
VG Series Terminal Commands

Instruction Manual

Ver 1.06

Supporting Models : VG-870/VG-871/VG-880

VG Series

Terminal Commands

Instruction Manual

2009.12

Ver.1.06

Supporting Models : VG-870/VG-871/VG-880

CONTENTS

Concerning the configuration of this manual.....	ix
Chapter 1 CONCERNING THE TERMINAL COMMANDS.....	1
1.1 Introduction.....	1
1.2 Communication specifications	1
1.2.1 RS-232C	1
1.2.2 LAN	2
1.3 Connection configuration.....	2
1.3.1 RS-232C	2
1.3.2 LAN	2
1.4 Differences in commands from conventional VG series	3
1.5 Description of terms used	4
1.6 Transmission control characters, data and error commands	4
1.7 Error statuses	5
1.8 Command formats	7
1.8.1 New commands	7
1.8.2 Old commands.....	7
1.9 Basic formats	8
1.9.1 When setting commands are sent.....	8
1.9.2 When the get command is sent.....	8
1.10 Communication protocol.....	9
1.10.1 Type 1	9
1.10.2 Type 2	10
1.10.3 Type 3	11
1.10.4 Type 4	12
1.10.5 Type 5	13
1.10.6 Type 6	14
1.10.7 Type 7	15
1.11 Precaution drawing command	15
Chapter 2 INDIVIDUAL FORMATS FOR VG CONTROL COMMANDS.....	17
2.1 SHT4 [20H 20H]: H timing data registration.....	17
2.2 LHT4 [20H 21H]: H timing data readout.....	18
2.3 SVT4 [20H 22H]: V timing data registration	19
2.4 LVT4 [20H 23H]: V timing data readout	21
2.5 SOT4 [20H 24H]: Output condition data registration.....	23
2.6 LOT4 [20H 25H]: Output condition data readout	27
2.7 SPAR4 [20H 26H]: Parallel data registration	31
2.8 LPAR4 [20H 27H]: Parallel data readout	33
2.9 SLVDS4 [20H 28H]: LVDS data registration	35
2.10 LLVDS4 [20H 29H]: LVDS data readout	36
2.11 SPTS4 [20H 2AH]: Pattern select data registration.....	37
2.12 LPTS4 [20H 2BH]: Pattern select data readout	39

2.13 SPT4 [20H 2CH]: Pattern data registration.....	40
2.14 LPT4 [20H 2DH]: Pattern data readout.....	50
2.15 SACT4 [20H 2EH]: Action data registration	60
2.16 LACT4 [20H 2FH]: Action data readout	63
2.17 SWLF4 [20H 30H]: Window level flicker data registration	66
2.18 LWFL4 [20H 31H]: Window level flicker data readout.....	67
2.19 SAAD4 [20H 32H]: Audio data registration (Analog).....	68
2.20 LAAD4 [20H 33H]: Audio data readout (Analog).....	69
2.21 SDAD4 [20H 34H]: Audio data registration (Digital).....	70
2.22 LDAD4 [20H 35H]: Audio data readout (Digital).....	72
2.23 SHDMI4 [20H 36H]: HDMI data registration	74
2.24 LHDMI4 [20H 37H]: HMDI data acquisition	75
2.25 SIF4 [20H 38H]: InfoFrame data registration	76
2.26 LIF4 [20H 39H]: InfoFrame data acquisition	79
2.27 SACP4 [20H 3AH]: ACP data registration.....	82
2.28 LACP4 [20H 3BH]: ACP data acquisition.....	84
2.29 SSD4 [20H 3CH]: Scart data registration.....	86
2.30 LSD4 [20H 3DH]: Scart data readout	87
2.31 SPD4 [20H 3EH]: Program data registration	88
2.32 LPD4 [20H 3FH]: Program data readout.....	90
2.33 SMACROV4 [20H 40H]: Macrovision data registration.....	92
2.34 LMACROV4 [20H 41H]: Macrovision data acquisition.....	93
2.35 SAFD4 [20H 42H]: AFD data registration	94
2.36 LAFD4 [20H 43H]: AFD data acquisition.....	95
2.37 SCAPTION4 [20H 44H]: ClosedCaption data registration	96
2.38 LCAPTION4 [20H 45H]: ClosedCaption data acquisition	97
2.39 SVCHIP4 [20H 46H]: V-Chip data registration.....	98
2.40 LVCHIP4 [20H 47H]: V-Chip data acquisition	99
2.41 STTEXT4 [20H 48H]: TeleText data registration	100
2.42 LTTEXT4 [20H 49H]: TeleText data acquisition	102
2.43 PNames4 [20H 4AH]: Program name registration.....	104
2.44 PNAMER4 [20H 4BH]: Program name readout.....	105
2.45 LPED4 [20H 4DH]: Program enable readout.....	106
2.46 SAT4 [20H 50H]: Auto display data registration.....	107
2.47 LAT4 [20H 51H]: Auto display data readout.....	108
2.48 SGROUP4 [20H 52H]: Group data registration	109
2.49 LGROUP4 [20H 53H]: Group data readout	110
2.50 SCFG4 [20H 54H]: Config data registration.....	111
2.51 LCFG4 [20H 55H]: Config data readout	114
2.52 SINB4 [20H 56H]: Black insertion data registration	115
2.53 LINB4 [20H 57H]: Black insertion data readout	116
2.54 SCEC4 [20H 58H]: CEC data registration	117
2.55 LCEC [20H 59H]: CEC data acquisition.....	118
2.56 LBED4 [20H 5AH]: Bitmap enable readout.....	120
2.57 LOED4 [20H 5BH]: User option enable readout	121

2.58 LGED4 [20H 5CH]: Group enable readout	122
2.59 SCCM4 [20H 5DH]: User subtitle data setting 1	123
2.60 LCCM4 [20H 5EH]: User subtitle data acquisition 1	124
2.61 SCCD4 [20H 5FH]: User subtitle data setting 2	125
2.62 LCCD4 [20H 60H]: User subtitle data acquisition 2	127
2.63 SGM4 [20H 61H]: GamutMeta data registration	129
2.64 LGM4 [20H 62H]: GamutMeta data acquisition	131
2.65 SLS4 [20H 63H]: LipSync data setting	133
2.66 LLS4 [20H 64H]: LipSync data acquisition	134
2.67 SHPS4 [20H 65H]: 0.5/0.25-pixel scroll data setting	135
2.68 LHPS4 [20H 66H]: 0.5/0.25-pixel scroll data acquisition	136
2.69 SDDCCI4 [20H 67H]: DDC/CI data setting	137
2.70 LDDCCI4 [20H 68H]: DDC/CI data acquisition	138
2.71 SEP4 [20H 69H]: EDID port data setting	139
2.72 LEP4 [20H 6AH]: EDID port data acquisition	140
2.73 SCGMS4 [20H 6BH]: CGMS data setting	141
2.74 LCGMS4 [20H 6CH]: CGMS data acquisition	142
2.75 SAP4 [20H 6DH]: Aspect ratio data setting	143
2.76 LAP4 [20H 6EH]: Aspect ratio data acquisition	144
2.77 SWSS4 [20H 6FH]: WSS data setting	145
2.78 LWSS4 [20H 70H]: WSS data acquisition	146
2.79 SID14 [20H 71H]: ID1 data setting	147
2.80 LID14 [20H 72H]: ID1 data acquisition	148
2.81 SKEYL4 [20H 73H]: Key lock data registration	149
2.82 LKEYL4 [20H 74H]: Key lock data readout	152
2.83 LPDF4 [20H 75H]: Program format readout	153
2.84 SMB4 [20H 76H]: Motion Blur data setting	154
2.85 LMB4 [20H 77H]: Motion Blur data acquisition	156
2.86 SDP4 [20H 78H]: DisplayPort data setting	158
2.87 LDP4 [20H 79H]: DisplayPort data acquisition	160
2.88 SSS4 [20H 7AH]: Scroll Sequence data setting	162
2.89 LSS4 [20H 7BH]: Scroll Sequence data acquisition	163
2.90 SDPLP4 [20H 7CH]: DP List Port data setting	165
2.91 LDPLP4 [20H 7DH]: DP List Port data acquisition	166
2.92 SVIF4 [20H 7EH]: Vendorspce InfoFrame data setting	167
2.93 LVIF4 [20H 7FH]: Vendorspce InfoFrame data acquisition	168
2.94 SNIF4 [20H 80H]: NTSC VBI InfoFrame data setting	169
2.95 LNIF4 [20H 81H]: NTSC VBI InfoFrame data acquisition	170
2.96 LTED4 [20H 82H]: Subtitle image enable readout	171
2.97 LIDNO4 [20H 83H]: Serial No. readout	172
2.98 S9Marker4 [20H 8BH]: OPT 9Marker data setting	173
2.99 L9Marker4 [20H 8CH]: OPT 9Marker data acquisition	175
2.100 STELOP4 [20H 91H]: Subtitle data setting	177
2.101 LTELOP4 [20H 92H]: Subtitle data acquisition	178
2.102 SITMDS4 [20H 93H]: iTMDS data setting	179

2.103 LITMDS4 [20H 94H] : iTMDS data acquisition.....	180
2.104 EXPDN4 [24H 20H]: Program data execution	181
2.105 INDC4 [24H 21H]: Program No. incrementing / decrementing	182
2.106 EXBN4 [24H 22H]: Buffer RAM program execution.....	183
2.107 INIBUF 4 [24H 23H]: Work RAM data initialization	184
2.108 SAVBUF 4 [24H 24H]: Work RAM data registration.....	185
2.109 EXSYNC4 [24H 25H]: Separate sync ON/OFF	186
2.110 CURSOR4 [24H 26H]: Cursor pattern control.....	187
2.111 VLEVEL4 [24H 27H]: Video level change	189
2.112 HDCPON4 [24H 28H]: HDCP execution start/stop	190
2.113 PBPRON4 [24H 29H]: RGB signal / color difference signal switching	191
2.114 SEDID4 [24H 2AH]: EDID write	192
2.115 LEDID4 [24H 2BH]: EDID readout	193
2.116 QDISP4 [24H 2CH]: H/V Disp acquisition.....	194
2.117 EXCCN4 [24H 2DH]: User subtitle data execution	195
2.118 LVGID4 [24H 2EH]: VG ID acquisition	196
2.119 EXSGON4 [24H 2FH]: RGB output ON/OFF	197
2.120 EXPONOFF4 [24H 30H]: Pattern data output ON/OFF	198
2.121 AAUDIO4 [24H 31H]: Analog audio change	200
2.122 SCROLL4 [24H 32H]: Pattern scroll execution.....	201
2.123 EXSYNCP4 [24H 33H]: Separate sync polarity switching	204
2.124 LKSV4 [24H 34H] : KSV data acquisition	205
2.125 LERR4 [24H 3AH] : Error code acquisition.....	206
2.126 LHDCP4 [24H 3DH] : HDCP operation start / stop acquisition.	209
2.127 MUTEON4 [24H 3EH] : MUTE operation ON/OFF	210
2.128 LMUTE4 [24H 3FH] : MUTE operation ON/OFF acquisition.....	211
2.129 VG control command table	212
Chapter 3 INDIVIDUAL FORMATS FOR VG DRAWING COMMANDS	215
3.1 CHACLR4 [28H 20H]: Character plane clear	215
3.2 CHAPSET4 [28H 21H]: Character plane dot drawing.....	216
3.3 CHALINE4 [28H 22H]: Character plane straight line drawing.....	217
3.4 CHASQRE4 [28H 23H]: Character plane square drawing.....	218
3.5 CHASQPA4 [28H 24H]: Character plane filled-in square drawing.....	219
3.6 CHACIRC4 [28H 25H]: Character plane circle drawing.....	220
3.7 CHACIRCPA4 [28H 26H]: Character plane filled-in circle drawing	221
3.8 CHAELPS4 [28H 27H]: Character plane ellipse drawing.....	222
3.9 CHAELPSPA4 [28H 28H]: Character plane filled-in ellipse drawing	223
3.10 CHATRI4 [28H 29H]: Character plane triangle drawing.....	224
3.11 CHATRIPA4 [28H 2AH]: Character plane filled-in triangle drawing.....	225
3.12 CHACOL4 [28H 2CH]: Character plane color setting	226
3.13 CHASTR4 [28H 2DH]: Character plane character string drawing.....	227
3.14 GRACLR4 [28H 40H]: Graphic Plane Clear	228
3.15 GRAPSET4 [28H 41H]: Graphic Plane Dot Drawing	229
3.16 GRALINE4 [28H 42H]: Graphic Plane Straight Line Drawing	230
3.17 GRASQRE4 [28H 43H]: Graphic Plane Square Drawing	231

3.18 GRASQPA4 [28H 44H]: Graphic Plane Filled-in Square	232
3.19 GRACIRC4 [28H 45H]: Graphic Plane Circle Drawing	233
3.20 GRACIRCPA4 [28H 46H]: Graphic Plane Filled-in Circle Drawing	234
3.21 GRAELPS4 [28H 47H]: Graphic Plane Ellipse drawing	235
3.22 GRAELPSA4 [28H 48H]: Graphic Plane Filled-in Ellipse Drawing	236
3.23 GRATRI4 [28H 49H]: Graphic Plane triangle Drawing	237
3.24 GRATRIPA4 [28H 4AH]: Graphic Plane Filled-in Triangle Drawing	238
3.25 GRACOL4 [28H 4CH]: Graphic Plane Color Setting.....	239
3.26 GRALEV4 [28H 4DH]: Graphic Plane Level Edit.....	240
3.27 ALLCLR4 [28H 60H]: All planes clear	241
3.28 WINDOW4 [28H 61H]: Window drawing.....	242
3.29 WINCOL4 [28H 62H]: Window color setting	243
3.30 WINCLR4 [28H 63H]: Window plane clear	244
3.31 VG drawing command table	245
Chapter 4 INDIVIDUAL FORMATS FOR CONTROL COMMANDS	247
4.1 SHT [48H]: H timing data registration	247
4.2 LHT [42H]: H timing data readout	248
4.3 SVT [49H]: V timing data registration.....	249
4.4 LVT [43H]: V timing data readout.....	250
4.5 SOT [4AH]: Output condition data registration.....	251
4.6 LOT [44H]: Output condition data readout.....	253
4.7 SPT [4BH]: Pattern data registration.....	254
4.8 LPT [45H]: Pattern data readout.....	258
4.9 SPD [4DH]: Program data registration.....	259
4.10 LPD [4CH]: Program data readout.....	261
4.11 SAT [46H]: Auto display data registration.....	262
4.12 LAT [40H]: Auto display data readout.....	263
4.13 SPTS [47H]: Pattern select data registration	264
4.14 LPTS [41H]: Pattern select data readout	265
4.15 SCH [4FH]: Character data registration.....	266
4.16 LCH [4EH]: Character data readout.....	267
4.17 EXPPN [07H]: Timing data execution	268
4.18 EXPBN [08H]: Program data setting/execution	269
4.19 EXPDN [09H]: Program data execution 2 (Registered program designation).....	270
4.20 EXPON [0EH]: Pattern data output ON setting.....	271
4.21 EXPOFF [0FH]: Pattern data output OFF setting.....	272
4.22 DISPHV [28H]: Display dot count readout	273
4.23 INDC [29H]: Program no incrementing/decrementing.....	274
4.24 EXBN [0CH]: Current program execution	275
4.25 EXSGON [0BH]: Output signal ON/OFF	276
4.26 EXSYNC [51H]: Separate sync ON/OFF	277
4.27 SGROUP [52H]: Group data registration	278
4.28 LGROUP [53H]: Group data readout	279
4.29 SPT3 [A2H]: Pattern data registration (Type 3)	280
4.30 LPT3 [A1H]: Pattern data readout (Type 3)	285

4.31 SOT3 [A7H]: All output condition data registration (Type 3).....	286
4.32 LOT3 [A6H]: All output condition data readout (Type 3)	288
4.33 SPD3 [A4H]: Program data registration (Type 3).....	289
4.34 LPD3 [A3H]: Program data readout (Type 3).....	290
4.35 EXPBN3 [A5H]: Program data setting/execution (Type 3).....	291
4.36 PNames3 [A8H]: Program name registration (Type 3).....	292
4.37 PNAMER3 [A9H]: Program name readout (Type 3)	293
4.38 SGROUP3 [AAH]: Group number registration (Type 3).....	294
4.39 LGROUP3 [ABH]: Group number readout (Type 3).....	295
4.40 GNames3 [ACH]: Group name registration (Type 3).....	296
4.41 GNAMER3 [ADH]: Group name readout (Type 3)	297
4.42 SCFG3 [7FH]: Config data registration (Type 3).....	298
4.43 LCFG3 [7EH]: Config data readout (Type 3).....	299
4.44 SPbPrD [92H]: Color difference coefficient data registration	300
4.45 LPbPrD [91H]: Color difference coefficient data readout	301
4.46 PbPrDNames3 [93H]: Color difference coefficient data name registration (Type 3).....	302
4.47 PbPrDNAMER3 [94H]: Color difference coefficient data name readout (Type 3)	303
4.48 CROSS_CTRL [2EH]: Cursor pattern control	304
4.49 SDC [61H]: D connector output condition registration	306
4.50 LDC [60H]: D connector output condition readout	307
4.51 SWP [63H]: Window pattern coordinate registration.....	308
4.52 LWP [62H]: Window pattern coordinate readout.....	309
4.53 SOM [65H]: Video output ON/OFF registration.....	310
4.54 LOM [64H]: Video output ON/OFF readout.....	311
4.55 SAD [67H]: Audio output condition registration.....	312
4.56 LAD [66H]: Audio output condition readout.....	313
4.57 SIPADR [F1H]: IP address registration	314
4.58 LIPADR [F0H]: IP address readout.....	315
4.59 SPDS [69H]: Pulldown scroll setting data registration	316
4.60 LPDS [68H]: Pulldown scroll setting data readout	317
4.61 SSC [6BH]: S connector output condition registration	318
4.62 LSC [6AH]: S connector output condition readout	319
4.63 SDVIM [6DH]: DVI output mode registration.....	320
4.64 LDVIM [6CH]: DVI output mode readout	321
4.65 SGADR [F3H]: Gateway IP address registration	322
4.66 LGADR [F2H]: Gateway IP address readout	323
4.67 SHDCPEN [81H]: Program HDCP enable/disable setting	324
4.68 LHDCPEN [80H]: Program HDCP enable/disable readout.....	325
4.69 LOPTB [74H]: Optional board data acquisition	326
4.70 SOPTB [75H]: Optional board data setting.....	327
4.71 LOPTB2 [79H]: Optional board data 2 acquisition	328
4.72 SOPTB2 [7AH]: Optional board data 2 setting.....	329
Chapter 5 INDIVIDUAL DRAWING COMMAND FORMATS	331
5.1 GCIRC [18H]: Circle drawing / CCIRC [12H]: Circle clearing	331
5.1.1 GCIRC [18H]: Circle drawing	331

5.1.2 CCIRC [12H]: Circle clearing	332
5.2 GCIRCPA [D4H]: Filled-in circle drawing / CCIRCPA [D5H]: Filled-in circle clearing	333
5.2.1 GCIRCPA [D4H]: Filled-in circle drawing	333
5.2.2 CCIRCPA [D5H]: Filled-in circle clearing	334
5.3 GLINE [19H]: Straight line drawing / CLINE [13H]: Straight line clearing	335
5.3.1 GLINE [19H]: Straight line drawing	335
5.3.2 CLINE [13H]: Straight line clearing	336
5.4 GPSET [1BH]: Dot drawing / CPSET [14H]: Dot clearing	337
5.4.1 GPSET [1BH]: Dot drawing	337
5.4.2 CPSET [14H]: Dot clearing	338
5.5 ACLR [23H]: Drawing planes all clearing	339
5.6 COCLR [24H]: Color clearing	340
5.7 GCLR [25H]: Graphic plane clearing	341
5.8 GCHAR [27H]: Character drawing	342
5.9 GSQRE [D0H]: Square drawing / CSQRE [D1H]: Square clearing	343
5.9.1 GSQRE [D0H] Square drawing	343
5.9.2 CSQRE [D1H] Square clearing	344
5.10 GSQPA [31H]: Filled-in square drawing / CSQPA [32H]: Filled-in square clearing	345
5.10.1 GSQPA [31H]: Filled-in square drawing	345
5.10.2 CSQPA [32H]: Filled-in square clearing	346
5.11 WINDW [3CH]: Window drawing / CWIND [2AH]: Window clearing	347
5.11.1 WINDW [3CH]: Window drawing	347
5.11.2 CWIND [2AH]: Window clearing	348
5.12 WINDCL [3DH]: Window color setting	349
5.13 GRPHCL [3BH]: Graphic color setting	350
5.14 GTRIPA [D2H]: Filled-in triangle drawing / CTRIPA [D3H]: Filled-in triangle clearing	351
5.14.1 GTRIPA [D2H]: Filled-in triangle drawing	351
5.14.2 CTRIPA [D3H]: Filled-in triangle clearing	352
5.15 GELPS [D6H]: Ellipse drawing / CELPS [D7H]: Ellipse clearing	353
5.15.1 GELPS [D6H]: Ellipse drawing	353
5.15.2 CELPS [D7H]: Ellipse clearing	354
5.16 GELPSPA [D8H]: Filled-in ellipse drawing / CELPSPA [D9H]: Filled-in ellipse clearing	355
5.16.1 GELPSPA [D8H]: Filled-in ellipse drawing	355
5.16.2 CELPSPA [D9H]: Filled-in ellipse clearing	356
5.17 G8CIRC [E0H]: Circle drawing (color designation) G8CIRCPA [E6H]: Filled-in circle drawing (color designation).....	357
5.17.1 G8CIRC [E0H]: Circle drawing (color designation).....	357
5.17.2 G8CIRCPA [E6H]: Filled-in circle drawing (color designation).....	358
5.18 G8LINE [E1H]: Straight line drawing (color designation)	359
5.19 G8PSET [E2H]: Dot drawing (color designation)	360
5.20 G8SQRE [E4H]: Square drawing (color designation) G8SQPA [E3H]: Filled-in square drawing (color designation).....	361
5.20.1 G8SQRE [E4H]: Square drawing (color designation).....	361
5.20.2 G8SQPA [E3H]: Filled-in square drawing (color designation).....	362
5.21 G8TRIPA [E5H]: Filled-in triangle drawing (color designation).....	363
5.22 G8ELPS [E7H]: Ellipsis drawing (color designation) G8ELPSPA [E8H]: Filled-in ellipsis drawing (color designation).....	364

5.22.1 G8ELPS [E7H]: Ellipsis drawing (color designation)	364
5.22.2 G8ELPSA [E8H]: Filled-in ellipsis drawing (color designation).....	365
5.23 G8COLOR [EAH]: Color mode setting.....	366
5.24 G8COLOR2 [ECH]: Palette setting.....	367
Chapter 6 EXAMPLES OF USAGE	369
6.1 Executing the internal timing data.....	369
6.1.1 Flow of commands used	369
6.1.2 Command settings	369
6.2 Setting and executing the H and V timing data.....	370
6.2.1 Flow of commands used	371
6.2.2 Settings established using H timing setting command	372
6.2.3 Settings established using V timing setting command	373
6.2.4 Settings established using program data execution command	374
6.3 Setting and executing the pattern data	375
6.3.1 Flow of commands used	376
6.3.2 Settings established using pattern select data setting command	377
6.3.3 Settings established using pattern data setting command	378
6.3.4 Settings established using program data execution command	379
6.3.5 Settings established using program data execution command (Buffer RAM)	379
6.3.6 Settings established using pattern data output ON/OFF setting command	380
6.4 Setting and executing the drawing pattern data.....	381
6.4.1 Flow of commands used	382
6.4.2 Settings established using pattern data output ON/OFF setting command.....	383
6.4.3 Settings established using window pattern clearing command	384
6.4.4 Settings established using character plane color setting command.....	384
6.4.5 Settings established using window color setting command.....	385
6.4.6 Settings established using square drawing command	385
6.4.7 Settings established using filled-in triangle drawing command	386
6.4.8 Settings established using circle drawing command	387
6.4.9 Settings established using window drawing command	389

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, VG-871 and VG-880 generators.

Also described are the terminal command of the VG-848 series (hereafter indicated as the "old VG models").

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 * 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		VG-870 end	
Pin No.	Signal	Pin No.	Signal
2	RXD (Received data)	2	TXD (Transmitted data)
3	TXD (Transmitted data)	3	RXD (Received data)
5	GND (Signal ground)	5	GND (Signal ground)
7	RTS (Request to send)	7	CTS (Clear to send)
8	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

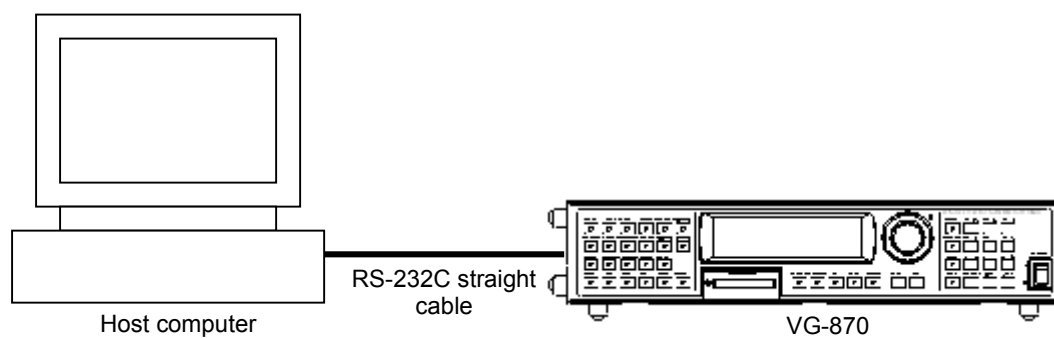


Fig. 1-3-1

1.3.2 LAN

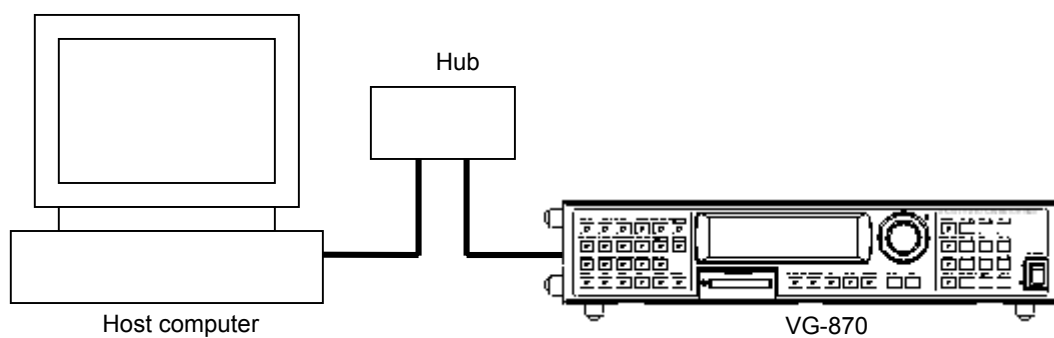


Fig. 1-3-2

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 always be entered in the data: otherwise, the data will be registered without coloring.
Buffer RAM	The VG generator calls one of the programs registered on the CompactFlash 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 CompactFlash 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"	This error occurs when the horizontal sync data is outside the $5.00 \text{ MHz} \leq \text{Dot Clock} \leq 300.00 \text{ MHz}$ range when direct display or a program was executed.
"03"	This error occurs when the horizontal sync data is outside the $H \text{ Period} \geq H_{\text{sync}} + H_{\text{backp}} + H_{\text{disp}} (\text{dot})$ range when direct display or a program was executed.
"04"	This error occurs when the horizontal sync data is outside the $H \text{ Period} \geq H_{\text{sync}} + H_{\text{backp}} + H_{\text{disp}} (\mu\text{s})$ range when direct display or a program was executed.
"05"	This error occurs when the horizontal sync data is outside the $H \text{ Period} \geq HD_{\text{start}} + HD_{\text{width}} (\text{dot})$ range when direct display or a program was executed.
"06"	This error occurs when the horizontal sync data is outside the $H \text{ Period} \geq HD_{\text{start}} + HD_{\text{width}} (\mu\text{s})$ range when direct display or a program was executed.
"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"	V_{total} of the vertical timing data is outside the specified range.
"65"	V_{disp} of the vertical timing data is outside the specified range.
"66"	V_{sync} of the vertical timing data is outside the specified range.
"67"	V_{backp} of the vertical timing data is outside the specified range.
"68"	The front porch of the vertical timing data is outside the specified range. ($V_{\text{total}} \geq V_{\text{sync}} + V_{\text{backp}} + V_{\text{disp}}$)

"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 is outside the specified range. ($V_{total} \geq V_{Dstart} + V_{Dline}$)
"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.

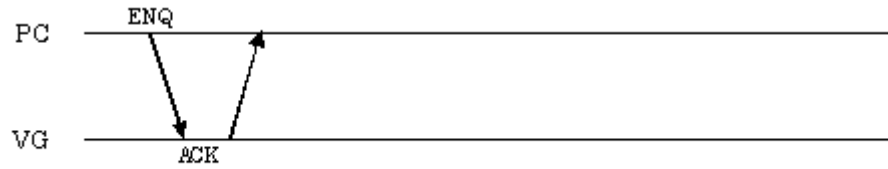


Fig. 1-10-1-1

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.

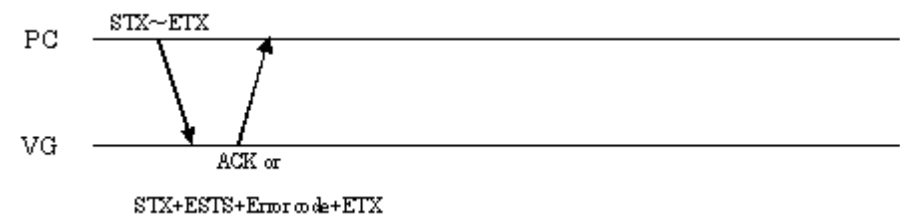


Fig. 1-10-2-1

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.

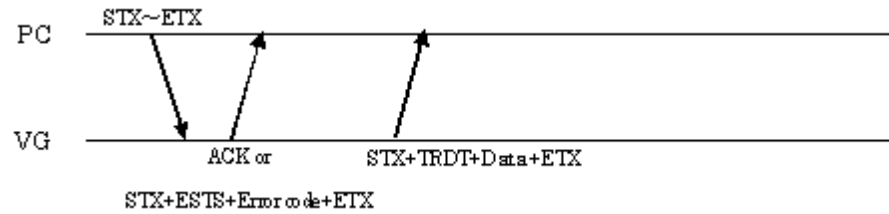


Fig. 1-10-3-1

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

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

VG4CMD	Command 1	Command 2
--------	-----------	-----------

*2 The flow is terminated at 2b if communication failed.

1.10.4 Type 4

This is the sequence for sending the VG data.

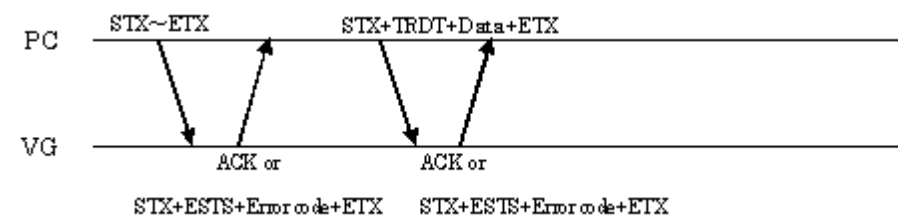


Fig. 1-10-4-1

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

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

VG4CMD	Command 1	Command 2
--------	-----------	-----------

*2 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.

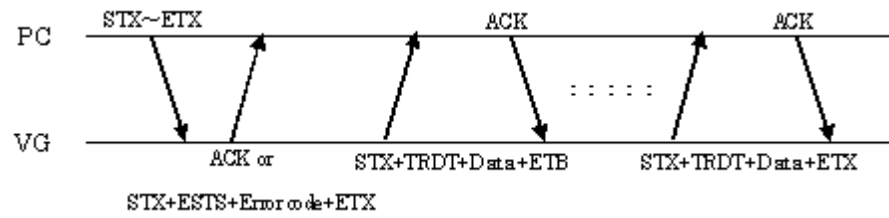


Fig. 1-10-5-1

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

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

VG4CMD	Command 1	Command 2
--------	-----------	-----------

*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.

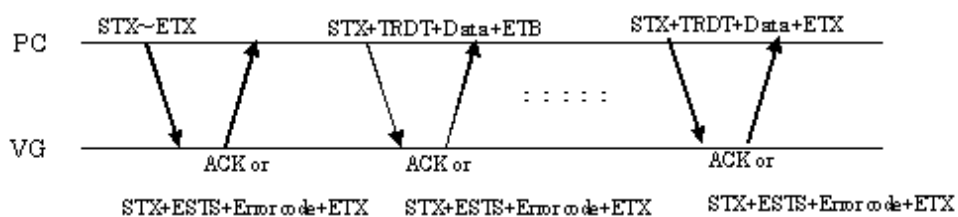


Fig. 1-10-6-1

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

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

VG4CMD	Command 1	Command 2
--------	-----------	-----------

*2 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.

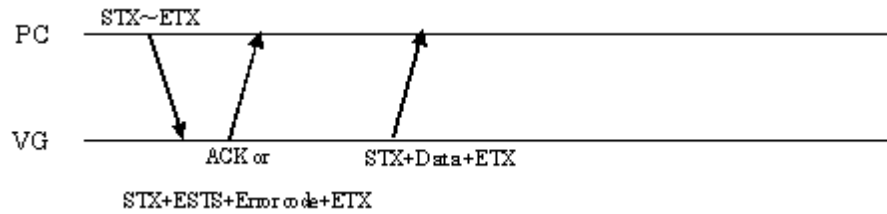


Fig. 1-10-7-1

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

Fig. 1-10-7-2

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

VG4CMD	Command 1	Command2
--------	-----------	----------

*2 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 which drawn by graphic plane drawing command is not able to overwrite 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 (3.15. GRACLR4 {28H 40H}: Graphic plain clear).
3. Color table for graphic plain drawing command, will be 0 to 255.



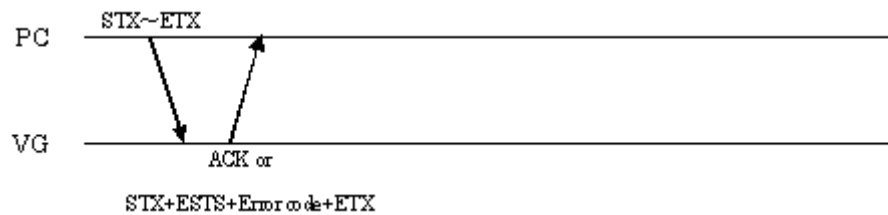
2

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:

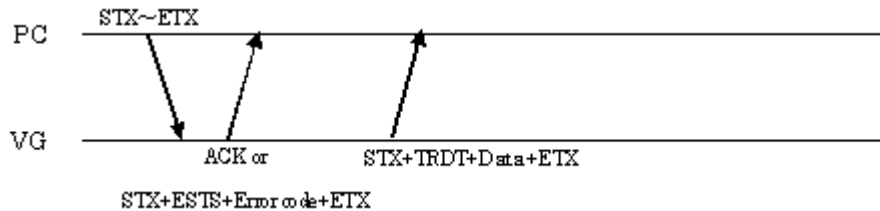
STX	1 byte	02H
VG4CMD	1 byte	FDH
SHT4	2 bytes	20H 20H
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
μs/dot	1 byte	"0" = μs, "1" = dot
,	1 byte	2CH (Delimiter)
Repetition	1 to 2 bytes	"1" to "10"
,	1 byte	2CH (Delimiter)
DOT CLOCK	1 to 9 bytes	"0" to "999999999" (in 1 Hz increments)
,	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:

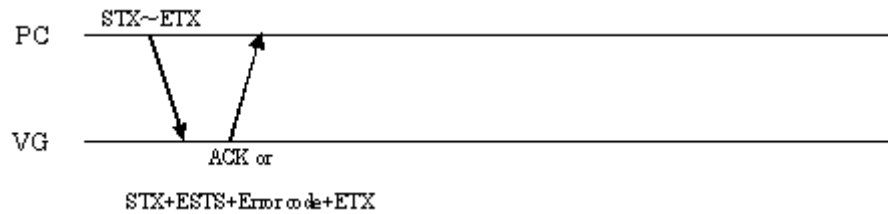
STX	1 byte	02H
TRDT	1 byte	10H
μs/dot	1 byte	"0" = μs, "1" = dot
,	1 byte	2CH (Delimiter)
Repetition	1 to 2 bytes	"1" to "10"
,	1 byte	2CH (Delimiter)
DOT CLOCK	1 to 9 bytes	"0" to "999999999" (in 1 Hz increments)
,	1 byte	2CH (Delimiter)
H-PERIOD	1 to 5 bytes	"0" to "65535" (0 to 655.35 with μs)
,	1 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)

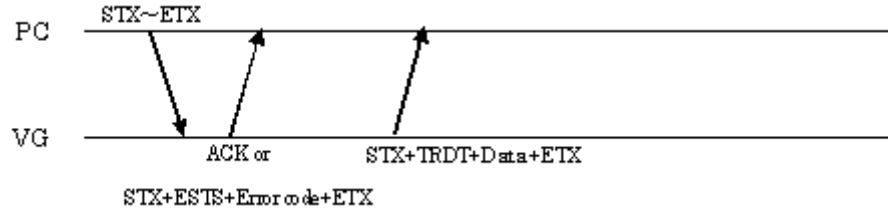
Tv Mode	1 to 2 bytes	"0" = Other "1" = NTSC "2" = PAL "3" = SECAM "4" = HDTV1080 "5" = Reserved "6" = NTSC-M "7" = NTSC-443 "8" = PAL-M "9" = PAL-60 "10" = PAL-N "11" = PAL-Nc "12" = HDTV1250AUS "13" = HDTV1250 "14" = HDTV1152AUS "15" = Reserved "16" = Reserved "17" = HDTV720
,	1 byte	2CH (Delimiter)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

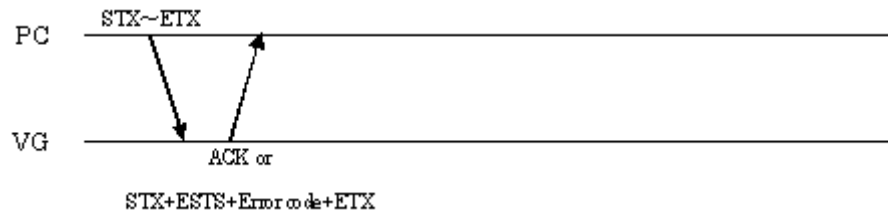
VD-START2	1 to 5 bytes	"0" to "99995" (0 to 9999.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
VD-WIDTH2	1 to 5 bytes	"0" to "99995" (0 to 9999.5H) * In 0.5H increments
,	1 byte	2CH (Delimiter)
Tv Mode	1 or 2 bytes	"0" = Other "1" = NTSC "2" = PAL "3" = SECAM "4" = HDTV1080 "5" = Reserved "6" = NTSC-M "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
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 "4" 0 to 3: 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	"0" to "120" (0.00 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	"0" to "16" 0: Config setting is followed.
,	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
,	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)
SConnector 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" = Squeeze "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"=LIMITED

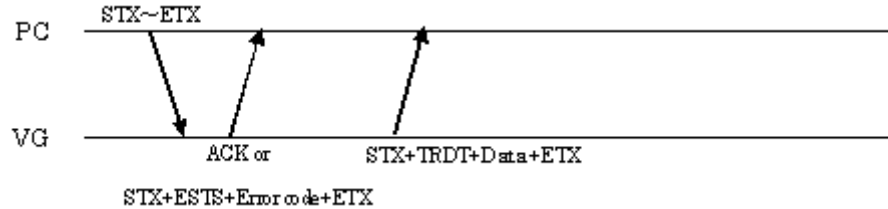
,	1 byte	2CH (Delimiter)
Level Mode12 (Reserved)	1 byte	Fixed at "0"
,	1 byte	2CH (Delimiter)
Level Mode13 (Reserved)	1 byte	Fixed at "0"
,	1 byte	2CH (Delimiter)
Level Mode14 (Reserved)	1 byte	Fixed at "0"
,	1 byte	2CH (Delimiter)
Level Mode14 (iTMDS)	1 BYTE	"0"=FULL "1"=LIMITED
,	1 BYTE	2CH (Delimiter)
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
iTMDS1 ON/OFF	1 BYTE	"0"=OFF "1"=ON
,	1 BYTE	2CH (Delimiter)
iTMDS2 ON/OFF	1 BYTE	"0"=OFF "1"=ON
ETX	1 byte	03H

Fig. 2-5-1

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

Function: This command reads the output condition 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
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
YPbPr	1 byte	"0" = OFF (RGB), "1" = ON (YPbPr)
,	1 byte	2CH (Delimiter)
YPbPrNo	1 byte	"0" to "4" 0 to 3: 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	"0" to "120" (0.00 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	"0" to "16"
,		0: Config setting is followed.
,	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
,	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)
SConnector 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" = Squeeze "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"

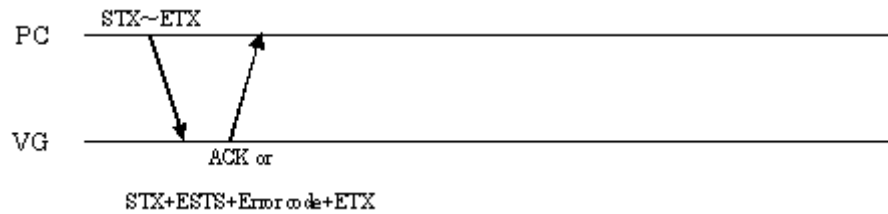
,	1 byte	2CH (Delimiter)
Level Mode10 (Reserved)	1 byte	Fixed at "0"
,	1 byte	2CH (Delimiter)
Level Mode11 (Reserved)	1 byte	Fixed at "0"
,	1 byte	2CH (Delimiter)
Level Mode12 (Reserved)	1 byte	Fixed at "0"
,	1 byte	2CH (Delimiter)
Level Mode13 (Reserved)	1 byte	Fixed at "0"
,	1 byte	2CH (Delimiter)
Level Mode14 (iTMDS)	1 BYTE	"0"=FULL "1"=LIMITED
,	1 BYTE	2CH (Delimiter)
Level Mode14 (Reserved)	1 byte	Fixed at "0"
,	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
iTMDS1 ON/OFF	1 BYTE	"0"=OFF "1"=ON
,	1 BYTE	2CH (Delimiter)
iTMDS2 ON/OFF	1 BYTE	"0"=OFF "1"=ON
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 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
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 Enable	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch1 Clock	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch1 Sync	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch1 Power	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch1 RGB 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	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch1 SW3	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch2 Output Enable	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch2 Clock	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch2 Sync	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch2 Power	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch2 RGB 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)

