * If NULL (0x00) is set, values of NULL itself and values after the NULL value can not be acquired.
,	1 byte	2CH (Delimiter)
SPD Source Device	1 byte	"0"=unknown "1"=DigiSTB "2"=DVD "3"=DVHS "4"=HDD "5"=DVC "6"=DSC "7"=CD "8"=Game "9"=PC "10"=Blu-Ray(BD) "11"=Super Audio CD "12"=HD DVD "13"=PMP
,	1 byte	2CH (Delimiter)
Audio Type	1 byte	“4” = 4
,	1 byte	2CH (Delimiter)
Audio Ver	1 byte	“1” = 1

,	1 byte	2CH (Delimiter)
Audio Channel Count	1 byte	“0” = Refer, “1” = 2ch, “2” = 3ch, “3” = 4ch, “4” = 5ch, “5” = 6ch, “6” = 7ch, “7” = 8ch
,	1 byte	2CH (Delimiter)
Audio Coding Type	1 byte	"0"=Refer "1"=IEC60958 "2"=AC3 "3"=MPEG1 "4"=MP3 "5"=MPEG2 "6"=AAC "7"=DTS "8"=ATRAC "9"=DSD ISO/IEC 14496-3 "10"=E-AC-3 ATSC A/52B "11"=DTS-HD DVD Forum DTSHD "12"=MLP DVD Forum MLP "13"=DST ISO/IEC 14496-3 "14"=WMA Pro WMA Pro Decoder "15"=Refer to Audio Coding Extension Type
,	1 byte	2CH (Delimiter)
Audio Sample Size	1 byte	“0” = Refer, “1” = 16 bits, “2” = 20 bits, “3” = 24 bits
,	1 byte	2CH (Delimiter)
Audio Sample Freq	1 byte	“0” = Refer, “1” = 32 kHz, “2” = 44.1 kHz, “3” = 48 kHz, “4” = 88.2 kHz, “5” = 96 kHz, “6” = 176.4 kHz, “7” = 192 kHz
,	1 byte	2CH (Delimiter)
Audio Channel Alloc	1 or 2 bytes	“0” to “31”
,	1 byte	2CH (Delimiter)
Audio Level Shift	1 or 2 bytes	“0” to “15” dB
,	1 byte	2CH (Delimiter)
Audio Down-mix	1 byte	“0” = Permitted, “1” = Prohibited
,	1 byte	2CH (Delimiter)
MPEG Type	1 byte	“5” = 5
,	1 byte	2CH (Delimiter)
MPEG Ver	1 byte	“1” = 1
,	1 byte	2CH (Delimiter)
MPEG Frame	1 byte	“0” = Unknown, “1” = I Pic, “2” = B Pic, “3” = P Pic
,	1 byte	2CH (Delimiter)
MPEG Field Repeat	1 byte	“0” = New, “1” = Repeated
,	1 byte	2CH (Delimiter)
MPEG Bit Rate	1 to 10 bytes	“0” to “4294967295” Hz
,	1 byte	2CH (Delimiter)
AVI IT Content Type	1 byte	"0"=Graphics "1"=Photo "2"=Cinema "3"=Game
,	1 byte	2CH (Delimiter)
AVI YCC Quantization Range	1 byte	"0"=Limited Range "1"=Full Range
,	1 byte	2CH (Delimiter)
Audio LFE playback level	1 byte	"0"=unknown "1"=0dB playback "2"=+10dB playback
,	1 byte	2CH (Delimiter)
Audio Coding Type Extension	1 byte	"1"=HE-AAC, "2"=HE-AACv2, "3"=Mpeg Surround "4"=MPEG-4 HE AAC "5"=MPEG-4 HE AAC v2 "6"=MPEG-4 AAC LC "7"=DRA "8"=MPEG-4 HE AAC + MPEG Surround "9"=Reserve "10"=MPEG-4 AAC LC + MPEG Surround
,	1 byte	2CH (Delimiter)
Chk Sum Mode	1 byte	"0"=auto, "1"=Manual
,	1 byte	2CH (Delimiter)

Chk Sum	1 to 2 bytes	"0" - "FF" * Effective when ChkSumMode=auto.
,	1 byte	2CH (Delimiter)
Info Len	1 to 2 bytes	"0" - "15"
,	1 byte	2CH (Delimiter)
Data Byte 14	1 to 2 bytes	"0" - "FF"
,	1 byte	2CH (Delimiter)
Data Byte 15	1 to 2 bytes	"0" - "FF"
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0" = HDMI, "1"= DisplayPort, "2"= HDBaseT * The one set by the command parameter is returned.
,	1 byte	2CH (Delimiter)
AVI Additional Colorimetry	1 byte	"0"=DCI-P3 R'G'B'(D65) "1"=DCI-P3 R'G'B'(theater) "2"=ITU-R BT.2100 ICTCP
,	1 byte	2CH (Delimiter)
Speaker Mask 1 ***1**	8 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Speaker Mask 2 ***2**	8 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Speaker Mask 3 ***3**	4 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Channel Index 1 ***4**	8 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Channel Index 2 ***5**	8 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Channel Index 3 ***6**	8 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Channel Index 4 ***7**	8 byte	Set ON / OFF of each item with "0" = OFF, "1" = ON
ETX	1 byte	03H

Fig. 2-26-3

***1** The contents of the setting data are as follows

	1	2	3	4	5	6	7	8	BYTE
	FL/FR	LFE1	FC	BL/BR	BC	FLC/FRC	RLC/RRC	FLW/FRW	
Example)"10110010"									
	ON	OFF	ON	ON	OFF	OFF	ON	OFF	

***2** The contents of the setting data are as follows

	1	2	3	4	5	6	7	8	BYTE
	TpFL/TpFR	TpC	TpFC	LS/RS	LFE2	TpBC	SiL/SiR	TpSiL/TpSiR	
Example)"00011011"									
	OFF	OFF	OFF	ON	ON	OFF	ON	ON	

***3** The contents of the setting data are as follows

	1	2	3	4	BYTE
	TpBL/TpBR	BtFC	BtFL/BtFR	TpLS/TpRS	
Example)"1011"					
	ON	OFF	ON	ON	

***4** The contents of the setting data are as follows

	1	2	3	4	5	6	7	8	BYTE
	CID00	CID01	CID02	CID03	CID04	CID05	CID06	CID07	
Example)"01110011"									
	OFF	ON	ON	ON	OFF	OFF	ON	ON	

***5** The contents of the setting data are as follows

	1	2	3	4	5	6	7	8	BYTE
	CID08	CID09	CID10	CID11	CID12	CID13	CID14	CID15	
Example)"10100001"									
	ON	OFF	ON	OFF	OFF	OFF	OFF	ON	

***6** The contents of the setting data are as follows

	1	2	3	4	5	6	7	8	BYTE
	CID16	CID17	CID18	CID19	CID20	CID21	CID22	CID23	
Example)"00100111"									
	OFF	OFF	ON	OFF	OFF	ON	ON	ON	

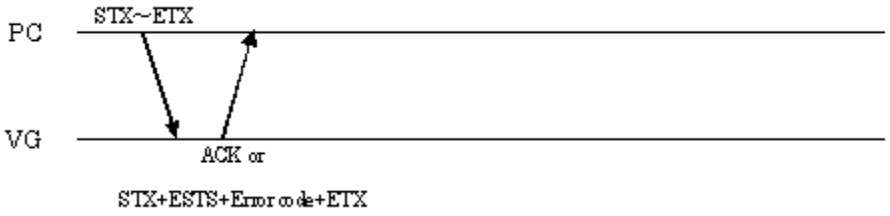
***7** The contents of the setting data are as follows

	1	2	3	4	5	6	7	8	BYTE
	CID24	CID25	CID26	CID27	CID28	CID29	CID30	CID31	
Example)"10010110"									
	ON	OFF	OFF	ON	OFF	ON	ON	OFF	

2.27 SACP4 [20H 3AH]: ACP data registration

Function: This command registers the ACP data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SACP4	2 bytes	20H 3AH
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
ACP On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
ISRC1 On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
ISRC2 On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
ACP Type	1 byte	“0” to “3”
,	1 byte	2CH (Delimiter)
DVD-Audio Type	1 byte	“0” to “1”
,	1 byte	2CH (Delimiter)
Copy Permission	1 byte	“0” to “3”
,	1 byte	2CH (Delimiter)
Copy Number	1 byte	“0” to “7”
,	1 byte	2CH (Delimiter)
Quality	1 byte	“0” to “3”
,	1 byte	2CH (Delimiter)
Transaction	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
ISRC1 Cont	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
ISRC1 Valid	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
ISRC1 Status	1 byte	“0” to “2”
,	1 byte	2CH (Delimiter)
ISRC1 Validity Info.	1 byte	“0” to “3”
,	1 byte	2CH (Delimiter)
ISRC1 Catalogue code	13 bytes	“0000000000000” to “9999999999999”
,	1 byte	2CH (Delimiter)
ISRC1 Country code	2 bytes	“00” to “ZZ”
,	1 byte	2CH (Delimiter)
ISRC1 First owner code	3 bytes	“000” to “ZZZ”
,	1 byte	2CH (Delimiter)
Year of recording code	2 bytes	“00” to “99”
,	1 byte	2CH (Delimiter)
Recording (item) code	5 bytes	“00000” to “99999”
,	1 byte	2CH (Delimiter)
SACD Count_A	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
SACD Count_S	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
SACD Count_U	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)

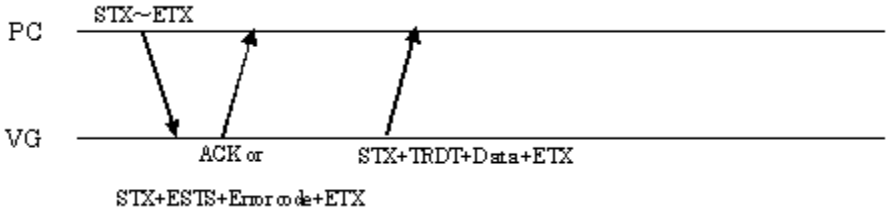
SACD A	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
SACD S	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
SACD U	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
SACD Move_A	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
SACD Move_S	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
SACD Move_U	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI、"1"=HDBaseT
ETX	1 byte	03H

Fig. 2-27-1

2.28 LACP4 [20H 3BH]: ACP data acquisition

Function: This command gets the ACP data of the program whose number has been designated. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out the data from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LACP4	2 bytes	20H 39H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT
ETX	1 byte	03H

Fig. 2-28-1

As shown below, if you skip Data Type setting of HDMI or HDBaseT, ACP data of HDMI setting is received.

STX	1 byte	02H
VG4CMD	1 byte	FDH
LACP4	2 bytes	20H 39H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-28-2

Data:

STX	1 byte	02H
TRDT	1 byte	10H
ACP On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
ISRC1 On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
ISRC2 On	1 byte	“0” = Off, “1” = On
,	1 byte	2CH (Delimiter)
ACP Type	1 byte	“0” to “3”
,	1 byte	2CH (Delimiter)
DVD-Audio Type	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
Copy Permission	1 byte	“0” to “3”
,	1 byte	2CH (Delimiter)
Copy Number	1 byte	“0” to “7”
,	1 byte	2CH (Delimiter)
Quality	1 byte	“0” to “3”
,	1 byte	2CH (Delimiter)
Transaction	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
ISRC1 Cont	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
ISRC1 Valid	1 byte	“0” or “1”

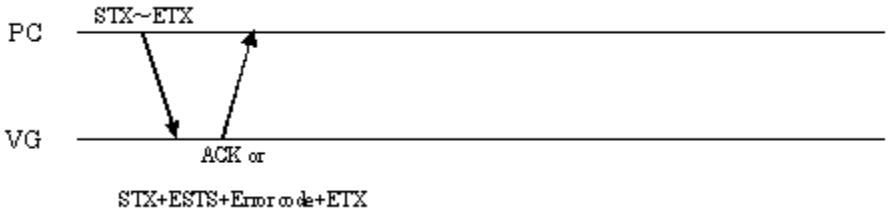
,	1 byte	2CH (Delimiter)
ISRC1 Status	1 byte	“0” to “2”
,	1 byte	2CH (Delimiter)
ISRC1 Validity Info.	1 byte	“0” to “3”
,	1 byte	2CH (Delimiter)
ISRC1 Catalogue code	13 bytes	“0000000000000” to “9999999999999”
,	1 byte	2CH (Delimiter)
ISRC1 Country code	2 bytes	“00” to “ZZ”
,	1 byte	2CH (Delimiter)
ISRC1 First owner code	3 bytes	“000” to “ZZZ”
,	1 byte	2CH (Delimiter)
Year of recording code	2 bytes	“00” to “99”
,	1 byte	2CH (Delimiter)
Recording (item) code	5 bytes	“00000” to “99999”
,	1 byte	2CH (Delimiter)
SACD Count_A	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
SACD Count_S	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
SACD Count_U	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
SACD A	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
SACD S	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
SACD U	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
SACD Move_A	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
SACD Move_S	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
SACD Move_U	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT * The one set by the command parameter is returned.
ETX	1 byte	03H

Fig. 2-28-3

2.29 SSD4 [20H 3CH]: Scart data registration

Function: This command registers the Scart data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

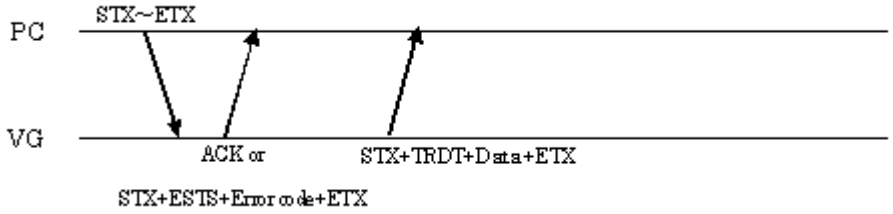
STX	1 byte	02H
VG4CMD	1 byte	FDH
SSD4	2 bytes	20H 3CH
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Output selection	1 byte	“0” = CVBS (Composite) “1” = Y/C “2” = RGB
,	1 byte	2CH (Delimiter)
Video status	1 byte	“0” = Auto “1” = 4:3 “2” = 16:9 “3” = NoSignal
,	1 byte	2CH (Delimiter)
RGB status	1 byte	“0” = Auto “1” = VBS “2” = RGB “3” = FastBlanking
,	1 byte	2CH (Delimiter)
Audio output CH 1	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Audio output CH 2		“0” = OFF, “1” = ON
ETX	1 byte	03H

Fig. 2-29-1

2.30 LSD4 [20H 3DH]: Scart data readout

Function: This command reads the Scart data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LSD4	2 bytes	20H 3DH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-30-1

Data:

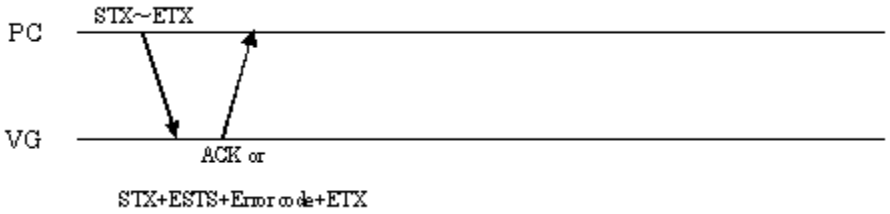
STX	1 byte	02H
TRDT	1 byte	10H
Output selection	1 byte	“0” = CVBS (Composite) “1” = Y/C “2” = RGB
,	1 byte	2CH (Delimiter)
Video status	1 byte	“0” = Auto “1” = 4:3 “2” = 16:9 “3” = NoSignal
,	1 byte	2CH (Delimiter)
RGB status	1 byte	“0” = Auto “1” = VBS “2” = RGB “3” = FastBlanking
,	1 byte	2CH (Delimiter)
Audio output CH 1	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Audio output CH 2		“0” = OFF, “1” = ON
ETX	1 byte	03H

Fig. 2-30-2

2.31 SPD4 [20H 3EH]: Program data registration

Function: This command registers all the data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SPD4	2 bytes	20H 3EH
Program number	1 to 4 bytes	“0” to “1000”, “9999”
;	1 byte	3BH (Delimiter 2)
H timing	? bytes	Refer to Fig. 2-1-2.
;	1 byte	3BH (Delimiter 2)
V timing	? bytes	Refer to Fig. 2-3-2.
;	1 byte	3BH (Delimiter 2)
Output condition	? bytes	Refer to Fig. 2-5-2.
;	1 byte	3BH (Delimiter 2)
Graphic color	? bytes	Refer to Fig. 2-13-2.
;	1 byte	3BH (Delimiter 2)
Character	? bytes	Refer to Fig. 2-13-3.
;	1 byte	3BH (Delimiter 2)
Crosshatch	? bytes	Refer to Fig. 2-13-4.
;	1 byte	3BH (Delimiter 2)
Dot	? bytes	Refer to Fig. 2-13-5.
;	1 byte	3BH (Delimiter 2)
Circle	? bytes	Refer to Fig. 2-13-6.
;	1 byte	3BH (Delimiter 2)
Burst	? bytes	Refer to Fig. 2-13-7.
;	1 byte	3BH (Delimiter 2)
Window	? bytes	Refer to Fig. 2-13-8.
;	1 byte	3BH (Delimiter 2)
Cursor	? bytes	Refer to Fig. 2-13-9.
;	1 byte	3BH (Delimiter 2)
Pattern name	? bytes	Refer to Fig. 2-13-10.
;	1 byte	3BH (Delimiter 2)
Color bar	? bytes	Refer to Fig. 2-13-11.
;	1 byte	3BH (Delimiter 2)
Gray scale	? bytes	Refer to Fig. 2-13-12.
;	1 byte	3BH (Delimiter 2)
Ramp	? bytes	Refer to Fig. 2-13-13.
;	1 byte	3BH (Delimiter 2)
Sweep	? bytes	Refer to Fig. 2-13-14.
;	1 byte	3BH (Delimiter 2)
Monoscope	? bytes	Refer to Fig. 2-13-15.
;	1 byte	3BH (Delimiter 2)
Raster	? bytes	Refer to Fig. 2-13-16.
;	1 byte	3BH (Delimiter 2)
Checker	? bytes	Refer to Fig. 2-13-17.
;	1 byte	3BH (Delimiter 2)
Optional pattern	? bytes	Refer to Fig. 2-13-18.
;	1 byte	3BH (Delimiter 2)
Background color	? bytes	Refer to Fig. 2-13-19.
;	1 byte	3BH (Delimiter 2)

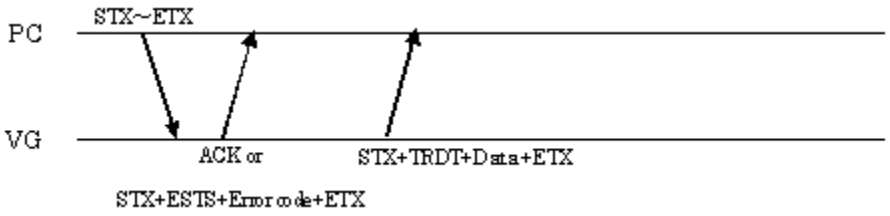
Aspect	? bytes	Refer to Fig. 2-13-20.
ETX	1 byte	03H

Fig. 2-31-1

2.32 LPD4 [20H 3FH]: Program data readout

Function: This command reads all the data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out the data from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LPD4	2 bytes	20H 3FH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-32-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
H timing	? bytes	Refer to Fig. 2-1-2.
;	1 byte	3BH (Delimiter 2)
V timing	? bytes	Refer to Fig. 2-3-2.
;	1 byte	3BH (Delimiter 2)
Output condition	? bytes	Refer to Fig. 2-5-2.
;	1 byte	3BH (Delimiter 2)
Graphic color	? bytes	Refer to Fig. 2-13-2.
;	1 byte	3BH (Delimiter 2)
Character	? bytes	Refer to Fig. 2-13-3.
;	1 byte	3BH (Delimiter 2)
Crosshatch	? bytes	Refer to Fig. 2-13-4.
;	1 byte	3BH (Delimiter 2)
Dot	? bytes	Refer to Fig. 2-13-5.
;	1 byte	3BH (Delimiter 2)
Circle	? bytes	Refer to Fig. 2-13-6.
;	1 byte	3BH (Delimiter 2)
Burst	? bytes	Refer to Fig. 2-13-7.
;	1 byte	3BH (Delimiter 2)
Window	? bytes	Refer to Fig. 2-13-8.
;	1 byte	3BH (Delimiter 2)
Cursor	? bytes	Refer to Fig. 2-13-9.
;	1 byte	3BH (Delimiter 2)
Pattern name	? bytes	Refer to Fig. 2-13-10.
;	1 byte	3BH (Delimiter 2)
Color bar	? bytes	Refer to Fig. 2-13-11.
;	1 byte	3BH (Delimiter 2)
Gray scale	? bytes	Refer to Fig. 2-13-12.
;	1 byte	3BH (Delimiter 2)
Ramp	? bytes	Refer to Fig. 2-13-13.
;	1 byte	3BH (Delimiter 2)
Sweep	? bytes	Refer to Fig. 2-13-14.

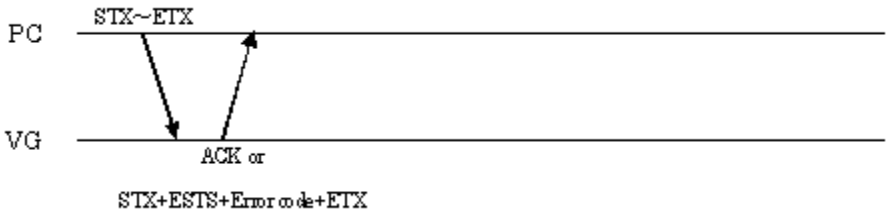
;	1 byte	3BH (Delimiter 2)
Monoscope	? bytes	Refer to Fig. 2-13-15.
;	1 byte	3BH (Delimiter 2)
Raster	? bytes	Refer to Fig. 2-13-16.
;	1 byte	3BH (Delimiter 2)
Checker	? bytes	Refer to Fig. 2-13-17.
;	1 byte	3BH (Delimiter 2)
Optional pattern	? bytes	Refer to Fig. 2-13-18.
;	1 byte	3BH (Delimiter 2)
Background color	? bytes	Refer to Fig. 2-13-19.
;	1 byte	3BH (Delimiter 2)
Aspect	? bytes	Refer to Fig. 2-13-20.
ETX	1 byte	03H

Fig. 2-32-2

2.33 SMACROV4 [20H 40H]: Macrovision data registration

Function: This command registers the Macrovision data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

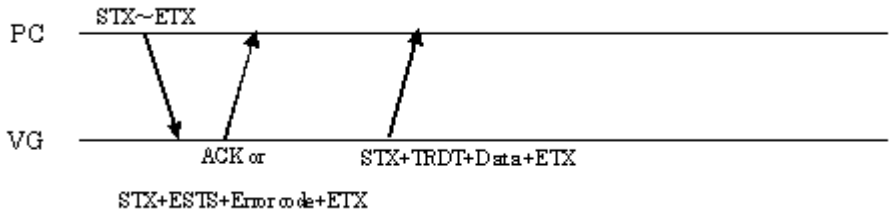
STX	1 byte	02H
VG4CMD	1 byte	FDH
SMACROV4	2 bytes	20H 40H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Mode	1 byte	“0” to “5”
ETX	1 byte	03H

Fig. 2-33-1

2.34 LMACROV4 [20H 41H]: Macrovision data acquisition

Function: This command gets the Macrovision data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out the data from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LMACROV4	2 bytes	20H 41H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-34-1

Data:

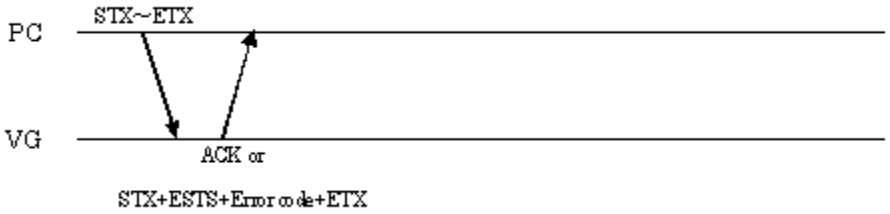
STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	“0” to “5”
ETX	1 byte	03H

Fig. 2-34-2

2.35 SAFD4 [20H 42H]: AFD data registration

Function: This command registers the AFD data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

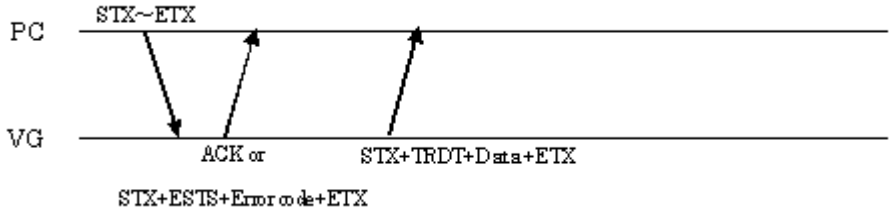
STX	1 byte	02H
VG4CMD	1 byte	FDH
SAFD4	2 bytes	20H 42H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Aspect	1 byte	“0” = 4:3, “1” = 16:9
,	1 byte	2CH (Delimiter)
Type	1 or 2 bytes	“0” to “12”
,	1 byte	2CH (Delimiter)
Color R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Color G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Color B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Color Bit Mode	1 or 2 bytes	“8” to “16”
,	1 byte	2CH (Delimiter)
BG R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
BG G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
BG B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Back Bit Mode	1 or 2 bytes	“8” to “16”
,	1 byte	2CH (Delimiter)
Bar R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Bar G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Bar B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Bar Bit Mode	1 or 2 bytes	“8” to “16”
ETX	1 byte	03H

Fig. 2-35-1

2.36 LAFD4 [20H 43H]: AFD data acquisition

Function: This command gets the AFD data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out the data from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LAFD4	2 bytes	20H 43H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-36-1

Data:

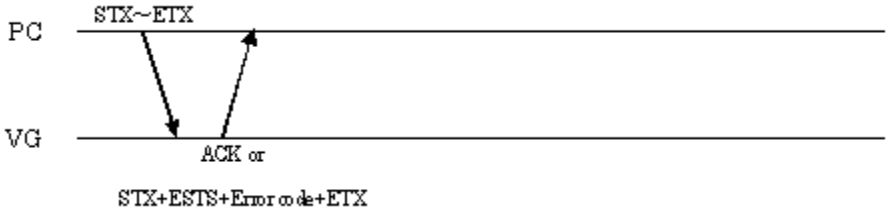
STX	1 byte	02H
TRDT	1 byte	10H
Aspect	1 byte	“0” = 4:3, “1” = 16:9
,	1 byte	2CH (Delimiter)
Type	1 or 2 bytes	“0” to “12”
,	1 byte	2CH (Delimiter)
Color R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Color G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Color B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Color Bit Mode	1 or 2 bytes	“8” to “16”
,	1 byte	2CH (Delimiter)
BG R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
BG G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
BG B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Back Bit Mode	1 or 2 bytes	“8” to “16”
,	1 byte	2CH (Delimiter)
Bar R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Bar G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Bar B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Bar Bit Mode	1 or 2 bytes	“8” to “16”
ETX	1 byte	03H

Fig. 2-36-2

2.37 SCAPTION4 [20H 44H]: ClosedCaption data registration

Function: This command registers the ClosedCaption data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

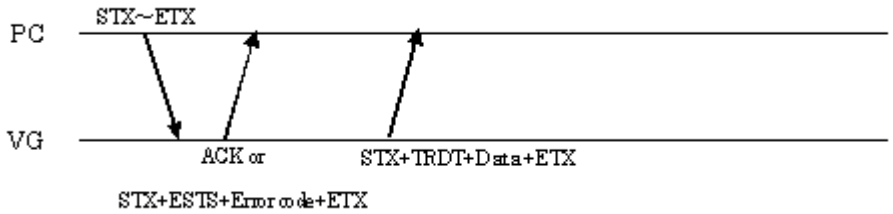
STX	1 byte	02H
VG4CMD	1 byte	FDH
SCAPTION4	2 bytes	20H 44H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Mode	1 byte	“0” to “8”
,	1 byte	2CH (Delimiter)
Data	1 or 2 bytes	“0” to “20”
,	1 byte	2CH (Delimiter)
Interval	1 or 2 bytes	“0” to “60”
ETX	1 byte	03H

Fig. 2-37-1

2.38 LCAPTION4 [20H 45H]: ClosedCaption data acquisition

Function: This command gets the ClosedCaption data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out the data from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LCAPTION4	2 bytes	20H 45H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-38-1

Data:

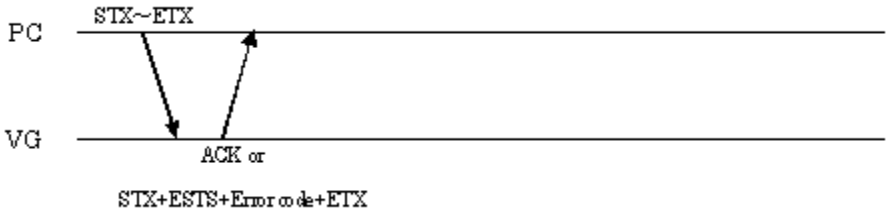
STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	“0” to “8”
,	1 byte	2CH (Delimiter)
Data	1 or 2 bytes	“0” to “20”
,	1 byte	2CH (Delimiter)
Interval	1 or 2 bytes	“0” to “60”
ETX	1 byte	03H

Fig. 2-38-2

2.39 SVCHIP4 [20H 46H]: V-Chip data registration

Function: This command registers the V-Chip data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SVCHIP4	2 bytes	20H 46H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Mode	1 byte	“0” to “4”
,	1 byte	2CH (Delimiter)
MPAA Rate	1 byte	“0” to “7”
,	1 byte	2CH (Delimiter)
USTV Rate	1 byte	“0” to “7”
,	1 byte	2CH (Delimiter)
USTV Ext. Rate	1 byte	40H to 5FH *1
,	1 byte	2CH (Delimiter)
English Rate	1 byte	“0” to “6”
,	1 byte	2CH (Delimiter)
French Rate	1 byte	“0” to “5”
,	1 byte	2CH (Delimiter)
Interval	1 or 2 bytes	“0” to “60”
ETX	1 byte	03H

Fig. 2-39-1

*1: The contents of the data are as follows:

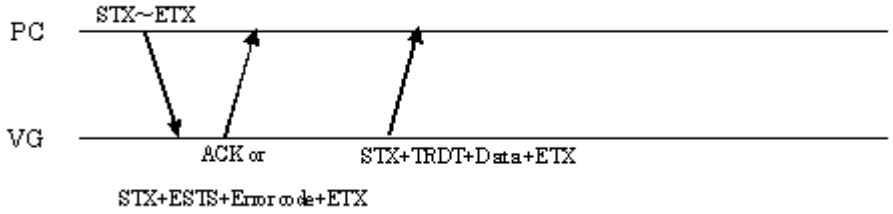
Bit7							Bit0
0	1	0	FV	V	S	L	D

Low = Off, High = On, Bits 5 to 7 are fixed

2.40 LVCHIP4 [20H 47H]: V-Chip data acquisition

Function: This command gets the V-Chip data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out the data from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LVCHIP4	2 bytes	20H 47H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-40-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	“0” to “4”
,	1 byte	2CH (Delimiter)
MPAA Rate	1 byte	“0” to “7”
,	1 byte	2CH (Delimiter)
USTV Rate	1 byte	“0” to “7”
,	1 byte	2CH (Delimiter)
USTV Ext. Rate	1 byte	40H to 5FH *1
,	1 byte	2CH (Delimiter)
English Rate	1 byte	“0” to “6”
,	1 byte	2CH (Delimiter)
French Rate	1 byte	“0” to “5”
,	1 byte	2CH (Delimiter)
Interval	1 or 2 bytes	“0” to “60”
ETX	1 byte	03H

Fig. 2-40-2

Data contents are as below.

Example 1) When all off : “0”

Example 2) When only FV is On : “16”

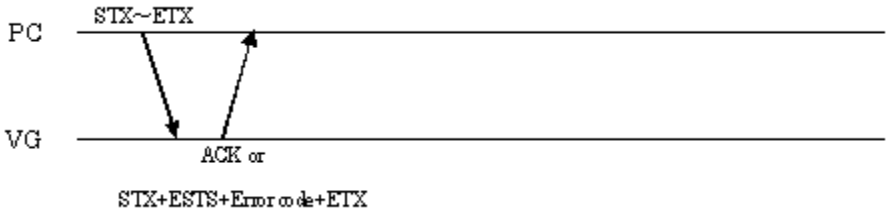
Example 3) when V and L are On : “10”

Example 4) When V, S, L are On : “14”

2.41 STTEXT4 [20H 48H]: TeleText data registration

Function: This command registers the TeleText data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
STTEXT4	2 bytes	20H 48H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Enable	1 byte	“0” = OFF, “1” = Default, “2” = Select
,	1 byte	2CH (Delimiter)
Data output line, line 8	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 9	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 10	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 11	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 12	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 13	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 14	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 15	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 16	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 17	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 18	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 19	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 20	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 21	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 22	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 23	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Channel 1	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Channel 2	3 bytes	“100” to “899”

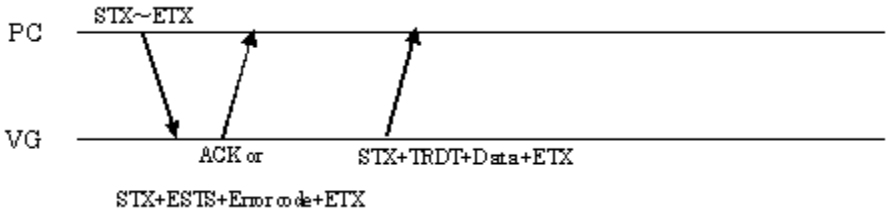
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Channel 20	3 bytes	“100” to “899”
ETX	1 byte	03H

Fig. 2-41-1

2.42 LTTEXT4 [20H 49H]: TeleText data acquisition

Function: This command gets the TeleText data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out the data from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LTTEXT4	2 bytes	20H 49H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-42-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Enable	1 byte	“0” = OFF, “1” = Default, “2” = Select
,	1 byte	2CH (Delimiter)
Data output line, line 8	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 9	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 10	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 11	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 12	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 13	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 14	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 15	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 16	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 17	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 18	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 19	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 20	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 21	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Data output line, line 22	1 byte	“0” = OFF, “1” = ON

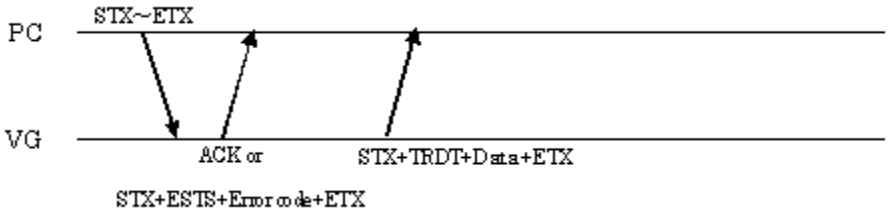
,	1 byte	2CH (Delimiter)
Data output line, line 23	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Channel 1	3 bytes	“100” to “899”
,	1 byte	2CH (Delimiter)
Channel 2	3 bytes	“100” to “899”
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Channel 20	3 bytes	“100” to “899”
ETX	1 byte	03H

Fig. 2-42-2

2.43 PNAMES4 [20H 4AH]: Program name registration

Function: This command registers the name of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 3



Command:

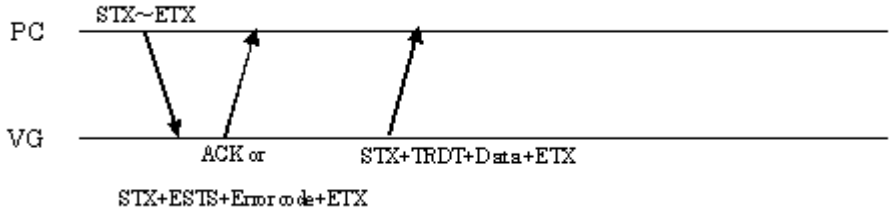
STX	1 byte	02H
VG4CMD	1 byte	FDH
PNAMES4	2 bytes	20H 4AH
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Length	1 or 2 bytes	“1” to “20”
,	1 byte	2CH (Delimiter)
String	20 bytes	* 20 ASCII characters (When the string contains fewer than 20 characters, enter a space or spaces after the characters to bring the number of characters up to 20)
ETX	1 byte	03H

Fig. 2-43-1

2.44 PNAMER4 [20H 4BH]: Program name readout

Function: This command gets the name of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out the data from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
PNAMER4	2 bytes	20H 4BH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-44-1

Data:

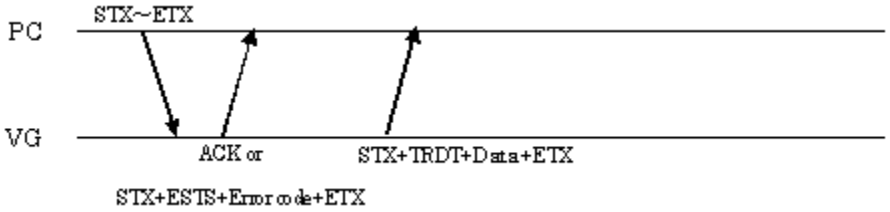
STX	1 byte	02H
TRDT	1 byte	10H
Length	1 or 2 bytes	“1” to “20”
,	1 byte	2CH (Delimiter)
String	20 bytes	* 20 ASCII characters (When the string contains fewer than 20 characters, enter a space or spaces after the characters to bring the number of characters up to 20)
ETX	1 byte	03H

Fig. 2-44-2

2.45 LPED4 [20H 4DH]: Program enable readout

Function: This command returns enable or disable for the file of the designated program number.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LPED4	2 bytes	20H 4DH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-45-1

Data:

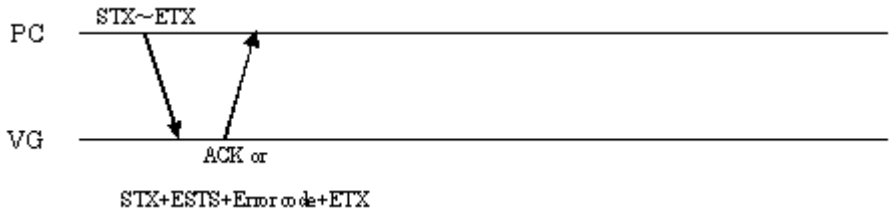
STX	1 byte	02H
TRDT	1 byte	10H
Enable/disable	1 byte	“0” = Enable, “1” = Disable
ETX	1 byte	03H

Fig. 2-45-2

2.46 SAT4 [20H 50H]: Auto display data registration

Function: This command registers the data for executing auto display.

Sequence: Type 2



Command:

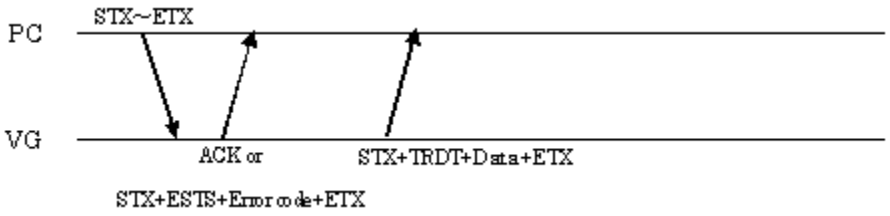
STX	1 byte	02H
VG4CMD	1 byte	FDH
SAT4	2 bytes	20H 50H
Mode	1 byte	“0” = Normal Autodisplay, “1” = Group, “2” = Large Group
,	1 byte	2CH (Delimiter)
Group No.	1 or 2 bytes	“0” to “99”
,	1 byte	2CH (Delimiter)
Interval time (Sec)	1 to 3 bytes	“0” to “999”
,	1 byte	2CH (Delimiter)
Block 1 (START)	1 to 4 bytes	“0” to “1000” (“0” = Not registered)
,	1 byte	2CH (Delimiter)
Block 1 (END)	1 to 4 bytes	“0” to “1000” (“0” = Not registered)
,	1 byte	2CH (Delimiter)
Block 2 (START)	1 to 4 bytes	“0” to “1000” (“0” = Not registered)
,	1 byte	2CH (Delimiter)
Block 2 (END)	1 to 4 bytes	“0” to “1000” (“0” = Not registered)
,	1 byte	2CH (Delimiter)
Block 3 (START)	1 to 4 bytes	“0” to “1000” (“0” = Not registered)
,	1 byte	2CH (Delimiter)
Block 3 (END)	1 to 4 bytes	“0” to “1000” (“0” = Not registered)
ETX	1 byte	03H

Fig. 2-46-1

2.47 LAT4 [20H 51H]: Auto display data readout

Function: This command receives the data for executing auto display.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LAT4	2 bytes	20H 51H
ETX	1 byte	03H

Fig. 2-47-1

Data:

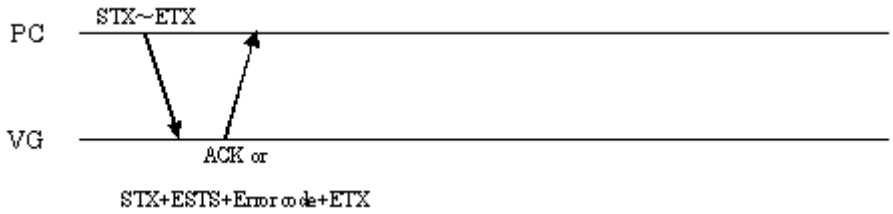
STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	“0” = Normal Autodisplay, “1” = Group, “2” = Large Group
,	1 byte	2CH (Delimiter)
Group No.	1 or 2 bytes	“0” to “99”
,	1 byte	2CH (Delimiter)
Interval time (Sec)	1 to 3 bytes	“0” to “999”
,	1 byte	2CH (Delimiter)
Block 1 (START)	1 to 4 bytes	“0” to “1000” (“0” = Not registered)
,	1 byte	2CH (Delimiter)
Block 1 (END)	1 to 4 bytes	“0” to “1000” (“0” = Not registered)
,	1 byte	2CH (Delimiter)
Block 2 (START)	1 to 4 bytes	“0” to “1000” (“0” = Not registered)
,	1 byte	2CH (Delimiter)
Block 2 (END)	1 to 4 bytes	“0” to “1000” (“0” = Not registered)
,	1 byte	2CH (Delimiter)
Block 3 (START)	1 to 4 bytes	“0” to “1000” (“0” = Not registered)
,	1 byte	2CH (Delimiter)
Block 3 (END)	1 to 4 bytes	“0” to “1000” (“0” = Not registered)
ETX	1 byte	03H

Fig. 2-47-2

2.48 SGROUP4 [20H 52H]: Group data registration

Function: This command registers the data of the designated group number.

Sequence: Type 2



Command:

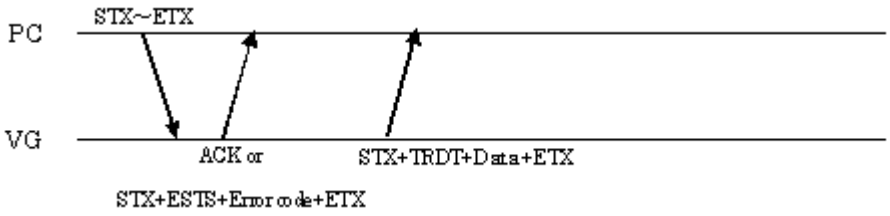
STX	1 byte	02H	
VG4CMD	1 byte	FDH	
SGROUP4	2 bytes	20H 52H	
Group No.	1 or 2 bytes	“1” to “99”	
,	1 byte	2CH (Delimiter)	
Number of characters in group name	1 or 2 bytes	“1” to “20”	
,	1 byte	2CH (Delimiter)	
Group name	20 bytes	* 20 ASCII characters (When the string contains fewer than 20 characters, enter a space or spaces after the characters to bring the number of characters up to 20)	
,	1 byte	2CH (Delimiter)	#1
Timing data program No.	1 to 4 bytes	“0” to “2000” (“0” = Not registered)	
,	1 byte	2CH (Delimiter)	
Pattern data program No.	1 to 4 bytes	“0” to “2000” (“0” = Not registered)	
,	1 byte	2CH (Delimiter)	
Interval time (Sec)	1 to 3 bytes	“0” to “999”	
,	1 byte	2CH (Delimiter)	#98
Timing data program No.	1 to 4 bytes	“0” to “2000” (“0” = Not registered)	
,	1 byte	2CH (Delimiter)	
Pattern data program No.	1 to 4 bytes	“0” to “2000” (“0” = Not registered)	
,	1 byte	2CH (Delimiter)	
Interval time (Sec)	1 to 3 bytes	“0” to “999”	
ETX	1 byte	03H	

Fig. 2-48-1

2.49 LGROUP4 [20H 53H]: Group data readout

Function: This command reads the data of the designated group number.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LGROUP4	2 bytes	20H 53H
Group No.	1 or 2 bytes	“1” to “99”
ETX	1 byte	03H

Fig. 2-49-1

Data:

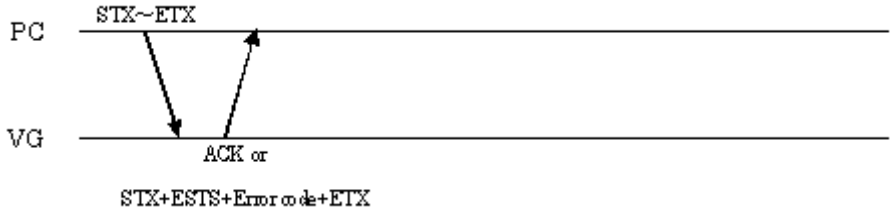
STX	1 byte	02H	
TRDT	1 byte	10H	
Number of characters in group name	1 or 2 bytes	“1” to “20”	
,	1 byte	2CH (Delimiter)	
Group name	20 bytes	* 20 ASCII characters (When the string contains fewer than 20 characters, enter a space or spaces after the characters to bring the number of characters up to 20)	
,	1 byte	2CH (Delimiter)	#1
Timing data program No.	1 to 4 bytes	“0” to “2000” (“0” = Not registered)	
,	1 byte	2CH (Delimiter)	
Pattern data program No.	1 to 4 bytes	“0” to “2000” (“0” = Not registered)	
,	1 byte	2CH (Delimiter)	
Interval time (Sec)	1 to 3 bytes	“0” to “999”	
,	1 byte	2CH (Delimiter)	#98
Timing data program No.	1 to 4 bytes	“0” to “2000” (“0” = Not registered)	
,	1 byte	2CH (Delimiter)	
Pattern data program No.	1 to 4 bytes	“0” to “2000” (“0” = Not registered)	
,	1 byte	2CH (Delimiter)	
Interval time (Sec)	1 to 3 bytes	“0” to “999”	
ETX	1 byte	03H	

Fig. 2-49-2

2.50 SCFG4 [20H 54H]: Config data registration

Function: This command registers the system settings (configuration) data into the VG generator.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SCFG4	2 bytes	20H 54H
Parameter 1 identification code	1 to 3 bytes	“0” to “999”
,	1 byte	2CH (Delimiter)
Parameter 1 setting	? bytes	?
,	1 byte	2CH (Delimiter)
Parameter 2 identification code	1 to 3 bytes	“0” to “999”
,	1 byte	2CH (Delimiter)
Parameter 2 setting	? bytes	?
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Parameter N identification code	1 to 3 bytes	“0” to “999”
,	1 byte	2CH (Delimiter)
Parameter N setting	? bytes	?
ETX	1 byte	03H

Fig. 2-50-1

Concerning the identification codes

Code	Item	Byte	Value	Supported VG
0	Beep	1	"0"=OFF, "1"=ON	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A,VG-879, VG-880,VG-881,VG-882, VG-884
2	RS Speed	1	"0"=9600, "1"=19200, "2"=38400, "3"=57600, "4"=115200	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878-A,VG-879, VG-880,VG-881, VG-884
3	RS Data Length	1	"1"=8	
4	RS Parity	1	"0"=None, "1"=Even, "2"=Odd	
5	RS Stop Bit	1	"0"=1, "1"=2	
6	IP Address 1	1-3	"0" - "255"	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-881
7	IP Address 2	1-3	"0" - "255"	
8	IP Address 3	1-3	"0" - "255"	
9	IP Address 4	1-3	"0" - "255"	
10	Gate Way 1	1-3	"0" - "255"	
11	Gate Way 2	1-3	"0" - "255"	
12	Gate Way 3	1-3	"0" - "255"	
13	Gate Way 4	1-3	"0" - "255"	
14	Net Mask 1	1-3	"0" - "255"	
15	Net Mask 2	1-3	"0" - "255"	
16	Net Mask 3	1-3	"0" - “255”	

17	Net Mask 4	1-3	"0" - "255"	
18	Port No.	4-5	"1024" - "65535"	
19	VBS Filter Level	1	"0" - "5"	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-882, VG-884
20	I2C Trans Clock	1	"0"=20 "1"=40 "2"=60 "3"=80 "4"=100 (kHz)	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-881, VG-882, VG-884
21	HDMI Auto Select	1	"0"=OFF, "1"=Selected	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-881
22	LVDS Select	1	"0"=DEF1 "1"=DEF2 "2"=USER1 "3"=USER2 "4"=USER3 "5"=refer Program ***1**	VG-870,VG-871,VG-873,VG-874, VG-880
23	LVDS User1	16	Ex. "0123456789ABCDEF"	
24	LVDS User2	16	Ex. "0123456789ABCDEF"	
25	LVDS User3	16	Ex. "0123456789ABCDEF"	
26	Out Bit Def	1-2	"0":Follow the Program setting. "8" - "16" *** In case of VG-882, 884** "8" - "12"	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-880,VG-881,VG-882, VG-884
27	Window Trigger	1	"0"=OFF "1"=Trigger A "2"=Trigger B "3"=scroll Trigger "4"=VSyncTrigger	VG-870,VG-871,VG-873,VG-874, VG-876, VG-877,VG-879
28	Reserved	1	"0" fixed.	
29	Prog. Inc/Dec Repeat	1	"0"=OFF, "1"=ON	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-880,VG-881,VG-882, VG-884
30	Prog. Inc/Dec Interval	1-2	"0" - "10"	
31	LVDS Multi Bit Mode	1	"0"=8+8(multibit provided) "1"=10+6(multibit provided)	VG-870,VG-871,VG-873,VG-874, VG-880
32	Image Priority	1	"0"=OFF **※2** "1"=Internal Flash → External CF "2"= External CF → Internal Flash	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-880,VG-881,VG-882, VG-884
33	RGB Fix Mode	1	"0"=followed to Prog, "1"=RGB fixed	VG-870,VG-871,VG-873,VG-874, VG-876, VG-877,VG-878,VG-878-A,VG-879,
34	Fast BMP Mode	1	"0"=OFF, "1"=ON	
35	Fast BMP Start No	1-3	"1" - "200" ***Below is for VG-876,877,878/-A,879** "1" - "999"	
36	Fast BMP end No	1-3	"1" - "200" ***Below is for VG-876,877,878/-A,879** "1" - "999"	
37	BMP display position	1	"0"= Center "1"= Left top "2"= Left bottom "3"= Right top "4"= Right bottom	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-880,VG-881,VG-882, VG-884
38	HDMI AV Mute IF Change	1	"0"=Normal Mode "1"=Game Mode ***3**	VG-870,VG-871,VG-873,VG-874, VG-876, VG-877,VG-878,VG-878-A,VG-879,
39	CursTextMoveMode	1	"0"=Normal "1"=Move with Curs ***4**	VG-870,VG-871,VG-873,VG-874, VG-876, VG-877,VG-878,VG-878-A,VG-879, VG-880,VG-882, VG-884
40	Mouse Speed	1	"0" - "9"	VG-870,VG-871,VG-873,VG-874, VG-876, VG-877,VG-879
41	INC/DEC I/F Change	1	"0"=OFF、"1"=ON	VG-881

42	Trigger Delay Enable	1	40H - 4FH ***8**	VG-870,VG-871,VG-873,VG-874, VG-876, VG-877,VG-879
43	Trigger Pulse Enable	1	40H - 4FH ***8**	
44	Trigger Toggle Enable	1	"0"=Disable、"1"=Enable	
45	Trigger Toggle Select	1	"0"=1-4ch, "1"=only 1ch	
46	Trigger Delay Time 0	1-4	"0"-"4095" = 1H-4096H delay	
47	Trigger Pulse Width 0	1-4	"0"-"4095" = 0H-4095H	
48	Trigger Pol	1	40H-4FH ***9**	
49	Trigger Frame Data Num	1-2	"0" - "16"	
	Trigger Frame No	1-4	"1" - "1024"	
	Trigger Frame OutData	1	"0" - "F"	
	This setting is set as below. In case the data number is 3, and frame No. is 100, 101, 102, and output data is 9, A, B. "49" : Code "," : Delimiter "3" : Data number "," : Delimiter "100" : Frame No.1 "," : Delimiter "9" : Output Data 1 "," : Delimiter "101" : Frame No.2 "," : Delimiter "A" : Output Data 2 "," : Delimiter "102" : Frame No.3 "," : Delimiter "B" : Output Data 3			
50	Digital Video Level Step(SHIFT)	1-5	"0" - "32767"	VG-870,VG-871,VG-873,VG-874, VG-876, VG-877,VG-878,VG-878-A,VG-879, VG-882, VG-884
51	Trigger Delay Time 1	1-4	"0"-"4095" = 1H-4096H delay	VG-870,VG-871,VG-873,VG-874, VG-876, VG-877,VG-879
52	Trigger Pulse Width 1	1-4	"0"-"4095" = 0H-4095H	
53	Trigger Delay Time Select	1	40H-4FH ***10**	
54	Trigger Pulse Width Select	1	40H-4FH ***11**	
55	CC Overlay Field 1 Line	1	"0"=19/21 "1"=20/22 "2"=21/23 "3"=22/24	VG-870,VG-871,VG-873,VG-874
56	CC Overlay Field 2 Line	1	"0"=282/333 "1"=283/334 "2"=284/335 "3"=285/336	
57	CF Program Folder No	1-3	"0"=Pro4 folder "1"-"999"=Prg4ext xxx folder	VG-870,VG-871,VG-873,VG-874, VG-876, VG-877,VG-878,VG-878-A,VG-879,
58	AV MUTE Mode	1	"0"=Keeping Status "1"=Pulse	VG-870,VG-871,VG-873,VG-874
59	VariableDotClock	2-5	"10"-"50000"	VG-870,VG-871,VG-873,VG-874

61	SDI TimeCode ON/OFF	1	"0"=OFF, "1"=ON	VG-876,VG-877,VG-879
62	SDI TimeCode Hour(h)	1-2	"0"-"23"	
63	SDI TimeCode Min(m)	1-2	"0"-"59"	
64	SDI TimeCode Sec(s)	1-2	"0"-"59"	
65	S-TRIG 0 Mode	1	"0"=OFF "1"=HSync trigger "2"=VSync trigger "3"=Field trigger "4"=DataENABLE trigger "5"=RGB data trigger "0"=OFF "1"=HSync trigger (P) "2"=HSync trigger (N) "3"=VSync trigger (P) "4"=VSync trigger (N) "5"=Field trigger (2nd) "6"=DataENABLE trigger (H&V) "7"=DataENABLE trigger (H) "8"=DataENABLE trigger (V)	
66	S-TRIG 1 Mode	1	* Same as Code65	
67	S-TRIG 2 Mode	1	* Same as Code65	
68	S-TRIG 3 Mode	1	* Same as Code65	
73	SDI Clock Delay 1	2-3	"00"-"140" ***16**	VG-876,VG-877,VG-879
74	SDI Clock Delay 2	2-3	* Same as Code73	
75	SDI Clock Delay 3	2-3	* Same as Code73	
76	SDI Clock Delay 4	2-3	* Same as Code73	
77	SDI Clock Delay 5	2-3	* Same as Code73	
78	SDI Clock Delay 6	2-3	* Same as Code73	
79	SDI Clock Delay 7	2-3	* Same as Code73	
80	SDI Clock Delay 8	2-3	* Same as Code73	
81	Mx Mode	1	"0"=OFF "1"=Master "2"=Reserved "3"=Slave *** 17**	VG-876,VG-879
82	MX Unit Position	1	"0"=LeftTop "1"=RightTop "2"=LeftBottom "3"=TightBottom *** 18**	
83	Mx Unit Count	1	"1"-"4"	
84	Mx Slave No	1	"1"-"3"	
85	Mx Timeout	1-3	"0"-"255" **※19**	
86	XY Reversal Mode	1	"0"=Normal "1"=Left & Right reversed. "2"=Top & Bottom reversed. "3"=Top & Bottom, Left & Right reversed.	
87	Slave Control Num	1	"0"=Slave, Not controlled. "1"-"3" * number of sets	
88	Slave1 IP Address 1	1-3	"0"-"255"	
89	Slave1 IP Address 2	1-3	"0"-"255"	
90	Slave1 IP Address 3	1-3	"0"-"255"	
91	Slave1 IP Address 4	1-3	"0"-"255"	
92	Slave2 IP Address 1	1-3	"0"-"255"	
93	Slave2 IP Address 2	1-3	"0"-"255"	
94	Slave2 IP Address 3	1-3	"0"-"255"	
95	Slave2 IP Address 4	1-3	"0"-"255"	
96	Slave3 IP Address 1	1-3	"0"-"255"	
97	Slave3 IP Address 2	1-3	"0"-"255"	
98	Slave3 IP Address 3	1-3	"0"-"255"	
99	Slave3 IP Address 4	1-3	"0"-"255"	

101	HDCP EDID CEC Check Mode	1	"0"=HDCP/EDID/CEC result multi-display is not displayed. "1"=HDCP/EDID/CEC result multi-display is displayed.	VG-870,VG-871,VG-873,VG-874, VG-876,VG-878,VG-878-A,VG-879, VG-882,VG-884
102	HDCP-PcDVI	1	40H-47H ***12**	VG-870,VG-871,VG-873,VG-874
103	HDCP-DVI	1	40H-47H ***12**	
104	HDCP-HDMI	1	40H-7FH ***13**	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-882,VG-884
105	HDCP-DP	1	40H-7FH ***13**	VG-870,VG-871,VG-873,VG-874,VG-884, VG-876,VG-877,VG-879,VG-884
106	EDID-PcDVI	1	40H-47H ***12**	VG-870,VG-871,VG-873,VG-874
107	EDID-PcVGA	1	40H-47H ***12**	VG-870,VG-871,VG-873,VG-874,VG-882, VG-884
108	EDID-TvVGA	1	40H-47H ***12**	VG-870,VG-871,VG-873,VG-874
109	EDID-DVI	1	40H-7FH ***13**	VG-870,VG-871,VG-873,VG-874
110	EDID-HDMI	1	40H-7FH ***13**	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-882,VG-884
111	EDID-DP	1	40H-7FH ***13**	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-879,VG-884
112	CEC-HDMI	1	40H-7FH ***13**	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-882,VG-884
113	HDCP-HDMI 6-11	1	40H-7FH ***14**	VG-876,VG-877,VG-879
114	HDCP-HDMI 12-15	1	40H-4FH ***15**	
115	HDCP-DP 6-11	1	40H-7FH ***14**	
116	HDCP-DP 12-15	1	40H-4FH ***15**	
117	EDID-HDMI 6-11	1	40H-7FH ***14**	
118	EDID-HDMI 12-15	1	40H-4FH ***15**	
119	EDID-DP 6-11	1	40H-7FH ***14**	
120	EDID-DP 12-15	1	40H-4FH ***15**	
121	CEC-HDMI 6-11	1	40H-7FH ***14**	
122	CEC-HDMI 12-15	1	40H-4FH ***15**	
123	EDID-VGA	1	40H-4FH ***15**	
124	HDCP-HDBaseT 0～5	1	40H-7FH ***13**	
125	HDCP-HDBaseT 6～11	1	40H-7FH ***14**	
126	HDCP-HDBaseT 12～15	1	40H-4FH ***15**	
127	EDID-HDBaseT 0～5	1	40H-7FH ***13**	
128	EDID-HDBaseT 6～11	1	40H-7FH ***14**	
129	EDID-HDBaseT 12～15	1	40H-4FH ***15**	
130	CEC-HDBaseT 0～5	1	40H-7FH ***13**	
131	CEC-HDBaseT 6～11	1	40H-7FH ***14**	
132	CEC-HDBaseT 12～15	1	40H-4FH ***15**	
201	Custom Key 1	1	"0"=HDCP "256"=SIG ON	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-882,VG-884
202	Custom Key 2	1	"0"=MUTE "1"=AV-MUTE ***Below is for VG-876,877** "2"=GCP Set AV-MUTE "3"=GCP Clear AV-MUTE	
301	RB-1871 Custom Key 2	1	"0"=HDCP "256"=SIG ON	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-882,VG-884
302	RB-1871 Custom Key 2	1	"0"=MUTE "1"=AV-MUTE ***Below is for VG-876,877** "2"=GCP Set AV-MUTE "3"=GCP Clear AV-MUTE	

400	Hotplug Detect	1	"0"=refer Program "1"=ON "2"=OFF	VG-870,VG-871,VG-873,VG-874, VG-884
401	Analize Port	1	"0"=DP1 "1"=DP2 ***Below is for VG-876,877 and 879.** "2"=DP3 "3"=DP4 "4"=DP5 "5"=DP6 "6"=DP7 "7"=DP8	VG-870,VG-871,VG-873,VG-874, VG-876, VG-877,VG-879,VG-884
402	Link Sel Mode	1	"0"=refer Program "1"=Auto "2"=Manual	VG-870,VG-871,VG-873,VG-874, VG-876, VG-877,VG-879,VG-884
403	eDP enable	1	"0"=disable, "1"=enable	VG-870,VG-871,VG-873,VG-874,
404	DP Auto Select	1	"0"=OFF, "1" = selected	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-879,VG-884
405	SSC Disable/Enable	1	"0"=refer Program "1"=disable "2"=enable	VG-870,VG-871,VG-873,VG-874, VG-884
406	Link rate	1	"0"=HBR(2.7Gbps) "1"=RBR(1.62Gbps) ***Below is for VG-876,877 and 879** "2"=HBR2 (5.4Gbps)	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-879,VG-884
407	Number of Lanes	1	"0"=1 lane "1"=2 lanes "2"=4 lanes	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-879,VG-884
410	Scramble	1	"0"=Refer Program "1"=OFF "2"=ON (3.4G over) "3"=IN "4"=EDID	VG-876,VG-877,VG-879
411	SCDC Send	1	"0"=ON "1"=OFF "2"=Refer EDID	
412	HPD Negate	1	"0"= Output is OFF when HPD is negate. "1"= Output remains when HPD is negate.	
500	Message display time	1-2	"0"= not displayed "1" – "10" sec ***5**	VG-880
501	Program No Digits	1	"1" – "4" ***6**	
502	Name Pattern Mode	1	"0"=Normal mode "1"=Not display Bit length.	VG-870,VG-871,VG-873,VG-874,VG-876, VG-877,VG-878,VG-878-A,VG-879
503	Group Mode Name Disp	1	"0"=Timing "1"=Pattern	VG-876,VG-877,VG-878,VG-878-A, VG-879

504	SDI VITC	1	"0"=OFF "1"=ON	VG-879
505	SDI LTC	1	"0"=OFF "1"=ON	
506	SDI Drop Frame	1	"0"=OFF "1"=ON	
507	SDI ANC Packet	1	"0"=OFF "1"=Y ON "2"=C ON "3"=Y/C ON	
508	SDI ANC Embed Line1	1-4	"0"-"9999" ***20**	
509	SDI ANC Embed Sample1	1-4	"0"-"9999" ***20**	
510	SDI ANC Embed Line2	1-4	"0"-"9999" ***20**	
511	SDI ANC Embed Sample2	1-4	"0"-"9999" ***20**	
512	SDI ANC Parity	1	"0"=OFF ***21** "1"=ON	
513	SDI ANC DID	1-3	***Below is for Parity OFF** "0"-"2FF" ***Below is for Parity ON** "0"-"FF"	
514	SDI ANC SDID	1-3	***Below is for Parity OFF** "0"-"2FF" ***Below is for Parity ON** "0"-"FF"	
515	SDI ANC DC	1-3	***Below is for Parity OFF** "0"-"2FF" ***Below is for Parity ON** "0"-"FF"	
516	SDI ANC UDW update flag	1	"0" = Do not update "1" = Update *** When updating Please execute "[20H C7] User Data Word setting" command.** **If not updating, the current value will remain.**	
517	SDI ANC CheckSum Calc	1	"0"=OFF "1"=ON	
518	SDI ANC CheckSum	1-3	"0"-"2FF"	
519	SDI TimeCode Sec(Frame)	1-2	"0"-"30"	
520	External Syncronaization (External synchronization setting)	1	"0"=OFF "1"=BB "2"=3CS	
614	Ctrl Mode	1	"0"=Refer ProgData "1"=Individual setting "2"=CH1→234	VG-876,VG-879
615	HTPD Control 1	1	"0"=THROUGH, "1"=LOW, "2"=HIGH	
616	HTPD Control 2	1	"0"=THROUGH, "1"=LOW, "2"=HIGH	
617	HTPD Control 3	1	"0"=THROUGH, "1"=LOW, "2"=HIGH	
618	HTPD Control 4	1	"0"=THROUGH, "1"=LOW, "2"=HIGH	
619	Lock Control 1	1	"0"=THROUGH, "1"=LOW, "2"=HIGH	
620	Lock Control 2	1	"0"=THROUGH, "1"=LOW, "2"=HIGH	
621	Lock Control 3	1	"0"=THROUGH, "1"=LOW, "2"=HIGH	
622	Lock Control 4	1	"0"=THROUGH, "1"=LOW, "2"=HIGH	
700	Key Lock	1	"0"=KeyLock function is OFF	VG-870,VG-871,VG-873,VG-874,

			"1"=KeyLock function is ON. Available only for designated key. "2"=All key lock。 ***7**	VG-876,VG-877,VG-878,VG-878-A VG-879,VG-880,VG-881,VG-882,VG-884
701	LCD Brightness	1	"1"-"9"	VG-879
702	HDBaseT Auto Select	1	"0"=OFF, "1"=Selected	VG-876,VG-877,VG-879
703	HDBaseT AV Mute Mode By IF Change	1	"0"=Normal Mode "1"=Game Mode ***3**	VG-876,VG-877,VG-879
705	Link Mode	1	"0"=HDBaseT mode "1"=Long reach mode	VG-876,VG-877,VG-879
706	VM-1876-MD Mode	1	"0"=OFF "1"=ON	VG-879
707	FRL Rate Down Output	1	"0"=OFF "1"=ON	VG-879
708	TMDS or FRL	1	"0"=Refer Program "1"=TMDS "2"=FRL	VG-879
709	DSC Mode	1	"0"=Refer Program "1"=OFF "2"=Refer Rate Per Lane "3"=Refer EDID	VG-879
710	MD 8K Output	1	"0"=4K Upconversion "1"=4K Capture	VG-879
711	Rate Per lane	1	"0"=Refer Program "1"=Auto "2"=3Gbps 3Lanes "3"=6Gbps 3Lanes "4"=6Gbps 4Lanes "5"=8Gbps 4Lanes "6"=10Gbps 4Lanes "7"=12Gbps 4Lanes	VG-879

800	HDCP Execute Mode	1	"0"=Disable "1"=Enable "2"=Program	VG-870,VG-871,VG-873,VG-874,VG-876, VG-877,VG-878,VG-878-A,VG-879,
801	HDCP Display Mode	1	"0"=All, "1"=NG Only	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A VG-879,VG-882,VG-884
802	HDCP Interval	1-2	"1"-"10"	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A VG-879,VG-881,VG-882, VG-884
803	HDCP Version	1	"0"-"2"	VG-870,VG-871,VG-873,VG-874, VG-876, VG-877,VG-879,VG-882, VG-884
804	HDCP Ri NG Reset	1	"0"=OFF, "1"=ON	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-881,VG-882, VG-884
805	HDCP FIFO Ready	1	"0"-"8"	
806	HDCP Start Wait	1-4	“0” – “3000” ms	VG-884, VG-876,VG-877,VG-878, VG-878-A,VG-879,
807	HDCP Restart Wait	1-4	“0” – “3000” ms note) set by 100ms unit	
808	HDCP Start Wait	1-3	“0” – “200” ms	VG-873,VG-874
809	Error Output	1	"0"=OFF, "1"=ON	VG-876,VG-877,VG-878,VG-878-A VG-879,
810	Content Type	1	"0"=Type0, "1"=Type1	
811	IA1542 IP Address 1	1-3	"0"-"255"	VG-870,VG-871,VG-873,VG-874
812	IA1542 IP Address 2	1-3	"0"-"255"	
813	IA1542 IP Address 3	1-3	"0"-"255"	
814	IA1542 IP Address 4	1-3	"0"-"255"	
815	IA1542 Default Gateway 1	1-3	"0"-"255"	
816	IA1542 Default Gateway 2	1-3	"0"-"255"	
817	IA1542 Default Gateway 3	1-3	"0"-"255"	
818	IA1542 Default Gateway 4	1-3	"0"-"255"	
819	IA1542 Subnet Mask 1	1-3	"0"-"255"	
820	IA1542 Subnet Mask 2	1-3	"0"-"255"	
821	IA1542 Subnet Mask 3	1-3	"0"-"255"	
822	IA1542 Subnet Mask 4	1-3	"0"-"255"	
823	VM1823 IP Address 1	1-3	"0"-"255"	VG-873,VG-874
824	VM1823 IP Address 2	1-3	"0"-"255"	
825	VM1823 IP Address 3	1-3	"0"-"255"	
826	VM1823 IP Address 4	1-3	"0"-"255"	
827	VM1823 Default Gateway 1	1-3	"0"-"255"	
828	VM1823 Default Gateway 2	1-3	"0"-"255"	
829	VM1823 Default Gateway 3	1-3	"0"-"255"	
830	VM1823 Default Gateway 4	1-3	"0"-"255"	
831	VM1823 Subnet Mask 1	1-3	"0"-"255"	
832	VM1823 Subnet Mask 2	1-3	"0"-"255"	
833	VM1823 Subnet Mask 3	1-3	"0"-"255"	
834	VM1823 Subnet Mask 4	1-3	"0"-"255"	
835	HDCP Authentication Version	1-3	"0"= Refer Program "1"=AUTO "2"=HDCP1.4 "3"=HDCP2.2	VG-876, VG-877,VG-878,VG-878-A, VG-879

900	LastMemMod	1	"0"=Prog is not executed "1"=do not use last memory function "2"= use last memory function	VG-870,VG-871,VG-873,VG-874, VG-876,VG-877,VG-878,VG-878-A, VG-879,VG-880,VG-882, VG-884
901	Power ON Exe Mode	1	"0"=sample prog data "1"=user prog data "2"=Group	
902	Power ON Exe GrpNo	1-2	"1" - "99"	
903	Power ON Exe PrgNo	1-4	VG-870: "1" - "1000" VG-880: "1" - "2000"	
904	Power ON Exe TimNo	1-4	VG-870: "1001" - "2000" VG-880: "1" - "2000"	
905	Power ON Exe PatNo	1-4	VG-870: "1001" - "2000" VG-880:"1" - "2000"	
906	Power ON Exe Mode	1	"0"= do not execute Large Group. "1"= execute Large Group. (Refer to “Power ON Exe GrpNo”)	VG-881

Fig 2.50-1

***1 In VG-880, "1"=DEF2 cannot be used.**

***2 If CF is inserted, it accesses to CF only. If CF is not inserted, it accesses to internal Flash only.**

***3 In case of "0"=default IF, when changing, normal AV-Mute (disconnect sync) is executed. In case of "1"=IF, sync does not disconnect in AV-MUTE.**

***4 "0" = normal mode, "1"= this is the mode that coordinate information follows the cursor.**

***5 The message is displayed while the designated time. After that, it goes back to the original.**

***6 Set the digit number of Program No. that is input in Direct display.**

***7 Refer to "SKEYL4 [20H 73H] : KEY LOCK data registering command" about key setting.**

***8 The setting data is shown below.**

Bit7							Bit0
0	1	0	0	CH 3	CH 2	CH 1	CH 0

Low=Off, High=On, Bit4 -7 are fixed.

***9 The setting data is shown below.**

Bit7							Bit0
0	1	0	0	CH 3	CH 2	CH 1	CH 0

Low=Posi, High=Nega, Bit4 – 7 are fixed.

***10 The setting data is shown below.**

Bit7							Bit0
0	1	0	0	CH 3	CH 2	CH 1	CH 0

Low = Trigger Delay Time 0

High = Trigger Delay Time 1

Bit4 – 7 are fixed.

***11 The setting data is shown below.**

Bit7							Bit0
0	1	0	0	CH 3	CH 2	CH 1	CH 0

Low = Trigger Pulse Width 0

High = Trigger Pulse Width 1

Bit4 – 7 are fixed.

***12 The setting data is shown below.**

Bit7							Bit0
0	1	0	0	0	CH 2	CH 1	CH 0

Low = Off

High = On

Bit3 - 7 are fixed.

***13 The setting data is shown below.**

Bit7							Bit0
0	1	CH 5	CH 4	CH 3	CH 2	CH 1	CH 0

Low = Off

High = On

Bit6 - 7 are fixed.

***14 The setting data is shown below.**

Bit7							Bit0
0	1	CH 11	CH 10	CH 9	CH 8	CH 7	CH 6

Low = Off

High = On

Bit6-7 are fixed.

***15 The setting data is shown below.**

Bit7							Bit0
0	1	0	0	CH 15	CH 14	CH 13	CH 12

Low = Off

High = On

Bit6-7 are fixed.

***16 0th BYTE is sine code:"0"=+,"1"=-**

1st BYTE – 2nd BYTE is data part.

e.g.)

Setting value : 10 → "010"

Setting value : -30 → "130"

Setting value : -5 → "15"

Setting value : 9 → "09"

***17 MX Synchronizing mode**

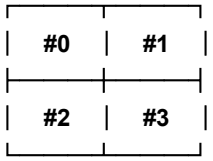
When operating 8K by sycnronizing mode, one set is set as Master and the rest of units are set as slaves. (the cable should be cascade-connected from the Master to slaves.)

If MX board is not installed, this setting is ignored. (same as "OFF" setting).

Even if MX board is installed, but this setting is OFF, each VG works independently.

***18 Designate Unit No. of 8K mode.**

The position of each No is shown as below.



Note) this item is not effective except 8K timing.

※19 Set Timeout value of Sychronization mode.

During Synchronization mode, the Master unit waits completion of program of the Slave units.

The time out value indicates this waiting time. Set "0" for normal use.

***20**

The effective data range changes according to the set timing data.

Item	Min	Max
SDI ANC Embed Line1	**0**	**VTotal**
SDI ANC Embed Sample1	**0**	**Htotal**
SDI ANC Embed Line2	**0**	**Vtotal**
SDI ANC Embed Sample2	**0**	**HTotal**

***21**

Depending on the ON / OFF setting of SDI ANC Pariyt, the setting values of "SDI ANC DID", "SDI ANC SDID", "SDI ANC DC" and "SDI ANC UDW" change to 10 bit and 8 bit setting.

SDI ANC Pariyt = OFF :10bit setting *Maximum value is 0x2FF (767)
SDI ANC Pariyt = ON :8bit setting

Note1) The above setting is made by VG-848 series Config setting.

Note 2) transfer byte number (command + parameter) should be within 1024 bytes.

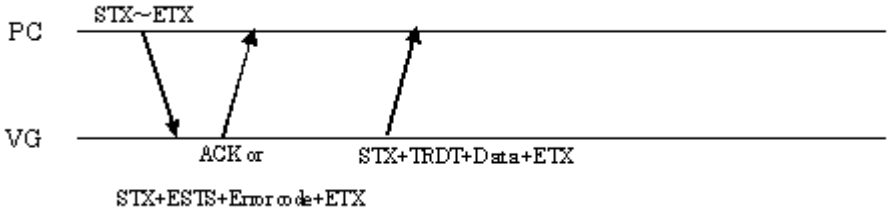
If it is over 1024 bytes, it sends by several times by dividing the data.

Note3) the KeyLock data cannot be sent out to both VG-870 and VG-880 together.

2.51 LCFG4 [20H 55H]: Config data readout

Function: This command reads the system setting (config) data from the VG generator.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LCFG4	2 bytes	20H 55H
ETX	1 byte	03H

Fig. 2-51-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Parameter 1 identification code	1 to 3 bytes	“0” to “999”
,	1 byte	2CH (Delimiter)
Parameter 1 setting	? bytes	?
,	1 byte	2CH (Delimiter)
Parameter 2 identification code	1 to 3 bytes	“0” to “999”
,	1 byte	2CH (Delimiter)
Parameter 2 setting	? bytes	?
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Parameter N identification code	1 to 3 bytes	“0” to “999”
,	1 byte	2CH (Delimiter)
Parameter N setting	? bytes	?
ETX	1 byte	03H

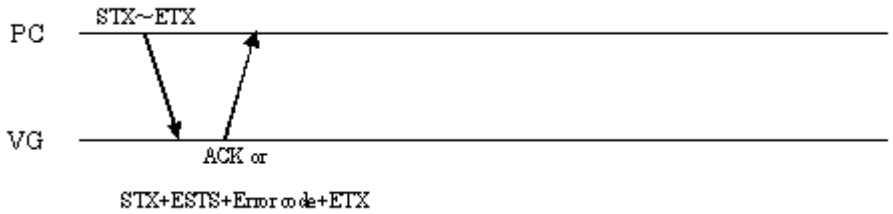
Fig. 2-51-2

For details on the identification codes, refer to Fig. 2-50-2.

