Surge Protective Device

Paperless Datasheet

In support of environmental sustainability, WatchfulEye provides digital datasheets accessible via a QR code laser-marked on the product housing. Scan the QR code or visit the link below to download the latest datasheet:
http://datasheet.watchfuleyesolutions.com/US121012.html

3D file download

http://www.watchfuleyesolutions.com/wth_rar/3D/WTH-SG_RJ45.STEP.zip

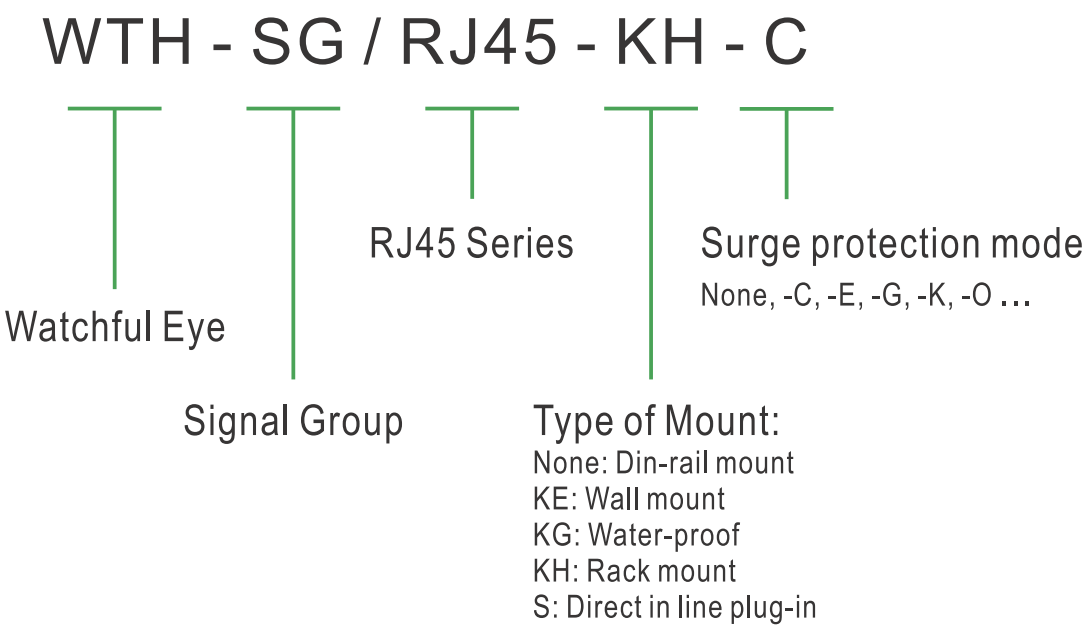
Model & Ordering Code

Model	Ordering Code	UPC/EAN Code
WTH–SG/RJ45	US121012	(0) 811914030003
WTH–SG/RJ45–E	US121125	(0) 811914030034

Certificates of Products

UL LISTED E346881 CE RoHS IEC61643-11

How to Name Ethernet PoE Series



UL file number: E346881
Data protectors, for indoor use, Model(s) WTH-SG/RJ45+
Data protectors, for outdoor use, Model(s) WTH-SG/RJ45-KE+, WTH-SG/RJ45-KG+
Data protectors, for rack mount use, Model(s) WTH-SG/RJ45-KH+/n (n=number of ports)

Notes:
+ - May be followed by -A, -B, -C, -D, -E, -F, -G, -H, -I, -J, -K, -L, -M, -N or -O.