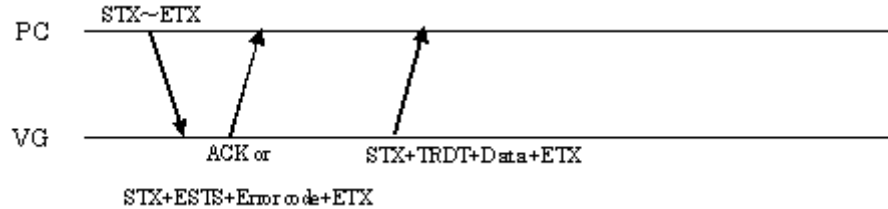
Ch2 SW2	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch2 SW3	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch3 Output Enable	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch3 Clock	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch3 Sync	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch3 Power	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch3 RGB Polarity	1 byte	"0" = Nega, "1" = Posi
,	1 byte	2CH (Delimiter)
Ch3 SW1	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch3 SW2	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch3 SW3	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch4 Output Enable	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch4 Clock	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch4 Sync	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch4 Power	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch4 RGB Polarity	1 byte	"0" = Nega, "1" = Posi
,	1 byte	2CH (Delimiter)
Ch4 SW1	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch4 SW2	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch4 SW3	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 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
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 Enable	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch1 Clock	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch1 Sync	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch1 Power	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch1 RGB 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	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch1 SW3	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch2 Output Enable	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch2 Clock	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch2 Sync	1 byte	"0" = Hi-Z, "1" = ON

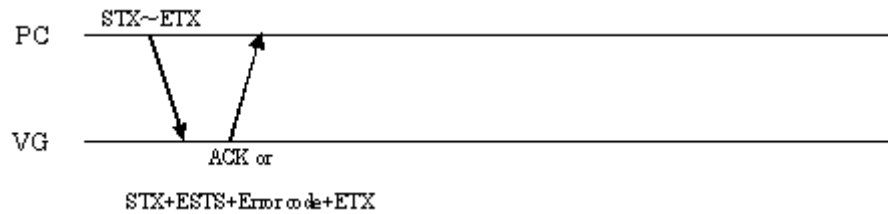
,	1 byte	2CH (Delimiter)
Ch2 Power	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch2 RGB Polarity	1 byte	"0" = Nega, "1" = Posi
,	1 byte	2CH (Delimiter)
Ch2 SW1	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch2 SW2	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = 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 Enable	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch3 Clock	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch3 Sync	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch3 Power	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch3 RGB Polarity	1 byte	"0" = Nega, "1" = Posi
,	1 byte	2CH (Delimiter)
Ch3 SW1	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch3 SW2	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch3 SW3	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch4 Output Enable	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch4 Clock	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch4 Sync	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch4 Power	1 byte	"0" = Hi-Z, "1" = ON
,	1 byte	2CH (Delimiter)
Ch4 RGB Polarity	1 byte	"0" = Nega, "1" = Posi
,	1 byte	2CH (Delimiter)
Ch4 SW1	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch4 SW2	1 byte	"0" = CS, "1" = VD, "2" = HD, "3" = Low, "4" = High
,	1 byte	2CH (Delimiter)
Ch4 SW3	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 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:

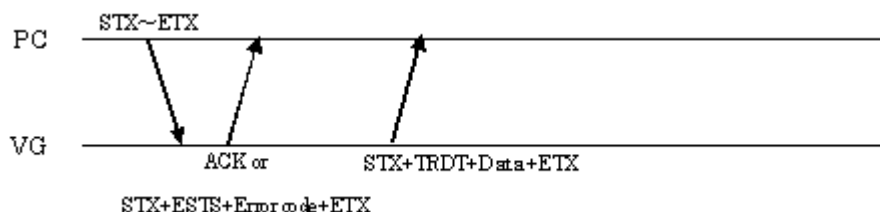
STX	1 byte	02H
VG4CMD	1 byte	FDH
SLVDS4	2 bytes	20H 28H
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Dual Mode	1 byte	"0" = Single (Auto) "1" = Dual (Auto) "2" = Quad (10 bits) "3" = Single (10 bits) "4" = Single (Mbits) "5" = Dual (10 bits) "6" = Dual (Mbits)
,	1 byte	2CH (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"
,	1 byte	2CH (Delimiter)
Reserved4	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 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
LLVDS4	2 bytes	20H 29H
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-10-1

Data:

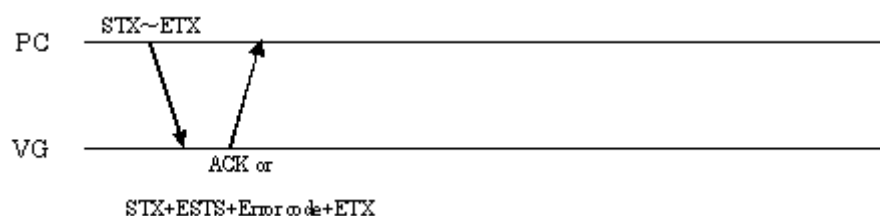
STX	1 byte	02H
TRDT	1 byte	10H
Dual Mode	1 byte	"0" = Single (Auto) "1" = Dual (Auto) "2" = Quad (10 bits) "3" = Single (10 bits) "4" = Single (Mbits) "5" = Dual (10 bits) "6" = Dual (Mbits)
,	1 byte	2CH (Delimiter)
Split Mode	1 byte	"0" = None "1" = Split into 2 (Valid at Dual or Quad setting) "2" = 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
,	1 byte	2CH (Delimiter)
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"
,	1 byte	2CH (Delimiter)
Reserved4	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 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
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	CharaPlane
7	OPT
8	Checker
9	Aspect
10	Raster
11	Monoscop
12	Sweep
13	Ramp
14	GrayScale
15	ColorBar
17	Name
18	Cursor
19	Window
24	Burst
25	Circle
26	×

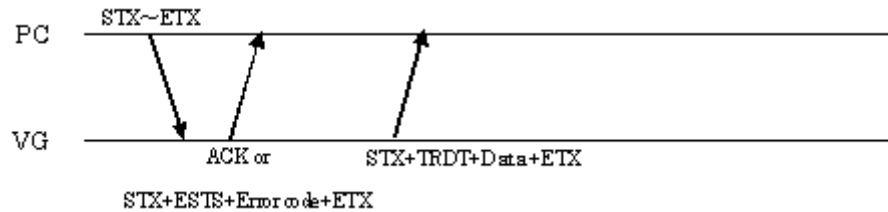
27	+
28	□
29	DOTS
30	CROSS
31	CHARA

Fig. 2-11-2

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

Function: This command reads the pattern select data of the 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
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

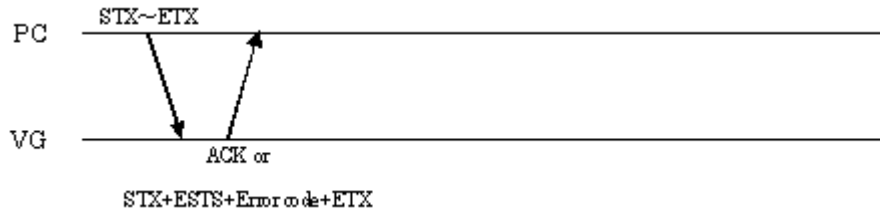
Fig. 2-12-2

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 program whose number has been designated. 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
,	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 bytes	"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
,	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
,	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	"0" to "16"
,	1 byte	2CH (Delimiter)
H width	1 to 4 bytes	% = "0" to "1000" (0.0 to 100.0%), dot = "1" to "9999"
,	1 byte	2CH (Delimiter)
V width	1 to 4 bytes	% = "0" to "1000" (0.0 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	% = "0" to "1000" (0.0 to 100.0%), dot = "1" to "9999"
,	1 byte	2CH (Delimiter)
V width	1 to 4 bytes	% = "0" to "1000" (0.0 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
,	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
,	1 byte	2CH (Delimiter)
APDC Type	1 BYTE	"1"=APDC1 "2"=APDC2 "3"=APDC3 "4"=APDC4 *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 assingment	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 "899"
,	1 byte	2CH (Delimiter)
User optional pattern code	1 to 3 bytes	"1" to "899"
,	1 byte	2CH (Delimiter)
Image data code	1 to 3 bytes	"1" to "899"
,	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

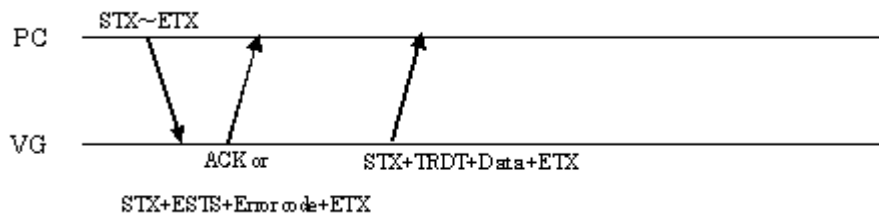
Type	1 byte	"1" = OverScan, "2" = AFD
------	--------	---------------------------

Fig. 2-13-20

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

Function: This command reads the pattern data of the program whose number has been designated. 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"
ETX	1 byte	03H

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
,	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"
ETX	1 byte	03H

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"
ETX	1 byte	03H

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
ETX	1 byte	03H

Fig. 2-14-5

(5) Circle data

STX	1 byte	02H
TRDT	1 byte	10H
Circle format	1 byte	"0" to "6"
ETX	1 byte	03H

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"
ETX	1 byte	03H

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%)
ETX	1 byte	03H

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" = Fertical line
,	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)
ETX	1 byte	03H

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
,	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
,	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"
ETX	1 byte	03H

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	"0" to "16"
,	1 byte	2CH (Delimiter)
H width	1 to 4 bytes	% = "0" to "1000" (0.0 to 100.0%), dot = "1" to "9999"
,	1 byte	2CH (Delimiter)
V width	1 to 4 bytes	% = "0" to "1000" (0.0 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%)
ETX	1 byte	03H

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	% = "0" to "1000" (0.0 to 100.0%), dot = "1" to "9999"
,	1 byte	2CH (Delimiter)
V width	1 to 4 bytes	% = "0" to "1000" (0.0 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"
ETX	1 byte	03H

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
,	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
ETX	1 byte	03H

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
,	1 byte	2CH (Delimiter)
APDC Type	1 BYTE	"1"=APDC1 "2"=APDC2
ETX	1 byte	03H

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 assgination color	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 "899"
,	1 byte	2CH (Delimiter)
User optional pattern code	1 to 3 bytes	"1" to "899"
,	1 byte	2CH (Delimiter)
Image data code	1 to 3 bytes	"1" to "899"
,	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"
ETX	1 byte	03H

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"
ETX	1 byte	03H

Fig. 2-14-19

(19) Aspect ratio

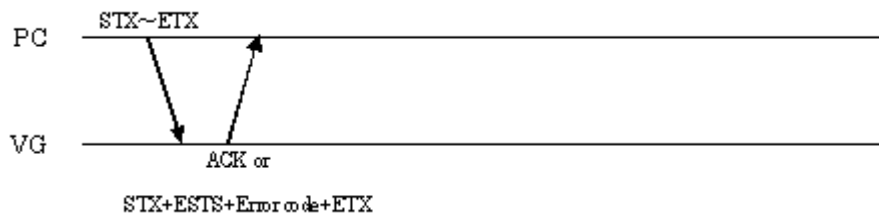
STX	1 byte	02H
TRDT	1 byte	10H
Type	1 byte	"1" = OverScan, "2" = AFD
ETX	1 byte	03H

Fig. 2-14-20

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

Function: This command registers the action 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
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

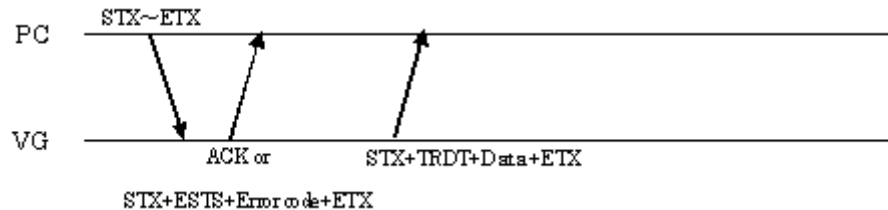
	1 byte	2CH (Delimiter)
Group pull-down mode	1 byte	"0" = User, "1" = 60i → 60i, "2" = 24p → 60i, "3" = 25p → 50i, "4" = 30p → 60i
	1 byte	2CH (Delimiter)
Window pull-down mode	1 byte	"0" = User, "1" = 60i → 60i, "2" = 24p → 60i, "3" = 25p → 50i, "4" = 30p → 60i
	1 byte	2CH (Delimiter)
Window flicker 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

Fig. 2-15-1

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

Function: This command reads the action 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
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)

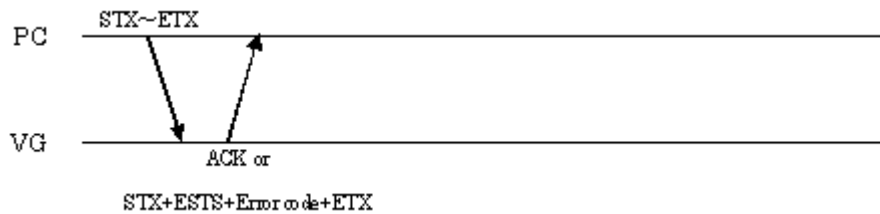
Window level change interval	1 to 3 bytes	"1" to "255"
,	1 byte	2CH (Delimiter)
Window level change step	1 to 3 bytes	"1" to "255"
,	1 byte	2CH (Delimiter)
Character pull-down mode	1 byte	"0" = User, "1" = 60i → 60i, "2" = 24p → 60i, "3" = 25p → 50i, "4" = 30p → 60i
,	1 byte	2CH (Delimiter)
Group pull-down 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 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:

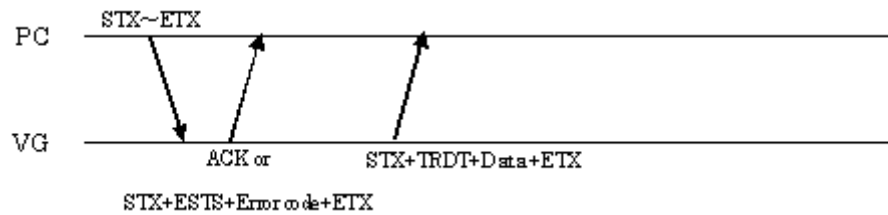
STX	1 byte	02H	
VG4CMD	1 byte	FDH	
SWLF4	2 bytes	20H 30H	
Program number	1 to 4 bytes	"0" to "1000", "9999"	
,	1 byte	2CH (Delimiter)	
Window level flicker	1 byte	"0" = Not provided, "1" = Provided	
,	1 byte	2CH (Delimiter)	
Number of data N	1 to 3 bytes	"1" to "256"	
,	1 byte	2CH (Delimiter)	
Bit mode	1 or 2 bytes	"8" to "16"	
,	1 byte	2CH (Delimiter)	#1
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"	
,			
,	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. 2-17-1

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

Function: This command reads the window level flicker 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
LWFL4	2 bytes	20H 31H
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-18-1

Data:

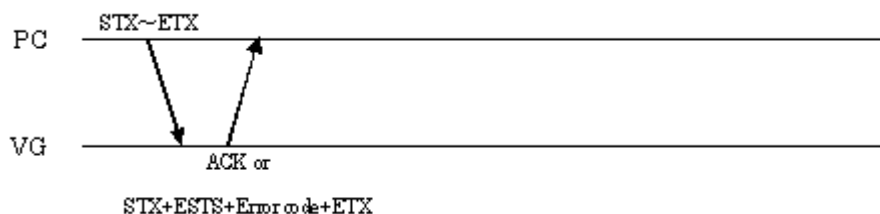
STX	1 byte	02H	
TRDT	1 byte	10H	
Window level flicker	1 byte	"0" = Not provided, "1" = Provided	
,	1 byte	2CH (Delimiter)	
Number of data N	1 to 3 bytes	"1" to "256"	
,	1 byte	2CH (Delimiter)	
Bit mode	1 or 2 bytes	"8" to "16"	
,	1 byte	2CH (Delimiter)	#1
Time	1 to 3 bytes	"1" to "255" ("0" = Not registered)	
,	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"	
,	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 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:

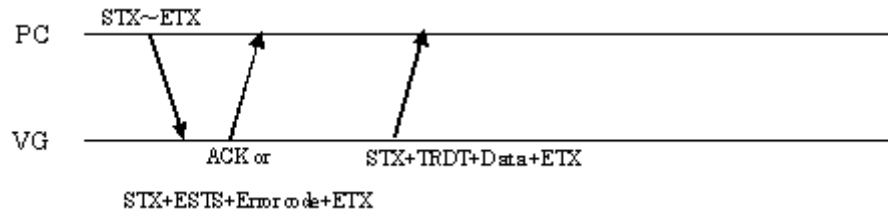
STX	1 byte	02H
VG4CMD	1 byte	FDH
SAAD4	2 bytes	20H 32H
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Freq L (Hz)	2 to 5 bytes	"20" to "20000" = 20 Hz to 20000 Hz
,	1 byte	2CH (Delimiter)
Freq R (Hz)	2 to 5 bytes	"20" to "20000" = 20 Hz to 20000 Hz
,	1 byte	2CH (Delimiter)
Level L (mV)	1 to 4 bytes	"0" to "2000" = 0 mV to 2000 mV (in 50 mV increments)
,	1 byte	2CH (Delimiter)
Level R (mV)	1 to 4 bytes	"0" to "2000" = 0 mV to 2000 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 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
LAAD4	2 bytes	20H 33H
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-20-1

Data:

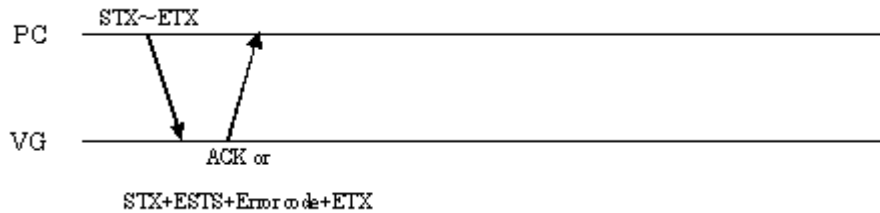
STX	1 byte	02H
TRDT	1 byte	10H
Freq L (Hz)	2 to 5 bytes	"20" to "20000" = 20 Hz to 20000 Hz
,	1 byte	2CH (Delimiter)
Freq R (Hz)	2 to 5 bytes	"20" to "20000" = 20 Hz to 20000 Hz
,	1 byte	2CH (Delimiter)
Level L (mV)	1 to 4 bytes	"0" to "2000" = 0 mV to 2000 mV (in 50 mV increments)
,	1 byte	2CH (Delimiter)
Level R (mV)	1 to 4 bytes	"0" to "2000" = 0 mV to 2000 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 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 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
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
,	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
,	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"

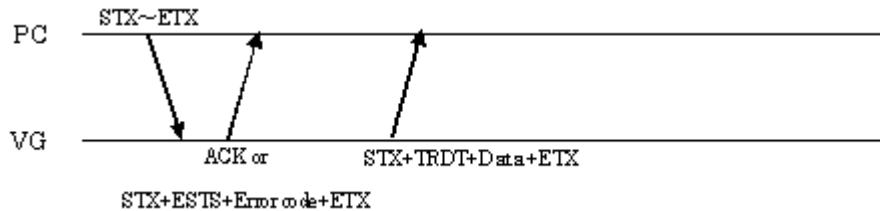
,	1 byte	2CH (Delimiter)
Audio Internal Freq 2	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 3	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 4	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 5	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 6	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 7	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 8	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	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 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
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
,	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
,	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"

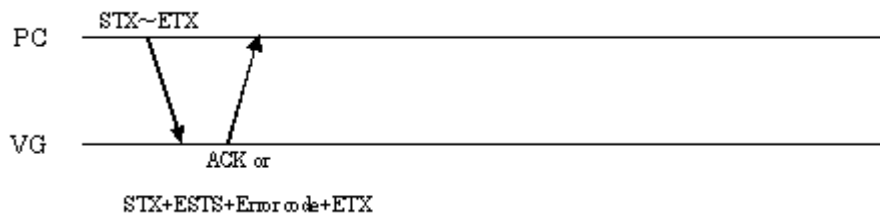
,	1 byte	2CH (Delimiter)
Audio Internal Level 6	1 to 7 bytes	"0" to "8388607"
,	1 byte	2CH (Delimiter)
Audio Internal Level 7	1 to 7 bytes	"0" to "8388607"
,	1 byte	2CH (Delimiter)
Audio Internal Level 8	1 to 7 bytes	"0" to "8388607"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 1	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 2	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 3	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 4	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 5	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 6	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 7	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	1 byte	2CH (Delimiter)
Audio Internal Freq 8	2 to 5 bytes	20 Hz to "1/2 of frequency set by Audio Sample"
,	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 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
SHDMI4	2 bytes	20H 36H
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
HDMI Mode	1 byte	"0" = OFF, "1" = DVI, "2" = HDMI1.0, "3" = HDMI1.1, "4" = Auto
,	1 byte	2CH (Delimiter)
Video Format	1 byte	"0" = RGB, "1" = YCbCr444, "2" = YCbCr422
,	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)
ETX	1 byte	03H

Fig. 2-23-1

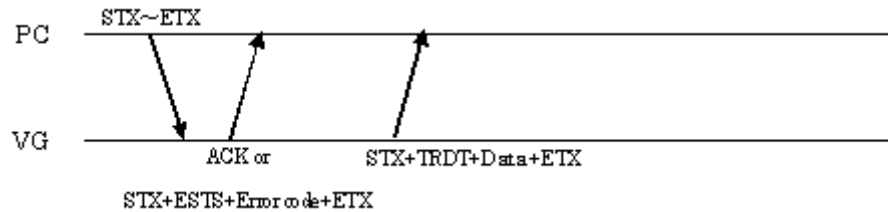
*1: The ranges of the settings are as listed below by video format.

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"

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

Function: This command gets the HDMI 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
LHDMI4	2 bytes	20H 37H
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-24-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
HDMI Mode	1 byte	"0" = OFF, "1" = DVI, "2" = HDMI1.0, "3" = HDMI1.1, "4" = Auto
,	1 byte	2CH (Delimiter)
Video Format	1 byte	"0" = RGB, "1" = YCbCr444, "2" = YCbCr422
,	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)
ETX	1 byte	03H

Fig. 2-24-2

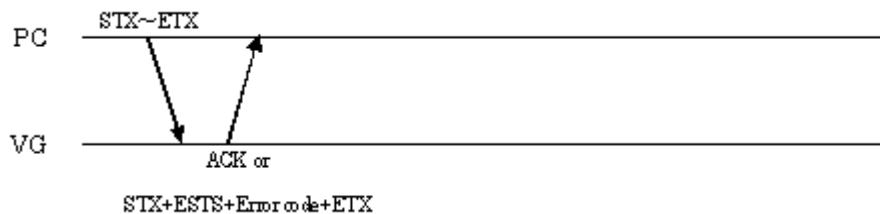
*1: The ranges of the settings are as listed below by video format.

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"

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

Function: This command registers the InfoFrame 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
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
,	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
,	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 "64"
,	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
,	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 or spaces after the characters to bring the number of characters up to 8)
,	1 byte	2CH (Delimiter)
SPD Product	16 bytes	* 16 ASCII characters (When the string contains fewer than 16 characters, enter a space or spaces after the characters to bring the number of characters up to 16)
,	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 Samp Size	1 byte	"0" = Refer, "1" = 16 bits, "2" = 20 bits, "3" = 24 bits
,	1 byte	2CH (Delimiter)
Audio Samp 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)

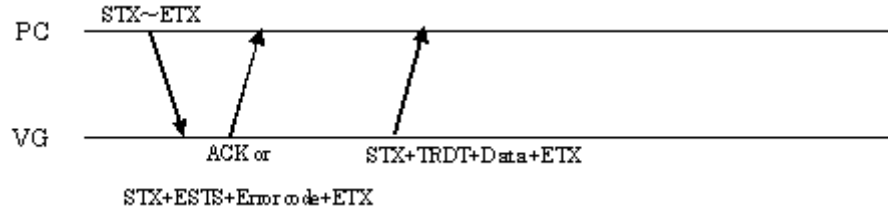
Audio Channel Alloc	1 or 2 bytes	"0" to "31"
,	1 byte	2CH (Delimiter)
Audio Level Shift	1 or 2 bytes	"0" to "15" dB
,	1 byte	2CH (Delimiter)
Audio Down-mix	1 byte	"0" = Permitted, "1" = Prohibitd
,	1 byte	2CH (Delimiter)
MPEG Type	1 byte	"5" = 5
,	1 byte	2CH (Delimiter)
MPEG Ver	1 byte	"1" = 1
,	1 byte	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"=Chinema "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"=inknown "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
ETX	1 byte	03H

Fig. 2-25-1

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

Function: This command gets the InfoFrame 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
LIF4	2 bytes	20H 39H
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-26-1

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
,	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
,	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 "64"
,	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
,	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 or spaces after the characters to bring the number of characters up to 8)
,	1 byte	2CH (Delimiter)
SPD Product	16 bytes	* 16 ASCII characters (When the string contains fewer than 16 characters, enter a space or spaces after the characters to bring the number of characters up to 16)
,	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 DTS HD "12"=MLP DVD Forum MLP "13"=DST ISO/IEC 14496-3 "14"=WMA Pro WMA Pro Decoder "15"=Refer to Audio Coding Extension Type

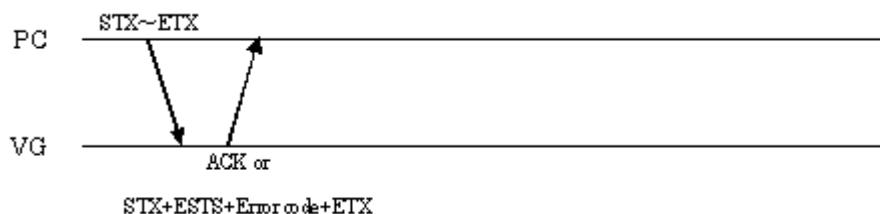
,	1 byte	2CH (Delimiter)
Audio Samp Size	1 byte	"0" = Refer, "1" = 16 bits, "2" = 20 bits, "3" = 24 bits
,	1 byte	2CH (Delimiter)
Audio Samp Freq	1 byte	"0" = Refer, "1" = 32 kHz, "2" = 44.1 kHz, "3" = 48 kHz, "4" = 88.2 kHz, "5" = 96 kHz, "6" = 176.4 kHz, "7" = 192 kHz
,	1 byte	2CH (Delimiter)
Audio 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"=Chinema "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"=inknown "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
ETX	1 byte	03H

Fig. 2-26-2

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

Function: This command registers the ACP 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
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"

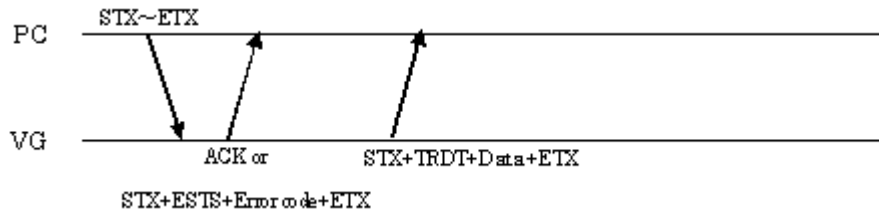
,	1 byte	2CH (Delimiter)
SACD S	1 byte	"0" or "1"
,	1 byte	2CH (Delimiter)
SACD U	1 byte	"0" or "1"
,	1 byte	2CH (Delimiter)
SACD Move_A	1 byte	"0" or "1"
,	1 byte	2CH (Delimiter)
SACD Move_S	1 byte	"0" or "1"
,	1 byte	2CH (Delimiter)
SACD Move_U	1 byte	"0" or "1"
ETX	1 byte	03H

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"
ETX	1 byte	03H

Fig. 2-28-1

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	"000000000000" to "999999999999"
,	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"

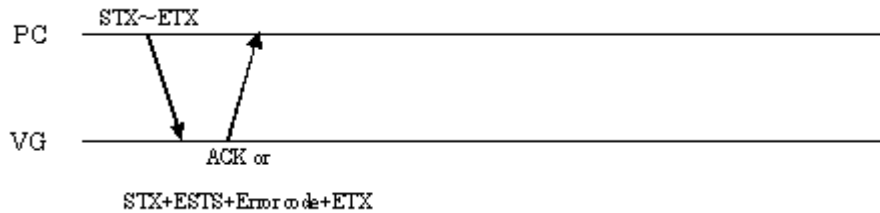
,	1 byte	2CH (Delimiter)
SACD Count_A	1 to 3 bytes	"0" to "255"
,	1 byte	2CH (Delimiter)
SACD Count_S	1 to 3 bytes	"0" to "255"
,	1 byte	2CH (Delimiter)
SACD Count_U	1 to 3 bytes	"0" to "255"
,	1 byte	2CH (Delimiter)
SACD A	1 byte	"0" or "1"
,	1 byte	2CH (Delimiter)
SACD S	1 byte	"0" or "1"
,	1 byte	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"
ETX	1 byte	03H

Fig. 2-28-2

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

Function: This command registers the Scart 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:

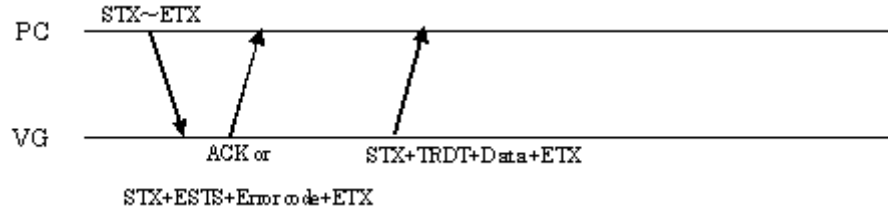
STX	1 byte	02H
VG4CMD	1 byte	FDH
SSD4	2 bytes	20H 3CH
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Output selection	1 byte	"0" = CVBS (Composite) "1" = Y/C "2" = RGB
,	1 byte	2CH (Delimiter)
Video status	1 byte	"0" = Auto "1" = 4:3 "2" = 16:9 "3" = NoSignal
,	1 byte	2CH (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
,	1 byte	2CH (Delimiter)
Fast Blanking Area X1	1 to 3 bytes	"0" to "100" %
,	1 byte	2CH (Delimiter)
Fast Blanking Area Y1	1 to 3 bytes	"0" to "100" %
,	1 byte	2CH (Delimiter)
Fast Blanking Area X2	1 to 3 bytes	"0" to "100" %
,	1 byte	2CH (Delimiter)
Fast Blanking Area Y2	1 to 3 bytes	"0" to "100" %
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 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
LSD4	2 bytes	20H 3DH
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-30-1

Data:

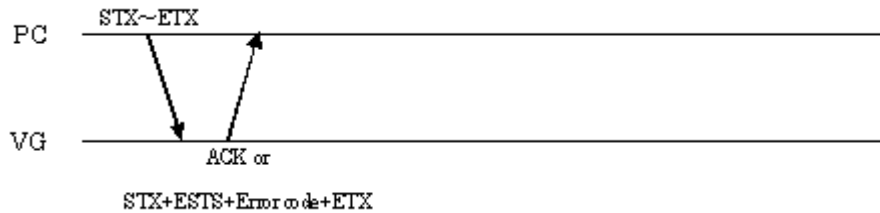
STX	1 byte	02H
TRDT	1 byte	10H
Output selection	1 byte	"0" = CVBS (Composite) "1" = Y/C "2" = RGB
,	1 byte	2CH (Delimiter)
Video status	1 byte	"0" = Auto "1" = 4:3 "2" = 16:9 "3" = NoSignal
,	1 byte	2CH (Delimiter)
RGB status	1 byte	"0" = Auto "1" = VBS "2" = RGB "3" = FastBlanking
,	1 byte	2CH (Delimiter)
Audio output CH 1	1 byte	"0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Audio output CH 2	1 byte	"0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Fast Blanking Area X1	1 to 3 bytes	"0" to "100" %
,	1 byte	2CH (Delimiter)
Fast Blanking Area Y1	1 to 3 bytes	"0" to "100" %
,	1 byte	2CH (Delimiter)
Fast Blanking Area X2	1 to 3 bytes	"0" to "100" %
,	1 byte	2CH (Delimiter)
Fast Blanking Area Y2	1 to 3 bytes	"0" to "100" %
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 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
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.

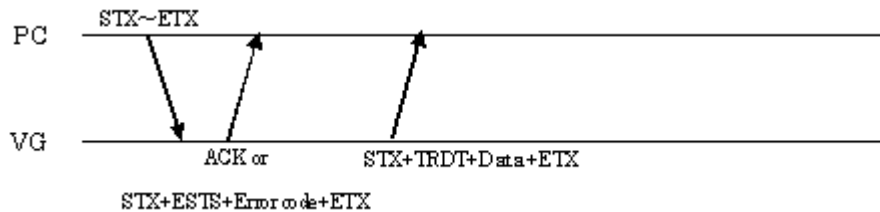
;	1 byte	3BH (Delimiter 2)
Optional pattern	? bytes	Refer to Fig. 2-13-18.
;	1 byte	3BH (Delimiter 2)
Background color	? bytes	Refer to Fig. 2-13-19.
;	1 byte	3BH (Delimiter 2)
Aspect	? bytes	Refer to Fig. 2-13-20.
ETX	1 byte	03H

Fig. 2-31-1

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

Function: This command reads all the data of the 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
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.

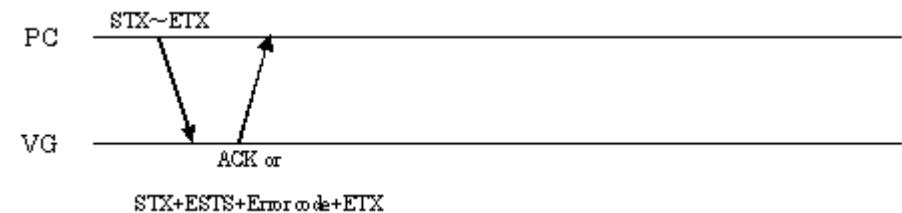
;	1 byte	3BH (Delimiter 2)
Monoscope	? bytes	Refer to Fig. 2-13-15.
;	1 byte	3BH (Delimiter 2)
Raster	? bytes	Refer to Fig. 2-13-16.
;	1 byte	3BH (Delimiter 2)
Checker	? bytes	Refer to Fig. 2-13-17.
;	1 byte	3BH (Delimiter 2)
Optional pattern	? bytes	Refer to Fig. 2-13-18.
;	1 byte	3BH (Delimiter 2)
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 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:

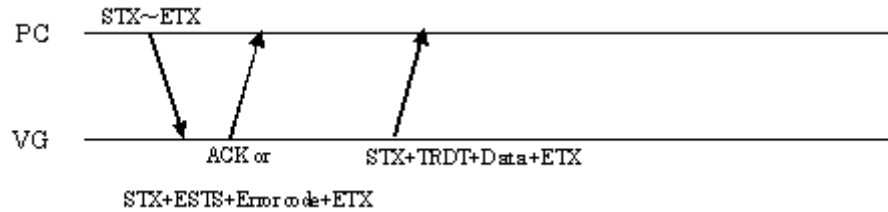
STX	1 byte	02H
VG4CMD	1 byte	FDH
SMACROV4	2 bytes	20H 40H
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Mode	1 byte	"0" to "5"
ETX	1 byte	03H

Fig. 2-33-1

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

Function: This command gets the Macrovision data of the 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
LMACROV4	2 bytes	20H 41H
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-34-1

Data:

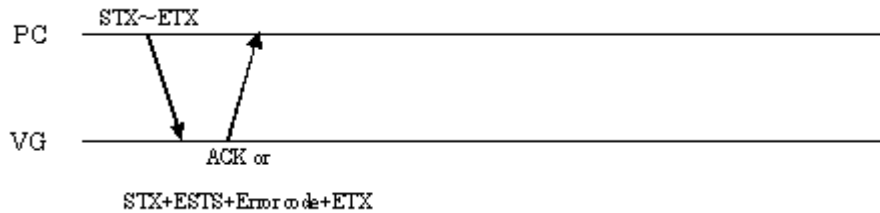
STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	"0" to "5"
ETX	1 byte	03H

Fig. 2-34-2

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

Function: This command registers the AFD data of the 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:

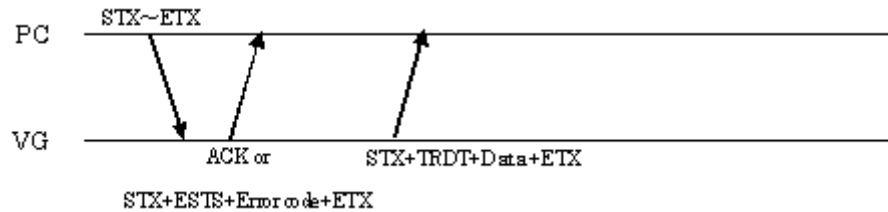
STX	1 byte	02H
VG4CMD	1 byte	FDH
SAFD4	2 bytes	20H 42H
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Aspect	1 byte	"0" = 4:3, "1" = 16:9
,	1 byte	2CH (Delimiter)
Type	1 or 2 bytes	"0" to "12"
,	1 byte	2CH (Delimiter)
Color R	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
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 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
LAFD4	2 bytes	20H 43H
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-36-1

Data:

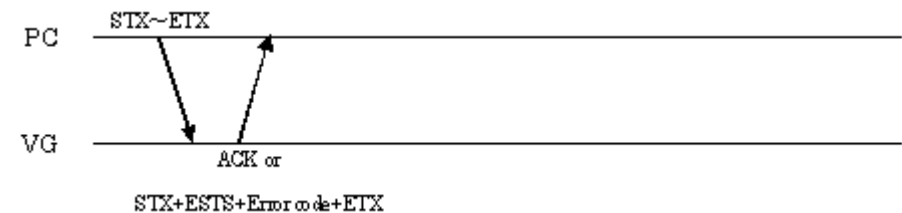
STX	1 byte	02H
TRDT	1 byte	10H
Aspect	1 byte	"0" = 4:3, "1" = 16:9
,	1 byte	2CH (Delimiter)
Type	1 or 2 bytes	"0" to "12"
,	1 byte	2CH (Delimiter)
Color R	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
Color G	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
Color B	1 to 5 bytes	"0" to "65535"
,	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 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:

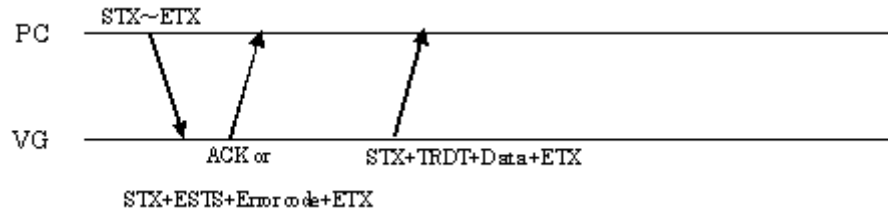
STX	1 byte	02H
VG4CMD	1 byte	FDH
SCAPTION4	2 bytes	20H 44H
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Mode	1 byte	"0" to "8"
,	1 byte	2CH (Delimiter)
Data	1 or 2 bytes	"0" to "20"
,	1 byte	2CH (Delimiter)
Interval	1 or 2 bytes	"0" to "60"
ETX	1 byte	03H

Fig. 2-37-1

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

Function: This command gets the ClosedCaption data of the 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
LCAPTION4	2 bytes	20H 45H
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-38-1

Data:

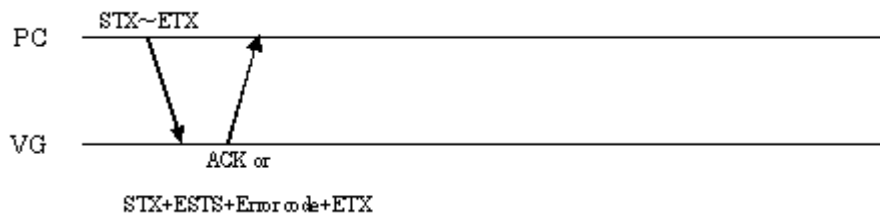
STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	"0" to "8"
,	1 byte	2CH (Delimiter)
Data	1 or 2 bytes	"0" to "20"
,	1 byte	2CH (Delimiter)
Interval	1 or 2 bytes	"0" to "60"
ETX	1 byte	03H

Fig. 2-38-2

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

Function: This command registers the V-Chip data of the 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
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:

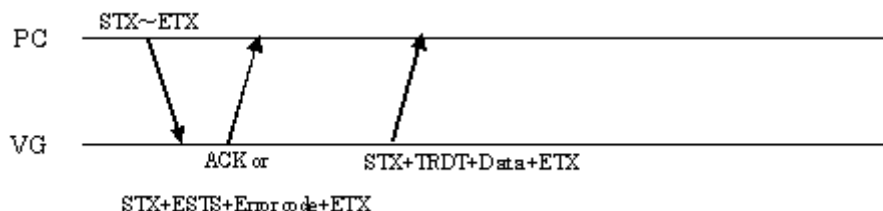
Bit7							Bit0
0	1	0	FV	V	S	L	D

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 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
LVCHIP4	2 bytes	20H 47H
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-40-1

Data:

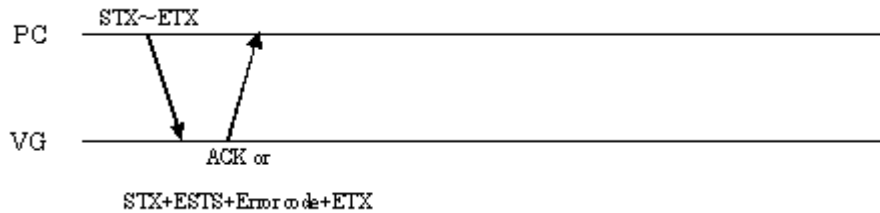
STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	"0" to "4"
,	1 byte	2CH (Delimiter)
MPAA Rate	1 byte	"0" to "7"
,	1 byte	2CH (Delimiter)
USTV Rate	1 byte	"0" to "7"
,	1 byte	2CH (Delimiter)
USTV Ext. Rate	1 byte	40H to 5FH *1
,	1 byte	2CH (Delimiter)
English Rate	1 byte	"0" to "6"
,	1 byte	2CH (Delimiter)
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

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

Function: This command registers the TeleText 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
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"

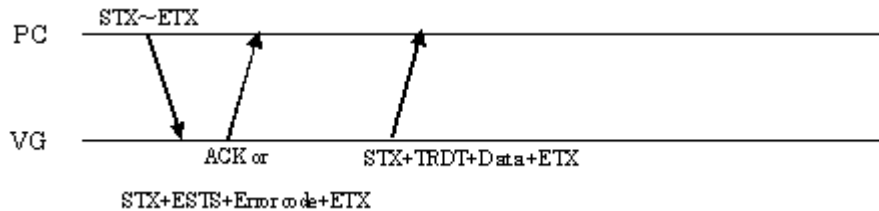
,	1 byte	2CH (Delimiter)
,	1 byte	2CH (Delimiter)
Channel 20	3 bytes	"100" to "899"
ETX	1 byte	03H

Fig. 2-41-1

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

Function: This command gets the TeleText data of the 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
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

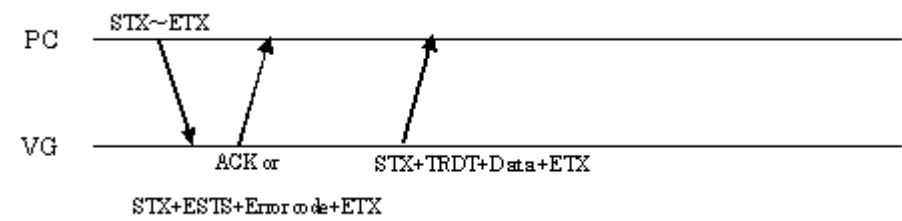
,	1 byte	2CH (Delimiter)
Data output line, line 23	1 byte	"0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Channel 1	3 bytes	"100" to "899"
,	1 byte	2CH (Delimiter)
Channel 2	3 bytes	"100" to "899"
,	1 byte	2CH (Delimiter)
...
,	1 byte	2CH (Delimiter)
Channel 20	3 bytes	"100" to "899"
ETX	1 byte	03H

Fig. 2-42-2

2.43 PNames4 [20H 4AH]: Program name registration

Function: This command registers the name of the 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 3



Command:

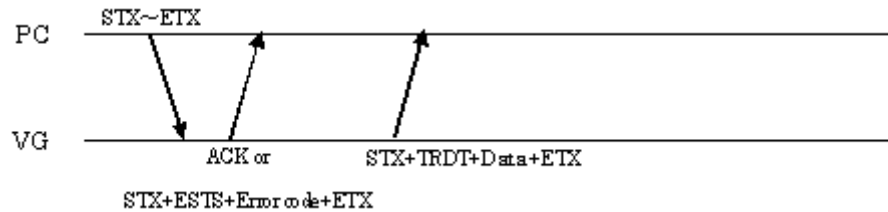
STX	1 byte	02H
VG4CMD	1 byte	FDH
PNames4	2 bytes	20H 4AH
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Length	1 or 2 bytes	"1" to "20"
,	1 byte	2CH (Delimiter)
String	20 bytes	* 20 ASCII characters (When the string contains fewer than 20 characters, enter a space or spaces 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 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
PNAMER4	2 bytes	20H 4BH
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-44-1

Data:

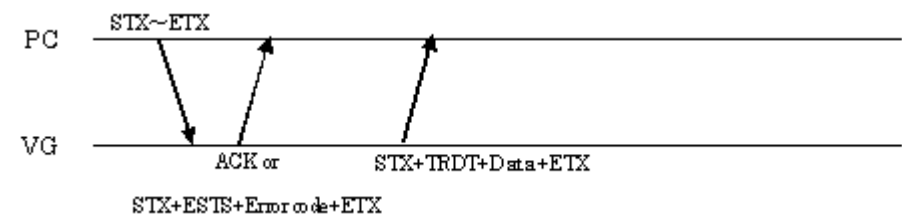
STX	1 byte	02H
TRDT	1 byte	10H
Length	1 or 2 bytes	"1" to "20"
,	1 byte	2CH (Delimiter)
String	20 bytes	* 20 ASCII characters (When the string contains fewer than 20 characters, enter a space or spaces after the characters to bring the number of characters up to 20)
ETX	1 byte	03H

Fig. 2-44-2

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

Function: This command returns enable or disable for the file whose program number has been designated.

