Meter-Treater, Inc.

QUALITY SURGE PROTECTION DEVICES SINCE 1986

Utility Programs & Commercial, Industrial and Residential Surge Protection

Utility

Commercial

Industrial

Residential

SPD Background Information

Who sets the criteria for Surge Protection Devices (SPD's):

IEEE: Sets the Design and Application Guide Lines
OSHA: Mandates NRTL Testing to Industry Standards and Qualifies NRTLs to Perform Certification.
NRTLs (Nationally Recognized Testing Laboratories): Test and Label SPDs per the ANSI/UL 1449 Standard.
ANSI/UL1449: Establishes Testing and Safety Standards for SPD Qualification and Applicable Uses. OSHA mandates that all certified NRTLs are equal in their ability to test and approve SPDs.
NFPA/NEC: The National Fire Protection Association/National Electric Code stipulates the how-to for SPD installations on premises wiring systems rated 1kV or less and specifies safety and inspection requirements.

SPD Marking Requirements

SPDs are required by the ANSI/UL 1449 Standard to be labeled with:

- SPD type: 1, 2, 3, 4, 5
- Electrical ratings that include operating voltage (volts).
- AC power frequency (Hz)
- SPD's number of phases and the voltage protection ratings (VPR), in volts, for each phase.
- For 2-port SPDs, ratings would also include the load current rating (amperes). For Type 1 & Type 2 SPDs only.
- The I_n rating in amps or kA.
- The maximum continuous operating voltage rating (MCOV) in volts.
- The short-circuit current rating (SCCR) in amps or kA.

Terms to Know

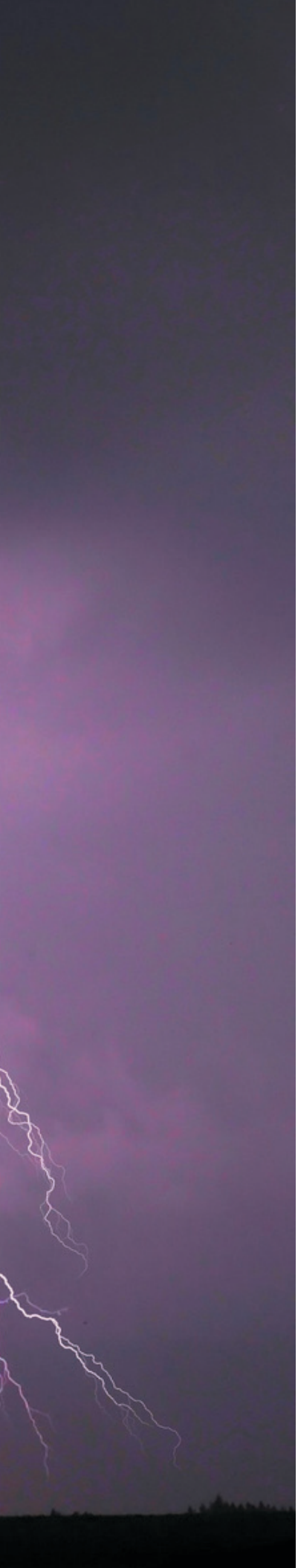
I_n Nominal discharge current – For Type 1 and Type 2 SPDs
Nominal discharge current and the subsequent duty cycle test: The nominal discharge current value is selected by the manufacturer and can be 10 kA or 20 kA for a Type 1 SPD or 3 kA, 5 kA, 10 kA or 20 kA for Type 2 SPDs. The SPD is then subjected to a total of 15 impulses of the selected nominal discharge current. To pass this test, the SPD cannot create a shock or fire hazard during the test and nothing in the surge path can open at any time during or after the test. This includes all internal or external supplementary protective devices or overcurrent devices such as fuses or circuit breakers. The nominal discharge current level is required on the label of the SPD.

Symmetrical Fault Current
Short Circuit Current Ratings (SCCR) are shown in Tables within the ANSI/UL 1449 Standard. SCCR selection table – rms symmetrical current in amperes and ranges from 5,000 Amps up to 200,000 Amps. The SCCR is required on the label of the SPD.

MCOV
The SPDs Maximum Continuous Operating Voltage. Exceeding the MCOV will cause SPD failure.

VPR
Voltage Protection Ratings are issued by the NRTL testing the SPD for certification. VPRs are defined as the let through voltage at a specific test waveform level specified by the ANSI/UL 1449 Standard. The VPR indicates what the voltage will be at the load (output) side of the SPD.

kA Ratings
The kA rating of SPDs is their ability to handle induced surge energies in 1000ths of Amps. Surge Ratings and kA ratings mean the same thing.



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The Meter-Treater Story…

Founded in 1986, Meter-Treater, Inc. engineered, patented and manufactured the first meter based surge protection device. The meterbased SPD was solely conceived for power utilities to market to their residential customer base. Over the years MTI earned a reputation for producing quality products along with excellent customer service and program support.

Today, MTI manufactures hundreds of products, in full compliance with all applicable industry standards and guidelines, delivering cost-effective power quality solutions for commercial, industrial, residential and remote applications. Quality, American Made, products are available for Power, Signal, Data, Telephony and Security systems.

Our customer base has expanded well beyond that of the power companies and we now create hybrid and custom designed products engineered per specific customer requests. Many of our main stream products are contracted under private label agreements for unique and vertical markets.

When you have a need for surge protection as a product, design application, program or private labeled production, please, contact us with your specifics and allow us to become your solution partner as well as your solution provider.

In-House (USA) Manufacturing Facility:

MTI products are produced in an inclusive manufacturing facility with CNC machine shop, injection molding operations and electromechanical assembly capabilities. Complete and total control is exercised over every aspect of our products from design through delivery. MTI is proud of the fact that the vast majority of its product offering is American Made.

Comprehensive, In-House, Testing Laboratory:

Customers evaluating surge protective devices (SPDs) have an open invitation (reservations required) to verify the performance of our products under their consideration. Our facility's test lab is equipped to confirm and verify our published product specifications. You can observe our engineering and technicians conduct testing per industry standards or you may have your own qualified personnel, with our supervision, conduct the tests. You can even bring competitive products along for a side-by-side comparison.

Training:

Whether at our facility or a place of your choosing, MTI provides a number of different training courses from technical presentations to call center and customer service programs. Our technical presentations cover topics on protector, application, selection, installation and maintenance etc. MTI is a firm believer in an educated consumer.

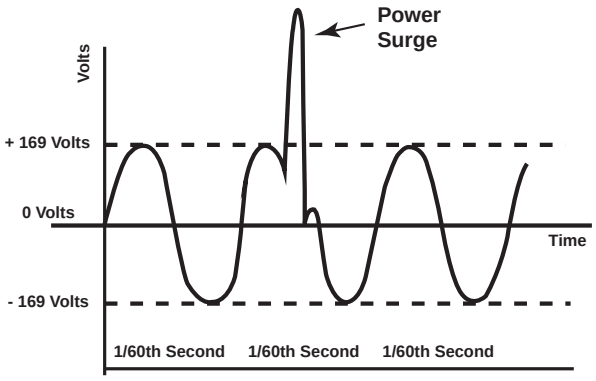
Customer Service & Technical Support:

MTI's Customer Service and Technical Representatives are available to assist you with all of your Surge Protection needs from problem identification to application solution. Our team will always provide you with the most technically suitable and cost-effective resolution for your application.

What is a Surge?

A surge is a very short duration (micro seconds) event, imposing a significant overvoltage or impulse on the AC sine wave. The IEEE (Institute of Electrical and Electronic Engineers) defines a surge as a spike in voltage that typically lasts for less than 1/60th of a second. Surges are the most commonly occurring power quality anomaly and they are by far the most disruptive and destructive.

Surges increase the electrical stress on connected user equipment and appear in all applications involving electricity, no matter the source. The cumulative effect of repeated applications of small surges (or perhaps one large surge) may cause undesirable operation at best, and complete device failure at worst.



120 Volt (RMS), 60Hz, Electrical Sine Wave

The graph above illustrates a transient spike in voltage lasting for less then 1/60th of a second.

The Causes/Sources of Surges

Major causes of surges are ESD (electrostatic discharge), Utility Actions, Lightning and internal system/equipment operations.

- Although lightning may be the most destructive surge source it is, by far, not the most prevalent source. Lightning surges can enter an electrical system by (a) Direct Coupling; (b) Inductive Coupling; (c) Resistive Coupling; or (d) Capacitive Coupling
- Utility operations for routine maintenance and service.
- Poor wiring or degrading conditions of the electrical distribution network within a facility.
- Load switching of capacitor banks by the power company.
- Accidents from sources such as auto crashes or wildlife getting into the distribution system.
- ESD or static electricity is created when walking across a carpet or other surfaces then discharging the voltage buildup to another point.

The simple act of turning on and off a standard electric light switch can generate surge voltages as high as 1000 volts during the building and collapsing of the electromagnetic field.

What Is A Surge Protection Device?

A Surge Protective Device a product designed to minimize surge voltages. It lowers the deteriorating effects of cyclic surge voltages on equipment, increasing equipment longevity and reliability. SPDs can also lower the risks and damages associated with extreme events like lightning and distribution faults.

How Does It All Work?

Because of performance, availability and low costs, the majority of surge protectors are designed around a component called a Metal Oxide Varistor (MOV). MOVs intercept surge energies, before they can cause damage to vulnerable equipment, by doing one or more of the following:

- Conducts when surge voltages reach the MOV's predetermined clamp level;
- Sends current where voltage is lower;
- Diverts, stores, and/or dissipates the energy of the surge;
- Divides the surge voltage among all of the wires; and
- Keeps voltages to safe levels for the protected equipment/system.

Characteristics of Effective SPD's

The Control of Transient Voltages

Surge Protective Devices must be able to control transient events to a level below the upset threshold (immunity level) of the system, or equipment they are protecting. SPDs have to be able to perform their design function and they must be capable of doing it repeatedly.

The Ability to Withstand the Electrical Environment

Surge Protective Devices must be able to survive the operating environment they were designed to interface with and protect. They should be capable of providing years of useful service without degradation to their original performance characteristics.

Complete Compatibility with Connected Equipment

Properly designed and configured SPDs are required to interface with equipment and systems they protect without causing disruption or delays. The integrity and quality of the operating system should not be compromised in any way by the installation and operation of the SPD.

What Makes a Device Credible?

Surge Protectors are one of the most tested and controlled products in the electrical industry yet one of the most misunderstood devices. They are designed per IEEE guidelines, tested by an independent NRTL (Nationally Recognized Testing Laboratory) who has to be certified by OSHA and are to be installed per NFPA/NEC codes and practices.

How to Select the Right SPD

- Pick a product that meets your needs in both Type and Category Location.
- Make sure the SPD will fit into the application/installation location (Right Tool for the Job).
- Buy only NRTL Labeled SPDs from a reputable source.
- Make sure the SPD has the proper label markings.
- Select SPDs with realistic kA, VPR, SCCR and I_n ratings to meet your application.
- Make sure the SPD has the right electrical configuration for your premise/system/equipment wiring.

Notes/Misc.

- SPDs (Surge Protection Devices) are not Lightning Protectors.
- A singe SPD cannot provide complete protection to an entire residence or facility.
- SPDs are designed for and installed at specific ingress points.
- SPDs are most effective when applied in layers as primary and secondary devices for specific locations.
- To achieve maximum protection protect all ingress points (power, telephony, security, SATV/CATV, etc.).
- To obtain maximum surge performance, connect the SPD to a good quality ground.

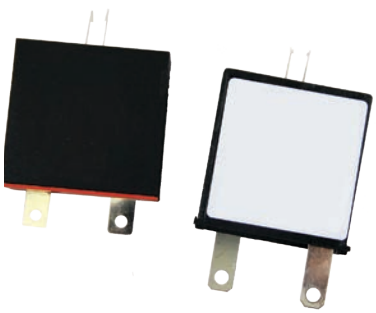
Types Of Surge Protection

Type 1 – Permanently connected SPDs intended for installation between the secondary of the service transformer and the line side of the service equipment overcurrent device, as well as the load side, including watt-hour meter socket enclosures and Molded Case SPDs intended to be installed without an external overcurrent protective device.

Type 2 – Permanently connected SPDs intended for installation on the load side of the service equipment overcurrent device; including SPDs located at the branch panel and Molded Case SPDs.

Type 3 – Point of utilization SPDs, installed at a minimum conductor length of 10 meters (30 feet) from the electrical service panel to the point of utilization. For example, cord connected, direct plug-in, receptacle type and SPDs installed at the utilization equipment being protected. See marking in 80.3. The distance (10 meters) is exclusive of conductors provided with or used to attach SPDs.

Type 4 - Component Assemblies – Component assembly consisting of one or more Type 5 components together with a disconnect (integral or external) or a means of complying with limited current tests.



Type 5 – Discrete component surge suppressors, such as MOVs that may be mounted on a Printed Wiring Board (PWB), connected by its leads or provided within an enclosure with mounting means and wiring terminations.

Based on UL1449, 4th Edition Standard for Surge Protection Devices



What Type Of Facilities Can We Protect?

Surge Protection Devices are used to protect a wide variety of facilities...

- General Offices/Corporate Offices
- Medical Facilities
- Schools/Universities
- Banks
- Manufacturing Plants
- Data Centers
- Cell Sites/Telecom
- Correctional Institutions
- Military
- Gas/Convenience Stores
- Retail Stores
- Airports
- Residential Homes
- Financial Institutions
- Waste/Water Treatment Plants
- Irrigation
- Golf Courses
- Ski Resorts
- Restaurants
- Farms/Agriculture
- Utility Plants
- Hotels and Resorts
- Theme Parks
- Bottling Companies
- Food Processing Plants
- Printing Presses

and so much more!

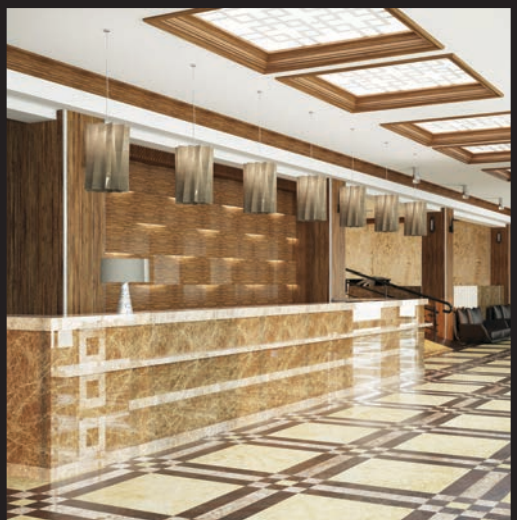




Surge Protection Devices are used to protect a wide variety of equipment...

- Computers
- Security Systems
- HVAC Systems
- Telecom Equipment
- Networks/Modems/Routers
- CNC Machines
- Ski Lifts/People Movers/Elevators
- Roller Coasters
- Medical Equipment
- Variable Frequency Drives
- POS Terminals
- Pumps, Motors & Compressors
- Water and Waste Treatment
- ATM Machines
- Weather Instrumentation
- UPS Backup Systems
- Sensors
- Programmable Logic Controllers
- CCTV
- CATV

What Type Of Equipment Can We Protect?


Meter-Treater offers a variety of valuable services as a part of our utility program. These services can play a key role in your marketing and sales campaigns.

Marketing Materials

You need marketing materials...well look no further! Meter-Treater offers assistance with marketing materials at your disposal. Everything including but not limited to flyers, banners, post cards, brochures, door hangers and more. We can also provide you with web-based marketing such as web banners, digital ads, email marketing campaigns and anything else you need. You can use the materials as is or we can create something completely customized just for you.

Training

Education is the key to success for any Residential Surge Program. We offer training courses at your location or our facility for technical, sales, field installation, customer service and marketing strategies.

Websites

If you are looking for an easy way to generate revenue by offering point-of-use surge protection, we can help! Meter-Treater can create and maintain an e-commerce website customized just for your company. We offer all the benefits of an e-commerce website at a fraction of the cost.

Utility Programs

Type 1

Type 1 surge protection is used to protect the motor-based, larger appliances and devices in a home. Some of the items it will protect are listed below:

- Washer/Dyer
- HVAC Units
- Refrigerator
- Dishwasher
- Stove/Range
- Ceiling Fans
- Garage Openers

While Type 1 surge protectors offer a first tier of protections, smaller electronics require a second layer with Type 3 SPD's.

Type 3

Type 3 surge protection devices (plug in devices) are used as a secondary source of protection for the items that are not protected by Type 1 surge protectors. Here are some of the items that a Type 3 surge protector will protect.

- Televisions
- Telephones
- Computers
- Printers

400 Series

Meter Based Surge Protection Device Traditional

The **400-1SL-A Meter Based SPD** stops surges right at the electric meter, before they can enter your home or business.

