
G1000 D-ILATM

RS-232C CONTROL SPECIFICATIONS

Table of Contents

1. Outline.....	1
2. Communication Format.....	1
3. Data Format.....	1
4. Header	3
5. ID.....	3
6. CR	4
7. Parameters	4
8. Tally (Response) Data.....	9
9. Internal Errors	10
10. G1000 Operation Modes	12
11. Source (Area)	12
12. Commands.....	15
13. Appendix	64

1.0 Outline

This document describes the communication and data formats used to control the G1000 via its RS-232C port.

2.0 Communication Format

Transfer Rate	:	9600 (default), 19200, 38400 bps
Data Length	:	8 bits
Parity Bit	:	None
Start Bit	:	1 bit
Flow Control	:	None

3.0 Data Format

3.1 Command Data Format (External Control → G1000).

Header ID SP Command SP Parameter SP Parameter SP ... CR

Header	:	Indicates the beginning of data and data type
		'!' (21H) : Command for the G1000
		'?' (3FH) : Query to the G1000 (Request for Data)
ID	:	Identification number of G1000
SP	:	Indicates the separation between ID and command, command and parameter, parameter and parameter (20H)
CR	:	Indicates the end of data (0DH)

3.2 Tally (Response) Data Format (G1000 → External Control)

3.2.1 Tally (Response) Data when Terminated Normally

Header ID SP Normal Termination Status SP Parameter SP Parameter SP ... CR

Header	:	Indicates the beginning of tally (response) data
		'@' (40H)
ID	:	Identification number of G1000
SP	:	Indicates the separation between ID and status, status and parameter, parameter and parameter (20H)
Normal Termination Status	:	'0' (30H)
CR	:	Indicates the end of data (0DH)

* Parameter is sent when tally (response) data is issued in response to a query (request for data). There is no parameter for tally (response) data in response to a command.

3.2.2 Tally Data when Error Occurs

Header	ID	SP	Error Status	CR
Header	:	Indicates the beginning of tally (response) data '@' (40H)		
ID	:	Identification number of G1000		
SP	:	Indicates the separation between ID and Status (20H)		
Error Status	:	'A00' (41H 30H 30H)		
	:	'A01' (41H 30H 31H)		
	:	'A02' (41H 30H 32H)		
	:	'A03' (41H 30H 33H)		
	:	'A04' (41H 30H 34H)		
	:	'A05' (41H 30H 35H)		
	:	'A07' (41H 30H 37H)		
CR	:	Indicates the end of data (0DH)		

* For details on error status, refer to 8. Tally (Response) Data.

3.3 Internal Error Data Format (G1000 → External Control)

Header	ID	SP	Internal Error Status	SP	Parameter	SP	Parameter	CR
Header	:	Indicates the beginning of internal error data '&' (26H)						
ID	:	Identification number of G1000						
SP	:	Indicates the separation between ID and status, status and parameter, parameter and parameter (20H)						
Internal Error Status	:	'E01' (45H 30H 31H)						
	:	'E02' (45H 30H 32H)						
	:	'E03' (45H 30H 33H)						
	:	'E04' (45H 30H 34H)						
	:	'E06' (45H 30H 36H)						
	:	'E07' (45H 30H 37H)						
	:	'E08' (45H 30H 38H)						
CR	:	Indicates the end of data (0DH)						

* For details on internal error status, refer to 9. Internal Errors.

4.0 Header

Indicates the beginning and type of communication data

4.1 External Control → G1000

Character	Hex	Definition
'!	21	Command to the G100
'?	3F	Query (request for information) to the G1000

4.2 G1000 → External Control

Character	Hex	Definition
'@'	40	Tally (Response) data
'&'	26	Internal error data

5.0 ID

Numeric characters are used to identify an individual G1000 when two or more G1000 units are connected to a single control machine

Setting separate identification numbers for each G1000 allows independent control of each G1000 unit.

Ⓞ Assignable ID numbers

'0'	(30H)	'8'	(38H)
'1'	(31H)	'9'	(39H)
'2'	(32H)	'A'	(41H)
'3'	(33H)	'B'	(42H)
'4'	(34H)	'C'	(43H)
'5'	(35H)	'D'	(44H)
'6'	(36H)	'E'	(45H)
'7'	(37H)	'F'	(46H)

* Factory set ID is '1' (31H)

ID number '0' (30H) should be used when assigning all connected G1000 units for batch operation. This means that when assigning independent IDs to multiple units, 15 of the 16 assignable numbers (from '1' through 'F') can actually be used for registration.

Please note that tally (response) data is not returned from the projector when the global ID assignment function (0) is used.

6.0 CR

Indicates the end of each set of data (0DH)

7.0 Parameters

There are four types of parameters:

1. Indicates the numeric value.
2. Indicates the MIN / MAX / DEFAULT level.
3. Indicates the ON / OFF status
4. Special parameter.

7.1 Numeric Value Parameter

Signed 2-byte hexadecimal code represented by 4 (byte) characters.
Assignable range is between '8000' and '7FFF'

Ex-1) The parameter indicating '20' (decimal):
Since '20' (decimal) is represented as '0014' in signed 2-byte hexadecimal, its parameter is:

'0014' (30H 30H 31H 34H)

Ex-2) The parameter to indicate '-2' (decimal):
Since '-2' (decimal) is represented as 'FFFE' in signed 2-byte hexadecimal, its parameter is:

'FFFE' (46H 46H 46H 45H)

7.2 MIN / MAX / DEFAULT Level Parameter

This parameter is used to request adjustable range data (e.g Position) from the G1000. It is represented as

'*' (2AH)

The G1000 returns the tally (response) data in the order of minimum level, maximum level and the default level.

Ⓞ Query data

['?'] ID SP Command SP ['*'] CR

Ⓞ Tally (Response) data

['@'] ID SP Normal Termination Status SP Min SP Max.
SP Default CR

* This parameter is valid only with queries (request for data). To assign data on the G1000 use the numeric value parameter.

7.3 ON / OFF Status Parameter

Indicates the ON / OFF status of items such as POWER or HIDE.

Character	HEX	Definition
'0'	30	OFF
'1'	31	ON

7.4 Special Parameters

Parameters other than those described in 7.1 to 7.3.

7.4.1 ZOOM Wide/Tele, FOCUS +/- Parameter

Character	HEX	Definition
'0'	30	STOP
'1'	31	START

7.4.2 Menu Display Auto OFF Parameter

Character	HEX	Definition
'0'	30	NO
'1'	31	YES

7.4.3 Transfer Rate Parameter

Character	HEX	Definition
'0'	30	9600 bps
'1'	31	19200 bps
'2'	32	38400 bps

7.4.4 Decoder Parameter

Character	HEX	Definition
'0'	30	NTSC
'1'	31	NTSC 4.43
'2'	32	PAL
'3'	33	SECAM
'4'	34	AUTO

7.4.5 Color Temperature Parameter

Character	HEX	Definition
'0'	30	LOW
'1'	31	MIDDLE
'2'	32	HIGH

7.4.6 Input Select Parameter

Character	HEX	Definition
'0'	30	Y/C
'1'	31	VIDEO
'2'	32	Y P _B /B-Y P _R /R-Y
'3'	33	COMPUTER 1
'4'	34	COMPUTER 2

7.4.7 G1000 Operation Mode Parameter

Character	HEX	Definition
'0000'	30H 30H 30H 30H	Standby Mode
'0001'	30H 30H 30H 31H	Power ON Mode
'0002'	30H 30H 30H 32H	Cool-Down Mode
'0004'	30H 30H 30H 34H	Emergency Mode

7.4.8 Text Mode Parameter

Character	HEX	Definition
'0'	30	Normal
'1'	31	Text 1
'2'	32	Text 2

7.4.9 Aspect Parameter

Character	HEX	Definition
'0'	30	4:3
'1'	31	16:9

7.4.10 Back Color Parameter

Character	HEX	Definition
'0'	30	Black
'1'	31	Red
'2'	32	Green
'3'	33	Yellow
'4'	34	Blue
'5'	35	Magenta
'6'	36	Cyan

7.4.11 ID Parameter

Character	HEX	Definition
'0'	30	ID 0 (global command for all projectors)
'1'	31	ID 1
'2'	32	ID 2
'3'	33	ID 3
'4'	34	ID 4
'5'	35	ID 5
'6'	36	ID 6
'7'	37	ID 7
'8'	38	ID 8
'9'	39	ID 9
'A'	41	ID 10
'B'	42	ID 11
'C'	43	ID 12
'D'	44	ID 13
'E'	45	ID 14
'F'	46	ID 15

7.4.12 Clamp Parameters

Character	HEX	Definition
'0'	30	BP
'1'	31	ST

8.0 Tally (Response) Data

The G1000 will only accept and process data when the ID number included with the data coincides with the ID number registered to the G1000 itself (except when ID= '0'). If the received ID number matches the G1000's ID, it will return a response to the query from the external control unit. This response data is called "Tally (Response) Data" (however, when ID= '0', tally (response) data is not replied).

