Surge Suppression Products

Surge suppression for critical devices in industrial, commercial and institutional applications.

MTL Instruments

Surge Suppression for Critical Devices

MTL Instruments presents a range of surge suppression products designed to protect critical devices in industrial, commercial, and institutional applications. These products are engineered to withstand high-voltage surges, ensuring the safety and reliability of equipment. The Surge Suppression Curve and Zone Defender products are specifically designed to offer robust protection against lightning and power surges.

MTL Instruments is committed to providing innovative solutions that meet the needs of the industrial, commercial, and institutional sectors. With a focus on safety and performance, MTL Instruments continues to be a trusted name in surge protection technology.
Maximizing plant productivity by protecting critical power feeds.

In today’s complex process environment, a properly designed surge protection plan is a key step in improving plant reliability, reducing downtime, and protecting your facility.

Surge overvoltages are short duration, high magnitude impulses that exist on all electrical (power and signal) lines for a brief time. Common causes can range from lightning strikes to switching of electrical loads. These power surges can occur at any time. The outcome is often devastating, resulting in substantial cost due to:

- Downtime / lost productivity
- Equipment replacement
- Maintenance fees

These costly surges can be avoided with innovative surge suppression products from Cooper Crouse-Hinds.

Introducing ESP solutions.

For more than 100 years, Cooper Crouse-Hinds has exceeded customer expectations when it comes to new ideas and technological advancements. Today, as the electrical industry’s global leader for hazardous environments, we continue to reach beyond the expected - especially with our commitment to ESP (Enhancing Safety and Productivity).

The problem that never happens. That’s the goal behind ESP - smarter, more powerful solutions enhancing safety and productivity in your world. Making danger obsolete is what drives the innovative minds at Cooper Crouse-Hinds. ESP is all about anticipating customer needs while staying in tune with what’s important to you. By providing innovative solutions for enhancing safety and productivity, we’re helping you do more with less.

Don’t underestimate the impact of surge voltages. Protect your facility with Cooper Crouse-Hinds surge suppression products.

Surge Protection Benefits:

- Reduces equipment failure
  - Direct savings in hardware
  - Reduction in premature failures
  - Elimination of catastrophic failure
- Less maintenance fees
- Increased plant availability and productivity
- Indirect savings as a result of a better deployed, more efficient maintenance crew
Cooper Crouse-Hinds offers a comprehensive line of AC surge suppression devices that provide unmatched reliability, quality, and performance.

**PRODUCT SELECTOR CHART**

<table>
<thead>
<tr>
<th>Series:</th>
<th>ZoneDefender PRO</th>
<th>ZoneDefender Curve</th>
<th>ZoneSentinel</th>
<th>ZoneMaster</th>
<th>ZoneMaster All-Mode</th>
<th>ZoneMaster PRO</th>
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**Ideal Applications:**

- Medium sized service entrances
- Distribution panels
- Branch panels
- 20kA L for UL96A Master Label applications
- PLCs
- Control panels
- Dedicated equipment
- Type 1 (before) or Type 2 (after) building main disconnect
- 20kA L, for UL96A Master Label applications
- PLCs
- Control panels
- Dedicated equipment
- Medium sized service entrances
- Distribution panels
- Branch panels
- Computer grade panelboards
- Small transfer switches
- Medium to large service entrances
- Distribution panels
- Branch panels
- Motors
- MCCs
- Pumps
- VFDs
- Medium to large transfer switches
- All sizes of main services
- Distribution panels
- Branch panelboards
- Computer grade panels
- MCCs
- VFDs
- Transfer switches
The ZoneDefender PRO is a versatile, high performance surge protector designed for use in a wide variety of industrial, institutional, and commercial applications. The ZoneDefender PRO is the most compact, powerful, feature-rich surge protector on the market today.

State-of-the-art circuitry protects equipment from high frequency noise, as well as from damaging electrical transients and high energy disturbances. In addition, the ZoneDefender PRO Series offers cost-effective high capacity protection along with application versatility, features which make this Series the ultimate surge protection solution.