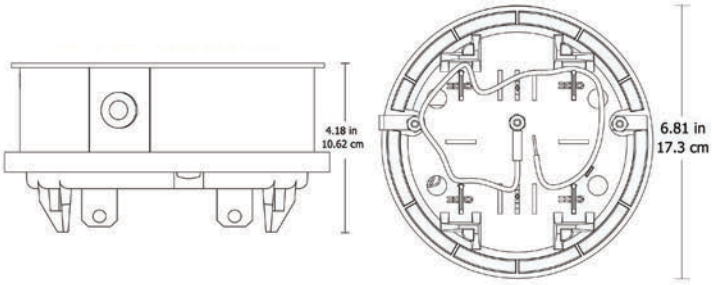
Units are equipped with **SUNBRIGHT® diagnostics** with 1000 MCD LEDs that are fully visible in the brightest sunlight allowing fast and accurate readings in the field.

Units contain **"Smart Sensing Technology"** that distinguishes between surges and overcurrent events. The product complies with all current and proposed safety requirements. The 400-1SL is a Type 1 Surge Protection Device (SPD) that is Listed to **ANSI/UL 1449.**

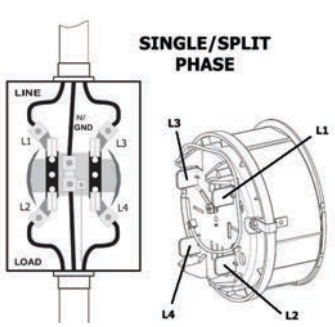
The integration of design, performance and safety features in the METER TREATER makes it an ideal choice for Utility Power Quality Programs.
A **15 Year Product Warranty** and concurrent Extended Warranty for downstream white appliances are included†.

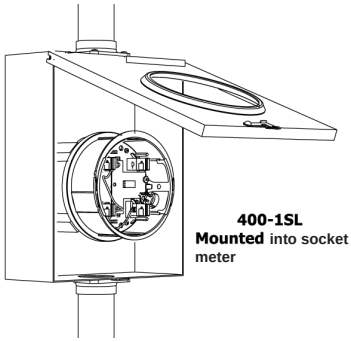
Rated for 260 Amp (320 Max) Continuous Service

Dimensions



Typical Installations





(Diagrams not drawn to scale)

Product Specifications			
Applied Voltage	120/240 Vac	Product Dimensions	4.18" x 6.81" (2.48" installed depth)
Max Surge Current	120kA (60kA per phase)	Diagnostics*	Red Status LED, SUNBRIGHT
Max Load Current	320 Amps (260 Amps Continuous) attained in HQ4D L&G 250 Amps (200 Amps Continuous) attained in HQ-5B L&G	Safety Standards (Type 1 SPD)	UL 1449 (most current)
		VPR (Suppressed Voltage)	500 Volts (8x20µs, 6kV/3kA)
		I_n (nominal discharge current)	20 kA
MCOV	150 Volts	Connection Method	Meter Base 4 or 5 Jaw Blades
Short Circuit Current	10k RMS Symmetrical Amps	Surge Technology	40mm MOV Blocks
Housing Rating	3R (UL 414) with UV inhibitors	Operating Temperature	-40 to +140 F (-40 to +60 C) 10%+-
Product Weight	2.5 lbs.	Operating Frequency	50/60 Hz

Available Models/Options	
400-1SL-A	4 Jaws (Standard)
400-1SL-A-5J	5th Jaws for 120/208 Networks
5th Jaw kit	Kit with single jaw blade and hardware to modify a standard unit.

†Concurrent extended warranty is only applicable for customers participating in a utility residential surge protection program and for those utilities requesting the extended warranty.

* Two red LED's - one monitors each phase.

All product dimensions provided are ± 0.125

575-1SL-A

Meter Based Surge Protection Device Low Profile

The **575-1SL-A Meter Based SPD** stops surges right at the electric meter, before they can enter your home or business.

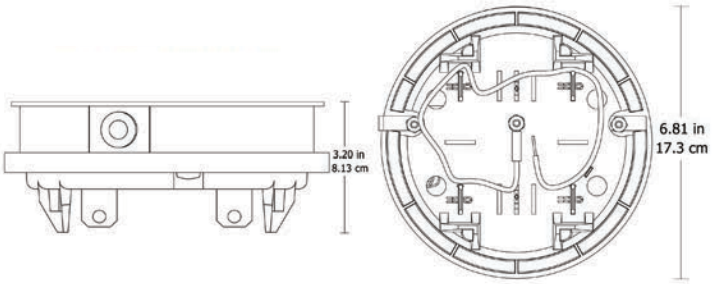
Units are equipped with **SUNBRIGHT® diagnostics** with 1000 MCD LEDs that are fully visible in the brightest sunlight allowing fast and accurate readings in the field.

Units contain **"Smart Sensing Technology"** that distinguishes between surges and overcurrent events. The product complies with all current and proposed safety requirements. The 575-1SL-A is a Type 1 Surge Protection Device (SPD) that is Listed to **ANSI/UL 1449**.

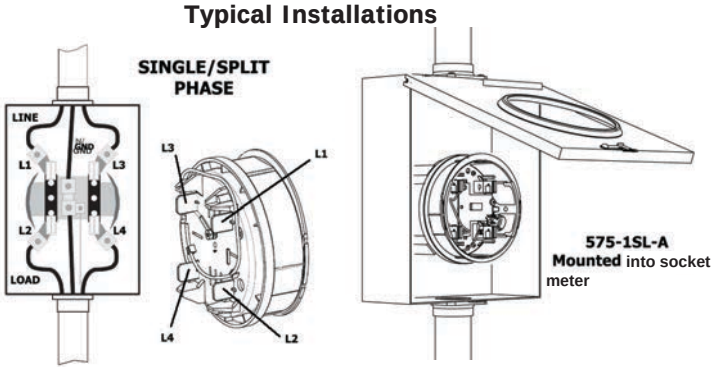
The integration of design, performance and safety features in the METER TREATER makes it an ideal choice for Utility Power Quality Programs. A **15 Year Product Warranty** and concurrent Extended Warranty for downstream white appliances are included†.

Rated for 240 Amp (320 Max) Continuous Service

Dimensions



Typical Installations



(Diagrams not drawn to scale)

Product Specifications			
Applied Voltage	120/240 Vac (120V L-G)	Product Dimensions	3.2" x 6.81" (1.5" installed depth)
Max Surge Current	120kA (60kA per phase)	Diagnostics*	Red Status LED, SUNBRIGHT
Max Load Current	320 Amps (260 Amps Continuous) attained in HQ4D L&G 250 Amps (200 Amps Continuous) attained in UAT4 L&G	Safety Standards (Type 1 SPD)	UL 1449 (most current)
		VPR (Suppressed Voltage)	600 Volts (8x20µs, 6kV/3kA)
		I_n (nominal discharge current)	20 kA
MCOV	150 Volts	Connection Method	Meter Base 4 or 5 Jaw Blades
Short Circuit Current	10k RMS Symmetrical Amps	Surge Technology	40mm MOV Blocks
Housing Rating	3R (UL 414) with UV inhibitors	Operating Temperature	-40 to +140 F (-40 to +60 C) 10%+-
Product Weight	1.4 lbs.	Operating Frequency	50/60 Hz

Available Models/Options	
575-1SL-A	4 Jaws (Standard)
575-1SL-A-5J	5th Jaws for 120/208 Networks
5th Jaw kit	Kit with single jaw blade and hardware to modify a standard unit.

†Concurrent extended warranty is only applicable for customers participating in a utility residential surge protection program and for those utilities requesting the extended warranty.
*Single red LED monitors both phases

All product dimensions provided are ± 0.125

675-3PAL

Meter Based Surge Protection Device Three Phase Traditional

The **675-3PAL Meter Based SPD** built above the current industry standards, stops surges right at the electric meter, before they can enter your home or business.

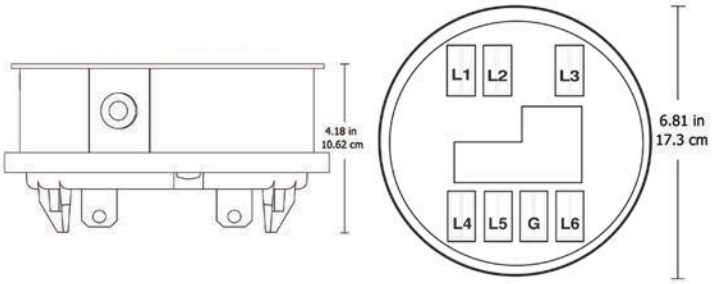
Units are equipped with **SUNBRIGHT® diagnostics** with 1000 MCD LEDs that are fully visible in the brightest sunlight allowing fast and accurate readings in the field.

Units contain **"Smart Sensing Technology"** that distinguishes between surges and overcurrent events. The product complies with all current and proposed safety requirements. The 675-3PAL is a Type 1 Surge Protection Device (SPD) that is Listed to **ANSI/UL 1449**.

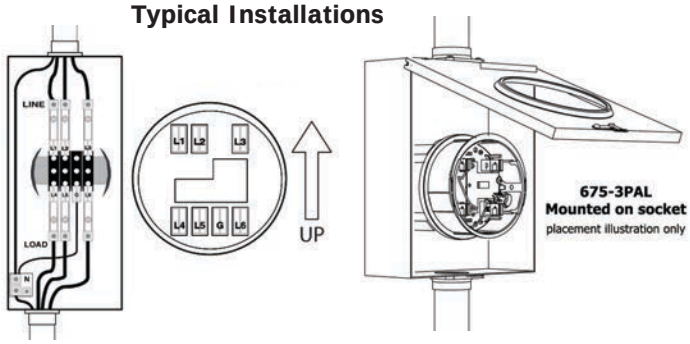
The integration of design, performance and safety features in the METER TREATER makes it an ideal choice for Utility Power Quality Programs. A **15 Year Product Warranty** and concurrent Extended Warranty for downstream white appliances are included†.

Rated for 200 Amp (250 Max) Continuous Service

Dimensions



Typical Installations



(Diagrams not drawn to scale)

Product Specifications				
Applied Voltage	260 Vac MAX		Connection Method	Meter Base 7 Jaw Blades
Max Surge Current	150kA (50kA per phase)		Surge Technology	MOV
Max Load Current	250 Amps (200 Amps Continuous) attained in HQ-5B L&G		Operating Temperature	-40 to +140 F (-40 to +60 C) 10%+-
			Operating Frequency	50/60 Hz
MCOV	270 Volts		Diagnostics	Red Status LED, SUNBRIGHT
Short Circuit Current	10k RMS Symmetrical Amps		Safety Standards (Type 1 SPD)	UL 1449 & UL 414 (most current)
Housing Rating	3R (UL 414) with UV inhibitors		VPR (Suppressed Voltage)	1000 Volts (8x20µs, 6kV/3kA)
Product Weight	3.0 lbs.		I_n (nominal discharge current)	20 kA
Product Dimensions	4.18" x 6.81" (2.45" installed depth)			

Available Models/Options	
675-3PAL	7 Jaws (Standard)

†Concurrent extended warranty is only applicable for residential customers participating in a utility residential surge protection program and for those utilities requesting the extended warranty.

All product dimensions provided are ± 0.125

CL320 SERIES

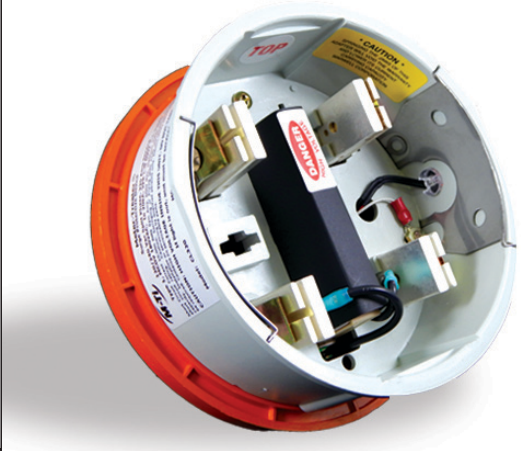
Meter Based Surge Protection Device Class 320 Traditional

The **CL320 Series Meter Based SPD** is for use in 320 Amp continuous meter sockets and stops surges right at the electric meter, before they can enter your home or business. Suppressing power surges since 1987.

Units are equipped with **SUNBRIGHT® diagnostics** with 1000 MCD LEDs that are fully visible in the brightest sunlight allowing fast and accurate readings in the field.

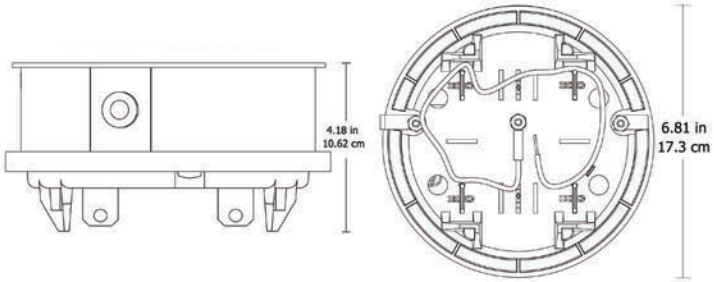
Units contain **"Smart Sensing Technology"** that distinguishes between surges and overcurrent events. The product complies with all current and proposed safety requirements. The CL320 is a Type 1 Surge Protection Device (SPD) that is Listed to **ANSI/UL 1449**.

The integration of design, performance and safety features in the METER TREATER makes it an ideal choice for Utility Power Quality Programs. A **15 Year Product Warranty** and concurrent Extended Warranty for downstream white appliances are included†.

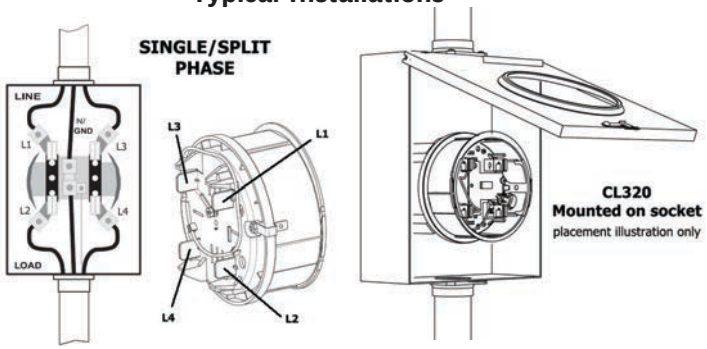


Rated for 320 Amp (400 Max) Continuous Service

Dimensions



Typical Installations



(Diagrams not drawn to scale)

Product Specifications			
Applied Voltage	120/240 Vac	Connection Method	4 Heavy Duty Machined Jaw Blades
Max Surge Current	100kA (50kA per phase)	Surge Technology	MOV
Max Load Current	400 Amps (320 Amps Continuous)	Operating Temperature	-40 to +140 F (-40 to +60 C) 10%+-
MCOV	180 Volts	Operating Frequency	50/60 Hz
Short Circuit Current	10k RMS Symmetrical Amps	Diagnostics	Red Status LED, SUNBRIGHT
Housing Rating	3R (UL 414) with UV inhibitors	Safety Standards (Type 1 SPD)	UL 1449 (most current)
Product Weight	3.0 lbs.	VPR (Suppressed Voltage)	600 Volts (8x20µs, 6kV/3kA)
Product Dimensions	4.18" x 6.81" (2.45" installed depth)	I_n (nominal discharge current)	20 kA

Available Models/Options	
CL320	4 Jaws (Standard)
CL320-1	Longer Ground Wire

†Concurrent extended warranty is only applicable for residential customers participating in a utility residential surge protection program and for those utilities requesting the extended warranty.

All product dimensions provided are ± 0.125

RCHW Series

Extrusion Case

Residential/Commercial Hardwired Surge Protection Device

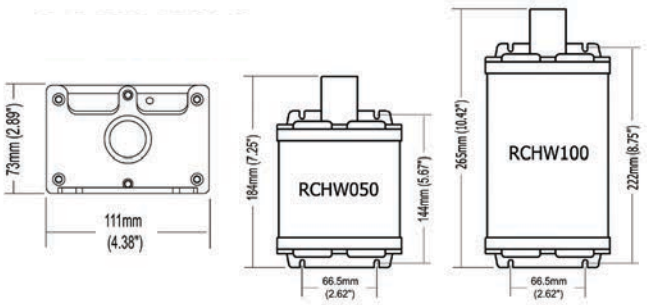
The **RCHW Series** provides **high-energy surge protection** and optional **RF filtering** for Residential, Commercial, Industrial and Remote Site applications.

These hardwired units provide superior control over transients by delivering low clamping voltages combined with high surge energy handling capabilities. All RCHW models are Type 1 or Type 2 Surge Protection Devices that are listed to **ANSI/UL 1449**.

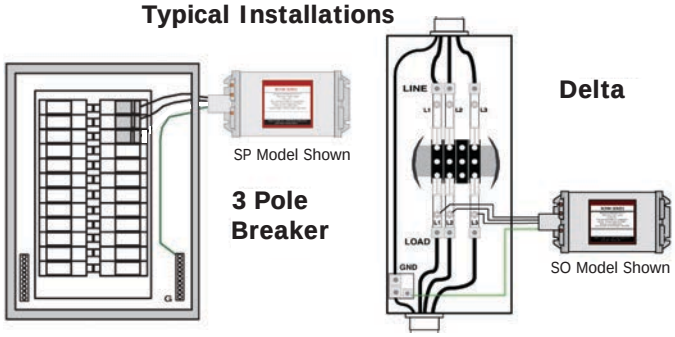
They are configured for **quick and easy parallel installation** and require little maintenance while in service. The high energy handling capabilities of the RCHW Series is due to the utilization of large diameter MOV technology.