2.52 SINB4 [20H 56H]: Black insertion data registration

Function: This command registers the black insertion data of the designated program number When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Command:

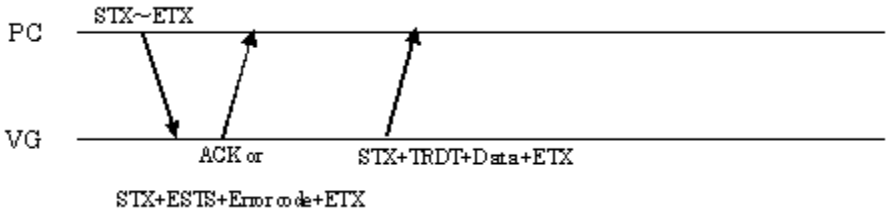
STX	1 byte	02H
VG4CMD	1 byte	FDH
SINB4	2 bytes	20H 56H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Insert Black Enable	1 byte	“0” = Disable, “1” = Enable
,	1 byte	2CH (Delimiter)
Insert Black Position	1 byte	“0” = All, “1” = Left, “2” = Right
,	1 byte	2CH (Delimiter)
Insert Black On Time	1 to 3 bytes	“0” to “255” (0 to 255 V)
,	1 byte	2CH (Delimiter)
Insert Black Off Time	1 to 3 bytes	“0” to “255” (0 to 255 V)
,	1 byte	2CH（Delimiter）
Level	1 to 3 bytes	"0" to "100" %
ETX	1 byte	03H

Fig. 2-52-1

2.53 LINB4 [20H 57H]: Black insertion data readout

Function: This command reads the black insertion data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LINB4	2 bytes	20H 57H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-53-1

Data:

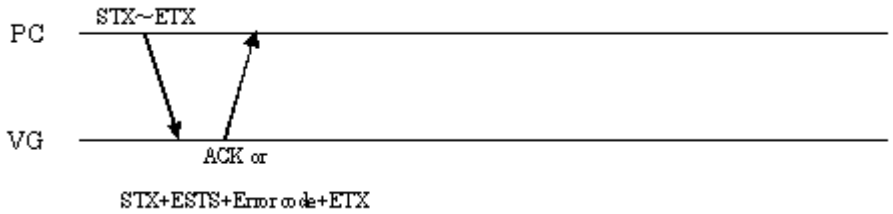
STX	1 byte	02H
TRDT	1 byte	10H
Insert Black Enable	1 byte	“0” = Disable, “1” = Enable
,	1 byte	2CH (Delimiter)
Insert Black Position	1 byte	“0” = All, “1” = Left, “2” = Right
,	1 byte	2CH (Delimiter)
Insert Black On Time	1 to 3 bytes	“0” to “255” (0 to 255 V)
,	1 byte	2CH (Delimiter)
Insert Black Off Time	1 to 3 bytes	“0” to “255” (0 to 255 V)
,	1 byte	2CH (Delimiter)
Level	1 to 3 bytes	"0" to "100" %
ETX	1 byte	03H

Fig. 2-53-2

2.54 SCEC4 [20H 58H]: CEC data registration

Function: This command registers the CEC data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

STX	1 byte	02H	
VG4CMD	1 byte	FDH	
SCEC4	2 bytes	20H 58H	
Program number	1 to 4 bytes	“0” to “1000”, “9999”	
,	1 byte	2CH (Delimiter)	
CEC Mode	1 byte	“0” = Monitor “1” = Sending “2” = Respond	
,	1 byte	2CH (Delimiter)	
VG Logical Address	1 byte	“0” to “F”	
,	1 byte	2CH (Delimiter)	
TX Destination	1 byte	“0” to “F”	
,	1 byte	2CH (Delimiter)	
RX Initiator	1 byte	“0” to “F”	
,	1 byte	2CH (Delimiter)	
RX Destination	1 byte	“0” to “F”	
,	1 byte	2CH (Delimiter)	
TX OpeCode	2 bytes	“00” to “FF”	
,	1 byte	2CH (Delimiter)	
TX Parameter Num	1 or 2 bytes	“0” to “14”	
,	1 byte	2CH (Delimiter)	#1
TX Parameter1	2 bytes	“00” to “FF”	
,	1 byte	2CH (Delimiter)	#14
TX Parameter14	2 bytes	“00” to “FF”	
,	1 byte	2CH (Delimiter)	
RX OpeCode	2 bytes	“0” to “FF”	
,	1 byte	2CH (Delimiter)	
RX Parameter Num	1 or 2 bytes	“0” to “14”	
,	1 byte	2CH (Delimiter)	#1
RX Parameter1	2 bytes	“00” to “FF”	
,	1 byte	2CH (Delimiter)	#14
RX Parameter14	2 bytes	“00” to “FF”	
,	1 byte	2CH (Delimiter)	

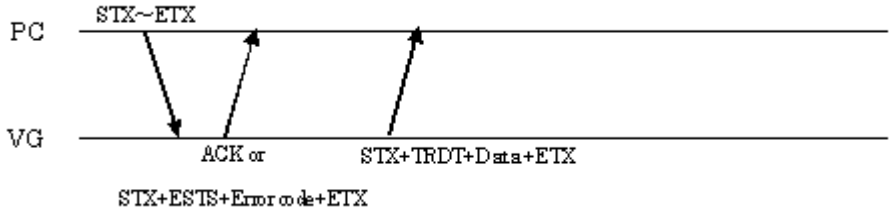
PortSel	1 byte	“0” = HDMI 1 “1” = HDMI 2 "2" = HDMI 3 * VG-882,883, 876, 878/-A, 879 "3" = HDMI 4 * VG-882,883, 876, 878/-A, 879 *Below is for VG-876,879 "4" = HDMI 5, "5" = HDMI 6, "6" = HDMI 7 "7" = HDMI 8, "8" = HDMI 9, "9" = HDMI 10 "10" = HDMI 11, "11" = HDMI 12, "12" = HDMI 13 "13" = HDMI 14, "14" = HDMI 15, "15" = HDMI 16 "16"=HDBaseT1, "17"=HDBaseT2, "18"=HDBaseT3, "19"=HDBaseT4, "20"=HDBaseT5, "21"=HDBaseT6, "22"=HDBaseT7, "23"=HDBaseT8, "24"=HDBaseT9, "25"=HDBaseT10, "26"=HDBaseT11, "27"=HDBaseT12, "28"=HDBaseT13, "29"=HDBaseT14, "30"=HDBaseT15, "31"=HDBaseT16
ETX	1 byte	03H

Fig. 2-54-1

2.55 LCEC [20H 59H]: CEC data acquisition

Function: This command reads the CEC data of the designated program number. When the program number is 0, it reads out the data from the buffer RAM. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command + parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LCEC4	2 bytes	20H 59H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-55-1

Data:

STX	1 byte	02H	
TRDT	1 byte	10H	
CEC Mode	1 byte	“0” = Monitor “1” = Sending “2” = Respond	
,	1 byte	2CH (Delimiter)	
VG Logical Address	1 byte	“0” to “F”	
,	1 byte	2CH (Delimiter)	
TX Destination	1 byte	“0” to “F”	
,	1 byte	2CH (Delimiter)	
RX Initiator	1 byte	“0” to “F”	
,	1 byte	2CH (Delimiter)	
RX Destination	1 byte	“0” to “F”	
,	1 byte	2CH (Delimiter)	
TX OpeCode	2 bytes	“00” to “FF”	
,	1 byte	2CH (Delimiter)	
TX Parameter Num	1 or 2 bytes	“0” to “14”	
,	1 byte	2CH (Delimiter)	#1
TX Parameter1	2 bytes	“00” to “FF”	
,	1 byte	2CH (Delimiter)	#14
TX Parameter14	2 bytes	“00” to “FF”	
,	1 byte	2CH (Delimiter)	
RX OpeCode	2 bytes	“0” to “FF”	
,	1 byte	2CH (Delimiter)	
RX Parameter Num	1 or 2 bytes	“0” to “14”	
,	1 byte	2CH (Delimiter)	#1
RX Parameter1	2 bytes	“00” to “FF”	
,	1 byte	2CH (Delimiter)	#14
RX Parameter14	2 bytes	“00” to “FF”	

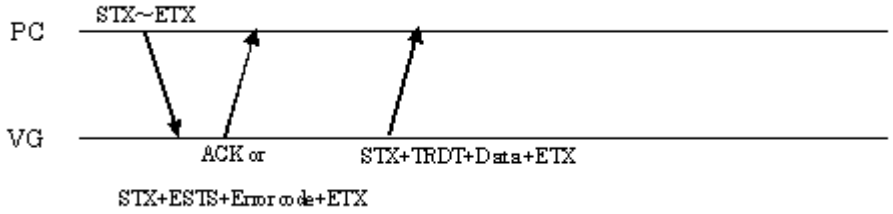
,	1 byte	2CH (Delimiter)
PortSel	1 byte	“0” = HDMI 1 “1” = HDMI 2 "2" = HDMI 3 * VG-882,883, 876, 878/-A, 879 "3" = HDMI 4 * VG-882,883, 876, 878/-A, 879 *Below is for VG-876,879 "4" = HDMI 5, "5" = HDMI 6, "6" = HDMI 7 "7" = HDMI 8, "8" = HDMI 9, "9" = HDMI 10 "10" = HDMI 11, "11" = HDMI 12, "12" = HDMI 13 "13" = HDMI 14, "14" = HDMI 15, "15" = HDMI 16 "16"=HDBaseT1, "17"=HDBaseT2, "18"=HDBaseT3, "19"=HDBaseT4, "20"=HDBaseT5, "21"=HDBaseT6, "22"=HDBaseT7, "23"=HDBaseT8, "24"=HDBaseT9, "25"=HDBaseT10, "26"=HDBaseT11, "27"=HDBaseT12, "28"=HDBaseT13, "29"=HDBaseT14, "30"=HDBaseT15, "31"=HDBaseT16
ETX	1 byte	03H

Fig. 2-55-2

2.56 LBED4 [20H 5AH]: Bitmap enable readout

Function: This command reads enable or disable for the bitmap whose number has been designated.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LBED4	2 bytes	20H 5AH
Program number	1 to 3 bytes	“1” to “899”
ETX	1 byte	03H

Fig. 2-56-1

Data:

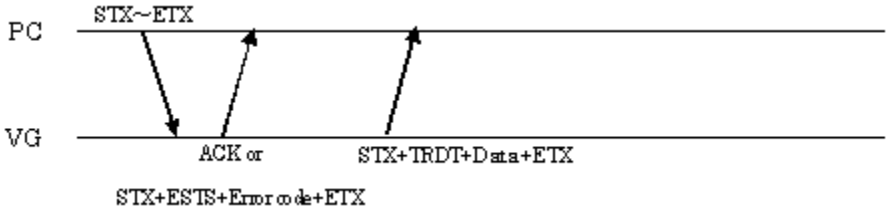
STX	1 byte	02H
TRDT	1 byte	10H
Enable/disable	1 byte	“0” = Enable, “1” = Disable
ETX	1 byte	03H

Fig. 2-56-2

2.57 LOED4 [20H 5BH]: User option enable readout

Function: This command reads enable or disable for the designated user option number.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LOED4	2 bytes	20H 5BH
User option No.	1 to 3 bytes	“1” to “899”
ETX	1 byte	03H

Fig. 2-57-1

Data:

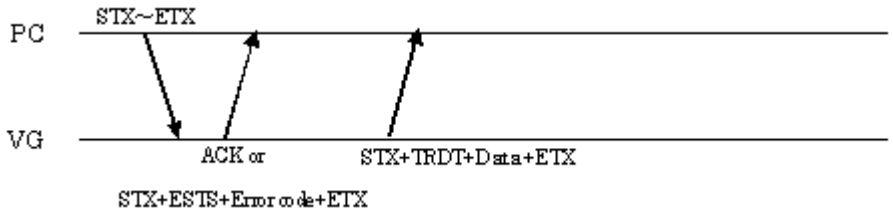
STX	1 byte	02H
TRDT	1 byte	10H
Enable/disable	1 byte	“0” = Enable, “1” = Disable
ETX	1 byte	03H

Fig. 2-57-2

2.58 LGED4 [20H 5CH]: Group enable readout

Function: This command reads enable or disable for the designated group number.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LOED4	2 bytes	20H 5BH
Group No.	1 or 2 bytes	“1” to “99”
ETX	1 byte	03H

Fig. 2-58-1

Data:

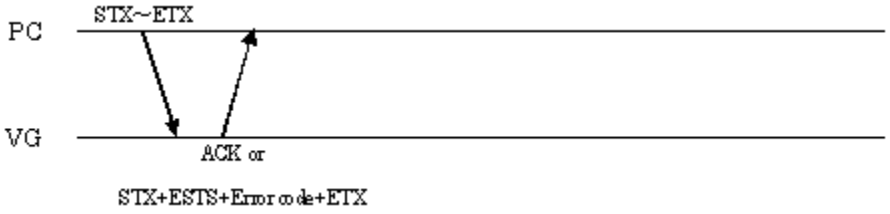
STX	1 byte	02H
TRDT	1 byte	10H
Enable/disable	1 byte	“0” = Enable, “1” = Disable
ETX	1 byte	03H

Fig. 2-58-2

2.59 SCCM4 [20H 5DH]: User subtitle data setting 1

Function: This command sets the mode and style data of the user subtitles.

Sequence: Type 2



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SCCVC4	2 bytes	20H 5DH
User No.	1 or 2 bytes	“1” to “20”
,	1 byte	2CH (Delimiter)
FLASH_WRITE	1 byte	“0” = Current data are updated only. “1” = Data is updated, and written on flash card.
,	1 byte	2CH (Delimiter)
Caption mode	1 byte	“0” = CC1 “1” = CC2 “2” = CC3 “3” = CC4 “4” = TXT1 “5” = TXT2 “6” = TXT3 “7” = TXT4
,	1 byte	2CH (Delimiter)
Caption style	1 byte	“0” = POPON “1” = ROLLUP2 “2” = ROLLUP3 “3” = ROLLUP4 “4” = PAINTON
ETX	1 byte	03H

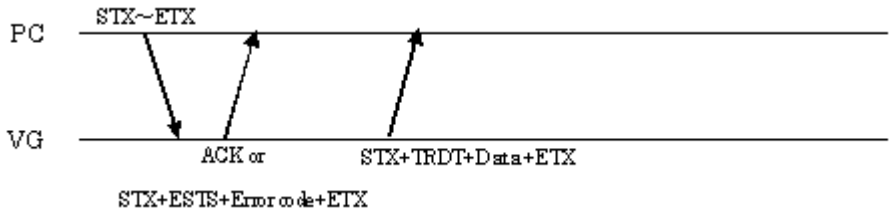
Fig. 2-59-1

Data: None

2.60 LCCM4 [20H 5EH]: User subtitle data acquisition 1

Function: This command gets the mode and style data of the user subtitles.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LCCM4	2 bytes	20H 5EH
User No.	1 or 2 bytes	“1” to “20”
ETX	1 byte	03H

Fig. 2-60-1

Data:

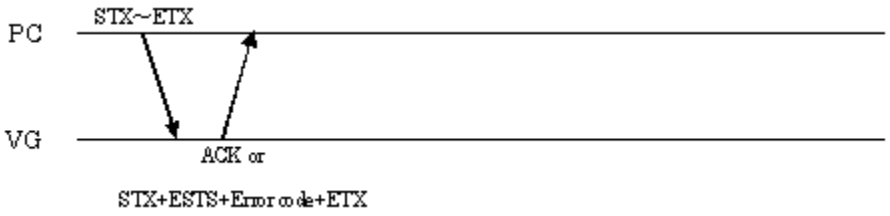
STX	1 byte	02H
TRDT	1 byte	10H
FLASH_WRITE	1 byte	“0” = Current data are updated only. “1” = Data is updated, and written on flash card.
,	1 byte	2CH (Delimiter)
Caption mode	1 byte	“0” = CC1 “1” = CC2 “2” = CC3 “3” = CC4 “4” = TXT1 “5” = TXT2 “6” = TXT3 “7” = TXT4
,	1 byte	2CH (Delimiter)
Caption style	1 byte	“0” = POPON “1” = ROLLUP2 “2” = ROLLUP3 “3” = ROLLUP4 “4” = PAINTON
ETX	1 byte	03H

Fig. 2-60-2

2.61 SCCD4 [20H 5FH]: User subtitle data setting 2

Function: This command sets the data of the user subtitles.

Sequence: Type 2



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SCCVC4	2 bytes	20H 5FH
User No.	1 or 2 bytes	“1” to “20”
,	1 byte	2CH (Delimiter)
ROW	1 or 2 bytes	“0” to “14” (In the text mode, however, the article name is inserted in 0, and the 13 and 14 data is disabled even when it is present).
,	1 byte	2CH (Delimiter)
FLASH_WRITE	1 byte	“0” = Current data are updated only. “1” = Data is updated, and written on flash card.
,	1 byte	2CH (Delimiter)
ASCII or binary	1 byte	“0” = ASCII “1” = Binary
,	1 byte	2CH (Delimiter)
ROW_ENABLE	1 byte	“0” = Disable “1” = Enable
,	1 byte	2CH (Delimiter)
Start position	1 or 2 bytes	“0” to “31”
,	1 byte	2CH (Delimiter)
Character color	1 byte	“0” = White “1” = Green “2” = Blue “3” = Cyan “4” = Red “5” = Yellow “6” = Magenta
,	1 byte	2CH (Delimiter)
Background color	1 byte	“0” = White “1” = Green “2” = Blue “3” = Cyan “4” = Red “5” = Yellow “6” = Magenta “7” = Black
,	1 byte	2CH (Delimiter)
Caption data foreground	1 byte	“0” = OFF “1” = ON
,	1 byte	2CH (Delimiter)
Caption data background setting	1 byte	“0” = Opaque (Background color) “1” = Semi-Transparent (Semi-transparent) “2” = Transparent (Opaque)

,	1 byte	2CH (Delimiter)
Underline	1 byte	“0” = OFF “1” = ON
,	1 byte	2CH (Delimiter)
Italic	1 byte	“0” = OFF “1” = ON
,	1 byte	2CH (Delimiter)
Flash	1 byte	“0” = OFF “1” = ON
,	1 byte	2CH (Delimiter)
Data length	1 to 3 bytes	“0” to “128” (byte)
,	1 byte	2CH (Delimiter)
Caption data	0 to 128 bytes	Variable (In the binary mode, the data must be inserted directly using the ASCII character for the numerals. Examples: 0×2a → “2A”, 0×00 → “00”)
ETX	1 byte	03H

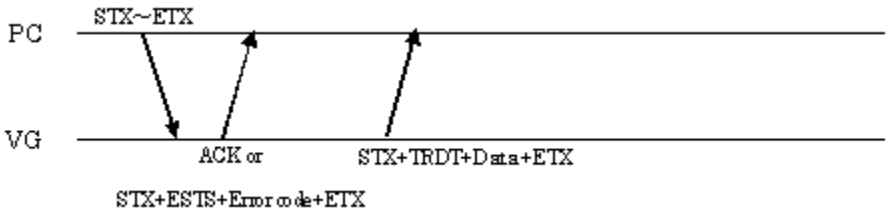
Fig. 2-61-1

Data: None

2.62 LCCD4 [20H 60H]: User subtitle data acquisition 2

Function: This command gets the user subtitle data.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LCCM4	2 bytes	20H 60H
User No.	1 or 2 bytes	“1” to “20”
,	1 byte	2CH (Delimiter)
ROW	1 or 2 bytes	“0” to “14” (In the text mode, however, the article name is inserted in 0, and the 13 and 14 data is disabled even when it is present).
ETX	1 byte	03H

Fig. 2-62-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
ASCII or binary	1 byte	“0” = ASCII “1” = Binary
,	1 byte	2CH (Delimiter)
ROW_ENABLE	1 byte	“0” = Disable “1” = Enable
,	1 byte	2CH (Delimiter)
Start position	1 or 2 bytes	“0” to “31”
,	1 byte	2CH (Delimiter)
Character color	1 byte	“0” = White “1” = Green “2” = Blue “3” = Cyan “4” = Red “5” = Yellow “6” = Magenta
,	1 byte	2CH (Delimiter)
Background color	1 byte	“0” = White “1” = Green “2” = Blue “3” = Cyan “4” = Red “5” = Yellow “6” = Magenta “7” = Black
,	1 byte	2CH (Delimiter)
Caption data foreground	1 byte	“0” = OFF “1” = ON
,	1 byte	2CH (Delimiter)
Caption data background setting	1 byte	“0” = Opaque (Background color) “1” = Semi-Transparent (Semi-transparent) “2” = Transparent (Opaque)

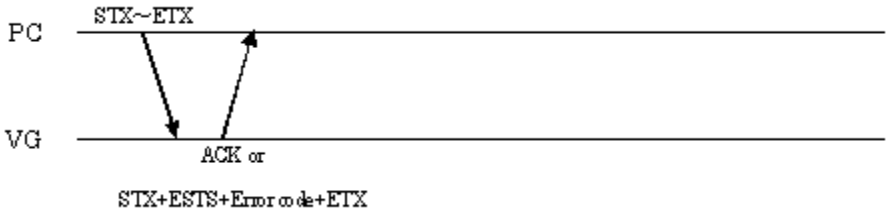
,	1 byte	2CH (Delimiter)
Underline	1 byte	“0” = OFF “1” = ON
,	1 byte	2CH (Delimiter)
Italic	1 byte	“0” = OFF “1” = ON
,	1 byte	2CH (Delimiter)
Flash	1 byte	“0” = OFF “1” = ON
,	1 byte	2CH (Delimiter)
Data length	3 bytes	“000” to “128” (byte)
,	1 byte	2CH (Delimiter)
Caption data	0 to 128 bytes	Variable (In the binary mode, the data must be inserted using hexadecimal ASCII character. Examples: 0×2a → “2A”, 0×00 → “00”)
ETX	1 byte	03H

Fig. 2-62-2

2.63 SGM4 [20H 61H]: GamutMeta data registration

Function: This command registers the GamutMeta data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

STX	1 byte	02H	
VG4CMD	1 byte	FDH	
SGM4	2 bytes	20H 61H	
Program number	1 to 4 bytes	“0” to “1000”, “9999”	
,	1 byte	2CH (Delimiter)	
ON/OFF	1 byte	“0” = OFF, “1” = ON	
,	1 byte	2CH (Delimiter)	
Next_Field	1 byte	“0” or “1”	
,	1 byte	2CH (Delimiter)	
No_Current_GBD	1 byte	“0” or “1”	
,	1 byte	2CH (Delimiter)	
GBD_profile	1 byte	“0” = P0 “1” = P1 “2” = P2 “3” = P3	
,	1 byte	2CH (Delimiter)	
Affected_Gamut_Seq_ Num	1 or 2 bytes	“0” to “15”	
,	1 byte	2CH (Delimiter)	
Current_Gamut_Seq_ Num	1 or 2 bytes	“0” to “15”	
,	1 byte	2CH (Delimiter)	
Packet_Seq	1 byte	“0” to “3”	
,	1 byte	2CH (Delimiter)	
Format_Flag	1 byte	“0” = Vertices/Facets “1” = Range	
,	1 byte	2CH (Delimiter)	
GBD_Color_Precision	1 byte	“0” = 8 bits “1” = 10 bits “2” = 12 bits	
,	1 byte	2CH (Delimiter)	
GBD_Color_Space_ Vertex	1 byte	“0” = ITU_R BT.709 “1” = xvYCC601 “2” = xvYCC709 “3” = XYZ	
,	1 byte	2CH (Delimiter)	
Number_Vertices	1 byte	“4” to “X” *1	
,	1 byte	2CH (Delimiter)	#1
Packeted_GBD_Vertices _Data	1 to 4 bytes	“0” to “4095” *2	
,	1 byte	2CH (Delimiter)	#25
Packeted_GBD_Vertices _Data	1 to 4 bytes	“0” to “4095” *2	
,	1 byte	2CH (Delimiter)	

GBD_Color_Space_ Range	1 byte	“0” = Reserved “1” = xvYCC601 “2” = xvYCC709 “3” = Reserved
,	1 byte	2CH (Delimiter)
Packeted_Range_Data (MinRedData)	2 to 11 byte	Byte 0 is a sign code: “0” for + or “1” for - Bytes 1 to 10 are the data portion. *3
,	1 byte	2CH (Delimiter)
Packeted_Range_Data (MaxRedData)	2 to 11 byte	Same as above
,	1 byte	2CH (Delimiter)
Packeted_Range_Data (MinGreenData)	2 to 11 byte	Same as above
,	1 byte	2CH (Delimiter)
Packeted_Range_Data (MaxGreenData)	2 to 11 byte	Same as above
,	1 byte	2CH (Delimiter)
Packeted_Range_Data (MinBlueData)	2 to 11 byte	Same as above
,	1 byte	2CH (Delimiter)
Packeted_Range_Data (MaxBlueData)	2 to 11 byte	Same as above
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI、"1"=HDBaseT
ETX	1 byte	03H

Fig. 2-63-1

*1: The ranges of the Number_Vertices values are given below by GBD_Color_Precision.

GBD_Color_Precision	Number_Vertices
0 (8 bits)	4 to 8
1 (10 bits)	4 to 6
2 (12 bits)	4 or 5

*2: The ranges of the Packeted_GBD_Vertices_Data values are given below by GBD_Color_Precision.

GBD_Color_Precision	Packeted_GBD_Vertices_Data
0 (8 bits)	0 to 255
1 (10 bits)	0 to 1023
2 (12 bits)	0 to 4095

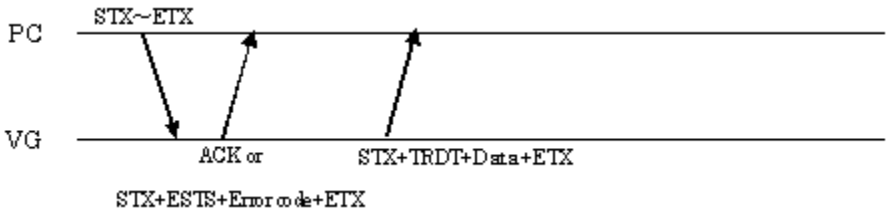
*3: The ranges of the Packeted_Range_Data values are given below by GBD_Color_Precision.

GBD_Color_Precision	Packeted_Range_Data
0 (8 bits)	0 to 396875 (Actual value × 100000 times)
1 (10 bits)	0 to 39921875 (Actual value × 10000000 times)
2 (12 bits)	0 to 3998046875 (Actual value × 1000000000 times)

2.64 LGM4 [20H 62H]: GamutMeta data acquisition

Function: This command gets the GamutMeta data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Command + parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LGM4	2 bytes	20H 62H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT
ETX	1 byte	03H

Fig. 2-64-1

As shown below, if you skip Data Type setting of HDMI or HDBaseT, Gamut Meta data of HDMI setting is received.

STX	1 byte	02H
VG4CMD	1 byte	FDH
LGM4	2 bytes	20H 62H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-64-2

Data:

STX	1 byte	02H
TRDT	1 byte	10H
ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Next_Field	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
No_Current_GBD	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
GBD_profile	1 byte	“0” = P0 “1” = P1 “2” = P2 “3” = P3
,	1 byte	2CH (Delimiter)
Affected_Gamut_Seq_ Num	1 or 2 bytes	“0” to “15”
,	1 byte	2CH (Delimiter)
Current_Gamut_Seq_ Num	1 or 2 bytes	“0” to “15”
,	1 byte	2CH (Delimiter)
Packet_Seq	1 byte	“0” to “3”
,	1 byte	2CH (Delimiter)
Format_Flag	1 byte	“0” = Vertices/Facets, “1” = Range
,	1 byte	2CH (Delimiter)

GBD_Color_Precision	1 byte	“0” = 8 bits “1” = 10 bits “2” = 12 bits	
,	1 byte	2CH (Delimiter)	
GBD_Color_Space_ Vertex	1 byte	“0” = ITU_R BT.709 “1” = xvYCC601 “2” = xvYCC709 “3” = XYZ	
,	1 byte	2CH (Delimiter)	
Number_Vertices	1 byte	“4” to “X” *1	
,	1 byte	2CH (Delimiter)	#1
Packeted_GBD_Vertices _Data	1 to 4 bytes	“0” to “4095” *2	
,	1 byte	2CH (Delimiter)	#25
Packeted_GBD_Vertices _Data	1 to 4 bytes	“0” to “4095” *2	
,	1 byte	2CH (Delimiter)	
GBD_Color_Space_ Range	1 byte	“0” = Reserved “1” = xvYCC601 “2” = xvYCC709 “3” = Reserved	
,	1 byte	2CH (Delimiter)	
Packeted_Range_Data (MinRedData)	2 to 11 byte	Byte 0 is a sign code: “0” for + or “1” for - Bytes 1 to 10 are the data portion. *3	
,	1 byte	2CH (Delimiter)	
Packeted_Range_Data (MaxRedData)	2 to 11 byte	Same as above	
,	1 byte	2CH (Delimiter)	
Packeted_Range_Data (MinGreenData)	2 to 11 byte	Same as above	
,	1 byte	2CH (Delimiter)	
Packeted_Range_Data (MaxGreenData)	2 to 11 byte	Same as above	
,	1 byte	2CH (Delimiter)	
Packeted_Range_Data (MinBlueData)	2 to 11 byte	Same as above	
,	1 byte	2CH (Delimiter)	
Packeted_Range_Data (MaxBlueData)	2 to 11 byte	Same as above	
,	1 byte	2CH (Delimiter)	
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT * The one set by the command parameter is returned.	
ETX	1 byte	03H	

Fig. 2-64-3

*1: The ranges of the Number_Vertices values are given below by GBD_Color_Precision.

GBD_Color_Precision	Number_Vertices
0 (8 bits)	4 to 8
1 (10 bits)	4 to 6
2 (12 bits)	4 or 5

*2: The ranges of the Packeted_GBD_Vertices_Data values are given below by GBD_Color_Precision.

GBD_Color_Precision	Packeted_GBD_Vertices_Data
0 (8 bits)	0 to 255
1 (10 bits)	0 to 1023
2 (12 bits)	0 to 4095

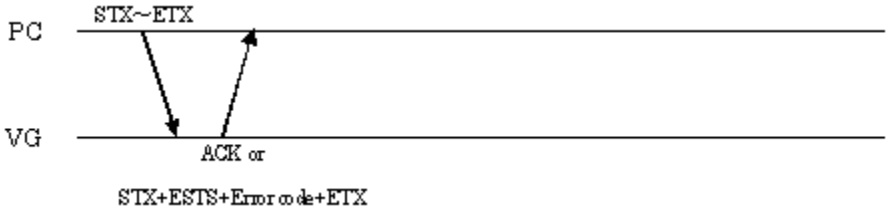
*3: The ranges of the Packeted_Range_Data values are given below by GBD_Color_Precision.

GBD_Color_Precision	Packeted_Range_Data
0 (8 bits)	0 to 396875 (Actual value × 100000 times)
1 (10 bits)	0 to 39921875 (Actual value × 10000000 times)
2 (12 bits)	0 to 3998046875 (Actual value × 1000000000 times)

2.65 SLS4 [20H 63H]: LipSync data setting

Function: This command sets the LipSync data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

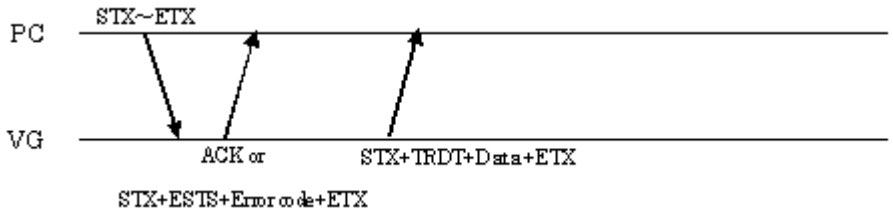
STX	1 byte	02H
VG4CMD	1 byte	FDH
SLS4	2 bytes	20H 63H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
LipSync ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Mode	1 byte	“0” = DELAY “1” = EDID
,	1 byte	2CH (Delimiter)
ON (Display) time	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
OFF (Black insertion) time	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Delay time	2 to 4 bytes	“1500” to “0500” (-500 to 500) Byte 0 is a sign code: “0” for + or “1” for - Bytes 1 to 3 are the data portion.
,	1 byte	2CH (Delimiter)
EDID Port	1 byte	“0” = HDMI1, “1” = HDMI2 *Below is for VG-876,879 "2"=HDMI3, "3"=HDMI4, "4"=HDMI5, "5"=HDMI6, "6"=HDMI7, "7"=HDMI8, "8"=HDMI9, "9"=HDMI10, "10"=HDMI11, "11"=HDMI12, "12"=HDMI13, " 13"=HDMI14, "14"=HDMI15, "15"=HDMI16 "16"=HDBaseT1, "17"=HDBaseT2, "18"=HDBaseT3, "19"=HDBaseT4, "20"=HDBaseT5, "21"=HDBaseT6, "22"=HDBaseT7, "23"=HDBaseT8, "24"=HDBaseT9, "25"=HDBaseT10, "26"=HDBaseT11, "27"=HDBaseT12, "28"=HDBaseT13, "29"=HDBaseT14, "30"=HDBaseT15, "31"=HDBaseT16
ETX	1 byte	03H

Fig. 2-65-1

2.66 LLS4 [20H 64H]: LipSync data acquisition

Function: This command gets the LipSync data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LLS4	2 bytes	20H 64H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-66-1

Data:

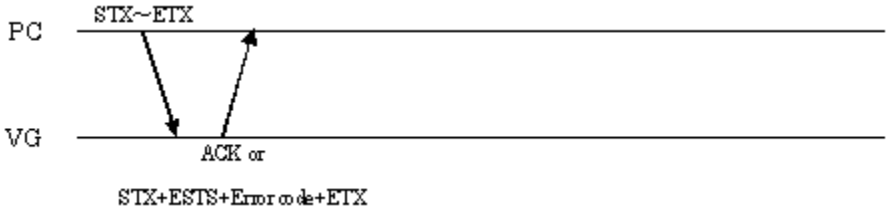
STX	1 byte	02H
TRDT	1 byte	10H
LipSync ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Mode	1 byte	“0” = DELAY “1” = EDID
,	1 byte	2CH (Delimiter)
ON (Display) time	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
OFF (Black insertion) time	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Delay time	2 to 4 bytes	“1500” to “0500” (-500 to 500) Byte 0 is a sign code: “0” for + or “1” for - Bytes 1 to 3 are the data portion.
,	1 byte	2CH (Delimiter)
EDID Port	1 byte	“0” = HDMI1, “1” = HDMI2 *Below is for VG-876,879 "2"=HDMI3, "3"=HDMI4, "4"=HDMI5, "5"=HDMI6, "6"=HDMI7, "7"=HDMI8, "8"=HDMI9, "9"=HDMI10, "10"=HDMI11, "11"=HDMI12, "12"=HDMI13, " 13"=HDMI14, "14"=HDMI15, "15"=HDMI16 "16"=HDBaseT1, "17"=HDBaseT2, "18"=HDBaseT3, "19"=HDBaseT4, "20"=HDBaseT5, "21"=HDBaseT6, "22"=HDBaseT7, "23"=HDBaseT8, "24"=HDBaseT9, "25"=HDBaseT10, "26"=HDBaseT11, "27"=HDBaseT12, "28"=HDBaseT13, "29"=HDBaseT14, "30"=HDBaseT15, "31"=HDBaseT16
ETX	1 byte	03H

Fig. 2-66-2

2.67 SHPS4 [20H 65H]: 0.5/0.25-pixel scroll data setting

Function: This command sets the 0.5- or 0.25-pixel scroll data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

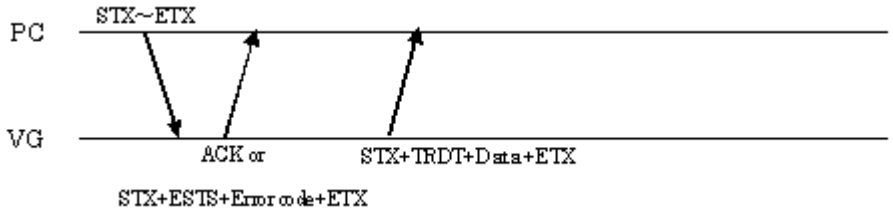
STX	1 byte	02H
VG4CMD	1 byte	FDH
SHPS4	2 bytes	20H 65H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
0.5/0.25-pixel scroll ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Reserved	1byte	“0” fixed
	1 byte	2CH (Delimiter)
Movement direction	1 byte	“0” = Left, “1” = Right
,	1 byte	2CH (Delimiter)
V direction offset value	1 to 3 bytes	"0" to "100" %
,	1 byte	2CH (Delimiter)
Moving amount	1 to 6 bytes	“0” to “254875”
ETX	1 byte	03H

Fig. 2-67-1

2.68 LHPS4 [20H 66H]: 0.5/0.25-pixel scroll data acquisition

Function: This command gets the 0.5- or 0.25-pixel scroll data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LHPS4	2 bytes	20H 66H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-68-1

Data:

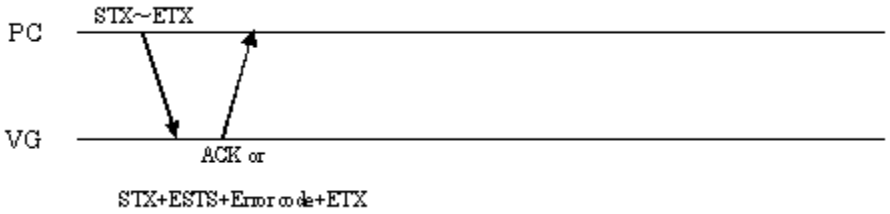
STX	1 byte	02H
TRDT	1 byte	10H
0.5/0.25-pixel scroll ON/OFF	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
Movement direction	1 byte	“0” = Left, “1” = Right *by 0.25 unit Note) if the value is set by 0.125, it automatically becomes “0” and returns.
,	1 byte	2CH (Delimiter)
V direction offset value	1 to 3 bytes	"0" to "100" %
,	1 byte	2CH (Delimiter)
Movement amount	1 to 5 bytes	“0” to “25475” *by 0.125 unit
ETX	1 byte	03H

Fig. 2-68-2

2.69 SDDCCI4 [20H 67H]: DDC/CI data setting

Function: This command sets the DDC/CI data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SDDCCI4	2 bytes	20H 67H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Port	1 byte	“1” = DVI-1 “2” = DVI-2 “3” = HDMI-1 “4” = HDMI-2 “5” = PC-DVI “6” = PC-VGA “7” = TV-VGA/DVI "8" = Reserved "9" = DisplayPort1 "10" = DisplayPort2 "11"=DVI(iTMDS)1 "12"=DVI(iTMDS)2 "13"=iTMDS-Quad1,2 "14"=iTMDS-Quad3,4 "15"=HDMI-3 (for VG-882, 883, 876, 878/-A, 879) "16"=HDMI-4 (for VG-882, 883, 876, 878/-A, 879) *Below is for VG-876,879 "17"=HDMI5 "18"=HDMI6 "19"=HDMI7 "20"=HDMI8 "21"=HDMI9 "22"=HDMI10 "23"=HDMI11 "24"=HDMI12 "25"=HDMI13 "26"=HDMI14 "27"=HDMI15 "28"=HDMI16 "29"=DisplayPort3 "30"=DisplayPort4 "31"=DisplayPort5 "32"=DisplayPort6 "33"=DisplayPort7 "34"=DisplayPort8 “35”=VGA1, “36”=VGA2, “37”=VGA3, “38”=VGA4 "39"=iTMDS3 "40"=iTMDS4 "41"=iTMDS5 "42"=iTMDS6 "43"=iTMDS7 "44"=iTMDS8 "45"=HDBaseT1 "46"=HDBaseT2 "47"=HDBaseT3 "48"=HDBaseT4 "49"=HDBaseT5 "50"=HDBaseT6 "51"=HDBaseT7 "52"=HDBaseT8 "53"=HDBaseT9 "54"=HDBaseT10 "55"=HDBaseT11 "56"=HDBaseT12 "57"=HDBaseT13 "58"=HDBaseT14 "59"=HDBaseT15 "60"=HDBaseT16 *VG-878/-A use “35=VGA1”
,	1 byte	2CH (Delimiter)
Mode	1 byte	“0” = Get, “1” = Set
,	1 byte	2CH (Delimiter)
VCP code	1 or 2 bytes	“0” to “FF”
,	1 byte	2CH (Delimiter)
Setting value	1 to 5 bytes	“0” to “65535”

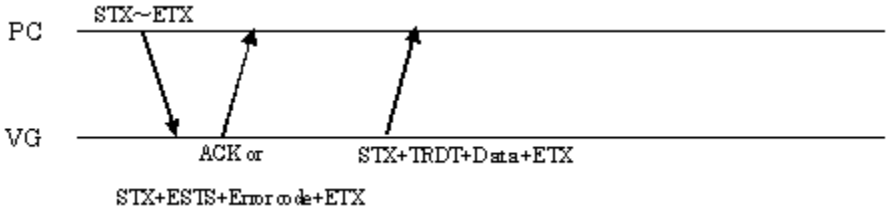
ETX	1 byte	03H

Fig. 2-69-1

2.70 LDDCCI4 [20H 68H]: DDC/CI data acquisition

Function: This command gets the DDC/CI data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LDDCCI4	2 bytes	20H 68H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-70-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Port	1 byte	“1” = DVI-1 “2” = DVI-2 “3” = HDMI-1 “4” = HDMI-2 “5” = PC-DVI “6” = PC-VGA “7” = TV-VGA/DVI "8" = Reserved "9" = DisplayPort1 "10" = DisplayPort2 "11"=DVI(iTMDS)1 "12"=DVI(iTMDS)2 "13"=iTMDS-Quad1,2 "14"=iTMDS-Quad3,4 "15"=HDMI-3 (for VG-882, 883, 876, 878/-A,879) "16"=HDMI-4 (for VG-882, 883, 876, 878/-A,879) *Below is for VG-876,879 "17"=HDMI5 "18"=HDMI6 "19"=HDMI7 "20"=HDMI8 "21"=HDMI9 "22"=HDMI10 "23"=HDMI11 "24"=HDMI12 "25"=HDMI13 "26"=HDMI14 "27"=HDMI15 "28"=HDMI16 "29"=DisplayPort3 "30"=DisplayPort4 "31"=DisplayPort5 "32"=DisplayPort6 "33"=DisplayPort7 "34"=DisplayPort8 “35”=VGA1, “36”=VGA2, “37”=VGA3, “38”=VGA4 "39"=iTMDS3 "40"=iTMDS4 "41"=iTMDS5 "42"=iTMDS6 "43"=iTMDS7 "44"=iTMDS8 "45"=HDBaseT1 "46"=HDBaseT2 "47"=HDBaseT3 "48"=HDBaseT4 "49"=HDBaseT5 "50"=HDBaseT6 "51"=HDBaseT7 "52"=HDBaseT8 "53"=HDBaseT9 "54"=HDBaseT10 "55"=HDBaseT11 "56"=HDBaseT12 "57"=HDBaseT13 "58"=HDBaseT14 "59"=HDBaseT15 "60"=HDBaseT16 *VG-878/-A use “35=VGA1”
,	1 byte	2CH (Delimiter)
Mode	1 byte	“0” = Get , “1” = Set

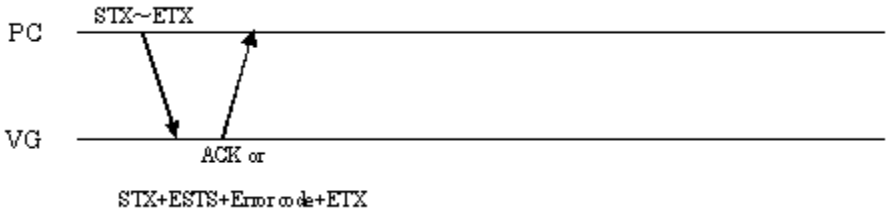
,	1 byte	2CH (Delimiter)
VCP code	1 or 2 bytes	“0” to “FF”
,	1 byte	2CH (Delimiter)
Setting value	1 to 5 bytes	“0” to “65535”
ETX	1 byte	03H

Fig. 2-70-2

2.71 SEP4 [20H 69H]: EDID port data setting

Function: This command sets the EDID port data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

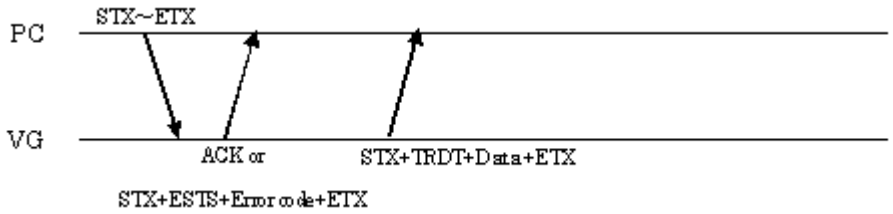
STX	1 byte	02H
VG4CMD	1 byte	FDH
SEP4	2 bytes	20H 69H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Port	1 byte	“1” = DVI-1 “2” = DVI-2 “3” = HDMI-1 “4” = HDMI-2 “5” = PC-DVI “6” = PC-VGA “7” = TV-VGA/DVI "8" = Reserved "9" = DisplayPort1 "10" = DisplayPort2 "11"=DVI(iTMDS)1 "12"=DVI(iTMDS)2 "13"=iTMDS-Quad1,2 "14"=iTMDS-Quad3,4 "15"=HDMI-3 (for VG-882, 883, 876, 878/-A,879) "16"=HDMI-4 (for VG-882, 883, 876, 878/-A,879) *Below is for VG-876,879 "17"=HDMI5 "18"=HDMI6 "19"=HDMI7 "20"=HDMI8 "21"=HDMI9 "22"=HDMI10 "23"=HDMI11 "24"=HDMI12 "25"=HDMI13 "26"=HDMI14 "27"=HDMI15 "28"=HDMI16 "29"=DisplayPort3 "30"=DisplayPort4 "31"=DisplayPort5 "32"=DisplayPort6 "33"=DisplayPort7 "34"=DisplayPort8 “35”=VGA1, “36”=VGA2, “37”=VGA3, “38”=VGA4 "39"=iTMDS3 "40"=iTMDS4 "41"=iTMDS5 "42"=iTMDS6 "43"=iTMDS7 "44"=iTMDS8 "45"=HDBaseT1 "46"=HDBaseT2 "47"=HDBaseT3 "48"=HDBaseT4 "49"=HDBaseT5 "50"=HDBaseT6 "51"=HDBaseT7 "52"=HDBaseT8 "53"=HDBaseT9 "54"=HDBaseT10 "55"=HDBaseT11 "56"=HDBaseT12 "57"=HDBaseT13 "58"=HDBaseT14 "59"=HDBaseT15 "60"=HDBaseT16 *VG-878/-A use “35=VGA1”
ETX	1 byte	03H

Fig. 2-71-1

2.72 LEP4 [20H 6AH]: EDID port data acquisition

Function: This command gets the EDID port data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LDDCCI4	2 bytes	20H 6AH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-72-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Port	1 byte	“1” = DVI-1 “2” = DVI-2 “3” = HDMI-1 “4” = HDMI-2 “5” = PC-DVI “6” = PC-VGA “7” = TV-VGA/DVI "8" = Reserved "9" = DisplayPort1 "10" = DisplayPort2 "11"=DVI(iTMDS)1 "12"=DVI(iTMDS)2 "13"=iTMDS-Quad1,2 "14"=iTMDS-Quad3,4 "15"=HDMI-3 (for VG-882, 883, 876, 878/-A,879) "16"=HDMI-4 (for VG-882, 883, 876, 878/-A,879) Below is for VG-876,879 "17"=HDMI5 "18"=HDMI6 "19"=HDMI7 "20"=HDMI8 "21"=HDMI9 "22"=HDMI10 "23"=HDMI11 "24"=HDMI12 "25"=HDMI13 "26"=HDMI14 "27"=HDMI15 "28"=HDMI16 "29"=DisplayPort3 "30"=DisplayPort4 "31"=DisplayPort5 "32"=DisplayPort6 "33"=DisplayPort7 "34"=DisplayPort8 “35”=VGA1, “36”=VGA2, “37”=VGA3, “38”=VGA4 "39"=iTMDS3 "40"=iTMDS4 "41"=iTMDS5 "42"=iTMDS6 "43"=iTMDS7 "44"=iTMDS8 "45"=HDBaseT1 "46"=HDBaseT2 "47"=HDBaseT3 "48"=HDBaseT4 "49"=HDBaseT5 "50"=HDBaseT6 "51"=HDBaseT7 "52"=HDBaseT8 "53"=HDBaseT9 "54"=HDBaseT10 "55"=HDBaseT11 "56"=HDBaseT12 "57"=HDBaseT13 "58"=HDBaseT14 "59"=HDBaseT15 "60"=HDBaseT16

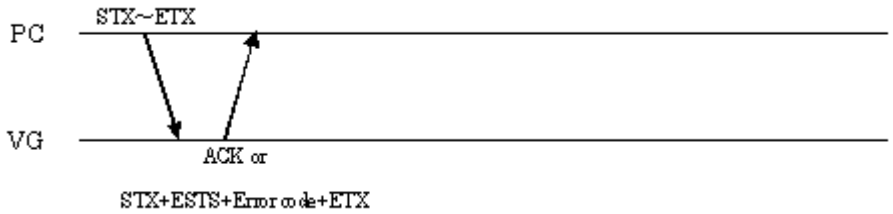
		*VG-878/-A use “35=VGA1”
ETX	1 byte	03H

Fig. 2-72-2

2.73 SCGMS4 [20H 6BH]: CGMS data setting

Function: This command sets the CGMS data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

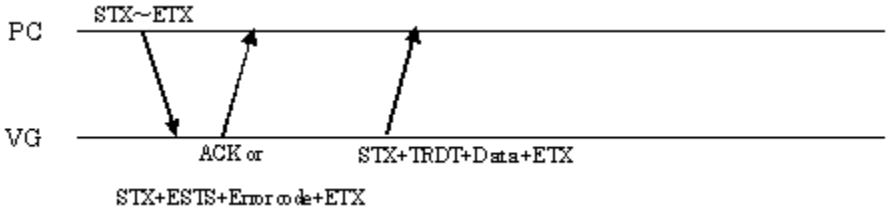
STX	1 byte	02H
VG4CMD	1 byte	FDH
SCGMS4	2 bytes	20H 6BH
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Enable (Field-1)	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
Enable (Field-2)	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
CGMS	1 byte	“0” = Copying permitted “1” = Not used condition “2” = Copy Once “3” = No copying permitted
ETX	1 byte	03H

Fig. 2-73-1

2.74 LCGMS4 [20H 6CH]: CGMS data acquisition

Function: This command gets the CGMS data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LCGMS4	2 bytes	20H 6CH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-74-1

Data:

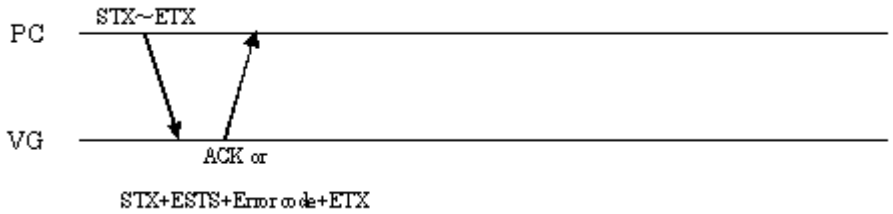
STX	1 byte	02H
TRDT	1 byte	10H
Enable (Field-1)	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
Enable (Field-2)	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
CGMS	1 byte	“0” = Copying permitted “1” = Not used condition “2” = Copy Once “3” = No copying permitted
ETX	1 byte	03H

Fig. 2-74-2

2.75 SAP4 [20H 6DH]: Aspect ratio data setting

Function: This command sets the aspect ratio data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

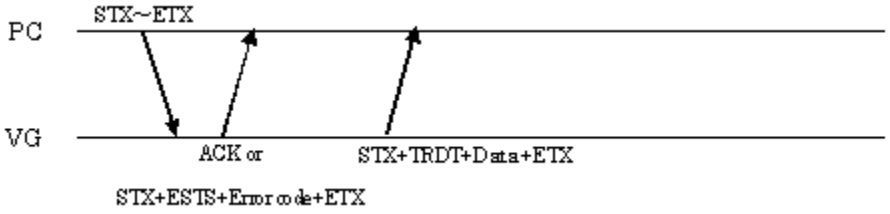
STX	1 byte	02H
VG4CMD	1 byte	FDH
SAP4	2 bytes	20H 6DH
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Enable	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
EndLine	1 or 2 bytes	“0” to “63”
,	1 byte	2CH (Delimiter)
StartLine	1 or 2 bytes	“0” to “63”
,	1 byte	2CH (Delimiter)
Squeeze	1 byte	“0” or “1”
ETX	1 byte	03H

Fig. 2-75-1

2.76 LAP4 [20H 6EH]: Aspect ratio data acquisition

Function: This command gets the aspect ratio data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LAP4	2 bytes	20H 6EH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-76-1

Data:

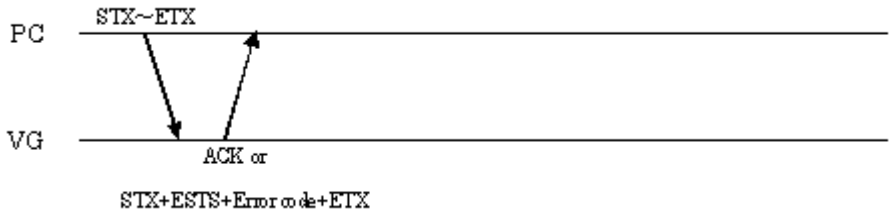
STX	1 byte	02H
TRDT	1 byte	10H
Enable	1 byte	“0” or “1”
,	1 byte	2CH (Delimiter)
EndLine	1 or 2 bytes	“0” to “63”
,	1 byte	2CH (Delimiter)
StartLine	1 or 2 bytes	“0” to “63”
,	1 byte	2CH (Delimiter)
Squeeze	1 byte	“0” or “1”
ETX	1 byte	03H

Fig. 2-76-2

2.77 SWSS4 [20H 6FH]: WSS data setting

Function: This command sets the WSS data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

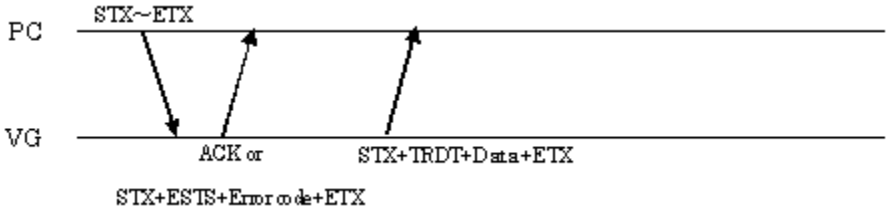
STX	1 byte	02H
VG4CMD	1 byte	FDH
SWSS4	2 bytes	20H 6EH
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Enable	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
AspectRatio	1 byte	“0” = Full Format 4:3 “1” = LB 14:9 center “2” = LB 14:9 top “3” = LB 16:9 center “4” = LB 16:9 top “5” = LB >16:9 center “6” = Full Format 14:9 “7” = Full Format 16:9
ETX	1 byte	03H

Fig. 2-77-1

2.78 LWSS4 [20H 70H]: WSS data acquisition

Function: This command gets the WSS data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LWSS4	2 bytes	20H 70H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-78-1

Data:

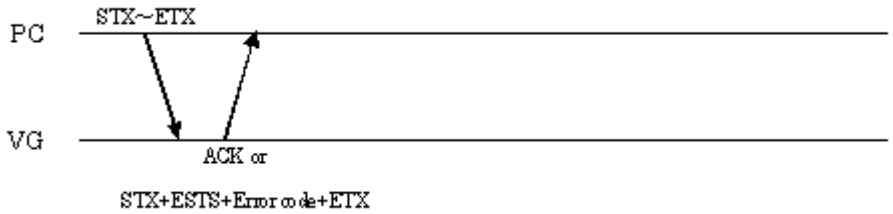
STX	1 byte	02H
TRDT	1 byte	10H
Enable	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
AspectRatio	1 byte	“0” = Full Format 4:3 “1” = LB 14:9 center “2” = LB 14:9 top “3” = LB 16:9 center “4” = LB 16:9 top “5” = LB >16:9 center “6” = Full Format 14:9 “7” = Full Format 16:9
ETX	1 byte	03H

Fig. 2-78-2

2.79 SID14 [20H 71H]: ID1 data setting

Function: This command sets the ID1 data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

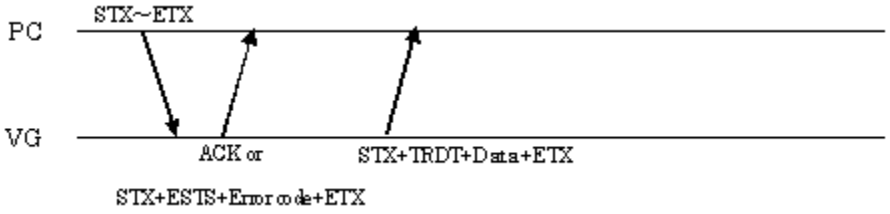
STX	1 byte	02H
VG4CMD	1 byte	FDH
SID14	2 bytes	20H 71H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Aspect	1 byte	“0” = 4:3 Normal “1” = 16:9 Normal “2” = 4:3 LB “3” = Not Defined
ETX	1 byte	03H

Fig. 2-79-1

2.80 LID14 [20H 72H]: ID1 data acquisition

Function: This command gets the ID1 data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LID14	2 bytes	20H 72H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-80-1

Data:

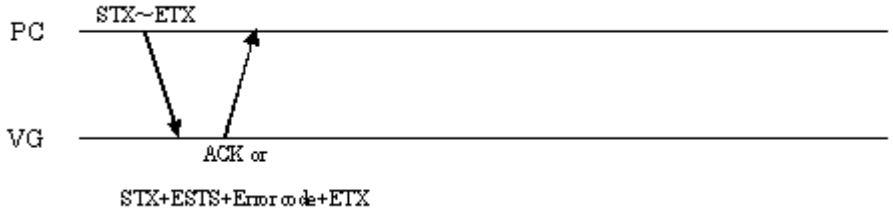
STX	1 byte	02H
TRDT	1 byte	10H
Aspect	1 byte	“0” = 4:3 Normal “1” = 16:9 Normal “2” = 4:3 LB “3” = Not Defined
ETX	1 byte	03H

Fig. 2-80-2

2.81 SKEYL4 [20H 73H]: Key lock data registration

Function: This command registers the key lock data of the system settings (config) into the VG generator.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SKEYL4	2 bytes	20H 73H
Parameter 1 identification code	1 to 3 bytes	“0” to “155”
,	1 byte	2CH (Delimiter)
Parameter 1 setting	? bytes	?
,	1 byte	2CH (Delimiter)
Parameter 2 identification code	1 to 3 bytes	“0” to “155”
,	1 byte	2CH (Delimiter)
Parameter 2 setting	? bytes	?
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Parameter N identification code	1 to 3 bytes	“0” to “155”
,	1 byte	2CH (Delimiter)
Parameter N setting	? bytes	?
ETX	1 byte	03H

Fig. 2-81-1

Concerning the identification codes

Code	Item	Byte	Value
*** Key lock items for VG-870 and 871 generators**			
0	Key Lock Color	1	“0” = OFF, “1” = LOCK
1	Key Lock Gray	1	“0” = OFF, “1” = LOCK
2	Key Lock RAMP	1	“0” = OFF, “1” = LOCK
3	Key Lock Sweep	1	“0” = OFF, “1” = LOCK
4	Key Lock Monoscope	1	“0” = OFF, “1” = LOCK
5	Key Lock I	1	“0” = OFF, “1” = LOCK
6	Key Lock Raster	1	“0” = OFF, “1” = LOCK
7	Key Lock Aspect	1	“0” = OFF, “1” = LOCK
8	Key Lock Checker	1	“0” = OFF, “1” = LOCK
9	Key Lock OPT/IMG	1	“0” = OFF, “1” = LOCK
10	Key Lock Chara	1	“0” = OFF, “1” = LOCK
11	Key Lock II	1	“0” = OFF, “1” = LOCK
12	Key Lock Window	1	“0” = OFF, “1” = LOCK
13	Key Lock CURSOR	1	“0” = OFF, “1” = LOCK
14	Key Lock NAME	1	“0” = OFF, “1” = LOCK
15	Key Lock Action	1	“0” = OFF, “1” = LOCK

16	Key Lock Level	1	“0” = OFF, “1” = LOCK	
17	Key Lock R	1	“0” = OFF, “1” = LOCK	
18	Key Lock G	1	“0” = OFF, “1” = LOCK	
19	Key Lock B	1	“0” = OFF, “1” = LOCK	
20	Key Lock INV	1	“0” = OFF, “1” = LOCK	
21	Key Lock SYNC	1	“0” = OFF, “1” = LOCK	
22	Key Lock Detail	1	“0” = OFF, “1” = LOCK	
23	Key Lock MENU	1	“0” = OFF, “1” = LOCK	
24	Key Lock SHORT CUT	1	“0” = OFF, “1” = LOCK	
25	Key Lock SAVE	1	“0” = OFF, “1” = LOCK	
26	Key Lock SHIFT	1	“0” = OFF, “1” = LOCK	
27	Key Lock INC	1	“0” = OFF, “1” = LOCK	
28	Key Lock DEC	1	“0” = OFF, “1” = LOCK	
29	Key Lock 0/STATUS	1	“0” = OFF, “1” = LOCK	
30	Key Lock 1	1	“0” = OFF, “1” = LOCK	
31	Key Lock 2	1	“0” = OFF, “1” = LOCK	
32	Key Lock 3	1	“0” = OFF, “1” = LOCK	
33	Key Lock 4	1	“0” = OFF, “1” = LOCK	
34	Key Lock 5	1	“0” = OFF, “1” = LOCK	
35	Key Lock 6	1	“0” = OFF, “1” = LOCK	
36	Key Lock 7	1	“0” = OFF, “1” = LOCK	
37	Key Lock 8	1	“0” = OFF, “1” = LOCK	
38	Key Lock 9	1	“0” = OFF, “1” = LOCK	
39	Key Lock CATEGORY	1	“0” = OFF, “1” = LOCK	
40	Key Lock SAMPLE	1	“0” = OFF, “1” = LOCK	
41	Key Lock TIM	1	“0” = OFF, “1” = LOCK	
42	Key Lock PAT	1	“0” = OFF, “1” = LOCK	
43	Key Lock GROUP	1	“0” = OFF, “1” = LOCK	
44	Key Lock ESC	1	“0” = OFF, “1” = LOCK	
45	Key Lock SET	1	“0” = OFF, “1” = LOCK	
*** Key lock items for VG-880 generator**				
100	Key Lock INC	1	“0” = OFF, “1” = LOCK	Front panel keys
101	Key Lock DEC	1	“0” = OFF, “1” = LOCK	
102	Key Lock SET	1	“0” = OFF, “1” = LOCK	
103	Key Lock CHAR	1	“0” = OFF, “1” = LOCK	Remote control keys
104	Key Lock CROSS	1	“0” = OFF, “1” = LOCK	
105	Key Lock DOTS	1	“0” = OFF, “1” = LOCK	
106	Key Lock CIRCLE	1	“0” = OFF, “1” = LOCK	
107	Key Lock ＋	1	“0” = OFF, “1” = LOCK	
108	Key Lock □	1	“0” = OFF, “1” = LOCK	
109	Key Lock ×	1	“0” = OFF, “1” = LOCK	
110	Key Lock CURSOR	1	“0” = OFF, “1” = LOCK	
111	Key Lock COLOR	1	“0” = OFF, “1” = LOCK	
112	Key Lock GRAY	1	“0” = OFF, “1” = LOCK	
113	Key Lock BURST	1	“0” = OFF, “1” = LOCK	
114	Key Lock WINDOW	1	“0” = OFF, “1” = LOCK	
115	Key Lock OPT1	1	“0” = OFF, “1” = LOCK	
116	Key Lock OPT2	1	“0” = OFF, “1” = LOCK	
117	Key Lock FORMAT	1	“0” = OFF, “1” = LOCK	
118	Key Lock NAME	1	“0” = OFF, “1” = LOCK	
119	Key Lock R/R-Y	1	“0” = OFF, “1” = LOCK	
120	Key Lock G/G-Y	1	“0” = OFF, “1” = LOCK	
121	Key Lock B/B-Y	1	“0” = OFF, “1” = LOCK	
122	Key Lock INV	1	“0” = OFF, “1” = LOCK	
123	Key Lock HS/CS	1	“0” = OFF, “1” = LOCK	

124	Key Lock VS	1	“0” = OFF, “1” = LOCK	
125	Key Lock GS	1	“0” = OFF, “1” = LOCK	
126	Key Lock YPbPr	1	“0” = OFF, “1” = LOCK	
127	Key Lock MUTE	1	“0” = OFF, “1” = LOCK	
128	Key Lock PROG	1	“0” = OFF, “1” = LOCK	
129	Key Lock TIMING	1	“0” = OFF, “1” = LOCK	
130	Key Lock PAT	1	“0” = OFF, “1” = LOCK	
131	Key Lock SAVE	1	“0” = OFF, “1” = LOCK	
132	Key Lock LEVEL	1	“0” = OFF, “1” = LOCK	
133	Key Lock SHIFT	1	“0” = OFF, “1” = LOCK	
134	Key Lock FUNC	1	“0” = OFF, “1” = LOCK	
135	Key Lock 0	1	“0” = OFF, “1” = LOCK	
136	Key Lock 1	1	“0” = OFF, “1” = LOCK	
137	Key Lock 2	1	“0” = OFF, “1” = LOCK	
138	Key Lock 3	1	“0” = OFF, “1” = LOCK	
139	Key Lock 4/A	1	“0” = OFF, “1” = LOCK	
140	Key Lock 5/B	1	“0” = OFF, “1” = LOCK	
141	Key Lock 6/C	1	“0” = OFF, “1” = LOCK	
142	Key Lock 7/D	1	“0” = OFF, “1” = LOCK	
143	Key Lock 8/E	1	“0” = OFF, “1” = LOCK	
144	Key Lock 9/F	1	“0” = OFF, “1” = LOCK	
145	Key Lock INC (↑)	1	“0” = OFF, “1” = LOCK	
146	Key Lock DEC (↓)	1	“0” = OFF, “1” = LOCK	
147	Key Lock ←	1	“0” = OFF, “1” = LOCK	
148	Key Lock →	1	“0” = OFF, “1” = LOCK	
149	Key Lock SET	1	“0” = OFF, “1” = LOCK	
150	Key Lock ESC	1	“0” = OFF, “1” = LOCK	
151	Key Lock HS	1	“0” = OFF, “1” = LOCK	
152	Key Lock H-T	1	“0” = OFF, “1” = LOCK	
153	Key Lock CS	1	“0” = OFF, “1” = LOCK	
154	Key Lock GROUP	1	“0” = OFF, “1” = LOCK	
155	Key Lock MODE	1	“0” = OFF, “1” = LOCK	
*Key lock items for VG-881 generator				
200	Key Lock 1080i	1	“0” = OFF, “1” = LOCK	Front panel keys
201	Key Lock 1080p	1	“0” = OFF, “1” = LOCK	
202	Key Lock 720p	1	“0” = OFF, “1” = LOCK	
203	Key Lock 576p	1	“0” = OFF, “1” = LOCK	
204	Key Lock 480p	1	“0” = OFF, “1” = LOCK	
205	Key Lock NTSC	1	“0” = OFF, “1” = LOCK	
206	Key Lock PAL	1	“0” = OFF, “1” = LOCK	
207	Key Lock SECAM	1	“0” = OFF, “1” = LOCK	
208	Key Lock XGA	1	“0” = OFF, “1” = LOCK	
209	Key Lock USER1	1	“0” = OFF, “1” = LOCK	
210	Key Lock USER2	1	“0” = OFF, “1” = LOCK	
211	Key Lock USER3	1	“0” = OFF, “1” = LOCK	
212	Key Lock FRANE RATE	1	“0” = OFF, “1” = LOCK	
213	Key Lock PAT 1	1	“0” = OFF, “1” = LOCK	
214	Key Lock PAT 2	1	“0” = OFF, “1” = LOCK	
215	Key Lock PAT 3	1	“0” = OFF, “1” = LOCK	
216	Key Lock PAT 4	1	“0” = OFF, “1” = LOCK	
217	Key Lock PAT 5	1	“0” = OFF, “1” = LOCK	
218	Key Lock PAT 6	1	“0” = OFF, “1” = LOCK	
219	Key Lock PAT 7	1	“0” = OFF, “1” = LOCK	
220	Key Lock PAT 8	1	“0” = OFF, “1” = LOCK	
221	Key Lock PAT 9	1	“0” = OFF, “1” = LOCK	
222	Key Lock PAT 10	1	“0” = OFF, “1” = LOCK	
223	Key Lock ALL	1	“0” = OFF, “1” = LOCK	

224	Key Lock TOP	1	“0” = OFF, “1” = LOCK	
225	Key Lock MENU	1	“0” = OFF, “1” = LOCK	
226	Key Lock NAME	1	“0” = OFF, “1” = LOCK	
227	Key Lock HDCP	1	“0” = OFF, “1” = LOCK	
228	Key Lock EDID	1	“0” = OFF, “1” = LOCK	
229	Key Lock CEC	1	“0” = OFF, “1” = LOCK	
230	Key Lock AUDIO	1	“0” = OFF, “1” = LOCK	
231	Key Lock YPbPr	1	“0” = OFF, “1” = LOCK	
232	Key Lock R	1	“0” = OFF, “1” = LOCK	
233	Key Lock G	1	“0” = OFF, “1” = LOCK	
234	Key Lock B	1	“0” = OFF, “1” = LOCK	
235	Key Lock INV	1	“0” = OFF, “1” = LOCK	
236	Key Lock UP	1	“0” = OFF, “1” = LOCK	
237	Key Lock DOWN	1	“0” = OFF, “1” = LOCK	
238	Key Lock RIGHT	1	“0” = OFF, “1” = LOCK	
239	Key Lock LEFT	1	“0” = OFF, “1” = LOCK	
240	KEY Lock RB PATTERN	1	“0” = OFF, “1” = LOCK	Remote control keys
241	KEY Lock RB timing	1	“0” = OFF, “1” = LOCK	
*Key lock items for VG-882, VG-883, VG-884 generator				
300	Key Lock INC	1	“0” = OFF, “1” = LOCK	Front panel keys
301	Key Lock DEC	1	“0” = OFF, “1” = LOCK	
302	Key Lock SET	1	“0” = OFF, “1” = LOCK (for VG-882)	
	Key Lock TIM/PAT	1	“0” = OFF, “1” = LOCK (for VG-883)	
Key lock for remote control keys is same as VG-870 setting.				Remote control keys

Fig. 2-81-2

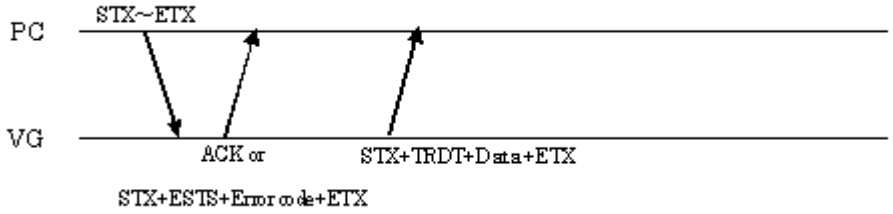
* This command sends only the above-listed key lock data of the system settings.
* The data is prepared on the basis of the SCFG4 [20H 54H] config data registration command.

2.82 LKEYL4 [20H 74H]: Key lock data readout

Function: This command reads the key lock data of the system settings (config) from the VG generator.

* This command is supported only by the VG-880 generator.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LKEYL4	2 bytes	20H 74H
ETX	1 byte	03H

Fig. 2-82-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Parameter 1 identification code	1 or 2 bytes	“0” to “56”
,	1 byte	2CH (Delimiter)
Parameter 1 setting	? bytes	?
,	1 byte	2CH (Delimiter)
Parameter 2 identification code	1 or 2 bytes	“0” to “56”
,	1 byte	2CH (Delimiter)
Parameter 2 setting	? bytes	?
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Parameter N identification code	1 or 2 bytes	“0” to “56”
,	1 byte	2CH (Delimiter)
Parameter N setting	? bytes	?
ETX	1 byte	03H

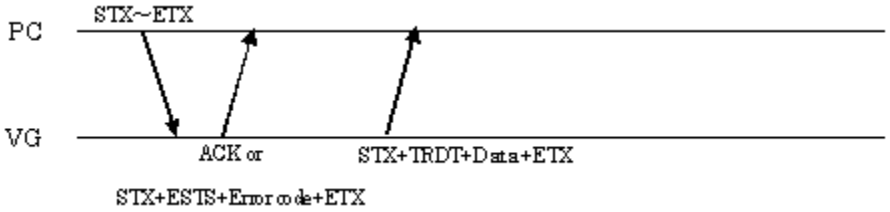
Fig. 2-82-2

For details on the identification codes, refer to Fig. 2-81-2.