The Tally (Response) Data is normally returned within three seconds after the data is received. There are some exceptions however, (e.g. POWER command).

After transmitting data, the external control unit cannot transmit subsequent data until the Tally (Response) Data is received. However, if Tally (Response) Data is not returned within three seconds after transmitting the data (there are some exceptions such as the POWER command), data transmission can be retried.

8.1 Tally (Response) Data Status

8.1.1 Normal Termination Status

Character	HEX	Definition
'0'	30	Command received and processing terminated

8.1.2 Status when Error Occurs (Error Status)

Character	HEX	Definition
'A00'	(41H 30H 30H)	Command not received
'A01'	(41H 30H 31H)	Invalid Parameter
'A02'	(41H 30H 32H)	Parameter value exceeds operation range
'A03'	(41H 30H 33H)	Unclassified error
'A04'	(41H 30H 34H)	Unacceptable command in current mode or Unacceptable command with current setting
'A05'	(41H 30H 35H)	Unacceptable command with no signal
'A07'	(41H 30H 37H)	Unable to accept during scanning operation

8.2 Tally (Response) Data Parameter

The Tally (Response) Data Parameter is returned when the Tally (Response) Data is issued in response to a query (request for data). No parameter is returned when Tally (Response) Data issued in response to a command or when an error occurs.

9.0 Internal Errors

Error data is returned to the external control unit when an error has occurred.

9.1 Internal Error Data Status (Internal Error Status)

Character	HEX	Definition
'E01'	(45H 30H 31H)	Lamp did not light
'E02'	(45H 30H 32H)	Lamp life exceeds guaranteed time
'E03'	(45H 30H 33H)	IIC ACK error occurs
'E04'	(45H 30H 34H)	Filter cover on the bottom of the unit is displaced
'E06'	(45H 30H 36H)	Lamp suddenly goes out during projecting (Power ON mode) (Lamp Shut Down)
'E07'	(45H 30H 37H)	Fan is locked
'E08'	(45H 30H 38H)	Internal temperature is too high

9.2 Internal Error Data Parameters

There are two parameters for Internal Error Data.

Header ID SP Internal Error Status SP Parameter 1 SP Parameter 2 CR

Each parameter shows the slave address (Parameter 1) and Sub-Address (Parameter 2) when an IIC ACK error (Error status: 'E03') occurs.

The parameter type is "numeric value."

* Two parameters are also returned when internal errors other than IIC ACK errors occur. In this case, however, the parameter's numeric value has no meaning.

Ex) Internal error data when IIC ACK error occurs with Slave address 'A0H' and Sub-address of '1F20H':

'&' ID SP 'E03' SP '00A0' SP '1F20' CR

9.3 Internal Error Data Reply Timing

When returning data, the G1000 checks for internal error data. If such data exists, the internal error data is returned before the tally (response) data is transmitted. That is, if an internal error occurs, the G1000 retains the internal error data (up to 6), returning it in order of precedence when a request for tally (response) data is received. Once transmitted, internal error data is deleted from the G1000.

10.0 G1000 Operation Modes

This section describes the G1000's four basic operation modes.

10.1 Standby Mode

The G1000 enters this mode when it is plugged into an AC outlet and the MAIN POWER switch is turned ON.

The lamp does not light and the fan does not operate.

10.2 Power ON Mode

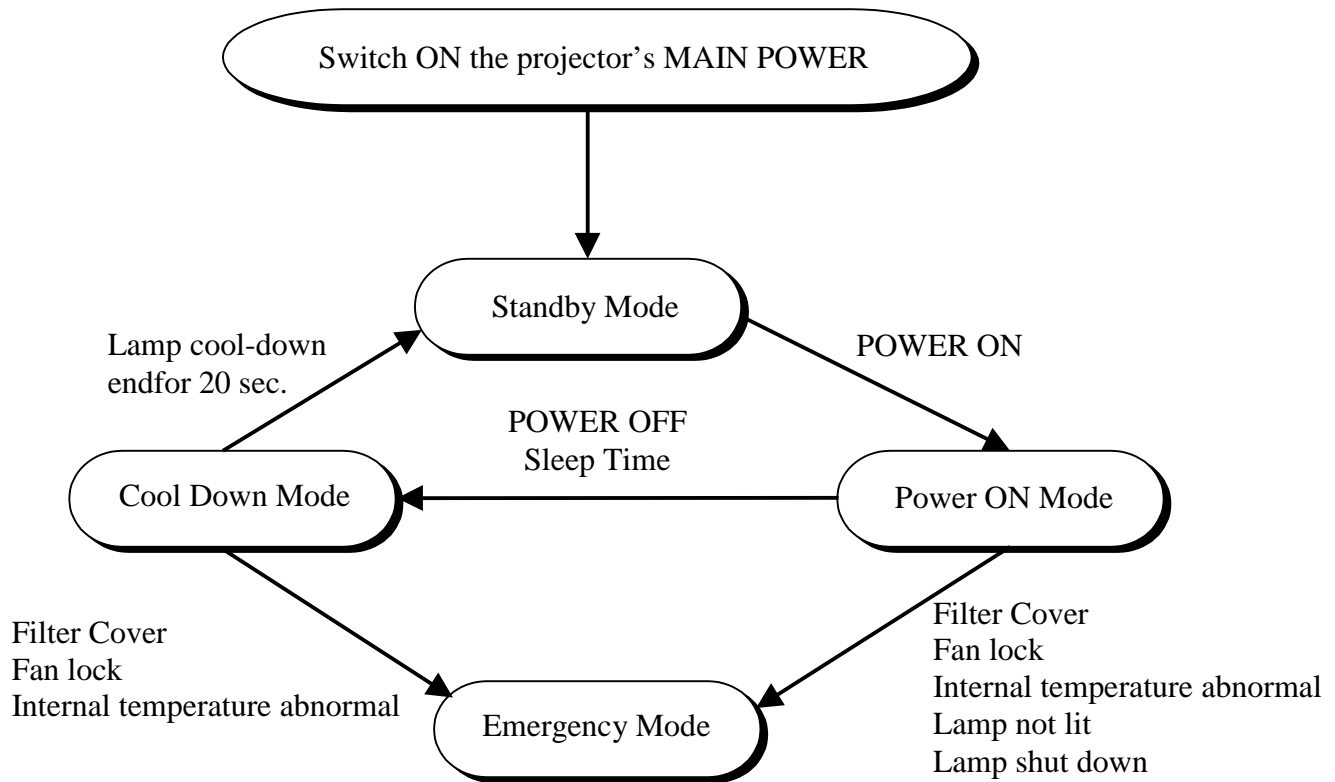
This mode is engaged when the POWER ON command is received and processed normally in the Standby mode. The lamp lights and the fan starts rotating. Images can be projected in this mode.