The RCHW Series is available for all standard service voltages and phase configurations and can be equipped with several specialized diagnostic options. All Models have a 100kA RMS symmetrical fault current rating suitable for IEEE category C locations, and are available with surge ratings of 50kA and 100kA per phase. (200kA is also available)† (please contact factory)

Dimensions



Typical Installations



(Diagrams not drawn to scale)

Product Specifications				
Max Surge Current	100kA per Phase (see /POL)		Diagnostics	Red Status LED, SUNBRIGHT
Fusing	Coordinated Surge & Thermal		Safety Standards (Type 1 SPD)	ANSI/UL1449 (most current)
Short Circuit Current	100kA RMS Symmetrical		I_n	20kA*
Housing Rating	NEMA, 1, 2, 3, 3X, 4X, 12 & 13		Flexible Elbow option available	/FLEXELB
Enclosure	Extruded aluminum with plastic end caps			

†Special orders options and 200KA models, please contact the manufacturer for details.
* Devices that are rated 480V delta have a 10kA I_n

Model Number	Service Voltage	MCOV	L-N	L-G	N-G	L-L
RCHWxxx/120-10-#-1	120 Volt Single Ø	150Vac	600V	600V	600V	N/A
RCHWxxx/120-SP-#-1	120/240 Volt Split Ø	150Vac	600V	600V	600V	1200V
RCHWxxx/120-3W-#-1	120/208 Volt 3Ø Wye	150Vac	600V	600V	600V	1200V
RCHWxxx/120-3H-0-1	120/240 Volt 3Ø Delta	150/320Vac	600/1000V	600/1000V	600V	1200/1800V
RCHWxxx/240-3D-0-1	240 Volt 3Ø Delta	320Vac	N/A	1000V	N/A	2000V
RCHWxxx/220-3W-#-1	220/380 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/230-3W-#-1	230/400 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/240-3W-#-1	240/415 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/277-3W-#-1	277/480 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/480-3D-0-1	480 Volt 3Ø Delta	520Vac	N/A	1800V	N/A	4000V

1. **Replace xxx with:** 050 for 50kA or with 100 for 100kA (200 for 200kA per phase) Surge Ratings
2. **Replace # with:** F if filtering is required (available option on WYE Models only).
3. **Options**: Add /DC for Dry Contacts, Add /AA for Audible Alarm, Add /FM for Flush Mount Kit.
4. **Add:** /POL to the end of the Model Number for the optional NEMA 4X Non-Metallic Housing
5. **Add:** /WP to the end of the Model Number for the optional weatherproof, NEMA 4X, 3/4" grey thick flexible nonmetallic conduit
6. **Add:** /FLEX to the end of the Model Number for the optional weatherproof, NEMA 4X, 3/4" black thin nonmetallic conduit

All product dimensions provided are ± 0.125

RCHW Series

Polycase

Residential/Commercial/Light Industrial Surge Protection Device

The RCHW/POL Series provides **high-energy surge protection** and optional **RF filtering** for Residential, Commercial, Industrial and Remote Site applications.

These hardwired units provide superior control over transients by delivering low clamping voltages combined with high surge energy handling capabilities. All RCHW/POL models are Type 1 or Type 2 Surge Protection Devices that are listed to **ANSI/UL 1449**.

They are configured for **quick and easy parallel installation** and require little maintenance while in service. The superior energy handling capabilities of the RCHW/POL Series is due to the utilization of large diameter MOV technology.

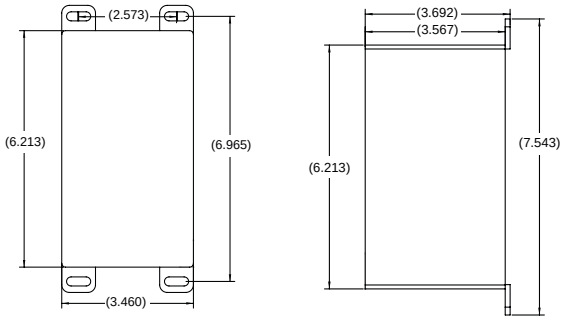
The RCHW/POL Series is available for all service voltages and phase configurations and can be equipped with several specialized diagnostic options. All Models have a 100kA RMS symmetrical fault current rating suitable for all IEEE category C locations and are available with surge ratings of 50kA or 100kA per phase.

15 YEAR WARRANTY

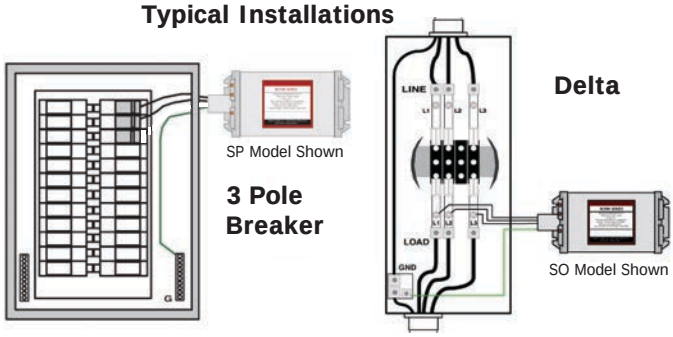
MADE IN THE USA

C ETL US LISTED Intertek

Dimensions



Typical Installations



(Diagrams not drawn to scale)

Product Specifications	
I_n	20 kA*
Max Surge Current	50kA to 100kA per Phase
Fusing	Coordinated Surge & Thermal
Short Circuit Current	100kA RMS Symmetrical

Mechanical/Environmental Specifications	
Diagnostics	Red Status LED, SUNBRIGHT
Safety Standards (Type 1 SPD)	ANSI/UL 1449
Housing Ratings	NEMA 4X Polycarb - Standard

* Devices that are rated 480V delta have a 10kA I_n

Model Number	Service Voltage	MCOV	L-N	L-G	N-G	L-L
RCHWxxx/120-10-#-1/POL	120 Volt Single Ø	150Vac	600V	600V	600V	N/A
RCHWxxx/120-SP-#-1/POL	120/240 Volt Split Ø	150Vac	600V	600V	600V	1200V
RCHWxxx/120-3W-#-1/POL	120/208 Volt 3Ø Wye	150Vac	600V	600V	600V	1200V
RCHWxxx/120-3H-0-1/POL	120/240 Volt 3Ø Delta	150/320Vac	600/1000V	600/1000V	600V	1200/1800V
RCHWxxx/240-3D-0-1/POL	240 Volt 3Ø Delta	320Vac	N/A	1000V	N/A	2000V
RCHWxxx/220-3W-#-1/POL	220/380 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/230-3W-#-1/POL	230/400 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/240-3W-#-1/POL	240/415 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/277-3W-#-1/POL	277/480 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/480-3D-0-1/POL	480 Volt 3Ø Delta	520Vac	N/A	1800V	N/A	4000V

1. **Replace xxx with:** 050 for 50kA or 100 for 100kA per phase Surge Ratings.
2. **Replace # with:** F if filtering is required (available option on WYE Models only).
3. **Options**: Add - TB to the end of the model number for Terminal Block option.
4. **Add:** - DIN to the end of the model number for the Din Rail Mount.

All product dimensions provided are ± 0.125

MAP Series

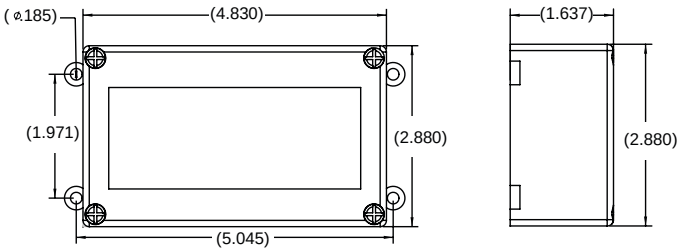
Universal - Residential/ Commercial/Light Industrial Surge Protection Device

Meter Treater's **MAP Series**, represents a new era in surge protection with our "one size fits all" application flexibility. All units contain short circuit and thermal fusing, and our **"Smart Sensing Technology"** that distinguishes between surges and overcurrent events.

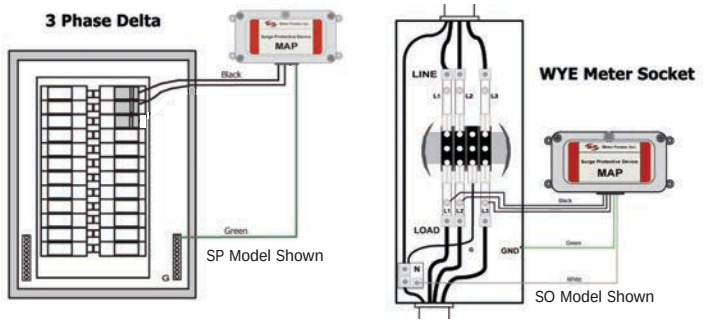
This new suppressor package meets the current industry standards and stops surges right at the electric meter before they can enter a facility. The MAP Series is a Type 1 or Type 2 Surge Protection Device (SPD) that is listed to **ANSI/UL 1449.**

The inventive design, performance and universal application features of the MAP, makes it the ideal choice for Commercial and Light Industrial applications.

Dimensions



Typical Installations



(Diagrams not drawn to scale)

Product Specifications	
I_n	10/20 kA (nominal discharge current)
Max Surge Current	150kA (50kA per Phase)
Max Load Current	up to 800 Amps Continuous
Fusing*	Thermal and Short Circuit Fusing
Short Circuit Current	100kA RMS Symmetrical Amps
Diagnostics	Fiber Optics
Housing Rating	NEMA1 Standard with NEMA 4X optional†

†Other options available. Contact factory.

Mechanical/Environmental Specifications	
Enclosure	Polycarbonate
Safety Standards (Type 1 SPD)	UL 1449 (most current)
Operating Frequency	50/60 Hz

*No external fusing required. **Required by ANSI/UL 1449.

			VPR			
Model Number	**Service Voltage**	**MCOV**	**L - N**	**L - G**	**N - G**	**L - L**
MAP050/120-10-0-2	120 Single	150	600	600	1200	-
MAP050/120-SP-0-2	120/240 Split	150	600	1200	600	1200
MAP050/120-3W-0-2	120/208 Wye	150	600	1200	600	1200
MAP050/120-3H-0-2	120/240 Highleg	150	600/1000	1200/1800	600	1200/1800
MAP050/240-3D-0-2	240 Delta	320	-	1000	-	2000
MAP050/240-2P-0-1	240 Volt Two Phase	320	-	1000	-	2000
MAP050/277-3W-0-2	277/480 Wye	320	1000	2000	1000	2000
MAP050/480-3D-0-2	480 Delta	550	-	1800	-	4000
MAP100/120-10-0-1	120 Volt Single Phase	150	600	600	1200	-

All product dimensions provided are ± 0.125

MST Series

Residential/Commercial/Industrial Surge Protection Device

The **MST Series** is a modular, parallel installed, Surge Protection Device designed for commercial, industrial and residential applications. Models are available for all standard electrical services and provide up to 100kA of surge energy handling per phase. This rating is **10 times the energy handling of the IEEE's highest Category C location** rating of 10kA/20kV using an 8x20µs waveform. All models carry a 100Ka RMS symmetrical fault current rating making expensive disconnects and/or costly replacement fuses unnecessary.

MST units incorporate a **replaceable MT protection module** that is completely **self-contained with fusing and diagnostic circuitry**. The MT module can be **replaced in the field**, thereby eliminating the need to remove the entire unit from service. Replacement modules include the entire operating unit (all phases, all modes, the fuses and even the diagnostics) MST Modules are keyed to prevent the use of the wrong module for the application.

3R Enclosure

Polycarb Enclosure

(MST Module)

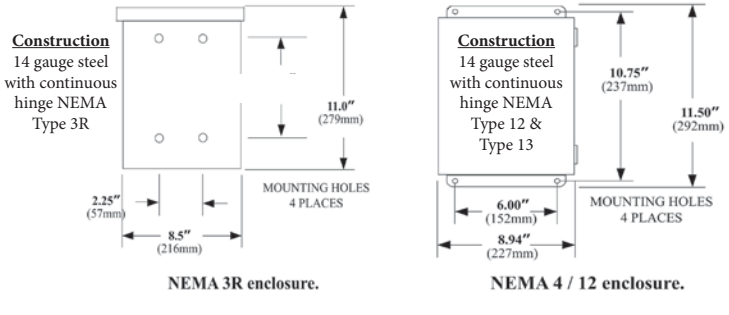
15 YEAR WARRANTY

MADE IN THE USA

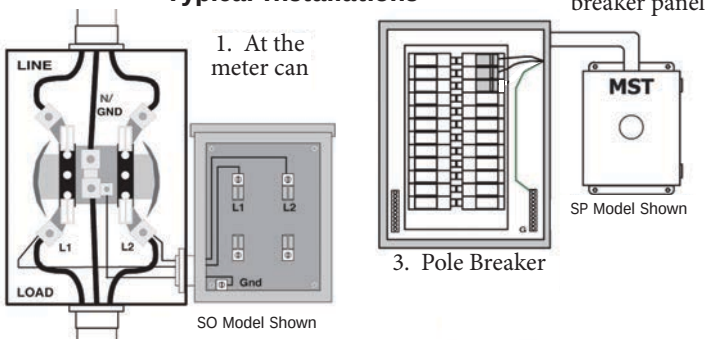
c ETL us LISTED

Intertek

Dimensions



Typical Installations



(Diagrams not drawn to scale)

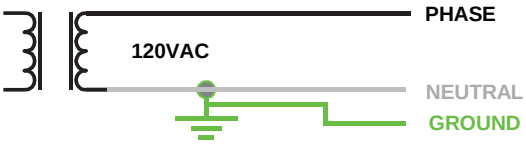
Product Specifications				
I_n	10/20 kA (nominal discharge current)		Operating Temperature	-40 to +140 F (-40 to +60 C)
Max Surge Current	100kA per Phase		Diagnostics	Red Status LED, SUNBRIGHT
Fusing	Coordinated Surge & Thermal		Safety Standards (Type 1 SPD)	UL 1449 (most current)
Short Circuit Current	100kA RMS Symmetrical Amps		Operating Frequency	50/60 Hz
Housing Rating	NEMA 3R, NEMA 4X, NEMA 12			

Model Number	Service Voltage	MCOV	L-N	L-G	N-G	L-L
MSTXXX-120-SP-0-XX	Split Phase 3 Wire + Gnd.	150Vac	600V	600V	600V	1200V
MSTXXX-120-3W-0-XX	3 Phase Wye, 4 Wire + Gnd.	150Vac	600V	600V	600V	1200V
MSTXXX-120-3H-0-XX	High Leg Delta, 4 Wire + Gnd.	150/320Vac	600/1000V	600/1000V	600V	1200/1800V
MSTXXX-240-3D-0-XX	3 Phase Delta, 3 Wire + Gnd.	320Vac	N/A	1000V	N/A	2000V
MSTXXX-220-3W-0-XX	3 Phase Wye, 4 Wire + Gnd.	320Vac	1000V	1000V	1000V	2000V
MSTXXX-230-3W-0-XX	3 Phase Wye, 4 Wire + Gnd.	320Vac	1000V	1000V	1000V	2000V
MSTXXX-277-3W-0-XX	3 Phase Wye, 4 Wire + Gnd.	320Vac	1000V	1000V	1000V	2000V
MSTXXX-480-3D-0-XX	3 Phase Delta, 3 Wire + Gnd.	520Vac	N/A	1800V	N/A	4000V

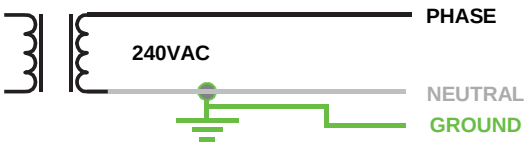
Replace XXX with desired kA rating per phase: 050 for 50 kA or 100 for 100 kA.
Then, replace XX with: 3R, 12, POL (4X Nonmetallic) or SS (Stainless) for desired NEMA Enclosure

