# Panasonic

S P E C   F I L E

**Product Number :** PT-**TX301R**

**Product Name :** Short-Throw DLP™ Projector

Short-Throw DLP™ Projector

# PT-**TX301R**

## Specifications

**Main unit**

| | | |
|---|---|---|
| Power supply | | 100–240 V AC, 50/60 Hz |
| Power consumption | | 301 W (0.5 W when STANDBY MODE set to ECO[*1], 6.0 W when STANDBY MODE set to NORMAL.[*2]) |
| DLP™ chip | Panel size | 14.0 mm (0.55 inches) diagonal (4:3 aspect ratio) |
| | Display method | DLP™ chip × 1, DLP™ system |
| | Pixels | 786,432 (1,024 × 768) pixels |
| Lens | | Fixed (0.626:1 throw ratio), manual focus, F 2.8, f 7.26 mm |
| Lamp | | 240 W UHM lamp × 1 |
| Screen size | | 1.02–5.08 m (40–200 inches), 4:3 aspect ratio |
| Brightness[*3] | | 3,000 lumens (Lamp Power : Normal, Color Mode : Dynamic) |
| Center-to-corner uniformity[*3] | | 80% |
| Contrast[*3] | | 7,500:1 (full on/off, Lamp Power: AUTO, input signal: RGB, Color Mode: Dynamic) |
| Resolution | | 1,024 x 768 pixels (Input signals that exceed this resolution will be converted to 1,024 x 768 pixels.) |
| Scanning frequency | HDMI | $f_H$: 15 kHz–91.1 kHz, $f_V$: 24 Hz–85.1 Hz, dot clock 25–162 MHz |
| | RGB | $f_H$: 15 kHz–91.1 kHz, $f_V$: 24 Hz–85.1 Hz, dot clock: 162 MHz or lower |
| | YP$_B$P$_R$ (YC$_B$C$_R$) | 525i (480i): $f_H$ 15.75 kHz; $f_V$ 60 Hz, |
| | | 625i (576i): $f_H$ 15.63 kHz; $f_V$ 50 Hz, |
| | | 525p (480p): $f_H$ 31.50 kHz; $f_V$ 60 Hz, |
| | | 625p (576p): $f_H$ 31.25 kHz; $f_V$ 50 Hz, |
| | | 750 (720)/60p: $f_H$ 45.00 kHz; $f_V$ 60 Hz, |
| | | 750 (720)/50p: $f_H$ 37.50 kHz; $f_V$ 50 Hz, |
| | | 1125 (1080)/60i: $f_H$ 33.75 kHz; $f_V$ 60 Hz, |
| | | 1125 (1080)/50i: $f_H$ 28.13 kHz; $f_V$ 50 Hz, |
| | | 1125 (1080)/24p: $f_H$ 27.00 kHz; $f_V$ 24 Hz, |
| | | 1125 (1080)/60p: $f_H$ 67.50 kHz; $f_V$ 60 Hz, |
| | | 1125 (1080)/50p: $f_H$ 56.25 kHz; $f_V$ 50 Hz |
| | Video | $f_H$: 15.75 kHz, $f_V$: 60 Hz [NTSC/NTSC4.43/PAL-M/PAL60] |
| | | $f_H$: 15.63 kHz, $f_V$: 50 Hz [PAL/PAL-N/SECAM] |
| Optical axis shift | | 10:-1.5 |
| Keystone correction range | | Vertical: ±40° (manual) |
| Installation | | Ceiling/floor, front/rear |
| Terminals | HDMI IN | HDMI 19-pin x 1 (Deep Color, compatible with HDCP) 525i(480i)[*4], 625i(576i)[*4], 525p (480p), 625p (576p), 750 (720)/60p, 750 (720)/50p, 1125 (1080)/60i, 1125 (1080)/50i, 1125 (1080)/24p, 1125 (1080)/60p, 1125 (1080)/50p, VESA CVT-RB compliant VGA (640 × 480) – UXGA (1,600 × 1,200), Audio signal: linear PCM (sampling frequencies: 48 kHz, 44.1 kHz, 32 kHz) |
| | COMPUTER 1/2 IN | D-sub HD 15-pin (female) × 2, |
| | R, G, B | G: 0.7 Vp-p (1.0 Vp-p for sync on G), 75 ohms; B, R: 0.7 Vp-p, 75 ohms; HD/VD, SYNC: high impedance, TTL (positive/negative) |
| | Y, P$_B$ (C$_B$), P$_R$ (C$_R$) | Y: 1.0 Vp-p (including sync signal); P$_B$ (C$_B$), P$_R$ (C$_R$): 0.7 Vp-p, 75 ohms |
| | VIDEO IN | Pin jack × 1, 1.0 Vp-p, 75 ohms |
| | MONITOR OUT | D-sub HD 15-pin (female) × 1 |
| | AUDIO 1 IN | M3 (L, R) × 1, 0.5 Vrms (for COMPUTER) |
| | AUDIO 2 IN | M3 (L, R) × 1, 0.5 Vrms (for VIDEO) |
| | AUDIO OUT | Mini jack × 1 (monitor out: 0– 2.0 Vrms, variable) |
| | SERIAL IN | D-sub 9-pin (female) × 1 for external control (RS-232C compliant) |
| | LAN | RJ-45 × 1 for network connection, 100Base-TX/10Base-T, compliant with PJLink™ (class 1) |
| | MINI USB (in the Interactive camera) | Mini USB × 1 (For Interactive function) |

