

# PanL70PLUS (PD70PLUS) Touch Display Datasheet



## 1 Introduction

The PanL70PLUS Touch Display provides users an intuitive interface option to monitor and trigger control events when working alongside PanL Hub. Unlike mobile devices that usually requires recharging, the display can be placed at highly accessible areas with continuous power supply from PanL Hub through an Ethernet cable. PD70PLUS is built with 7.0 inch full color TFT LCD powered by Bridgetek’s very own Embedded Video Engine (EVE) Graphic Controller chip that enables rich and intuitive multi touch GUIs displays. A system LED indicator built at the front provides an application specific indicator to users. The display also comes with a RFID reader which can be used to enable application based access authentication.

### 1.1 Features

PanL70PLUS has the following features:

- Integrated FT903 32-bit RISC microcontroller (MCU) with high speed performance
- In-built advanced BT815 graphics controller with display, touch and audio functionality
- 7.0" high brightness TFT LCD (800\*480 pixels) with capacitive 5 touch supported

- Ambient Light Sensor
- 23mm x 36mm LED Matrix System Indicator
- Built In 13.56Mhz RFID Reader
- Built In Buzzer
- Two RJ45 Ports support RS485 Interface to PanL Hub, PanL Terminator, daisy chain to another PanL70PLUS Display or other PanL Devices
- Powered by PanL Hub at 24V DC Input through either RJ45 port
- Operating temperature range : 0°C to +55°C
- FCC ID: : 2ATZF-PD7010XXA (RFID)



## 2 Ordering Information

Part No.	Description
PD701001A	7.0" PanL LCD Display with RFID and LED System Indicator with Buzzer

**Table 1 – PanL70PLUS Part Number**

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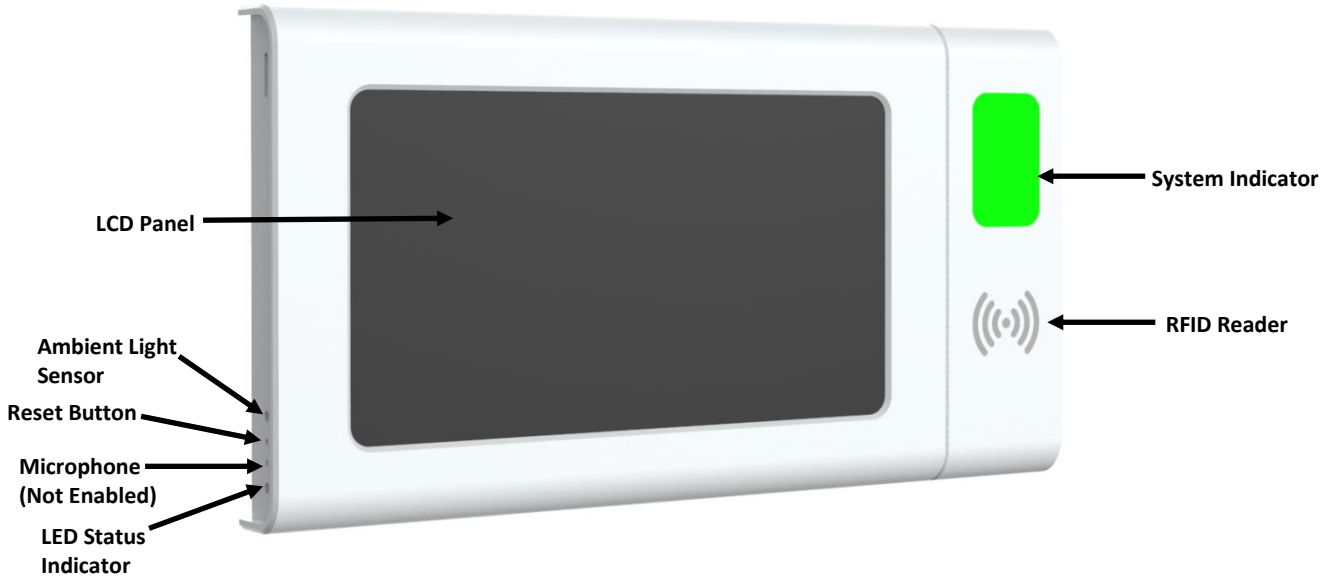
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### 3 Specifications