**APPLICATIONS**

- Service entrance and power distribution panels
- Generators and transfer switches
- Motor Control Centers (MCCs)
- Variable Frequency Drives (VFDs)
- Programmable Logic Controllers (PLCs)
- Lift stations
- UL96A Master Label applications

**FEATURES AND BENEFITS**

- 80kA, 100kA, 120kA, 160kA, 200kA, 240kA surge current rating per phase
- High performance EMI/RFI filtering (standard)
- Green and red LED status indication
- Built-in audible alarm (standard)
- Normally open/normally closed dry contacts (standard)
- Thermal and short circuit fusing tested under UL1449 3rd Edition
- Short circuit rating: 200k AIC
- 10 year product warranty "No Questions Asked"

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**CERTIFICATIONS AND COMPLIANCES**

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<th>Country</th>
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**DIMENSIONS**

- Dimensions: 8.80 x 9.30 x 3.00 (height x width x depth)
SPECIFICATIONS

Maximum Surge Current ($I_{\text{max}}$)
80kA / 100kA / 120kA / 160kA / 200kA / 240kA (8/20μs)

Maximum Continuous Operating Voltage
220/240 versions 140VAC
277/480 versions 320VAC

Nominal Discharge Current 20kA ($I_f$)

Lines Protected AC
L-N, L-G, L-L, N-G

Duty Cycle Performance (8/20μs)
Rated 1 impulse
10,000A >6,500 impulses
100A infinite

Long Duration Current Pulse (10/1,000μs)
Capability 3.600A (tested)

Ambient Temperature Limits
-40°C to +85°C (-40°F to +185°F)

Humidity 95% RH (non-condensing)

Terminals
#10 AWG (5mm²) and #8 AWG (8mm²)

Mounting
Surface mount by 0.21” (5mm) diameter holes

Remote Contacts
Form C (NC, NO, C) 60W DC, 120 VA AC, 3A max.

Indication
Green LED on Red LED off

Protection fault (remote indication alarm via contacts and audible alarm)
Green LED on Red LED on

Neutral/ground fault (voltage potential)

Audible Alarm 90dB

EMI/RFI Attenuation
-75dB maximum 100kHz to 100MHz

Weight
From 5.2 lbs. (2.34 Kg.)

SCCR Rating
Suitable for use on a circuit capable of delivering not more than 200,000 rms symmetrical Amperes, 480V max.

EMC Compliance
BS EN 60950: 1992
BS EN 61000-6-2:1999

Ratings in Compliance with IEC 61643-1

$I_{\text{max}}$ = 80kA, 120kA

$I_{\text{imp}}$ = 6kA (10/350)*

$I_{\text{imp}}$ = 160kA

*All current results are per phase.

ORDERING INFORMATION

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<th>Limiting Voltage @10kA (ln) (V)</th>
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ZoneDefender Curve Series

For applications requiring a Type 1 or Type 2 surge protection device.

The ZoneDefender Curve Series surge suppressor is specifically designed for applications that require a Type 1 or Type 2 Surge Protective Device (SPD). Type 1 models are available that meet UL96A Master Label Program requirements.

This device eliminates the need for additional overcurrent protection, providing substantial cost savings. These compact and durable devices offer cost-effective, high capacity protection along with application versatility, features which make this Series the ultimate surge protection solution.

APPLICATIONS

- Type 1 (before) or Type 2 (after) building main disconnect
- Models for UL96A Master Label applications
- Programmable Logic Controllers (PLCs)
- Control panels
- Dedicated equipment

FEATURES AND BENEFITS

- Wide range of voltage applications
- UL1449 Type 1 and Type 2 applications
- Short circuit rating: 200k AIC
- Red LED status indication
- UL1449 3rd Edition Listed
- 10 year product warranty “No Questions Asked”
- Automatic reset; maintenance-free unit
- Thermal fusing and short circuit protection
- Wide range of ratings to cover most all customer requirements
- Allows for installation in many applications
- Allows for installation on almost any size panel
- Customer-friendly easy to read failure status indication
- Ensures the product safety under the harshest of conditions
- At least 10 years of surge protection with no replacement costs
- Increases productivity and reduces downtime
- Provides additional safety and peace of mind

DIMENSIONS

For applications requiring a Type 1 or Type 2 surge protection device.
### SPECIFICATIONS

All figures typical at 77°F (25°C) unless otherwise stated.