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:

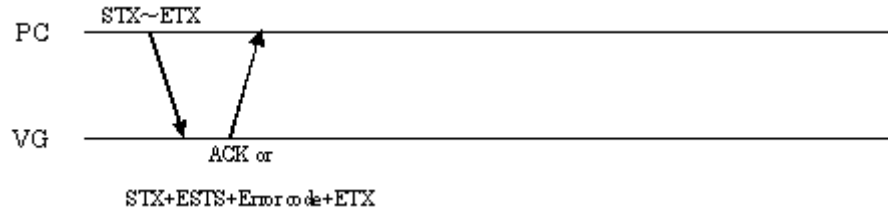
STX	1 byte	02H
TRDT	1 byte	10H
Enable/disable	1 byte	"0" = Enable, "1" = Disable
ETX	1 byte	03H

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:

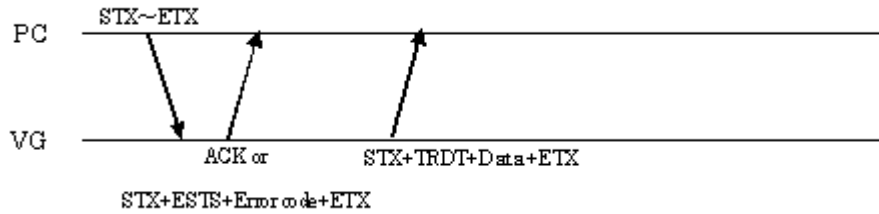
STX	1 byte	02H
VG4CMD	1 byte	FDH
SAT4	2 bytes	20H 50H
Mode	1 byte	"0" = Normal Autodisplay, "1" = Group
,	1 byte	2CH (Delimiter)
Group No.	1 or 2 bytes	"0" to "99"
,	1 byte	2CH (Delimiter)
Interval time (Sec)	1 to 3 bytes	"0" to "999"
,	1 byte	2CH (Delimiter)
Block 1 (START)	1 to 4 bytes	"0" to "1000" ("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:

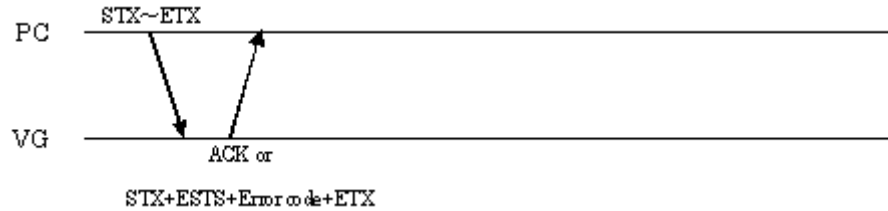
STX	1 byte	02H
TRDT	1 byte	10H
Mode	1 byte	"0" = Normal Autodisplay, "1" = Group
,	1 byte	2CH (Delimiter)
Group No.	1 or 2 bytes	"0" to "99"
,	1 byte	2CH (Delimiter)
Interval time (Sec)	1 to 3 bytes	"0" to "999"
,	1 byte	2CH (Delimiter)
Block 1 (START)	1 to 4 bytes	"0" to "1000" ("0" = Not registered)
,	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 group whose number has been designated.

Sequence: Type 2



Command:

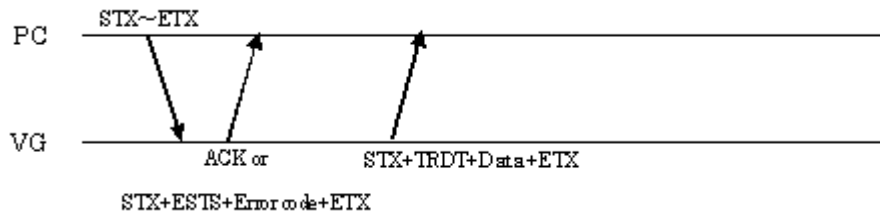
STX	1 byte	02H	
VG4CMD	1 byte	FDH	
SGROUP4	2 bytes	20H 52H	
Group No.	1 or 2 bytes	"1" to "99"	
,	1 byte	2CH (Delimiter)	
Number of characters in group name	1 or 2 bytes	"1" to "20"	
,	1 byte	2CH (Delimiter)	
Group name	20 bytes	* 20 ASCII characters (When the string contains fewer than 20 characters, 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 group whose number has been designated.

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:

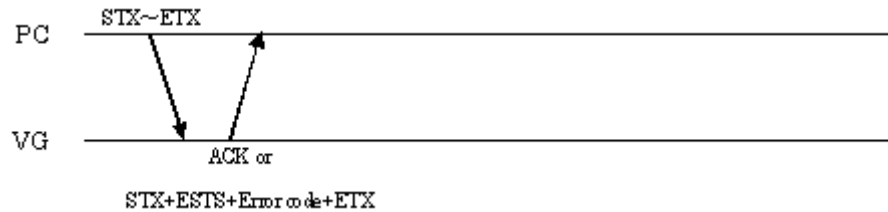
STX	1 byte	02H	
TRDT	1 byte	10H	
Number of characters in group name	1 or 2 bytes	"1" to "20"	
,	1 byte	2CH (Delimiter)	
Group name	20 bytes	* 20 ASCII characters (When the string contains fewer than 20 characters, enter a space or spaces after the characters to bring the number of characters up to 20)	
,	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
0	Beep	1	"0" = OFF, "1" = ON
1	Term Port	1	"0" = SIO, "1" = LAN, "2" = USB
2	RS Speed	1	"0" = 9600, "1" = 19200, "2" = 38400, "3" = 57600, "4" = 115200
3	RS Data Length	1	"0" = 7, "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 to 3	"0" to "255"
7	IP Address 2	1 to 3	"0" to "255"
8	IP Address 3	1 to 3	"0" to "255"
9	IP Address 4	1 to 3	"0" to "255"
10	Gate Way 1	1 to 3	"0" to "255"
11	Gate Way 2	1 to 3	"0" to "255"
12	Gate Way 3	1 to 3	"0" to "255"
13	Gate Way 4	1 to 3	"0" to "255"
14	Net Mask 1	1 to 3	"0" to "255"
15	Net Mask 2	1 to 3	"0" to "255"
16	Net Mask 3	1 to 3	"0" to "255"
17	Net Mask 4	1 to 3	"0" to "255"
18	Port No.	4 or 5	"1024" to "65535"

19	VBS Filter Level	1	"0" to "5"
20	I2C Trans Clock	1	"0" = 20, "1" = 40, "2" = 60, "3" = 80, "4" = 100 (kHz)
21	HDMI Auto Select	1	"0" = OFF, "1" = Selected
22	LVDS Select	1	"0" = DEF1, "1" = DEF2, "2" = USER1, "3" = USER2, "4" = USER3 * "1" = DEF2 cannot be used by the 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 or 2	"0", "8" to "16"
27	Window Trigger	1	"0" = OFF, "1" = TriggerA, "2" = TriggerB, "3" = ScrollTrigger, "4" = VSyncTrigger
28	Sync Mode	1	"0" = Standard Mode "1" = Separate Sync Mode "2" = Composite Sync Mode "3" = Sync on Video Mode
29	Prog. Inc/Dec Repeat	1	"0" = OFF, "1" = ON
30	Prog. Inc/Dec Interval	1 or 2	"0" to "10"
31	LVDS Multi Bit Mode	1	"0" = 8+8 (Multiple bits provided) "1" = 10+6 (Multiple bits provided)
32	Image Priority	1	"0" = OFF "1" = Internal flash memory "2" = External CompactFlash card
33	RGB Fix Mode	1	"0" = It is programmatic "1" = RGB fixation
34	Fast BMP Mode	1	"0" = OFF, "1" = ON
35	Fast BMP Start No	1 to 3	"1" to "200"
36	Fast BMP end No	1 to 3	"1" to "200"
37	BMP display position	1	"0" = Center, "1" = Top-Left, "2" = Bottom-Left, "3" = Top-Right, "4" = Bottom-Right
38	HDMI AV Mute IF Change	1	changing only "0" = default IF, process OFF sync in AV-Mute. Changing only "1" = IF, process NOT OFF sync in AV-Mute.
202	Custom Key 2	1	"0" = MUTE "1" = AV-MUTE
302	RB-1871 Custom Key 2	1	"0" = MUTE "1" = AV-MUTE
400	HDP Mode	1	"0" = refer Program "1" = ON "2" = OFF
401	Analize Port	1	"0" = DP1 "1" = DP2
402	Link Sel Mode	1	"0" = refer Program "1" = Auto "2" = Manual
500	Message display time	1 or 2	"0" = Time not displayed "1" to "10" seconds The message is displayed for the specified time, after which the original status is restored. * This command is valid for the VG-880 only.

501	Program No Digits	1	"1" to "4" The number of digits of programs No input on a direct display is set. *This command is valid for the VG-880 only.
700	Key Lock	1	"0" = KeyLock function OFF "1" = KeyLock function ON. Designated keys only. "2" = All keys locked * For details on designating the keys, refer to "SKEYL4 [20H 73H]: KEY LOCK data registration command."
800	HDCP Execute Mode	1	"0" = Disable, "1" = Enable, "2" = Program
801	HDCP Display Mode	1	"0" = All, "1" = NG Only
802	HDCP Interval	1 or 2	"1" to "10"
803	HDCP Version	1	"0" to "2"
804	HDCP Ri NG Reset	1	"0" = OFF, "1" = ON
805	HDCP FIFO Ready	1	"0" to "8"
900	LastMemMod	1	"0" = Program is not executed. "1" = Last memory is not used. "2" = Last memory is used.
901	Power ON Exe Mode	1	"0" = Sample program data, "1" = User program data, "2" = Group
902	Power ON Exe GrpNo	1 or 2	"1" to "99"
903	Power ON Exe PrgNo	1 to 4	With VG-870: "1" to "1000" With VG-880: "1" to "2000"
904	Power ON Exe TimNo	1 to 4	With VG-870: "1001" to "2000" With VG-880: "1" to "2000"
905	Power ON Exe PatNo	1 to 4	With VG-870: "1001" to "2000" With VG-880: "1" to "2000"

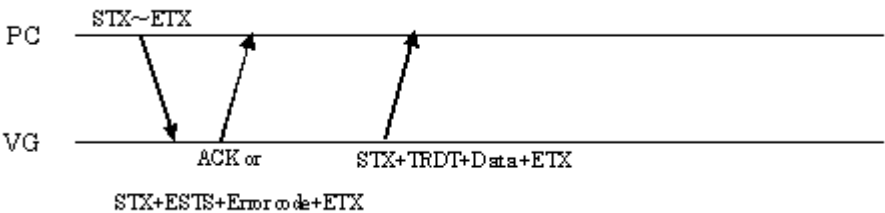
Fig. 2-50-2

* KeyLock data for use with the VG-870 generator and that for the VG-880 generator cannot both be sent.

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

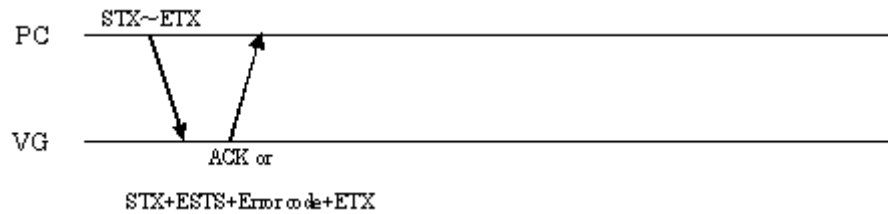
Fig. 2-51-2

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 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:

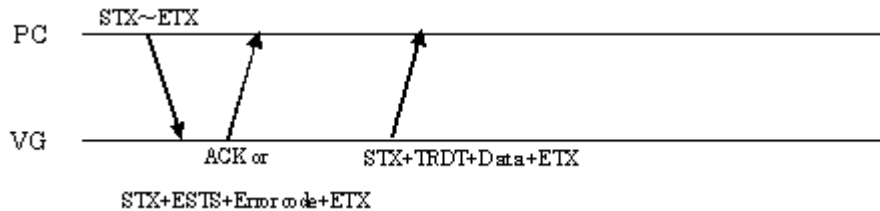
STX	1 byte	02H
VG4CMD	1 byte	FDH
SINB4	2 bytes	20H 56H
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Insert Black Enable	1 byte	"0" = Disable, "1" = Enable
,	1 byte	2CH (Delimiter)
Insert Black Position	1 byte	"0" = All, "1" = Left, "2" = Right
,	1 byte	2CH (Delimiter)
Insert 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" %

Fig. 2-52-1

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

Function: This command reads the black insertion 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
LINB4	2 bytes	20H 57H
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-53-1

Data:

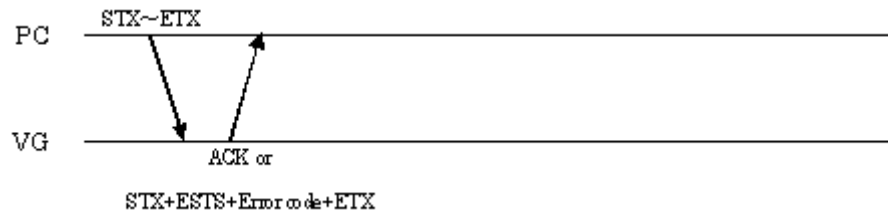
STX	1 byte	02H
TRDT	1 byte	10H
Insert Black Enable	1 byte	"0" = Disable, "1" = Enable
,	1 byte	2CH (Delimiter)
Insert Black Position	1 byte	"0" = All, "1" = Left, "2" = Right
,	1 byte	2CH (Delimiter)
Insert Black On Time	1 to 3 bytes	"0" to "255" (0 to 255 V)
,	1 byte	2CH (Delimiter)
Insert Black Off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



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 Logcal 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)	
ProtSel	1 byte	"0" = Port1 "1" = Port2 (HDMI port specification)	
ETX	1 byte	03H	

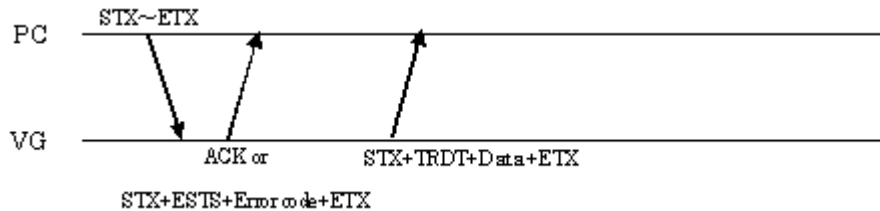
Fig. 2-54-1

Data: None

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

Function: This command reads the CEC 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 + 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"	

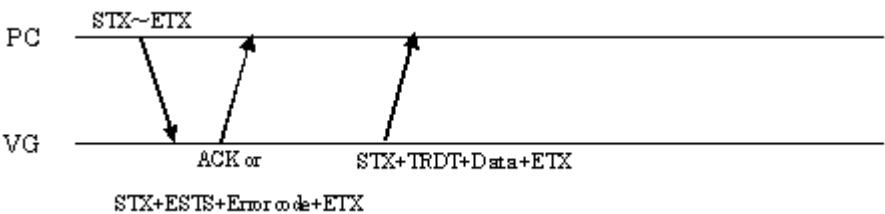
,	1 byte	2CH (Delimiter)
ProtSel	1 byte	"0" = Port1 "1" = Port2 (HDMI port specification)
ETX	1 byte	03H

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:

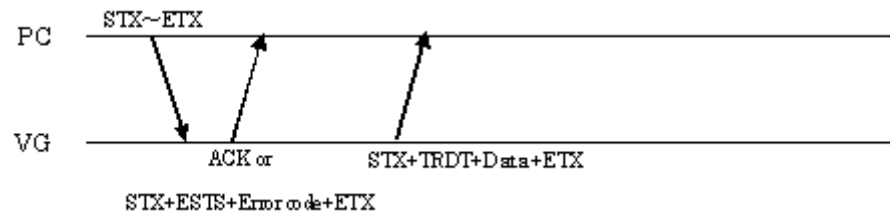
STX	1 byte	02H
TRDT	1 byte	10H
Enable/disable	1 byte	"0" = Enable, "1" = Disable
ETX	1 byte	03H

Fig. 2-56-2

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

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

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:

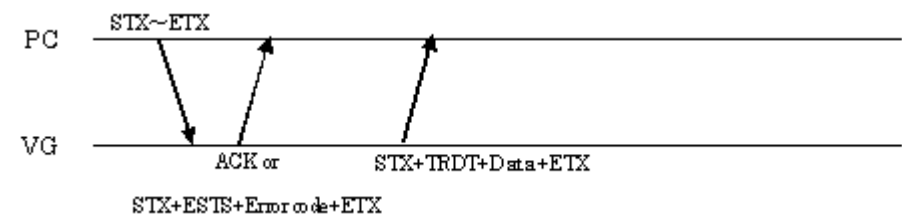
STX	1 byte	02H
TRDT	1 byte	10H
Enable/disable	1 byte	"0" = Enable, "1" = Disable
ETX	1 byte	03H

Fig. 2-57-2

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

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

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:

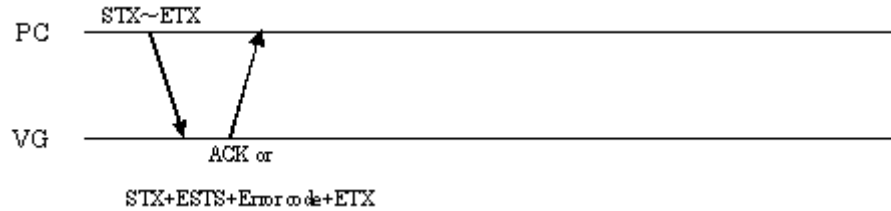
STX	1 byte	02H
TRDT	1 byte	10H
Enable/disable	1 byte	"0" = Enable, "1" = Disable
ETX	1 byte	03H

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

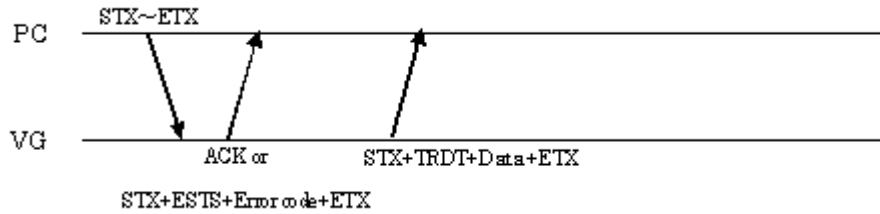
Fig. 2-59-1

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:

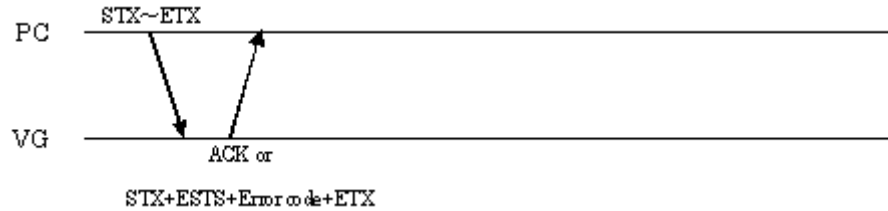
STX	1 byte	02H
TRDT	1 byte	10H
FLASH_WRITE	1 byte	"0" = Current data are updated only. "1" = Data is updated, and written on flash card.
,	1 byte	2CH (Delimiter)
Caption mode	1 byte	"0" = CC1 "1" = CC2 "2" = CC3 "3" = CC4 "4" = TXT1 "5" = TXT2 "6" = TXT3 "7" = TXT4
,	1 byte	2CH (Delimiter)
Caption style	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: 0x2a → "2A", 0x00 → "00")
ETX	1 byte	03H

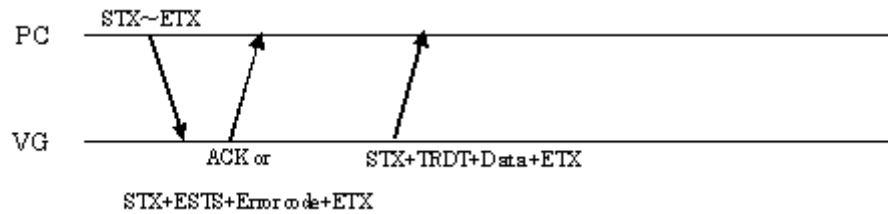
Fig. 2-61-1

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)

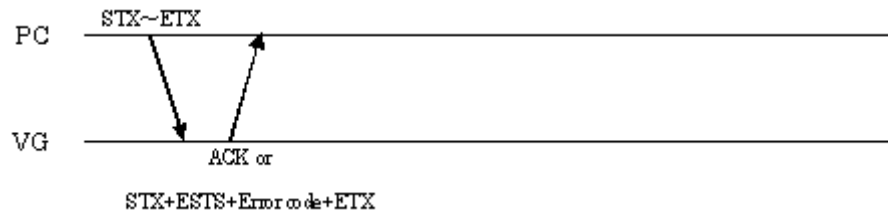
,	1 byte	2CH (Delimiter)
Underline	1 byte	"0" = OFF "1" = ON
,	1 byte	2CH (Delimiter)
Italic	1 byte	"0" = OFF "1" = ON
,	1 byte	2CH (Delimiter)
Flash	1 byte	"0" = OFF "1" = ON
,	1 byte	2CH (Delimiter)
Data length	3 bytes	"000" to "128" (byte)
,	1 byte	2CH (Delimiter)
Caption data	0 to 128 bytes	Variable (In the binary mode, the data must be inserted using hexadecimal ASCII character. Examples: 0x2a → "2A", 0x00 → "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 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



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)
Packeded_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)
Packeded_Range_Data (MaxRedData)	2 to 11 byte	Same as above
,	1 byte	2CH (Delimiter)
Packeded_Range_Data (MinGreenData)	2 to 11 byte	Same as above
,	1 byte	2CH (Delimiter)
Packeded_Range_Data (MaxGreenData)	2 to 11 byte	Same as above
,	1 byte	2CH (Delimiter)
Packeded_Range_Data (MinBlueData)	2 to 11 byte	Same as above
,	1 byte	2CH (Delimiter)
Packeded_Range_Data (MaxBlueData)	2 to 11 byte	Same as above
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 Packeded_GBD_Vertices_Data values are given below by GBD_Color_Precision.

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

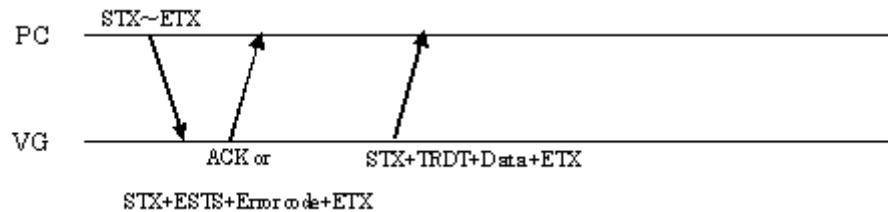
*3: The ranges of the Packeded_Range_Data values are given below by GBD_Color_Precision.

GBD_Color_Precision	Packeded_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 program whose number has been designated. 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"
ETX	1 byte	03H

Fig. 2-64-1

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	
ETX	1 byte	03H	

Fig. 2-64-2

*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

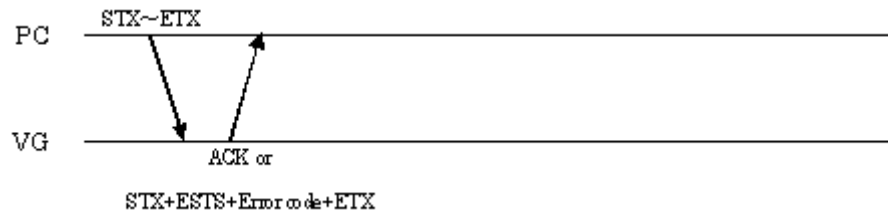
*3: The ranges of the Packeted_Range_Data values are given below by GBD_Color_Precision.

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 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



Parameters:

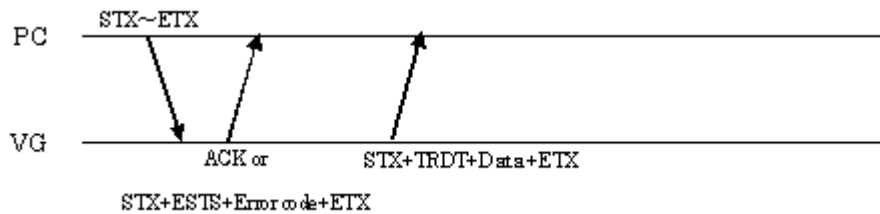
STX	1 byte	02H
VG4CMD	1 byte	FDH
SLS4	2 bytes	20H 63H
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
LipSync ON/OFF	1 byte	"0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Mode	1 byte	"0" = DELAY "1" = EDID
,	1 byte	2CH (Delimiter)
ON (Display) time	1 to 3 bytes	"1" to "255"
,	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
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 program whose number has been designated. 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:

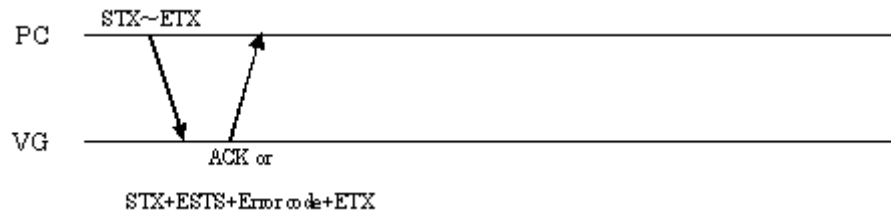
STX	1 byte	02H
TRDT	1 byte	10H
LipSync ON/OFF	1 byte	"0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Mode	1 byte	"0" = DELAY "1" = EDID
,	1 byte	2CH (Delimiter)
ON (Display) time	1 to 3 bytes	"1" to "255"
,	1 byte	2CH (Delimiter)
OFF (Black insertion) time	1 to 3 bytes	"1" to "255"
,	1 byte	2CH (Delimiter)
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
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 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



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)
Movement amount	1 to 5 bytes	"0" to "25475"
,	1 byte	2CH (Delimiter)
Movement direction	1 byte	"0" = Left, "1" = Right
,	1 byte	2CH (Delimiter)
V offset	1 to 3 bytes	"0" to "100" %
ETX	1 byte	03H

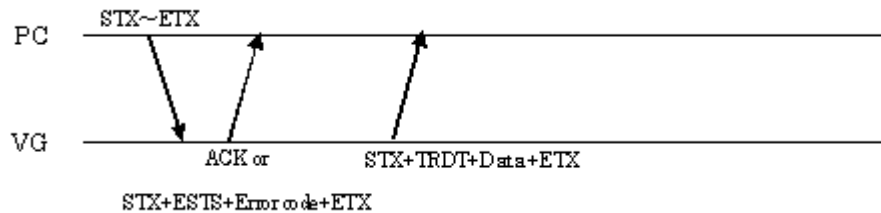
Fig. 2-67-1

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 program whose number has been designated. 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:

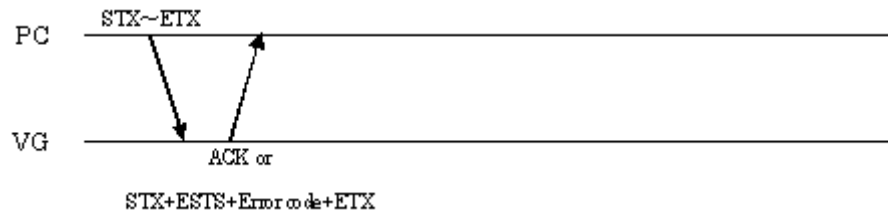
STX	1 byte	02H
TRDT	1 byte	10H
0.5/0.25-pixel scroll ON/OFF	1 byte	"0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
Movement amount	1 to 5 bytes	"0" to "25475"
,	1 byte	2CH (Delimiter)
Movement direction	1 byte	"0" = Left, "1" = Right
,	1 byte	2CH (Delimiter)
V offset	1 to 3 bytes	"0" to "100" %
ETX	1 byte	03H

Fig. 2-68-2

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

Function: This command sets the DDC/CI data of the 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



Parameters:

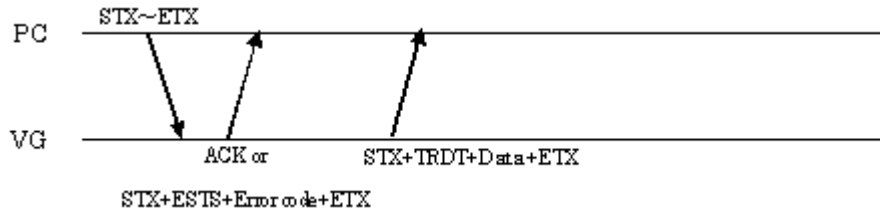
STX	1 byte	02H
VG4CMD	1 byte	FDH
SDDCCI4	2 bytes	20H 67H
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Port	1 byte	"1" = DVI-1 "2" = DVI-2 "3" = HDMI-1 "4" = HDMI-2 "5" = PC-DVI "6" = PC-VGA "7" = TV-VGA/DVI "8" = Reserved "9" = DisplayPort1 "10" = DisplayPort2
,	1 byte	2CH (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 program whose number has been designated. 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:

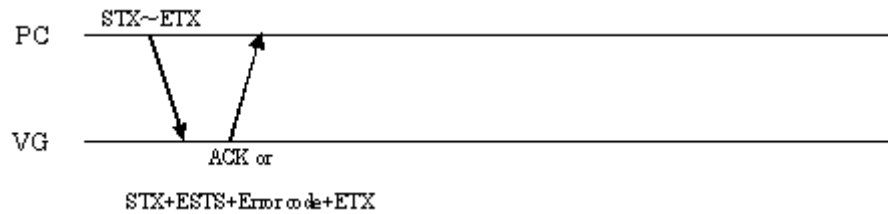
STX	1 byte	02H
TRDT	1 byte	10H
Port	1 byte	"1" = DVI-1 "2" = DVI-2 "3" = HDMI-1 "4" = HDMI-2 "5" = PC-DVI "6" = PC-VGA "7" = TV-VGA/DVI "8" = Reserved "9" = DisplayPort1 "10" = DisplayPort2
,	1 byte	2CH (Delimiter)
Mode	1 byte	"0" = Get, "1" = Set
,	1 byte	2CH (Delimiter)
VCP code	1 or 2 bytes	"0" to "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 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



Parameters:

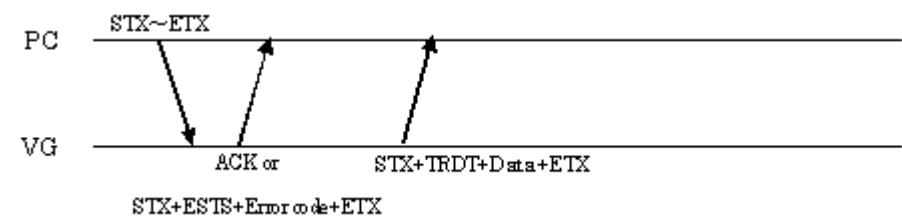
STX	1 byte	02H
VG4CMD	1 byte	FDH
SEP4	2 bytes	20H 69H
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Port	1 byte	"1" = DVI-1 "2" = DVI-2 "3" = HDMI-1 "4" = HDMI-2 "5" = PC-DVI "6" = PC-VGA "7" = TV-VGA/DVI "8" = Reserved "9" = DisplayPort1 "10" = DisplayPort2
ETX	1 byte	03H

Fig. 2-71-1

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

Function: This command gets the EDID port data of the program whose number has been designated. 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:

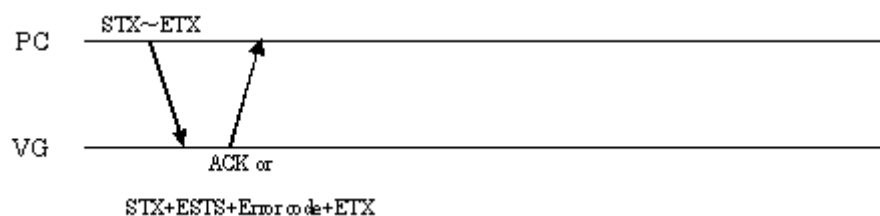
STX	1 byte	02H
TRDT	1 byte	10H
Port	1 byte	"1" = DVI-1 "2" = DVI-2 "3" = HDMI-1 "4" = HDMI-2 "5" = PC-DVI "6" = PC-VGA "7" = TV-VGA/DVI "8" = Reserved "9" = DisplayPort1 "10" = DisplayPort2
ETX	1 byte	03H

Fig. 2-72-2

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

Function: This command sets the CGMS data of the 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



Parameters:

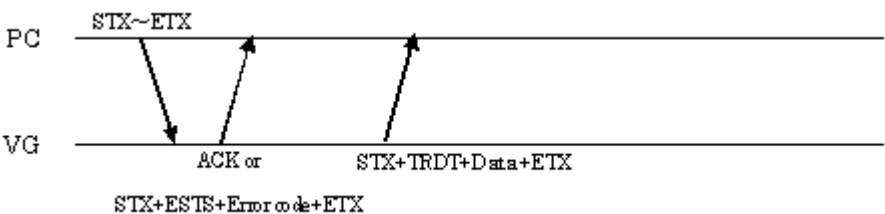
STX	1 byte	02H
VG4CMD	1 byte	FDH
SCGMS4	2 bytes	20H 6BH
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Enable (Field-1)	1 byte	"0" or "1"
,	1 byte	2CH (Delimiter)
Enable (Field-2)	1 byte	"0" or "1"
,	1 byte	2CH (Delimiter)
CGMS	1 byte	"0" = Copying permitted "1" = Not used 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 program whose number has been designated. 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:

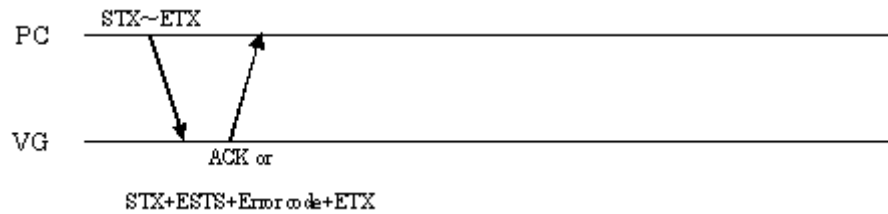
STX	1 byte	02H
TRDT	1 byte	10H
Enable (Field-1)	1 byte	"0" or "1"
,	1 byte	2CH (Delimiter)
Enable (Field-2)	1 byte	"0" or "1"
,	1 byte	2CH (Delimiter)
CGMS	1 byte	"0" = Copying permitted "1" = Not used condition "2" = Copy Once "3" = No copying permitted
ETX	1 byte	03H

Fig. 2-74-2

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

Function: This command sets the aspect ratio data of the 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



Parameters:

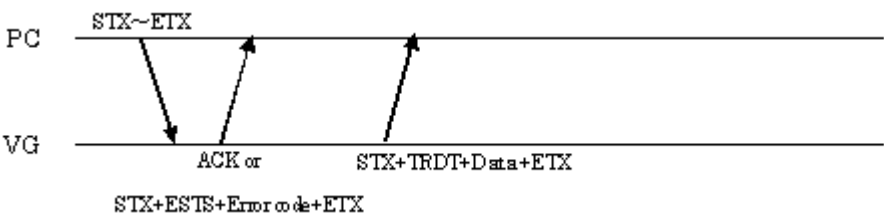
STX	1 byte	02H
VG4CMD	1 byte	FDH
SAP4	2 bytes	20H 6DH
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Enable	1 byte	"0" or "1"
,	1 byte	2CH (Delimiter)
EndLine	1 or 2 bytes	"0" to "63"
,	1 byte	2CH (Delimiter)
StartLine	1 or 2 bytes	"0" to "63"
,	1 byte	2CH (Delimiter)
Squeeze	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 program whose number has been designated. 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:

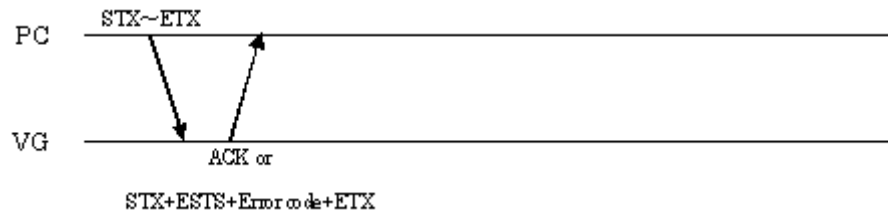
STX	1 byte	02H
TRDT	1 byte	10H
Enable	1 byte	"0" or "1"
,	1 byte	2CH (Delimiter)
EndLine	1 or 2 bytes	"0" to "63"
,	1 byte	2CH (Delimiter)
StartLine	1 or 2 bytes	"0" to "63"
,	1 byte	2CH (Delimiter)
Squeeze	1 byte	"0" or "1"
ETX	1 byte	03H

Fig. 2-76-2

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

Function: This command sets the WSS data of the 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



Parameters:

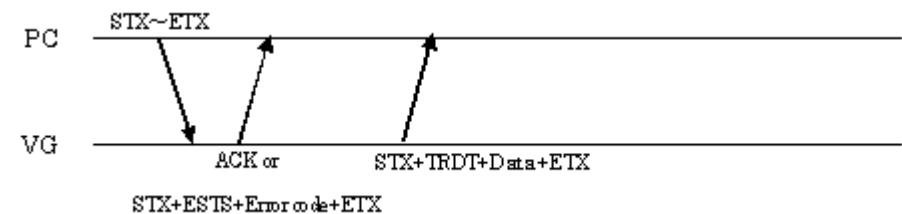
STX	1 byte	02H
VG4CMD	1 byte	FDH
SWSS4	2 bytes	20H 6EH
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Enable	1 byte	"0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
AspectRatio	1 byte	"0" = Full Format 4:3 "1" = LB 14:9 center "2" = LB 14:9 top "3" = LB 16:9 center "4" = LB 16:9 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 program whose number has been designated. 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:

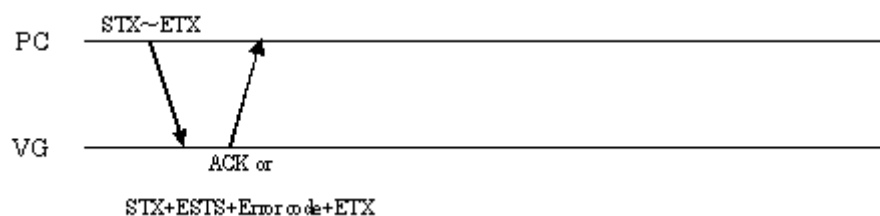
STX	1 byte	02H
TRDT	1 byte	10H
Enable	1 byte	"0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
AspectRatio	1 byte	"0" = Full Format 4:3 "1" = LB 14:9 center "2" = LB 14:9 top "3" = LB 16:9 center "4" = LB 16:9 top "5" = LB >16:9 center "6" = Full Format 14:9 "7" = Full Format 16:9
ETX	1 byte	03H

Fig. 2-78-2

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

Function: This command sets the ID1 data of the 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



Parameters:

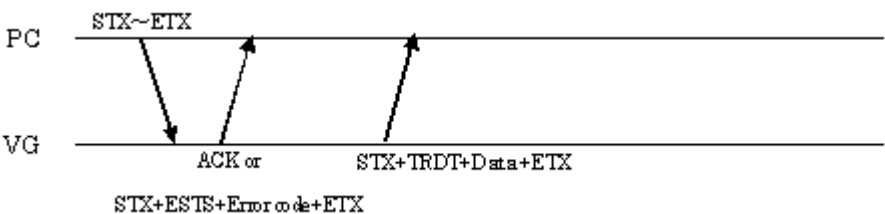
STX	1 byte	02H
VG4CMD	1 byte	FDH
SID14	2 bytes	20H 71H
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Aspect	1 byte	"0" = 4:3 Normal "1" = 16:9 Normal "2" = 4:3 LB "3" = Not Defined
ETX	1 byte	03H

Fig. 2-79-1

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

Function: This command gets the ID1 data of the program whose number has been designated. 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:

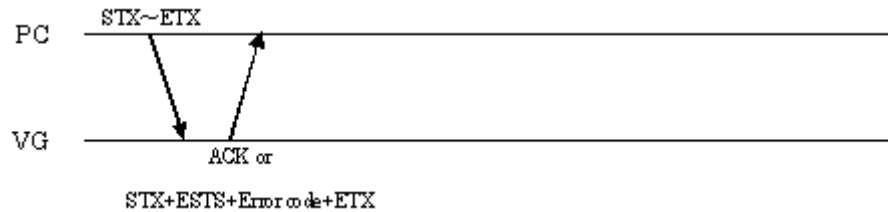
STX	1 byte	02H
TRDT	1 byte	10H
Aspect	1 byte	"0" = 4:3 Normal "1" = 16:9 Normal "2" = 4:3 LB "3" = Not Defined
ETX	1 byte	03H

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

Fig. 2-81-2

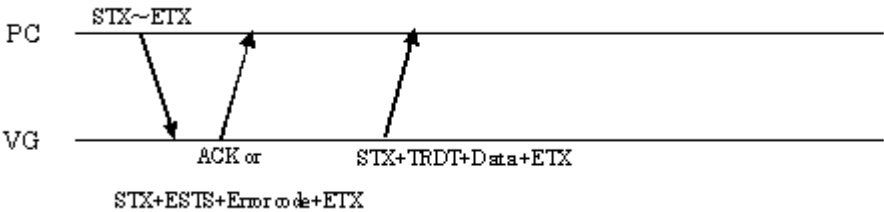
- * This command sends only the above-listed key lock data of the system settings.
- * The data is prepared on the basis of the SCFG4 [20H 54H] config data registration command.

