

PanL

PD40 Display Datasheet



1 Introduction

PanL PD40 Display works as an interactive client in PanL Smart Living (PSL) environment. Configuration is done via PanL Smart Living (PSL) mobile app. Users may use its intuitive interface to control appliances such as lighting, curtain, fan, aircon, audio etc. in PSL environment.

Unlike mobile devices that require recharging, PD40 is supplied with continuous power supply from PanL Hub through an RJ45-JST8 cable.

PD40 is built with 4.0-inch full color TFT LCD powered by BRTSys's very own Embedded Video Engine (EVE) Graphic Controller chip BT815 that enables rich and intuitive multi-touch GUI displays.

1.1 Features

- Raspberry Pi RP2040 Dual ARM Cortex-M0+ @ 133MHz with Real-Time Operating System
- Built-in Advanced BT815 Graphics Controller.

- 4.0 inches 480x480 resolution with Projected Capacitive Multi-Touch (PCAP) LCD display
- CAP Touch supports 5-point multi-touch and can easily be controlled by fingers
- Fanless system and low power consumption
- Configurable for use with different PanL smart living appliances
- Built-in Buzzer for sound output
- Power source 24VDC comes from RJ45-JST8 cable
- Stylish design for smart living and room management applications
- Operating temperature range: 0°C to +55°C
- Supported platform applications:
BRTSys's PanL Smart Living product
(Visit <https://brtsys.com/resources>)



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2 Part Numbers/ Ordering Information

Part#	Description
PD400000A	4.0" PanL PD40 Display
PA001400A	PD40 Wall Box Mounting Bracket
PA001500A	PD40 Rear Cover Mounting Bracket

Table 1 - PanL PD40 Display - Part Numbers

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3 Specifications

Platform	Microcontroller	RP2040 (Dual ARM Cortex-M0+)
	Graphic Controller	BT815
	Display Size	3.95 inches
	Display Type	TFT-LCD with LED Backlight
	Display Colour	16.7M
Display	Touch / Glass	Projected Capacitive
	Resolution	480 X 480
	Active Display Area	71.86 (W) X 70.18 (H) mm
	Brightness	700 nits
	Contrasts	800:1
	Viewing Angles	80 degrees (U/D/L/R)
	Sound Alert	Buzzer
Features	Reset Button	Yes
	Rotary ID Switch	Yes
	Connectivity	JST8 Connector (RS485)
Interface	RS485 Termination:	Yes (ID Set 7)
	Input Voltage	DC 24V /100mA
Power	Operating Current	70mA
	Screen Timeout Current	50mA
	Colours	Black
Physical Characteristics	Assembly Method	Wall Mount/Glass Mount/Electric Box Mount
	Dimensions	89 x 89 x 12 mm (Without Mount Bracket)
	Enclosure	Polycarbonates
	Weight	125g (including Rear Cover Mounting Bracket assembly)
	Operating Temperature	0 to 55°C
Environmental Limits	Storage Temperature	0 to 60°C
	Ambient Relative Humidity	20 to 85% (non-condensing)
	Standards & Certifications	EMC (FCC/CE)
BS EN 55032:2015+A11:2020 Class B		
AS/NZS CISPR 32:2015+AMD1:2020 Class B		
CISPR 32:2015+AMD1:2019 Class B		
EN 55035:2017+A11:2020		
BS EN 55035:2017+A11:2020		
FCC CFR Title 47, PART 15, Subpart B, Class B		
ANSI C63.4-2014 ANSI C63.4a-2017		
PACKAGE CONTENTS	Device	1x PD40
	Accessories	1x 5-meter RJ45 to JST8 cable
		1x Wall Box Mounting Bracket (P/N: PA001400A)
		1x Rear Cover Mounting Bracket (P/N PA001500A)
		1x Glass mount cover sheet
		2x Double sided tape for Glass mount

