

USA PRODUCT CATALOG

Surge Protective Devices

Current Technology



- Safeguard your capital investments by protecting your equipment
- Help secure your operational continuity from unexpected catastrophic electrical disturbances

Lightning is well accepted as a powerful and destructive element to both physical structures and electrical power and communication systems. But, lightning comprises only about 20% of the overall surge activity in a building. The remaining 80% comes from internally generated surge activity.

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SPDs

Surge Protective Devices

ABB designs its surge protective devices (SPD) to mitigate surge events to harmless levels with the goal to keep connected electrical equipment and building processes functional. The Institute of Electrical and Electronic Engineers (IEEE) in its standard C62.69 defines a surge as a, “temporary disturbance on the conductors of an electrical service caused by an electrical event not related to the service.” The National Fire Protection Association’s NFPA® 780 Standard for the Installation of Lightning Protection Systems define a surge as, “a transient wave of current, potential, or power in an electric circuit. Surges do not include longer duration temporary overvoltages (TOV) consisting of an increase in the power frequency voltage for several cycles.” Simply put, a surge is an unwanted fast and temporary electrical event. Surges start and finish faster than the blink of an eye and can rise to several thousand volts or amps during this time frame.

Surges generated within a facility typically account for about 80% of the overall surge activity within and electrical system. These internally generated surges are often caused by normal operation of equipment used in offices, medical facilities and factories. From something as simple as lights being turned on an off, to elevators going up and down and to welders in a production line, surge activity is ever present. A simple residential electric stove can generate 6 surges per cycle (when set on say 50%). With 60 cycles per second, and 60 seconds per minute, the electric stove can generate 21,600 surges per minute. These are small surges, but they are like a water drip in the same spot, they both deliver wear and tear to the materials within their systems. Lightning surges, as opposed to the small surges, often cause terrible damage.

In 2012, Lightning surges caused 114,740 residential insurance claims with the average claim being almost \$6,000 – nearly a \$690 million annual issue. Lightning is strong with the average surge impulse current in Central Florida reaching 30 to 50 kA.

Worldwide research has shown that lightning strokes outdoors can reach above 100 kA with very rare events going beyond 200 kA of impulse current. The IEEE has shown that a 100 kA lightning strike to a power pole nearby a home can allow 30 kA of lightning surge current to enter a facility. The remaining 70 kA of this current is dissipated by power pole arresters, multi-neutral grounding and wire length. Another fascinating fact about a lightning stroke is that they always strike the same place more than once – each lightning stroke is composed of several impulse events. So, your SPD must be strong enough to handle multiple high-level surges without being damaged by the lightning stroke event.

An SPD must be designed and constructed carefully in order to withstand the surge strength and frequency for its intended installation and to perform the mitigative actions for years to come. The installation intent is for the SPD to take away the unwanted electrical energy from electrical loads with their more sensitive electronics including circuit boards and integrated circuits. However, cumulative damage especially within integrated circuits has been documented and presents the likelihood of equipment damage without any substantial surge event like lightning occurring. A properly selected and installed SPD provides protective measures providing operational assurance of connected electrical equipment.

Professionally installed Current Technology® products provide a long-lasting, outstanding protective system against all types of surge activity alleviating unnecessary downtime and costly repairs.

NEC® standards for where SPDs must be used

2008

- Article 708.20.D
 - COPS – Critical Operations Power Systems [Critical Facilities]
 - Government Agency (Federal, state, municipal)
 - Facility Engineering
 - Facilities that if destroyed may disrupt:
 - National Security, the Economy, Public Health, or Safety
 - HVAC, Fire Alarm, Security, Communications and Signaling
 - SPD must be used for each voltage level at the facility:
 - Service entrance
 - Distribution panels

2014

- Article 700.8
 - Emergency Switchboards and Panelboards
- Article 694.10 (D)
 - A SPD shall be installed between a Wind Electric System and any loads served by the premises electrical system

2017

- Article 620.51(E)
 - Elevators, dumbwaiters, escalators, moving walks, platform lifts, and stairway chairlifts
- Article 645.18
 - COPS Information Technology Equipment
- Article 695.15
 - Fire Pumps
- Article 670.6
 - Industrial machinery with safety interlock circuits shall have surge protection

