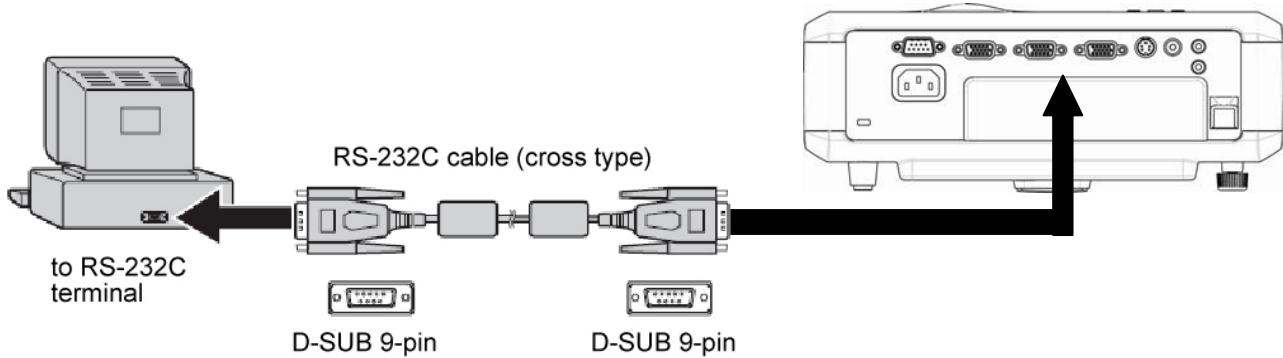


Controlling the projector using a personal computer

1. Connection:

Below shows the illustration of connection between PC and Projector.

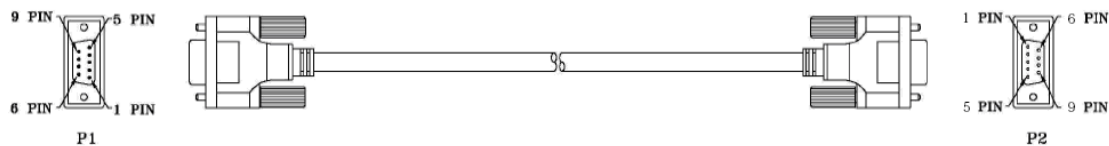


<CAUTION>

- ◆ 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>

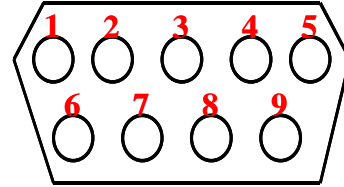


WIRE CONNECTION

| 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 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 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" "4E" "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# | | | | | | |