All product dimensions provided are ± 0.125

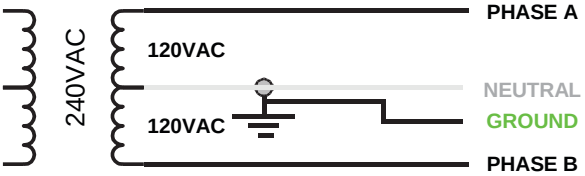
Standard Electrical Configurations



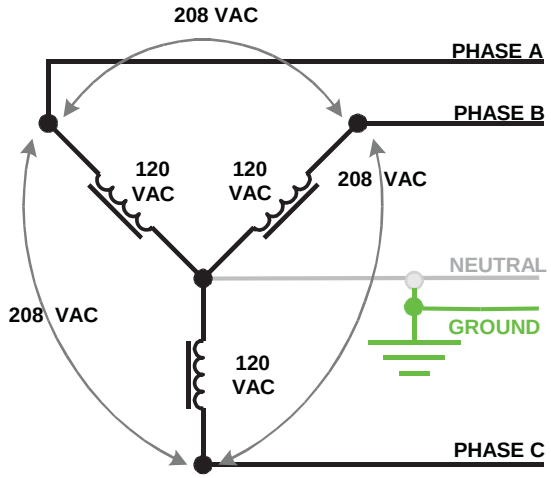
120Vac, Single Phase, 2 Wire + Ground



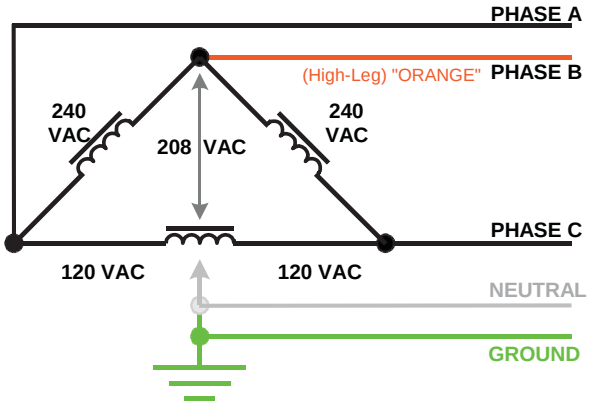
240Vac, Single Phase, 2 Wire + Ground



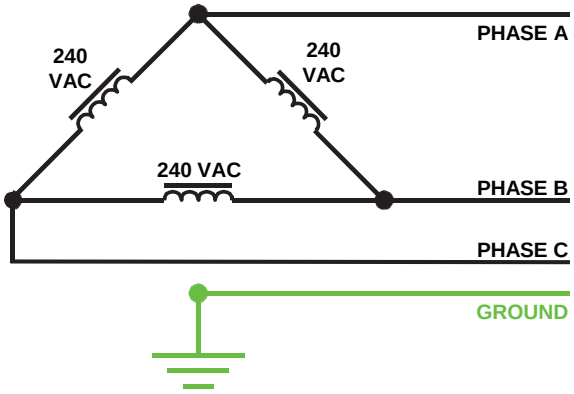
120/240Vac, Split Phase, 3 Wire + Ground



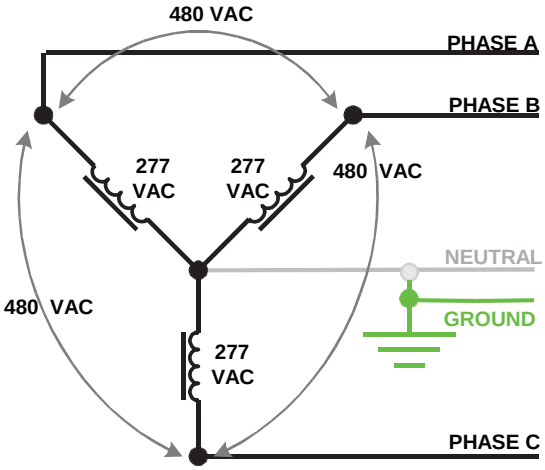
120/208Vac, Three Phase Wye, 4 Wire + Ground



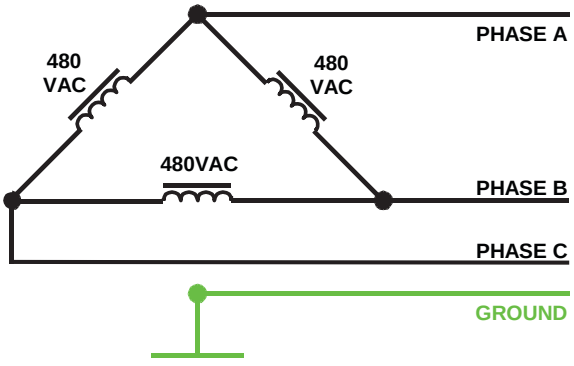
120/240Vac, Three Phase Delta, 4 Wire + Ground



240Vac, Three Phase Delta, 3 Wire + Ground



277/480Vac, Three Phase Wye, 4 Wire + Ground



480Vac, Three Phase Delta, 3 Wire + Ground

Products

MATCH PRODUCTS TO YOUR APPLICATION

Look for these icons on each spec page to help match the product with your needs

Commercial

Communication

Industrial

Power

Residential

DRM-K Series

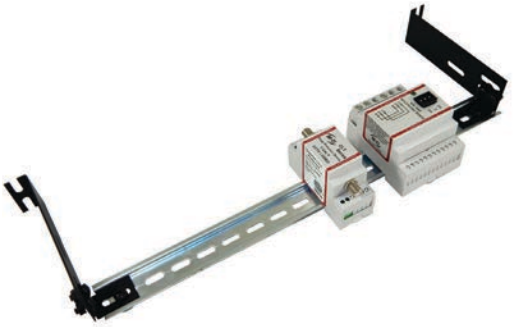
Din Rail Mounting Kit

Simple in design yet **multi-functional** in its application, the **DRM-K Series** is the ideal platform on which to mount your auxiliary and optional din rail equipment. The **DRM-K** product is shipped unassembled to allow for maximum onsite installation versatility.

Following the fully illustrated assembly instructions the User custom configures the **DRM-K** assembly to optimize the interface between their equipment and available space.

NOTE: Mounting Hardware for Rack Brackets to Cabinets/Wall/Surface is not provided.

Optional Item(s): Ground (buss) Assembly

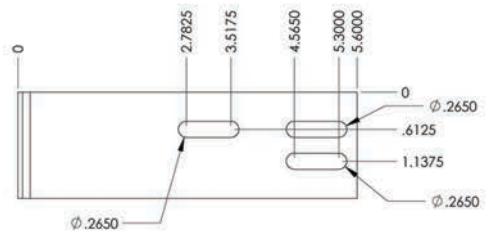


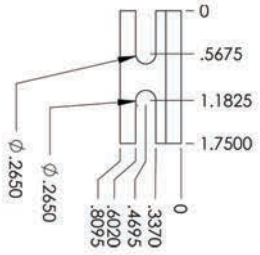
Model Shown: DRM-K19

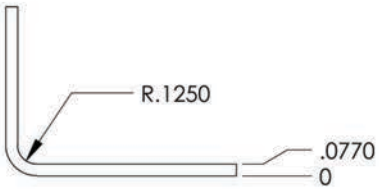
Model#: DRM-K19 Material List

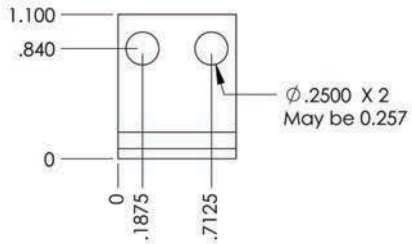
1. Two Rack Brackets (Black Steel)
2. Two Rail Brackets (Black Steel)
3. One Steel Din Rail 17.25 Inches Long
4. Six 1/4" Philips Pan Head (Black)
5. Six 1/4" Nut (Black)
6. Six 1/4" Washer (Black)

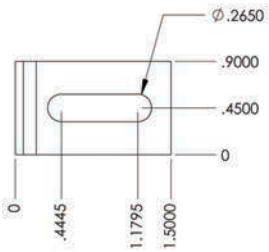
(Fits standard 19" Equipment Racks)











(Diagrams not drawn to scale)

All product dimensions provided are ± 0.125

SLT-HEB Series

High Energy Surge Protection Device for Sensors

The **SLT/HEB Series** of protectors is available as either a 4, 5, 8, or 10 Wire SPD (surge protective device) unit that will interface directly, in series, with 4 or 5 pin M12/Euro/DC Micro Connectors. Models are **unidirectional** due to connector configuration; where the male connector equals Line Side (unprotected) and the female equals the Load Side (protected). Circuit performance is bidirectional.

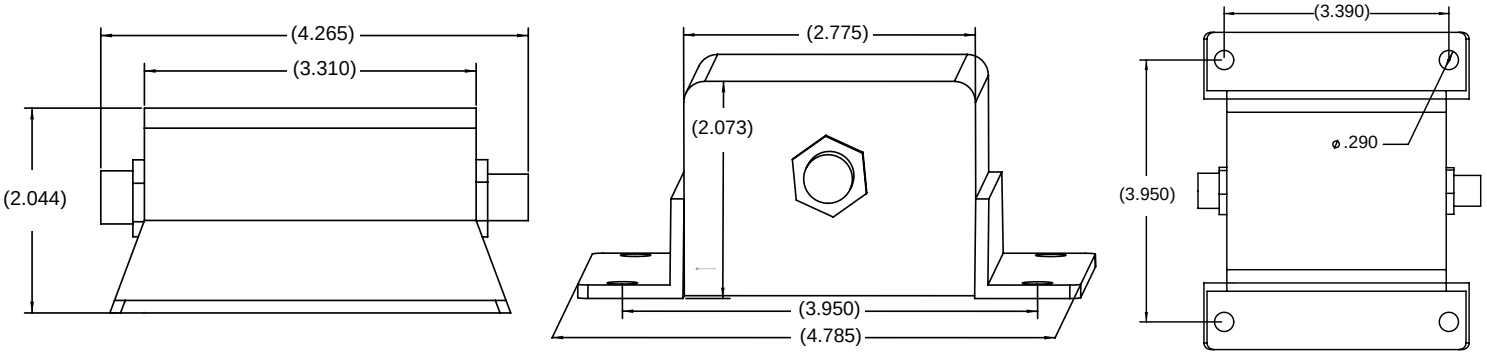
Unit is housed in a potted aluminum case with either Zytel plastic or aluminum end caps. An external ground stud is provided in addition to the two (2) grounded mounting brackets that are bolted to the case.

15 YEAR WARRANTY

UL LISTED

CE

Dimensions



(Diagrams not drawn to scale)

Electrical Specifications	
Max. Surge Current	8kA or 10kA
Max. Operating Voltage	36 Volts DC
Max. Operating Frequency	15 MHz
Max. Clamp Voltage	54.4 Volts @ 200 Amps/450 Volts
Surge Technology	High Energy Silicon Avalanche Diode Array (SAD)
Energy Rating/Wire	402.5 Joules
Response Time	< 1 Picosecond
UL Flammability Class	94 V-0
Listings & Certifications	UL Listed
Connectors	4 or 5 Pin Rigid M12 Connectors Male & Females (DC Micro - Euro)
Enclosure	Aluminum Extrusion Zytel or Aluminum End Caps
Max. Operating Temp.	-40 to + 125 C
Warranty	10 Year Product Warranty

Product Dimensions
4.55" L x 4.75" W x 2.26" H (includes mounting bracket)

Model Number	Wires
SLB/HEB-04-1EC-MF/X	4 Wires (1 Connector)
SLT/HEB-05-1EC-MF/X	5 Wires (1 Connector)
SLB/HEB-08-1EC-MF/X	8 Wires (2 Connector)
SLB/HEB-10-2EC-MF/X	10 Wires (2 Connectors)

All product dimensions provided are ± 0.125

SLT Series

Data/Signal Surge Protection Device

Transient Voltage Surge Suppression for standard low speed data (13.5MHz max), communication and signal line protocols. Units provide **protection against Transient Voltages** that exceed the nominal operating voltage of incoming data. Each line is protected against surge current impulses up to 10kA.

The **SLT device** works in series with the communication lines being protected, diverting harmful transient energy while **maintaining a tight clamp** at the peak voltage. Units are designed to operate in a wide temperature range and are configured for simple EIA (Electronic Industries Association)protocols.

The built in floating ground connection allows the device to provide protection at remote locations without creating a ground loop noise problem.

- **Solid state fail-safe design**
- **Low shunt capacitance to reduce signal loss**
- **Performance tested to verify compliance**

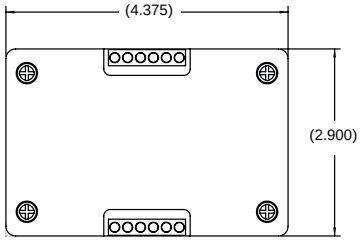
(Other Case Styles Available)

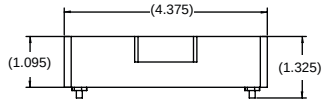
15 YEAR WARRANTY

MADE IN THE USA

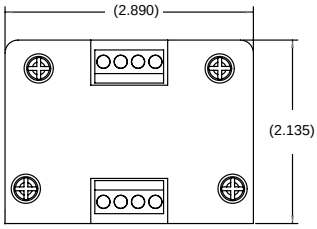
Intertek

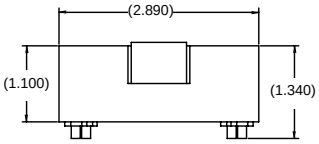
Dimensions



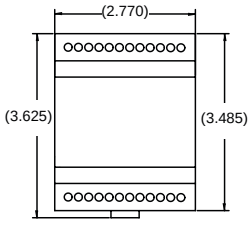


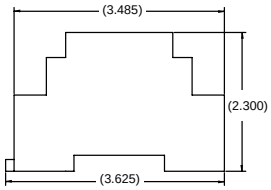
Case A



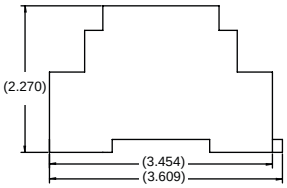


Case B





Case M - Large



Case M - Small

(Diagrams not drawn to scale)

Product Specifications				
Max. Surge Current	10kA per wire		Clamp Voltage	7.5V - 220V available
Max. Operating Voltage	1.5 - 270 V DC		Enclosure	Plastic (UL Rated 94 5V)
Response Time	<5 nanoseconds		Max. Operating Temp	-40 to +85 C
Series Resistance	5.3 Ohms (nominal)		Warranty	15 Year Product Warranty

Model Number	Circuit Case	Wires	Shield	Polarity	Protocol	Interface
SLT/	**XZ**	**-XX**	**X**	**-X**	**XXX**	**-XX**
Signal Line Treater	Replace X with A = SAD Arrays C = 5kA (Commercial) I = 10kA (Industrial) S = Solid State	Replace XX with 02 = 2 wires 04 = 4 wires 06 = 6 wires 10 = 10 wires Case A has a 10 wire MAX. Case B has a 4 wire MAX. Case M Large has a 10 wire MAX. Case M Small has a 4 wire MAX.	Replace X with 0 = No Shield S = Shield	Replace X with B = Bipolar Protection U = Unipolar protection	Replace XXX with CL1 = 30V CL2 = 55V DC1 = 95V DC2 = 130V DC3 = 195V DC4 = 18V DC5 = 140V SL1 = 25V SL2 = 10V SL3 = 270V SL4 = 45V SL5 = 50V Other protocols available, contact factory.	Replace XX with TS = Terminal Strip Screw RJ = Mod Jacks Consult factory for additional Interface options.
COMMERCIAL UNITS Utilize MOV & SAD Technology						
INDUSTRIAL UNITS Utilize Gas Tube & SAD Technology	Replace Z with A = Large Case B = Small Case M = Din Rail Case					

***NOTE:** Installation is accomplished by simply inserting the Protector in series with the communication cable(s) and connecting the grounds as required.
PROTOCOLS: CL = Closed Loop, DC = DC, SL = Signal Line

All product dimensions provided are ± 0.125

SLT CAT5 POE

Ethernet
Surge Protection Device

The **SLT Series CAT5 POE** utilizes **State-of-the-Art Avalanche Diode Technology** to provide fast clamping and high energy handling capability.

Unit provides protection against Transient Voltages that exceed the nominal operating voltage of incoming data. Each line is protected against surge impulses up to 200A.

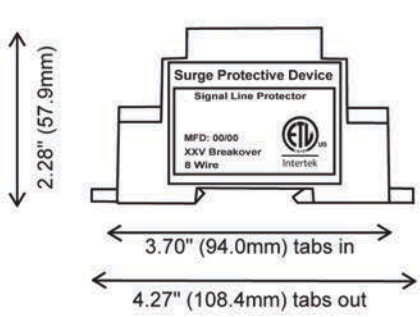
The SLT device works in series with the communication lines being protected; diverting harmful transient energies, while maintaining a tight clamp at the peak voltage. Units are designed to operate in a wide temperature range and are configured for 10/100 Ethernet data or similar protocol.