Facility-wide protection

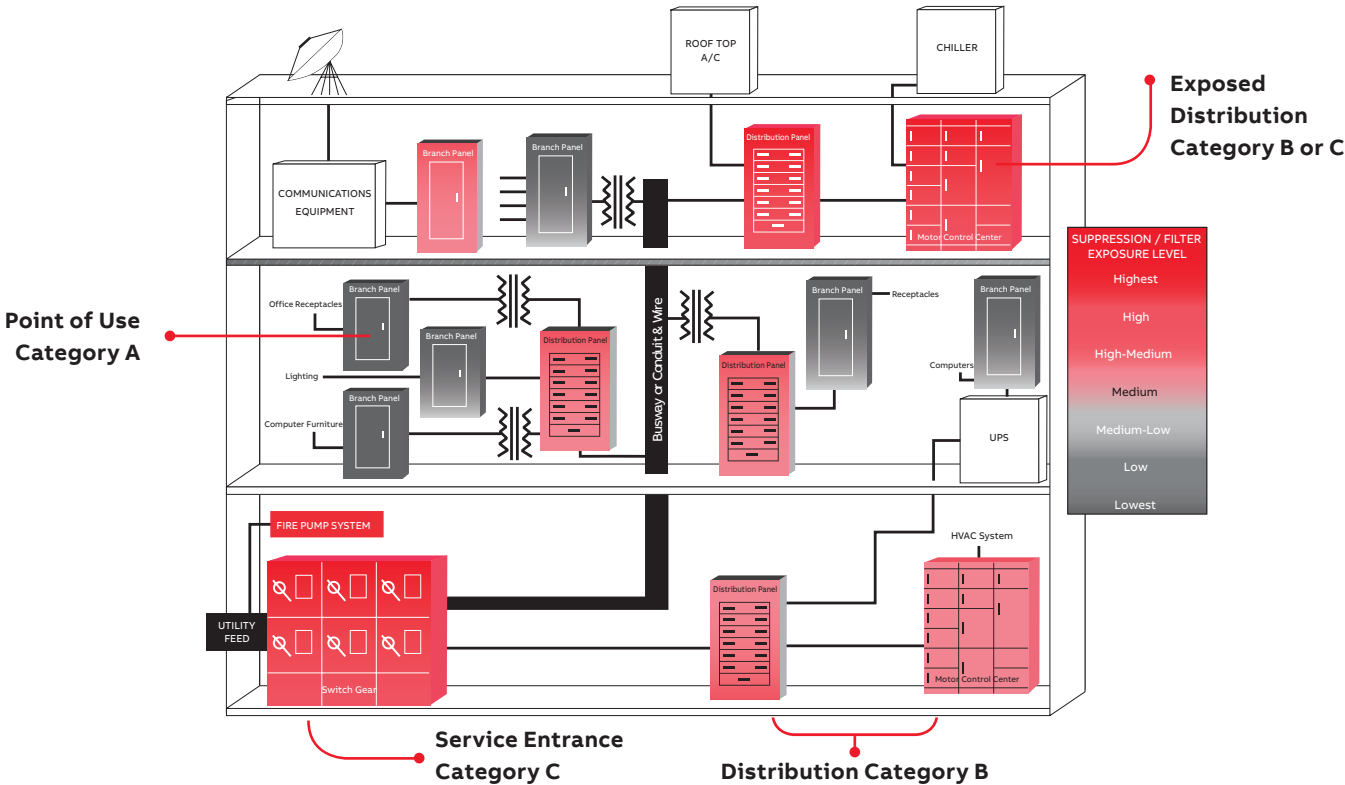
Surge current capacities: How much SPD strength do I need?

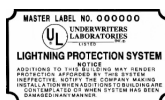
Category	High Exposure	Medium Exposure	Low Exposure
Category C	Select SL3 300–200 kA	TransGuard TG3 300–200 kA	
Category B	Select SL3 200–100 kA	Select SL3 80–50 kA	TransGuard TG3 125–80 kA
	TransGuard TG3 200–100 kA	TransGuard TG3 150–100 kA	CurrentGuard Plus 100–80 kA
	CurrentGuard Plus 3 200–100 kA	CurrentGuard Plus 3 150–100 kA	PX3 100–80 kA
Category A			Select SL3 80–50 kA
			TransGuard TG3 80–50 kA
			Current Guard 3 80–40 kA
			Current Guard 3 40kA
			PX3 80–50 kA

These recommendations are based on an average exposure, based on the Isokeraunic map of the U.S. Product recommendations may vary by geographic location or facility.

