

PanL PD100 Display Datasheet



1 Introduction

The PanL PD100 Display provides users with an intuitive interface option to monitor and trigger control events when working alongside a PanL Hub. Unlike mobile devices that usually require recharging, the display can be placed at highly accessible areas with continuous power supply from PanL Hub through an RJ45-JST8 cable. PD100 is built with 10.1-inch full color TFT LCD powered by BRTSys's very own Embedded Video Engine (EVE) Graphic Controller chip BT817 that enables rich and intuitive multi-touch GUI displays.

1.1 Features

PanL PD100 Display has the following features:

- Raspberry Pi RP2040 Dual ARM Cortex-M0+ @ 133MHz with Real-Time Operating System
- Built-in Advanced BT817 Graphics Controller
- 10.1 inches 1280x800 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

- Built-in Ambient Light and Time-Of-Flight Sensor
- Built-in Buzzer for sound output
- Power source 24VDC comes from RJ45-JST8 cable
- Stylish design for smart living and room management applications
- Built-in 2 RGB LED Light Strip Indicators
- Available with PanL Hub and LDSBus RFID Reader
- Operating temperature range: 0°C to +50°C



2 Ordering Information

| Part No. | Description |
|-----------------|--------------------------------|
| PD100000A | 10.1" PanL PD100 Display (PSL) |
| PD100001A | 10.1" PanL PD100 Display (PRM) |

Table 1 – PanL PD100 Display - Part Number

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3 Specifications

| | | |
|---------------------------------------|---------------------------|---|
| PLATFORM | Microcontroller | RP2040 (Dual ARM Cortex-M0+) |
| | Graphic Controller | BT817 |
| DISPLAY | Display Size | 10.1 inches |
| | Display Type | IPS LCD with LED Backlight |
| | Touch / Glass | Projected Capacitive, 5 points multi-touch |
| | Resolution | 1280 x 800 |
| | Active Display Area | 216.96 (H) X 135.60 (V) mm |
| | Brightness | 700 nits |
| | Contrasts | 800:1 |
| | Viewing Angles | 80 degrees (U/D/L/R) |
| FEATURES | Sound Alert | 90 dB buzzer @3.1khz |
| | Ambient Light Sensor | Yes |
| | Time Of Flight Sensor | Yes |
| | Reset Button | Yes |
| | Rotary ID Switch | Yes |
| | System Indicator | RGB LED Strip x 2 (PRM Application only) |
| POWER | Input Voltage | DC 24V |
| | Operating Current | 310mA (PRM Application) |
| | | 265mA (PSL Application) |
| | Screen Timeout Current | 135mA (PRM Application) |
| 125mA (PSL Application) | | |
| IO Ports | Connectivity | 1x JST8 Port |
| | | 1x JST4 Port |
| PHYSICAL CHARACTERISTICS | Colours | Black |
| | Assembly Method | Wall Mount/Electric Socket Mount/VESA Mount/Glass Mount |
| | Dimensions | 251 x 168 x 21.2 mm |
| | Enclosure | Polycarbonates |
| | Weight | 790g (Device Body) |
| ENVIRONMENTAL LIMITS | Operating Temperature | 0 to 50°C |
| | Storage Temperature | 0 to 60°C |
| | Ambient Relative Humidity | 20 to 85% (non-condensing) |
| STANDARDS & CERTIFICATIONS | EMC (FCC/CE) | EN 55032:2015+A11:2020 Class B |
| | | EN 55034:2010+A1:2015 |
| | | BS EN 55032:2015+A11:2020 Class B |
| | | BS EN 55034:2010+A1:2015 |
| | | AS/NZS CISPR 32:2015 Class B |
| | | CISPR 32:2015+COR1:2016 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 PD100 |
| | Accessories | 1x 5-meter RJ45 to JST8 cable |
| | | 1x Panel mount metal bracket |
| | | 2x Double sided tape |