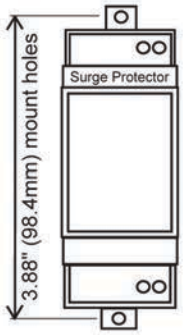
- **Protects POE data lines with ≤100Mbps & ≤100Mhz**
- **Solid state fail-safe design**
- **Low shunt capacitance to reduce signal loss**
- **RJ45 (female to female) Connection Method**
- **Performance tested to verify compliance**

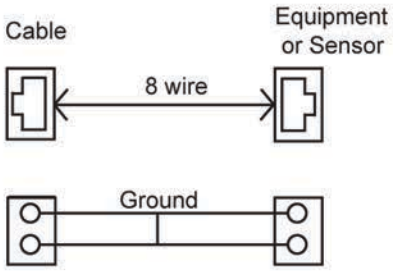
15 YEAR WARRANTY

MADE IN THE USA

C ETL US LISTED Intertek







(Diagrams not drawn to scale)

Electrical Specifications	
Maximum Peak Surge Current	200 Amps
Peak Pulse Power	1500 Watts Min.
Maximum Clamping Voltage at Ipp of 145 Amps	92 Volts
Line - Load Sensitive	No
Response Time	< 1 Nanosecond
Breakover Voltage: (Line - Ground)	68 Volts
Maximum Nominal Operating Frequency	100MHz
Operating Frequency with Attenuation <3db	0-537MHz
Data Transfer Rate	10/100Mbps
Capacitance L - G	0.41nF
Number of Protected Lines	8
Series Resistance	< 1 Ohm
Power Over Ethernet (POE) IEEE Std. 802.3 at 2009	YES – 57 Volts

Mechanical Specifications	
Weight	60 grams (2.1 Ounces)
Connector Type	8P8C (RJ45)
Mounting	35mm DIN or panel mount via 2 integrated tabs that accept up to #6 sized screws
Enclosure	Polycarbonate UL94 V-0

Environmental Specifications	
Operating Temperature	-34°C to 74°C (-30°F to 165°F)
Relative Humidity	95% noncondensing

NOTE: Installation is accomplished by simply inserting the Protector in series with the communication cable(s) and connecting the grounds as required.

All product dimensions provided are ± 0.125

SLT CAT5e

10/100
Surge Protection Device

The **SLT Series CAT5e** utilizes **State-of-the-Art Avalanche Diode Technology** to provide fast clamping and high energy handling capability.

Unit provides protection against Transient Voltages that exceed the nominal operating voltage of incoming data. Each line is protected against surge impulses up to 500A.

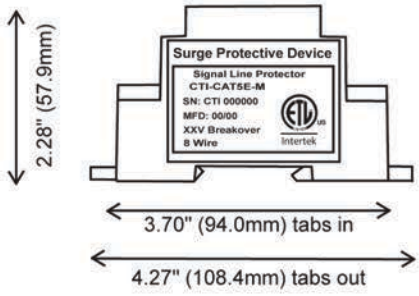
The SLT device works in series with the communication lines being protected; diverting harmful transient energies, while maintaining a tight clamp at the peak voltage. Units are designed to operate in a wide temperature range and are configured for 10/100 Ethernet data or similar protocol.

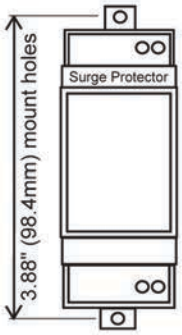
- **Protects CAT5e data lines with ≤100Mbps & ≤100Mhz**
- **Solid state fail-safe design**
- **Low shunt capacitance to reduce signal loss**
- **RJ45 (female to female) Connection Method**
- **Performance tested to verify compliance**

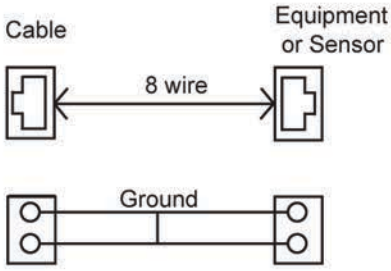
15 YEAR WARRANTY

MADE IN THE USA

Intertek







(Diagrams not drawn to scale)

Electrical Specifications	
Maximum Peak Surge Current	500 Amps
Peak Pulse Power	1500 Watts Min.
Maximum Clamping Voltage at Ipp of 105 Amps	14.5 Volts
Line - Load Sensitive	No
Response Time	< 1 Nanosecond
Breakover Voltage: (Line - Ground)	10 Volts
Maximum Nominal Op Frequency	100MHz
Operating Frequency with Attenuation <3db	0-389MHz
Data Transfer Rate	10/100Mbps
Capacitance L - G	0.41nF
Number of Protected Lines	8
Series Resistance	< 1 Ohm
Power Over Ethernet (POE)	No

Mechanical Specifications	
Weight	60 grams (2.1 Ounces)
Connector Type	8P8C (RJ45)
Mounting	35mm DIN or panel mount via 2 integrated tabs that accept up to #6 sized screws
Enclosure	Polycarbonate UL94 V-0

Environmental Specifications	
Operating Temperature	-34°C to 74°C (-30°F to 165°F)
Relative Humidity	95% noncondensing

NOTE: Installation is accomplished by simply inserting the Protector in series with the communication cable(s) and connecting the grounds as required.

All product dimensions provided are ± 0.125

SLT CAT6 DIN

10/100/1000
Surge Protection Device

The **SLT Series CAT6 DIN** utilizes **State-of-the-Art Avalanche Diode Technology** to provide fast clamping and high energy handling capability.

Unit provides protection against Transient Voltages that exceed the nominal operating voltage of incoming data. Each line is protected against surge impulses up to 200A.

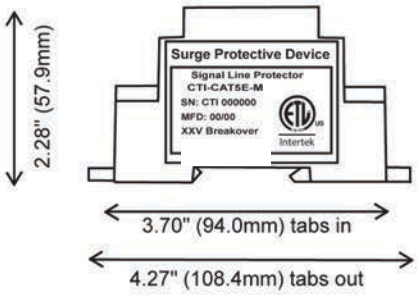
The SLT device works in series with the communication lines being protected; diverting harmful transient energies, while maintaining a tight clamp at the peak voltage. Units are designed to operate in a wide temperature range and are configured for 10/100/1000 Ethernet data or similar protocol.

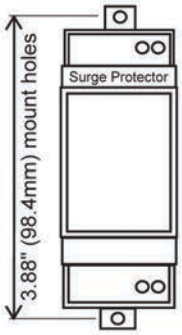
- **Protects CAT6 data lines with ≤1000Mbps & ≤250Mhz**
- **Solid state fail-safe design**
- **Low shunt capacitance to reduce signal loss**
- **RJ45 (female to female) Connection Method**
- **Performance tested to verify compliance**

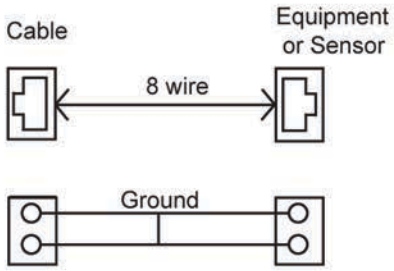
15 YEAR WARRANTY

MADE IN THE USA

Intertek







(Diagrams not drawn to scale)

Electrical Specifications	
Maximum Peak Surge Current	500 Amps
Peak Pulse Power	1500 Watts Min.
Maximum Clamping Voltage at Ipp of 105 Amps	14.5 Volts
Line - Load Sensitive	No
Response Time	< 1 Nanosecond
Breakover Voltage: (Line - Ground)	10 Volts
Attenuation Worse Case Margin	1.1db @ 250MHz
NEXT	>40dB
Data Transfer Rate	10/100/1000Mbps
Power Sum NEXT	33.6dB @ 247MHz
Return Loss	28dB @ 223.5MHz
ACR	Worse Case 15.6dB
Power Sum ACR	Worse Case 14.0dB
ARC -F	26.8dB @ 220MHz
PSACRF	24.3dB @ 250MHz

Mechanical Specifications	
Weight	60 grams (2.1 Ounces)
Connector Type	8P8C (RJ45)
Mounting	DIN Rail
Enclosure	Polycarbonate UL94 V-0

Environmental Specifications	
Operating Temperature	-34°C to 74°C (-30°F to 165°F)
Relative Humidity	95% noncondensing

NOTE: Installation is accomplished by simply inserting the Protector in series with the communication cable(s) and connecting the grounds as required. dB values obtained with a 300 ft long cable.

All product dimensions provided are ± 0.125

SLT CAT6 POE

10/100/1000
Surge Protection Device

The **SLT Series CAT6 POE** utilizes S**tate-of-the-Art Avalanche Diode Technology** to provide fast clamping and high energy handling capability.

Unit provides protection against Transient Voltages that exceed the nominal operating voltage of incoming data. Each line is protected against surge impulses up to 400A.

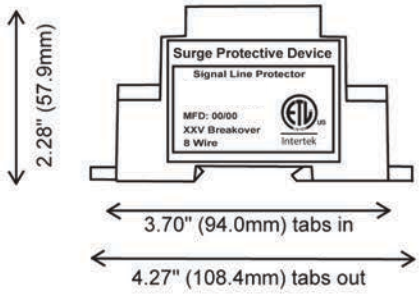
The SLT device works in series with the communication lines being protected; diverting harmful transient energies, while maintaining a tight clamp at the peak voltage. Units are designed to operate in a wide temperature range and are configured for 10/100/1000 Ethernet data or similar protocol.

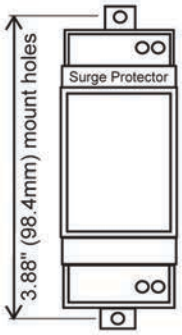
- **Protects CAT6 data lines with ≤1000Mbps & ≤250Mhz**
- **Solid state fail-safe design**
- **Low shunt capacitance to reduce signal loss**
- **RJ45 (female to female) Connection Method**
- **Performance tested to verify compliance**

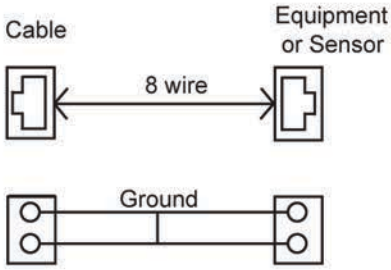
15 YEAR WARRANTY

MADE IN THE USA

Intertek







(Diagrams not drawn to scale)

Electrical Specifications	
Maximum Peak Surge Current 8 x 20µs	200 Amps
Peak Pulse Power	1500 Watts Min.
Maximum Clamping Voltage at Ipp of 16.5 Amps	92 Volts
Line - Load Sensitive	No
Response Time	< 1 Nanosecond
Breakover Voltage: (Line - Ground)	68 Volts
Attenuation Margin	.3db @ 176MHz
NEXT	>40dB
Data Transfer Rate	10/100/1000Mbps
Power Sum NEXT	47.8dB @ 248MHz
Return Loss	34.8dB @ 38MHz
ACR	Worse Case 17.0dB
Power Sum ACR	Worse Case 14.9dB
ARC -F	27.4dB @ 245MHz
PSACRF	>38dB

Mechanical Specifications	
Weight	60 grams (2.1 Ounces)
Connector Type	8P8C (RJ45)
Mounting	35mm DIN or panel mount via 2 integrated tabs that accept up to #6 sized screws
Enclosure	Polycarbonate

Environmental Specifications	
Operating Temperature	-34°C to 74°C (-30°F to 165°F)
Relative Humidity	95% noncondensing

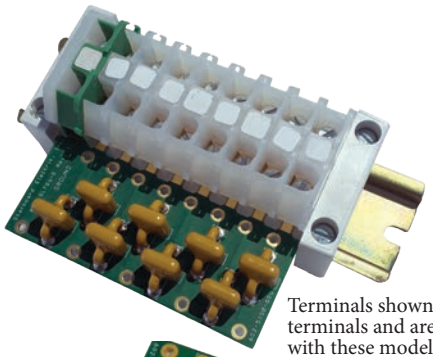
NOTE: Installation is accomplished by simply inserting the Protector in series with the communication cable(s) and connecting the grounds as required.

All product dimensions provided are ± 0.125

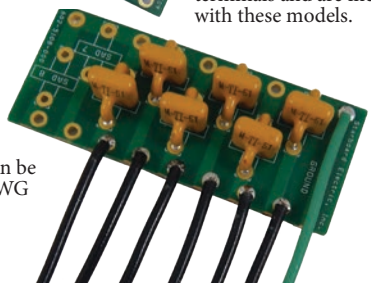
HE-SL Finger Board

The HE-SL Series is specifically engineered to provide maximum protection for proximity sensors. These high-energy surge protection devices are designed to mount directly in parallel with control signal lines allowing for fast and orderly field retrofitting.

The HE-SL Series was developed in order to reduce the frequency of proximity sensor failures due to induced surge energies on messenger cables due to lightning induced by inductive, capacitive or resistive coupling and/or electrostatic buildup. Unit provides up to 8 wire Line to Ground Protection. Proper installation of the HE-SL Series can significantly reduce down time and damages due to unexpected surges.

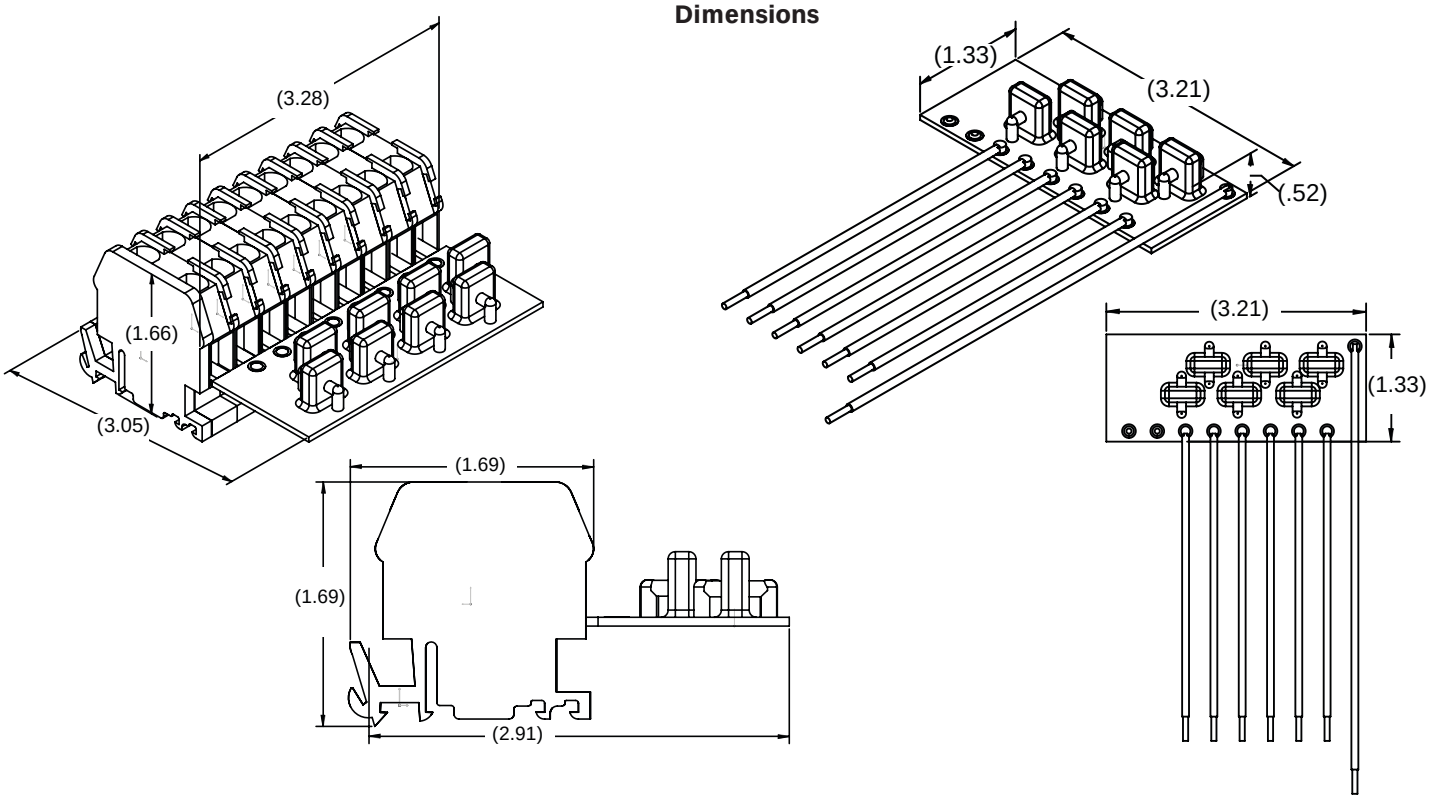


Terminals shown are box lug terminals and are included with these models.



Fingers can be removed, as shown, and wire leads (up to AWG #10) can be soldered to the board. Standard boards include AWG #14 black and AWG #14 green for ground. Custom colors and configurations are available.

Dimensions



(Diagrams not drawn to scale)

Product Specifications			
High Energy Glass Passivated, Stacked Silicon Avalanche Diode Arrays		UL Flammability Classification:	94 V-0
Response Time of SAD Array:	Typically <1 µs (0 Volts to Breakover Voltage)	Maximum Clamp Voltages:	54.4 Volts @200Amps/450 Volts (8x20µs waveform)
Maximum Operating Voltage:	36 Volts DC	Maximum Surge Energy	8kA+ (8 x 20µs waveform)1 Time per circuit/wire
Maximum Operating Frequency:	15 MHz	Terminals	Box Lug Terminal Block *Other terminal blocks can be used
Operating Temperature Range:	-40° C to + 125° C	Warranty	15 Years

All product dimensions provided are ± 0.125

TLT Series

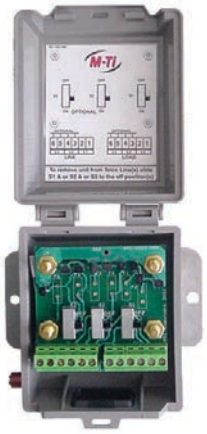
Telephony Lines
Surge Protection Device

The **TLT Series** is a Secondary Transient Voltage Surge Suppression for Telephony line protocols. Units provide protection against Transient Voltages that exceed the nominal operating voltage of Dial-Up, Dedicated/Leased and T1 Lines.