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

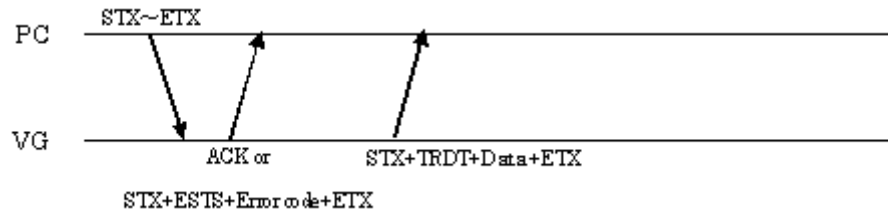
Fig. 2-82-2

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 format of the program whose number has been designated is timing or pattern 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:

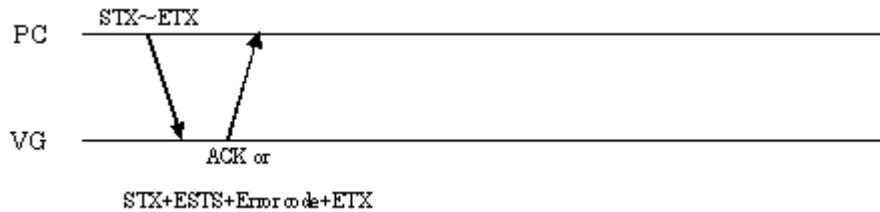
STX	1 byte	02H
TRDT	1 byte	10H
Format	1 byte	"0" = No data "1" = Only timing data valid "2" = Only pattern data valid "3" = Timing and pattern data valid
ETX	1 byte	03H

Fig. 2-83-2

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

Function: This command sets the Motion Blur data of the 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



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)	
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 be 2,4,8 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)	
Top left coordinate X	1 to 3 bytes	"0" to "100" %	
,	1 byte	2CH (Delimiter)	
Top left coordinate Y	1 to 3 bytes	"0" to "100" %	
,	1 byte	2CH (Delimiter)	
Bottom right coordinate X	1 to 3 bytes	"0" to "100" %	
,	1 byte	2CH (Delimiter)	
Bottom right coordinate Y	1 to 3 bytes	"0" to "100" %	
,	1 byte	2CH (Delimiter)	
Edit Bit Mode	1 or 2 bytes	"8" to "16"	
,	1 byte	2CH (Delimiter)	
Speed	1 to 3 bytes	"0" to "255" v	#1
,	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	

,	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"	

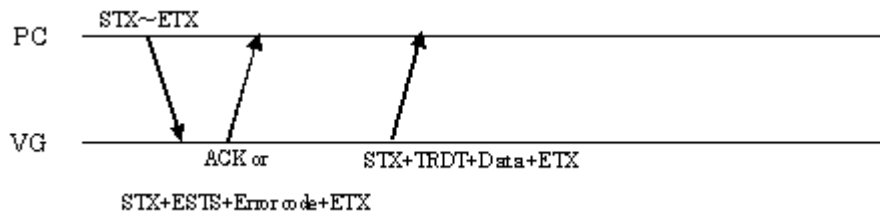
Fig. 2-84-1

* 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 program whose number has been designated. 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 be 2,4,8 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)
Top left coordinate X	1 to 3 bytes	"0" to "100" %
,	1 byte	2CH (Delimiter)
Top left coordinate Y	1 to 3 bytes	"0" to "100" %
,	1 byte	2CH (Delimiter)
Bottom right coordinate X	1 to 3 bytes	"0" to "100" %
,	1 byte	2CH (Delimiter)
Bottom right coordinate Y	1 to 3 bytes	"0" to "100" %
,	1 byte	2CH (Delimiter)
Edit 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 byte	2CH (Delimiter)
G	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)

#1

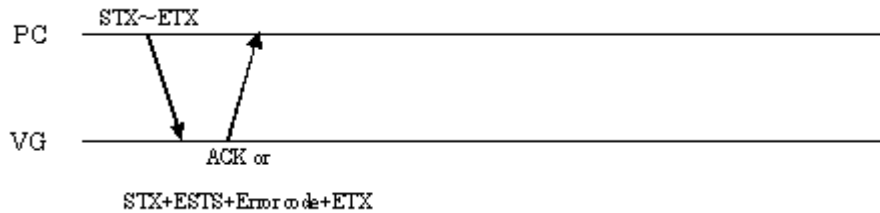
B	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH (Delimiter)	#16
Speed	1 to 3 bytes	"0" to "255" v	
,	1 byte	2CH (Delimiter)	
R	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH (Delimiter)	
G	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH (Delimiter)	#1
B	1 to 5 bytes	"0" to "65535"	
,	1 byte	2CH (Delimiter)	
Distance 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 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



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)
,	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
,	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)
Reserved 9	1 byte	Fixed at "1"
,	1 byte	2CH (Delimiter)

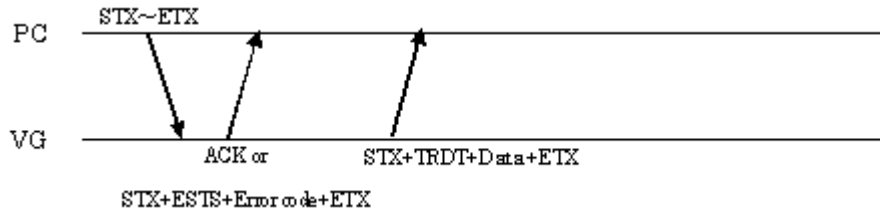
Reserved 10	1 byte	Fixed at "1"
,	1 byte	2CH (Delimiter)
HPD Auto Mode	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
Reserved 11	1 byte	Fixed at "0"
,	1 byte	2CH (Delimiter)
Reserved 12	1 byte	Fixed at "0"
,	1 byte	2CH (Delimiter)
Reserved 13	1 byte	Fixed at "0"
,	1 byte	2CH (Delimiter)
Reserved 14	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)
Reserved 19	1 byte	Fixed at "0"
,	1 byte	2CH (Delimiter)
Link Set Mode	1 byte	"0"=Auto "1"=Manual
,	1 byte	2CH (Delimiter)
Reserved 20	2 bytes	Fixed at "32"
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 program whose number has been designated. 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)
,	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
,	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)

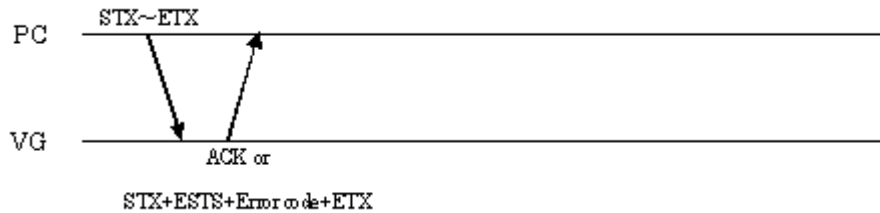
Reserved 8	2 bytes	Fixed at "28"
,	1 byte	2CH (Delimiter)
Nvid	1 to 7 bytes	"1" to "1667216"
,	1 byte	2CH (Delimiter)
Reserved 9	1 byte	Fixed at "1"
,	1 byte	2CH (Delimiter)
Reserved 10	1 byte	Fixed at "1"
,	1 byte	2CH (Delimiter)
HPD Auto Mode	1 byte	"0"=OFF "1"=ON
,	1 byte	2CH (Delimiter)
Reserved 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)
Reserved 19	1 byte	Fixed at "0"
,	1 byte	2CH (Delimiter)
Link Set Mode	1 byte	"0"=Auto "1"=Manual
,	1 byte	2CH (Delimiter)
Reserved 20	2 bytes	Fixed at "32"
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 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



Parameters:

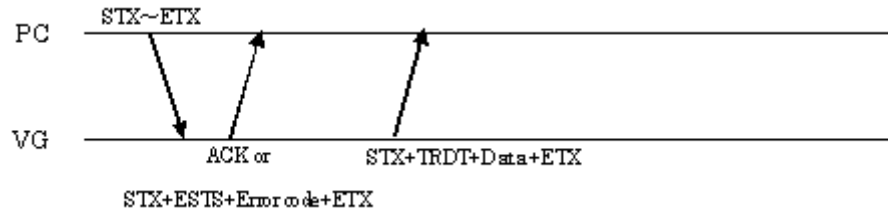
STX	1 byte	02H	
VG4CMD	1 byte	FDH	
SSS4	2 bytes	20H 7AH	
Program number	1 to 4 bytes	"0" to "1000", "9999"	
,	1 byte	2CH (Delimiter)	
Scroll Sequence ON/OFF	1 BYTE	"0"=OFF "1"=Character "2"=Graphic "3"=Character & Graphic "4"=Window "5"=Character & Window "6"=Graphic & Window "7"=Character & Graphic & Window	
,	1 byte	2CH (Delimiter)	
Data Num N	1 to 2 bytes	"1" to "16"	
,	1 byte	2CH (Delimiter)	
Return Mode	1 byte	"0"=All Sequence, "1"=1 Sequence	
,	1 byte	2CH (Delimiter)	
Interval	1 to 3 bytes	"1" to "255"	#1
,	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)	#16
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 program whose number has been designated. 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 Num N	1 to 2 bytes	"1" to "16"	
,	1 byte	2CH (Delimiter)	
Return Mode	1 byte	"0"=All Sequence, "1"=1 Sequence	
,	1 byte	2CH (Delimiter)	
Interval	1 to 3 bytes	"1" to "255"	#1
,	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)	
,	1 byte	2CH (Delimiter)	#16
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)	

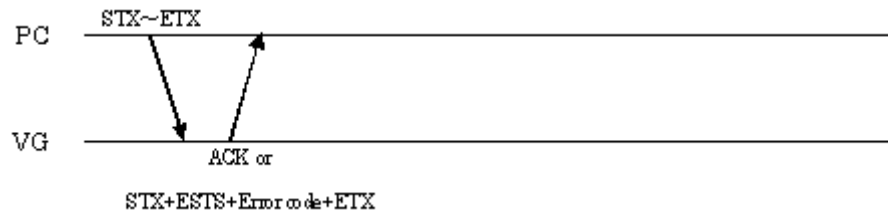
Dir	1 byte	“0” = Left , “1” = Right, “2” = Up, “3” = Down, “4” = Top left, “5” = Bottom left, “6” = Top right, “7” = Bottom right	
ETX	1 byte	03H	

Fig. 2-89-2

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

Function: This command sets the DisplayPort List Port 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



Parameters:

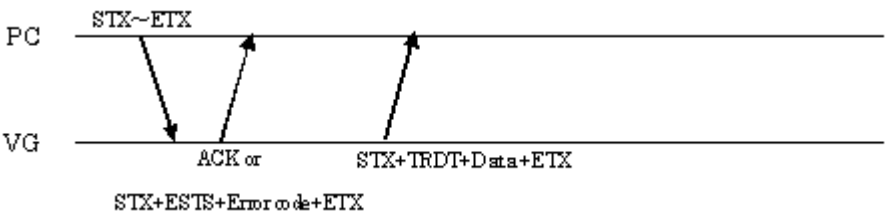
STX	1 byte	02H
VG4CMD	1 byte	FDH
SDPLP4	2 bytes	20H 7CH
Program number	1 to 4 bytes	"0" to "1000", "9999"
,	1 byte	2CH (Delimiter)
Port	1 byte	"0" = DisplayPort1 "1" = DisplayPort2
ETX	1 byte	03H

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 program whose number has been designated. 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:

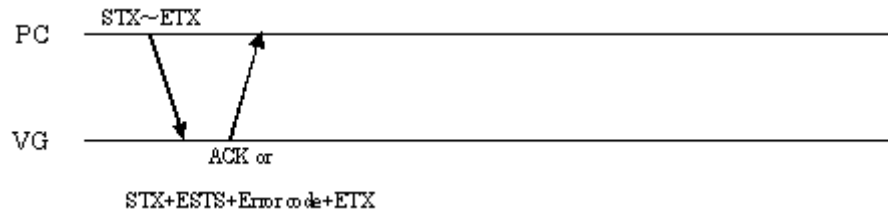
STX	1 byte	02H
TRDT	1 byte	10H
Port	1 byte	"0" = DiplayPort1 "1" = DiplayPort2
ETX	1 byte	03H

Fig. 2-91-2

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

Function: This command sets the Vendorspce InfoFrame 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



Parameters:

STX	1 byte	02H	
VG4CMD	1 byte	FDH	
SVIF4	2 bytes	20H 7EH	
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	"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 Len	1 to 2 bytes	"1" to "24"	
,	1 byte	2CH (Delimiter)	
Payload 1	2 bytes	"00" to "FF"	#1
,			
,	1 byte	2CH (Delimiter)	
Payload 24	2 bytes	"00" to "FF"	#24
ETX	1 byte	03H	

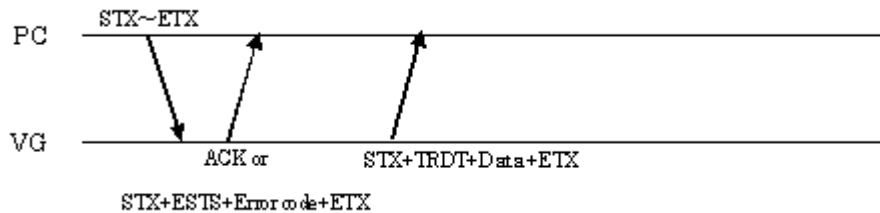
Fig. 2-92-1

2.93

LVIF4 [20H 7FH]: Vendorspce InfoFrame data acquisition

Function: This command gets the Vendorspce InfoFrame data of the program whose number has been designated. 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"
ETX	1 byte	03H

Fig. 2-93-1

Data:

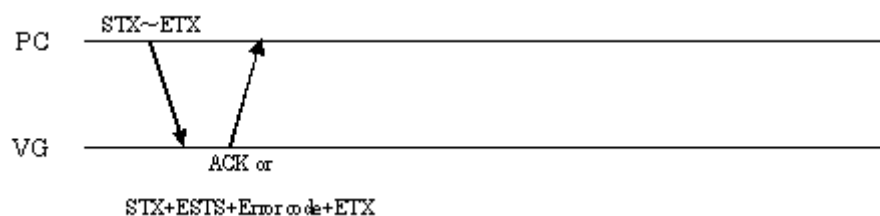
STX	1 byte	02H	
TRDT	1 byte	10H	
On/Off	1 byte	"0"=OFF "1"=ON	
,	1 byte	2CH (Delimiter)	
Type	1 byte	"1"=1	
,	1 byte	2CH (Delimiter)	
Version	1 byte	"1"=1	
,	1 byte	2CH (Delimiter)	
IEEE ID	3 bytes	"000000" to "FFFFFF"	
,	1 byte	2CH (Delimiter)	
Payload Len	1 to 2 bytes	"1" to "24"	
,	1 byte	2CH (Delimiter)	
Payload 1	2 bytes	"00" to "FF"	#1
,	1 byte	2CH (Delimiter)	
Payload 24	2 bytes	"00" to "FF"	#24
ETX	1 byte	03H	

Fig. 2-93-2

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

Function: This command sets the NTSC VBI InfoFrame 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



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"	
ETX	1 byte	03H	

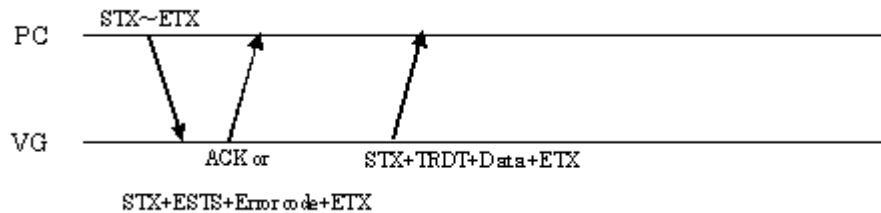
Fig. 2-94-1

2.95

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

Function: This command gets the NTSC VBI InfoFrame data of the program whose number has been designated. 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"
ETX	1 byte	03H

Fig. 2-95-1

Data:

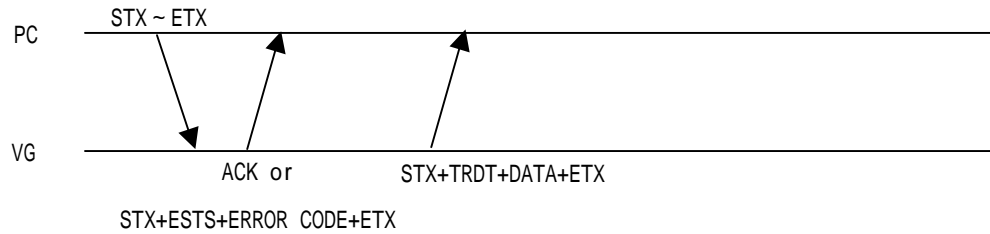
STX	1 byte	02H	
TRDT	1 byte	10H	
On/Off	1 byte	"0"=OFF "1"=ON	
,	1 byte	2CH (Delimiter)	
Type	1 byte	"6"=6	
,	1 byte	2CH (Delimiter)	
Version	1 byte	"1"=1	
,	1 byte	2CH (Delimiter)	
Pes Len	1 to 2 bytes	"1" to "27"	
,	1 byte	2CH (Delimiter)	#1
Pes 1	2 bytes	"00" to "FF"	
,			
,	1 byte	2CH (Delimiter)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

Fig. 2-95-2

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



Command :

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

Fig. 2-96-1

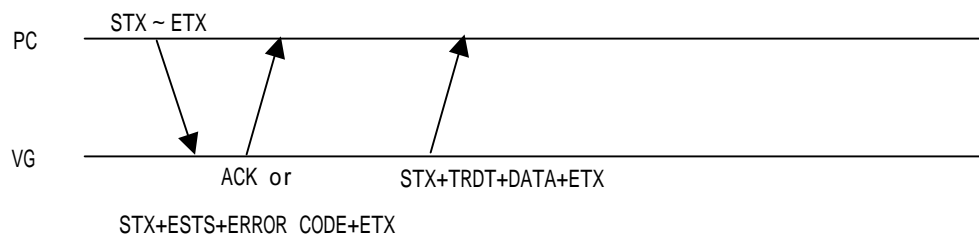
DATA :

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



Command :

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

Fig. 2-97-1

DATA :

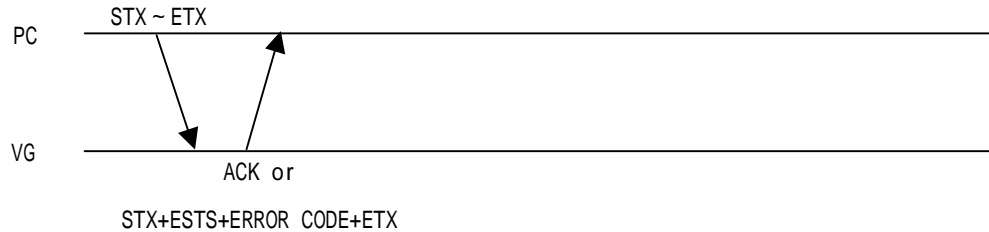
STX	1 BYTE	02H
TRDT	1 BYTE	10H
SERIAL No.	7 BYTE	"0000000" to "9999999"
ETX	1 BYTE	03H

Fig. 2-97-2

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

Function : This command set the Option 9Marker data of 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 save the command code temporary.

Sequence : TYPE2



Command :

STX	1 BYTE	02H	
VG4CMD	1 BYTE	FDH	
S9Marker4	2 BYTE	20H 89H	
PROGRAM NO	1 to 4 BYTE	"0" to "1000","9999"	
,	1 BYTE	2CH (Delimiter)	
Type	1 BYTE	"0"=Circle、 "1"=Rectangle	
,	1 BYTE	2CH (Delimiter)	
Mark Num	1 BYTE	"0" to "9"	
,	1 BYTE	2CH (Delimiter)	#1
Pos X	1 to 4 BYTE	"0" to "4095"	
,	1 BYTE	2CH (Delimiter)	
Pos Y	1 to 4 BYTE	"0" to "4095"	
,	1 BYTE	2CH (Delimiter)	#9
Pos X	1 to 4 BYTE	"0" to "4095"	
,	1 BYTE	2CH (Delimiter)	
Pos Y	1 to 4 BYTE	"0" to "4095"	
,	1 BYTE	2CH (Delimiter)	
Size	1 to 4 BYTE	"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 BYTE	"1" to "15" * It is ON in case not filling line.	
,	1 BYTE	2CH (Delimiter)	
Color R	1 to 5 BYTE	"0" to "65535"	
,	1 BYTE	2CH (Delimiter)	
Color G	1 to 5 BYTE	"0" to "65535"	
,	1 BYTE	2CH (Delimiter)	
Color B	1 to 5 BYTE	"0" to "65535"	
,	1 BYTE	2CH (Delimiter)	
Edit Bit Mode	1 to 2 BYTE	"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 BYTE	"1" to "15"	
,	1 BYTE	2CH (Delimiter)	
Center coordinate X of	1 to 4 BYTE	"0" to "4095"	

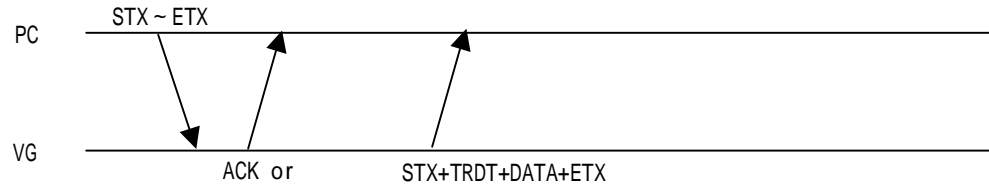
virticalline line / horizontal line.		
,	1 BYTE	2CH (Delimiter)
The center coordinate Y of Vertica / Horizontal line.	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
The color of Vertical line / horizontal line R	1 to 5 BYTE	"0" to "65535"
,	1 BYTE	2CH (Delimiter)
The color of Vertical line / horizontal line G	1 to 5 BYTE	"0" to "65535"
,	1 BYTE	2CH (Delimiter)
The color of Vertical line / horizontal line B	1 to 5 BYTE	"0" to "65535"
ETX	1 BYTE	03H

Fig. 2-98-1

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

Function : This command gets the data of Option 9Marker of 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.



STX+ESTS+ERROR CODE+ETX

Parameter :

STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
L9Marker4	2 BYTE	20H 8CH
Program NO	1 to 4 BYTE	"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	
,	1 BYTE	2CH (Delimiter)	
Mark Num	1 BYTE	"0" to "9"	
,	1 BYTE	2CH (Delimiter)	#1
Pos X	1 to 4 BYTE	"0" to "4095"	
,	1 BYTE	2CH (Delimiter)	
Pos Y	1 to 4 BYTE	"0" to "4095"	
,	1 BYTE	2CH (Delimiter)	#9
Pos X	1 to 4 BYTE	"0" to "4095"	
,	1 BYTE	2CH (Delimiter)	
Pos Y	1 to 4 BYTE	"0" to "4095"	
,	1 BYTE	2CH (Delimiter)	
Size	1 to 4 BYTE	"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 BYTE	"1" to "15" * It is ON in case not filling line.	
,	1 BYTE	2CH (Delimiter)	
Color R	1 to 5 BYTE	"0" to "65535"	
,	1 BYTE	2CH (Delimiter)	
Color G	1 to 5 BYTE	"0" to "65535"	
,	1 BYTE	2CH (Delimiter)	
Color B	1 to 5 BYTE	"0" to "65535"	
,	1 BYTE	2CH (Delimiter)	
Edit Bit Mode	1 to 2 BYTE	"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 BYTE	"1" to "15"	

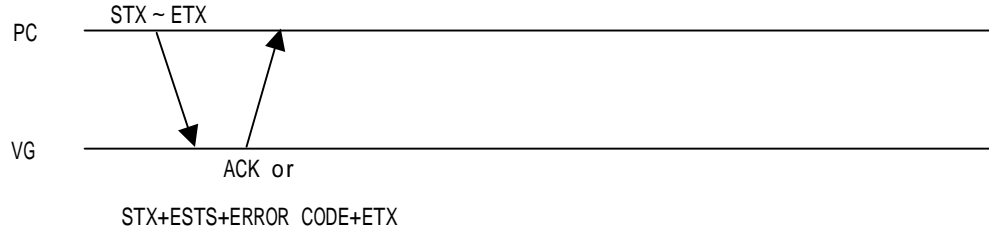
horizontal line.		
,	1 BYTE	2CH (Delimiter)
Center coordinate X of virticalline line / horizontal line.	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
The center coordinate Y of Vertica / Horizontal line.	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
The color of Vertical line / horizontal line R	1 to 5 BYTE	"0" to "65535"
,	1 BYTE	2CH (Delimiter)
The color of Vertical line / horizontal line G	1 to 5 BYTE	"0" to "65535"
,	1 BYTE	2CH (Delimiter)
The color of Vertical line / horizontal line B	1 to 5 BYTE	"0" to "65535"
ETX	1 BYTE	03H

Fig. 2-99-2

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

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

Sequence : TYPE2



Command :

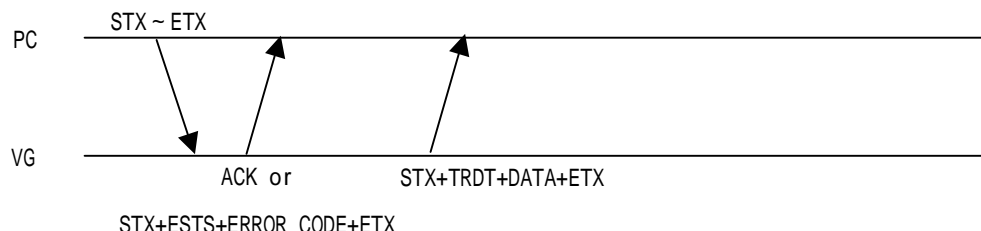
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
STELOP4	2 BYTE	20H 91H
Program NO	1 to 4 BYTE	"0" to "1000", "9999"
,	1 BYTE	2CH (Delimiter)
Telop NO	1 to 3 BYTE	"1" to "200"
,	1 BYTE	2CH (Delimiter)
Position	1 BYTE	"0"=Indication of coordinate, "1"=Upper left "2"=Middle left, "3"=Bottom left "4"=Upper middle, "5"=Middle "6"=Bottom middle, "7"=Upper right "8"=Middle right, "9"=Bottom right
,	1 BYTE	2CH (Delimiter)
Position X	1 to 4 BYTE	"1" to "9999" *This is ON incase Position is 0.
,	1 BYTE	2CH (Delimiter)
Position Y	1 to 4 BYTE	"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 BYTE	"0" to "65535" *This is ON in case, Color Enable is 1.
,	1 BYTE	2CH (Delimiter)
Color0 G	1 to 5 BYTE	"0" to "65535" *This is ON in case, Color Enable is 1.
,	1 BYTE	2CH (Delimiter)
Color0 B	1 to 5 BYTE	"0" to "65535" *This is ON in case, Color Enable is 1.
,	1 BYTE	2CH (Delimiter)
Color1 R	1 to 5 BYTE	"0" to "65535" *This is ON in case, Color Enable is 1.
,	1 BYTE	2CH (Delimiter)
Color1 G	1 to 5 BYTE	"0" to "65535" *This is ON in case, Color Enable is 1.
,	1 BYTE	2CH (Delimiter)
Color1 B	1 to 5 BYTE	"0" to "65535" *This is ON in case, Color Enable is 1.
,	1 BYTE	2CH (Delimiter)
Color2 R	1 to 5 BYTE	"0" to "65535" *This is ON in case, Color Enable is 1.
,	1 BYTE	2CH (Delimiter)
Color2 G	1 to 5 BYTE	"0" to "65535" *This is ON in case, Color Enable is 1.
,	1 BYTE	2CH (Delimiter)
Color2 B	1 to 5 BYTE	"0" to "65535" *This is ON in case, Color Enable is 1.
,	1 BYTE	2CH (Delimiter)
BitMode	1 to 2 BYTE	"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 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 BYTE	20H 92H
PROGRAM NO	1 to 4 BYTE	"0" to "2000", "9999"
ETX	1 BYTE	03H

Fig. 5-113-1

Data :

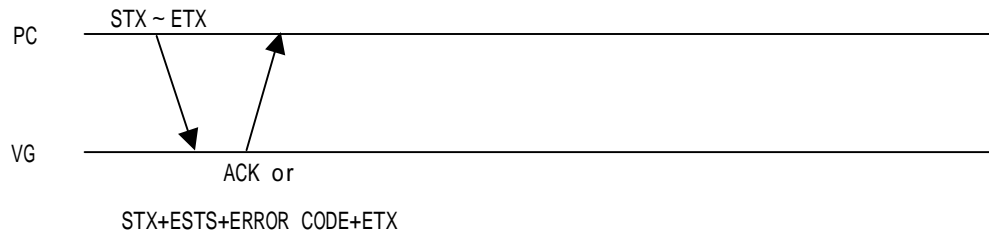
STX	1 BYTE	02H
TRDT	1 BYTE	10H
Subtitle NO	1 to 3 BYTE	"1" to "200"
,	1 BYTE	2CH (Delimiter)
Position	1 BYTE	"0"=Indication of coordinate "1"=Upper left , "2"=Middle left "3"=Bottom left, "4"=Upper middle "5"=Middle , "6"=Bottom middle "7"=Upper right, "8"=Middle right "9"=Bottom right
,	1 BYTE	2CH (Delimiter)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



Command :

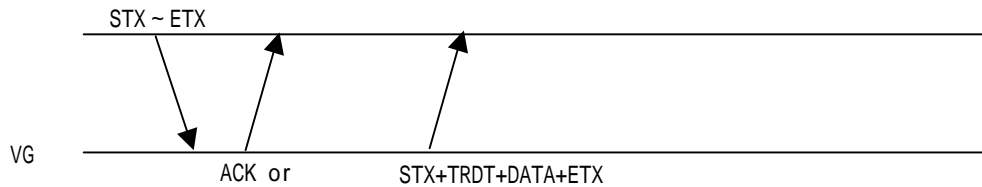
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
SITMDS4	2 BYTE	20H 93H
Program NO	1 to 4 BYTE	"0" to "1000", "9999"
,	1 BYTE	2CH (Delimiter)
Mode	1 BYTE	"0"=iTMDs "1"=DVI
,	1 BYTE	2CH (Delimiter)
Control 0	1 BYTE	"0"=LOW "1"=HIGH
,	1 BYTE	2CH (Delimiter)
Control 1	1 BYTE	"0"=LOW "1"=HIGH
,	1 BYTE	2CH (Delimiter)
Dual 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)
,	1 BYTE	2CH (Delimiter)
Split Mode	1 BYTE	"0"=Divided 2 parts for horizontal and 2 parts for vertical. "1"=Vertical quartering "2"=Horizontal 2 parts divided "3"=Vertical 2 parts divided * This command is ON only in case Dual Link Mode is Quad(8bit)
ETX	1 BYTE	03H

Fig2-102-1

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

Function : This command gets iTMDS data of 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



STX+ESTS+ERROR CODE+ETX

Parameter :

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

☒ 2-103-1

Data :

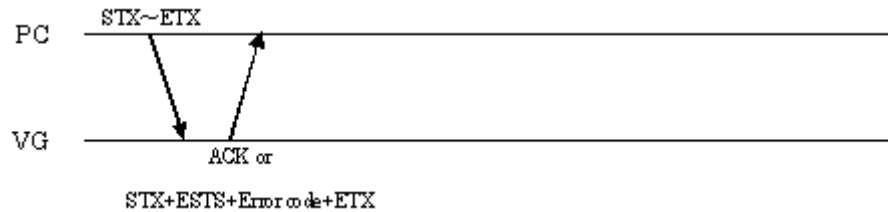
STX	1 BYTE	02H
TRDT	1 BYTE	10H
Mode	1 BYTE	"0"=iTMDs "1"=DVI
,	1 BYTE	2CH (Delimiter)
Control 0	1 BYTE	"0"=LOW "1"=HIGH
,	1 BYTE	2CH (Delimiter)
Control 1	1 BYTE	"0"=LOW "1"=HIGH
,	1 BYTE	2CH (Delimiter)
Dual Link Mode	1 BYTE	"0"=Single(Auto) "1"=Dual(Auto) "2"=Quad(8bit) "3"=Single(8bit) "4"=Single(16bit) "5"=Dual(8bit) "6"=Dual(16bit)
,	1 BYTE	2CH (Delimiter)
Split Mode	1 BYTE	"0"=Divided 2 parts for horizontal and 2 parts for vertical. "1"=Vertical quartering "2"=Horizontal 2 parts divided "3"=Vertical 2 parts divided * This command is ON only in case Dual Link Mode is Quad(8bit)
ETX	1 BYTE	03H

☒ 2-103-2

2.104 EXPDN4 [24H 20H]: Program data execution

Function: This command designates the program number and executes the program. When the program number is 9999, it execute the data written in the command work RAM.

Sequence: Type 2



Command:

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. 2-104-1

When the execution mode setting has been omitted as in the figure below, the program is executed in the program mode.

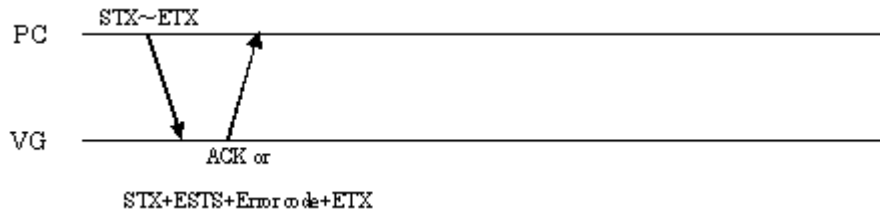
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXPDN4	2 bytes	22H 20H
Program number	1 to 4 bytes	"0" to "2000", "9999"
ETX	1 byte	03H

Fig. 2-104-2

2.105 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



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
INDC4	2 bytes	24H 21H
[+]/[-]	1 byte	"0" = [+], "1" = [-]
ETX	1 byte	03H

Fig. 2-105-1

- * 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.

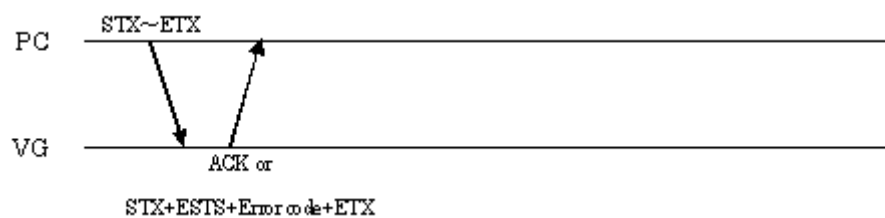
Example 3: When the VG generator is in the internal timing data execution status (Category: VESA)

→ Internal timing data numbers 1001 to 2000 for which VESA has been set as the category are subject to incrementing or decrementing.

2.106 EXBN4 [24H 22H]: Buffer RAM program execution

Function: This command executes the programs in the current buffer RAM.

Sequence: Type 2



Command:

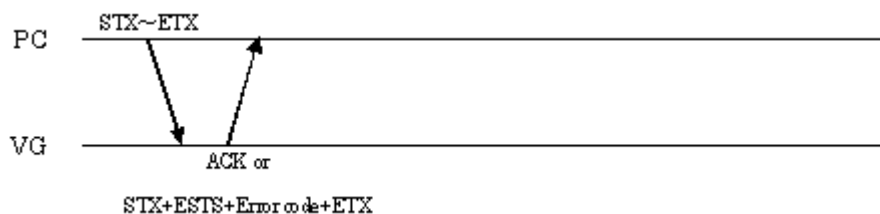
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXBN4	2 bytes	24H 22H
ETX	1 byte	03H

Fig. 2-106-1

2.107 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



Command:

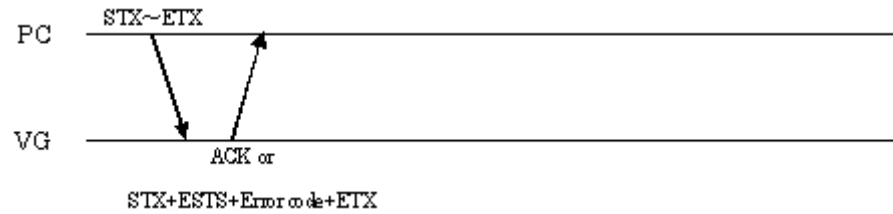
STX	1 byte	02H
VG4CMD	1 byte	FDH
INIBUF4	2 bytes	24H 23H
Program number	1 to 4 bytes	"0" to "2000"
ETX	1 byte	03H

Fig. 2-107-1

2.108 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



Command:

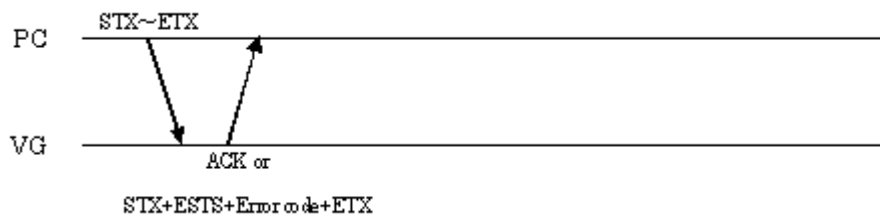
STX	1 byte	02H
VG4CMD	1 byte	FDH
SAVBUF4	2 bytes	24H 24H
Program number	1 to 4 bytes	"1" to "1000"
ETX	1 byte	03H

Fig. 2-108-1

2.109 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



Command:

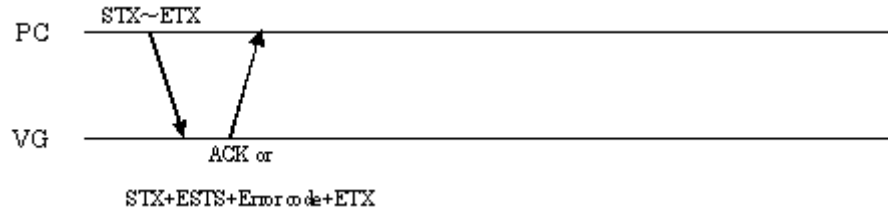
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXSYNC4	2 bytes	24H 25H
HS	1 byte	"0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
VS	1 byte	"0" = OFF, "1" = ON
,	1 byte	2CH (Delimiter)
CS	1 byte	"0" = OFF, "1" = ON
ETX	1 byte	03H

Fig. 2-109-1

2.110 CURSOR4 [24H 26H]: Cursor pattern control

Function: This command controls the cursor pattern.

