
PSE-SW5G

5 Port PoE Switch & Extender (Repeat Ethernet and PoE)

USER'S MANUAL



MSTRONIC CO., LTD.

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1. General Information

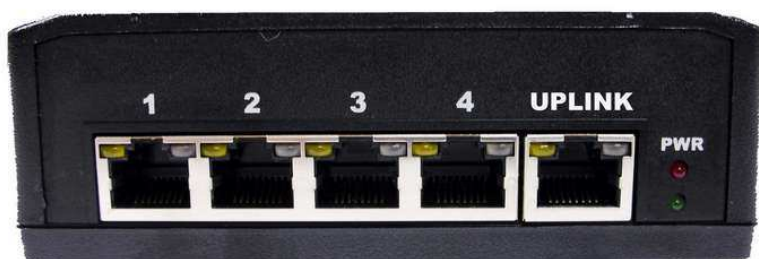
The PSE-SW5G PoE (Power Over Ethernet) Switch family provides four 10M/100M/1000M TX ports with PoE PSE function plus one 10M/100M/1000M TX up-link port with PoE PD function. It accepts power from PoE power sourcing equipment (PSE) and delivers power to PoE powered device (PD), which are compliant with IEEE802.3af and IEEE802.3at standard to receive and deliver both Ethernet data and DC power through the traditional UTP or STP cable. The PoE Switch can extend Ethernet data and DC power up to 200 meters. This manual will help you to install and maintain the PoE switch. Installation of the PoE switch is very easy and you can start to use the product as soon as it has powered up.

2. Hardware Description

*LED Indicator

There are 12 LEDs on the PoE switch to indicate the status of power and signal. The following section describes the functions of each LED indicator.

Front panel detail



*POWER LED

LED	STATUS	Description
Power	Green	LED ON when power input (DC IN on rear panel or UPLINK on front panel) has valid power supplied.
	Red	The indicator is used on full range voltage model(PSE-SW5G-11x1) and 12VDC typical model(PSE-SW5G52x0), LED ON when the following warning condition happens. *Power input under voltage (Vin<10V) *Power input over voltage (Vin>59V) *PoE over current (2A/per port) the indicator is unused on 24V typical model(PSE-SW5G-25x4),48V typical model(PSE-SW5G44x4) and 4 individual input (P/N:PSE-SW5G11XN).
	Off	No power supplied.

*SWITCH LED (the right indicator on RJ45)

LED	STATUS	Description
P1~P5 Link/Act	Green	A network device is detected (1000Mbps), but no communication activity is detected.
	Green Blinking	This port is transmitting to, or receiving package from another device at 1000Mbps.
	Yellow	A network device is detected (10Mbps or 100Mbps), but no communication activity is detected.

	Yellow Blinking	This port is transmitting to, or receiving package from another device at 10Mbps or 100Mbps.
	Off	No device is detected.

*PoE LED (the left indicator on RJ45)

P1~P4 PoE	Yellow	A valid Powered Device (PD) is detected and delivering power on this port.
	Off	No PD is detected on this port.
UPLINK (P5) PoE	Yellow	Power via another PoE 24V typical model(PSE-SW5G25x4) & 48V typical model(PSE-SW5G44x4): Powered via all 4 data pairs. Full range voltage model (PSE-SW5G11x1), & 4 individual input (P/N:PSE-SW5G11XN): (2 data pairs or 4 data pairs)
	Yellow Blanking	24V typical model(PSE-SW5G25x4) & 48V typical model(PSE-SW5G44x4): Powered via 2 data pairs. (1,2,3,6 or 4,5,7,8 are all acceptable). Full range voltage model (PSE-SW5G11x1), & 4 individual input (P/N:PSE-SW5G11XN):unused.
	Off	No power is detected on this port.

*Power wiring

The PoE switch family includes 5 models, be used for 5 different ranges of input voltage:

full range voltage (12 to 57VDC)	(P/N: PSE-SW5G1111,PSE-SW5G1141,PSE-SW5G1181)
12VDC typical (10 to 15VDC)	(P/N: PSE-SW5G5210,PSE-SW5G5240,PSE-SW5G5280)
24VDC typical (12 to 36VDC)	(P/N: PSE-SW5G25A4,PSE-SW5G25B4,PSE-SW5G25D4)
48VDC typical (44 to 57VDC)	(P/N: PSE-SW5G44A4,PSE-SW5G44B4,PSE-SW5G44D4)
4 individual inputs (12 to 57VDC)	(P/N:PSE-SW5G11XN)

The PoE switch family allows for it to be powered by another PoE source on port 5 (UPLINK) as a PoE repeater or extender. For PSE-SW5G25x4 and PSE-SW5G44x4 are 44~57VDC, for full range voltage model(PSE-SW5G11x1), and 4 individual input model(PSE-SW5G11XN) are 12~57VDC. The 12VDC typical model(PSE-SW5G52x0) without PoE input function.