Table 2 – PanL PD100 Display Specifications

4 Hardware Features

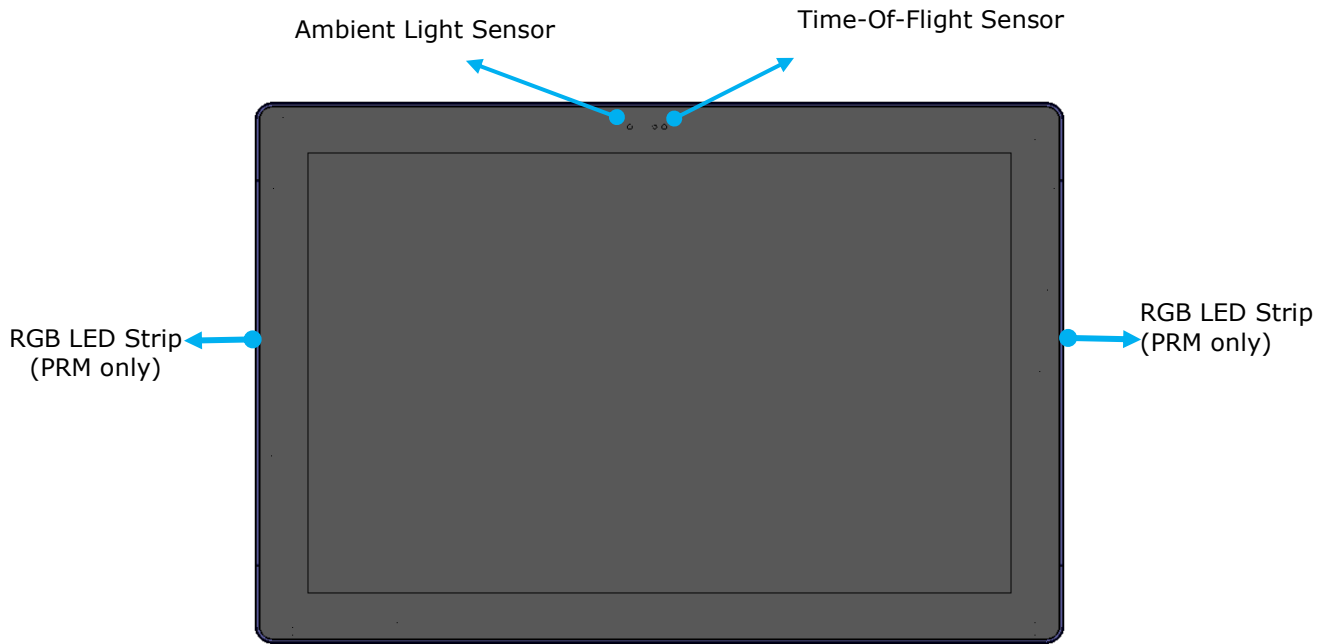


Figure 1 – PanL PD100 Display Front View

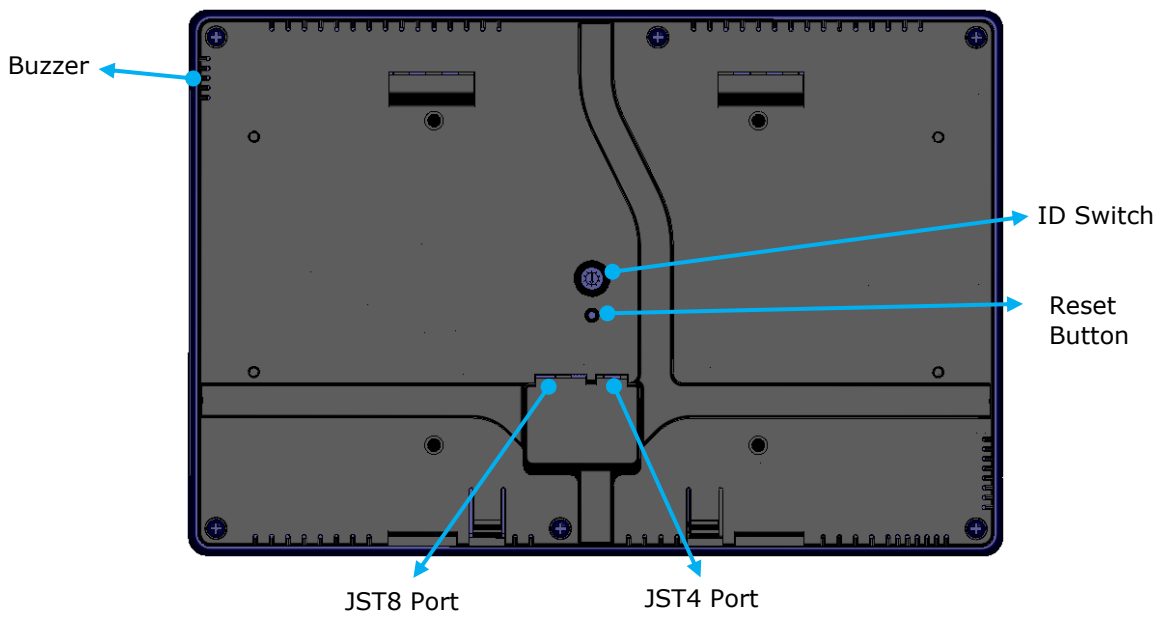


Figure 2 – PanL PD100 Display Rear View

4.1 Power Supply

Power is received from PanL Hub via JST8 Port on PD100. The supply voltage is 24V DC, and the nominal current is 500mA.