Sequence: Type 2



Command:

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. 2-102-2 to 10.
ETX	1 byte	03H

Fig. 2-110-1

(1) "A" Switch coordinate display

Coordinate display mode	1 byte	"0" = OFF, "1" = Normal1, "2" = Normal2, "3" = Reverse1, "4" = Reverse2
-------------------------	--------	---

Fig. 2-110-2

(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. 2-110-3

(3) "C" Change cursor shape

Cursor shape	1 byte	"0" = 5×5, "1" = Cross, "2" = V-Line
--------------	--------	--------------------------------------

Fig. 2-110-4

(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. 2-110-5

(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. 2-110-6

(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. 2-110-7

(7) "G" Set subpixel to ON or OFF

SubPixel ON/OFF	1 byte	"0" = OFF, "1" = ON
-----------------	--------	---------------------

Fig. 2-110-8

(8) "H" Set overlay to ON or OFF

Overlay ON/OFF	1 byte	"0" = OFF, "1" = ON
----------------	--------	---------------------

Fig. 2-110-9

(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. 2-110-10

(10) Exchange "J" Cursor1 and Cursor2

Cursor1、 2	1 byte	"0"=Cursor1、 "1"=Cursor2
------------	--------	--------------------------

Fig2-110-11

(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"

Fig2-110-12

(12) "L" Cursor 2Mode ON/OFF

Cursor 2Mode	1 byte	"0"=OFF、 "1"=ON
--------------	--------	-----------------

Fig2-110-13

*1. This command is common command for cursor1 and cursor2

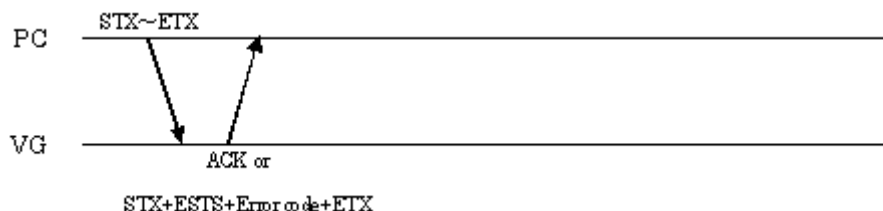
*2. This command is available for cursor1, in case "Exchange" is set for cursor1. In case changing Cursor2, set the command for cursor2.

*3 Cursor2 is unable to set SubPixel.

2.111 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



Command:

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. 2-111-2 to 3.
ETX	1 byte	03H

Fig. 2-111-1

(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. 2-111-2

(2) "B" Level ±

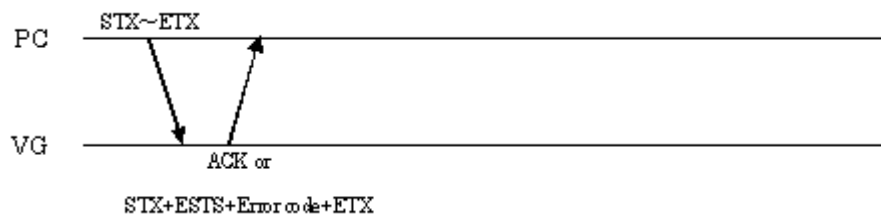
[+]/[-]	1 byte	"0" = [+], "1" = [-]
---------	--------	----------------------

Fig. 2-111-3

2.112 HDCPON4 [24H 28H]: HDCP execution start/stop

Function: This command starts or stops the HDCP execution.

Sequence: Type 2



Command:

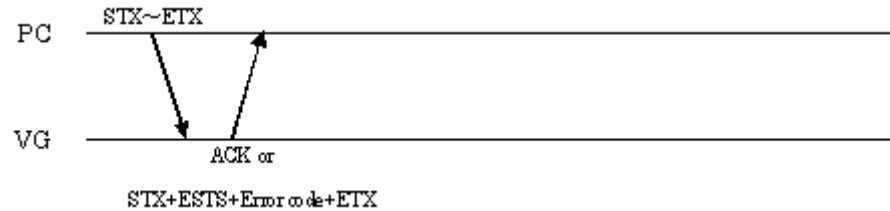
STX	1 byte	02H
VG4CMD	1 byte	FDH
HDCPON4	2 bytes	24H 28H
HDCP execution	1 byte	"0" = Stop, "1" = Start
ETX	1 byte	03H

Fig. 2-112-1

2.113 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



Command:

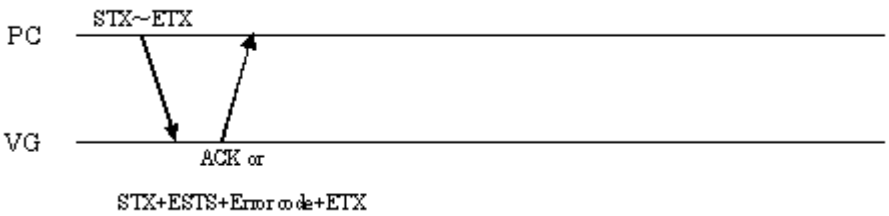
STX	1 byte	02H
VG4CMD	1 byte	FDH
PBPRON4	2 bytes	24H 29H
RGB/color difference	1 byte	"0" = RGB, "1" = Color difference
ETX	1 byte	03H

Fig. 2-113-1

2.114 SEDID4 [24H 2AH]: EDID write

Function: This command writes the EDID in the monitor via the VG generator.

Sequence: Type 2



Command:

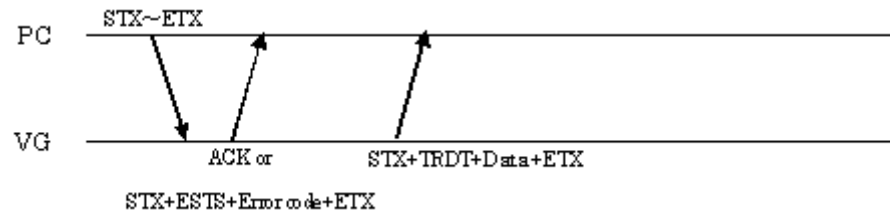
STX	1 byte	02H
VG4CMD	1 byte	FDH
SEDID4	2 bytes	24H 2AH
Block No.	1 to 3 bytes	"0" to "255"
,	1 byte	2CH (Delimiter)
EDID	256 bytes	"00" to "FF" (Hexadecimal format, 2 bytes × 128)
ETX	1 byte	03H

Fig. 2-114-1

2.115 LEDID4 [24H 2BH]: EDID readout

Function: This command reads the EDID from the monitor via the VG generator.

Sequence: Type 3



Command:

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. 2-115-1

Data:

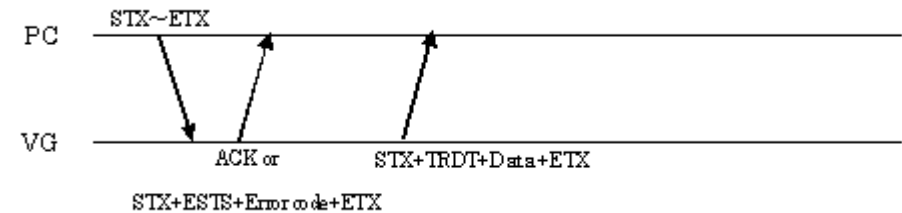
STX	1 byte	02H
TRDT	1 byte	10H
EDID	256 bytes	"00" to "FF" (Hexadecimal format, 2 bytes × 128)
ETX	1 byte	03H

Fig. 2-115-2

2.116 QDISP4 [24H 2CH]: H/V Disp acquisition

Function: This command gets the H/V Disp (Number of display dots/lines).

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
QDISP4	2 bytes	24H 2CH
ETX	1 byte	03H

Fig. 2-116-1

Data:

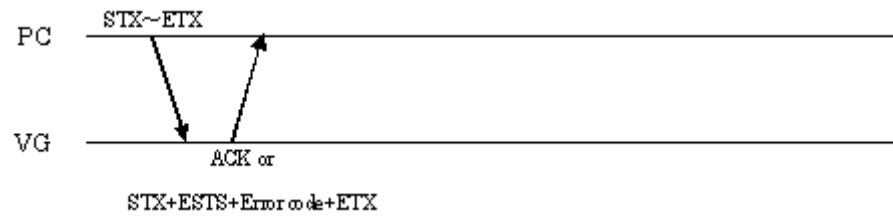
STX	1 byte	02H
TRDT	1 byte	10H
H-Disp	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
V-Disp	1 to 4 bytes	"0" to "4095"
ETX	1 byte	03H

Fig. 2-116-2

2.117 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:

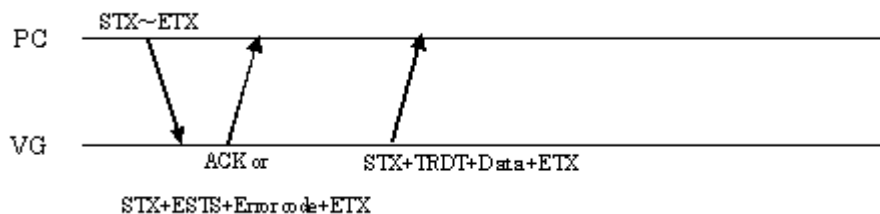
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXCCN4	2 bytes	24H 2DH
User No.	1 or 2 bytes	"1" to "20"
ETX	1 byte	03H

Fig. 2-117-1

2.118 LVGID4 [24H 2EH]: VG ID acquisition

Function: This command gets the ID of the VG generator.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LVGID4	2 bytes	24H 2EH
ETX	1 byte	03H

Fig. 2-118-1

Data:

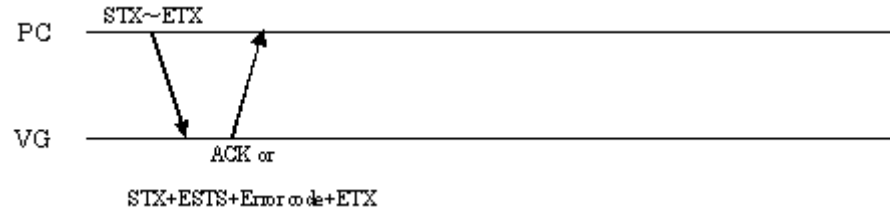
STX	1 byte	02H
TRDT	1 byte	10H
VGID	1 byte	47H: VG-848 48H: VG-835 49H: VG-849 / 849A / 849B 4AH: VG-858 4BH: VG-830 4CH: VG-857 4DH: VG-859 / 859A / 859B 4EH: VG-837 4FH: VG-835-A 50H: VG-849C 51H: VG-859C 52H: VG-835-B 53H: VG-849C-A 70H: VG-870 71H: VG-871 80H: VG-880
ETX	1 byte	03H

Fig. 2-118-2

2.119 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



Command:

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

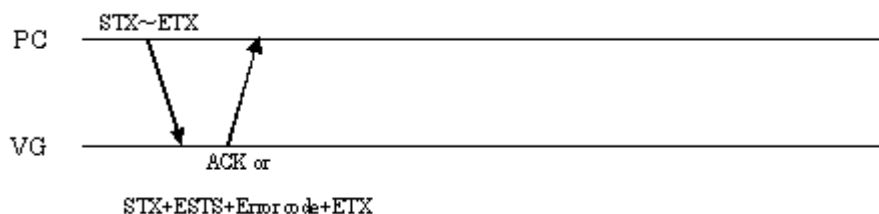
Fig. 2-119-1

2.120 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



Command:

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. 2-120-1

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	Monoscop * 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	Charaplane items
25	Circle	
26	×	
27	+	
28	□	
29	DOTS	
30	CROSS	
31	CHARA	

Fig. 2-120-2

*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.

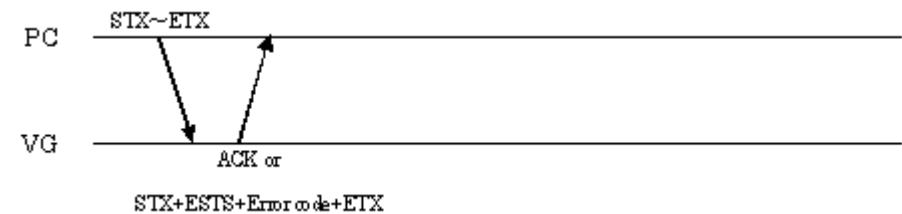
- When “2” is set

The designated patterns and signals are set to OFF from the ones in the output status, and the remaining ones output.

2.121 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



Command:

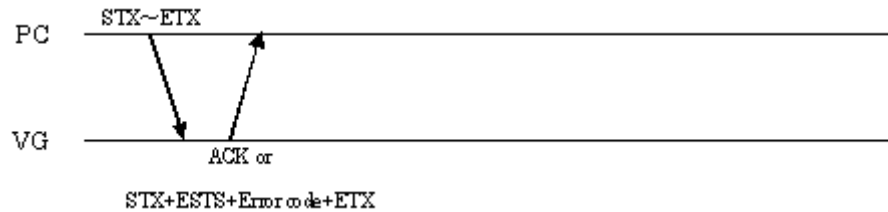
STX	1 byte	02H
VG4CMD	1 byte	FDH
AAUDIO4	2 bytes	24 31H
Frequency-L	2 to 5 bytes	"100" to "20000" (100 Hz to 20000 Hz)
,	1 byte	2CH (Delimiter)
Frequency-R	2 to 5 bytes	"100" to "20000" (100 Hz to 20000 Hz)
,	1 byte	2CH (Delimiter)
Level-L	1 to 4 bytes	"0" to "2500" (0 mV to 2500 mV)
,	1 byte	2CH (Delimiter)
Level-R	1 to 4 bytes	"0" to "2500" (0 mV to 2500 mV)
ETX	1 byte	03H

Fig. 2-121-1

2.122 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



Command:

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"
Chapter 7,	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"
Chapter 8,	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"

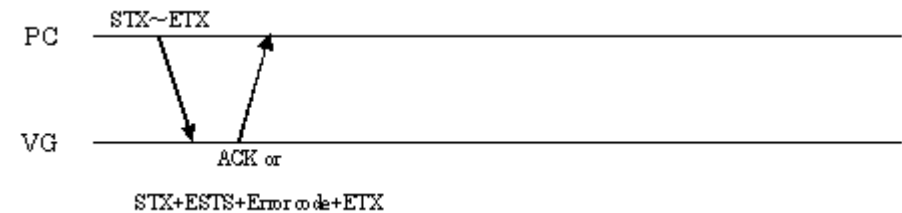
,	1 byte	2CH (Delimiter)
Subtitle pattern stepV4	1 to 3 bytes	"0" to "255"
ETX	1 BYTE	03H

Fig. 2-122-1

2.123 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



Command:

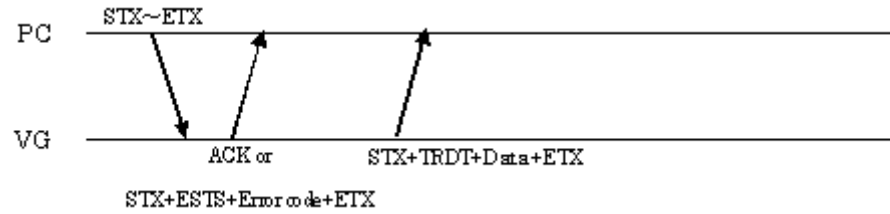
STX	1 byte	02H
VG4CMD	1 byte	FDH
EXSYNCP4	2 bytes	24H 33H
HS	1 byte	"0" = Nega, "1" = Posi
,	1 byte	2CH (Delimiter)
VS	1 byte	"0" = Nega, "1" = Posi
,	1 byte	2CH (Delimiter)
CS	1 byte	"0" = Nega, "1" = Posi
ETX	1 byte	03H

Fig. 2-123-1

2.124 LKSV4 [24H 34H] : KSV data acquisition

Function: This command gets the KSV data.

Sequence: Type 3



Command:

STX	1 byte	02H
VG4CMD	1 byte	FDH
LKSV4	2 bytes	24H 34H
ETX	1 byte	03H

Fig. 2-124-1

Data:

STX	1 byte	02H
TRDT	1 byte	10H
Transmitter	2 to 10 byte	"00" to "FFFFFFFF"
,	1 byte	2CH (Delimiter)
Receiver	2 to 10 byte	"00" to "FFFFFFFF"
ETX	1 byte	03H

Fig. 2-124-2

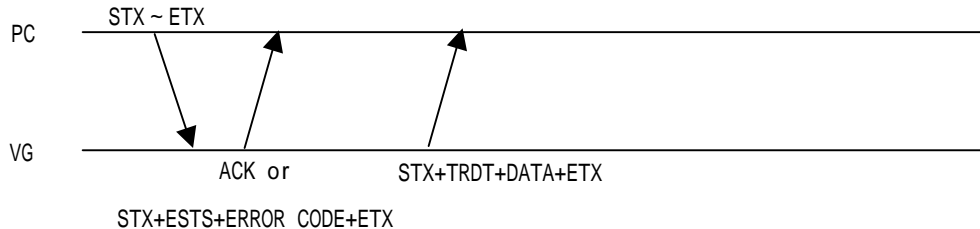
2.125 LERR4 [24H 3AH] : Error code acquisition.

Function : This command gets the error code.

* This command is made in order to cover increased error command.

*In case of receiving "Error" masagae, 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.

Sequence : TYPE 3



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LERR4	2 byte	24H 3AH
ETX	1 byte	03H

Fig.2-125-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
ERROR CODE	8 byte	"00000000" to "FFFFFFF"
ETX	1 byte	03H

Fig.2-125-2

Error code dialog

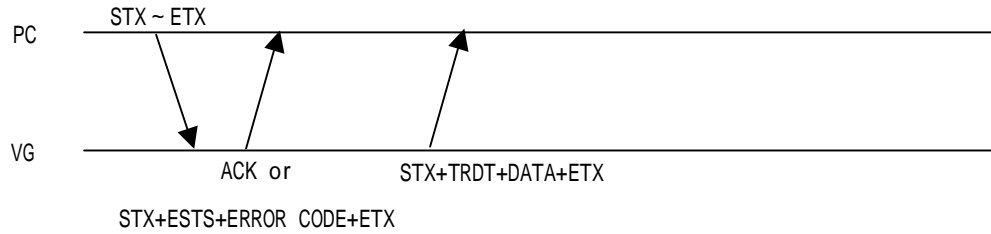
Error code	Content
Media relation error.	
"80000200"	Recover File System error.
"80000201"	Requirement of System Reboot
"80000202"	File System error which is not reparation.
"80000209"	Size over of image data.
"80000210"	File System
"80000211"	File open error
"80000212"	File Write error
"80000213"	File Read error
"80000215"	Flash ROM write error
"80000216"	Flash ROM Read error
"80000217"	The shortage of internalFLASH(USER) memory
"80000218"	Flash ROM does not mounted.
"80000220"	EEPROM write error
"80000225"	CF Card type error
"80000226"	CF Card write error
"80000227"	CF Card write protect
"80000228"	CF Card does not inserted.
"80000229"	CF Card does not be formatted.
"8000022a"	The shortage of CF Card memory for save data.
"8000022c"	OPT Data File error
"8000022f"	Image Data File error
"80000231"	Audio Flash ROM I/O error.
"80000232"	Audio Flash ROM does not formatted.
"80000233"	Audio Flash ROM is already registrated.
"80000235"	Audio Flash ROM File error
"80000236"	Audio Flash ROM memory over.
General error	
"80000301"	Program data is disable.

"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
"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 Comm error
"80000366"	IA-1541 Power Comm 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
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

2.126 LHDCP4 [24H 3DH] : HDCP operation start / stop acquisition.

Function : This command order the ON/OFF of HDCP.
 Swquence : TYPE 3.



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LHDCP4	2 byte	24H 3DH
X	1 byte	03H

Fig2-126-1

Data :

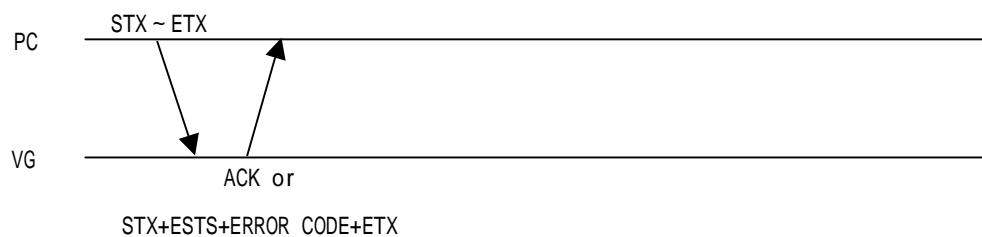
STX	1 byte	02H
TRDT	1 byte	10H
HDCP Operation	1 byte	"0"=STOP, "1"=START
ETX	1 byte	03H

Fig2-126-2

2.127 MUTEON4 [24H 3EH] : MUTE operation ON/OFF

Function : This command sets ON/OFF of MUTE operation.

Sequence : Type 2



Command :

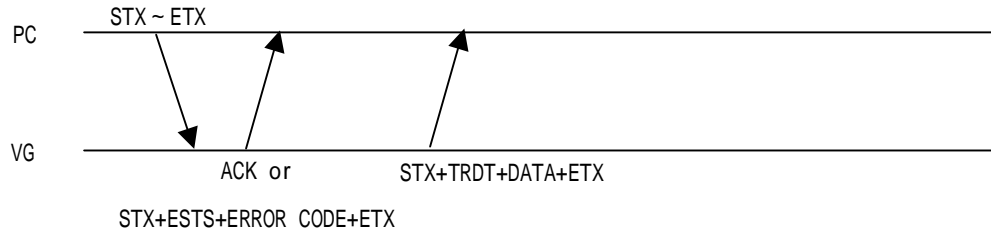
STX	1 byte	02H
VG4CMD	1 byte	FDH
MUTEON4	2 byte	24H 3EH
MUTE Operation	1 byte	"0"=OFF, "1"=ON
ETX	1 byte	03H

Fig 2-127-1

2.128 LMUTE4 [24H 3FH] : MUTE operation ON/OFF acquisition.

Function : This command sets MUTE status ON/OFF.

Sequence : TYPE3



Command :

STX	1 byte	02H
VG4CMD	1 byte	FDH
LMUTE4	2 byte	24H 3FH
ETX	1 byte	03H

Fig 2-128-1

Data :

STX	1 byte	02H
TRDT	1 byte	10H
MUTE operation	1 byte	"0"=OFF, "1"=ON
ETX	1 byte	03H

Fig 2-128-2

2.129 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	SMB4	Motion Blur data registration	2
20H	77H	LMB4	Motion Blur 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
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



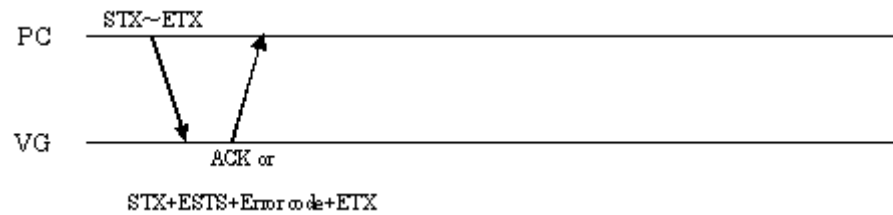
3

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:

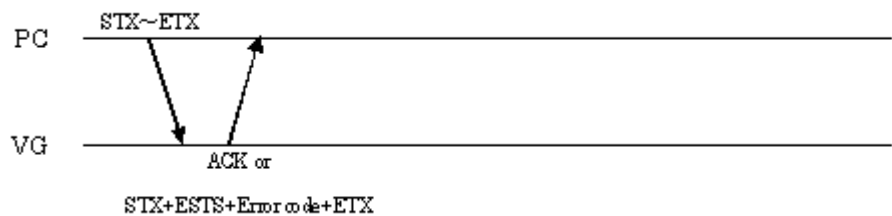
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHACLR4	2 bytes	28H 20H
ETX	1 byte	03H

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 has been omitted as in the figure below, the dot is drawn in the Set mode.

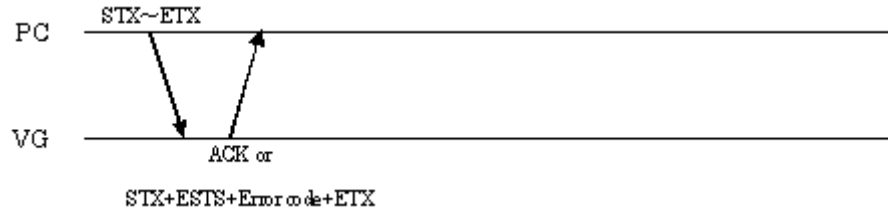
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHAPSET4	2 bytes	28H 21H
X coordinate	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Y coordinate	1 to 4 bytes	"0" to "4095"
ETX	1 byte	03H

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" = 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" = 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" = 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" = 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 has been omitted as in the figure below, the dot is drawn in the Set mode.

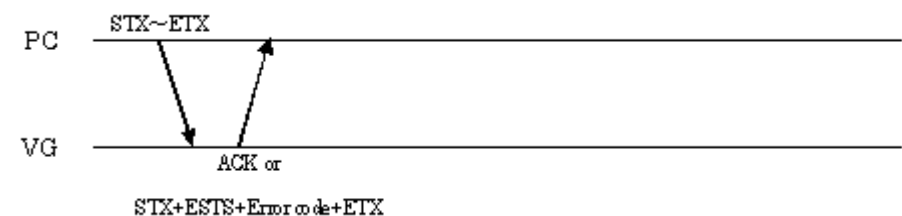
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHALINE4	2 bytes	28H 22H
Start point coordinate X	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Start point coordinate Y	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
End point coordinate X	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
End 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 has been omitted as in the figure below, the dot is drawn in the Set mode.

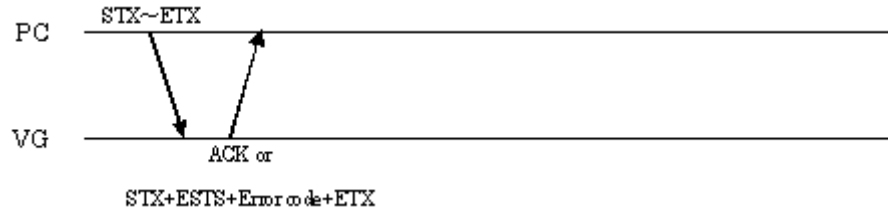
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHASQRE4	2 bytes	28H 23H
Top left coordinate X	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Top left coordinate Y	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Bottom right coordinate X	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Bottom right coordinate 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 has been omitted as in the figure below, the dot is drawn in the Set mode.

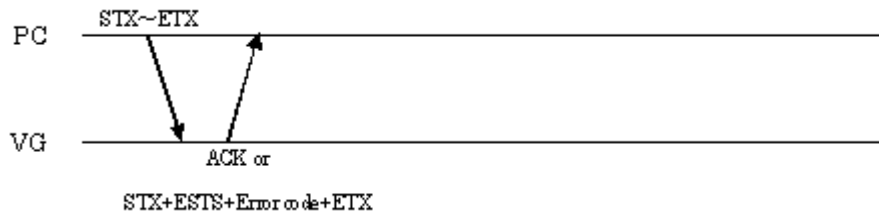
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHASQPA4	2 bytes	28H 24H
Top left coordinate X	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Top left coordinate Y	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Bottom right coordinate X	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Bottom right coordinate 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" = 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" = 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 has been omitted as in the figure below, the dot is drawn in the Set mode.

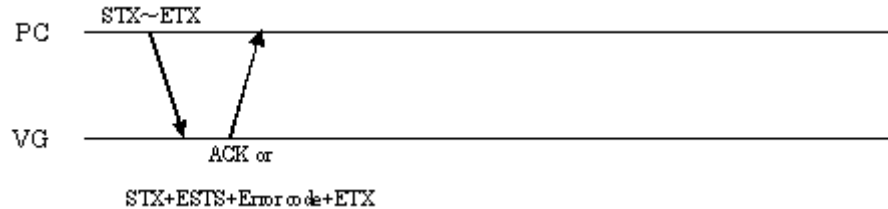
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHACIRC4	2 bytes	28H 25H
Center X coordinate	2 to 5 bytes	Sign code + "0" to "4095" Sign code: "0" = +, "1" = 1 * -2048 ("12048") to +4096 ("04095") in numerical terms
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	Sign code + "0" to "4095" Sign code: "0" = +, "1" = 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" = 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" = 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 has been omitted as in the figure below, the dot is drawn in the Set mode.

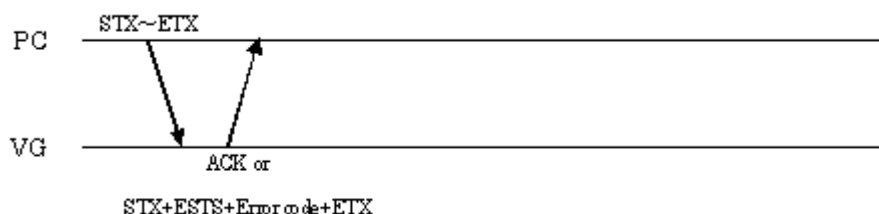
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHACIRCPA4	2 bytes	28H 26H
Center X coordinate	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Radius	1 to 4 bytes	"1" to "4095"
ETX	1 byte	03H

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" = 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" = 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 has been omitted as in the figure below, the dot is drawn in the Set mode.

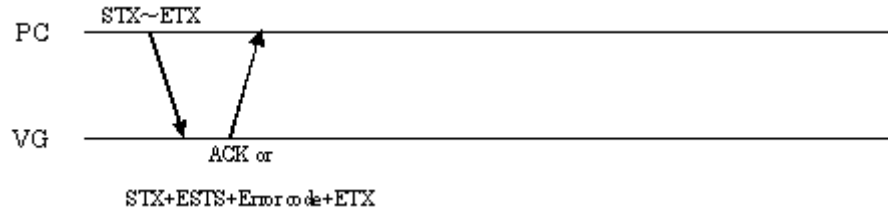
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHAELPS4	2 bytes	28H 27H
Center X coordinate	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Radius RX	1 to 4 bytes	"1" to "4095"
,	1 byte	2CH (Delimiter)
Radius RY	1 to 4 bytes	"1" to "4095"
ETX	1 byte	03H

Fig. 3-8-2

3.9 CHAELPSA4 [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
CHAELPSA4	2 bytes	28H 28H
Center X coordinate	2 to 5 bytes	Sign code + "0" to "4095" Sign code: "0" = +, "1" = 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" = 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 has been omitted as in the figure below, the dot is drawn in the Set mode.

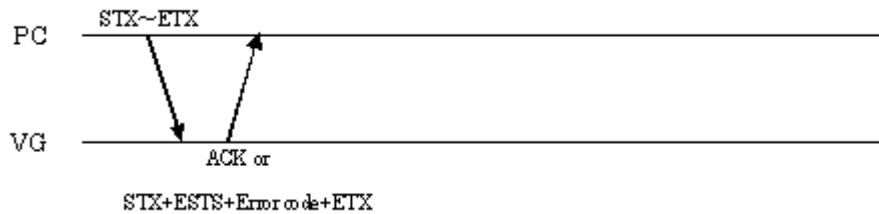
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHAELPSA4	2 bytes	28H 28H
Center X coordinate	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Center Y coordinate	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Radius RX	1 to 4 bytes	"1" to "4095"
,	1 byte	2CH (Delimiter)
Radius RY	1 to 4 bytes	"1" to "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" = 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" = 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 has been omitted as in the figure below, the dot is drawn in the Set mode.

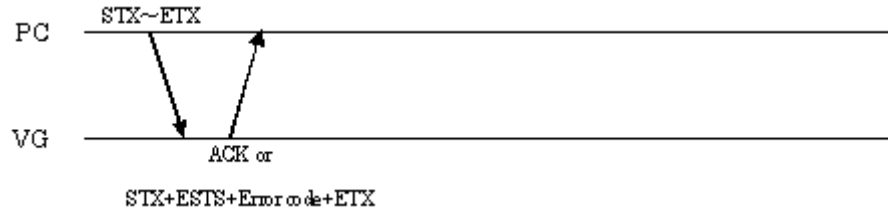
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHATRI4	2 bytes	28H 29H
Coordinate X1	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate Y1	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate X2	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate Y2	2 to 5 bytes	See above 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" = 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" = 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 has been omitted as in the figure below, the dot is drawn in the Set mode.

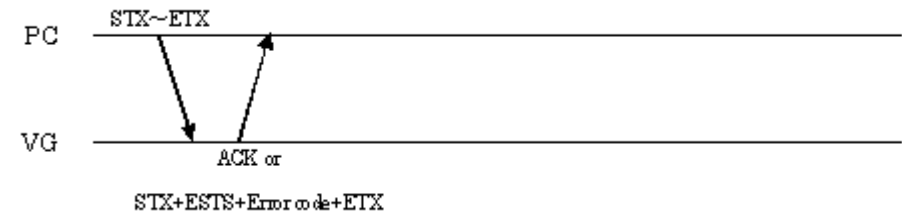
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHATRIPA4	2 bytes	28H 2AH
Coordinate X1	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate Y1	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate X2	2 to 5 bytes	See above figure.
,	1 byte	2CH (Delimiter)
Coordinate Y2	2 to 5 bytes	See above 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 CHACOL4 [28H 2CH]: Character plane color setting

Function: This command sets the color of the character plane.

Sequence: Type 2



Command:

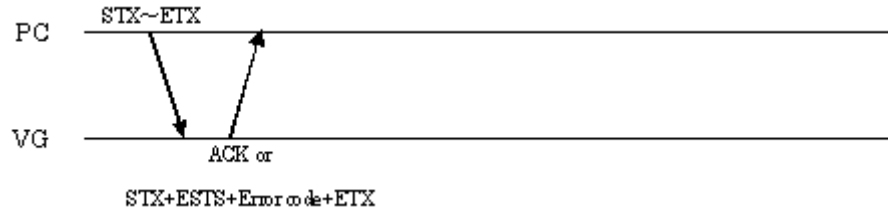
STX	1 byte	02H
VG4CMD	1 byte	FDH
CHACOL4	2 bytes	28H 2CH
R	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
Bit Mode	1 or 2 bytes	"8" to "16"
ETX	1 byte	03H

Fig. 3-12-1

3.13 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. 3-13-1

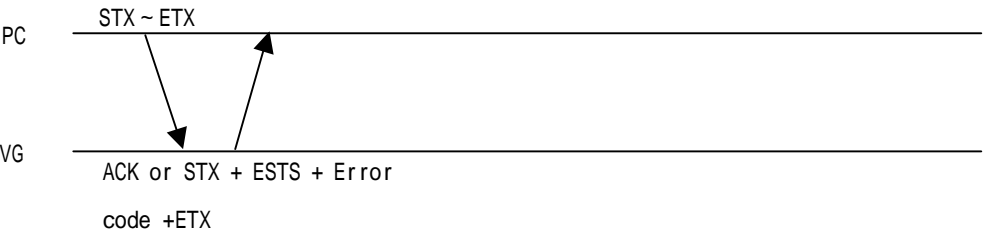
When the drawing mode setting has been omitted as in the figure below, the dot is drawn in the Set mode.

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. 3-13-2

3.14 GRACLR4 [28H 40H]: Graphic Plane Clear

Function : This command clear the graphic plane
Sequence : Type 2



Command :

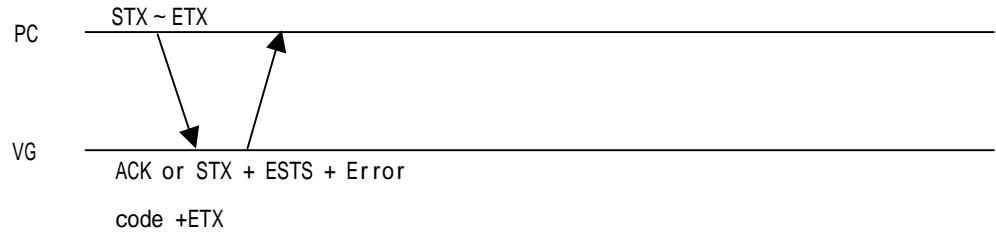
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
GRACLR4	2 BYTE	28H 40H
ETX	1 BYTE	03H

Figure 3-14-1

3.15 GRAPSET4 [28H 41H]: Graphic Plane Dot Drawing

Function : This command draw dot on the graphic plane

Sequence : Type 2



Command :

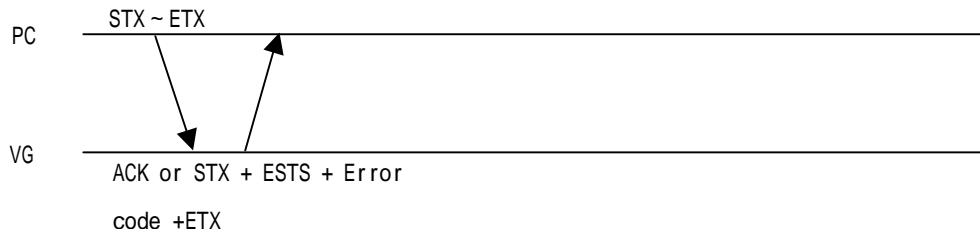
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
GRAPSET4	2 BYTE	28H 41H
X coordinate	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
Y coordinate	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
Color	1 to 4 BYTE	"0" to "4095"
ETX	1 BYTE	03H

Figure 3-15-1

3.16 GRALINE4 [28H 42H]: Graphic Plane Straight Line Drawing

Function : This command draw straight line on the graphic plane

Sequence : Type 2



Command :

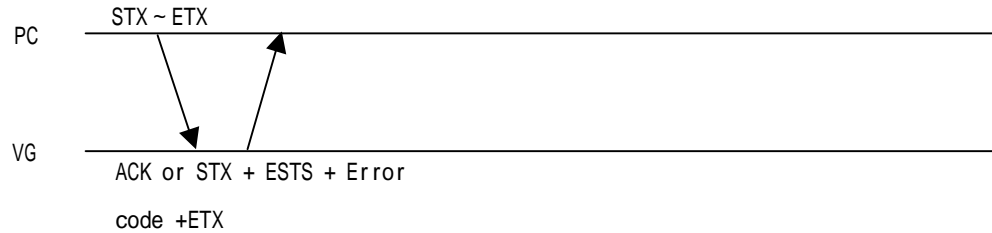
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
GRALINE4	2 BYTE	28H 42H
Top left coordinate X	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Top left coordinate Y	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Bottom right coordinate X	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Bottom right coordinate Y	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Color	1 to 4 BYTE	"0" to "4095"
ETX	1 BYTE	03H

Figure 3-16-1

3.17 GRASQRE4 [28H 43H]: Graphic Plane Square Drawing

Function : This command draw square on the graphic plane

Sequence : Type 2



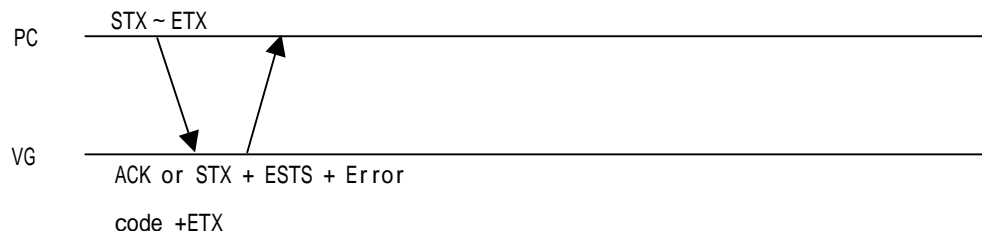
Command :

STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
GRASQRE4	2 BYTE	28H 43H
Top left coordinate X	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
Top left coordinate Y	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
Bottom right coordinate X	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
Bottom right coordinate Y	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
Color	1 to 4 BYTE	"0" to "4095"
ETX	1 BYTE	03H

Figure 3-17-1

3.18 GRASQPA4 [28H 44H]: Graphic Plane Filled-in Square

Function : This command draw filled-in square on the graphic plane
Sequence : Type 2



Command :

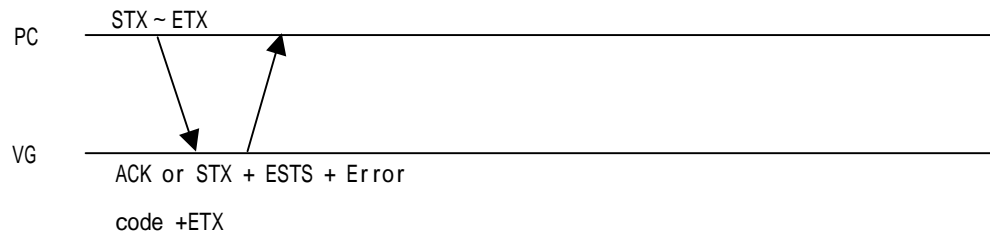
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
GRASQPA4	2 BYTE	28H 44H
Top left coordinate X	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
Top left coordinate Y	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
Bottom right coordinate X	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
Bottom right coordinate Y	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
Color	1 to 4 BYTE	"0" to "4095"
ETX	1 BYTE	03H

Figure 3-18-1

3.19 GRACIRC4 [28H 45H]: Graphic Plane Circle Drawing

Function : This command draw circle on the graphic plane

Sequence : Type 2



Command :

