PEMCO

Hundreds of Solutions

We have 500 different Surge Protection and Power Quality products to choose from! As only our most popular items make this catalog, please don't hesitate to contact us for ANY need, as we have exactly what you are looking for!

Home Or Facility Surge Protection
Battery Backups & Power Solutions

PEMCO
1030 Arlington Avenue North
St. Petersburg, FL 33705
Phone: (800) 800-0966
www.pemfg.com

Unexpected power surges can be devastating to both your home and business life. Installing surge protection devices prevents and stops damage before it even happens.

Why Install Surge Protection?

Surge protection is important because early electric equipment was quite large and was not easily damaged by electrical surges. As new products were developed, their size and internal circuits became smaller and smaller resulting in increased potential for surge damage. Today, our homes and businesses contain a large number of sensitive appliances that are at risk for damage from surges.

Most surges don't cause immediate equipment damage or failure. However, they can result in additional wear and tear on electrical circuits inside sensitive equipment and can lead to early equipment failure. We call this "electronic rust" and have seen results of this in test labs.

Most people don't realize that surges can enter a piece of equipment a number of ways. If you protect only the electric supply, then surge energy can enter via the antenna or cable TV wire. It can also enter via the telephone cable on modems, fax machines or computers. We recommend that you build a "wall" of protection by making sure that all external wires pass through the suppressor.

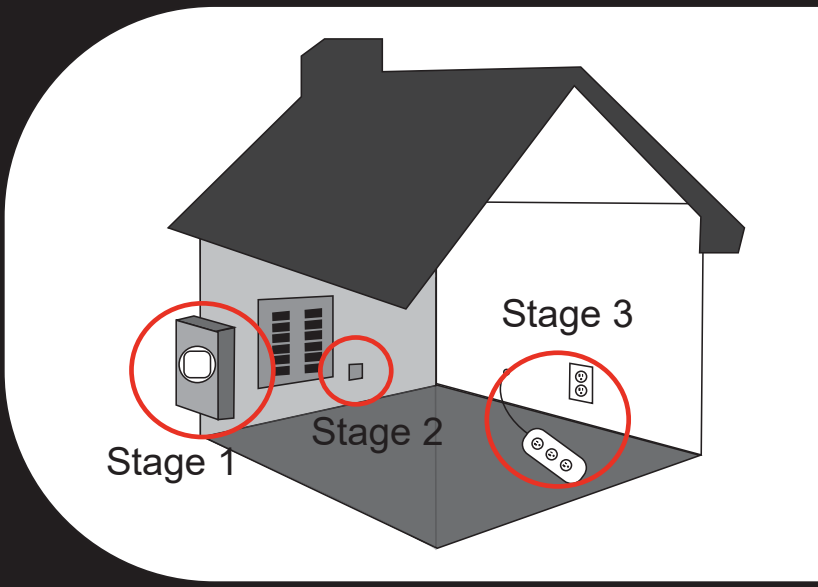
When describing the effects of lightning, we use the analogy of a rock being dropped into a calm pool of water. You will see the waves ripple away from the point that the rock enters the water. For a lightning strike to a nearby tree, the electrical energy radiates from the point of the strike until it dissipates just like the waves in the previous example. If the electrical wave hits a ground conductor that, as an example, is only connected to the TV cable entering the home, then surge energy can enter your home via the cable and pass through your television or DVR as it finds its way to the electrical ground. A similar situation can happen with your telephone cable. Either way, there is a high risk for damage to your equipment. If all grounds are bonded together, there is no ability for current to flow up one conductor and out the other conductor.

Remember that years ago, single point grounding was less important because customers did not have televisions, computers or gaming systems connected across two different utility systems. Newer equipment is plugged across two (or even three for small dish satellite video system) different wiring systems. A tiered system of surge protection is the best way to protect your electronics.

Keep it Outside

Whenever a transient surge (a cool name for spike or surge) attempts to enter the home, the meter base surge protector jumps into action, capturing and diverting 80% of the intensity of the surge event to earth ground BEFORE it enters the home!

The small remaining surge is easily “mopped up” by plug-in surge protectors installed (or need to be installed) at sensitive electronics in the home.



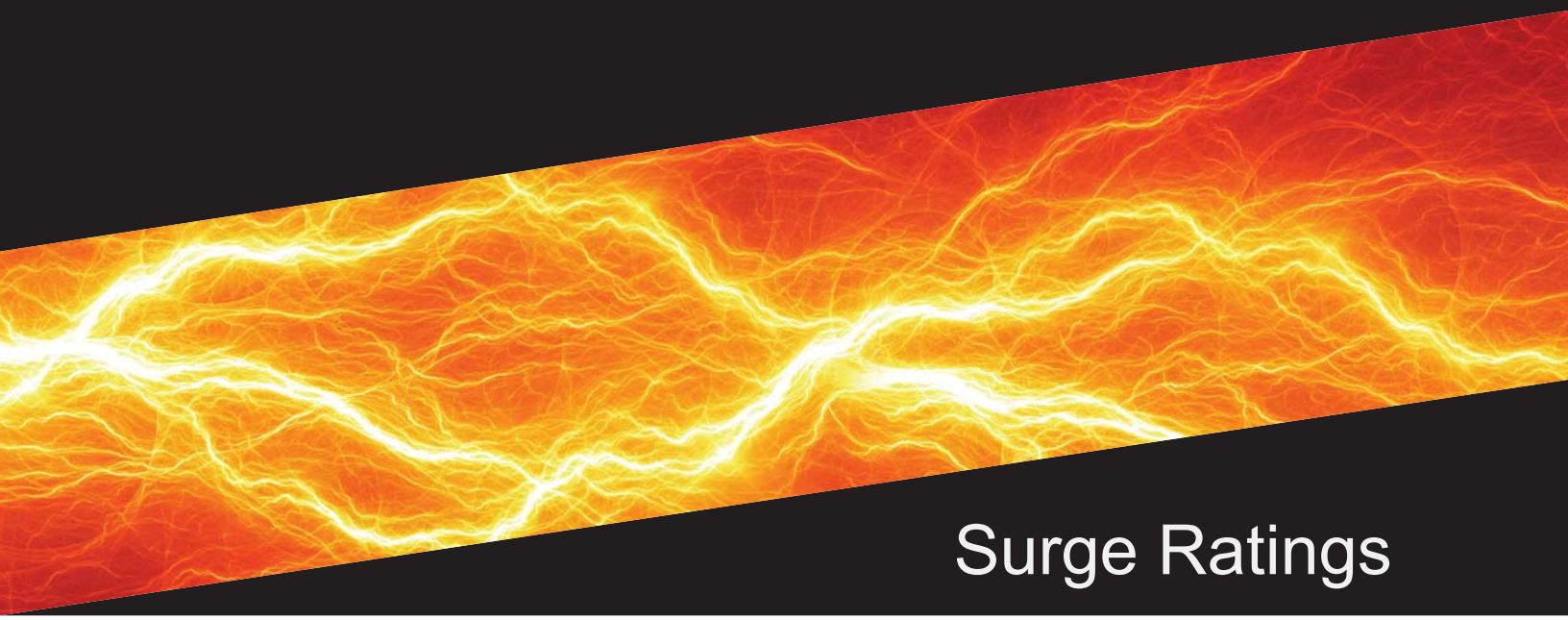
Over the years, we have received a lot of feedback from our utility clients and their customers sharing praise that our surge protector “worked” protecting their home from a major transient surge event. Others shared frustration by customers who, for various reasons, decided not to have surge protection installed and then changed their mind after they had experienced damage.

Here are a few thoughts to consider when discussing the benefits of having surge protection installed.

- “Stage 1 - **Keep it outside!**” This statement describes in simple terms, what the meter base surge protector actually does as it maintains constant vigil, protecting the electrical power feed to a home 24 hours per day, 7 days per week, 365 days per year for over 10 years!

- “Stage 2 - Panel“ If your utility doesn’t have a meter base surge protection program you can have an electrician install a hard wired device at your panel. These devices are installed on the load side of service equipment.

- “Stage 3 - Point of Utilization” – Plug-in surge protection devices are direct plug-in receptacle protectors. We have a wide variety of plug-in protectors, many of which are not included in this catalog. If you have a specific need please call us and we’ll match you up with a solution for your needs.



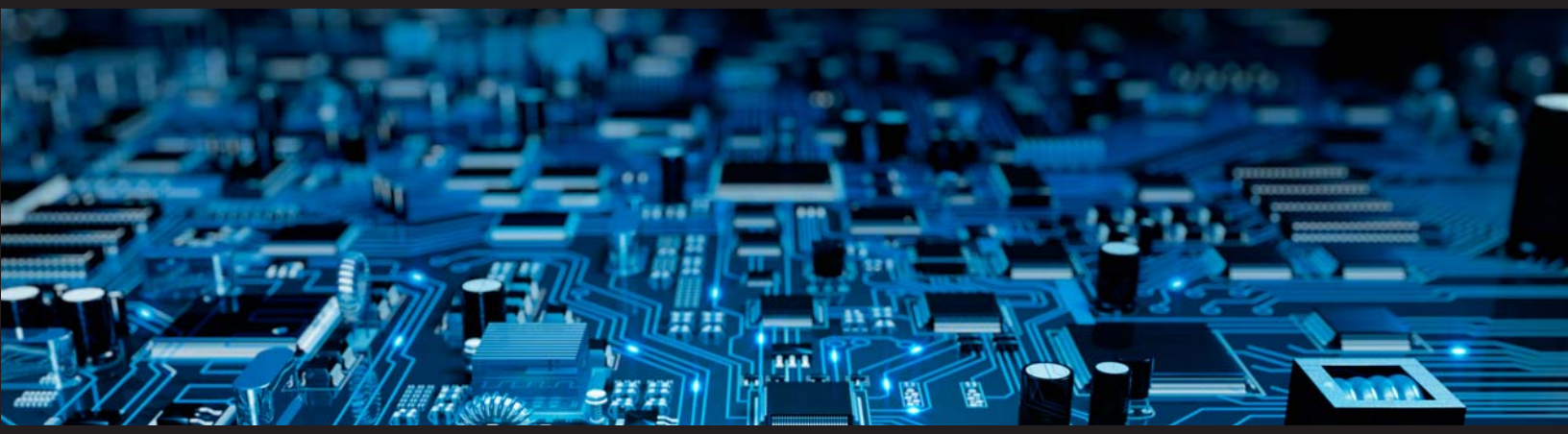
Surge Ratings

Comparing surge devices can be challenging when there are no standards for specs like “Joule rating”, “response time” or “clamp voltage” yet those are often published on specification sheets. Consequently, it is very difficult to compare one device’s statistics to another. This is especially true when looking at devices that provide multiple modes of protection.

Some manufacturers rely on supplier data and only have small scale surge generators so they use calculations to determine ratings and not actual test results.

We only sell products that meet our stringent performance and safety standards. We fully examine the protection capabilities of the products that we sell: we have our own 200,000 Amp testing lab on-site at our headquarters in St. Petersburg so that we don’t have to take anyone else’s word for it.

If you have a product that is “under consideration” please feel free to contact us to use our lab and see for yourself.



FAQ

Just what is a surge and how are they created?
Surges are very brief increases (spikes) in voltage. Many people equate surges with lightning, but there are many other causes that most people don't even recognize. From outside your home, brief surges can occur when a tree branch falls into a line or a car hits a power pole. Internal surges can occur when motors or pumps turn off or when you turn your vacuum cleaner on and off. (A large vacuum cleaner can generate a 6000-volt spike!)

How do Surge Protection Devices work?
Surge Protection Devices (SPDs) are like pressure safety valves on a boiler, which release dangerous excess pressure from the system. SPDs are installed across the power supply in parallel with the equipment to be protected. At normal operating voltages, the SPDs do not affect the system. When a transient voltage occurs, the SPD diverts the transient energy/current back to its source or ground. This limits (clamps) the voltage amplitude to a safer level. After the transient is diverted the SPD will automatically reset back to its original state.

Do I need the redundancy of multi-stages?
Yes, for full coverage it is best to have a multi-stage protection approach. Think of an electrical surge as a large tidal wave, each protection stage knocks out a huge portion of the surge until there is nothing left to hurt or damage your equipment.

What are utilities doing to protect power lines from surges?
We have worked with over 100 utilities around the country and find that they all take extra steps to provide surge protection on the electrical distribution system. This surge protection is tough enough to work on high voltage lines but is not refined enough to protect sensitive electronics.