2.83 LPDF4 [20H 75H]: Program format readout

Function: This command reads whether the designated program number has either timing only or pattern only from the VG generator.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LPDF4	2 bytes	20H 75H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-83-1

Data:

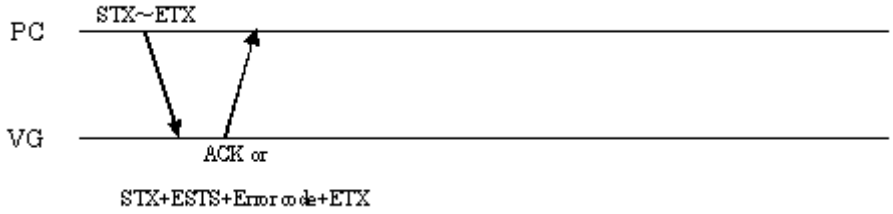
STX	1 byte	02H
TRDT	1 byte	10H
Format	1 byte	“0” = No data “1” = Only timing data valid “2” = Only pattern data valid “3” = Timing and pattern data valid
ETX	1 byte	03H

Fig. 2-83-2

2.84 SMB4 [20H 76H]: Motion Blur data setting

Function: This command sets the Motion Blur data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

STX	1 byte	02H	
VG4CMD	1 byte	FDH	
SMB4	2 bytes	20H 76H	
Program number	1 to 4 bytes	“0” to “1000”, “9999”	
,	1 byte	2CH (Delimiter)	
Direction	1 byte	“0” = Diagonal "1" = Horizontal "2" = Vertical "3" = Random “4” = Horizontal 2 pair motion	
,	1 byte	2CH (Delimiter)	
Displayed Pattern Number	1 or 2 bytes	“1” to “16” **When using the horizontal 2 pair motion, it should be2,4,8 or 16.**	
,	1 byte	2CH (Delimiter)	
Pattern Size	1 bytes	“0” = 8x8 “1” = 16x16 “2” = 32x32 “3” = 64x64	
,	1 byte	2CH (Delimiter)	
Type	1 or 2 bytes	"0" = Circle, "1" = Square “E0 –FF” (user character number)	
,	1 byte	2CH (Delimiter)	
Start coordinate X	1 to 3 bytes	“0” to “100” %	
,	1 byte	2CH (Delimiter)	
Start coordinate Y	1 to 3 bytes	“0” to “100” %	
,	1 byte	2CH (Delimiter)	
Ending coordinate X	1 to 3 bytes	“0” to “100” %	
,	1 byte	2CH (Delimiter)	
Ending coordinate Y	1 to 3 bytes	“0” to “100” %	
,	1 byte	2CH (Delimiter)	
Bit Mode	1 or 2 bytes	“8” to “16”	
,	1 byte	2CH (Delimiter)	#1
Speed	1 to 3 bytes	“0” to “255” v (v unit)	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	#16
Speed	1 to 3 bytes	“0” to “255” v (v unit)	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	“0” to “65535”	

,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH（Delimiter）	#1
Distance of 2 pair motion	1 to 3 bytes	"0" to "255"	
,	1 byte	2CH（Delimiter）	#8
Distance of 2 pair motion	1 to 3 bytes	"0" to "255"	
,	1 byte	2CH（Delimiter）	
Background color R	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
Background color G	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
Back ground color B	1 to 5 bytes	"0" to "65535"	
ETX	1 byte	03H	

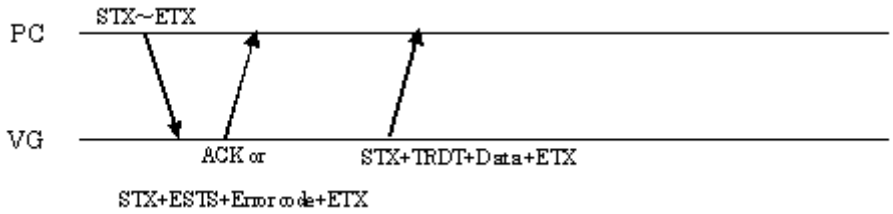
Fig. 2-84-1

*** In the RGB setting, one setting will set two patterns. Therefore, the setting of #1 to #8 of RGB setting is effective. As for RGB setting of #9 to #16, set “0”.**

2.85 LMB4 [20H 77H]: Motion Blur data acquisition

Function: This command gets the Motion Blur data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LMB4	2 bytes	20H 77H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-85-1

Data:

STX	1 byte	02H	
TRDT	1 byte	10H	
Dir	1 byte	“0” = Diagonal "1" = Horizontal "2" = Vertical "3" = Random “4” = Horizontal 2 pair motion	
,	1 byte	2CH (Delimiter)	
Pattern Num	1 or 2 bytes	“1” to “16” **When using the horizontal 2 pair motion, it should be2,4,8 or 16.**	
,	1 byte	2CH (Delimiter)	
Pattern Size	1 bytes	“0” = 8x8 “1” = 16x16 “2” = 32x32 “3” = 64x64	
,	1 byte	2CH (Delimiter)	
Type	1 or 2 bytes	"0" = Circle, "1" = Square 0xE0 to 0xFF *When 0xE0 to 0xFF is set, user character data will be displayed.	
,	1 byte	2CH (Delimiter)	
Start coordinate X	1 to 3 bytes	“0” to “100” %	
,	1 byte	2CH (Delimiter)	
Start coordinate Y	1 to 3 bytes	“0” to “100” %	
,	1 byte	2CH (Delimiter)	
Ending coordinate X	1 to 3 bytes	“0” to “100” %	
,	1 byte	2CH (Delimiter)	
Ending coordinate Y	1 to 3 bytes	“0” to “100” %	
,	1 byte	2CH (Delimiter)	
Bit Mode	1 or 2 bytes	“8” to “16”	
,	1 byte	2CH (Delimiter)	
Speed	1 to 3 bytes	“0” to “255” v	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	“0” to “65535”	#1
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	

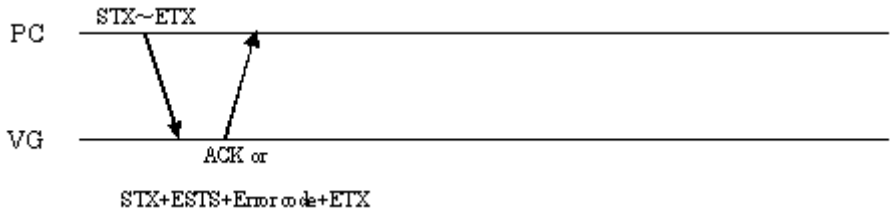
B	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	#16
Speed	1 to 3 bytes	“0” to “255” v	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH（Delimiter）	#1
Distance of 2 pair motion.	1 to 3 bytes	“0” to “255” v	
,	1 byte	2CH（Delimiter）	#8
Distance of 2 pair motion.	1 to 3 bytes	“0” to “255” v	
,	1 byte	2CH（Delimiter）	
Back ground color R	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH（Delimiter）	
Back ground color G	1 to 5 bytes	“0” to “65535”	
,	1 byte	2CH（Delimiter）	
Back ground color B	1 to 5 bytes	“0” to “65535”	

Fig. 2-85-2

2.86 SDP4 [20H 78H]: DisplayPort data setting

Function: This command sets the DisplayPort data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
SDP4	2 bytes	20H 78H
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
VideoFormat	1 byte	"0"=RGB "1"=YCbCr4:4:4 "2"=YCbCr4:2:2
,	1 byte	2CH (Delimiter)
Reserved 1	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
Reserved 2	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
Width	1 byte	"0"=Auto "1"=6(bit) "2"=8(bit) "3"=10(bit) “4”=12(bit) Note) when “YCbCr4:2:2” video format is selected, 6-bit cannot be set here. 12-bit setting is available only when “YCbCr4:2:2” is selected.
,	1 byte	2CH (Delimiter)
Reserved 3	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
Reserved 4	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
Reserved 5	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
Reserved 6	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Dual Mode	1 byte	"0"=Single "1"=Dual "2"=Split “3”=Split2
,	1 byte	2CH (Delimiter)
Colorimetry	1 byte	"0"=ITU601 "1"=ITU709
,	1 byte	2CH (Delimiter)
Reserved 7	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
LinkRate	1 byte	"0"=HBR(2.7Gbps) "1"=RBR(1.62Gbps)
,	1 byte	2CH (Delimiter)
Number of Lane	1 byte	"0"=1 lane "1"=2 lanes "2"=4 lanes
,	1 byte	2CH (Delimiter)

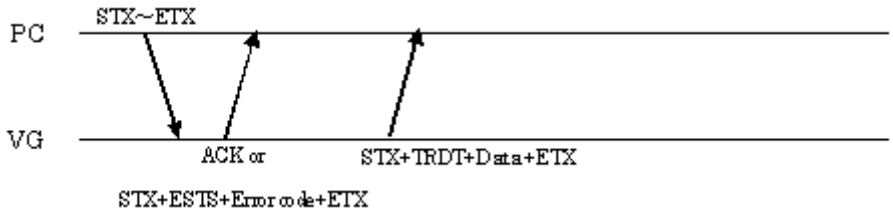
Reserved 8	2 bytes	Fixed at “28”
,	1 byte	2CH (Delimiter)
Nvid	1 to 7 bytes	"1" to "1667216"
,	1 byte	2CH (Delimiter)
SSC ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
Reserved 9	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
HPD Auto mode	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
Reserved 10	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
Reserved 11	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 12	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 13	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 14	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 15	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 16	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 17	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 18	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Link Set Mode	1 byte	"0"=Auto "1"=Manual
,	1 byte	2CH (Delimiter)
Reserved 19	1 byte	Fixed at “32”
,	1 byte	2CH (Delimiter)
Split Mode	1 bytes	“2”=Horizontally “3”=Vertically
ETX	1 byte	03H

Fig. 2-86-1

2.87 LDP4 [20H 79H]: DisplayPort data acquisition

Function: This command gets the DisplayPort data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LDP4	2 bytes	20H 79H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-87-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
VideoFormat	1 byte	"0"=RGB "1"=YCbCr4:4:4 "2"=YCbCr4:2:2
,	1 byte	2CH (Delimiter)
Reserved 1	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
Reserved 2	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
Width	1 byte	"0"=Auto "1"=6(bit) "2"=8(bit) "3"=10(bit) “4”=12(bit)
,	1 byte	2CH (Delimiter)
Reserved 3	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
Reserved 4	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
Reserved 5	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
Reserved 6	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Dual Mode	1 byte	"0"=Single "1"=Dual "2"=Split “3”=Split2
,	1 byte	2CH (Delimiter)
Colorimetry	1 byte	"0"=ITU601 "1"=ITU709
,	1 byte	2CH (Delimiter)
Reserved 7	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
LinkRate	1 byte	"0"=HBR(2.7Gbps) "1"=RBR(1.62Gbps)
,	1 byte	2CH (Delimiter)

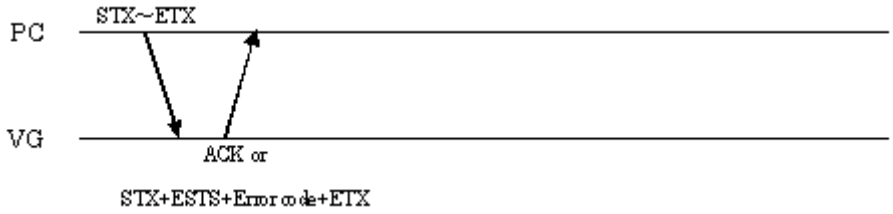
Number of Lane	1 byte	"0"=1 lane "1"=2 lanes "2"=4 lanes
,	1 byte	2CH (Delimiter)
Reserved 8	2 bytes	Fixed at “28”
,	1 byte	2CH (Delimiter)
Nvid	1 to 7 bytes	"1" to "1667216"
,	1 byte	2CH (Delimiter)
SSC ON/OFF	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
Reserved 9	1 byte	Fixed at “1”
,	1 byte	2CH (Delimiter)
HPD Auto Mode	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
Reserved 10	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 11	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 12	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 13	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 14	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 15	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 16	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 17	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Reserved 18	1 byte	Fixed at “0”
,	1 byte	2CH (Delimiter)
Link Set Mode	1 byte	"0"=Auto "1"=Manual
,	1 byte	2CH (Delimiter)
Reserved 19	1 byte	Fixed at “32”
,	1 byte	2CH (Delimiter)
Split Mode	1 bytes	“2”=Horizontally “3”=Vertically
ETX	1 byte	03H

Fig. 2-87-2

2.88 SSS4 [20H 7AH]: Scroll Sequence data setting

Function: This command sets the Scroll Sequence data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

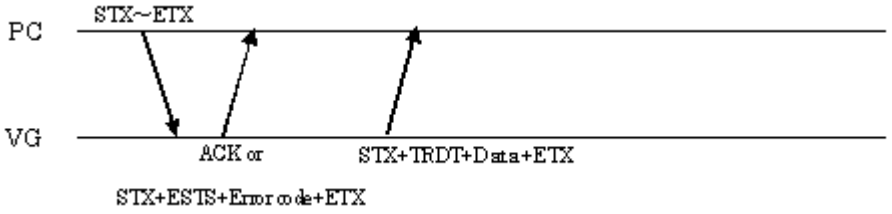
STX	1 byte	02H	
VG4CMD	1 byte	FDH	
SSS4	2 bytes	20H 7AH	
Program number	1 to 4 bytes	“0” to “1000”, “9999”	
,	1 byte	2CH (Delimiter)	
Scroll Sequence ON/OFF	1 byte	"0"=OFF "1"=Character "2"=Graphic "3"=Character & Graphic "4"=Window "5"=Character & Window "6"=Graphic & Window "7"=Character & Graphic & Window	
,	1 byte	2CH (Delimiter)	
Data Number N	1 to 2 bytes	"1" to "16"	
,	1 byte	2CH (Delimiter)	
Return Mode	1 byte	"0"=All Sequence,"1"=1 data, “2”=random	
,	1 byte	2CH (Delimiter)	#1
Interval	1 to 3 bytes	"1" to "255"	
,	1 byte	2CH (Delimiter)	
Step H	1 to 3 bytes	"1" to "255"	
,	1 byte	2CH (Delimiter)	
Step V	1 to 3 bytes	"1" to "255"	
,	1 byte	2CH (Delimiter)	
Time	1 to 3 bytes	"1" to "999"	
,	1 byte	2CH (Delimiter)	
Dir	1 byte	“0” = Left , “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right	
,	1 byte	2CH (Delimiter)	#N
Interval	1 to 3 bytes	"1" to "255"	
,	1 byte	2CH (Delimiter)	
Step H	1 to 3 bytes	"1" to "255"	
,	1 byte	2CH (Delimiter)	
Step V	1 to 3 bytes	"1" to "255"	
,	1 byte	2CH (Delimiter)	
Time	1 to 3 bytes	"1" to "999"	
,	1 byte	2CH (Delimiter)	
Dir	1 byte	“0” = Left , “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right	
ETX	1 byte	03H	

Fig. 2-88-1

2.89 LSS4 [20H 7BH]: Scroll Sequence data acquisition

Function: This command gets the Scroll Sequence data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LSS4	2 bytes	20H 7BH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-89-1

Data:

STX	1 byte	02H	
TRDT	1 byte	10H	
Scroll Sequence ON/OFF	1 byte	"0"=OFF "1"=Character "2"=Graphic "3"=Character & Graphic "4"=Window "5"=Character & Window "6"=Graphic & Window "7"=Character & Graphic & Window	
,	1 byte	2CH (Delimiter)	
Data Number N	1 to 2 bytes	"1" to "16"	
,	1 byte	2CH (Delimiter)	
Return Mode	1 byte	"0"=All Sequence,"1"=1 data, “2”=random	
,	1 byte	2CH (Delimiter)	#1
Interval	1 to 3 bytes	"1" to "255"	
,	1 byte	2CH (Delimiter)	
Step H	1 to 3 bytes	"1" to "255"	
,	1 byte	2CH (Delimiter)	
Step V	1 to 3 bytes	"1" to "255"	
,	1 byte	2CH (Delimiter)	
Time	1 to 3 bytes	"1" to "999"	
,	1 byte	2CH (Delimiter)	
Dir	1 byte	“0” = Left , “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right	
,	1 byte	2CH (Delimiter)	#N
Interval	1 to 3 bytes	"1" to "255"	
,	1 byte	2CH (Delimiter)	
Step H	1 to 3 bytes	"1" to "255"	
,	1 byte	2CH (Delimiter)	
Step V	1 to 3 bytes	"1" to "255"	
,	1 byte	2CH (Delimiter)	
Time	1 to 3 bytes	"1" to "999"	
,	1 byte	2CH (Delimiter)	

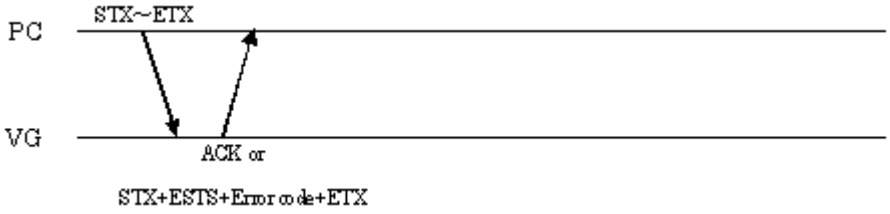
Dir	1 byte	“0” = Left , “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right	
ETX	1 byte	03H	

Fig. 2-89-2

2.90 SDPLP4 [20H 7CH]: DP List Port data setting

Function: This command sets the DidplayPort List Port data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

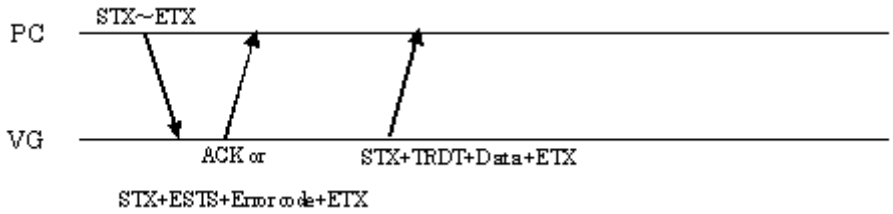
STX	1 byte	02H
VG4CMD	1 byte	FDH
SDPLP4	2 bytes	20H 7CH
Program number	1 to 4 bytes	“0” to “1000”, “9999”
,	1 byte	2CH (Delimiter)
Port	1 byte	"0" = DiplayPort1 "1" = DiplayPort2
ETX	1 byte	03H

Fig. 2-90-1

2.91 LDPLP4 [20H 7DH]: DP List Port data acquisition

Function: This command gets the DisplayPort List Port data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LDPLP4	2 bytes	20H 7DH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-91-1

Data:

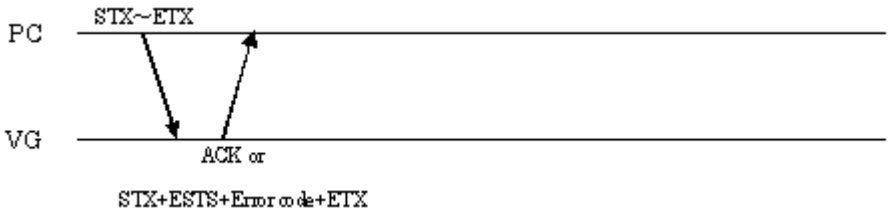
STX	1 byte	02H
TRDT	1 byte	10H
Port	1 byte	"0" = DiplayPort1 "1" = DiplayPort2
ETX	1 byte	03H

Fig. 2-91-2

2.92 SVIF4 [20H 7EH]: Vendor Specific InfoFrame data setting

Function: This command sets the Vendor Specific InfoFrame data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

STX	1 byte	02H	
VG4CMD	1 byte	FDH	
SVIF4	2 byte	20H 7EH	
Program No.	1 to 4 bytes	“0” to “1000”, “9999”	
,	1 byte	2CH (Delimiter)	
On/Off	1 byte	"0"=OFF "1"=ON	
,	1 byte	2CH (Delimiter)	
Type	1 byte	"1"=1	
,	1 byte	2CH (Delimiter)	
Version	1 byte	"1"=1	
,	1 byte	2CH (Delimiter)	
IEEE ID	3 byte	"000000" to "FFFFFF"	
,	1 byte	2CH (Delimiter)	
Payload Length	1 to 2 bytes	"1" to "23"	
,	1 byte	2CH (Delimiter)	#1
Payload 1	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	#23
Payload 23	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	
Rsv	1 byte	Fixed at "0"	
,	1 byte	2CH (Delimiter)	
HDMI VideoFormat	1 byte	"0"=Non,"1"=Ext Resolution format, "2"=3D format	
,	1 byte	2CH (Delimiter)	
HDMI VIC	1 byte	"1" to "4"	
,	1 byte	2CH (Delimiter)	
3D structure	1 byte	"0"=Frame Packing "1"=Field Alternative "2"=Line Alternative "3"=Side-by-Side(Full) "4"=L + depth "5"=L + depth + graphics + gra-depth "6"=Side-by-Side(Half)	
,	1 byte	2CH (Delimiter)	
3D Extension	1 byte	"0"=HorSubSampling (O/L,O/R) "1"=HorSubSampling (O/L,E/R) "2"=HorSubSampling (E/L,O/R) "3"=HorSubSampling (E/L,E/R) "4"=Quincunx Matrix(O/L,O/R) "5"=Quincunx Matrix(O/L,E/R) "6"=Quincunx Matrix(E/L,O/R) "7"=Quincunx Matrix(E/L,E/R) **Note) these are effective when 3D structure="6".**	
,	1 byte	2CH (Delimiter)	

3D Meta Present	1 byte	"0"=no meta data "1"= have meta data	
,	1 byte	2CH (Delimiter)	
3D Meta Type	1 byte	Fixed at "0"	
,	1 byte	2CH (Delimiter)	
3D Meta DataLength	1 to 2 bytes	"0" to "21"	
,	1 byte	2CH (Delimiter)	#1
3D Meta Data1	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	#19
3D Meta Data19	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	
VendorSpec I/F Type	1 byte	"0"= others "1"=HDMI 1.4b “2”=HF-VSIF	
,	1 byte	2CH (Delimiter)	
3D Meta Data20	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	
3D Meta Data21	2 byte	"00" to "FF"	
,	1 byte	2CH (Delimiter)	
Version	1 byte	"1"=1	
,	1 byte	2CH (Delimiter)	
3D Valid	1 byte	"0"=Disable, "1"=Enable	
,	1 byte	2CH (Delimiter)	
3D Additional Info Present	1 byte	"0"=not Present、"1"=Present	
,	1 byte	2CH (Delimiter)	
3D Dual View	1 byte	"0"=Normal、"1"=Dual View	
,	1 byte	2CH (Delimiter)	
3D View Dependency	1 byte	"0"=No indication "1"=Right View originates "2"=Left View originates "3"=Both Views	
,	1 byte	2CH (Delimiter)	
3D Preferred 2D View	1 byte	"0"=No indication "1"=Right 3D view for 2D viewing "2"=Left 3D view for 2D viewing "3"=Don’t care.	
,	1 byte	2CH (Delimiter)	
3D Disparity Data Present	1 byte	"0"=No Disparity Data, "1"=Disparity Data exists	
,	1 byte	2CH (Delimiter)	
3D Disparity Data Ver	1 byte	"0"=0, "1"=1, "2"=2	
,	1 byte	2CH (Delimiter)	
3D Disparity Data length	1 to 2 bytes	"0" - "21"	
,	1 byte	2CH (Delimiter)	#01
3D Disparity Data1	2 bytes	"00" - "FF"	
,	1 byte	2CH (Delimiter)	#21
3D Disparity Data31	2 bytes	"00" - "FF"	
,	1 byte	2CH (Delimiter)	
VSIF1 or VSIF2	1 byte	"0"=Vendorspec InfoFrame1 "1"=Vendorspec InfoFrame2	
,	1 byte	2CH (Delimiter)	
Reserved 1	1 byte	"0" fixed.	
,	1 byte	2CH (Delimiter)	
Reserved 2	1 byte	"0" fixed.	
,	1 byte	2CH (Delimiter)	
Reserved 3	1 byte	"0" fixed.	
,	1 byte	2CH (Delimiter)	
Reserved 4	1 byte	"0" fixed.	
,	1 byte	2CH (Delimiter)	
Reserved 5	1 byte	"0" fixed.	
,	1 byte	2CH (Delimiter)	
Reserved 6	1 byte	"0" fixed.	
,	1 byte	2CH (Delimiter)	
Reserved 7	1 byte	"0" fixed.	

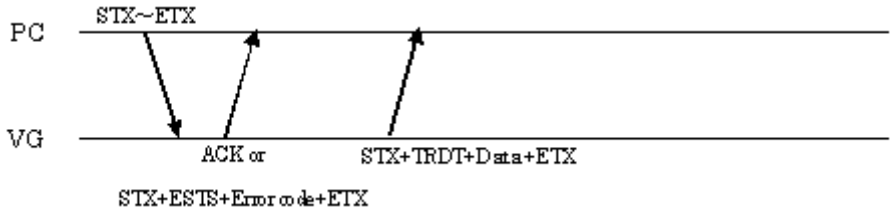
,	1 byte	2CH (Delimiter)
Reserved 8	1 byte	"0" fixed.
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI、"1"=HDBaseT
,	1 byte	2CH (Delimiter)
AllMMode	1 byte	"0"=Not Supported、"1"=Supported
,	1 byte	2CH (Delimiter)
CCBPC	1 byte	"0"=No Indication, "1"=8bit, "2"=9bit, "3"=10bit, "4"=11bit, "5"=12bit, "6"=13bit, "7"=14bit, "8"=15bit, "9"=16bit
ETX	1 byte	03H

Fig. 2-92-1

2.93 LVIF4 [20H 7FH]: Vendor Specific InfoFrame data acquisition

Function: This command gets the Vendor Specific InfoFrame data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LVIF4	2 bytes	20H 7FH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
,	1 byte	2CH (Delimiter)
VSIF1 or VSIF2	1 byte	"0"=Vendorspec InfoFrame1 "1"=Vendorspec InfoFrame2
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT
ETX	1 byte	03H

Fig. 2-93-1

As shown below, if you skip Data Type setting of HDMI or HDBaseT, Vendorspec InfoFrame data of HDMI setting is received.

STX	1 byte	02H
VG4CMD	1 byte	FDH
LVIF4	2 bytes	20H 7FH
Program number	1 to 4 bytes	“0” to “2000”, “9999”
,	1 byte	2CH (Delimiter)
VSIF1 or VSIF2	1 byte	"0"=Vendor Specific InfoFrame1 "1"=Vendor Specific InfoFrame2
ETX	1 byte	03H

Fig. 2-93-2

Data:

STX	1 byte	02H	
TRDT	1 byte	10H	
On/Off	1 byte	"0"=OFF "1"=ON	
,	1 byte	2CH (Delimiter)	
Type	1 byte	"1"=1	
,	1 byte	2CH (Delimiter)	
Version	1 byte	"1"=1	
,	1 byte	2CH (Delimiter)	
IEEE ID	3 bytes	"000000" to "FFFFFF"	
,	1 byte	2CH (Delimiter)	
Payload Length	1 to 2 bytes	"1"to"23"	
,	1 byte	2CH (Delimiter)	#1
Payload 1	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	#23

Payload 23	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	
Rsv	1 byte	Fixed at "0"	
,	1 byte	2CH (Delimiter)	
HDMI VideoFormat	1 byte	"0"=Non, "1"=Ext Resolution format, "2"=3D format	
,	1 byte	2CH (Delimiter)	
HDMI VIC	1 byte	"1" to "4"	
,	1 byte	2CH (Delimiter)	
3D structure	1 byte	"0"=Frame Packing "1"=Field Alternative "2"=Line Alternative "3"=Side-by-Side(Full) "4"=L + depth "5"=L + depth + graphics + gra-depth "6"=Side-by-Side(Half)	
,	1 byte	2CH (Delimiter)	
3D Extension	1 byte	"0"=HorSubSampling (O/L,O/R) "1"=HorSubSampling (O/L,E/R) "2"=HorSubSampling (E/L,O/R) "3"=HorSubSampling (E/L,E/R) "4"=Quincunx Matrix(O/L,O/R) "5"=Quincunx Matrix(O/L,E/R) "6"=Quincunx Matrix(E/L,O/R) "7"=Quincunx Matrix(E/L,E/R) **Note) these are effective when 3D structure="6".**	
,	1 byte	2CH (Delimiter)	
3D Meta Present	1 byte	"0"=no meta data "1"= have meta data	
,	1 byte	2CH (Delimiter)	
3D Meta Type	1 byte	Fixed at "0"	
,	1 byte	2CH (Delimiter)	
3D Meta Data Length	1 to 2 bytes	"0"to "21"	
,	1 byte	2CH (Delimiter)	#1
3D Meta Data1	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	#19
3D Meta Data19	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	
VendorSpec I/F Type	1 byte	"0"=Others "1"=HDMI 1.4b “2”=HF-VSIF	
,	1 byte	2CH (Delimiter)	
3D Meta Data20	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	
3D Meta Data21	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	
Version	1 byte	"1"=1	
,	1 byte	2CH (Delimiter)	
3D Valid	1 byte	"0"=Disable, "1"=Enable	
,	1 byte	2CH (Delimiter)	
3D Additional Info Present	1 byte	"0"=not Present、"1"=Present	
,	1 byte	2CH (Delimiter)	
3D Dual View	1 byte	"0"=Normal、"1"=Dual View	
,	1 byte	2CH (Delimiter)	
3D View Dependency	1 byte	"0"=No indication "1"=Right View originates "2"=Left View originates "3"=Both Views	
,	1 byte	2CH (Delimiter)	
3D Preferred 2D View	1 byte	"0"=No indication "1"=Right 3D view for 2D viewing "2"=Left 3D view for 2D viewing "3"=Don’t care.	
,	1 byte	2CH (Delimiter)	
3D Disparity Data Present	1 byte	"0"=No Disparity Data, "1"=Disparity Data exists	

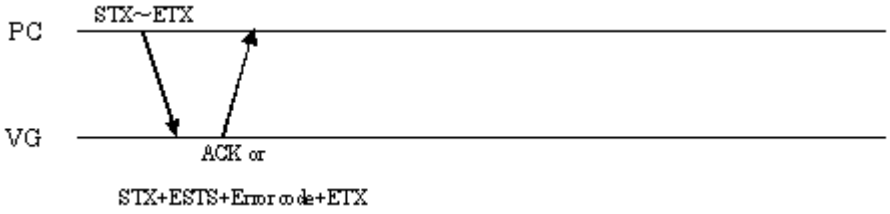
,	1 byte	2CH (Delimiter)
3D Disparity Data Ver	1 byte	"0"=0, "1"=1, "2"=2
,	1 byte	2CH (Delimiter)
3D Disparity Data length	1 to 2 bytes	"0" - "21"
,	1 byte	2CH (Delimiter)
3D Disparity Data1	2 bytes	"00" - "FF"
,	1 byte	2CH (Delimiter)
3D Disparity Data31	2 bytes	"00" - "FF"
,	1 byte	2CH (Delimiter)
VSIF1 or VSIF2	1 byte	"0"=Vendorspec InfoFrame1 "1"=Vendorspec InfoFrame2
,	1 byte	2CH (Delimiter)
Reserved 1	1 byte	"0" fixed.
,	1 byte	2CH (Delimiter)
Reserved 2	1 byte	"0" fixed.
,	1 byte	2CH (Delimiter)
Reserved 3	1 byte	"0" fixed.
,	1 byte	2CH (Delimiter)
Reserved 4	1 byte	"0" fixed.
,	1 byte	2CH (Delimiter)
Reserved 5	1 byte	"0" fixed.
,	1 byte	2CH (Delimiter)
Reserved 6	1 byte	"0" fixed.
,	1 byte	2CH (Delimiter)
Reserved 7	1 byte	"0" fixed.
,	1 byte	2CH (Delimiter)
Reserved 8	1 byte	"0" fixed.
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT * The one set by the command parameter is returned.
,	1 byte	2CH (Delimiter)
AllMMode	1 byte	"0"=Not Supported、"1"=Supported
,	1 byte	2CH (Delimiter)
CCBPC	1 byte	"0"=No Indication, "1"=8bit, "2"=9bit, "3"=10bit, "4"=11bit, "5"=12bit, "6"=13bit, "7"=14bit, "8"=15bit, "9"=16bit
ETX	1 byte	03H

Fig. 2-93-3

2.94 SNIF4 [20H 80H]: NTSC VBI InfoFrame data setting

Function: This command sets the NTSC VBI InfoFrame data of the designated program number. When the program number is 0, it writes the data into the buffer RAM. When it is 9999, it writes the data into the command work RAM.

Sequence: Type 2



Parameters:

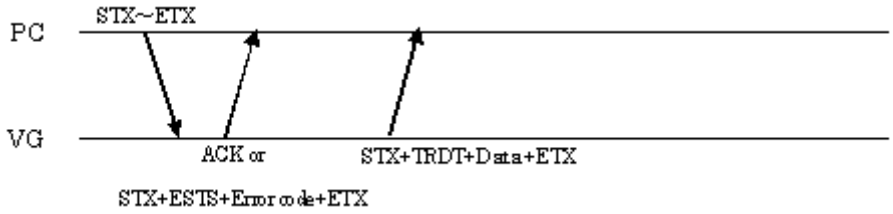
STX	1 byte	02H	
VG4CMD	1 byte	FDH	
SNIF4	2 bytes	20H 80H	
Program number	1 to 4 bytes	“0” to “1000”, “9999”	
,	1 byte	2CH (Delimiter)	
On/Off	1 byte	"0"=OFF "1"=ON	
,	1 byte	2CH (Delimiter)	
Type	1 byte	"6"=6	
,	1 byte	2CH (Delimiter)	
Version	1 byte	"1"=1	
,	1 byte	2CH (Delimiter)	
Pes Len	1 to 2 bytes	"1" to "27"	
,	1 byte	2CH (Delimiter)	#1
Pes 1	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	#27
Pes 27	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT	
ETX	1 byte	03H	

Fig. 2-94-1

2.95 LNIF4 [20H 81H]: NTSC VBI InfoFrame data acquisition

Function: This command gets the NTSC VBI InfoFrame data of the designated program number. When the program has any number from 1001 to 2000, the command reads out from the fixed data. When the program number is 9999, the command reads the data from the command work RAM.

Sequence: Type 3



Parameters:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LNIF4	2 bytes	20H 81H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT
ETX	1 byte	03H

Fig. 2-95-1

As shown below, if you skip Data Type setting of HDMI or HDBaseT, NTSC VBI InfoFrame data of HDMI setting is received.

STX	1 byte	02H
VG4CMD	1 byte	FDH
LNIF4	2 bytes	20H 81H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2-95-2

Data:

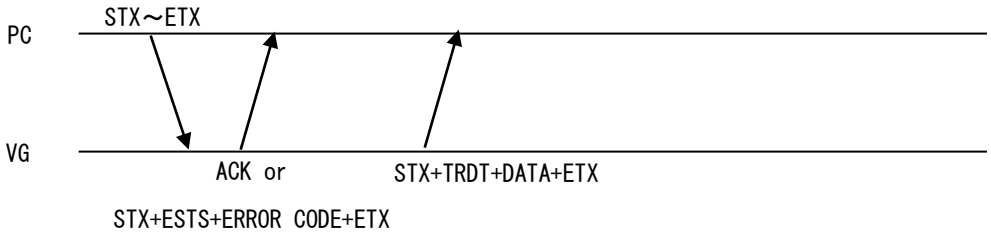
STX	1 byte	02H	
TRDT	1 byte	10H	
On/Off	1 byte	"0"=OFF "1"=ON	
,	1 byte	2CH (Delimiter)	
Type	1 byte	"6"=6	
,	1 byte	2CH (Delimiter)	
Version	1 byte	"1"=1	
,	1 byte	2CH (Delimiter)	
Pes Len	1 to 2 bytes	"1" to "27"	
,	1 byte	2CH (Delimiter)	#1
Pes 1	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	#27
Pes 27	2 bytes	"00" to "FF"	
,	1 byte	2CH (Delimiter)	
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT	
ETX	1 byte	03H	

Fig. 2-95-3

2.96 LTED4 [20H 82H] : Subtitle image enable readout.

Function : This command read the data of enable(display) or disable(not display) setting of indicated Subtitle image No.

Sequence : Type 3



Parameters :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LTED4	2 bytes	20H 82H
IMAGE NO	1 to 3 bytes	"1" to "200"
ETX	1 byte	03H

Fig. 2-96-1

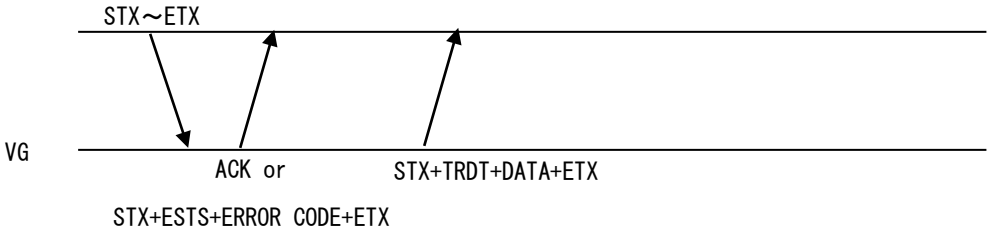
DATA :

STX	1 byte	02H
TRDT	1 byte	10H
ENABLE/ DISABLE	1 byte	"0"=ENABLE "1"=DISABLE
ETX	1 byte	03H

Fig.2-96-2

2.97 LIDNO4 [20H 83H] : Serial No. readout.

Function : This command gets the serial No. of VG which is connected.
Sequence : Type 3



Parameters :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LIDNO4	2 bytes	20H 83H
ETX	1 byte	03H

Fig. 2-97-1

DATA :

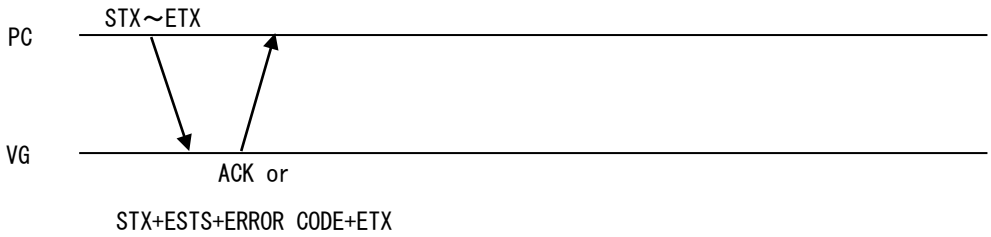
STX	1 byte	02H
TRDT	1 byte	10H
SERIOL No.	7 bytes	"0000000" to "9999999"
ETX	1 byte	03H

Fig. 2-97-2

2.98 S9Marker4 [20H 8BH] : OPT 9 Marker data setting.

Function : This command set the Option 9 Marker data of the indicated program No. The data is saved in Buffer RAM temporally in case of program No.0. The data is saved in this RAM will be disappeared when VG power is turned off. In case of No.9999, this data is saved in command work RAM which saves the command code temporary.

Sequence : TYPE2



Command :

STX	1 byte	02H	
VG4CMD	1 byte	FDH	
S9Marker4	2 bytes	20H 89H	
PROGRAM NO	1 to 4 bytes	"0" to "1000","9999"	
,	1 byte	2CH（Delimiter）	
Type	1 byte	"0"=Circle、"1"=Rectangle, “2”=Line	
,	1 byte	2CH（Delimiter）	
Mark Num	1 byte	"0" to "9"	
,	1 byte	2CH（Delimiter）	#1
Pos X	1 to 4 bytes	"0" to "4095"	
,	1 byte	2CH（Delimiter）	
Pos Y	1 to 4 bytes	"0" to "4095"	
,	1 byte	2CH（Delimiter）	#9
Pos X	1 to 4 bytes	"0" to "4095"	
,	1 byte	2CH（Delimiter）	
Pos Y	1 to 4 bytes	"0" to "4095"	
,	1 byte	2CH（Delimiter）	
Size	1 to 4 bytes	"1" to "9999" *In case Type is circle, the value should be the radius. In case, rectangle, the value is the distance from center.	
,	1 byte	2CH（Delimiter）	
Filling marker	1 byte	"0"=OFF、"1"=ON	
,	1 byte	2CH（Delimiter）	
Line width	1 to 2 bytes	"1" to "15" * It is ON in case not filling line.	
,	1 byte	2CH（Delimiter）	
Color R	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
Color G	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
Color B	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
Edit Bit Mode	1 to 2 bytes	"8" to "16"	
,	1 byte	2CH（Delimiter）	
Vertical line / Horizontal line mode.	1 byte	"0"=OFF "1"=Vertical line "2"=Horizontal line "3"=Vertical/Horizontal line	
,	1 byte	2CH（Delimiter）	
The width of vertical line / horizontal line.	1 to 2 bytes	"1" to "15"	
,	1 byte	2CH（Delimiter）	
Center coordinates X of vertical	1 to 4 bytes	"0" to "4095"	

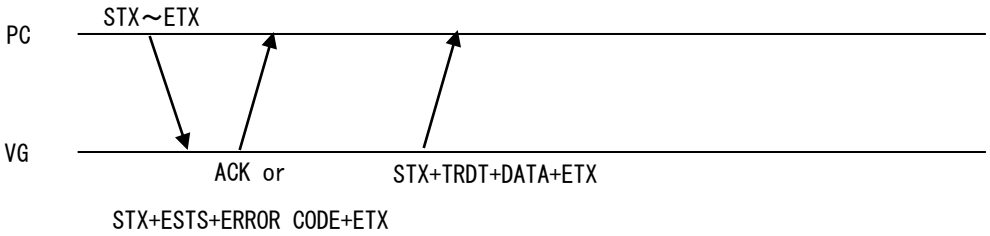
line / horizontal line.			
,	1 byte	2CH（Delimiter）	
The center coordinates Y of Vertical / Horizontal line.	1 to 4 bytes	"0" to "4095"	
,	1 byte	2CH（Delimiter）	
The color of Vertical line / horizontal line R	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
The color of Vertical line / horizontal line G	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
The color of Vertical line / horizontal line B	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
Type 1 of Line	1 byte	"0"=horizontal line, "1"=vertical line Note) this is ON when Type is selected as 2=Line.	#1
	1 byte	2CH（Delimiter）	
Type 9 of Line		"0"=horizontal line, "1"=vertical line Note) this is ON when Type is selected as 2=Line.	#9
ETX	1 byte	03H	

Fig. 2-98-1

2.99 L9Marker4［20H 8CH］:OPT 9 Marker data acquisition

Function : This command gets the data of Option 9Marker of the indicated program No. In case NO.1001 to 2000 program, original data of VG is read. In case NO.9999, the data is read out from command work ROM.

Sequence : TYPE 3.



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
L9Marker4	2 bytes	20H 8CH
Program NO	1 to 4 bytes	"0" to "2000","9999"
ETX	1 byte	03H

Fig. 2-99-1

Data :

STX	1 byte	02H	
TRDT	1 byte	10H	
Type	1 byte	"0"=Circle、"1"=Rectangle, "2"=Line	
,	1 byte	2CH（Delimiter）	
Mark Num	1 byte	"0" to "9"	
,	1 byte	2CH（Delimiter）	#1
Pos X	1 to 4 bytes	"0" to "4095"	
,	1 byte	2CH（Delimiter）	
Pos Y	1 to 4 bytes	"0" to "4095"	
,	1 byte	2CH（Delimiter）	#9
Pos X	1 to 4 bytes	"0" to "4095"	
,	1 byte	2CH（Delimiter）	
Pos Y	1 to 4 bytes	"0" to "4095"	
,	1 byte	2CH（Delimiter）	
Size	1 to 4 bytes	"1" to "9999" *In case Type is circle, the value should be the radius. In case, rectangle, the value is the distance from center.	
,	1 byte	2CH（Delimiter）	
Filling marker	1 byte	"0"=OFF, "1"=ON	
,	1 byte	2CH（Delimiter）	
Line width	1 to 2 bytes	"1" to "15" * It is ON in case not filling line.	
,	1 byte	2CH（Delimiter）	
Color R	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
Color G	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
Color B	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
Edit Bit Mode	1 to 2 bytes	"8" to "16"	
,	1 byte	2CH（Delimiter）	
Vertical line / Horizontal line mode.	1 byte	"0"=OFF "1"=Vertical line "2"=Horizontal line "3"=Vertical/Horizontal line	
,	1 byte	2CH（Delimiter）	
The width of vertical line /	1 to 2 bytes	"1" to "15"	

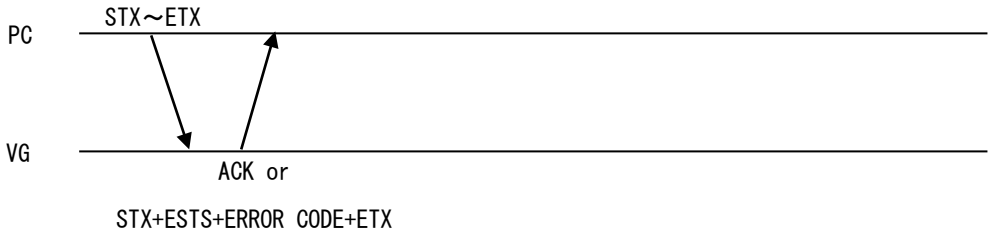
horizontal line.			
,	1 byte	2CH（Delimiter）	
Center coordinates X of vertical line / horizontal line.	1 to 4 bytes	"0" to "4095"	
,	1 byte	2CH（Delimiter）	
The center coordinates Y of Vertical / Horizontal line.	1 to 4 bytes	"0" to "4095"	
,	1 byte	2CH（Delimiter）	
The color of Vertical line / horizontal line R	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
The color of Vertical line / horizontal line G	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
The color of Vertical line / horizontal line B	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH（Delimiter）	
Type 1 of Line	1 byte	"0"=horizontal line, "1"=vertical line Note) this is ON when Type is selected as 2=Line.	#1
,	1 byte	2CH（Delimiter）	
Type 9 of Line	1 byte	"0"=horizontal line, "1"=vertical line Note) this is ON when Type is selected as 2=Line.	#9
ETX	1 byte	03H	

Fig. 2-99-2

2.100 STELOP4 [20H 91H] : Subtitle data setting.

Function : This command sets subtitle data of the indicated program No. In case, program No.0, this data is saved in Buffer RAM temporally in case, NO.9999, the data is recorded in command work RAM.

Sequence : TYPE2



Command :

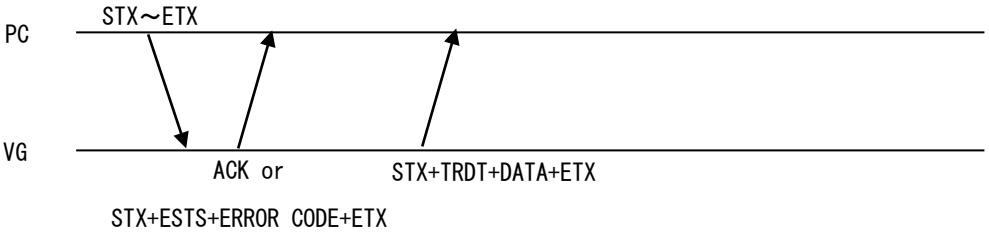
STX	1 byte	02H
VG4CMD	1 byte	FDH
STELOP4	2 bytes	20H 91H
Program NO	1 to 4 bytes	"0" to "1000","9999"
,	1 byte	2CH（Delimiter）
Telop NO	1 to 3 bytes	"1" to "200"
,	1 byte	2CH（Delimiter）
Position	1 byte	"0"=Indication of coordinate, "1"=Upper left "2"=Middle left, "3"=Bottom left "4"=Upper middle, "5"=Middle "6"=Bottom middle, "7"=Upper right "8"=Middle right, "9"=Bottom right
,	1 byte	2CH（Delimiter）
Position X	1 to 4 bytes	"1" to "9999" ***This is ON incase Position is 0.**
,	1 byte	2CH（Delimiter）
Position Y	1 to 4 bytes	"1" to "9999" ***This is ON incase Position is 0.**
,	1 byte	2CH（Delimiter）
Color Enable	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH（Delimiter）
Color0 R	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color0 G	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color0 B	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color1 R	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color1 G	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color1 B	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color2 R	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color2 G	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color2 B	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Bit Mode	1 to 2 bytes	"8" to "16"
ETX	1 byte	03H

Fig. 2-100-1

2.101 LTELOP4 [20H 92H] : Subtitle data acquisition.

Function : This command gets the Subtitle data of the indicated program. In case NO.1001 to 2000, the data is read out from original program data of VG. In case,NO.9999, the data is read out from command workRAM.

Sequence : TYPE3



Parameter

STX	1 byte	02H
VG4CMD	1 byte	FDH
LTELOP4	2 bytes	20H 92H
PROGRAM NO	1 to 4 bytes	"0" to "2000","9999"
ETX	1 byte	03H

Fig. 5-113-1

Data :

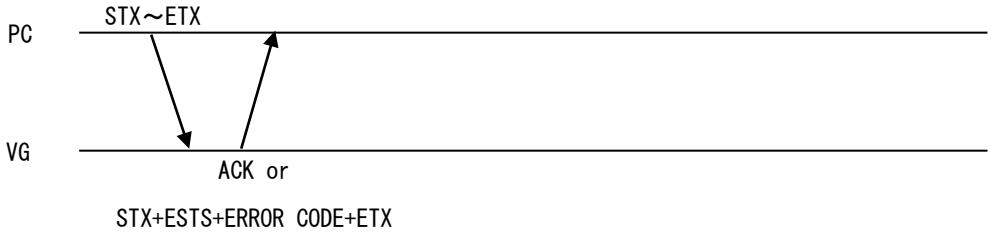
STX	1 byte	02H
TRDT	1 byte	10H
Subtitle NO	1 to 3 bytes	"1" to "200"
,	1 byte	2CH（Delimiter）
Position	1 byte	"0"=Indication of coordinate "1"=Upper left , "2"=Middle left "3"=Bottom left, "4"=Upper middle "5"=Middle , "6"=Bottom middle "7"=Upper right, "8"=Middle right "9"=Bottom right
,	1 byte	2CH（Delimiter）
Position X	1 to 4 bytes	"1" to "9999" ***This is ON incase Position is 0.**
,	1 byte	2CH（Delimiter）
Position Y	1 to 4 bytes	"1" to "9999" ***This is ON incase Position is 0.**
,	1 byte	2CH（Delimiter）
Color Enable	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH（Delimiter）
Color0 R	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color0 G	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color0 B	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color1 R	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color1 G	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color1 B	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color2 R	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color2 G	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Color2 B	1 to 5 bytes	"0" to "65535" ***This is ON in case, Color Enable is 1.**
,	1 byte	2CH（Delimiter）
Bit Mode	1 to 2 bytes	"8" to "16"
ETX	1 byte	03H

Fig. 5-101-2

2.102 SITMDS4 [20H 93H] : iTMDS data setting.

Function : This command sets iTMDS data of the indicated program. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE2



Parameter :

STX	1 byte	02H		
VG4CMD	1 byte	FDH		
SITMDS4	2 bytes	20H 93H		
Program NO	1 to 4 bytes	"0" to "1000","9999"		
,	1 byte	2CH（Delimiter）		
Mode	1 byte	"0"=iTMDS "1"=DVI		
,	1 byte	2CH（Delimiter）		
Control 0	1 byte	"0"=LOW "1"=HIGH		
,	1 byte	2CH（Delimiter）		
Control 1	1 byte	"0"=LOW "1"=HIGH		
,	1 byte	2CH（Delimiter）		
Dual Link Mode	1 byte	"0"=Single(Auto) "1"=Dual(Auto) "2"=Quad(8bit) "3"=Single(8bit) "4"=Single(16bit) "5"=Dual(8bit) "6"=Dual(16bit) “7”=Octal (8bit)		
,	1 byte	2CH（Delimiter）		
Split Mode	1 byte		Quad	Octal
		“0”	Cross split to 4 part	Cross split to 4 part + Vertically 2-split
		“1”	Vertically 4-split	Vertically 4-split + Vertically 2-split
		“2”	Horizontally 4-split	Horizontally 2-split + Vertically 2-split
		“3”	Vertically 2-split	Vertically 2-split + Vertically 2-split
		“4”	No split	
		“5”	Vertically 8-split	Vertically 2-split + Vertically 8-split
		* This command is active only when Dual Link Mode is Quad(8bit) or Octal (8bit).		
,	1 byte	2CH (Delimiter)		
iTMDS 240Hz enable	1 byte	“0”=disable, “1”=enable		
,	1 byte	2CH（Delimiter）		
iTMDS 240Hz BitMode	1 byte	“0”	Non dividing mode	
		“1”	Normal mode	
		“2”	Cross mode	
		“3”	Dividing normal mode	
		“4”	Dividing cross mode	
		“5”		No split
		* This command is active when “iTMDS 240Hz enable” setting is enable. ***** This command is active only when Dual Link Mode is Quad(8bit) or Octal (8bit).		
,	1 byte	2CH（Delimiter）		

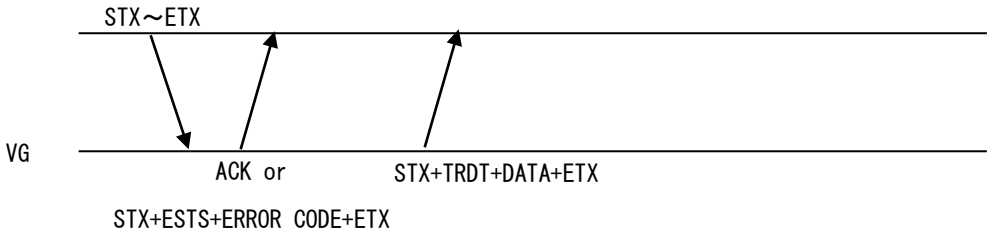
OCT MUX	1 byte	“0”=disable, “1”=enable
ETX	1 byte	03H

Fig2-102-1

2.103 LITMDS4 [20H 94H] : iTMDS data acquisition.

Function : This command gets iTMDS data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LITMDS4	2 bytes	20H 94H
PROGRAM NO	1 to 4 bytes	"0" to "2000","9999"
ETX	1 byte	03H

Fig2-103-1

Data :

STX	1 byte	02H		
TRDT	1 byte	10H		
Mode	1 byte	"0"=iTMDS "1"=DVI		
,	1 byte	2CH（Delimiter）		
Control 0	1 byte	"0"=LOW "1"=HIGH		
,	1 byte	2CH（Delimiter）		
Control 1	1 byte	"0"=LOW "1"=HIGH		
,	1 byte	2CH（Delimiter）		
Dual Link Mode	1 byte	"0"=Single(Auto) "1"=Dual(Auto) "2"=Quad(8bit) "3"=Single(8bit) "4"=Single(16bit) "5"=Dual(8bit) "6"=Dual(16bit) “7”=Octal(8bit)		
,	1 byte	2CH（Delimiter）		
Split Mode	1 byte		Quad	Octal
		“0”	Cross split to 4 part	Cross split to 4 part + Vertically 2-split
		“1”	Vertically 4-split	Vertically 4-split + Vertically 2-split
		“2”	Horizontally 4-split	Horizontally 2-split + Vertically 2-split
		“3”	Vertically 2-split	Vertically 2-split + Vertically 2-split
		“4”	No split	
		“5”	Vertically 8-split	Vertically 2-split + Vertically 8-split
		* This command is active only when Dual Link Mode is Quad(8bit) or Octal (8bit).		
,	1 byte	2CH（Delimiter）		
iTMDS 240Hz enable	1 byte	“0”=disable, “1”=enable		
,	1 byte	2CH（Delimiter）		
iTMDS 240Hz BitMode	1 byte	“0”	Non dividing mode	
		“1”	Normal mode	
		“2”	Cross mode	
		“3”	Dividing normal mode	
		“4”	Dividing cross mode	
		“5”		No split

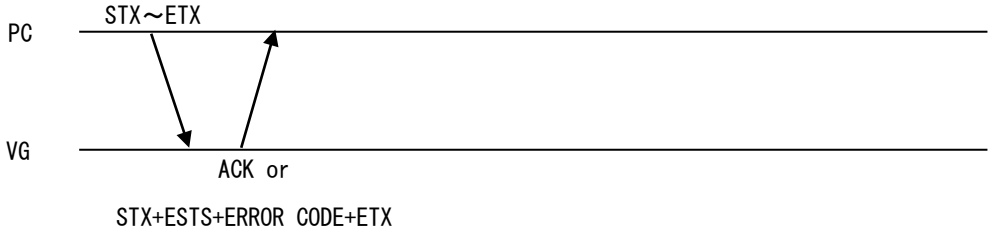
		* This command is active when “iTMDS 240Hz enable” setting is enable. * This command is active only when Dual Link Mode is Quad(8bit) or Octal (8bit).
,	1 byte	2CH（Delimiter）
OCT MUX	1 byte	“0”=disable, “1”=enable
ETX	1 byte	03H

Fig2-103-2

2.104 SVBO4 [20H 97H] : VbyOne data setting

Function : This command gets VbyOne data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE2



Parameter :

STX	1 byte	02H		
VG4CMD	1 byte	FDH		
SVBO4	2 bytes	20H 97H		
Program NO	1 to 4 bytes	"0" - "1000","9999"		
,	1 byte	2CH (Delimiter)		
Lane number	1 byte	"0"=AUTO "1"=1 Lane "2"=2 Lane "3"=4 Lane "4"=8 Lane "5"=16 Lane		
,	1 byte	2CH (Delimiter)		
PreEmphasis	1 byte	"0"=0% "1"=100%		
,	1 byte	2CH (Delimiter)		
VbyOne Field Bet Mode	1 byte	"0"=Disable "1"=Enable		
,	1 byte	2CH (Delimiter)		
Lane Distribute Mode	1 byte	"0"=Normal "1"=Distribution		
,	1 byte	2CH (Delimiter)		
240Hz Enable	1 byte	"0"=Disable "1"=Enable		
,	1 byte	2CH (Delimiter)		
Split Mode*	1 byte		8 lane	16 lane
		“0”	Cross split to 4 part	Cross split to 4 part + Vertically 2-split
		“1”	Vertically 4-split	Vertically 4-split + Vertically 2-split
		“2”	Horizontally 4-split	Horizontally 2-split + Vertically 2-split
		“3”	Vertically 2-split	Vertically 2-split + Vertically 2-split
		“4”	No split	
		“5”	Vertically 8-split	Vertically 2-split + Vertically 8-split
		* This command is active when lane number is 8 or 16.		
,	1 byte	2CH (Delimiter)		
240Hz BitMode*	1 byte		8 lane	16 lane
		“0”	Non dividing mode	
		“1”	Normal mode	
		“2”	Cross mode	
		“3”	Dividing Normal Mode	
		“4”	Dividing Cross Mode	
		“5”		No split
		* This command is active when “ 240Hz enalble” is “ Enable”. * This command is active when lane number is 8 or 16.		
,	1 byte	2CH (Delimiter)		
3D Flag	1 byte	"0"=2D Mode "1"=3D Mode		

,	1 byte	2CH (Delimiter)
Ctrl Mode	1 byte	"0"=Individual setting, "1"=CH1→234
,	1 byte	2CH (Delimiter)
HTPD Control 1	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
HTPD Control 2	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
HTPD Control 3	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
HTPD Control 4	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
Lock Control 1	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
Lock Control 2	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
Lock Control 3	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
Lock Control 4	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
ETX	1 byte	03H

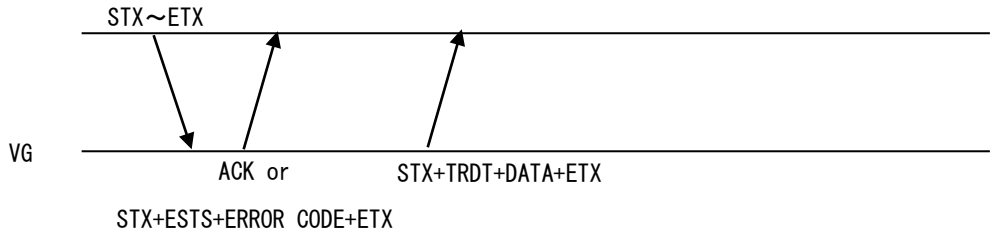
Fig 2-104-1

* This command is ignored by VG-876. Refer to "SDIV4 [20H BDH] : DotClk Mode settin" about Split mode of VG-876 is

2.105 LVBO4 [20H 98H] : VbyOne data aquisition

Function : This command gets VbyOne data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LVBO4	2 bytes	20H 98H
Program NO	1 to 4 bytes	"0" - "2000","9999"
ETX	1 byte	03H

Fig 2.105-1

Data :

STX	1 byte	02H		
TRDT	1 byte	10H		
Lane number	1 byte	"0"=AUTO "1"=1 Lane "2"=2 Lane "3"=4 Lane "4"=8 Lane "5"=16 Lane		
,	1 byte	2CH (Delimiter)		
PreEmphasis	1 byte	"0"=0% "1"=100%		
,	1 byte	2CH (Delimiter)		
VbyOne Field Bet Mode	1 byte	"0"=Disable "1"=Enable		
,	1 byte	2CH (Delimiter)		
Lane Distribute Mode	1 byte	"0"=Normal "1"=Distribution		
,	1 byte	2CH (Delimiter)		
240Hz Enable	1 byte	"0"=Disable "1"=Enable		
,	1 byte	2CH (Delimiter)		
Split Mode	1 byte		8 lane	16 lane
		"0"	Cross split to 4 part	Cross split to 4 part + Vertically 2-split
		"1"	Vertically 4-split	Vertically 4-split + Vertically 2-split
		"2"	Horizontally 4-split	Horizontally 2-split + Vertically 2-split
		"3"	Vertically 2-split	Vertically 2-split + Vertically 2-split
		"4"	No split	
		"5"	Vertically 8-split	Vertically 2-split + Vertically 8-split
		Note) this is active when Lane number is set as 8 or 16 Lane.		
,	1 byte	2CH (Delimiter)		
240Hz BitMode	1 byte		8 lane	16 lane
		"0"	Non dividing mode	
		"1"	Normal mode	
		"2"	Cross mode	
		"3"	Dividing Normal Mode	
		"4"	Dividing Cross Mode	
		"5"		No split

		Note) this command is active when “240Hz enable” setting is enable. This command is active when Lane number is set as 8 or 16 lanes.
,	1 byte	2CH（Delimiter）
3D Flag	1 byte	"0"=2D Mode "1"=3D Mode
,	1 byte	2CH (Delimiter)
Ctrl Mode	1 byte	"0"=Individual setting, "1"=CH1→234
,	1 byte	2CH (Delimiter)
HTPD Control 1	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
HTPD Control 2	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
HTPD Control 3	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
HTPD Control 4	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
Lock Control 1	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
Lock Control 2	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
Lock Control 3	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
,	1 byte	2CH (Delimiter)
Lock Control 4	1 byte	"0"=THROUGH, "1"=LOW、"2"=HIGH
ETX	1 byte	03H

Fig 2-105-2

2.106 SHDMISW4 [20H 99H] : HDMI SW data setting

Function : This command gets HDMI SW data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE 2

Parameter :

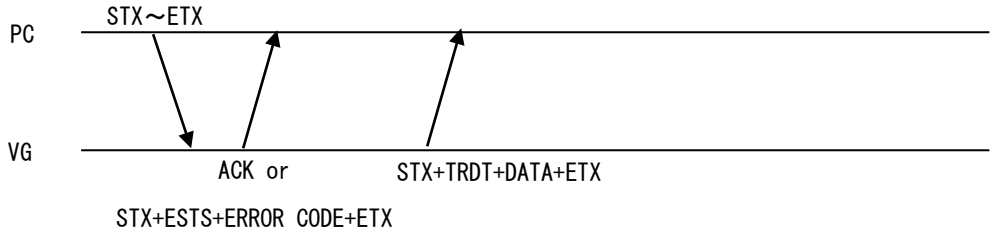
STX	1 byte	02H
VG4CMD	1 byte	FDH
SHDMISW4	2 bytes	20H 99H
Program NO	1 to 4 bytes	"0" - "1000","9999"
	1 byte	2CH (Delimiter)
HDMI 1 Mode	1 byte	"0"= selector, "1"= all outputs
,	1 byte	2CH (Delimiter)
HDMI 1 InSel	1 byte	"0" - "1"
,	1 byte	2CH (Delimiter)
HDMI 1 OutSel	1 byte	"0" - "7" Note) This command is active when Mode is selected as Selector.
,	1 byte	2CH (Delimiter)
HDMI 2 Mode	1 byte	"0"= selector, "1"= all outputs
,	1 byte	2CH (Delimiter)
HDMI 2 Input Select	1 byte	"0" - "1"
,	1 byte	2CH (Delimiter)
HDMI 2 Output Select	1 byte	"0" - "7" Note) This is active when Mode is selected as Selector.
ETX	1 byte	03H

Fig 2-106-1

2.107 LHDMISW4 [20H 9AH] : HDMI SW data aquisition

Function : This command gets VbyOne data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LHDMISW4	2 bytes	20H 9AH
Program NO	1 to 4 bytes	"0" - "2000","9999"
ETX	1 byte	03H

Fig 2-107-1

Data :

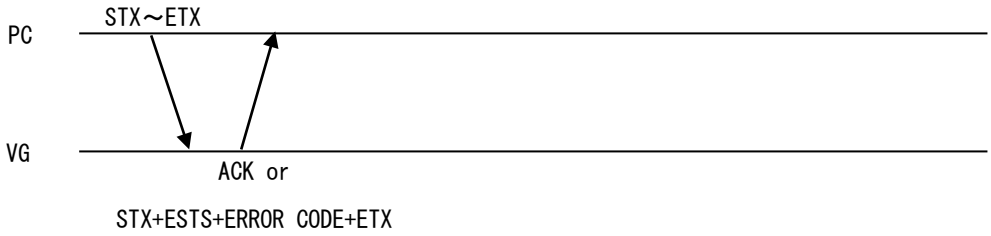
STX	1 byte	02H
TRDT	1 byte	10H
HDMI 1 Mode	1 byte	"0"= selector, "1"= all outputs
,	1 byte	2CH (Delimiter)
HDMI 1 InSel	1 byte	"0"-"1"
,	1 byte	2CH (Delimiter)
HDMI 1 OutSel	1 byte	"0" - "7" Note) This command is active when Mode is selected as Selector.
,	1 byte	2CH (Delimiter)
HDMI 2 Mode	1 byte	"0"= selector, "1"= all outputs
,	1 byte	2CH (Delimiter)
HDMI 2 Input Select	1 byte	"0"-"1"
,	1 byte	2CH (Delimiter)
HDMI 2 Output Select	1 byte	"0" - "7" Note) This command is active when Mode is selected as Selector.
ETX	1 byte	03H

Fig 2-107-2

2.108 STPKEY4 [20H 9BH] : Key information of Timing and Pattern data registration

Function : This command registers key information of Timing and Pattern of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case , No.2001-2010, the data is saved in the Internal memory. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
STPKEY4	2 bytes	20H 9BH
Program NO	1 to 4 bytes	"0"-"1000","2001"-"2010","9999"
,	1 byte	2CH (Delimiter)
Timing Key No	1 to 2 bytes	"1"-"12"
,	1 byte	2CH (Delimiter)
Timing FREQ No	1 to 2 bytes	"1"-"10"
,	1 byte	2CH (Delimiter)
Pattern Key No	1 to 2 bytes	"1"-"10"
ETX	1 byte	03H

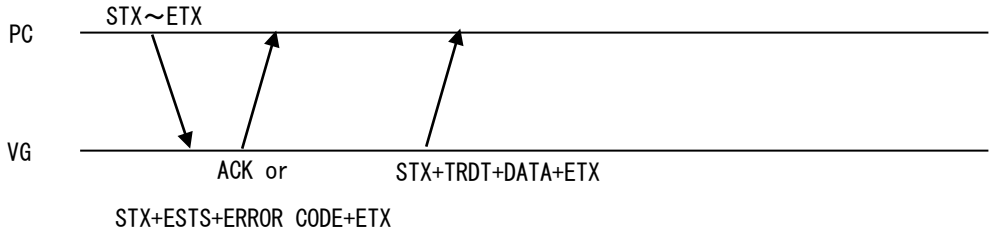
Fig 2-108-1

This command is only for VG-881.

2.109 LTPKEY4 [20H 9CH] : Key information of Timing and Pattern data readout

Function: This command reads the Key information of Timing and Pattern data of the indicated program. In case, program No.0, the data is read out from buffer RAM. In case , No.2001-2010, the data is read out from the Internal memory. In case, NO.9999, the data is read out from the command work RAM.

Sequence: Type 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LTPKEY4	2 bytes	20H 9CH
Program NO	1 to 4 bytes	"1"-"1000","2001"-"2010","9999"
ETX	1 byte	03H

Fig 2-109-1

Data :

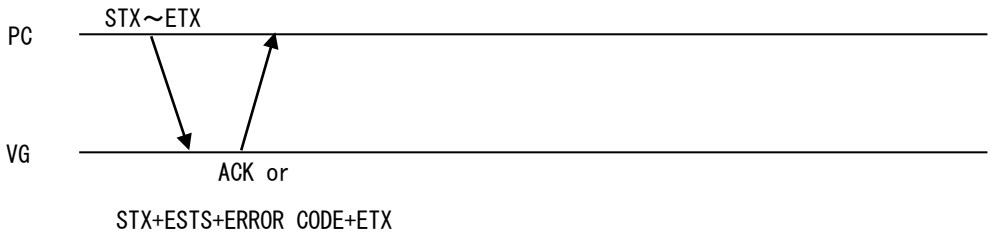
STX	1 byte	02H
TRDT	1 byte	10H
Timing Key No	1 to 2 bytes	"1" - "12"
,	1 byte	2CH (Delimiter)
Timing FREQ No	1 to 2 bytes	"1" - "10"
,	1 byte	2CH (Delimiter)
Pattern Key No	1 to 2 bytes	"1" - "10"
ETX	1 byte	03H

Fig 2-109-2

This command is only for VG-881.

2.110 SLGRP5 [20H 9FH] : Large group data registration

Function : This command registers indicated large group No. data.
Sequence : TYPE2



Parameter :

STX	1 byte	02H		
VG4CMD	1 byte	FDH		
SLGRP5	2 bytes	20H 9FH		
Large group NO	1 to 2 bytes	"1"～"99"		
,	1 byte	2CH (Delimiter)		
Character number of large group name.	1 to 2 bytes	"1"-"20"		
,	1 byte	2CH (Delimiter)		
Large group name	20 bytes	20 ASCII characters (When the string contains fewer than 20 characters, enter spaces after the characters to bring the number of characters up to 20)		
,	1 byte	2CH (Delimiter)		#1
Slot No.	1 to 2 bytes	"0"-"11"		
,	1 byte	2CH (Delimiter)		
Board Type	1 byte	"1"-"5" "1"=HDMI "2"=HDMI & VGA "3"=TVAnalog(YPbPr) "4"=TVAnalog(D5) "5"=Scart Note) 0 is invalid.		
,	1 byte	2CH (Delimiter)	#1-1	
Execution sequence No.	1 to 2 bytes	"1"-"12"		
,	1 byte	2CH (Delimiter)		
Small group No.	1 to 2 bytes	"0"-"99" ("0"=unregistered)		
,	1 byte	2CH (Delimiter)	#1-2	
Execution sequence No.	1 to 2 bytes	"1"-"12"		
,	1 byte	2CH (Delimiter)		
Small group No.	1 to 2 bytes	"0"-"99" ("0"=unregistered)		
,	1 byte	2CH (Delimiter)	#1-3	
Execution sequence No.	1 to 2 bytes	"1"-"12"		
,	1 byte	2CH (Delimiter)		
Small group No.	1 to 2 bytes	"0"-"99" ("0"=unregistered)		
,	1 byte	2CH (Delimiter)		#4
Slot No.	1 to 2 bytes	"0"-"11"		
,	1 byte	2CH (Delimiter)		
Board Type	1 byte	"1"-"5" "1"=HDMI "2"=HDMI & VGA "3"=TVAnalog(YPbPr) "4"=TVAnalog(D5) "5"=Scart Note) 0 is invalid.		
,	1 byte	2CH (Delimiter)	#4-1	
Execution sequence No.	1 to 2 bytes	"1"-"12"		
,	1 byte	2CH (Delimiter)		
Small group No.	1 to 2 bytes	"0"-"99" ("0"=unregistered)		
,	1 byte	2CH (Delimiter)	#4-2	

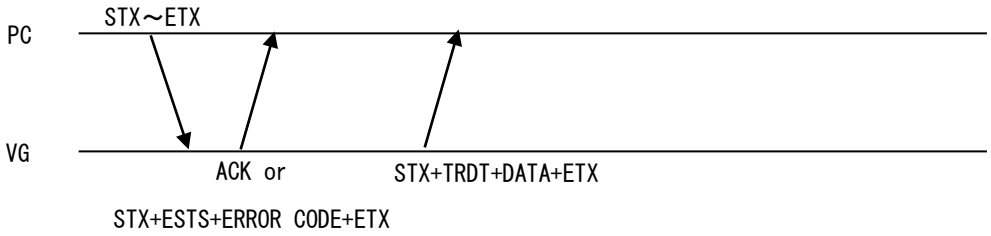
Execution sequence No.	1 to 2 bytes	"1"-"12"		
,	1 byte	2CH (Delimiter)		
Small group No.	1 to 2 bytes	"0"-"99" ("0"=unregistered)		
,	1 byte	2CH (Delimiter)	#4-3	
Execution sequence No.	1 to 2 bytes	"1"-"12"		
,	1 byte	2CH (Delimiter)		
Small group No.	1 to 2 bytes	"0"-"99" ("0"=unregistered)		
ETX	1 byte	03H		

Fig 2-110-1

This command is only for VG-881.

2.111 LLGRP5 [20H A0H] : Large group data readout

Function : This command reads out indicated large group No. data.
Sequence : TYPE3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LLGRP5	2 bytes	20H A0H
Large group NO	1 to 2 bytes	"1"-"99"
ETX	1 byte	03H

Fig 2-111-1

Data :

STX	1 byte	02H		
TRDT	1 byte	10H		
Large group NO	1 to 2 bytes	"1"-"99"		
,	1 byte	2CH (Delimiter)		
Character number of large group name.	1 to 2 bytes	"1"-"20"		
,	1 byte	2CH (Delimiter)		
Large group name	20 bytes	20 ASCII characters (When the string contains fewer than 20 characters, enter spaces after the characters to bring the number of characters up to 20)		
,	1 byte	2CH (Delimiter)		#1
Slot No.	1 to 2 bytes	"0"-"11"		
,	1 byte	2CH (Delimiter)		
Board Type	1 byte	"1"-"5" "1"=HDMI "2"=HDMI & VGA "3"=TVAnalog(YPbPr) "4"=TVAnalog(D5) "5"=Scart Note) 0 is invalid.		
,	1 byte	2CH (Delimiter)	#1-1	
Execution sequence No.	1 to 2 bytes	"1"-"12"		
,	1 byte	2CH (Delimiter)		
Small group No.	1 to 2 bytes	"0"-"99" ("0"=unregistered)		
,	1 byte	2CH (Delimiter)	#1-2	
Execution sequence No.	1 to 2 bytes	"1"-"12"		
,	1 byte	2CH (Delimiter)		
Small group No.	1 to 2 bytes	"0"-"99" ("0"=unregistered)		
,	1 byte	2CH (Delimiter)	#1-3	
Execution sequence No.	1 to 2 bytes	"1"-"12"		
,	1 byte	2CH (Delimiter)		
Small group No.	1 to 2 bytes	"0"-"99" ("0"=unregistered)		
,	1 byte	2CH (Delimiter)		#4
Slot No.	1 to 2 bytes	"0"-"11"		
,	1 byte	2CH (Delimiter)		

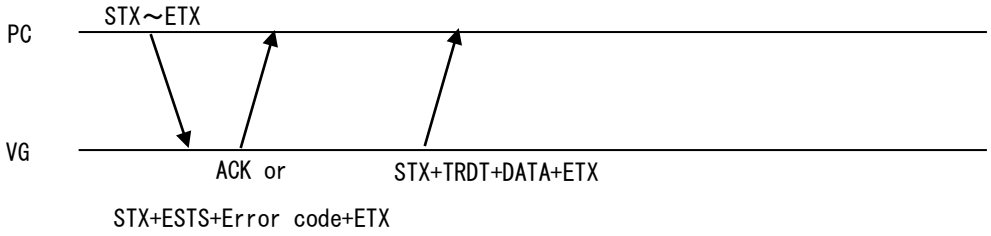
Board Type	1 byte	"1"-"5" "1"=HDMI "2"=HDMI & VGA "3"=TVAnalog(YPbPr) "4"=TVAnalog(D5) "5"=Scart Note) 0 is invalid.		
,	1 byte	2CH (Delimiter)	#4-1	
Execution sequence No.	1 to 2 bytes	"1"-"12"		
,	1 byte	2CH (Delimiter)		
Small group No.	1 to 2 bytes	"0"-"99" ("0"=unregistered)		
,	1 byte	2CH (Delimiter)	#4-2	
Execution sequence No.	1 to 2 bytes	"1"-"12"		
,	1 byte	2CH (Delimiter)		
Small group No.	1 to 2 bytes	"0"-"99" ("0"=unregistered)		
,	1 byte	2CH (Delimiter)	#4-3	
Execution sequence No.	1 to 2 bytes	"1"-"12"		
,	1 byte	2CH (Delimiter)		
Small group No.	1 to 2 bytes	"0"-"99" ("0"=unregistered)		
ETX	1 byte	03H		

Fig 2-111-2

This command is only for VG-881.

2.112 LLGED5 [20H A1H] : Large group enable readout

Function : This command reads out enable or disable setting of the indicated large group No. data.
Sequence : TYPE3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LLGED5	2 bytes	20H A0H
Large group NO	1 to 2 bytes	"1"-"99"
ETX	1 byte	03H

Fig. 2-112-1

Data :

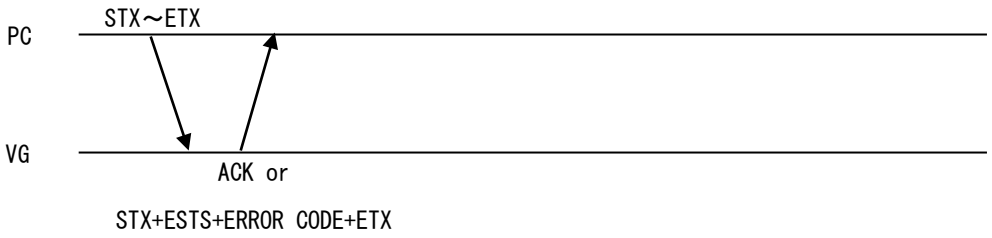
STX	1 byte	02H
TRDT	1 byte	10H
Enable / Disable	1 byte	"0"=Enable "1"=Disable
ETX	1 byte	03H

Fig. 2-112-2

This command is only for VG-881.

2.113 LGDEL5 [20H A2H] : Delete Large group data

Function : This command deletes the indicated large group data.
Sequence : TYPE 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LGDEL5	2 bytes	20H A2H
Top of deleting data No.	1 to 2 bytes	"1""99"
,	1 byte	2CH (Delimiter)
Last of deleting data No.	1 to 2 byte	"1"-"99"
ETX	1 byte	03H

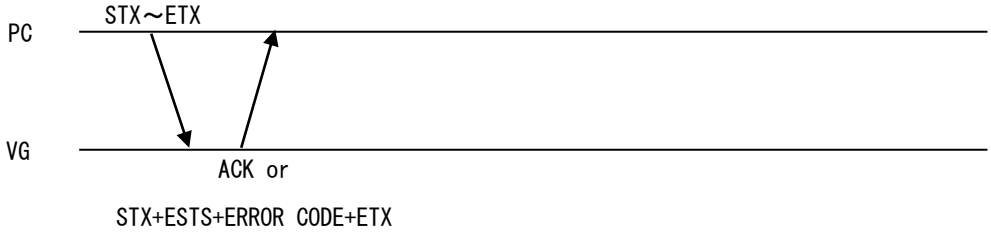
Fig 2-113-1

This command is only for VG-881.

2.114 SSDI4 [20H A3H] : SDI data setting

Function : This command gets SDI data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
SSDI4	2 bytes	20H A3H
Program NO	1 to 4 bytes	"0"-"1000","9999"
,	1 byte	2CH (Delimiter)
SDI Format	1 byte	"0"=SD "1"=HD "2"=3G-A "3"=3G-B "4"=DUAL "5"=3D (VG-876,877,879 does not support it.) "6"=6G *VG-879 only "7"=12G *VG-879 only
,	1 byte	2CH (Delimiter)
Video Format	1 byte	"0"=RGB "1"=YC:444 "2"=YC:422 "3"=YC:420 *VG-879 only
,	1 byte	2CH (Delimiter)
BitWidth	1 byte	"0"=Auto "1"=10bit "2"=12bit
,	1 byte	2CH (Delimiter)
Audio Out Enable	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
Payload Data Format	1 byte	"0" fixed
,	1 byte	2CH (Delimiter)
Payload ON/OFF	1 byte	"0"=OFF "1"=ON *Below is for VG-879 "0"=OFF "1"=Y ON "2"=C ON "3"=Y/C ON
,	1 byte	2CH (Delimiter)
Transport	1 byte	"0"=Interlace "1"=Progressive
,	1 byte	2CH (Delimiter)
Picture	1 byte	"0"=Interlace "1"=Progressive
,	1 byte	2CH (Delimiter)
PictureRate	1 byte	"0"=23.98Hz "1"=24Hz "2"=25Hz "3"=29.97Hz "4"=30Hz "5"=50Hz "6"=59.94Hz "7"=60Hz Below is available only for VG-876 ,877 and 879. "8"=47.95Hz "9"=48Hz

,	1 byte	2CH (Delimiter)
AspectRatio	1 byte	"0"=4:3 "1"=16:9
,	1 byte	2CH (Delimiter)
Sampling Structure	1 byte	"0"=4:2:2(YCbCr) "1"=4:4:4(YCbCr) "2"=4:4:4(RGB) "3"=4:4:4:4(YCbCr+A) "4"=4:4:4:4(RGB+A) “5”=4:4:4 (XYZ) Below is available only for VG-876 ,877 and 879. "6"=4:2:0 "7"=4:2:2:4(YCbCr+A) "8"=4:2:2:4(YCbCr+D) "9"=4:4:4:4(YCbCr+D) "10"=4:4:4:4(RGB+D)
,	1 byte	2CH (Delimiter)
DynamicRange	1 byte	"0"=100% "1"=200% "2"=400%
,	1 byte	2CH (Delimiter)
BitDepth	1 byte	"0"=8bit "1"=10bit "2"=12bit
,	1 byte	2CH (Delimiter)
H Y-Sampling	1 byte	"0"-"1"
,	1 byte	2CH (Delimiter)
Manual Payload ID	1 byte	“0”=Auto, “1”=Manual, “2”=Hex
,	1 byte	2CH (Delimiter)
Payload ID Byte1	1 to 2 bytes	“00”-“FF”
,	1 byte	2CH (Delimiter)
Channel Assignment 1 (Ch1 Link A) ***1**	1 byte	“0”=1, “1”=2, “2”=3, “3”=4 Below is available only for VG-876 ,877 and 879. "4"=5 "5"=6 "6"=7 "7"=8
,	1 byte	2CH (Delimiter)
Channel Assignment 2 (Ch1 Link B) ***1**	1 byte	“0”=1, “1”=2, “2”=3, “3”=4 Below is available only for VG-876 ,877 and 879. "4"=5 "5"=6 "6"=7 "7"=8
,	1 byte	2CH (Delimiter)
***2**		
,	1 byte	2CH (Delimiter)
Ch2 Link A	1 byte	* Same as Ch1 Link A
,	1 byte	2CH (Delimiter)
Ch2 Link B	1 byte	* Same as Ch1 Link B
,	1 byte	2CH (Delimiter)
Ch3 Link A	1 byte	* Same as Ch1 Link A
,	1 byte	2CH (Delimiter)
Ch3 Link B	1 byte	* Same as Ch1 Link B
,	1 byte	2CH (Delimiter)
Ch4 Link A	1 byte	* Same as Ch1 Link A
,	1 byte	2CH (Delimiter)
Ch4 Link B	1 byte	* Same as Ch1 Link B
,	1 byte	2CH (Delimiter)
Audio Link ch1(Payload)	1 byte	"0"=Add Channel "1"=Copy Link1
,	1 byte	2CH (Delimiter)
PayloadIDByte2	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte3	2 bytes	"00"-"FF"

,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch1 LinkA	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch1 LinkB	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch2 LinkA	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch2 LinkB	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch3 LinkA	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch3 LinkB	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch4 LinkA	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch4 LinkB	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
Audio Link ch2 (Payload)	1 byte	"0"=No Copy "1"=Copy Link1
,	1 byte	2CH (Delimiter)
Audio Link ch3 (Payload)	1 byte	"0"=No Copy "1"=Copy Link1
,	1 byte	2CH (Delimiter)
Audio Link ch4 (Payload)	1 byte	"0"=No Copy "1"=Copy Link1
,	1 byte	2CH (Delimiter)
Audio Link ch2	1 byte	"0"=No Copy "1"=Copy Link1
,	1 byte	2CH (Delimiter)
Audio Link ch3	1 byte	"0"=No Copy "1"=Copy Link1
,	1 byte	2CH (Delimiter)
Audio Link ch4	1 byte	"0"=No Copy "1"=Copy Link1
ETX	1 byte	03H

Fig 2-114-1

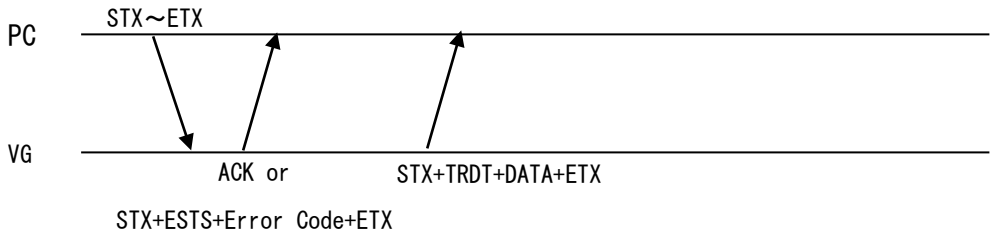
***1**
In VG-876, 877, 879, "Channel Assignment 1, 2" has been changed to "Ch1 Link A, B".