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Surge Protective Device

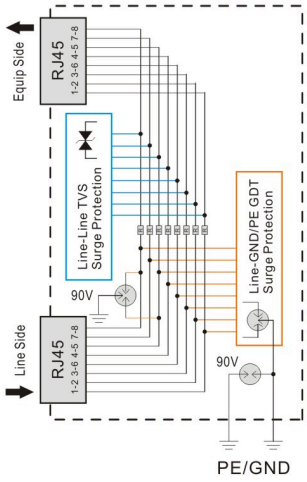
Description

WTH-SG/RJ45 Series surge protective devices are applied to surge protection for data communication systems. WTH-SG/RJ45 is connected in series in CAT6 network cables, compatible with 10/100/1000/10000 (10G) Base-T Ethernet systems, protecting the equipment which are connected to the network (e.g. computers, routers, PoE devices, etc.) against damages by over-voltage surge.
(Standards compliance: IEC61643-11, UL497B, IEEE 802.3af PoE/802.3 at PoE Plus)

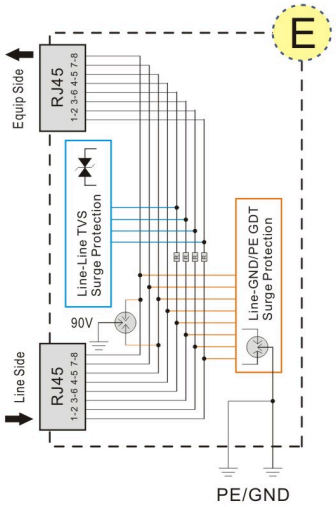
WTH-SG/RJ45(-E) Series Technical Data	
Nominal operating voltage (Un)	2.8V(Ethernet)/48V(PoE)
Max. continuous operating voltage (UC)	3V(Ethernet)/60V(PoE)
Nominal Discharge Current (In @8/20μs)	3kA (line to line)
Max. Discharge Current (Imax @8/20μs)	20kA (line to GND/PE)
Voltage protection level (Up @line-line)	50V @ 3kV (1.2/50)
Voltage protection level (Up @line-GND/PE)	700/800V @ 3kV (1.2/50)
Max Watt	90W (PoE)
Data Rate	100/1000Mbps
Bandwidth (3db) per pair	>250MHz
Insertion Loss	<0.5dB @100MHz
Pairs Protected	1-2,3-6,4-5,7-8
Protective Element	GDT, TVS
Voltage Breakdown Range, Vdc @ 100 V/s	2.4-188 (L-L) / 72-108(L-G)
Impulse Voltage Range,Vdc @ 100 V/μs	<1000
Response Time (tA)	<100ns (line-GND/PE), <1ns (line-line)
Connection mode	RJ45
Temperature Range	- 40˚ to 176˚F (-40˚ to 80˚C)
Relative Humidity	0% to 95% noncondensing
Maximum Operating Altitude	10,000 feet (3000m)
Cross-sectional area of earth lead	3mm^2 multistranded / flexible
Stripping Length Contacts	>0.25inches (6-7mm)
Terminal Screw Torque	Max. 0.25Nm
Protection Rating (IP Code)	IP 20
Surge Life at 0.5kA (8/20μs)	>2000 events
DIN Rail EN60715	35mm top-hat rail
Housing Material	Thermoplastic, UL94 V-0
Net Weight Per Unit	0.16Lb (71g)
Product Dimension (W×D×H)	0.9"×2.0"×3.1" (24mm×51mm×78mm)