Table 2 – PanL PD40 Display Specifications

4 Hardware Features

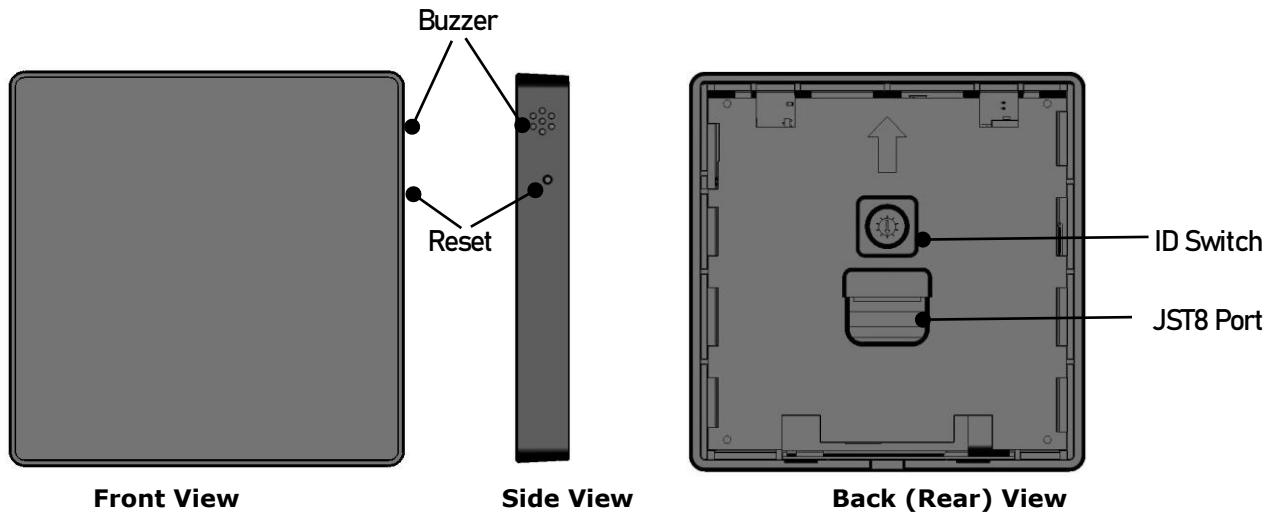


Figure 1 - PanL PD40 Display Hardware Features

4.1 Power Supply

Power is received from PanL Hub via JST8 Port on PD40. The supply voltage is 24V DC, and the nominal current is 100mA.

4.2 Microcontroller

The RP2040 Dual ARM Cortex-M0+ high-performance microcontroller device (MCU) with 264kB of embedded SRAM from Raspberry Pi.

4.3 Graphic Controller

The BT815 is an Advanced Embedded Video Engine (EVE) with high resolution graphics and video playback which features graphics and audio controls as well as a touch screen interface.

4.4 JST8 Port

Power and data are provided by JST8 (1.5mm pitch) ports connected to the PanL Hub, which provides DC24V/100mA and data.

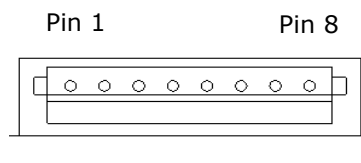


Figure 2 - JST8 Port

Pin Number	1	2	3, 6	4, 5	7, 8
Function	RS485 B/Z	RS485 A/Y	Detection	DC24V IN	GND

Table 3 - JST8 Port Pin Function

4.5 Reset Button

Inside the PD40, a device reset pin is included which may be used to restart the PD40 device if required.

4.6 ID Switch

An ID switch at the back of PD40 Display can be configured for unique settings.

- Use a Philips head screwdriver to set a unique ID number between 0-7 (8- 9 are reserved) if several PD40 Displays will be connected to a same port of PanL Hub.
- Several PD40 Displays connected to different PanL Hub ports can share the same unique ID number.
- Set ID number to 7 to enable the RS485 terminator.

4.7 Buzzer

This buzzer is used for configuring touch sound to provide audible feedback, allowing users to perceive and confirm touch interactions with display.

5 Mechanical Dimensions

Figure 3 illustrates the PanL PD40 device's body dimensions.

