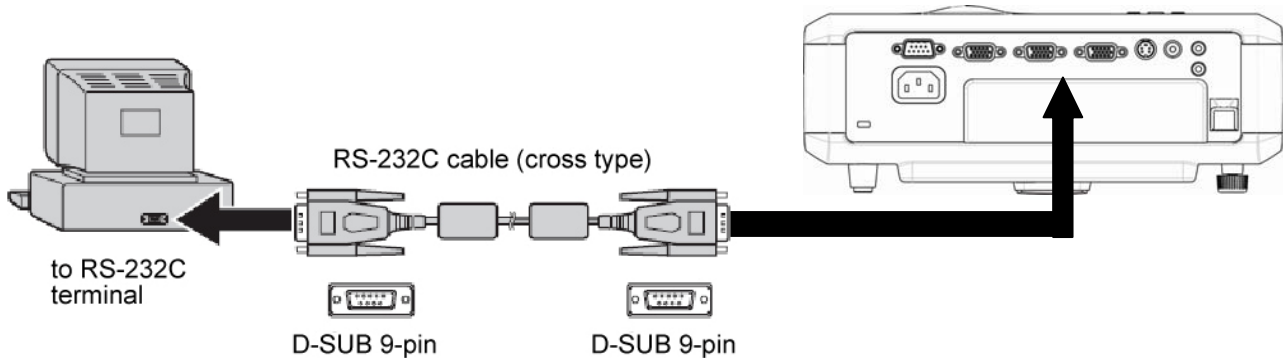


## Controlling the projector using a personal computer

### 1. Connection:

Below shows the illustration of connection between PC and Projector.

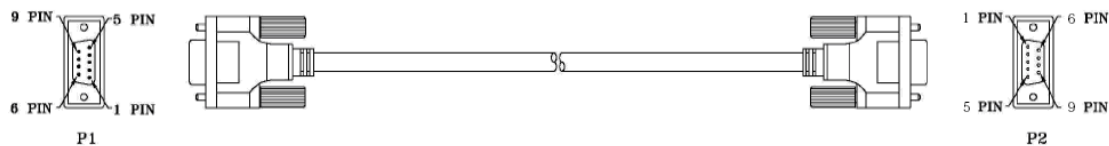


#### <CAUTION>

- ◆ Make sure that your computer and projector are turned off before connection.
- ◆ Power on the computer first, and then plug the power cord of the projector. (It may cause Com port incorrect function, if you do not follow this instruction)
- ◆ Adapters may be necessary depending on the PC connected to this projector. Please contact with your dealer for further details.

### 2. Hardware connection

#### <Control cable>

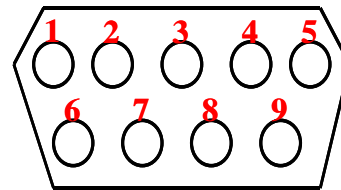


#### WIRE CONNECTION

WIRE ARRANGEMENT		
P1	COLOR	P2
1	BLACK	1
2	BROWN	3
3	RED	2
4	ORANGE	4
5	YELLOW	5
6	GREEN	6
7	BLUE	8
8	PURPLE	7
9	GRAY	9
CASE	DRAIN WIRE	CASE

<Pin assignment for PC side>

Pin	Description	Pin	Description
1	NC	2	RXD
3	TXD	4	NC
5	GND	6	NC
7	RTS	8	CTS
9	NC		



Interface

RS-232 protocol	
Baud Rate	115200 bps (fixed)
Data Length	8 bit
Parity Check	None
Stop Bit	1 bit
Flow Control	None

**3. Software connection:**

**1) Control command**

The command consists of the start code, function code, and end code. The length of the command varies among the functions.

	Start code	Function code	End code
ASCII code	<CR>	Function	<CR>
HEX code	"0D"	Function	"0D"

\*Refer Table 1 in Section 3 for Function code.

**2) Control sequence**

(1) Send the command from the personal computer to the projector.

(2) When give ASCII <CR> (Hex code:"0D"), it will echo the following code. It means projector is ready to accept RS-232 command.

EX200U Status	Return ASCII code	Return HEX code
Standby mode	>	"3E"
Other mode(P-ON, Cooling etc.)	> <NULL>	"3E" "00"

(3) If no any command, it should echo the following code after 5 seconds.(5 sec time out)

EX200U Status	Return ASCII code	Return HEX code
Standby mode	<CR> <LF>	"0D" "0A"
Other mode(P-ON, Cooling etc.)	<CR> <LF> <NULL>	"0D" "0A" "00"

(4) When any command is received,each input character will be echoed.

(5) If command do not have end code, it should echo <CR> <LF> <NULL> (Hex code:"0D" "0A" "00") after 5 seconds.(5 sec time out)

(6) After sending input character, the projector sends the following code.