10.3 Cool-Down Mode

This mode is engaged when the POWER OFF command is received and processed normally in the Power ON mode. The lamp goes out but the fan continues to rotate for a predetermined time (approx. 20 sec.) to cool down the lamp. Once the lamp has cooled down sufficiently, the fan stops and the unit automatically enters the Standby mode.

10.4 Emergency Mode

This mode is engaged when the projector malfunctions or is improperly operated. The lamp and the fan are shut down and the MAIN POWER switch is turned OFF. Non-operation status continues until the reset function is activated.



* Note that the acceptance/non-acceptance condition of a command differs depending on the operation mode.

11.0 Source (Area)

The G1000 incorporates an internal signal classification format that ensures that the images it projects correspond correctly to the type of signal being input. These classifications are called “Sources (Areas),” and each Source (Area) is assigned specified numbers. A signal input from an external device is called an “Input Signal” or “Input Source”.

11.1 G1000 Source (Areas) and Source (Area Numbers)

Source	Source (Area) No. (Character)	Source (Area) No. (HEX)
NTSC	'0000'	30H 30H 30H 30H
PAL/SECAM	'0001'	30H 30H 30H 31H

Source	Source (Area) No. (Character)	Source (Area) No. (HEX)
EDTV II	'0003'	30H 30H 30H 33H
HDTV	'0004'	30H 30H 30H 34H
PC-98	'0005'	30H 30H 30H 35H
VGA 1	'0006'	30H 30H 30H 36H
VGA 3	'0007'	30H 30H 30H 37H
MAC 13"	'0008'	30H 30H 30H 38H
VGA VESA	'0009'	30H 30H 30H 39H
SVGA 1	'000A'	30H 30H 30H 41H
SVGA 2	'000B'	30H 30H 30H 42H
MAC 16"	'000C'	30H 30H 30H 43H
XGA 1	'000D'	30H 30H 30H 44H
XGA 2	'000E'	30H 30H 30H 45H
MAC 19"	'000F'	30H 30H 30H 46H
MAC 21"	'0010'	30H 30H 31H 30H
SXGA 1	'0011'	30H 30H 31H 31H
SXGA 2	'0012'	30H 30H 31H 32H
SXGA 3	'0013'	30H 30H 31H 33H
No signal	'FFFF'	46H 46H 46H 46H

* The following Source (Area) types are considered Video Sources (Areas):

NTSC PAL/SECAM ECTV II HDTV

The following Source (Area) types are considered PC Sources (Areas) or
Computer Sources (Areas):

PC-98 VGA 1 VGA 3 MAC 13" VGA VESA
SVGA 1 SVGA 2 MAC 16" XGA 1 XGA 2
MAC19" MAC 21" SXGA 1 SXGA 2 SXGA 3

* Note that the acceptance/non-acceptance of a command may differ depending on the Source (Area) actually registered on the G1000.

12.0 Commands

This section describes the commands that can be used with the G1000

- In the Communication Examples, the ID number registered on the G1000 is represented as '1' (31H). This is the default setting.
- “CTRL” refers to transmissions from the external control unit and “DLA” refers to transmissions (Tally (Response) Data) from the G1000.
- “Reply Time” refers to the maximum time required between command reception and return of Tally (Response) Data. In other words, it refers to the maximum time that the external control unit must wait for the Tally (Response) Data.
- For details on the different parameters, refer to 7.0 Parameters.
- Acceptance or non-acceptance of a command in each operation mode is indicated by “@” (accept) or “X” (does not accept).

12.1 **HIDE** : 'U00 (55H 30H 30H)

Definition : Controls video signal muting
 Command : 'U00' (55H 30H 30H)
 Parameter type : ON/OFF
 Reply time : 3 seconds
 Conditions :

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- To Turn HIDE ON

```

CTRL  '!'  '1'  SP  'U00'  SP  '1'  CR
DLA                                     '@'  '1'  SP  '0'  CR
    
```

- When requesting current for HIDE status (if HIDE status is ON)

```

CTRL  '?'  '1'  SP  'U00'  CR
DLA                                     '@'  '1'  SP  '0'  SP  '1'  CR
    
```

- When trying to change HIDE status in emergency mode (turn ON)

```

CTRL  '!'  '1'  SP  'U00'  SP  '1'  CR
DLA                                     '@'  '1'  SP  'A04'  CR
    
```

12.2	Back Color	:	'U01 (55H 30H 31H)
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Definition : Controls the background color projected when Source (Area) has no signal.

Command : 'U01' (55H 30H 31H)

Parameter type : Special parameter (Refer to 7.4.10 Back Color Parameter)

Reply time : 3 seconds

Restrictions :

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
⓪	⓪	⓪	X

⓪ Communication Examples

- To Turn "blue" as the background color

CTRLR '!' '1' SP 'U01' SP '4' CR

DLA '@' '1' SP '0' CR

- When requesting background color data (if background color is set to magenta)

CTRLR '?' '1' SP 'U01' CR

DLA '@' '1' SP '0' SP '5' CR

- When specifying a background color as "blue", but the projector is performing scanning operations.

CTRLR '!' '1' SP 'U01' SP '4' CR

DLA '@' '1' SP 'A07' CR

12.3 Horizontal Position : 'U02 (55H 30H 32H)

Definition : Adjusts the horizontal position
 Command : 'U02' (55H 30H 32H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions : None except when there is no Source (Area) signal

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When specifying “30” (decimal) as the horizontal position
 CTRLR ‘!’ ‘1’ SP ‘U02’ ‘SP’ ‘001E’ CR
 DLA ‘@’ ‘1’ SP ‘0’ CR
- When requesting current horizontal position data (if horizontal position is set to “-1”)
 CTRLR ‘?’ ‘1’ SP ‘U02’ CR
 DLA ‘@’ ‘1’ SP ‘0’ SP ‘FFFF’ CR
- When specifying the horizontal position, but the Source (Area) has no signal input
 CTRLR ‘!’ ‘1’ SP ‘U02’ SP ‘001E’ CR
 DLA ‘@’ ‘1’ SP ‘A05’ CR

12.4	Vertical Position	:	'U03 (55H 30H 33H)
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Definition	:	Adjusts the vertical position
Command	:	'U03' (55H 30H 33H)
Parameter type	:	Numeric, MAX / MIN / DEFAULT
Reply time	:	3 seconds
Restrictions	:	None except when there is no Source (Area) signal

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When specifying "5" (decimal) as the vertical position

CTLR '!' '1' SP 'U03' 'SP' '0005' CR

DLA '@' '1' SP '0' CR

- When requesting current vertical position data (if vertical position is set to "48"(decimal))

CTLR '?' '1' SP 'U03' CR

DLA '@' '1' SP '0' SP '0030' CR

- When specifying the vertical position, but an internal error occurs (IIC ACK error occurs at slave address: 00A0 (H), sub-address: 1003(H))

CTLR '?' '1' SP 'U03' CR

DLA '&' '1' SP 'E03' SP '00A0' SP '1003' CR

'@' '1' SP '0' SP '0030' CR

12.5 Phase : 'U04 (55H 30H 34H)
--

Definition : Adjusts the phase
 Command : 'U04' (55H 30H 34H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions : None except when there is no Source (Area) signal

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When specifying “50” (decimal) as the phase adjust level
 CTRLR ‘!’ ‘1’ SP ‘U04’ ‘SP’ ‘0032’ CR
 DLA ‘@’ ‘1’ SP ‘0’ CR

- When requesting current phase adjust level (if phase adjust level is set to “0” (decimal))
 CTRLR ‘?’ ‘1’ SP ‘U04’ CR
 DLA ‘@’ ‘1’ SP ‘0’ SP ‘0000’ CR

12.6 Tracking : 'U05 (55H 30H 35H)

Definition : Adjusts tracking
 Command : 'U05' (55H 30H 35H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions : None except when there is no Source (Area) signal

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When specifying “50” (decimal) as the tracking adjust level