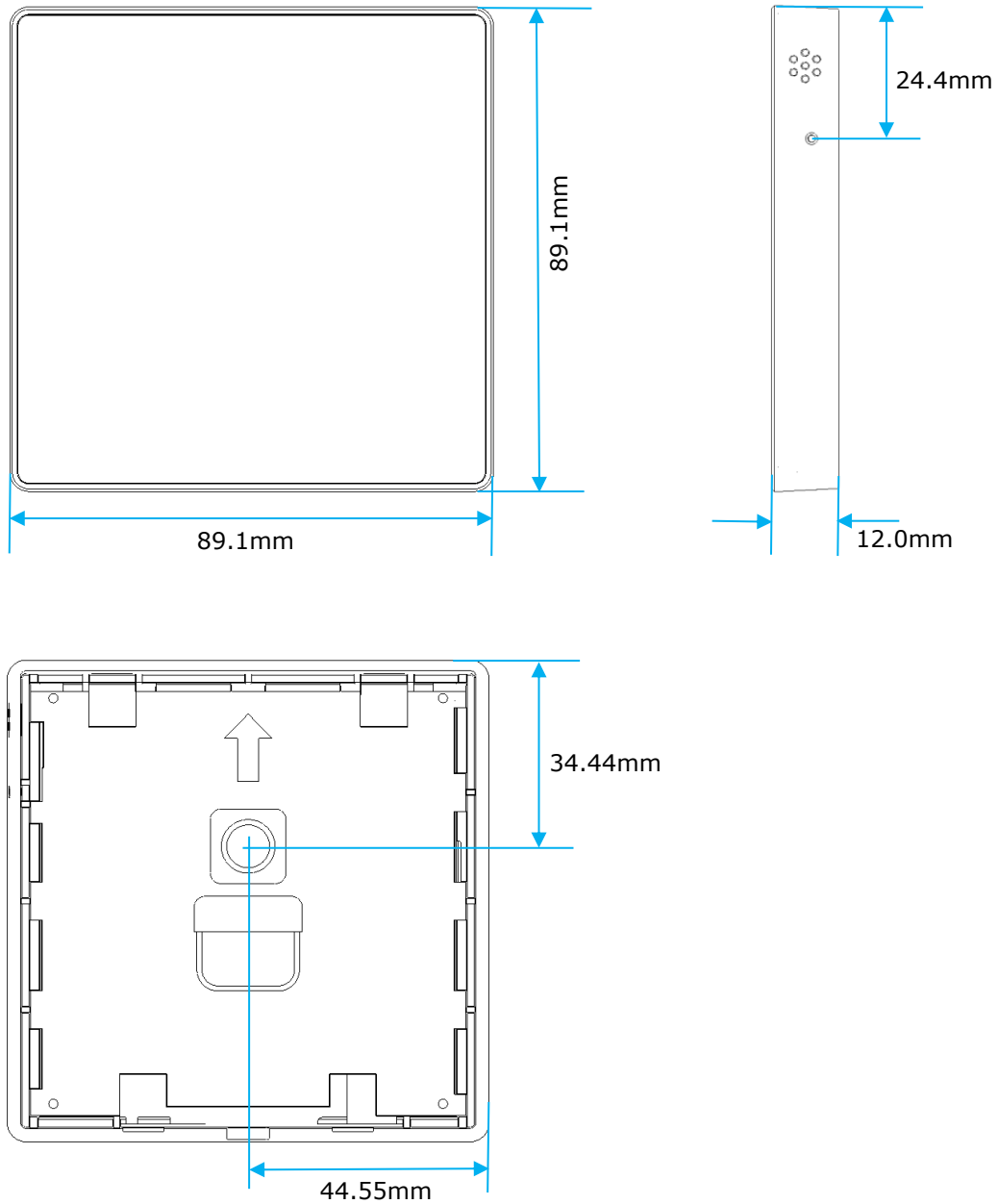


Figure 3 - PanL PD40 Display's Body Dimensions

Figure 4 below illustrates:

- (a) the dimensions of the slots and screw holes on PD40 rear cover, as measured from PD40 rear cover's center
- (b) the dimensions of PD40 device when fitted with rear cover