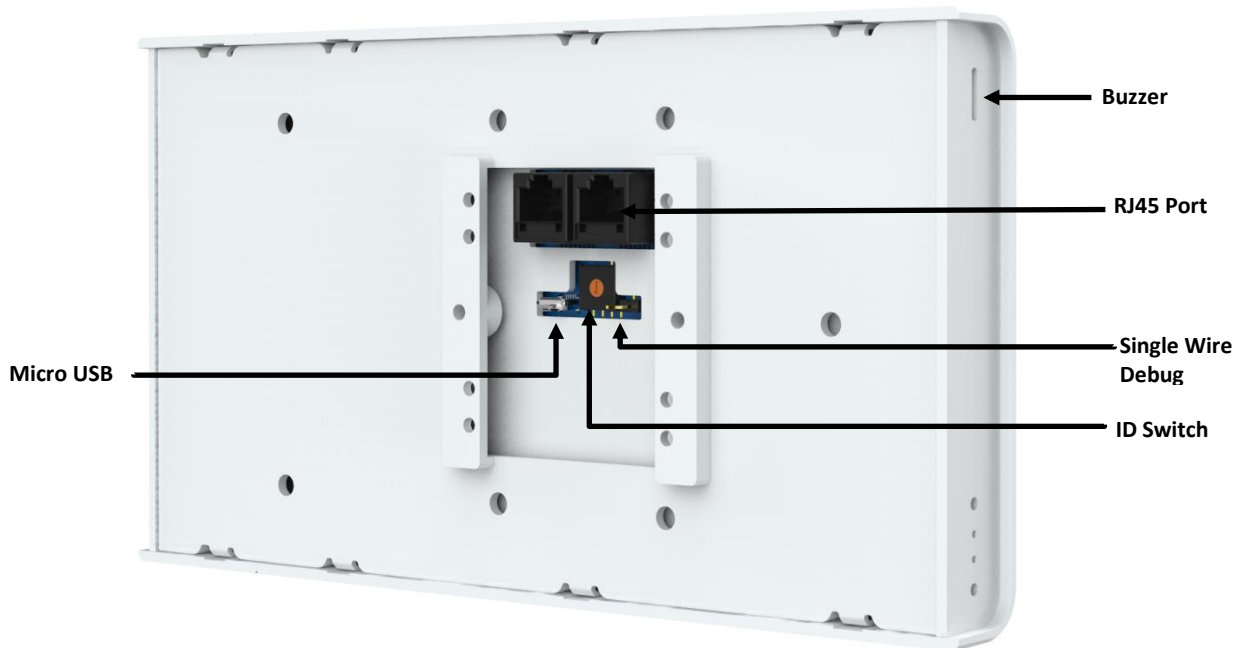
<b>PLATFORM</b>	Microcontroller	FT903Q
	Graphic Controller	BT815
<b>DISPLAY</b>	Display Size	7.0 inch TFT LCD
	Display Type	Capacitive touch panel
	Number of Pixels	800 (RGB) x 480
	Active Display Area	154.08 (H) x 85.92 (V) mm
	Light Intensity (Brightness)	420 cd/m <sup>2</sup>
	Display Colour	16.7M colors
	Viewing Angels	65°/55°/65°/65° (U/D/L/R)
<b>FEATURES</b>	Sound Alert	90 dB buzzer @3.1khz (optional)
	Ambient Light Sensor	-
	Reset Button	Push Switch
	Device Indicator	RGB LED
	System Indicator	RGB LED Matrix
	RFID Reader	13.56Mhz ISO/IEC 14443 A/MIFARE/NTAG
	Single Wire Debug	Reserved for factory use only
<b>POWER &amp; CONNECTIVITY</b>	Input Voltage	DC 9-24V
	Connectivity	2x RJ45 Ports
	Micro USB	Reserved for factory use only
<b>PHYSICAL CHARACTERISTICS</b>	Color	White
	Housing	Polycarbonates
	Dimensions	232 x 125 x 26.4 mm
	Weight	528g
<b>ENVIRONMENTAL LIMITS</b>	Operating Temperature	0 to 55°C
	Storage Temperature	0 to 60°C
	Ambient Relative Humidity	5 to 80% (non-condensing)
<b>STANDARDS &amp; CERTIFICATIONS</b>	EMC (FCC/CE)	EN 55032:2015+AC:2016 Class B CISPR 32:2015+C1: 2016 Class B EN 55035:2017 FCC PART 15, Subpart B
	Radio Equipment Directive (RED)	EN 301 489-1 V2.2.0 EN 301 489-3 V2.1.1
	Safety (LVD)	IEC 62368-1:2014 EN 62368-1:2014 +A11:2017
	RFID (FCC/CE)	EN 300 330 V2.1.1 EN 62311:2008 FCC PART 15, Subpart C (15.225)
<b>PACKAGE CONTENTS</b>	Hardware components	1x PD70PLUS 6x M3 Screws (4 Arlington LV2 Wall Mounting + 2 additional wall screws)
	Documentation	1x Quick Start Guide

**Table 2 – PanL70PLUS (PD70PLUS) Touch Display Specifications**

### 4 Hardware Features



**Figure 1 – PanL70PLUS (PD70PLUS) Touch Display Top View**



**Figure 2 – PanL70PLUS (PD70PLUS) Touch Display Rear View**

### 4.1 Power Supply

The PD70PLUS receives power externally from Hub through either RJ45 ports. Input supply voltage is 9VDC to 24V DC (nominally 24V, 500mA from Hub).