How many SPDs does my facility need?

The best approach for complete coverage is using a cascaded strategy by installing SPD devices at multiple locations throughout the electrical distribution system of a facility. When multiple SPDs are properly selected and installed at the main and secondary electrical panels in a cascaded strategy, a facility obtains a protective system against internally and externally generated surges.



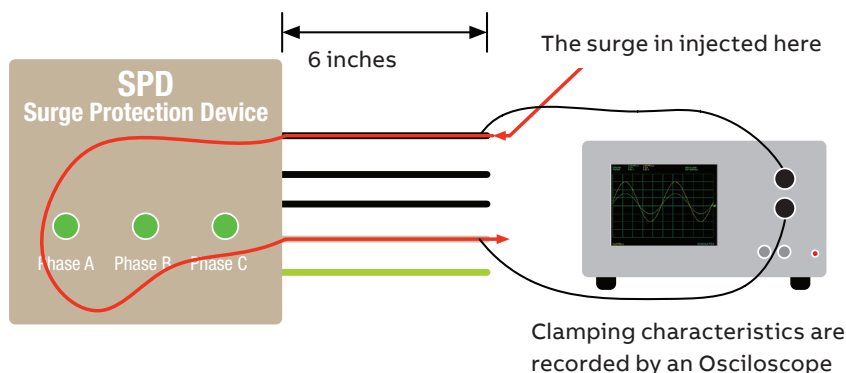


Shortest lead length

All SPD manufacturers recommend in their installation instructions to keep the lead length as short as possible, understanding the impact lead length has on the installed performance of surge devices. Per UL 1449, all surge manufacturers evaluate their products with six inches of lead length. Recognizing the critical role lead length plays on SPD performance, UL 1449 established the six-inch lead length measured from the enclosure wall for testing so that all SPD products would be evaluated based on the same test set-up criteria.

The diagram below illustrates how the test is performed.

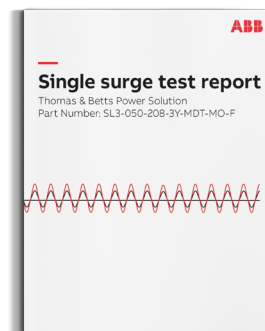
A well installed SPD will have the overall length of its conductors to be the shortest possible. This fact relates to integrated or externally installed SPDs. As parallel to the electrical bus structure, excessive overall lead length will hinder the SPDs ability to keep the surge activity at optimal levels. It is imperative that electricians understand the objective is to keep the overall lead length short. Locating the SPD in order to provide the shortest possible overall lead length is an essential evaluation parameter for the installer prior to installation regardless of integrated or external mounted SPDs.



Single Surge Rating

Since 2009 when the NEMA LS1 standard was rescinded, the SPD industry has not established a single surge current rating test protocol. The newest NEMA SPD 1.1-2019 does not include a single surge current test or even a rating method. ABB voted against this newest NEMA standard because it did not include single surge current ratings leaving this most used SPD specified rating up to vague interpretation at best. Most commonly, SPD manufacturers will use an arithmetic sum of internal surge protective component (SPC) ratings to determine their single surge current rating. For low-level single surge current ratings (10-50 kA), this is probably sufficient; however, for the more common commercial and industrial rated SPDs (65 kA and higher), the summing method cannot take into account significant electro-magnetic forces that play a role in the SPD's structural integrity. Therefore, ABB does not use the arithmetic

summing method but takes the more valid approach to test the products assuring the customer that the product contains the structural strength to withstand its stated single surge current rating. With ABB, the customer truly gets what they are paying to receive.



SL3™ Surge Protective Device Select



Select® SL3™ offers superior quality

The Select® SL3 provides outstanding performance in all power quality surge events including temporary over voltages. The Select® SL3 product line combines selenium cells with its patented Integrated Suppression Module (ISM™) to deliver the industry's best surge suppression performance. The ISM™ contains individual thermally fused and protected surge protective components, surge-rated copper busing, filtering and advanced remote communications capabilities.

