



**LCD**  

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**Projector**  

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**User Manual**  

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**X300**

# Control this projector by using a personal computer

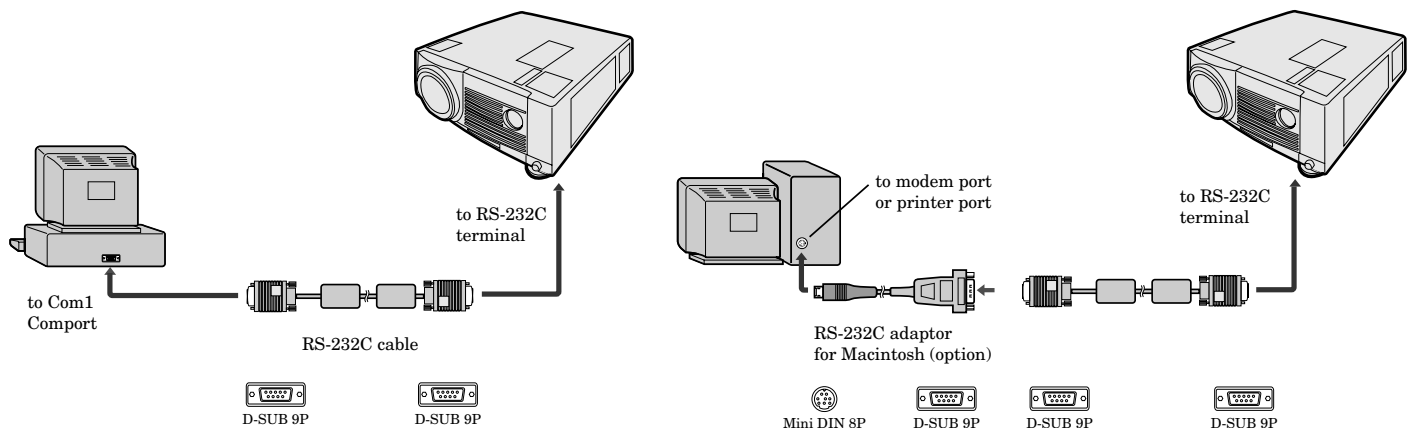
This projector can be controlled by connecting a personal computer with RS-232C terminal.

Functions can be controlled by a personal computer:

- Turn the ON or OFF
- Changing input signals
- Button input by remote control or control panel
- Reading warning data
- Menu setting

## Connection

### Projector + IBM PC or IBM PC compatibles



Note: If your PC (IBM or IBM compatible) is equipped only with a 25-pin serial port connector, a 25-pin serial port adapter is required. Contact your dealer for details.

## 1) Interface

PROTOCOL	RS-232C
BAUD RATE	9600 [bps]
DATA LENGTH	8 [bits]
PARITY BIT	NONE
STOP BIT	1 [bits]
FLOW CONTROL	NONE

This projector uses RXD, TXD and GND lines for RS-232C control.  
For RS-232C cable, the reverse type cable should be used.

## 2) Control command diagram

The command is structured by the address code, function code, data code and end code. The length of the command is different by each function.

	Address code	Function code	Data code	End code
HEX	30h 30h	Function	Data	0Dh
ASCII	'0' '0'	Function	Data	↵

[Address code] 30h 30h (In ASCII code, '0' '0') fixed.

[Function code] A code of each fixed control move.

[Data code] A code of each fixed control data (number) and not always indicated.

[End code] 0Dh (In ASCII code, '↵') fixed.

### 3) Control sequence

- (1) The command from a personal computer to the projector will be sent in 400ms.
- (2) The projector will send a return command 400ms\* after it has received an encode. If the command isn't received correctly, the projector will not send the return command.
- (3) The personal computer checks the command and confirms if the command which has been sent has been executed or not.
- (4) This projector sends various codes other than the return code. When having a control sequence by RS-232C, reject other codes from personal computer side.

- \*: The sending time of return command may delay depending on the condition (during changing the input signal, etc.).

[Example] Turn the power ON (' is for ASCII code)

Sending commands from the PC etc.	Status code from projector	Meaning
30 30 21 0D '0' '0' '!' '↵'		Command for POWER ON
	30 30 21 0D '0' '0' '!' '↵'	Command received (Command echo back)

### 4) Operation commands

The operation commands execute the basic operation setting of this projector. It may not operate when changing the signal.

Operation	ASCII	HEX
POWER ON	!	21h
POWER OFF	"	22h
INPUT COMPUTER 1	_r1	5Fh 72h 31h
INPUT COMPUTER 2	_r2	5Fh 72h 32h
INPUT VIDEO 1	_v1	5Fh 76h 31h
INPUT VIDEO 2	_v2	5Fh 76h 32h

- POWER OFF command will not work for 1 minute after the power is turned on.
- POWER ON command will not work for 1 minute after the power is turned off.