***2**
For Ch2 Link A and later, only VG-876, 877, 879 are supported.

2.115 LSDI4 [20H A4H] : SDI data aquisition

Function : This command gets SDI data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LSDI4	2 bytes	20H A4H
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig 2-115-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
SDI Format	1 byte	"0"=SD "1"=HD "2"=3G-A "3"=3G-B "4"=DUAL "5"=3D (VG-876,877,879 does not support it.) "6"=6G *VG-879 only "7"=12G *VG-879 only
,	1 byte	2CH (Delimiter)
Video Format	1 byte	"0"=RGB "1"=YC:444 "2"=YC:422 "3"=YC:420 *VG-879 only
,	1 byte	2CH (Delimiter)
BitWidth	1 byte	"0"=Auto "1"=10bit "2"=12bit
,	1 byte	2CH (Delimiter)
Audio Out Enable	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
Payload Data Format	1 byte	Fixed to "0"
,	1 byte	2CH (Delimiter)
Payload ON/OFF	1 byte	"0"=OFF "1"=ON *Below is for VG-879 "0"=OFF "1"=Y ON "2"=C ON "3"=Y/C ON
,	1 byte	2CH (Delimiter)
Transport	1 byte	"0"=Interlace "1"=Progressive
,	1 byte	2CH (Delimiter)
Picture	1 byte	"0"=Interlace "1"=Progressive
,	1 byte	2CH (Delimiter)
PictureRate	1 byte	"0"=23.98Hz "1"=24Hz "2"=25Hz "3"=29.97Hz "4"=30Hz "5"=50Hz "6"=59.94Hz

		"7"=60Hz Below is available only for VG-876 ,877 and 879. "8"=47.95Hz "9"=48Hz
,	1 byte	2CH (Delimiter)
AspectRatio	1 byte	"0"=4:3 "1"=16:9
,	1 byte	2CH (Delimiter)
Sampling Structure	1 byte	"0"=4:2:2(YCbCr) "1"=4:4:4(YCbCr) "2"=4:4:4(RGB) "3"=4:4:4:4(YCbCr+A) "4"=4:4:4:4(RGB+A) “5”=4:4:4 (XYZ) Below is available only for VG-876 ,877 and 879. "6"=4:2:0 "7"=4:2:2:4(YCbCr+A) "8"=4:2:2:4(YCbCr+D) "9"=4:4:4:4(YCbCr+D) "10"=4:4:4:4(RGB+D)
,	1 byte	2CH (Delimiter)
DynamicRange	1 byte	"0"=100% "1"=200% "2"=400%
,	1 byte	2CH (Delimiter)
BitDepth	1 byte	"0"=8bit "1"=10bit "2"=12bit
,	1 byte	2CH (Delimiter)
H Y-Sampling	1 byte	"0"-"1"
,	1 byte	2CH (Delimiter)
Manual Payload ID		“0”=Auto, “1”=Manual, “2”=HEX
,	1 byte	2CH (Delimiter)
Payload ID Byte1	1 to 2 bytes	“00”-“FF”
,	1 byte	2CH (Delimiter)
Channel Assignment 1 (Ch1 Link A) ***1**	1 byte	“0”=1, “1”=2, “2”=3, “3”=4 Below is available only for VG-876 ,877 and 879. "4"=5 "5"=6 "6"=7 "7"=8
,	1 byte	2CH (Delimiter)
Channel Assignment 2 (Ch1 Link B) ***1**	1 byte	“0”=1, “1”=2, “2”=3, “3”=4 Below is available only for VG-876 ,877 and 879. "4"=5 "5"=6 "6"=7 "7"=8
***2**		
,	1 byte	2CH (Delimiter)
Ch2 Link A	1 byte	* Same as Ch1 Link A
,	1 byte	2CH (Delimiter)
Ch2 Link B	1 byte	* Same as Ch1 Link B
,	1 byte	2CH (Delimiter)
Ch3 Link A	1 byte	* Same as Ch1 Link A
,	1 byte	2CH (Delimiter)
Ch3 Link B	1 byte	* Same as Ch1 Link B
,	1 byte	2CH (Delimiter)
Ch4 Link A	1 byte	* Same as Ch1 Link A
,	1 byte	2CH (Delimiter)
Ch4 Link B	1 byte	* Same as Ch1 Link B
,	1 byte	2CH (Delimiter)
Audio Link ch1(Payload)	1 byte	"0"=Add Channel "1"=Copy Link1

,	1 byte	2CH (Delimiter)
PayloadIDByte2	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte3	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch1 LinkA	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch1 LinkB	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch2 LinkA	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch2 LinkB	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch3 LinkA	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch3 LinkB	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch4 LinkA	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
PayloadIDByte4 Ch4 LinkB	2 bytes	"00"-"FF"
,	1 byte	2CH (Delimiter)
Audio Link ch2 (Payload)	1 byte	"0"=No Copy "1"=Copy Link1
,	1 byte	2CH (Delimiter)
Audio Link ch3 (Payload)	1 byte	"0"=No Copy "1"=Copy Link1
,	1 byte	2CH (Delimiter)
Audio Link ch4 (Payload)	1 byte	"0"=No Copy "1"=Copy Link1
,	1 byte	2CH (Delimiter)
Audio Link ch2	1 byte	"0"=No Copy "1"=Copy Link1
,	1 byte	2CH (Delimiter)
Audio Link ch3	1 byte	"0"=No Copy "1"=Copy Link1
,	1 byte	2CH (Delimiter)
Audio Link ch4	1 byte	"0"=No Copy "1"=Copy Link1
ETX	1 byte	03H

Fig 2-115-2

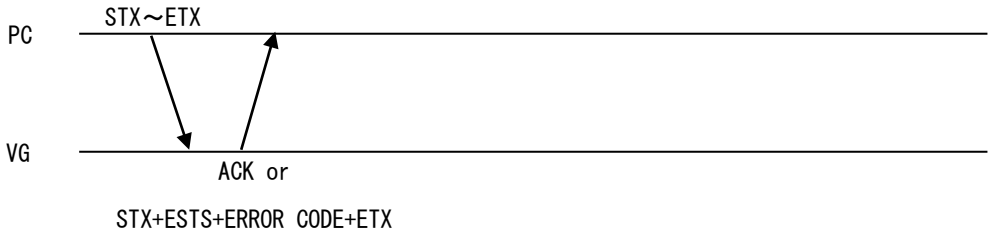
***1**
In VG-876, 877, 879, "Channel Assignment 1, 2" has been changed to "Ch1 Link A, B".

***2**
For Ch2 Link A and later, only VG-876, 877, 879 are supported.

2.116 SHAN4 [20H A5H] : N value data setting

Function : This command sets N value of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE2



Parameter :

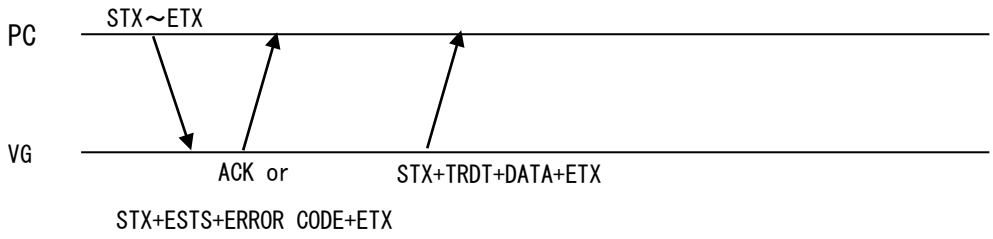
STX	1 byte	02H
VG4CMD	1 byte	FDH
SHAN4	2 byte	20H A5H
Program NO	1 to 4 bytes	"0"-"1000","9999"
,	1 byte	2CH (Delimiter)
Mode	1 byte	"0"=AUTO, "1"=Manual
,	1 byte	2CH (Delimiter)
N value	3 to 4 bytes	"300""1500" **Note) this is used when "Mode" is set as Manual**
ETX	1 byte	03H

Fig 2-116-1

2.117 LHAN4 [20H A6H] : N value data aquisition

Function : This command gets N value of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LHAN4	2 byte	20H A6H
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig 2-117-1

Data :

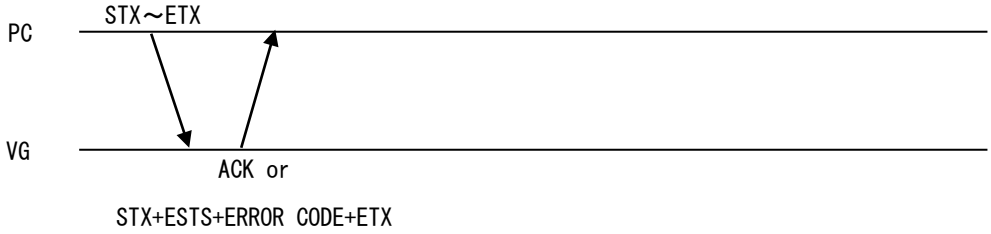
STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	"0"=AUTO, "1"=Manual
,	1 byte	2CH(Delimiter)
N value	3 to 4 bytes	"300"-"1500" **Note) this is used when "Mode" is set as Manual**
ETX	1 byte	03H

Fig 2-117-2

2.118 S3DPAT4 [20H A9H] : OPT 3D pattern data setting

Function : This command sets OPT 3D pattern data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
S3DPAT4	2 byte	20H A9H
Program NO	1 to 4 bytes	"0"-"1000","9999"
,	1 byte	2CH (Delimiter)
Type	1 to 2 bytes	"0"= Color bar V-1 "1"= Color bar V-2 "2"= Vertical bar "3"= Checker dot "4"= Checker block "5"= Slant color bar "6"= Raster "7"= □×＋○ "8"= Window "9"= Circle "10"= 9 Window "11"= 9 Circle "12"= Slant gray bar "13"= Cross Hatch
,	1 byte	2CH (Delimiter)
LR ON/OFF	1 to 2 bytes	"0"=L / R ON "1"=L ON / R OFF "2"=L OFF / R ON "3"=L ON / R(O) ON / R(E) OFF "4"=L ON / R(O) OFF / R(E) ON "5"=L OFF / R(O) ON / R(E) OFF "6"=L OFF / R(O) OFF / R(E) ON "7"=L(O) ON / L(E) OFF / R ON "8"=L(O) OFF / L(E) ON / R ON "9"=L(O) ON / L(E) OFF / R OFF "10"L(O) OFF / L(E) ON / R OFF "11"=L(O) ON / L(E) OFF / R(O) ON / R(E) OFF "12"=L(O) ON / L(E) OFF / R(O) OFF / R(E) ON "13"=L(O) OFF / L(E) ON / R(O) ON / R(E) OFF "14"=L(O) OFF / L(E) ON / R(O) OFF / R(E) ON
,	1 byte	2CH (Delimiter)
Color R (When L or R is set OFF)	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Color G (When L or R is set OFF)	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Color B (When L or R is set OFF)	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Level L (When L or R is set ON)	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
Level R	1 to 3 bytes	"0"-"100"%

(When L or R is set ON)		
,	1 byte	2CH (Delimiter)
OutputMode	1 byte	"0"=3D Structure "1"=Frame Sequential
,	1 byte	2CH (Delimiter)
Bit Mode	1 to 2 bytes	"8"-"16"
,	1 byte	2CH (Delimiter)
LeftColor R	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
LeftColor G	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
LeftColor B	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
RightColor R	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
RightColor G	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
RightColor B	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
BackColorL R	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
BackColorL G	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
BackColorL B	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
HSize	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
VSize	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
HPosL	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
VPosL	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
UseLRColor	1 byte	"0"=Not Use "1"=Use
,	1 byte	2CH (Delimiter)
HSize9	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
Vsize9	1 to 3 bytes	"0"-"100%"
,	1 byte	2CH (Delimiter)
HPosL9	1 to 3 bytes	"0"-"100%"
,	1 byte	2CH (Delimiter)
VPosL9	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
BackColorR R	1 to 5 bytes	"0"-"65535"
,	,	,
BackColorR G	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
BackColorR B	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
LRDisp	1 byte	"0"=OFF "1"=display on top "2"=display in center
,	1 byte	2CH (Delimiter)
LRBlackBack	1 byte	"0"=Not use, "1"=Use
,	1 byte	2CH (Delimiter)
SlantAngle	1 to 2 bytes	"0"=0° "1"=15° "2"=30° … "11"=165°
,	1 byte	2CH (Delimiter)
SubSampling	1 byte	"0"=Not use, "1"=Use
,	1 byte	2CH (Delimiter)
Real Circle	1 byte	"0"=Not use, "1"=Use
,	1 byte	2CH (Delimiter)
VerBarWidth	1 to 2 bytes	"1"-"16"
,	1 byte	2CH (Delimiter)
HPosR	1 to 3 bytes	"0"-"100"%

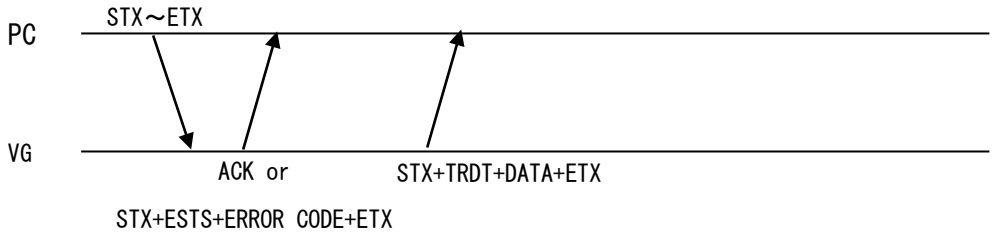
,	1 byte	2CH (Delimiter)
VPosR	1 to 3 bytes	"0"-"100"%
ETX	1 byte	03H

Fig 2-118-1

2.119 L3DPAT4 [20H AAH] :OPT 3D pattern data aquisition

Function : This command gets OPT 3D pattern data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
L3DPAT4	2 byte	20H AAH
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig 2-119-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
Type	1 to 2 bytes	"0"= Color bar V-1 "1"= Color bar V-2 "2"= Vertical bar "3"= Checker dot "4"= Checker block "5"= Slant color bar "6"= Raster "7"= □×＋○ "8"= Window "9"= Circle "10"= 9 Window "11"= 9 Circle "12"= Slant gray bar "13"= Cross Hatch
,	1 byte	2CH (Delimiter)
LR ON/OFF	1 to 2 bytes	"0"=L / R ON "1"=L ON / R OFF "2"=L OFF / R ON "3"=L ON / R(O) ON / R(E) OFF "4"=L ON / R(O) OFF / R(E) ON "5"=L OFF / R(O) ON / R(E) OFF "6"=L OFF / R(O) OFF / R(E) ON "7"=L(O) ON / L(E) OFF / R ON "8"=L(O) OFF / L(E) ON / R ON "9"=L(O) ON / L(E) OFF / R OFF "10"L(O) OFF / L(E) ON / R OFF "11"=L(O) ON / L(E) OFF / R(O) ON / R(E) OFF "12"=L(O) ON / L(E) OFF / R(O) OFF / R(E) ON "13"=L(O) OFF / L(E) ON / R(O) ON / R(E) OFF "14"=L(O) OFF / L(E) ON / R(O) OFF / R(E) ON
,	1 byte	2CH (Delimiter)
Color R (When L or R is set OFF)	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Color G	1 to 3 bytes	"0"-"255"

(When L or R is set OFF)		
,	1 byte	2CH (Delimiter)
Color B (When L or R is set OFF)	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Level L (When L or R is set ON)	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
Level R (When L or R is set ON)	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
OutputMode	1 byte	"0"=3D Structure "1"=Frame Sequential
,	1 byte	2CH (Delimiter)
Bit Mode	1 to 2 bytes	"8"-"16"
,	1 byte	2CH (Delimiter)
LeftColor R	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
LeftColor G	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
LeftColor B	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
RightColor R	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
RightColor G	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
RightColor B	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
BackColorL R	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
BackColorL G	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
BackColorL B	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
HSize	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
VSize	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
HPosL	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
VPosL	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
UseLRColor	1 byte	"0"=Not Use "1"=Use
,	1 byte	2CH (Delimiter)
HSize9	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
Vsize9	1 to 3 bytes	"0"-"100%"
,	1 byte	2CH (Delimiter)
HPos9	1 to 3 bytes	"0"-"100%"
,	1 byte	2CH (Delimiter)
VPos9	1 to 3 bytes	"0"-"100%"
,	1 byte	2CH (Delimiter)
BackColorR R	1 to 5 bytes	"0"-"65535"
,	,	,
BackColorR G	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
BackColorR B	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
LRDisp	1 byte	"0"=OFF "1"=display on top "2"=display in center
,	1 byte	2CH (Delimiter)
LRBlackBack	1 byte	"0"=Not use, "1"=Use
,	1 byte	2CH (Delimiter)
SlantAngle	1 to 2 bytes	"0"=0° "1"=15° "2"=30° …

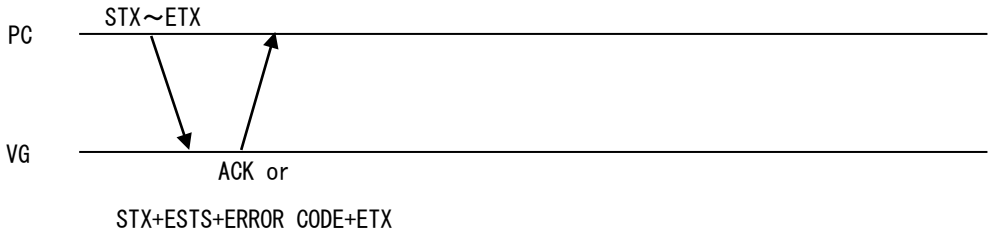
		"11"=165°
,	1 byte	2CH (Delimiter)
SubSampling	1 byte	"0"=Not use, "1"=Use
,	1 byte	2CH (Delimiter)
Real Circle	1 byte	"0"=Not use, "1"=Use
,	1 byte	2CH (Delimiter)
VerBarWidth	1 to 2 bytes	"1"-"16"
,	1 byte	2CH (Delimiter)
HPosR	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
VPosR	1 to 3 bytes	"0"-"100"%
ETX	1 byte	03H

Fig 2-119-2

2.120 SARC4 [20H ABH] : HDMI ARC pattern data setting

Function : This command sets HDMI ARC pattern data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE2



Parameter :

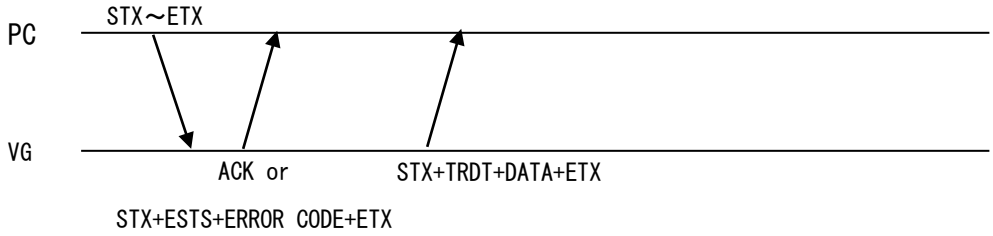
STX	1 byte	02H
VG4CMD	1 byte	FDH
SARC4	2 bytes	20H ABH
Program NO	1 to 4 bytes	"0"-"1000","9999"
,	1 byte	2CH (Delimiter)
Port Select	1 byte	"0"=HDMI 1 "1"=HDMI 2 "2"=HDMI 3 for VG-882,883,876,878/-A,879 "3"=HDMI 4 for VG-882,883,876,878/-A,879 *Below is for VG-876,879 "4"=HDMI5, "5"=HDMI6, "6"=HDMI7, "7"=HDMI8, "8"=HDMI9, "9"=HDMI10, "10"=HDMI11, "11"=HDMI12, "12"=HDMI13, "13"=HDMI14 "14"=HDMI15 "15"=HDMI16
,	1 byte	2CH (Delimiter)
Mode	1 byte	"0"=Monitor "1"=InitiateByVG "2"=TerminateByVG "3"=Initiate without CMD "4"=Terminate without CMD
,	1 byte	2CH (Delimiter)
VG Logical Address	1 byte	"0"-"F"
,	1 byte	2CH (Delimiter)
Follower Mode	1 byte	"0"=Auto "1"=Manual
,	1 byte	2CH (Delimiter)
Follower Logical Address	1 byte	"0"-"F" **Note) this is used when "Mode" is set as Manual**
ETX	1 byte	03H

Fig 2-120-1

2.121 LARC4 [20H ACH] : HDMI ARC pattern data aquisition

Function : This command gets HDMI ARC pattern data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LARC4	2 bytes	20H ACH
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig 2-121-1

Data :

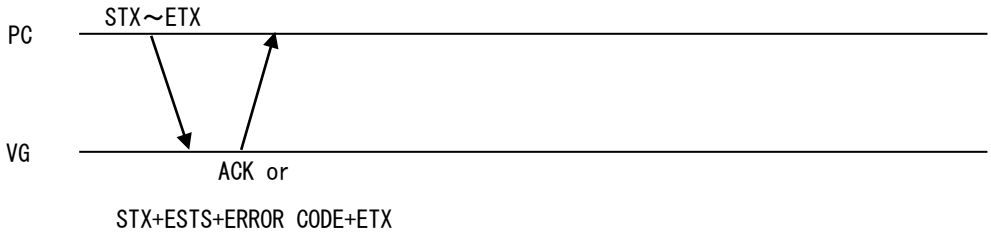
STX	1 byte	02H
TRDT	1 byte	10H
Port Select	1 byte	"0"=HDMI 1 "1"=HDMI 2 "2"=HDMI 3 for VG-882,883,876,878/-A,879 "3"=HDMI 4 for VG-882,883,876,878/-A,879 *Below is for VG-876,879 "4"=HDMI5, "5"=HDMI6, "6"=HDMI7, "7"=HDMI8, "8"=HDMI9, "9"=HDMI10, "10"=HDMI11, "11"=HDMI12, "12"=HDMI13, "13"=HDMI14 "14"=HDMI15 "15"=HDMI16
,	1 byte	2CH (Delimiter)
Mode	1 byte	"0"=Monitor "1"=InitiateByVG "2"=TerminateByVG "3"=Initiate without CMD "4"=Terminate without CMD
,	1 byte	2CH (Delimiter)
VG Logical Address	1 byte	"0"-"F"
,	1 byte	2CH (Delimiter)
Follower Mode	1 byte	"0"=Auto "1"=Manual
,	1 byte	2CH (Delimiter)
Follower Logical Address	1 byte	"0"-"F"
ETX	1 byte	03H

Fig 2-121-2

2.122 SHECA4 [20H ADH] :HDCP, EDID, CEC, HDMI ARC ON/OFF data setting

Function : This command sets HDCP, EDID, CEC, HDMI ARC ON/OFF data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
SHECA4	2 bytes	20H ADH
Program NO	1 to 4 bytes	"0"-"1000","9999"
,	1 byte	2CH (Delimiter)
HDCP ON/OFF	1 byte	40H-4FH *
,	1 byte	2CH (Delimiter)
EDID ON/OFF	1 byte	40H-4FH *
,	1 byte	2CH (Delimiter)
CEC ON/OFF	1 byte	40H-4FH *
,	1 byte	2CH (Delimiter)
HDMI ARC ON/OFF	1 byte	40H-4FH *
ETX	1 byte	03H

Fig 2-122-1

* The data configuration is shown below.

Bit7							Bit0
0	1	0	0	Port 4	Port 3	Port 2	Port 1

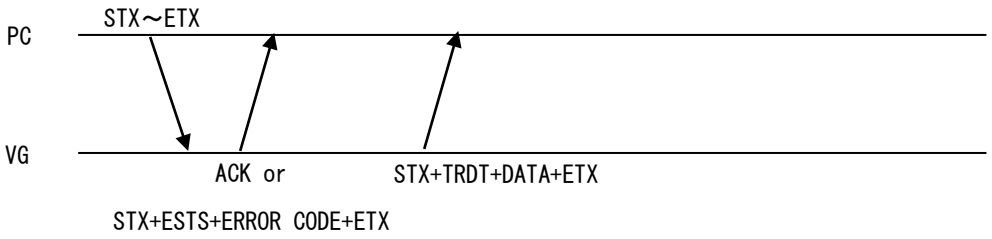
Low=Off, High=On, Bit4 to 7 are fixed.

***This command is only for VG-883.**

2.123 LHECA4 [20H AEH] : HDCP, EDID, CEC, HDMI ARC ON/OFF data aquisition

Function : This command gets HDCP, EDID, CEC, HDMI ARC ON/OFF data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LHECA4	2 bytes	20H AEH
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig 2-123-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
HDCP ON/OFF	1 byte	40H-4FH *
,	1 byte	2CH (Delimiter)
EDID ON/OFF	1 byte	40H-4FH *
,	1 byte	2CH (Delimiter)
CEC ON/OFF	1 byte	40H-4FH *
,	1 byte	2CH (Delimiter)
HDMI ARC ON/OFF	1 byte	40H-4FH *
ETX	1 byte	03H

Fig 2-123-2

* The data configuration is shown below.

Bit7							Bit0
0	1	0	0	Port 4	Port 3	Port 2	Port 1

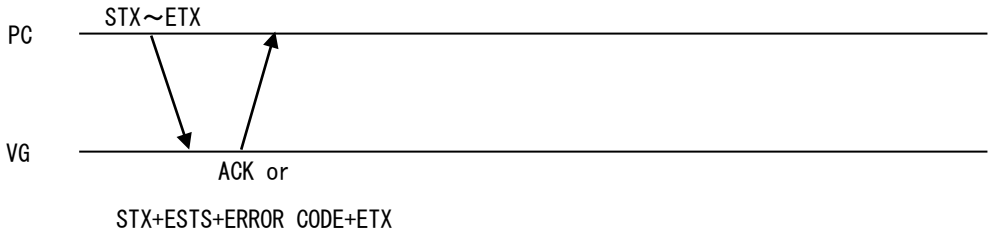
Low=Off, High=On, Bit4 to 7 are fixed.

***This command is only for VG-883.**

2.124 STM4 [20H AFH] : Transmission Mode data setting

Function : This command sets Transmission Mode data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE2



Parameter :

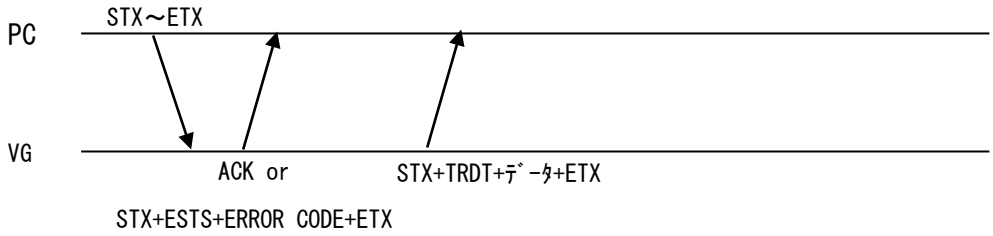
STX	1 byte	02H
VG4CMD	1 byte	FDH
STM4	2 bytes	20H AFH
Program NO	1 to 4 bytes	"0"-"1000","9999"
,	1 byte	2CH (Delimiter)
PacketType	1 byte	"0"-"9"
,	1 byte	2CH (Delimiter)
Interval	1 byte	"0"-"20"
ETX	1 byte	03H

Fig 2-124-1

2.125 LTM4 [20H B0H] :Transmission Mode data aquisition

Function : This command gets Transmission Mode data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LARC4	2 bytes	20H B0H
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig 2-125-1

Data :

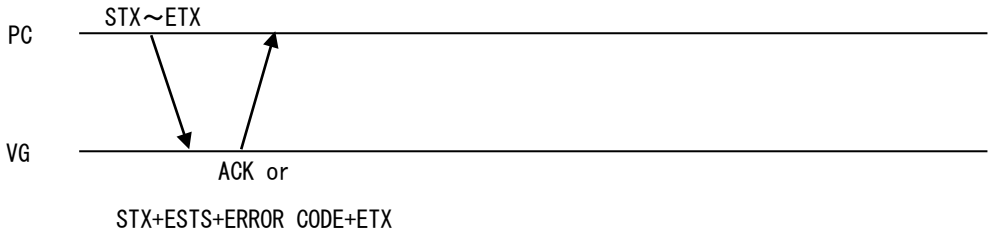
STX	1 byte	02H
TRDT	1 byte	10H
PacketType	1 byte	"0"-"9"
,	1 byte	2CH (Delimiter)
Interval	1 byte	"0"-"20"
ETX	1 byte	03H

Fig 2-125-2

2.126 SHEC4 [20H B1H] : HDMI HEC data setting

Function : This command sets HDMI CEC data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
SARC4	2 bytes	20H B1H
Program NO	1 to 4 bytes	"0"-"1000","9999"
Port Select	1 byte	"0"=port 1 "1"=port 2 * select HDMI port "2"=port 3 "3"=port 4 * this is for VG-882-A
,	1 byte	2CH (Delimiter)
TestMode	1 byte	"0"=auto "1"=CDC "2"=Network
,	1 byte	2CH (Delimiter)
CdcMsg	1 byte	"0"=Inquire State "1"=Report State "2"=Set State Adjacent "3"=Set State "4"=Request Deactivation "5"=Notify Alive "6"=Discover
,	1 byte	2CH (Delimiter)
Target Ip Address1	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Target Ip Address2	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Target IP Address3	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Target IP Address4	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Test Sequence	1 byte	"0"=Sample1 "1"=Sample2 "2"=Sample3 "3"=Sample4 "4"=Sample5 "5"=User1 "6"=User2 "7"=User3 "8"=User4 "9"=User5
,	1 byte	2CH (Delimiter)
Vg Logical Address	1 byte	"0"-"F"
,	1 byte	2CH (Delimiter)
Target Logical Address	1 byte	"0"-"F"
,	1 byte	2CH (Delimiter)
Inquire State		
TermDevPa1	4 bytes	"0000" - "FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
TermDevPa2	4 bytes	"0000" - "FFFF"

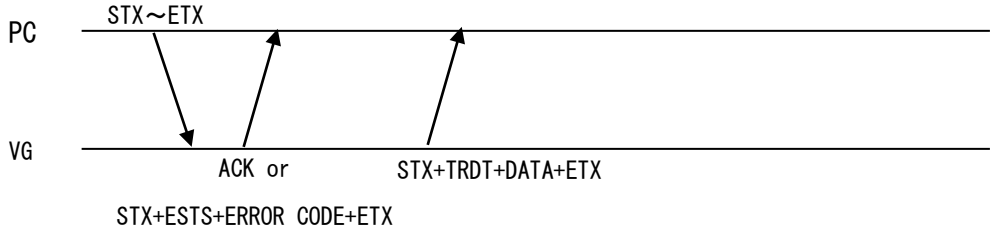
		[0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
Report State		
TargetDevPa	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
HEC Func State	1 byte	"0"= HEC Not Support "1"= HEC Inactive "2"= HEC Active "3"= HEC Activation Field
,	1 byte	2CH (Delimiter)
Host Func State	1 byte	"0"= Host Not Supported "1"= Host Inactive "2"= Host Active
,	1 byte	2CH (Delimiter)
ENC Func State	1 byte	"0"= Ext Con Not Supported "1"= Ext Con Inactive "2"= Ext Con Active
,	1 byte	2CH (Delimiter)
CDC Error Code	1 byte	"0"= No Error "1"= Initiator does not have the requested Capability "2"= Initiator is not capable to carry out the request in this state "3"= Other Error
,	1 byte	2CH (Delimiter)
Set State Adjacent		
Set Mode	1 byte	"0"=Auto "1"=Manual
,	1 byte	2CH (Delimiter)
TermDevPa	4 bytes	"0000"～"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
Hec Set State	1 byte	"0"=Deactivate HEC "1"=Activate HEC
,	1 byte	2CH (Delimiter)
Set State		
TermDevPa1	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
TermDevPa2	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
Hec Set State	1 byte	"0"=Deactivate HEC "1"=Activate HEC
,	1 byte	2CH (Delimiter)
Request Deactivation		
ActivatorPa	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
TermDevPa1	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
TermDevPa2	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
Notify Alive		
SndInterval1	1 to 3 bytes	"0"-"150"
,	1 byte	2CH (Delimiter)
SndInterval2	1 to 3 bytes	"0"-"150"
,	1 byte	2CH (Delimiter)
SndInterval3	1 to 3 bytes	"0"-"150"
,	1 byte	2CH (Delimiter)
SendTime	1 to 2 bytes	"1"-"10"
ETX	1 byte	03H

Fig 2-126-1

2.127 LHEC4 [20H B2H] : HDMI HEC data aquisition

Function : This command gets Transmission Mode data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LARC4	2 bytes	20H B2H
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig 2-127-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
Port Select	1 byte	"0"=port 1 "1"=port 2 * select HDMI port "2"=port 3 "3"=port 4 * this is for VG-882-A
,	1 byte	2CH (Delimiter)
TestMode	1 byte	"0"=auto "1"=CDC "2"=Network
,	1 byte	2CH (Delimiter)
CdcMsg	1 byte	"0"=Inquire State "1"=Report State "2"=Set State Adjacent "3"=Set State "4"=Request Deactivation "5"=Notify Alive "6"=Discover
,	1 byte	2CH (Delimiter)
Target IP Address1	1 to 3 byte	"0"-"255"
,	1 byte	2CH (Delimiter)
Target IP Address2	1 to 3 byte	"0"-"255"
,	1 byte	2CH (Delimiter)
Target IP Address3	1 to 3 byte	"0"-"255"
,	1 byte	2CH (Delimiter)
Target IP Address4	1 to 3 byte	"0"-"255"
,	1 byte	2CH (Delimiter)
Test Sequence	1 byte	"0"=Sample1 "1"=Sample2 "2"=Sample3 "3"=Sample4 "4"=Sample5 "5"=User1 "6"=User2 "7"=User3 "8"=User4 "9"=User5
,	1 byte	2CH (Delimiter)
Vg Logical Address	1 byte	"0"-"F"
,	1 byte	2CH (Delimiter)

Target Logical Address	1 byte	"0"-"F"
,	1 byte	2CH (Delimiter)
Inquire State		
TermDevPa1	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
TermDevPa2	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
Report State		
TargetDevPa	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
HEC Func State	1 byte	"0"= HEC Not Support "1"= HEC Inactive "2"= HEC Active "3"= HEC Activation Field
,	1 byte	2CH (Delimiter)
Host Func State	1 byte	"0"= Host Not Supported "1"= Host Inactive "2"= Host Active
,	1 byte	2CH (Delimiter)
ENC Func State	1 byte	"0"= Ext Con Not Supported "1"= Ext Con Inactive "2"= Ext Con Active
,	1 byte	2CH (Delimiter)
CDC Error Code	1 byte	"0"= No Error "1"= Initiator does not have the requested Capability "2"= Initiator is not capable to carry out the request in this state "3"= Other Error
,	1 byte	2CH (Delimiter)
Set State Adjacent		
Set Mode	1 byte	"0"=Auto "1"=Manual
,	1 byte	2CH (Delimiter)
TermDevPa	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
Hec Set State	1 byte	"0"=Deactivate HEC "1"=Activate HEC
,	1 byte	2CH (Delimiter)
Set State		
TermDevPa1	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
TermDevPa2	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
Hec Set State	1 byte	"0"=Deactivate HEC "1"=Activate HEC
,	1 byte	2CH (Delimiter)
Request Deactivation		
ActivatorPa	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
TermDevPa1	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
TermDevPa2	4 bytes	"0000"-"FFFF" [0]upper 2 digits [1]lower 2 digits
,	1 byte	2CH (Delimiter)
Notify Alive		
SndInterval1	1 to 3 bytes	"0"-"150"
,	1 byte	2CH (Delimiter)
SndInterval2	1 to 3 bytes	"0"-"150"
,	1 byte	2CH (Delimiter)
SndInterval3	1 to 3 bytes	"0"-"150"

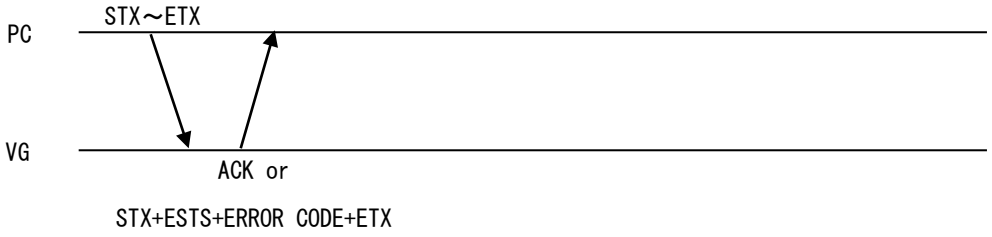
,	1 byte	2CH (Delimiter)
SendTime	1 to 2 bytes	"1"-"10"
ETX	1 byte	03H

Fig 2-127-2

2.128 SSMD3D4 [20H B3H] :SMD 3D Pattern data setting

Function : This command sets SMD 3D pattern data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE2



Parameter :

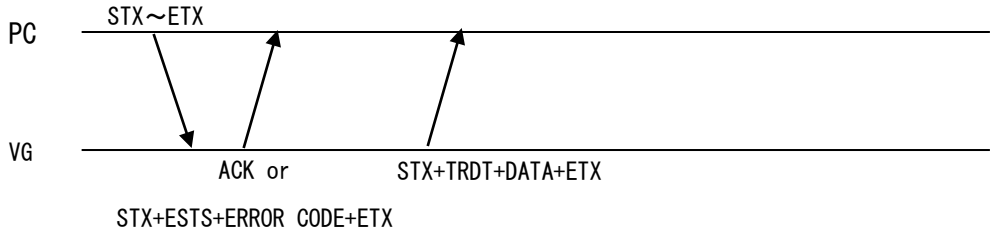
STX	1 byte	02H
VG4CMD	1 byte	FDH
SPOWER4	2 bytes	20H B3H
Program NO	1 to 4 bytes	"0"-"1000","9999"
,	1 byte	2CH (Delimiter)
Bit Mode	1 to 2 bytes	"8"-"16"
,	1 byte	2CH (Delimiter)
Pattern Type	1 bytes	"0"= Perfect circle "1"= Square
,	1 byte	2CH (Delimiter)
Pattern Size	1 to 3 bytes	"0"-"100"
,	1 byte	2CH (Delimiter)
Marker OnOff	1 byte	"0"= Off "1"= On
,	1 byte	2CH (Delimiter)
OutputMode	1 byte	"0"=3D Structure "1"=Frame Sequential
,	1 byte	2CH (Delimiter)
Left Position X	1 to 3 bytes	"0"-"640"
,	1 byte	2CH (Delimiter)
Left Position Y	1 to 3 bytes	"0"-"480"
,	1 byte	2CH (Delimiter)
Right Position X	1 to 3 bytes	"0"-"640"
,	1 byte	2CH (Delimiter)
Right Position Y	1 to 3 bytes	"0"-"480"
,	1 byte	2CH (Delimiter)
LeftColor R	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
LeftColor G	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
LeftColor B	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
RightColor R	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
RightColor G	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
RightColor B	1 to 5 bytes	"0"-"65535"
ETX	1 byte	03H

Fig 2-128-1

2.129 LSMD3D4 [20H B4H] : SMD 3D pattern data aquisition

Function : This command gets SMD 3D pattern data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LARC4	2 bytes	20H B4H
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig 2-129-1

Data :

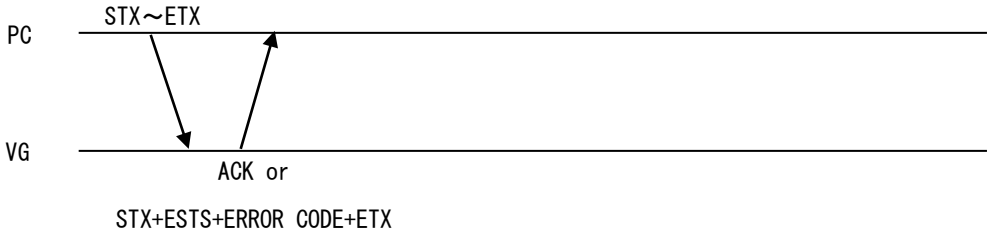
STX	1 byte	02H
TRDT	1 byte	10H
Bit Mode	1 to 2 bytes	"8"-"16"
,	1 byte	2CH (Delimiter)
Pattern Type	1 byte	"0"= Perfect circle "1"= Square
,	1 byte	2CH (Delimiter)
Pattern Size	1 to 3 byte	"0"-"100"
,	1 byte	2CH (Delimiter)
Marker OnOff	1 byte	"0"= Off "1"= On
,	1 byte	2CH (Delimiter)
OutputMode	1 byte	"0"=3D Structure "1"=Frame Sequential
,	1 byte	2CH (Delimiter)
Left Position X	1 to 3 byte	"0"-"640"
,	1 byte	2CH (Delimiter)
Left Position Y	1 to 3 byte	"0"-"480"
,	1 byte	2CH (Delimiter)
Right Position X	1 to 3 byte	"0"-"640"
,	1 byte	2CH (Delimiter)
Right Position Y	1 to 3 byte	"0"-"480"
,	1 byte	2CH (Delimiter)
LeftColor R	1 to 5 byte	"0"-"65535"
,	1 byte	2CH (Delimiter)
LeftColor G	1 to 5 byte	"0"-"65535"
,	1 byte	2CH (Delimiter)
LeftColor B	1 to 5 byte	"0"-"65535"
,	1 byte	2CH (Delimiter)
RightColor R	1 to 5 byte	"0"-"65535"
,	1 byte	2CH (Delimiter)
RightColor G	1 to 5 byte	"0"-"65535"
,	1 byte	2CH (Delimiter)
RightColor B	1 to 5 byte	"0"-"65535"
ETX	1 byte	03H

Fig 2-129-2

2.130 S3DIMG4 [20H B5H] : 3D Image pattern data setting

Function : This command gets 3D Image pattern data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
S3DPAT4	2 bytes	20H B5H
Program NO	1 to 4 bytes	"0"-"1000","9999"
,	1 byte	2CH (Delimiter)
ImageType	1 byte	"0"=Bitmap "1"=MonoScope "2"=China Pattern
,	1 byte	2CH (Delimiter)
LeftImage	1 to 3 bytes	"1"-"200"
,	1 byte	2CH (Delimiter)
RightImage	1 to 3 bytes	"1"-"200"
,	1 byte	2CH (Delimiter)
LeftDeviation	2 to 5 bytes	"12048"-"02048" (-2048 to 2048)
,	1 byte	2CH (Delimiter)
RightDeviation	2 to 5 bytes	"12048"-"02048" (-2048 to 2048)
,	1 byte	2CH (Delimiter)
LR ON/OFF	1 to 2 bytes	"0"=L / R ON "1"=L ON / R OFF "2"=L OFF / R ON "3"=L ON / R(O) ON / R(E) OFF "4"=L ON / R(O) OFF / R(E) ON "5"=L OFF / R(O) ON / R(E) OFF "6"=L OFF / R(O) OFF / R(E) ON "7"=L(O) ON / L(E) OFF / R ON "8"=L(O) OFF / L(E) ON / R ON "9"=L(O) ON / L(E) OFF / R OFF "10"L(O) OFF / L(E) ON / R OFF "11"=L(O) ON / L(E) OFF / R(O) ON / R(E) OFF "12"=L(O) ON / L(E) OFF / R(O) OFF / R(E) ON "13"=L(O) OFF / L(E) ON / R(O) ON / R(E) OFF "14"=L(O) OFF / L(E) ON / R(O) OFF / R(E) ON
,	1 byte	2CH (Delimiter)
Color R (When L/R is OFF)	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Color G (When L/R is OFF)	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Color B (When L/R is OFF)	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Level L (When L/R is ON)	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
Level R (When L/R is ON)	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
OutputMode	1 byte	"0"=3D Structure "1"=Frame Sequential

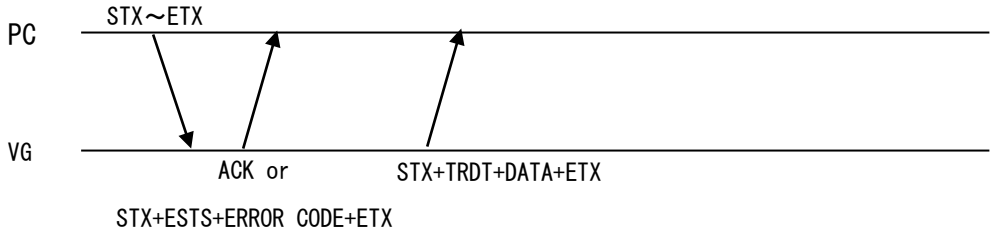
,	1 byte	2CH (Delimiter)
LRDisp	1 byte	"0"=OFF "1"= Display on top "2"= Display in center
,	1 byte	2CH (Delimiter)
LRBlackBack	1 byte	"0"=Not use "1"=Use
,	1 byte	2CH (Delimiter)
SubSampling	1 byte	"0"=Not use "1"=Use
ETX	1 byte	03H

Fig 2-130-1

2.131 L3DIMG4 [20H B5H] : 3D Image pattern data aquisition

Function : This command gets 3D Image pattern data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LARC4	2 bytes	20H B5H
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig 2-131-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
ImageType	1 byte	"0"=Bitmap "1"=MonoScope "2"=China Pattern
,	1 byte	2CH (Delimiter)
LeftImage	1 to 3 bytes	"1"-"200"
,	1 byte	2CH (Delimiter)
RightImage	1 to 3 bytes	"1"-"200"
,	1 byte	2CH (Delimiter)
LeftDeviation	2 to 5 bytes	"12048"-"02048" (-2048 to 2048)
,	1 byte	2CH (Delimiter)
RightDeviation	2 to 5 bytes	"12048"-"02048" (-2048 to 2048)
,	1 byte	2CH (Delimiter)
LR ON/OFF	1 to 2 bytes	"0"=L / R ON "1"=L ON / R OFF "2"=L OFF / R ON "3"=L ON / R(O) ON / R(E) OFF "4"=L ON / R(O) OFF / R(E) ON "5"=L OFF / R(O) ON / R(E) OFF "6"=L OFF / R(O) OFF / R(E) ON "7"=L(O) ON / L(E) OFF / R ON "8"=L(O) OFF / L(E) ON / R ON "9"=L(O) ON / L(E) OFF / R OFF "10"L(O) OFF / L(E) ON / R OFF "11"=L(O) ON / L(E) OFF / R(O) ON / R(E) OFF "12"=L(O) ON / L(E) OFF / R(O) OFF / R(E) ON "13"=L(O) OFF / L(E) ON / R(O) ON / R(E) OFF "14"=L(O) OFF / L(E) ON / R(O) OFF / R(E) ON
,	1 byte	2CH (Delimiter)
Color R (When L/R is OFF)	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Color G (When L/R is OFF)	1 to 3 bytes	"0"-"255"
,	1 byte	2CH (Delimiter)
Color B (When L/R is OFF)	1 to 3 bytes	"0"-"255"

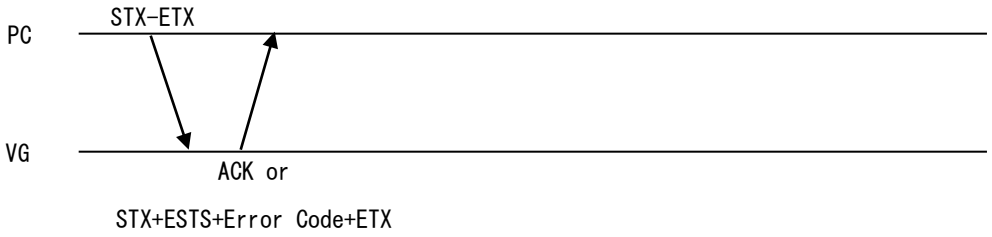
,	1 byte	2CH (Delimiter)
Level L (When L/R is ON)	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
Level R (When L/R is ON)	1 to 3 bytes	"0"-"100"%
,	1 byte	2CH (Delimiter)
OutputMode	1 byte	"0"=3D Structure "1"=Frame Sequential
,	1 byte	2CH (Delimiter)
LRDisp	1 byte	"0"=OFF "1"= Display on top "2"= Display in center
,	1 byte	2CH (Delimiter)
LRBlackBack	1 byte	"0"=Not use "1"=Use
,	1 byte	2CH (Delimiter)
SubSampling	1 byte	"0"=Not use "1"=Use
ETX	1 byte	03H

Fig 2-131-2

2.132 SCON4 [20H BBH] : Output terminal setting

Function : This command sets Output terminal data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
SCON4	2 bytes	20H BBH
Program NO	1 to 4 bytes	"0"-"1000","9999"
,	1 byte	2CH (Delimiter)
Output terminal code#1	1 to 3 bytes	"0"-"999"
,	1 byte	2CH (Delimiter)
Output terminal information #1	1 to 3 bytes	"0"=OFF, "1"=ON
,	1 byte	2CH (Delimiter)
Output terminal code #2	1 to 3 bytes	"0"-"999"
,	1 byte	2CH (Delimiter)
Output terminal information #2	1 byte	"0"=OFF, "1"=ON
Output terminal code #N	1 to 3 bytes	"0"-"999"
,	1 byte	2CH (Delimiter)
Output terminal information #N	1 byte	"0"=OFF, "1"=ON
ETX	1 byte	03H

Fig. 2.132-1

* About output terminal code, refer to Fig.2-132-2 for VG-870, 871, 873, 874 and 880. Refer to Fig. 2-132-3 for VG-878/-A. Refer to Fig.2-132-4 for VG-876 and 879.

* If the output terminal code that does not exist in VG, it is ignored.

*** Please use terminal ON / OFF setting in "2.5 SOT4 [20H 24H]: Output condition data registration" command for VG-882, 884.**

About output terminal code:

***VG-870, 871, 873, 874 and 880**

Code	Terminal
0	PC-BNC
1	PC-DSub
2	DVI-A
3	DVI-D
4	VBS
5	BNC
6	S-Connector
7	D-Connector
8	TV-DSub
9	Scart-1
10	Scart-2
11	HDMI-1
12	HDMI-2
13	DVI-D1
14	DVI-D2
15	LVDS-1
16	LVDS-2
17	LVDS-3
18	LVDS-4
19	Parallel-1
20	Parallel-2
21	Parallel-3
22	Parallel-4
23	DP1
24	DP2
25	TV-DVI Digital
26	iTMDS-1
27	iTMDS-2
28	VbyOne-1
29	VbyOne-2
30	iTMDS-Quad1,2
31	iTMDS-Quad3,4
32	SDI-1,2
33	SDI-3,4

Fig. 2.132-2

*** VG-878, 878-A**

Code	Terminal
50	HDMI 1
51	HDMI 2
52	HDMI 3
53	HDMI 4
54	VGA
55	YPbPr
57	CVBS
58	Y/C
59	Scart

Fig. 2.132-3

*** VG-876, 879**

Code	Terminal
100	HDMI-1
101	HDMI-2
102	HDMI-3
103	HDMI-4
104	HDMI-5
105	HDMI-6
106	HDMI-7
107	HDMI-8
108	HDMI-9
109	HDMI-10
110	HDMI-11
111	HDMI-12
112	HDMI-13
113	HDMI-14
114	HDMI-15
115	HDMI-16
116	DisplayPort-1
117	DisplayPort -2
118	DisplayPort -3
119	DisplayPort -4
120	DisplayPort -5
121	DisplayPort -6
122	DisplayPort -7
123	DisplayPort -8
132	SDI-1
133	SDI-2
134	SDI-3
135	SDI-4
136	SDI-5
137	SDI-6
138	SDI-7
139	SDI-8
140	SDI-9
141	SDI-10
142	SDI-11
143	SDI-12
144	SDI-13
145	SDI-14
146	SDI-15
147	SDI-16
148	V-by-One-1
149	V-by-One-2
150	V-by-One-3
151	V-by-One-4
152	V-by-One-5
153	V-by-One-6

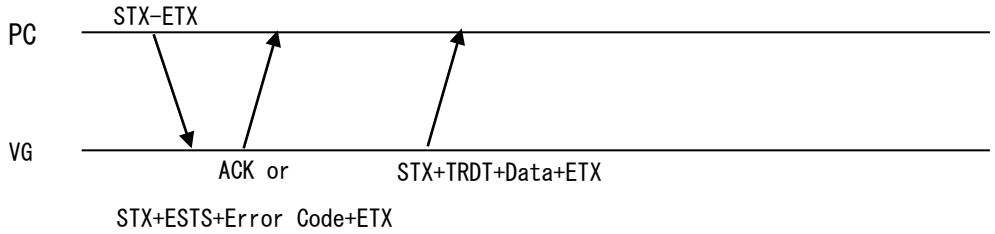
Code	Terminal
154	V-by-One-7
155	V-by-One-8
156	V-by-One-9
157	V-by-One-10
158	V-by-One-11
159	V-by-One-12
160	V-by-One-13
161	V-by-One-14
162	V-by-One-15
163	V-by-One-16
164	VGA1
165	VGA2
166	VGA3
167	VGA4
168	YPbPr1
169	YPbPr2
170	YPbPr3
171	YPbPr4
172	Composite1
173	Composite2
174	Composite3
175	Composte4
176	iTMDS 1
177	iTMDS 2
178	iTMDS 3
179	iTMDS 4
180	iTMDS 5
181	iTMDS 6
182	iTMDS 7
183	iTMDS 8
184	HDBaseT 1
185	HDBaseT 2
186	HDBaseT 3
187	HDBaseT 4
188	HDBaseT 5
189	HDBaseT 6
190	HDBaseT 7
191	HDBaseT 8
192	HDBaseT 9
193	HDBaseT 10
194	HDBaseT 11
195	HDBaseT 12
196	HDBaseT 13
197	HDBaseT 14
198	HDBaseT 15
199	HDBaseT 16

Fig. 2.132-4

2.133 LCON4 [20H BCH] : Output terminal acquisition

Function : This command gets Output terminal data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LCON4	2 bytes	20H BCH
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig. 2.133-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
Output terminal code#1	1 to 3 bytes	"0"～"999"
,	1 byte	2CH (Delimiter)
Output terminal information #1	1 to 2 bytes	"0"=OFF, "1"=ON
,	1 byte	2CH (Delimiter)
Output terminal code #2	1 to 3 bytes	"0"-"999"
,	1 byte	2CH (Delimiter)
Output terminal information #2	1 byte	"0"=OFF, "1"=ON
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Output terminal code #N	1 to 3 bytes	"0"-"999"
,	1 byte	2CH (Delimiter)
Output terminal information #N	1 byte	"0"=OFF, "1"=ON
ETX	1 byte	03H

Fig. 2.133-2

* About output terminal code, refer to Fig.2-132-2 for VG-870, 871, 873, 874 and 880. Refer to Fig. 2-132-3 for VG-878/-A. Refer to Fig.2-132-4 for VG-876 and 879.

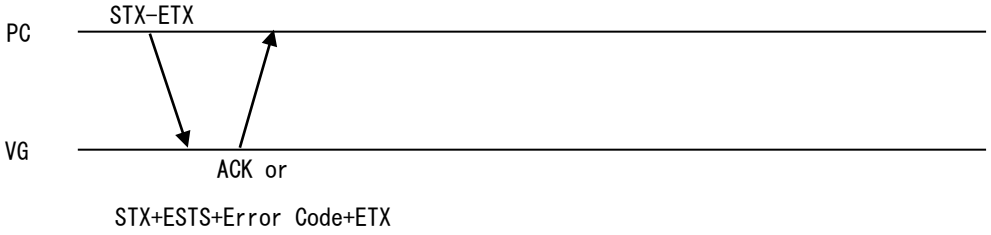
* If the output terminal code that does not exist in VG, it is ignored.

*** Please use terminal ON / OFF setting in "2.5 SOT4 [20H 24H]: Output condition data registration" command for VG-882, 884.**

2.134 SDIV4 [20H BDH] : DotClk Mode Data setting

Function : This command sets Dot Clock Mode data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.

Sequence : TYPE2



Parameter :

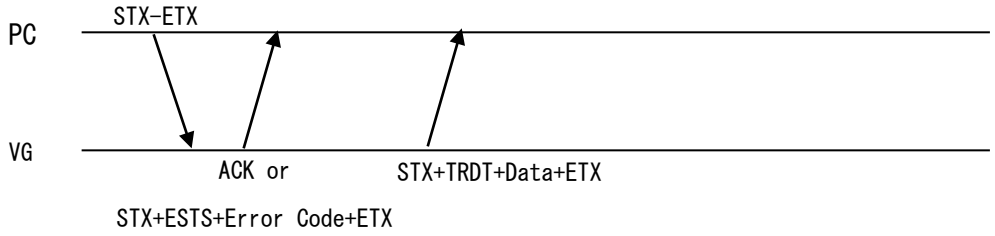
STX	1 byte	02H
VG4CMD	1 byte	FDH
SDIV4	2 bytes	20H BDH
Program NO	1 to 4 bytes	"0"-"1000","9999"
,	1 byte	2CH (Delimiter)
DotClk Mode	1 byte	"0"=Auto "1"=Single "2"=Dual "3"=Quad
,	1 byte	2CH (Delimiter)
Split Mode	1 to 2 bytes	"0"-"10"
ETX	1 byte	03H

Fig. 2.134-1

2.135 LDIV4 [20H BEH] : DotClk Mode Data Acquisition

Function : This command gets Dot Clock Mode data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LDIV4	2 bytes	20H BEH
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig. 2.135-1

Data :

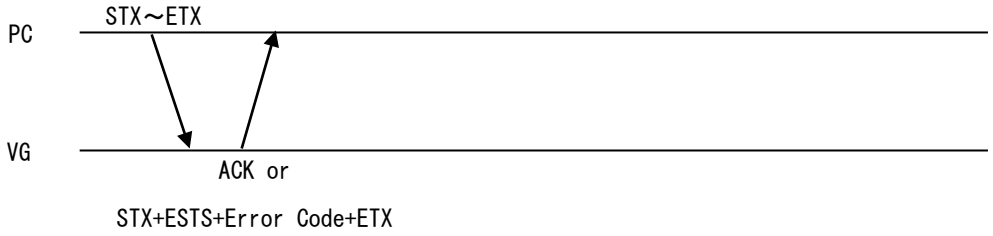
STX	1 byte	02H
TRDT	1 byte	10H
DotClk Mode	1 byte	"0"=Auto "1"=Single "2"=Dual "3"=Quad
,	1 byte	2CH (Delimiter)
Split Mode	1 to 2 bytes	"0"-"10"
ETX	1 byte	03H

Fig. 2.135-2

2.136 SSCDC4 [20H BFH] : SCDC List Port Data Setting

Function : This command sets SCDC List Port data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.Function :

Sequence : TYPE 2



Parameter :

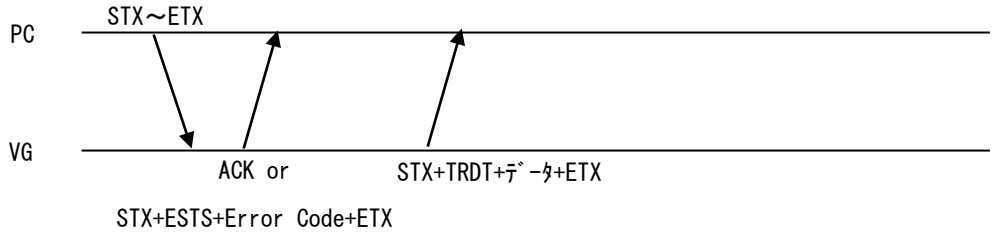
STX	1 byte	02H
VG4CMD	1 byte	FDH
SSCD4	2 bytes	20H BFH
Program NO	1 to 4 bytes	"0"-"1000","9999"
,	1 byte	2CH (Delimitter)
Port	1 byte	"0"= HDMI 1 "1"= HDMI 2 "2"= HDMI 3 "3"= HDMI 4 "4"= HDMI 5 "5"= HDMI 6 "6"= HDMI 7 "7"= HDMI 8
ETX	1 byte	03H

Fig. 2.136-1

2.137 LSCDC4 [20H C0H] :SCDC List Port data Acquisition

Function : This command gets SCDC List Port data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LSCDC4	2 bytes	20H C0H
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig. 2.137-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
Port	1 byte	"0"= HDMI 1 "1"= HDMI 2 "2"= HDMI 3 "3"= HDMI 4 "4"= HDMI 5 "5"= HDMI 6 "6"= HDMI 7 "7"= HDMI 8
ETX	1 byte	03H

Fig. 2.137-2

2.138 SMVM4 [20H C1H] : Multi VG Mode data setting

Function : This command sets Multi VG mode data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.Function :

Sequence : TYPE 2

Parameter :

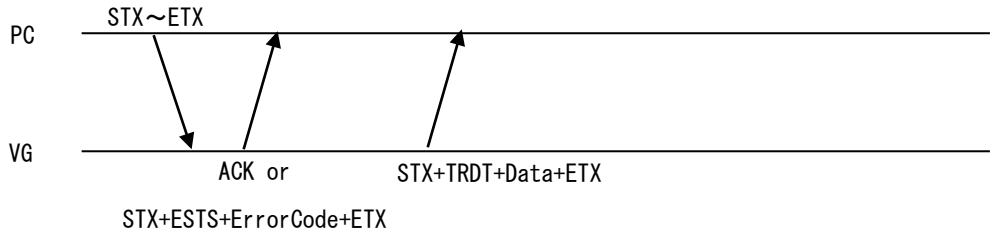
STX	1 byte	02H
VG4CMD	1 byte	FDH
SMVM4	2 bytes	20H C1H
ProgramNO	1 to 4 bytes	"0"-"1000","9999"
,	1 byte	2CH (delimiter)
Mode	1 byte	"0"=Auto "1"=H2/V2Div (Cross Split) "2"=V4Div (Vertically 4 split) "3"=H2Div (Vertically 2 split)
ETX	1 byte	03H

Fig. 2.138-1

2.139 LMVM4 [20H C2H] : Multi VG Mode data acquisition

Function : This command gets Multi VG mode data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LMVM4	2 bytes	20H C2H
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig. 2.139-1

Data :

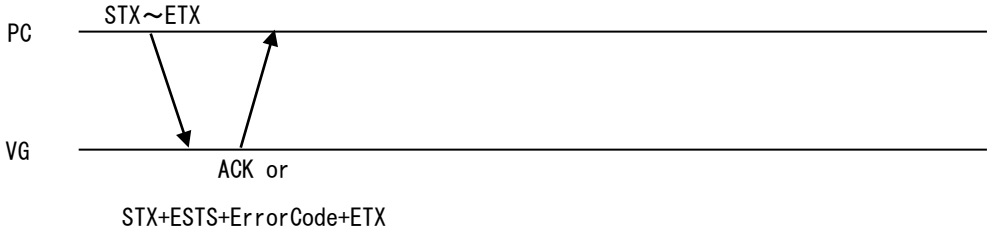
STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	"0"=Auto "1"=H2/V2Div (Cross Split) "2"=V4Div (Vertically 4 split) "3"=H2Div (Vertically 2 split)
ETX	1 byte	03H

Fig. 2.139-2

2.140 SHDR4 [20H C5H] : Dynamic Range and Mastering InfoFrame data setting

Function : This command sets Dynamic Range and Mastering data of the indicated program No. In case, program No.0, the data is saved in buffer RAM temporally. In case, NO.9999, the data is saved in command work RAM.Function :

Sequence : TYPE 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
SHDR4	2 byte	20H C5H
Program NO	1 to 4 bytes	"0"-"2000","9999"
,	1 byte	2CH (delimiter)
On/Off	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (delimiter)
Type	1 byte	"7"=7
,	1 byte	2CH (delimiter)
Version	1 byte	"1"=1
,	1 byte	2CH (delimiter)
EOTF	1 byte	"0"=SDR Range "1"=HDR Range "2"=SMPTE ST2084 "3"=Hybrid Log-Gamma
,	1 byte	2CH (delimiter)
Metadata ID	1 byte	"0"=0
,	1 byte	2CH (delimiter)
Disp Primaries x0	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
Disp Primaries y0	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
Disp Primaries x1	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
Disp Primaries y1	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
Disp Primaries x2	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
Disp Primaries y2	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
White Point x	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
White Point y	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
Max Disp Mastering	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (delimiter)
Min Disp Mastering	1 to 5 bytes	"0"-"65535" *** The value is 10,000 times ofactual value.**
,	1 byte	2CH (delimiter)
Content Light LV	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (delimiter)
Frame-ave Light LV	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT

ETX	1 byte	03H

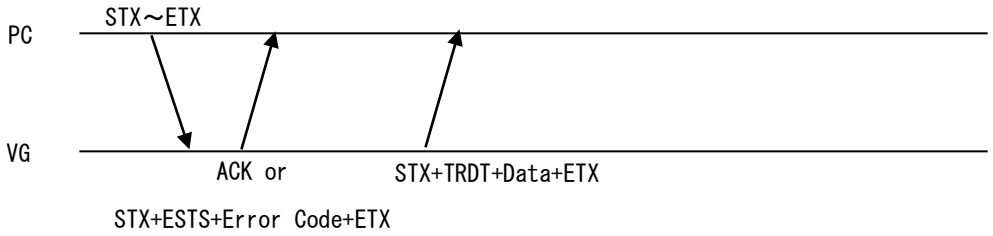
Fig. 2.140-1

***1**
The value is set by 2 step increment.
The setting value is 100,000 times of actual value.

2.141 LHDR4 [20H C6H] : Dynamic Range and Mastering InfoFrame Data Acquisition

Function : This command gets Dynamic Range and Mastering InfoFrame data of the indicated program No. In case program NO.1001 to 2000, the VG original data is read out. In case ,NO.9999, the data is read out from command work RAM.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LDRM4	2 bytes	20H C6H
Program NO	1 to 4 bytes	"0"-"2000","9999"
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT
ETX	1 byte	03H

Fig. 2.141-1

As shown below, if you skip Data Type setting of HDMI or HDBaseT, Dynamic Range and Mastering InfoFrame data of HDMI setting is received.

STX	1 byte	02H
VG4CMD	1 byte	FDH
LDRM4	2 bytes	20H C6H
Program NO	1 to 4 bytes	"0"-"2000","9999"
ETX	1 byte	03H

Fig. 2.141-2

Data :

STX	1 byte	02H
TRDT	1 byte	10H
On/Off	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (delimiter)
Type	1 byte	"7"=7
,	1 byte	2CH (delimiter)
Version	1 byte	"1"=1
,	1 byte	2CH (delimiter)
EOTF	1 byte	"0"=SDR Range "1"=HDR Range "2"=SMPTE ST2084 "3"=Hybrid Log-Gamma
,	1 byte	2CH (delimiter)
Metadata ID	1 byte	"0"=0
,	1 byte	2CH (delimiter)
Disp Primaries x0	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
Disp Primaries y0	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
Disp Primaries x1	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
Disp Primaries y1	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
Disp Primaries x2	1 to 6 bytes	"0"-"100000" ***1**

,	1 byte	2CH (delimiter)
Disp Primaries y2	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
White Point x	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
White Point y	1 to 6 bytes	"0"-"100000" ***1**
,	1 byte	2CH (delimiter)
Max Disp Mastering	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (delimiter)
Min Disp Mastering	1 to 5 bytes	"0"-"65535" *** The value is 10,000 times ofactual value.**
,	1 byte	2CH (delimiter)
Content Light LV	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (delimiter)
Frame-ave Light LV	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
Data Type	1 byte	"0"=HDMI , "1"=HDBaseT
ETX	1 byte	03H

Fig. 2.141-3

***1**
The value is set by 2 step increment.
The setting value is 100,000 times of actual value.

2.142 SUDW4 [20H C7H] : User Data Word data setting

Function : Set "User Data Word" data of config.
Sequence : TYPE 2

Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
SUDW4	2 bytes	20H C7H
UDW 01 data	1 to 3 bytes	"0"-"2FF"
,	1 byte	2CH (delimiter)
UDW 02 data	1 to 3 bytes	"0"-"2FF"
,	1 byte	2CH (delimiter)
UDW 254 data	1 to 3 bytes	"0"-"2FF"
,	1 byte	2CH (delimiter)
UDW 255 data	1 to 3 bytes	"0"-"2FF"
ETX	1 byte	03H

Fig. 2.142-1

* Maximum value of setting data changes depending on ON / OFF of "SDI ANC Parity" in the configuration data.

SDI ANC Pariyt = OFF: 10 bit setting *Maximum is 0x2FF (767)
SDI ANC Pariyt = ON: 8 bit setting

* It becomes effective only for the setting value of "SDI ANC DC" of the configuration data. It is also possible to transmit only the set value of "SDI ANC DC".

Example) SDI ANC DC = 4

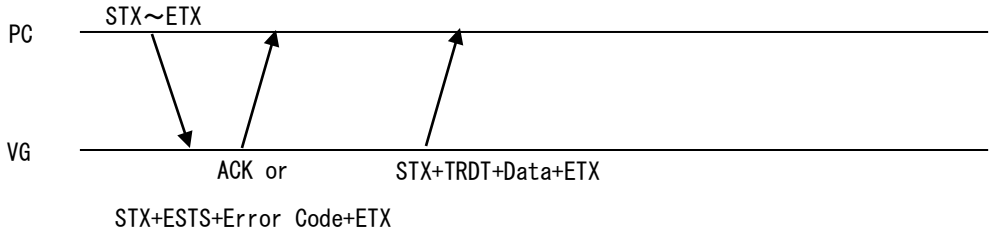
STX	1 byte	02H
VG4CMD	1 byte	FDH
SUDW4	2 bytes	20H C7H
UDW 01 data	1 to 3 bytes	"0"-"2FF"
,	1 byte	2CH (delimiter)
UDW 02 data	1 to 3 bytes	"0"-"2FF"
,	1 byte	2CH (delimiter)
UDW 03 data	1 to 3 bytes	"0"-"2FF"
,	1 byte	2CH (delimiter)
UDW 04 data	1 to 3 bytes	"0"-"2FF"
ETX	1 byte	03H

Fig. 2.142-2

*** Before setting this command, be sure to set "1: Update" at "Code: 516 SDI ANC UDW update flag" setting in "2.50 SCFG4 [20H 54H]: Config data registration" Make sure to set the command.**

2.143 LUDW4 [20H C8H] : User Data Word data Acquisition

Function : Read "User Data Word" data of config.
Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LUDW4	2 bytes	20H C8H
ETX	1 byte	03H

Fig. 2.143-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
UDW 01 data	1 to 3 bytes	"0"-"2FF"
,	1 byte	2CH (delimiter)
UDW 02 data	1 to 3 bytes	"0"-"2FF"
,	1 byte	2CH (delimiter)
UDW 254 data	1 to 3 bytes	"0"-"2FF"
,	1 byte	2CH (delimiter)
UDW 255 data	1 to 3 bytes	"0"-"2FF"
ETX	1 byte	03H

Fig. 2.143-2

* Maximum value of setting data changes depending on ON / OFF of "SDI ANC Parity" in the configuration data.

SDI ANC Pariyt = OFF: 10 bit setting *Maximum is 0x2FF (767)
SDI ANC Pariyt = ON: 8 bit setting

* The data of "UDW" will be returned by the set value of "SDI ANC DC" of the configuration data.

Example) SDI ANC DC = 4

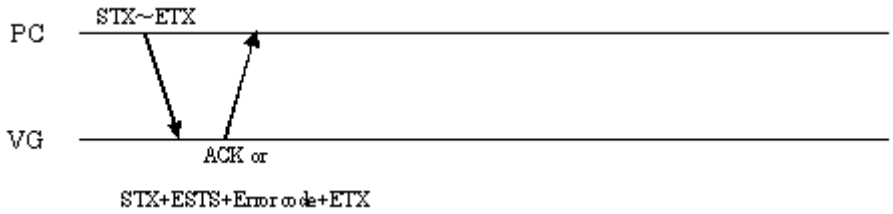
STX	1 byte	02H
TRDT	1 byte	10H
UDW 01 data	1 to 3 bytes	"0"-"2FF"
,	1 byte	2CH (delimiter)
UDW 02 data	1 to 3 bytes	"0"-"2FF"
,	1 byte	2CH (delimiter)
UDW 03 data	1 to 3 bytes	"0"-"2FF"
,	1 byte	2CH (delimiter)
UDW 04 data	1 to 3 bytes	"0"-"2FF"
ETX	1 byte	03H

Fig. 2.143-3

2.144 EXPDN4 [24H 20H] : Program data execution

Function: This command designates the program number and executes the program. When the program number is 9999, it executes the data written in the command work RAM.

Sequence: Type 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
EXPDN4	2 bytes	24H 20H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
,	1 byte	2CH (Delimiter)
Execution mode	1 byte	“0” = Program, “1” = Timing, “2” = Pattern
ETX	1 byte	03H

Fig. 2.144-1

When the execution mode setting has been omitted as in the figure below, the program is executed in the program mode.

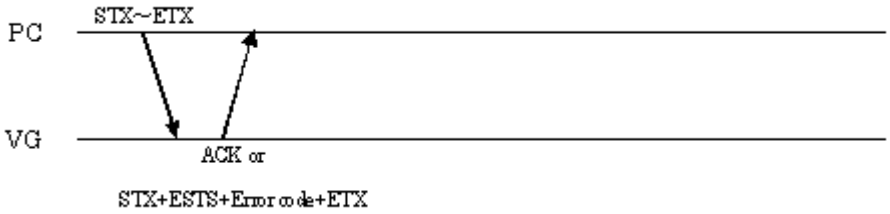
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXPDN4	2 bytes	22H 20H
Program number	1 to 4 bytes	“0” to “2000”, “9999”
ETX	1 byte	03H

Fig. 2.144-2

2.145 INDC4 [24H 21H] : Program No. incrementing / decrementing

Function: This command increments or decrements the program number (or timing or pattern number), and executes the program.

Sequence: Type 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
INDC4	2 bytes	24H 21H
[+]/[-]	1 byte	“0” = [+], “1” = [-]
ETX	1 byte	03H

Fig. 2.145-1

* This command increments or decrements the numbers on the basis of the current status of the VG generator.

Example 1: When the VG generator is in the internal timing data execution status (Category: All)

→ Internal timing data numbers 1001 to 2000 are subject to incrementing or decrementing.

Example 2: When the VG generator is in the user data (CompactFlash card or internal flash memory) execution status (Category: All)

→ User data numbers 1 to 1000 are subject to incrementing or decrementing.

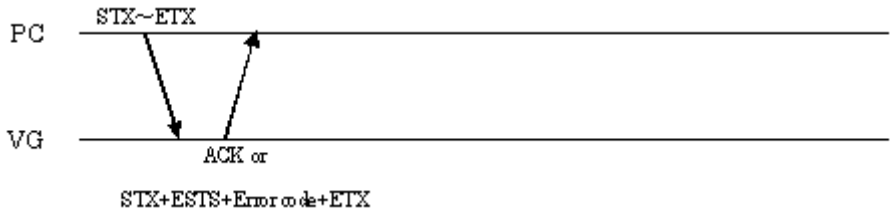
Example 3: When the VG generator is in the internal timing data execution status (Category: VESA)

→ Internal timing data numbers 1001 to 2000 for which VESA has been set as the categories are subject to incrementing or decrementing.

2.146 EXBN4 [24H 22H] : Buffer RAM program execution

Function: This command executes the programs in the current buffer RAM.

Sequence: Type 2



Parameter :

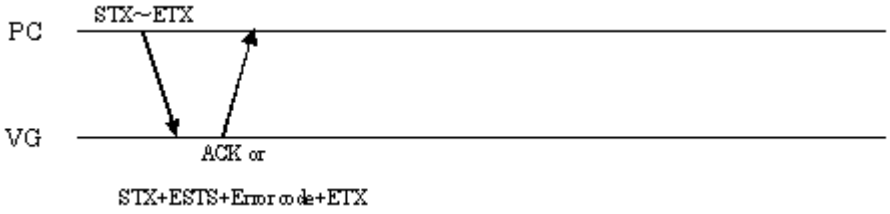
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXBN4	2 bytes	24H 22H
ETX	1 byte	03H

Fig. 2.146-1

2.147 INIBUF 4 [24H 23H] : Work RAM data initialization

Function: This command initializes the programs in the command work RAM using the data of the program whose number has been designated.

Sequence: Type 2



Parameter :

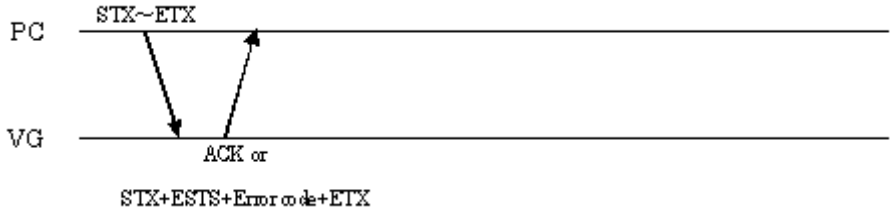
STX	1 byte	02H
VG4CMD	1 byte	FDH
INIBUF4	2 bytes	24H 23H
Program number	1 to 4 bytes	“0” to “2000”
ETX	1 byte	03H

Fig. 2.147-1

2.148 SAVBUF 4 [24H 24H] : Work RAM data registration

Function: This command registers the programs in the command work RAM on the memory card.

