BRTSys

Doc #: BRTSYS_000089
Clearance #: BRTSYS#147
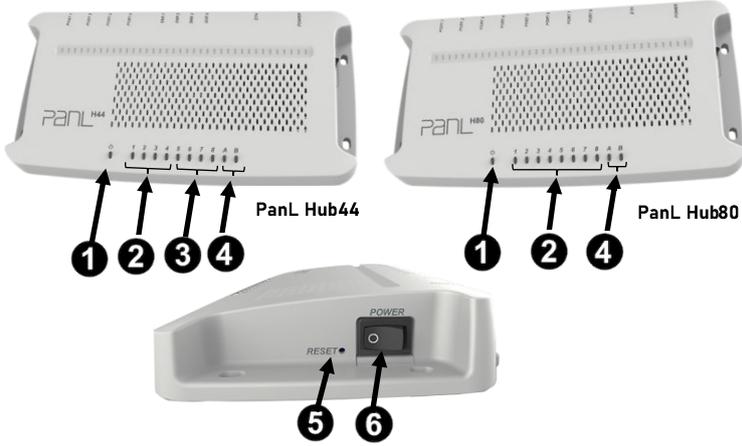
PanL Hub44/80
Quick Start Guide

Product Features

PanL Hub44

PanL Hub80
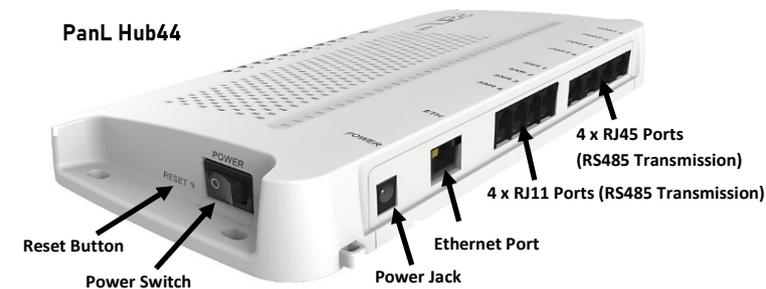

1 PanL Hub Power Indicator
2 RJ45 Port 1 to Port 4 Indicators
3 RJ11 Port 5 to Port 8 Indicators (reserved for future development)
4 LEDs A and B - Refer to *PanL Hub System Health LED Indicators* for details
5 Reset Button/ PanL Hub Control Menu - Refer to *PanL Hub System Health LED Indicators* section for details
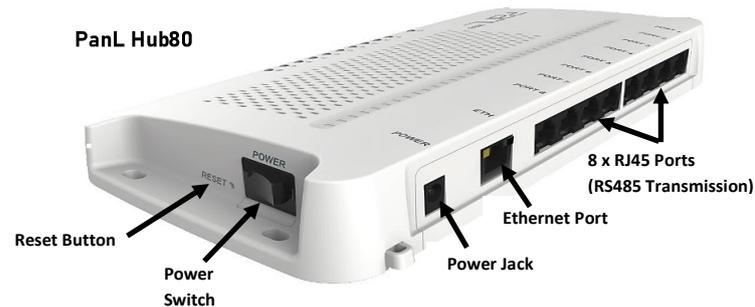6 Power Switch