**Maximum Surge Current**
- 50kA (8/20)

**Leakage Current**
- <5μA

**Working Voltage**
- See table below

**Maximum Continuous Operating Voltage**
- 125% x nominal

**Ambient Temperature Limits**
- -40°F to +185°F (-40°C to +85°C)

**Humidity**
- 95% RH (non-condensing)

**LED Indication**
- Red LED = failure

**Installation**
- Nipple mount

### ORDERING INFORMATION

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<th>System Type</th>
<th>Nominal Discharge Current (In, kA)</th>
<th>Max. Discharge Current (Imax, kA)</th>
<th>Max. Discharge Current (Iimp, kA)</th>
<th>Short Circuit Current Rating (SCCR, kA)</th>
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*Meets UL96A Master Label requirements.
**ZoneSentinel Series**

For applications at distribution boards and small service entrance locations.

The ZoneSentinel Series is engineered specifically for applications at distribution boards and small service entrance locations. ZoneSentinel devices provide cost-effective, high capacity power surge protection and, when used at a local panel in combination with a ZoneMaster at the service entrance, provide the lowest suppression voltages available today.

ZoneSentinel units offer a 100kA surge handling capability with protection between Line to Neutral, Line to Ground, Line to Line, and Neutral to Ground and no restriction to the amount of load current. Thermal and short circuit fusing mechanisms are also included as an additional safety feature.

**APPLICATIONS**

- Medium sized service entrances
- Distribution panels
- Branch panels
- Computer grade panelboards
- Small transfer switches

**FEATURES AND BENEFITS**

- Thermal and short circuit fusing tested under UL1449 3rd Edition
- Short circuit rating: 100k AIC
- Replaceable bolt-in modules
- Normally open/normally closed dry contacts (standard)
- Green and red LED status indication
- NEMA 4X rated enclosure
- Optional remote monitoring unit is available
- 15 year product warranty “No Questions Asked”
- Enhanced redundancy built into each module

---

**CERTIFICATIONS AND COMPLIANCES**

<table>
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<th>Country</th>
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**DIMENSIONS**

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<td>F</td>
<td>Add Suffix -F for Flush Mount Options</td>
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</table>
**SPECIFICATIONS**

All figures typical at 77ºF (25ºC) unless otherwise stated.

**Maximum Continuous Operating Voltage**
- 120V - 140VAC
- 277V - 320VAC

**Lines Protected**
- L-N 50kA, L-G 50kA, L-L 100kA, N-G 50kA

**Duty Cycle Performance (8/20μs)**
- 50,000A >4 impulses
- 10,000A >6,000 impulses
- 100A infinite

**Impulse Current for Class I (Iimp)**
- 20kA (10/350μs)

**Long Duration Current Pulse (10/1,000μs)**
- 3,600A (tested)

**Ambient Temperature Limits**
- -40ºF to +185ºF (working)
- -40ºC to +85ºC (working)

**Humidity**
- 95% RH (non-condensing)

**Enclosure**
- NEMA 1, 2, 3, 3S, 4, 4X, 12, 13 (IP66)

**Terminals**
- 2 AWG (32mm²)

**Mounting**
- Surface mount by 0.31” (8mm) diameter holes

**Indication**
- Continuous visual status monitoring
  - Green LED Lit = full protection
  - Red LED Lit = reduced (standby) OR no protection
  - Green LED Out = no power to protector
  - Red and Green LED Lit = high N-G voltage

**Remote Contacts**
- NO/NC

**Weight**
- 4.0 lbs. (1.8 Kg.)

**EMC Compliance**
- BS EN 60950: 1992
- BS EN 61000-6-2:1999

---

**OPTIONAL POWER FILTER SPECIFICATIONS:**

**Limiting Voltage**
- 200V (@ 3kA 8/20μs)

**Maximum Attenuation (typical)**
- -75dB (100kHz to 100MHz)

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**ORDERING INFORMATION**

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The ZoneMaster Series of surge protection devices combines unparalleled power handling capability, application versatility, and proven circuitry along with simple installation, features which make these units the ultimate mains power protection solution.