### 4.2 Microcontroller














The [FT9030](#) 100-pin QFN microcontroller which is provided on the board belongs to the 32-bit FT90X Super Bridging Microcontroller family from [Bridgetek](#).

### 4.3 Graphic controller

The BT815 is an Advanced Embedded Video Engine (EVE) with high resolution graphics and video playback. BT815 functionality includes graphic control, audio control, and touch control interface.

### 4.4 LED Status Indicator

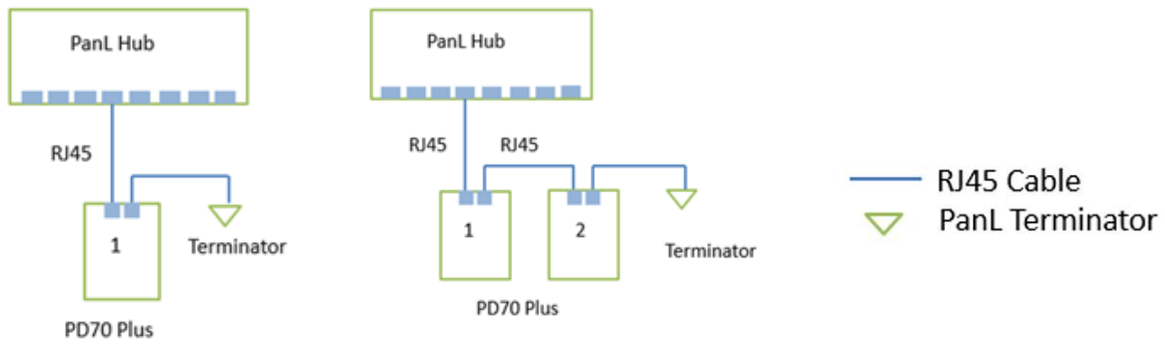
An LED status indicator that indicates the device status of the PD70PLUS. Refer to the table below –

Status	LED Color (Normal Mode)	LED Color (Failsafe Mode)
Booting Up	Red 	Red 
Boot Success	Green 	Red (Blink – slow speed, twice a second) 
Lost Link To Hub (For PD70)	Yellow 	Red (Blink – medium speed, five times a second) 
Communication Error (For PD70 PLUS)	Red (Blink – slow speed, every second) 	
While communicating with Hub	Green (Blink – fast speed, ten times a second) 	Red (Blink – fast speed, ten times a second) 
Waiting for Recovery	NA	Red <-> Green (Alternate blink – slow speed, twice a second) 
Recovery in Progress	NA	Red <-> Yellow (Alternate blink – slow speed, twice a second) 
Recovery Done	NA	Green (Blink – fast speed, ten times a second) 
Waiting for Configuration	Yellow (Blink – slow speed, twice a second) 	NA

**Table 3 – LED Status Indicator**

### 4.5 RJ45 Port

The RJ45 ports are used either as an input or output terminal that is connected to the Hub, other PanL Devices or another PD70PLUS device as illustrated below. For single PD70PLUS connection to a PanL Hub port, the maximum length of the RJ45 cable is 100 meters. Connect the PanL terminator provided in PanL Hub box to the unconnected PD70PLUS port. For multiple PD70PLUS connections to a single PanL Hub port, the first connection to PanL Hub and the subsequent connections in between the PD70PLUS displays must not exceed 50 meters in cable length each. A single PanL Hub port can support up to 2 PanL70PLUS. The total combined cable lengths must not exceed 100 meters. Connect the terminator provided in PanL Hub box to the last unconnected PD70PLUS port.



**Figure 3 – Daisy Chain Network**

### 4.6 ID Switch

For multiple PD70PLUS connections or mixed PanL Device daisy chain connection to a single PanL Hub port, the ID switch at the back of the displays must be configured to be unique. Using a Philip head screw driver, set a unique number for each device between 0-7 (8-9 are reserved). For example, if connecting two PD70PLUS to a PanL Hub port, you may set it as **0 and 1**. Displays connected to different PanL Hub ports can share the same unique number. A maximum of Two PanL devices are allowed for daisy chain if there are more than one PD70, PD70PLUS or PD50 device or any combination of these present. Any other combinations will have a maximum limit of three devices.