[Example] Set the input signal to COMPUTER 1 (' is for ASCII code)

Sending commands from the PC etc.	Status code from projector	Meaning
30 30 5F 72 31 0D '0' '0' '_' 'r' '1' '↵'		Command for setting the input signal to COMPUTER 1
	30 30 5F 72 31 0D '0' '0' '_' 'r' '1' '↵'	Command received (Command echo back)

### 5) Remote commands

Some remote control operations can be done by remote command codes.

Button's name on remote	ASCII	HEX
+ VOLUME	r06	72h 30h 36h
- VOLUME	r07	72h 30h 37h
MUTE	ra6	72h 61h 36h
EXPAND	r02	72h 30h 32h
PinP	r04	72h 30h 34h
▲	r53	72h 35h 33h
▼	r2b	72h 32h 62h
◀	r4f	72h 34h 66h
▶	r59	72h 35h 39h
MENU	r54	72h 35h 34h
ENTER	r10	72h 31h 30h
ZOOM/FOCUS	r0f	72h 33h 66h
AUTO POSITION	r09	72h 30h 39h
STILL	ra4	72h 61h 34h

## Control this projector by using a personal computer (Continued)

[Example] Display MENU selection bar. (' ' is for ASCII code)

Sending commands from the PC etc.	Status code from projector	Meaning
30 30 72 35 34 0D '0' '0' 'r' '5' '4' '↵'		Command as same as MENU button
	30 30 72 35 34 0D '0' '0' 'r' '5' '4' '↵'	Command received (Command echo back)

### 6) Warning commands

Read the past warning data. The personal computer doesn't attach the data code onto the warning commands to send. On the other hand, the projector which has received a command attaches the warning data as the data code to reply.

	ASCII	HEX
past data 1 (newest)	Ep1	45h 70h 31h
past data 2	Ep2	45h 70h 32h
past data 3	Ep3	45h 70h 33h
clear past data	Ec	45h 63h

The past data

Ep\* (\* is 7 digits, hexadecimal notation)

\*=(MBS)b1,b2,b3,b4,b5,b6,b7,b8, b9, b10, b11, b12, b13, b14, b15, b16, b17, b18, b19, b20, b21, b22, b23, b24, b25, 0, 0, 0(LSB)

b1=Operation time (during boot up '0' / when the power is ON, '1')

b2=Communication error between microcomputer and IC PIO1

b3=Communication error between microcomputer and IC PIO2

b4=Communication error between microcomputer and IC PIO3

b5=Communication error between microcomputer and IC PIO4

b6=Communication error between microcomputer and IC PIO5

b7=Stand-by power short

b8=Switch power short (SC connector)

b9=Switch power short (SP connector)

b10=Switch power short (SD connector)

b11=The air inlet fan is stopped

b12=The air outlet fan is stopped

b13=The power fan is stopped

b14=The audio fan is stopped (This fan is not installed.)

b15=The lamp cover is not closed

b16=The filter cover (bottom) is not closed

b17=The filter cover (front) is not closed

b18=The temperature sensor is off (SZ connector)

b19=Communication error between microcomputer and decoder

b20=Abnormal temperature (outside)

b21=Abnormal temperature (lamp)

b22=Abnormal temperature (LCD)

b23=Abnormal temperature (The difference value of lamp from outside)

b24= The life of a lamp

b25=The lamp is not illuminating.

[Example 1] The outlet fan was down when the power was ON and the newest past data of the warning was confirmed.

Sending commands from the PC etc.	Status code from projector	Meaning
30 30 45 70 31 0D '0' '0' 'E' 'p' '1' '↵'		Command to confirm past data
	30 30 45 70 38 30 31 30 30 30 0D '0' '0' 'E' 'p' '1' '8' '0' '1' '0' '0' '0' '0' '↵' *	Warning command (Outlet fan is stopped when the power is ON) carried out

\* : '8' '2' '0' '0' '0' '0' mean the numbers as shown below

Bit	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	b13	b14	b15	b16	b17	b18	b19	b20	b21	b22	b23	b24	b25	0	0	0
ASCII	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEX	8				0				1				0				0				0							

b1=1(The power is ON), b12=1(The outlet fan is stopped), Other= 0

## 7) Reading command diagram

Monitor projector operation status. The power ON, OFF and input terminal settings can be monitored.

	ASCII		HEX	
	Function	Data (Receive)	Function	Data (Receive)
POWER ON	vP	1	76h 50h	31h
POWER OFF	vP	0	76h 50h	30h
INPUT COMPUTER 1	vI	r1	76h 49h	72h 31h
INPUT COMPUTER 2	vI	r2	76h 49h	72h 32h
INPUT VIDEO 1	vI	v1	76h 49h	76h 31h
INPUT VIDEO 2	vI	v2	76h 49h	76h 32h

When a personal computer sends the command, data code will not be attached. On the other hand, the projector which has received a command will attach the recent operating status and then send.

[Example ] Input was Video 1 when the operating status of the input terminal was confirmed.