4.2 Microcontroller

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

4.3 Graphic Controller

The BT817 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/500mA and data. (**Note:** A Daisy chain network is not allowed on the port where PD100 connects to PanL Hub).

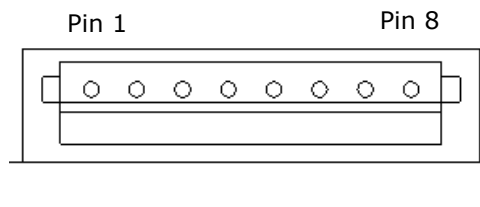


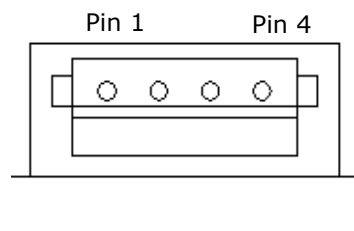
Figure 3 – JST8 Port

| 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 JST4 Port

The JST4 (1.5mm pitch) port is designed for the LDSBus RFID Reader module, which provides DC5V power and data connectivity.



| Pin Number | 1 | 2 | 3 | 4 |
|------------|-----|-----------|-----------|--------------|
| Function | GND | RS485 A/Y | RS485 B/Z | DC5V(Output) |

Table 4 – JST4 Port Pin Function

4.6 Reset Button

A device reset pin is included and can be used to restart the PD100 device.

4.7 ID Switch

An ID switch on back of displays can be configured for unique settings or left as factory default. Use a Philips head screwdriver to set a unique number between 0-7 (8- 9 are reserved). PD100 Displays connected to different PanL Hub ports can share the same unique number.

4.8 Buzzer

Trigger sound to user to signify an event.

4.9 Time-Of-Flight Sensor

The PD100 includes a time-of-flight sensor which allows the device to sense objects or people up to 3 feet away.

4.10 Ambient Light Sensor

The PD100 screen can be dimmed appropriately to match ambient light.

4.11 LED Indicator

Two RGB LED strips are located on the left and right sides of the device, providing an RGB matrix indicator of the system status of the PD100 PRM application. More information about RGB LED matrix indicators can be found in the following table.














| Status | LED Color (Normal Mode) | | LED Color (Failsafe Mode) | |
|------------------------------|-------------------------|---|---------------------------|---|
| | Color | Icon | Color | Icon |
| Booting Up | Red |  | Red |  |
| Boot Success | Cyan |  | Red (Blink at 2Hz) |  |
| Communication Error | Red (Blink at 2Hz) |  | Red (Blink at 2Hz) |  |
| While communicating with Hub | NA | NA | Red (Blink at 2Hz) |  |
| Waiting for Recovery | NA | NA | Red <-> Cyan at 2Hz |  |
| Recovery in Progress | NA | NA | Red <-> Orange at 2Hz |  |
| Recovery Done | NA | NA | Cyan (Blink at 2Hz) |  |
| Waiting for Configuration | Orange (Blink at 2Hz) |  | NA | NA |
| License expiry | Red |  | Red |  |