| | |
|---|---|
| Built-in speaker | 7 × 4 cm Oval x1 output power 8 W (Monaural) |
| Power cord length | 3.0 m (9 ft 10 in) |
| Cabinet materials | Molded plastic (PC) |
| Dimensions (W × H × D) | 288 x 106*[4] x 246*[5] mm (11-11/32 x 4-3/16*[4] x 9-11/16*[5] inches) |
| Weight | Approx. 2.5 kg (5.5 lbs) |
| Operation noise*[3] | 37 dB (Lamp power: Normal); 32 dB (Lamp power: Eco1); 29 dB (Lamp power: Eco2) |
| Operating temperature | 5°C – 40°C (41°F – 104°F) [Less than 750 m (2,500 ft) above sea level]; 5°C – 35°C (41°F – 95°F) [750 – 1,500 m (2,500 – 5,000 ft) above sea level] 5°C – 30°C (41°F – 86°F) [1,500 – 3,000 m (5,000 – 10,000 ft) above sea level] |
| Operating humidity | 20%–80% (no condensation) |

### Remote control unit

| | |
|---|---|
| Power supply | 3 V DC (Lithium coin cell battery x 1) |
| Operation range*[7] | Approx. 8 m (26 ft 3 in) when operated from directly in front of the signal receptor |
| Dimensions (W × H × D) | 40.6 x 86.5 x 7.2 mm (1-19/32 × 3-13/32 × 9/32 inches) |
| Weight | Approx. 23 g (0.8 oz) (including battery) |

### Supplied accessories

Power cord (× 1) (× 2 for PT-TX301REA)
Wireless remote control unit (× 1)
Battery for remote control (CR2025 type × 1)
Computer cable (for VGA) (× 1)
Interactive Pen (× 2)
AAA type battery (× 4)
USB cable (5.0 m) (× 1)
Cable tie (× 1)
Software CD-ROM (LightPenⅢ) (× 1)

### Optional accessories

| | |
|---|---|
| Ceiling mount bracket | ET-PKV100H (for high ceilings) ET-PKV100S (for low ceilings) |
| Attachment for ceiling mount bracket | ET-PKL300B |
| Replacement lamp unit | ET-LAL341 |
| Interactive Pen | ET-PEN100 |
| Interactive Pointer | ET-PNT100 |