PEMCO

* Hardwired Surge Protection

* Single Circuit Suppressors

* Data/Communication Suppressors

* Video Surge Protection Devices

* Plug-In Protection

* UPS

PEMCO

MINI MAXX Surge
Type 1 Hardwired

Surge Protective Device | **Technical Documentation**

The T1SPD is an easy to install surge protector that meets all applicable electric codes. It is used for 120/240 electrical services and can be used in pairs for 240 V Delta 3 phase and 120/208 Wye 3 phase services. The T1SPD is rated to handle surges 25% higher than the average lightning strike so it will work reliably for years. The T1SPD design prevents failure due to open neutrals or other system disturbances.

The T1SPD is compact and includes an LED indicator to show that it is working.

Key Specs

- **Type 1 SPD**

Features

- First Line of Defense Against Surges
- Great Value
- Easy to Install
- T1SPD 120/240
- T1SPD 277/480

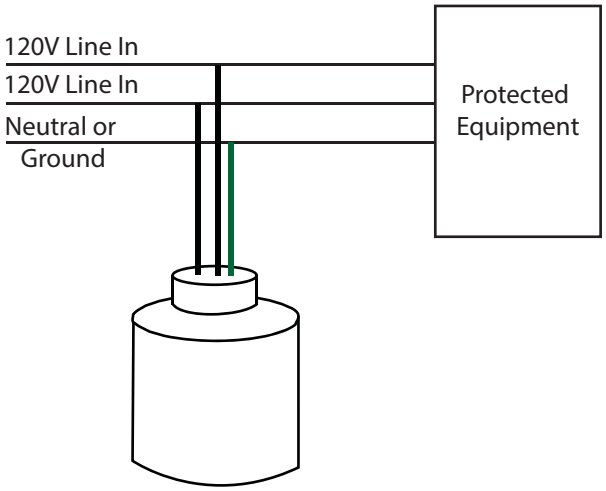
General Technical Specifications	
Voltage	120/240 Single Phase, 120/208Y 3 phase (pairs), 240 Delta 3 phase (pairs)
MCOV	150 Vac
Open Neutral Protect	Yes
Response Time	Less than 1 Nanosecond
Nominal Peak Surge	25,000 A
One-time Surge	57,000A
Clamping Voltage	600
Fusing	Internal 200 kAIC
Indicator	LED
Included Accessories	90° mounting bracket

⚠ DANGER!

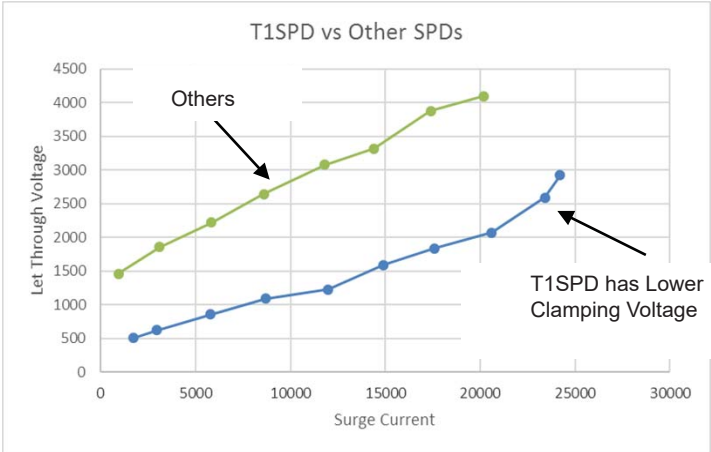
Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Installation Instructions

DRAWING 1



Performance



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MINI MAXX Surge
Lighting Protection, Type 4 Hardwired

Surge Protective Device | **Technical Documentation**

The T4SPD is an easy to install surge protector that is used for lighting system protection as well as control panel protection. The T4SPD is capable of handling a 25kA peak surge current (equivalent of a direct lightning strike) and is listed for use inside panels and lighting fixtures.

LH model does not disconnect power on failure. LHT disconnects power on fail. The T4SPD is compact and includes an LED indicator to show that it is working.

General Technical Specifications	
Voltage	120 240, 277 480V lighting and control circuits
MCOV	150,320, 550 Vac depending on model
Open Neutral Protect	Yes
Response Time	Less than 1 Nanosecond
Nominal Peak Surge	10,000 A
One-time Surge	25,000 A
Clamping Voltage	600
Fusing	External Only
Indicator	LED
Included Accessories	90° mounting bracket

Key Specs

- **Type 4 SPD**

Features

- First Line of Defense Against Surges
- Protects Lighting & Control Panels
- Easy to Install

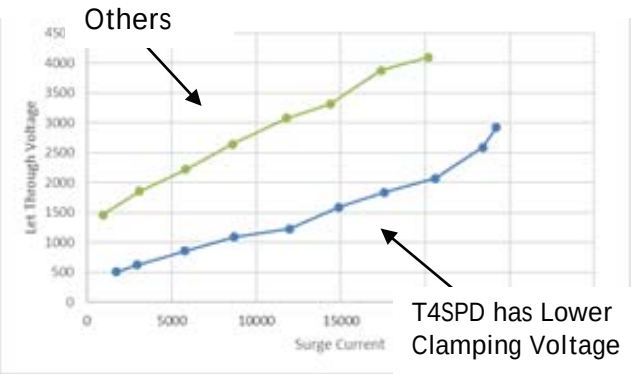
Applications

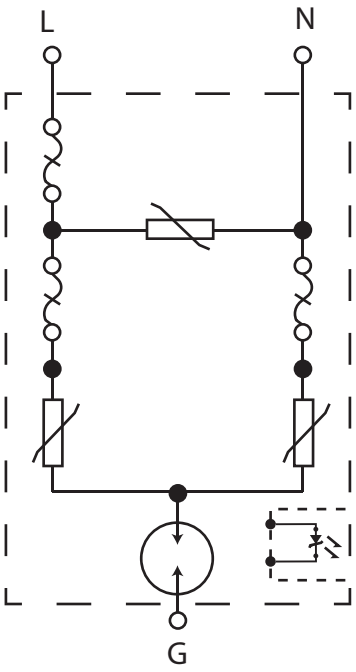
- Outdoor and Commercial LED Lighting
- Roadway lighting
- Traffic lighting
- Digital signage
- Wash wall lighting
- Parking garage/lot lighting
- Flood lighting
- Tunnel lighting
- Street lighting

⚠ DANGER!

Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Performance





Ordering Information

MODEL

SD05C120-LH	120V, 2W+G
SD05C 277-LH	240-277V, 2W+G
SD05C 480-LH	480V, 2W+G
SD05C 120-LHT	120V, 4W+G (2W in & 2W out)
SD05C 277-LHT	277V, 4W+G (2W in & 2W out)
SD05C 480-LHT	480V, 4W+G (2W in & 2W out)

***Also Available in 5 kA nominal surge models**

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MINI MAXX Surge

Lighting Protection, Type 4 Hardwired

Surge Protective Device | **Technical Documentation**

The T4SPD is an easy to install surge protector that is used for lighting system protection as well as control panel protection. The T4SPD is capable of handling a 10kA peak surge current (triple the 3kA expected on wired devices) and is listed for use inside panels and lighting fixtures. LM model does not disconnect power on failure. LMT disconnects power on fail.

The T4SPD is compact and includes LED indicator to show it is working.

General Technical Specifications	
Voltage	120 277 480V lighting and control circuits
MCOV	150,320, 480 Vac depending on model
Open Neutral Protect	Yes
Response Time	Less than 1 Nanosecond
Nominal Peak Surge	5,000 A
One-time Surge	10,000 A
Clamping Voltage	600
Fusing	External Only
Indicator	LED

Key Specs

- **Type 4 SPD**

Features

- First Line of Defense Against Surges
- Protects Lighting & Control Panels
- Easy to Install

Applications

- Outdoor and Commercial LED Lighting
- Roadway lighting
- Traffic lighting
- Digital signage
- Wash wall lighting
- Parking garage/lot lighting
- Flood lighting
- Tunnel lighting
- Street lighting

⚠ DANGER!

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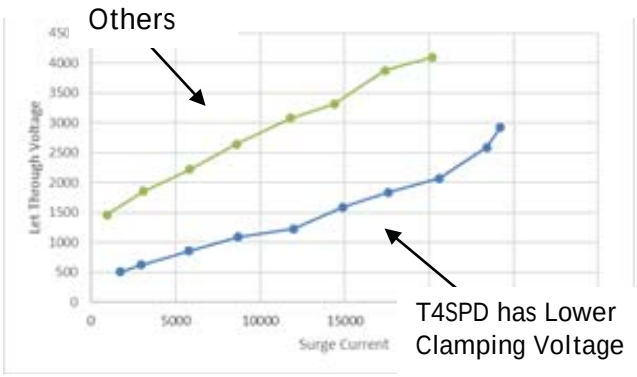
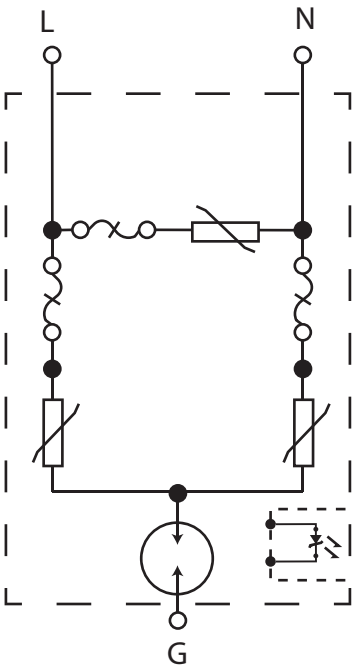
Performance





Ordering Information

MODEL

SD05K-120-LM	120V, 2W+G
SD05K-277-LM	240, 277V, 2W+G
SD05K-480-LM	480V, 2W+G
SD05K-120-LMT	120V, 4W+G (2W in & 2W out)
SD05K-277-LMT	277V, 4W+G (2W in & 2W out)
SD05K-480-LMT	480V, 4W+G (2W in & 2W out)

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MPAF Series
Hardwired Series

Surge Protective Device

Technical Documentation

The MPAF Series Surge Protective Device (SPD) provides the industry's strongest level of surge protection in a very compact and easily installed unit. Unlike competitive bulky and expensive surge devices, the MPAF is modern and state of the art with extreme performance. It can handle over three times the average lightning peak surge current.

The MPAF series is designed for primary protection at the service entrance. As the first-in-line protection device, the MPAF handles any incoming surges safely. Other applications include: branch panels, switches, equipment disconnects and generator transfer switches. The MPAF is used in OEM panels as well as solar combiner boxes. It fulfills the requirements for UL 96A lightning protection installations and light pole applications. The housing is constructed of UV-stabilized thermoplastic and meets the UL 50 Type 4x rating, making it ideal for both indoor and outdoor applications. All of the models have a 20kA nominal discharge current rating, the highest level recognized under the UL 1449 Edition 4 standard.

The MPAF is a Type 1 device UL® Listed to UL 1449 Edition 4 and cUL® Listed to CAN/CSA C233.1. This allows installations on the line or load side of the service panel in accordance with the NEC® 2014 or CAN/CSA C233.1 without the requirement for additional circuit breakers or fuses.

Model	MPAF 120/240SP	MPAF 1201P	MPAF 2083P	MPAF 2401P	MPAF 4803P
Nominal System Voltage, U_n	120/240 VAC	120 VAC	120/208 VAC	240 VAC	277/480 VAC
Distribution System	1Ph 2W+G	1Ph 2W+G	3Ph 4W+G, 3Ph Δ 3W+G	1Ph 2W+G	3Ph 4W+G, 3Ph Δ 3W+G
Max Cont. Operating Voltage, U_c	150/300 VAC	150 VAC	150/300 VAC	300 VAC	340/590 VAC
Frequency	0-100 Hz				
Max Discharge Current, $I_{(max)}$	40 kA 8/20 µs per mode				
Nominal Discharge Current, I_n	20 kA 8/20 µs				
Protection Modes	L-L, L-N	L-G, L-N, N-G	L-G, L-L, L-N, N-G	L-G, L-N, N-G	L-G, L-L, L-N, N-G
Voltage Protection Rating (VPR)	1800, 900 V @ 3 kA	900, 1800, 900 V @ 3 kA	1800, 1800, 800, 800 V @ 3 kA	1500, 2500, 1200 V @ 3 kA	2500, 2500, 1500, 1500 V @ 3 kA
Short Circuit Current Rating (SCCR)	200 kA				
Status	Blue LED indicator				
Dimensions H x D x W : in (mm)	2.75 X 3 X 4.75 (69.85 X 76.20 X 120.65)				
Weight lbs (kg)	0.55 (0.25)	0.55 (0.25)	0.85 (0.385)	0.55 (0.25)	0.85 (0.385)
Enclosure	NEMA® 4x, IP 65				
Connection	36" of #12 AWG (900 mm of 3.31 mm²) flying leads				
Mounting	1/2" straight nipple				
Temperature	-40ºC to 80ºC (-40ºF to 176ºF)				
Approvals	UL® 1449 Ed. 4 Listed Type 1/2, 20kA mode				
Available Options	Flush Mounting Plate (Part #: MPAF FMP)				

Features

- Compact design can be directly mounted to panel or installed in a small space
- Front-facing design eases installation and performance monitoring
- 40 kA 8/20 µs maximum surge rating per mode
- UL® Type 1 SPD
- Optional Flush Mounting Plate

Certifications

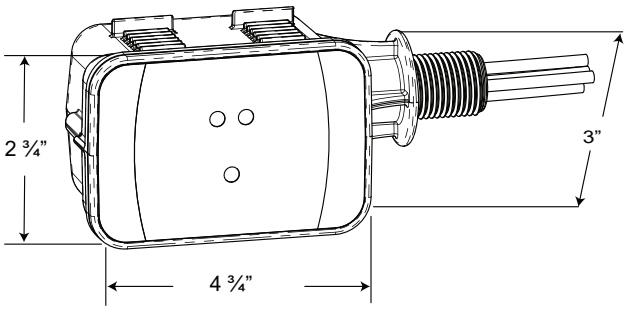
- UL 1449

⚠ DANGER!

Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Size

DRAWING 1



Read and Understand These Instructions

Note:

- Do not cut wires until the SPD is mounted and minimum wire lengths have been verified. All connection leads should be cut to minimum possible length; never coil or push aside excess length.
- For outdoor installations, include drip loop as additional precaution.

Installation:

1. Detailed Instructions can be found in box or upon request.
2. Verify system voltage.
3. Identify proper location for the SPD.
4. Connect ground.
5. AC Rated Units: Connect neutral and phase conductors.
6. Connector and Lugs.

Ordering Information

MODEL
MPAF 120-1P
MPAF 240-1P
MPAF 120/240-SP
MPAF 208-3P
MPAF 480-3P

ACCESSORIES *Former Accessory Name*

MPAF Flush Mounted Plate	*MPAF FMP*
MPAF Light Tube	*MPAF-LT*

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EXT50C Series
Hardwired Series

Surge Protective Device

Technical Documentation

The EXT50C Series SPD is a compact, state of the art high energy surge protection system. Its compact size saves valuable electrical room space. Plus, it can be installed in most retrofit situations. Available with surge rating of 50kA, the EXT50C is listed to UL 1449 Edition 4. The EXT50C is listed as a TYPE 1 device which means you don't have to worry about where to install it. It can be installed upstream or downstream of the service main disconnect.

Using special technology, the EXT series has lower let through voltages at high surge currents than similar hardwire devices. In addition, its technology prevents premature failure under unusual voltage conditions.
Exclusive multipath protection means that redundant surge elements continue to provide protection even should an internal surge element fail.

The EXT series includes intelligent indicators for each protection mode. You can confirm total protection with a quick inspection of the LED indicators.

Part Number	EXT50C-120	EXT50C-120/208	EXT50C-120240
Nominal System Voltage (Un)	120 V	120/208 V	120/240 V
Distribution System	1Ph 2W+G	3Ph 4W+G	1Ph 3W+G
Max Continuous Operating Voltage (Uc)	170 VAC	170/276 VAC	
Stand-off Voltage	240 VAC	240/415 VAC	240/480 VAC
Frequency	50 – 60 Hz		
Short Circuit Current Rating (SCCR)	200 kA		
Nominal Discharge Current (In)	20 kA 8/20 µs		
Max Discharge Current (Imax), Per Phase	50 kA 8/20 µs		
Voltage Protection Rating (VPR), L-N	600 V @ 3 kA 1,200 V @ 20 kA		
Protection Modes	L-N L-PE N-PE		
Remote Contacts	Yes		
Status Indication	LED		
Surge Counter	No		
Technology	Over-current fusing TD technology with thermal disconnect		
Lead Size	#10		
Lead Length	30"		

Features

- Single or Three Phase
- Compact for installation on virtually any panel
- Intelligent indicators for each protection mode
- High surge capacity
- Plug-in module
- Internally fused with 200kAIC interrupt rating

Certifications

- UL 1449

⚠ DANGER!

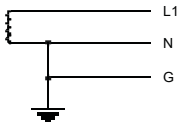
Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Installation Instructions

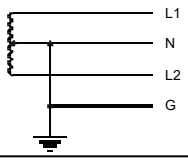
DRAWING 1
EXT50C

CONFIGURATION

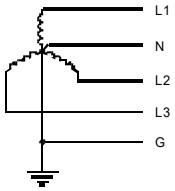
Single Phase
1Ø 2W+G



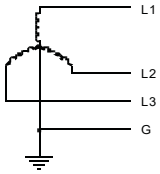
Single Phase
(Split)
1Ø 3W+G



Three Phase Wye
3Ø Wye 4W+G



Three Phase Wye
3Ø Wye 3W+G
(No Neutral)



Read and Understand These Instructions

Note:

- The EXT series is listed as a TVSS to UL1449 Edition 4. The EXT series is rated as a TYPE 1 SPD for installation on electric services upstream or downstream of the main. It must be installed per National Electric Code.
- The EXT can be installed on services rated up to 200,000 Amps fault current without external fusing.

Ordering Information

MODEL	VOLTAGE
EXT50C	120/240 1 Phase
EXT50C	120/208Y 3 Phase
EXT50C	120/240D 3 Phase
EXT50C	277/480 3 Phase
EXT50C	UPS 3 Phase Universal Voltage

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EXT100M Series
Hardwired Series

Surge Protective Device

Technical Documentation

The EXT100M Series is a compact, state of the art high energy surge protection system. Its compact size saves valuable electrical room space. Plus, it can be installed in most retrofit situations.

Available with surge rating of 100kA, the EXT100M is listed to Ul 1449 Edition 2.5 and UL 1449 Edition 4. The EXT100M is listed as a TYPE 1 device which means you don't have to worry about where to install it. It can be installed upstream or downstream of the service main disconnect. The EXT100M series is Modular and "Hot Swappable" – the surge modules can be field replaced without removing the suppressor!

Using special technology, the EXT series has lower let through voltages at high surge currents than standard similar devices. In addition its technology prevents premature failure under unusual voltage conditions. Exclusive multipath protection means that redundant surge elements continue to provide protection even should an internal surge element fail.

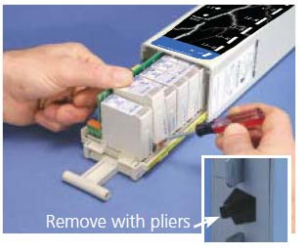
The EXT series includes intelligent indicators for each protection mode. You can confirm total protection with a quick inspection. In addition the 100kA EXT100M series units include dry contacts for optional remote monitoring.

Features

- Single or Three Phase
- Hot Swappable Field Replaceable Modules
- Compact - installs on any panel
- Intelligent indicators for each protection mode
- High surge capacity
- Internally fused with 200kAIC rating

Certifications

- UL 1449



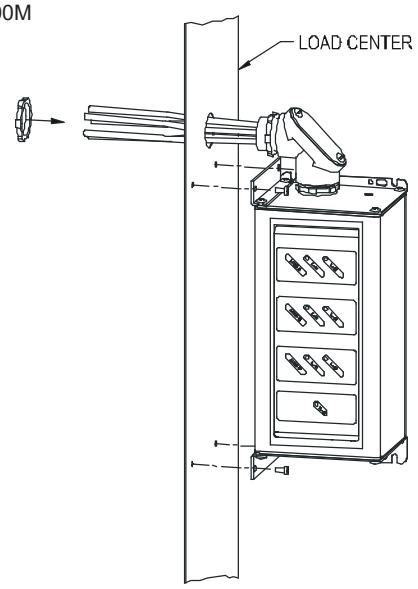
⚠ DANGER!

Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Installation Instructions

DRAWING 1

EXT100M



Ordering Information

MODEL	VOLTAGE
EXT100M-120208	120/208Y 3 Phase
EXT100M-120240	120/240 1 Phase
EXT100M-277480	277/480 3 Phase
EXT100M-347600	347/600 3 Phase
EXT100M-120240D	Delta Config 120/240 V
EXT100M-240D	Delta Config 240 VAC
EXT100M-480D	Delta Config 480 V

Read and Understand These Instructions

Note:

- The EXT series is listed as a TVSS to UL1449 edition 2.5 and Edition 4. The EXT series is rated as a TYPE 1 device for installation on electric services upstream or downstream of the main. It must be installed per National Electric Code.
- The EXT can be installed on services rated up to 200,000 Amps fault current without external fusing.

Part Number	EXT100M-120208	EXT100M-120240	EXT100M277480	EXT100M347600
Nominal System Voltage (Un)	120/208 V	120/240 V	277/480 V	347/600 V
Distribution System	3Ph 4W+G	1Ph 3W+G	3Ph 4W+G	
Max Continuous Operating Voltage (Uc)	170/276 VAC		320/550 VAC	550/1100 VAC
Stand-off Voltage	240/415 VAC	240/480 VAC	480/831 VAC	790/1370 VAC
Frequency	50 – 60 Hz			
Protection Modes	L-N L-PE N-PE			
Short Circuit Current Rating (SCCR)	200 kA			
Nominal Discharge Current (In)	50 kA 8/20 µs		40 kA 8/20 µs	
Max Discharge Current (Imax), Per Phase	100 kA 8/20 µs			
Impulse Current (Iimp), Per Mode	12.5 kA 10/350 µs			
Voltage Protection Rating (VPR), L-L	–			
Voltage Protection Rating (VPR), L-N	600 V @ 3 kA 1,200 V @ 20 kA		1,200 V @ 3 kA 1,800 V @ 20 kA	1,800 V @ 3 kA 2,600 V @ 20 kA
Status Indication	LED Mechanical flag Audible alarm			
Surge Counter	No			

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Rev0 06-19

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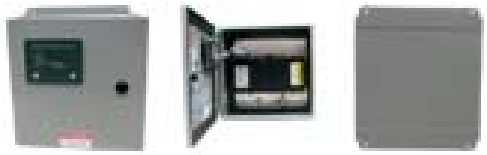
TEXAS Series
Type 1/Type 2
Surge Protection Device

Surge Protective Device | **Technical Documentation**

ACCESSORY SOLD SEPARATELY

With surge current levels of 100kA, 150kA, 200kA, 250kA, 300kA, 400kA and 500kA per phase, our XAS Series is the Surge Protective Device that covers most current surge protector needs. With one replaceable module per unit containing Large Block 50kA Thermal Protected MOV's, this unit's low cost, reliability, flexibility and robustness is the best solution for any environment large or small.



Key Specs

- **100kA - 500kA per phase rating**
- **All UL required OCP & Safety Coordination included**
- **20kA Inominal (most models)**
- **20kA SCCRs (most models)**

**See Ordering Information for model number selection*

Features

- UL 96A Lightning Protection Master Label compliant
- Voltage Specific Design Highly configurable
- All MOV suppression elements monitored
- Optional Rotary Disconnect Switch

Certifications

- UL 1449

General Technical Specifications

Surge Capacities	L-N	L-G	N-G	L-L
100kA Per Phase	50kA	50kA	50kA	100kA
150kA Per Phase	100kA	50kA	50kA	150kA
200kA Per Phase	100kA	100kA	100kA	200kA
250kA Per Phase	150kA	100kA	100kA	250kA
300kA Per Phase	150kA	150kA	150kA	300kA
400kA Per Phase	200kA	200kA	200kA	400kA
500kA Per Phase	250kA	250kA	250kA	500kA
Response Time				< 1 nanosecond
Repetitive Implulse				5,000 hits
AC Sinewave Tracking Filter with EMI/RFI Filtering up to -50dB from 10kHz to 100MHz (Type 2 option only, incl. UL 1283 Listing)				

⚠ DANGER!

Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

teXAS Model Number Configurator & Options

TE □□ XAS □□ □□ □

Voltage Code for Electrical System

Common North American Systems:
01 = 240/120V Split Phase - 1Ø 3W+Grnd (Fig 1)
02 = 208Y/120V Wye - 3Ø 4W+Grnd (Fig 2)
03 = 240/120V High Leg Delta (B High) (Fig 3)
04 = 480Y/277V Wye - 3Ø 4W+Grnd (Fig 2)
05 = 480V Delta - 3Ø 3W+Grnd (Fig 4) & HRG Wye
(450kA replaces 400kA or 500kA)
08 = 600Y/347V Wye - 3Ø 4W+Grnd (Fig 2)

Other Available Systems - Confirmation encouraged:
15 = 254/127V Split Phase - 1Ø 3W+Grnd (Fig 1)
18 = 480/277V 2-Pole, (480/240V Split Phase) (Fig 1)
21 = 220Y/127V Wye - 3Ø 4W+Grnd (Fig 2)
41 = 520Y/300V Wye - 3Ø 4W+Grnd (Fig 2)
42 = 415Y/240V Wye - 3Ø 4W+Grnd (Fig 2)
43 = 400Y/230V Wye - 3Ø 4W+Grnd (Fig 2)
44 = 440Y/250V Wye - 3Ø 4W+Grnd (Fig 2)
51 = 480V B Corner Grnd Delta, 3Ø 3W+Grnd (Fig 6)
(450kA replaces 400kA or 500kA)
06 = 240V Delta - 3Ø 3W+Grnd (Fig 4)
(450kA replaces 400kA or 500kA)
61 = 240V B Corner Grnd Delta, 3Ø 3W+Grnd (Fig 6)
(450kA replaces 400kA or 500kA)
07 = 380Y/220V Wye - 3Ø 4W+Grnd (Fig 2)
09 = 600V Delta - 3Ø 3W+Grnd (Fig 4) & HRG Wye
(Available: 100kA, 150kA, 200kA, 250kA)
91 = 600V B Corner Grnd Delta, 3Ø 3W+Grnd (Fig 6)
(Available: 100kA, 150kA, 200kA, 250kA)
11 = 120V Single Phase (Fig 5)
12 = 240V Single Phase (Fig 5) - Not split phase
13 = 127V Single Phase (Fig 5)
14 = 300V Single Phase (Fig 5) 16 = 277V Single Phase (Fig 5)
17 = 480V Single Phase (1 Hot, 1 Neu, 1 Grnd) (Fig 5)

Surge Current Rating

10 = 100kA/Phase
15 = 150kA/Phase
20 = 200kA/Phase
25 = 250kA/Phase
30 = 300kA/Phase
40 = 400kA/Phase
45 = 450kA/Phase
(Voltage Codes 05, 51, 06 & 61)
50 = 500kA/Phase

Options

X = Surge Counter, six-digit LCD counter includes maintenance-free Eprom memory backup
E = Remote Locatable Display on 4 ft Cable custom cable lengths available
F = Noise Filtering - Extended Range & Attenuation (available on 400kA & 500kA models)
D = Rotary Disconnect Switch, ABB, UL98
T = Thru-Door Rotary Disconnect Switch, ABB, UL98, E1 enclosure only
(Consult factory for other disconnect switch options)
2 = Type 2 SPD, incl. UL 1283 EMI/RFI Filters
Delete Options - Consult Factory for Order Code
Delete L-N Protection (reduces kA rating)
Delete L-G Protection (reduces kA rating)
Delete N-G Protection (reduces kA rating)
Delete Noise Filtering
Available Accessory (order separately)
RM = Remote Monitor

Enclosure Rating

E1 = NEMA 1/12/3R/4 (size: 12” x 12” x 7”)
4X = NEMA 4X Non-Metallic (size: 14” x 12”x 6”)
(polycarbonate, display inside clear front door)
4S = NEMA 4X Stainless Steel (size: 12" x 12"x 6")
(display inside door)
FM = NEMA 1 Flush Mount (wall cavity size: 12” x 12”x 6” deep)
P1 = NEMA 1 pullbox ‘indoor’ (size: 12” x 12” x 6”) includes ‘E’ option
(Optional rotary disconnect increases enclosure sizes to 16” x 14” x 6” on models > 300kA)

Performance Data

Common North American Systems			UL 1449 Fourth Edition Test Data Voltage Protection Ratings (VPR - 3kA)						
			L-N	L-G	N-G	L-L	I_n	SCCR	MCOV
01	=	240/120V Split Phase (<300kA)	700	700	700	1200	20kA	100kA	150
01	=	240/120V Split Phase (=>300kA)	700	600	600	1000	20kA	100kA	150
02	=	208Y/120V 3Ø Wye (<300kA)	700	700	700	1200	20kA	200kA	150
02	=	208Y/120V 3Ø Wye (=>300kA)	700	600	600	1000	20kA	200kA	150
03	=	240Y/120V B High Leg Delta	700/1200	700/1200	700	1800	20kA	200kA	150 / 320
04	=	480Y/277V 3Ø Wye (<300kA)	1200	1200	1200	2000	20kA	200kA	320
04	=	480Y/277V 3Ø Wye (=>300kA)	1200	1000	1000	1800	20kA	200kA	320
05	=	480V 3Ø Delta (<300kA)	-	1800	-	1800	10kA	200kA	550
05	=	480V 3Ø Delta (=>450kA)	-	1800	-	1800	20kA	200kA	550
07	=	380Y/220V 3Ø Wye (<300kA)	1200	1200	1200	2000	20kA	200kA	320
08	=	600Y/347V 3Ø Wye (<300kA)	1500	1500	1500	2500	10kA	200kA	420
08	=	600Y/347V 3Ø Wye (=>300kA)	1500	1500	1500	2500	20kA	200kA	420

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Remote Monitor
Operational Status Updates

Surge Protective Device | **Technical Documentation**

ACCESSORY SOLD SEPARATELY

The Remote Monitor option provides operational status for 1-3 TVSS up to 1000 feet away. The Remote Monitor requires input information from each TVSS' dry contact.

Connections are made to the Remote Monitor's 10 position terminal block using 25 to 18 AWG wire (not provided). The Remote Monitor includes a 6' cord connected power supply that requires a traditional 120VAC wall outlet.

The Remote Monitor's output has one Green LED, one flashing Red LED, an audible alarm and a Form C dry contact (NO-C-NC).

Upon receiving a status change via TVSS' dry contacts, the Remote Monitor's Green LED will go out, the Red LED will flash, the audible alarm will sound, and the Remote Monitor's dry contact output will change state (i.e.: Normally Open will change to Closed, and Normally Closed will change to Open).

Key Specs

- **Three position slide switch: Test, Normal & Silence**
- **Red LED alarm**

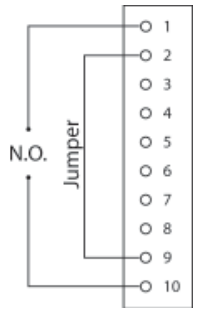
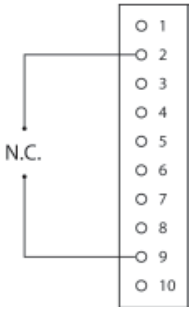
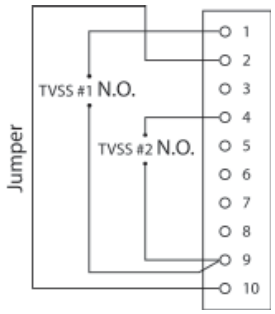
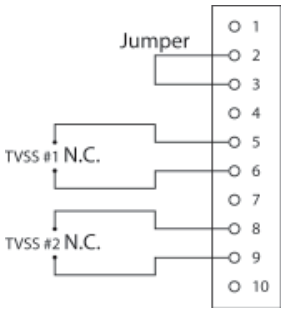
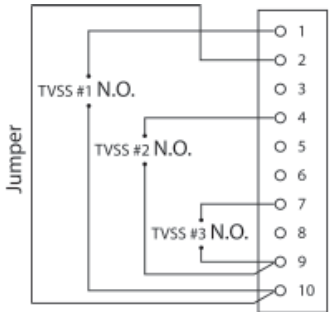
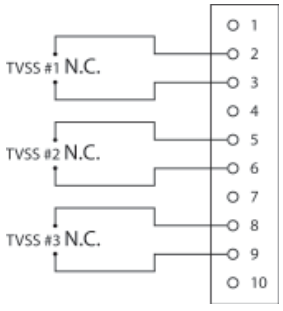
⚠ DANGER!

Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Installation Instructions

Plan installation. Remote Monitor can be installed on Din-Rail or included mounting attachment. Position Remote Monitor appropriately with access to power. Remove four screws to access internal circuit board. Note diagram identifying key components. Input wiring diagram identifying several installation options is included. This unit ships with a jumper installed between 2 and 9 for a typical one TVSS, Normally Open configuration. The jumper can be removed for other configurations. (FYI: 9 and 10 are jumpered internally.) Attach power leads from power supply (not polarity sensitive). If Output Dry Contacts are used, attach appropriately. Use included tie-wraps for cable strain relief. Reassemble unit and mount. Test unit.

Remote Monitor Wiring Diagrams

	Using **Normally Open** Contacts	Using **Normally Closed** Contacts
One TVSS		
Two TVSS		
Three TVSS		

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PHSP-PLP Series
Power Line Protector

Surge Protective Device | **Technical Documentation**

The VSS-PLP is unique! It uses multi stages that cascade to strangle surges and protect your equipment. Most similar devices are single stage only.

The VSS-PLP is an easy to install surge protector that meets all applicable electric codes. First stage is super strong thermal MOVS, followed by the special patented X-Coil which is designed to cancel surges. The X-Coil is truly unique in that it cancels surges like noise-canceling headsets cancel background noise (The X-Coil is patented (US#10/601,991) and provides exceptional protection for your equipment (yet can be used on power circuits up to 20 amps). Last is the final filter stage of thermal MOVs that are designed to provide the absolute lowest clamping possible.

The VSS-PLP is equipped with a status LED to let you know your device is functioning properly. In addition, the VSS-PLP disconnects the load if it ever fails, thus protecting your equipment.

The VSSS-PLP is available in both a 15 or 20amp configuration using 20-amp terminal hookups.

Features

- First Line of Defense Against Surges
- Multi-Stage Patented X-Coil Technology
- NEMA/RoHS/UL Enclosure
- Easy to Install

General Technical Specifications	
Operating Voltage	120/240 Vac
Clamping Voltage	400V L-N & L-G
Operating Current	20A
Peak Surge Current	20kA
Operating Frequency	0-100Hz
EMI Attenuation	MOVs & Patented X-Coil Technology
Modes of Protection	L-N, L-G, N-G
Status Indication Power	LED for Functioning device
Connection Type	3 Position Terminal Block with compression screws
Operating Temperature	-20C to +85C
Dimensions	2.38H x 3.19W X3.19L

⚠ DANGER!

Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

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HSP-121 Series
Internal Mount 120 VAC Protection

Surge Protective Device

Technical Documentation

NEMA 4X MODEL SHOWN

The ***PEMCO HSP-121 Series*** is an advanced 3-stage hybrid, solid state power line protector. Features such as noise filtering, common mode and normal mode suppression, nanosecond reaction time, power line tracking, and compression screw terminations make the HSP-121 Series an excellent choice in commercial and industrial applications.

The HSP-121 Series offers a replaceable fuse designed to remove the load (protected equipment) from the line if the unit is either overloaded or the internal protection fails. This feature prevents surges from entering equipment through a failed protector, not noticed by the user. Unlike models with only an indicator, which may take weeks to notice, the HSP-121 Series demands immediate attention upon the unlikely occurrence of internal failure.

General Technical Specifications	
Operating Voltage	120 VAC
Clamping Voltage	200-240 VAC
Operating Current	15 A
Peak Surge Current	39 kA (8 x 20 µs)
Operating Frequency	47-63 Hz
EMI Attenuation	> 40 dB (100 kHz to 100 MHz)
SPD Technology	Metal Oxide Varistors (MOVs) w/ L-C Filter
Modes of Protection	Line-to-Neutral, Line-to-Ground, Neutral-to-Ground
Status Indication	Power On & MOVs functional
Connection Type	3 position, 20 A terminal block w/ compression screws Terminals accept up to 14 AWG
Operating Temperature	-40°C to +85°C
Dimensions (in / mm)	Exposed Terminal Design: 1.8″ H x 2.9″ W x 5.3″ L [46 x 74 x 135 mm] NEMA 4X: 2.95” H x 4.95” W x 3.0” L [74.93 x 125.73 x 76.2 mm]
Weight (oz / kg)	10 oz [0.28 kg]
Certifications	UL 1449 recognized
Warranty	5 years

Key Specs

- **Voltage:** 120 VAC
- **Current:** 15 Amp
- **Connection:** Hardwire/ Terminal Block
- **Mounting:** Flange

**See Ordering Information for model number selection*

Features

- Fast response time
- Failure indicator
- Power line tracking
- EMI/RFI noise filtering
- 3-stage hybrid design
- Replaceable fuse
- Enclosure Options
- 5 year warranty

Certifications

- UL 1449 recognized

⚠ DANGER!

Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Installation Instructions

Note:

1. Remove power from equipment to be protected.
2. Mount HSP-121 Series in a UL approved housing. Keep all leads as short as possible.
3. Position unit within the equipment cabinet so that the fuse holder will be accessible should the fuse need replacing.
4. Secure HSP-121 Series using up to six screws to fit 3/16˝ [4.76 mm] hole openings.
5. Make sure wiring from power sources properly connects to LINE side of HSP-121 Series (torque to 7 in. lbs.). Wiring from protected equipment must properly connect to EQUIP side of HSP-121 Series (torque to 7 in. lbs.).
6. Connect only to 120 VAC, 15 Amp Max., single phase, three wire circuit.
7. Indication of internal failure:
   a. Indicator will extinguish.
   b. Blown fuse will disconnect load from power source.

Warning

Disconnect AC source before replacing fuse. For continued protection against risk of fire, replace only with same type rating of fuse (3 AB,15 A/250 V).

Avertissement

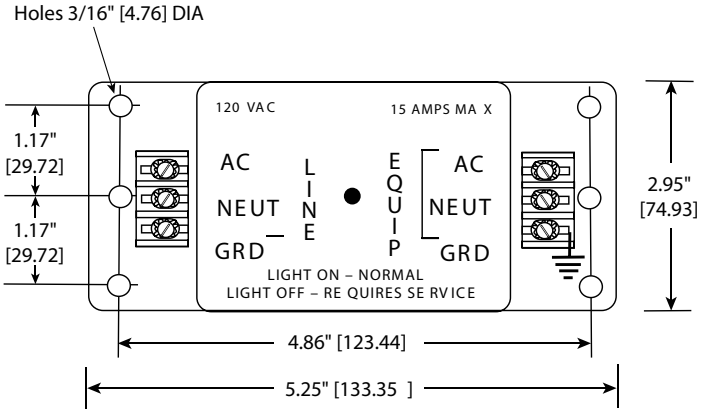
Débranchez la source de la tension AC avant que replacer le fusible. Pour assurer la protection contre feu continuée, replacez le fusible avec exactement le même class du fusible (3 AB, 15 A/250 V).

Ordering Information

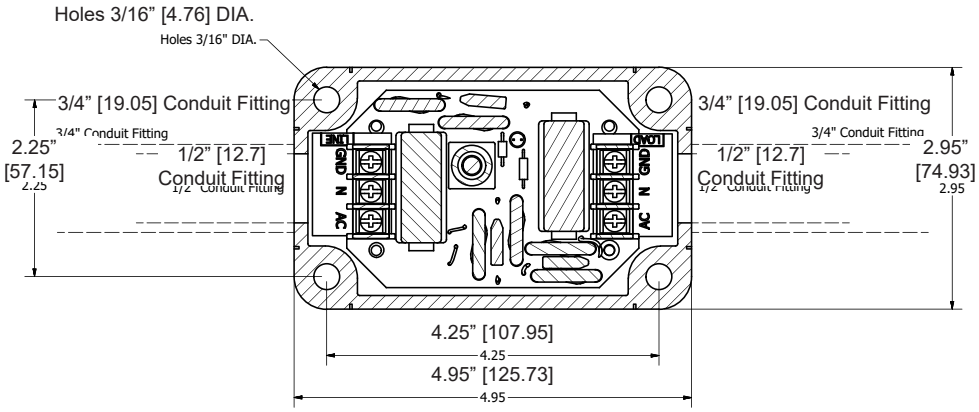
MODEL	APPLICATION
HSP-121BT1RUP	120VAC (L,N,G), 15Amp, Single Phase, Exposed Terminal Design
HSP-121AP	120VAC (L,N,G), 15Amp, Single Phase, NEMA 4X

Dimensions

EXPOSED TERMINAL DESIGN MODEL



NEMA 4X DESIGN



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PEMCO

PC642C Series
Zone/Loop/Data (Modular)

Surface Protective Device

Technical Documentation

ACCESSORY SOLD SEPARATELY

The ***PEMCO PC642C Series*** surge protective device (SPD) is a two-pair (four wire) module implementing three-stage hybrid technology. This SPD addresses over-voltage transients with gas tubes and silicon avalanche components. In addition, sneak and fault currents are mitigated with resettable fuses (PTCs). The PTCs increase resistance several orders of magnitude when over-currents exceed safe levels. A normal state resumes when over-currents are removed. The ability to self-restore in this manner significantly increases suppressor performance and survivability.

The PC642C card edge is gold-plated, double sided and is designed to mate with the base accessory (PCB1B) gold-plated female terminal connector (sold separately). When snapped together, the data circuits "pass thru" the protector in a serial fashion from the four "Field Side" terminals to the four "Electronics Side" terminals. Terminals 1 or 10 of the PCB1B must be attached to Building-Approved Ground.

General Technical Specifications	
Operating Voltage	5, 12, 18, 24, 30, 36, 43, 52 VDC
Clamping Voltage	8, 15, 20, 30, 36, 43, 50, 60 VDC
Operating Current	0.15 A
Peak Surge Current	10 kA (8 x 20 µs)
Frequency Range	0 to 20 MHz
Insertion Loss	< 0.1 dB at 50 MHz
SPD Technology	GDT, SAD, w/ Series PTC
Connection Type	Terminal Block, w/ compression lugs Terminals accept up to 10 AWG
Operating Temperature	-40°C to +85°C
Dimensions (in / mm)	2.0˝ H x 1.0˝ W x 2.5˝ L [50.8 x 25.4 x 63.5 mm] (175 + PCB1B Base)
Weight (oz / kg)	1 oz [0.03 kg]
Certifications	UL 497B

Caution
Do not place this product in service on any signal line capable of supplying more than 150 mA continuously.

Key Specs

- **Voltage:** 0-250 VDC
- **Current:** 150mA
- **Connection:** Modular; Hardwire into base
- **Mounting:** Punch into keyed base/DIN

**See Ordering Information for model number selection*

Features

- Three-stage hybrid protection
- Sneak/fault current protection
- Resettable fuses – PTCs
- Low capacitance option
- Plug-in module
- Fast response time
- 5 year warranty

Certifications

- UL 497B

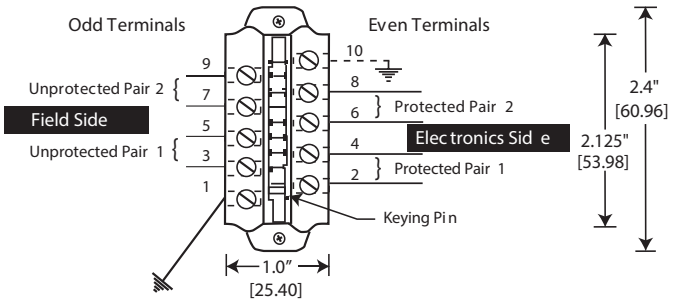
⚠ DANGER!

Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Installation Instructions

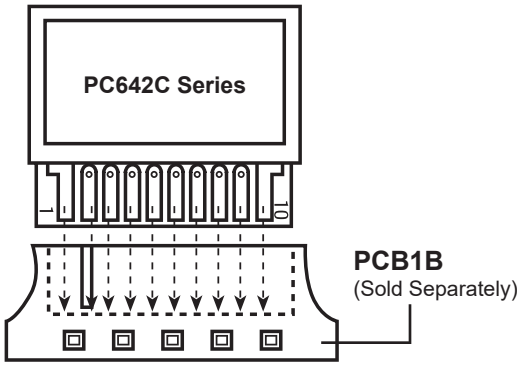
DRAWING 1

PCB1B Accessory Terminal Assignments



Ground Terminal 1 or 10 to Building Approved Ground (preferably AC Power safety ground).
NOTE: DO NOT daisy chain grounds. NOT intended for shield termination. Install ground in accordance with all applicable codes.

DRAWING 2



Read and Understand These Instructions

Note:

- These protectors are intended for indoor use on communication loop circuits which have been isolated from the Public Switch Telephone Network.
- The communication loop circuits shall not be exposed to accidental contact with the electric light or power conductors.
- The protectors shall be installed per the applicable requirements of the National Electric Code, ANSI/NFPA 70.
- Measure DC operating voltage of system to insure it does not exceed the rating of the selected surge device (5-180 VDC depending on the device).

Installation:

1. Turn off power to circuit to be protected prior to installation.
2. Screw mounting base #PCB1B (accessory) in desired location preferably as close to protected equipment as possible and in close proximity to a building approved grounding point using (2) #4 screws. PCB1B may also be DIN Rail mounted using optional DIN clip accessory #PCDIN.
3. Attach field side pairs (26-10 AWG) to positions 3/5 and 7/9, attach electronics side pairs (26-10 AWG) to positions 2/4 and 6/8. Attach ground wire (10 AWG) to positions 1 or 10 on base. See Drawing 1. Torque wires to 7 lb-in [0.791 N-m].
4. Insert 175 module into keyed PCB1B base. See Drawing 2.
5. Apply power to protected circuit.

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Ordering Information

MODEL	OPERATING VOLTAGE	CLAMPING VOLTAGE
PC642C-008P	5 VDC	8 VDC
PC642C-015P	12 VDC	15 VDC
PC642C-020P	18 VDC	20 VDC
PC642C-030P	24 VDC	30 VDC
PC642C-036P	30 VDC	36 VDC
PC642C-043P	36 VDC	43 VDC
PC642C-050P	43 VDC	50 VDC
PC642C-060P	52 VDC	60 VDC
PC642C-008DP	5 VDC	8 VDC
PC642C-015DP	12 VDC	15 VDC
PC642C-020DP	18 VDC	20 VDC
PC642C-030DP	24 VDC	30 VDC
PC642C-036DP	30 VDC	36 VDC
PC642C-043DP	36 VDC	43 VDC
PC642C-050DP	43 VDC	50 VDC
PC642C-060DP	52 VDC	60 VDC
PC642C-008XP	5 VDC	8 VDC
PC642C-015XP	12 VDC	15 VDC
PC642C-020XP	18 VDC	20 VDC
PC642C-030XP	24 VDC	30 VDC
PC642C-036XP	30 VDC	36 VDC
PC642C-043XP	36 VDC	43 VDC
PC642C-050XP	43 VDC	50 VDC
PC642C-060XP	52 VDC	60 VDC
PC642C-008LCP	5 VDC	8 VDC
PC642C-036LCP	30 VDC	36 VDC
PC642C-043LCP	36 VDC	43 VDC

D = Stage 2 clamp line to line only
X = Stage 2 clamp line to line and each line to ground
LC = Low Capacitance option stage 2 clamp line to line and each line to ground

ACCESSORIES *Former Accessory Name*

PCB1B *PCB1B-WKEY*	Wiring Base, Plug-in Socket
PCDIN *11604KIT-PC*	DIN Mounting Kit for PCB1B
PTU *PC642PTU*	Pass Through Module for Troubleshooting

APPLICATIONS	MODELS
RS485, RS422	175D008S10KLPCN0 & PCB1B
RS423, Token Ring	175D008S10KLPCN0 & PCB1B
RS232	175D020S10KAPCN0 & PCB1B
E-Net, 10 Base T	175D030S10KLPCN0 & PCB1B
4-20 ma	175D036S10KLPCN0 & PCB1B

PEMCO

PEMCO

FAS-31XTP
Telephone Protection for
Traffic Cabinets

Surge Protective Device | **Technical Documentation**

The ***PEMCO FAS-31XTP*** is a single pair telephone protector that implements an advanced three-stage hybrid design. This unit addresses over-voltage transients with gas discharge tubes (GDT) and silicon breakover devices. Additionally, sneak and fault currents are mitigated with PTC technology, which consists of solid state resettable fuses. FAS-31XTP is specifically designed for more rugged applications such as traffic cabinets.

General Technical Specifications	
Operating Voltage	220 VDC
Clamping Voltage	270 VDC
Operating Current	0.15 A
Peak Surge Current	10kA (8 x 20µs)
Frequency Range	0 to 20 MHz
Insertion Loss	< 0.1 dB at 20 MHz
SPD Technology	GDT, SAD, w/ Series PTC
Connection Type	RJ or screw terminal in RJ connector or screw terminal out
Operating Temperature	-40°C to +85°C De-Rate 40% at +85°C
Dimensions (in / mm)	1.0” H x 2.0” W x 2.0” L [25.4 x 50.8 x 50.8 mm]
Weight (oz / kg)	2 oz [0.06 kg]
Warranty	5 years

Caution
Do not place this product in service on any signal line capable of supplying more than 150 mA continuously.

⚠ DANGER!

Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Key Specs

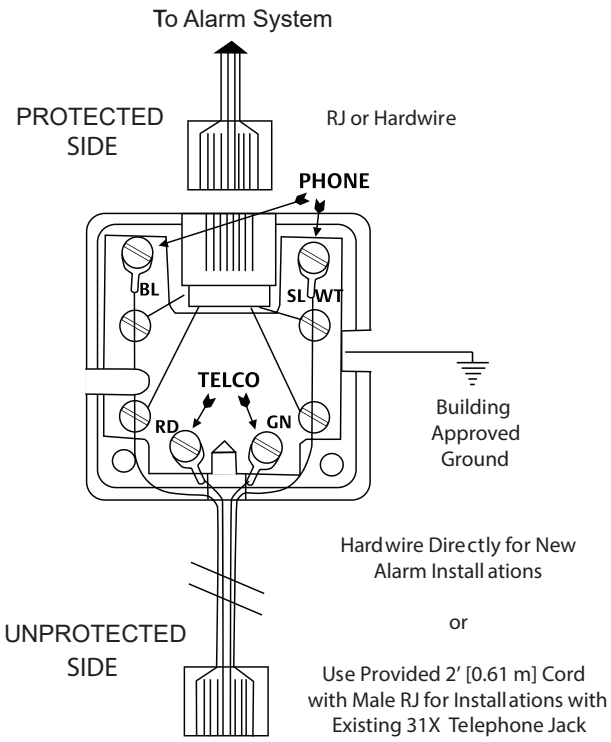
- **Voltage:** 0-220 VDC
- **Current:** 150mA
- **Connection:** Input: Hardwire or RJ-11, Output: Hardwire or RJ-11
- **Mounting:** Wall Mount

**See Ordering Information for model number selection*

Features

- Three-stage hybrid design
- Rugged gas tube protection
- Sneak/fault current protection
- Fast response time
- 5 year warranty

Installation Instructions



Ordering Information

MODEL	APPLICATION
FAS-31XTP	Telephone Line Protection For Traffic Cabinets

PEMCO
1030 Arlington Avenue North
St. Petersburg, FL 33705
Phone: (800) 800-0966
www.pemfg.com

USA Based

PEMCO

Rev0 10-17

PEMCO

DRS Series
DIN Rail Protection

Surge Protective Device

Technical Documentation

The ***PEMCO DRS Series*** is a din rail mountable, single pair surge suppression module implementing three-stage hybrid technology. This module addresses over-voltage transients with gas tubes and silicon avalanche components. In addition, sneak currents are mitigated with resettable fuses (PTCs). The PTCs increase resistance several orders of magnitude when over-currents exceed safe levels. A normal state resumes when over-currents are removed. The ability to self-restore in this manner significantly increases suppressor performance and survivability.

The DRS Series mounts onto a standard 35mm industrial din rail. There are three “Field Side” and three “Electronics Side” screw terminals. One is reserved for a shield. Three electrically tied ground terminals are provided for grounding the DRS Series unit to Building-Approved Ground. Shield is isolated from ground. Two (2) terminal versions without a shield connection are also available.

General Technical Specifications	
Operating Voltage	6, 12, 15, 24, 30, 35, 43, 52 VDC
Clamping Voltage	8, 15, 22, 30, 36, 43, 50, 60 VDC
Operating Current	0.15 A
Peak Surge Current	10 kA (8x20µs)
Max Current Ip (Occurrences)	>100 (10x1000µs)
Typical Capacitance	1500pf
Nominal Series Resistance	5 Ω
Response Time	< 1 nanosecond
Operating Temperature	-40°C to 85°C
Certifications	UL 497B
Warranty	5 years

Caution
Do not place this product in service on any signal line capable of supplying more than 150 mA continuously.

Key Specs

- **Voltage:** 0-170 VDC
- **Current:** 150 mA
- **Connection:** Hardwire/Terminals - accepts up to 12 AWG
- **Mounting:** DIN - 35mm

**See Ordering Information for model number selection*

Features

- Low-voltage data surge protection
- Three-stage hybrid protection
- Sneak/fault current protection with resettable fuses (PTCs)
- Low profile packaging
- Easy installation
- Fits standard 35mm DIN-Rail

Certifications

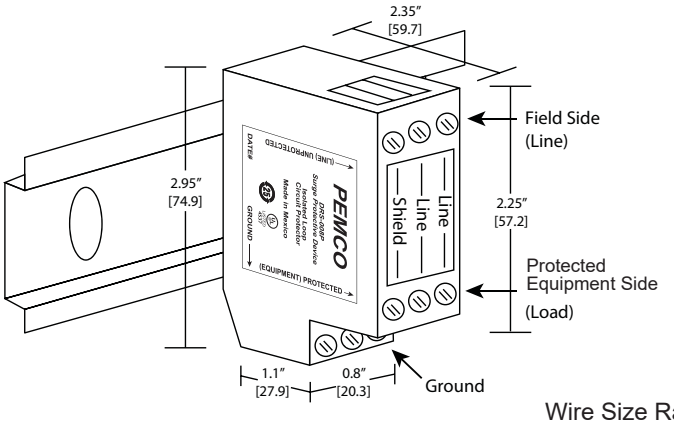
- UL 497B

⚠ DANGER!

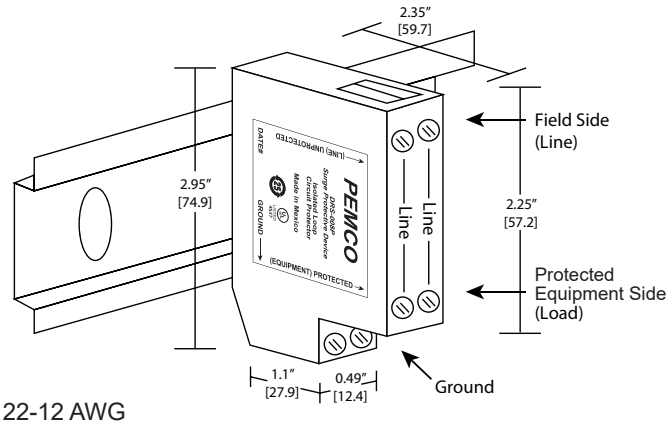
Only qualified personnel should install or service this system. Electrical safety pre-cautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Installation Instructions

3-TERMINAL DEVICE



2-TERMINAL DEVICE



Wire Size Range = 22-12 AWG
Terminal Torque Rating = 0.8 Nm (7 in-lb)

Read and Understand These Instructions

These protectors are intended for indoor use on communication loop circuits which have been isolated from the Public Switch Telephone Network.

The communication loop circuits shall not be exposed to accidental contact with the electric light or power conductors. The protectors shall be installed per the applicable requirements of the National Electric Code, ANSI/NFPA 70.

Ordering Information

MODEL	OPERATING VOLTAGE	CLAMPING VOLTAGE
DRS-008P	6 VDC	8 VDC
DRS-015P	12 VDC	15 VDC
DRS-232P	15 VDC	22 VDC
DRS-030P	24 VDC	30 VDC
DRS-036P	30 VDC	36 VDC
DRS-043P	35 VDC	43 VDC
DRS-050P	43 VDC	50 VDC
DRS-060P	52 VDC	60 VDC

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1030 Arlington Avenue North
St. Petersburg, FL 33705
Phone: (800) 800-0966
www.pemfg.com

USA Based

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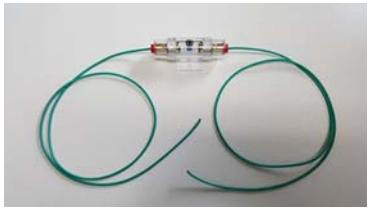
Broadband-Power Bond
Bonding Device

Surge Protective Device | **Technical Documentation**



ACCESSORY SOLD SEPARATELY

The BroadBand-Power Bond (BB-PB) is an easy to install bonding device that meets all applicable electric codes. It is used for bonding cable broadband coax to power line ground- where a permanent ground cannot be made due to powerline interference. It is designed to provide a convenient method to bond a broadband cable suppressor to ground. It will work reliably for years.

The BroadBand-Power Bond provides a continous path to ground during surge events and at the same time prevents powerline noise from entering the broadband data path.

Features

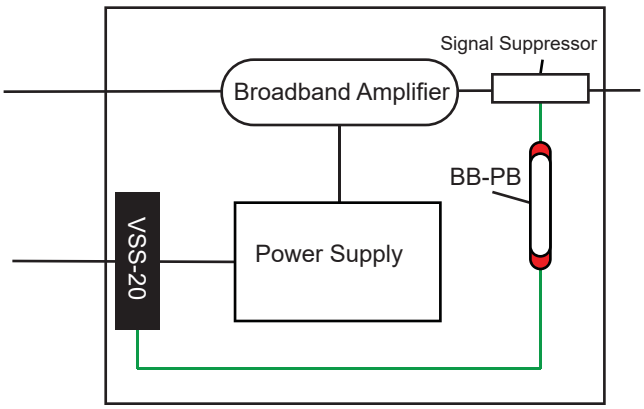
- Bonds Broadband surge devices to power ground
- Prevents surge damage
- Blocks powerline noise

General Technical Specifications	
Use	Bond Broadband cable to power supply ground
Voltage	Only connect to ground circuits
Response Time	Less than 5 Nanoseconds
Peak Surge	25,000 A

⚠ DANGER!

Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Installation Instructions



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USA Based

PEMCO

Rev1 04-17

PEMCO

CAT6-POEP
CAT6-POE-IP
CAT6 Power-Over-Ethernet

Surge Protective Device | **Technical Documentation**

The ***PEMCO Models CAT6-POEP & CAT6-POE-IP*** are designed to work on Category 6 Power-Over-Ethernet transmission line applications and are ideal for protecting expensive computer and video equipment from damaging surges and transients.

Transmission lines provide easy access for transients to enter a facility, putting vital equipment at risk. The CAT6-POE-IP is available with an isolated ground to be used at the equipment end in order to prevent circulating ground currents.

Up to four CAT6-POEP or CAT6-POE-IPs can be installed using optional ASCO C6MP4 mounting bracket.

General Technical Specifications		
	CAT6-POEP	**CAT6-POE-IP**
Operating Voltage	0-57 VDC	
Clamping Voltage	68 VDC	
Operating Current*	0.75 Amp Per Pin	
Peak Surge Current	10 kA (8 x 20 µs) Per Pair	
Insertion Loss	< 0.1 dB	
Topology	Two Port Series	
Modes of Protection	All Lines (1-8) Protected (L-L) and (L-G) Signal High-Low; High-Ground; Low-Ground	
Transmission Speeds	10BaseT; 100BaseT; 1000BaseT	
SPD Technology	GDT, SAD, Series PTC	
Input/Output Connection	RJ-45 Jacks (Shielded)	RJ-45 Jacks (Isolated)
CAT 5 Output Cable	Shielded RJ-45, 7″ (.18M)	Unshielded RJ-45, 7″ (.18M)
Ground Terminal	10-32 Stud	10-32 Stud (Isolated)
Operating Temperature	-40°C to +85°C (operating current adjusted to 40% @ +85°C)	
Operating Humidity	0-95% Non-Condensing	
Dimensions (in / mm)	7.91″ L x 3.48″ W x 1.89″ H [201 x 88.5 x 48 mm]	
Material	Aluminum	
Mounting	Flange	
Weight (oz / g)	5 oz [142 g]	
Certification	UL 497B Listed, Tested to IEC 802.11 (Complies to IEEE 802.3AT and 802.3AF)	
Warranty	5 Year	

Caution
Do not place this product in service on any signal line capable of supplying more than 0.75 Amps continuously.

**For applications requiring higher Operating Currents, parallel connections can be utilized. See installation information on Page 2.*

Key Specs

- **Voltage:** 0-57 VDC
- **Current:** 750 mA
- **Connection:**
  Input: female RJ-45
  Output: female RJ-45
- **Mounting:** Flange/DIN

**See Ordering Information for model number selection*

Features

- Exceeds Category 6 transmission values
- Three stage hybrid circuit
- DC over Ethernet all pins
- Optional mounting bracket
- Optional DIN mounting kit
- 5 year warranty

Certifications

- UL 497B Listed
- IEEE802.3af & IEEE802.3at compliant (POE & POE+)

Optional Multi-Unit Mounting Bracket (Sold Separately)

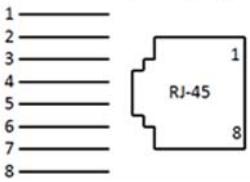
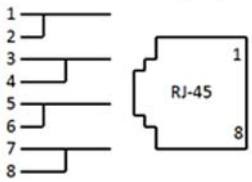
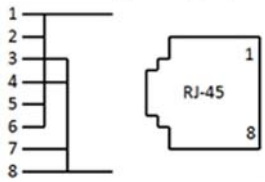
Part Number: C6MP4

Bracket accommodates up to four Model 185 surge protectors.

