

12W PD-5V PoE Splitter (Type-c)



Product characteristi

- Compliance with IEEE802.3af standard
- 42V~57V wide operating voltage range
- Maximum output power up to 12W; Rated output: 5V/2.4A
- The output ripple is less than 100 mV
- The maximum transmission distance is 100M, and plug and play does not require management
- Conversion efficiency can be as high as 82% (input: 48V output: 5V@2.4A)
- It has excellent reliability and circuit protection such as over current, short circuit, under voltage and surge
- Shape size: 94*35*27mm
- Input/Output: isolate 1500Vdc
- Class 4 IEEE802.3 PD
- Standard Type-C power interface

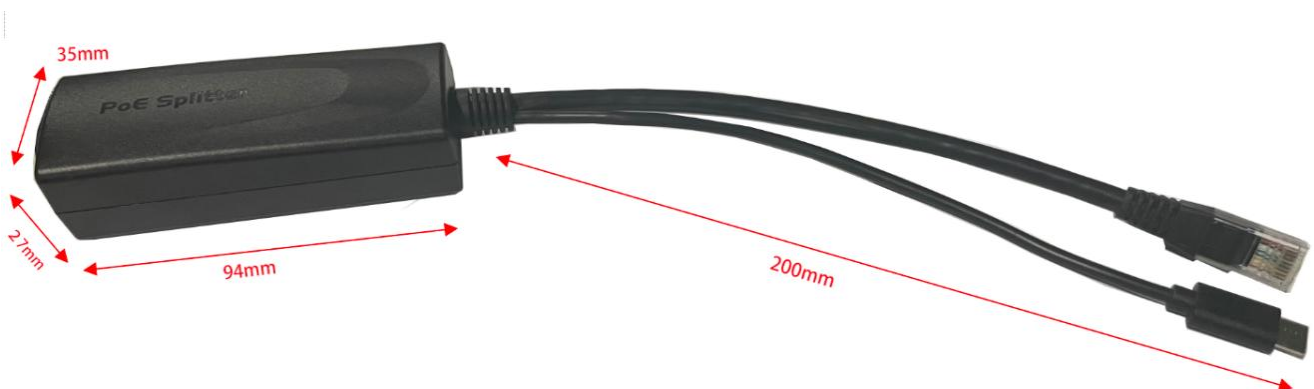
Scope of application

- Outdoor security video surveillance
- Wireless data center
- High temperature industrial applications
- Business and Public Information Monitor
- RFID Reader

Describe

- The PoE (power over Ethernet) module is a traditional Category 5 and 6 twisted pair Ethernet power supply module based on the IEEE 802.3AF PoE standard
- Designed to extract power from power supply devices (PSEs) through conventional twisted pair Category 5 and Category 6 Ethernet cables. The module input complies with IEEE803.2AF signature recognition and classification standards, providing a 10M/100Mbps network data transmission line
- Pre configured as a Type 1, Level 4 device, allowing the module to obtain class 4 power from the PSE with a rated output voltage of 5V. Efficient DC/DC converters can achieve an efficiency of about 84% and operate within a wide input voltage range, with low ripple and low noise output. The DC/DC converter also has built-in output overload and short circuit protection, and provides 1500Vdc (input output) isolation barrier

Mechanical dimensions



Unit: mm

The above dimensions are manually measured and may have slight errors. Please refer to the actual product for accuracy;

Technical Parameters

Model	PS12-CB05R1-TYPEC
product type	PoE splitter
Support Agreement	IEEE802.3af
Transfer Rate	10/100M
Interface Type	1 Input RJ45 port, 1 output RJ45 port, 1 DC output (Type-c)
LED	Yellow PoE power indicator light
Power	Output 5V/2.4A
Environment	Working temperature: -40 °C -80 °C Storage temperature: -40 °C -85 °C Working humidity: 10%~90% Non condensing Storage humidity: 5%~90% Non condensing
TRNF	1/2(+),3/6(-);4/5(+),7/8(-)
Dimension	94*35*27mm (L*W*H)

Electrical Characteristics

Absolute maximum rating parameter

No	parameter	Symbol	MIN	MAX	Units
1	Input DC voltage	VCC	42	57	V
2	DC Voltage Surge 1ms	VSURGE	-0.6	80	V
3	ambient temperature	TS	-40	80	°C