Sequence: Type 2



Parameter :

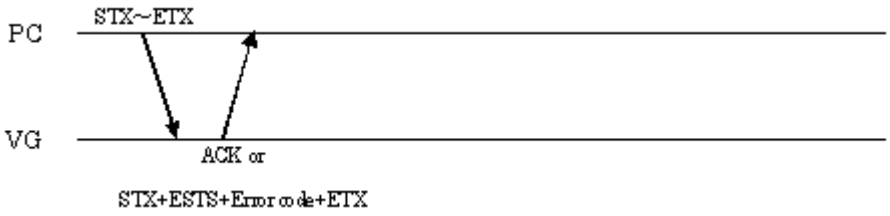
STX	1 byte	02H
VG4CMD	1 byte	FDH
SAVBUF4	2 bytes	24H 24H
Program number	1 to 4 bytes	“1” to “1000”
ETX	1 byte	03H

Fig. 2.148-1

2.149 EXSYNC4 [24H 25H] : Separate sync ON/OFF

Function: This command sets each of the HS, VS and CS sync signals to ON or OFF.

Sequence: Type 2



Parameter :

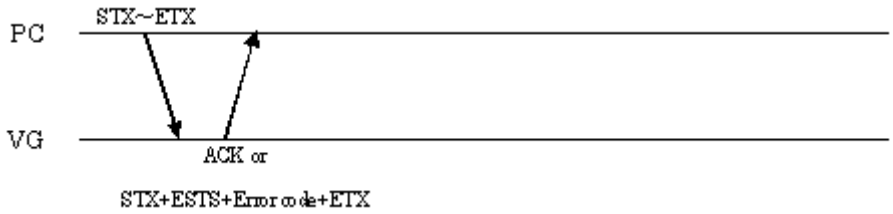
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXSYNC4	2 bytes	24H 25H
HS	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
VS	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
CS	1 byte	“0” = OFF, “1” = ON
ETX	1 byte	03H

Fig. 2.149-1

2.150 CURSOR4 [24H 26H] : Cursor pattern control

Function: This command controls the cursor pattern.

Sequence: Type 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
CURSOR4	2 bytes	24H 26H
Command code	1 byte	“A” = Switch coordinate display “B” = Change flicker speed “C” = Change cursor shape “D” = Change background color “E” = Change cursor color “F” = Change cursor coordinate “G” = Set subpixel to ON or OFF “H” = Set overlay to ON or OFF “I” = Cross point color “J” = Switching cursor 1 and 2 “K” = Change color of cursor 2 “L” = Set cursor 2 mode to ON or OFF
,	1 byte	2CH (Delimiter)
Control parameter	?	Refer to Fig. 2-114-2 to 10.
ETX	1 byte	03H

Fig. 2.150-1

(1) “A” Switch coordinates display

Coordinate display mode	1 byte	“0” = OFF, “1” = Normal1, “2” = Normal2, “3” = Reverse1, “4” = Reverse2

Fig. 2.150-2

(2) “B” Change flicker speed

Flicker speed	1 byte	“0” = None, “1” = 1 V, “2” = 2 V, “3” = 4 V, “4” = 8 V, “5” = 16 V, “6” = 32 V, “7” = 64 V

Fig. 2.150-3

(3) “C” Change cursor shape

Cursor shape	1 byte	“0” = 5×5, “1” = Cross, “2” = V-Line, “3”= dot

Fig. 2.150-4

(4) “D” Change background color

Background color R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Background color G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Background color B	1 to 5 bytes	“0” to “65535”

Fig. 2.150-5

(5) “E” Change cursor color

Cursor color R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Cursor color G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Cursor color B	1 to 5 bytes	“0” to “65535”

Fig. 2.150-6

(6) “F” Change cursor coordinate

Cursor coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Cursor coordinate Y	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
SubPixel Mode	1 byte	"1" = R (in SubPixel increments) "2" = G (in SubPixel increments) "3" = B (in SubPixel increments) *** When SubPixel is turning on, it is effective.** *** It operates by the unit of 1dot when omitted.**

Fig. 2.150-7

(7) “G” Set subpixel to ON or OFF

SubPixel ON/OFF	1 byte	“0” = OFF, “1” = ON

Fig. 2.150-8

(8) “H” Set overlay to ON or OFF

Overlay ON/OFF	1 byte	“0” = OFF, “1” = ON

Fig. 2.150-9

(9) “I” Change of color of intersection point

Cross point color	1 byte	“0” = Normal (Not set to black) “1” = Space (Set to black)

Fig. 2.150-10

(10) Exchange "J" Cursor1 and Cursor2

Cursor1, 2	1 byte	"0"=Cursor1, "1"=Cursor2

Fig. 2.150-11

(11) Exchange color of "K" Cursor 2

Cursor color R	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Cursor color G	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH（Delimiter）
Cursor color B	1 to 5 bytes	"0" to "65535"

Fig. 2.150-12

(12) "L" Cursor 2Mode ON/OFF

Cursor 2Mode	1 byte	"0"=OFF、"1"=ON

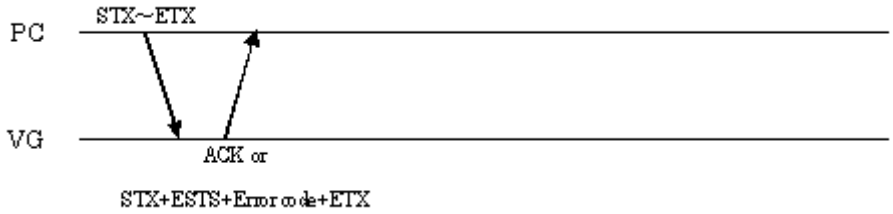
Fig. 2.150-13

***1. This command is common command for cursor1 and cursor2**
***2. This command is available for cursor1, in case “Exchange” is set for cursor1. In case changing Cursor2, set the command for cursor2.**
***3 Cursor2 is unable to set SubPixel.**

2.151 VLEVEL4 [24H 27H] : Video level change

Function: This command changes the video level. The changes are immediately reflected in the signals output from the VG generator.

Sequence: Type 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
VLEVEL4	2 bytes	24H 27H
Command code	1 byte	“A” = Level value setting “B” = Level ±
,	1 byte	2CH (Delimiter)
Parameter	?	Refer to Fig. 2-115-2 to 3.
ETX	1 byte	03H

Fig. 2.151-1

(1) “A” Level value setting

Analog/digital	1 byte	“0” = Analog, “1” = Digital
,	1 byte	2CH (Delimiter)
Level value	1 to 5 bytes	With analog signals: “0” to “120” (0.00 to 1.20 V) With digital signals: “0” to “65535”

Fig. 2.151-2

(2) “B” Level ±

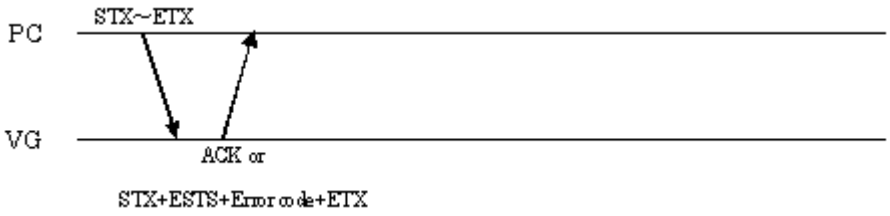
[+]/[-]	1 byte	“0” = [+], “1” = [-]

Fig. 2.151-3

2.152 HDCPON4 [24H 28H] : HDCP execution start/stop

Function: This command starts or stops the HDCP execution.

Sequence: Type 2



Parameter :

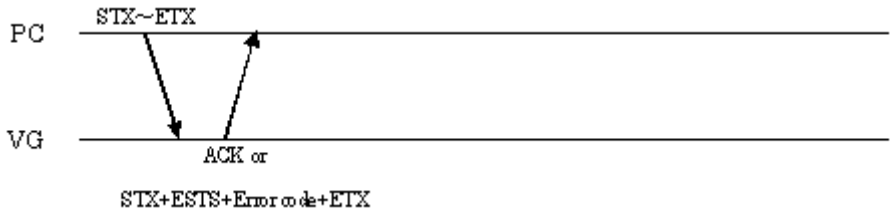
STX	1 byte	02H
VG4CMD	1 byte	FDH
HDCPON4	2 bytes	24H 28H
HDCP execution	1 byte	“0” = Stop, “1” = Start
ETX	1 byte	03H

Fig. 2.152-1

2.153 PBPRON4 [24H 29H] : RGB signal / color difference signal switching

Function: This command switches between the RGB signals and color difference signals. The changes are immediately reflected in the signals output from the VG generator.

Sequence: Type 2



Parameter :

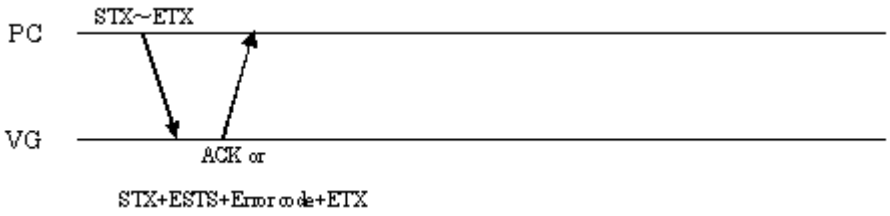
STX	1 byte	02H
VG4CMD	1 byte	FDH
PBPRON4	2 bytes	24H 29H
RGB/color difference	1 byte	“0” = RGB, “1” = Color difference
ETX	1 byte	03H

Fig. 2.153-1

2.154 SEDID4 [24H 2AH] : EDID write

Function: This command writes the EDID in the monitor via the VG generator.

Sequence: Type 2



Parameter :

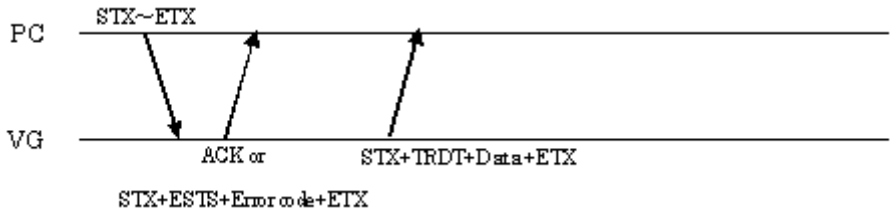
STX	1 byte	02H
VG4CMD	1 byte	FDH
SEDID4	2 bytes	24H 2AH
Block No.	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
EDID	256 bytes	“00” to “FF” (Hexadecimal format, 2 bytes × 128)
ETX	1 byte	03H

Fig. 2.154-1

2.155 LEDID4 [24H 2BH] : EDID readout

Function: This command reads the EDID from the monitor via the VG generator.

Sequence: Type 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LEDID4	2 bytes	24H 2BH
Block No.	1 to 3 bytes	“0” to “255”
ETX	1 byte	03H

Fig. 2.155-1

Data:

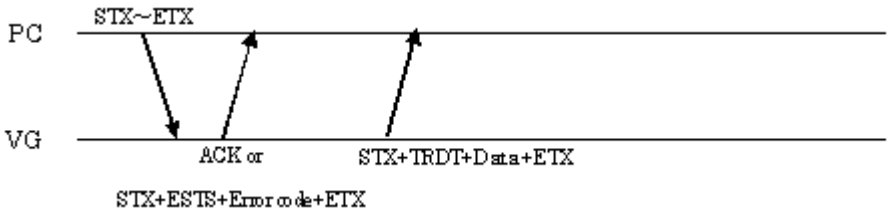
STX	1 byte	02H
TRDT	1 byte	10H
EDID	256 bytes	“00” to “FF” (Hexadecimal format, 2 bytes×128)
ETX	1 byte	03H

Fig. 2.155-2

2.156 QDISP4 [24H 2CH] : H/V Disp acquisition

Function: This command gets the H/V Disp (Number of display dots/lines).

Sequence: Type 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
QDISP4	2 bytes	24H 2CH
ETX	1 byte	03H

Fig. 2.156-1

Data:

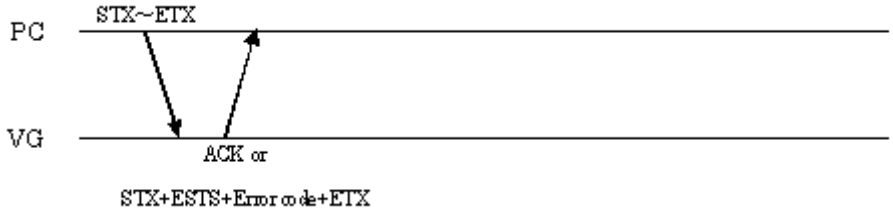
STX	1 byte	02H
TRDT	1 byte	10H
H-Disp	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
V-Disp	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

Fig. 2.156-2

2.157 EXCCN4 [24H 2DH] : User subtitle data execution

Function: This command specifies the user number for the user subtitle data, and executes the data.

Sequence: Type 2



Parameters:

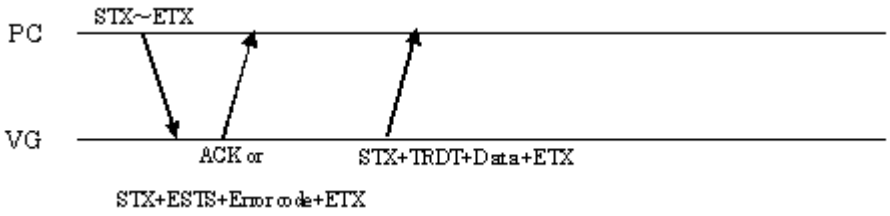
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXCCN4	2 bytes	24H 2DH
User No.	1 or 2 bytes	“1” to “20”
ETX	1 byte	03H

Fig. 2.157-1

2.158 LVGID4 [24H 2EH] : VG ID acquisition

Function: This command gets the ID of the VG generator.

Sequence: Type 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LVGID4	2 bytes	24H 2EH
ETX	1 byte	03H

Fig. 2.158-1

Data:

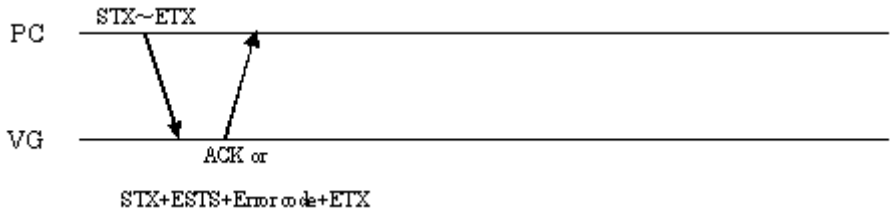
STX	1 byte	02H
TRDT	1 byte	10H
VGID	1 byte	70H: VG-870 71H: VG-871 72H: VG-872-B 73H: VG-873 74H: VG-874 76H: VG-876 77H: VG-877 78H: VG-878 79H: VG-879 7AH: VG-878-A 7CH: VG-872-C 80H: VG-880 81H: VG-881 82H: VG-882 83H: VG-883 84H: VG-884
ETX	1 byte	03H

Fig. 2.158-2

2.159 EXSGON4 [24H 2FH] : RGB output ON/OFF

Function: This command sets the output of R, G and B each to ON or OFF.

Sequence: Type 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
EXSGON4	2 bytes	24H 2FH
R	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
G	1 byte	“0” = OFF, “1” = ON
,	1 byte	2CH (Delimiter)
B	1 byte	“0” = OFF, “1” = ON
ETX	1 byte	03H

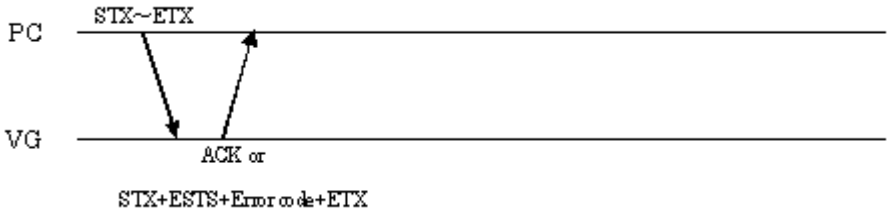
Fig. 2.159-1

2.160 EXPONOFF4 [24H 30H] : Pattern data output ON/OFF

Function: This command sets the designated patterns and signals to ON. The patterns and signals which are not designated are set to OFF.

*** Some patterns cannot be output simultaneously.**

Sequence: Type 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
EXPONOFF4	2 bytes	24 30H
Mode	1 byte	"0" = ON only for designated patterns and signals "1" = ON for additional designated patterns and signals "2" = OFF only for designated patterns and signals ***1**
,	1 byte	2CH (Delimiter)
Pattern select code #1	1 or 2 bytes	"0" to "99"
,	1 byte	2CH (Delimiter)
Pattern select code #2	1 or 2 bytes	"0" to "99"
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Pattern select code #N	1 or 2 bytes	"0" to "99"
ETX	1 byte	03H

Fig. 2.160-1

Concerning the pattern select codes *** Same as Fig. 2-11-2**

Code	Pattern		
0	R		
1	G		
2	B		
3	INV		
6	CharaPlane		
7	OPT	*	Can be output simultaneously with Name, Cursor and Window patterns
8	Checker	*	Can be output simultaneously with Name, Cursor and Window patterns
9	Aspect	*	Can be output simultaneously with Name, Cursor and Window patterns
10	Raster	*	Can be output simultaneously with Name, Cursor, Window and Charaplane patterns
11	Moonscape	*	Can be output simultaneously with Name, Cursor and Window patterns
12	Sweep	*	Can be output simultaneously with Name, Cursor and Window patterns
13	Ramp	*	Can be output simultaneously with Name, Cursor, Window and Charaplane patterns
14	GrayScale	*	Can be output simultaneously with Name, Cursor, Window and Charaplane patterns
15	ColorBar	*	Can be output simultaneously with Name, Cursor, Window and Charaplane patterns
17	Name		

18	Cursor	
19	Window	
24	Burst	Chara plane items
25	Circle	
26	×	
27	＋	
28	□	
29	DOTS	
30	CROSS	
31	CHARA	

Fig. 2.160-2

***1**

- **When “0” is set**

  Only the designated patterns and signals are output. The patterns and signals which are not designated are set to OFF.

- **When “1” is set**

  The designated patterns and signals are added to the ones already in the output status, and output.

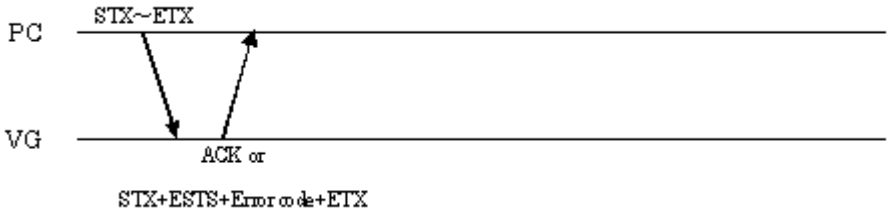
- **When “2” is set**

  The designated patterns and signals are set to OFF from the ones in the output status, and the remaining ones output.

2.161 AAUDIO4 [24H 31H] : Analog audio change

Function: This command changes the analog audio signal frequency and level. The changes are immediately reflected in the signals output from the VG generator.

Sequence: Type 2



Parameter :

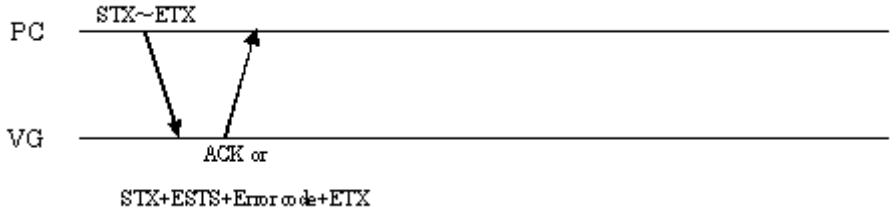
STX	1 byte	02H
VG4CMD	1 byte	FDH
AAUDIO4	2 bytes	24 31H
Frequency-L	2 to 5 bytes	“100” to “20000” (100 Hz to 20000 Hz)
,	1 byte	2CH (Delimiter)
Frequency-R	2 to 5 bytes	“100” to “20000” (100 Hz to 20000 Hz)
,	1 byte	2CH (Delimiter)
Level-L	1 to 4 bytes	“0” to “4000” (0 mV to 4000 mV)
,	1 byte	2CH (Delimiter)
Level-R	1 to 4 bytes	“0” to “4000” (0 mV to 4000 mV)
ETX	1 byte	03H

Fig. 2.161-1

2.162 SCROLL4 [24H 32H] : Pattern scroll execution

Function: This command executes pattern scrolling. The changes are immediately reflected in the signals output from the VG generator.

Sequence: Type 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
SCROLL4	2 bytes	24 32H
Character Plane	1 byte	“0” = Left, “1” = Right, “2” = Up “3” = Down, “4” = Top left, “5” = Bottom left “6” = Top right, “7” = Bottom right “9” = Temporary stop, “A” = Stop + Center
,	1 byte	2CH (Delimiter)
Graphic Plane	1 byte	“0” = Left, “1” = Right, “2” = Up “3” = Down, “4” = Top left, “5” = Bottom left “6” = Top right, “7” = Bottom right “9” = Temporary stop, “A” = Stop + Center
,	1 byte	2CH (Delimiter)
Window Plane	1 byte	“0” = Left, “1” = Right, “2” = Up “3” = Down, “4” = Top left, “5” = Bottom left “6” = Top right, “7” = Bottom right “9” = Temporary stop, “A” = Stop + Center
,	1 byte	2CH (Delimiter)
Character pattern interval 1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Character pattern interval 2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern interval 3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern interval 4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step H1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Character pattern step H2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step H3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step H4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step V1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Character pattern step V2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step V3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Character pattern step V4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern interval 1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Group pattern interval 2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern interval 3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern interval 4	1 to 3 bytes	“0” to “255”

,	1 byte	2CH (Delimiter)
Group pattern step H1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Group pattern step H2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step H3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step H4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step V1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Group pattern step V2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step V3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Group pattern step V4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window interval 1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Window interval 2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window interval 3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window interval 4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step H1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step H2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step H3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step H4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step V1	1 to 3 bytes	“1” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step V2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step V3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH (Delimiter)
Window scroll step V4	1 to 3 bytes	“0” to “255”
Subtitle scroll mode	1 byte	"0"=Left, "1"=Right, "2"=Up "3"=Down, "4"=Upper left, "5"=Bottom left "6"=Upper right, "7"=Bottom right "9"=Pause, "A"=Stop+Center
,	1 byte	2CH（Delimiter）
Subtitle pattern interval1	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern interval2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern interval3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern interval 4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern stepH1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH（Delimiter）
Subtitle pattern step H2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern step H3	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern stepH4	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitlepattern step V1	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH（Delimiter）
Subtitle pattern stepV2	1 to 3 bytes	“0” to “255”
,	1 byte	2CH（Delimiter）
Subtitle pattern stepV3	1 to 3 bytes	“0” to “255”

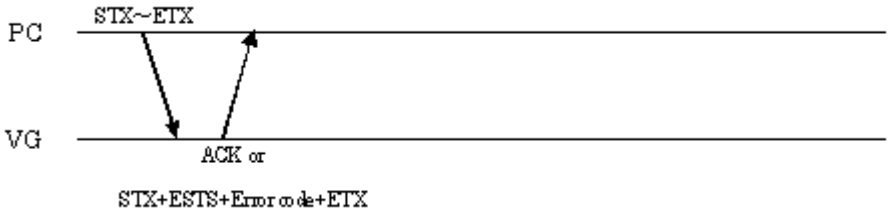
,	1 byte	2CH（Delimiter）
Subtitle pattern stepV4	1 to 3 bytes	“0” to “255”
ETX	1 byte	03H

Fig. 2.162-1

2.163 EXSYNCP4 [24H 33H] : Separate sync polarity switching

Function: This command switches the polarity of each of the HS, VS and CS separate sync signals.

Sequence: Type 2



Parameter :

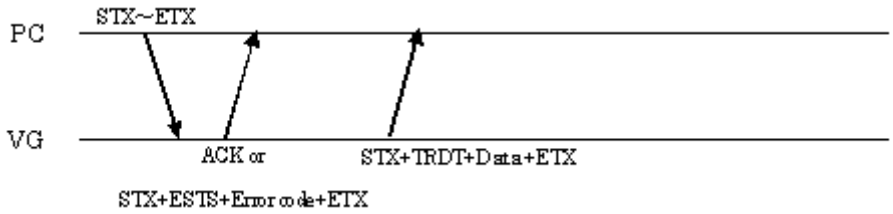
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXSYNCP4	2 bytes	24H 33H
HS	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
VS	1 byte	“0” = Nega, “1” = Posi
,	1 byte	2CH (Delimiter)
CS	1 byte	“0” = Nega, “1” = Posi
ETX	1 byte	03H

Fig. 2.163-1

2.164 LKSV4 [24H 34H] : KSV data acquisition

Function: This command gets the KSV data.

Sequence: Type 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LKSV4	2 bytes	24H 34H
ETX	1 byte	03H

Fig. 2.164-1

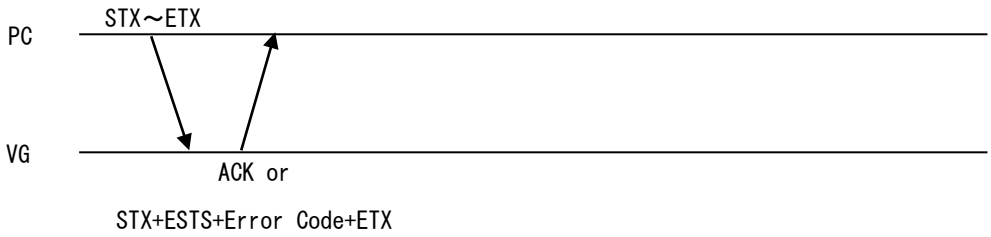
Data:

STX	1 byte	02H
TRDT	1 byte	10H
Transmitter	2 to 10 bytes	"00" to "FFFFFFFFFF"
,	1 byte	2CH (Delimiter)
Receiver	2 to 10 bytes	"00" to "FFFFFFFFFF"
ETX	1 byte	03H

Fig. 2.164-2

2.165 EXDPTP4 [24H 39H] : DP Training Pattern execution

Function : this command executes Training Pattern Mode of DisplayPort Analysis.
Sequence : Type 2



Parameter :

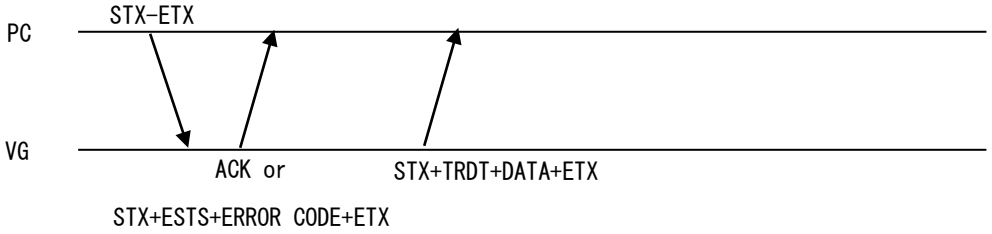
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXDPTP4	2 bytes	24H 39H
Port No.	1 byte	"0"=DP1 "1"=DP2 **Below is for VG-876, 877 and 879** "2"=DP3 "3"=DP4 "4"=DP5 "5"=DP6 "6"=DP7 "7"=DP8
,	1 byte	2CH (Delimiter)
Pattern Select	1 byte	"0"=D10.2(TP1) "1"=EQ(TP2) "2"=Symbol Error Rate "3"=PRBS7
,	1 byte	2CH (Delimiter)
Link Rate	1 byte	"0"=HBR(2.7Gbps) "1"=RBR(1.62Gbps) **Below is for VG-876, 877 and 879** “2”=HBR2(5.4Gbps)
,	1 byte	2CH (Delimiter)
Number of Lane	1 byte	"0"=1 lane "1"=2 lanes "2"=4 lanes
,	1 byte	2CH (Delimiter)
Voltage Swing	1 byte	"0"=0.4V "1"=0.6V "2"=0.8V "3"=1.2V
,	1 byte	2CH (Delimiter)
Pre-emphasis	1 byte	"0"=0dB "1"=3.5dB "2"=6.0dB "3"=9.5dB
ETX	1 byte	03H

Fig. 2.165-1

2.166 LERR4 [24H 3AH] : Error code acquisition.

Function : This command gets the error code.

Sequence : TYPE 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LERR4	2 bytes	24H 3AH
ETX	1 byte	03H

Fig. 2.166-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
ERROR CODE	8 bytes	"00000000" to "FFFFFFFF"
ETX	1 byte	03H

Fig. 2.166-2

* This command is made in order to cover increased error command.

*In case of receiving “Error” massage, please execute this command and receive the error code. It is able to check the error detailed (except communication error) by checking the error code dialog below.

Error code dialog

Error code	Content
Media relation error.	
“80000200”	Recover File System error.
“80000201”	Requirement of System Reboot
“80000202”	File System error which is not reparation.
“80000209”	Size over of image data.
“80000210”	File System
“80000211”	File open error
“80000212”	File Write error
“80000213”	File Read error
“80000215”	Flash ROM write error
“80000216”	Flash ROM Read error
“80000217”	The shortage of internalFLASH(USER) memory
“80000218”	Flash ROM is not mounted.
“80000220”	EEPROM write error
“80000225”	CF Card type error
“80000226”	CF Card write error
“80000227”	CF Card write protect
“80000228”	CF Card is not inserted.
“80000229”	CF Card is not formatted.
“8000022a”	The shortage of CF Card memory for saving data.
“8000022c”	OPT Data File error
“8000022f”	Image Data File error
“80000231”	Audio Flash ROM I/O error.
“80000232”	Audio Flash ROM does not format.

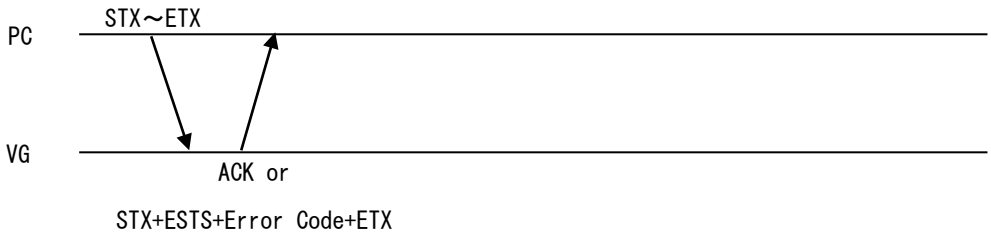
“80000233”	Audio Flash ROM is already registered.
“80000235”	Audio Flash ROM File error
“80000236”	Audio Flash ROM memory over.
General error	
“80000301”	Program data is disabling.
“80000302”	H-Timing DotClock data error
“80000303”	H-Timing H Frontp data error
“80000305”	H-Timing HD data error
“80000307”	H-Timing H Period data error
“80000308”	H-Timing H Disp data error
“80000309”	H-Timing H Sync data error
“8000030a”	H-Timing H Backp data error
“8000030b”	H-Timing H Blanking data error
“8000030c”	H-Frequency data error
“8000030d”	H-Timing data error
“80000310”	Output data error
“80000311”	Pattern Character data error
“80000312”	Pattern Cross Hatch data error
“80000313”	Pattern Dot data error
“80000314”	Pattern Circle data error
“80000315”	Pattern Burst data error
“80000316”	Pattern Window data error
“80000317”	Pattern Color Bar data error
“80000318”	Parameter error
“80000319”	Data error
“8000031b”	Video、Setup、Sync Level error
“8000031e”	Communication Timeout
“8000031f”	Undefined Command
“80000320”	V-Sync Time-out
“80000321”	Program No error
“80000322”	Group No error
“80000323”	Character Code error
“8000032b”	OPT No error
“8000032e”	Image No error
“80000330”	Image Data File Not Found
“80000332”	Key Locked
“80000333”	CURSOR Not Selected
“80000334”	EDID Read Port Not Found
“80000338”	Pattern Gray Scale data error
“80000339”	Pattern OPT/Image data error
“8000033b”	Pattern Cursor data error
“8000033c”	Pattern Program Name data error
“8000033d”	Pattern □X[ABC] Color data error
“8000033e”	Pattern Action data error
“80000340”	V-Timing Total data error
“80000341”	V-Timing Disp data error
“80000342”	V-Timing Sync data error
“80000343”	V-Timing Backp data error
“80000344”	V-Timing Frontp data error
“80000345”	V-Timing Blanking data error
“80000346”	V-Frequency data error
“80000347”	V-Timing VD data error
“80000348”	V-Timing EQP-Fp data error
“80000349”	V-Timing EQP-Bp data error
“8000034a”	V-Timing data error
“8000034b”	DDC1 Time-out
„8000034c“	DDC1 ACK error
„8000034e“	DDC2 Line error
“80000350”	Macrovision Not Supported
“80000351”	Simple motion error
“80000352”	EDID Header error
“80000353”	EDID Check Sum error
“80000354”	EDID Header & Check Sum error
“80000355”	User YPbPr Coefficient error
“80000356”	Terminal Command execute error
“80000358”	Audio Data No. error

“8000035a”	Audio Data File Not Found
“8000035b”	Audio Data Sampling-Freq error
“8000035c”	Lip Sync： Delay > ON(OFF) Time
“8000035d”	Lip Sync： Invalid EDID Latency OFF
“8000035e”	Lip Sync ‘Audio Source’ error
“8000035f”	Lip Sync ‘EDID Port’ error
“80000360”	Image data License error
“80000361”	Data does not saved
“80000362”	Copy Condition error
“80000363”	Shortage of internal Image RAM.
“80000364”	Audio data License error
“80000365”	IA-1541 Communication error
“80000366”	IA-1541 Power Communication error
“80000367”	IA-1541 Over Current error
“80000368”	IA-1541 Over Volt error
“80000369”	IA-1541 Under Volt error
“8000036a”	IA-1541 during Power ON
"8000036b"	IA-1541 not exist
"8000036d"	Octal mode error
"8000036e"	Scroll step error
"8000036f"	License error
"80000370"	3D license error
"80000371"	Pattern draw error
"80000372"	Hard Timing Set error
"80000373"	EDID Read Ack error
"80000374"	DP AUX NACK error
"80000375"	DP AUX DEFFER error
"80000376"	DP I2C NACK error
"80000377"	DP I2C DEFFER error
HDCP relation error	
"80000402"	Ri Time out
"80000403"	Transmitter KSV error
"80000404"	Receiver KSV error
"80000405"	Link Check error
"80000406"	Encryption error
"80000407"	Hot Plug error
"80000408"	Ri Ready error
"80000410"	I2C ACK(from Tx) error
"80000411"	I2C ACK(from Rx) error
"80000412"	I2C Line(Tx & Rx) error
"80000414"	Receiver Not HDMI mode error
"80000415"	Ri NG
"80000416"	FIFO Ready Time out
"80000417"	DEPTH error
"80000418"	DEVICE_COUNT error
"80000419"	List error
"8000041a"	Bcaps error
"8000041b"	Setting error

2.167 EXGDN4 [24H 3BH] : Group data selection

Function : this command designates the group number to be executed.

Sequence : Type 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
EXGDN4	2 bytes	24H 3BH
Group NO	1 to 2 bytes	"0"-"99"
ETX	1 byte	03H

Fig. 2.167-1

Note 1 : when you designate Group No.1, group is not executed.
Note 2 : in case of VG-870 series, group number is selected. In case of VG-881, the first program data of the selected group is executed.

2.168 EXGDN4 [24H 3CH] : Execution of the program data in a group

Function : this command executes the program data in a group.
Sequence : Type 2

Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
EXGPDN4	2 bytes	24H 3CH
Setting NO	1 to 2 bytes	"1"-"98"
ETX	1 byte	03H

Fig. 2.168-1

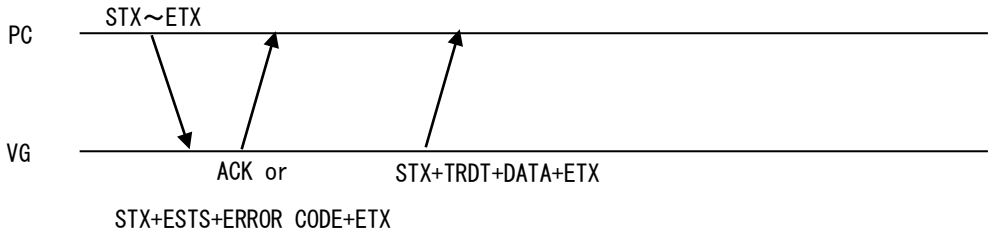
Execution example
In case the group data has the following programs.

No	Timing No.	Pattern No.
1	1001	1001
2	1039	0
3	0	1045
4	1120	1001
5	1001	1010

Execute No.1 → the timing and pattern data of No.1001 are executed.
Execute No.2 → the timing data of No.1039 is output, and pattern data keeps the current status.
Execute No.3 → the pattern data of No.1045 is output, the timing data keeps the current status.
Execute No.4 → no timing data in No.1120 (in sample program of SP-8870) , it will show error.
Execute No.5 → no pattern data in No.1010 (in sample program of SP-8870), it will show error.

2.169 LHDCP4 [24H 3DH] : HDCP operation start / stop acquisition.

Function : This command order the ON/OFF of HDCP.
Swquence : TYPE 3.



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LHDCP4	2 bytes	24H 3DH
ETX	1 byte	03H

Fig. 2.169-1

Data :

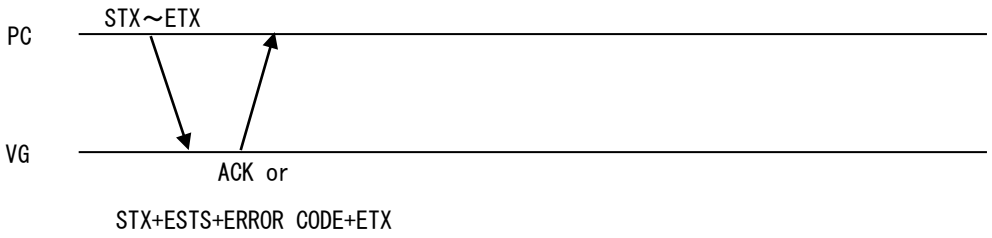
STX	1 byte	02H
TRDT	1 byte	10H
HDCP Operation	1 byte	"0"=STOP, "1"=START
ETX	1 byte	03H

Fig. 2.169-2

2.170 MUTEON4 [24H 3EH] : MUTE operation ON/OFF

Function : This command sets ON/OFF of MUTE operation.

Sequence : Type 2



Parameter :

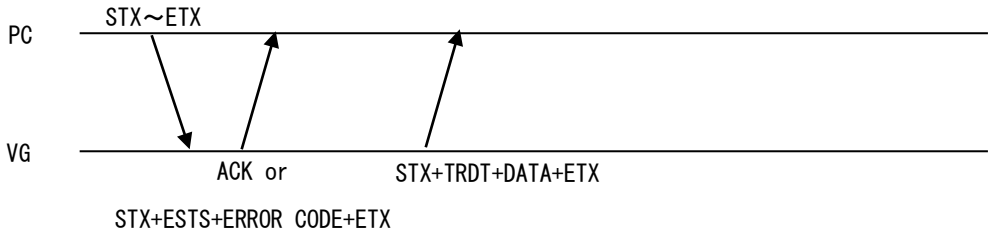
STX	1 byte	02H
VG4CMD	1 byte	FDH
MUTEON4	2 bytes	24H 3EH
MUTE Operation	1 byte	"0"=OFF, "1"=ON
ETX	1 byte	03H

Fig. 2.170-1

2.171 LMUTE4 [24H 3FH] : MUTE operation ON/OFF acquisition.

Function : This command sets MUTE status ON/OFF.

Sequence : TYPE3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LMUTE4	2 bytes	24H 3FH
ETX	1 byte	03H

Fig. 2.171-1

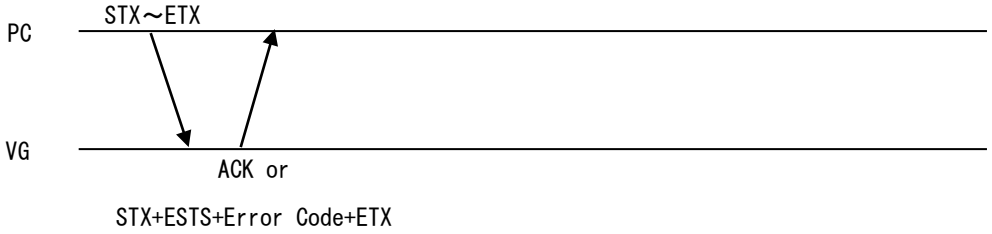
Data :

STX	1 byte	02H
TRDT	1 byte	10H
MUTE operation	1 byte	"0"=OFF, "1"=ON
ETX	1 byte	03H

Fig. 2.171-2

2.172 EXHDMISW4 [24H 40H] : HDMI SW control

Function : this command controls HDMI SW
Sequence : Type 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
EXHDMISW4	2 byte	24H 40H
Command Code	1 byte	"A"= Reserve "B"= Mode change "C"= Change of input selection "D"= Change of output selection
,	1 byte	2CH (Delimiter)
Control Parameter	?	Refer from Fig2.133-2
ETX	1 byte	03H

Fig. 2.172-1

(2) "B" Mode change

Mode	1 byte	"0"=change both HDMI1 and 2 "1"=change HDMI1 only "2"=change HDMI2 only
,	1 byte	2CH (Delimiter)
HDMI 1 Select Mode	1 byte	"0"= Selector, "1"= split by all output
,	1 byte	2CH (Delimiter)
HDMI 2 Select Mode	1 byte	"0"= Selector, "1"= split by all output

Fig. 2.172-2

(3) "C" Change of input selection

Mode	1 byte	"0"=change both HDMI1 and 2 "1"=change HDMI1 only "2"=change HDMI2 only
,	1 byte	2CH (Delimiter)
HDMI 1 Input Select	1 byte	"0" - "1"
,	1 byte	2CH (Delimiter)
HDMI 2 Input Select	1 byte	"0" - "1"

Fig. 2.172-3

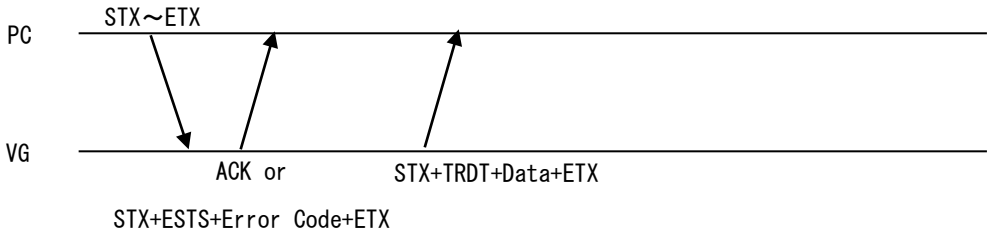
(4) "D" Change of output selection

Mode	1 byte	"0"=change both HDMI1 and 2 "1"=change HDMI1 only "2"=change HDMI2 only
,	1 byte	2CH (Delimiter)
HDMI 1 Output Select	1 byte	"0" - "7"
,	1 byte	2CH (Delimiter)
HDMI 2 Output Select	1 byte	"0" - "7"

Fig. 2.172-4

2.173 LOBT4 [24H 41H] : output board type acquisition

Function : this command gets the information of output board type of the designated slot.
Sequence : Type 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LBT4	2 bytes	24H 41H
Slot No.	1 byte	"1"-"4"
ETX	1 byte	03H

Fig. 2.173-1

Data :

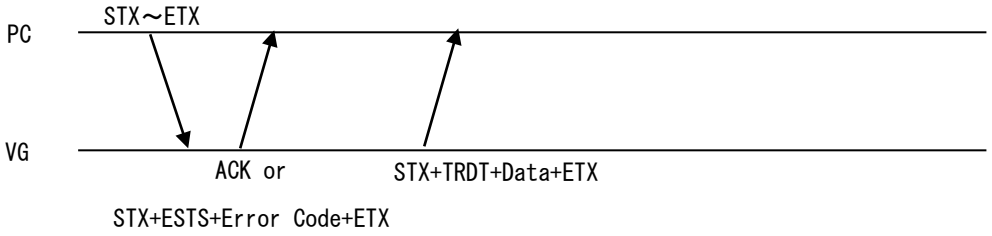
STX	1 byte	02H
TRDT	1 byte	10H
Output board type	1 to 2 bytes	"0"=CPU board "1"=M4 board (HDMI board [HDMIx3]) "2"=M5 board (HDMI board [HDMIx2,VGA]) "3"=M6 board (TV analog board [YPbPr,VGA,VIDEO+Y/C]) "4"=M7 board (TV analog board [D5,VGA,VIDEO+Y/C]) "5"=M8 board (SCART board [SCARTx2]) "FF"= no board
ETX	1 byte	03H

Fig. 2.173-2

Note : this command is only for VG-881.

2.174 LOTT4 [24H 42H] : Output terminal type acquisition

Function : this command gets the information of output terminal type of the designated slot.
Sequence : Type 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LOTT4	2 bytes	24H 42H
Slot No.	1 byte	"1"-"4"
ETX	1 byte	03H

Fig. 2.174-1

Data :

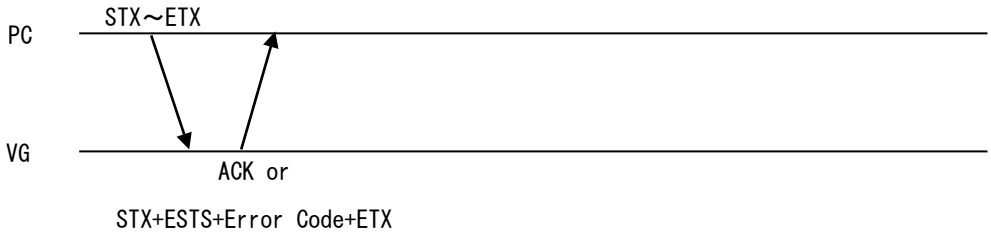
STX	1 byte	02H
TRDT	1 byte	10H
Output Terminal 1	1 to 2 bytes	"0"=HDMI : HDMI terminal "1"=HDMI output : VGA(D-Sub) terminal "2"=Component : YPbPr terminal "3"= Component : D5 terminal "4"=TV analog output : VGA(D-Sub) terminal "5"=Composite : VIODEO + Y/C terminal "6"=SCART : SCART terminal "FF"=No output
,	1 byte	2CH (Delimiter)
Output Terminal 2	1 to 2 bytes	"0"=HDMI : HDMI terminal "1"=HDMI output : VGA(D-Sub) terminal "2"= Component : YPbPr terminal "3"= Component : D5 terminal "4"=TV analog output : VGA(D-Sub) terminal "5"= Composite : VIODEO + Y/C terminal "6"=SCART : SCART terminal "FF"=No output
,	1 byte	2CH (Delimiter)
Output Terminal 3	1 to 2 bytes	"0"=HDMI : HDMI terminal "1"=HDMI output : VGA(D-Sub) terminal "2"= Component : YPbPr terminal "3"= Component : D5 terminal "4"=TV analog output : VGA(D-Sub) terminal "5"= Composite : VIODEO + Y/C terminal "6"=SCART : SCART terminal "FF"=No output
ETX	1 byte	03H

Fig. 2.174-2

Note : this command is only for VG-881.

2.175 EXEPIF4 [24H 43H] : set slot No. and terminal No. to be executed or transmitted.

Function : this command sets slot No. and terminal No. to be executed or transmitted.
Sequence : Type 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
EXEPIF4	2 bytes	24H 43H
Slot No	1 byte	"0"-"4" Note : "0" means ALL
,	1 byte	2CH (Delimiter)
Terminal No.	1 byte	"1"-"3"
ETX	1 byte	03H

Fig. 2.175-1

Note1 : this command is only for VG-881.
Note2 : before executing program by command in VG-881, use this command first. However, in case of receiving command, "All" setting of Slot No. will show error.

2.176 EXEKEY4 [24H 44H] : execution of timing keys and pattern keys

Function : this command executes the data of the designated timing keys and pattern keys.
Sequence : Type 2

Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
EXEKEY4	2 bytes	24H 44H
Mode	1 byte	"0"= Timing and Pattern "1"= Timing only "2"= Pattern only
,	1 byte	2CH (Delimiter)
Timing Key No	1 to 2 bytes	"1"-"12"
,	1 byte	2CH (Delimiter)
Timing FREQ No	1 to 2 bytes	"1"-"10"
,	1 byte	2CH (Delimiter)
Pattern Key No	1 to 2 bytes	"1"-"10"
ETX	1 byte	03H

Fig. 2.176-1

Note : this command is only for VG-881.

2.177 EXEIFONOFF4[24H 45H]: ON/OFF setting of terminal

Function : this command sets ON/OFF of terminals.
Sequence : Type 2

Parameter :

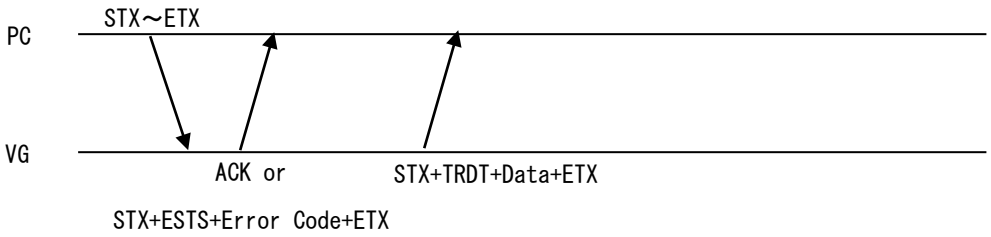
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXEIFONOFF4	2 bytes	24H 45H
ON/OFF	1 byte	"0"=OFF、"1"=ON
ETX	1 byte	03H

Fig. 2.177-1

Note : this command is only for VG-881.

2.178 LCURPOS4 [24H 46H] : cursor coordinate aquisition

Function : this command will get the coordinate of the center of the cursor.
Sequence : Type 3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LCURPOS4	2 bytes	24H 46H
ETX	1 byte	03H

Fig. 2.178-1

Data :

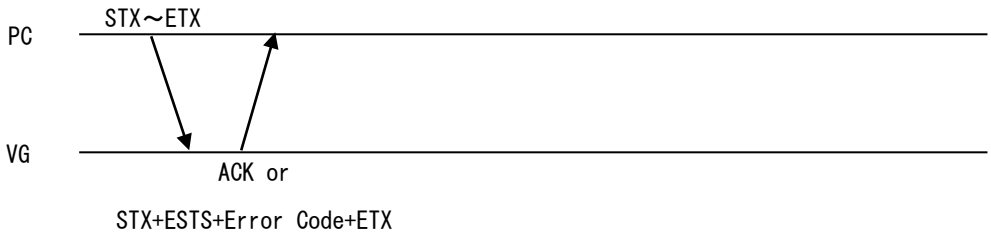
STX	1 byte	02H
TRDT	1 byte	10H
Cursor coordinate X	1 to 4 bytes	"0"-"4095"
,	1 byte	2CH (Delimiter)
Cursor coordinate Y	1 to 4 bytes	"0"-"4095"
ETX	1 byte	03H

Fig. 2.178-2

2.179 EXLGDN5 [24H 47H] : large group data selection

Function : this command designates the large group number to execute.

Sequence : Type 2



Parameter:

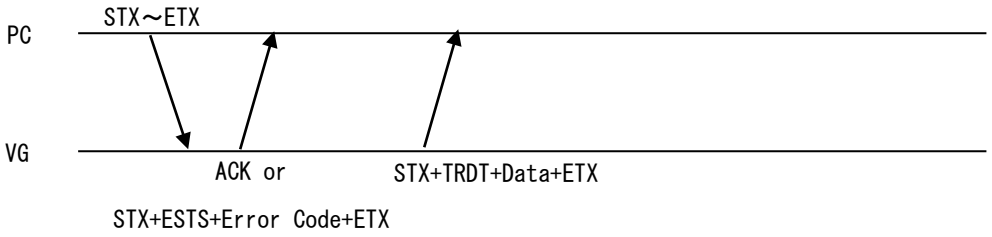
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXLGDN5	2 bytes	24H 47H
Large group NO	1 to 2 bytes	"1"-"99"
ETX	1 byte	03H

Fig. 2.179-1

Note : this command is only for VG-881.

2.180 LERR5 [24H 48H] : Error code aquisition

Function : this command obtains error code.
Sequence : Type 3



Parameter:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LERR5	2 bytes	24H 48H
ETX	1 byte	03H

Fig. 2.180-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Distinguish Code 1	1 to 2 bytes	"1"-"12"
,	1 byte	2CH (Delimiter)
Error Code	8 bytes	"00000000"-"FFFFFFFF"
,	1 byte	2CH (Delimiter)
Distinguish Code 2	1 to 2 bytes	"1"-"12"
,	1 byte	2CH (Delimiter)
Error Code	8 bytes	"00000000"-"FFFFFFFF"
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Distinguish Code N	1 to 2 bytes	"1"-"12"
,	1 byte	2CH (Delimiter)
Error Code	8 bytes	"00000000"-"FFFFFFFF"
ETX	1 byte	03H

Fig. 2.180-2

Note 1 : during group data is being executed, or current buffer RAM is being executed, when command error “99” is returned, by using this command, the error code for each terminal can be obtained. Referring to the list of error code, users can understand its details.
Note 2 : only error is returned to this command. If nothing returns, it means, “Success”, “no board” or “no terminal”.

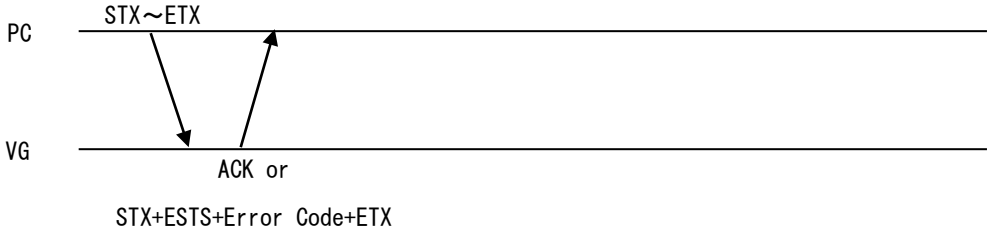
Distinguish Code

Code	Slot, Terminal
1	Terminal 1 of Slot1
2	Terminal 2 of Slot1
3	Terminal 3 of Slot1
4	Terminal 1 of Slot2
5	Terminal 2 of Slot2
6	Terminal 3 of Slot2
7	Terminal 1 of Slot3
8	Terminal 2 of Slot3
9	Terminal 3 of Slot3
10	Terminal 1 of Slot4
11	Terminal 2 of Slot4
12	Terminal 3 of Slot4

Note : this command is only for VG-881.

2.181 LHCE4 [24H 49H] : test result acquisition of HDCP, CEC and EDID

Function : this command obtains HDCP, CEC and EDID test result of the designated terminal.
Sequence : Type 2



Parameter:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LHCE4	2 bytes	24H 49H
Slot No	1 byte	"0"-"4" Note: "0" indicates ALL
,	1 byte	2CH (Delimiter)
Terminal No.	1 byte	"1"-"3" Note: when slot is set as “0”, it is ignored.
ETX	1 byte	03H

Fig. 2.181-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
HDCP	1 byte	"0"=invalid, "1"=OK, "2"=NG **Note 2**
,	1 byte	2CH (Delimiter)
CEC	1 byte	"0"= invalid, "1"=OK, "2"=NG, "3"=WAIT **Note 2**
,	1 byte	2CH (Delimiter)
EDID	1 byte	"0"= invalid, "1"=OK, "2"=NG **Note 2**
ETX	1 byte	03H

Fig. 2.181-2

When slot No. is set as “0”, the below data is returned from VG.

STX	1 byte	02H	
TRDT	1 byte	10H	
HDCP	1 byte	"0"= invalid, "1"=OK, "2"=NG **Note 2**	#1 SlotNo.1 TerminalNo.1 **Note 3**
,	1 byte	2CH (Delimiter)	
CEC	1 byte	"0"= invalid, "1"=OK, "2"=NG, "3"=WAIT **Note 2**	
,	1 byte	2CH (Delimiter)	
EDID	1 byte	"0"= invalid, "1"=OK, "2"=NG **Note 2**	
HDCP	1 byte	"0"= invalid, "1"=OK, "2"=NG **Note 2**	#12 SlotNo.4 TerminalNo.3 **Note 3**
,	1 byte	2CH (Delimiter)	
CEC	1 byte	"0"= invalid, "1"=OK, "2"=NG, "3"=WAIT **Note 2**	
,	1 byte	2CH (Delimiter)	
EDID	1 byte	"0"= invalid, "1"=OK, "2"=NG **Note 2**	
ETX	1 byte	03H	

Fig. 2.181-3

Note 1 : this command is only for VG-881.

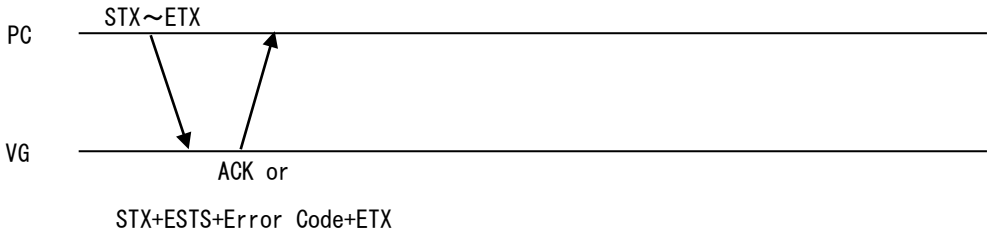
Note 2 : if there is no terminal (or not output) or the terminal cannot be tested (including set as “Test OFF”), “0”(Invalid) is returned from those terminal.

Note 3
In case set as “ALL”, the below sequence of data is returned.

#1	**Slot 1**	**Terminal 1**
#2	**Slot 1**	**Terminal 2**
#3	**Slot 1**	**Terminal 3**
#4	**Slot 2**	**Terminal 1**
#5	**Slot 2**	**Terminal 2**
#6	**Slot 2**	**Terminal 3**
#7	**Slot 3**	**Terminal 1**
#8	**Slot 3**	**Terminal 2**
#9	**Slot 3**	**Terminal 3**
#10	**Slot 4**	**Terminal 1**
#11	**Slot 4**	**Terminal 2**
#12	**Slot 4**	**Terminal 3**

2.182 EXEUKB4 [24H 4AH] : designate User KEY Block

Function : this command designate the Block number that will send/receive User Key data.
Sequence : Type 2



Parameter :

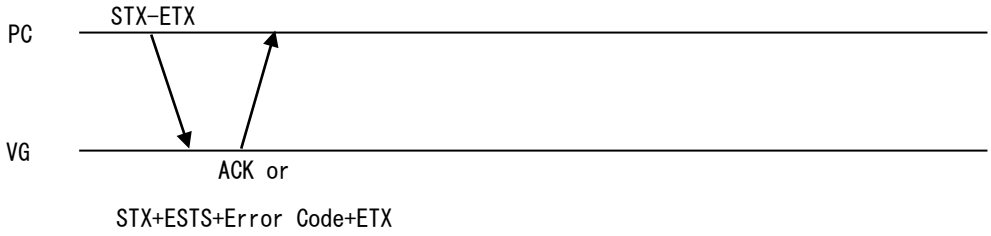
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXEUKB4	2 bytes	24H 4AH
Mode	1 byte	"0"=Internal, "1"=CF
,	1 byte	2CH (Delimiter)
Block No	1 to 3 bytes	"0"-"100"
ETX	1 byte	03H

Fig. 2.182-1

Note 1 : this command is only for VG-881.

2.183 EXECON4 [24H 4CH] : Output Terminal Setting

Function : this command sets ON/OFF of each output terminal.
Sequence : Type 2



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
EXCON4	2 bytes	24H 4CH
Output Terminal Code#1	1 to 3 bytes	"0"-"999"
,	1 byte	2CH (Delimiter)
Output Terminal Information #1	1 to 3 bytes	"0"=OFF, "1"=ON
,	1 byte	2CH (Delimiter)
Output Terminal Code#2	1 to 3 bytes	"0"-"999"
,	1 byte	2CH (Delimiter)
Output Terminal Information #2	1 byte	"0"=OFF, "1"=ON
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Output Terminal Code#N	1 to 3 bytes	"0"-"999"
,	1 byte	2CH (Delimiter)
Output Terminal Information #N	1 byte	"0"=OFF, "1"=ON
ETX	1 byte	03H

Fig. 2.183-1

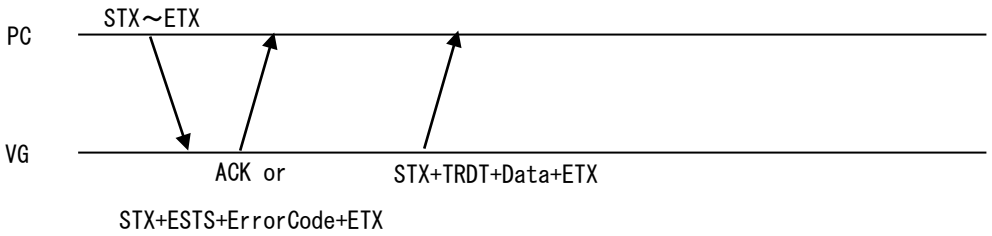
* About output terminal code, refer to Fig.2-132-2 for VG-870, 871, 873, 874 and 880. Refer to Fig. 2-132-3 for VG-878/-A. Refer to Fig.2-132-4 for VG-876 and 879.

* If the output terminal code that does not exist in VG, it is ignored.

*** Please use terminal ON / OFF setting in "2.5 SOT4 [20H 24H]: Output condition data registration" command for VG-882, 884.**

2.184 QEDID4 [24H 4EH]: EDID read (even if error appears)

Function : Read EDID of monitor through VG. Even it shows EDID error, VG will read EDID data.
Sequence : Type3



Parameter :

STX	1 byte	02H
VG4CMD	1 byte	FDH
QEDID4	2 bytes	24H 4EH
Block No.	1 to 3 bytes	"0"-"255"
ETX	1 byte	03H

Fig. 2.184-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
EDID	256 bytes	"00"-"FF"(Hexadecimal format, 2 bytes×128)
ETX	1 byte	03H

Fig. 2.184-2

2.185 VG control command table

Code 1	Code 2	Command	Description	Type
20H	20H	SHT4	H timing data registration	2
20H	21H	LHT4	H timing data readout	3
20H	22H	SVT4	V timing data registration	2
20H	23H	LVT4	V timing data readout	3
20H	24H	SOT4	Output condition data registration	2
20H	25H	LOT4	Output condition data readout	3
20H	26H	SPAR4	Parallel data registration	2
20H	27H	LPAR4	Parallel data readout	3
20H	28H	SLVDS4	LVDS data registration	2
20H	29H	LLVDS4	LVDS data readout	3
20H	2AH	SPTS4	Pattern select data registration	2
20H	2BH	LPTS4	Pattern select data readout	3
20H	2CH	SPT4	Pattern data registration	2
20H	2DH	LPT4	Pattern data readout	3
20H	2EH	SACT4	Action data registration	2
20H	2FH	LACT4	Action data readout	3
20H	30H	SWLF4	Window level flicker data registration	2
20H	31H	LWLF4	Window level flicker data readout	3
20H	32H	SAD4	Audio data registration (Analog)	2
20H	33H	LAD4	Audio data readout (Analog)	3
20H	34H	SDAD4	Audio data registration (Digital)	2
20H	35H	LDAD4	Audio data readout (Digital)	3
20H	36H	SHDMI4	HDMI data registration	2
20H	37H	LHDMI4	HDMI data readout	3
20H	38H	SIF4	InfoFrame data registration	2
20H	39H	LIF4	InfoFrame data readout	3
20H	3AH	SACP4	ACP data registration	2
20H	3BH	LACP4	ACP data readout	3
20H	3CH	SSD4	Scart data registration	2
20H	3DH	LSD4	Scart data readout	3
20H	3EH	SPD4	Program data registration	2
20H	3FH	LPD4	Program data readout	3
20H	40H	SMACROV4	Macrovision data registration	2
20H	41H	LMACROV4	Macrovision data readout	3
20H	42H	SAFD4	AFD data registration	2
20H	43H	LAFD4	AFD data readout	3
20H	44H	SCAPTION4	ClosedCaption data registration	2
20H	45H	LCAPTION4	ClosedCaption data readout	3
20H	46H	SVCHIP4	V-Chip data registration	2
20H	47H	LVCHIP4	V-Chip data readout	3
20H	48H	STTEXT4	TeleText data registration	2
20H	49H	LTTEXT4	TeleText data readout	3
20H	4AH	PNAMES4	Program name registration	2
20H	4BH	PNAMER4	Program name readout	3
20H	4DH	LPED4	Program enable readout	3
20H	50H	SAT4	Auto display data registration	2
20H	51H	LAT4	Auto display data readout	3
20H	52H	SGROUP4	Group data registration	2
20H	53H	LGROUP4	Group data readout	3
20H	54H	SCFG4	Config data registration	2
20H	55H	LCFG4	Config data readout	3
20H	56H	SINB4	Black insertion data registration	2
20H	57H	LINB4	Black insertion data readout	3
20H	58H	SCEC4	CEC data registration	2
20H	59H	LCEC4	CEC data readout	3
20H	5AH	LBED4	Bitmap enable readout	3
20H	5BH	LOED4	User option enable readout	3
20H	5CH	LGED4	Group enable readout	3
20H	5DH	SCCM4	User subtitle data registration 1	2
20H	5EH	LCCM4	User subtitle data readout 1	3
20H	5FH	SCCD4	User subtitle data registration 2	2
20H	60H	LCCD4	User subtitle data readout 2	3

20H	61H	SGM4	GamutMeta data registration	2
20H	62H	LGM4	GamutMeta data readout	3
20H	63H	SLS4	LipSync data registration	2
20H	64H	LLS4	LipSync data readout	3
20H	65H	SHPS4	0.5/0.25-pixel data registration	2
20H	66H	LHPS4	0.5/0.25-pixel data readout	3
20H	67H	SDDCCI4	DDC/CI data registration	2
20H	68H	LDDCCI4	DDC/CI data readout	3
20H	69H	SEP4	EDID port data registration	2
20H	6AH	LEP4	EDID port data readout	3
20H	6BH	SCGMS4	CGMS data registration	2
20H	6CH	LCGMS4	CGMS data readout	3
20H	6DH	SAP4	Aspect ratio data registration	2
20H	6EH	LAP4	Aspect ratio data readout	3
20H	6FH	SWSS4	WSS data registration	2
20H	70H	LWSS4	WSS data readout	3
20H	71H	SID14	ID1 data registration	2
20H	72H	LID14	ID1 data readout	3
20H	73H	SKEYL4	Key lock data registration	2
20H	74H	LKEYL4	Key lock data readout	3
20H	75H	LPDF4	Program format readout	3
20H	76H	SSMEAR4	Smear pattern data registration	2
20G	77H	LSMEAR4	Smear pattern data readout	3
20H	78H	SDP4	Display Port data registration	2
20H	79H	LDP4	Display Port data readout	3
20H	7AH	SSS4	Scroll Sequence data registration	2
20H	7BH	LSS4	Scroll Sequence data readout	3
20H	7CH	SDPLP4	DP List Port data registration	2
20H	7DH	LDPLP4	DP List Port data readout	3
20H	7EH	SVIF4	Vendorspec InfoFrame data registration	2
20H	7FH	LVIF4	Vendorspec InfoFrame data readout	3
20H	80H	SNIF4	NTSC VBI InfoFrame data registration	2
20H	81H	LNIF4	NTSC VBI InfoFrame data readout	3
20H	82H	LTED4	Subtitle image enable readout	3
20H	83H	LIDNO4	VG Serial No. readout	3
20H	8BH	S9Marker4	OPT 9Marker data setting	2
20H	8CH	L9Marker4	OPT 9Marker data acquisition.	3
20H	91H	STELOP4	Subtitle data setting	2
20H	92H	LTELOP4	Subtitle data acquisition.	3
20H	93H	SITMDS4	iTMDS data setting	2
20H	94H	LITMDS4	iTMDS data acquisition.	3
20H	97H	SVBO4	VbyOne data setting	2
20H	98H	LVBO4	VbyOne data acquisition	3
20H	99H	SHDMISW4	HDMI SW data setting	2
20H	9AH	LHDMISW4	HDMI SW data acquisition	3
20H	9BH	STPKEY4	Timing and pattern key information registration	2
20H	9CH	LTPKEY4	Timing and pattern key information acquisition	3
20H	9DH	SBNKEY4	Register all timing and pattern key information to the buffer RAM	2
20H	9EH	LBNKEY4	Read out all timing and pattern key information that are written in the buffer RAM	3
20H	9FH	SLGRP5	Large group data registration	2
20H	A0H	LLGRP5	Large group data readout	3
20H	A1H	LLGED5	Read out Large group enable data	3
20H	A2H	LGDEL5	Delete Large group data	2
20H	A3H	SSDI4	SDI data registration	2
20H	A4H	LSDI4	SDI data acquisition	3
20H	A5H	SHAN4	N value data registration	2
20H	A6H	LHAN4	N value data acquisition	3
20H	A9H	S3DPAT4	OPT 3D pattern data registration	2
20H	AAH	L3DPAT4	OPT 3D pattern data acquisition	3
20H	ABH	SARC4	HDMI ARC pattern data registration	2
20H	ACH	LARC4	HDMI ARC pattern data acquisition	3
20H	ADH	SHECA4	HDCP, EDID, CEC, HAMI ARC ON/OFF data registration	2
20H	AEH	LHECA4	HDCP, EDID, CEC, HAMI ARC ON/OFF data acquisition	3
20H	AFH	STM4	Transmission Mode data registration	2
20H	B0H	LTM4	Transmission Mode data acquisition	3
20H	B1H	SHEC4	HDMI HEC data registration	2
20H	B2H	LHEC4	HDMI HEC data acquisition	3

20H	B3H	SSMD3D4	SMD 3D pattern data setting	2
20H	B4H	LSMD3D4	SMD 3D pattern data acquisition	3
20H	B5H	S3DIMG4	3D Image pattern data setting	2
20H	B6H	L3DIMG4	3D Image Pattern data acquisition	3
20H	BBH	SCON4	Output Terminal Setting	2
20H	BCH	LCON4	Output Terminal Acquisition	3
20H	BDH	SDIV4	DotClk Mode data setting	2
20H	BEH	LDIV4	DotClk Mode data acquisition	3
20H	BFH	SSCDC4	SCDC List Port Data Setting	2
20H	C0H	LSCDC4	SCDC List Port Data acquisition	3
20H	C1H	SMVM4	Multi VG Mode Data Setting	2
20H	C2H	LMVM4	Multi VG Mode Data acquisition	3
20H	C5H	SHDR4	Dynamic Range and Mastering InfoFrame Data setting	2
20H	C6H	LHDR4	Dynamic Range and Mastering InfoFrame Data acquisition	3
20H	C7H	SUDW4	User Data Word data setting	2
20H	C8H	LUDW4	User Data Word data acquisition	3

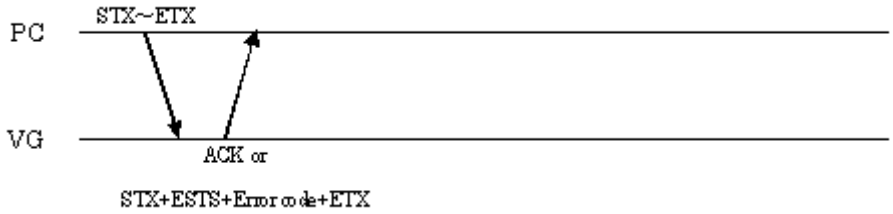
24H	20H	EXPDN4	Program execution	2
24H	21H	INDC4	Program No. INC/DEC	2
24H	22H	EXBN4	Buffer RAM execution	2
24H	23H	INIBUF4	Buffer RAM data initialization	2
24H	24H	SAVBUF4	Buffer RAM data registration	2
24H	25H	EXSYNC4	Separate Sync ON/OFF	2
24H	26H	CURSOR4	Cursor pattern control	2
24H	27H	VLEVEL4	Video level change	2
24H	28H	HDCPON4	HDCP execution start/stop	2
24H	29H	PBPRON4	RGB signal/color difference signal switching	2
24H	2AH	SEDID4	EDID write	2
24H	2BH	LEDID4	EDID readout	3
24H	2CH	QDISP4	H/V Disp acquisition	3
24H	2DH	EXCCN4	User subtitle data execution	2
24H	2EH	LVGID4	VG ID acquisition	3
24H	2FH	EXSGON4	RGB output ON/OFF	2
24H	30H	EXPONOFF4	Pattern data output ON/OFF	2
24H	31H	AAUDIO4	Analog audio change	2
24H	32H	SCROLL4	Pattern scroll execution	2
24H	33H	EXSYNCP4	Separate sync polarity change	2
24H	34H	LKSV4	KSV data acquisition	3
24H	3AH	LERR4	Error code acquisition	3
24H	3DH	LHDCP4	HDCP operation start/stop code acquisition.	3
24H	3EH	MUTEON4	MUTE operation ON/OFF	2
24H	3FH	LMUTE4	MUTE operation ON/OFF acquisition	3
24H	40H	EXHDMISW4	HDMI SW control	2
24H	41H	LOBT4	Output board type acquisition	3
24H	42H	LOTT4	Output terminal type acquisition	3
24H	43H	EXEPIF4	Designate Slot No and Terminal No that is executed and transmitted data.	2
24H	44H	EXEKEY4	Execute timing and pattern key	2
24H	45H	EXEIFONOFF4	ON/OFF of the output of the designated terminal	2
24H	46H	LCURPOS4	Cursor coordinate acquisition	3
24H	47H	EXLGDN5	Select large group data	2
24H	48H	LERR5	Error code aquisition	3
24H	49H	LHCE4	HDCP, CEC and EDID test result acquisition	3
24H	4AH	EXEUKB4	Designate User KEY Block	2
24H	4CH	ECECON4	Output Terminal Setting	2
24H	4EH	QEDID4	EDID read (even if error appears)	3

3 INDIVIDUAL FORMATS FOR VG DRAWING COMMANDS

3.1 CHACLR4 [28H 20H]: Character plane clear

Function: This command clears the character plane.

Sequence: Type 2



Command:

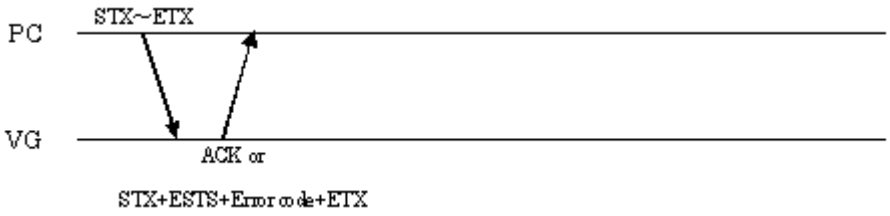
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHACLR4	2 bytes	28H 20H
ETX	1 byte	03H

Fig. 3-1-1

3.2 CHAPSET4 [28H 21H]: Character plane dot drawing

Function: This command draws one dot on the character plane.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
CHAPSET4	2 bytes	28H 21H
X coordinate	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Y coordinate	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Drawing mode	1 byte	“0” = Clear, “1” = Set
ETX	1 byte	03H

Fig. 3-2-1

When the drawing mode setting is omitted as below, the dot is drawn in the Set mode.

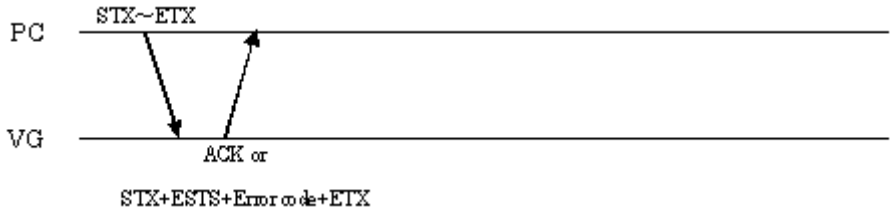
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHAPSET4	2 bytes	28H 21H
X coordinate	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Y coordinate	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

Fig. 3-2-2

3.3 CHALINE4 [28H 22H]: Character plane straight line drawing

Function: This command draws a straight line on the character plane.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
CHALINE4	2 bytes	28H 22H
Start point coordinate X	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Start point coordinate Y	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
End point coordinate X	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
End point coordinate Y	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Drawing mode	1 byte	“0” = Clear, “1” = Set
ETX	1 byte	03H

Fig. 3-3-1

When the drawing mode setting is omitted as below, the dot is drawn in the Set mode.

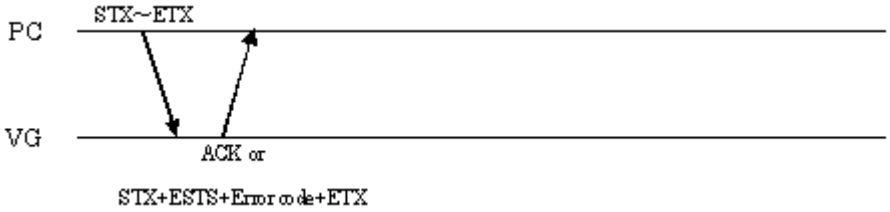
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHALINE4	2 bytes	28H 22H
Start point coordinate X	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Start point coordinate Y	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
End point coordinate X	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
End point coordinate Y	2 to 5 bytes	See above figure.
ETX	1 byte	03H

Fig. 3-3-2

3.4 CHASQRE4 [28H 23H]: Character plane square drawing

Function: This command draws a square on the character plane.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
CHASQRE4	2 bytes	28H 23H
Top left coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Bottom right coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Bottom right coordinate Y	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Drawing mode	1 byte	“0” = Clear, “1” = Set
ETX	1 byte	03H

Fig. 3-4-1

When the drawing mode setting is omitted as below, the dot is drawn in the Set mode.

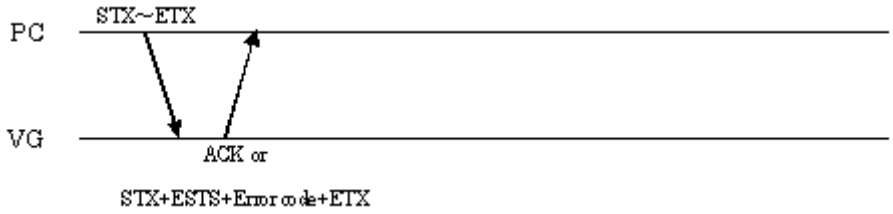
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHASQRE4	2 bytes	28H 23H
Top left coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Bottom right coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Bottom right coordinate Y	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

Fig. 3-4-2

3.5 CHASQPA4 [28H 24H]: Character plane filled-in square drawing

Function: This command draws a filled-in square on the character plane.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
CHASQPA4	2 bytes	28H 24H
Top left coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Bottom right coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Bottom right coordinate Y	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Drawing mode	1 byte	“0” = Clear, “1” = Set
ETX	1 byte	03H

Fig. 3-5-1

When the drawing mode setting is omitted as below, the dot is drawn in the Set mode.