### 4.7 Reset Button

It is a device reset pin which is used to restart the PD70PLUS.

### 4.8 Micro USB

This is reserved for factory use.

### 4.9 Single Wire Debug

This is reserved for factory use.

### 4.10 Buzzer

Trigger sound to user to signify an event.

### 4.11 Microphone

This feature is not enabled.

### 4.12 Ambient Light Sensor

Appropriately dim the PD70PLUS screen to match the surrounding ambient light.

### 4.13 System Indicator

An LED Matrix indicator where different color codes can be programmed to represent a certain application event. Please refer to the application User Guide for more details about the different color codes.

### 4.14 RFID Reader

The built in 13.56MHz RFID reader supports ISO/IEC 14443 A/MIFARE and NTAG. Able to detect RFID tags and RFID fobs up to 3cm.



### 5 FCC Statements

PanL70PLUS device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

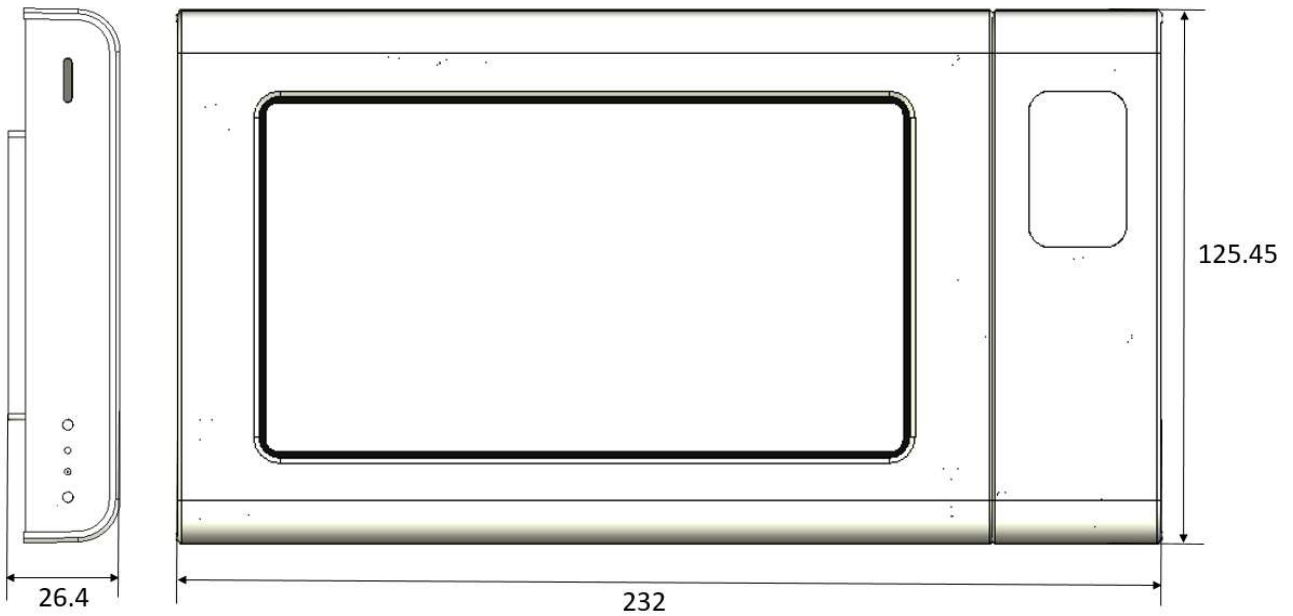
- (1) These devices may not cause harmful interference, and
- (2) These devices must accept any interference received, including interference that may cause undesired operation.

**NOTE:** The equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a building installation. These equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF exposure guidelines, at least 20cm of separation distance between the PanL70PLUS device and the user's body must be maintained at all times.

## 6 Mechanical Dimensions



**Figure 4 – PanL70PLUS (PD70PLUS) Touch Display Dimensions**

### 7 Contact Information

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## Appendix A - References

### Document References

NA

### Acronyms and Abbreviations

Terms	Description
EVE	Embedded Video Engine
FCC	Federal Communications Commission
GUI	Graphical User Interface
LCD	Liquid Crystal Display
LED	Light Emitting Diode
MCU	Microcontroller Unit
QFN	Quad Flat No Leads
RFID	Radio Frequency Identification
RGB	Red Green Blue
RISC	Reduced Instruction Set Computer
TFT	Thin Film Transistor
USB	Universal Serial Bus

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Revision	Changes	Date
Version 1.0	Initial Release	2020-01-16