- Exceeding the above rating may cause permanent damage to the product. Functional operations under these conditions are not recommended

Recommended working conditions

No	parameter	Symbol	MIN	TYP	MAX	Units
1	Input DC voltage	VIN	42	48	57	V
2	Low pressure input threshold	VLOCK	37	-	-	V
3	Ambient Temperature	TOP	-40	25	80	°C

- Only applicable to the highest operating temperature of PS12-CB05R1-TYPEC products

DC Characteristic

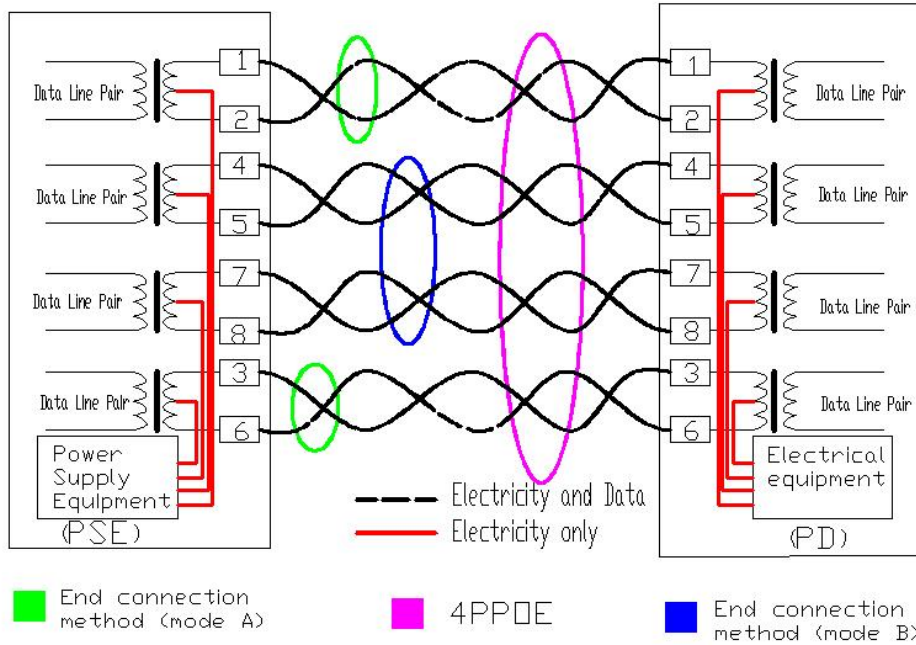
No	parameter	Symbol	MIN	TYP	MAX	Units	Test conditions
1	Output voltage	VDC	4.75	5	5.25	V	VIN=48V Tc: 25°C
2	Output Current (VIN=48V)	PWR	-	2.4	-	A	Wide voltage input 42-57V
3	Power adjustment rate	VLINE	-	0.1	-	%	@50% Load
4	Load Adjustment Rate	VLOAD	-	1	-	%	@VIN=48V
5	Full load output ripple	VRN	-	100	-	mVp-p	@Maximum Load
6	Minimum Load	RLOAD	10	-	-	mA	
7	Short circuit duration	TSC	-	-	∞	sec	
8	Efficiency (load 80%)	EFF	82	84	-	%	
9	Isolation Voltage (I/O)	VISO	-	-	1500	VPK	
10	temperature coefficient	Tc	-	0.02	-	%	Per °C
11	transient response	Ts	-	150	200	ms	VIN=48V VOUT=max

- Typical number is 25 C, nominal voltage is 48V, for auxiliary design only
- Output ripple and noise can be reduced by an external filter, see the application instructions
- If operated under the specified minimum load, the module will emit sound noise, which may cause repeated hiccups in the PSE