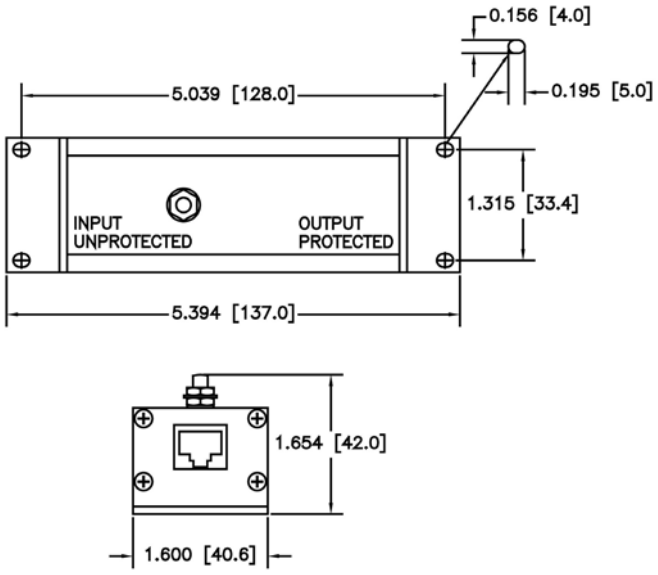
Bracket's ground lug allows all devices to share one single ground connection.

Installation Instructions

1. Mount the SPD as close as possible to the protected equipment and secure. #6 hardware is recommended.
2. Connect a #10 ground wire using a 10-32 ring terminal (not provided) to the SPD ground stud. Connect the opposite end of the wire to a “building approved ground”. Wire should be short and straight as possible.
3. Connect the CAT6-POEP or CAT6-POE-IP supply cable (with RJ-45 connector) to the INPUT side of the SPD.
4. Complete the circuit by connecting the CAT5 cable (provided) from the output of the SPD to the protected equipment.

Higher Operating Currents ** For applications requiring higher Operating Currents, input connections can be paralleled to meet the desired rating.*	4 Pair – 0.75 A/36W per pin 	2 Pair – 1.5 A/72W per pin 	1 Pair – 3.0 A/144W per pin 

Dimensional Information



Ordering Information

MODEL	APPLICATION
CAT6-POEP	CAT6 Protection
CAT6-POE-IP	CAT6 Protection with Isolated Ground

ACCESSORIES *Former Accessory Name*

C6MP4 *C6-MP4*	Multi-Unit Mounting Bracket
C6DIN *11604KIT-C6*	Single unit DIN Mounting Kit * (Sold Separately)

**Includes DIN clips and hardware to mount a single unit.*

⚠ DANGER!

Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Seulement le personnel qualifié doit installer ou maintenir ce systéme. Des précautions de sécurité en électricité doivent être suivis lors de l’installation ou de la maintenance de cet equipement. Pour eviter tout risque de choc électrique, débranchez et verouiller toutes les sources d’alimentation de cet equipement avant de.

PEMCO
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www.pemfg.com

USA Based

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Rev0 04-17

PEMCO

CX06-MP
CX06-MIP
Analog Video &
Data Applications/Coax

Surge Protective Device | **Technical Documentation**

CX06-MP

CX06-MIP

The ***PEMCO CX06 Series*** Surge Protective Devices (SPDs) implement three-stage hybrid technology. The SPDs address over-voltage transients with a primary Gas Discharge Tube (GDT) and secondary Silicon Avalanche Diode (SAD) components. Over-current protection, e.g. sneak and fault currents, are mitigated with solid-state resettable fuses — PTCs.

CX06 Series SPDs are designed in accordance with NFPA 780 (2004 edition) requirements, with up to 20kA of surge current capability. They have an isolated ground option and are recommended for use at the camera-end.

General Technical Specifications	
Operating Voltage	5 VDC
Clamping Voltage	6 VDC
Operating Current	0.15 A
Peak Surge Current	20 kA (8 x 20 µs)
Frequency Range	0 to 20 MHz
Insertion Loss	< 0.1 dB at 20 MHz
Response Time	< 0.5 ns
SPD Technology	GDT, SAD, w/ Series PTC
Connection Type	BNC, 50/75 Ohm
Operating Temperature	-40°C to +85°C
Dimensions (in / mm)	CX06-MP = 1.5″ H x 1.0″ W x 3.25″ L [38.1 x 25.4 x 82.55 mm] CX06-MPI = 1.5″ H x 1.0″ W x 4.0″ L [38.1 x 25.4 x 101.6 mm]
Weight (oz / kg)	CX06-MP = 2.3 oz [0.07 kg] CX06-MPI = 3 oz [0.09 kg]
Certifications	UL 497B

Caution
Do not place this product in service on any signal line capable of supplying more than 150 mA continuously.

Key Specs

- **Voltage:** 0-5 VDC
- **Current:** 150mA
- **Connection:** BNC, 50/75 Ohm
- **Mounting:** Flange/DIN

**See Ordering Information for model number selection*

Features

- Sneak/fault current protection
- Low insertion loss
- Shielded case
- Models with isolated ground
- 5 year warranty

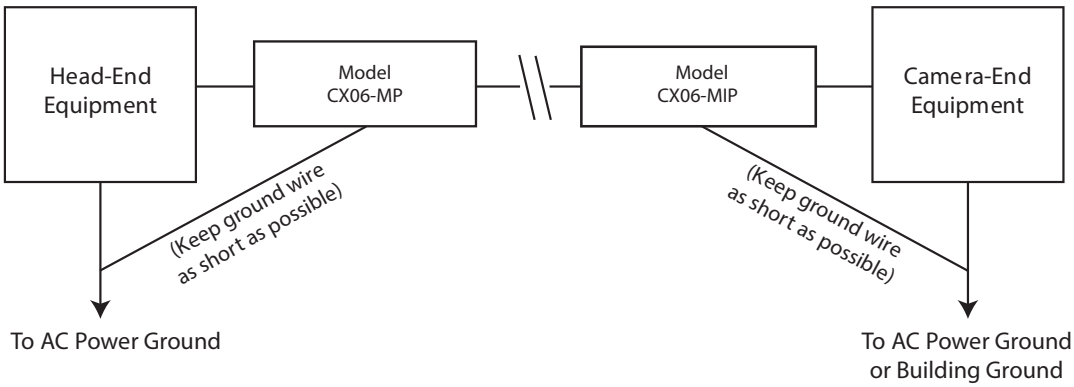
Certifications

- UL 497B

⚠ DANGER!

Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.

Installation Instructions



Read and Understand These Instructions

These protectors are intended for indoor use on communication loop circuits which have been isolated from the Public Switch Telephone Network.

The communication loop circuits shall not be exposed to accidental contact with the electric light or power conductors.

The protectors shall be installed per the applicable requirements of the National Electric Code, ANSI/NFPA 70.

CX06-MP: Head-End Equipment Protection

A. Connect the CX06-MP in line with the coaxial cable. The side labeled “EQUIP” should be connected to the adjacent head-end equipment.
B. Connect incoming coaxial cable to the side of the CX06-MP labeled “CABLE”.
C. Connect a ground wire (10-12 AWG) between the CX06-MP ground terminal and the AC power ground of head-end equipment. Keep this wire as short and straight as possible.

CX06-MIP: Camera-End Protection (with Isolated Ground)

A. Connect the CX06-MIP in line with the coaxial cable. The side labeled “EQUIP” should be connected to the adjacent camera.
B. Connect incoming coaxial cable to the side of the PEMCO CX06-MIP labeled “CABLE”.
C. Connect a ground wire (10-12 AWG) between the PEMCO CX06-MIP ground terminal and either the AC power ground or equipment building ground at the camera location. Keep this wire as short and straight as possible.

Ordering Information

MODEL	APPLICATION
CX06-MP	Head-End
CX06-MIP (w/ Isolated Ground)	Camera-End
ACCESSORIES *Former Accessory Name*	
PCDIN *11604KIT-PC*	DIN Mounting Kit for CX06-MP

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1030 Arlington Avenue North
St. Petersburg, FL 33705
Phone: (800) 800-0966
www.pemfg.com

USA Based

PEMCO

Rev0 04-17

PEMCO

Compact CSS Series
Plug-In

Surge Protective Device | **Technical Documentation**

The CSS series compact suppressor is designed to protect 120 Volt electronics with up to 15 amps current carrying capability.

The CSS series is a single stage receptacle suppressor that plugs into a standard wall outlet. It uses larger surge elements but does not have multistage protection circuitry.

The CSS series is used to protect simple electronics, microwaves, and garage door openers.

The CSS series is available with a video suppressor, and as a standalone single outlet suppressor.

Features

- 120 Volt General Use
- Single Receptacle
- Simple Plug-In Installation
- Intelligent indicator diagnoses wiring and grounding
- Available with video protection

Ordering Information

MODEL	DESCRIPTION
CSS-1	Single Receptacle
CSS-1V	Single Receptacle Combo with video protection

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1030 Arlington Avenue North
St. Petersburg, FL 33705
Phone: (800) 800-0966
www.pemfg.com

USA Based

PEMCO

Rev0 06-19

PEMCO

US1206
Plug-In Surge Protector

Surge Protective Device | **Technical Documentation**

US1206 universal suppressor has six receptacles to power your sensitive electronics. Its circuitry absorbs and reroutes surge energy to ground or in the event of catastrophic surge, completely disconnects power.

US1206 receptacles rotate so that cords are out of the way for installations behind desks and other furniture. The US1206 includes intelligent indicators to diagnose proper grounding and outlet wiring.

The US1206 multi-stage protection handles six times the surge energy while still protecting your sensitive electronics. Let through voltage is the best on the market even at a full 3,000 amps surge current.

US1206 is also telephone ready with phone line protection including twin PTC auto-reset modules to protect pay per-view, fax telephone lines and modems. The US1206 includes network protection for computer networks. Standard RJ-45 cables have all 8 wires protected.

Features

- 6 rotating power receptacles
- Two video suppressors
- Two line phone protection
- RJ-45 Network protection
- Nanosecond Speed
- Includes video and phone adapters
- Multi-Function Indicators

General Specifications			
Operating Voltage			120 VAC, Single Phase
Operating Voltage Tolerance			+/- 10%
Operating Frequency Range			47 - 63 Hz
Peak Surge Current			39,000 Amps (8 x 20 µs)
Maximum Continuous Operating Voltage (MCOV)			130 VAC (L-N)
Rated Output (Amps)			15 Amperes
Connection Type			(6) 5-15R Receptacles and 5-15P Plug
Phase Configuration			2 Wire + Gnd
Enclosure			High Impact Plastic
Modes Of Protection			L-N, L-G, N-G
Response Time			< .5 ns Normal mode
Dimensions (in / mm)			7.5" L x 4.75" W x 1.75" D [190.5 x 120.65 x 45 mm]
Weight (lb / kg)			2.0 lb [0.907 kg]
Warranty			5 Year
Certifications			UL 1449 Listed
Low Voltage Protection	Video 1 & 2	Phone	Network
Connection Type	Type "F"	Type RJ11	Type RJ45
Cables Provided	(2x), 6', Type "F" Ends	6', RJ11, Male Ends	6', RJ45, Male Ends
Peak Surge Current	5kA (8x20us)	2kA (10x1000us)	3kA (8x20us)
Capacitance	<12pf	<50pf	<70pf
Protection Modes	L-G	T-R, T-G, R-G	L-G (8 Lines)
Clamping Voltage (DC)	145V	270-350V	30V
Attenuation	1db @ 2Ghz	N/A	N/A

Includes Cords

PEMCO
1030 Arlington Avenue North
St. Petersburg, FL 33705
Phone: (800) 800-0966
www.pemfg.com

PEMCO

Rev0 07-18

PEMCO

MPM8-AV
Plug-In Surge Protector

Surge Protective Device | **Technical Documentation**

The MPM8-AV Multimedia Power Strip suppressor has eight receptacles to power your sensitive electronics. Its high energy circuitry absorbs and reroutes surge energy to ground or in the event of catastrophic surge, completely disconnects power.

The MPM8-AV receptacles are spaced to fit power blocks (transformers). Diagnostic lights indicate proper grounding and outlet wiring.

Key Specs

- **IMPROVES PICTURE AND SOUND QUALITY**
- **SURGE PROTECTION**

Features

- 8 protected power receptacles
- Twin video suppressors
- Telephone suppressor
- Includes video/phone cables
- Nanosecond Speed
- Meets IEEE587CAT.B
- Multi-Functional indicators

General Technical Specifications	
Weight	3.5 lbs.
Voltage Protection Rating	500V
Thermal Fusing	Yes
Single Pulse Energy Dissipation	1125 Joules
Response Time	< 1ns
Protection Modes	L-N, L-G, N-G
Peak Impulse Current	52,000 A
Maximum Current Rating Line Voltage	15A(1800W) 120VAC, 50/60Hz
Initial Clamping Level	200V Peak, 141V RMS
EMI/RFI Noise Filtration	45 dB(100 KHz - 1MHz)

Ordering Information

MODEL
MPM8-AV

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Rev0 04-17

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VSS Series
X-COIL Technology

Surface Protective Device

Technical Documentation

The VSS is an advanced multi-stage hybrid, solid state power line protector. Features such as a common mode and normal mode suppression, nanosecond reaction time, power line tracking and simple wire terminations make the VSS an excellent choice in commercial and industrial applications.

