

Product Specifications

5-Port 802.3at PoE+ Solar PoE Switch with 1-Port 1000X SFP and LCD Display BSP-115PV-15A

Version 1.0

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Change History:

Revision	Date	Author	Change List
Version 1.0	2024/6/7	Sky Chen	Initial release

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1. PRODUCT DESCRIPTION



Industry-leading Integration of PoE Technology and Renewable Power System

PLANET's launched Renewable Energy Industrial 802.3at PoE Ethernet Switch, the BSP-115PV-15A, can be charged by the inexhaustible and natural source of energy, such as solar, wind and hydroelectric power, to conserve energy so as to economically power these remote IP cameras and wireless APs.

The BSP-115PV-15A is equipped with 5 10/100/1000BASE-T copper ports supporting 802.3at PoE+ injector function, a total PoE power budget of up to 120 watts and 1 extra 100/1000BASE-X SFP fiber port especially used for such expansive applications as dams, forests, deserts, national parks, nature/animal protection areas and highways. It is designed to efficiently handle power distribution for a versatile array of connected devices which meet the Environmental, Social, and Governance (ESG) principles. Leveraging cutting-edge IP-based technology, PLANET has transformed conventional Power Over Ethernet (PoE) into genuine networking devices that align with sustainable and responsible business practices.

Zero-Carbon and Stable Power Supply

The 12V/24V lithium, lead-acid or lithium iron battery gets recharged by way of the BSP-115 Series where solar power is sourced. Thus, the BSP-115 Series will keep powering PDs like wireless PoE AP without a cable and a wired camera connected to its port with a UTP cable. Its zero-carbon feature is made possible as the energy the unit gets is renewable. Most importantly, the operation of outdoor wireless IP-based surveillance can be continued into the night as the battery is charged during the day.

Smart Battery Management

The BSP-115PV-15A features the following special power management functions:

- Current battery usage status by percentage
- Over budget PoE port disconnection protection

Smart and Intuitive LCD Monitoring

As the front panel of the BSP-115PV-15A provides an intuitive panel, you can check the current solar energy and battery statuses on the BSP-115PV-15A LCD screen. This easy operation can enhance the energy management efficiency of renewable PoE switches as the following special status functions are included:

- Displays solar input voltage and current power
- Displays battery voltage and current power
- Displays PoE current power
- Displays battery remaining and remaining charging time
- Displays temperature and humidity information

Intelligent Powered Device Alive Check

The BSP-115 Series can monitor connected PD status in real time via PD alive check function. Once the PD stops working and responding, the BSP-115 Series will resume the PoE power and bring the PD back to work. It will greatly enhance the network reliability through the PoE port resetting the PD's power source and reducing administrator management burden.

802.3at PoE+ Power and Ethernet Data Transmission Distance Extension

Its DIP switch can set the system to extend mode. In addition, the BSP-115PV-15A is equipped with VLAN technology and operates on a per-port basis at 10Mbps duplex operation. It can also support 21.2-watt PoE power output over a distance of up to 250 meters overcoming the 100m limit on Ethernet UTP cable.

With this brand-new feature, the BSP-115 series provides an additional solution for 802.3at/af PoE distance extension, thus saving the cost of Ethernet cable installation.

Multiple Battery Options for All Market Requirements

The BSP-115 Series features a variety of battery options, including **lead-acid**, **lithium**, and **lithium iron** batteries. Lead-acid battery offers a cost-effective option while lithium battery offers higher energy density and lightweight design, and lithium-iron battery combines high energy efficiency with durability. The renewable PoE switch provides a flexible, reliable solution that ensures all applications can continue to run without a glitch.

2. PRODUCT FEATURES

➤ **Physical Port**

- Five 10/100/1000BASE-T Gigabit RJ45 copper ports with IEEE 802.3at/af PoE injector function
- One 100/1000BASE-X SFP slot for SFP type auto detection

➤ **Power over Ethernet**

- Complies with IEEE 802.3at Power over Ethernet Plus end-span PSE
- Backward compatible with IEEE 802.3af Power over Ethernet
- Up to 5 ports of IEEE 802.3af/802.3at devices powered
- Supports PoE power up to 35 watts for each PoE port
- 120-watt PoE budget
- Auto detects powered device (PD)
- Circuit protection prevents power interference between ports
- Remote power feeding up to 100m in standard mode and 250m in extend mode
- PoE management
 - Total PoE power budget control
 - PD alive check

➤ **Smart LCD**

- Displays solar input voltage and current power
- Displays battery voltage and current power
- Displays PoE current power
- Displays battery remaining and remaining charging time
- Displays temperature and humidity information