**Weights and dimensions shown are approximate. Specifications and appearance are subject to change without notice.**
**\*1  When [VGA Out (Standby)] / [In Standby Mode (Audio)] are all set to [Off].**
**\*2  When [VGA Out (Standby)] / [In Standby Mode (Audio)] are all set to [On].**
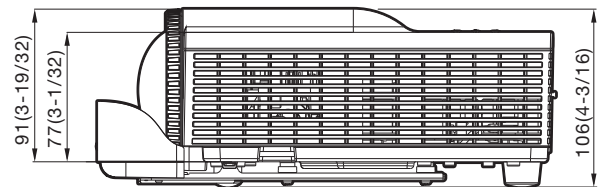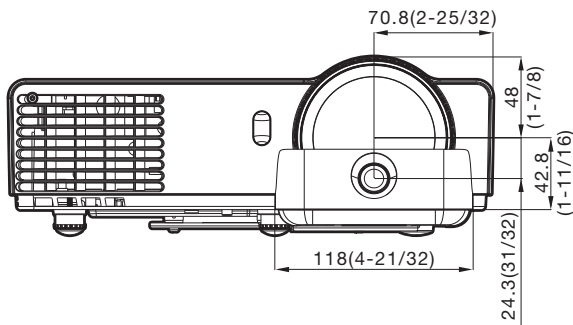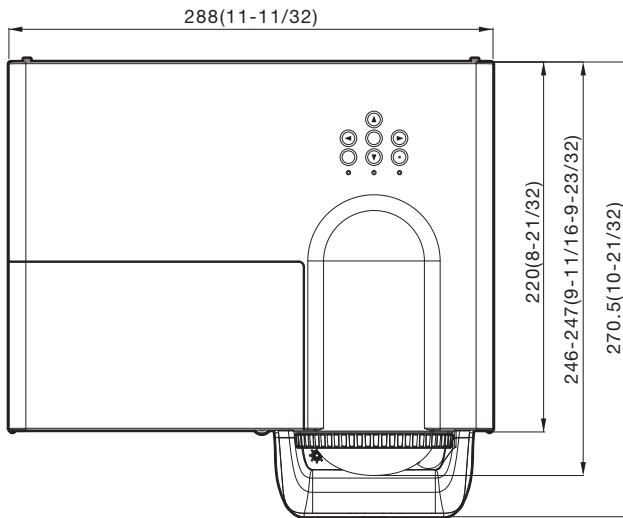**\*3  Measurement, measuring conditions, and method of notation all comply with ISO 21118 international standards.**
**\*4  Only compatible with dot clock frequency of 27 MHz (pixel repetition signal)**
**\*5  With legs at shortest position.**
**\*6  With lens at shortest position.**
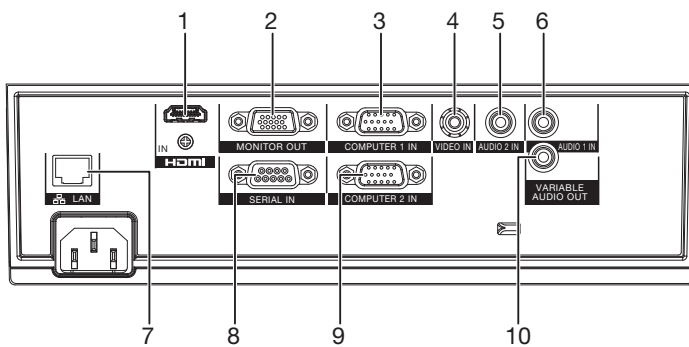**\*7  Operation range differs depending on environments.**

## Dimensions

288(11-11/32)

220(8-21/32)

246-247(9-11/16-9-23/32)

270.5(10-21/32)

70.8(2-25/32)

48 (1-7/8)

42.8 (1-11/16)

24.3(31/32)

118(4-21/32)

91(3-19/32)

77(3-1/32)

