Surge Protective Device

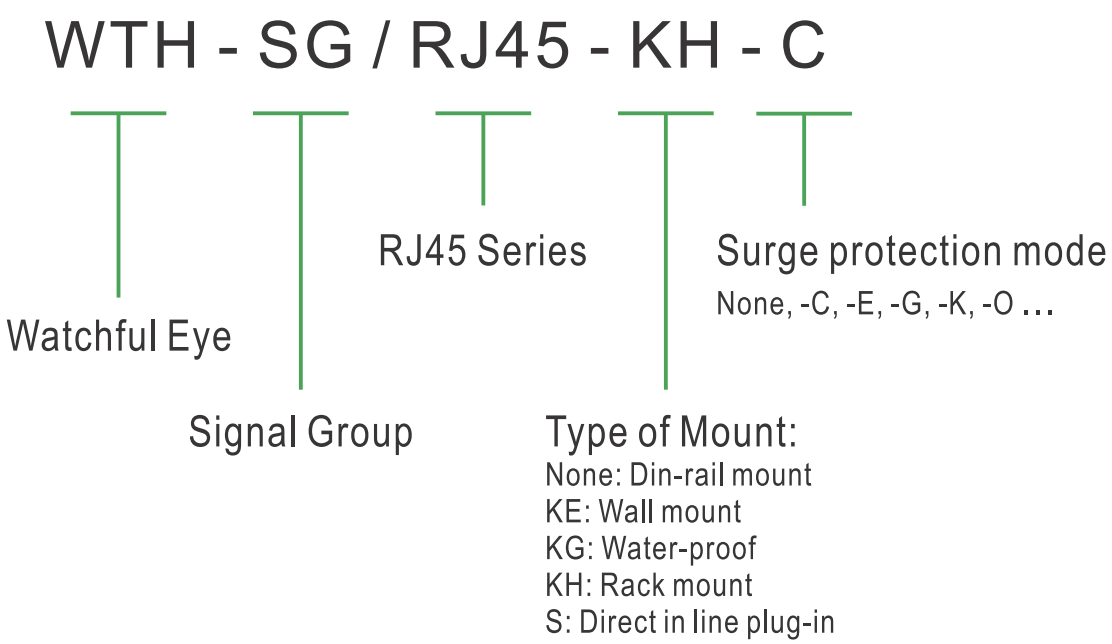
Paperless Datasheet

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/US121103.html

Model & Ordering Code

Model	Ordering Code	UPC/EAN Code
WTH-SG/RJ45-KE	US121103	(0) 811914030010

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.

Surge Protective Device

Description

WTH-SG/RJ45 Series surge protective devices are applied to surge protection for data communication systems. WTH-SG/RJ45-KE 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)

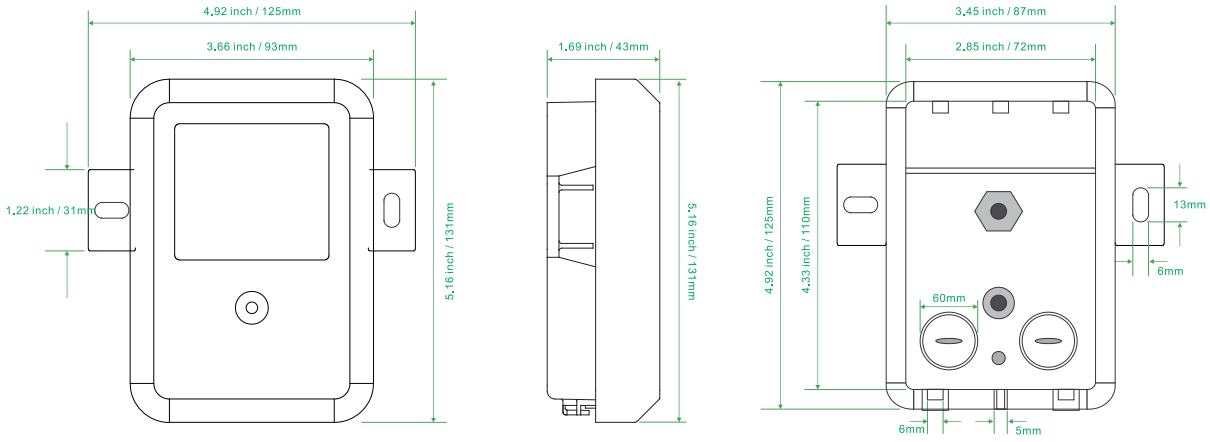
WTH-SG/RJ45-KE Technical Data	
Nominal operating voltage (Un)	2.8V(Ethernet)/48V(PoE)
Max. continuous operating voltage (UC)	3V(Ethernet)/60V(PoE)
Nominal Discharge Current (In @8/20μs)	3kA (line to line)
Max. Discharge Current (Imax @8/20μs)	20kA (line to GND/PE)
Voltage protection level (Up @line-line)	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	1/4 inches (6-7mm)
Terminal Screw Torque	Max. 0.25Nm
Protection Rating (IP Code)	IP 65
Surge Life at 0.5kA (8/20μs)	>2000 events
Housing Material	Thermoplastic, UL94 V-0, f1
Net Weight Per Unit	0.35Lb (160g)
Product Dimension (W×D×H)	5.4"×5.2"×1.9" (136mm×132mm×47mm)