For PoE operation, make sure your power supply can offer at least 75W for 4x 802.3af PoE port, or 150W for 4x 802.3at PoE port.

If powered via the rear terminal, please make sure the input current is not over 10A. total output 8A maximum.

If powered on port 5, the input current is not over 2Amp. Total output 2A maximum.

Ports 1~4 will deliver DC power over the Ethernet cable as detailed below:

Mode A:

- * Data pair A plus V+ on line 1 and 2
- * Data pair B plus V- on line 3 and 6
- * Data pair C on line 4 and 5
- * Data pair D on line 7 and 8

Mode B:

- * Data pair A on line 1 and 2
- * Data pair B on line 3 and 6
- * Data pair C plus V+ on line 4 and 5
- * Data pair D plus V- on line 7 and 8

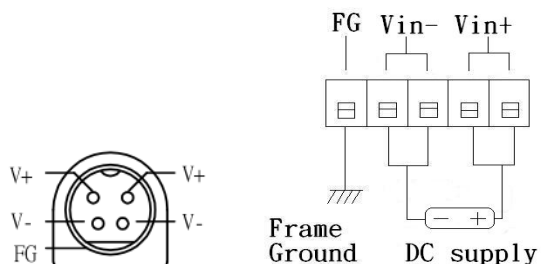
Mode D (dual,=A+B):

- * Data pair A plus V+ on line 1 and 2
- * Data pair B plus V- on line 3 and 6
- * Data pair C plus V+ on line 4 and 5
- * Data pair D plus V- on line 7 and 8

Port 5 may receive DC power over the Ethernet cable, as detailed below:

- * Data pair A plus V+ /V- on line 1 and 2
- * Data pair B plus V-/V+ on line 3 and 6
- * Data pair C plus V+/V- on line 4 and 5
- * Data pair D plus V-/V+ on line 7 and 8

The terminal block on the rear panel should be wired as detailed below:



The DIN-4P connector on the rear panel also used for power input, you can use an AC/DC adapter with DIN-4P connector directly, recommends adaptor products as detailed below: (OPTION)

	MS-180-18	MS-180-24	MS-180-48	MS-180-56
Maximum output	18VDC/8.35A	24VDC/6.25A	48VDC/3.75A	56VDC/3.2A
Related model	PSE-SW5G1111 PSE-SW5G1141 PSE-SW5G1181 PSE-SW5G25A4 PSE-SW5G25B4 PSE-SW5G25D4 PSE-SW5G11XN	PSE-SW5G1111 PSE-SW5G1141 PSE-SW5G1181 PSE-SW5G25A4 PSE-SW5G25B4 PSE-SW5G25D4 PSE-SW5G11XN	PSE-SW5G1111 PSE-SW5G1141 PSE-SW5G1181 PSE-SW5G44A4 PSE-SW5G44B4 PSE-SW5G44D4 PSE-SW5G11XN	PSE-SW5G1111 PSE-SW5G1141 PSE-SW5G1181 PSE-SW5G44A4 PSE-SW5G44B4 PSE-SW5G44D4 PSE-SW5G11XN

*For 24VDC typical model(PSE-SW5G25x4)

Please note that the maximum power per port of 35W can only be achieved using 24VDC input operation. If your input is 12VDC, then the total power per port should be de-rated to 17W per port. Total output of 24VDC typical model is 35W(802.3at) x2 or 17W (802.3af) x 4.

*For 48VDC typical model(PSE-SW5G44x4) (PSE-SW5Gxxx4)

The input voltage must be in the range of 44 to 57VDC if running for 802.3af operation.

The input voltage must be in the range of 50 to 57VDC if running for 802.3at operation.

If the 48VDC typical model is not powered with the above designated input voltage, it will only function as an Ethernet switch without PoE output.

Model	Input Voltage (REAR)	Input Voltage (Port 5)	Output voltage	802.3af/at	Isolated
PSE-SW5G1111 PSE-SW5G1141 PSE-SW5G1181	12-57VDC	No input	12-57VDC (As input voltage) (non-regulated)	No	No
	No input	12-57VDC	12-57VDC (non-regulated)	No	No
	12-57VDC	12-57VDC	Higher voltage output (REAR or Port 5)	No	No
PSE-SW5G25A4 PSE-SW5G25B4 PSE-SW5G25D4	12-36VDC	No input	56VDC (regulated)	Yes	No
	No input	44-57VDC	44-57VDC (non-regulated)	Yes	No
	12-36VDC	44-57VDC	56VDC (regulated)	Yes	No
PSE-SW5G44A4 PSE-SW5G44B4 PSE-SW5G44D4	44-57VDC	No input	44-57VDC (non-regulated)	Yes	No
	No input	44-57VDC	44-57VDC (non-regulated)	Yes	No
	44-57VDC	44-57VDC	Higher voltage output (REAR or Port5)	Yes	No