➤ **Battery Management**

- Battery type option: Lithium battery, lithium iron battery or lead-acid battery
- Easy diagnostic of the system operating status via LED indicator
- Current battery usage status
- Maximum Power Point Tracking Charge Controller
 - Reverse current protection to prevent the current circuits from flowing back to the PV panel
 - Over-current protection
 - Reverse polarity protection (for battery and charging electrodes)

➤ **Case and Installation**

- IP30 metal case
- Desktop and wall-mount designs
- Supports -20 to 65 degrees C operating temperature
- Supports ESD 4KV contact and 8KV air DC Ethernet protection
- Supports surge protection up to 2KV

➤ **Power Requirements**

- Supports 12V solar panel input (open circuit voltage = 27V) with 12V battery
- Supports 24V solar panel input (open circuit voltage = 45V) with 24V battery
- PV DC input, 12V battery pack -- DC input range 20-27V, maximum input power 405W
- PV DC input, 24V battery pack -- DC input range 32-45V, maximum input power 675W

➤ **Switching**

- Hardware-based 10/100Mbps (half/full duplex), 1000Mbps (full duplex), auto-negotiation and auto MDI/MDI-X
- Features Store-and-Forward mode with wire-speed filtering and forwarding rates
- IEEE 802.3x flow control for full duplex operation and back pressure for half duplex operation
- 2K MAC address table size
- 10K jumbo frame
- SFP slot supports dual speed, 100BASE-FX and 1000BASE-SX/LX SFP (Small Form-factor Pluggable) fiber-optic modules.
- The distance can be extended to 2km (multi-mode fiber) and to 120 kilometers (single-mode fiber or WDM fiber).



3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

CPU	STC8C	x 1
Switch PHY:	RTL8367S	x 1
Charge Chip	HS20A	x 1
Flash	32Kbytes	x 1
SDRAM	1.5Mbytes	x 1
PoE Chip	RTL8238B	x 1

3.2 FUNCTION SPECIFICATIONS

Product	BSP-115PV-15A
Hardware Specifications	
Copper Ports	5 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
SFP Port	1 100/1000BASE-X SFP port
Connector	Removable 6-pin terminal block Pin 1/2(+/-) , 3/4(+/-) for PV panel (In parallel); Pin 5/6(-/+) for battery charging and discharging The PV input is compliant with DC input but cannot be connected simultaneously with solar input to prevent damage to the device.
DIP Switch	<p>Front Panel:</p> <ul style="list-style-type: none"> ■ Alive Check: All PoE ports enable PD Alive check function. ■ VLAN: Port isolation ■ Extend: Long distance PoE switch. <p>Rear Panel:</p> <ul style="list-style-type: none"> ■ PWR: Equipment power switch ■ BAT: Battery type switch ■ BV: Battery voltage switch ■ LiFe: Lithium iron phosphate switch
Power Requirements	Supports 12V solar panel input (open circuit voltage = 27V) with 12V battery Supports 24V solar panel input (open circuit voltage = 45V) with 24V battery Compatible with DC input, 12V battery pack: DC input range DC 20-27V, maximum input power 405W; Compatible with DC input, 24V battery pack: DC input range 32-45V, maximum input power 675W;
Charging Function	Integrated automatic charging and discharging, maximum efficiency 98%, maximum charging current 15A Integrated battery protection function Integrated battery float charging function Supports over-temperature protection function
Battery Type	Based on Full Loading power consumption: <ul style="list-style-type: none"> ■ 12V / 24V lead-acid battery, maximum charging current 15A ■ 12.6V/25. 2V lithium battery, maximum charging current 15A ■ 14.6V/29.2V lithium iron battery, maximum charging current 15A <p>※ Recommended capacity: 500AH in full power usage of 120W</p>
Power Consumption/ Dissipation	3 watts, 10.2BTU (Standby without PoE function) 140 watts, 477 BTU (Full loading with PoE function)
Dimensions (W x D x H)	142 x 197 x 34 mm
Weight	820g
LCD Monitor (W x D)	26.77 x 16 mm, 1.1-inch
Temperature Sensor	Temperature Detector -20 ~ 120 Degree C Humidity Detector 0 ~ 100 % RH
ESD Protection	±8KV air gap discharge