With configurations suitable for all international supply voltages, ZoneMaster is truly a versatile and flexible protection range.

**APPLICATIONS**

- Medium to large service entrances
- Distribution panels
- Branch panels
- Motors
- Motor Control Centers (MCCs)
- Pumps
- Variable Frequency Drives (VFDs)
- Medium to large transfer switches

**FEATURES AND BENEFITS**

- Thermal and short circuit fusing tested under UL1449 3rd Edition
- Green and red LED status indication
- Short circuit rating: 100k AIC
- Replaceable bolt-in modules
- Normally open/normally closed dry contacts (standard)
- Optional remote monitoring unit is available
- Large block Metal Oxide Varistor (MOV) technology
- 15 year product warranty “No Questions Asked”
- Enhanced redundancy built into each module
- Low let-through performance with high current impulses
- Ensures the product safety under the harshest of conditions
- Customer-friendly easy to read failure status indication
- Allows for installation on almost any size panel
- Minimizes transient impedance
- Allows easy connection to any building management system or alarm
- Provides audio and visual indication of protector status
- Produces redundancy, ensuring the facility is never unprotected
- At least 15 years of surge protection with no replacement costs

**CERTIFICATIONS AND COMPLIANCES**

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**DIMENSIONS**

[Diagram of dimensions]
SPECIFICATIONS

All figures typical at 77ºF (25ºC) unless otherwise stated.

Maximum Continuous Operating Voltage
120V - 140VAC
240V - 280VAC
277V - 320VAC

Lines Protected
ZoneMaster 170
L-N 170kA, L-L 170kA, N-G 170kA
ZoneMaster 200
L-N 200kA, L-L 200kA, N-G 200kA

Duty Cycle Performance (8/20μs)
100,000A >4 impulses
10,000A >8,000 impulses
170A infinite

Impulse Current for Class I (Iimp)
50kA (10/350μs)

Long Duration Current Pulse (10/1,000μs) Capability
3,600A (tested)

Ambient Temperature Limits
-40ºF to +185ºF (working)
-40ºC to +85ºC (working)

Humidity
95% RH (non-condensing)

Enclosure
NEMA 1, 2, 3, 3S, 4, 4X, 12, 13 (IP66)

Terminals
2 AWG (32mm²)

Mounting
Surface mount by 0.31” (8mm) diameter holes

Indication
Continuous visual status monitoring
Green LED Lit = full protection
Red LED Lit = reduced (standby) OR no protection
Green LED Out = no power to protector
Red and Green LED Lit = high N-G voltage

Remote Contacts
NO/NC

Weight
Approx. 7.0 lbs. (3.2 Kg.)

EMC Compliance
BS EN 60950: 1992
BS EN 61000-6-2:1999

OPTIONAL POWER FILTER SPECIFICATIONS:

Limiting Voltage
200V (@ 3kA 8/20μs)

Maximum Attenuation (typical)
-75dB (100kHz to 100MHz)

ORDERING INFORMATION

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ZoneMaster All-Mode Series

Ultimate protection, plus suitability for all international supply voltages.

The ZoneMaster All-Mode Series of surge protection devices combines unparalleled power handling capability, application versatility, and proven circuitry along with simple installation, features which make ZoneMaster All-Mode units the ultimate power protection solution.

With 200kA, 240kA, 340kA, and 400kA versions available and configurations suitable for all international supply voltages, ZoneMaster All-Mode is truly a versatile and flexible protection range.

