SFE-SW5G-25x4

5 Port PoE Switch & Extender

(Repeat Ethernet and PoE)

USER'S MANUAL

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1. General Information

The SFE-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 souring 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
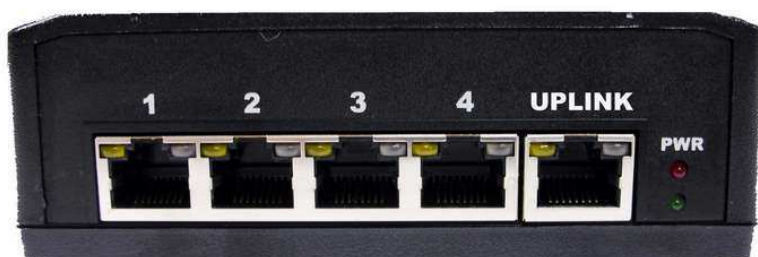
*POWER LED

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 unused
	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	Powered from another PoE, Powered via all 4 pairs.
	Yellow Blanking	Powered via 2 pairs, data pairs (pin 1,2,3,6) or spare pairs (pin 4,5,7,8) are all acceptable.
	Off	No power is detected on this port.

*Power wiring

The PoE switch family includes 3 models as below:

Model number	Input Voltage	Vout/pin out/Iout	Output Wattage	Remark
SFE-SW5G25A4	12-36VDC(P3) 44~57VDC(POE)	56VDC/1236/0.625A	35W/port	802.3at
SFE-SW5G25B4	12-36VDC(P3) 44~57VDC(POE)	56VDC/4578/0.625A	35W/port	802.3at
SFE-SW5G25D4	12-36VDC(P3) 44~57VDC(POE)	56VDC/1236+4578/0.625A	35W/port	802.3at

The PoE switch allows to be powered by another PoE source on port 5 (UPLINK) and/or on rear terminal,

If powered on port 5 (UPLINK) as a PoE repeater, the PoE input must be 44~57VDC, the input current is not over 2Amp.

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

Model	Input Voltage (REAR)	Input Voltage (Port 5)	Output voltage
SFE-SW5G25A4 SFE-SW5G25B4 SFE-SW5G25D4	12-36VDC	No input	56VDC (regulated)
	No input	44-57VDC	44-57VDC (non-regulated)
	12-36VDC	44-57VDC	56VDC (regulated)

For PoE operation, total output is 35W (802.3at) x 2 or 17W (802.3af) x 4. Please note that the full load output only be achieved using 24VDC (or above) input voltage. If your input is 12VDC, then the total load should be de-rated.

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

Mode A: SFE-SW5G25A4
* 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: SFE-SW5G25B4
* 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): SF-SW5G25D4
* 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 (UPLINK) 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 MS-180-18 or MS-180-24 as detailed below: (OPTION)

	MS-180-18	MS-180-24
Maximum output	18VDC/8.33A	24VDC/6.25A

*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 A and/or B mode connector assignment. The following table shows pin assignment of alternative A and/or 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. 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 plus V+(1,2),
                                   data pair B plus V-(3,6),
                                   data pair C(4,5),
                                   data pair (7,8)
                               *B mode:
                                   data pair A(1,2),
                                   data pair B(3,6),
                                   data pair C plus V+(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

        Total power – 70W

     Port 5: 90W (802.3at 2 event classification) **INPUT**

       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 ON – 4 pair power, Blinking-2 pair power

     *POWER Green-normal, Red-alarm


Power input   PoE source on Port 5 (UPLINK), and/or optional DC power supply on

      rear terminal.

Power consumption less than 5W when without PD loading

Input	PSE-SW5G25x4
12V	0.340A
24V	0.170A

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

Operating temperature   -20℃~ +75℃

 Operation humidity   90% relative humidity, non-condensing

Storage temperature   -40℃~+85℃

Dimension   40mm(H)x118mm(W)x150mm(D)   DIN RAIL Mountable
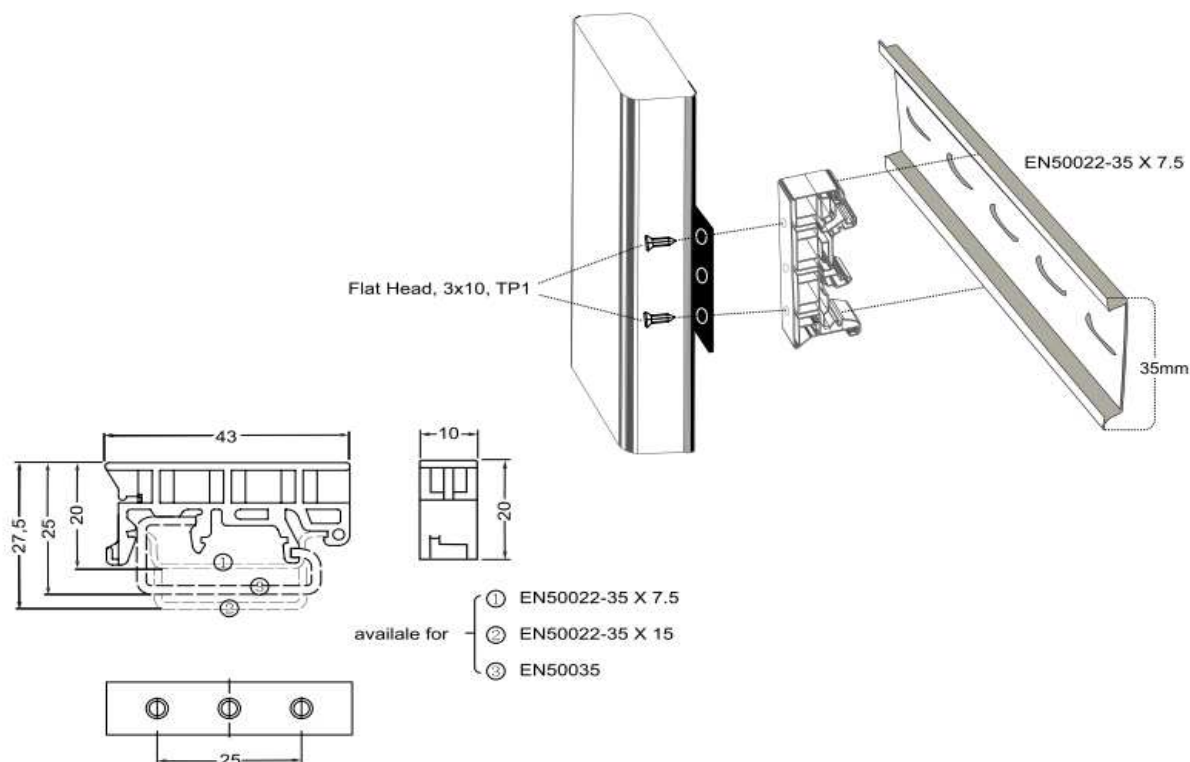
Surge Protection on data pairs

	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 @ data input
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)