PSE-SW5G5210 PSE-SW5G5240 PSE-SW5G5280	10-15VDC	No input	24VDC (regulated)	No	No
PSE-SW5G11XN	12-57VDC	No input	12-57VDC (As input voltage) (non-regulated)	No	No
	No input	12-57VDC	12-57VDC (non-regulated)	No	No
	12-57VDC	12-57VDC	Higher voltage output (REAR or Port 5)	No	No

*Ethernet Port Wiring

The PoE switch family supports one RJ-45 uplink (port 5 with PoE PD) and four RJ-45 ports (port 1~4 with PoE PSE) with automatic MDI/MDI-X crossover, auto-sense for speed and duplex for 10Base-T, 100Base-TX or 1000Base-T connection. Automatic MDI/MDI-X crossover allows you to connect to other devices (switches, hubs, or workstations etc.), without regard to using straight-through or crossover cabling.

Port 1 to 4 provides Power over Ethernet function that delivers DC power through the data pairs C & D (pin 4,5 and pin 7,8) (mode B) to the PD. Port 5 provides Power Device function that receive power from 4 pairs or 2 pairs Ethernet cable.

The following tables describe the wiring diagram of straight-through and crossover cabling. The crossover cables simply cross-connect the transmit lines at each end to the receive lines at the opposite end.

Straight-through Cabling	
Pin 1	Pin 1
Pin 2	Pin 2
Pin 3	Pin 3
Pin 6	Pin 6
Pin 4	Pin 4
Pin 5	Pin 5
Pin 7	Pin 7
Pin 8	Pin 8

Cross-over Cabling	
Pin 1	Pin 3
Pin 2	Pin 6
Pin 3	Pin 1
Pin 6	Pin 2
Pin 4	Pin 7
Pin 5	Pin 8
Pin 7	Pin 4
Pin 8	Pin 5

Connect an Ethernet cable into any switch port and connect the other side to your attached device. The Link/Act LED (green or yellow) will light up when the cable is correctly connected. Refer to the **LED Indicator** section for descriptions of each LED indicator.

If a port LED is off, go back and check for connectivity problems between that port and the network device connected.

The maximum cable length for 10/100/1000BaseT with Cat 5 twisted pair cables is typically 100m (328 ft.).

*PD Port Wiring

Port 1 to 4 provides PoE injection function with maximum 35W ability to power up the powered device using the straight-through or cross-over Ethernet cable.

The PoE switch follows the IEEE802.3af Alternative B mode connector assignment. The following table shows pin assignment of alternative A and B for the Power Source Equipment.

Conductor	Alternative A (MDI-X)	Alternative A (MDI)	Alternative B (All)
1	Negative Vport	Positive Vport	
2	Negative Vport	Positive Vport	
3	Positive Vport	Negative port	
4			Positive Vport
5			Positive Vport
6	Positive Vport	NegativeVport	
7			Negative Vport
8			Negative Vport

Be sure the twisted pair cable is bound with the standard RJ-45 pin, especially the pins 4, 5, 7 and 8. If the RJ-45 is bound with the wrong pin number, the PoE switch will not recognize the PD and won't deliver DC power to the PD. The yellow PoE LED will light up when the cable is correctly connected. Refer to the **LED Indicator** section for descriptions of each LED indicator. If a port LED is off, go back and check for connectivity problems between that port and the network device connected.

*Network Application

The PoE Switch can receive power from a PoE midspan and provide power to the PD which follows the IEEE 802.3af/at standard in the network. The PoE Switch can be installed in a more appropriate position for better performance to extend Ethernet to 200 meters. The following figure is an example of a network application for the PoE Switch.