	±4KV contact discharge
Surge Immunity	2KV
Enclosure	IP30 metal case
Installation	Desktop/Wall-mount ear
Fan	Fanless design
LED Indicators	Front Panel: System: - Green: PWR ,  BAT. out,  BAT. in Per 10/100/1000T RJ45 Port: (Port 1~Port 3): - Green: LNK/ACT (10/100/1000Mbps) - Amber: PoE-in-use Per 10/100/1000T RJ45 Port: (Port 4~Port 5): - Green: LNK/ACT (10/100/1000Mbps) - Amber: 1000Mbps - Green: PoE-in-use Per SFP Port: (Port 6): - Green: LNK/ACT (100/1000Mbps)
	Rear Panel: System: - Green: SYS, PWR, PV in Battery: - Green: BAT. out, BAT. in, BAT. V in
Switching Specifications	
Switch Architecture	Store-and-Forward
Switch Fabric	12Gbps/non-blocking
Switch Throughput	8.92Mpps@64 bytes
MAC Address Table	2K entries
Shared Data Buffer	2.5Mb
Jumbo Frame	10K bytes
Power over Ethernet	
PoE Standard	IEEE 802.3af/802.3at Power over Ethernet PSE
PoE Power Supply Type	End-span
PoE Power Output	Per port 48V DC, max. 35 watts
Power Pin Assignment	1/2 (+), 3/6 (-)
PoE Power Budget	Maximum 120W (depending on power input)
Standards Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Standards Compliance	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3ab 1000BASE-T Gigabit Ethernet IEEE 802.3z Gigabit SX/LX IEEE 802.3x Flow Control and Back Pressure IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus IEEE 802.3az Energy-Efficient Ethernet
Environment	
Operating	Temperature: -20 ~ 65 degrees C Relative Humidity: 5 ~ 95% (non-condensing)
Storage	Temperature: -40 ~ 70 degrees C Relative Humidity: 5 ~ 95% (non-condensing)

Front View



Network LED Definition:



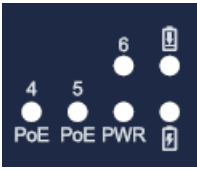
■ **10/100/1000T RJ45 PoE+ Ports (Port 1 to Port 3)**



LED	Color	Function	
10/100/1000LNK/ACT	Green	Lights	To indicate the port is successfully established.
		Blinks	To indicate that the switch is actively sending or receiving data over that port.
PoE-in-Use	Amber	Lights	To indicate the port is providing DC in-line power.
		Off	To indicate the connected device is not a PoE PD.

■ **10/100/1000T RJ45 PoE+ Ports (Port 4 to Port 5)**

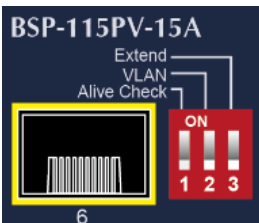
LED	Color	Function	
10/100/1000LNK/ACT	Green	Lights	To indicate the port is successfully established at 10/100/1000Mbps
		Blinks	To indicate that the switch is actively sending or receiving data over that port.
1000	Amber	Lights	To indicate the port is successfully established at 1000Mbps.

Front System LED Definition:



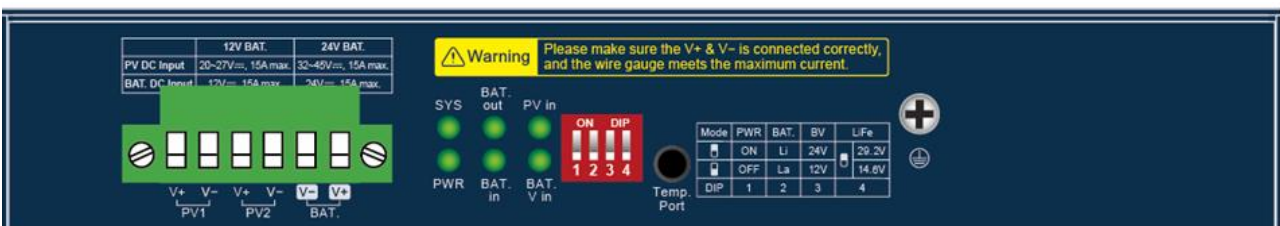
Function indicator	Color	State	Description
PoE 4, 5	Green	Lights	To indicate the port is providing DC in-line power.
		Off	To indicate the connected device is not a PoE PD.
6 Optical port: 6	Green	Lights	Optical network Linkup
		Off	Optical network down
		Blink	To indicate that the switch is actively sending or receiving data over that port.
PWR Power indicator:	Green	Lights	To indicate the system power works normally when Alive Check is switched off.
		Blink	To indicate the system power works normally when Alive Check is switched on.
		Off	The system power is off.
 Battery discharge indicator	Green	Lights	Battery discharge > 15%
		Off	End of battery discharge or no discharge
		Blinks	Power <15%
 Charging indicator	Green	Lights	Charging and power <98%
		Off	End of battery charging or no charging
		Blinks	It is about to be fully charged, and the power is = 98%.