CTLR ‘!’ ‘1’ SP ‘U05’ ‘SP’ ‘0032’ CR

DLA ‘@’ ‘1’ SP ‘0’ CR

- When requesting current tracking adjust level data (if tracking adjust level is set to “0” (decimal))

CTLR ‘?’ ‘1’ SP ‘U05’ CR

DLA ‘@’ ‘1’ SP ‘0’ SP ‘0000’ CR

12.7 Contrast : 'U06 (55H 30H 36H)

Definition : Adjusts the contrast
 Command : 'U06' (55H 30H 36H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions : None except when there is no Source (Area) signal

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When specifying “2” (decimal) as the contrast adjust level
 CTRLR ‘!’ ‘1’ SP ‘U06’ ‘SP’ ‘0002’ CR
 DLA ‘@’ ‘1’ SP ‘0’ CR

- When requesting current contrast adjust level data (if contrast adjust level is set to “0” (decimal))
 CTRLR ‘?’ ‘1’ SP ‘U06’ CR
 DLA ‘@’ ‘1’ SP ‘0’ SP ‘0000’ CR

12.8	Brightness	:	'U07 (55H 30H 37H)
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Definition : Adjusts the brightness
 Command : 'U07' (55H 30H 37H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions : None except when there is no Source (Area) signal

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When specifying “-2” (decimal) as the brightness adjust level

CTLR ‘!’ ‘1’ SP ‘U07’ ‘SP’ ‘FFFE’ CR

DLA ‘@’ ‘1’ SP ‘0’ CR

- When requesting current brightness adjust level data (if brightness adjust level is set to “0” (decimal))

CTLR ‘?’ ‘1’ SP ‘U07’ CR

DLA ‘@’ ‘1’ SP ‘0’ SP ‘0000’ CR

12.9 Sharpness : 'U08 (55H 30H 38H)
--

Definition : Adjusts the sharpness
 Command : 'U08' (55H 30H 38H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions : None except when there is no Source (Area) signal

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When specifying “2” (decimal) as the sharpness
 CTRLR ‘!’ ‘1’ SP ‘U08’ ‘SP’ ‘0002’ CR
 DLA ‘@’ ‘1’ SP ‘0’ CR

- When requesting current sharpness adjust level data (if sharpness adjust level is set to “7” (decimal))
 CTRLR ‘?’ ‘1’ SP ‘U08’ CR
 DLA ‘@’ ‘1’ SP ‘0’ SP ‘0007’ CR

12.10 Color	:	'U09 (55H 30H 39H)
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Definition : Adjusts the color
 Command : 'U09' (55H 30H 39H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions : Video Sources (Areas) only

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When specifying “-2” (decimal) as the color adjust level

CTLR '!' '1' SP 'U09' 'SP' 'FFFE' CR

DLA '@' '1' SP '0' CR

- When requesting current color adjust level (if color adjust level is set to “0” (decimal))

CTLR '?' '1' SP 'U09' CR

DLA '@' '1' SP '0' SP '0000' CR

12.11 Tint :	'U0A (55H 30H 41H)
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Definition : Adjusts the tint
 Command : 'U0A' (55H 30H 41H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions : Source (Area) must be NTSC, EDTV II or HDTV

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When specifying “-2” (decimal) as the tint level
 CTRLR ‘!’ ‘1’ SP ‘U0A’ ‘SP’ ‘FFFE’ CR
 DLA ‘@’ ‘1’ SP ‘0’ CR

- When requesting current tint adjust level data (if tint adjust level is set to “0” (decimal))
 CTRLR ‘?’ ‘1’ SP ‘U0A’ CR
 DLA ‘@’ ‘1’ SP ‘0’ SP ‘0000’ CR

12.12 Color Temperature : 'U0B (55H 30H 42H)

Definition	:	Adjusts the color temperature
Command	:	'U0B' (55H 30H 42H)
Parameter type	:	Special parameter (Refer to 7.4.5 Color Temperature Parameter)
Reply time	:	3 seconds
Restrictions	:	None except when there is no Source (Area) signal

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When specifying "MIDDLE" as the color temperature

CTLR '!' '1' SP 'U0B' 'SP' '1' CR

DLA '@' '1' SP '0' CR

- When requesting color temperature data (if color temperature is set to "LOW")

CTLR '?' '1' SP 'U0B' CR

DLA '@' '1' SP '0' SP '0' CR

12.13 R-Gain	:	'U0C (55H 30H 43H)
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Definition : Adjusts the R-gain
 Command : 'U0C' (55H 30H 43H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions : Computer Sources (Areas) only

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When specifying “-2” (decimal) as the R-gain adjust level
 CTRLR ‘!’ ‘1’ SP ‘U0C’ ‘SP’ ‘FFFE’ CR
 DLA ‘@’ ‘1’ SP ‘0’ CR

- When requesting current R-gain adjust level data (if R-gain adjust level is set to “0” (decimal))
 CTRLR ‘?’ ‘1’ SP ‘U0C’ CR
 DLA ‘@’ ‘1’ SP ‘0’ SP ‘0000’ CR

12.14 G-Gain	:	'U0D (55H 30H 44H)
---------------------	---	--------------------

Definition : Adjusts the G-gain
 Command : 'U0D' (55H 30H 44H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions : Computer Sources (Areas) only

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When specifying “-2” (decimal) as the G-gain adjust level

CTLR ‘!’ ‘1’ SP ‘U0D’ ‘SP’ ‘FFFE’ CR

DLA ‘@’ ‘1’ SP ‘0’ CR

- When requesting current G-gain adjust level data (if G-gain adjust level is set to “0” (decimal))

CTLR ‘?’ ‘1’ SP ‘U0D’ CR

DLA ‘@’ ‘1’ SP ‘0’ SP ‘0000’ CR

12.15 B-Gain : 'U0E (55H 30H 45H)
--

Definition : Adjusts the B-gain
 Command : 'U0E' (55H 30H 45H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions : Computer Sources (Areas) only

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ **Communication Examples**

- When specifying “-2” (decimal) as the B-gain adjust level
 CTRLR ‘!’ ‘1’ SP ‘U0E’ ‘SP’ ‘FFFE’ CR
 DLA ‘@’ ‘1’ SP ‘0’ CR

- When requesting current B-gain adjust level data (if B-gain adjust level is set to “0” (decimal))
 CTRLR ‘?’ ‘1’ SP ‘U0E’ CR
 DLA ‘@’ ‘1’ SP ‘0’ SP ‘0000’ CR

12.16 Power	:	'U0F (55H 30H 46H)
--------------------	---	--------------------

Definition	:	Controls the power
Command	:	'U0F' (55H 30H 46H)
Parameter type	:	ON / OFF
Reply time	:	POWER ON transmission 65 seconds (*1) POWER OFF transmission 3 seconds (*2)
Restrictions	:	No query

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
ⓐ	ⓐ	X	X

ⓐ Communication Examples

- When turning the G1000's power ON

```

CTRL  '!'  '1'  SP  'U0F'  'SP'  '1'  CR
DLA                                     '@'  '1'  SP  '0'  CR

```

- * 1 - When the POWER ON command is received, the G1000 returns the Tally (Response) Data after completing all the POWER ON processing operations (lighting lamp, rotating fan, transmitting data, etc.). These operations can take up to a maximum of about 65 seconds (if it takes the lamp a long time to light up). In most cases, the Tally (Response) Data should be returned within 35 to 40 seconds.
- * 2 - When the POWER OFF command is received, the G1000 enters the Cool-Down mode for about 20 seconds to allow the lamp to cool. After Cool-Down is completed, the G1000 automatically enters the Standby mode (for operation modes, refer to 10.0 G1000 Operation Modes).
Since the POWER ON command cannot be accepted in the Cool-Down mode, first query (issue a request for data) the operation mode to confirm that the G1000 is in the Standby mode, then transmit the POWER ON command to turn on the G1000 again. (For the command to request the current operation mode, refer to 12.41 Operation Mode Query).