Table 5 – LED Status Indicator

5 Mechanical Dimensions

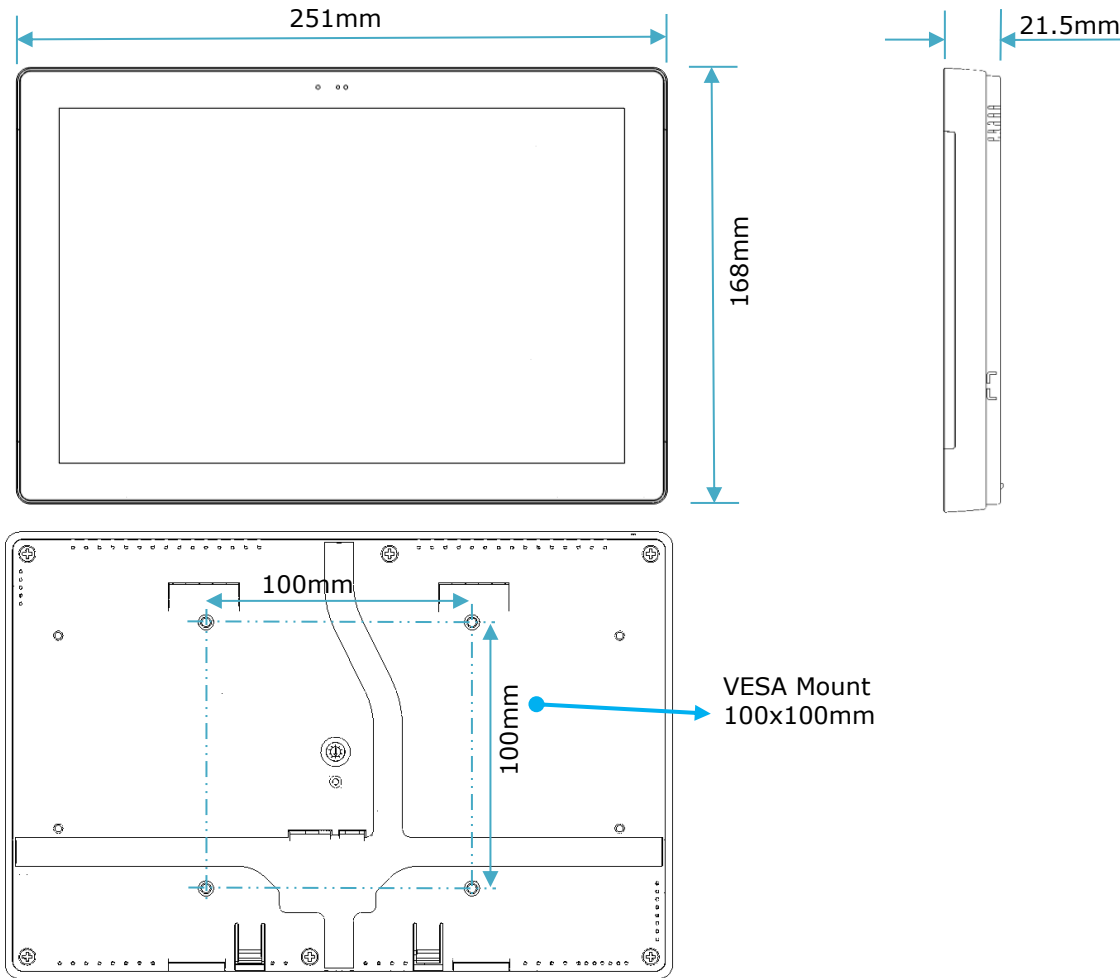


Figure 4 – PanL PD100 Display Dimensions

Figure 5 illustrates the panel mount metal bracket drill holes' locations referring to the device center.