EX200U Status	Return ASCII code	Return HEX code
Standby mode	<CR> <CR> <LF>	"0D" "0D" "0A"
Other mode(P-ON, Cooling etc.)	<CR> <CR> <LF> <NULL>	"0D" "0D" "0A" "00"

(7) When the projector is in standby, the projector can receive only some commands (example: power status, lamp time). Against other commands, it will echo ACK "Block Item".

(8) If the command format is illegal, it will echo ACK "\*Illegal format#" or "Illegal format".

(9) If the command format is correct, but it is not valid for this model, it will echo ACK "\*Unsupported item#" or "Unsupported item".

(10) If the command format is correct, but it can't be executed in some condition, it will echo ACK "\*Block item#" or "Block Item".

When the status of the projector is green in Table 1 (at Section 3), the projector can receive the command.

(11) If the command format is correct and the projector operates the function, it will echo ACK such as the following list (Table 1 in Section 3).

(12) After sending ACK, the projector sends the following code.

EX200U Status	Return ASCII code	Return HEX code
Standby mode	<LF> <CR>	"0A" "0D"
Other mode(P-ON, Cooling etc.)	<CR> <LF> <NULL>	"0D" "0A" "00"

Caution When the projector is turned on, unexpected commands occur by lamp noise.

## Example

When turning the power ON.

	Sending commands from the PC	Returned code from the projector
ASCII Character	<CR>*pow=on#<CR>	>*pow=on#<CR><CR><LF>*POW=ON#<LF><CR>
Hex data	"0D" "2A" "70" "6F" "77" "3D" "6F" "6E" "23" "0D"	"3E" "2A" "70" "6F" "77" "3D" "6F" "6E" "23" "0D" "0D" "0A" "2A" "50" "4F" "57" "3D" "4F" "4E" "23" "0A" "0D"

When telling power status of the projector

	Sending commands from the PC	Returned code from the projector
ASCII Character	<CR>*pow=?#<CR>	>*pow=?#<CR><CR><LF>*POW=OFF#<LF><CR>
Hex data	"0D" "2A" "70" "6F" "77" "3D" "3F" "23" "0D"	"3E" "2A" "70" "6F" "77" "3D" "3F" "23" "0D" "0D" "0A" "2A" "50" "4F" "57" "3D" "4F" "46" "46" "23" "0A" "0D"
ASCII Character	<CR>*pow=?#<CR>	><NULL>*pow=?#<CR><CR><LF><NULL>*POW=ON#<CR><LF><NULL>
Hex data	"0D" "2A" "70" "6F" "77" "3D" "3F" "23" "0D"	"3E" "00" "2A" "70" "6F" "77" "3D" "3F" "23" "0D" "0D" "0A" "00" "2A" "50" "4F" "57" "3D" "4F" "4E" "23" "0D" "0A" "00"

When changing to Computer1 input.

	Sending commands from the PC	Returned code from the projector
ASCII Character	<CR>*sour=RGB#<CR>	><NULL>*sour=RGB#<CR><CR><LF><NULL>*sour=RGB#<CR><LF> <NULL>
Hex data	"0D" "2A" "73" "6F" "75" "72" "3D" "52" "47" "42" "23" "0D"	"3E" "00" "2A" "73" "6F" "75" "72" "3D" "52" "47" "42" "23" "0D" "0D" "0A" "00" "2A" "53" "4F" "55" "52" "3D" "52" "47" "42" "23" "0D" "0A" "00"

When telling selected input terminal.

	Sending commands from the PC	Returned code from the projector
ASCII Character	<CR>*sour=?#<CR>	><NULL>*sour=?#<CR><CR><LF><NULL>*sour=VID#<CR><LF><NULL>
Hex data	"0D" "2A" "73" "6F" "75" "72" "3D" "3F" "23" "0D"	"3E" "00" "2A" "73" "6F" "75" "72" "0D" "0D" "0A" "00" "2A" "53" "4F" "55" "52" "3D" "56" "49" "44" "23" "0D" "0A" "00"

When sending wrong command.

	Sending commands from the PC	Returned code from the projector
ASCII Character	<CR>*sour<CR>	><NULL>*sour<CR><CR><LF><NULL>*Illegal format#<CR><LF><NULL>
Hex data	"0D" "2A" "73" "6F" "75" "72" "0D"	"3E" "00" "2A" "73" "6F" "75" "72" "3D" "3F" "23" "0D" "0D" "0A" "00" "2A" "49" "6C" "6C" "65" "67" "61" "6C" "20" "66" "6F" "72" "6D" "61" "74" "23" "0D" "0A" "00"

When telling selected input terminal in standby mode.