106(4-3/16)

unit : mm (inch)
**NOTE: This illustration is not drawn to scale.**

## Terminals

1   2   3   4   5   6

IN

MONITOR OUT   COMPUTER 1 IN   VIDEO IN   AUDIO 2 IN   AUDIO 1 IN

HDMI

LAN   SERIAL IN   COMPUTER 2 IN   VARIABLE AUDIO OUT

7   8   9   10
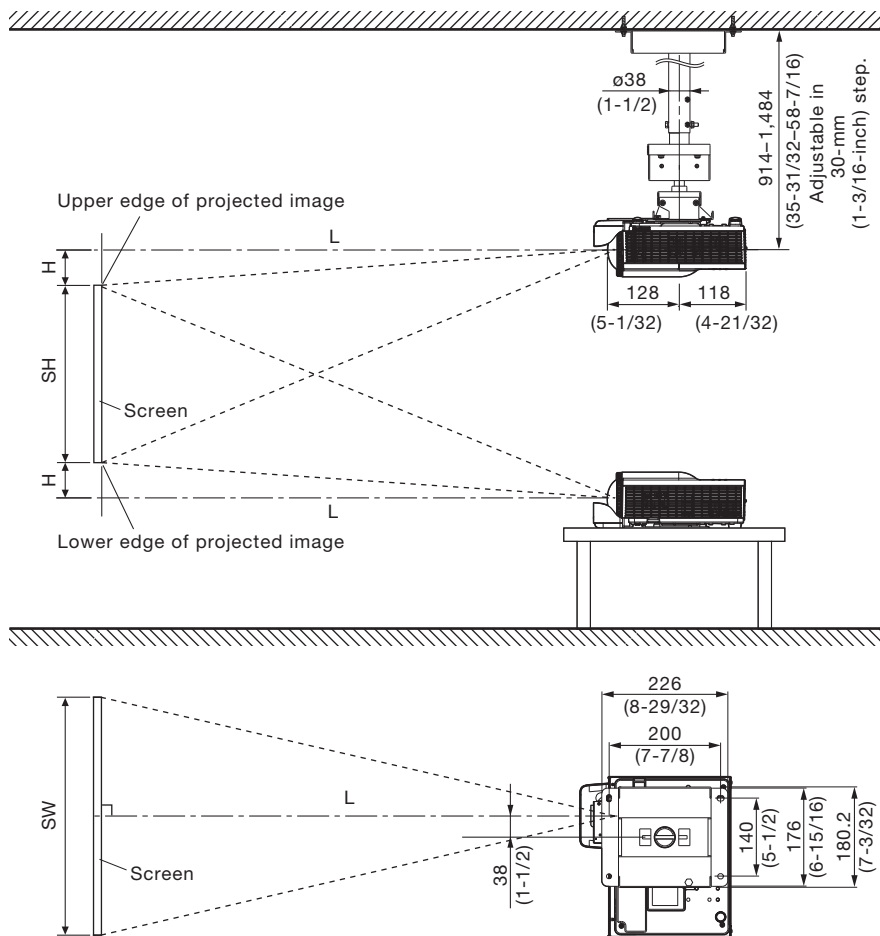
1   HDMI input

2   Monitor output

3   Computer 1 input

4   Video input

5   Audio 2 input for VIDEO

6   Audio 1 input for COMPUTER

7   LAN connector

8   Serial input

9   Computer 2 input

10  Audio output

## Standard setting-up position

unit : mm (inch)

ø38
(1-1/2)

914–1,484
(35-31/32–58-7/16)
Adjustable in
30-mm
(1-3/16-inch) step.

Upper edge of projected image

L

H

SH

Screen

H

L

Lower edge of projected image

128
(5-1/32)

118
(4-21/32)

226
(8-29/32)

200
(7-7/8)

SW

L

Screen

38
(1-1/2)

140
(5-1/2)

176
(6-15/16)

180.2
(7-3/32)

**NOTE:**

**Illustrations show the projector installed using optional ceiling mount bracket ET-PKV100H and attachment ET-PKL300B.**

**This illustration is not drawn to scale.**

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**Caution:**
- All construction work should be done by a qualified technician.
- When mounting to the ceiling, use the special mounting bracket. Furthermore, in order to prevent it from falling down from the ceiling, use the supplied wire on the mounting bracket.