Each line is protected against surge current impulses up to 1.9kA/wire. The **TLT Series** installs in series with the telephone lines to be protected, diverting harmful transient energies to ground while maintaining close clamping thresholds above normal service voltages. Units can be configured for all standard telephony applications by varying circuit components and/or densities.

The SG housing for the **TLT Series** is designed for indoor and outdoor installations. All other housings are for indoor use only.

- **Solid state fail-safe design**
- **Low shunt capacitance to reduce signal loss**
- **Performance tested to verify compliance**



Case G

Case B

Case A

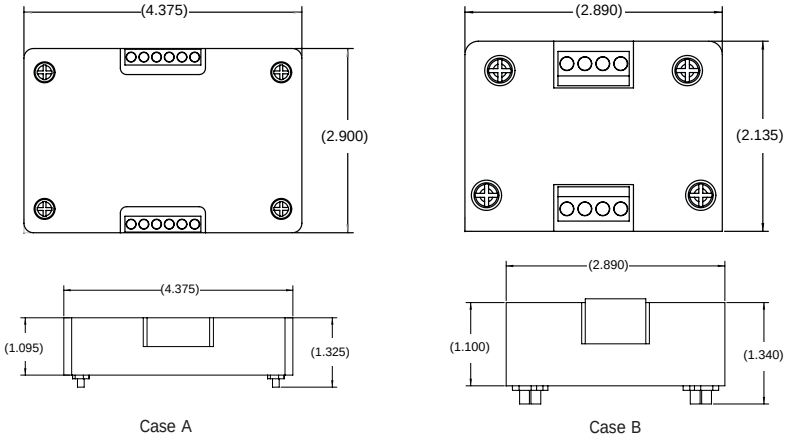
15 YEAR WARRANTY

MADE IN THE USA

ETL LISTED US

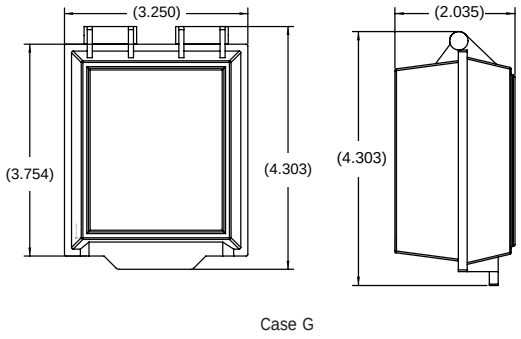
Intertek

Dimensions



Case A

Case B



Case G

(Diagrams not drawn to scale)

Product Specifications			
Max. Circuits Protected	5 Pairs (10 Wires)	Enclosure	Indoor (SA & SB) Outdoor (SG)
Max. Operating Voltage	56 - 190 Volts	Max. Operating Temp	-40 to +85 C
Response Time	< 5 - 15 nanoseconds	Warranty	15 Year Product Warranty
Clamp Voltage	Between 105 and 270 volts		

ETL Listed to UL497A Standard. (Secondary Protection for Telephone Lines)

Model Number	Clamp Voltage	Application	Max. Operating Voltage
TLT/SG-XX0-UDUL-ZZ	270 Volts	Dial-up Line	240 Volts
TLT/SG-XX0-UT1L-ZZ	220 Volts	E1/T1	190 Volts
TLT/SG-XX0-ULDL-ZZ	110 Volts	Leased Line	80 Volts
TLT/SA-XX0-UDUL-ZZ	270 Volts	Dial-up Line	240 Volts
TLT/SA-XX0-UT1L-ZZ	220 Volts	E1/T1	190 Volts
TLT/SA-XX0-ULDL-ZZ	110 Volts	Leased Line	80 Volts
TLT/SB-XX0-UDUL-ZZ	270 Volts	Dial-up Line	240 Volts
TLT/SB-XX0-UT1L-ZZ	220 Volts	E1/T1	190 Volts
TLT/SB-XX0-ULDL-ZZ	110 Volts	Leased Line	80 Volts

Replace XX with number of wires to be protected: 02 = 2 wires, 04 = 4 wires, 06 = 6 wires, 08 = 8 wires, 10 = 10 wires.
Replace ZZ with: RJ for Modular Jacks (female to female) - TS for Terminal Strip Screw
Modular Jacks: only 8 wires for case A & B. Case G only 6 wire.

All product dimensions provided are ± 0.125

CLT Series

Coaxial Line Surge Protection Device

The **CLT Series** provides Bidirectional Transient Voltage Surge Suppression for Coaxial Applications. Units provide protection against Transient Voltages that exceed nominal operating voltages. Devices can protect against surge current impulses up to 10kA/wire.

Models are available to protect **CATV, SATV, CCTV, Digital Modems, Ethernet ThinNet (10 Base 2) and Arcnet**. Consult factory for special applications.

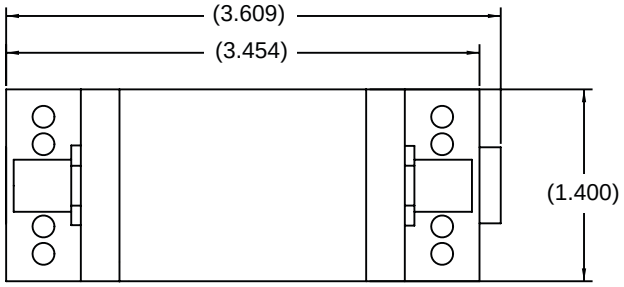
The CLT Series installs in series with the coaxial lines and diverts harmful transient energies away from sensitive system components. Units operate over a wide range of temperatures and interface with standard coaxial protocols.

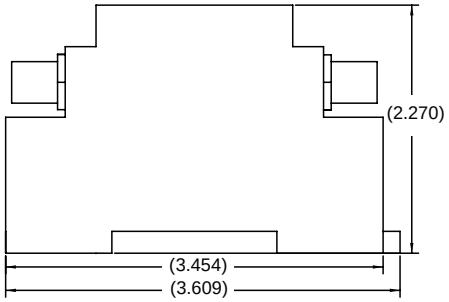
15 YEAR WARRANTY

MADE IN THE USA

ETL LISTED Intertek

Dimensions





(Diagrams not drawn to scale)

Product Specifications	
Max. Surge Current	10kA per wire
Interface	Bi-directional
Response Time	Typically <1 picosecond
Series Resistance	< 0.1 Ohm
Nominal Data Rate	100 Mbps
Enclosure	Polycarbonate UL94 V-0
Max. Operating Temp	-40 to +85 C
Warranty	15 Year Product Warranty

Mechanical Specifications	
Mounting:	Series devices suitable for din rail or wall mounting

ETL Listed to UL497A Standard. (Isolated Loop Protector)

Model Number	Application & Voltages	Connector	Case Style	Mounting (Standard)
CLT/	**-XXX**	**-X**	**-X**	**-X**
Coaxial Line Treater	Replace XXX with: CTV = 36V Cable TV **TVC = 75V Cable TV** CCV = 10V Video **VCC = 75V Video** ENT = 18V 10 Base 2 ARC = 30V Arcnet **NTV = 75V Satellite**	Replace X with: 1 = F Type 2 = BNC	Replace X with: M = Din Rail Case	Replace X with: 0 = Din Rail Wall Mount
Note: Shields are protected unless otherwise noted.	**NOTE: Bold items are Gas Tube (only).**	Consult factory for gender options.		

All product dimensions provided are ± 0.125

SST Series

4-20mA Loop Surge Protection Device

Transient Voltage Surge Suppression for discrete signaling 4-20mA protocols. Units provide protection against any Transient Voltage that exceeds the nominal signaling voltage. Each line is **protected against surge** current impulses **up to 10kA**.

The **SST Series** is configured to **work in series or parallel** with the measurement/control lines being protected, diverting harmful transient energies while maintaining a tight clamp at the peak voltage. SST Signaling units **protect 1 circuit consisting of 2 wires** (1 pair) plus ground.

Units are designed to operate in a wide temperature range and are ideal for the protection of 4-20mA current loop transducers, and similar instrument/control applications.

Consult the factory with any special package and circuit performance requirements.

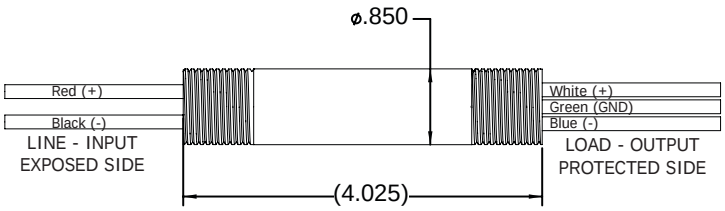
Case CA
(Cap Size)

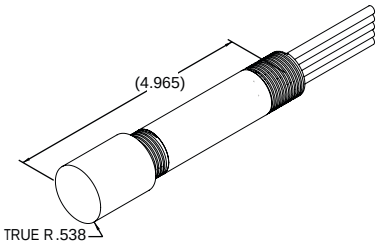
Case FT
(Feed Through Style)

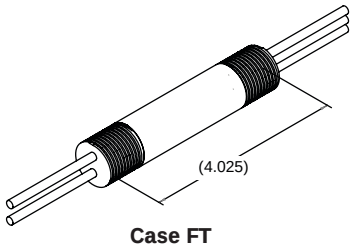
15 YEAR WARRANTY

MADE IN THE USA

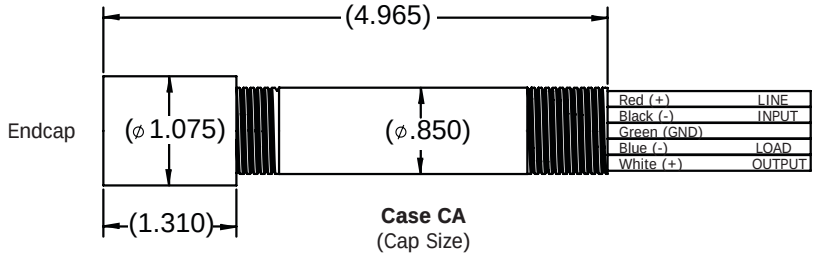
Intertek







Case FT
(Feed Through Style)



Case CA
(Cap Size)

Available Wire Sizes: 14 AWG, 16 AWG (Standard), 18 AWG and 20 AWG
Available Ground Wire Sizes: 16 AWG (Standard) and 18 AWG

(Diagrams not drawn to scale)

Product Specifications			
Max. Surge Current	10 kA per Wire	Enclosure	Stainless Steel 316L ½" NPT
Max. Operating Voltage	24 or 48 VDC	Max. Operating Temp	-55 to +85 C
Response Time	< 1 nanosecond	Connection Method	#16 AWG Tinned Copper Wires
Series Resistance	5.1 Ohms per Wire/Line	Warranty	15 Year Product Warranty
Modes of Protection	L-L and L-G		

Model Number	Clamp Voltage	Application	Max. Operating Voltage
SST/CP-020-UCL1-WL/CA	24V Capped	4 – 20mA loop	24 Vac
SST/CP-020-UCL2-WL/CA	48V Capped	4 – 20mA loop	48 Vdc
SST/CP-020-UCL1-WL/FT	24V Feed Through	4 – 20mA loop	24 Vdc
SST/CP-020-UCL2-WL/FT	48V Feed Through	4 – 20mA loop	48 Vdc

All product dimensions provided are ± 0.125

MPT Series

Commercial & Industrial Surge Protection Devices

The **MPT Series** is a 100% **modular** Surge Protection System providing high-energy protection and optional RF filtering for Commercial, Industrial and Remote Site applications. These panel units provide superior control over transients by delivering low clamping voltages combined with **high surge energy handling capabilities**. They are configured for quick and easy parallel installation.

On-board diagnostics include a front panel display equipped with LED indicators that continuously monitor the operational **status of the entire unit**. An **Audible Alarm** is standard with switch positions for test, disable and enable. A **Surge Counter** and a set of NO/NC dry contacts are also standard. Internal filtering and a remote monitor are available options.

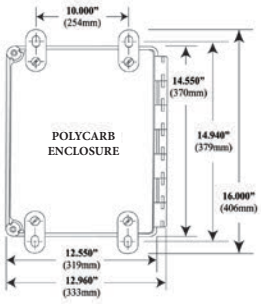
All Models are rated for Type 1 or Type 2 service locations and are available with surge ratings from **100kA to 300kA** per phase.

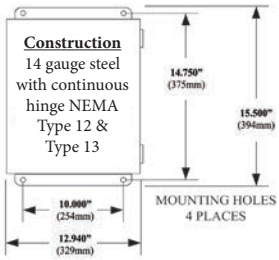
Steel Continuous Hinge Enclosure

Polycarb Enclosure

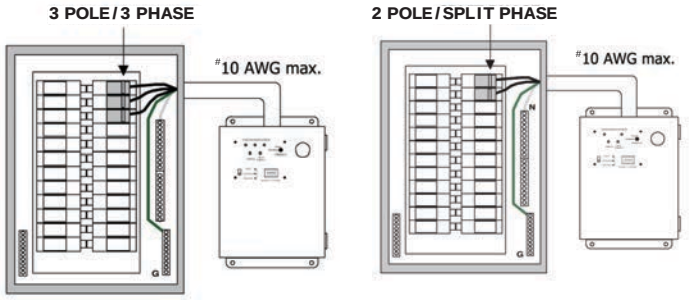
Intertek

Dimensions





Typical Installations



(Diagrams not drawn to scale)

Product Specifications	
I_N	10/20 kA
Surge Current Ratings	100/200/300kA per Phase
Fusing	Coordinated Surge & Thermal
Short Circuit Current	100kA RMS Symmetrical
Enclosure Ratings	NEMA 4, 4X & NEMA 12

Mechanical/Environmental Specifications	
Safety Standards	UL 1449 (most current)
Operating Frequency	50/60 Hz
Diagnostics	LEDs, Audible Alarm, Surge Counter
Opertating Temperature	-40 to +140 F (-40 to +60 C)

			VPR			
Model Number	**Service Voltage**	**MCOV**	**L - N**	**L - G**	**N - G**	**L - L**
MPTXXX/120-10-#-1	120 Volt Single Ø	150Vac	700V	700V	700V	N/A
MPTXXX/120-SP-#-1	120/240 Volt Split Ø	150Vac	700V	700V	700V	1500V
MPTXXX/120-3W-#-1	120/208 Volt 3Ø Wye	150Vac	700V	700V	700V	1500V
MPTXXX/120-3H-0-1	120/240 Volt 3Ø HL Delta	150/320Vac	700/1000V	700/1000V	700V	1500/1800V
MPTXXX/240-3D-0-1	240 Volt, 3Ø Delta	320Vac	N/A	1000V	N/A	2000V
MPTXXX/220-3W-#-1	220/380 Volt, 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
MPTXXX/230-3W-#-1	230/400 Volt, 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
MPTXXX/240-3W-#-1	240/415 Volt, 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
MPTXXX/277-3W-#-1	277/480 Volt, 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
MPTXXX/480-3D-0-1	480 Volt, 3Ø Delta	520Vac	N/A	1800V	N/A	4000V

1. **Replace XXX with:** desired kA rating per phase: 100 for 100kA or 200 for 200kA or 300 for 300kA. 2. **Replace # with:** F if filtering is required (available option on WYE Models only).
3. **Add:** /RM at the end of the Model Number for the Remote Monitoring option. 4. **ENCLOSURE HOUSING OPTIONS:** Add /POL to the end of the Model Number for NEMA 4X NonMetallic or /SS for NEMA 4 Stainless Steel or /WP for Weatherproof.

All product dimensions provided are ± 0.125

BPT Series

Commercial/Industrial Panel Surge Protection Device

The **BPT Series** is a **Transient Protection System** that provides heavy-duty surge protection and filtering for industrial and commercial sites against the harmful effects of transient energies induced on AC power lines. The BPT's unique construction allows it to deliver low clamping voltages while **safely handling large surge currents**. Configured for parallel installation, units install quickly and easily. All models are suitable for Type 1 or Type 2 service panel applications.

On-board diagnostics include a panel display equipped with LED indicators that continuously monitor the operational **status of the entire unit**. An **Audible Alarm** is standard with switch positions for test, disable and enable. A **Surge Counter** and a set of NO/NC dry contacts are also standard. A Remote Monitor and/or Filter are available as options.

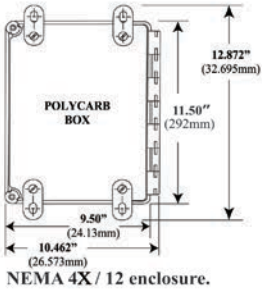
Weather Resistant models available in a NEMA 4X housing with internal diagnostics for harsh environments. Audible Alarm and Surge Counter are not included with the NEMA 3R model.