	Sending commands from the PC	Returned code from the projector
ASCII Character	<CR>*sour=?#<CR>	>*sour=?#<CR><CR><LF>Block Item<LF><CR>
Hex data	"0D" "2A" "73" "6F" "75" "72" "3D" "3F" "23" "0D"	"3E" "2A" "73" "6F" "75" "72" "3D" "3F" "23" "0D" "0D" "0A" "42" "6C" "6F" "63" "6B" "20" "49" "74" "65" "6D" "0A" "0D"

### 3) Operation commands

**Table 1. Operation commands list (The EX200U can receive the command at the green status.)**

CMD	ACTION	FUNCTION (ASCII Character)	ACK (ASCII Character)	Projector Status				
				Standby	Logo	Searching	Source Display	Cooling
Power	Power On	*pow=on#	*POW=ON#	Green	Red	Red	Red	Red
	Power off	*pow=off#	*POW=OFF#	Red	Red	Green	Green	Red
	Power Status	*pow=?#	*POW=ON#(*POW=OFF#)	Green	Green	Red	Red	Red
Source Selection	VGA/YpPr	*sour=RGB#	*SOUR=RGB#	Red	Red	Green	Green	Red
	VGA/YpPr-2	*sour=RGB2#	*SOUR=RGB2#	Red	Red	Green	Green	Red
	Composite	*sour=vid#	*SOUR=VID#	Red	Red	Green	Green	Red
	SVIDEO	*sour=svid#	*SOUR=SVID#	Red	Red	Green	Green	Red
	Current source	*sour=?#	*SOUR=RGB# (*SOUR=VID# / *SOUR=SVID# etc)	Red	Red	Green	Green	Red
Audio	Mute On	*mute=on#	*MUTE=ON#	Red	Red	Green	Green	Red
	Mute Off	*mute=off#	*MUTE=OFF#	Red	Red	Green	Green	Red
	Mute Status	*mute=?#	*MUTE=ON#/*MUTE=OFF#	Red	Red	Green	Green	Red
	Volume +	*vol=+#	*VOL=+#	Red	Red	Green	Green	Red
	Volume -	*vol=-#	*VOL=-#	Red	Red	Green	Green	Red
	Volume	*vol=?#	*VOL=__# ( __ is volume value.)	Red	Red	Green	Green	Red
Picture Setting	Contrast +	*con=+#	*CON=+#	Red	Red	Green	Green	Red
	Contrast -	*con=-#	*CON=-#	Red	Red	Green	Green	Red
	Contrast value	*con=?#	*CON=__# ( __ is contrast value.)	Red	Red	Green	Green	Red
	Brightness +	*bri=+#	*BRI=+#	Red	Red	Green	Green	Red
	Brightness -	*bri=-#	*BRI=-#	Red	Red	Green	Green	Red
	Brightness value	*bri=?#	*BRI=__# ( __ is Brightness value)	Red	Red	Green	Green	Red
	Aspect 4:3	*asp=4:3#	*ASP=4:3#	Red	Red	Green	Green	Red
	Aspect 16:9	*asp=16:9#	*ASP=16:9#	Red	Red	Green	Green	Red
	Aspect Auto	*asp=AUTO#	*ASP=AUTO#	Red	Red	Green	Green	Red
Aspect Real	*asp=REAL#	*ASP=REAL#	Red	Red	Green	Green	Red	
Lamp Control	Lamp 1 Hour	*ltim=?#	*LTIM=__# ( __ is Lamp used hour.)	Green	Green	Green	Green	Green

	Normal mode	*lampm=lnor#	*LAMPM=LNOR#					
	Economic mode	*lampm =eco#	*LAMPM=ECO#					
	LampMode Status	*lampm=?#	*LAMPM=LNOR#(*LAMP M=ECO#)					
Miscellaneous	Blank On	<CR>*blank=on#<CR>	*BLANK=ON#					
	Blank Off	<CR>*blank=off#<CR>	*BLANK=OFF#					
	Blank Status	<CR>*blank=?#<CR>	*BLANK=ON#(*BLANK=OFF#)					
	Freeze On	<CR>*freeze=on#<CR>	*FREEZE=ON#					
	Freeze Off	<CR>*freeze=off#<CR>	*FREEZE=OFF#					
	Freeze Status	<CR>*freeze=?#<CR>	*FREEZE=ON#(*FREEZE=OFF#)					
	Menu On	<CR>*menu#<CR>	*MENU#					
	Up	<CR>*up#<CR>	*UP#					
	Down	<CR>*down#<CR>	*DOWN#					
	Right	<CR>*right#<CR>	*RIGHT#					
	Left	<CR>*left#<CR>	*LEFT#					
	enter	<CR>*enter#<CR>	*ENTER#					
	Auto	<CR>*auto#<CR>	*AUTO#					
	Zoom In	<CR>*zoomI#<CR>	*ZOOMI#					
	Zoom out	<CR>*zoomO#<CR>	*ZOOMO#					