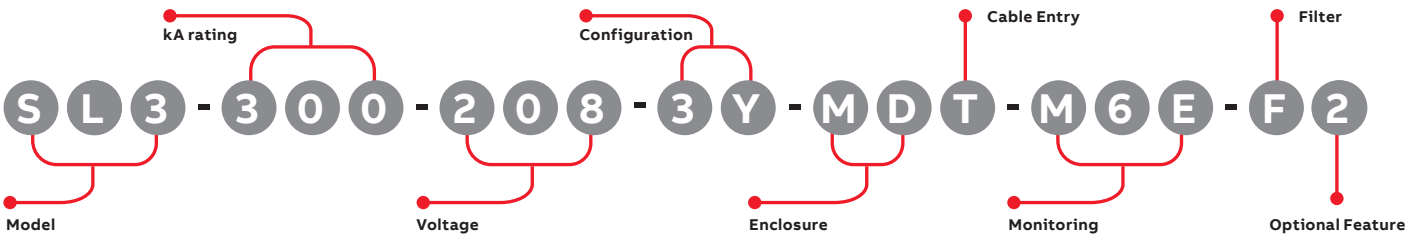
Why Selenium?

- Selenium is the only technology that protects critical loads and downstream equipment from catastrophic overvoltages.
- Selenium provides additional protection to loads providing lower clamping voltages than other systems.
- Selenium conducts small routine transients extending the ISM's life and ultimately the life expectancy of the unit.

ASSEMBLED IN

U. S. A.





kA Rating	Voltage (Consult factory for additional Voltages)		Configuration (Consult factory for additional Configurations)		Enclosure	
050	208	120/240	1G	1 Phase, Grounded	MN	Metal Without Disconnect
080	240	208Y/120	2G	2 Phase, Grounded, Split Phase	MD*	Metal With Disconnect
100	380	380Y/220	3Y	3 Phase, Grounded Wye	SN	Stainless Steel Without Disconnect
125	480	480Y/277	3H	3 Phase, Grounded, High Leg Delta	SD*	Stainless Steel With Disconnect
150	600	600Y/347	3D	3 Phase, Grounded Delta		
200						
250						
300						

*Not available on 50, 80 or 100 kA units

Cable Entry		Monitoring		Filter		Optional Features		Stand-Alone Options (To Be Ordered As Separate Items)	
T	Top Feed	M0	No local monitoring (see remote MxX stand-alone option)	F	Filter	2	Test Port	DTS	DTS-2 Diagnostic Test Set
B	Bottom Feed	M1	Smart switching tri-color/LED/ Phase, Audible Alarm & Dry Relay Contacts	N	No Filter	4	Enhanced Selenium	MxX	Remote Monitor Extension M1X through M6EX
		M2	M1 + Surge Counter					HPI	HPI Cable
		M3	Advanced Monitoring, Character Display, Modbus RTU						
		M4E	M3 + Ethernet, Modbus TCP						
		M5	Advanced Monitoring, Graphics Display, Modbus RTU						
		M6E	M5 + Ethernet, Modbus TCP						



1. ISM (Reference page 10)
2. Selenium Cells

Selenium: the optimal solution for service entrance applications

The SL3 combines selenium cells with MOVs, polypropylene capacitors and precise component geometry to deliver product life.

Selenium cells combined with MOVs provide superior bi-directional surge suppression. When coordinated as the “first line of defense” inside Select® SL3 suppression filter systems, selenium cells conduct routine, long duration surges, repetitive impulses and temporary over voltages, minimizing MOV wear and tear while protecting down stream equipment.

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The result: superior quality, maximum performance and extended product life.