12.17 Menu Auto Off : 'U10 (55H 31H 30H)

Definition : Controls the display menu auto-off function
 Command : 'U10' (55H 31H 30H)
 Parameter type : Special parameter (Refer to 7.4.2 Menu Display Auto OFF Parameter)
 Reply time : 3 seconds
 Restrictions :

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
⓪	⓪	⓪	X

⓪ Communication Examples

- When specifying that the menu display is turned off automatically
 CTRLR '!' '1' SP 'U10' 'SP' '1' CR
 DLA '@' '1' SP '0' CR
- When requesting the current menu display auto-off setting (if menu display does not turn off automatically)
 CTRLR '?' '1' SP 'U10' CR
 DLA '@' '1' SP '0' SP '0' CR

12.18 Line Display	:	'U11 (55H 31H 31H)
---------------------------	---	--------------------

Definition : Sets the line source (area) display
 Command : 'U11' (55H 31H 31H)
 Parameter type : ON / OFF
 Reply time : 3 seconds
 Restrictions :

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
⓪	⓪	⓪	X

⓪ Communication Examples

- When setting the line display to OFF

```

CTRL  '!'  '1'  SP  'U11'  'SP'  '0'  CR
DLA                                     '@'  '1'  SP  '0'  CR
  
```

- When requesting the current line display setting (if the line display is set to ON)

```

CTRL  '?'  '1'  SP  'U11'  CR
DLA                                     '@'  '1'  SP  '0'  SP  '1'  CR
  
```

12.19 Sleep Time : 'U12 (55H 31H 32H)

Definition : Sets the sleep time
 Command : 'U12' (55H 31H 32H)
 Parameter type : (*)
 Reply time : 3 seconds
 Restrictions :

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
⓪	⓪	⓪	X

The “Sleep time” function automatically turns off the projector power if the no-signal status continues for a specified time.

* Available parameters - Sleep time can be set to any of the following:
 10 min., 20 min., 30 min., 60 min.,

When the above times are represented as numerical parameters:

Time	Character	HEX
10 min.	'000A'	30H 30H 30H 41H
20 min.	'0014'	30H 30H 31H 34H
30 min.	'001E'	30H 30H 31H 45H
60 min.	'003C'	30H 30H 33H 43H

⓪ Tally (Response) data format to current sleep query

['@' '1' SP Normal Termination Status SP Parameter 1 SP Parameter 2 CR]

Parameter 1 : Indicates the sleep time specified
 (Refer to “Available parameters”)
 Parameter 2 : Indicates the remaining sleep time.
 Parameter type is numeric.

© **Communication Examples**

- When specifying “30 min.” as the sleep time

CTRL ‘!’ ‘1’ SP ‘U12’ ‘SP’ ‘001E’ CR

DLA ‘@’ ‘1’ SP ‘0’ CR

- When requesting the current sleep time setting (if the sleep time is set to “10 min.” and the remaining time is 3 min.)

CTRL ‘?’ ‘1’ SP ‘U12’ CR

DLA ‘@’ ‘1’ SP ‘0’ SP ‘000A’ SP
‘0003’ CR

12.20 **Zoom W** : 'U13 (55H 31H 33H)

Definition : Enlarges the screen size
 Command : 'U13' (55H 31H 33H)
 Parameter type : Special parameter (Refer to 7.4.1 Zoom W/T Focus +/- Parameter)
 Reply time : 3 seconds
 Restrictions : No query

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

```

CTRL  '!'  '1'  SP  'U13'  'SP'  '1'  CR
DLA                                     '@'  '1'  SP  '0'  CR
    
```

Continued from line above.

```

CTRL  '!'  '1'  SP  'U13'  'SP'  '0'  CR
DLA                                     '@'  '1'  SP  '0'  CR
    
```

* Be sure to transmit the STOP command after transmitting the START command.

12.21 Zoom T	:	'U14 (55H 31H 34H)
---------------------	---	--------------------

Definition : Reduces the screen size
 Command : 'U14' (55H 31H 34H)
 Parameter type : Special parameter (Refer to 7.4.1 Zoom W/T Focus +/- Parameter)
 Reply time : 3 seconds
 Restrictions : No query

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

```

CTRL  '!'  '1'  SP  'U14'  'SP'  '1'  CR
DLA                                     '@'  '1'  SP  '0'  CR

```

Continued from line above.

```

CTRL  '!'  '1'  SP  'U14'  'SP'  '0'  CR
DLA                                     '@'  '1'  SP  '0'  CR

```

* Be sure to transmit the STOP command after transmitting the START command.

12.22 **Focus +** : 'U15 (55H 31H 35H)

Definition : Moves the focal point forward
 Command : 'U15' (55H 31H 35H)
 Parameter type : Special parameter (Refer to 7.4.1 Zoom W/T Focus +/- Parameter)
 Reply time : 3 seconds
 Restrictions : No query

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

```

CTRL  '!'  '1'  SP  'U15'  'SP'  '1'  CR
DLA                                     '@'  '1'  SP  '0'  CR
    
```

Continued from line above.

```

CTRL  '!'  '1'  SP  'U15'  'SP'  '0'  CR
DLA                                     '@'  '1'  SP  '0'  CR
    
```

* Be sure to transmit the STOP command after transmitting the START command.

12.23 Focus --	:	'U16 (55H 31H 36H)
-----------------------	---	--------------------

Definition : Moves the focal point back
 Command : 'U16' (55H 31H 36H)
 Parameter type : Special parameter (Refer to 7.4.1 Zoom W/T Focus +/- Parameter)
 Reply time : 3 seconds
 Restrictions : No query

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

```

CTRL  '!'  '1'  SP  'U16'  'SP'  '1'  CR
DLA                                     '@'  '1'  SP  '0'  CR
  
```

Continued from line above.

```

CTRL  '!'  '1'  SP  'U16'  'SP'  '0'  CR
DLA                                     '@'  '1'  SP  '0'  CR
  
```

* Be sure to transmit the STOP command after transmitting the START command.

12.24 Right/Left Reverse : 'U17 (55H 31H 37H)

Definition : Reverses the image horizontally
 Command : 'U17' (55H 31H 37H)
 Parameter type : ON / OFF
 Reply time : 3 seconds
 Restrictions :

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
⓪	⓪	⓪	X

⓪ Communication Examples

- When reversing the image horizontally (Right/Left reverse)

CTRLR '!' '1' SP 'U17' 'SP' '1' CR
 DLA '@' '1' SP '0' CR
- When requesting the current R/L reverse setting (if the image is not reversed horizontally)

CTRLR '?' '1' SP 'U17' CR
 DLA '@' '1' SP '0' SP '0' CR

12.25 Top/Bottom Invert : 'U18 (55H 31H 38H)

Definition : Inverts the image vertically
 Command : 'U18' (55H 31H 38H)
 Parameter type : ON / OFF
 Reply time : 3 seconds
 Restrictions :

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
⓪	⓪	⓪	X

⓪ Communication Examples

- When inverting the image vertically (Top/Bottom invert)

CTLR '!' '1' SP 'U18' 'SP' '1' CR

DLA '@' '1' SP '0' CR

- When requesting the current Top/Bottom invert setting (if the image is not inverted vertically)

CTLR '?' '1' SP 'U18' CR

DLA '@' '1' SP '0' SP '0' CR

12.26 Decoder	:	'U19 (55H 31H 39H)
----------------------	---	--------------------

Definition : Selects the color TV broadcast system
 Command : 'U19' (55H 31H 39H)
 Parameter type : Special parameter (Refer to 7.4.4 Decoder Parameter)
 Reply time : 3 seconds
 Restrictions : None except when there is no Source (Area) signal

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When selecting "NTSC" as the broadcast system
 CTRLR '!' '1' SP 'U19' 'SP' '0' CR
 DLA '@' '1' SP '0' CR
- When requesting the current broadcast system setting (if the broadcast system is set to PAL)
 CTRLR '?' '1' SP 'U19' CR
 DLA '@' '1' SP '0' SP '2' CR