Product Specifications

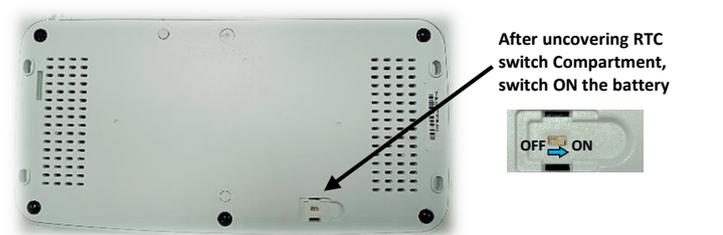| Platform	OS	Linux
	CPU	Quad Core 1.2GHz 64bit ARM Processor
	Internal Memory	1GB RAM, 4GB eMMC Flash
Wireless Connectivity	Wi-Fi	802.11 b/g/n (2.4GHz), upto 150 Mbps
	ZigBee	802.15.4 (2.4GHz)
	RF433	SRD 433.92MHz
I/O Interface	Ethernet	1 x 10/100BASE TX
	RJ45	4 x Ports to support RS485 **(for PH44)** 8 x Ports to support RS485 **(for PH80)**
	RJ11	4 x Ports to support RS485 for PanL Sensors **(for PH44)**
Features	Temperature Sensor	Builit-in
	Crypto Authentication	Builit-in
	RTC	CR1225 Battery (Lasts ~ 3 Years)
	Reset Button	Push Switch
	Power ON/OFF Switch	Rocker Switch
	Power Indicator LED	Red LED
	Status Indicator LED	Health Status (A/B) - 2 x RGB LEDs RJ45/RJ11 Ports - 8 x RGB LEDs **(for PH44)** RJ45 Ports - 8 x RGB LEDs **(for PH80)**
Power	Input Voltage	24V DC (60W-AC-DC-Adapter 100~240 VAC to 24V DC **(for PH44)** 24V DC (120W-AC-DC-Adapter 100~240 VAC to 24V DC **(for PH80)**
	Power Connector	24V DC / 2.5A Jack **(for PH44)** 24V DC / 5A Jack **(for PH80)**
	Output Voltage	RJ45 - 4 x 24V DC @500mA; RJ11 - 4 x 5V DC 100mA **(for PH44)** 8 x 24V DC @500mA **(for PH80)**
Physical Characteristics	Housing	Polycarbonate ABS
	Dimensions	129.44mm x 256.3mm x 35.0mm
	Weight	450 grams
Enviornmental Limits	Operating Temperature	0 to +55°C
	Storage Temperature	0 to +70°C
	Ambient Relative Humidity	20 to 85% (non-condensing)
Standards& Certifications	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; EN 301 489-17 V3.2.0 **(for PH44)**
	Safety(LVD)	IEC 62368-1: 2014; IEC 62368-1: 2014 +A11:2017 **(for PH44)**
	RFID (FCC/CE)	EN 300 328 V2.1.1; EN 300 220-1 V3.1.1; EN 300 220-2 V3.1.1; EN 62311:2008; FCC PART 15, Subpart C (15.225) **(for PH44)**
Package Contents	Hardware Components	1 x PanL Hub (PH44); 1 x 60W Power Adapter; 4 x RS485 PanL Terminators 1 x PanL Hub (PH80); 1 x 120W Power Adapter; 8 x RS485 PanL Terminators
	Documentation	1 x Quick Start Guide

PanL Hub Setup

PanL Hub44

Reset Button

Power Switch

Ethernet Port

Power Jack

4 x RJ45 Ports (RS485 Transmission)

4 x RJ11 Ports (RS485 Transmission)

PanL Hub Setup (Cont.)

PanL Hub80

Reset Button

Power Switch

Power Jack

Ethernet Port

8 x RJ45 Ports (RS485 Transmission)

1. Set up PanL Hub based on the following recommendations:
   a) Ensure the availability of an AC outlet nearby.
   b) Place on a flat surface area.
   c) Best to be placed in an open area with good ventilation
   d) Best to be positioned central to all wireless devices (if any).
   e) Place near Ethernet point if using wired Ethernet connection.

2. Uncover RTC switch compartment as shown below and switch on the RTC backup battery switch

After uncovering RTC switch Compartment, switch ON the battery

OFF   ON

3. Apply screws to the sides of the hub to secure the hub.

4. Next, use the power adapter (that is provided in PanL Hub package) to connect to PanL Hub's power jack.

Connect this end of power adapter to a power cable with power plug

To power supply outlet

5. For applications which require a network connection, connect an RJ45 Ethernet cable (not included in PanL Hub package) to the Ethernet port of PanL Hub. Alternatively, PanL Hub can be connected to a wireless network if the Wi-Fi option is present in PanL Hub. Refer to PanL Hub Control Menu

6. Connect any PanL wired devices to PanL Hub through the RJ45 ports. Ensure that the length of the RJ45 8P8C cables do not exceed 100 metres from the port to the wired device. If a single port is used to power up a few PanL devices in a daisy chain configuration, the first connection to a PanL device and the subsequent connections between the PanL devices must not exceed 50 metres in cable length. The total combined cable length must not exceed 100 metres.

   (Reserved for future development) For RJ11 port connections, the RJ11 6P4C cable length must not exceed 50 metres from the port to the PanL device.

7. Any unused RJ45 ports must be connected with the terminators provided in PanL Hub package.

8. As more protocol support may be added to PanL Hub in future, please refer to Section 6 in the PanL Hub 44/80 Datasheet or Section 5.1 in the PSL System Installation user guide at https://brtsys.com/resources/ for:
   a) The current default PanL Hub port assignments (e.g. as Modbus, LDSBus, or BACnet port).
   b) "Connecting Devices to PanL Hub" diagram.