APPLICATIONS

• Medium to large service entrances
• Distribution panels
• Computer grade panelboards
• Medium to large transfer switches

FEATURES AND BENEFITS

• Thermal and short circuit fusing tested under UL1449 3rd Edition
• Green and red LED status indication
• Short circuit rating: 100k AIC
• Replaceable bolt-in modules
• Normally open/normally closed dry contacts (standard)
• Large block Metal Oxide Varistor (MOV) technology
• NEMA 4X (IP66) rated enclosure
• 15 year product warranty “No Questions Asked”
• Enhanced redundancy plus thermal and short circuit fusing
• Low let-through performance with high current impulses

— Ensures the product safety under the harshest of conditions
— Customer-friendly easy to read failure status indication
— Allows for installation on almost any size panel
— Minimizes transient impedance
— Allows easy connection to any building management system or alarm
— Produces redundancy, ensuring the facility is never unprotected
— Exceptional durability
— At least 15 years of surge protection with no replacement costs

CERTIFICATIONS AND COMPLIANCES

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<td>Add Suffix -X for EMI/RFI Filter</td>
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</table>
**SPECIFICATIONS**

All figures typical at 77ºF (25ºC) unless otherwise stated.

**Maximum Continuous Operating Voltage**
- 120V - 150VAC
- 277V - 320VAC

**Lines Protected**
- **ZoneMaster All-Mode 200**
  - L-N 100kA, L-G 100kA, L-L 200kA, N-G 200kA
- **ZoneMaster All-Mode 240**
  - L-N 120kA, L-G 120kA, L-L 240kA, N-G 240kA
- **ZoneMaster All-Mode 340**
  - L-N 170kA, L-G 170kA, L-L 340kA, N-G 170kA
- **ZoneMaster All-Mode 400**
  - L-N 200kA, L-G 200kA, L-L 400kA, N-G 200kA

**Duty Cycle Performance (8/20μs)**
- 100,000A >4 impulses
- 10,000A >8,000 impulses
- 170A infinite

**Impulse Current for Class I (Iimp)**
- **ZoneMaster All-Mode 200** 25kA (10/350μs)
- **ZoneMaster All-Mode 340** 35kA (10/350μs)
- **ZoneMaster All-Mode 400** 50kA (10/350μs)

**Long Duration Current Pulse (10/1,000μs) Capability**
- 3,600A (tested)

**Ambient Temperature Limits**
- -40ºF to +185ºF (working)
- -40ºC to +85ºC (working)

**Humidity**
- 95% RH (non-condensing)

**Enclosure**
- NEMA 1, 2, 3, 3S, 4, 4X, 12, 13 (IP66)

**Terminals**
- 2 AWG (32mm²)

**Mounting**
- Surface mount by 0.31” (8mm) diameter holes

**Indication**
- Continuous visual status monitoring
  - Green LED Lit = full protection
  - Red LED Lit = reduced (standby) OR no protection
  - Green LED Out = no power to protector
  - Red and Green LED Lit = high N-G voltage

**Remote Contacts**
- NO/NC

**Weight**
- **ZoneMaster All-Mode 200** 10.5 lbs. (4.8 Kg.)
- **ZoneMaster All-Mode 240** 10.5 lbs. (4.8 Kg.)
- **ZoneMaster All-Mode 340** 12.5 lbs. (5.7 Kg.)
- **ZoneMaster All-Mode 400** 12.5 lbs. (5.7 Kg.)

**EMC Compliance**
- BS EN 60950: 1992
- BS EN 61000-6-2:1999

**OPTIONAL POWER FILTER SPECIFICATIONS:**
- **Limiting Voltage**
  - 200V (@ 3kA 8/20μs)
- **Maximum Attenuation (typical)**
  - -75dB (100kHz to 100MHz)

**ORDERING INFORMATION**

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</table>
ZoneMaster PRO Series

The ultimate protection for abusive, harsh environments.

The ZoneMaster PRO Series of surge protection devices combines all the advantages of all-mode protection with features and options to meet the needs of the most complex protection requirements.

The ZoneMaster PRO Series is available with surge current capacities of 200kA, 240kA, 340kA, and 400kA. This, along with the different international voltages available, make the ZoneMaster PRO the most versatile product on the market.