### Projection distance for 4:3 aspect ratio screen

unit: meters (feet)

| Projection size [diagonal] | Projection distance [L] | | Height from the edge of screen to center of lens [H] | |
|---|---|---|---|---|
| 1.02 m /　40˝ | 0.5 | (1.7) | -0.09 | (-0.30) |
| 1.27 m /　50˝ | 0.6 | (2.1) | -0.11 | (-0.38) |
| 1.52 m /　60˝ | 0.8 | (2.5) | -0.14 | (-0.45) |
| 1.78 m /　70˝ | 0.9 | (2.9) | -0.16 | (-0.53) |
| 2.03 m /　80˝ | 1.0 | (3.3) | -0.18 | (-0.60) |
| 2.29 m /　90˝ | 1.1 | (3.8) | -0.21 | (-0.68) |
| 2.54 m / 100˝ | 1.3 | (4.2) | -0.23 | (-0.75) |
| 3.05 m / 120˝ | 1.5 | (5.0) | -0.27 | (-0.90) |
| 3.81 m / 150˝ | 1.9 | (6.3) | -0.34 | (-1.13) |
| 5.08 m / 200˝ | 2.5 | (8.3) | -0.46 | (-1.50) |

### Calculation of the projection distance

For a screen size different from the above, use the equation below to calculate the projection distance.

Aspect ratio 4:3
$$L \text{ (m)} = \text{(diagonal screen size in inches)} \times 0.01272$$
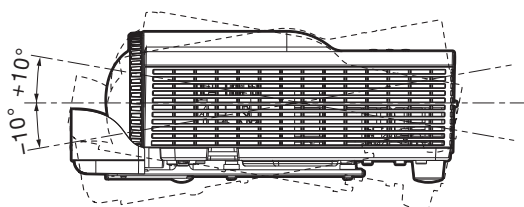
**NOTE:**
**Distances calculated with the above equations will include a slight error.**

### Installable angle

Install the projector at an angle within the range shown below.

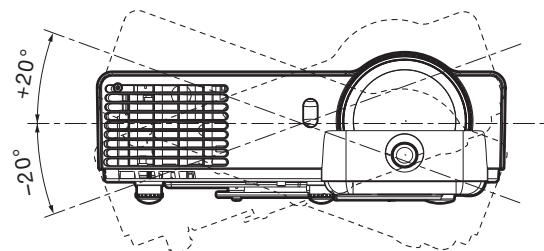**• Vertical direction**
The projector may be installed at a vertical angle of 10°.

**• Horizontal direction**
The projector may be installed at a horizontal angle of 20°.

## List of compatible signals

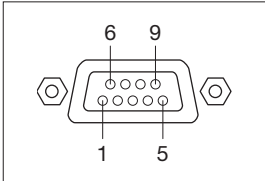The signals that can be input to this projector are shown in the table below.