12.27 Input Select	:	'U1A (55H 31H 41H)
---------------------------	---	---------------------------

Definition : Selects the video input terminals
 Command : 'U1A' (55H 31H 41H)
 Parameter type : Special parameter (Refer to 7.4.6 Input Select Parameter)
 Reply time : 3 seconds
 Restrictions :

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When selecting "COMPUTER 1" as the video input

CTRL '!' '1' SP 'U1A' 'SP' '3' CR

DLA

'@' '1' SP '0' CR

- When requesting the current video input setting (if the video input is set to PAL)

CTRL '?' '1' SP 'U1A' CR

DLA

'@' '1' SP '0' SP '1' CR

12.28 Transfer Rate : 'U1B (55H 31H 42H)

Definition : Controls the transfer rate for RS-232C
 Command : 'U1B' (55H 31H 42H)
 Parameter type : Special parameter (Refer to 7.4.3 Transfer Rate Parameter)
 Reply time : 3 seconds
 Restrictions :

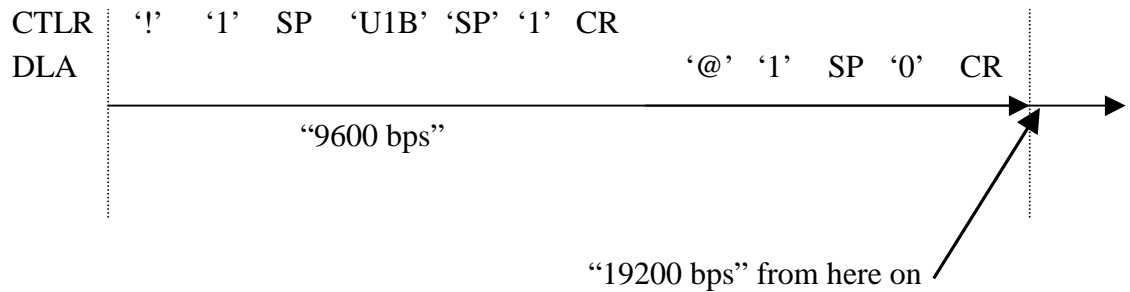
Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
⓪	⓪	⓪	X

* After this command has been received and processed, the Tally (Response) Data is returned at the current speed setting. The new transfer rate takes effect after return of the Tally (Response) Data.

⓪ Communication Examples

- When changing the transfer rate to “19200 bps” from the current setting of “9600 bps”



* The default transfer rate setting is “9600 bps”.

12.29 Lamp Time : 'U1C (55H 31H 43H)

Definition : Reset/check the lamp operation
 Command : 'U1C' (55H 31H 43H)
 Parameter type : (*)
 Reply time : 3 seconds
 Restrictions :

Operation

- When resetting

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
⓪	X	X	X

- When requesting current time

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
⓪	⓪	⓪	X

Data Format

- Reset data format

'1' '1' SP 'U1C' SP Reset parameter CR

(*) Reset parameters

Character	HEX
'[()]'	5BH 28H 29H 5DH

* Never issue the Reset command unless the lamp has been replaced with a new one.

- Tally (Response) data format when requesting current time

'@' '1' SP Normal Termination Status SP Parameter 1 SP Parameter 2 CR

(*) Parameter 1

The G1000 has an incremental counter that counts in four-minute increments. Parameter 1 shows this counter value. The parameter type is "numeric". Actual lamp operating time is obtained by converting the

Parameter 1 value into signed 2-byte binary hexadecimal and dividing it by 15.

(*) Parameter 2

Parameter 2 shows whether the lamp replacement time is close or not, based on the following calculation:

$(\text{lamp service life} - 100 \text{ hours}) \leq \text{Lamp operating time} < \text{Lamp service life}$

	Character	HEX
Lamp replacement time not close or Lamp life exceeded	'0'	30H
Lamp replacement time close	'1'	31H

Ⓢ Communication Examples

- When requesting the current lamp operating time (if the lamp operating time is 150 hours)

CTLR '?' '1' SP 'U1C' CR

DLA

'@' '1' SP '0' SP '08CA'
SP '0' CR

12.30 ID : 'U1D (55H 31H 44H)

Definition : Sets the ID for the G1000
 Command : 'U1D' (55H 31H 44H)
 Parameter type : Special parameter (Refer to 7.4.11 ID Parameter)
 Reply time : 3 seconds
 Restrictions : No query

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
⓪	⓪	⓪	X

* When this command is received, processed correctly, the Tally (Response) Data is returned with the changed ID number.

⓪ Communication Examples

- When changing the ID to '7' from the current setting of '1'

CTRL '! '1' SP 'U1D' 'SP' '7' CR
 DLA '@' '7' SP '0' CR



Tally (Response) Data is returned with the specified ID no.

12.31 Bass	:	'U1E (55H 31H 45H)
-------------------	---	--------------------

Definition : Adjusts the audio bass level
 Command : 'U1E' (55H 31H 45H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions :

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When setting the BASS adjust level to “3”
 CTRLR ‘!’ ‘1’ SP ‘U1E’ ‘SP’ ‘0003’ CR
 DLA ‘@’ ‘1’ SP ‘0’ CR

- When requesting the current BASS adjust level setting (if the BASS level is set to “-1”)
 CTRLR ‘?’ ‘1’ SP ‘U1E’ CR
 DLA ‘@’ ‘1’ SP ‘0’ SP ‘FFFE’ CR

12.32 Treble	:	'U1F (55H 31H 46H)
---------------------	---	--------------------

Definition : Adjusts the audio treble level
 Command : 'U1F' (55H 31H 46H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions :

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When setting the TREBLE adjust level to “3”


```

      CTRLR  '!'  '1'  SP  'U1F'  'SP'  '0003'  CR
      DLA                                     '@'  '1'  SP  '0'  CR
      
```
- When requesting the current TREBLE adjust level setting (if the TREBLE level is set to “-1”)


```

      CTRLR  '?'  '1'  SP  'U1F'  CR
      DLA                                     '@'  '1'  SP  '0'  SP  'FFFF'  CR
      
```

12.33 **Volume** : 'U20 (55H 32H 30H)

Definition : Adjusts the audio volume level
 Command : 'U20' (55H 32H 30H)
 Parameter type : Numeric, MAX / MIN / DEFAULT
 Reply time : 3 seconds
 Restrictions : None except when there is no Source (Area) signal

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ **Communication Examples**

- When setting the volume adjust level to “30”
 CTRLR ‘!’ ‘1’ SP ‘U20’ ‘SP’ ‘001E’ CR
 DLA ‘@’ ‘1’ SP ‘0’ CR

- When requesting the current volume adjust level setting (if the volume level is set to “5”)
 CTRLR ‘?’ ‘1’ SP ‘U20’ CR
 DLA ‘@’ ‘1’ SP ‘0’ SP ‘0005’ CR

12.34 Audio Muting	:	'U21 (55H 32H 31H)
---------------------------	---	---------------------------

Definition : Command to control the audio muting
 Command : 'U21' (55H 32H 31H)
 Parameter type : ON / OFF
 Reply time : 3 seconds
 Restrictions : None except when there is no Source (Area) signal.

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When muting the output sound

CTLR '!' '1' SP 'U21' 'SP' '1' CR

DLA

'@' '1' SP '0' CR

- When requesting the current audio muting status (if the audio muting is set to OFF)

CTLR '?' '1' SP 'U21' CR

DLA

'@' '1' SP '0' SP '0' CR

12.35 Quick Alignment : 'U2A (55H 32H 41H)

Definition : Controls the quick alignment function
 Command : 'U2A' (55H 32H 41H)
 Parameter type : (*)
 Reply time : 3 seconds
 Restrictions : Computer Source (Area) only

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	Ⓢ	X	X

*** Quick Alignment Parameter**

Use only ON parameter for ON/OFF

- Quick Alignment parameter

	Character	HEX
ON	'1'	31H

The G1000 performs quick alignment processing after returning Normal Transmission Status Tally (Response) data. Therefore, requests to check the quick alignment status should be sent from the control unit at a fixed interval (more than 1 second) after transmitting the ON command. Once quick alignment processing is confirmed, transmit the next command. If the next command is transmitted during quick alignment processing (before confirming completion of quick alignment), the G1000 may malfunction.