APPLICATIONS

- All sizes of main services
- Distribution panels
- Branch panelboards
- Computer grade panels
- Motor Control Centers (MCCs)
- Variable Frequency Drives (VFDs)
- Transfer switches

FEATURES AND BENEFITS

- Thermal and short circuit fusing tested under UL1449 3rd Edition
- Green and red LED status indication
- Short circuit rating: 100k AIC
- Replaceable bolt-in modules
- Large block Metal Oxide Varistor (MOV) technology
- Rugged and durable steel enclosure
- 15 year product warranty “No Questions Asked”
- Enhanced redundancy built into each module
- Low let-through performance with high current impulses
- Surge counter with fault monitor and audible alarm

- Ensures the product safety under the harshest of conditions
- Customer-friendly easy to read failure status indication
- Allows for installation on almost any size panel
- Minimizes transient impedance
- Produces redundancy, ensuring the facility is never unprotected
- Meets engineering specifications
- At least 15 years of surge protection with no replacement costs

CERTIFICATIONS AND COMPLIANCES

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<th>Country</th>
<th>Standard/ Authority</th>
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OPTIONS

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<td>Disconnect (200k AIC)</td>
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<td>O</td>
<td>NEMA 4 Enclosure</td>
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<td>R</td>
<td>Battery Powered Remote Monitor Unit</td>
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SPECIFICATIONS

All figures typical at 77ºF (25ºC) unless otherwise stated.

Maximum Continuous Operating Voltage
120V - 140VAC
240V - 280VAC
277V - 320VAC

Lines Protected
ZoneMaster PRO 200
L-N 100kA, L-G 100kA, L-L 200kA, N-G 200kA
Delta — L-G 200kA, L-L 200kA

ZoneMaster PRO 240
L-N 120kA, L-G 120kA, L-L 240kA, N-G 240kA
Delta — L-G 240kA, L-L 240kA

ZoneMaster PRO 340
L-N 170kA, L-G 170kA, L-L 340kA, N-G 170kA
Delta — L-G 340kA, L-L 340kA

ZoneMaster PRO 400
L-N 200kA, L-G 200kA, L-L 400kA, N-G 200kA
Delta — L-G 400kA, L-L 400kA

Duty Cycle Performance (8/20μs)
100,000A >4 impulses
10,000A >8,000 impulses
200A infinite

Impulse Current for Class I (I_imp)
50kA (10/350μs)

Long Duration Current Pulse (10/1,000μs)
Capability
3,600A (tested)

Ambient Temperature Limits
-40ºF to +185ºF (working)
-40ºC to +85ºC (working)

Humidity
95% RH (non-condensing)

Enclosure
NEMA 1 (standard); NEMA 4 (optional)

Terminals
2 AWG (32mm²)

Mounting
Surface mount by 0.31" (8mm) diameter holes or optional flush mount available

Indication
Continuous visual status monitoring
Green LED Lit = full protection
Red LED Lit = reduced (standby) OR no protection
Green LED Out = no power to protector
Red and Green LED Lit = high N-G voltage

Remote Contacts
NO/NC

Weight
25.4 lbs. (11.2 Kg.)

EMC Compliance
BS EN 60950: 1992
BS EN 61000-6-2:1999

OPTIONAL POWER FILTER SPECIFICATIONS:

Limiting Voltage
200V (@ 3kA 8/20μs)

Maximum Attenuation (typical)
-75dB (100kHz to 100MHz)

ORDERING INFORMATION

<table>
<thead>
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<th>Catalog Number</th>
<th>Maximum Surge Current I_max (kA)</th>
<th>Working Voltage (V)</th>
<th>UL 3rd Edition VPR (V)</th>
<th>Limiting Voltage @ 3kA (V)</th>
<th>Limiting Voltage @10kA (In) (V)</th>
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Maximum Surge Current I_max (kA)
200
10,000A >8,000 impulses
200A infinite
For more information:
If further assistance is required, please contact an authorized Cooper Crouse-Hinds Distributor, Sales Office, or Customer Service Department.

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FAX: (315) 477-5179
FAX Orders Only: (866) 653-0640
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