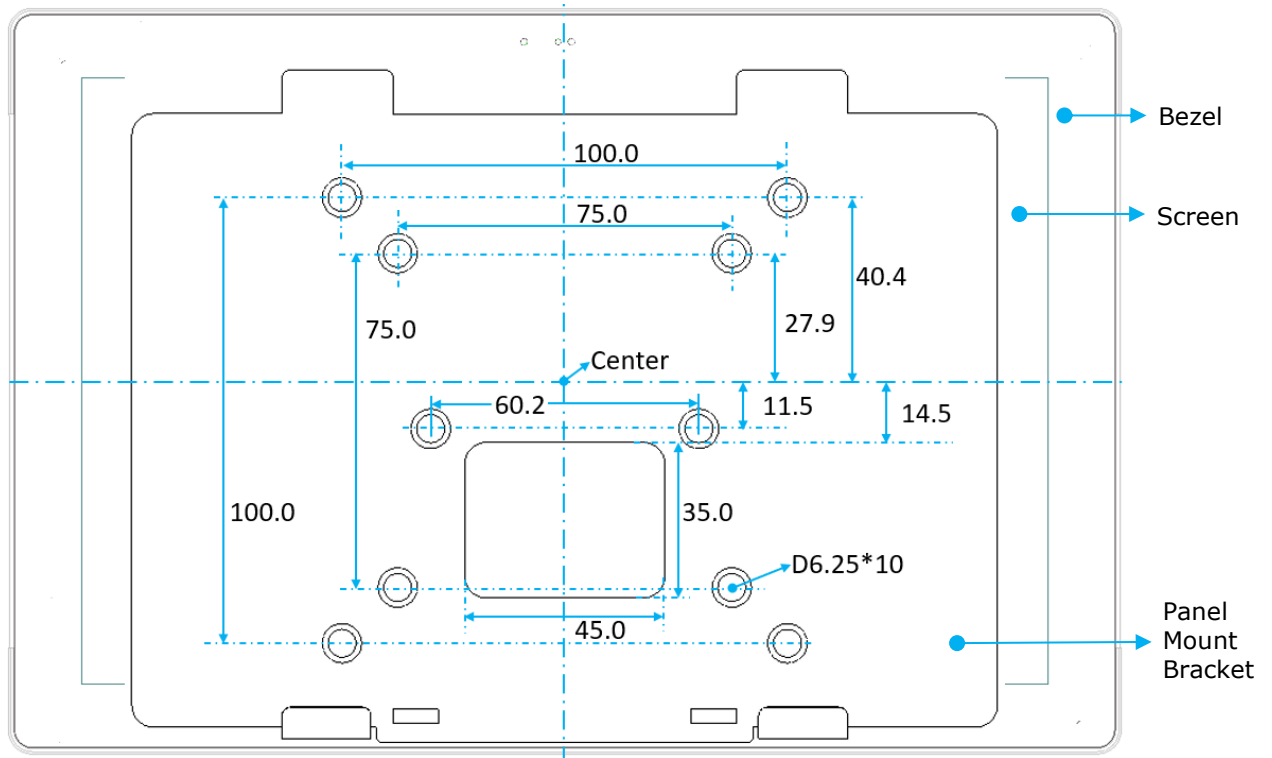


Figure 5 – Panel Mount Bracket Drill Holes Drawings (Front View)

Note: All dimensions are in millimetres.

6 Mounting Options

The following are the different mounting options available for the PD100.



Figure 6 – Wall Mount



Figure 7– Electrical Junction Box Mount

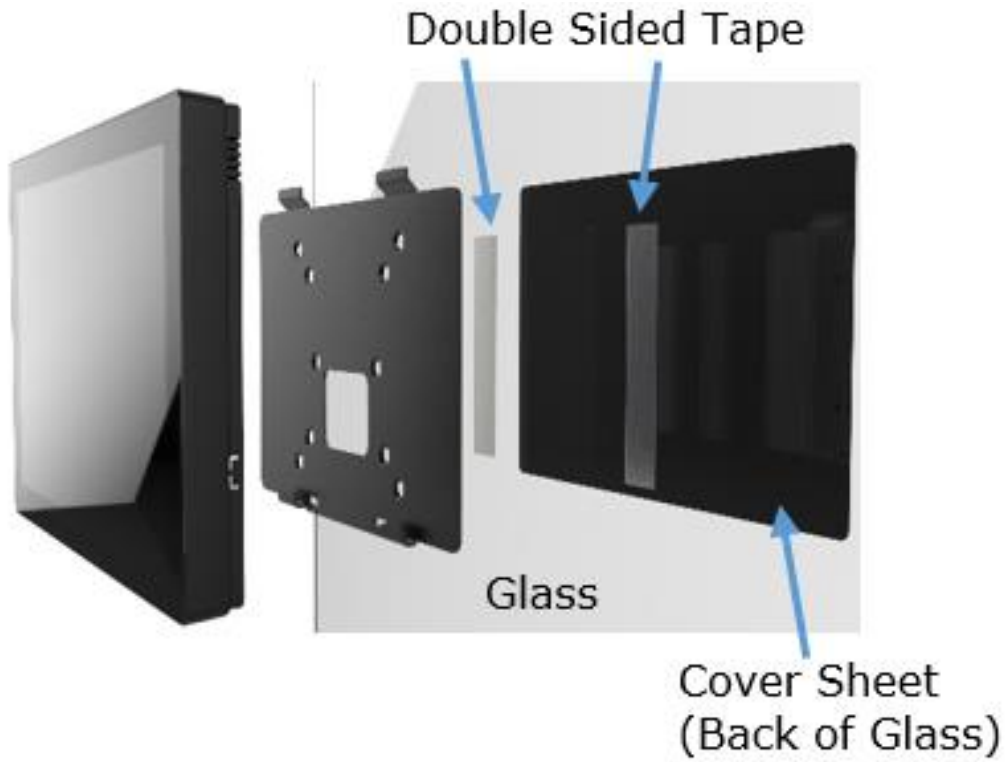


Figure 8 – Glass Mount



Figure 9 – VESA Mount (100X100)