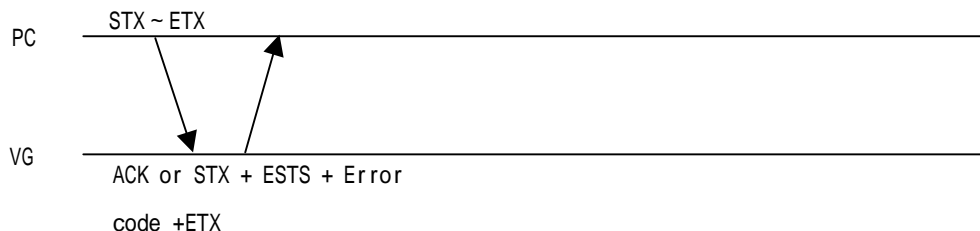
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
GRACIRC4	2 BYTE	28H 45H
Center X coordinate	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Center Y coordinate	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Radius	1 to 4 BYTE	"1" to "4095"
,	1 BYTE	2CH (Delimiter)
Color	1 to 4 BYTE	"0" to "4095"
ETX	1 BYTE	03H

Figure 3-19-1

3.20 GRACIRCPA4 [28H 46H]: Graphic Plane Filled-in Circle Drawing

Function : This command draw filled-in circle on the graphic plane

Sequence : Type 2



Command :

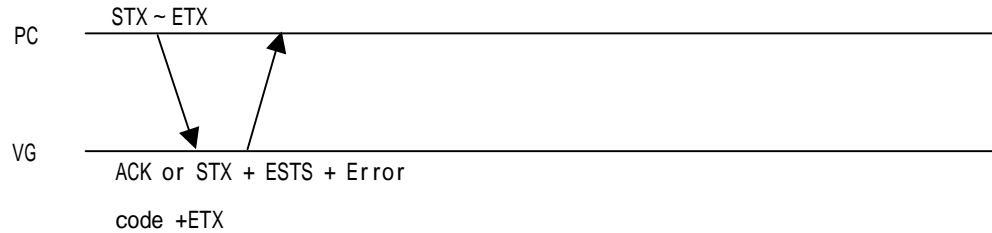
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
GRACIRCPA4	2 BYTE	28H 46H
Center X coordinate	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Center Y coordinate	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Radius	1 to 4 BYTE	"1" to "4095"
,	1 BYTE	2CH (Delimiter)
Color	1 to 4 BYTE	"0" to "4095"
ETX	1 BYTE	03H

Figure 3-20-1

3.21 GRAELPS4 [28H 47H]: Graphic Plane Ellipse drawing

Function : This command draw ellipse on the graphic plane

Sequence : Type 2



Command :

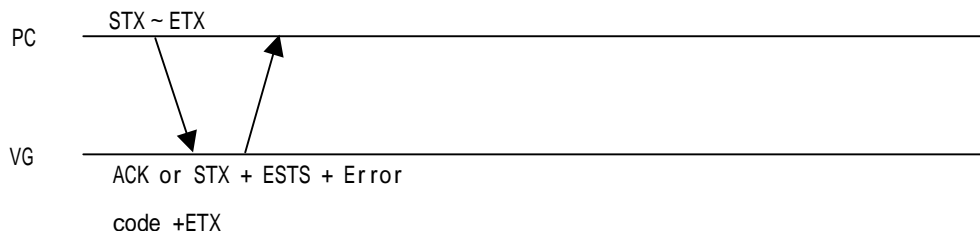
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
GRAELPS4	2 BYTE	28H 47H
Center X coordinate	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Center Y coordinate	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Radius RX	1 to 4 BYTE	"1" to "4095"
,	1 BYTE	2CH (Delimiter)
Radius RY	1 to 4 BYTE	"1" to "4095"
,	1 BYTE	2CH (Delimiter)
Color	1 to 4 BYTE	"0" to "4095"
ETX	1 BYTE	03H

Figure 3-21-1

3.22 GRAELPSPA4 [28H 48H]: Graphic Plane Filled-in Ellipse Drawing

Function : This command draw filled-in ellipse on the graphic plane

Sequence : Type 2



Command :

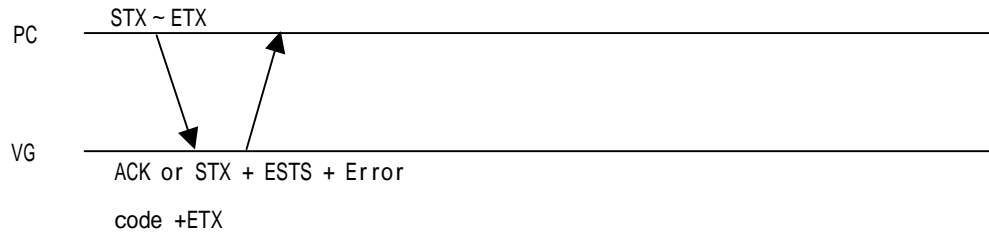
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
GRAELPSPA4	2 BYTE	28H 48H
Center X Coordinate	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Center Y coordinate	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Radius RX	1 to 4 BYTE	"1" to "4095"
,	1 BYTE	2CH (Delimiter)
Radius RY	1 to 4 BYTE	"1" to "4095"
,	1 BYTE	2CH (Delimiter)
Color	1 to 4 BYTE	"0" to "4095"
ETX	1 BYTE	03H

Figure 3-22-1

3.23 GRATRI4 [28H 49H]: Graphic Plane triangle Drawing

Function : This command draw triangle on the graphic plane

Sequence : Type 2



Command :

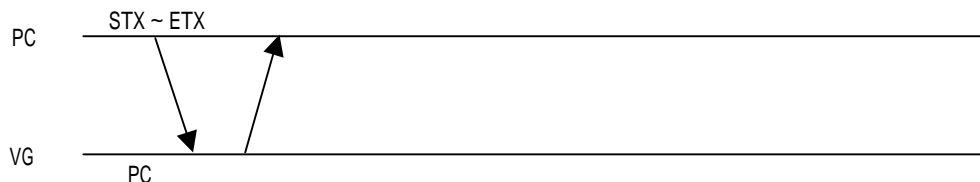
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
GRATRI4	2 BYTE	28H 49H
Coordinate X1	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Coordinate Y1	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Coordinate X2	2 to 5 BYTE	Same as coordinate X1
,	1 BYTE	2CH (Delimiter)
Coordinate Y2	2 to 5 BYTE	Same as coordinate Y1
,	1 BYTE	2CH (Delimiter)
Coordinate X3	2 to 5 BYTE	Same as coordinate X1
,	1 BYTE	2CH (Delimiter)
Coordinate Y3	2 to 5 BYTE	Same as coordinate Y1
,	1 BYTE	2CH (Delimiter)
Color	1 to 4 BYTE	"0" to "4095"
ETX	1 BYTE	03H

Figure 3-23-1

3.24 GRATRIPA4 [28H 4AH]: Graphic Plane Filled-in Triangle Drawing

Function : This command draw filled-in triangle on the graphic plane

Sequence : Type 2



Command :

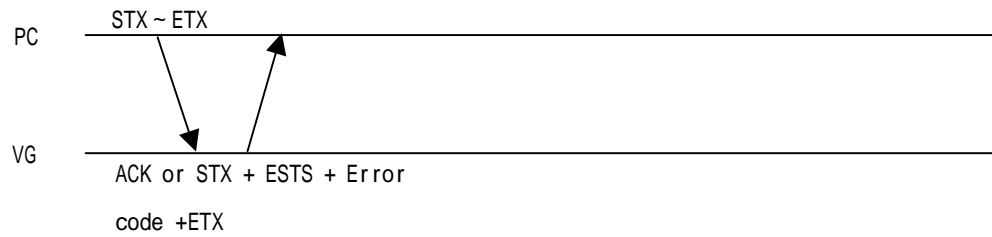
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
GRATRIPA4	2 BYTE	28H 4AH
Coordinate X1	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Coordinate Y1	2 to 5 BYTE	Parameter will be configured by Sign code + numbers from "0" to "4095" Byte 0 is Sign code:"0" for +, and "1" for - Parameter will be from -2048("12048") to +4096("04095")
,	1 BYTE	2CH (Delimiter)
Coordinate X2	2 to 5 BYTE	Same as coordinate X1
,	1 BYTE	2CH (Delimiter)
Coordinate Y2	2 to 5 BYTE	Same as coordinate Y1
,	1 BYTE	2CH (Delimiter)
Coordinate X3	2 to 5 BYTE	Same as coordinate X1
,	1 BYTE	2CH (Delimiter)
Coordinate Y3	2 to 5 BYTE	Same as coordinate Y1
,	1 BYTE	2CH (Delimiter)
Color	1 to 4 BYTE	"0" to "4095"
ETX	1 BYTE	03H

Figure 3-24-1

3.25 GRACOL4 [28H 4CH]: Graphic Plane Color Setting

Function : This command sets the color of the graphic plane

Sequence : Type 2



Command :

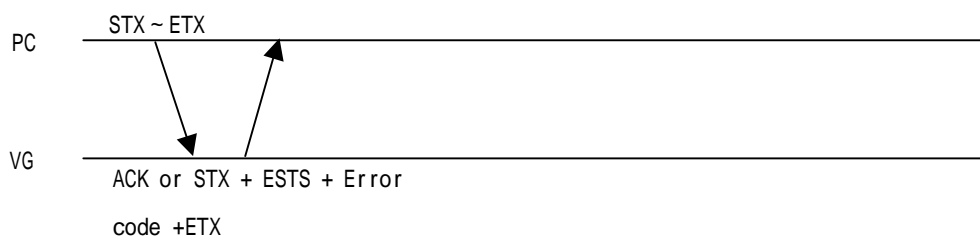
STX	1 BYTE	02H
VG4CMD	1 BYTE	FDH
GRACOL4	2 BYTE	28H 4CH
No.	1 to 4 BYTE	"0" to "4095"
,	1 BYTE	2CH (Delimiter)
R	1 to 5 BYTE	"0" to "65535"
,	1 BYTE	2CH (Delimiter)
G	1 to 5 BYTE	"0" to "65535"
,	1 BYTE	2CH (Delimiter)
B	1 to 5 BYTE	"0" to "65535"
,	1 BYTE	2CH (Delimiter)
Bit Mode	1 to 2 BYTE	"8" to "16"
ETX	1 BYTE	03H

Figure 3-25-1

3.26 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 BYTE	28H 4DH
R	1 to 5 BYTE	"0" to "65535"
,	1 BYTE	2CH (Delimiter)
G	1 to 5 BYTE	"0" to "65535"
,	1 BYTE	2CH (Delimiter)
B	1 to 5 BYTE	"0" to "65535"
,	1 BYTE	2CH (Delimiter)
Bit Mode	1 to 2 BYTE	"8" to "16"
ETX	1 BYTE	03H

Figure 3-26-1

*This command is effective for VG-880 only.

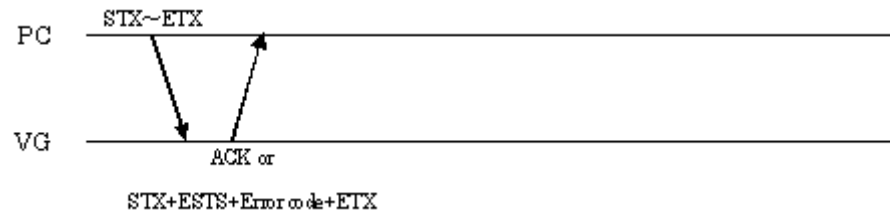
*When ramp pattern over 8bit is generating, this command will be invalid.

*When the pattern of the graphic plane changes, level setting will be cleared.

3.27 ALLCLR4 [28H 60H]: All planes clear

Function: This command clears all the planes.

Sequence: Type 2



Command:

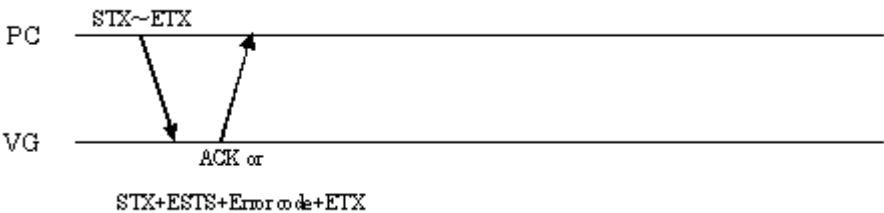
STX	1 byte	02H
VG4CMD	1 byte	FDH
ALLCLR4	2 bytes	28H 60H
ETX	1 byte	03H

Fig. 3-27-1

3.28 WINDOW4 [28H 61H]: Window drawing

Function: This commands draws windows.

Sequence: Type 2



Command:

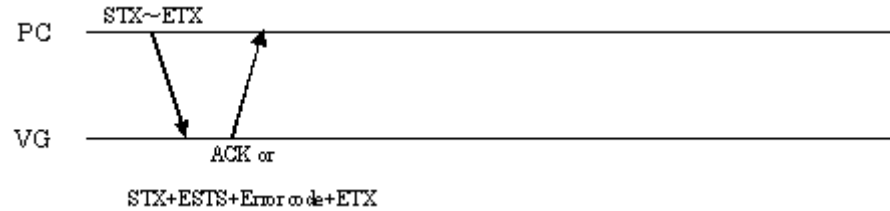
STX	1 byte	02H
VG4CMD	1 byte	FDH
WINDOW4	2 bytes	28H 61H
Top left coordinate X	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Top left coordinate Y	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Bottom right coordinate X	1 to 4 bytes	"0" to "4095"
,	1 byte	2CH (Delimiter)
Bottom right coordinate Y	1 to 4 bytes	"0" to "4095"
ETX	1 byte	03H

Fig. 3-28-1

3.29 WINCOL4 [28H 62H]: Window color setting

Function: This commands sets the window color.

Sequence: Type 2



Command:

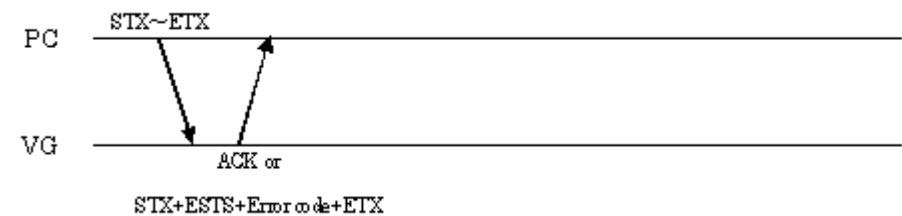
STX	1 byte	02H
VG4CMD	1 byte	FDH
WINCOL4	2 bytes	28H 62H
R	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
G	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
B	1 to 5 bytes	"0" to "65535"
,	1 byte	2CH (Delimiter)
Bit Mode	1 or 2 bytes	"8" to "16"
ETX	1 byte	03H

Fig. 3-29-1

3.30 WINCLR4 [28H 63H]: Window plane clear

Function: This commands 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. 3-30-1

3.31 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	CHAEPS4	Character plane ellipse drawing	2
28H	28H	CHAEPSPA4	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	4CH	GRACOL4	Graphic plane color setting	2
28H	4DH	GRALEV4	Graphic Plane Level Edit	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



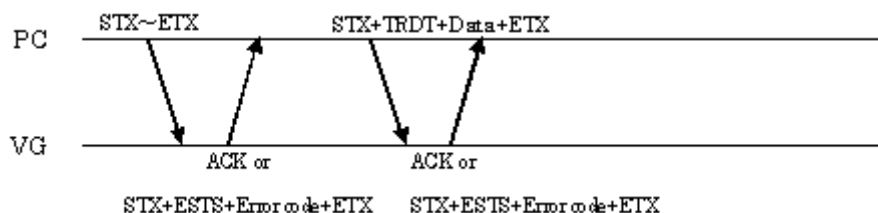
4

INDIVIDUAL FORMATS FOR CONTROL COMMANDS

4.1 SHT [48H]: 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.

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:

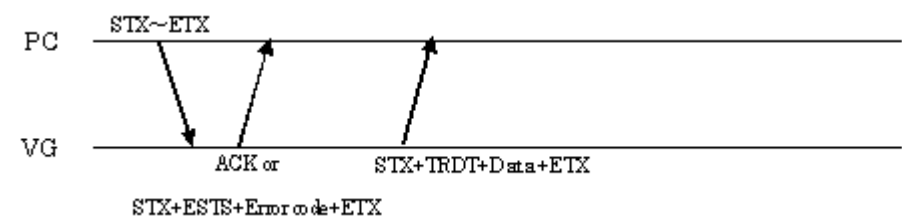
STX	1 byte	02H
TRDT	1 byte	10H
μ/dot	1 byte	"0" = μ, "1" = dot
DOT CLOCK	5 bytes	Sequence of digits from top: $10^2, 10^1, 10^0, 10^{-1}, 10^{-2}$
H-PERIOD	4 bytes	μ = Sequence of digits from top: $10^1, 10^0, 10^{-1}, 10^{-2}$ dot = Sequence of digits from top: $10^3, 10^2, 10^1, 10^0$
H-DISPLAY	4 bytes	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 program whose number has been designated.

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

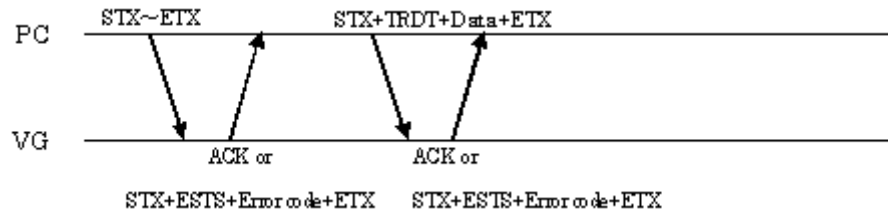
Fig. 4-2-1

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 program whose number has been designated. 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:

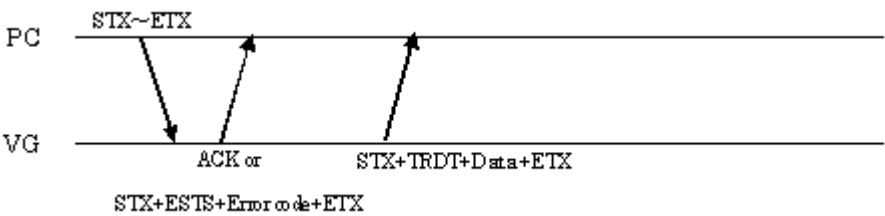
STX	1 byte	02H
TRDT	1 byte	10H
SCAN MODE	1 byte	"0" = NO INTER, "1" = INTER & sync, "2" = INTER & VIDEO
SERRATION	1 byte	"0" = OFF, "1" = 0.5H, "2" = 1H, "3" = EXOR
ENQ ON/OFF	1 byte	"0" = OFF, "1" = ON
V-TOTAL	4 bytes	Sequence of digits from top: $10^3, 10^2, 10^1, 10^0$
V-SYNC	3 bytes	Sequence of digits 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 program whose number has been designated.

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

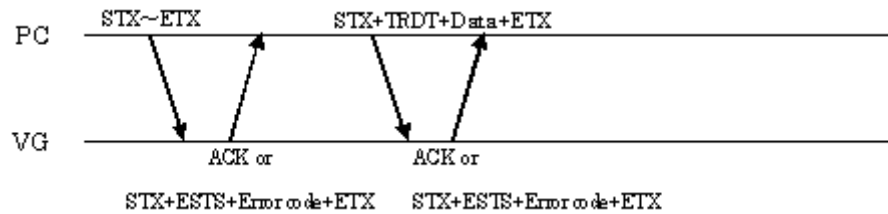
Fig. 4-4-1

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 program whose number has been designated. 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

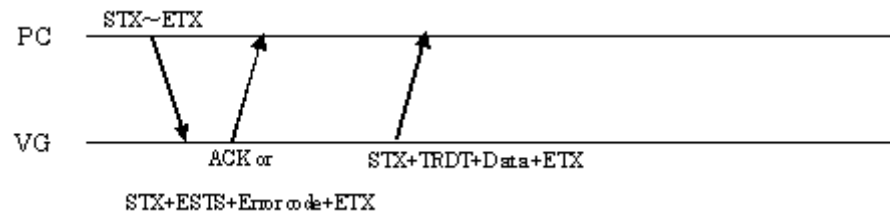
STX	1 byte	02H
TRDT	1 byte	10H
OUT PUT	1 byte	"0" = Analog, "1" = TTL
HS	1 byte	"0" = Nega, "1" = Posi, "2" = OFF
VS	1 byte	"0" = Nega, "1" = Posi, "2" = OFF
CS	1 byte	"0" = Nega, "1" = Posi, "2" = OFF, "3" = HS, "4" = VS
HD	1 byte	"0" = Nega, "1" = Posi
VD	1 byte	"0" = Nega, "1" = Posi
RGB	1 byte	Fixed 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 program whose number has been designated.

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

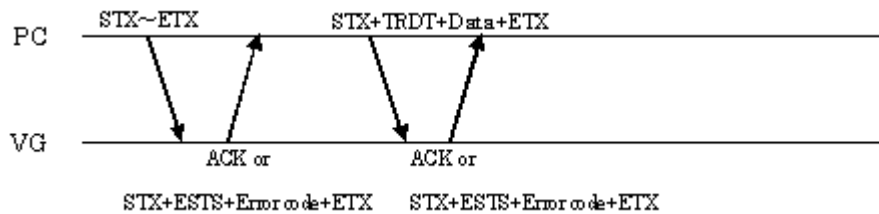
Fig. 4-6-1

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 program whose number has been designated. 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.

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 *1 "09" = Optional pattern 2 *1 "10" = Color bar "11" = Gray scale "12" = Half tone (* This function cannot be used.) *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

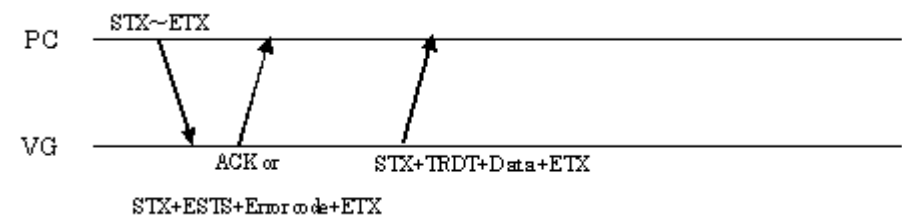
(12) Half tone data

* **This function cannot be used.**

4.8 LPT [45H]: Pattern data readout

Function: This command reads the pattern data of the program whose number has been designated. It selects the pattern block to be set as 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 *1 "09" = Optional pattern 2 *1 "10" = Color bar "11" = Gray scale "12" = Half tone (* This function cannot be used.) *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

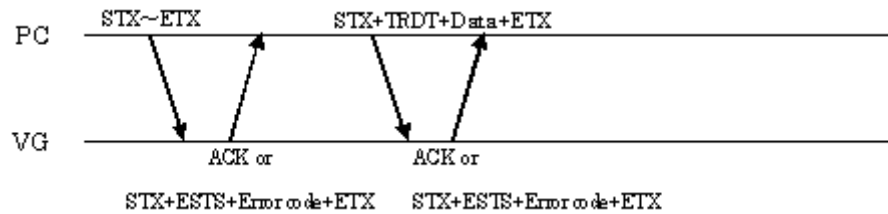
Fig. 4-8-1

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 program whose number has been designated. 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. * 2 bytes "00" to "0F" for digital data
Optional pattern 2	2 bytes	Refer to Fig. 4-7-10. * 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

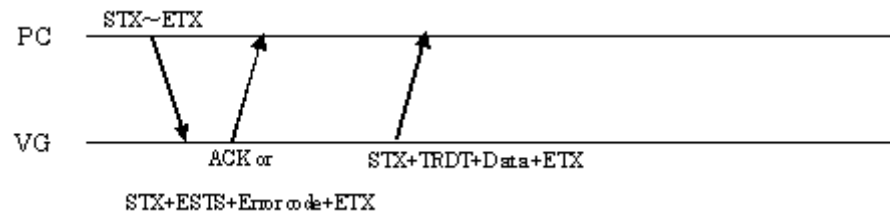
STX	1 byte	02H
TRDT	1 byte	10H
Horizontal timing	30 bytes	Refer to Fig. 4-1-2.
Delimiter	1 byte	“ , ”
Vertical timing	34 bytes	Refer to Fig. 4-3-2.
Delimiter	1 byte	“ , ”
Analog output condition	20 bytes	Refer to Fig. 4-5-3.
Delimiter	1 byte	“ , ”
Graphic color	12 bytes	Refer to Fig. 4-7-2.
Character	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 program whose number has been designated.

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

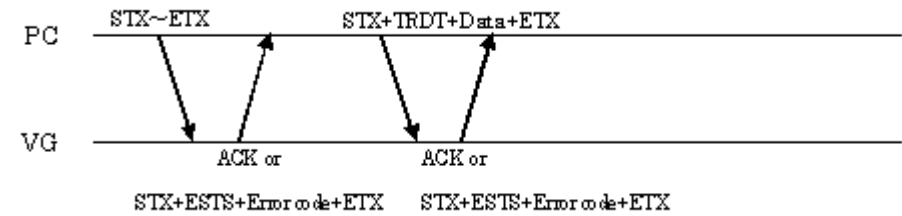
Fig. 4-10-1

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

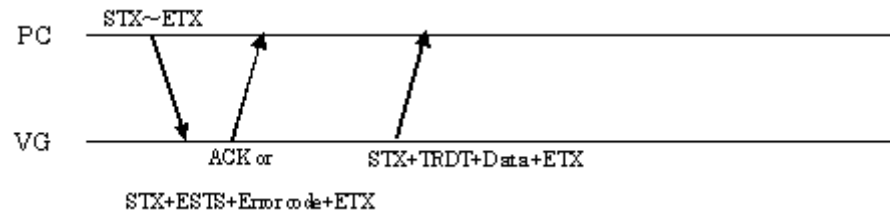
Fig. 4-11-2

*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

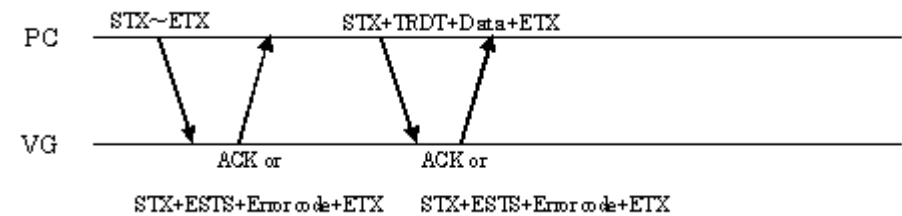
Fig. 4-12-1

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 program whose number has been designated. 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:

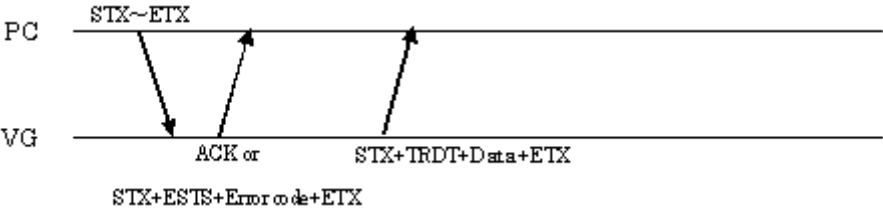
STX	1 byte	02H
TRDT	1 byte	10H
Pattern select	0 to 18 bytes	'50H' = CHARA '51H' = CROSS '52H' = DOTS '53H' = CIRCLE '54H' = + '55H' = □ '56H' = × '57H' = COLOR '58H' = GRAY '59H' = BURST '5AH' = WINDOW '5BH' = OPTION1 '5CH' = OPTION2 '5EH' = R '5FH' = G '60H' = B '62H' = INV '69H' = CURSOR
ETX	1 byte	03H

Fig. 4-13-2

4.14 LPTS [41H]: Pattern select data readout

Function: This command reads the pattern select data of the program whose number has been designated.

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

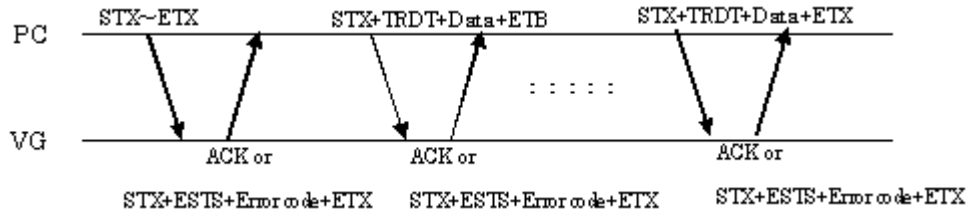
Fig. 4-14-1

Data: Same as Fig. 4-13-2.

4.15 SCH [4FH]: Character data registration

Function: This command registers the data for the character whose number has been designated.

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 are what is 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, each of which is then 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.

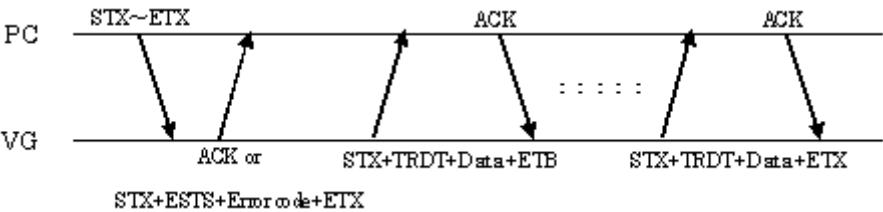
STX	1 byte	02H
TRDT	1 byte	10H
Character data	128 bytes	ASCII code
ETX	1 byte	03H

Fig. 4-15-4

4.16 LCH [4EH]: Character data readout

Function: This command reads the data for the character whose number has been designated.

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:

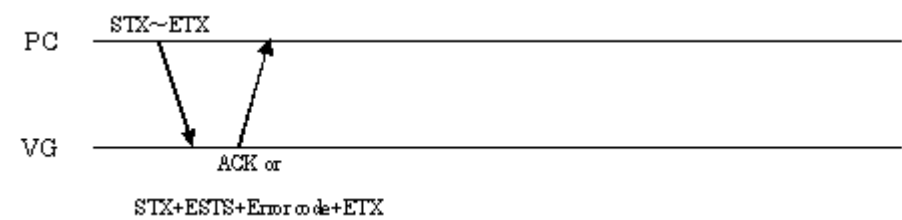
The first 7 blocks are received exactly as shown in Fig. 4-15-3, and the last block is received exactly as shown in Fig. 4-15-4.

4.17

EXPPN [07H]: Timing data execution

Function: This command executes only the timing data of the program whose number has been designated.

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

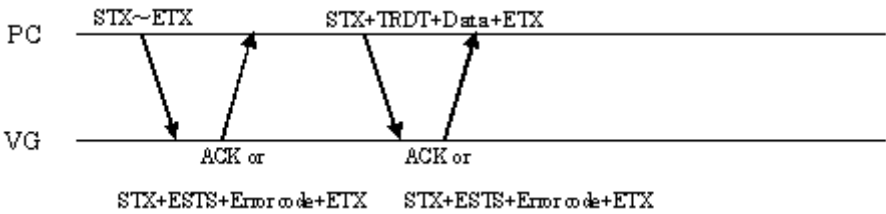
Fig. 4-17-1

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:

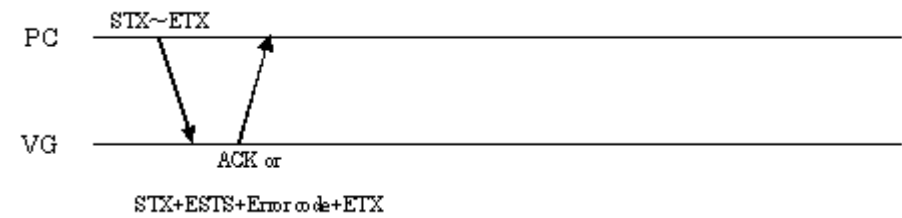
Same as Fig. 4-9-2 or Fig. 4-9-3.

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

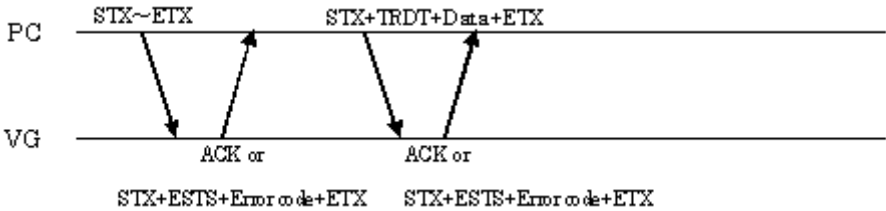
Fig. 4-19-1

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:

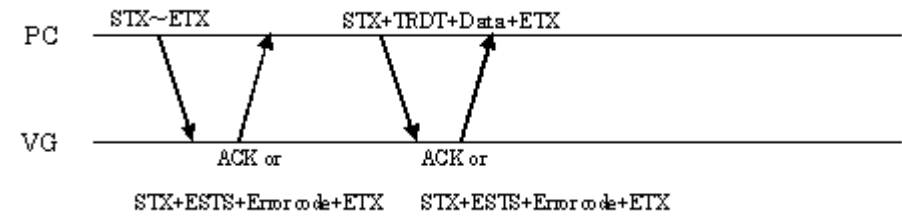
Same as Fig. 4-13-2.

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

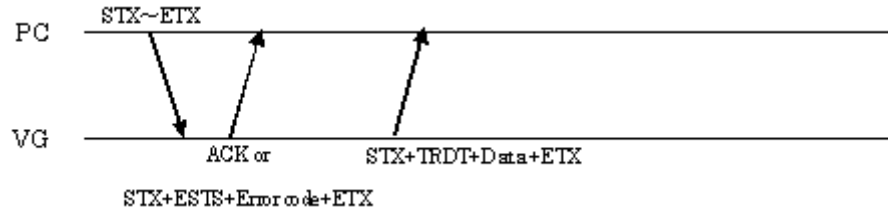
Fig. 4-21-1

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

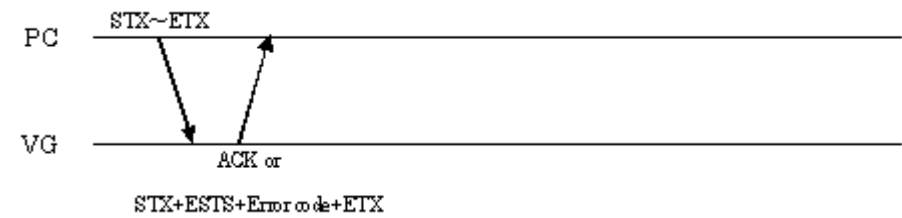
Fig. 4-22-2

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

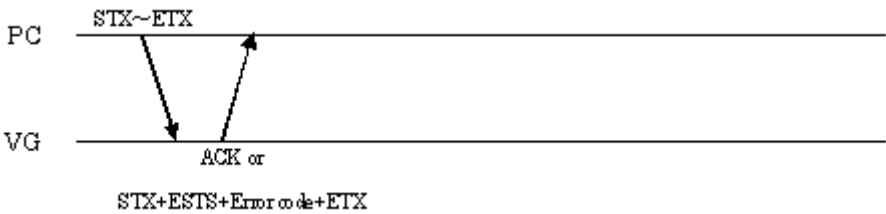
Fig. 4-23-1

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

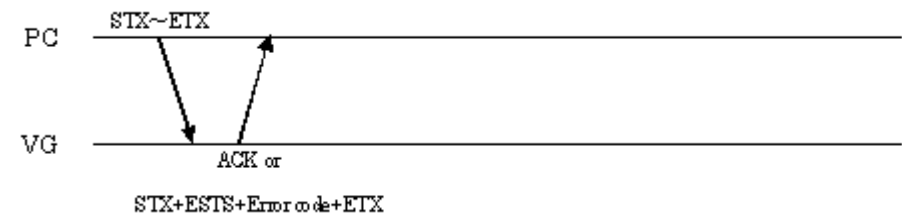
Fig. 4-24-1

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. Designate the key codes whose signals are to be turned ON as the parameters. A signal corresponding to a 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

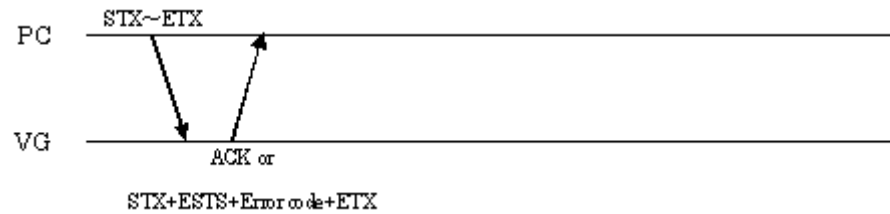
Fig. 4-25-1

Data: None

4.26 EXSYNC [51H]: Separate sync ON/OFF

Function: This command turns ON or OFF each of the separate HS, VS and CS sync signals.

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

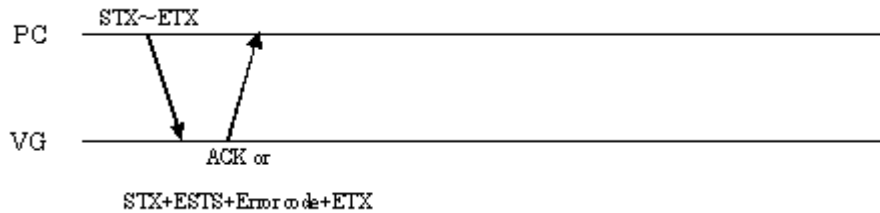
Fig. 4-26-1

Data: None

4.27 SGROUP [52H]: Group data registration

Function: This command registers the data of the group whose number has been designated.
Any group number from 1 to 9 can be designated. When designating a number from 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

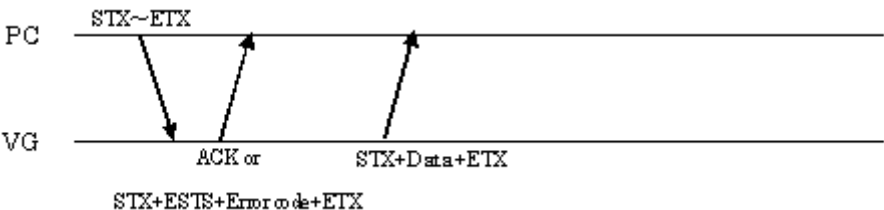
Fig. 4-27-1

Data: None

4.28 LGROUP [53H]: Group data readout

Function: This command reads the data of the group whose number has been designated. Any group number from 1 to 9 can be designated. When designating a number from 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:

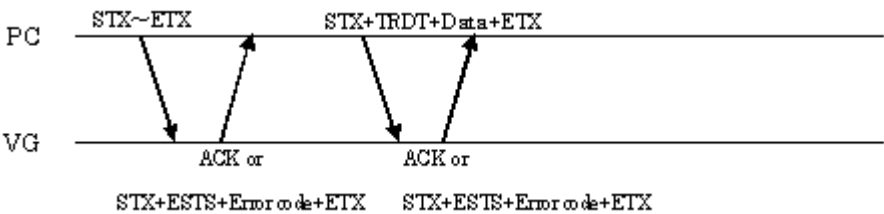
[illegible]

Fig. 4-28-2

4.29 SPT3 [A2H]: Pattern data registration (Type 3)

Function: This command registers the pattern data of the program whose number has been designated. It selects the pattern block to be set as 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"
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

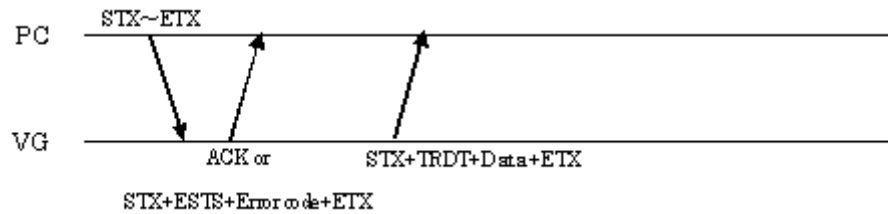
STX	1 byte	02H
TRDT	1 byte	10H
No. of interval V	3 bytes	"001" to "999"
Character flicker	1 byte	Fixed at "0" * This function cannot be used.
Window flicker	1 byte	"0" = Not provided, "1" = Provided
Pattern scroll	1 byte	"0" = None, "1" = Character scrolling, "2" = Graphic scrolling, "3" = Both types 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 program whose number has been designated. It selects the pattern block to be set as 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

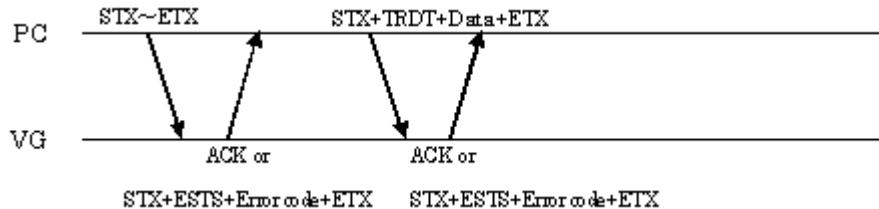
Fig. 4-30-1

Data: The data in Figs. 4-29-2 to 4-29-14 corresponding to the pattern block whose number has been designated 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 program whose number has been designated. 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	Analog data
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	
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								Digital data
DISP	1 byte	"0" = Nega, "1" = Posi								
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				
Reserved	1 byte	'40H' ("@" in ASCII code)								
ETX	1 byte	03H								

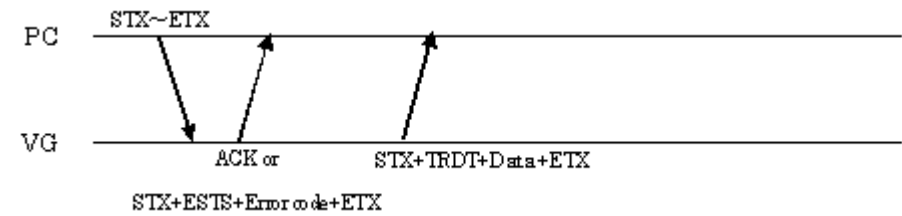
Fig. 4-31-2

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 program whose number has been designated.