| Display mode | Display resolution (dots)[1] | Scanning frequency H (kHz) | V (Hz) | Dot clock frequency (MHz) | Format |
|---|---|---|---|---|---|
| NTSC/NTSC4.43/PAL-M/PAL60 | 720 × 480i | 15.7 | 59.9 | – | VIDEO |
| PAL/PAL-N/SECAM | 720 × 576i | 15.6 | 50.0 | – | |
| 525i (480i) | 720 × 480i | 15.7 | 59.9 | 27.0 | HDMI |
| | | 15.7 | 59.9 | 13.5 | YC$_B$C$_R$ |
| 625i (576i) | 720 × 576i | 15.6 | 50.0 | 27.0 | HDMI |
| | | 15.6 | 50.0 | 13.5 | YC$_B$C$_R$ |
| 525p (480p) | 720 × 483 | 31.5 | 59.9 | 27.0 | HDMI/YP$_B$P$_R$ |
| 625p (576p) | 720 × 576 | 31.3 | 50.0 | 27.0 | |
| 750(720)/60p | 1280 × 720 | 45.0 | 60.0 | 74.3 | |
| 750(720)/50p | | 37.5 | 50.0 | 74.3 | |
| 1125(1080)/60i | 1920 × 1080i | 33.8 | 60.0 | 74.3 | |
| 1125(1080)/50i | | 28.1 | 50.0 | 74.3 | |
| 1125(1080)/24p | 1920 × 1080 | 27.0 | 24.0 | 74.3 | |
| 1125(1080)/60p | | 67.5 | 60.0 | 148.5 | |
| 1125(1080)/50p | | 56.3 | 50.0 | 148.5 | |
| VGA | 640 × 480 | 31.5 | 59.9 | 25.2 | HDMI/RGB |
| | | 35.0 | 66.7 | 30.2 | |
| | | 37.5 | 75.0 | 31.5 | |
| | | 37.9 | 72.8 | 31.5 | |
| | | 43.3 | 85.0 | 36.0 | |
| SVGA | 800 × 600 | 35.1 | 56.3 | 36.0 | |
| | | 37.9 | 60.3 | 40.0 | |
| | | 46.9 | 75.0 | 49.5 | |
| | | 48.1 | 72.2 | 50.0 | |
| | | 53.7 | 85.1 | 56.3 | |
| MAC16 | 832 × 624 | 49.7 | 74.6 | 57.3 | |
| XGA | 1024 × 768 | 48.4 | 60.0 | 65.0 | |
| | | 56.5 | 70.1 | 75.0 | |
| | | 60.0 | 75.0 | 78.8 | |
| | | 68.7 | 85.0 | 94.5 | |
| WXGA | 1280 × 720 | 44.8 | 60.0 | 74.5 | |
| | 1280 × 768 | 47.8 | 59.9 | 79.5 | |
| | 1280 × 768 | 60.3 | 74.9 | 102.3 | |
| | 1280 × 800 | 49.7 | 59.8 | 83.5 | |
| | 1366 × 768 | 47.7 | 59.8 | 84.8 | |
| MAC21 | 1152 × 870 | 68.7 | 75.1 | 100.0 | |
| MSXGA | 1280 × 960 | 60.0 | 60.0 | 108.0 | |
| | | 75.2 | 75.0 | 130.0 | |
| SXGA | 1280 × 1024 | 64.0 | 60.0 | 108.0 | |
| | | 80.0 | 75.0 | 135.0 | |
| | | 91.2 | 85.0 | 157.5 | |
| SXGA+ | 1400 × 1050 | 65.3 | 60.0 | 121.8 | |
| UXGA | 1600 × 1200 | 75.0 | 60.0 | 162.0 | |

**\*1  The "i" appearing after the resolution indicates an interlaced signal.**

## Serial connector

The serial connector complies with RS-232C. To control the projector from a personal computer, commands must be input through communication software, based on the format and satisfying the communication conditions shown below.
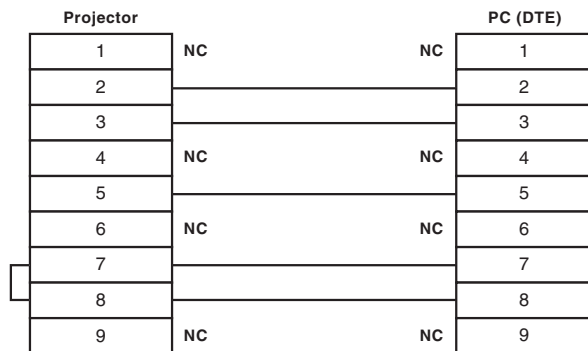
### Pin assignments and signal names

| No. | Signal name | Description | No. | Signal name | Description |
|-----|-------------|-------------|-----|-------------|-------------|
| 1 | – | NC | 6 | – | NC |
| 2 | TXD | Send data | 7 | CTS | Connected internally |
| 3 | RXD | Receive data | 8 | RTS | Connected internally |
| 4 | – | NC | 9 | – | NC |
| 5 | GND | Ground | | | |

6  9

1  5

**D-sub 9-pin (female) Serial input**

### Communication conditions (factory setting)

| | |
|-----|-----|
| Signal level | RS-232C-compliant |
| Synchronization method | Start-stop synchronization |
| Baud rate | 19,200 bps |
| Parity | None |
| Character length | 8 bits |
| Stop bit | 1 bit |
| X parameter | None |
| S parameter | None |