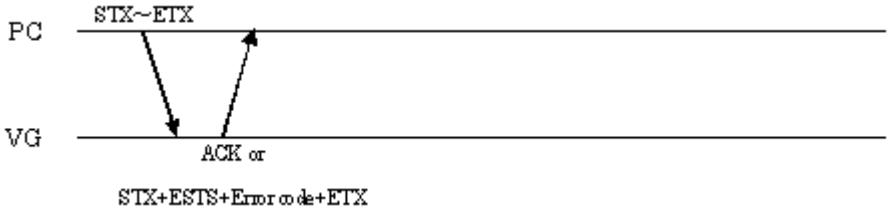
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHASQPA4	2 bytes	28H 24H
Top left coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Bottom right coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Bottom right coordinate Y	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

Fig. 3-5-2

3.6 CHACIRC4 [28H 25H]: Character plane circle drawing

Function: This command draws a circle on the character plane.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
CHACIRC4	2 bytes	28H 25H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Radius	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Drawing mode	1 byte	“0” = Clear, “1” = Set
ETX	1 byte	03H

Fig. 3-6-1

When the drawing mode setting is omitted as below, the dot is drawn in the Set mode.

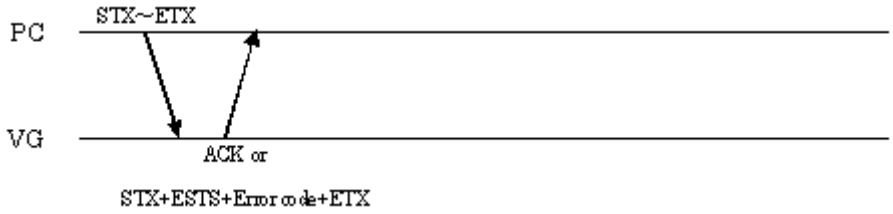
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHACIRC4	2 bytes	28H 25H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Radius	1 to 4 bytes	“1” to “4095”
ETX	1 byte	03H

Fig. 3-6-2

3.7 CHACIRCPA4 [28H 26H]: Character plane filled-in circle drawing

Function: This command draws a filled-in circle on the character plane.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
CHACIRCPA4	2 bytes	28H 26H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Radius	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Drawing mode	1 byte	“0” = Clear, “1” = Set
ETX	1 byte	03H

Fig. 3-7-1

When the drawing mode setting is omitted as below, the dot is drawn in the Set mode.

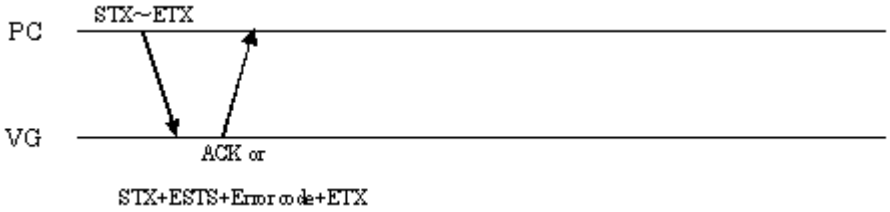
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHACIRCPA4	2 bytes	28H 26H
Center X coordinate	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Radius	1 to 4 bytes	“1” to “4095”
ETX	1 byte	03H

Fig. 3-7-2

3.8 CHAELPS4 [28H 27H]: Character plane ellipse drawing

Function: This command draws an ellipse on the character plane.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
CHAELPS4	2 bytes	28H 27H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Radius RX	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Radius RY	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Drawing mode	1 byte	“0” = Clear, “1” = Set
ETX	1 byte	03H

Fig. 3-8-1

When the drawing mode setting is omitted as below, the dot is drawn in the Set mode.

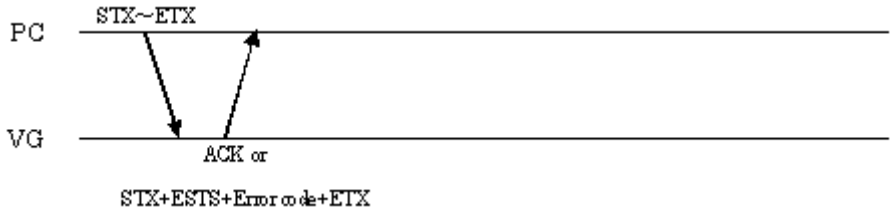
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHAELPS4	2 bytes	28H 27H
Center X coordinate	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Radius RX	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Radius RY	1 to 4 bytes	“1” to “4095”
ETX	1 byte	03H

Fig. 3-8-2

3.9 CHAELPSPA4 [28H 28H]: Character plane filled-in ellipse drawing

Function: This command draws a filled-in ellipse on the character plane.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
CHAELPSPA4	2 bytes	28H 28H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Radius RX	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Radius RY	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Drawing mode	1 byte	“0” = Clear, “1” = Set
ETX	1 byte	03H

Fig. 3-9-1

When the drawing mode setting is omitted as below, the dot is drawn in the Set mode.

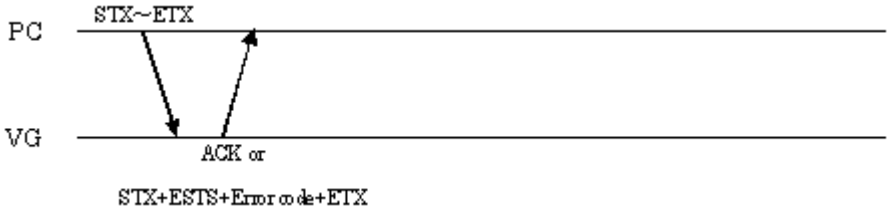
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHAELPSPA4	2 bytes	28H 28H
Center X coordinate	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Radius RX	1 to 4 bytes	“1” to “4095”
,	1 byte	2CH (Delimiter)
Radius RY	1 to 4 bytes	“1” to “4095”
ETX	1 byte	03H

Fig. 3-9-2

3.10 CHATRI4 [28H 29H]: Character plane triangle drawing

Function: This command draws a triangle on the character plane.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
CHATRI4	2 bytes	28H 29H
Coordinate X1	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Coordinate Y1	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Coordinate X2	2 to 5 bytes	Same as coordinate X1
,	1 byte	2CH (Delimiter)
Coordinate Y2	2 to 5 bytes	Same as coordinate Y1
,	1 byte	2CH (Delimiter)
Coordinate X3	2 to 5 bytes	Same as coordinate X1
,	1 byte	2CH (Delimiter)
Coordinate Y3	2 to 5 bytes	Same as coordinate Y1
,	1 byte	2CH (Delimiter)
Drawing mode	1 byte	“0” = Clear, “1” = Set
ETX	1 byte	03H

Fig. 3-10-1

When the drawing mode setting is omitted as below, the dot is drawn in the Set mode.

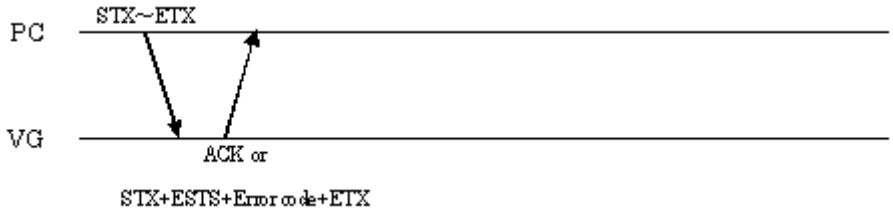
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHATRI4	2 bytes	28H 29H
Coordinate X1	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate Y1	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate X2	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate Y2	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate X3	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate Y3	2 to 5 bytes	See above figure.
ETX	1 byte	03H

Fig. 3-10-2

3.11 CHATRIPA4 [28H 2AH]: Character plane filled-in triangle drawing

Function: This command draws a filled-in triangle on the character plane.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
CHATRIPA4	2 bytes	28H 2AH
Coordinate X1	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Coordinate Y1	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - * -2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Coordinate X2	2 to 5 bytes	Same as coordinate X1
,	1 byte	2CH (Delimiter)
Coordinate Y2	2 to 5 bytes	Same as coordinate Y1
,	1 byte	2CH (Delimiter)
Coordinate X3	2 to 5 bytes	Same as coordinate X1
,	1 byte	2CH (Delimiter)
Coordinate Y3	2 to 5 bytes	Same as coordinate Y1
,	1 byte	2CH (Delimiter)
Drawing mode	1 byte	“0” = Clear, “1” = Set
ETX	1 byte	03H

Fig. 3-11-1

When the drawing mode setting is omitted as below, the dot is drawn in the Set mode.

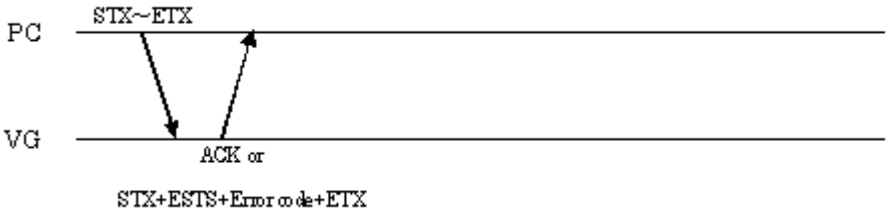
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHATRIPA4	2 bytes	28H 2AH
Coordinate X1	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate Y1	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate X2	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate Y2	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate X3	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate Y3	2 to 5 bytes	See above figure.
ETX	1 byte	03H

Fig. 3-11-2

3.12 CHABITBLT4 [28H 2BH] : Character Plane copy

Function : this command performs area-copy of character plane.

Sequence : Type 2



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
CHASTR4	2 bytes	28H 2DH
Font size	1 byte	"0"=5x7 "1"=7x9 "2"=16x16
,	1 byte	2CH (Delimiter)
Coordinate X	1 to 4 bytes	"0"-"4095"
,	1 byte	2CH (Delimiter)
Coordinate Y	1 to 4 bytes	"0"-"4095"
,	1 byte	2CH (Delimiter)
Character string	1 to 256 bytes	ASCII
,	1 byte	2CH (Delimiter)
Drawing mode	1 byte	"1"=Set, "2"=OR
ETX	1 byte	03H

Fig 3-12-1

When the drawing mode setting is omitted as below, the dot is drawn in the Set mode.

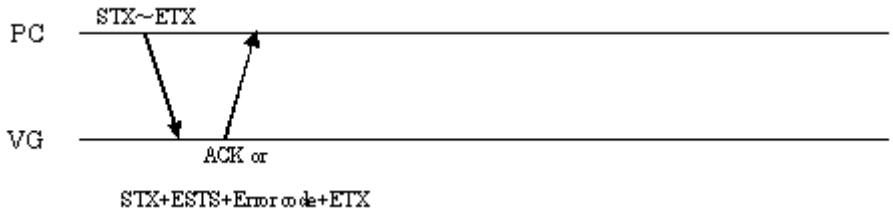
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHASTR4	2 bytes	28H 2DH
Font size	1 byte	"0"=5x7 "1"=7x9 "2"=16x16
,	1 byte	2CH (Delimiter)
Coordinate X	1 to 4 bytes	"0"-"4095"
,	1 byte	2CH (Delimiter)
Coordinate Y	1 to 4 bytes	"0"-"4095"
,	1 byte	2CH (Delimiter)
Character string	1 to 256 bytes	ASCII
ETX	1 byte	03H

Fig 3-12-2

3.13 CHACOL4 [28H 2CH]: Character plane color setting

Function: This command sets the color of the character plane.

Sequence: Type 2



Command:

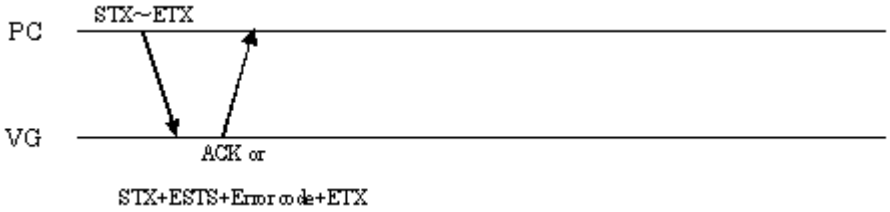
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHACOL4	2 bytes	28H 2CH
R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Bit Mode	1 or 2 bytes	“8” to “16”
ETX	1 byte	03H

Fig. 3-13-1

3.14 CHASTR4 [28H 2DH]: Character plane character string drawing

Function: This command draws a character string on the character plane.

Sequence: Type 2



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
CHASTR4	2 bytes	28H 2DH
Font size	1 byte	“0” = 5×7, “1” = 7×9, “2” = 16×16
,	1 byte	2CH (Delimiter)
Coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Coordinate Y	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Character string	1 to 256 bytes	ASCII
,	1 byte	2CH (Delimiter)
Drawing mode	1 byte	“1” = Set, “2” = OR
ETX	1 byte	03H

Fig. 3.14-1

When the drawing mode setting has been omitted as in the figure below, the dot is drawn in the Set mode.

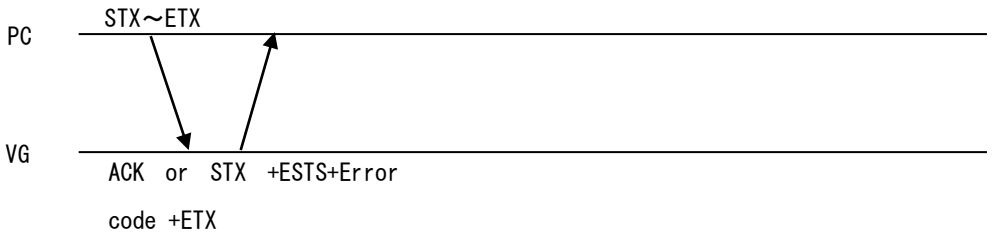
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHASTR4	2 bytes	28H 2DH
Font size	1 byte	“0” = 5×7, “1” = 7×9, “2” = 16×16
,	1 byte	2CH (Delimiter)
Coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Coordinate Y	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Character string	1 to 256 bytes	ASCII
ETX	1 byte	03H

Fig. 3-14-2

3.15 GRACLR4 [28H 40H]: Graphic Plane Clear

Function : This command clears the graphic plane

Sequence : Type 2



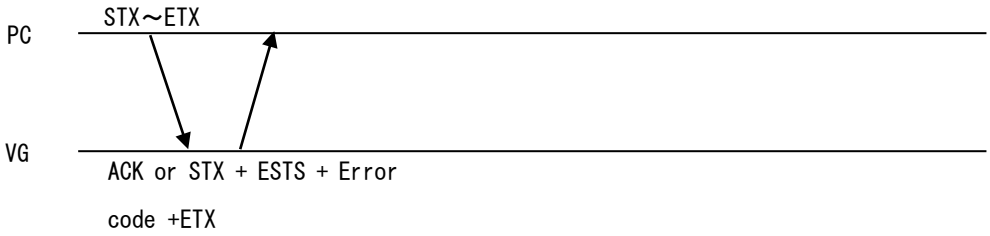
Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
GRACLR4	2 bytes	28H 40H
ETX	1 byte	03H

Figure 3-15-1

3.16 GRAPSET4 [28H 41H]: Graphic Plane Dot Drawing

Function : This command draws dot on the graphic plane
Sequence : Type 2



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
GRAPSET4	2 bytes	28H 41H
X coordinate	1 to 4 bytes	"0" to "255"
,	1 byte	2CH (Delimiter)
Y coordinate	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Color	1 to 3 bytes	"0" to "255" *Note
ETX	1 byte	03H

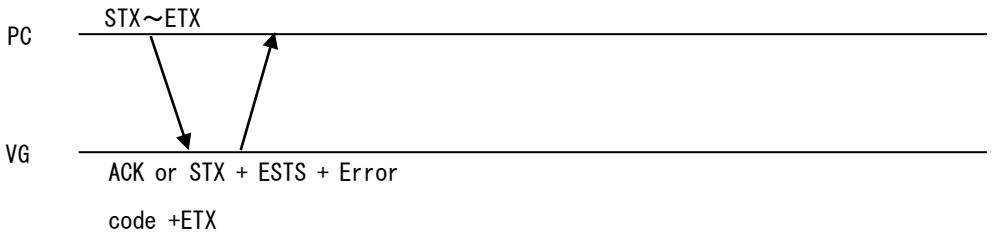
Figure 3-16-1

Note : by executing "GRAPAL4 [28H 4EH] Graphic Palette Mode", it can set in a range of 0 to 4095.

3.17 GRALINE4 [28H 42H]:GraphicPlane Straight Line Drawing

Function : This command draw straight line on the graphic plane

Sequence : Type 2



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
GRALINE4	2 bytes	28H 42H
Top left coordinate X	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Top left coordinate Y	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Bottom right coordinate X	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Bottom right coordinate Y	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Color	1 to 3 bytes	"0" to "255" *Note
ETX	1 byte	03H

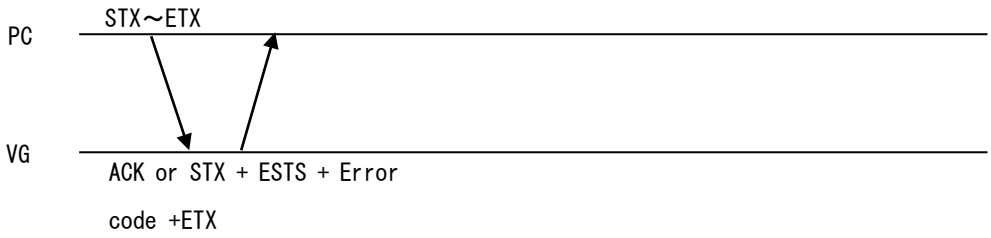
Fig 3-17-1

Note : by executing “GRAPAL4 [28H 4EH] Graphic Palette Mode”, it can set in a range of 0 to 4095.

3.18 GRASQRE4 [28H 43H]: Graphic Plane Square Drawing

Function : This command draw square on the graphic plane

Sequence : Type 2



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
GRASQRE4	2 bytes	28H 43H
Top left coordinate X	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Top left coordinate Y	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Bottom right coordinate X	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Bottom right coordinate Y	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Color	1 to 3 bytes	"0" to "255" *Note
ETX	1 byte	03H

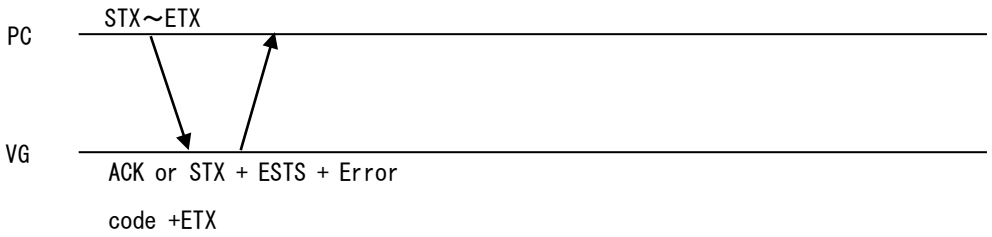
Figure 3-18-1

Note : by executing “GRAPAL4 [28H 4EH] Graphic Palette Mode”, it can set in a range of 0 to 4095.

3.19 GRASQPA4 [28H 44H]: Graphic Plane Filled-in Square

Function : This command draws filled-in square on the graphic plane

Sequence : Type 2



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
GRASQPA4	2 bytes	28H 44H
Top left coordinate X	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Top left coordinate Y	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Bottom right coordinate X	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Bottom right coordinate Y	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Color	1 to 3 bytes	"0" to "255" *Note
ETX	1 byte	03H

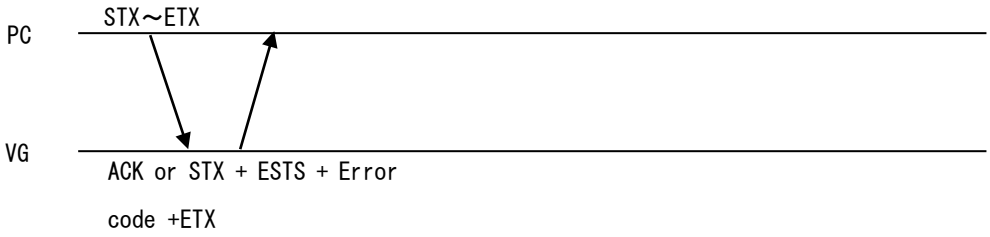
Figure 3-19-1

Note : by executing “GRAPAL4 [28H 4EH] Graphic Palette Mode”, it can set in a range of 0 to 4095.

3.20 GRACIRC4 [28H 45H]: Graphic Plane Circle Drawing

Function : This command draws circle on the graphic plane

Sequence : Type 2



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
GRACIRC4	2 bytes	28H 45H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Radius	1 to 4 bytes	"1" to "4095"
,	1 byte	2CH (Delimiter)
Color	1 to 3 bytes	"0" to "255" *Note
ETX	1 byte	03H

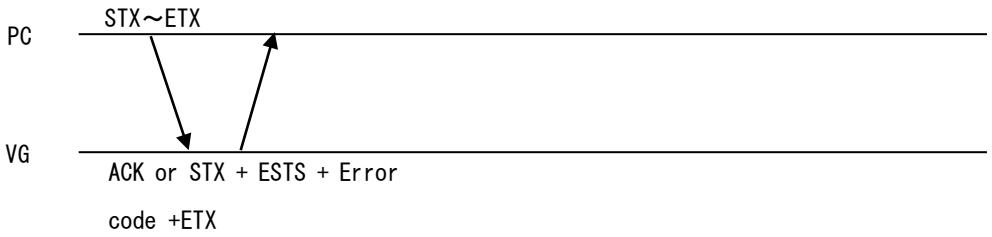
Figure 3-20-1

Note : by executing “GRAPAL4 [28H 4EH] Graphic Palette Mode”, it can set in a range of 0 to 4095.

3.21 GRACIRCPA4 [28H 46H]: Graphic Plane Filled-in Circle Drawing

Function : This command draws filled-in circle on the graphic plane

Sequence : Type 2



Command :

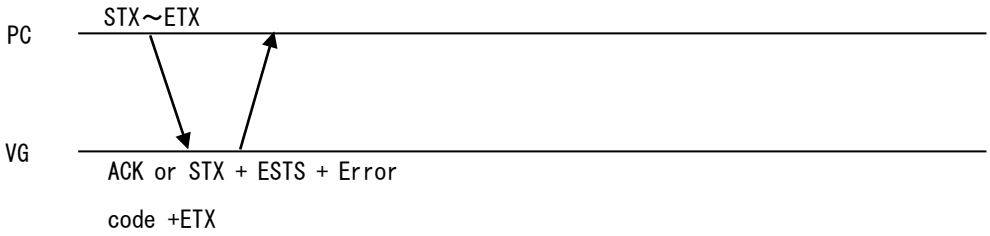
STX	1 byte	02H
VG4CMD	1 byte	FDH
GRACIRCPA4	2 bytes	28H 46H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Radius	1 to 4 bytes	"1" to "4095"
,	1 byte	2CH (Delimiter)
Color	1 to 3 bytes	"0" to "255" *Note
ETX	1 byte	03H

Figure 3-21-1

Note : by executing “GRAPAL4 [28H 4EH] Graphic Palette Mode”, it can set in a range of 0 to 4095.

3.22 GRAELPS4 [28H 47H]: Graphic Plane Ellipse drawing

Function : This command draw ellipse on the graphic plane
Sequence : Type 2



Command :

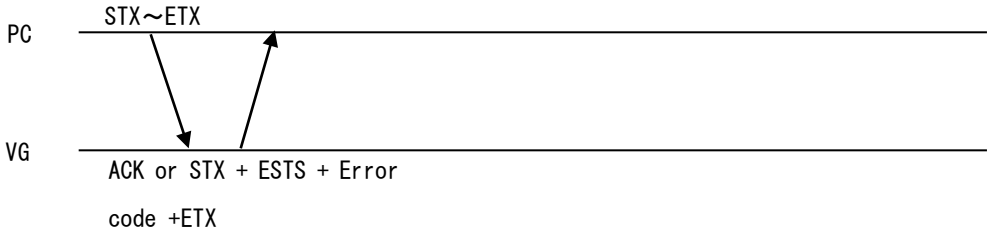
STX	1 byte	02H
VG4CMD	1 byte	FDH
GRAELPS4	2 bytes	28H 47H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Radius RX	1 to 4 bytes	"1" to "4095"
,	1 byte	2CH (Delimiter)
Radius RY	1 to 4 bytes	"1" to "4095"
,	1 byte	2CH (Delimiter)
Color	1 to 3 bytes	"0" to "255" *Note
ETX	1 byte	03H

Figure 3-22-1

Note : by executing “GRAPAL4 [28H 4EH] Graphic Palette Mode”, it can set in a range of 0 to 4095.

3.23 GRAELPSPA4 [28H 48H]: Graphic Plane Filled-in Ellipse Drawing

Function : This command draw filled-in ellipse on the graphic plane
Sequence : Type 2



Command :

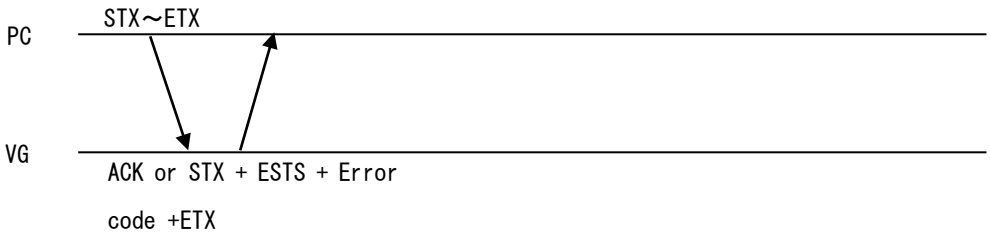
STX	1 byte	02H
VG4CMD	1 byte	FDH
GRAELPSPA4	2 byte	28H 48H
Center X Coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Radius RX	1 to 4 bytes	"1" to "4095"
,	1 byte	2CH (Delimiter)
Radius RY	1 to 4 bytes	"1" to "4095"
,	1 byte	2CH (Delimiter)
Color	1 to 3 bytes	"0" to "255" *Note
ETX	1 byte	03H

Figure 3-23-1

Note : by executing “GRAPAL4 [28H 4EH] Graphic Palette Mode”, it can set in a range of 0 to 4095.

3.24 GRATRI4 [28H 49H]: Graphic Plane triangle Drawing

Function : This command draws triangle on the graphic plane
Sequence : Type 2



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
GRATRI4	2 bytes	28H 49H
Coordinate X1	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Coordinate Y1	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Coordinate X2	2 to 5 bytes	Same as coordinate X1
,	1 byte	2CH (Delimiter)
Coordinate Y2	2 to 5 bytes	Same as coordinate Y1
,	1 byte	2CH (Delimiter)
Coordinate X3	2 to 5 bytes	Same as coordinate X1
,	1 byte	2CH (Delimiter)
Coordinate Y3	2 to 5 bytes	Same as coordinate Y1
,	1 byte	2CH (Delimiter)
Color	1 to 3 bytes	"0" to "255" *Note
ETX	1 byte	03H

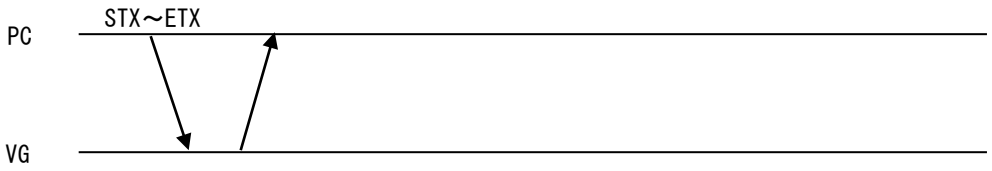
Figure 3-24-1

Note : by executing “GRAPAL4 [28H 4EH] Graphic Palette Mode”, it can set in a range of 0 to 4095.

3.25 GRATRIPA4 [28H 4AH]: Graphic Plane Filled-in Triangle Drawing

Function : This command draw filled-in triangle on the graphic plane

Sequence : Type 2



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
GRATRIPA4	2 bytes	28H 4AH
Coordinate X1	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Coordinate Y1	2 to 5 bytes	Sign code + “0” to “4095” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
,	1 byte	2CH (Delimiter)
Coordinate X2	2 to 5 bytes	Same as coordinate X1
,	1 byte	2CH (Delimiter)
Coordinate Y2	2 to 5 bytes	Same as coordinate Y1
,	1 byte	2CH (Delimiter)
Coordinate X3	2 to 5 bytes	Same as coordinate X1
,	1 byte	2CH (Delimiter)
Coordinate Y3	2 to 5 bytes	Same as coordinate Y1
,	1 byte	2CH (Delimiter)
Color	1 to 3 bytes	"0" to "255" *Note
ETX	1 byte	03H

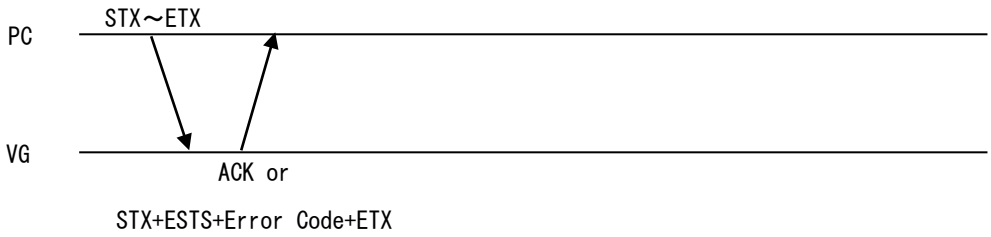
Figure 3-25-1

Note : by executing “GRAPAL4 [28H 4EH] Graphic Palette Mode”, it can set in a range of 0 to 4095.

3.26 GRATRIPA4 [28H 4BH] : Graphic Plane Copy

Function : this command performs area-copy of graphic plane.

Sequence : Type 2



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
GRABITBLT4	2 bytes	28H 4BH
Left-top coordinate X of transfer source	1 to 4 bytes	"0"-"4095"
,	1 byte	2CH (Delimiter)
Left-top coordinate Y of transfer source	1 to 4 bytes	"0"-"4095"
,	1 byte	2CH(Delimiter)
Size X	1 to 4 bytes	"1"-"4095"
,	1 byte	2CH(Delimiter)
Size Y	1 to 4 bytes	"1"-"4095"
,	1 byte	2CH(Delimiter)
Left-top coordinate X of transfer destination	1 to 4 bytes	"0"-"4095"
,	1 byte	2CH(Delimiter)
Left-top coordinate Y of transfer destination	1 to 4 bytes	"0"-"4095"
,	1 byte	2CH(Delimiter)
Drawing mode	1 byte	"1"=SET, "2"=OR
ETX	1 byte	03H

Fig 3-26-1

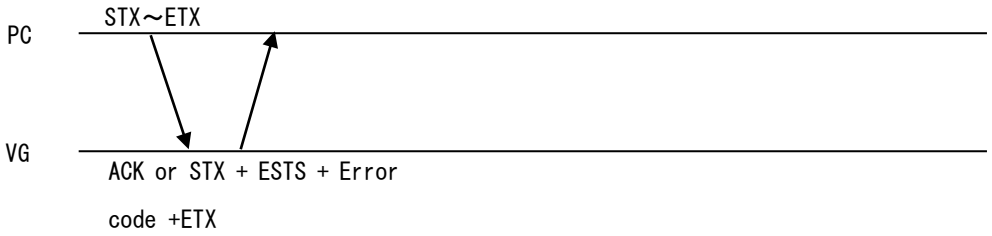
When the drawing mode setting is omitted as below, the dot is drawn in the Set mode.

STX	1 byte	02H
VG4CMD	1 byte	FDH
GRABITBLT4	2 byte	28H 4BH
Left-top coordinate X of transfer source	1 to 4 bytes	"0"-"4095"
,	1 byte	2CH (Delimiter)
Left-top coordinate Y of transfer source	1 to 4 bytes	"0"-"4095"
,	1 byte	2CH (Delimiter)
Size X	1 to 4 bytes	"1"-"4095"
,	1 byte	2CH (Delimiter)
Size Y	1 to 4 bytes	"1"-"4095"
,	1 byte	2CH (Delimiter)
Left-top coordinate X of transfer destination	1 to 4 bytes	"0"-"4095"
,	1 byte	2CH (Delimiter)
Left-top coordinate Y of transfer destination	1 to 4 bytes	"0"-"4095"
ETX	1 byte	03H

Fig 3-26-2

3.27 GRACOL4 [28H 4CH]: Graphic Plane Color Setting

Function : This command sets the color of the graphic plane
Sequence : Type 2



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
GRACOL4	2 bytes	28H 4CH
No.	1 to 3 bytes	"0" to "255" *Note
,	1 byte	2CH (Delimiter)
R	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
Bit Mode	1 to 2 bytes	"8" to "16"
ETX	1 byte	03H

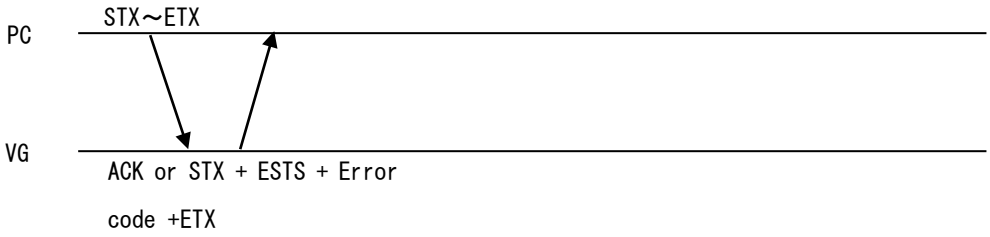
Figure 3-27-1

Note : by executing "GRAPAL4 [28H 4EH] Graphic Palette Mode", it can set in a range of 0 to 4095.

3.28 GRALEV4 [28H 4DH]: Graphic Plane Level Edit

Function : This command edit the level of the graphic plane

Sequence : Type 2



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
GRACOL4	2 bytes	28H 4DH
R	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
Bit Mode	1 to 2 bytes	"8" to "16" In case it is set as “0”, the RGB value is set as it is.
ETX	1 bytes	03H

Figure 3-28-1

Note 1) This command is effective for VG-880 only.
Note 2) When ramp pattern over 8bit is generating, this command will be invalid.
Note 3) When the pattern of the graphic plane changes, level setting will be cleared.

3.29 GRAPAL4 [28H 4EH] : Graphic Plane Palette Mode Setting

Function : this command sets the palette mode of the Graphic Plane.
Sequence : Type 2

Command :

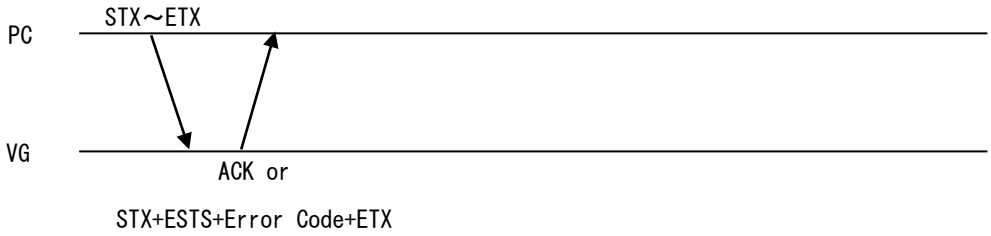
STX	1 byte	02H
VG4CMD	1 byte	FDH
GRAPAL4	2 bytes	28H 4EH
Mode	1 byte	"0" : default (256 colors palette) "1" : 4096 colors palette
ETX	1 byte	03H

Fig 3-29-1

Note 1) this command should be executed before other drawing commands for the graphic plane.
Note 2) if 4096 colors palette is set in this command, the setting of other drawing commands for the graphic plane can be set from 0 to 4096.
Note 3) if program data is executed after executing this command, this command will be cleared. You need to re-execute this command.

3.30 GRAMPAL4 [28H 4FH] : multiple colors setting of the graphic plane

Function : this command sets multiple color number for the graphic plane.
Sequence : Type 2



Command :

STX	1 byte	02H	
VG4CMD	1 byte	FDH	
GRAMPAL4	2 bytes	28H 4FH	
Data number N * **Note1**	1 to 3 bytes	"1"-"100" * **Note 2**	
,	1 byte	2CH (Delimiter)	
Bit Mode	1 to 2 bytes	"8"-"16"	
,	1 byte	2CH (Delimiter)	
Palette No.	1 to 3 bytes	"0"-"255"	#1
	1 to 4 bytes	"0"-"4095" * **Note 3**	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	#N
Palette No.	1 to 3 bytes	"0"-"255"	
	1 to 4 bytes	"0"-"4095" *Note 3	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	"0"-"65535"	
ETX	1 byte	03H	

Fig 3-30-1

*** Note 1 :The color number that is set in this command is effective in the color setting shown below. If the number setting of the data and color number setting does not match, it will be set as below.**

Data number setting < color number setting = the number that is set in Data number setting is set.
Data number setting > color number setting = the number that is set in color number setting is set.

*** Note 2 :The total number of transfer byte (control command + command + parameter) is within 1024 bytes. If the data is over 1024 bytes, please send it by dividing into several times.**

Example) available case : in case RGB is set by 51 steps in the range of 255, the palette 0 should be set as “black”.

STX	02H	1 byte
VG4CMD	FDH	1 byte
GRAPAL4	28H 4FH	2 bytes
Data number	"51"	2 bytes
,	2CH	1 byte
Bit Mode	"8"	1 byte
,	2CH	1 byte
Palette No.	"0"	1 byte
,	2CH	1 byte
R	"0"	1 byte
,	2CH	1 byte
G	"0"	1 byte
,	2CH	1 byte
B	"0"	1 byte
,	2CH	1 byte
Palette No.	"50"	2 bytes
,	2CH	1 byte
R	"255"	3 bytes
,	2CH	1 byte
G	"255"	3 bytes
,	2CH	1 byte
B	"255"	3 bytes
ETX	03H	1 byte

Control code（02H 03H）： total 2Byte
Distinguish code（FDH）：1Byte
Command code（28H 4FH）：total 2Byte
Parameter：693Byte
Total 698Byte
Since this is less than 1024 bytes, it is okay to transfer.

NG case) unable to transfer： in case all RGB is set as 255.

STX	02H	1 byte
VG4CMD	FDH	1 byte
GRAPAL4	28H 4FH	2 bytes
Data number	"100"	3 bytes
,	2CH	1 byte
Bit Mode	"8"	1 byte
,	2CH	1 byte
Palette No.	"0"	1 byte
,	2CH	1 byte
R	"255"	3 bytes
,	2CH	1 byte
G	"255"	3 bytes
,	2CH	1 byte
B	"255"	3 bytes
,	2CH	1 byte
Palette No.	"100"	3 bytes
,	2CH	1 byte
R	"255"	3 bytes
,	2CH	1 byte
G	"255"	3 bytes
,	2CH	1 byte
B	"255"	3 bytes
ETX	03H	1 byte

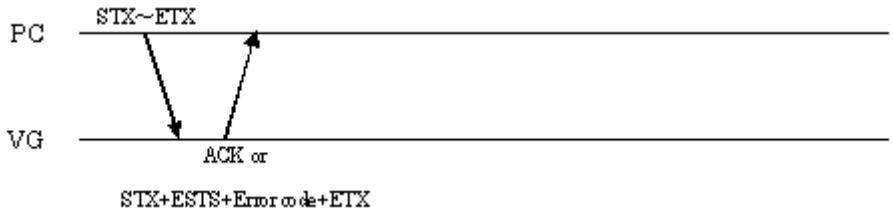
Control code（02H 03H）: total 2Byte
Distinguish code（FDH）: 1Byte
Command code（28H 4FH）: total 2Byte
Parameter : 1497Byte
Total 1502Byte
Since it is over 1024 bytes, it is unable to transfer.

Note 3 : by executing “GRAPAL4 [28H 4EH] Graphic Palette Mode”, it can set in a range of 0 to 4095.

3.31 ALLCLR4 [28H 60H]: All planes clear

Function: This command clears all the planes.

Sequence: Type 2



Command:

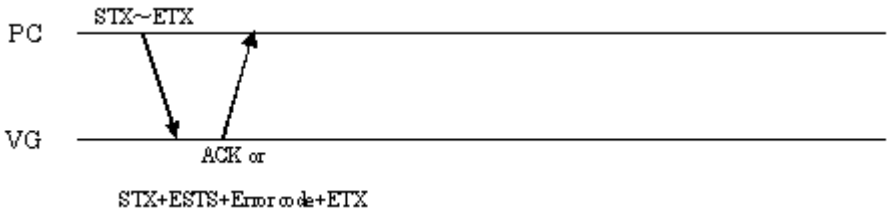
STX	1 byte	02H
VG4CMD	1 byte	FDH
ALLCLR4	2 bytes	28H 60H
ETX	1 byte	03H

Fig. 3-31-1

3.32 WINDOW4 [28H 61H]: Window drawing

Function: This command draws windows.

Sequence: Type 2



Command:

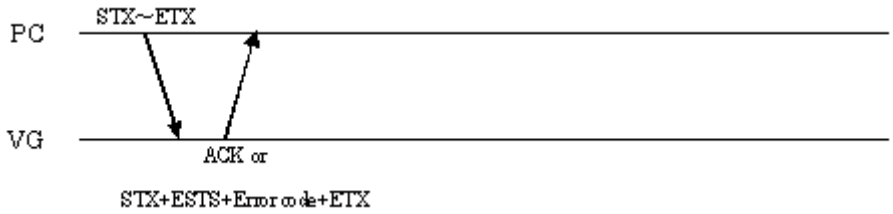
STX	1 byte	02H
VG4CMD	1 byte	FDH
WINDOW4	2 bytes	28H 61H
Top left coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Bottom right coordinate X	1 to 4 bytes	“0” to “4095”
,	1 byte	2CH (Delimiter)
Bottom right coordinate Y	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

Fig. 3-32-1

3.33 WINCOL4 [28H 62H]: Window color setting

Function: This command sets the window color.

Sequence: Type 2



Command:

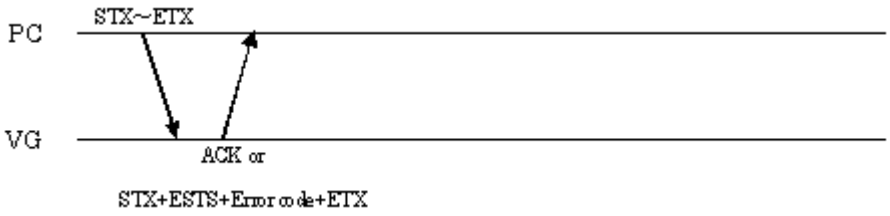
STX	1 byte	02H
VG4CMD	1 byte	FDH
WINCOL4	2 bytes	28H 62H
R	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	“0” to “65535”
,	1 byte	2CH (Delimiter)
Bit Mode	1 or 2 bytes	“8” to “16”
ETX	1 byte	03H

Fig. 3-33-1

3.34 WINCLR4 [28H 63H]: Window plane clear

Function: This command clears the window plane.

Sequence: Type 2



Command:

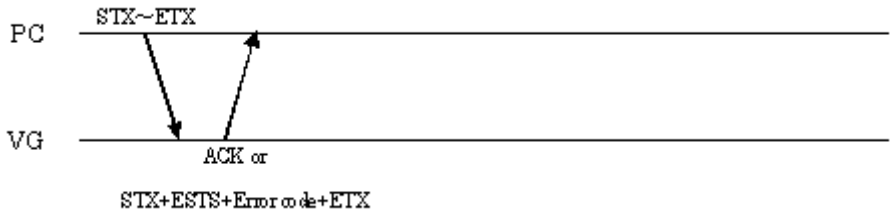
STX	1 byte	02H
VG4CMD	1 byte	FDH
WINCLR4	2 bytes	28H 63H
ETX	1 byte	03H

Fig. 3-34-1

3.35 ALLSCOL4 [28H 70H] : RGB output ON/IFF and Color setting

Function : this command sets RGB output ON/OFF and colors of all planes.

Sequence : Type 2



Command :

STX	1 byte	02H	
VG4CMD	1 byte	FDH	
ALLSCOL4	2 bytes	28H 70H	
R	1 byte	"0"=OFF, "1"=ON	
,	1 byte	2CH (Delimiter)	
G	1 byte	"0"=OFF, "1"=ON	
,	1 byte	2CH (Delimiter)	
B	1 byte	"0"=OFF, "1"=ON	
,	1 byte	2CH (Delimiter)	
Bit Mode	1 to 2 bytes	"0", "8"-"16" In case it is set as “0”, RGB value is set as it is.	
,	1 byte	2CH (Delimiter)	
Plane Code	1 byte	"C" code of character plane	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
Plane Code	1 byte	"W" code of Window plane	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
Plane Code	1 byte	"B" code of background	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	"0"～"65535"	
,	1 byte	2CH (Delimiter)	#1
Palette No.	1 to 3 bytes	"0"-"255" Palette No. of graphic plane	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	#16
Palette No.	1 to 3 bytes	"0"-"255" Palette No of graphic plane	

,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	"0"-"65535"	
ETX	1 byte	03H	

Fig 3-35-1

Note 1) The items below Bit Mode can be omitted. However, if you omit "color setting" part, you need to delete both "plane code" and "color setting". That is, if you set "color setting", you need to input Bit Mode, too.

Note 2) The Palette No. can be set maximum 16. Even if it is less than 16, it is okay to input.

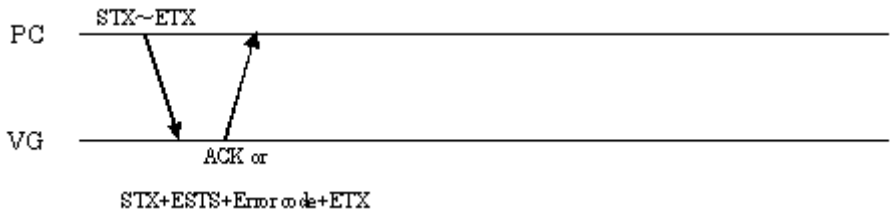
Example) Omit character plane and background. Palette is set as "8".

STX	1 byte	02H	
VG4CMD	1 byte	FDH	
ALLSCOL4	2 bytes	28H 70H	
R	1 byte	"0"=OFF, "1"=ON	
,	1 byte	2CH (Delimiter)	
G	1 byte	"0"=OFF, "1"=ON	
,	1 byte	2CH (Delimiter)	
B	1 byte	"0"=OFF, "1"=ON	
,	1 byte	2CH (Delimiter)	
Bit Mode	1 to 2 bytes	"0", "8"-"16" In case it is set as "0", RGB value is set as it is.	
,	1 byte	2CH (Delimiter)	
Plane Code	1 byte	"W" Window plane code	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
Palette No.	1 to 3 bytes	"0"-"255" Palette No. of graphic plane	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	"0"-"65535"	#1
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
Palette No.	1 to 3 bytes	"0"-"255" Palette No. of graphic plane	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	"0"-"65535"	#8
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	"0"-"65535"	
,	1 byte	2CH (Delimiter)	
B	1 to 5 bytes	"0"-"65535"	
ETX	1 byte	03H	

Fig 3-35-2

3.36 BCOL4 [28H 71H] : back ground color setting

Function : this command sets background color.
Sequence : Type 2



Command :

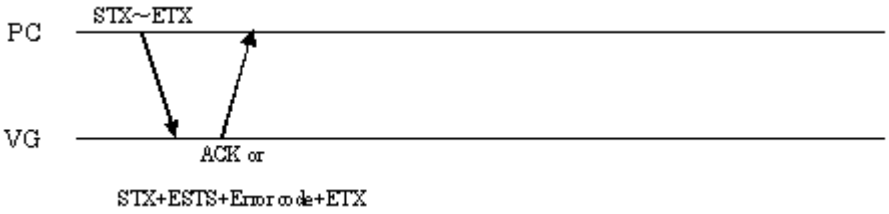
STX	1 byte	02H
VG4CMD	1 byte	FDH
BCOL4	2 bytes	28H 71H
R	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	"0"-"65535"
,	1 byte	2CH (Delimiter)
Bit Mode	1 to 2 bytes	"0", "8"-"16" In case it is set as “0”, RGB value is set as it is.
ETX	1 byte	03H

Fig 3-36-1

3.37 CAP4 [28H 72H] : capture execution

Function : this command captures the data that is drawn by drawing command in 4K mode to VRAM.

Sequence : Type 2



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
CAP4	2 bytes	28H 72H
ETX	1 byte	03H

Fig 3-37-1

Note 1) when using drawing command in 4K mode, after sending all drawing commands, this command needs to be sent.

Note 2) this command is available only for 4K mode.

3.38 VG drawing command table

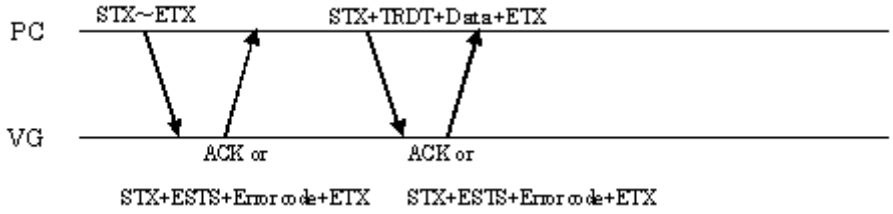
Code 1	Code 2	Command	Description	Type
28H	20H	CHACLR4	Character plane clear	2
28H	21H	CHAPSET4	Character plane dot drawing	2
28H	22H	CHALINE4	Character plane straight line drawing	2
28H	23H	CHASQRE4	Character plane square drawing	2
28H	24H	CHASQPA4	Character plane filled-in square drawing	2
28H	25H	CHACIRC4	Character plane circle drawing	2
28H	26H	CHACIRCPA4	Character plane filled-in circle drawing	2
28H	27H	CHAELPS4	Character plane ellipse drawing	2
28H	28H	CHAELPSPA4	Character plane filled-in ellipse drawing	2
28H	29H	CHATRI4	Character plane triangle drawing	2
28H	2AH	CHATRIPA4	Character plane filled-in triangle drawing	2
28H	2BH	CHABITBLT4	Character plane area copy	2
28H	2CH	CHACOL4	Character plane color setting	2
28H	2DH	CHASTR4	Character plane character string draw	2
28H	40H	GRACLR4	Graphic plane clear	2
28H	41H	GRAPSET4	Graphic plane dot drawing	2
28H	42H	GRALINE4	Graphic plane straight line drawing	2
28H	43H	GRASQRE4	Graphic plane square drawing	2
28H	44H	GRASQPA4	Graphic plane filled-in square drawing	2
28H	45H	GRACIRC4	Graphic plane circle drawing	2
28H	46H	GRACIRCPA4	Graphic plane filled-in circle drawing	2
28H	47H	GRAELPS4	Graphic plane ellipse drawing	2
28H	48H	GRAELPSPA4	Graphic plane filled-in ellipse drawing	2
28H	49H	GRATRI4	Graphic plane triangle drawing	2
28H	4AH	GRATRIPA4	Graphic plane filled-in triangle drawing	2
28H	4BH	GRABITBLT4	Graphic plane area copy	2
28H	4CH	GRACOL4	Graphic plane color setting	2
28H	4DH	GRALEV4	Graphic Plane Level Edit	2
28H	4EH	GRAPAL4	Graphic plane palette mode	2
28H	4FH	GRAMPAL4	Graphic plane multiple color setting	2
28H	60H	ALLCLR4	All planes clear	2
28H	61H	WINDOW4	Window drawing	2
28H	62H	WINDCL4	Window color setting	2
28H	63H	WINCLR4	Window plane clear	2
28H	70	ALLSCOL4	RGB output and color setting	2
28H	71	BCOL4	Background color setting	2
28H	72	CAP4	Capture execution	2

4 INDIVIDUAL FORMATS FOR CONTROL COMMANDS

4.1 SHT [48H]: H timing data registration

Function: This command registers the H timing data of the designated program number. When the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SHT	1 byte	48H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-1-1

Data:

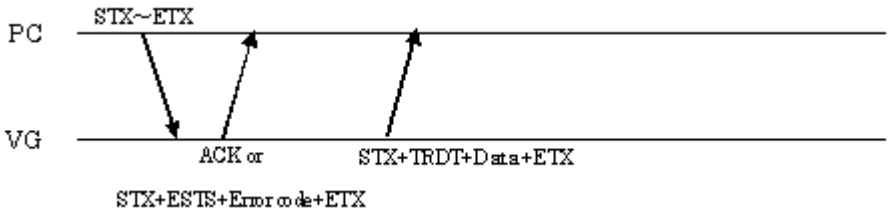
STX	1 byte	02H
TRDT	1 byte	10H
µ/dot	1 byte	“0” = µ, “1” = dot
DOT CLOCK	5 bytes	Sequence of digits from top: 10^2, 10^1, 10^0, 10^{-1}, 10^{-2}
H-PERIOD	4 bytes	µ = Sequence of digits from top: 10^1, 10^0, 10^{-1}, 10^{-2} dot = Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
H-DISPLAY	4 bytes	µ = Sequence of digits from top: 10^1, 10^0, 10^{-1}, 10^{-2} dot = Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
H-SYNC	4 bytes	µ = Sequence of digits from top: 10^1, 10^0, 10^{-1}, 10^{-2} dot = Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
H-BACK-PORCH	4 bytes	µ = Sequence of digits from top: 10^1, 10^0, 10^{-1}, 10^{-2} dot = Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
HD-START	4 bytes	µ = Sequence of digits from top: 10^1, 10^0, 10^{-1}, 10^{-2} dot = Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
HD-WIDTH	4 bytes	µ = Sequence of digits from top: 10^1, 10^0, 10^{-1}, 10^{-2} dot = Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
ETX	1 byte	03H

Fig. 4-1-2

4.2 LHT [42H]: H timing data readout

Function: This command reads the H timing data of the designated program number.

Sequence: Type 3



Command:

STX	1 byte	02H
LHT	1 byte	42H
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

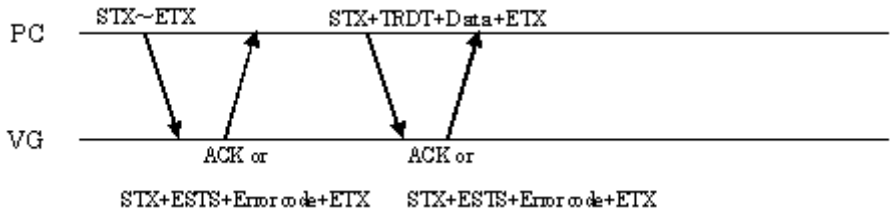
Fig. 4-2-1

Data: Same as Fig. 4-1-2.

4.3 SVT [49H]: V timing data registration

Function: This command registers the V timing data of the designated program number. When the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SVT	1 byte	49H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-3-1

Data:

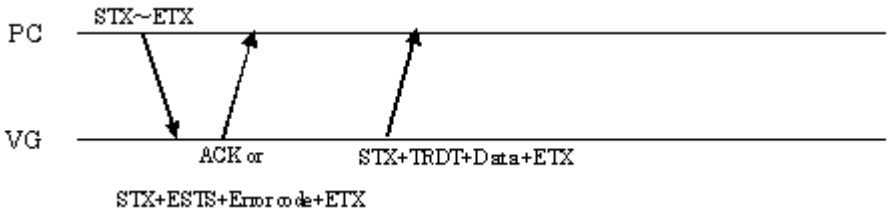
STX	1 byte	02H
TRDT	1 byte	10H
SCAN MODE	1 byte	“0” = NO INTER, “1” = INTER & sync, “2” = INTER & VIDEO
SERRATION	1 byte	“0” = OFF, “1” = 0.5H, “2” = 1H, “3” = EXOR
ENQ ON/OFF	1 byte	“0” = OFF, “1” = ON
V-TOTAL	4 bytes	Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
V-SYNC	3 bytes	Sequence of digits from top: 10^1, 10^0, 10^{-1}
ENQ-FP	3 bytes	Sequence of digits from top: 10^1, 10^0, 10^{-1}
ENQ-BP	3 bytes	Sequence of digits from top: 10^1, 10^0, 10^{-1}
V-BACK-PORCH	4 bytes	Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
V-DISPLAY	4 bytes	Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
VD-START	5 bytes	Sequence of digits from top: 10^3, 10^2, 10^1, 10^0, 10^{-1}
VD-WIDTH	5 bytes	Sequence of digits from top: 10^3, 10^2, 10^1, 10^0, 10^{-1}
ETX	1 byte	03H

Fig. 4-3-2

4.4 LVT [43H]: V timing data readout

Function: This command reads the V timing data of the designated program number.

Sequence: Type 3



Command:

STX	1 byte	02H
LVT	1 byte	43H
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

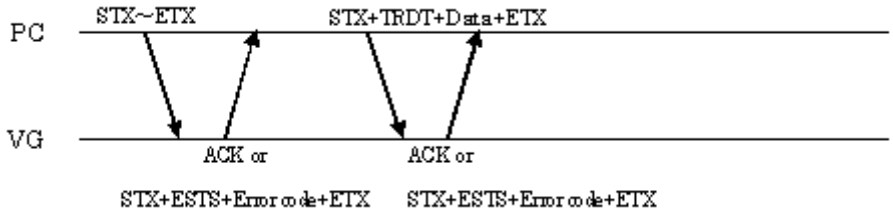
Fig. 4-4-1

Data: Same as Fig. 4-3-2.

4.5 SOT [4AH]: Output condition data registration

Function: This command registers the output condition data of the designated program number. The registered data is either digital data or analog data. When the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SOT	1 byte	4AH
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-5-1

Data:

(1) Digital data

STX	1 byte	02H
TRDT	1 byte	10H
CLOCK MODE	1 byte	“0” = 1/1 clock, “1” = 1/2 clock
HS	1 byte	“0” = Nega, “1” = Posi
VS	1 byte	“0” = Nega, “1” = Posi
CS	1 byte	“0” = Nega, “1” = Posi
HD	1 byte	“0” = Nega, “1” = Posi
VD	1 byte	“0” = Nega, “1” = Posi
1ch RGB	1 byte	Fixed at “0” *** This function cannot be used.**
2ch RGB	1 byte	Fixed at “0” *** This function cannot be used.**
CLOCK	1 byte	“0” = Nega, “1” = Posi
DISP	1 byte	“0” = Nega, “1” = Posi
RZ/NRZ	1 byte	Fixed at “0” *** This function cannot be used.**
SW0	1 byte	Fixed at “0” *** This function cannot be used.**
SW1	1 byte	Fixed at “0” *** This function cannot be used.**
DELAY MODE	1 byte	“0” = OFF, “1” = ON
CLOCK AREA	1 byte	“0” = DISP, “1” = ALL
DELAY TIME	1 byte	“1” = 4ns, “2” = 8ns, “3” = 12ns, “4” = 16ns, “5” = 20ns, “6” = 24ns, “7” = 28ns, “8” = 32ns
RGB BIT OUT	1 byte	“1” = 1bit, “2” = 2 bits, “3” = 3 bits, “4” = 4 bits, “5” = 5 bits, “6” = 6 bits, “7” = 7 bits, “8” = 8 bits
R MASK	2 bytes	“00” to “FF”
G MASK	2 bytes	“00” to “FF”
B MASK	2 bytes	“00” to “FF”
ETX	1 byte	03H

Fig. 4-5-2

(2) Analog data

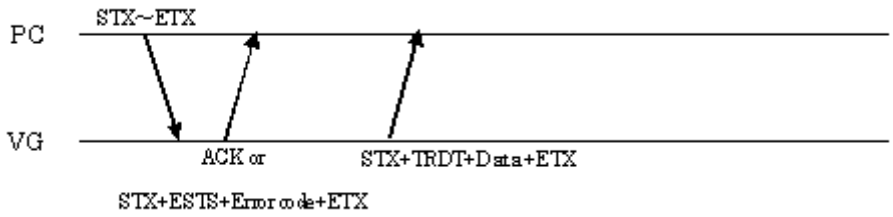
STX	1 byte	02H
TRDT	1 byte	10H
OUT PUT	1 byte	“0” = Analog, “1” = TTL
HS	1 byte	“0” = Neoga, “1” = Posy, “2” = OFF
VS	1 byte	“0” = Neoga, “1” = Posy, “2” = OFF
CS	1 byte	“0” = Neoga, “1” = Posy, “2” = OFF, “3” = HS, “4” = VS
HD	1 byte	“0” = Nega, “1” = Posi
VD	1 byte	“0” = Nega, “1” = Posi
RGB	1 byte	Fixed at “0” *** This function cannot be used.**
RH GH BH	1 byte	Fixed at “0” *** This function cannot be used.**
V/S	1 byte	“0” = None “1” = R, “2” = G, “3” = RG “4” = B, “5” = RB, “6” = GB, “7” = RGB
RZ/NRZ	1 byte	Fixed at “0” *** This function cannot be used.**
CLOCK	1 byte	“0” = Nega, “1” = Posi
VIDEO LEVEL	3 bytes	Sequence of digits from top: 10^{0}, 10^{-1}, 10^{-2}
SET UP	3 bytes	Sequence of digits from top: 10^{0}, 10^{-1}, 10^{-2}
SYNC LEVEL	3 bytes	Sequence of digits from top: 10^{0}, 10^{-1}, 10^{-2}
ETX	1 byte	03H

Fig. 4-5-3

4.6 LOT [44H]: Output condition data readout

Function: This command reads the output condition data of the designated program number .

Sequence: Type 3



Command:

STX	1 byte	02H
LOT	1 byte	44H
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

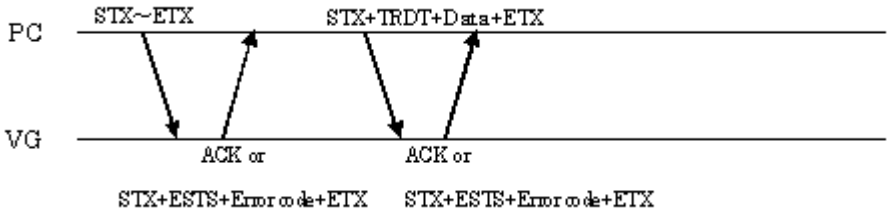
Fig. 4-6-1

Data: Same as Fig. 4-5-2 or Fig. 4-5-3.

4.7 SPT [4BH]: Pattern data registration

Function: This command registers the pattern data of the designated program number. It selects the pattern block to set a parameter and sends the corresponding data. When the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SPT	1 byte	4BH
Program number	1 to 3 bytes	“0” to “849”
Pattern block No.	2 bytes	“01” = Graphic color “02” = Character “03” = Crosshatch “04” = Dot “05” = Circle “06” = Burst “07” = Window “08” = Optional pattern 1 * Note 1 “09” = Optional pattern 2 * Note 1 “10” = Color bar “11” = Gray scale “12” = Half tone **(* This function cannot be used.)** *Note 1: If 2 digits (00 to 1F) are designated as the optional pattern code, use the [SPT2] (5BH) command since the [SPT] command cannot be used. Apart from the number of digits for the optional pattern code, the command usage is the same.
ETX	1 byte	03H

Fig. 4-7-1

Data:

(1) Graphic color data

STX	1 byte	02H
TRDT	1 byte	10H
R	3 bytes	“000” to “255”
G	3 bytes	“000” to “255”
B	3 bytes	“000” to “255”
Graphic color (TTL)	1 byte	Fixed at “0” *** This function cannot be used.**
Graphic half tone	1 byte	Fixed at “0” *** This function cannot be used.**
Background	1 byte	Fixed at “0” *** This function cannot be used.**
ETX	1 byte	03H

Fig. 4-7-2

(2) Character data

STX	1 byte	02H
TRDT	1 byte	10H
Character format	1 byte	“0” = Format 0, “1” = Format 1, “2” = Format 2
Character font	1 byte	“0” = 5×7, “1” = 7×9, “2” = 16×16
Character code	2 bytes	“20” to “EF”
H cell size	2 bytes	“01” to “64”
V cell size	2 bytes	“01” to “64”
ETX	1 byte	03H

Fig. 4-7-3

(3) Crosshatch data

STX	1 byte	02H
TRDT	1 byte	10H
H interval	4 bytes	Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
V interval	4 bytes	Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
ETX	1 byte	03H

Fig. 4-7-4

(4) Dot data

STX	1 byte	02H
TRDT	1 byte	10H
H interval	4 bytes	Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
V interval	4 bytes	Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
ETX	1 byte	03H

Fig. 4-7-5

(5) Circle data

STX	1 byte	02H
TRDT	1 byte	10H
Circle format	1 byte	“0” to “4”
ETX	1 byte	03H

Fig. 4-7-6

(6) Burst data

STX	1 byte	02H
TRDT	1 byte	10H
Burst format	1 byte	“0” to “3”
Interval	2 bytes	“01” to “99”
Step	2 bytes	“01” to “99”
ETX	1 byte	03H

Fig. 4-7-7

(7) Window data

STX	1 byte	02H
TRDT	1 byte	10H
Window mode	1 byte	“0” = %, “1” = dot
H width	4 bytes	% = “0001” to “1000” (0.1 to 100.0%) dot = “0001” and above
V width	4 bytes	% = “0001” to “1000” (0.1 to 100.0%) dot = “0001” and above
R	3 bytes	“000” to “255”
G	3 bytes	“000” to “255”
B	3 bytes	“000” to “255”
Window color (TTL)	1 byte	Fixed at “0” *** This function cannot be used.**
Window half tone	1 byte	Fixed at “0” *** This function cannot be used.**
Format	1 byte	“0” to “F”
Flicker interval	1 byte	“0” to “7”
ETX	1 byte	03H

Fig. 4-7-8

(8) Optional pattern 1 data

STX	1 byte	02H
TRDT	1 byte	10H
Optional pattern code	1 byte	“0” to “F”
ETX	1 byte	03H

Fig. 4-7-9

(9) Optional pattern 2 data

STX	1 byte	02H
TRDT	1 byte	10H
Optional pattern code	1 byte	“0” to “F”
ETX	1 byte	03H

Fig. 4-7-10

(10) Color bar data

STX	1 byte	02H
TRDT	1 byte	10H
MODE	1 byte	“0” = %, “1” = dot
H width	4 bytes	% = “0000” to “1000” (0.0 to 100.0%) dot = “0001” and above
V width	4 bytes	% = “0000” to “1000” (0.0 to 100.0%) dot = “0001” and above
Direction H/V	1 byte	“0” = Horizontal, “1” = Vertical, “2” = Repeated horizontally, “3” = Repeated vertically
Color specification	16 bytes	“0” = None “1” = R, “2” = G, “3” = RG, “4” = B, “5” = RB, “6” = GB, “7” = RGB
ETX	1 byte	03H

Fig. 4-7-11

(11) Gray scale data

STX	1 byte	02H
TRDT	1 byte	10H
Direction H/V	1 byte	“0” = Horizontal, “1” = Vertical
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”

Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
ETX	1 byte	03H

Fig. 4-7-12

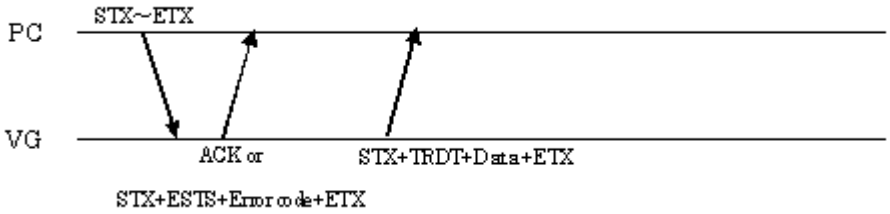
(12) Half tone data

*** This function cannot be used.**

4.8 LPT [45H]: Pattern data readout

Function: This command reads the pattern data of the designated program number. It selects the pattern block to set a parameter and receives the corresponding data.

Sequence: Type 3



Command:

STX	1 byte	02H
LPT	1 byte	45H
Program number	1 to 3 bytes	“0” to “999”
Pattern block No.	2 bytes	“01” = Graphic color “02” = Character “03” = Crosshatch “04” = Dot “05” = Circle “06” = Burst “07” = Window “08” = Optional pattern 1 *Note 1 “09” = Optional pattern 2 *Note 1 “10” = Color bar “11” = Gray scale “12” = Half tone **(* This function cannot be used.)** *Note 1: If 2 digits (00 to 1F) are designated as the optional pattern code, use the [SPT2] (5BH) command since the [SPT] command cannot be used. Apart from the number of digits for the optional pattern code, the command usage is the same.
ETX	1 byte	03H

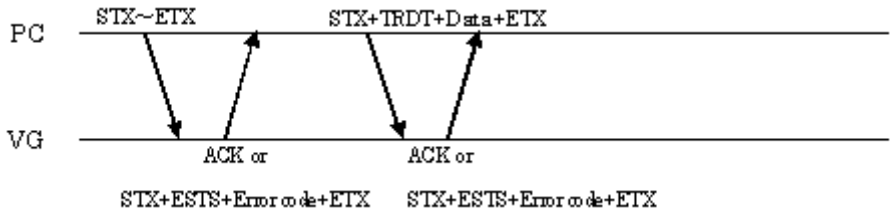
Fig. 4-8-1

Data: The data in Figs. 4-7-2 through 4-7-13 corresponding to the designated pattern block numbers is received.

4.9 SPD [4DH]: Program data registration

Function: This command registers all the data of the designated program number. The registered data is either digital data or analog data. When the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SPD	1 byte	4DH
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-9-1

Data:

(1) Digital data

STX	1 byte	02H
TRDT	1 byte	10H
Horizontal timing	30 bytes	Refer to Fig. 4-1-2.
Delimiter	1 byte	“, “
Vertical timing	34 bytes	Refer to Fig. 4-3-2.
Delimiter	1 byte	“, “
Digital output condition	23 bytes	Refer to Fig. 4-5-2.
Delimiter	1 byte	“, “
Graphic color	12 bytes	Refer to Fig. 4-7-2.
Character	8 bytes	Refer to Fig. 4-7-3.
Crosshatch	8 bytes	Refer to Fig. 4-7-4.
Dot	8 bytes	Refer to Fig. 4-7-5.
Circle	1 byte	Refer to Fig. 4-7-6.
Burst	5 bytes	Refer to Fig. 4-7-7.
Window	22 bytes	Refer to Fig. 4-7-8.
Optional pattern 1	2 bytes	Refer to Fig. 4-7-9. Note) 2 bytes “00” to “0F” for digital data
Optional pattern 2	2 bytes	Refer to Fig. 4-7-10. Note) 2 bytes “00” to “0F” for digital data
Delimiter	1 byte	“, “
Color bar	26 bytes	Refer to Fig. 4-7-11.
Delimiter	1 byte	“, “
Gray scale	49 bytes	Refer to Fig. 4-7-12.
ETX	1 byte	03H

Fig. 4-9-2

(2) Analog data

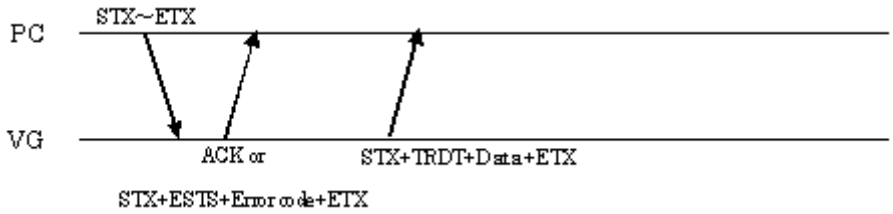
STX	1 byte	02H
TRDT	1 byte	10H
Horizontal timing	30 bytes	Refer to Fig. 4-1-2.
Delimiter	1 byte	“, “
Vertical timing	34 bytes	Refer to Fig. 4-3-2.
Delimiter	1 byte	“, “
Analog output condition	20 bytes	Refer to Fig. 4-5-3.
Delimiter	1 byte	“, “
Graphic color	12 bytes	Refer to Fig. 4-7-2.
Character	8 bytes	Refer to Fig. 4-7-3.
Crosshatch	8 bytes	Refer to Fig. 4-7-4.
Dot	8 bytes	Refer to Fig. 4-7-5.
Circle	1 byte	Refer to Fig. 4-7-6.
Burst	5 bytes	Refer to Fig. 4-7-7.
Window	22 bytes	Refer to Fig. 4-7-8.
Optional pattern 1	1 byte	Refer to Fig. 4-7-9.
Optional pattern 2	1 byte	Refer to Fig. 4-7-10.
Delimiter	1 byte	“, “
Color bar	26 bytes	Refer to Fig. 4-7-11.
Delimiter	1 byte	“, “
Gray scale	49 bytes	Refer to Fig. 4-7-12.
Delimiter	1 byte	“, “
Half tone	17 bytes	Refer to Fig. 4-7-13.
ETX	1 byte	03H

Fig. 4-9-3

4.10 LPD [4CH]: Program data readout

Function: This command reads all the data of the designated program number.

Sequence: Type 3



Command:

STX	1 byte	02H
LPD	1 byte	4CH
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

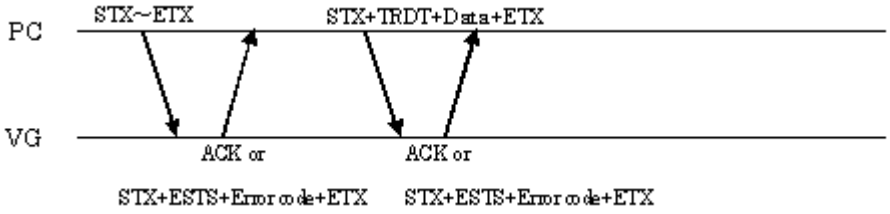
Fig. 4-10-1

Data: Same as Fig. 4-9-2 or Fig. 4-9-3.

4.11 SAT [46H]: Auto display data registration

Function: This command registers the data for executing auto display.

Sequence: Type 4



Command:

STX	1 byte	02H
SAT	1 byte	46H
ETX	1 byte	03H

Fig. 4-11-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Interval time (Sec)	3 bytes	“000” to “999”
Block 1 (START)	3 bytes	“000” to “999”
Block 1 (END)	3 bytes	“000” to “999”
Block 2 (START)	3 bytes	“000” to “999”
Block 2 (END)	3 bytes	“000” to “999”
Block 3 (START)	3 bytes	“000” to “999”
Block 3 (END)	3 bytes	“000” to “999”
ETX	1 byte	03H

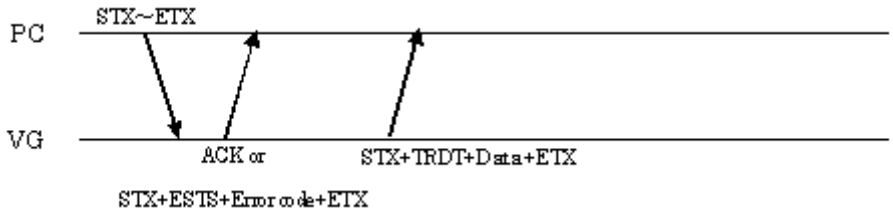
Fig. 4-11-2

*1: Set blocks 2 and 3 to “000” when only one block will be used.

4.12 LAT [40H]: Auto display data readout

Function: This command receives the data for executing auto display.

Sequence: Type 3



Command:

STX	1 byte	02H
LAT	1 byte	40H
ETX	1 byte	03H

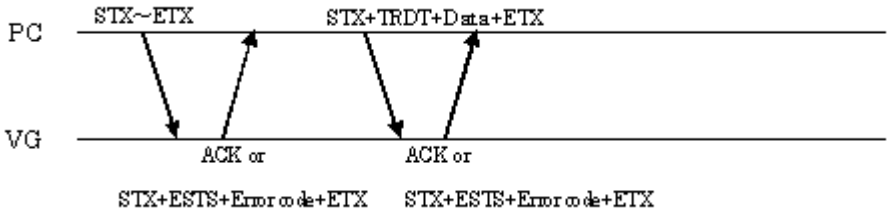
Fig. 4-12-1

Data: Same as Fig. 4-11-2.

4.13 SPTS [47H]: Pattern select data registration

Function: This command registers the pattern select data of the designated program number. . When the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SPTS	1 byte	47H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-13-1

Data:

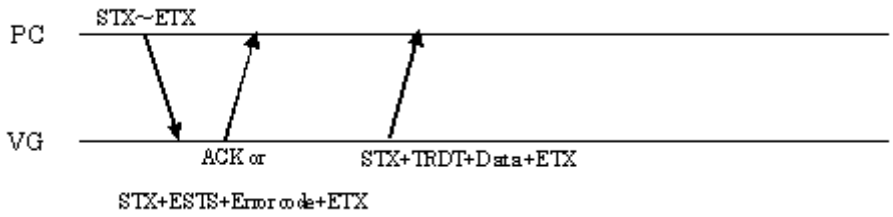
STX	1 byte	02H
TRDT	1 byte	10H
Pattern select	0 to 18 bytes	'50H' = CHARA '51H' = CROSS '52H' = DOTS '53H' = CIRCLE '54H' = ＋ '55H' = □ '56H' = × '57H' = COLOR '58H' = GRAY '59H' = BURST '5AH' = WINDOW '5BH' = OPTION1 '5CH' = OPTION2 '5EH' = R '5FH' = G '60H' = B '62H' = INV '69H' = CURSOR
ETX	1 byte	03H

Fig. 4-13-2

4.14 LPTS [41H]: Pattern select data readout

Function: This command reads the pattern select data of the designated program number.

Sequence: Type 3



Command:

STX	1 byte	02H
LPTS	1 byte	41H
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

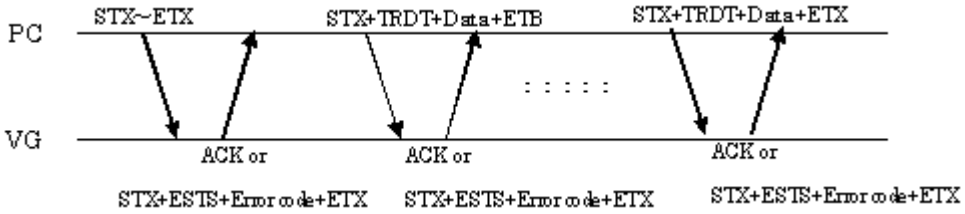
Fig. 4-14-1

Data: Same as Fig. 4-13-2.

4.15 SCH [4FH]: Character data registration

Function: This command registers the data for the designated character number.

Sequence: Type 6



Command:

STX	1 byte	02H
SCH	1 byte	4FH
Character No.	1 byte	“0” to “F”
ETX	1 byte	03H

Fig. 4-15-1

Data:

The binary data of the character drawn inside the 64×64 cell is converted into ASCII code as shown below.

* Under the binary format, the “1” parts become “set”.

	Byte 1		Byte 2		Byte 7	Byte 8	
1	0011	0000	0011		0101	0101	1101
2	0100	1100	0100		0010	1011	1100
…							

↓ Binary → hexadecimal

	1	2	3		14	15	16
1	3H	0H	3H		5H	5H	DH
2	4H	CH	4H		2H	BH	CH
…							

↓ hexadecimal → ASCII code

	1	2	3		14	15	16
1	33H	30H	33H		35H	35H	44H
2	34H	43H	34H		32H	42H	43H
…							

Fig. 4-15-2

The data is organized as follows: 8 bytes × 64 = 512 bytes
512 × 2 = 1024 bytes (ASCII code)
1024 bytes ÷ 128 bytes = 8

Since the amount of data transferred each time is always 128 bytes, the data is divided into 8 blocks, and transmitted and received.