3. Model Information

Model number	Input Voltage	Vout/pin out/Iout	Output Wattage	Remark
PSE-SW5G1111	12~57VDC(P3) 12~57VDC(POE)	Vi/1236/2A	2A/port	
PSE-SW5G1141	12~57VDC(P3) 12~57VDC(POE)	Vi/4578/2A	2A/port	
PSE-SW5G1181	12~57VDC(P3) 12~57VDC(POE)	Vi/1236+4578/2A	2A/port	
PSE-SW5G25A4	12-36VDC(P3) 44~57VDC(POE)	56VDC/1236/0.625A	35W/port	802.3at
PSE-SW5G25B4	12-36VDC(P3) 44~57VDC(POE)	56VDC/4578/0.625A	35W/port	802.3at
PSE-SW5G25D4	12-36VDC(P3) 44~57VDC(POE)	56VDC/1236+4578/0.625A	35W/port	802.3at
PSE-SW5G44A4	44-57VDC(P3) 44~57VDC(POE)	Vi/1236/0.625A	35W/port	802.3at
PSE-SW5G44B4	44-57VDC(P3) 44~57VDC(POE)	Vi/4578/0.625A	35W/port	802.3at
PSE-SW5G44D4	44-57VDC(P3) 44~57VDC(POE)	Vi/1236+4578/0.625A	35W/port	802.3at
PSE-SW5G5210	10~15VDC	24V/1236/0.84A	20W/port	
PSE-SW5G5240	10~15VDC	24V/4578/0.84A	20W/port	
PSE-SW5G5280	10~15VDC	24V/1236+4578/0.84A	20W/port	
PSE-SW5G11XN	12~57VDC	Vi/4578/2A	2A/port	4 individual input

4. Technical Specifications

Standards	IEEE802.3/IEEE802.3u standards/IEEE802.3ab (10 base-T/100base-TX/1000base-T)
Ports	5 ports with PoE (4 PSE & 1 PD), support auto-crossover & auto-polarity
Transmission speed	1000Mbps (1000base-T).100 Mbps (100base-TX), 10 Mbps(10base-T) Auto-negotiation
Switch technology	store-and-forward
Protocols	CSMA/CD
Flow control	IEEE802.3x (full-duplex), back pressure (half-duplex)
Data transmission rate	1488000pps for1000base-T, 148800pps for 100base-T, 14880pps for 10base-T
Address table	2K MAC address table, self-learning
Connect	RJ-45
PoE port	Port 1-4, PSE auto power management Pin assignment: *A mode: data pair A plusV+(1,2), data pair B plusV-(3,6), data pair C (4,5), data pair D (7,8) *B mode: data pair A (1,2), data pair B (3,6), data pair C plusV+(4,5), data pair D plus V-(7,8)

*A+B mode:

data pair A plus V+(1,2),

data pair B plus V-(3,6),

data pair C plus V+(4,5),

data pair D plus V-(7,8)

Port 5, 4 pairs PD

Maximum PoE power Port 1-4: IEEE802.3af – 16.8W
IEEE802.3at – 35W
Current limited – 2A
24V output – 20W
(Total power for PSE-SW5G25x4 – 70W)

Port 5: 90W (802.3at 2 event classification)
Current limited – 2A

PSE disconnect mode DC disconnect

PoE auto detection IEEE802.3af & IEEE802.3at (2 event classification signaling)

PoE protection Over-temperature, over-current, over/under voltage

LEDs *Link/Activity (Green ON/ Green Blinking @1000Mbps,
Yellow/Yellow Blinking @10M/100Mbps)

*PoE (Yellow) port 1-4 ON - PD detect
Port 5 PSE-SW5G25x4 & PSE-SW5G44x4
ON – 4 pair power, Blinking-2 pair power
PSE-SW5G11x1, PSE-SW5G52x0 &
PSE-SW5G11XN ON – 2 or 4 pair power
*POWER Green-normal, Red-alarm

Power input Port 5 (UPLINK) from network switch or midspan, or optional DC
power supply.
(see detail on page 8)

Power consumption less than 5W when without PD loading

Input	PSE-SW5G11x1	PSE-SW5G25x4	PSE-SW5G44x4
12V	0.190A	0.340A	0.190A
24V	0.104A	0.170A	0.104A
48V	0.061A	---	0.061A
56V	0.056A	---	0.056A

Power efficiency 85% at full load (@48V typical)

Operating temperature -20°C ~ +75°C

Operation humidity 90% relative humidity, non-condensing

Storage temperature -40°C ~ +85°C

Dimension 40mm(H)x118mm(W)x150mm(D) DIN RAIL Mountable

Surge Protection on data pairs

	Signal
Operating Voltage	Data 5V
Clamping Voltage	Data 16.5V (@I PP =5A, t p =8/20μs, I/O pin to GND)
Peak Pulse Current	20A (tp=8/20μs)
Pin Protected	All 8 pin protected
Max. Shut Capacitance	<3pF (VR = 0V, f = 1MHz, I/O pin to GND) < 1.5 pF (VR = 0V, f = 1MHz, Between I/O pins)
IEC COMPATIBILITY (EN61000-4)	IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact) IEC61000-4-4 (EFT) 40A (5/50ns) IEC61000-4-5 (Lightning) 20A (8/20μs)

NOTICE:

The product is not comply to LPS requirement, it need to evaluate at final system.