TG3™ Surge Protective Device

TransGuard®



TransGuard Surge Protective Device

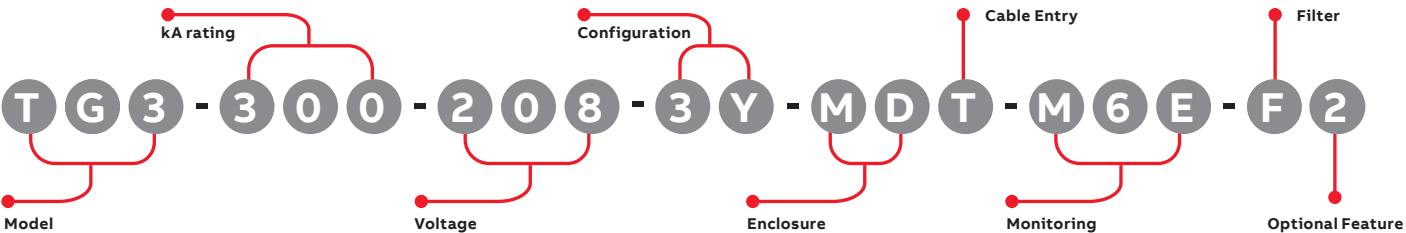
TransGuard® TG3™ suppression filter systems feature a powerful failure-free ISM™ (Integrated Suppression Module). The ISM™ contains individual thermally fused and protected surge protective components, surge-rated copper busing, surge rated EMI/RFI frequency dependent filtering and advanced remote communications capabilities. The TG3™ helps keep today's facilities from experiencing costly downtime and equipment damage caused by routine or catastrophic electrical surge activity.

Features

- Individual thermally fused and protected MOVs
- Type 2 with filtering option
- UL96A compliant
- RoHS compliant
- Single surge rated and tested
- Wide range of kA and voltage offerings
- Various local and remote monitoring Options



TG3™ Surge Protective Device
TransGuard®



kA Rating	Voltage (Consult factory for additional Voltages)		Configuration (Consult factory for additional Configurations)		Enclosure	
Available TG3™ kA Ratings	208	120/240	1G	1 Phase, Grounded	MN	Metal Without Disconnect
050						
080	240	208Y/120	2G	2 Phase, Grounded, Split Phase	MD	Metal With Disconnect
100	380	380Y/220	3Y	3 Phase, Grounded Wye	SN	Stainless Steel Without Disconnect
125	480	480Y/277	3H	3 Phase, Grounded, High Leg Delta	SD	Stainless Steel With Disconnect
150	600	600Y/347	3D	3 Phase, Grounded Delta	PN	Fiberglass Reinforced Polyester Without Disconnect
200						
250						
300						

Cable Entry		Monitoring		Filter		Optional Features		Stand-Alone Options (To Be Ordered As Separate Items)	
T	Top Feed	M0	No local monitoring (see remote MxX stand-alone option)	F	Filter	2	Test Port (not available for fiberglass reinforced polyester enclosures from 125 kA to 300 kA)	DTS	DTS-2 Diagnostic Test Set
B	Bottom Feed	M1	Smart switching tri-color/LED/ Phase, Audible Alarm & Dry Relay Contacts	N	No Filter			MxX	Remote Monitor Extension M1X through M6EX
		M2	M1 + Surge Counter				HPI	HPI Cable	
		M3	Advanced Monitoring, Character Display, Modbus RTU						
		M4E	M3 + Ethernet, Modbus TCP						
		M5	Advanced Monitoring, Graphics Display, Modbus RTU						
		M6E	M5 + Ethernet, Modbus TCP						