9. Switch on PanL Hub's power switch.

PanL Hub System Health LED Indicators

PanL Hub Status Description	PanL Hub System Health LEDs	
	LED A	LED B
Hub is existing in Unconfigured Hub Mode	ON, Green blinking	ON, Green blinking
Hub is Booting up	ON, Green blinking	ON, Green
Hub is existing in Normal Operation Mode	ON, Green	ON, Green
Hub is Re-booting/ Shutting down	ON, Blue blinking	ON, Green
Hub is performing Firmware Rollback	ON, Yellow blinking	ON, Yellow blinking
Indicates result that Firmware Rollback has failed **Note:** Please reboot the Hub by manually powering it OFF and ON.	ON, Blue	ON, Blue
Hub Network is down **Note:** For wired Hub, please check if the physical connection (cable/s) between Hub's Ethernet Port and LAN switch/ Router/ MODEM has become loose or missing. If so, just reconnect it securely to resolve this error. For WIFI wireless Hub, please check if the Hub's WIFI configuration has been lost/ corrupted. If so, re-configure it correctly to resolve this error.	ON, Green	ON, Red
Hub has lost its Internet connection **Note:** In this case, the physical cable connection is well connected, or WIFI configuration is correct, but the Internet Service Provider's (ISP) internet service is down. PanLAgent Service is down (Applicable to PRM System)	ON, Yellow	ON, Green
Hub Temperature is above the threshold value **Note:** If Hub is used in PanL Smart Living (PSL) ecosystem, an alert (notification) will be sent to inform the user via PSL mobile app. Next, the Hub will be shut down. If Hub is used in PanL Room Manager (PRM) ecosystem, an alert (email and WMC notification) will be sent to the administrator. Next, the Hub will be shut down.	ON, Red blinking	ON, Red linking
Hub network is down and PanLPower service is down (Applicable to PRM System)	ON, Red	ON, Red
One or more services are down (PanLNode or SQLite or redis services) (Applicable to PRM System)	ON, Red blinking	ON, Green
Unable to reach or establish connection with Exchange Server (Applicable to PRM System)	ON, Yellow blinking	ON, Green
Unable to reach PRM Server (Applicable to PRM System)	ON, Red	ON, Green

PanL Hub Control Menu

Action	Instruction
Activate Control Menu	To activate the control menu, press and hold the [Reset] button until the system health LED indicators (LED A & B) flash green. Then, quickly press the button again to enter the control menu. The Port 1-Port 4 indicator will flash green, indicating that the control menu has been successfully triggered.
Function Selection	After successfully triggering the control menu, the corresponding 4 functions below can be toggled by doing short presses on the [Reset] button. This will be reflected on Port 1-Port 4 indicators: Port 1) Rollback to previous firmware Port 2) Set Hub back to un-configured state Port 3) Reset Hub to Factory Settings Port 4) Go back to Port 1 selection Once the desired function is selected, press and hold the button, and the selected port indicator will change from green to yellow, signalling that the function has been successfully executed. If no input is selected for a period after the control menu is triggered, the hub will automatically return to normal operation mode.
Reboot	To perform a reboot function, simply do a short press (01.-1 seconds on the [Reset] button.
System Shutdown	To perform system shutdown, simply press the [Reset] button for more than 5 seconds and release. LED A will flash blue while LED B will flash green indicating a successful shutdown.

What's in the PanL Hub Package?

The package includes:

Item No.	Description
❶	PanL Hub PH44/PH80
❷	PanL Hub PH44 Power Adapter, 24VDC/2.5A, 60W PanL Hub PH80 Power Adapter, 24VDC/5.0A, 120W
❸	4 x Terminators; for PanL Hub PH44 RJ45 ports 8 x Terminators; for PanL Hub PH80 RJ45 ports
❹	PanL Hub PH44/PH80 Quick Start Guide
❺ *Cable is not shown*	*Power Cable with Power Plug that depends on each country's power supply rating and plug type* *---NOT INCLUDED AS PART OF THE PACKAGE"*

FCC Statements

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

1) This device may not cause harmful interference, and
2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This 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. This 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 this 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:

- Reorient 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 20 cm of separation distance between the PanL Hub device and the user's body must be always maintained.