The first 7 blocks are sent as shown below.

STX	1 byte	02H
TRDT	1 byte	10H
Character data	128 bytes	ASCII code
ETB	1 byte	17H

Fig. 4-15-3

The last block is sent as shown below.

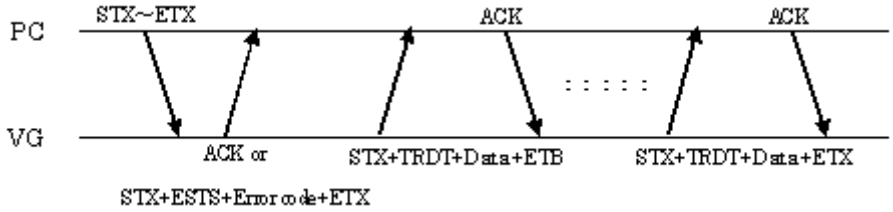
STX	1 byte	02H
TRDT	1 byte	10H
Character data	128 bytes	ASCII code
ETX	1 byte	03H

Fig. 4-15-4

4.16 LCH [4EH]: Character data readout

Function: This command reads the data for the designated character number.

Sequence: Type 5



Command:

STX	1 byte	02H
LCH	1 byte	4EH
Character No.	1 byte	“0” to “F”
ETX	1 byte	03H

Fig. 4-16-1

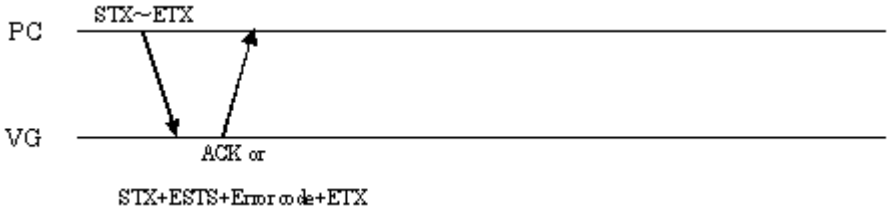
Data:

The first 7 blocks are received in the same way as Fig. 4-15-3, and the last block is received in the same way as Fig. 4-15-4.

4.17 EXPPN [07H]: Timing data execution

Function: This command executes only the timing data of the designated program number..

Sequence: Type 2



Command:

STX	1 byte	02H
EXPPN	1 byte	07H
Program number	1 to 3 bytes	“1” to “999”
ETX	1 byte	03H

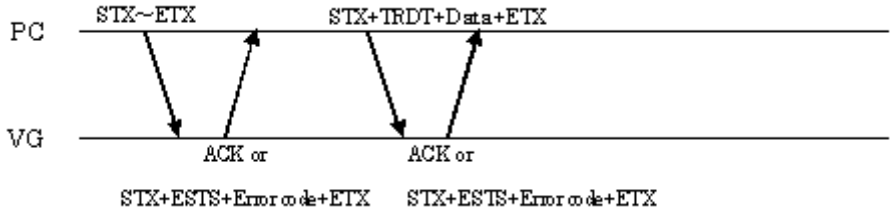
Fig. 4-17-1

Data: None

4.18 EXPBN [08H]: Program data setting/execution

Function: This command sends and executes the data in one program. It does not write the data on the memory card.

Sequence: Type 4



Command:

STX	1 byte	02H
EXPBN	1 byte	08H
ETX	1 byte	03H

Fig. 4-18-1

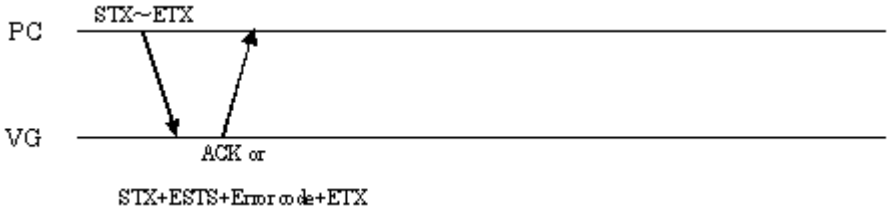
Data:

Same as Fig. 4-9-2 or Fig. 4-9-3.

4.19 EXPDN [09H]: Program data execution 2 (Registered program designation)

Function: This command designates the number of the direct display, and executes it.

Sequence: Type 2



Command:

STX	1 byte	02H
EXPDN	1 byte	09H
Program number	1 to 3 bytes	“1” to “999”
ETX	1 byte	03H

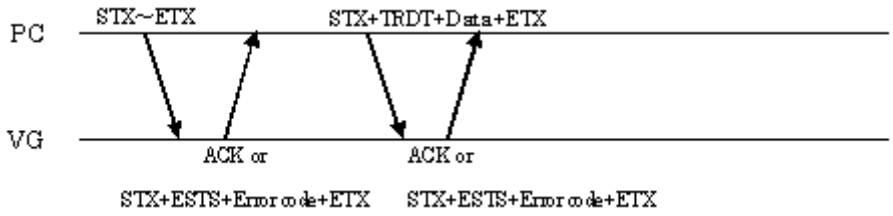
Fig. 4-19-1

Data: None

4.20 EXPON [0EH]: Pattern data output ON setting

Function: This command sets the designated patterns and signals to ON.

Sequence: Type 4



Command:

STX	1 byte	02H
EXPON	1 byte	0EH
ETX	1 byte	03H

Fig. 4-20-1

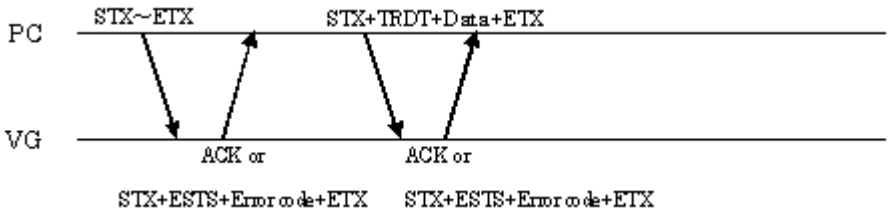
Data:

Same as Fig. 4-13-2.

4.21 EXPOFF [0FH]: Pattern data output OFF setting

Function: This command sets the designated pattern and signal to OFF.

Sequence: Type 4



Command:

STX	1 byte	02H
EXPOFF	1 byte	0FH
ETX	1 byte	03H

Fig. 4-21-1

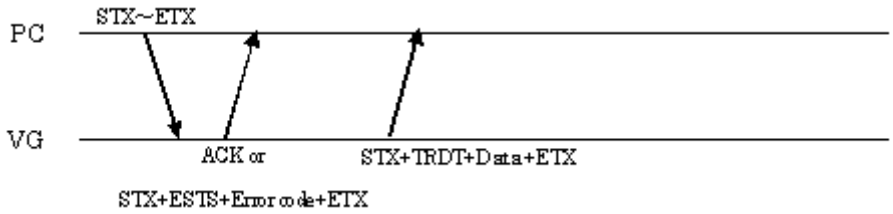
Data:

Same as Fig. 4-13-2.

4.22 DISPHV [28H]: Display dot count readout

Function: This command reads the number of display dots on the graphic plane.

Sequence: Type 3



Command:

STX	1 byte	02H
DISPHV	1 byte	28H
ETX	1 byte	03H

Fig. 4-22-1

Data:

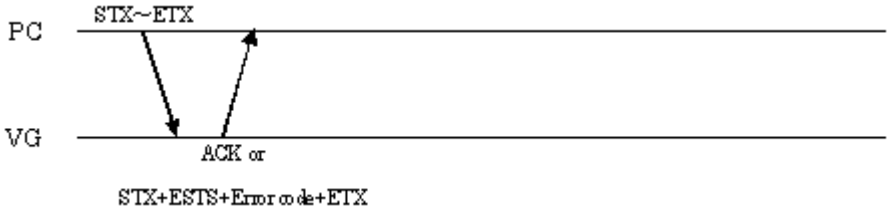
STX	1 byte	02H
TRDT	1 byte	10H
Number of H display dots	4 bytes	Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
Number of V display dots	4 bytes	Sequence of digits from top: 10^3, 10^2, 10^1, 10^0
ETX	1 byte	03H

Fig. 4-22-2

4.23 INDC [29H]: Program no incrementing/decrementing

Function: This command increments or decrements the direct display number.

Sequence: Type 2



Command:

STX	1 byte	02H
INDC	1 byte	29H
[+]/[-]	1 byte	'63H' = ＋ '64H' = －
ETX	1 byte	03H

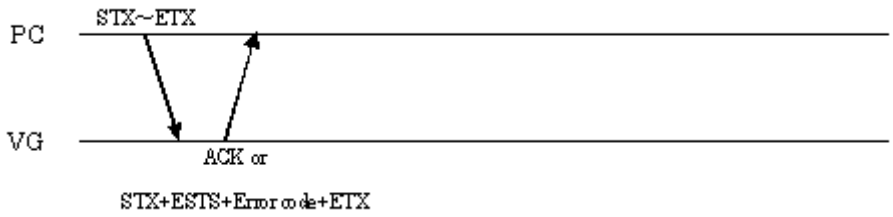
Fig. 4-23-1

Data: None

4.24 EXBN [0CH]: Current program execution

Function: This command executes the contents of the current program (in the buffer RAM).

Sequence: Type 2



Command:

STX	1 byte	02H
EXBN	1 byte	0CH
ETX	1 byte	03H

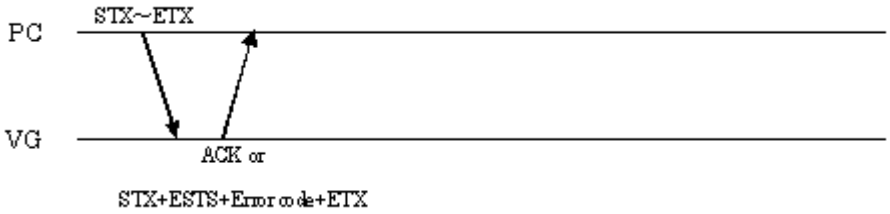
Fig. 4-24-1

Data: None

4.25 EXSGON [0BH]: Output signal ON/OFF

Function: This command turns ON or OFF each of the R, G, B, RHT, GHT and BHT signals. The parameter designates the key codes to be ON . A signal of the key code which is not designated is set to OFF.

Sequence: Type 2



Command:

STX	1 byte	02H
EXSGON	1 byte	0BH
Key code	0 to 6 bytes	'5EH' = R '5FH' = G '60H' = B '65H' = RH '66H' = GH '67H' = BH
ETX	1 byte	03H

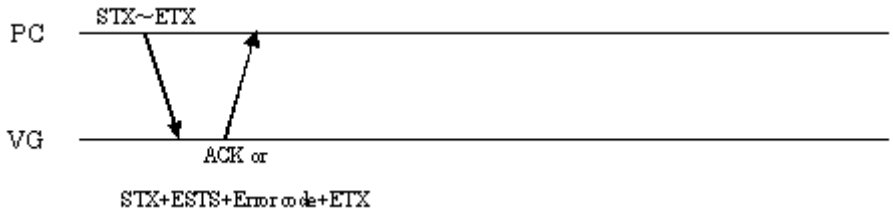
Fig. 4-25-1

Data: None

4.26 EXSYNC [51H]: Separate sync ON/OFF

Function: This command turns ON or OFF of the separate sync of HS, VS and CS .

Sequence: Type 2



Command:

STX	1 byte	02H
EXSYNC	1 byte	51H
HS	1 byte	“0” = OFF, “1” = ON
VS	1 byte	“0” = OFF, “1” = ON
CS	1 byte	“0” = OFF, “1” = ON
ETX	1 byte	03H

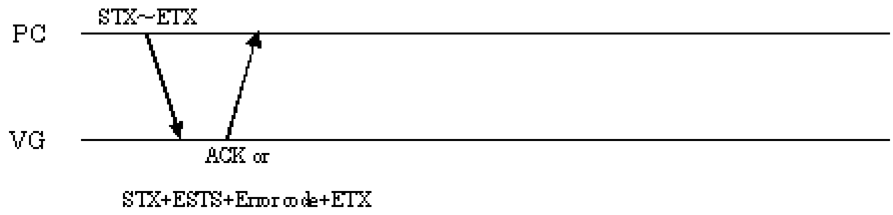
Fig. 4-26-1

Data: None

4.27 SGROUP [52H]: Group data registration

Function: This command registers the data of the designated group number. Group number from 1 to 9 can be set. If you designate a number of 10 and up, use the [SGROUP3] command.

Sequence: Type 2



Command:

STX	1 byte	02H
SGROUP	1 byte	52H
GROUP NO	1 byte	“1” to “9”
Program number	3 bytes	“001” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
ETX	1 byte	03H

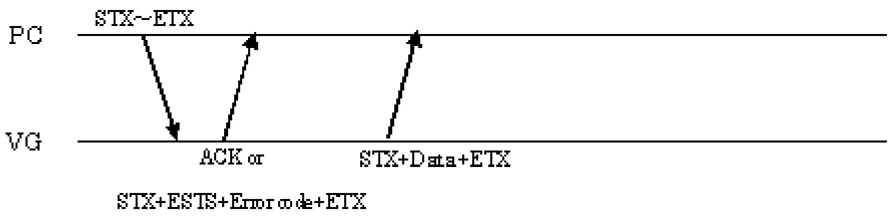
Fig. 4-27-1

Data: None

4.28 LGROUP [53H]: Group data readout

Function: This command reads the data of the designated group number. Group number from 1 to 9 can be set. If you designate a number of 10 and up, use the [SGROUP3] command.

Sequence: Type 7



Command:

STX	1 byte	02H
LGROUP	1 byte	53H
GROUP NO	1 byte	“1” to “9”
ETX	1 byte	03H

Fig. 4-28-1

Data:

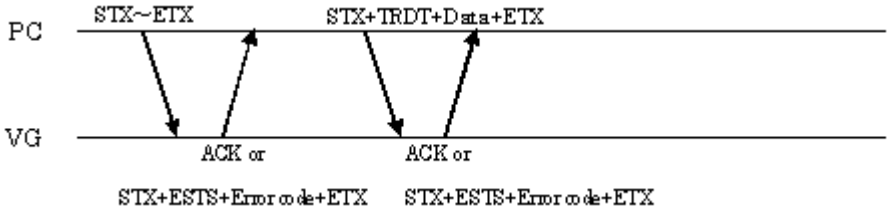
STX	1 byte	02H
Program number	3 bytes	“001” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
Program number	3 bytes	“000” to “999”
ETX	1 byte	03H

Fig. 4-28-2

4.29 SPT3 [A2H]: Pattern data registration (Type 3)

Function: This command registers the pattern data of the designated program number. It selects the pattern block to be set in a parameter and sends the corresponding data. If the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SPT3	1 byte	A2H
Program number	1 to 3 bytes	“0” to “849”
Pattern block No.	2 bytes	“01” = Graphic color “02” = Character “03” = Crosshatch “04” = Dot “05” = Circle “06” = Burst “07” = Window “08” = Optional pattern 1 “09” = Optional pattern 2 “10” = Color bar “11” = Gray scale “13” = Cursor “14” = Action
ETX	1 byte	03H

Fig. 4-29-1

* Pattern block No.12 (half tone) is not available.

Data:

(1) Graphic color data

STX	1 byte	02H
TRDT	1 byte	10H
R	3 bytes	“000” to “255”
G	3 bytes	“000” to “255”
B	3 bytes	“000” to “255”
Graphic color (TTL)	1 byte	Fixed at “0” *** This function cannot be used.**
Graphic half tone	1 byte	Fixed at “0” *** This function cannot be used.**
Background	1 byte	Fixed at “0” *** This function cannot be used.**
Background color R	3 bytes	“000” to “255”
Background color G	3 bytes	“000” to “255”
Background color B	3 bytes	“000” to “255”
ETX	1 byte	03H

Fig. 4-29-2

(2) Character data

STX	1 byte	02H
TRDT	1 byte	10H
Character format	1 byte	“0” = Format 0, “1” = Format 1, “2” = Format 2
Character font	1 byte	“0” = 5×7, “1” = 7×9, “2” = 16×16
Character code	2 bytes	“20” to “FF”
H cell size	3 bytes	“001” to “255”
V cell size	3 bytes	“001” to “255”
ETX	1 byte	03H

Fig. 4-29-3

(3) Crosshatch data

STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	“0” = No. of lines “1” = dot
Format	1 byte	“0” = From the center, “1” = From the top left
H interval	4 bytes	“0000” to “9999”
V interval	4 bytes	“0000” to “9999”
H line width	2 bytes	“01” to “15”
V line width	2 bytes	“01” to “15”
ETX	1 byte	03H

Fig. 4-29-4

(4) Dot data

STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	“0” = No. of lines, “1” = dot
Format	1 byte	“0” = From the center, “1” = From the top left
H interval	4 bytes	“0000” to “9999”
V interval	4 bytes	“0000” to “9999”
Size	2 bytes	“01” to “15”
Shape	1 byte	“0” = Round, “1” = Square
ETX	1 byte	03H

Fig. 4-29-5

(5) Circle data

STX	1 byte	02H
TRDT	1 byte	10H
Circle format	1 byte	“0” to “6”
Aspect ratio H	3 bytes	Fixed at “0” *** This function cannot be used.**
Aspect ratio V	3 bytes	Fixed at “0” *** This function cannot be used.**
ETX	1 byte	03H

Fig. 4-29-6

(6) Burst data

STX	1 byte	02H
TRDT	1 byte	10H
Burst format	1 byte	“0” to “3”
Interval	2 bytes	“01” to “99”
Step	2 bytes	“01” to “99”
ETX	1 byte	03H

Fig. 4-29-7

(7) Window data

STX	1 byte	02H
TRDT	1 byte	10H
Window mode	1 byte	“0” = %, “1” = dot
H width	4 bytes	% = “0001” to “1000” (0.1 to 100.0%) dot = “0001” and above
V width	4 bytes	% = “0001” to “1000” (0.1 to 100.0%) dot = “0001” and above
R	3 bytes	“000” to “255”
G	3 bytes	“000” to “255”
B	3 bytes	“000” to “255”
Window color (TTL)	1 byte	“0” = None, “1” = R, “2” = G, “3” = RG, “4” = B, “5” = RB, “6” = GB, “7” = RGB
Window half tone	1 byte	“0” = None, “1” = RH, “2” = GH, “3” = RHGH, “4” = BH, “5” = RHBH, “6” = GHBH, “7” = RHGHBH
Format	1 byte	“0” to “F” The coordinate data of format “E” is not supported by the terminal commands.
Flicker interval	1 byte	“0” to “7”
ETX	1 byte	03H

Fig. 4-29-8

(8) Optional pattern 1 data

STX	1 byte	02H
TRDT	1 byte	10H
Optional pattern code	2 bytes	“00” to “BF”
ETX	1 byte	03H

Fig. 4-29-9

(9) Optional pattern 2 data

STX	1 byte	02H
TRDT	1 byte	10H
Optional pattern code	2 bytes	“00” to “BF”
ETX	1 byte	03H

Fig. 4-29-10

(10) Color bar data

STX	1 byte	02H
TRDT	1 byte	10H
MODE	1 byte	“0” = %, “1” = dot
Valid number	2 bytes	“00” to “16”
H width	4 bytes	% = “0000” to “1000” (0.0 to 100.0%) dot = “0001” and above
V width	4 bytes	% = “0000” to “1000” (0.0 to 100.0%) dot = “0001” and above
Direction H/V	1 byte	“0” = Horizontal, “1” = Vertical, “2” = Repeated horizontally, “3” = Repeated vertically
Color specification	16 bytes	“0” = None, “1” = R, “2” = G, “3” = RG, “4” = B, “5” = RB, “6” = GB, “7” = RGB
ETX	1 byte	03H

Fig. 4-29-11

(11) Gray scale data

STX	1 byte	02H
TRDT	1 byte	10H
MODE	1 byte	“0” = %, “1” = dot
Valid number	2 bytes	“00” to “16”
H width	4 bytes	% = “0000” to “1000” (0.0 to 100.0%) dot = “0001” and above
V width	4 bytes	% = “0000” to “1000” (0.0 to 100.0%) dot = “0001” and above
Direction H/V	1 byte	“0” = Horizontal, “1” = Vertical
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
Level	3 bytes	“000” to “255”
ETX	1 byte	03H

Fig. 4-29-12

(12) Cursor data

STX	1 byte	02H
TRDT	1 byte	10H
Shape	1 byte	“0” = 5×5, “1” = Full cross, “2” = Vertical line
Flicker	3 bytes	“000” to “007”
Coordinate display	1 byte	“0” = None, “1” = Type 1, “2” = Type 2
Step amount	3 bytes	“000” = 1 dot, “001” = 10 dots, “002” = 100 dots
R	3 bytes	“000” to “255”
G	3 bytes	“000” to “255”
B	3 bytes	“000” to “255”
Background R	3 bytes	“000” to “255”
Background G	3 bytes	“000” to “255”
Background B	3 bytes	“000” to “255”
ETX	1 byte	03H

Fig. 4-29-13

(13) Action data

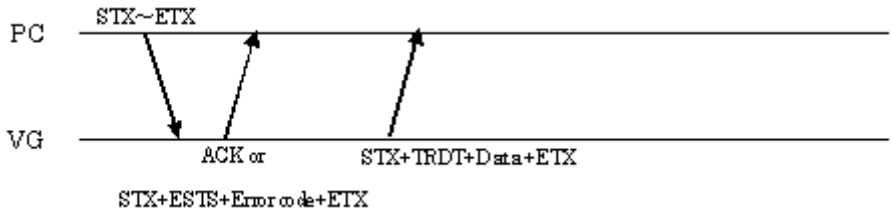
STX	1 byte	02H
TRDT	1 byte	10H
No. of interval V	3 bytes	“001” to “999”
Character flicker	1 byte	Fixed at “0” *** This function cannot be used.**
Window flicker	1 byte	“0” = Not provided, “1” = Provided
Pattern scroll	1 byte	“0” = None, “1” = Character scrolling, “2” = Graphic scrolling, “3” = Both types of scrolling
Character scroll mode	1 byte	“0” = Left, “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right
Graphic scroll mode	1 byte	“0” = Left, “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right, “8” = Move display position
Number of times repeated horizontally	2 bytes	“01” to “15”
Horizontal step	4 bytes	“0001” to “4095”
Number of times repeated vertically	2 bytes	“01” to “15”
Vertical step	4 bytes	“0001” to “4095”
Window scroll	1 byte	“0” = Not provided, “1” = Provided
Window scroll mode	1 byte	“0” = Left, “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right
Window scroll step	3 bytes	“001” to “255”
Palette scrolling	1 byte	“0” = Not provided, “1” = Provided
Palette scroll step sign	1 byte	“0” = +, “1” = -
Palette scroll step	3 bytes	“000” to “128”
Start palette	3 bytes	“000” to “255”
End palette	3 bytes	“000” to “255”
Reserved	6 bytes	“000000”
ETX	1 byte	03H

Fig. 4-29-14

4.30 LPT3 [A1H]: Pattern data readout (Type 3)

Function: This command reads the pattern data of the designated program number. It selects the pattern block to be set in a parameter and receives the corresponding data.

Sequence: Type 3



Command:

STX	1 byte	02H
LPT3	1 byte	A1H
Program number	1 to 3 bytes	“0” to “999”
Pattern block No.	2 bytes	“01” = Graphic color “02” = Character “03” = Crosshatch “04” = Dot “05” = Circle “06” = Burst “07” = Window “08” = Optional pattern 1 “09” = Optional pattern 2 “10” = Color bar “11” = Gray scale “13” = Cursor “14” = Action
ETX	1 byte	03H

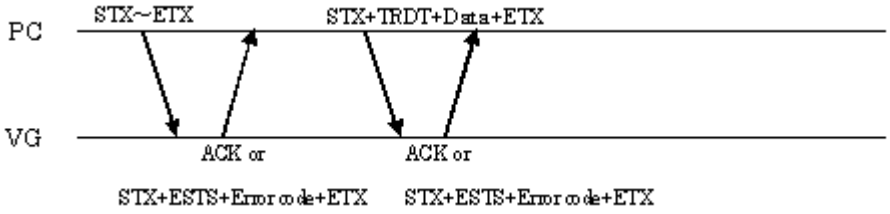
Fig. 4-30-1

Data: The data in Figs. 4-29-2 to 4-29-14 corresponding to the designated pattern block number is received.

4.31 SOT3 [A7H]: All output condition data registration (Type 3)

Function: This command registers all the analog and digital output condition data of the designated program number. When the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SOT3	1 byte	A7H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-31-1

Data:

STX	1 byte	02H	
TRDT	1 byte	10H	
OUT PUT	1 byte	“0” = Analog “1” = TTL “2” = 1080 system “3” = 1035 system “4” = 720 system “5” = 483 system “6” = NTSC system “7” = PAL system “8” = SECAM system	Analog data
HS	1 byte	“0” = Nega, “1” = Posi, “2” = OFF	
VS	1 byte	“0” = Nega, “1” = Posi, “2” = OFF	
CS	1 byte	“0” = Nega, “1” = Posi, “2” = OFF, “3” = HS, “4” = VS	
HD	1 byte	“0” = Nega, “1” = Posi	
VD	1 byte	“0” = Nega, “1” = Posi	
RGB	1 byte	“0” = Nega, “1” = Posi	
RH GH BH	1 byte	“0” = Nega, “1” = Posi	
V/S	1 byte	“0” = None, “1” = R, “2” = G, “3” = RG, “4” = B, “5” = RB, “6” = GB, “7” = RGB	
RZ/NRZ	1 byte	“0” = NRZ, “1” = RZ	
CLOCK	1 byte	“0” = Nega, “1” = Posi	
VIDEO LEVEL	3 bytes	Sequence of digits from top: 10^0, 10^{-1}, 10^{-2}	
SET UP	3 bytes	Sequence of digits from top: 10^0, 10^{-1}, 10^{-2}	
SYNC LEVEL	3 bytes	Sequence of digits from top: 10^0, 10^{-1}, 10^{-2}	
Color difference table No.	1 byte	“0” to “4” or ‘70H’ to ‘74H’ (with YPbPr)	
CLOCK MODE	1 byte	“0” = 1/1 clock, “1” = 1/2 clock	Digital data
HS	1 byte	“0” = Nega, “1” = Posi	
VS	1 byte	“0” = Nega, “1” = Posi	
CS	1 byte	“0” = Nega, “1” = Posi	
HD	1 byte	“0” = Nega, “1” = Posi	
VD	1 byte	“0” = Nega, “1” = Posi	
1ch RGB	1 byte	“0” = Nega, “1” = Posi	
2ch RGB	1 byte	“0” = Nega, “1” = Posi	

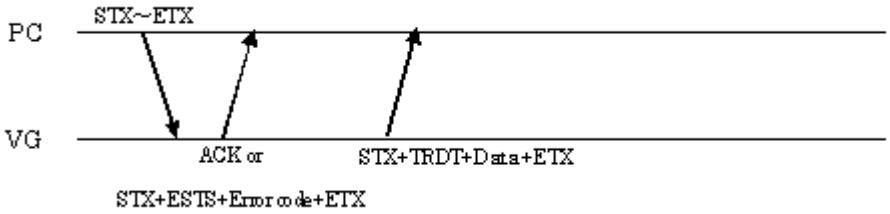
CLOCK	1 byte	“0” = Nega, “1” = Posi	
DISP	1 byte	“0” = Nega, “1” = Posi	Digital data
RZ/NRZ	1 byte	“0” = NRZ, “1” = RZ	
OSW0	1 byte	“0” = OFF, “1” = ON	
OSW1	1 byte	“0” = OFF, “1” = ON	
DELAY MODE	1 byte	“0” = OFF, “1” = ON	
CLOCK AREA	1 byte	“0” = DISP, “1” = ALL	
DELAY TIME	2 bytes	“00” to “30”	
RGB BIT OUT	1 byte	“1” = 1bit, “2” = 2 bits, “3” = 3 bits, “4” = 4 bits, “5” = 5 bits, “6” = 6 bits, “7” = 7 bits, “8” = 8 bits	
R MASK	2 bytes	“00” to “FF”	
G MASK	2 bytes	“00” to “FF”	
B MASK	2 bytes	“00” to “FF”	
SW0SEL	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = OSW0, “4” = OSW1, “5” = GSW0, “6” = GSW1	
SW1SEL	1 byte	“0” = CS, “1” = VD, “2” = HD, “3” = OSW0, “4” = OSW1, “5” = GSW0, “6” = GSW1	
SW2SEL	1 byte	“0” = VS, “1” = VD, “2” = HD, “3” = OSW0, “4” = OSW1, “5” = GSW0, “6” = GSW1	
SW3SEL	1 byte	“0” = HS, “1” = VD, “2” = HD, “3” = OSW0, “4” = OSW1, “5” = GSW0, “6” = GSW1	
CLK/OUT	1 byte	0 1 0 0 2ch clk 1ch clk 2ch out 1ch out 0 = ON 1 = High impedance ‘4xH’ is set on the basis of the above bit layout. “x” is substituted for by the value that has raised each of the bits.	
Reserved	1 byte	'40H' (“@” in ASCII code)	
ETX	1 byte	03H	

Fig. 4-31-2

4.32 LOT3 [A6H]: All output condition data readout (Type 3)

Function: This command reads all the analog and digital output condition data of the designated program number.

Sequence: Type 3



Command:

STX	1 byte	02H
LOT3	1 byte	A6H
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

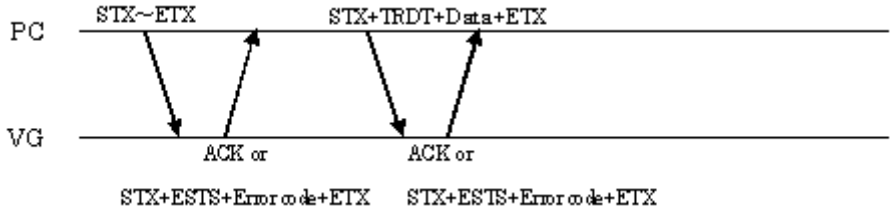
Fig. 4-32-1

Data: Same as Fig. 4-31-2.

4.33 SPD3 [A4H]: Program data registration (Type 3)

Function: This command registers all the data of the designated program number. If the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SPD3	1 byte	A4H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-33-1

Data:

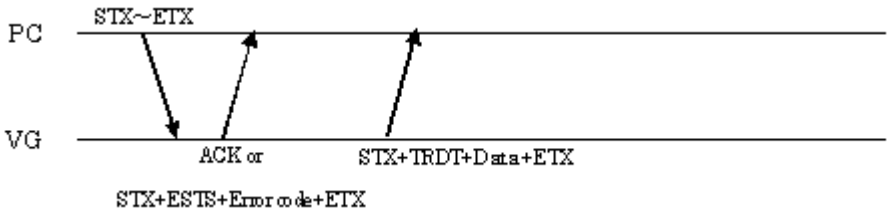
STX	1 byte	02H
TRDT	1 byte	10H
Horizontal timing	30 bytes	Refer to Fig. 4-1-2.
Delimiter	1 byte	“, “
Vertical timing	34 bytes	Refer to Fig. 4-3-2.
Delimiter	1 byte	“, “
Analog + digital output conditions	51 byte	Refer to Fig. 4-31-2.
Delimiter	1 byte	“, “
Graphic color	21 byte	Refer to Fig. 4-29-2.
Character	10 bytes	Refer to Fig. 4-29-3.
Crosshatch	14 bytes	Refer to Fig. 4-29-4.
Dot	13 bytes	Refer to Fig. 4-29-5.
Circle	7 bytes	Refer to Fig. 4-29-6.
Burst	5 bytes	Refer to Fig. 4-29-7.
Window	22 bytes	Refer to Fig. 4-29-8.
Optional pattern 1	2 bytes	Refer to Fig. 4-29-9.
Optional pattern 2	2 bytes	Refer to Fig. 4-29-10.
Delimiter	1 byte	“, “
Color bar	28 bytes	Refer to Fig. 4-29-11.
Delimiter	1 byte	“, “
Gray scale	60 bytes	Refer to Fig. 4-29-12.
Delimiter	1 byte	“, “
Cursor	26 bytes	Refer to Fig. 4-29-13.
Delimiter	1 byte	“, “
Action	42 bytes	Refer to Fig. 4-29-14.
ETX	1 byte	03H

Fig. 4-33-2

4.34 LPD3 [A3H]: Program data readout (Type 3)

Function: This command reads all the data of the designated program number.

Sequence: Type 3



Command:

STX	1 byte	02H
LPD	1 byte	A3H
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

Fig. 4-34-1

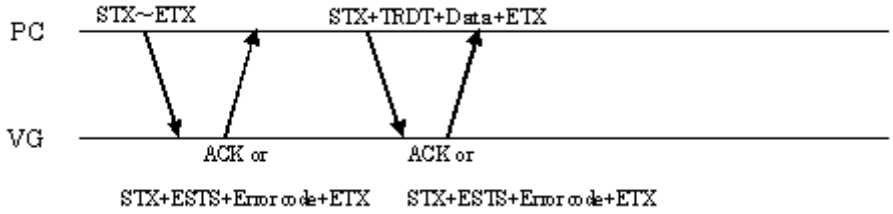
Data:

Same as Fig. 4-33-2.

4.35 EXPBN3 [A5H]: Program data setting/execution (Type 3)

Function: This command sets the data of one program in the buffer RAM, and executes it. IT DOES NOT WRITE THE DATA ON THE PC CARD.

Sequence: Type 4



Command:

STX	1 byte	02H
EXPBN3	1 byte	A5H
ETX	1 byte	03H

Fig. 4-35-1

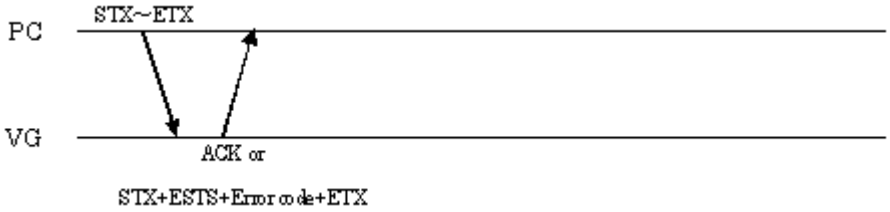
Data:

Same as Fig. 4-33-2.

4.36 PNAMES3 [A8H]: Program name registration (Type 3)

Function: This command registers the name of the designated program number.

Sequence: Type 2



Command:

STX	1 byte	02H
PNAMES3	1 byte	A8H
Program number	3 bytes	“000” to “849”
Display position	1 byte	“0” = Center, “1” = Top left, “2” = Bottom left, “3” = Top right, “4” = Bottom right
Font size	1 byte	“0” = 5×7, “1” = 7×9, “2” = 16×16
Program name	1 to 20 bytes	ASCII code
ETX	1 byte	03H

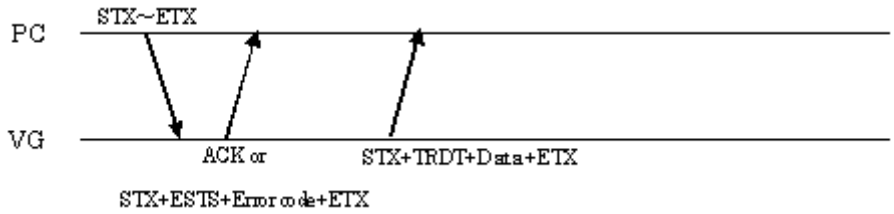
Fig. 4-36-1

Data: None

4.37 PNAMER3 [A9H]: Program name readout (Type 3)

Function: This command reads the name of the designated program designated.

Sequence: Type 3



Command:

STX	1 byte	-
PNAMER3	1 byte	A9H
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	-

Fig. 4-37-1

Data:

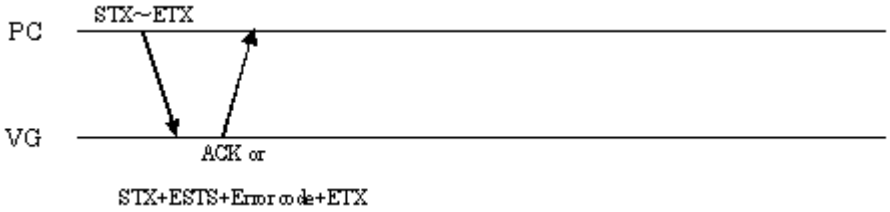
STX	1 byte	-
TRDT	1 byte	-
Display position	1 byte	“0” = Center, “1” = Top left, “2” = Bottom left, “3” = Top right, “4” = Bottom right
Font size	1 byte	“0” = 5×7, “1” = 7×9, “2” = 16×16
Program name	1 to 20 bytes	ASCII code
ETX	1 byte	-

Fig. 4-37-2

4.38 SGROUP3 [AAH]: Group number registration (Type 3)

Function: This command registers the data of the designated group number.

Sequence: Type 2



Command:

STX	1 byte	02H	
SGROUP3	1 byte	AAH	
Group No.	2 bytes	“01” to “99”	
GSW0 start status	1 byte	“0” = Off, “1” = On	
GSW1 start status	1 byte	“0” = Off, “1” = On	
GSW0 end status	1 byte	“0” = Off, “1” = On	
GSW1 end status	1 byte	“0” = Off, “1” = On	
Timing data program No.	3 bytes	“001” to “999”	Repeated up to 98 times in this increment ((3 +3) × 98 bytes)
Pattern data program No.	3 bytes	“001” to “999”	
ETX	1 byte	03H	

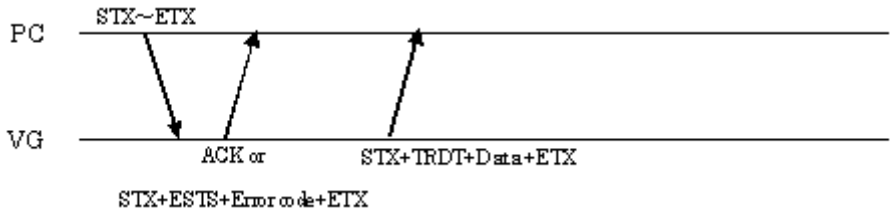
Fig. 4-38-1

Data: None

4.39 LGROUP3 [ABH]: Group number readout (Type 3)

Function: This command reads the data of the designated group number.

Sequence: Type 3



Command:

STX	1 byte	02H
LGROUP3	1 byte	ABH
Group No.	2 bytes	“01” to “99”
ETX	1 byte	03H

Fig. 4-39-1

Data:

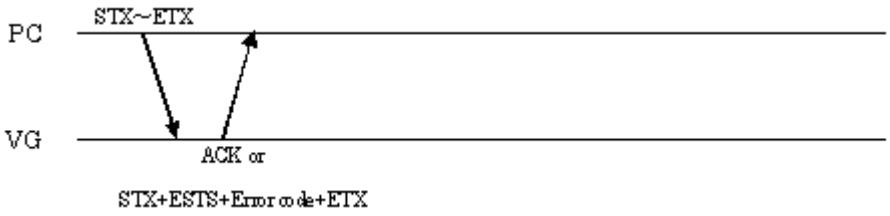
STX	1 byte	02H	
TRDT	1 byte	10H	
GSW0 start status	1 byte	“0” = Off, “1” = On	
GSW1 start status	1 byte	“0” = Off, “1” = On	
GSW0 end status	1 byte	“0” = Off, “1” = On	
GSW1 end status	1 byte	“0” = Off, “1” = On	
Timing data program No.	3 bytes	“001” to “999”	Repeated up to 98 times in this increment ((3 +3) × 98 bytes)
Pattern data program No.	3 bytes	“001” to “999”	
ETX	1 byte	03H	

Fig. 4-39-2

4.40 GNAMES3 [ACH]: Group name registration (Type 3)

Function: This command registers the name of the designated group number.

Sequence: Type 2



Command:

STX	1 byte	02H
GNAMES3	1 byte	ACH
Group No.	2 bytes	“01” to “99”
Group name	1 to 20 bytes	ASCII code
ETX	1 byte	03H

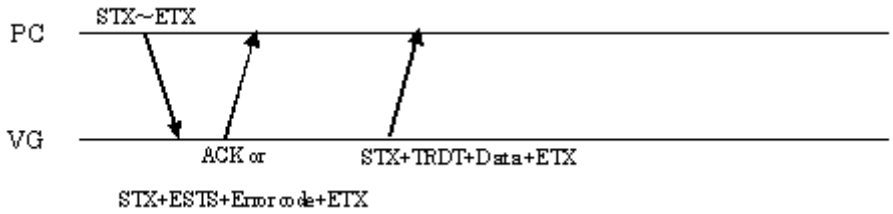
Fig. 4-40-1

Data: None

4.41 GNAMER3 [ADH]: Group name readout (Type 3)

Function: This command reads the name of the designated group number.

Sequence: Type 3



Command:

STX	1 byte	02H
GNAMER3	1 byte	ADH
Group No.	2 bytes	“01” to “99”
ETX	1 byte	03H

Fig. 4-41-1

Data:

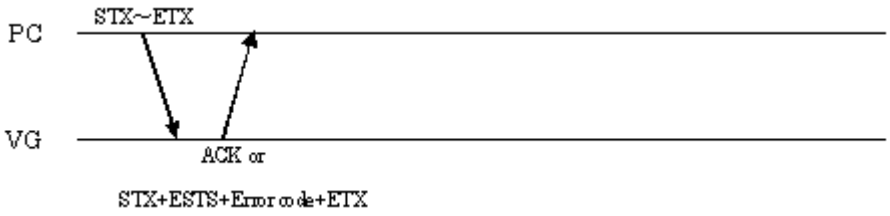
STX	1 byte	02H
TRDT	1 byte	10H
Group name	1 to 20 bytes	ASCII code
ETX	1 byte	03H

Fig. 4-41-2

4.42 SCFG3 [7FH]: Config data registration (Type 3)

Function: This command registers the configuration data.

Sequence: Type 2



Command:

STX	1 byte	02H
SCFG3	1 byte	7FH
Program data device	1 byte	“0” = Memory card
Pattern display mode	1 byte	“0” = Single-action switching, “1” = Overwriting
Group No.	2 bytes	“00” = Group not used “01” to “99” = Designated group executed
Beep tone	1 byte	“0” = OFF, “1” = ON
Baud rate	1 byte	“0” = 9600, “1” = 19200, “2” = 38400, “3” = 57600, “4” = 115200
Data length	1 byte	“0” = 7, “1” = 8
Parity	1 byte	“0” = None, “1” = Even, “2” = Odd
Stop length	1 byte	“0” = 1, “1” = 2
ETX	1 byte	03H

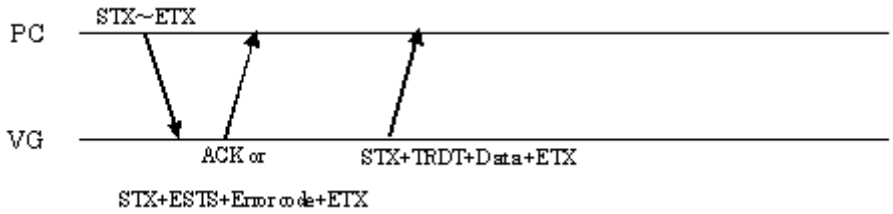
Fig. 4-42-1

Data: None

4.43 LCFG3 [7EH]: Config data readout (Type 3)

Function: This command reads the configuration data.

Sequence: Type 3



Command:

STX	1 byte	02H
LCFG3	1 byte	7EH
ETX	1 byte	03H

Fig. 4-43-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Program data device	1 byte	“0” = Memory card
Pattern display mode	1 byte	“0” = Single-action switching, “1” = Overwriting
Group No.	2 bytes	“00” = Group not used “01” to “99” = Designated group executed
Beep tone	1 byte	“0” = OFF, “1” = ON
Baud rate	1 byte	“0” = 9600, “1” = 19200, “2” = 38400, “3” = 57600, “4” = 115200
Data length	1 byte	“0” = 7, “1” = 8
Parity	1 byte	“0” = None, “1” = Even, “2” = Odd
Stop length	1 byte	“0” = 1, “1” = 2
ETX	1 byte	03H

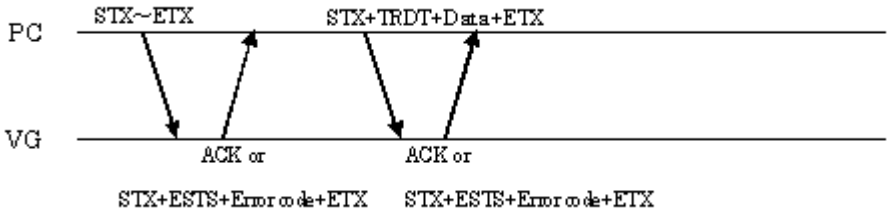
Fig. 4-43-2

4.44 SPbPrD [92H]: Color difference coefficient data registration

Function: This command registers the color difference coefficient data.

Note) This command is not supported by the VG-880 generator.

Sequence: Type 4



Command:

STX	1 byte	02H
SPbPrD	1 byte	92H
Color difference table No.	1 byte	“0” to “3”
ETX	1 byte	03H

Fig. 4-44-1

Data:

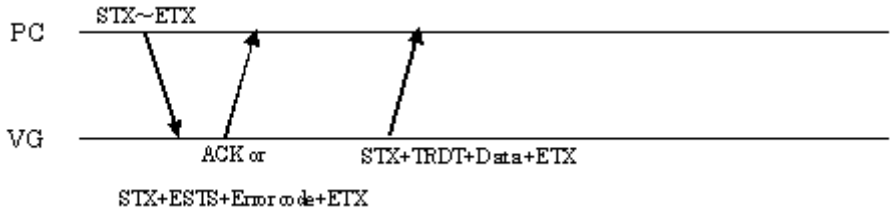
STX	1 byte	02H
TRDT	1 byte	10H
YR	5 bytes	“00000” to “10000” Total value of YG + YB must be set to under 10000.
YG	5 bytes	“00000” to “10000” Total value of YR + YB must be set to under 10000.
YB	5 bytes	“00000” to “10000” Total value of YR + YG must be set to under 10000.
PbR	5 bytes	“00000” to “05000” Total value of PbG + PbB must be set to under 10000.
PbG	5 bytes	“00000” to “05000” Total value of PbR + PbB must be set to under 10000.
PbB	5 bytes	“00000” to “05000” Total value of PbR + PbG must be set to under 10000.
PrR	5 bytes	“00000” to “05000” Total value of PrR + PrG must be set to under 10000.
PrG	5 bytes	“00000” to “05000” Total value of PrR + PrB must be set to under 10000.
PrB	5 bytes	“00000” to “05000” Total value of PrR + PrG must be set to under 10000.
ETX	1 byte	-

Fig. 4-44-2

4.45 LPbPrD [91H]: Color difference coefficient data readout

Function: This command reads the color difference coefficient data.

Sequence: Type 3



Command:

STX	1 byte	02H
LPbPrD	1 byte	91H
Color difference table No.	1 byte	“0” to “3”
ETX	1 byte	03H

Fig. 4-45-1

Data:

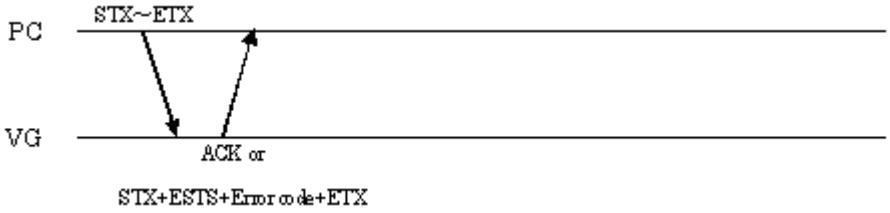
Same as Fig. 4-44-2.

4.46 PbPrDNAMES3 [93H]: Color difference coefficient data name registration (Type 3)

Function: This command registers the name of the designated color difference coefficient data .

Note) this command is not supported by the VG-880 generator.

Sequence: Type 2



Command:

STX	1 byte	02H
GNAMES3	1 byte	93H
Color difference table No.	1 byte	“0” to “3”
Color difference coefficient data name	1 to 20 bytes	ASCII code
ETX	1 byte	03H

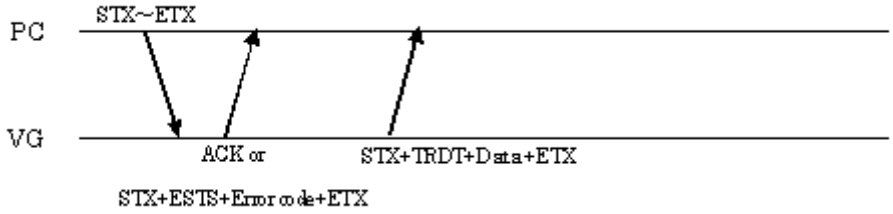
Fig. 4-46-1

Data: None

4.47 PbPrDNAMER3 [94H]: Color difference coefficient data name readout (Type 3)

Function: This command reads the name of the designated color difference coefficient data.

Sequence: Type 3



Command:

STX	1 byte	02H
GNAMER3	1 byte	94H
Color difference table No.	1 byte	“0” to “3”
ETX	1 byte	03H

Fig. 4-47-1

Data:

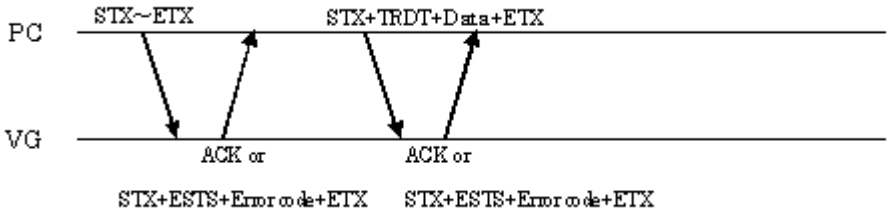
STX	1 byte	02H
TRDT	1 byte	10H
Color difference coefficient data name	1 to 20 bytes	ASCII code
ETX	1 byte	03H

Fig. 4-47-2

4.48 CROSS_CTRL [2EH]: Cursor pattern control

Function: This command changes the setting for the cursor pattern. It is valid only when a cursor pattern has been output in advance. Send the data that corresponds to the designated command code.

Sequence: Type 4



Command:

STX	1 byte	02H
CROSS_CTRL	1 byte	2EH
Command code	1 byte	“A” = Switch coordinate display “B” = Change flicker speed “C” = Change cursor shape “D” = Change background color “E” = Change cursor color “F” = Change cursor coordinate
ETX	1 byte	03H

Fig. 4-48-1

Data:

(A) Coordinate display

STX	1 byte	02H
TRDT	1 byte	10H
Display format	1 byte	“0” = (xxx, yyy, STEPaa) “1” = (R: a, G: b, B: c), (GATE: d, STEP: e) “2” = No display “3” = Reversed by top/bottom and left/right of “0” “4” = Reversed by top/bottom and left/right of “1”
ETX	1 byte	03H

Fig. 4-48-2

(B) Flicker speed

STX	1 byte	02H
TRDT	1 byte	10H
Flicker speed	1 byte	“0” = Flicker stopped “1” = Flicker every 16 blanking times “2” = Flicker every 8 blanking times
ETX	1 byte	03H

Fig. 4-48-3

(C) Cursor shape

STX	1 byte	02H
TRDT	1 byte	10H
Cursor shape	1 byte	“0” = Full-screen cross cursor “1” = Vertical line “2” = 5×5 cross cursor “3” = Full-screen cross cursor RGB “4” = Vertical line RGB “5” = 5×5 cross cursor RGB
ETX	1 byte	03H

Fig. 4-48-4

(D) Background color

STX	1 byte	02H
TRDT	1 byte	10H
R	3 bytes	“000” to “255”
G	3 bytes	“000” to “255”
B	3 bytes	“000” to “255”
ETX	1 byte	-

Fig. 4-48-5

(E) Cursor color

STX	1 byte	02H
TRDT	1 byte	10H
R	3 bytes	“000” to “255”
G	3 bytes	“000” to “255”
B	3 bytes	“000” to “255”
ETX	1 byte	03H

Fig. 4-48-6

(F) Cursor coordinates

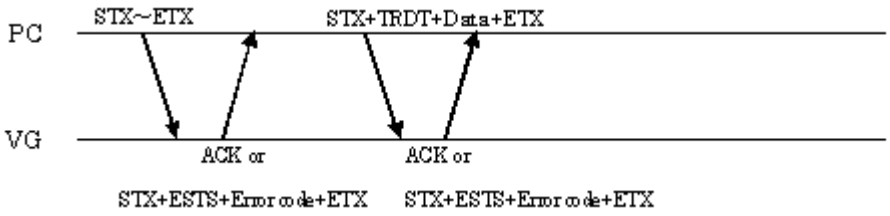
STX	1 byte	02H
TRDT	1 byte	10H
X coordinate	4 bytes	From “0000” to “H display size -1 (4 digits)”
Y coordinate	4 bytes	From “0000” to “V display size -1 (4 digits)”
ETX	1 byte	03H

Fig. 4-48-7

4.49 SDC [61H]: D connector output condition registration

Function: This command registers the D connector output conditions of the designated program number.
If the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SDC	1 byte	61H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-49-1

Data:

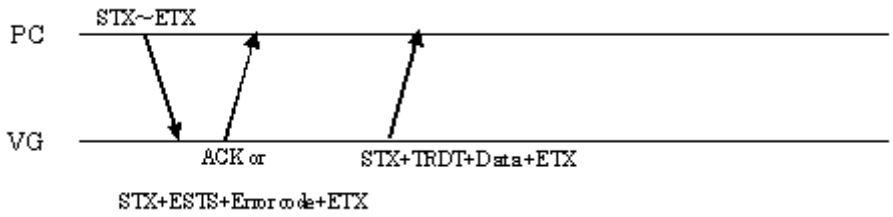
STX	1 byte	02H
TRDT	1 byte	10H
D connector LINE1	1 byte	“0” = 480, “1” = 720, “2” = 1080
D connector LINE2	1 byte	“0” = Interlace, “1” = Progressive
D connector LINE3	1 byte	“0” = 4:3, “1” = 4:3LB, “2” = 16:9
ETX	1 byte	03H

Fig. 4-49-2

4.50 LDC [60H]: D connector output condition readout

Function: This command reads the D connector output conditions of the designated program number.

Sequence: Type 3



Command:

STX	1 byte	02H
LDC	1 byte	60H
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

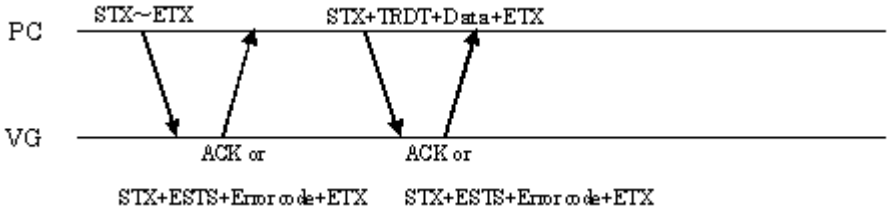
Fig. 4-50-1

Data: Same as Fig. 4-49-2.

4.51 SWP [63H]: Window pattern coordinate registration

Function: This command sends the center coordinates of Window pattern. This becomes valid when “Format E” is selected in window pattern editing The command is sent to the designated program number. If the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SWP	1 byte	63H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-51-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Window #1 horizontal center position (%)	4 bytes	“0000” to “1000” = 0.000% to 100.0%
Window #1 vertical center position (%)	4 bytes	“0000” to “1000” = 0.000% to 100.0%
Window #2 horizontal center position (%)	4 bytes	“0000” to “1000” = 0.000% to 100.0%
Window #2 vertical center position (%)	4 bytes	“0000” to “1000” = 0.000% to 100.0%
ETX	1 byte	03H

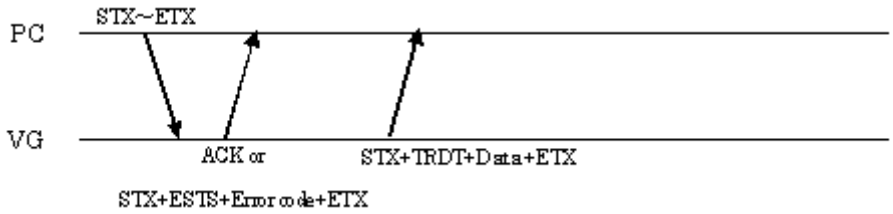
Fig. 4-51-2

* Window #2 is not displayed if “0000” has been selected as the setting for the H and V data of window #2.

4.52 LWP [62H]: Window pattern coordinate readout

Function: This command receives the enter coordinates of Window pattern from the designated program number. This becomes valid when “Format E” is selected in window pattern editing.

Sequence: Type 3



Command:

STX	1 byte	02H
LWP	1 byte	62H
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

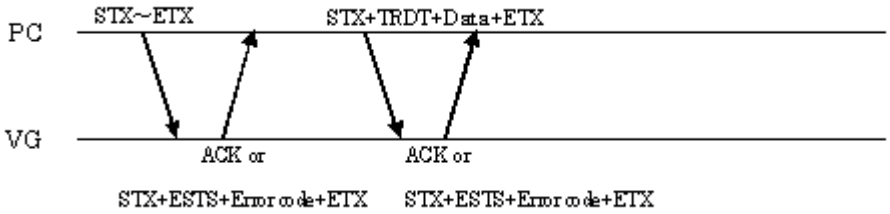
Fig. 4-52-1

Data: Same as Fig. 4-51-2.

4.53 SOM [65H]: Video output ON/OFF registration

Function: This command registers the video output ON/OFF statuses of the designated program number. If the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SOM	1 byte	65H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-53-1

Data:

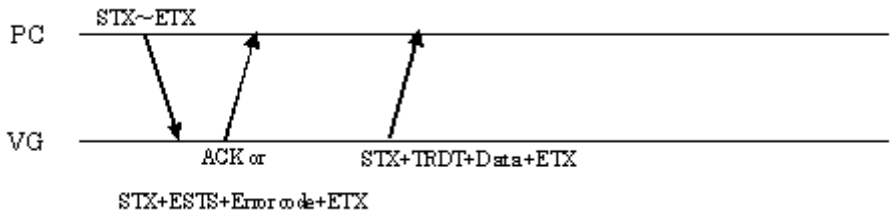
STX	1 byte	02H
TRDT	1 byte	10H
Analog output (BNC)	1 byte	“0” = OFF, “1” = ON
Analog output (D-SUB)	1 byte	“0” = OFF, “1” = ON
DVI (Digital)	1 byte	“0” = OFF, “1” = ON
DVI (Analog)	1 byte	“0” = OFF, “1” = ON
D connector output	1 byte	“0” = OFF, “1” = ON
Spare	1 byte	“0”
Spare	1 byte	“0”
Spare	1 byte	“0”
ETX	1 byte	03H

Fig. 4-53-2

4.54 LOM [64H]: Video output ON/OFF readout

Function: This command reads the video output ON/OFF statuses of the designated program number.

Sequence: Type 3



Command:

STX	1 byte	02H
LOM	1 byte	64H
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

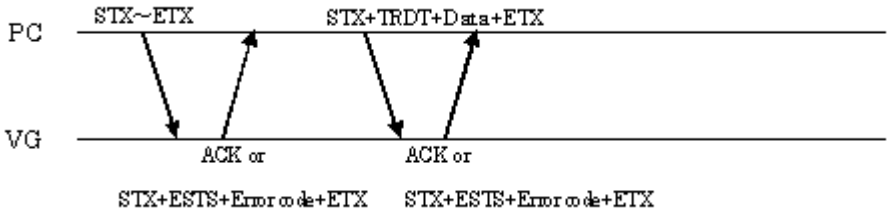
Fig. 4-54-1

Data: Same as Fig. 4-53-2.

4.55 SAD [67H]: Audio output condition registration

Function: This command registers the audio output setting data of the designated program number. If the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SAD	1 byte	67H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-55-1

Data:

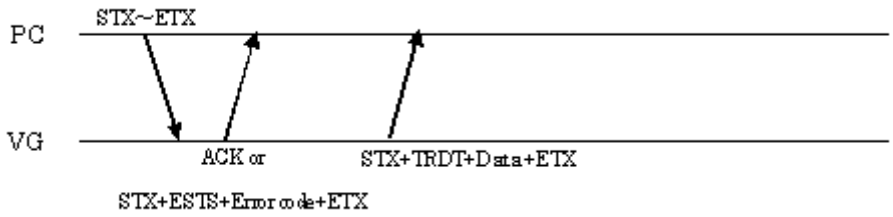
STX	1 byte	02H
TRDT	1 byte	10H
Freq L (Hz)	5 bytes	“00100” to “20000” = 100 Hz to 20000 Hz
Freq R (Hz)	5 bytes	“00100” to “20000” = 100 Hz to 20000 Hz
Level L (mV)	4 bytes	“0000” to “2000” = 0 mV to 2000 mV (in 50 mV increments)
Level R (mV)	4 bytes	“0000” to “2000” = 0 mV to 2000 mV (in 50 mV increments)
SWEEP	1 byte	“0” = OFF, “1” = Frequency, “2” = Level L, “3” = Level R
ETX	1 byte	03H

Fig. 4-55-2

4.56 LAD [66H]: Audio output condition readout

Function: This command reads the audio output setting data of the designated program number.

Sequence: Type 3



Command:

STX	1 byte	02H
LAD	1 byte	66H
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

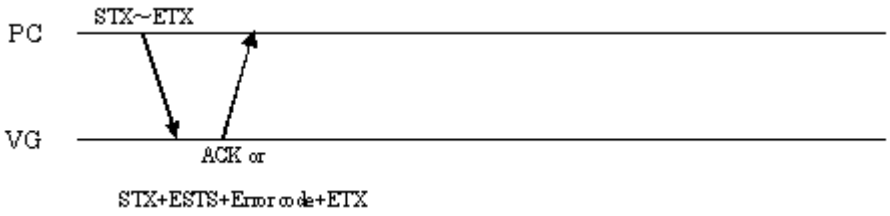
Fig. 4-56-1

Data: Same as Fig. 4-55-2.

4.57 SIPADR [F1H]: IP address registration

Function: This command registers the IP address setting data.

Sequence: Type 2



Command:

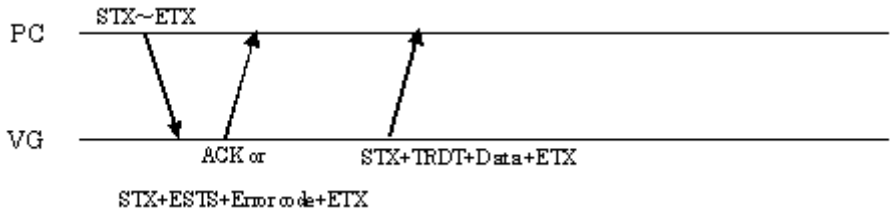
STX	1 byte	02H
SIPADR	1 byte	F1H
IP address	8 bytes	ASCII code (Hex)
Port number	4 bytes	ASCII code (Hex)
ETX	1 byte	03H

Fig. 4-57-1

4.58 LIPADR [F0H]: IP address readout

Function: This command reads IP address setting data.

Sequence: Type 3



Command:

STX	1 byte	02H
LIPADR	1 byte	F0H
ETX	1 byte	03H

Fig. 4-58-1

Data:

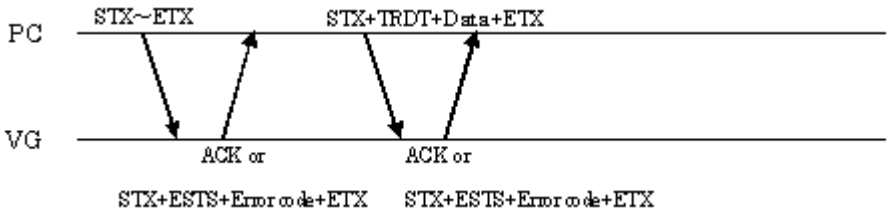
STX	1 byte	02H
TRDT	1 byte	10H
IP address	8 bytes	ASCII code (Hex) Example: 192.168.0.10 → “C0A8000A”
Port number	4 bytes	ASCII code (Hex) Example: 8000 → “1F40”
ETX	1 byte	03H

Fig. 4-58-2

4.59 SPDS [69H]: Pulldown scroll setting data registration

Function: This command sends the pulldown scroll setting data of the designated program number. If the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Command:

STX	1 byte	02H
SPDS	1 byte	69H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-59-1

Data:

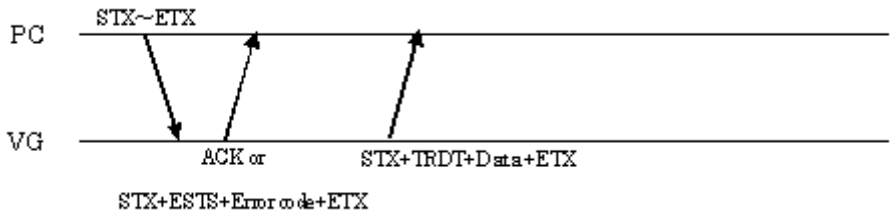
STX	1 byte	02H
TRDT	1 byte	10H
Interval 1	3 bytes	“001” to “255” = 1 V to 255 V
Interval 2	3 bytes	“000” to “255” = 0 V to 255 V
Interval 3	3 bytes	“000” to “255” = 0 V to 255 V
Interval 4	3 bytes	“000” to “255” = 0 V to 255 V
Graphic & character H-Step1	4 bytes	“0001” to “0255” = 1Step to 255Step
Graphic & character H-Step2	4 bytes	“0000” to “0255” = 0Step to 255Step
Graphic & character H-Step3	4 bytes	“0000” to “0255” = 0Step to 255Step
Graphic & character H-Step4	4 bytes	“0000” to “0255” = 0Step to 255Step
Graphic & character V-Step1	4 bytes	“0001” to “0255” = 1Step to 255Step
Graphic & character V-Step2	4 bytes	“0000” to “0255” = 0Step to 255Step
Graphic & character V-Step3	4 bytes	“0000” to “0255” = 0Step to 255Step
Graphic & character V-Step4	4 bytes	“0000” to “0255” = 0Step to 255Step
Window Step1	3 bytes	“001” to “255”
Window Step2	3 bytes	“000” to “255”
Window Step3	3 bytes	“000” to “255”
Window Step4	3 bytes	“000” to “255”
ETX	1 byte	03H

Fig. 4-59-2

4.60 LPDS [68H]: Pulldown scroll setting data readout

Function: This command reads the pulldown scroll setting data of the designated program number.

Sequence: Type 3



Parameters:

STX	1 byte	02H
LPDS	1 byte	68H
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

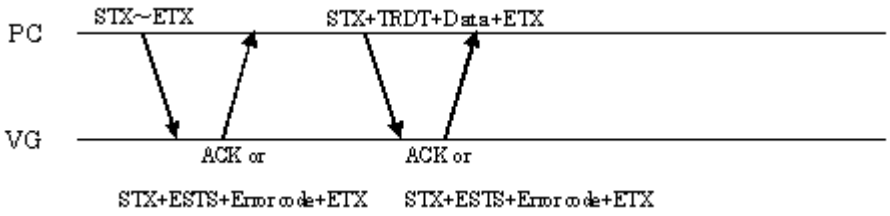
Fig. 4-60-1

Data: Same as Fig. 4-59-2.

4.61 SSC [6BH]: S connector output condition registration

Function: This command registers the S connector output conditions of the designated program number. If the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Parameters:

STX	1 byte	02H
SSC	1 byte	6BH
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-61-1

Data:

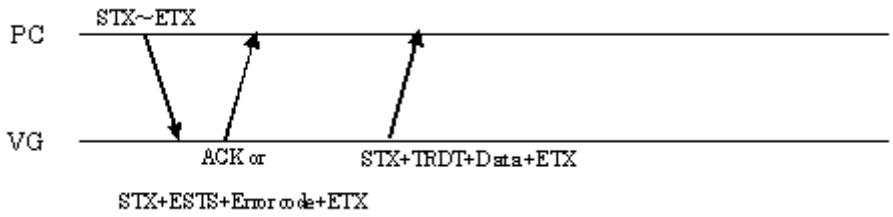
STX	1 byte	02H
TRDT	1 byte	10H
S connector 1	1 byte	“0” = Normal, “1” = Letter box, “2” = Squeeze
ETX	1 byte	03H

Fig. 4-61-2

4.62 LSC [6AH]: S connector output condition readout

Function: This command reads the S connector output conditions of the designated program number.

Sequence: Type 3



Parameters:

STX	1 byte	02H
LSC	1 byte	6AH
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

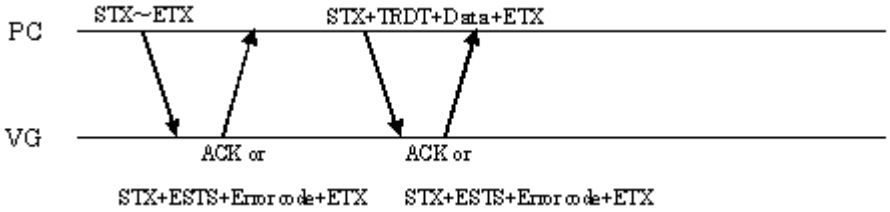
Fig. 4-62-1

Data: Same as Fig. 4-61-2.

4.63 SDVIM [6DH]: DVI output mode registration

Function: This command registers the DVI mode of the designated program number. If the program number is 0, it writes the data into the buffer RAM.

Sequence: Type 4



Parameters:

STX	1 byte	02H
SDVIM	1 byte	6DH
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-63-1

Data:

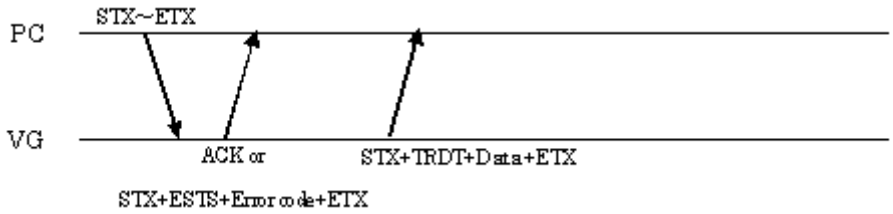
STX	1 byte	02H
TRDT	1 byte	10H
DVI MODE	1 byte	“0” = Single, “1” = Dual
ETX	1 byte	03H

Fig. 4-63-2

4.64 LDVIM [6CH]: DVI output mode readout

Function: This command reads the DVI mode of the designated program number.

Sequence: Type 3



Parameters:

STX	1 byte	02H
LDVIM	1 byte	6CH
Program number	1 to 3 bytes	“0” to “999”
ETX	1 byte	03H

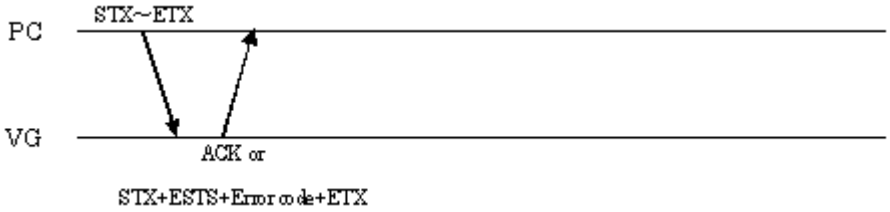
Fig. 4-64-1

Data: Same as Fig. 4-63-2.

4.65 SGADR [F3H]: Gateway IP address registration

Function: This command sends the IP address of the gateway. (In the VG-848 series, even its setting is registered, it will not function.)

Sequence: Type 2



Parameters:

STX	1 byte	02H
SGADR	1 byte	F3H
IP address	8 bytes	ASCII code (Hex) Example: 192.168.0.10 → “C0A8000A”
ETX	1 byte	03H

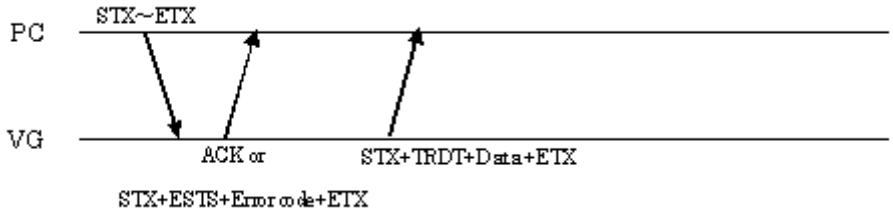
Fig. 4-65-1

Data: None

4.66 LGADR [F2H]: Gateway IP address readout

Function: This command reads the IP address of the gateway. (In the VG-848 series, even its setting is registered, it will not function.)

Sequence: Type 3



Parameters:

STX	1 byte	02H
LGADR	1 byte	F2H
ETX	1 byte	03H

Fig. 4-66-1

Data:

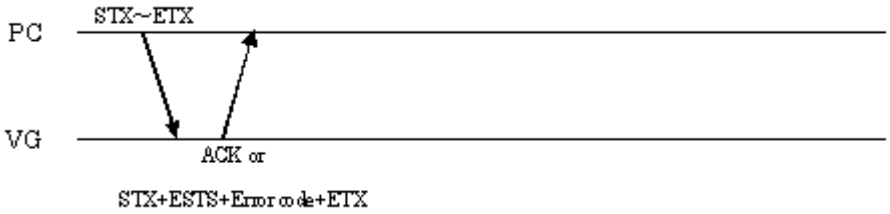
STX	1 byte	02H
TRDT	1 byte	10H
IP address	8 bytes	ASCII code (Hex) Example: 192.168.0.10 → “C0A8000A”
ETX	1 byte	03H

Fig. 4-66-2

4.67 SHDCPEN [81H]: Program HDCP enable/disable setting

Function: This command sets enable or disable for HDCP of the designated program number .

Sequence: Type 2



Command:

STX	1 byte	02H
SHDCPEN	1 byte	81H
Program number	2 bytes	“0” to “849”
Enable/Disable	1 byte	“0” = Enable, “1” = Disable
ETX	1 byte	03H

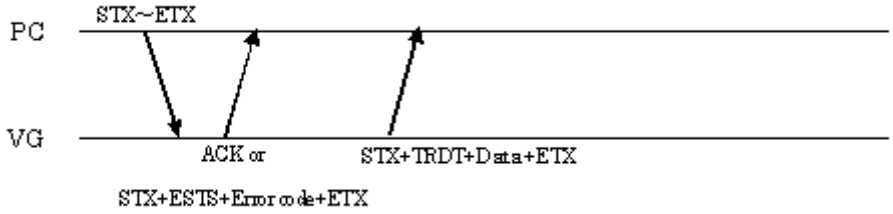
Fig. 4-67-1

Data: None

4.68 LHDCPEN [80H]: Program HDCP enable/disable readout

Function: This command reads enable or disable for HDCP of the designated program number.

Sequence: Type 3



Command:

STX	1 byte	02H
LHDCPEN	1 byte	80H
Program number	2 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-68-1

Data:

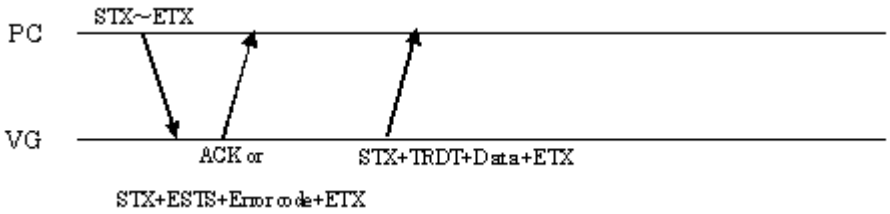
STX	1 byte	02H
Enable/Disable	1 byte	“0” = Enable, “1” = Disable
ETX	1 byte	03H

Fig. 4-68-2

4.69 LOPTB [74H]: Optional board data acquisition

Function: This command gets the optional board data of the designated program number.

Sequence: Type 3



Parameters:

STX	1 byte	02H
LOPTB	1 byte	74H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-69-1

Data:

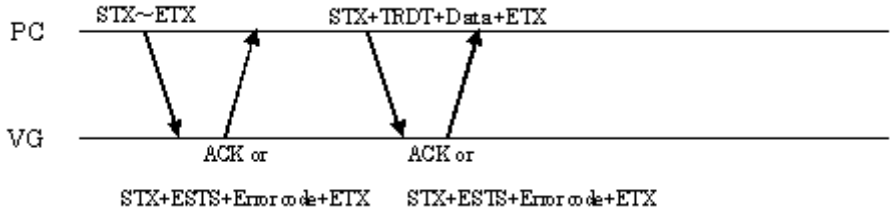
STX	1 byte	02H
TRDT	1 byte	10H
RGB1	1 byte	“0” = Nega, “1” = Posi
OUT1	1 byte	“0” = Hi-Z, “1” = ON
CLOCK1	1 byte	“0” = Hi-Z, “1” = ON
SYNC1	1 byte	“0” = Hi-Z, “1” = ON
POW1	1 byte	“0” = Hi-Z, “1” = ON
RGB2	1 byte	“0” = Nega, “1” = Posi
OUT2	1 byte	“0” = Hi-Z, “1” = ON
CLOCK2	1 byte	“0” = Hi-Z, “1” = ON
SYNC2	1 byte	“0” = Hi-Z, “1” = ON
POW2	1 byte	“0” = Hi-Z, “1” = ON
RGB3	1 byte	“0” = Nega, “1” = Posi
OUT3	1 byte	“0” = Hi-Z, “1” = ON
CLOCK3	1 byte	“0” = Hi-Z, “1” = ON
SYNC3	1 byte	“0” = Hi-Z, “1” = ON
POW3	1 byte	“0” = Hi-Z, “1” = ON
RGB4	1 byte	“0” = Nega, “1” = Posi
OUT4	1 byte	“0” = Hi-Z, “1” = ON
CLOCK4	1 byte	“0” = Hi-Z, “1” = ON
SYNC4	1 byte	“0” = Hi-Z, “1” = ON
POW4	1 byte	“0” = Hi-Z, “1” = ON
LVDS Split	1 byte	“0” to “6”
LVDS Dual	1 byte	“0” = MODE0 (Singl) “1” = MODE1 (Dual) “3” = MODE3
ETX	1 byte	03H

Fig. 4-69-2

4.70 SOPTB [75H]: Optional board data setting

Function: This command sets the optional board data of the designated program number.