PX3™ Surge Protective Device

Panel Extension



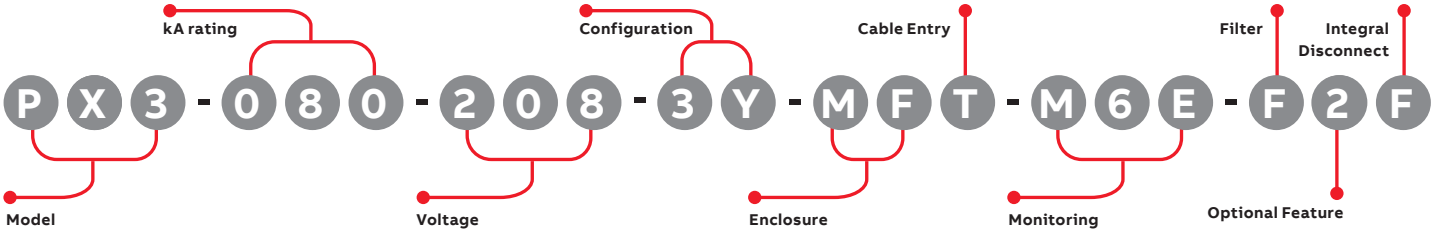
Panel Extension

The PX3™ series of SPDs are designed to be integrated with standard panelboards. The design allows for the SPD to be mounted to either the top or bottom of the panelboard. The PX3™ can be flush mount, or surface mount to match the intended installation of the panelboard. The 50 kA, 80 kA, and 100 kA units are housed in an enclosure that would only add an additional nine inches to the standard enclosure which offers a smaller wall profile over what the gear manufacturers would provide. The major benefit of the PX3™ is that it can be electrically isolated from the live circuitry of the panelboard, allowing for service or repair of the SPD without having to shut down the entire panelboard or without requiring an electrician to work on a live circuit. The standard SPD offered by most panelboard manufacturers is mounted behind the dead front of the panelboard which would require the panelboard to be completely powered down to service or repair the SPD.

Features

- Top feed or bottom feed options
- ISM mounted on the left so conduit can be run thru the SPD into the panelboard
- Flush mount or surface mount options
- Color matched to most panelboard manufacturers
- Separate access door, does not require removal of panelboard dead front to service/repair SPD
- Nine-inch extension for the 50 kA, 80 kA, and 100 kA options (smaller than extended enclosures offered by panelboard manufacturers)
- Option for an integral disconnect which frees up all breaker locations in the panelboard
- 15 year standard warranty

PX3™ Surge Protective Device
Panel Extension



kA Rating	Voltage		Configuration		Enclosure	
050	208	120/240	1G	1 Phase, Grounded	MFT	Metal, Flush Mount, Top Feed
080	240	208Y/120	2G	2 Phase, Grounded, Split Phase	MFB	Metal, Flush Mount, Bottom Feed
100	380	380Y/220	3Y	3 Phase, Grounded Wye	MST	Metal, Surface Mount, Top Feed
125*	480	480Y/277	3H	3 Phase, Grounded, High Leg Delta	MSB	Metal, Surface Mount, Bottom Feed
150*	600	600Y/347*	3D	3 Phase, Grounded Delta	SFT	Stainless, Flush Mount, Top Feed
200*					SFB	Stainless, Flush Mount, Bottom Feed
					SST	Stainless, Surface Mount, Top Feed
					SSB	Stainless, Surface Mount, Bottom Feed

*Not available on 50, 80 or 100 kA units

Monitoring		Filter		Optional Features		Disconnect Option		Stand-Alone Options (To Be Ordered As Separate Items)	
M0	No local monitoring (see remote MxX stand-alone option)	F	Filter	1	Panel Mounted In-House	D	Integral Disconnect	DTS	DTS-2 Diagnostic Test Set
M1	Smart switching tri-color/LED/ Phase, Audible Alarm & Dry Relay Contacts	N	No Filter	2	Test Port	Blank	No Disconnect	MxX	Remote Monitor Extension M1X through M6EX
M2	M1 + Surge Counter			4	Full Flush Cover			HPI	HPI Cable
M3	Advanced Monitoring, Character Display, Modbus RTU			5	GE Version				
M4E	M3 + Ethernet, Modbus TCP			6	Square D Version				
M5	Advanced Monitoring, Graphics Display, Modbus RTU			7	Siemens, Eaton-Cutler Hammer				
M6E	M5 + Ethernet, Modbus TCP								

MasterMind®

Monitoring options for SL3™, TG3™ and PX3™ products

ABB's MasterMind® monitoring system offers multiple levels of advanced, multifunction, power quality monitoring for SL3™, TG3™, and PX3™ surge suppression filter systems. The MasterMind provides real-time data on product protective status, performance and distribution system power characteristics. In addition to local visual indication and access, this critical information can now be accessed remotely through the addition of both modbus and ethernet communications options. The MasterMind® system is capable of providing time date stamps, magnitudes, and durations for many types of power quality events. End users have the ability to set alarm conditions by establishing the magnitude and duration required to trigger an alarm event. Memory capacity will allow for up to 2,000 events and 1,000 P.Q. records to be recorded before a reset is required.