Functional Description

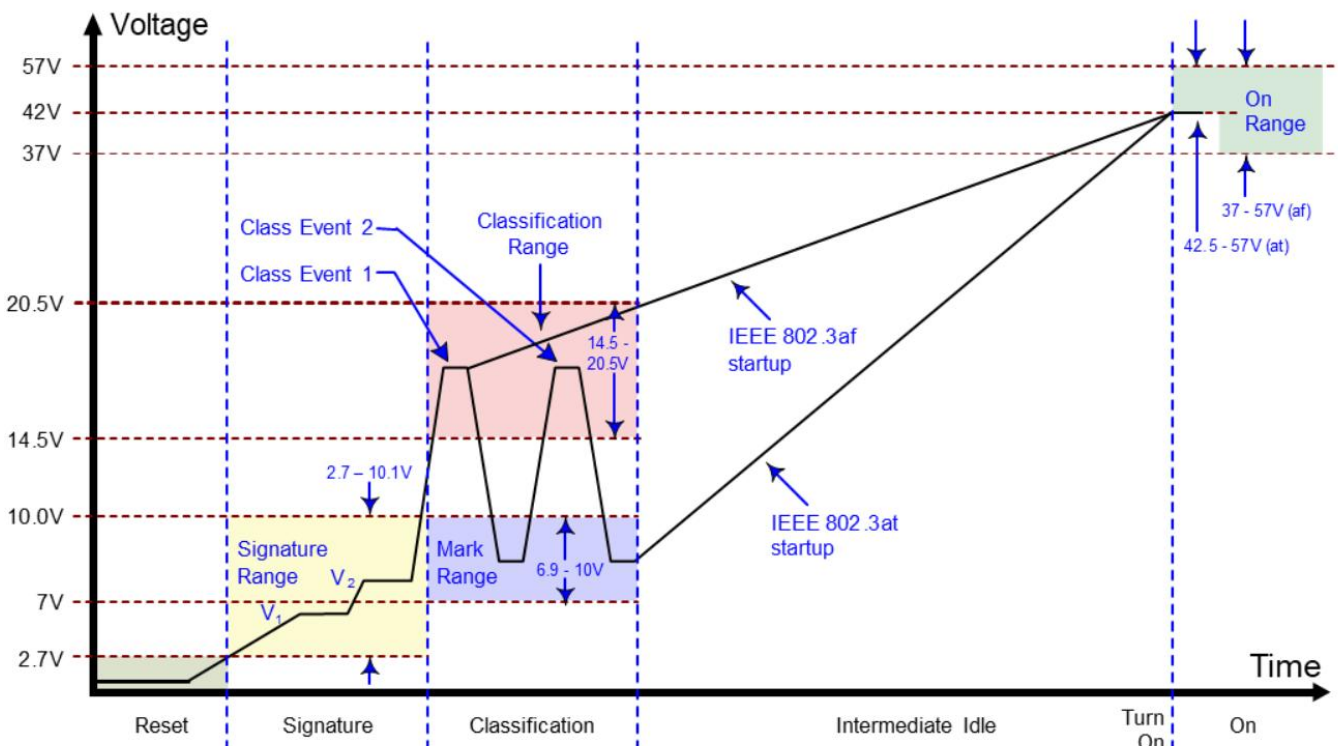
input:

- PS12-CB05R1-TYPEC Ginput end with bridge stack ensures input polarity protection, user can choose the connection mode as needed.



PD Signature

- When the module is connected to the cable, it will automatically provide the Power Device (PD) signature to the PSE when needed. The PSE recognizes that the PD is connected to that line and provides power.

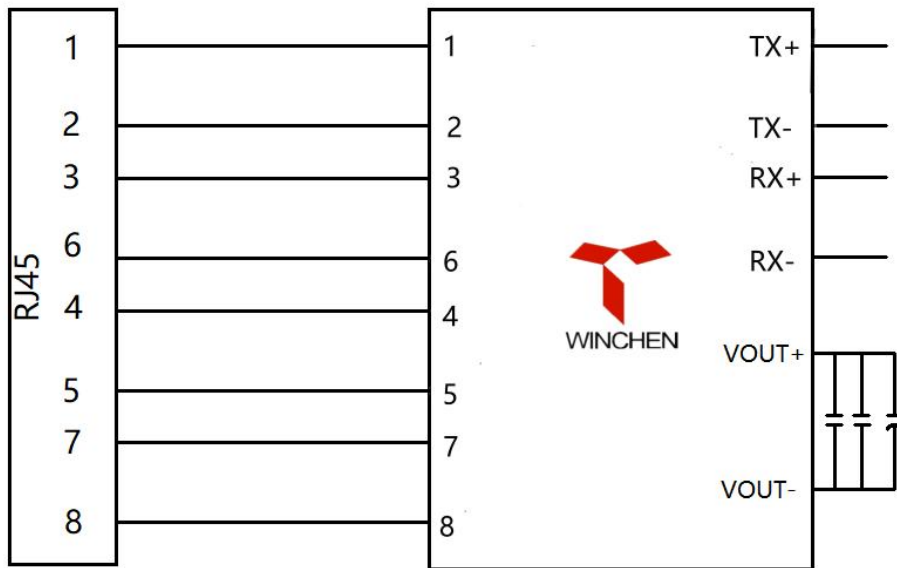


Power Classification:

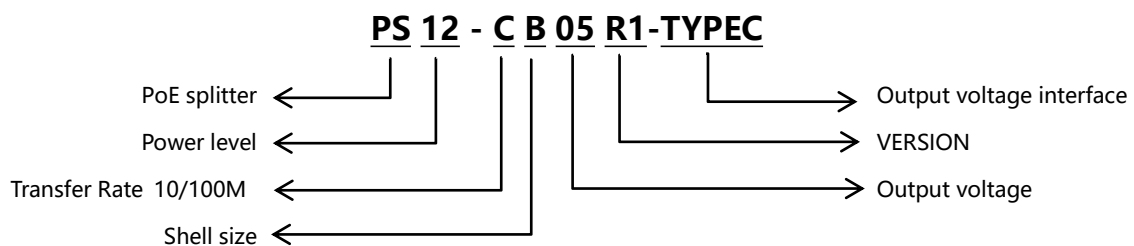
➤ PS12-CB05R1-TYPEC uses IEEE802.3af standard and runs with Class 3 (12W) power rating by default.

Define criteria	Cable requirements	Grading parameters	Power Supply Characteristics
IEEE802.3at (PoE Plus)	CAT5 cable or CAT6 cable	Maximum power required for Class4 devices is 13W~25.5W	<ol style="list-style-type: none"> The DC voltage ranges from 42 to 57V, with a typical value of 48V. Typical operating current is 10~600mA; typical output power: 30W. Class4 rating supported by electrical equipment.
IEEE802.3af (PoE)	CAT5 cable	Maximum power required for Class0 devices is 0~12.95W	<ol style="list-style-type: none"> The DC voltage ranges from 38 to 57V, with a typical value of 48V. Typical operating current is 10~350mA; typical output power: 15.4W. The overload detection current is 350~500mA. Provide 4 Class Power Requests for PD Devices ranging from 3.84 to 12.95W.
		The maximum power required for Class1 devices is 0~3.84W	
		The maximum power required for Class2 devices is 3.85W~6.49W	
		The maximum power required for Class3 devices is 6.5W~12.95W	