Surge Protective Device

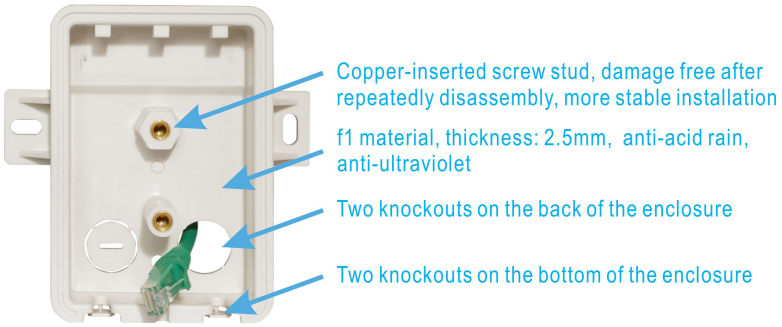
Downloadable CAD-Compatible SVG Drawing

A scalable SVG drawing file is available for this product. The vector-based format preserves dimensional accuracy and can be imported into many CAD and engineering design applications. Customers can use the file for rack layout planning, cabinet integration, installation design, and project documentation.

Dimensions



Cable Connection



Installation Instruction

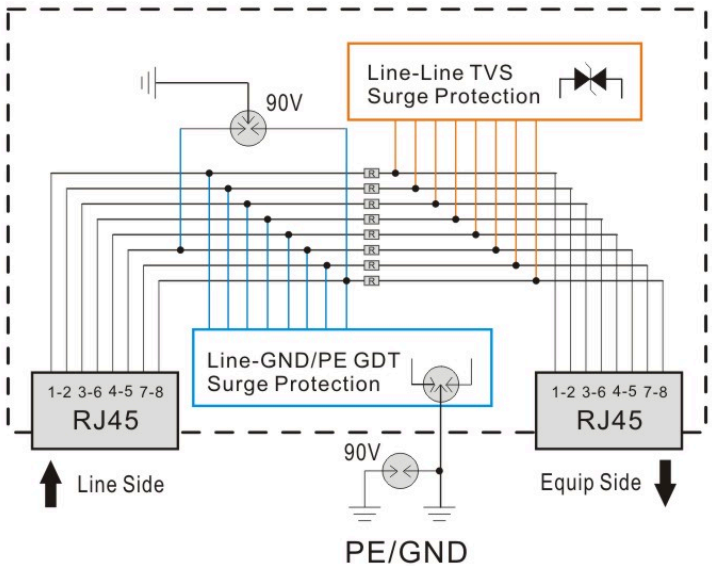
For installations requiring UL compliance, the device shall be installed inside a Listed enclosure accessible only to qualified service personnel.