% Protective Status Sensing

All MasterMind® monitoring options sense and communicate the the percentage of remaining available surge protective components for each phase. This sensing capability gives the operator clear indication either locally or remotely of the SPD's protective status and any power system anomalies that need to be addressed. Most SPD's standardize on providing LED indication for locally communicating the protective status of the surge protective device. This limited local status indication shows if the overall SPD is either functional (LED on) or not (LED off), if the LED has been off for some time, the facility has been exposed to electrical surges since the SPD expired when the LED went out. There is no record as to when the LED went out and the SPD expired thereby providing the facility operator no valuable information to diagnose potential or immediately evident equipment failures. MasterMind with its time-date stamp and multiple redundant protective components gives

the operator greater assurance of product protective performance while allowing time to repair or replace the portions of the SPD that have been compromised.

Not A Standard Surge Counter

The surge counter function of the MasterMind® exceeds the capability of typical surge counters by not only counting but categorizing surges into three useful categories. Most surge protective device counters utilize a current transformer that detects the amount of current flow through neutral or ground. When the current is high enough for the current transformer to detect it, the surge counter is incremented. Some surge protective devices that employ both surge suppression and EMI/RFI filtering can have false surge counts caused by the EMI/RFI suppression filtering function. The MasterMind® surge counter registers and records surge events in excess of 100 A to prevent false readings. Surges detected by the MasterMind® system will be categorized as low, medium, or high depending upon the surge impulse level associated with each event.

Remote Communications

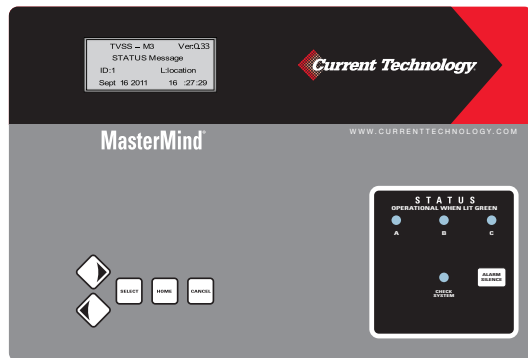
Methods for remote communications include ModBus-TCP/IP over ethernet, webserver via the ethernet connection, and modbus over RS485, or standard dry relay contacts. The ethernet and modbus options provide the end-user remote access to the critical power quality data and the protective health of the surge unit remotely. With the webserver, there is a platform for the end-user to easily view all of the available information arranged in an easily recognizable display format. The versatility of the remote connectivity available with the MasterMind® monitoring package allows for access to the surge unit from just about anywhere and at any time.



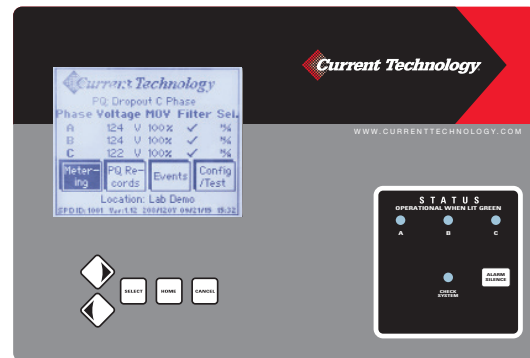
MasterMind® Monitoring Options

A full-featured monitoring option for SL3™, TG3™ and PX3™ products

—
01
M3 or M4E local display
—
02
M5 or M6E local display



01



02

M3 Monitoring

- Local display with membrane switch user interface
- Power Quality Monitor that provides time, date, magnitude and duration of the following
 - Sags
 - Swells
 - Dropouts
 - Outages
 - THD
 - Frequency
 - Volts RMS per phase
 - Surges
 - Low 100 A – 500 A
 - Med 500 A – 3000 A
 - High 3000 A+
 - Remaining surge protection percentage
- User settable alarm thresholds (magnitude and duration)
- Dry relay contacts
- Audible alarm, alarm silence
- Smart switching tri-color/LED/Phase
- ModBus RTU remote communications capability

M4E Monitoring

- M3 features plus...
- Ethernet, ModBus TCP remote communications capability
- Web Interface