### Cable specifications

| Projector | | | | PC (DTE) |
|-----------|-----|-----|-----|----------|
| 1 | NC | | NC | 1 |
| 2 | | | | 2 |
| 3 | | | | 3 |
| 4 | NC | | NC | 4 |
| 5 | | | | 5 |
| 6 | NC | | NC | 6 |
| 7 | | | | 7 |
| 8 | | | | 8 |
| 9 | NC | | NC | 9 |

## Basic format

Transmission from the computer begins with STX, then the ID, command, parameter, and ETX are sent in this order. Add parameters according to the details of control.

| STX | : | C1 C2 C3 | : | P1 P2 ... Pn | ETX |

Start (1 byte)   Colon (1 byte)   Command (3 bytes) (Control and/or query commands)   Colon (1 byte)   Parameters (undefined length)   End (1 byte)
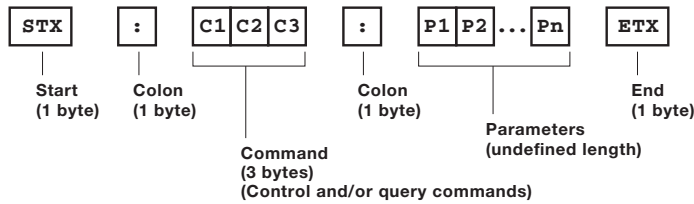
* STX and ETX are character chords. STX is 02 and ETX is 03 when expressed in hexadecimal.

**CAUTION**
- It may not be possible to send or receive commands for about 10 to 60 seconds when the lamp is first turned on. If this occurs, wait for 60 seconds, then try sending or receiving again.
- When sending multiple commands, be sure to wait for at least 0.5 second after receiving a response from the projector before sending the next command.
- Additional time is sometimes required for response due to processing inside the projector. Set the time-out period for command response to 10 seconds or more.

## Control commands

| Command : Parameter | Function | | Callback |
|---|---|---|---|
| **PON** | POWER (STANDBY) | Standby power on | **PON** |
| **POF** | | Standby power off | **POF** |
| **IIS:HD1** | INPUT SELECT | HDMI | **IIS:HD1** |
| **IIS:RG1** | | Computer 1 | **IIS:RG1** |
| **IIS:RG2** | | Computer 2 | **IIS:RG2** |
| **IIS:VID** | | Video | **IIS:VID** |
| **OSH:0** | AV MUTE | AV mute off | **OSH:0** |
| **OSH:1** | | AV mute on | **OSH:1** |

* Do not send PON, POF or OSH commands continuously in a short period of time. Doing so may burst the lamp or shorten the lamp replacement cycle.

* When a command that cannot be executed during standby mode is sent, the projector will send an ER401 command in reply.

## Status request commands

| Command:Parameter | Function | Callback | Description |
|---|---|---|---|
| **QPW** | Main power status | **000** | Standby |
| | | **001** | On |
| **Q$S** | Lamp on status | **0** | Standby |
| | | **1** | Lamp on control in progress |
| | | **2** | Lamp on |
| | | **3** | Lamp off control in progress |
| **QSH** | AV mute function status | **0** | Off |
| | | **1** | On |
| **QIN** | Input signal status | **HD1** | HDMI |
| | | **RG1** | Computer 1 |
| | | **RG2** | Computer 2 |
| | | **VID** | Video |
| **QVX:RTMI0** | Projector run time | **p1p2p3p4p5** | 00000h−99999h |
| **Q$L** | Lamp run time | **p1p2p3p4** | 0000h−9999h |
| **QTM:0** | Temperature status | **p1p2p3p4/p5p6p7p8** [*1] | p0 = Internal temperature |

*1  p1p2p3p4: Celsius (°C), p5p6p7p8: Fahrenheit (°F)

**NOTE: If a wrong command is received, the projector will send an ER401 or ER402 command to the computer.**

## Command example

To set the AV mute function off, send the command as shown below.