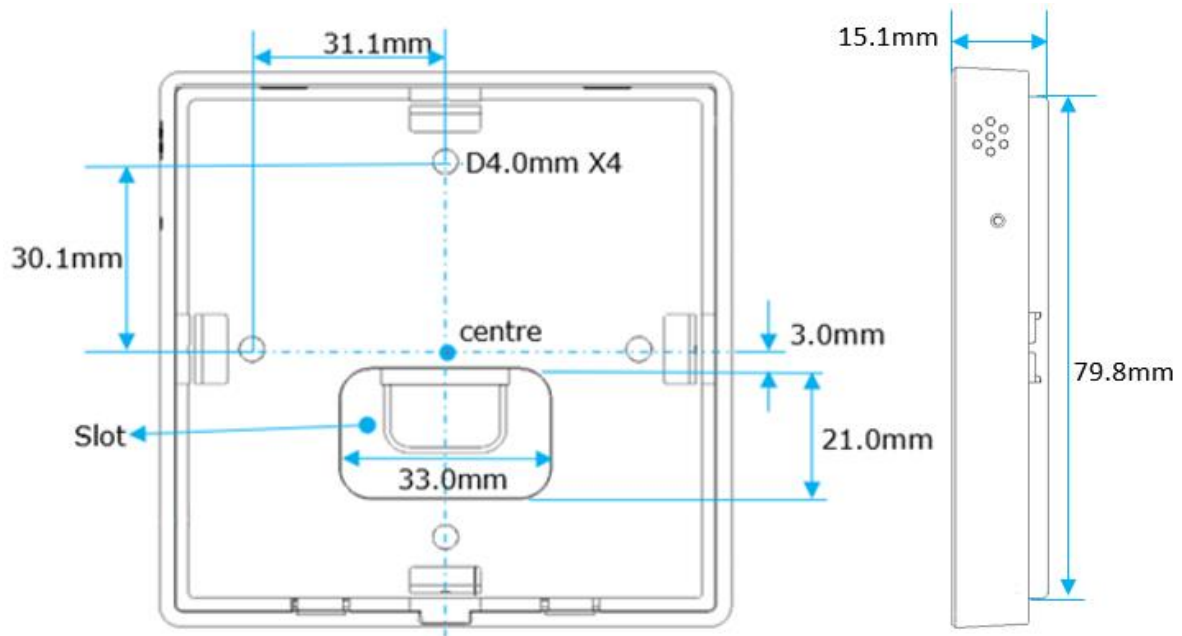


Figure 4 - PD40 Rear Cover's Slots and Screw Holes Drawings (Back View/Side View)

Figure 5 below illustrates

- (a) the dimensions of the slots and screw holes of Wall-Box's mounting bracket, as measured from the bracket's center
- (b) the dimensions of PD40 device when fitted with a Wall-Box's mounting bracket