Surge Protective Device

Main Features

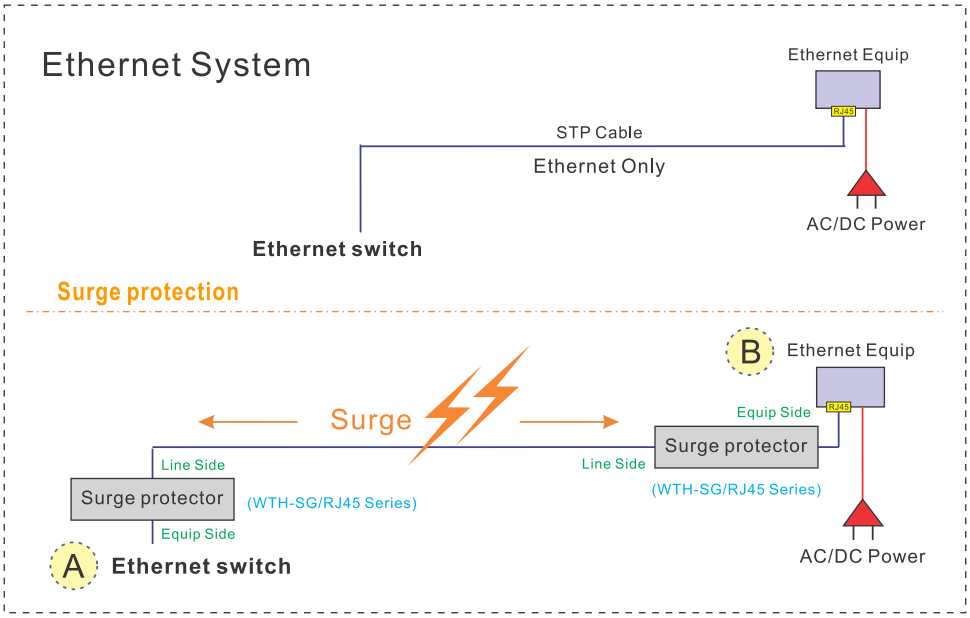
1. Wall-mount and waterproof design, suitable for indoor or outdoor applications
2. UL certified f1 anti-acid rain and anti-ultraviolet enclosure material, ensuring the aging resistance of enclosure for outdoor use
3. Optional 35mm standard DIN- rail, G-rail (high and low rail) mounting accessories
4. Copper insert stud, damage free after repeatedly disassembly, more stable installation
5. Two wire threading methods: bottom and wall
6. Dual-grounding mode, boosting to 90V leakage voltage whenever grounding voltage is disturbed

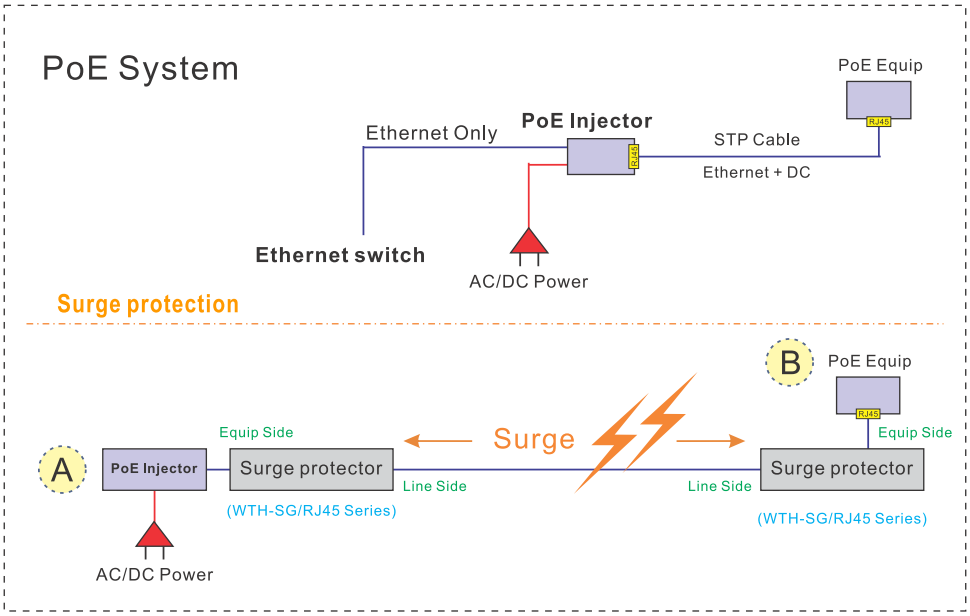
Surge Protection Connection Diagram



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-KE 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-KE is normal or not.

3. Can you list more applications of WTH-SG/RJ45-KE?
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. The PE/GND of WTH-SG/RJ45-KE has two terminals, what's the use of a GDT connected in series between the two terminals?
The PE/GND of WTH-SG/RJ45-KE 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.

FAQ & Help (2/2)

8. 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.

9. 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.

10. What is UL f1 standard for housing materials?
UL f1 standard requires housing materials be UV and acid rain resistant and can be used in outdoor environments

Certificates of Products

CE RoHS IEC61643-11

WatchfulEyE

Surge Protective Device

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.

Download WatchfulEyE Official App

Scan the QR code to access the WatchfulEye official website for product information and updates.

After-sale Services

WatchfulEye offers a global 5-year quality warranty.

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