Surge Protective Device

Surge Protection Connection Diagram

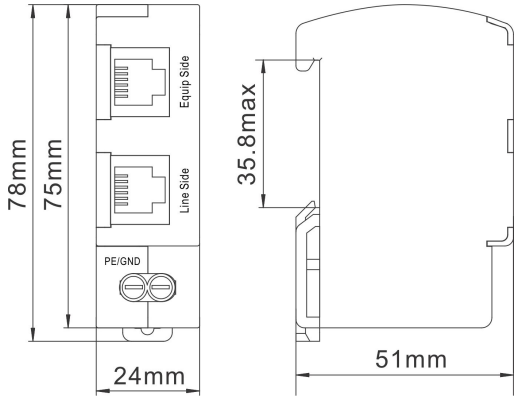


WTH-SG/RJ45



WTH-SG/RJ45-E

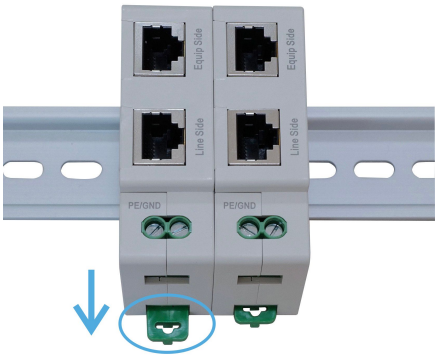
Dimensions

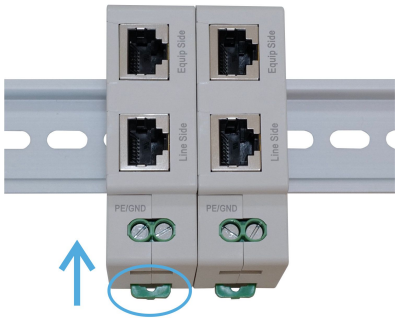


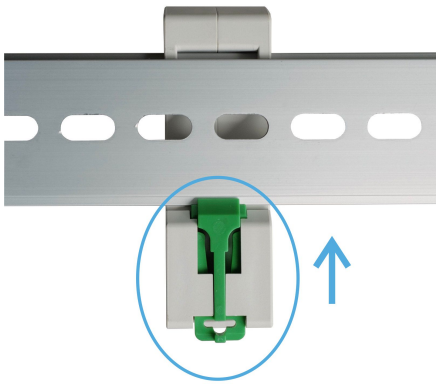
Installation Instruction

The surge protective devices shall be employed in a Listed enclosure or closet that is only accessible to technicians or service personnels.