Figure 10 illustrates the cable wiring direction options for the wall mount and glass mount (Rear View). The cable can pass through the rectangle slot of the Panel Mount Bracket for the electrical mount and VESA mount in addition to the options below. (Refer to Figure 5)

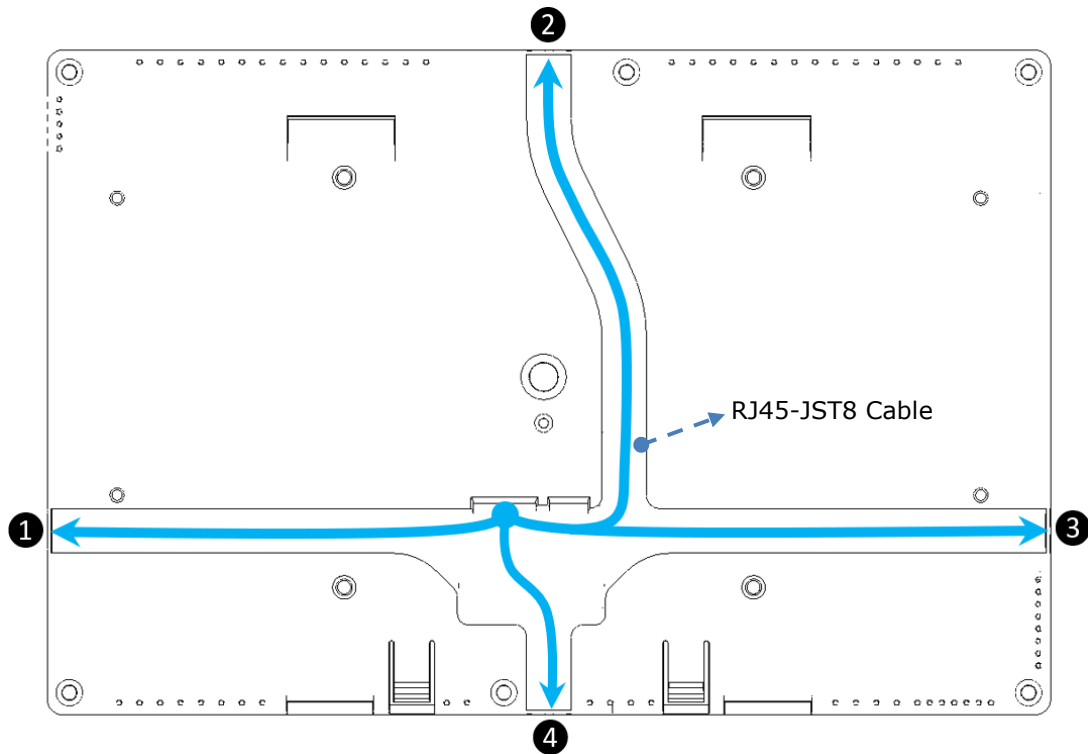


Figure 10 – RJ45-JST8 Cable Wiring Direction Options

Note: A 5-meter RJ45-JST8 cable is included in the package, with a width of 9.1mm and a thickness of 3.0mm.

7 Contact Information

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Appendix A – References

Document References

NA

Acronyms and Abbreviations

| Terms | Description |
|-------|-----------------------------------|
| ALS | Ambient Light Sensor |
| EVE | Embedded Video Engine |
| FCC | Federal Communications Commission |
| LCD | Liquid Crystal Display |
| LED | Light Emitting Diode |
| MCU | Microcontroller Unit |
| PSL | PanL Smart Living |
| PRM | PanL Room Manager |
| RGB | Red, Green Blue |
| TFT | Thin Film Transistor |
| TOF | Time-Of-Flight |

Appendix B – List of Figures and Tables

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Appendix C – Revision History

Document Title: PanL PD100 Display Datasheet
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Document Feedback: [Send Feedback](#)

| Revision | Changes | Date |
|----------|-----------------|------------|
| Version | Initial Release | 09-06-2023 |