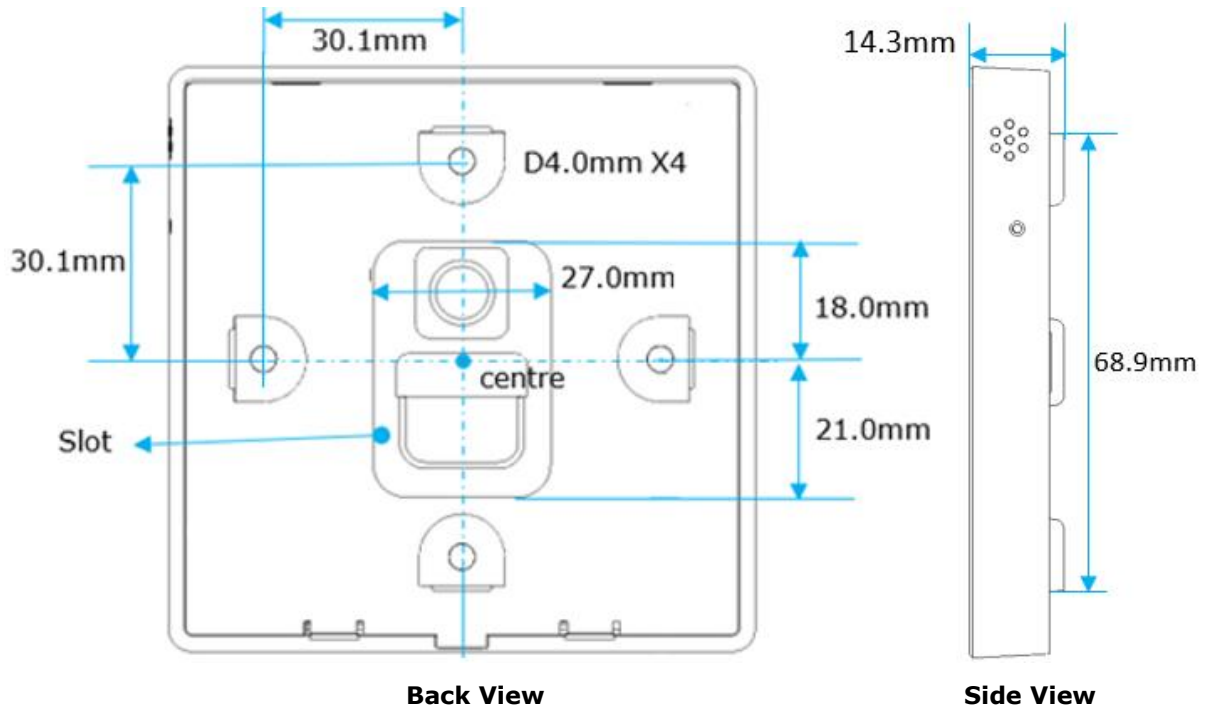


Figure 5 - Wall-Box's Mount Bracket Slots and Screw Holes Drawings (Back View/Side View)

6 Mounting Options

One of the following different mounting options may be selected for PD40.

Note: Wall Mounting, Glass Mounting and 86 Type Electrical Box Mounting may use the same Rear Cover Mounting Bracket while Wall Box Mounting will use a different one (Wall Box Mounting Bracket).