Never transmit any commands other than the quick alignment query during quick alignment processing operations.

*** Tally (Response) data to the query**

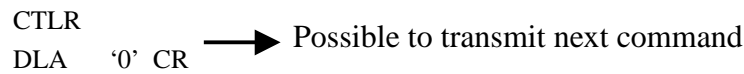
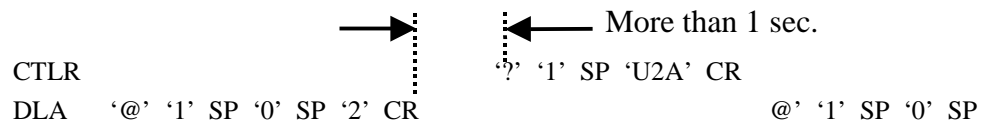
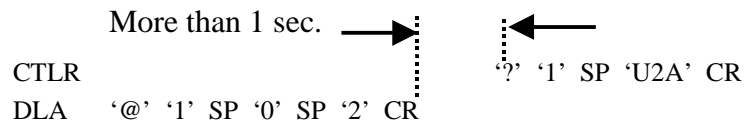
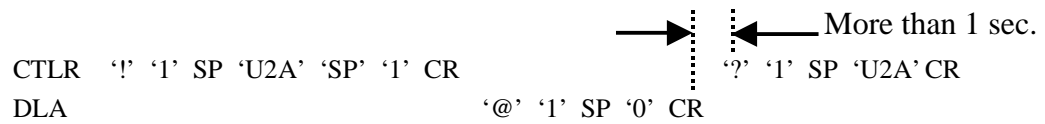
- Tally (Response) data format against query

'@' '1' SP Normal Termination Status SP Parameter CR

- Tally (Response) data parameters to query

	Character	HEX	Definition
Normal termination	'0'	30H	Quick alignment processing completed correctly (End)
Failed	'1'	31H	Quick alignment processing failed (End)
In processing	'2'	32H	Quick alignment is under processing (during processing)

ⓐ Communication Examples



12.36 Text Mode	:	'U2C (55H 32H 43H)
------------------------	---	---------------------------

- Definition : Controls the legibility of screen text
- Command : 'U2C' (55H 32H 43H)
- Parameter type : Special parameter (Refer to 7.4.8 Text Mode Parameter)
- Reply time : 3 seconds
- Restrictions : Computer Sources (Areas) only. Does not include SXGA 1, SXGA 2, SXGA 3. Resize function must be set to ON.

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When setting the text mode to “Normal”
 - CTRL '!' '1' SP 'U2C' 'SP' '0' CR
 - DLA '@' '1' SP '0' CR
- When requesting the current text mode setting (if the text mode is set to “Text 1”)
 - CTRL '?' '1' SP 'U2C' CR
 - DLA '@' '1' SP '0' SP '1' CR

12.37 Resize	:	'U2D (55H 32H 44H)
---------------------	---	--------------------

Definition : Controls expanded image
 Command : 'U2D' (55H 32H 44H)
 Parameter type : ON / OFF
 Reply time : 3 seconds
 Restrictions : Computer Sources (Areas) only. Does not include SXGA 1, SXGA 2, or SXGA 3.

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When setting the resize function to ON

CTLR '!' '1' SP 'U2D' 'SP' '1' CR

DLA

'@' '1' SP '0' CR

- When requesting the current resize function setting (if the resize function is set to OFF)

CTLR '?' '1' SP 'U2D' CR

DLA

'@' '1' SP '0' SP '0' CR

12.38 Aspect Change : 'U2E (55H 32H 45H)

Definition : Controls the aspect ratio of the projected image
 Command : 'U2E' (55H 32H 45H)
 Parameter type : Special parameter (Refer to 7.4.9 Aspect Parameter)
 Reply time : 3 seconds
 Restrictions : Video Sources (Areas) only.

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When setting the aspect ratio to “4 : 3”
 CTRLR ‘!’ ‘1’ SP ‘U2E’ ‘SP’ ‘0’ CR
 DLA ‘@’ ‘1’ SP ‘0’ CR
- When requesting the current aspect ratio setting (if the aspect ratio is set to “16 : 9”)
 CTRLR ‘?’ ‘1’ SP ‘U2E’ CR
 DLA ‘@’ ‘1’ SP ‘0’ SP ‘1’ CR

12.39 Source (Area) Assignment : 'U2F (55H 32H 46H)
--

Definition	:	Specifies Source (Area) (for each input)
Command	:	'U2F' (55H 32H 46H)
Parameter type	:	(*)
Reply time	:	3 seconds
Restrictions	:	

Operation

- When resetting

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
⓪	⓪	X	X

*** Source (Area) assignment data format**

- When specifying with command

['!'] ['1'] [SP] ['U2F'] [SP] [Parameter 1] [SP] [Parameter 2] [CR]

Parameter 1 : Input source information

Indicates Source (Area) information for the input terminal specified for Source (Area) (refer to 7.4.6 Input Select Parameter).

Parameter 2 : Source Information

Indicates the Source (Area) setting. The available parameters are those listed in 11.1 G1000 Sources (Areas) and Source (Area) Numbers except for “No signal” with “AUTO” added (refer to 12.39.1 Source (Area) Assignment Parameter).

- When requesting current

['?'] ['1'] [SP] ['U2F'] [SP] [Parameter] [CR]

Parameter : Input source information

Indicates Source (Area) information for the input terminal specified for Source (Area) (refer to 7.4.6 Input Select Parameter).

- ⓪ Tally (Response) data format to query

['@'] ['1'] [SP] [Normal Termination Status] [SP] [Parameter] [CR]

Parameter : Source (Area) Information

Indicates the Source (Area) information assigned to the “Input source specified for requesting current data” (refer to 12.39.1 Source (Area) Assignment Parameter).

- * When “AUTO” is assigned for Source (Area), the G1000 automatically analyzes the input signal to select the most appropriate Source (Area).
- * When Source (Area) is set to anything other than “AUTO” and no signal is input, the Source (Area) is set to “No signal”. The Source (Area) assignment command is used only for requesting current Source (Area) setting status. For the information on the Source (Area) actually selected on the G1000, use 12.42 Source (Area) Query.

© Source (Area) Items actually assigned on the G1000

- When “AUTO” is specified with the Source (Area) assignment command, any item listed in 11.1 G1000 Sources (Areas) and Source (Area) Numbers.
 - When anything other than “AUTO” is specified with the Source (Area) assignment command, any item assigned for Source (Area) or “No signal”
- * To obtain the information about Source (Area) actually assigned on the G1000, use the 12.42 Source (Area) Query.