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

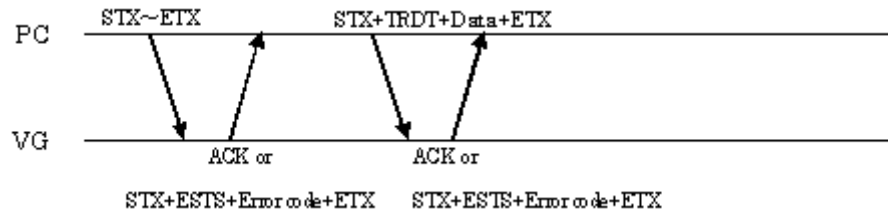
Fig. 4-32-1

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 program whose number has been designated. 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:

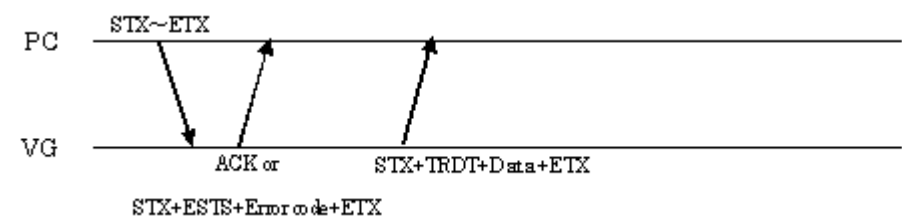
STX	1 byte	02H
TRDT	1 byte	10H
Horizontal timing	30 bytes	Refer to Fig. 4-1-2.
Delimiter	1 byte	" "
Vertical timing	34 bytes	Refer to Fig. 4-3-2.
Delimiter	1 byte	" "
Analog + digital output conditions	51 byte	Refer to Fig. 4-31-2.
Delimiter	1 byte	" "
Graphic color	21 byte	Refer to Fig. 4-29-2.
Character	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 program whose number has been designated.

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

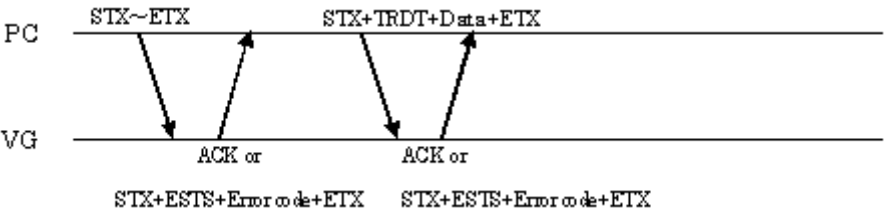
Data:

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:

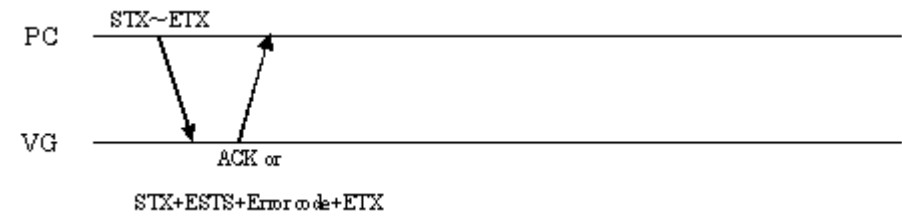
Same as Fig. 4-33-2.

4.36

PNAME3 [A8H]: Program name registration (Type 3)

Function: This command registers the name of the program whose number has been designated.

Sequence: Type 2



Command:

STX	1 byte	02 H
PNAME3	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

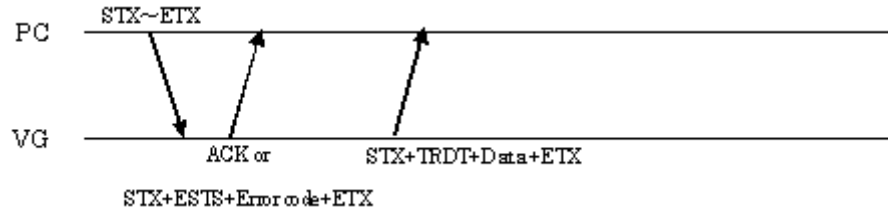
Fig. 4-36-1

Data: None

4.37 PNAMER3 [A9H]: Program name readout (Type 3)

Function: This command reads the name of the program whose number has been 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	-

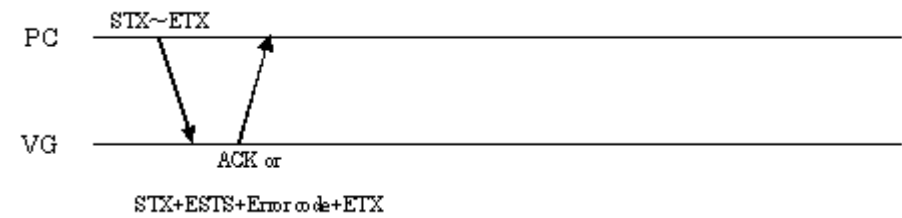
Fig. 4-37-2

4.38

SGROUP3 [AAH]: Group number registration (Type 3)

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

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"
Pattern data program No.	3 bytes	"001" to "999"
ETX	1 byte	03H

Repeated up to 98 times
in this increment
(3 + 3) × 98 bytes

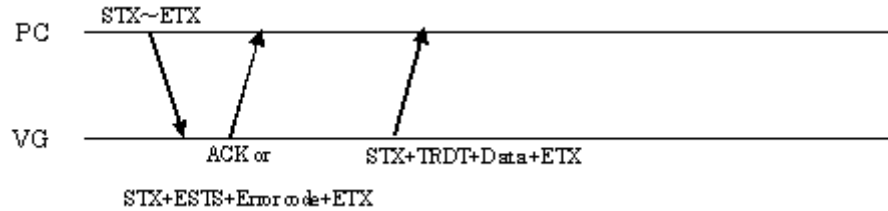
Fig. 4-38-1

Data: None

4.39 LGROUP3 [ABH]: Group number readout (Type 3)

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

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"
Pattern data program No.	3 bytes	"001" to "999"
ETX	1 byte	03H

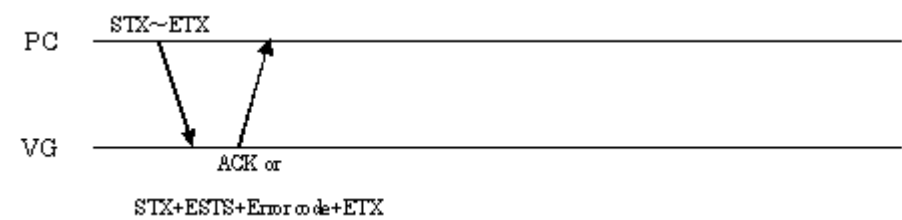
Repeated up to 98 times
in this increment
((3 + 3) × 98 bytes)

Fig. 4-39-2

4.40 GNAME\$3 [ACH]: Group name registration (Type 3)

Function: This command registers the name of the group whose number has been designated.

Sequence: Type 2



Command:

STX	1 byte	02H
GNAME\$3	1 byte	ACH
Group No.	2 bytes	"01" to "99"
Group name	1 to 20 bytes	ASCII code
ETX	1 byte	03H

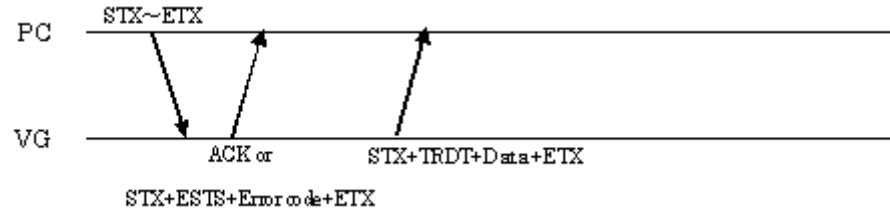
Fig. 4-40-1

Data: None

4.41 GNAMER3 [ADH]: Group name readout (Type 3)

Function: This command reads the name of the group whose number has been designated.

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:

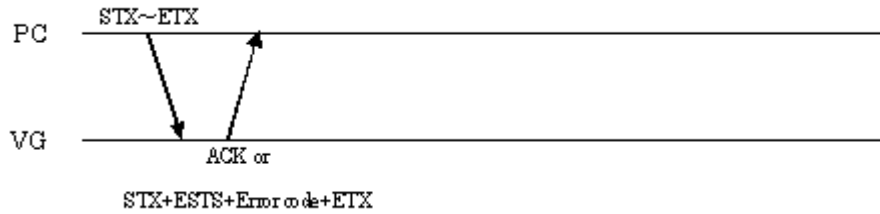
STX	1 byte	02H
TRDT	1 byte	10H
Group name	1 to 20 bytes	ASCII code
ETX	1 byte	03H

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

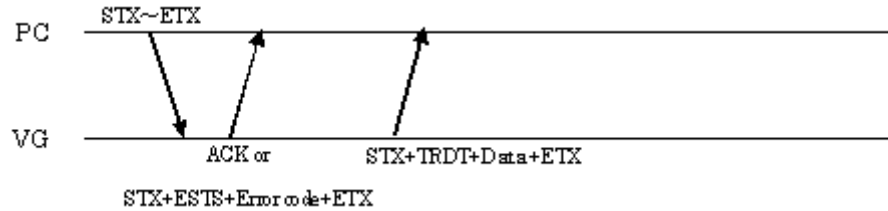
Fig. 4-42-1

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

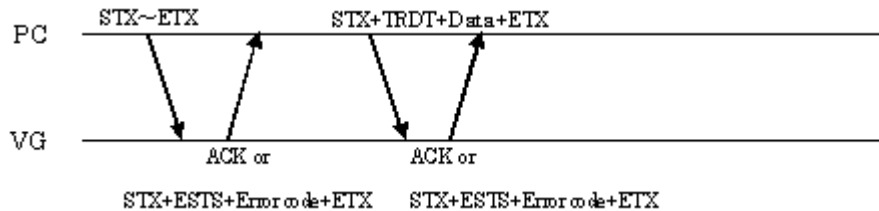
Fig. 4-43-2

4.44 SPbPrD [92H]: Color difference coefficient data registration

Function: This command registers the color difference coefficient data.

* 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:

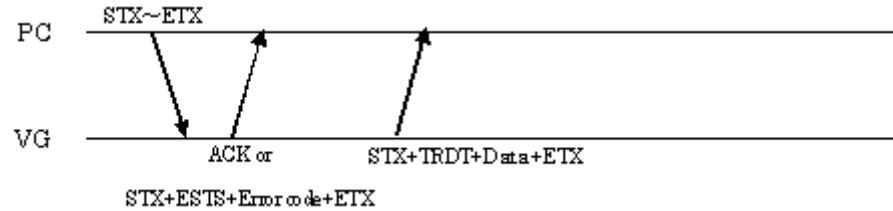
STX	1 byte	02H
TRDT	1 byte	10H
YR	5 bytes	"00000" to "10000" Total value of YG + YB must be set to under 10000.
YG	5 bytes	"00000" to "10000" Total value of YR + YB must be set to under 10000.
YB	5 bytes	"00000" to "10000" Total value of YR + YG must be set to under 10000.
PbR	5 bytes	"00000" to "05000" 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.

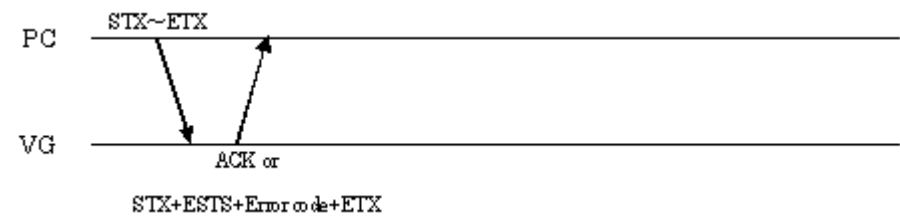
4.46

PbPrDNAMES3 [93H]: Color difference coefficient data name registration (Type 3)

Function: This command registers the name of the color difference coefficient data whose number has been designated.

* 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

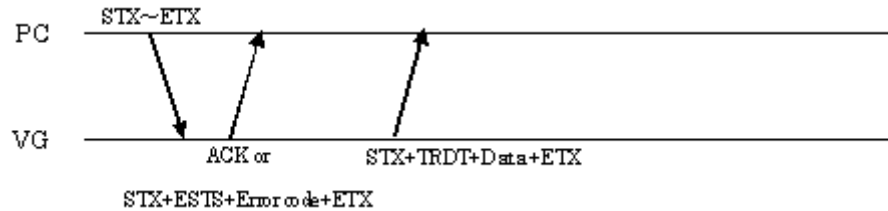
Fig. 4-46-1

Data: None

4.47 PbPrDNAMER3 [94H]: Color difference coefficient data name readout (Type 3)

Function: This command reads the name of the color difference coefficient data whose number has been designated.

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:

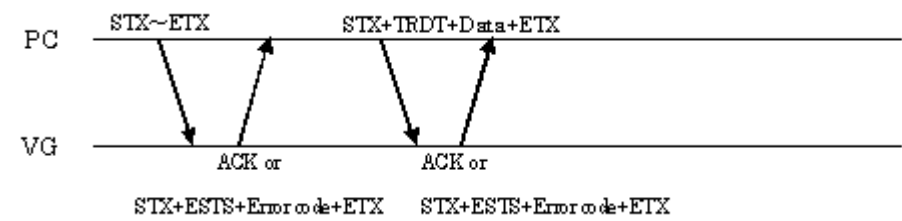
STX	1 byte	02H
TRDT	1 byte	10H
Color difference coefficient data name	1 to 20 bytes	ASCII code
ETX	1 byte	03H

Fig. 4-47-2

4.48 CROSS_CTRL [2EH]: Cursor pattern control

Function: This command changes the setting for the angle of the cursor pattern. It is valid only when a cursor pattern has been output in advance. Send the data that corresponds to the command code which has been designated.

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" = Top/bottom and left/right of "0" reversed "4" = Top/bottom and left/right of "1" reversed
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 coordinate

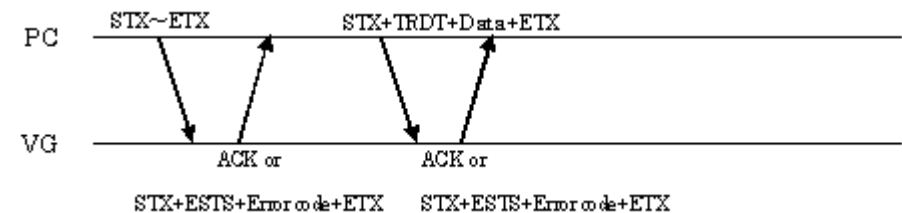
STX	1 byte	02H
TRDT	1 byte	10H
X coordinate	4 bytes	From "0000" to "H display size -1 (4 digits)"
Y coordinate	4 bytes	From "0000" to "V display size -1 (4 digits)"
ETX	1 byte	03H

Fig. 4-48-7

4.49 SDC [61H]: D connector output condition registration

Function: This command registers the D connector output conditions of the program whose number has been designated.
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:

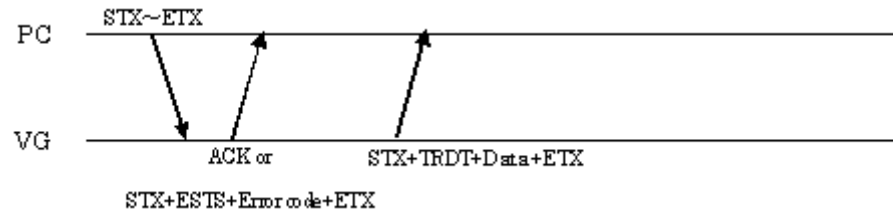
STX	1 byte	02H
TRDT	1 byte	10H
D connector LINE1	1 byte	"0" = 480, "1" = 720, "2" = 1080
D connector LINE2	1 byte	"0" = Interlace, "1" = Progressive
D connector LINE3	1 byte	"0" = 4:3, "1" = 4:3LB, "2" = 16:9
ETX	1 byte	03H

Fig. 4-49-2

4.50 LDC [60H]: D connector output condition readout

Function: This command reads the D connector output conditions of the program whose number has been designated.

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

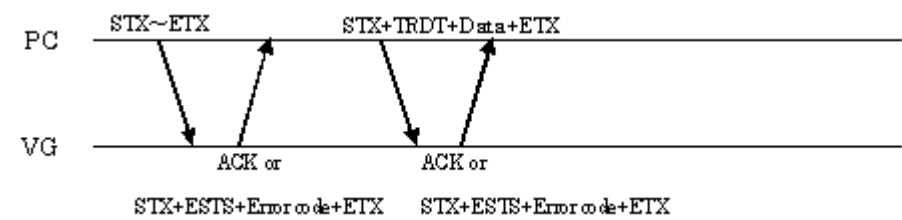
Fig. 4-50-1

Data: Same as Fig. 4-49-2.

4.51 SWP [63H]: Window pattern coordinate registration

Function: This command sends the window display center coordinates, which become valid when "Format E" has been selected during window pattern editing, to the program whose number has been designated. 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

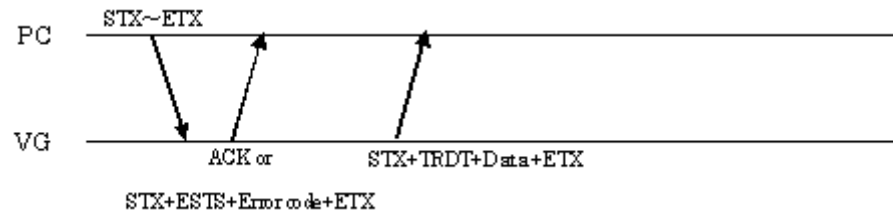
Fig. 4-51-2

* 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 window display center coordinates, which become valid when "Format E" has been selected during window pattern editing, from the program whose number has been designated.

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

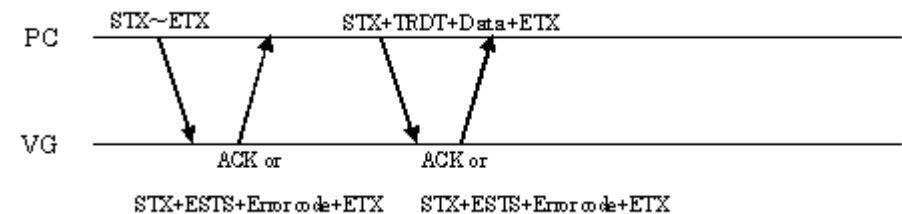
Fig. 4-52-1

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 program whose number has been designated. 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:

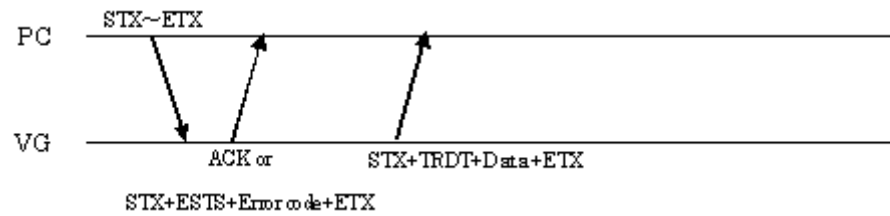
STX	1 byte	02H
TRDT	1 byte	10H
Analog output (BNC)	1 byte	"0" = OFF, "1" = ON
Analog output (D-SUB)	1 byte	"0" = OFF, "1" = ON
DVI (Digital)	1 byte	"0" = OFF, "1" = ON
DVI (Analog)	1 byte	"0" = OFF, "1" = ON
D connector output	1 byte	"0" = OFF, "1" = ON
Spare	1 byte	"0"
Spare	1 byte	"0"
Spare	1 byte	"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 program whose number has been designated.

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

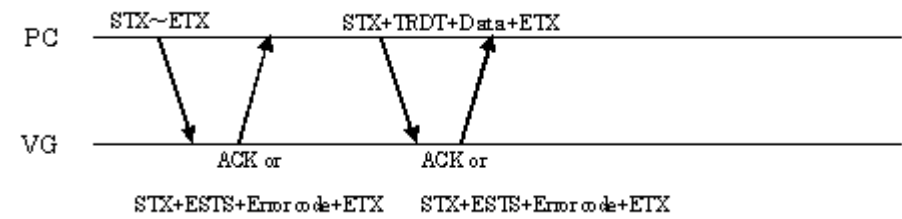
Fig. 4-54-1

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 program whose number has been designated. 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:

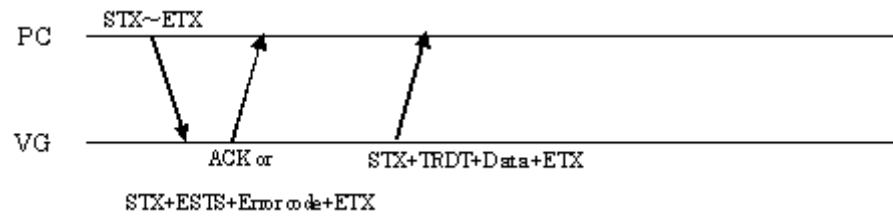
STX	1 byte	02H
TRDT	1 byte	10H
Freq L (Hz)	5 bytes	"00100" to "20000" = 100 Hz to 20000 Hz
Freq R (Hz)	5 bytes	"00100" to "20000" = 100 Hz to 20000 Hz
Level L (mV)	4 bytes	"0000" to "2000" = 0 mV to 2000 mV (in 50 mV increments)
Level R (mV)	4 bytes	"0000" to "2000" = 0 mV to 2000 mV (in 50 mV increments)
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 program whose number has been designated.

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

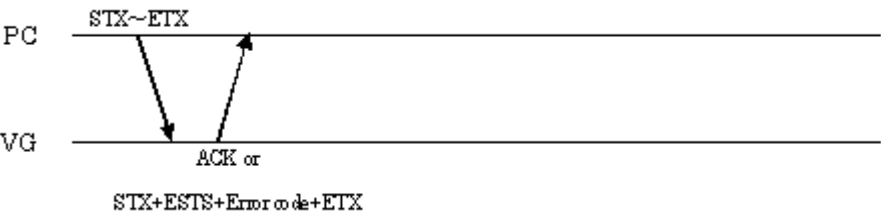
Fig. 4-56-1

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:

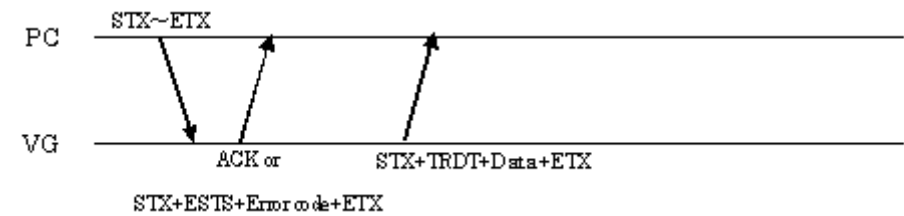
STX	1 byte	02H
SIPADR	1 byte	F1H
IP address	8 bytes	ASCII code (Hex)
Port number	4 bytes	ASCII code (Hex)
ETX	1 byte	03H

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

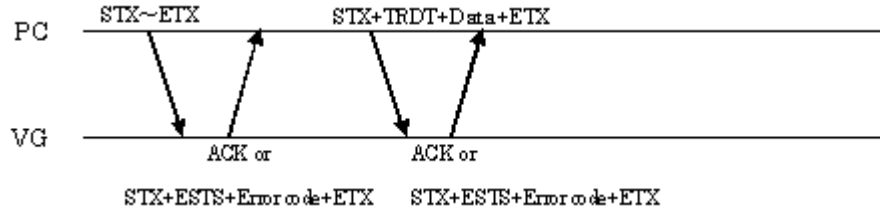
Fig. 4-58-2

4.59

SPDS [69H]: Pulldown scroll setting data registration

Function: This command sends the pulldown scroll setting data of the program whose number has been designated. 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:

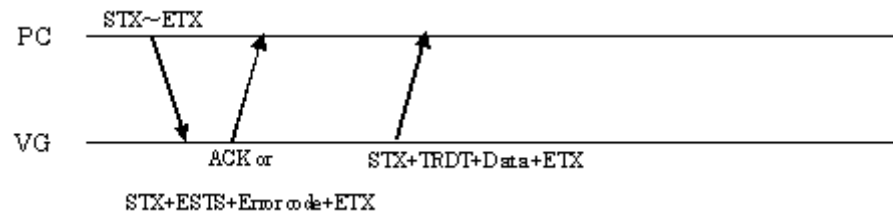
STX	1 byte	02H
TRDT	1 byte	10H
Interval 1	3 bytes	"001" to "255" = 1 V to 255 V
Interval 2	3 bytes	"000" to "255" = 0 V to 255 V
Interval 3	3 bytes	"000" to "255" = 0 V to 255 V
Interval 4	3 bytes	"000" to "255" = 0 V to 255 V
Graphic & character H-Step1	4 bytes	"0001" to "0255" = 1Step to 255Step
Graphic & 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 program whose number has been designated.

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

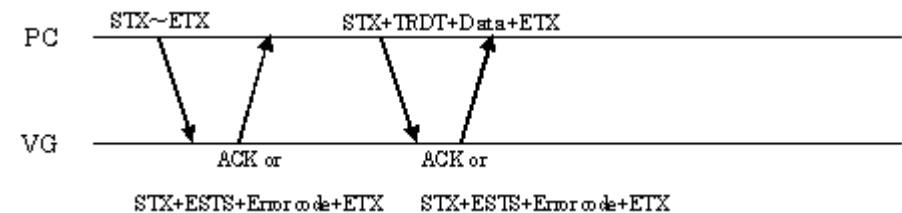
Data: Same as Fig. 4-59-2.

4.61

SSC [6BH]: S connector output condition registration

Function: This command registers the S connector output conditions of the program whose number has been designated. 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:

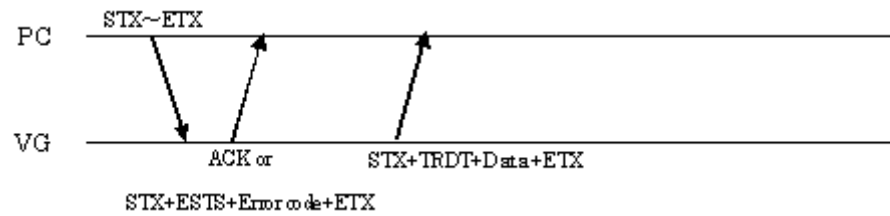
STX	1 byte	02H
TRDT	1 byte	10H
S connector 1	1 byte	"0" = Normal, "1" = Letter box, "2" = Squeeze
ETX	1 byte	03H

Fig. 4-61-2

4.62 LSC [6AH]: S connector output condition readout

Function: This command reads the S connector output conditions of the program whose number has been designated.

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

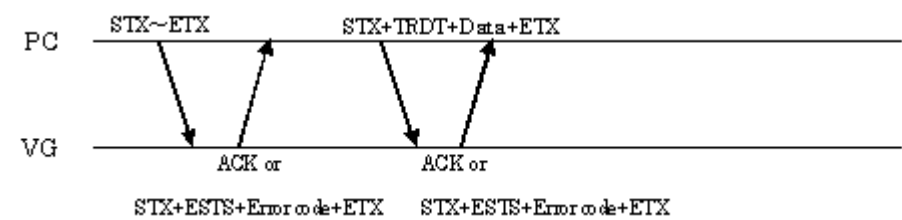
Fig. 4-62-1

Data: Same as Fig. 4-61-2.

4.63 SDVIM [6DH]: DVI output mode registration

Function: This command registers the DVI mode of the program whose number has been designated. 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:

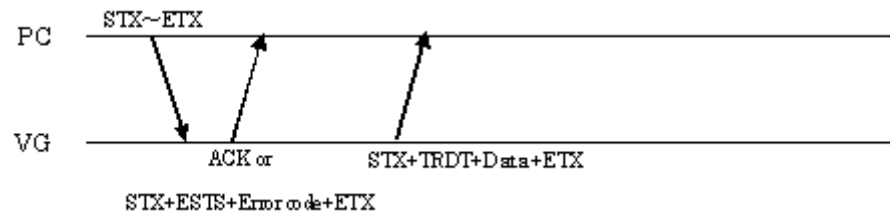
STX	1 byte	02H
TRDT	1 byte	10H
DVI MODE	1 byte	"0" = Single, "1" = Dual
ETX	1 byte	03H

Fig. 4-63-2

4.64 LDVIM [6CH]: DVI output mode readout

Function: This command reads the DVI mode of the program whose number has been designated.

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

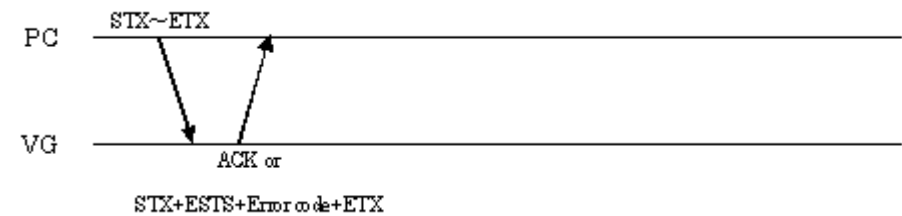
Data: Same as Fig. 4-63-2.

4.65

SGADR [F3H]: Gateway IP address registration

Function: Gateway IP address registrationThis command sends the IP address of the gateway.
(In the VG-848, it is reserved and is only to be used in the event that the generator's functions are expanded. Even when 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

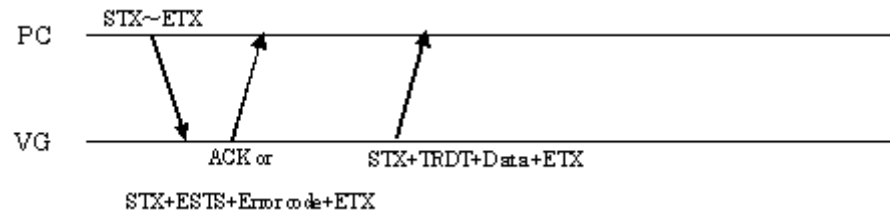
Fig. 4-65-1

Data: None

4.66 LGADR [F2H]: Gateway IP address readout

Function: This command reads the IP address of the gateway. (In the VG-848, it is reserved and is only to be used in the event that the generator's functions are expanded. Even when 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

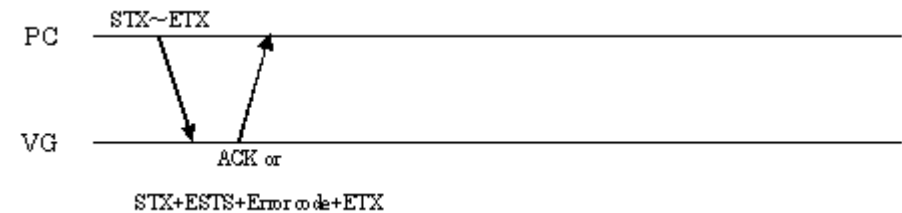
Fig. 4-66-2

4.67

SHDCPEN [81H]: Program HDCP enable/disable setting

Function: This command sets enable or disable for HDCP of the program whose number has been designated.

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

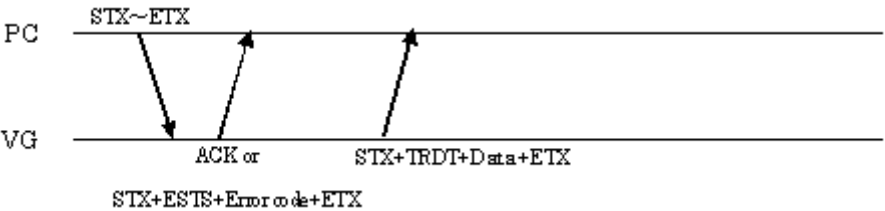
Fig. 4-69-1

Data: None

4.68 LHDCPEN [80H]: Program HDCP enable/disable readout

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

Sequence: Type 3



Command:

STX	1 byte	02H
LHDCPEN	1 byte	80H
Program number	2 bytes	"0" to "849"
ETX	1 byte	03H

Fig. 4-70-1

Data:

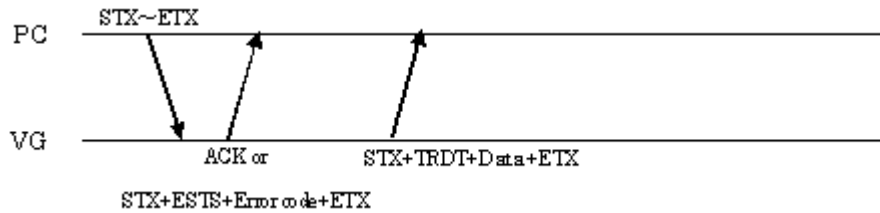
STX	1 byte	02H
Enable/Disable	1 byte	"0" = Enable, "1" = Disable
ETX	1 byte	03H

Fig. 4-70-2

4.69 LOPTB [74H]: Optional board data acquisition

Function: This command gets the optional board data of the program whose number has been designated.

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. 4-71-1

Data:

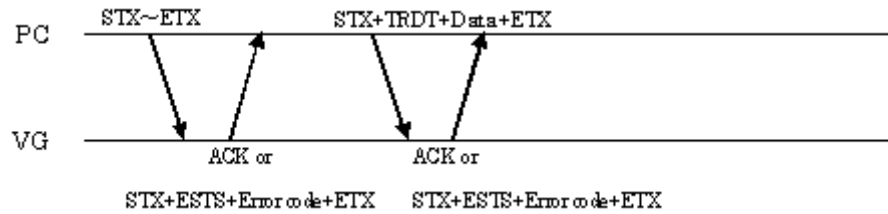
STX	1 byte	02H
TRDT	1 byte	10H
RGB1	1 byte	"0" = Nega, "1" = Posi
OUT1	1 byte	"0" = Hi-Z, "1" = ON
CLOCK1	1 byte	"0" = Hi-Z, "1" = ON
SYNC1	1 byte	"0" = Hi-Z, "1" = ON
POW1	1 byte	"0" = Hi-Z, "1" = ON
RGB2	1 byte	"0" = Nega, "1" = Posi
OUT2	1 byte	"0" = Hi-Z, "1" = ON
CLOCK2	1 byte	"0" = Hi-Z, "1" = 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. 4-71-2

4.70 SOPTB [75H]: Optional board data setting

Function: This command sets the optional board data of the program whose number has been designated.

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:

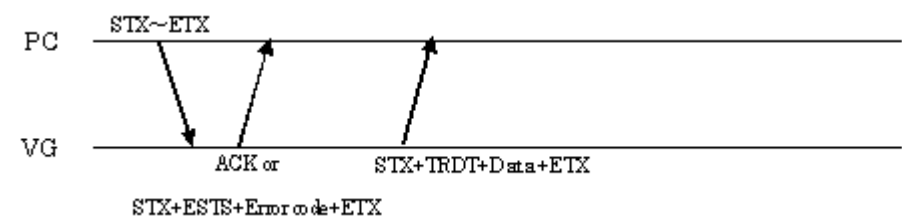
STX	1 byte	02H
TRDT	1 byte	10H
RGB1	1 byte	"0" = Nega, "1" = Posi
OUT1	1 byte	"0" = Hi-Z, "1" = ON
CLOCK1	1 byte	"0" = Hi-Z, "1" = ON
SYNC1	1 byte	"0" = Hi-Z, "1" = ON
POW1	1 byte	"0" = Hi-Z, "1" = ON
RGB2	1 byte	"0" = Nega, "1" = Posi
OUT2	1 byte	"0" = Hi-Z, "1" = ON
CLOCK2	1 byte	"0" = Hi-Z, "1" = 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. 4-72-2

4.71 LOPTB2 [79H]: Optional board data 2 acquisition

Function: This command gets the optional board data 2 of the program whose number has been designated.

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. 4-73-1

Data:

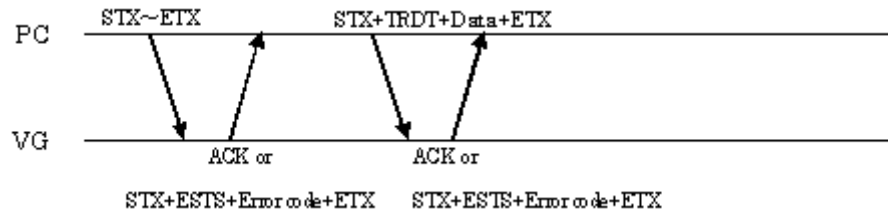
STX	1 byte	02H
TRDT	1 byte	10H
LVDS 1ch	1 byte	"0" = OFF, "1" = ON
LVDS 2ch	1 byte	"0" = OFF, "1" = ON
rsv1	1 byte	"0"
Output Select	1 byte	"0" = DVI "1" = Parallel "2" = 4Head LVDS "3" = 2Head LVDS
rsv2	28 bytes	All "0"
ETX	1 byte	03H

Fig. 4-73-2

4.72 SOPTB2 [7AH]: Optional board data 2 setting

Function: This command sets the optional board data 2 of the program whose number has been designated.

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. 4-74-2

Data: None



5

INDIVIDUAL DRAWING COMMAND FORMATS

Execute the drawing commands after having set the sync signals.

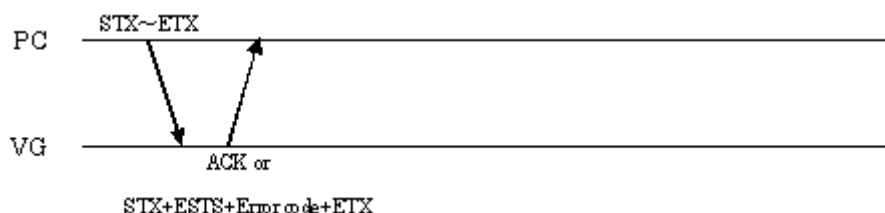
With the VG-848 generator, do not execute drawing commands in combination with pattern drawing using the main unit. If they are executed, the patterns may not be drawn on the screen correctly due to the structure of the video memory.

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 designated as the parameters.

Sequence: Type 2



Command:

STX	1 byte	02H
GCIRC, CCIRC	1 byte	18H, 12H
Center X coordinate	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	" , "
Radius	1 to 4 bytes	"1" to "4095"
ETX	1 byte	03H

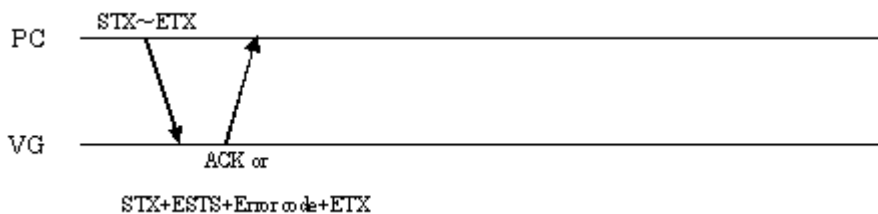
Fig. 5-1-1

* 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 designated as the parameters.

Sequence: Type 2



Parameters:

STX	1 byte	02H
CCIRC	1 byte	12H
Center X coordinate	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	","
Radius	1 to 4 bytes	"1" to "4095"
ETX	1 byte	03H

Fig. 5-1-2

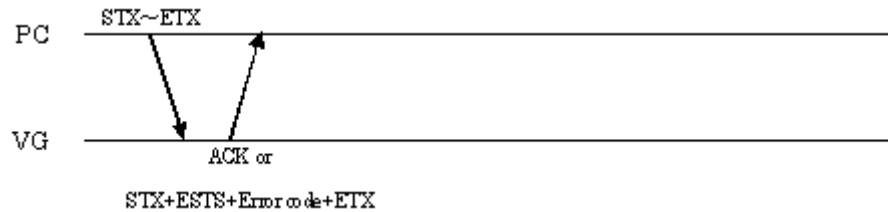
* A sign code is provided for each of the center coordinates.

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 designated as the parameters.

Sequence: Type 2



Command:

STX	1 byte	02H
GCIRCPA, CCIRCPA	1 byte	D4H, D5H
Center X coordinate	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	","
Radius	1 to 4 bytes	"1" to "4095"
ETX	1 byte	03H

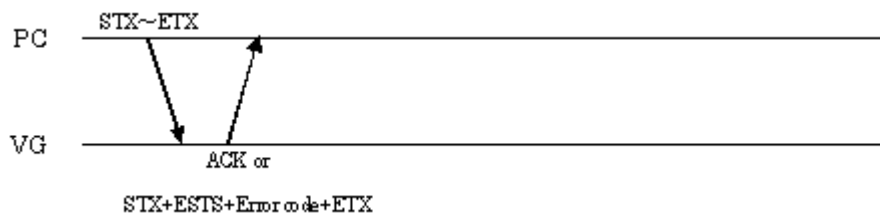
Fig. 5-2-1

* 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 designated as the parameters.

Sequence: Type 2



Parameter:

STX	1 byte	02H
CCIRCPA	1 byte	D5H
Center X coordinate	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	","
Radius	1 to 4 bytes	"1" to "4095"
ETX	1 byte	03H

Fig. 5-2-2

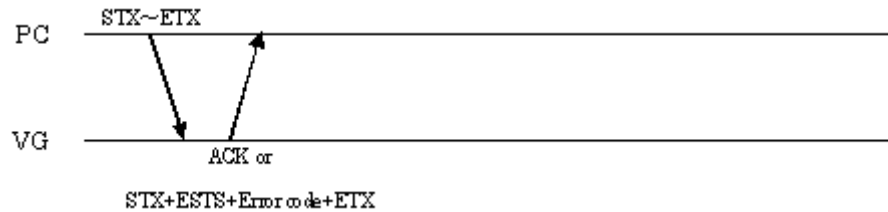
* A sign code is provided for each of the center coordinates.

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 designated as the parameters.

Sequence: Type 2



Command:

STX	1 byte	02H
GLINE, CLINE	1 byte	19H, 13H
Start point coordinate X	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	","
Start point coordinate Y	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	","
End point coordinate X 1	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	","
End point coordinate Y 1	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
ETX	1 byte	03H

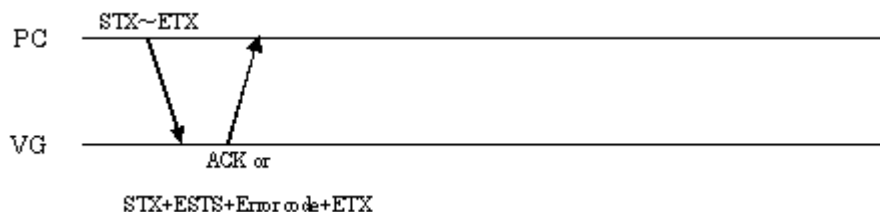
Fig. 5-3-1

* 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 designated as the parameters.