Typical Connection Diagram

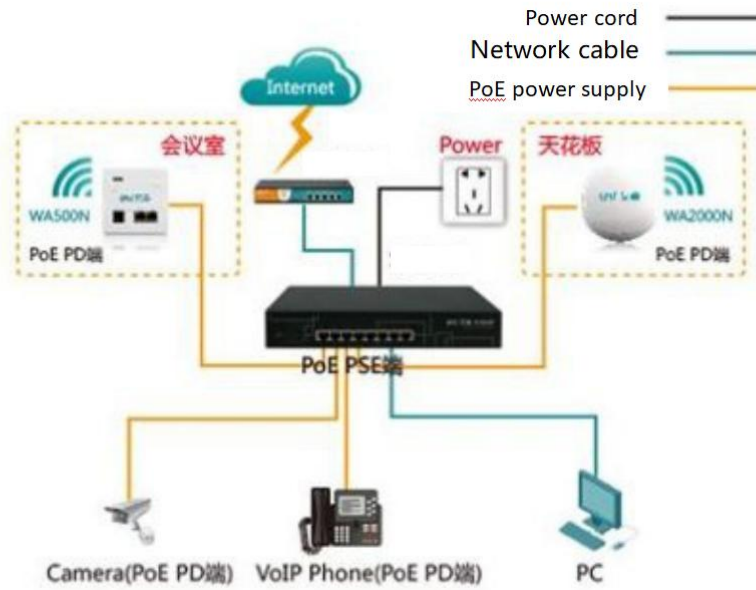


PoE Product naming rules



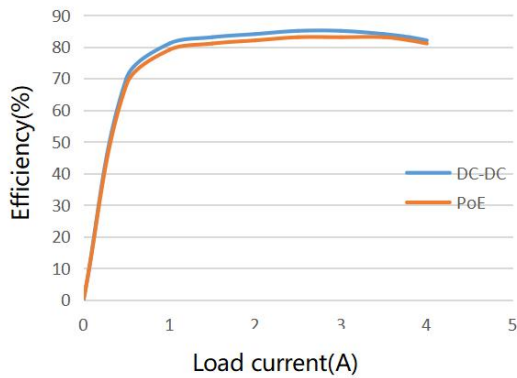
Typical applications

- This module is used in the PSE network cable to convert electrical energy into the voltage required for DC-DC to the device without affecting data signal transmission. Complies with IEEE802.3AF standard and is used by all device terminals.

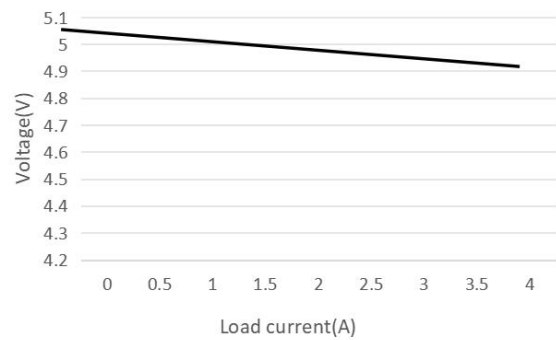


Test waveform diagram

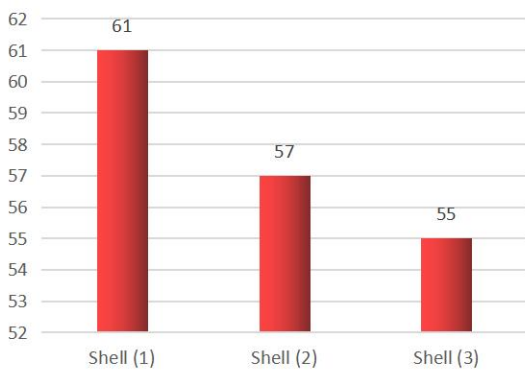
Typical features: $V_{out}=5V$



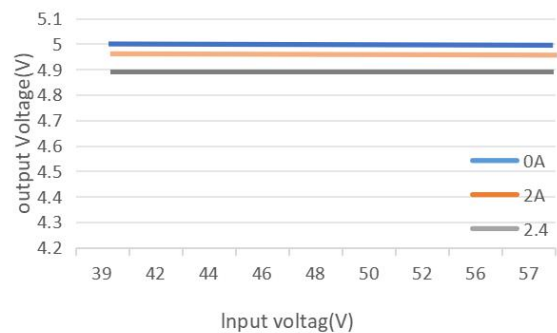
Efficiency (V_{out} = 5 V)



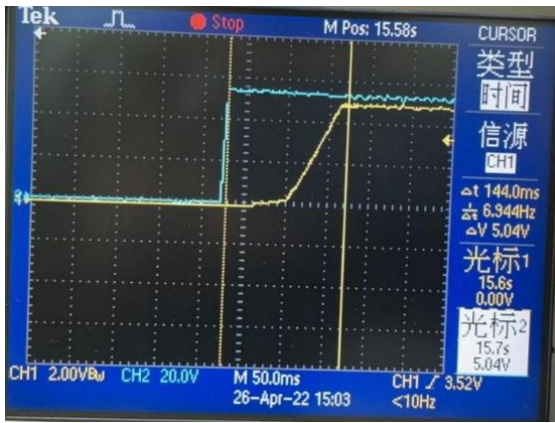
Output voltage and current (Input 48V)



Maximum temperature of components Conditions (ambient temperature: 27 °C; output power: 5V / 2.4A; frequency: 3H)