**STX**     **OSH**     **:**     **0**     **ETX**

**Start**     **Command**     **Parameter**     **End**

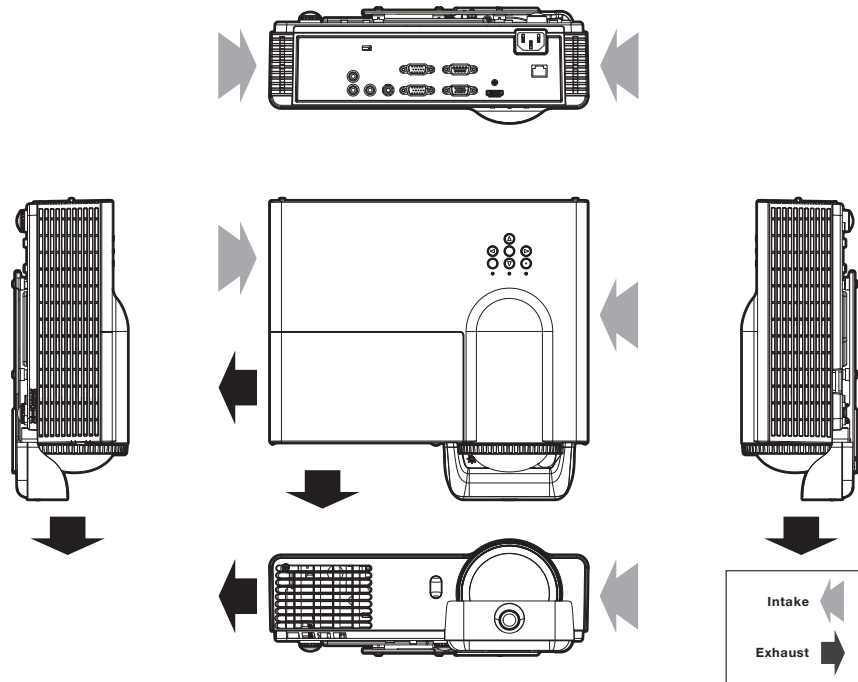**NOTE: When sending commands without parameters, a colon (:) is not necessary.**

## Notes on projector placement and operation

The projector uses a high-wattage lamp that becomes very hot during operation. Please observe the following precautions.

1.  Never place objects on top of the projector while it is operating.
2.  Make sure there is the unobstructed space as shown below or more around the projector's exhaust openings. In addition to this space, also ensure that there is a sufficient work space for removing and installing the lamp, air filter and other parts.
3.  Make sure that nothing blocks the projector's air intake and exhaust openings. Also, install the projector so that cool or hot air from other air conditioning equipment does not flow directly toward the projector's air intake or exhaust openings.
4.  Do not install the projector in an enclosed space. If it is necessary to install it in an enclosed space, add a separate ventilation system. If ventilation is insufficient, hot air will accumulate at the intake opening. This may cause the projector's protective circuit to interrupt projector operation.

500 mm (19-11/16″) or more          1000 mm (39-3/8″) or more          500 mm (19-11/16″) or more
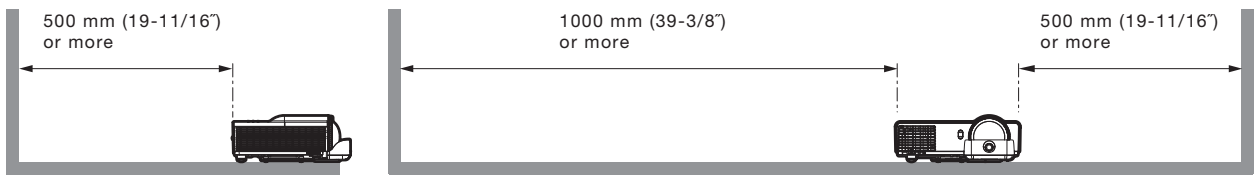
## Direction of air intake and exhaust

Intake

Exhaust

## Operating the projector continuously

1.  If the projector is to be operated continuously 22 hours or more, lamp replacement cycle duration becomes shorter.
2.  The lamp replacement cycle duration becomes shorter if the projector is operated repeatedly for short periods (one hour or less).

**Panasonic**