Sequence: Type 2



Parameters:

STX	1 byte	02H
CLINE	1 byte	13H
Start point coordinate X	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	","
Start point coordinate Y	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	","
End point coordinate X 1	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	","
End point coordinate Y 1	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
ETX	1 byte	03H

Fig. 5-3-2

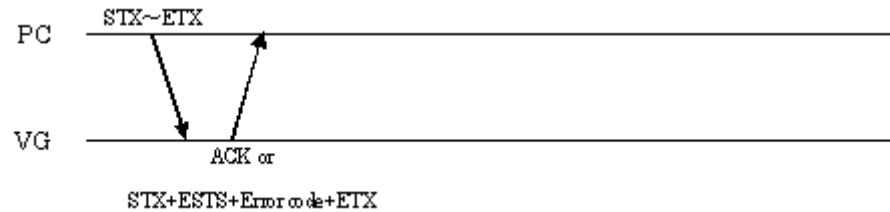
* Sign codes are provided.

5.4 GPSET [1BH]: Dot drawing / CPSET [14H]: Dot clearing

5.4.1 GPSET [1BH]: Dot drawing

Function: This commands draws one dot on the graphic plane (1-bit plane).
Coordinates are designated as the parameters.

Sequence: Type 2



Command:

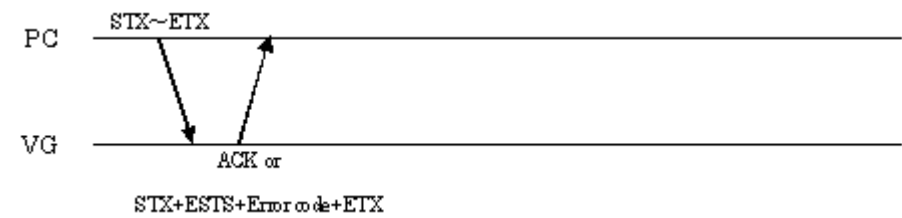
STX	1 byte	02H
GPSET, CPSET	1 byte	1BH, 14H
X coordinate	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	","
Y coordinate	1 to 4 bytes	"0" to "4095"
ETX	1 byte	03H

Fig. 5-4-1

5.4.2 CPSET [14H]: Dot clearing

Function: This commands clears the one dot on the graphic plane (1-bit plane).
Coordinates are designated as the parameters.

Sequence: Type 2



Parameters:

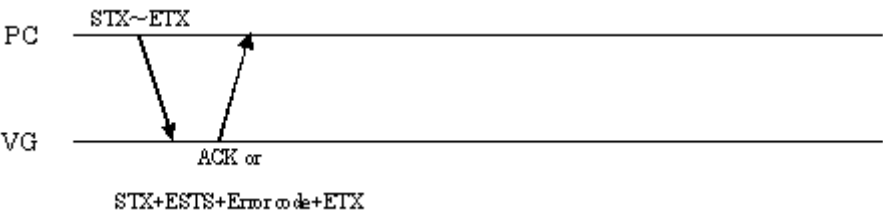
STX	1 byte	02H
CPSET	1 byte	14H
X coordinate	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	","
Y coordinate	1 to 4 bytes	"0" to "4095"
ETX	1 byte	03H

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:

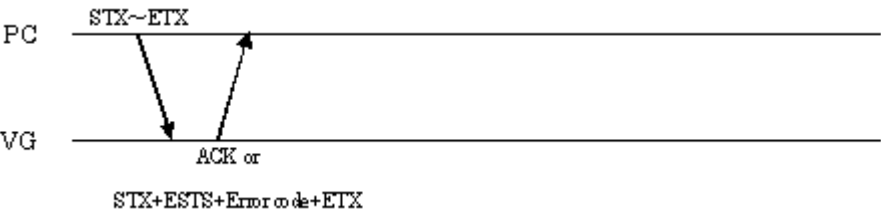
STX	1 byte	02H
ACLR	1 byte	23H
ETX	1 byte	03H

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:

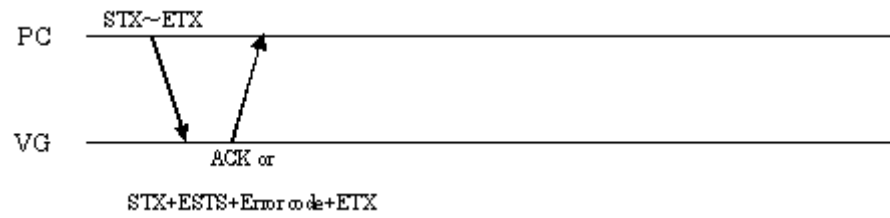
STX	1 byte	02H
COCLR	1 byte	24H
ETX	1 byte	03H

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:

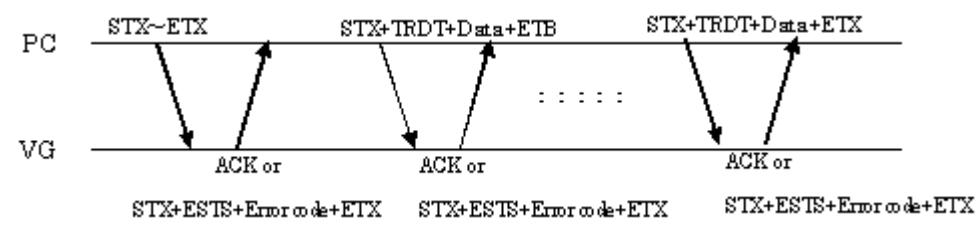
STX	1 byte	02H
GCLR	1 byte	25H
ETX	1 byte	03H

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 designated as the parameters.

Sequence: Type 6



Command:

STX	1 byte	02H
GCHAR	1 byte	27H
Font size	1 byte	"0" = 5×7, "1" = 7×9, "2" = 16×16
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

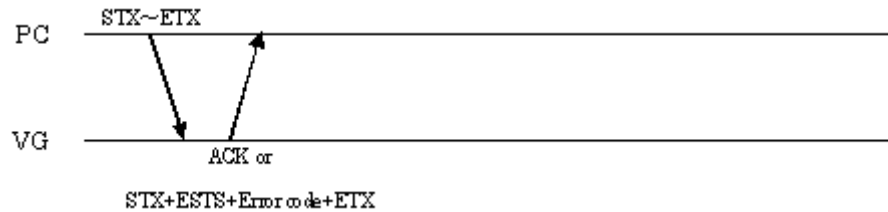
Fig. 5-8-2

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 designated as 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

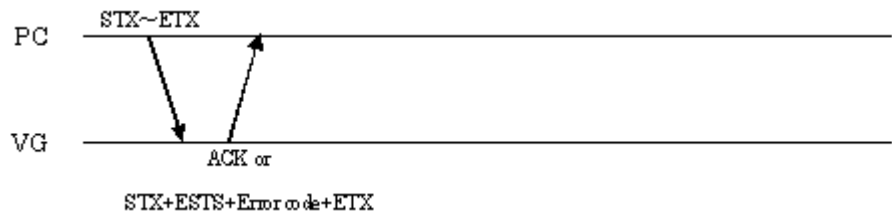
Fig. 5-9-1

* $X < X1, Y < Y1$

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 designated as 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

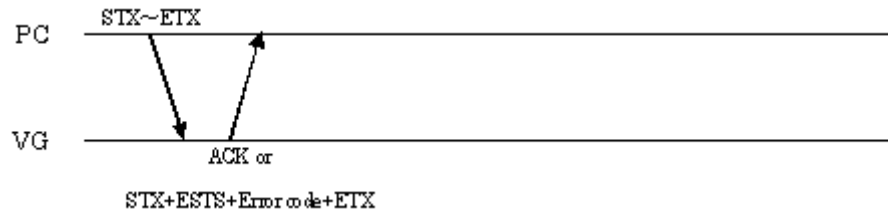
* $X < X1, Y < Y1$

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 designated as 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

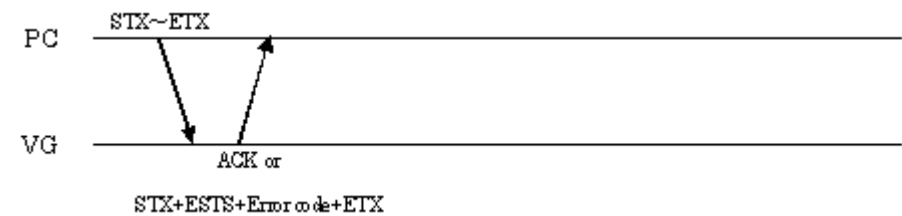
Fig. 5-10-1

* $X < X1, Y < Y1$

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 designated as 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

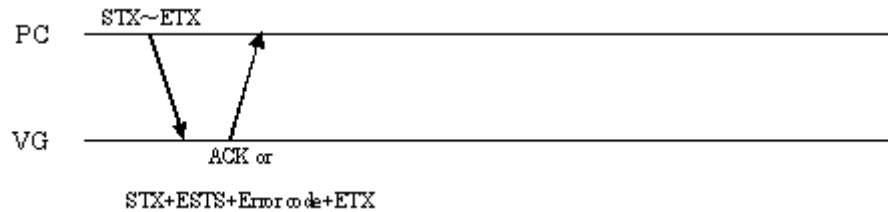
* X < X1, Y < Y1

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 designated as the parameters.

Sequence: Type 2



Command:

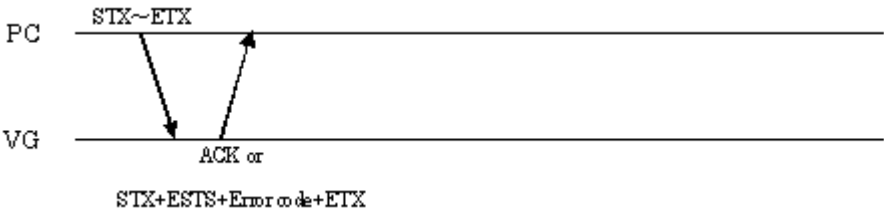
STX	1 byte	02H
WINDW, CWIND	1 byte	3CH, 2AH
Top left coordinate X	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	","
Top left coordinate Y	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	","
Bottom right coordinate X 1	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	","
Bottom right coordinate Y 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 designated as the parameters.

Sequence: Type 2



Parameters:

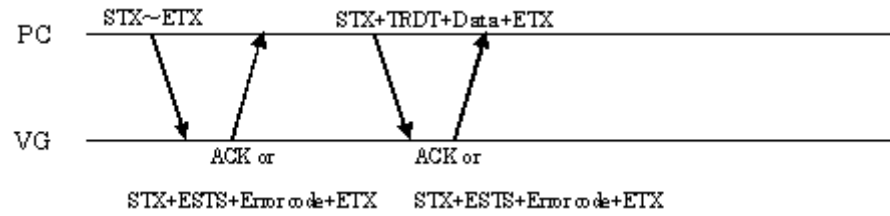
STX	1 byte	02H
CWIND	1 byte	2AH
Top left coordinate X	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	" , "
Top left coordinate Y	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	" , "
Bottom right coordinate X 1	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	" , "
Bottom right coordinate Y 1	1 to 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 designated as the parameters.

Sequence: Type 4



Command:

STX	1 byte	02H
WINDCL	1 byte	3DH
ETX	1 byte	03H

Fig. 5-12-1

Data:

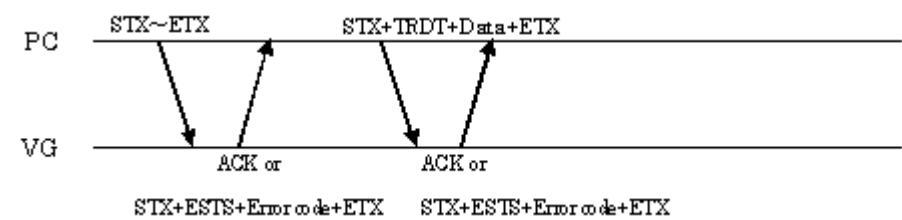
STX	1 byte	02H
TRDT	1 byte	10H
R	3 bytes	"000" to "255"
G	3 bytes	"000" to "255"
B	3 bytes	"000" to "255"
ETX	1 byte	03H

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 designated as 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

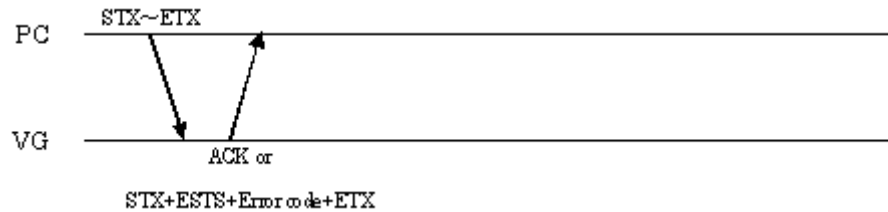
Fig. 5-13-2

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 designated as the parameters.

Sequence: Type 2



Command:

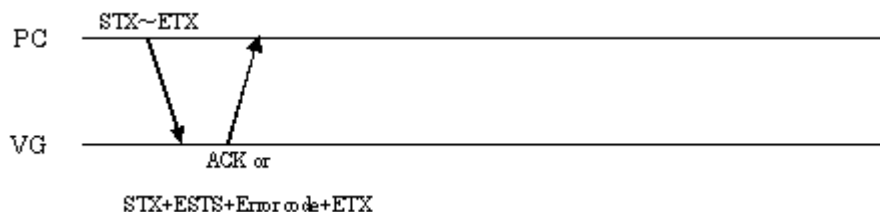
STX	1 byte	02H
GTRIPA, CTRIPA	1 byte	D2H, D3H
Coordinate X1	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	","
Coordinate Y1	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
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 designated as the parameters.

Sequence: Type 2



Parameters:

STX	1 byte	02H
CTRIPA	1 byte	D3H
Coordinate X1	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * 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" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
ETX	1 byte	03H

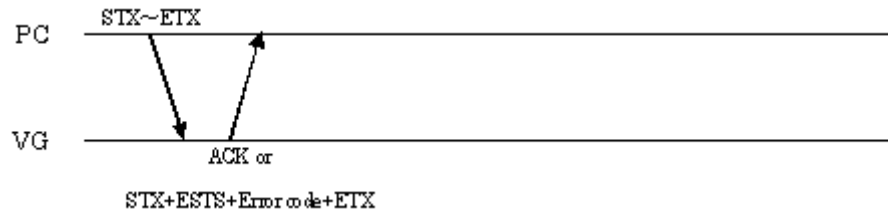
Fig. 5-14-2

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 designated as the parameters.

Sequence: Type 2



Command:

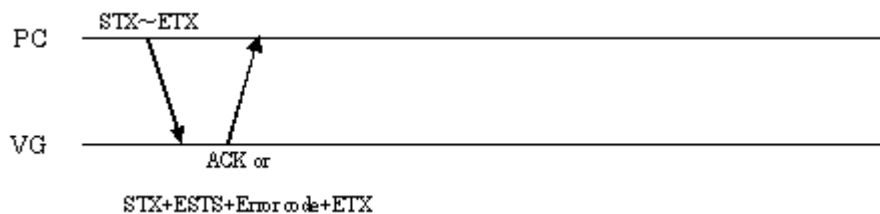
STX	1 byte	02H
GELPS, CELPS	1 byte	D6H, D7H
Center coordinate X	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	" , "
Center coordinate Y	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * 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"
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 designated as the parameters.

Sequence: Type 2



Parameters:

STX	1 byte	02H
GELPS	1 byte	D7H
Center coordinate X	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	","
Center coordinate Y	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * 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"
ETX	1 byte	03H

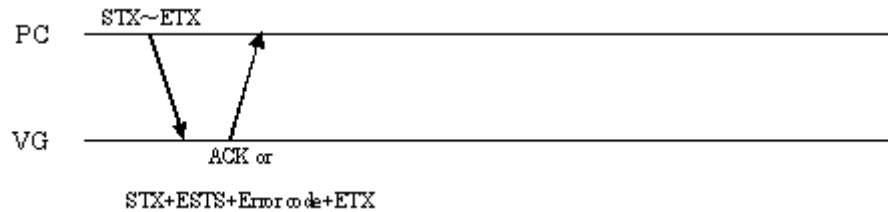
Fig. 5-15-2

5.16 GELPSA [D8H]: Filled-in ellipse drawing / CELPSA [D9H]: Filled-in ellipse clearing

5.16.1 GELPSA [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 as the parameters.

Sequence: Type 2



Command:

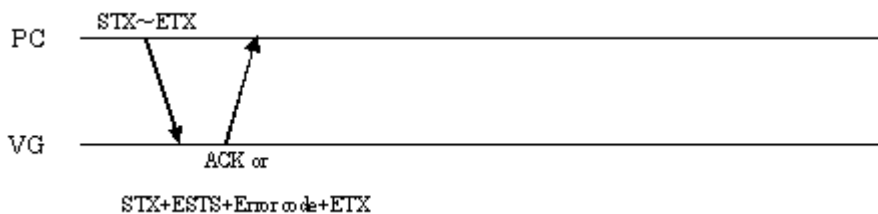
STX	1 byte	02H
GELPSA, CELPSA	1 byte	D8H, D9H
Center coordinate X	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	" , "
Center coordinate Y	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * 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"
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 as the parameters.

Sequence: Type 2



Parameters:

STX	1 byte	02H
CELPSPA	1 byte	D9H
Center coordinate X	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	","
Center coordinate Y	2 to 5 bytes	"0" to "4095" Example: 100 → "0100" Byte 0 is a sign code: "0" for + or "1" for - * 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"
ETX	1 byte	03H

Fig. 5-16-2

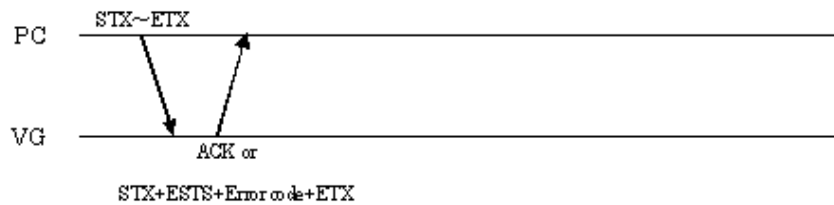
5.17 G8CIRC [E0H]: Circle drawing (color designation)

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 as the parameters.

Sequence : Type 2



Parameter:

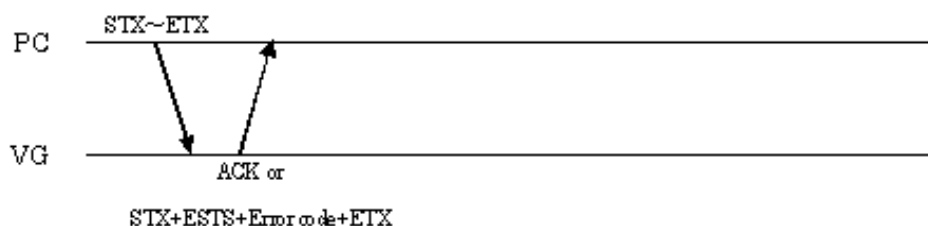
STX	1 byte	02H
G8CIRC	1 byte	E0H
Center X coordinate	2 to 5 bytes	"0" to "4095", example: 100 → "0100" Sign codes for byte 0: "0" = +, "1" = - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	" , "
Center Y coordinate	2 to 5 bytes	"0" to "4095", example: 100 → "0100" Sign codes for byte 0: "0" = +, "1" = - * In numerical value terms, the settings range from -2048 to +4096.
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 as the parameters.

Sequence : Type 2



Parameter:

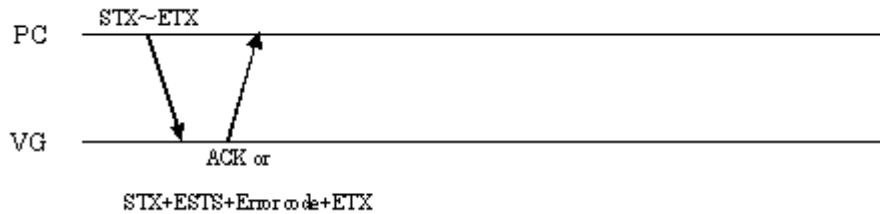
STX	1 byte	02H
G8CIRCPA	1 byte	E6H
Center X coordinate	2 to 5 bytes	"0" to "4095", example: 100 → "0100" Sign codes for byte 0: "0" = +, "1" = - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	" "
Center Y coordinate	2 to 5 bytes	"0" to "4095", example: 100 → "0100" Sign codes for byte 0: "0" = +, "1" = - * In numerical value terms, the settings range from -2048 to +4096.
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:

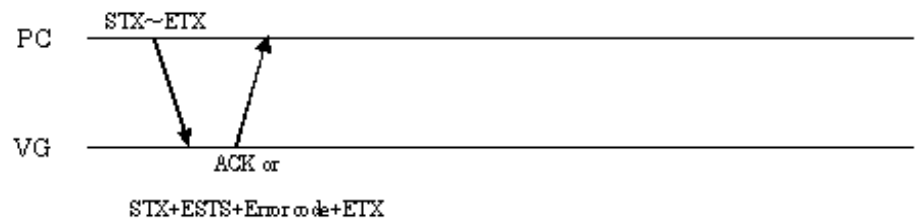
STX	1 byte	02H
G8LINE	1 byte	E1H
Start point coordinate X	2 to 5 bytes	"0" to "4095", example: 100 → "0100" Sign codes for byte 0: "0" = +, "1" = - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	" , "
Start point coordinate Y	2 to 5 bytes	"0" to "4095", example: 100 → "0100" Sign codes for byte 0: "0" = +, "1" = - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	" , "
End point coordinate X1	2 to 5 bytes	"0" to "4095", example: 100 → "0100" Sign codes for byte 0: "0" = +, "1" = - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	" , "
End point coordinate Y1	2 to 5 bytes	"0" to "4095", example: 100 → "0100" Sign codes for byte 0: "0" = +, "1" = - * 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. 5-18-1

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 as 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

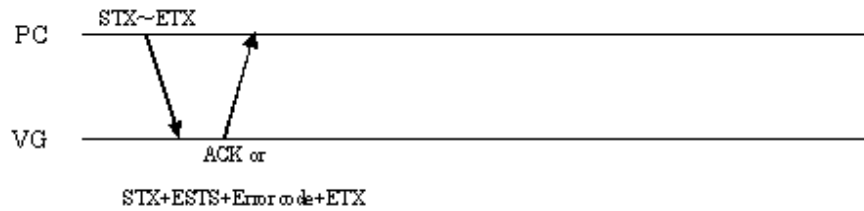
Fig. 5-19-1

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 as the parameters.

Sequence: Type 2



Parameter:

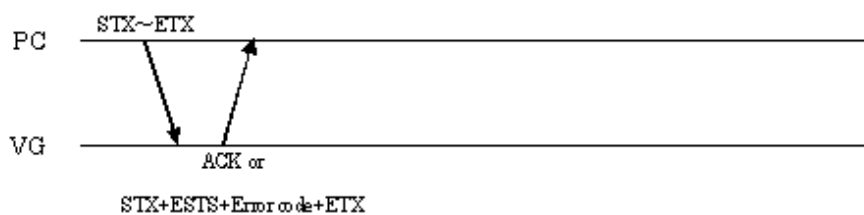
STX	1 byte	02H
G8SQRE	1 byte	E4H
Top left coordinate X	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	" , "
Top left coordinate Y	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	" , "
Bottom right coordinate X1	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	" , "
Bottom right coordinate Y1	1 to 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:

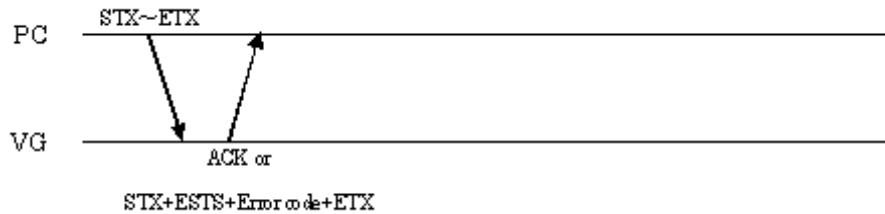
STX	1 byte	02H
G8SQPA	1 byte	E3H
Top left coordinate X	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	" "
Top left coordinate Y	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	" "
Bottom right coordinate X1	1 to 4 bytes	"0" to "4095"
Data delimiter	1 byte	" "
Bottom right coordinate Y1	1 to 4 bytes	"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 as 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" = - * 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" = - * 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" = - * 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" = - * 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" = - * 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" = - * 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

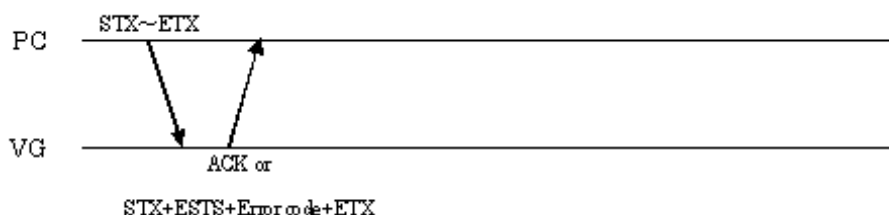
* Execute this command after having set the sync signals.

5.22 G8ELPS [E7H]: Ellipsis drawing (color designation) G8ELPSA [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 as the parameters.

Sequence : Type 2



Parameter:

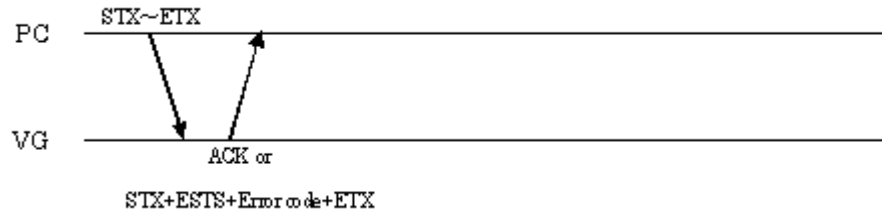
STX	1 byte	02H
G8ELPS	1 byte	E7H
Center X coordinate	2 to 5 bytes	"0" to "4095", example: 100 → "0100" Sign codes for byte 0: "0" = +, "1" = - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	" "
Center Y coordinate	2 to 5 bytes	"0" to "4095", example: 100 → "0100" Sign codes for byte 0: "0" = +, "1" = - * 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 G8ELPSA [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 as the parameters.

Sequence: Type 2



Parameter:

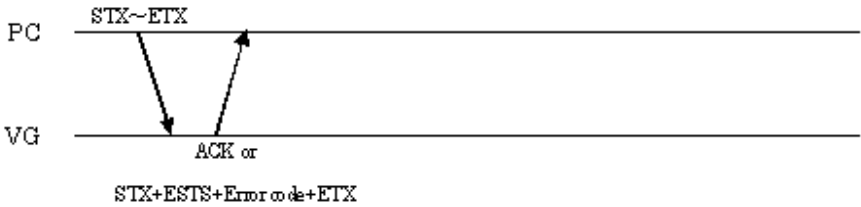
STX	1 byte	02H
G8ELPSA	1 byte	E8H
Center X coordinate	2 to 5 bytes	"0" to "4095", example: 100 → "0100" Sign codes for byte 0: "0" = +, "1" = - * In numerical value terms, the settings range from -2048 to +4096.
Data delimiter	1 byte	" , "
Center Y coordinate	2 to 5 bytes	"0" to "4095", example: 100 → "0100" Sign codes for byte 0: "0" = +, "1" = - * 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 as the parameters.

Sequence : Type 2



Parameter:

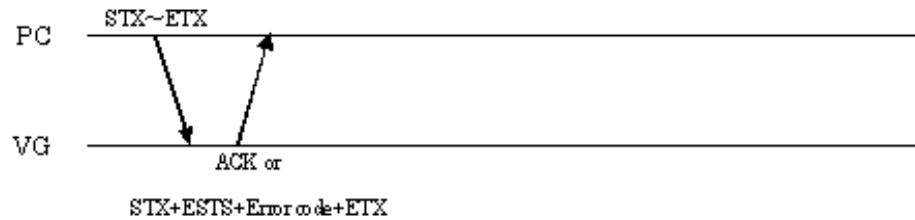
STX	1 byte	02H
G8COLOR	1 byte	EAH
Color mode	1 byte	"0" = Gray mode with 256 gradations "1" = 256-color mode
ETX	1 byte	03H

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 as 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

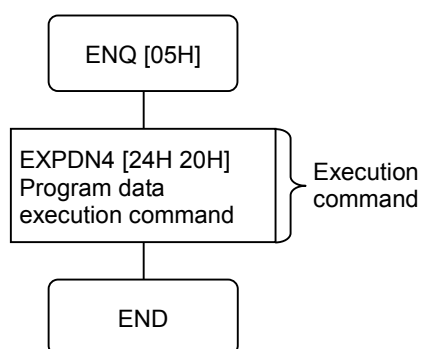
EXAMPLES OF USAGE

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.

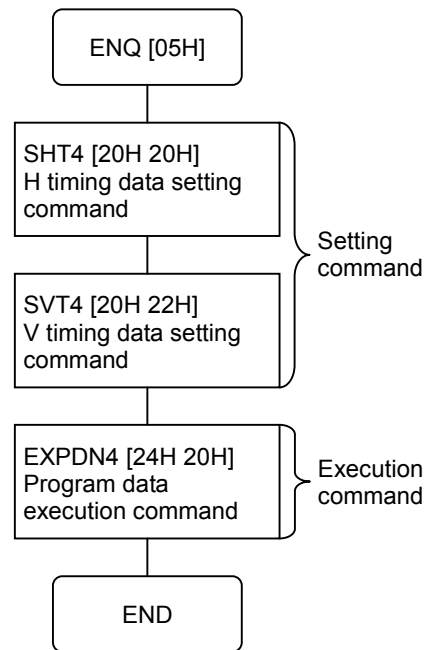
6.2 Setting and executing the H and V timing data

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
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
		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

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	" "
u/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	

* 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	"4"
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 = 8.0	0×38	"8"
	0×30	"0"
Delimiter	0×2C	" "
V-SYNC2 = 1.0	0×34	"1"
	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 = 0	0×30	"0"
Delimiter	0×2C	" "
V-DISPLAY2 = 2	0×32	"2"

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	

- * 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	

- * ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

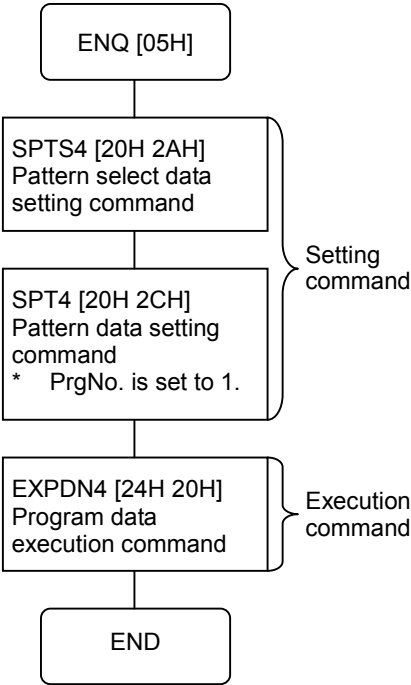
6.3 Setting and executing the pattern data

Example: If color bar data such as the data shown below is to set and executed, then:

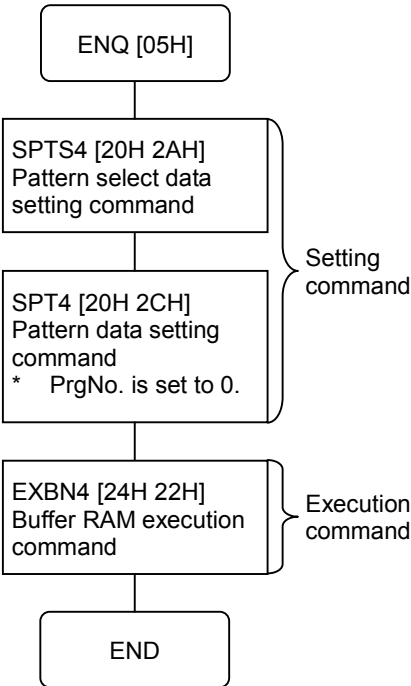
Color bar	
Type	Custom
Mode	%
Valid number	16
H width	6.3%
V width	6.3%
Direction H/V	Horizontal
Color specification 1	White
Color specification 2	Yellow
Color specification 3	Cyan
Color specification 4	Green
Color specification 5	Magenta
Color specification 6	Red
Color specification 7	Blue
Color specification 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

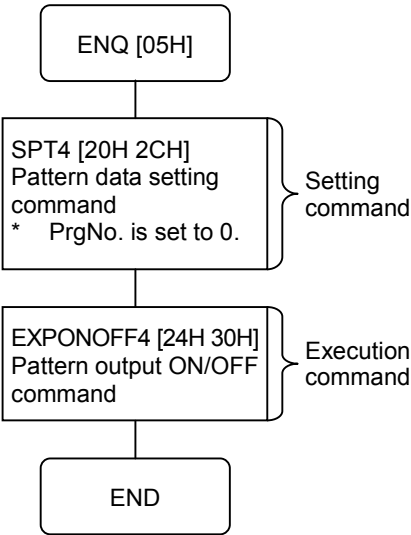
- (1) When the pattern data is to be registered on the CF card, and executed (if the data is to be set in program No.1)



- (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	
VGCM4	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	

* 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	

* 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	

* 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	

* 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]

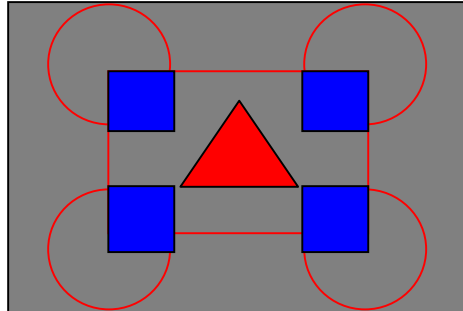
Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VGCMD4	0×FD	
EXPONOFF4	0×20	
	0×30	"0"
Mode	0×30	"0"
Delimiter	0×2C	" , "
Pattern select code = R	0×30	"0"
Delimiter	0×2C	" , "
Pattern select code = G	0×31	"1"
Delimiter	0×2C	" , "
Pattern select code = B	0×32	"2"
Delimiter	0×2C	" , "
Pattern select code = ColorBar	0×31	"1"
	0×35	"5"
ETX	0×03	

- * 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:

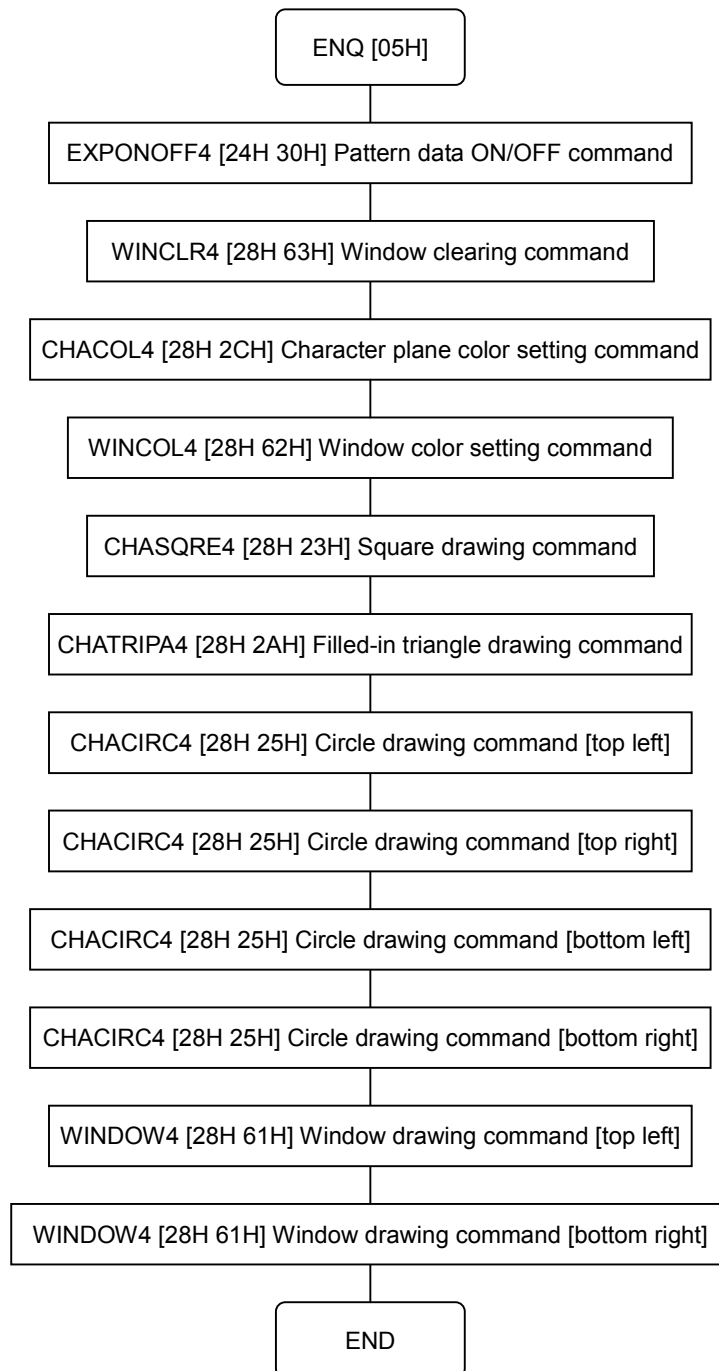
- *1: It is assumed that the timing data in question has been set ahead of time and that internal timing data No.1616 has been set.
- *2: It is also assumed that a 50% gray raster pattern is output as the background pattern.



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	

* 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	
VGCM4	0×FD	
WINCLR4	0×28	"("
	0×63	"C"
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.

6.4.4 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	","
BitMode	0×38	"8"
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.

6.4.5 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	
WNCOL4	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	","
BitMode	0×38	"8"
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.

6.4.6 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	

* 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	

- * 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	

* 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	

* 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	"0/"
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	

* 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	"0/"
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	

* ACK or the error status is received from the VG generator here.
ACK is received if the data has been transferred successfully.

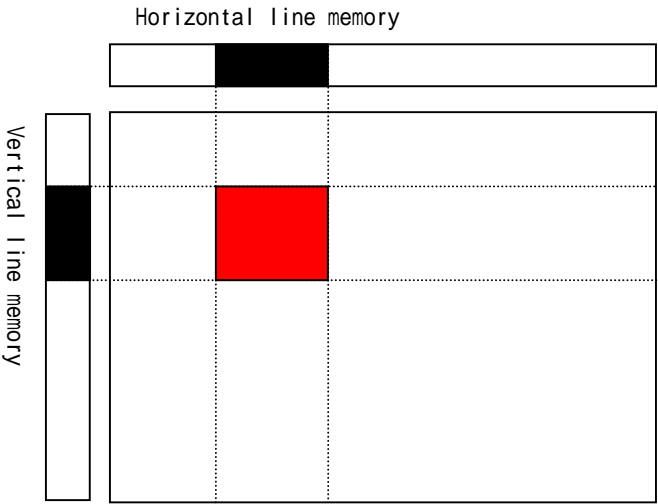
Window drawing: Command [28H 61H]

(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	

* 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.

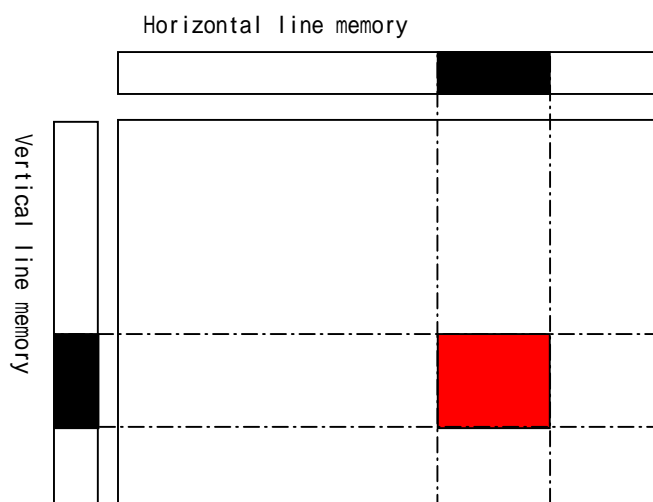


(2) Window at bottom right

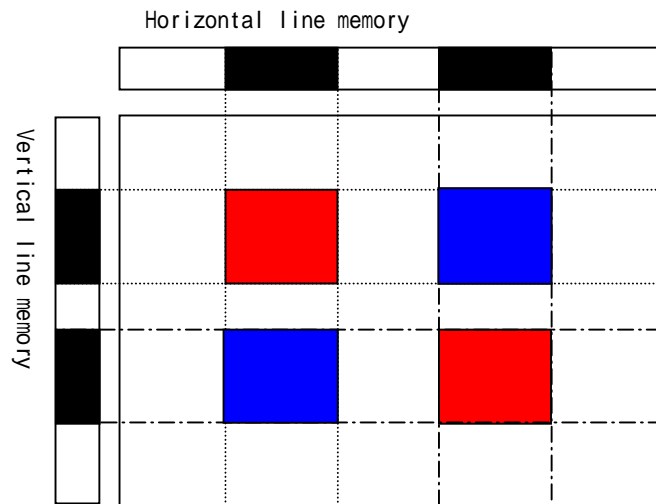
Setting item	Setting value	
	Binary	ASCII
STX	0×02	
VG4CMD	0×FD	
WINDOW4	0×28	"("
	0×61	"a"
Top left coordinate X	0×36	"6"
	0×31	"1"
	0×38	"8"
Delimiter	0×2C	","
Top left coordinate Y	0×34	"4"
	0×32	"2"
	0×36	"6"
Delimiter	0×2C	","
Bottom right coordinate X	0×37	"7"
	0×36	"6"
	0×38	"8"
Delimiter	0×2C	","
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.



 : Area which is set by drawing command

 : Area which is drawn by line memory setting

NOTICE

An incorrectly collated manual or a manual with missing pages will be replaced.

All copyrights pertaining to this product are the property of ASTRODESIGN.

This manual may not be copied in whole or in part without written permission.

The contents of this manual are subject to change without prior notice due to improvements.

The manufacturer will not be liable for any effects caused by incorrect operation.

All inquiries concerning this product should be addressed to your dealer or to the manufacturer at the contact numbers given below.

The products and product names mentioned in this manual are the trademarks and registered trademarks of the companies concerned.

T0134G

ASTRODESIGN, Inc.

URL <http://www.astrodesign.co.jp>

● For more information, please contact us :

International Business Unit

TEL.+81-(0)3-5734-6320 FAX.+81-(0)3-5734-6104

1-5-2 Minami-yukigaya, Ota-ku, Tokyo, Japan 145-0066