12.39.1 Source (Area) assignment parameters

Source (Area)	Source (Area) No. (Character)	Source (Area) No. (HEX)
NTSC	'0000'	30H 30H 30H 30H
PAL/SECAM	'0001'	30H 30H 30H 31H
EDTV II	'0003'	30H 30H 30H 33H
HDTV	'0004'	30H 30H 30H 34H
PC-98	'0005'	30H 30H 30H 35H
VGA 1	'0006'	30H 30H 30H 36H
VGA 3	'0007'	30H 30H 30H 37H
MAC 13"	'0008'	30H 30H 30H 38H
VGA VESA	'0009'	30H 30H 30H 39H
SVGA 1	'000A'	30H 30H 30H 41H
SVGA 2	'000B'	30H 30H 30H 42H
MAC 16"	'000C'	30H 30H 30H 43H
XGA 1	'000D'	30H 30H 30H 44H
XGA 2	'000E'	30H 30H 30H 45H

MAC 19"	'000F'	30H 30H 30H 46H
MAC 21"	'0010'	30H 30H 31H 30H
SXGA 1	'0011'	30H 30H 31H 31H
SXGA 2	'0012'	30H 30H 31H 32H
SXGA 3	'0013'	30H 30H 31H 33H
AUTO	'00A0'	30H 30H 41H 30H

Ⓢ Communication Examples

- When specifying "VGA 3" for COMPUTER1

```

CTRL  '!'  '1'  SP  'U2F'  'SP'  '3'  SP  '0007'  CR
DLA                                     '@'  '1'  SP
      '0'  CR

```

- When requesting current Source (Area) setting for VIDEO (if it is set to "AUTO")

```

CTRL  '?'  '1'  SP  'U2F'  SP  '1'  CR
DLA                                     '@'  '1'  SP  '0'  SP  '00A0'
      CR

```

- * Note that the types of Sources (Areas) that can be assigned differ depending on the input terminals.

For information on the relationship between input terminals and Source (Area) settings, refer to 12.39.2 Input Terminals and Assignable Sources (Areas).

12.39.2 Input Terminals and Assignable Sources (Areas)

	S-VIDEO	VIDEO	Y P _B / B-Y P _R / R-Y	COMPUTER 1	COMPUTER 2
NTSC	⓪	⓪	⓪	X	⓪
PAL/SECAM	⓪	⓪	⓪	X	⓪
EDTV II	X	X	⓪	X	⓪
HDTV	X	X	⓪	X	⓪
PC-98	X	X	X	⓪	⓪
VGA 1	X	X	X	⓪	⓪
VGA 3	X	X	X	⓪	⓪
MAC 13"	X	X	X	⓪	⓪
VGA VESA	X	X	X	⓪	⓪
SVGA 1	X	X	X	⓪	⓪
SVGA 2	X	X	X	⓪	⓪
MAC 16"	X	X	X	⓪	⓪
XGA 1	X	X	X	⓪	⓪
XGA 2	X	X	X	⓪	⓪
MAC 19"	X	X	X	⓪	⓪
MAC 21"	X	X	X	⓪	⓪
SXGA 1	X	X	X	⓪	⓪
SXGA 2	X	X	X	⓪	⓪
SXGA 3	X	X	X	⓪	⓪
AUTO	⓪	⓪	⓪	⓪	⓪

12.40 Clamp	:	'U30 (55H 33H 30H)
--------------------	---	--------------------

Definition : Specifies the clamp function
 Command : 'U30' (55H 33H 30H)
 Parameter type : Special parameter (Refer to 7.4.12 Clamp Parameter)
 Reply time : 3 seconds
 Restrictions : None except when there is no Source (Area) signal.

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

ⓐ Communication Examples

- When setting the clamp function to "BP"

CTLR '!' '1' SP 'U30' 'SP' '0' CR

DLA

'@' '1' SP '0' CR

- When requesting the current clamp function setting (if it is set to "ST")

CTLR '?' '1' SP 'U30' CR

DLA

'@' '1' SP '0' SP '1' CR

12.41 Operation Mode Query : 'Z03 (5AH 30H 33H)

Definition : Requests the current operation mode
 Command : 'Z03' (5AH 30H 33H)
 Parameter type : Special parameter (Refer to 7.4.7 G1000 Operation Mode Parameter)
 Reply time : 3 seconds
 Restrictions : Query only.

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
①	①	①	①

When the POWER OFF command is received in the Power ON mode, the G1000 first enters the Cool-Down mode for about 20 seconds to cool down the lamp, then automatically enters the Standby Mode (for information on each Operation Mode, refer to 10.0 G1000 Operation Modes). Since the POWER ON command cannot be accepted in the Cool-Down mode, first query (issue a request for data) the Operation Mode to confirm that the G1000 is in the Standby Mode, then transmit the POWER ON command to turn on the G1000 again.

① Communication Examples

- When requesting the current operation mode (if the G1000 is in Standby Mode)

```

CTRLR  '?' '1' SP 'Z03' CR
DLA    '@' '1' SP '0' SP '0000' CR
    
```

12.42	Source (Area) Query	:	'Z05 (5AH 30H 35H)
-------	----------------------------	---	--------------------

Definition	:	Asks for the Source (Area) setting actually assigned on the G1000
Command	:	'Z05' (5AH 30H 35H)
Parameter type	:	(Refer to 11.1 G1000 Sources (Areas) and Sources (Areas) Numbers)
Reply time	:	3 seconds
Restrictions	:	Query only.

Operation

Standby Mode	Power ON Mode	Cool Down Mode	Emergency Mode
X	ⓐ	X	X

* This command is used to request the current Source (Area) setting actually assigned on the G1000. To obtain the Source (Area) setting status for each input terminal, use the 12.39 Source (Area) Assignment command.

ⓐ Communication Examples

- When requesting the current Source (Area) setting actually assigned on the G1000 (if SVGA 1 is actually assigned)

CTRLR '?' '1' SP 'Z05' CR

DLA '@' '1' SP '0' SP '000A' CR

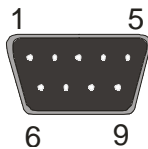
13.0 Appendix

13.1 External Control Command List

Command	Character	HEX
Hide	'U00'	55H 30H 30H
Black Color	'U01'	55H 30H 31H
Horizontal Position	'U02'	55H 30H 32H
Vertical Position	'U03'	55H 30H 33H
Phase	'U04'	55H 30H 34H
Tracking	'U05'	55H 30H 35H
Contrast	'U06'	55H 30H 36H
Brightness	'U07'	55H 30H 37H
Sharpness	'U08'	55H 30H 38H
Color	'U09'	55H 30H 39H
Tint	'U0A'	55H 30H 41H
Color Temperature	'U0B'	55H 30H 42H
R-Gain	'U0C'	55H 30H 43H
G-Gain	'U0D'	55H 30H 44H
B-Gain	'U0E'	55H 30H 45H
Power	'U0F'	55H 30H 46H
Menu Auto-Off	'U10'	55H 31H 30H
Line Display	'U11'	55H 31H 31H
Sleep Time	'U12'	55H 31H 32H
Zoom W	'U13'	55H 31H 33H
Zoom T	'U14'	55H 31H 34H
Focus +	'U15'	55H 31H 35H
Focus --	'U16'	55H 31H 36H
Right/Left Reverse	'U17'	55H 31H 37H
Top/Bottom Invert	'U18'	55H 31H 38H
Decoder	'U19'	55H 31H 39H
Input Select	'U1A'	55H 31H 41H

Command	Character	HEX
Transfer Rate	'U1B'	55H 31H 42H
Lamp Time	'U1C'	55H 31H 43H
ID	'U1D'	55H 31H 44H
Bass	'U1E'	55H 31H 45H
Treble	'U1F'	55H 31H 46H
Volume	'U20'	55H 32H 30H
Audio Muting	'U21'	55H 32H 31H
Quick Alignment	'U2A'	55H 32H 41H
Text Mode	'U2C'	55H 32H 43H
Resize	'U2D'	55H 32H 44H
Aspect Change	'U2E'	55H 32H 45H
Source (Area) Assignment	'U2F'	55H 32H 46H
Clamp	'U30'	55H 33H 30H
Operation Mode Query	'Z03'	55H 30H 33H
Source (Area) Query	'Z05'	55H 30H 35H

13.2 RS-232C Control Port

RS-232C Control Port			
D-SUB 9-pin (male) 	Pin No	Signal	Definition
	1	N / A	Not Used
	2	R x D (RD)	Receive data
	3	T x D (SD)	Transmit data
	4	N / A	Not Used
	5	GND	Ground
	6	N / A	Not Used
	7	N / A	Not Used
	8	N / A	Not Used
	9	N / A	Not Used