15 YEAR WARRANTY

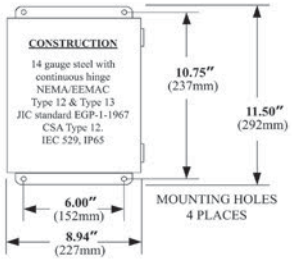
MADE IN THE USA

C ETL US LISTED Intertek

Dimensions

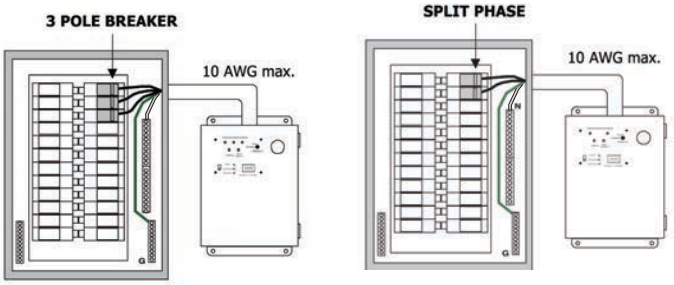


NEMA 4X / 12 enclosure.



NEMA 3R enclosure.

Typical Installations



(Diagrams not drawn to scale)

Product Specifications	
I_n	10/20 kA
Max Surge Current	300kA per Phase
Fusing	Coordinated Surge & Thermal
Short Circuit Current	100kA RMS Symmetrical Amps
Enclosure Ratings	NEMA 4, 4X & NEMA 12

Mechanical/Environmental Specifications	
Diagnostics	LED, Audible Alarm, Surge Counter
Safety Standards	UL 1449 (most current)
Operating Frequency	50/60 Hz

			VPR			
Model Number	**Service Voltage**	**MCOV**	**L - N**	**L - G**	**N - G**	**L - L**
BPTXXX/120-10-#-1	120 Volt Single Ø	150Vac	600V	600V	700V	N/A
BPTXXX/120-SP-#-1	120/240 Volt Split Ø	150Vac	600V	600V	700V	1200V
BPTXXX/120-3W-#-1	120/208 Volt 3Ø Wye	150Vac	600V	600V	700V	1200V
BPTXXX/120-3H-#-1	120/240 Volt 3Ø HL Delta	150/320Vac	600/1000V	600/1000V	700V	1200/1500V
BPTXXX/240-3D-0-1	240 Volt, 3Ø Delta	320Vac	N/A	1000V	N/A	1200V
BPTXXX/220-3W-#-1	220/380 Volt, 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
BPTXXX/230-3W-#-1	230/400 Volt, 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
BPTXXX/240-3W-#-1	240/415 Volt, 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
BPTXXX/277-3W-#-1	277/480 Volt, 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
BPTXXX/480-3D-0-1	480 Volt, 3Ø Delta	520Vac	N/A	1800V	N/A	4000V

1. **Replace XXX with:** desired kA rating per phase: 100 for 100kA or 200 for 200kA or 300 for 300kA. 2. **Replace # with:** F if filtering is required (available option on WYE Models only).
3. **Add:** /RM at the end of the Model Number for the Remote Monitoring option. 4. **ENCLOSURE HOUSING OPTIONS:** Add /POL to the end of the Model Number for NEMA 4X NonMetallic or /SS for NEMA 4 Stainless Steel or /WP for Weatherproof.

All product dimensions provided are ± 0.125

MST Series

Residential/Commercial/Industrial Surge Protection Device

The **MST Series** is a modular, parallel installed, Surge Protection Device designed for commercial, industrial and residential applications. Models are available for all standard electrical services and provide up to 100kA of surge energy handling per phase. This rating is **10 times the energy handling of the IEEE's highest Category C location** rating of 10kA/20kV using an 8x20µs waveform. All models carry a 100Ka RMS symmetrical fault current rating making expensive disconnects and/or costly replacement fuses unnecessary.

MST units incorporate a **replaceable MT protection module** that is completely **self-contained with fusing and diagnostic circuitry**. The MT module can be **replaced in the field**, thereby eliminating the need to remove the entire unit from service. Replacement modules include the entire operating unit (all phases, all modes, the fuses and even the diagnostics) MST Modules are keyed to prevent the use of the wrong module for the application.

3R Enclosure

Polycarb Enclosure

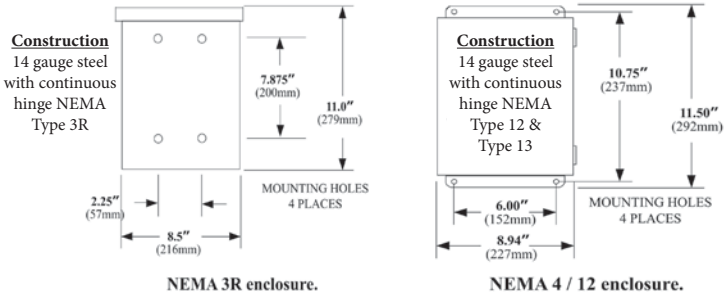
(MST Module)

15 YEAR WARRANTY

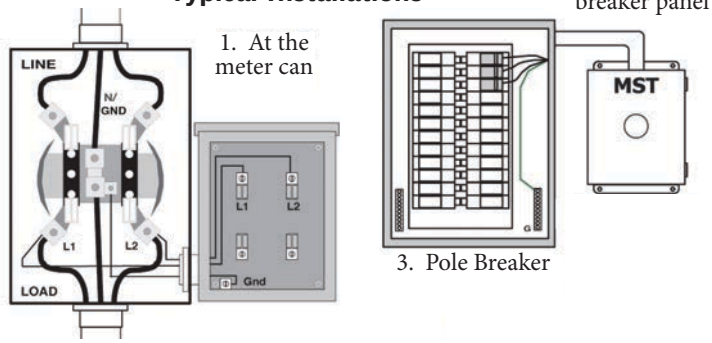
MADE IN THE USA

c ETL us LISTED Intertek

Dimensions



Typical Installations



(Diagrams not drawn to scale)

Product Specifications				
I_n	10/20 kA (nominal discharge current)		Operating Temperature	-40 to +140 F (-40 to +60 C)
Max Surge Current	100kA per Phase		Diagnostics	Red Status LED, SUNBRIGHT
Fusing	Coordinated Surge & Thermal		Safety Standards (Type 1 SPD)	UL 1449 (most current)
Short Circuit Current	100kA RMS Symmetrical Amps		Operating Frequency	50/60 Hz
Housing Rating	NEMA 3R, NEMA 4, 4X, NEMA 12			

Model Number	Service Voltage	MCOV	L-N	L-G	N-G	L-L
MSTXXX-120-SP-0-XX	Split Phase 3 Wire + Gnd.	150Vac	600V	600V	600V	1200V
MSTXXX-120-3W-0-XX	3 Phase Wye, 4 Wire + Gnd.	150Vac	600V	600V	600V	1200V
MSTXXX-120-3H-0-XX	High Leg Delta, 4 Wire + Gnd.	150/320Vac	600/1000V	600/1000V	600V	1200/1800V
MSTXXX-240-3D-0-XX	3 Phase Delta, 3 Wire + Gnd.	320Vac	N/A	1000V	N/A	2000V
MSTXXX-220-3W-0-XX	3 Phase Wye, 4 Wire + Gnd.	320Vac	1000V	1000V	1000V	2000V
MSTXXX-230-3W-0-XX	3 Phase Wye, 4 Wire + Gnd.	320Vac	1000V	1000V	1000V	2000V
MSTXXX-277-3W-0-XX	3 Phase Wye, 4 Wire + Gnd.	320Vac	1000V	1000V	1000V	2000V
MSTXXX-480-3D-0-XX	3 Phase Delta, 3 Wire + Gnd.	520Vac	N/A	1800V	N/A	4000V

Replace XXX with desired kA rating per phase: 050 for 50 kA or 100 for 100 kA.
Then, replace XX with: 3R, 12, POL (4X Nonmetallic) or SS (Stainless) for desired NEMA Enclosure

All product dimensions provided are ± 0.125

RPM Series

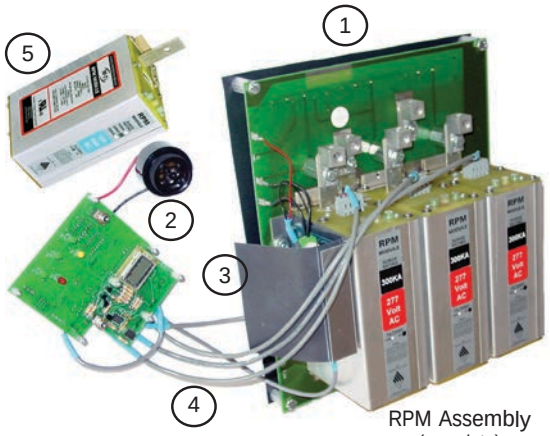
Modular Kit Assembly
Commercial & Industrial
Surge Protection Devices

RPM Modules are Surge Protection Devices capable of providing **heavy-duty surge protection and filtering for industrial and commercial sites** against the harmful effects of transient energies induced on AC power lines.

The RPM's unique construction allows it to deliver **low clamping voltages** while safely handling large surge currents. It can be incorporated into an OEM or VAR protection design and provided the end enclosure is listed it will maintain its Recognized status as a SPD device. One module per phase is required.

Configured for parallel installation, units cost nothing to maintain and are **easy to upgrade while in service**. All models have a 100kA rms symmetrical fault current rating. The surge suppression function of the RPM is provided by large diameter MOV and "smart sensing" technology. Each module is capable of providing L-N, L-G and N-G protection modes.

On-board **LED indicators** continuously **monitor the operational status** of each protection mode (5 - 10 VDC Supply Required). Additional safety features include color-coded labels and keyed mounting by voltage application. Filtering & remote monitor options available.



RPM Assembly
(complete)

15 YEAR WARRANTY

MADE IN THE USA

Intertek

Product Specifications	
Surge Current Ratings	100, 200, 300kA per phase
Short Circuit Rating	100kA RMS Symmetrical Amps
Fusing	Coordinated Surge and Thermal
Operating Frequency	50/60 Hz
Operating Temperature	-40 to +140 F (-40 to +60 C)
Diagnostics	LED, Surge Counter, Alarm
Safety Standards (Type 4 SPD)	UL 1449 (most current)
Warranty	15 Year Product Warranty

Dimensions & Weight	
RPM Module:	6.582" x 4.256" x 2.784" (2.255 lb)
RPM Assembly:	12.25" x 10.25" x 5.487" (9.434 lb)

RPM Assembly Parts
1 - Mounting Board
2 - Front Panel Diagnostics
3 - Power Supply
4 - Cable Assembly
5 - RPM Modules

RPM Modules			VPR		
Model Number	**Service Voltage**	**MCOV**	**L - N**	**L - G**	**N - G**
RPMXXX/120-W-#-1	120 Volt, Single Phase	150 Vac	600V	600V	500V
RPMXXX/240-D-0-1	240 Volt, Single Phase, Delta	320 Vac	N/A	1000V	N/A
RPMXXX/220-W-#-1	220 Volt, Single Phase	320 Vac	1000V	1000V	1000V
RPMXXX/230-W-#-1	230 Volt, Single Phase	320 Vac	1000V	1000V	1000V
RPMXXX/240-W-#-1	240 Volt, Single Phase, Wye	320 Vac	1000V	1000V	1000V
RPMXXX/277-W-#-1	277 Volt, Single Phase	320 Vac	1000V	1000V	1000V
RPMXXX/480-D-0-1	480 Volt, Single Phase	520 Vac	N/A	1800V	N/A
RPM Kit Assembly					
RPMKITXXX/120-10-#-1/	120 Volt, Single Phase	150 Vac	700V	700V	700V
RPMKITXXX/120-SP-#-1/	120/240 Volt, Split Phase	150 Vac	700V	700V	700V
RPMKITXXX/120-3W-#-1/	120/208 Volt, 3 Phase Wye	150 Vac	700V	700V	700V
RPMKITXXX/120-3H-#-1/	120/240 Volt, 3 Phase HL Delta	150/320 Vac	700/1000V	700/1000V	700V
RPMKITXXX/240-3D-0-1/	240 Volt, 3 Phase Delta	320 Vac	N/A	1000V	N/A
RPMKITXXX/220-3W-#-1/	220/380 Volt, 3 Phase Wye	320 Vac	1000V	1000V	1000V
RPMKITXXX/230-3W-#-1/	230/400 Volt, 3 Phase Wye	320 Vac	1000V	1000V	1000V
RPMKITXXX/240-3W-#-1/	240/415 Volt, 3 Phase Wye	320 Vac	1000V	1000V	1000V
RPMKITXXX/277-3W-#-1/	277/480 Volt, 3 Phase Wye	320 Vac	1000V	1000V	1000V
RPMKITXXX/480-3D-0-1/	480 Volt, 3 Phase Delta	520 Vac	N/A	1800V	N/A

RPM MODULE NOTE: Replace XXX with desired kA rating, per phase: 100 for 100kA, 200 for 200kA or 300 for 300kA. Replace # with F if filtering is required (WYE Models Only).
RPM KIT NOTE: Replace XXX with desired kA rating, per phase: 100 for 100kA, 200 for 200kA or 300 for 300kA. Replace # with F if filtering is required (WYE Models Only). Place an /RM at the end of the part number for the Remote Monitoring option.

All product dimensions provided are ± 0.125

MAP Series

Universal - Residential/ Commercial/Light Industrial Surge Protection Device

Meter Treater's **MAP Series**, represents a new era in surge protection with our "one size fits all" application flexibility. All units contain short circuit and thermal fusing, and our **"Smart Sensing Technology"** that distinguishes between surges and overcurrent events.

This new suppressor package meets the current industry standards and stops surges right at the electric meter before they can enter a facility. The MAP Series is a Type 1 or Type 2 Surge Protection Device (SPD) that is listed to **ANSI/UL 1449.**

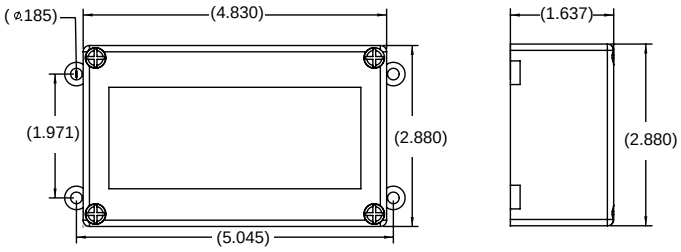
The inventive design, performance and universal application features of the MAP, makes it the ideal choice for Commercial and Light Industrial applications.

15 YEAR WARRANTY

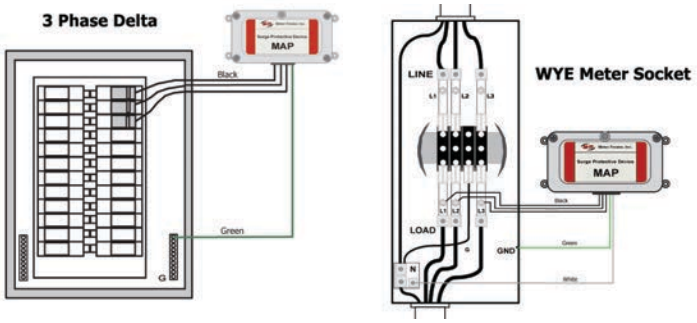
MADE IN THE USA

C ETL US LISTED Intertek

Dimensions



Typical Installations



(Diagrams not drawn to scale)

Product Specifications	
I_n	10/20 kA (nominal discharge current)
Max Surge Current	150kA (50kA per Phase)
Max Load Current	up to 800 Amps Continuous
Fusing*	Thermal and Short Circuit Fusing
Short Circuit Current	100kA RMS Symmetrical Amps
Diagnostics	Fiber Optics
Housing Rating	NEMA1 Standard with NEMA 4X optional†

†Other options available. Contact factory.

Mechanical/Environmental Specifications	
Enclosure	Polycarbonate
Safety Standards (Type 1 SPD)	UL 1449 (most current)
Operating Frequency	50/60 Hz

*No external fusing required. **Required by ANSI/UL 1449.