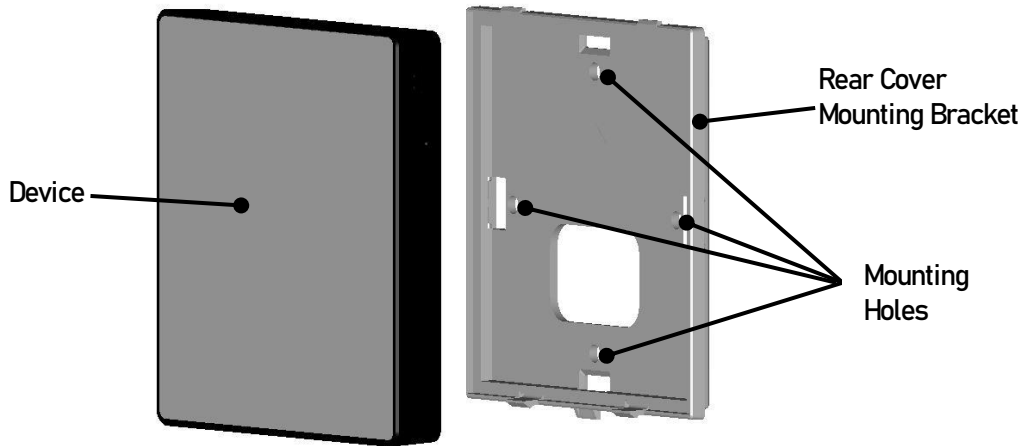


Figure 6 - Wall Mounting

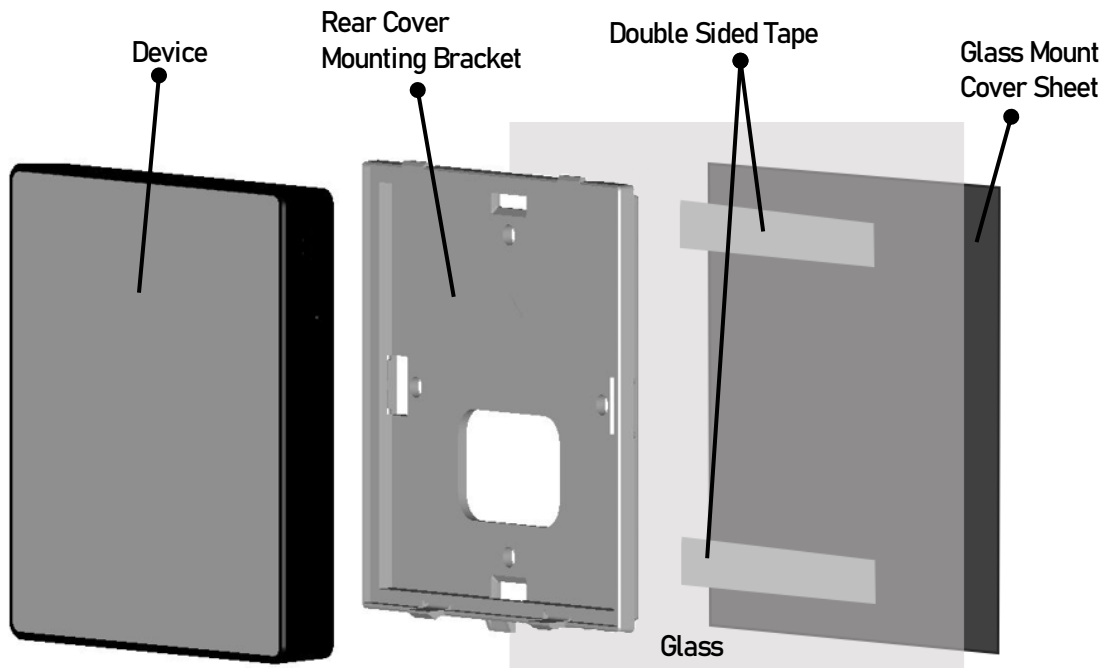


Figure 7 - Glass Mounting

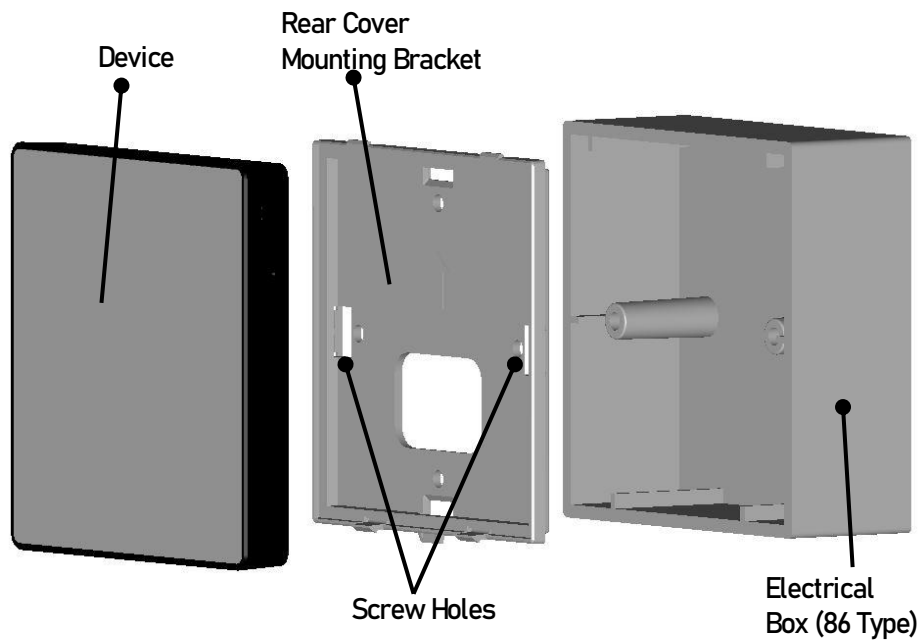


Figure 8 - Electrical Box (86 Type) Mounting

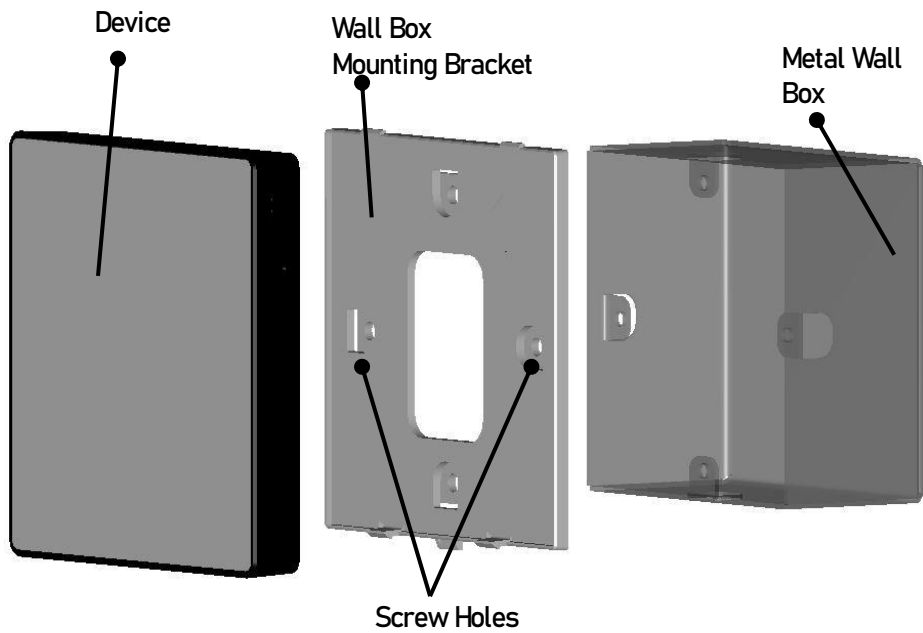


Figure 9 - Wall Box Mounting

Figure 1010 illustrates the cable wiring direction options for PD40's wall mounting (in Back View). The cable can pass through one of the four rectangle slots on the rear cover/wall-box mount bracket for the electrical junction box/wall-box mount. (Refer to Figure 4).

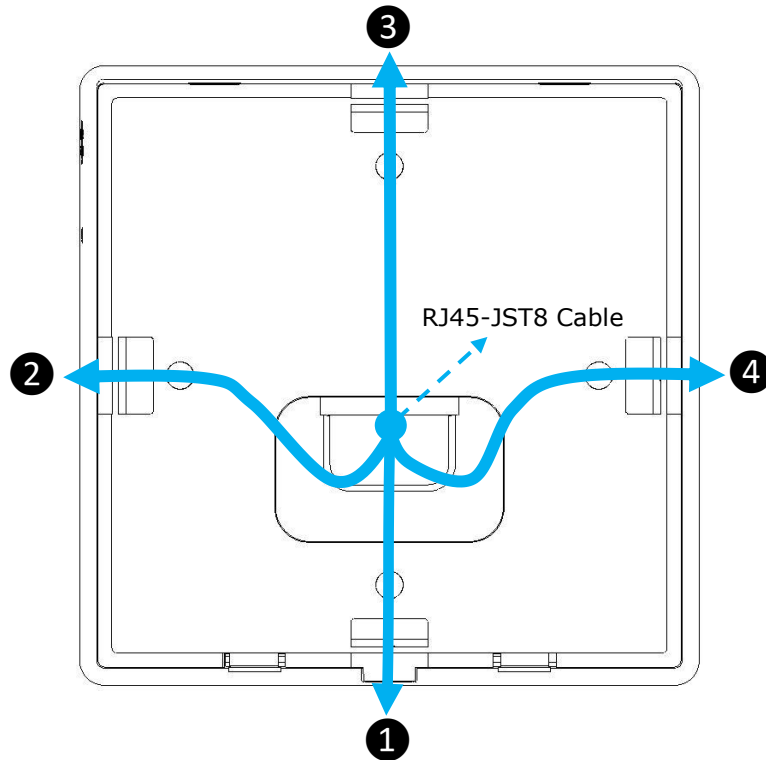


Figure 10 - RJ45-JST8 Cable Wiring Direction Options

Note: A 5-meter RJ45-JST8 cable, with a width of 9.1mm and a thickness of 3.0mm, is included in PD40 package. Refer to Table 2 for contents of PD40 package.

5-meter RJ45-JST cable: Standard RJ45 plug to JST8 (1.5mm pitch) plug, the JST8 plug size: WxH=14x3.5mm

7 Contact Information

Refer to <https://brtsys.com/contact-us/> for contact information.

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Appendix A – References

Document References

[BRTSYS_QSG_PanL_PD40_Display](#)

Acronyms and Abbreviations

Terms	Description
EVE	Embedded Video Engine
FCC	Federal Communications Commission
LCD	Liquid Crystal Display
LED	Light Emitting Diode
MCU	Microcontroller Unit
PSL	PanL Smart Living
TFT	Thin Film Transistor

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Appendix C – Revision History

Document Title: PanL PD40 Display Datasheet
Document Reference No.: BRTSYS_000036
Clearance No.: BRTSYS#049
Product Page: [PD40 - PanL Smart Living \(brtsys.com\)](https://brtsys.com)
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Revision	Changes	Date
Version 1.0	Initial Release	10-11-2023