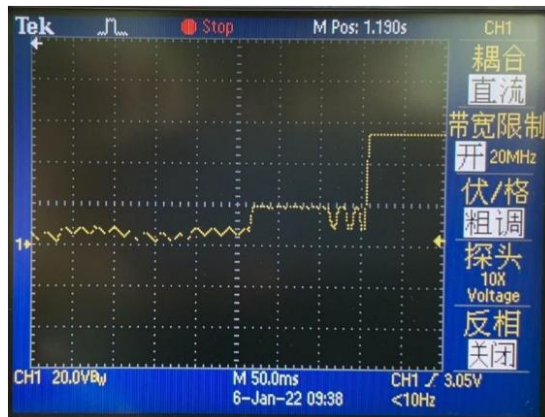
Input voltage & output voltage



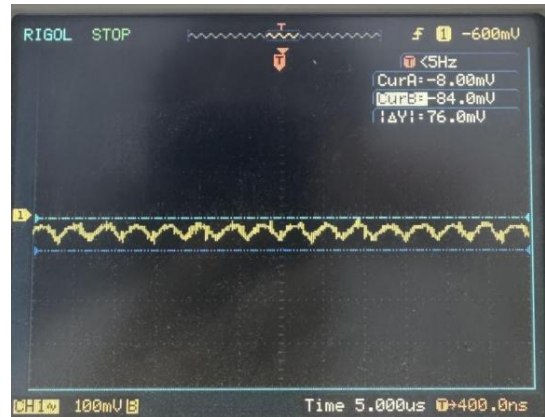
Power on



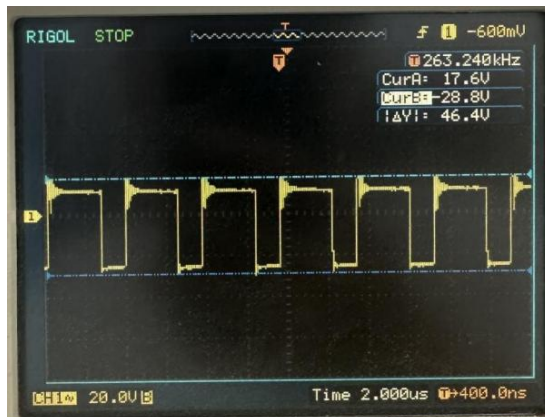
Power down



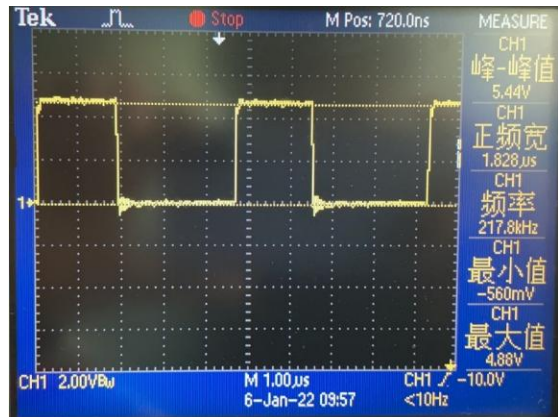
Power on protocol handshake



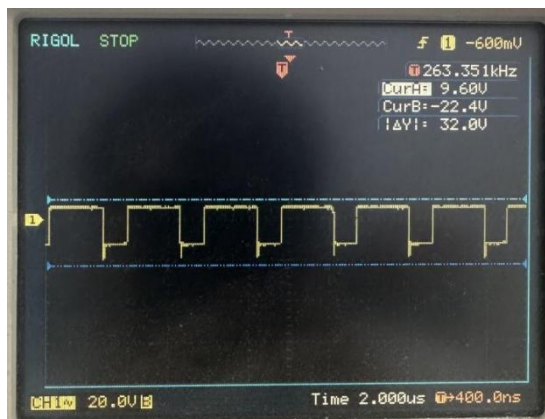
Output ripple (5V /2.4A)



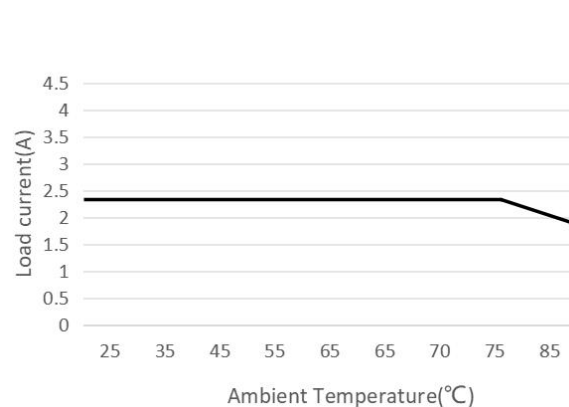
switching waveform



PWM



Output diode waveform



Derating