Sequence: Type 4



Parameters:

STX	1 byte	02H
SHDCPEN	1 byte	75H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-72-1

Data:

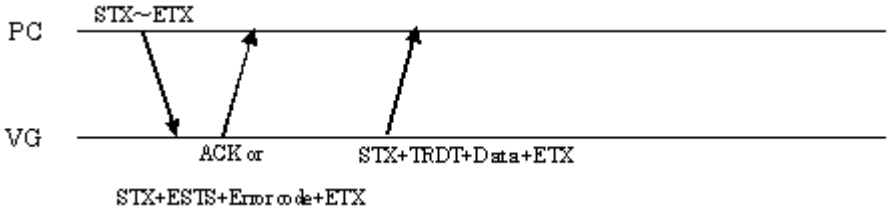
STX	1 byte	02H
TRDT	1 byte	10H
RGB1	1 byte	“0” = Nega, “1” = Posi
OUT1	1 byte	“0” = Hi-Z, “1” = ON
CLOCK1	1 byte	“0” = Hi-Z, “1” = ON
SYNC1	1 byte	“0” = Hi-Z, “1” = ON
POW1	1 byte	“0” = Hi-Z, “1” = ON
RGB2	1 byte	“0” = Nega, “1” = Posi
OUT2	1 byte	“0” = Hi-Z, “1” = ON
CLOCK2	1 byte	“0” = Hi-Z, “1” = ON
SYNC2	1 byte	“0” = Hi-Z, “1” = ON
POW2	1 byte	“0” = Hi-Z, “1” = ON
RGB3	1 byte	“0” = Nega, “1” = Posi
OUT3	1 byte	“0” = Hi-Z, “1” = ON
CLOCK3	1 byte	“0” = Hi-Z, “1” = ON
SYNC3	1 byte	“0” = Hi-Z, “1” = ON
POW3	1 byte	“0” = Hi-Z, “1” = ON
RGB4	1 byte	“0” = Nega, “1” = Posi
OUT4	1 byte	“0” = Hi-Z, “1” = ON
CLOCK4	1 byte	“0” = Hi-Z, “1” = ON
SYNC4	1 byte	“0” = Hi-Z, “1” = ON
POW4	1 byte	“0” = Hi-Z, “1” = ON
LVDS 1ch	1 byte	“0” = OFF, “1” = ON
LVDS 2ch	1 byte	“0” = OFF, “1” = ON
LVDS 3ch	1 byte	“0” = OFF, “1” = ON
LVDS 4ch	1 byte	“0” = OFF, “1” = ON
LVDS Split	1 byte	“0” to “6”
LVDS Dual	1 byte	“0” = MODE0 (Singl) “1” = MODE1 (Dual) “3” = MODE3
ETX	1 byte	03H

Fig. 4-70-2

4.71 LOPTB2 [79H]: Optional board data 2 acquisition

Function: This command gets the optional board data 2 of the designated program number .

Sequence: Type 3



Parameters:

STX	1 byte	02H
LOPTB2	1 byte	79H
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-71-1

Data:

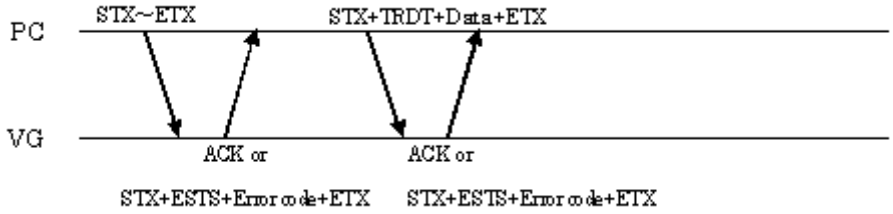
STX	1 byte	02H
TRDT	1 byte	10H
LVDS 1ch	1 byte	“0” = OFF, “1” = ON
LVDS 2ch	1 byte	“0” = OFF, “1” = ON
rsv1	1 byte	“0”
Output Select	1 byte	“0” = DVI “1” = Parallel “2” = 4Head LVDS “3” = 2Head LVDS
rsv2	28 bytes	All “0”
ETX	1 byte	03H

Fig. 4-71-2

4.72 SOPTB2 [7AH]: Optional board data 2 setting

Function: This command sets the optional board data 2 of the designated program number .

Sequence: Type 4



Parameters:

STX	1 byte	02H
SHDCPEN	1 byte	7AH
Program number	1 to 3 bytes	“0” to “849”
ETX	1 byte	03H

Fig. 4-74-1

STX	1 byte	02H
TRDT	1 byte	10H
LVDS 1ch	1 byte	“0” = OFF, “1” = ON
LVDS 2ch	1 byte	“0” = OFF, “1” = ON
rsv1	1 byte	“0”
Output Select	1 byte	“0” = DVI “1” = Parallel “2” = 4Head LVDS “3” = 2Head LVDS
rsv2	28 bytes	All “0”
ETX	1 byte	03H

Fig. 4-72-2

Data: None

5 INDIVIDUAL DRAWING COMMAND FORMATS

Execute the drawing commands after having set the sync signals.

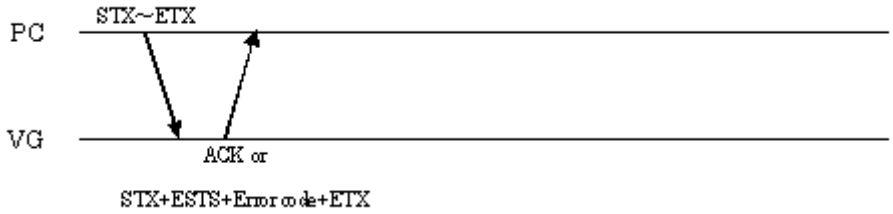
With the VG-848 series generator, do not execute drawing commands in combination with pattern drawing using the main unit. If they are executed together, the patterns may not be drawn on the screen correctly.

5.1 GCIRC [18H]: Circle drawing / CCIRC [12H]: Circle clearing

5.1.1 GCIRC [18H]: Circle drawing

Function: This command draws a circle on the graphic plane (1-bit plane).
The center coordinates and radius of the circle are set by the parameters.

Sequence: Type 2



Command:

STX	1 byte	02H
GCIRC, CCIRC	1 byte	18H, 12H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Radius	1 to 4 bytes	“1” to “4095”
ETX	1 byte	03H

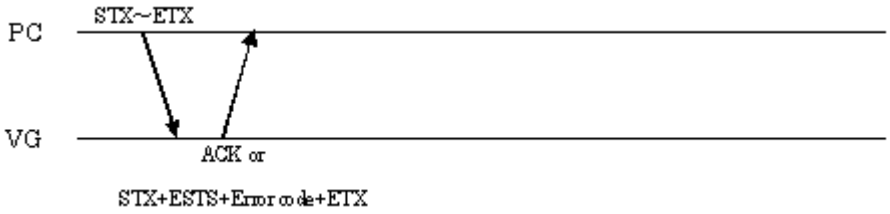
Fig. 5-1-1

* A sign code is provided for each of the center coordinates.

5.1.2 CCIRC [12H]: Circle clearing

Function: This command clears the circle on the graphic plane (1-bit plane).
The center coordinates and radius of the circle are set by the parameters.

Sequence: Type 2



Parameters:

STX	1 byte	02H
CCIRC	1 byte	12H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Radius	1 to 4 bytes	“1” to “4095”
ETX	1 byte	03H

Fig. 5-1-2

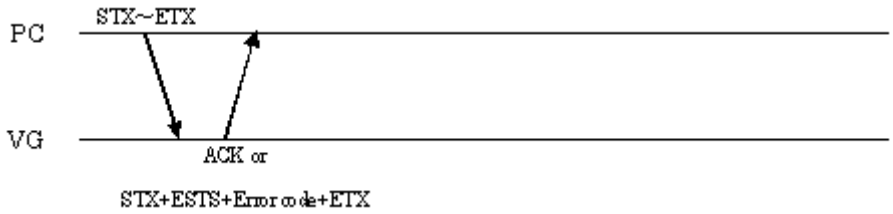
* A sign code is provided for each of the center coordinates.

5.2 GCIRCPA [D4H]: Filled-in circle drawing / CCIRCPA [D5H]: Filled-in circle clearing

5.2.1 GCIRCPA [D4H]: Filled-in circle drawing

Function: This command draws a filled-in circle on the graphic plane (1-bit plane). The center coordinates and radius of the circle are set by the parameters.

Sequence: Type 2



Command:

STX	1 byte	02H
GCIRCPA, CCIRCPA	1 byte	D4H, D5H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Radius	1 to 4 bytes	“1” to “4095”
ETX	1 byte	03H

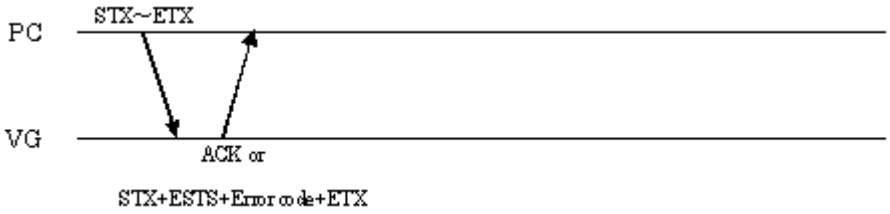
Fig. 5-2-1

* A sign code is provided for each of the center coordinates.

5.2.2 CCIRCPA [D5H]: Filled-in circle clearing

Function: This command clears the filled-in circle on the graphic plane (1-bit plane). The center coordinates and radius of the circle are set by the parameters.

Sequence: Type 2



Parameter:

STX	1 byte	02H
CCIRCPA	1 byte	D5H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Radius	1 to 4 bytes	“1” to “4095”
ETX	1 byte	03H

Fig. 5-2-2

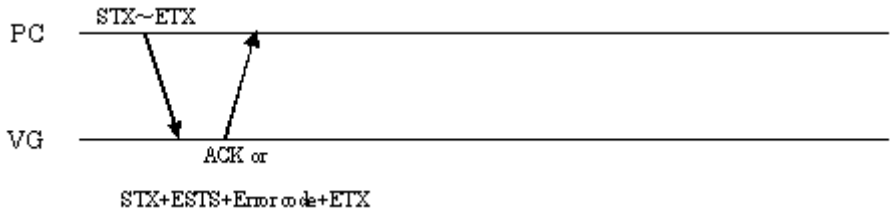
* A sign code is provided for each of the center coordinates.

5.3 GLINE [19H]: Straight line drawing / CLINE [13H]: Straight line clearing

5.3.1 GLINE [19H]: Straight line drawing

Function: This command draws a straight line on the graphic plane (1-bit plane). The start and end point coordinates are set by the parameters.

Sequence: Type 2



Command:

STX	1 byte	02H
GLINE, CLINE	1 byte	19H, 13H
Start point coordinate X	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Start point coordinate Y	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
End point coordinate X 1	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
End point coordinate Y 1	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
ETX	1 byte	03H

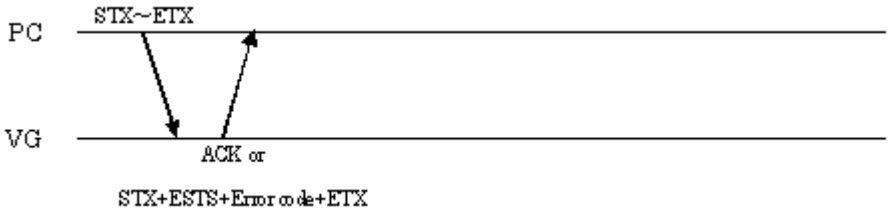
Fig. 5-3-1

* Sign codes are provided.

5.3.2 CLINE [13H]: Straight line clearing

Function: This command clears the straight line on the graphic plane (1-bit plane). The start and end point coordinates are set by the parameters.

Sequence: Type 2



Parameters:

STX	1 byte	02H
CLINE	1 byte	13H
Start point coordinate X	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Start point coordinate Y	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
End point coordinate X 1	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
End point coordinate Y 1	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
ETX	1 byte	03H

Fig. 5-3-2

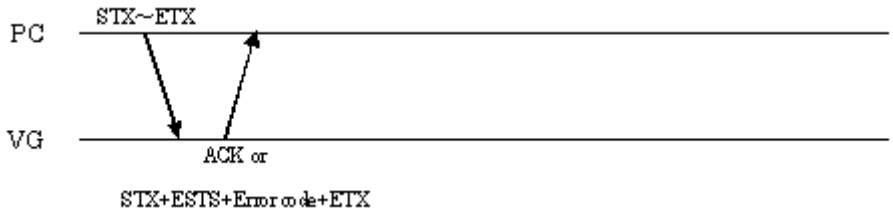
* Sign codes are provided.

5.4 GPSET [1BH]: Dot drawing / CPSET [14H]: Dot clearing

5.4.1 GPSET [1BH]: Dot drawing

Function: This command draws one dot on the graphic plane (1-bit plane). Coordinates are set by the parameters.

Sequence: Type 2



Command:

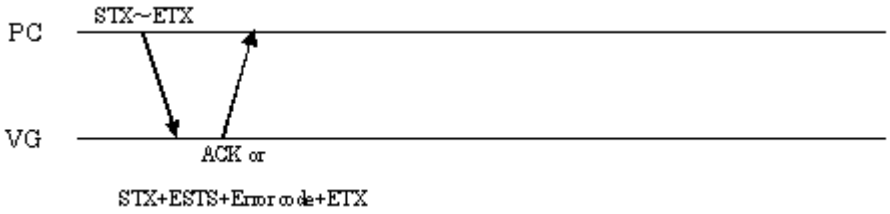
STX	1 byte	02H
GPSET, CPSET	1 byte	1BH, 14H
X coordinate	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Y coordinate	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

Fig. 5-4-1

5.4.2 CPSET [14H]: Dot clearing

Function: This command clears the one dot on the graphic plane (1-bit plane). Coordinates are set by the parameters.

Sequence: Type 2



Parameters:

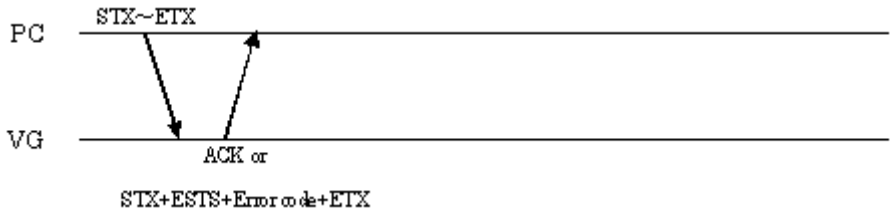
STX	1 byte	02H
CPSET	1 byte	14H
X coordinate	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Y coordinate	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

Fig. 5-4-2

5.5 ACLR [23H]: Drawing planes all clearing

Function: This command clears the graphic and color planes.

Sequence: Type 2



Command:

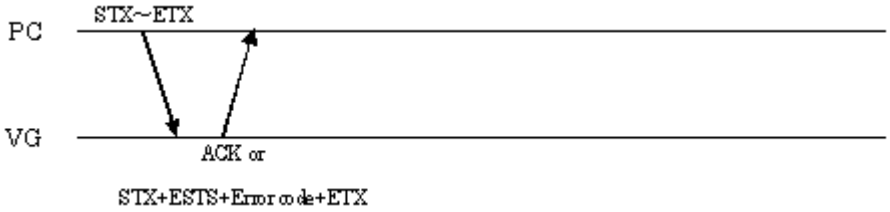
STX	1 byte	02H
ACLR	1 byte	23H
ETX	1 byte	03H

Fig. 5-5-1

5.6 COCLR [24H]: Color clearing

Function: This command clears the graphic and color planes.
It operates in the same way as the ACLR [23H] command.

Sequence: Type 2



Command:

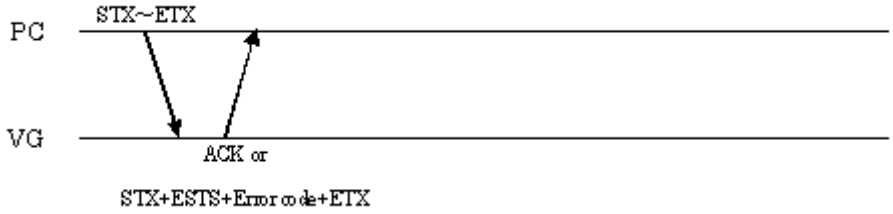
STX	1 byte	02H
COCLR	1 byte	24H
ETX	1 byte	03H

Fig. 5-6-1

5.7 GCLR [25H]: Graphic plane clearing

Function: This command clears the graphic and color planes.
It operates in the same way as the ACLR [23H] command.

Sequence: Type 2



Command:

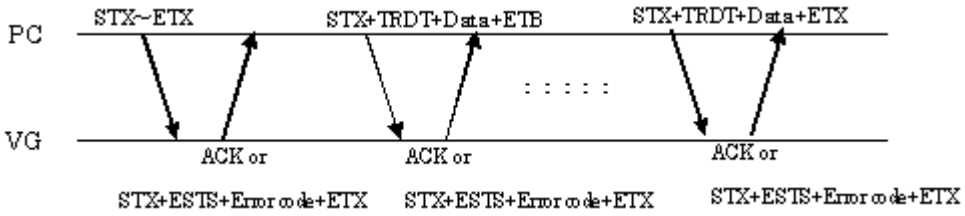
STX	1 byte	02H
GCLR	1 byte	25H
ETX	1 byte	03H

Fig. 5-7-1

5.8 GCHAR [27H]: Character drawing

Function: This command writes the points designated on the graphic plane as a character. The font size and display coordinates are set by the parameters.

Sequence: Type 6



Command:

STX	1 byte	02H
GCHAR	1 byte	27H
Font size	1 byte	“0” = 5×7 “1” = 7×9 inverse “2” = 7x9 “3” = 7x9 inverse “4” = 16x16 “5” = 16x16 inverse
Data delimiter	1 byte	“, “
X coordinate	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Y coordinate	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

Fig. 5-8-1

Data: Character data

STX	1 byte	02H
TRDT	1 byte	10H
Character code	Max. 128 bytes	Max. 128 characters
ETB	1 byte	17H

-
- <Block 1> to <Block h>
-

STX	1 byte	02H
TRDT	1 byte	10H
Character code	Max. 128 bytes	Max. 128 characters
ETX	1 byte	03H

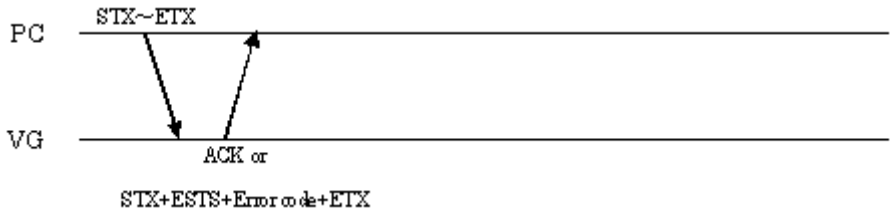
Fig. 5-8-2

5.9 GSQRE [D0H]: Square drawing / CSQRE [D1H]: Square clearing

5.9.1 GSQRE [D0H] Square drawing

Function: This command draws a square on the graphic plane.
The start and end point coordinates are set by the parameters.

Sequence: Type 2



Command:

STX	1 byte	02H
GSQRE, CSQRE	1 byte	D1H
Top left coordinate X	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Bottom right coordinate X 1	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Bottom right coordinate Y 1	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

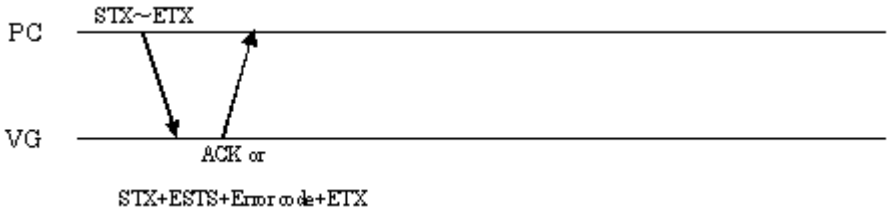
Fig. 5-9-1

* X < X1, Y < Y1

5.9.2 CSQRE [D1H] Square clearing

Function: This command clears the square on the graphic plane (1-bit plane). The start and end point coordinates are set by the parameters.

Sequence: Type 2



Parameters:

STX	1 byte	02H
CSQRE	1 byte	D1H
Top left coordinate X	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Bottom right coordinate X 1	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Bottom right coordinate Y 1	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

Fig. 5-9-2

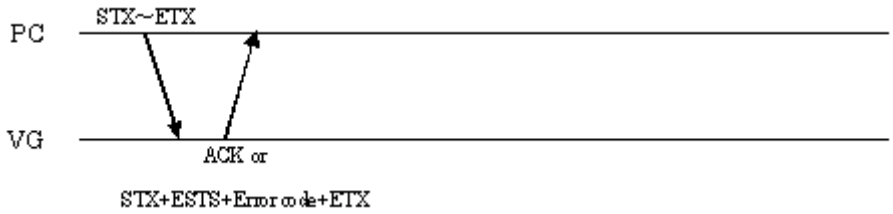
* X < X1, Y < Y1

5.10 GSQPA [31H]: Filled-in square drawing / CSQPA [32H]: Filled-in square clearing

5.10.1 GSQPA [31H]: Filled-in square drawing

Function: This command draws a filled-in square on the graphic plane (1-bit plane). The start and end point coordinates are set by the parameters.

Sequence: Type 2



Command:

STX	1 byte	02H
GSQPA, CSQPA	1 byte	31H, 32H
Top left coordinate X	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Bottom right coordinate X 1	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Bottom right coordinate Y 1	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

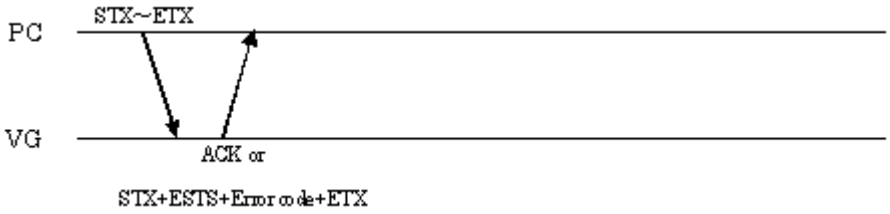
Fig. 5-10-1

* X < X1, Y < Y1

5.10.2 CSQPA [32H]: Filled-in square clearing

Function: This command clears the filled-in square on the graphic plane (1-bit plane). The start and end point coordinates are set by the parameters.

Sequence: Type 2



Parameters:

STX	1 byte	02H
CSQPA	1 byte	32H
Top left coordinate X	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Bottom right coordinate X 1	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Bottom right coordinate Y 1	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

Fig. 5-10-2

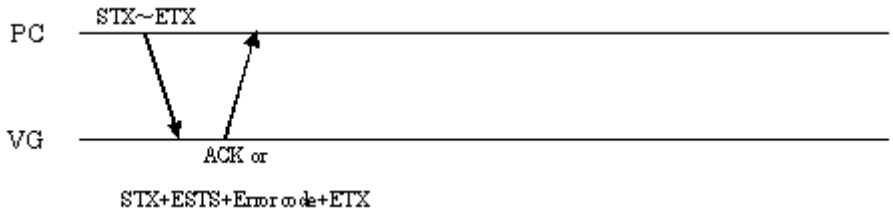
* X < X1, Y < Y1

5.11 WINDW [3CH]: Window drawing / CWIND [2AH]: Window clearing

5.11.1 WINDW [3CH]: Window drawing

Function: This command draws a window. The start and end point coordinates are set by the parameters.

Sequence: Type 2



Command:

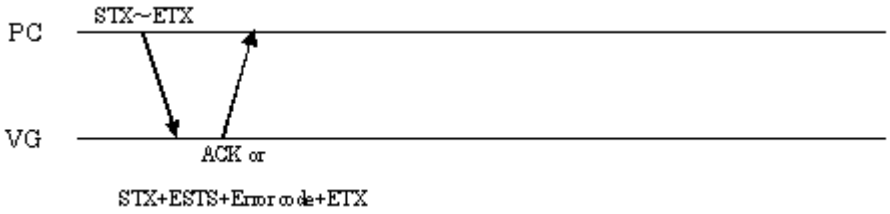
STX	1 byte	02H
WINDW, CWIND	1 byte	3CH, 2AH
Top left coordinate X	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Bottom right coordinate X 1	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Bottom right coordinate Y 1	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

Fig. 5-11-1

5.11.2 CWIND [2AH]: Window clearing

Function: This command clears the window. The start and end point coordinates are set by the parameters.

Sequence: Type 2



Parameters:

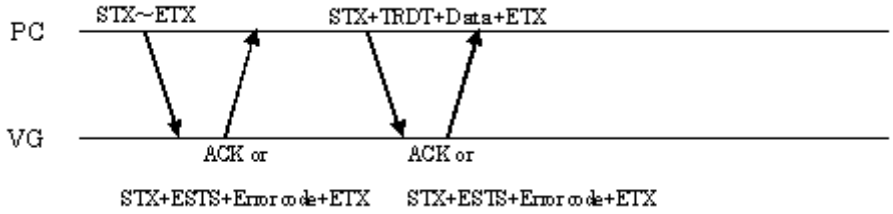
STX	1 byte	02H
CWIND	1 byte	2AH
Top left coordinate X	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Bottom right coordinate X 1	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“, “
Bottom right coordinate Y 1	1 to 4 bytes	“0” to “4095”
ETX	1 byte	03H

Fig. 5-11-2

5.12 WINDCL [3DH]: Window color setting

Function: This command sets the window colors. The R, G and B colors are set by the parameters.

Sequence: Type 4



Command:

STX	1 byte	02H
WINDCL	1 byte	3DH
ETX	1 byte	03H

Fig. 5-12-1

Data:

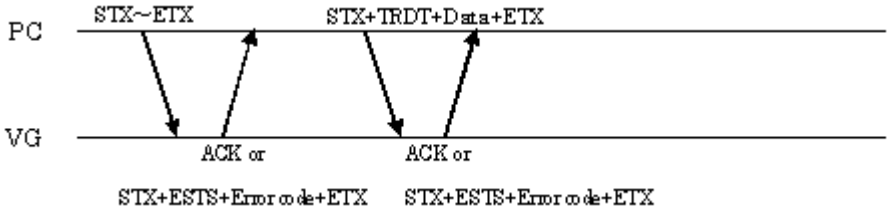
STX	1 byte	02H
TRDT	1 byte	10H
R	3 bytes	“000” to “255”
G	3 bytes	“000” to “255”
B	3 bytes	“000” to “255”
ETX	1 byte	03H

Fig. 5-12-2

5.13 GRPHCL [3BH]: Graphic color setting

Function: This command sets the graphic colors. The R, G and B colors are set by the parameters.

Sequence: Type 4



Command:

STX	1 byte	02H
GRPHCL	1 byte	3BH
ETX	1 byte	03H

Fig. 5-13-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
R	3 bytes	“000” to “255”
G	3 bytes	“000” to “255”
B	3 bytes	“000” to “255”
ETX	1 byte	03H

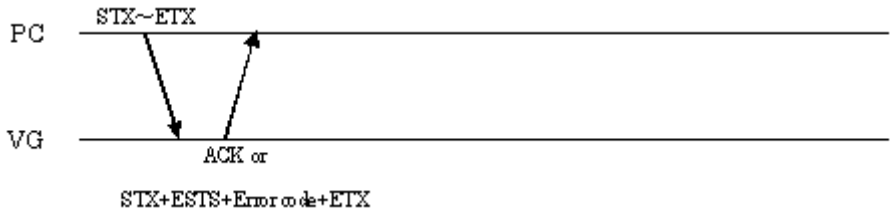
Fig. 5-13-2

5.14 GTRIPA [D2H]: Filled-in triangle drawing / CTRIPA [D3H]: Filled-in triangle clearing

5.14.1 GTRIPA [D2H]: Filled-in triangle drawing

Function: This command draws a filled-in triangle on the graphic plane (1-bit plane). The coordinates of the three apex points are set by the parameters.

Sequence: Type 2



Command:

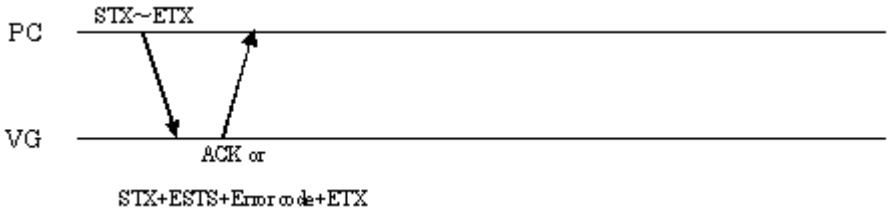
STX	1 byte	02H
GTRIPA, CTRIPA	1 byte	D2H, D3H
Coordinate X1	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Coordinate Y1	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Coordinate X2	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Coordinate Y2	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Coordinate X3	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Coordinate Y3	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
ETX	1 byte	03H

Fig. 5-14-1

5.14.2 CTRIPA [D3H]: Filled-in triangle clearing

Function: This command clears the filled-in triangle on the graphic plane (1-bit plane). The coordinates of the three apex points are set by the parameters.

Sequence: Type 2



Parameters:

STX	1 byte	02H
CTRIPA	1 byte	D3H
Coordinate X1	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Coordinate Y1	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Coordinate X2	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Coordinate Y2	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Coordinate X3	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Coordinate Y3	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
ETX	1 byte	03H

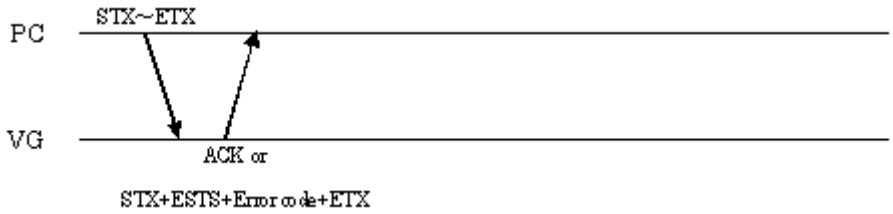
Fig. 5-14-2

5.15 GELPS [D6H]: Ellipse drawing / CELPS [D7H]: Ellipse clearing

5.15.1 GELPS [D6H]: Ellipse drawing

Function: This command draws an ellipse on the graphic plane (1-bit plane).
The center coordinates and radii of the ellipse are set by the parameters.

Sequence: Type 2



Command:

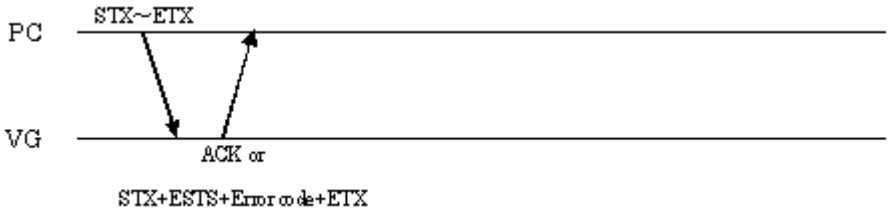
STX	1 byte	02H
GELPS, CELPS	1 byte	D6H, D7H
Center coordinate X	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Center coordinate Y	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Radius RX	1 to 4 bytes	“1” to “4095”
Data delimiter	1 byte	“, “
Radius RY	1 to 4 bytes	“1” to “4095”
ETX	1 byte	03H

Fig. 5-15-1

5.15.2 CELPS [D7H]: Ellipse clearing

Function: This command clears the ellipse on the graphic plane.
The center coordinates and radii of the ellipse are set by the parameters.

Sequence: Type 2



Parameters:

STX	1 byte	02H
GELPS	1 byte	D7H
Center coordinate X	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Center coordinate Y	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Radius RX	1 to 4 bytes	“1” to “4095”
Data delimiter	1 byte	“, “
Radius RY	1 to 4 bytes	“1” to “4095”
ETX	1 byte	03H

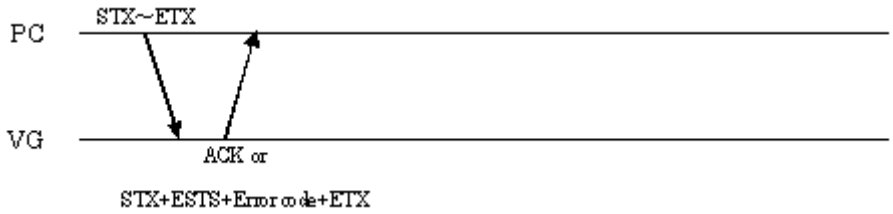
Fig. 5-15-2

5.16 GELPSPA [D8H]: Filled-in ellipse drawing / CELPSPA [D9H]: Filled-in ellipse clearing

5.16.1 GELPSPA [D8H]: Filled-in ellipse drawing

Function: This command draws a filled-in ellipse on the graphic plane (1-bit plane). The center coordinates and radii of the ellipse are designated by the parameters.

Sequence: Type 2



Command:

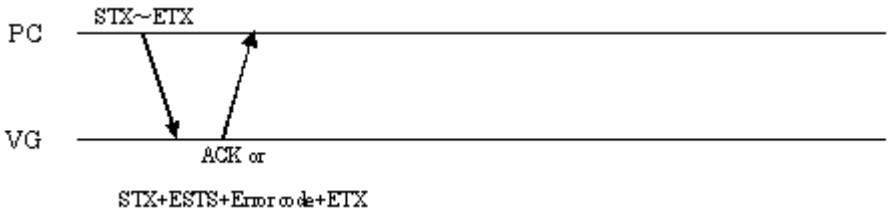
STX	1 byte	02H
GELPSPA, CELPSPA	1 byte	D8H, D9H
Center coordinate X	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Center coordinate Y	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Radius RX	1 to 4 bytes	“1” to “4095”
Data delimiter	1 byte	“, “
Radius RY	1 to 4 bytes	“1” to “4095”
ETX	1 byte	03H

Fig. 5-16-1

5.16.2 CELPSPA [D9H]: Filled-in ellipse clearing

Function: This command clears the filled-in ellipse on the graphic plane (1-bit plane). The center coordinates and radii of the ellipse are designated by the parameters.

Sequence: Type 2



Parameters:

STX	1 byte	02H
CELPSPA	1 byte	D9H
Center coordinate X	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Center coordinate Y	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“, “
Radius RX	1 to 4 bytes	“1” to “4095”
Data delimiter	1 byte	“, “
Radius RY	1 to 4 bytes	“1” to “4095”
ETX	1 byte	03H

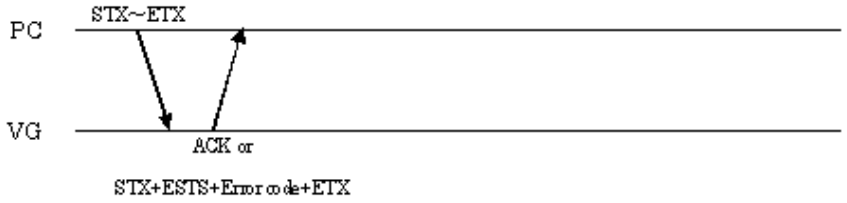
Fig. 5-16-2

5.17 G8CIRC [E0H]: Circle drawing (color designation) G8CIRCPA [E6H]: Filled-in circle drawing (color designation)

5.17.1 G8CIRC [E0H]: Circle drawing (color designation)

Function : This command draws circles on the color bar plane (8-bit plane). The center coordinates and radius and color of the circle are designated by the parameters.

Sequence : Type 2



Parameter :

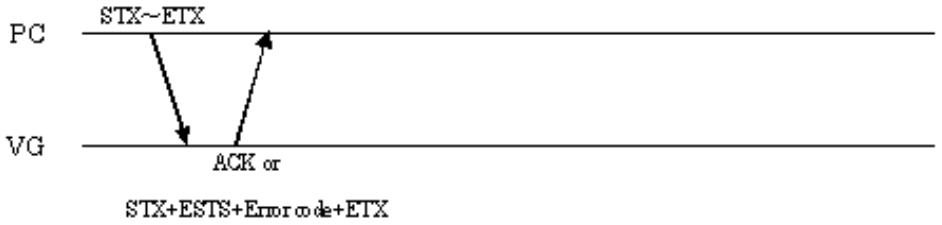
STX	1 byte	02H
G8CIRC	1 byte	E0H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“,”
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“,”
Radius	1 to 4 bytes	“1” to “4095”
Data delimiter	1 byte	“,”
Color	1 to 3 bytes	“0” to “255”
ETX	1 byte	03H

Fig. 5-17-1

5.17.2 G8CIRCPA [E6H]: Filled-in circle drawing (color designation)

Function : This command draws filled-in circles on the color bar plane (8-bit plane). The center coordinates and radius and color of the circle are designated by the parameters.

Sequence : Type 2



Parameter :

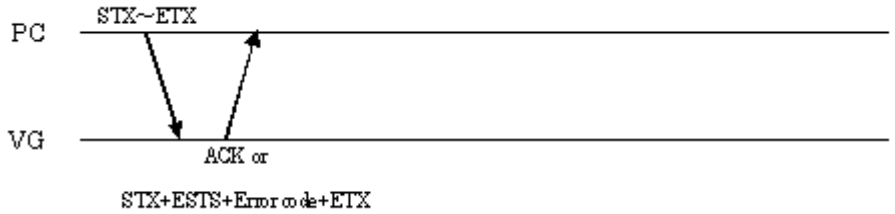
STX	1 byte	02H
G8CIRCPA	1 byte	E6H
Center X coordinate	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“,”
Center Y coordinate	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“,”
Radius	1 to 4 bytes	“1” to “4095”
Data delimiter	1 byte	“,”
Color	1 to 3 bytes	“0” to “255”
ETX	1 byte	03H

Fig. 5-17-2

5.18 G8LINE [E1H]: Straight line drawing (color designation)

Function : This command draws straight lines on the color bar plane (8-bit plane). The start and end point coordinates and the color are designated as the parameters.

Sequence : Type 2



Parameter :

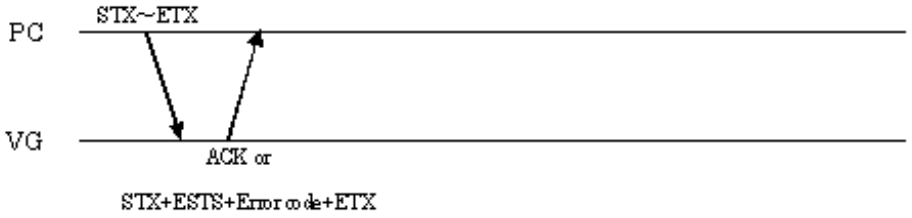
STX	1 byte	02H
G8LINE	1 byte	E1H
Start point coordinate X	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“,”
Start point coordinate Y	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“,”
End point coordinate X1	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms
Data delimiter	1 byte	“,”
End point coordinate Y1	2 to 5 bytes	Sign code + “0” to “4095” e.g. 100→ “0100” Sign code: “0” = +, “1” = - *-2048 (“12048”) to +4096 (“04095”) in numerical terms.
Data delimiter	1 byte	“,”
Color	1 to 3 bytes	“0” to “255”
ETX	1 byte	03H

Fig. 5-18-1

5.19 G8PSET [E2H]: Dot drawing (color designation)

Function : This command draws dots on the color bar plane (8-bit plane). The coordinates and color are designated by the parameters.

Sequence : Type 2



Parameter :

STX	1 byte	02H
G8PSET	1 byte	E2H
Coordinate X	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“,”
Coordinate Y	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“,”
Color	1 to 3 bytes	“0” to “255”
ETX	1 byte	03H

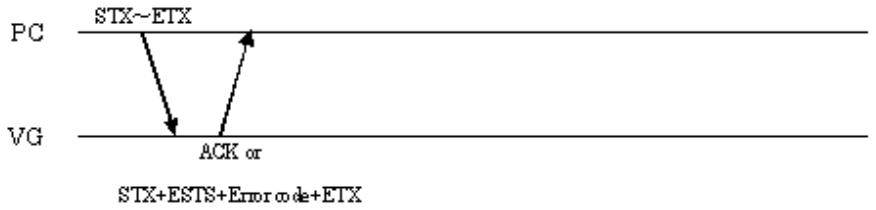
Fig. 5-19-1

5.20 G8SQRE [E4H]: Square drawing (color designation) G8SQPA [E3H]: Filled-in square drawing (color designation)

5.20.1 G8SQRE [E4H]: Square drawing (color designation)

Function : This command draws squares on the color bar plane (8-bit plane). The start and end point coordinates and the color are designated by the parameters.

Sequence : Type 2



Parameter :

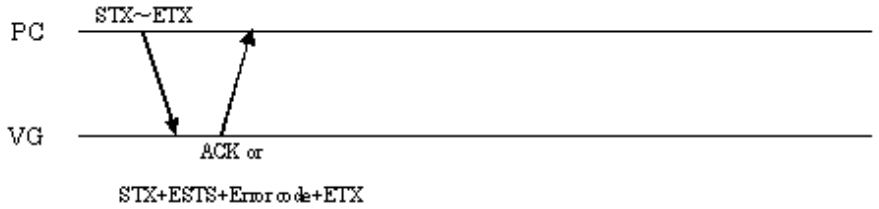
STX	1 byte	02H
G8SQRE	1 byte	E4H
Top left coordinate X	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“,”
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“,”
Bottom right coordinate X1	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“,”
Bottom right coordinate Y1	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“,”
Color	1 to 3 bytes	“0” to “255”
ETX	1 byte	03H

Fig. 5-20-1

5.20.2 G8SQPA [E3H]: Filled-in square drawing (color designation)

Function : This command draws filled-in squares on the color bar plane (8-bit plane). The start and end point coordinates and the color are designated as the parameters.

Sequence : Type 2



Parameter :

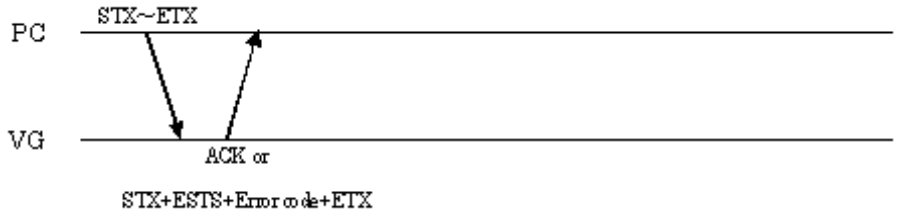
STX	1 byte	02H
G8SQPA	1 byte	E3H
Top left coordinate X	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“,”
Top left coordinate Y	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“,”
Bottom right coordinate X1	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“,”
Bottom right coordinate Y1	1 to 4 bytes	“0” to “4095”
Data delimiter	1 byte	“,”
Color	1 to 3 bytes	“0” to “255”
ETX	1 byte	03H

Fig. 5-20-2

5.21 G8TRIPA [E5H]: Filled-in triangle drawing (color designation)

Function : This command draws filled-in triangles on the color bar plane (8-bit plane). The coordinates of the three points and the color are designated by the parameters.

Sequence : Type 2



Parameter :

STX	1 byte	02H
G8TRIPA	1 byte	E5H
Coordinate X1	2 to 5 bytes	“0” to “4095”, example: 100 → “0100” Sign codes for byte 0: “0” = +, “1” = - Note) In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	“,”
Coordinate Y1	2 to 5 bytes	“0” to “4095”, example: 100 → “0100” Sign codes for byte 0: “0” = +, “1” = - Note) In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	“,”
Coordinate X2	2 to 5 bytes	“0” to “4095”, example: 100 → “0100” Sign codes for byte 0: “0” = +, “1” = - Note) In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	“,”
Coordinate Y2	2 to 5 bytes	“0” to “4095”, example: 100 → “0100” Sign codes for byte 0: “0” = +, “1” = - Note) In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	“,”
Coordinate X3	2 to 5 bytes	“0” to “4095”, example: 100 → “0100” Sign codes for byte 0: “0” = +, “1” = - Note) In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	“,”
Coordinate Y3	2 to 5 bytes	“0” to “4095”, example: 100 → “0100” Sign codes for byte 0: “0” = +, “1” = - Note) In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	“,”
Color	1 to 3 bytes	“0” to “255”
ETX	1 byte	03H

Fig. 5-21-1

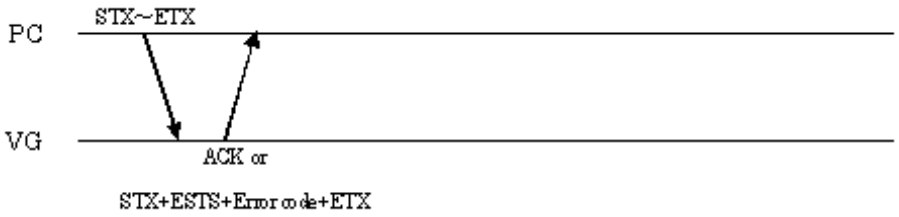
* Execute this command after having set the sync signals.

5.22 G8ELPS [E7H]: Ellipsis drawing (color designation) G8ELPSPA [E8H]: Filled-in ellipsis drawing (color designation)

5.22.1 G8ELPS [E7H]: Ellipsis drawing (color designation)

Function : This command draws ellipses on the color bar plane (8-bit plane). The center coordinates, radii and color of the ellipse are designated by the parameters.

Sequence : Type 2



Parameter :

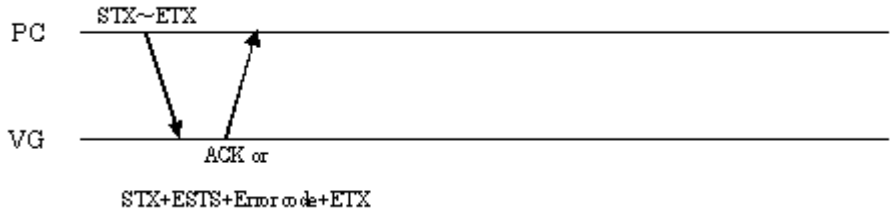
STX	1 byte	02H
G8ELPS	1 byte	E7H
Center X coordinate	2 to 5 bytes	“0” to “4095”, example: 100 → “0100” Sign codes for byte 0: “0” = +, “1” = - Note) In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	“,”
Center Y coordinate	2 to 5 bytes	“0” to “4095”, example: 100 → “0100” Sign codes for byte 0: “0” = +, “1” = - Note) In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	“,”
Radius RX	1 to 4 bytes	“1” to “4095”
Data delimiter	1 byte	“,”
Radius RY	1 to 4 bytes	“1” to “4095”
Data delimiter	1 byte	“,”
Color	1 to 3 bytes	“0” to “255”
ETX	1 byte	03H

Fig. 5-22-1

5.22.2 G8ELPSPA [E8H]: Filled-in ellipsis drawing (color designation)

Function : This command draws filled-in ellipses on the color bar plane (8-bit plane). The center coordinates, radii and color of the ellipse are designated by the parameters.

Sequence : Type 2



Parameter :

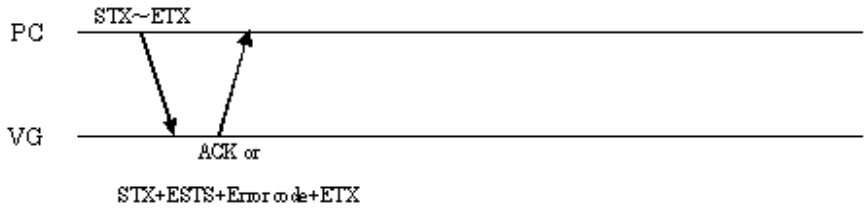
STX	1 byte	02H
G8ELPSPA	1 byte	E8H
Center X coordinate	2 to 5 bytes	“0” to “4095”, example: 100 → “0100” Sign codes for byte 0: “0” = +, “1” = - Note) In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	“,”
Center Y coordinate	2 to 5 bytes	“0” to “4095”, example: 100 → “0100” Sign codes for byte 0: “0” = +, “1” = - Note) In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	“,”
Radius RX	1 to 4 bytes	“1” to “4095”
Data delimiter	1 byte	“,”
Radius RY	1 to 4 bytes	“1” to “4095”
Data delimiter	1 byte	“,”
Color	1 to 3 bytes	“0” to “255”
ETX	1 byte	03H

Fig. 5-22-2

5.23 G8COLOR [EAH]: Color mode setting

Function : This command sets the display colors on the color bar plane (8-bit plane). The color mode is designated by the parameters.

Sequence : Type 2



Parameter :

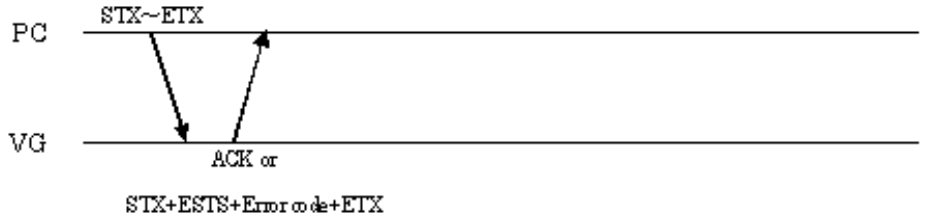
STX	1 byte	02H
G8COLOR	1 byte	EAH
Color mode	1 byte	“0” = Gray mode with 256 gradations “1” = 256-color mode
ETX	1 byte	03H

Fig. 5-23-1

5.24 G8COLOR2 [ECH]: Palette setting

Function : This command sets the display colors on the color bar plane (8-bit plane). The palette number and R, G and B colors are designated by the parameters.

Sequence : Type 2



Parameter :

STX	1 byte	02H
G8COLOR2	1 byte	ECH
Palette No.	1 to 3 bytes	“0” to “255”
Data delimiter	1 byte	“,”
R	1 to 3 bytes	“0” to “255”
Data delimiter	1 byte	“,”
G	1 to 3 bytes	“0” to “255”
Data delimiter	1 byte	“,”
B	1 to 3 bytes	“0” to “255”
ETX	1 byte	03H

Fig. 5-24-1

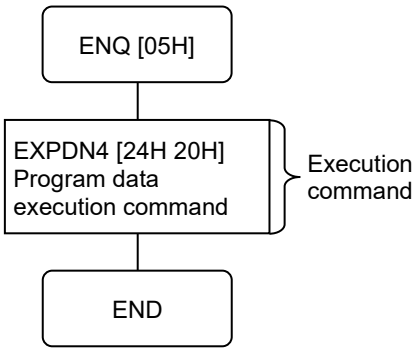
6 EXAMPLES OF USAGE

6.1 Executing the internal timing data

Example: If internal timing data No.1001 is to be executed, then:

Tim/Pat No.	
No.	1001

6.1.1 Flow of commands used



6.1.2 Command settings

Program data execution: Command [24H 20H]

Parameters:

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
EXPDN4	0×24	“$”
	0×20	
Program number	0×31	“1”
	0×30	“0”
	0×30	“0”
	0×31	“1”
Delimiter	0×2C	“,“
Execution mode (Timing)	0×31	“1”
ETX	0×03	

* ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.2 Setting and executing the H and V timing data

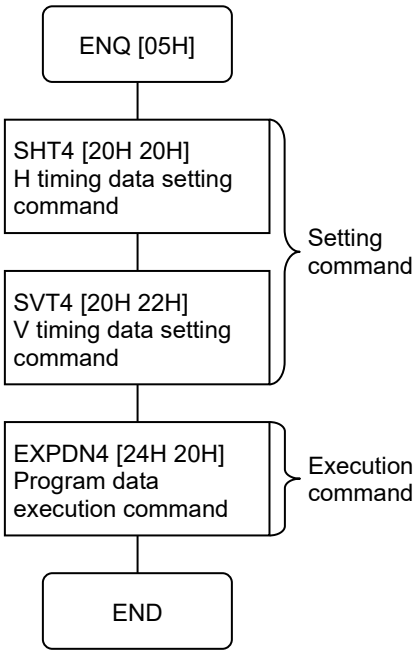
The command settings used from setting the H and V timing data to executing the data are listed below.

Example: If the H and V timing data shown below are to be set in program No.0001 and executed, then:

H Timing		V Timing		
µ/dot	1	SCAN MODE	0	
Repetition	1	SERRATION	0 H	
DotClock	65.00 MHz	ENQ ON/OFF	0 H	
H-PERIOD	1352 dots	V-TOTAL	804 H	
H-DISPLAY	1024 dots	V-SYNC	4 H	
H-SYNC	96 dots	ENQ-FP	0 H	1st field
H-BACK-PORCH	202 dots	ENQ-BP	0 H	
HD-START	0 dot	V-BACK-PORCH	29 H	
HD-WIDTH	0 dot	V-DISPLAY	768 H	
		VD-START	0 H	
		VD-WIDTH	0 H	
		V-TOTAL2	80 H	2nd field
		V-SYNC2	1 H	
		ENQ-FP2	0 H	
		ENQ-BP2	0 H	
		V-BACK-PORCH2	0 H	
		V-DISPLAY2	2 H	
		VD-START2	0 H	
		VD-WIDTH2	0 H	
		TvMode	Other	
		Category1 to 32	0	

Note) the above data set Scan Mode as “0 (non-interlace)”. Therefore, only the 1st field data is available as field data. However, if you set all 0 in the 2nd field, it will show data area check error. Therefore, the example sets the same data of the 1st field in the 2nd field.

6.2.1 Flow of commands used



6.2.2 Settings established using H timing setting command

H timing data registration: Command [20H 20H]

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
SHT4	0×20	
	0×20	
Program number	0×31	“1”
Delimiter	0×2C	“,“
µ/dot = dot	0×31	“1”
Delimiter	0×2C	“,“
Repetition	0×31	“1”
Delimiter	0×2C	“,“
DotClock = 65000000 Hz	0×36	“6”
	0×35	“5”
	0×30	“0”
	0×30	“0”
	0×30	“0”
	0×30	“0”
	0×30	“0”
	0×30	“0”
Delimiter	0×2C	“,“
H-PERIOD = 1352	0×31	“1”
	0×33	“3”
	0×35	“5”
	0×32	“2”
Delimiter	0×2C	“,“
H-DISPLAY = 1024	0×31	“1”
	0×30	“0”
	0×32	“2”
	0×34	“4”
Delimiter	0×2C	“,“
H-SYNC = 96	0×39	“9”
	0×36	“6”
Delimiter	0×2C	“,“
H-BACK-PORCH = 202	0×32	“2”
	0×30	“0”
	0×32	“2”
Delimiter	0×2C	“,“
HD-START = 0	0×30	“0”
Delimiter	0×2C	“,“
HD-WIDTH = 0	0×30	“0”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.2.3 Settings established using V timing setting command

V timing data registration: Command [20H 22H]

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
SVT4	0×20	
	0×22	
Program number	0×31	“1”
Delimiter	0×2C	“,“
SCAN MODE = NonInterlace	0×30	“0”
Delimiter	0×2C	“,“
SERRATION = OFF	0×30	“0”
Delimiter	0×2C	“,“
ENQ ON/OFF = OFF	0×30	“0”
Delimiter	0×2C	“,“
V-TOTAL = 804.0	0×38	“8”
	0×30	“0”
	0×34	“4”
	0×30	“0”
Delimiter	0×2C	“,“
V-SYNC = 4.0	0×34	“4”
	0×30	“0”
Delimiter	0×2C	“,“
ENQ-FP = 0	0×30	“0”
	0×30	“0”
	0×30	“0”
Delimiter	0×2C	“,“
ENQ-BP = 0	0×30	“0”
	0×30	“0”
	0×30	“0”
Delimiter	0×2C	“,“
V-BACK-PORCH = 29.0	0×32	“2”
	0×39	“9”
	0×30	“0”
Delimiter	0×2C	“,“
V-DISPLAY = 768	0×37	“7”
	0×36	“6”
	0×38	“8”
Delimiter	0×2C	“,“
VD-START = 0	0×30	“0”
Delimiter	0×2C	“,“
VD-WIDTH = 0	0×30	“0”
Delimiter	0×2C	“,“
V-TOTAL2 = 804.0	0x38	"8"
	0x30	"0"
	0x34	"4"
	0x30	"0"
Delimiter	0×2C	“,“
V-SYNC2 = 4.0	0×34	“4”
	0×30	“0”
Delimiter	0×2C	“,“
ENQ-FP2 = 0	0×30	“0”
Delimiter	0×2C	“,“
ENQ-BP2 = 0	0×30	“0”
Delimiter	0×2C	“,“
V-BACK-PORCH2 = 29.0	0x32	"2"
	0x39	"9"
	0x30	"0"
Delimiter	0×2C	“,“
V-DISPLAY2 = 768	0x37	"7"
	0x36	"6"
	0x38	"8"

Delimiter	0×2C	“, “
VD-START2 = 0	0×30	“0”
Delimiter	0×2C	“, “
VD-WIDTH2 = 0	0×30	“0”
Delimiter	0×2C	“, “
TV Mode = Other	0×30	“0”
Delimiter	0×2C	“, “
Category1 = Disable	0×30	“0”
Category2 = Disable	0×30	“0”
≀		
Category31 = Disable	0×30	“0”
Category32 = Disable	0×30	“0”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.2.4 Settings established using program data execution command

Program data execution: Command [24H 20H]

Parameters:

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
EXPDN4	0×24	“$”
	0×20	
Program number	0×31	“1”
Delimiter	0×2C	“, “
Execution mode (Timing)	0×31	“1”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

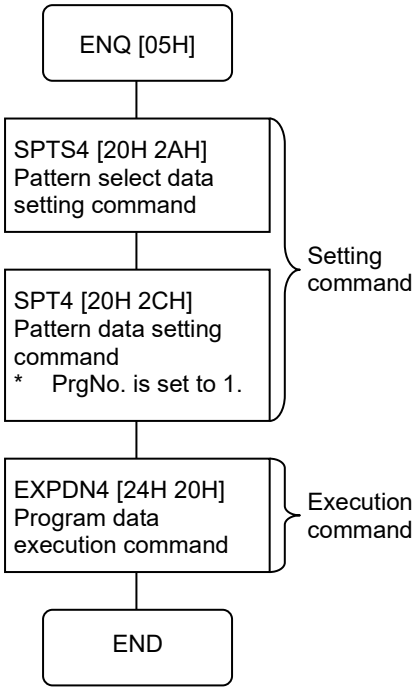
6.3 Setting and executing the pattern data

Example: executing the color bar data in the below data:

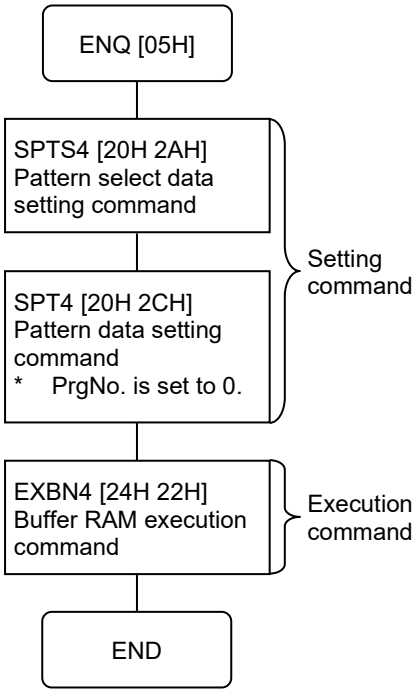
Color bar	
Type	Custom
Mode	%
Valid number	16
H width	6.3%
V width	6.3%
Direction H/V	Horizontal
Color specification 1	White
Color specification 2	Yellow
Color specification 3	Cyan
Color specification 4	Green
Color specification 5	Magenta
Color specification 6	Red
Color specification 7	Blue
Color specification 8	Black
Color specification 9	White
Color specification 10	Yellow
Color specification 11	Cyan
Color specification 12	Green
Color specification 13	Magenta
Color specification 14	Red
Color specification 15	Blue
Color specification 16	Black
Level 1 to 16	100%

6.3.1 Flow of commands used

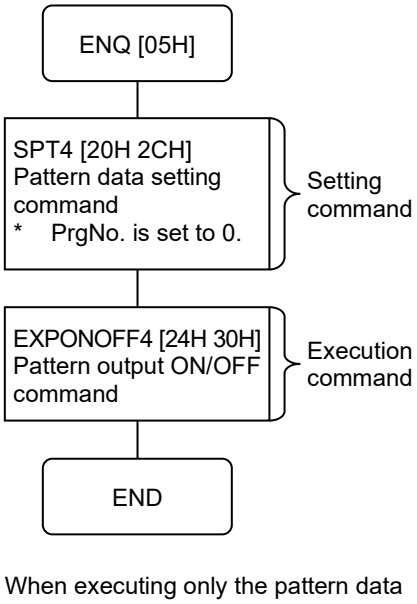
(1) When the pattern data is to be registered on the CF card, and executed (if the data is to be set in program No.1)



(2) When the pattern data is to be sent to the buffer RAM without registering it on the CF card, and executed



When executing the data in each program



When executing only the pattern data

6.3.2 Settings established using pattern select data setting command

Pattern select data registration: Command [20H 2AH]

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VGCMD4	0×FD	
SPTS4	0×20	
	0×2A	“*”
Program number	0×31	“1”
Delimiter	0×2C	“,“
Pattern select code = R	0×30	“0”
Delimiter	0×2C	“,“
Pattern select code = G	0×31	“1”
Delimiter	0×2C	“,“
Pattern select code = B	0×32	“2”
Delimiter	0×2C	“,“
Pattern select code = Color Bar	0×31	“1”
	0×35	“5”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.3.3 Settings established using pattern data setting command

Pattern data registration: Command [20H 2CH]

Parameters:

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
SPT4	0×20	
	0×2C	“,“
Program number	0×31	“1”
Delimiter	0×2C	“,“
Pattern block No.	0×31	“1”
	0×30	“0”
Delimiter	0×2C	“,“
Type = Custom	0×30	“0”
Delimiter	0×2C	“,“
MODE = %	0×30	“0”
Delimiter	0×2C	“,“
Valid number = 16	0×31	“1”
	0×36	“6”
Delimiter	0×2C	“,“
H width = 6.3%	0×36	“6”
	0×33	“3”
Delimiter	0×2C	“,“
V width = 6.3%	0×36	“6”
	0×33	“3”
Delimiter	0×2C	“,“
Direction H/V = Horizontal direction	0×30	“0”
Delimiter	0×2C	“,“
Color specification 1 = White	0×37	“7”
Color specification 2 = Yellow	0×33	“3”
Color specification 3 = Cyan	0×36	“6”
Color specification 4 = Green	0×32	“2”
Color specification 5 = Magenta	0×35	“5”
Color specification 6 = Red	0×31	“1”
Color specification 7 = Blue	0×34	“4”
Color specification 8 = Black	0×30	“0”
Color specification 9 = White	0×37	“7”
Color specification 10 = Yellow	0×33	“3”
Color specification 11 = Cyan	0×36	“6”
Color specification 12 = Green	0×32	“2”
Color specification 13 = Magenta	0×35	“5”
Color specification 14 = Red	0×31	“1”
Color specification 15 = Blue	0×34	“4”
Color specification 16 = Black	0×30	“0”
Delimiter	0×2C	“,“
Level 0 = 100%	0×31	“1”
	0×30	“0”
	0×30	“0”
	0×30	“0”
Delimiter	0×2C	“,“
Level 1 = 100%	0×31	“1”
	0×30	“0”
	0×30	“0”
	0×30	“0”
Delimiter	0×2C	“,“
↓		

Level 14 = 100%	0×31	“1”
	0×30	“0”
	0×30	“0”
	0×30	“0”
Delimiter	0×2C	“,“
Level 15 = 100%	0×31	“1”
	0×30	“0”
	0×30	“0”
	0×30	“0”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.3.4 Settings established using program data execution command

Program data execution: Command [24H 20H]

Parameters:

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
EXPDN4	0×24	“$”
	0×20	
Program number	0×31	“1”
Delimiter	0×2C	“,“
Execution mode (Pattern)	0×32	“2”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.3.5 Settings established using program data execution command (Buffer RAM)

Buffer RAM program data execution: Command [24H 22H]

Parameters:

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
EXBN4	0×24	“$”
	0×22	““”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.3.6 Settings established using pattern data output ON/OFF setting command

Pattern data output ON/OFF setting: Command [20H 30H]

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VGCMD4	0×FD	
EXPONOFF4	0×20	
	0×30	“0”
Mode	0×30	“0”
Delimiter	0×2C	“, “
Pattern select code = R	0×30	“0”
Delimiter	0×2C	“, “
Pattern select code = G	0×31	“1”
Delimiter	0×2C	“, “
Pattern select code = B	0×32	“2”
Delimiter	0×2C	“, “
Pattern select code = ColorBar	0×31	“1”
	0×35	“5”
ETX	0×03	

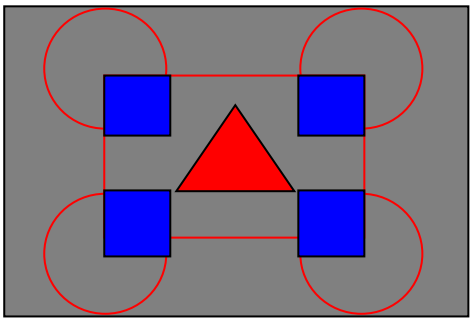
Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.4 Setting and executing the drawing pattern data

Example: If a pattern such as the one shown below is to be drawn, then:

*1: It is assumed that the timing data in question has been set ahead of time and that internal timing data No.1616 has been set.

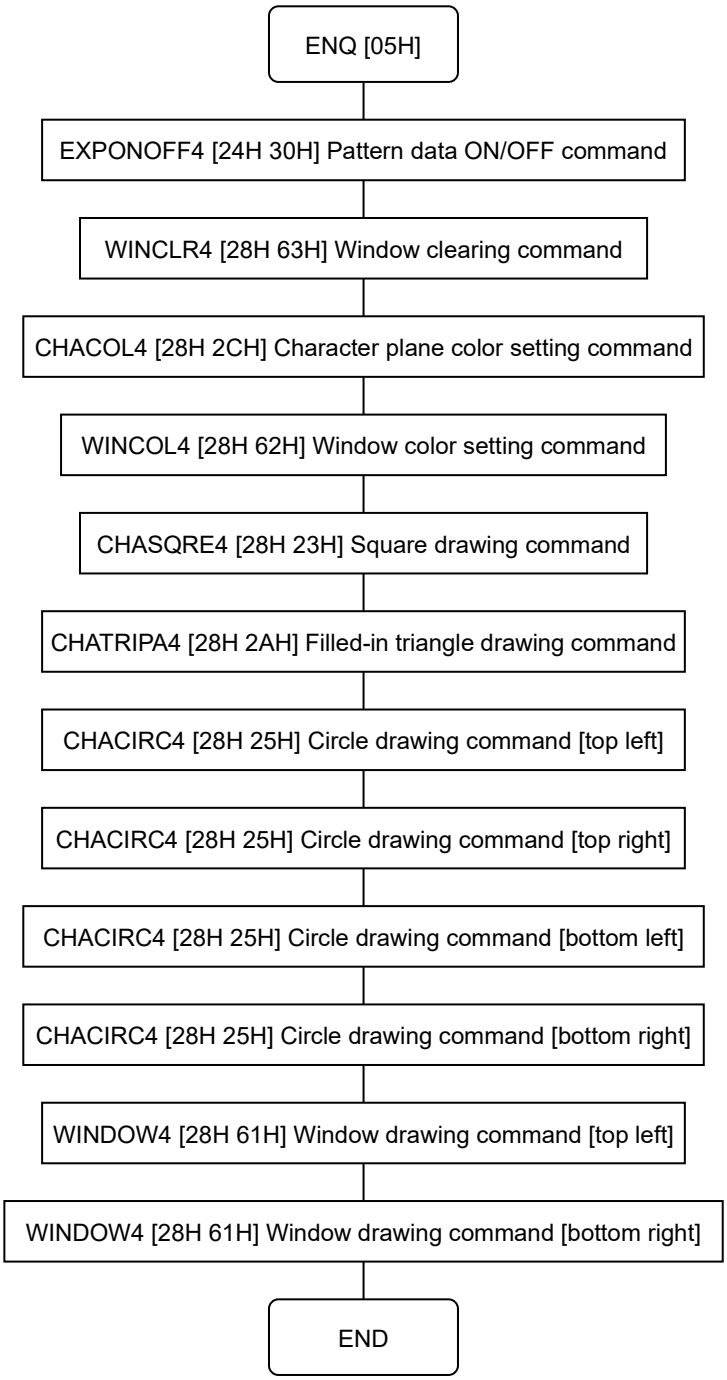
*2: It is also assumed that a 50% gray raster pattern is output as the background pattern.



The drawing functions used are as listed below.

Character plane	
Circle drawing	Top left (256, 192), Radius 150
	Top right (768, 192), Radius 150
	Bottom left (256, 576), Radius 150
	Bottom right (768, 576), Radius 150
Filled-in triangle drawing	(512, 268), (412, 442), (612, 442)
Square drawing	(256, 192), (768, 576)
Character plane color setting	R:255, G:0, B:0
Window plane	
Window drawing	Top left (256, 192), (406, 342)
	Top right (618, 192), (768, 342)
	Bottom left (256, 426), (406, 576)
	Bottom right (618, 426), (768, 576)
Window plane color settings	R:0, G:0, B:255

6.4.1 Flow of commands used



6.4.2 Settings established using pattern data output ON/OFF setting command

Pattern data output ON/OFF setting: Command [20H 30H]

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VGCMD4	0×FD	
EXPONOFF4	0×20	
	0×30	“0”
Mode	0×30	“0”
Delimiter	0×2C	“,“
Pattern select code = R	0×30	“0”
Delimiter	0×2C	“,“
Pattern select code = G	0×31	“1”
Delimiter	0×2C	“,“
Pattern select code = B	0×32	“2”
Delimiter	0×2C	“,“
Pattern select code = Raster	0×31	“1”
	0×30	“0”
Delimiter	0×2C	“,“
Pattern select code = Window	0×31	“1”
	0×39	“9”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.4.3 Settings established using window pattern clearing command

Pattern data output ON/OFF setting: Command [28H 63H]

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VGCMD4	0×FD	
WINCLR4	0×28	“(“
	0×63	“c”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.4.4 Settings established using character plane color setting command

Character plane color setting: Command [28H 2CH]

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
CHACOL4	0×28	“(“
	0×2C	“,“
R	0×32	“2”
	0×35	“5”
	0×35	“5”
Delimiter	0×2C	“,“
G	0×30	“0”
Delimiter	0×2C	“,“
B	0×30	“0”
Delimiter	0×2C	“,“
Bit Mode	0×38	“8”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.4.5 Settings established using window color setting command

Window color setting: Command [28H 62H]

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
WINCOL4	0×28	“(“
	0×62	“b”
R	0×30	“0”
Delimiter	0×2C	“,“
G	0×30	“0”
Delimiter	0×2C	“,“
B	0×31	“2”
	0×35	“5”
	0×35	“5”
Delimiter	0×2C	“,“
Bit Mode	0×38	“8”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.4.6 Settings established using square drawing command

Square drawing: Command [28H 23H]

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
CHASQRE4	0×28	“(“
	0×23	“#”
Top left coordinate X	0×32	“2”
	0×35	“5”
	0×36	“6”
Delimiter	0×2C	“,“
Top left coordinate Y	0×31	“1”
	0×39	“9”
	0×32	“2”
Delimiter	0×2C	“,“
Bottom right coordinate X	0×31	“7”
	0×30	“6”
	0×32	“8”
Delimiter	0×2C	“,“
Bottom right coordinate Y	0×35	“5”
	0×37	“7”
	0×36	“6”
Delimiter	0×2C	“,“
Drawing mode	0×31	“1”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.4.7 Settings established using filled-in triangle drawing command

Filled-in triangle drawing: Command [28H 2AH]

Parameters:

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
CHATRIPA4	0×28	“(“
	0×2A	“*”
Coordinate X1	0×30	“0”
	0×35	“5”
	0×31	“1”
	0×32	“2”
Delimiter	0×2C	“,“
Coordinate Y1	0×30	“0”
	0×32	“2”
	0×36	“6”
	0×38	“8”
Delimiter	0×2C	“,“
Coordinate X2	0×30	“0”
	0×34	“4”
	0×31	“1”
	0×32	“2”
Delimiter	0×2C	“,“
Coordinate Y2	0×30	“0”
	0×34	“4”
	0×34	“4”
	0×32	“2”
Delimiter	0×2C	“,“
Coordinate X3	0×30	“0”
	0×36	“6”
	0×31	“1”
	0×32	“2”
Delimiter	0×2C	“,“
Coordinate Y3	0×30	“0”
	0×34	“4”
	0×34	“4”
	0×32	“2”
Delimiter	0×2C	“,“
Drawing mode	0×31	“1”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.4.8 Settings established using circle drawing command

Circle drawing: Command [28H 25H]

(1) Circle at top left

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
CHACIRC4	0×28	“(“
	0×25	“%”
Center X coordinate	0×30	“0”
	0×32	“2”
	0×35	“5”
	0×36	“6”
Delimiter	0×2C	“,“
Center Y coordinate	0×30	“0”
	0×31	“1”
	0×39	“9”
	0×32	“2”
Delimiter	0×2C	“,“
Radius	0×31	“1”
	0×35	“5”
	0×30	“0”
Delimiter	0×2C	“,“
Drawing mode	0×31	“1”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

(2) Circle at top right

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
CHACIRC4	0×28	“(“
	0×25	“%”
Center X coordinate	0×30	“0”
	0×37	“7”
	0×36	“6”
	0×38	“8”
Delimiter	0×2C	“,“
Center Y coordinate	0×30	“0”
	0×31	“1”
	0×39	“9”
	0×32	“2”
Delimiter	0×2C	“,“
Radius	0×31	“1”
	0×35	“5”
	0×30	“0”
Delimiter	0×2C	“,“
Drawing mode	0×31	“1”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

(3) Circle at bottom left

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
CHACIRC4	0×28	“(“
	0×25	“%”
Center X coordinate	0×30	“0”
	0×32	“2”
	0×35	“5”
	0×36	“6”
Delimiter	0×2C	“,“
Center Y coordinate	0×30	“0”
	0×35	“5”
	0×37	“7”
	0×36	“6”
Delimiter	0×2C	“,“
Radius	0×31	“1”
	0×35	“5”
	0×30	“0”
Delimiter	0×2C	“,“
Drawing mode	0×31	“1”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

(4) Circle at bottom right

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
CHACIRC4	0×28	“(“
	0×25	“%”
Center X coordinate	0×30	“0”
	0×37	“7”
	0×36	“6”
	0×38	“8”
Delimiter	0×2C	“,“
Center Y coordinate	0×30	“0”
	0×35	“5”
	0×37	“7”
	0×36	“6”
Delimiter	0×2C	“,“
Radius	0×30	“0”
	0×31	“1”
	0×35	“5”
	0×30	“0”
Delimiter	0×2C	“,“
Drawing mode	0×31	“1”
ETX	0×03	

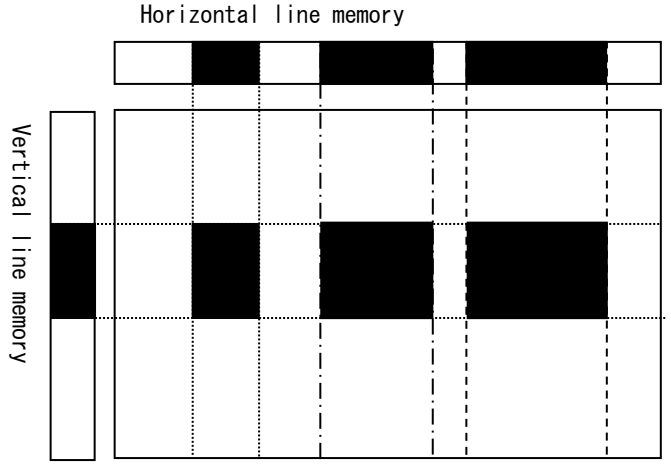
Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

6.4.9 Settings established using window drawing command

Window drawing command

To edit the Window, settings is done by line memory for Window
It is configured by Horizontal line memory and Vertical line memory as below.

Window will be drawn as a “product (and)” configured by Horizontal line memory and Vertical line memory.



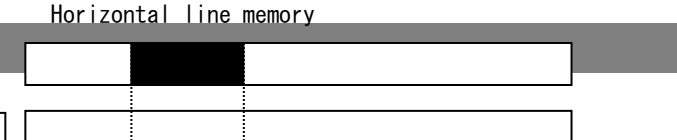
Window drawing: Command [28H 61H]

(1) Window at top left

Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
WINDOW4	0×28	“(“
	0×61	“a”
Top left coordinate X	0×32	“2”
	0×35	“5”
	0×36	“6”
Delimiter	0×2C	“,“
Top left coordinate Y	0×31	“1”
	0×39	“9”
	0×32	“2”
Delimiter	0×2C	“,“
Bottom right coordinate X	0×34	“4”
	0×30	“0”
	0×36	“6”
Delimiter	0×2C	“,“
Bottom right coordinate Y	0×33	“3”
	0×34	“4”
	0×32	“2”
ETX	0×03	

Note) ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

If only setting 1. is set, window will be drawn as below.

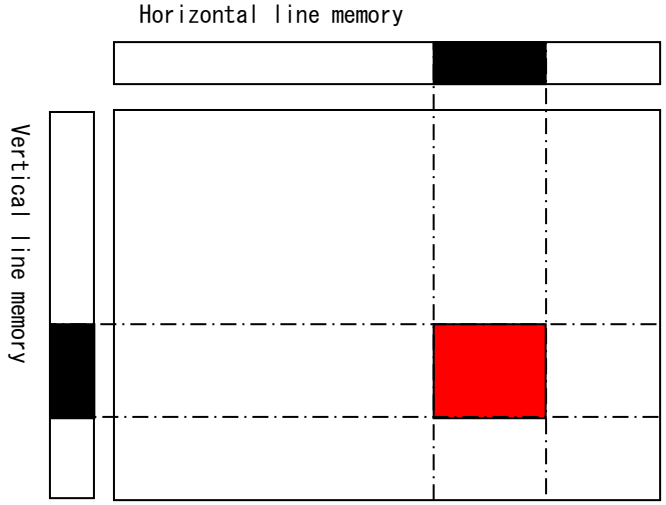


(2) Window at bottom right

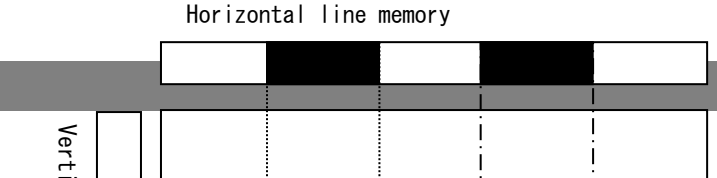
Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
WINDOW4	0×28	“(“
	0×61	“a”
Top left coordinate X	0×36	“6”
	0×31	“1”
	0×38	“8”
Delimiter	0×2C	“,“
Top left coordinate Y	0×34	“4”
	0×32	“2”
	0×36	“6”
Delimiter	0×2C	“,“
Bottom right coordinate X	0×37	“7”
	0×36	“6”
	0×38	“8”
Delimiter	0×2C	“,“
Bottom right coordinate Y	0×35	“5”
	0×37	“7”
	0×36	“6”
ETX	0×03	

* ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

If only setting 2. is set, window will be drawn as below.



If both setting 1. and 2. are set, 4 window will be drawn as below.



TERMINAL COMMAND

Instruction Manual Ver. 1.28

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