Sending commands from the PC etc.	Status code from projector	Meaning
30 30 76 49 OD '0' '0' 'v' 'I' '↵'		Command to confirm input
	30 30 76 49 76 31 OD '0' '0' 'v' 'I' 'v' '1' '↵'	Command (Input is Video 1) carried out

## 8) Menu setting commands

The menu setting commands execute the menu setting of this projector. If the personal computer doesn't send the commands without attaching the data code, the projector which has received the command replays the setting data as data code.

ITEM	ASCII	HEX	VALUE
CONTRAST	P	50h	±30±30±30 (R from G+Main data+B from G)
BRIGHTNESS	Q	51h	±30±30±30 (R from G+Main data+B from G)
COLOR TEMP.	A	41h	1 (Standard), 2 (High), 3 (Low), 4 (User)
SHARPNESS(COMPUTER input)	R1	52h 31h	±2
SHARPNESS(VIDEO input)	R2	52h 32h	±10
TINT	S	53h	±10
COLOR	T	54h	±10
BASS	AUB	41h 55h 42h	0 - 3
TREBLE	AUT	41h 55h 54h	0 - 3
PinP AUDIO	AUP	741h 55h 50h	0 (Main), 1 (Sub)
IMAGE REVERSE	IR	49h 52h	0 (Off), 1 (Mirror), 2 (Invert), 3 (Mirror invert)
KEystone	KS	4Bh 53h	±15
AUTO POWER ON	APON	41h 50h 4Fh 4Eh	0 (ON), 1 (OFF)
AUTO POWER OFF	APOF	41h 50h 4Fh 46h	00 (Off), 05, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60
TEST SIGNAL	TS	54h 53h	0 (ON), 1 (OFF)
MENU POSITION	MP	4Dh 50h	0 (Upper left), 1 (Lower right)
MODE DISPLAY	MD	4Dh 44h	0 (ON), 1 (OFF)
SPLASH SCREEN	SS	53h 53h	0 (ON), 1 (OFF)
CINEMA MODE	CM	43h 4Dh	0 (AUTO), 1 (OFF)
VIDEO SIGNAL	VS	56h 53h	0 (AUTO), 1 (NTSC), 2 (PAL), 3 (SECAM), 4 (4.43NTSC), 5 (PAL-M), 6 (PAL-N), 7 (PAL-60)
LANGUAGE	LG	4Ch 47h	0 (日本語), 1 (English), 2 (Español), 3 (Deutsch), 4 (Français), 5 (Italiano), 6 (中文)
HORIZ. POSITION	HP	48h 50h	+ (increase), - (decrease)
VERT. POSITION	VP	56h 50h	+ (increase), - (decrease)
FINE SYNC.	FN	46h 4Eh	00 - 31
TRACKING	TRK	54h 52h 4Bh	+ (increase), - (decrease)
COMPUTER INPUT	CIN	67h 49h 4Eh	0 (RGB), 1 (YCbCr), 2 (YPbPr)
HOLD BEGIN	HLB	48h 4Ch 42h	00 - 15
HOLD END	HLE	48h 4Ch 45h	00 - 15
CLAMP POSITION	CLP	43h 4Ch 50h	000 - 255
CLAMP WIDTH	CLW	43h 4Ch 57h	000 - 255
ANAMORPHIC	SC	53h 43h	0 (ON), 1 (OFF)

## Control this projector by using a personal computer (Continued)

### How to set the grade

Use ASCII letters code to set the grade for setting data. Please refer to the table below for HEX code.

ASCII	'+'	'-'	'0'	'1'	'2'	'3'	'4'	'5'	'6'	'7'	'8'	'9'
HEX	2Bh	2Dh	30h	31h	32h	33h	34h	35h	36h	37h	38h	39h

[Example 1] Set the AUTO POWER ON to OFF.

Sending commands from the PC etc.	Status code from projector	Meaning
30 30 41 50 4F 4E 30 0D '0' '0' 'A' 'P' 'O' 'N' '0' '␣'		Command for setting the AUTO POWER ON to ON
	30 30 41 50 4F 4E 30 0D '0' '0' 'A' 'P' 'O' 'N' '0' '␣'	Command received (Command echo back)

The data code of CONTRAST and BRIGHTNESS is structured by the difference data of R from G, the main data and the difference data of B from G.

[Example 2] Set the difference data of R from G to +10, the setting main data to 0 and the difference data of B from to -5.

Sending commands from the PC etc.	Status code from projector	Meaning
30 30 50 2B 31 30 2B 30 30 2D 30 35 0D '0' '0' 'P' '+' '1' '0' '+' '0' '0' '-' '0' '5' '␣'		Command for setting the picture control
	30 30 50 2B 31 30 2B 30 30 2D 30 35 0D '0' '0' 'P' '+' '1' '0' '+' '0' '0' '-' '0' '5' '␣'	Command received (Command echo back)

[Example 3] The TINT was set to +10 when the setting status was confirmed.

Sending commands from the PC etc.	Status code from projector	Meaning
30 30 53 0D '0' '0' 'S' '␣'		Command to confirm setting of TINT
	30 30 53 2B 31 30 0D '0' '0' 'S' '+' '1' '0' '␣'	Command (setting of TINT is +10) carried out