The VSS can be designed as a panel mount and takes up NO internal panel room; with the panel mount it is designed to be mounted externally (Panel Mount Model) or as a plug-in model (picture above).

The VSS utilizes a Patented X-Coil™ surge balancing coil. This insures best clamping performance of all internal surge elements.

The VSS contains internal fuses designed to remove the load (protected equipment) from the line if the unit is subject to long term overvoltage or the internal protection fails. This feature prevents surges from entering equipment through a failed protector, not noticed by the user. The VSS is universal: it can be used on any single phase circuit of either 120Vac or 240Vac.

It is designed to carry 20 Amp max current so it fits any commercial wiring system. The VSS is a series surge device so it has separate input and output wires (panel mount version). The output wires are clearly marked and connect to the electronics that are to be protected. Simple wire splices or wire nuts are acceptable connections to the VSS.

General Technical Specifications	
Nominal System Voltage	120/240V - series installtion
Max Amps	20Amps
Frequency	0-100Hz
Size	2.87” x 5.25” x 1.75”
Nominal Discharge Current (In)	10kA 8/20 µs
One-Time Surge	57 kAIC
Protection Modes	400V L-N / 400V L-G
Status indication	Green LED
Technology	TMOV - Th ermal Disconnects

Key Specs

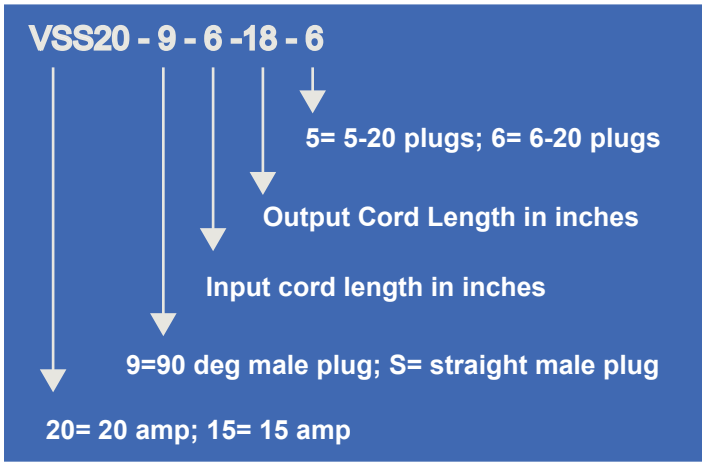
- **Multi-Stage High Energy Surge Suppression**
- **Line Drop Over Voltage Protection**
- **Compact and Easy to Install**

Features

- 120/240 volt 15-20 Amp
- Auto-Recovery
- Nanosecod response time
- Power Line Tracking
- Plug-in module
- Multi-stage Hybrid Design
- Easy to install

Ordering Information

Model Number Description:



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PJ60
Lithium Ion UPS

UPS | Technical Documentation

PJ60 advanced design combines the benefits of lithium powered UPS and advanced surge suppression technology. Slim form factor (just 1.25”), wall mounting, and easy access receptacles make PJ60 ideal for mounting behind thin display screens used in hotels, restaurants, hospitals, campuses, airports and other commercial areas.

While PJ60’s compact design is appealing to the digital signage industry, it is also excellent for providing protection to espresso machines, kiosks, gaming machines, computers, point-of-sale equipment, and small printers.

General Technical Specifications	
Capacity Power Rating	350VA (200W)
Input Voltage	120 VAC
Input Frequency	50/60HZ
Output Voltage	120VAC
Output Waveform (Normal)	SINE WAVE
Output Waveform (Battery)	SIMULATED SINE WAVE
Output Frequency	50/60HZ
Output Surge Suppression	300 JOULES
Battery Type	LITHIUM IRON PHOSPHATE (LIFEPO4)
Battery Quantity And Size	(8) 18650 CELLS, LIFEPO4
Battery Runtime (Est)	6 MIN AT 100% LOAD; 14 MIN AT 50% LOAD
Dimensions (W x D x H)	6.9 X 8.5 X 1.25 IN
Weight	3.4 LBS
Line Cord	OPTIONAL C13 TO 5-15P
Receptacles	(3) 5-15R
Environment Temperature	32-104°F (0-40°C)
Environment Humidity	0-90%
Environment Altitude	11,500 FT ABOVE SEA LEVEL

Key Specs

- **Light Weight:** 3.4 lbs
- **Slim:** 1.25”
- **Power Outage Protection:** Up to 20 minutes with 60W load

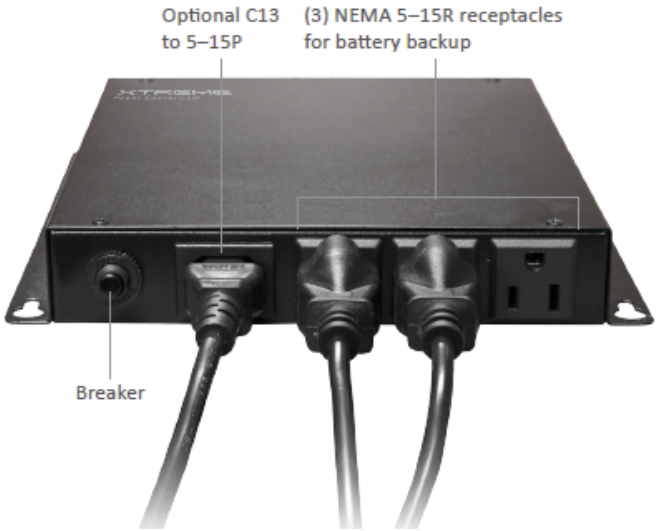
Features

- Lithium ion batteries provide protection for up to 8 years and 2000 discharges
- Input cord, optional detachable offset, right angle 5–15P power cord provides flexible installation
- Flat installation, Input cord, output receptacles, and USB are located on PJ60 top and bottom
- Auto restart, no need to be present after the outage

Front and Back

DIAGRAM 1

DIAGRAM 2



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USA Based

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PM-850
UPS

Battery Back-Up Device | **Technical Documentation**

The PM-850 Battery Back-up provides AVR (Automatic Voltage Regulation), which stabilizes input voltage to an appropriate level for optimal equipment performance by completely eliminating brownouts and over voltages.

This smart unit provides battery back-up and surge protection to 5 outlets and surge protection to an additional 4 outlets that do not require constant power. With a set of in/out co-axial plugs as well as a set of combo telephone/LAN connect plugs, you can be assured of complete coverage to all connected equipment. Also offers a USB/Serial connection to a connected PC.

Key Specs

- **Lamp Based Display**

Features

- Automatic Voltage Regulation
- Dimensions 4.3”W x 10.3”D x 8.9”H
- Weight 16 lbs
- 5 Outlet Battery Back-up + Surge
- 4 Outlet Surge Only
- 120 mins run time
- Automatic shut-down software

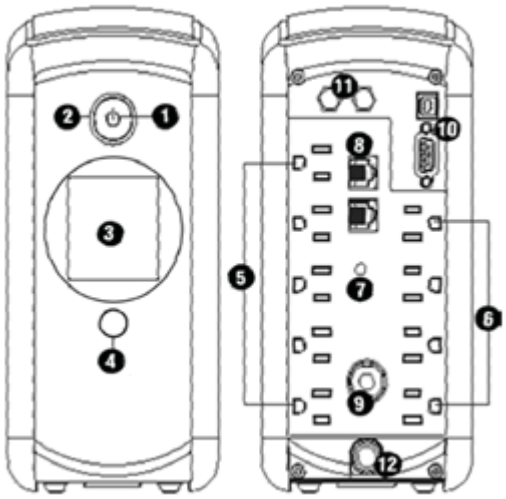
Certifications

- UL1778 Listed

General Technical Specifications	
Weight	16 lbs.
Dimensions	4.375”W x 10.25”D x 8.875”H
Output Power	850VA / 510 Watts with AVR
Output Voltage on Utility - Voltage	90V - 140V
Frequency	57 - 63 Hz
AVS Smart Boost	Boost 10% of input voltage for output
Surge Energy Capacity	890 Joules
Maximum Surge Current	36,000 Amps
Design Specification	NSI/IEE C62.41 CAT A
Battery Runtime	Up to 120 minutes
Battery Recharge	8 hours from total discharge
Battery Normal Life	3 to 6 years
Output Voltage on Battery - Voltage	120V ±5V
Frequency	60Hz

Diagrams

DRAWING 1
Back and Front of Unit



- 1. Power Switch
- 2. Power On Indicator
- 3. LCD Module Display
- 4. LCD Display Toggle Switch
- 5. Battery and Surge Protected Outlets
- 6. Full-time Surge Protection Outlets
- 7. Electrical Wiring Fault Indicator
- 8. Communication Protection Ports
- 9. Circuit Breaker
- 10. Serial / USB Ports
- 11. Coax / Cable / DSS Surge
- 12. Input Power Cord

LCD DISPLAY PROVIDES

- Output Power Frequency when interrupted
- Input Voltage Level
- Output Voltage Level
- AVR Status Meter
- Battery Capacity
- Estimated Runtime
- Load Level

Ordering Information

MODEL
PM-850 Battery Back-Up

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PS70 Series
Line Interactive UPS

Battery Backup Device

Technical Documentation

ACCESSORY SOLD SEPARATELY

This series will help you equip your office with reliable battery backup and protection from power outages. The series is designed to surmount power quality issues such as voltage fluctuations, over voltage, under voltage and voltage blackouts.

In the event of any common power problems, the PS70 UPS activates to protect all connected critical loads. The PS70 streamlines installation to just a few simple steps, allowing backup power protection right out of the box.

The smart LCD screen offers real-time monitoring of UPS parameters while shutdown and monitoring software enables UPS and remote device control over your network.

Key Specs

- **Available models:** 500VA
  1000VA
  1500VA
  2000VA
- **Smart LCD display**
- **Primary applications:** home or small office, desktop computers, routers, and switches

**See Ordering Information for model number selection*

Features

- Plug and Play
- USB communications & software CD
- Compact Design

General Technical Specifications	
Input Voltage	220/230/240VAC
Input Frequency	50/60Hz
Output Voltage	230VAC
Output Waveform	Sine wave (normal), simulated sine wave (battery mode)
Output Frequency	50/60Hz auto sensing
Output Transfer time	4ms (typical)
Battery type	Sealed, maintenance-free lead acid
Battery Recharge	4–6 hours to 90% capacity
Battery Runtime at 50% load	Up to 10 min
Line cord	6ft, IEC C13 to Schuko
Operating temperature	32–104°F (0–40°C)
Humidity	0–90%
Altitude	11,500 ft above sea level

Ordering Information

MODEL
PS70-500
PS70-1000
PS70-1500
PS70-2000

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PXST Series
Single Phase Standby UPS

Battery Back-Up Device | **Technical Documentation**

ACCESSORY SOLD SEPARATELY

This series is a compact single phase standby UPS. It was designed to deliver protection to small routers, switches, desktop PCs, VoIP Equipment, phone systems, and point of sale equipment. A vital addition to any home office, it enables graceful shutdown of equipment during a longer power outage.

This series has plug and play functionality which means that this UPS is ready to start backing up your equipment right out of the box. Auto restart is standard so you won't need to be in the office after an outage occurs.

Key Specs

- **Available Models:** 400VA, 600VA, 800V
- **Floor, Desk, or Wall Mount**
- **Primary applications:** Home or small office, desktop computers, routers, switches, and telecom closets

**See Ordering Information for model number selection*

Features

- Compact size and lightweight design
- RoHS compliant
- Plug & Play
- Auto Restart
- Cold Start Function

General Technical Specifications	
Input Voltage	120VAC
Input Frequency	60Hz
Output Voltage	120VAC
Output Frequency	60Hz ± 1Hz
Output Transfer time	2–6ms
Battery type	Sealed, maintenance free lead acid
Battery Recharge	8 hours to 90% capacity
UPS dimensions (W x D x H)	3.2 x 8.9 x 8.1 in (vertical stand position)
Line cord	5 ft, 5–15P
Receptacles	(4) NEMA 5–15R
Operating temperature	32–104°F (0–40°C)
Humidity	0–90%
Altitude	11,500 ft above sea level
AC mode	Blue LED ON

Additional Photos

Ordering Information

MODEL	POWER RATING
PXST-400	400VA (240W)
PXST-600	600VA (360W)
PXST-800	800VA (480W)

ACCESSORIES

PSNMP-USB	External Web/SNMP Card

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