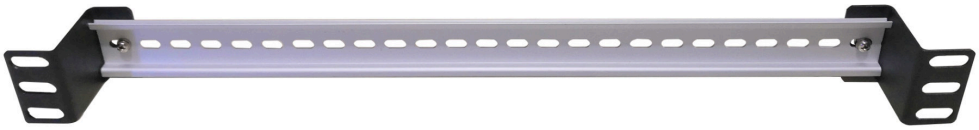
DIN-Rail Mounted



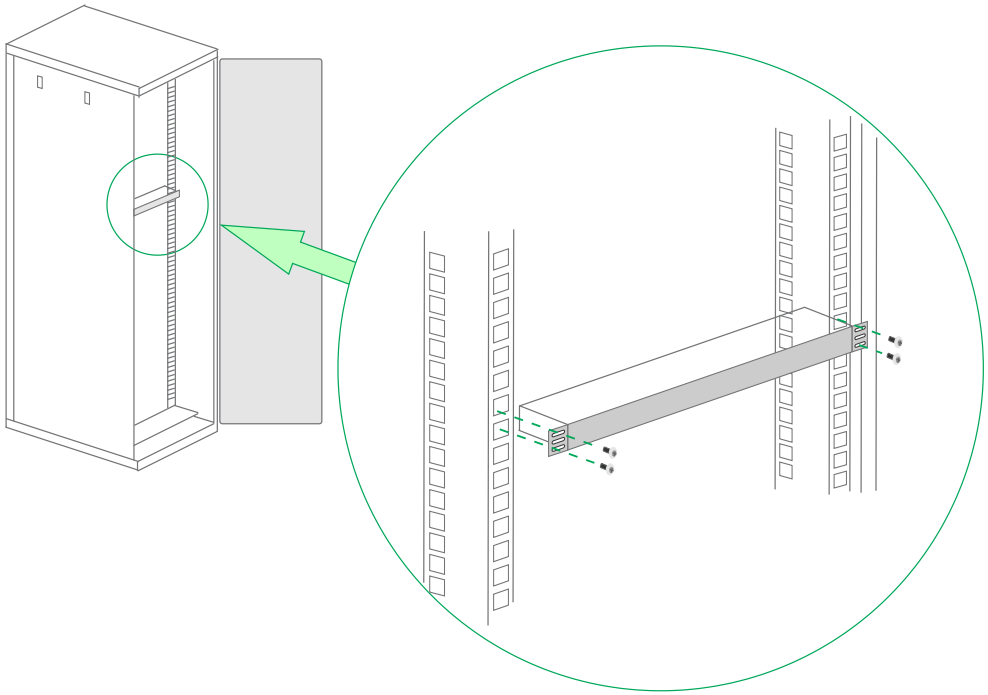




Rack Mounted

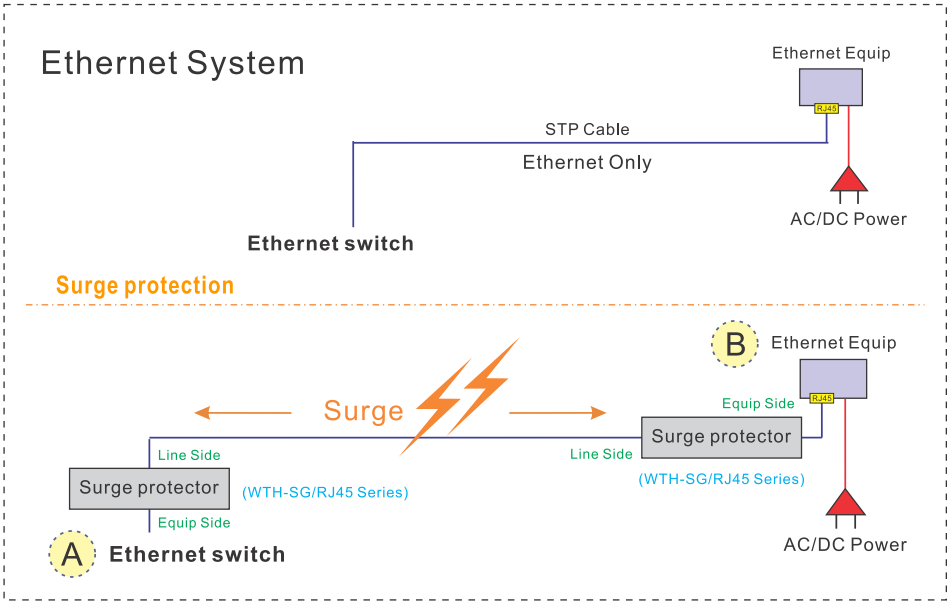


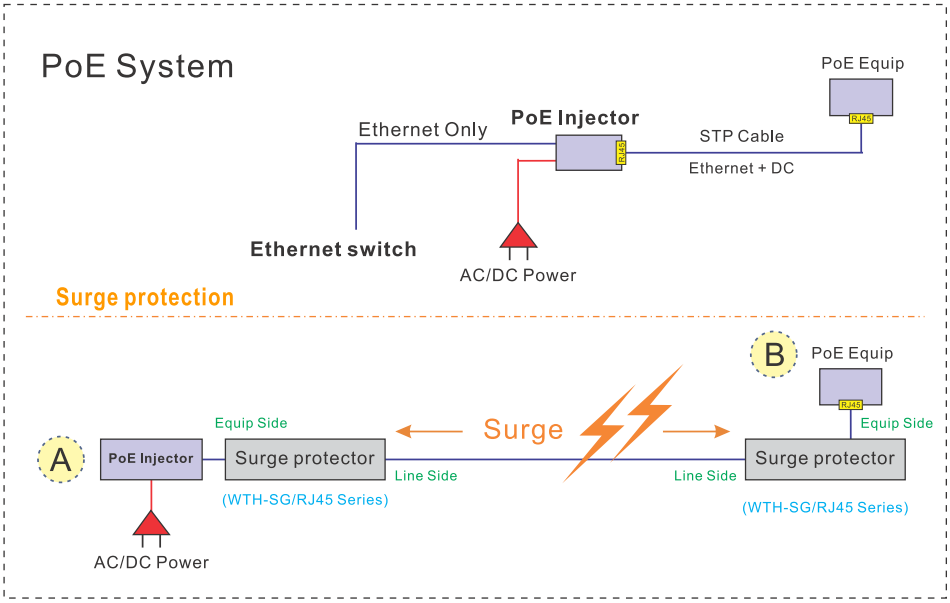
Rack Mount DIN Rail Kit (Model: RACK 3517)



Surge Protective Device

Application





FAQ & Help (1/2)

1. What should I do if I can't find the paper manual in the product packaging?
Watchful Eye products is committed to going green with paperless data sheets. On the left side of each product enclosure is an engraved link with URL for downloading paperless data sheet and QR code of the website. If you need the paper data sheet, you can open the link and print the data sheet by yourself.