			VPR			
Model Number	**Service Voltage**	**MCOV**	**L - N**	**L - G**	**N - G**	**L - L**
MAP050/120-10-0-2	120 Single	150	600	600	1200	-
MAP050/120-SP-0-2	120/240 Split	150	600	1200	600	1200
MAP050/120-3W-0-2	120/208 Wye	150	600	1200	600	1200
MAP050/120-3H-0-2	120/240 Highleg	150	600/1000	1200/1800	600	1200/1800
MAP050/240-3D-0-2	240 Delta	320	-	1000	-	2000
MAP050/240-2P-0-1	240 Volt Two Phase	320	-	1000	-	2000
MAP050/277-3W-0-2	277/480 Wye	320	1000	2000	1000	2000
MAP050/480-3D-0-2	480 Delta	550	-	1800	-	4000
MAP100/120-10-0-1	120 Volt Single Phase	150	600	600	1200	-

All product dimensions provided are ± 0.125

RCHW Series

Extrusion Case

Residential/Commercial Hardwired Surge Protection Device

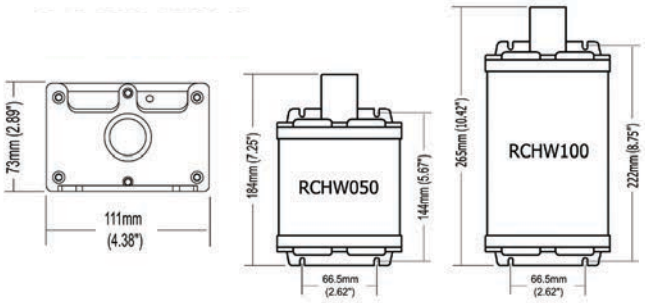
The **RCHW Series** provides **high-energy surge protection** and optional **RF filtering** for Residential, Commercial, Industrial and Remote Site applications.

These hardwired units provide superior control over transients by delivering low clamping voltages combined with high surge energy handling capabilities. All RCHW models are Type 1 or Type 2 Surge Protection Devices that are listed to **ANSI / UL 1449**.

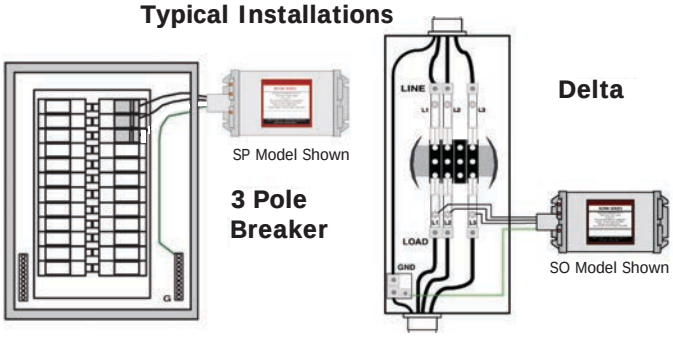
They are configured for **quick and easy parallel installation** and require little maintenance while in service. The high energy handling capabilities of the RCHW Series is due to the utilization of large diameter MOV technology.

The RCHW Series is available for all standard service voltages and phase configurations and can be equipped with several specialized diagnostic options. All Models have a 100kA RMS symmetrical fault current rating suitable for IEEE category C locations, and are available with surge ratings of 50kA and 100kA per phase. (200kA is also available)† (please contact factory)

Dimensions



Typical Installations



(Diagrams not drawn to scale)

Product Specifications				
Max Surge Current	100kA per Phase (see /POL)		Diagnostics	Red Status LED, SUNBRIGHT
Fusing	Coordinated Surge & Thermal		Safety Standards (Type 1 SPD)	ANSI/UL1449 (most current)
Short Circuit Current	100kA RMS Symmetrical		I_n	20kA*
Housing Rating	NEMA, 1, 2, 3, 3X, 4X, 12 & 13		Flexible Elbow option available	/FLEXELB
Enclosure	Extruded aluminum with plastic end caps			

†Special orders options and 200KA models, please contact the manufacturer for details.
* Devices that are rated 480V delta have a 10kA I_n

Model Number	Service Voltage	MCOV	L-N	L-G	N-G	L-L
RCHWxxx/120-10-#-1	120 Volt Single Ø	150Vac	600V	600V	600V	N/A
RCHWxxx/120-SP-#-1	120/240 Volt Split Ø	150Vac	600V	600V	600V	1200V
RCHWxxx/120-3W-#-1	120/208 Volt 3Ø Wye	150Vac	600V	600V	600V	1200V
RCHWxxx/120-3H-0-1	120/240 Volt 3Ø Delta	150/320Vac	600/1000V	600/1000V	600V	1200/1800V
RCHWxxx/240-3D-0-1	240 Volt 3Ø Delta	320Vac	N/A	1000V	N/A	2000V
RCHWxxx/220-3W-#-1	220/380 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/230-3W-#-1	230/400 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/240-3W-#-1	240/415 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/277-3W-#-1	277/480 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/480-3D-0-1	480 Volt 3Ø Delta	520Vac	N/A	1800V	N/A	4000V

1. **Replace xxx with:** 050 for 50kA or with 100 for 100kA (200 for 200kA per phase) Surge Ratings
2. **Replace # with:** F if filtering is required (available option on WYE Models only).
3. **Options**: Add /DC for Dry Contacts, Add /AA for Audible Alarm, Add /FM for Flush Mount Kit.
4. **Add:** /POL to the end of the Model Number for the optional NEMA 4X Non-Metallic Housing
5. **Add:** /WP to the end of the Model Number for the optional weatherproof, NEMA 4X, 3/4" grey thick flexible nonmetallic conduit
6. **Add:** /FLEX to the end of the Model Number for the optional weatherproof, NEMA 4X, 3/4" black thin nonmetallic conduit

All product dimensions provided are ± 0.125

RCHW Series

Polycase

Residential/Commercial/Light Industrial Surge Protection Device

The RCHW/POL Series provides **high-energy surge protection** and optional **RF filtering** for Residential, Commercial, Industrial and Remote Site applications.

These hardwired units provide superior control over transients by delivering low clamping voltages combined with high surge energy handling capabilities. All RCHW/POL models are Type 1 or Type 2 Surge Protection Devices that are listed to **ANSI/UL 1449**.

They are configured for **quick and easy parallel installation** and require little maintenance while in service. The superior energy handling capabilities of the RCHW/POL Series is due to the utilization of large diameter MOV technology.

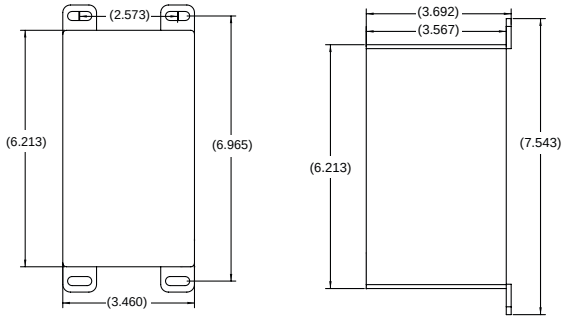
The RCHW/POL Series is available for all service voltages and phase configurations and can be equipped with several specialized diagnostic options. All Models have a 100kA RMS symmetrical fault current rating suitable for all IEEE category C locations and are available with surge ratings of 50kA or 100kA per phase.

15 YEAR WARRANTY

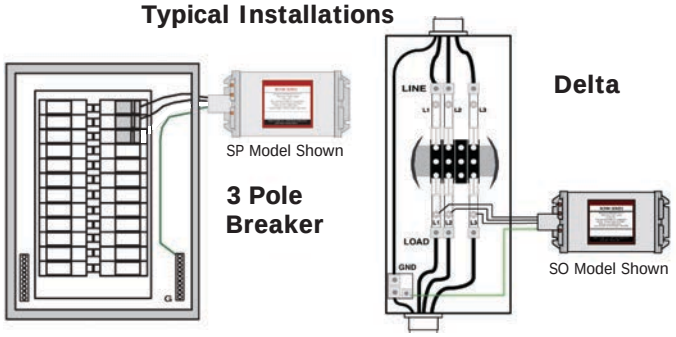
MADE IN THE USA

Intertek

Dimensions



Typical Installations



(Diagrams not drawn to scale)

Product Specifications	
I_n	20 kA*
Max Surge Current	50kA to 100kA per Phase
Fusing	Coordinated Surge & Thermal
Short Circuit Current	100kA RMS Symmetrical

Mechanical/Environmental Specifications	
Diagnostics	Red Status LED, SUNBRIGHT
Safety Standards (Type 1 SPD)	ANSI/UL 1449
Housing Ratings	NEMA 4X Polycarb - Standard

* Devices that are rated 480V delta have a 10kA I_n

Model Number	Service Voltage	MCOV	L-N	L-G	N-G	L-L
RCHWxxx/120-10-#-1/POL	120 Volt Single Ø	150Vac	600V	600V	600V	N/A
RCHWxxx/120-SP-#-1/POL	120/240 Volt Split Ø	150Vac	600V	600V	600V	1200V
RCHWxxx/120-3W-#-1/POL	120/208 Volt 3Ø Wye	150Vac	600V	600V	600V	1200V
RCHWxxx/120-3H-0-1/POL	120/240 Volt 3Ø Delta	150/320Vac	600/1000V	600/1000V	600V	1200/1800V
RCHWxxx/240-3D-0-1/POL	240 Volt 3Ø Delta	320Vac	N/A	1000V	N/A	2000V
RCHWxxx/220-3W-#-1/POL	220/380 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/230-3W-#-1/POL	230/400 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/240-3W-#-1/POL	240/415 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/277-3W-#-1/POL	277/480 Volt 3Ø Wye	320Vac	1000V	1000V	1000V	2000V
RCHWxxx/480-3D-0-1/POL	480 Volt 3Ø Delta	520Vac	N/A	1800V	N/A	4000V

1. **Replace xxx with:** 050 for 50kA or 100 for 100kA per phase Surge Ratings.
2. **Replace # with:** F if filtering is required (available option on WYE Models only).
3. **Options**: Add - TB to the end of the model number for Terminal Block option.
4. **Add:** - DIN to the end of the model number for the Din Rail Mount.

All product dimensions provided are ± 0.125

TST Series

Commercial & Light Industrial Surge Protection Devices

The **TST Series** of SPDs (surge protection devices) are designed to **protect sensitive electronic equipment** from the harmful effects of transients.

Models are configured for both parallel or series installation and can be either din rail or wall mounted. Units are rated as **Type 2 SPDs component assembly** making the TST Series the ideal choice for incorporation into control cabinets for sensitive microelectronic based equipment.

TST units are self-contained in rugged plastic enclosures and use twenty millimeter **(20mm) MOVs** as their key suppression elements. Units are not line load sensitive and interface with the incoming power cables via screw terminals (barrier strips):

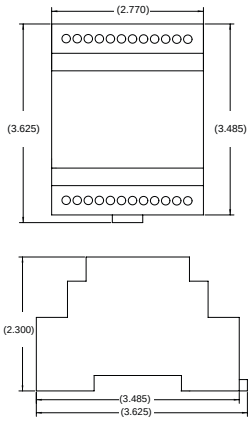
Small Terminals are capable of handling #14 to #30 AWG Wire.
Large Terminals are capable of handling #6 to #20 AWG Wire.

15 YEAR WARRANTY

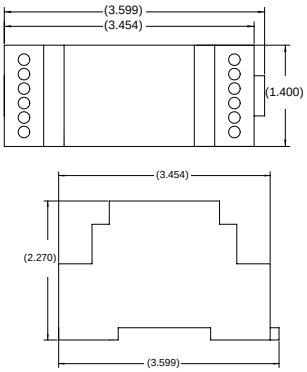
MADE IN THE USA

C ETL US LISTED Intertek

Dimensions

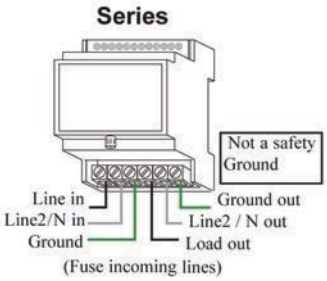


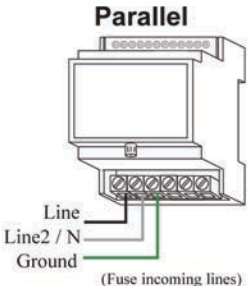
Case M Large



Case M Small

Typical Installations





(Diagrams not drawn to scale)

Product Specifications	
I_n	3kA
Max Surge Current	10 - 40kA/Phase (depending on model)
Fusing	Internal (Thermal)
Short Circuit Current	5kA Symmetrical w/external breaker
Short Circuit Current	100kA Symmetrical w/external T Fuse
Diagnostics	LED

Mechanical/Environmental Specifications	
Enclosure	Plastic (UL94-VO) Polycarbonate
Safety Standards (Type 2 SPD)	ANSI/UL 1449 (most current)
Operating Frequency	50/60 Hz
Max. Operatin Temp	-40° to +85° C

					VPR		
Model Number	**Service Voltage**	**Current Rating**	**Surge Rating**	**Case Size**	**L1 - N**	**L1 - G**	**N - G**
TST020/120-10-0-1/15A	120 Volts	15 Amp	20 kA	Small	600	600	600
TST020/250-10-0-1/30A	250 Volts	30 Amp	20 kA	Small	1000	1000	1000
TST020/120-10-0-1/30A	120 Volts	30 Amp	20 kA	Small	600	600	600
TST040/120-10-0-1/15A	120 Volts	15 Amp	40 kA	Large	500	500	600
TST040/220-10-0-1/15A	250 Volts	15 Amp	40 kA	Large	800	800	800
TST040/250-10-0-1/15A	250 Volts	15 Amp	40 kA	Large	800	800	800
TST040/120-10-0-1/30A	120 Volts	30 Amp	40 kA	Large	500	500	600
TST040/220-10-0-1/30A	250 Volts	30 Amp	40 kA	Large	800	800	800
TST040/250-10-0-1/30A	250 Volts	30 Amp	40 kA	Large	800	800	800
					L1-N	**L2-G**	**L1-L2**
TST010/024-2P-0-1/15A	24 Volts	15 Amp	10 kA	Small	200	200	200
TST010/048-2P-0-1/15A	48 Volts	15 Amp	10 kA	Small	200	200	200
TST020/024-2P-0-1/30A	24 Volts	30 Amp	20 kA	Large	200	200	200
TST020/048-2P-0-1/30A	48 Volts	30 Amp	40 kA	Large	200	200	200

ATL Listed 120V +

Low Voltage

All product dimensions provided are ± 0.125

HLP Series

Highway Lighting Protection Surge Protection Device

The **HLP Series** is a **Type 4 SPD** designed to protect equipment from surges.

Features include:
- Listed to ANSI/UL 1449
- Solid State 20mm MOV Design
- Line-to-Ground Protection
- LED Status Diagnostics
- Weather Resistant
- No Follow Current

Applications
Traffic Signals, Highway Lighting, Parking Lighting, Interior Lighting, Security Systems, Fire Alarms.

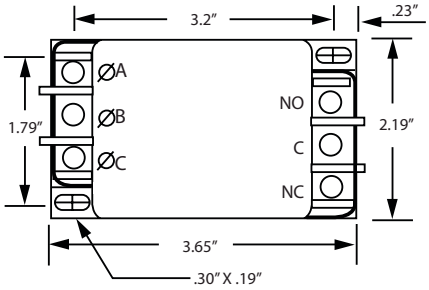
A **15 Year Product Warranty** is included.

15 YEAR WARRANTY

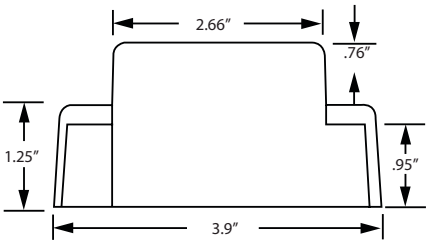
MADE IN THE USA

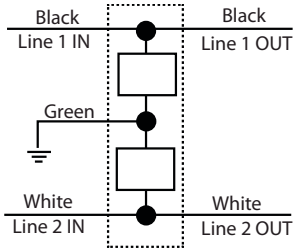
C ETL US LISTED Intertek

Dimensions



Wiring Diagram





(Diagrams not drawn to scale)

Product Specifications			
	HLP020-120-3L-0-AS1006	**HLP020-240-3L-0-AS1006**	**HLP020-480-3L-0-AS1006**
Operating Voltage	120 Volt	150	——
MCOV	150 VAC	275 VAC	550 VAC
Continuous Current	20 A	20 A	20 A
Max Surge Current	20kA (40kA available)	20kA (40kA available)	20kA (40kA available)
Clamp Voltage VPR	L-G 700, N-G 700, L-N 1200	L-G 1000, N-G 1000, L-N 1800	L-G 1800, N-G 1800, L-N 3000
SCCR	5kA	5kA	5kA
I_n	3kA	3kA	3kA
Surge Technology	MOV	MOV	MOV
Response Time	5 nanoseconds	5 nanoseconds	5 nanoseconds

Options:
- Replace **020** with **040** for 40kA Surge Rating
- Replace **S** with **P** for Parallel Connection
- Replace **06** with **GL** for Ground Lug
- Replace **1006** with **TB** for Terminal Block Connection
- Replace **1006** with **1414** for 14 AWG Wire and Ground
- Replace **1006** with **1410** for 14 AWG Wire and 10 AWG Ground
- Replace **1006** with **1406** for 14 AWG Wire and 6 AWG Ground
- Replace **1006** with **1010** for 10 AWG Wire and 10 AWG Ground
- Replace **-0-** with **-F-** for Internal Fusing (Type 1 locations)*

*Fusing does not disconnect load

Length	Gauge	Color	Connection
22”	6	Green	Ground
12”	10	Black	Line 1 (Hot)
12”	10	White	Line 2 (Hot)

All product dimensions provided are ± 0.125

Meter-Treater, Inc.

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