DIP Switch Definition:

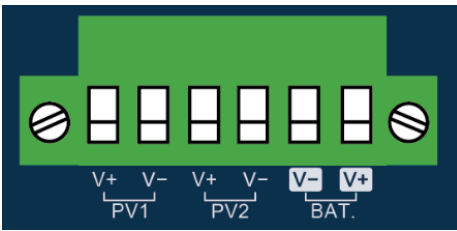


DIP Switch	Description
Alive Check:	PoE PD alive check switch;
VLAN:	Port isolation;
Extend:	Long distance PoE switch;

Rear View

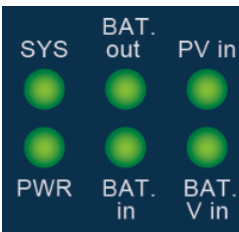


Terminal block Definition:



Location		Description
PV1	V+	Solar cathode
	V-	Solar negative electrode
PV2	V+	Solar cathode
	V-	Solar negative electrode
BAT.	V-	Battery negative electrode
	V+	Battery positive

Rear System LED Definition:



Function indicator(Rear)	Color	State	Description
SYS: System operation indicator	Green	Lights	The system has power but is not functioning properly.
		Off	The system did not start successfully.
		Blinks	Flashing every half-second indicates that the battery is normal. Flashing every quarter-second indicates battery failure.
PWR: Power board voltage OK indicator	Green	Lights	Power board voltage is normal.
		Off	Power board voltage is abnormal.
BAT. out: Discharge indicator	Green	Lights	Battery discharge >15%
		Off	End of battery discharge or no discharge
		Blinks	Flashing every half-second, power<15%
BAT. in: Charging indicator	Green	Lights	Charging and power <98%
		Off	End of battery charging or no charging
		Blinks	When the battery is charged or not charged, it will be fully charged, and the power is = 98%.
PV in: Solar energy input indicator	Green	Lights	The solar energy input is normal.
		Off	Solar energy not input
		Blinks	When flashing every half-second, it indicates that the solar energy is in delayed charging with a duration of 10 minutes. When flashing every quarter-second, it indicates that the solar energy input voltage is wrong and the charging is stopped.
BAT. V in: DC input indicator	Green	Lights	Battery Voltage input normal
		Blinks	When flashing every quarter-second, it indicates abnormal input voltage. When flashing every half-second, it indicates a low current power supply.

DIP switch definition:



DIP switch	Description
1	Equipment power switch
2	Battery type switch
3	Battery voltage switch
4	Lithium iron phosphate switch

Battery type definition:

Mode	PWR	BAT.	BV	LiFe
<input type="checkbox"/>	ON	Li	24V	<input type="checkbox"/> 29.2V
<input type="checkbox"/>	OFF	La	12V	<input type="checkbox"/> 14.6V
DIP	1	2	3	4

Battery type selection				
Switch 1	Switch 2	Switch 3	Switch 4	Description
ON: Equipment power ON	OFF	OFF	--	12V lead acid battery
	OFF	ON	--	24V lead-acid battery pack
	ON	OFF	OFF	12.6V lithium battery pack
	ON	OFF	ON	14.6V lithium iron phosphate battery pack
	ON	ON	OFF	25.2V lithium battery pack
	ON	ON	ON	29.2V lithium iron phosphate battery pack
OFF:	--	--	--	Equipment power OFF

3.4 ENVIRONMENTAL SPECIFICATIONS

Operating:

Temperature: -20 ~65 degrees C

Relative Humidity: 5% ~ 95% (non-condensing)

Storage:

Temperature: -40 ~70 degrees C

Relative Humidity: 5% ~ 95% (non-condensing)

3.5 ELECTRICAL SPECIFICATIONS

Power Requirements:

Supports 12V solar panel input (open circuit voltage = 27V) with 12V battery

Supports 24V solar panel input (open circuit voltage = 45V) with 24V battery

Compatible with DC input, 12V battery pack: DC input range DC 20-27v, maximum input power 405W;

Compatible with DC input, 24V battery pack: DC input range 32-45v, maximum input power 675W;

Power Consumption:

INPUT \ LOADING	Power on without any connection	PoE Full Loading + Ethernet Full Loading
12V DC	3 watts/10.2BTU	115 watts/248.9BTU
24V DC	3 watts10.2BTU	140 watts/477.4BTU

3.6 REGULATORY COMPLIANCE

FCC Part 15 Class A, CE

Stability Testing:

- IEC60068-2-32 (Free Fall)
- IEC60068-2-27 (Shock)
- IEC60068-2-6 (Vibration)

3.7 RELIABILITY

MTBF > 100,000hrs @ 25 degrees C

3.8 BASIC PACKAGING

- BSP-115PV-15A x 1
- User's Manual Sheet x 1
- Wall Mounting Kit x 1
- SFP Dust Cap x 1
- Screwdriver x 1
- temperature Sensor x 1

3.9 PACKING INFORMATION

- Dimensions (W x D x H):** 253 x 180 x 70 mm
- Weight:** 1.06 Kg
- Carton Dimensions (W x D x H):** 423 x 323 x 218 mm
- Total Weight:** 9.18 Kg
- Quantity:** 8pcs in one carton