2. Model WTH-SG/RJ45 has no LED status indicator. What instruments can be used to test whether its surge protection function is normal or not?
Test with a Watchful Eye surge protector tester.
If a system failure occurs, first remove the surge protector and restore the system to the wiring status without the surge protector. If the system failure is resolved, it shows the surge protector is faulty. Using Watchful Eye Surge Protective Tester can more easily test whether the WTH-SG/RJ45 series is normal or not.

3. Can you list more applications of WTH-SG/RJ45 series?
Ethernet & PoE equipment such as network switches, routers, computers, servers, video cameras, etc.

4. What are the advantages of the GDT+TVS type surge protection?
It provides a two-step surge protection mode: the first-stage GDT protection, releasing strong surge intrusion and reduce the strength of the surge; it is followed up the second-stage TVS fine protection, achieving a lower residual voltage value.

5. If the wires on the line side and the equipment side are connected reversely, will it affect surge protection?
When the wire is connected reversely, TVS becomes pre-stage protection, and GDT is post-stage protection. The nominal discharge current of TVS protection will be much lower than GDT. If it encounters a surge intrusion, it may cause damage to the TVS. The second-stage GDT protection will also play a role in surge protection, but the residual voltage value will increase, which is a risk to the protected equipment.

6. What are the advantages of 1-2, 3-6, 4-5, 7-8 line full protection mode of GDT+TVS type surge protection?
If you don't know whether the system is 100M or 1000M, which PoE structure or wiring mode the system is, the full line surge protection mode of GDT+TVS avoids the confusion of your selection.

7. There's no TVS protection on 4-5 and 7-8 lines of WTH-SG/RJ45-E, does it affect the system?
4-5 and 7-8 line TVS protection is applied for 1000M network. If your system is a 100M network PoE system, 4-5 and 7-8 are PoE power lines, which already has GDT protection, and it is not necessary for TVS surge protection.

FAQ & Help (2/2)

8. The PE/GND of WTH-SG/RJ45 has two terminals, what's the use of a GDT connected in series between the two terminals?
The PE/GND of WTH-SG/RJ45 has two terminals. There is an additional 90V GDT connected in series between the two terminals. First, connect the grounding to the right terminal of PE/GND. If signal is unstable, you can change the grounding to the left terminal, the voltage-to-ground will increase by additional 90V, greatly reducing the possibility of being interfered.

9. What is the role of GDT connected in series between 5-8 lines?
4-5 and 7-8 PoE lines, on the basis of common mode (line-ground) surge protection, add additional differential mode (line-line) surge protection, providing more refined protection.

10. Which of the 2 devices should be used when there is no need for PoE?
When PoE is not required, both WTH-SG/RJ45 and WTH-SG/RJ45-E can be used
WTH-SG/RJ45-E will save you costs, it doesn't provide TVS surge protection on 4-5, 7-8 lines; WTH-SG/RJ45 provides full protection (compare the two electrical diagrams). When you do not know the system type, WTH-SG/RJ45 is a better choice.

11. How do I determine the quantity of surge protector that I need for protecting the equipment?
Surge on the STP cable will be transmitted in two directions to the ends of the cable. The surge protector A protects the equipment on the A side, such as an ethernet switch, etc. And Surge protector B protects the equipment on the B side. such as an ethernet equipment. If only the device on one end of cable needs to be protected, then only one surge protector is needed.

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Version Update

V22.1: Updated document layout and visual design. Standardized CSS formatting and revised color scheme.
V22.0: Added product description details and enhanced document formatting.

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After-sale Services

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Activate Your 10-Year Warranty

Register this product within 90 days of purchase to receive:
• 5-year standard warranty
• Additional 5-year free extended warranty

Customers are responsible for shipping, labor, and any incidental costs.
This warranty does not cover damage caused by misuse, improper installation, or unauthorized modifications.

Contact us | Register Extended Warranty