M5 Monitoring

- Large local display with membrane switch user interface
- Power Quality Monitor that provides time, date, magnitude and duration of the following
 - Sags
 - Swells
 - Dropouts
 - Outages
 - THD
 - Frequency
 - Volts RMS per phase
 - Surges
 - Low 100 A – 500 A
 - Med 500 A – 3000 A
 - High 3000 A+
 - Remaining surge protection percentage
- User settable alarm thresholds (magnitude and duration)
- Dry relay contacts
- Audible alarm, alarm silence
- Smart switching tri-color/LED/Phase
- ModBus RTU remote communications capability

M6E Monitoring

- M5 features plus...
- Ethernet, ModBus TCP remote communications capability
- Web Interface

ISM™

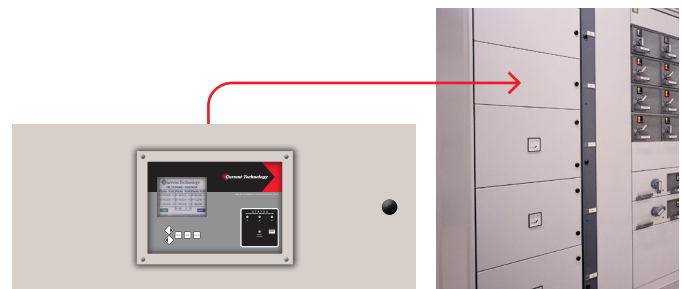
Integrated Suppression Module



The ISM™ (Integrated Suppression Module) features a surge suppression filter assembly, with individual thermally fused and protected surge protective components. Surge rated copper busging, surge rated EMI/RFI frequency dependent filtering with local and remote communication options.

- UL 1449 Listed as an Type 1 or Type 2 Open-type SPD
- Multiple redundant thermally fused and protected surge protective components offers additional protective elements during catastrophic surge events.
- Type 2 ISM's have surge rated EMI/RFI (UL 1283) filter capacitors providing protective measures against the daily barrage of low-level transient voltage and electrical noise activity.
- Solid copper bus construction – surge related energy is carried on copper bus bars, providing the strength needed for both repetitive and large single surge impulses.
- Local and remote status indication accessories are available.
- Thermoplastic polycarbonate rated UL 94V-0 housing

01
SPD Integral to Switchgear

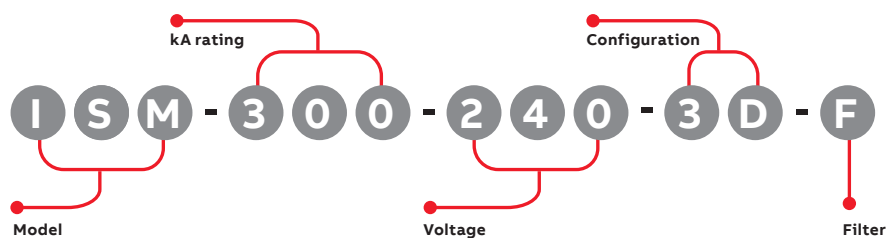


01

Example showing the ISM integrated into the switchgear and the M6EX remotely mounted on the surface of the switchgear.

ISM™

Integrated Suppression Module



kA Rating	Voltage * (Must Choose One)	Configuration (Must Choose One)
050	208 120/240	1G 1 Phase, Grounded
080	240 208Y/120	2G 2 Phase, Grounded, Split Phase
100	380 380Y/220	3Y 3 Phase, Grounded Wye
125	480 480Y/277	3H 3 Phase, Grounded, High Leg Delta
150	600 600Y/347	3D 3 Phase, Grounded Delta
200		
250		
300		

*Not all Voltage and Configurations are displayed, contact ABB for additional options.

Product Specifications

General Specifications

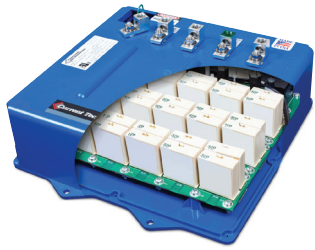
Safety Listings	C-UL-US Listed per ANSI/UL 1449 4 th Edition VZCA:E316636 and VZCA7:E316636 Type 1 or 2 – open-type SPD suitable for use in Type 1 or 2 SPD Applications; UL Type 2 has UL 1283 listed filter CSA C22.2 No. 8-M1986, C233.1-87 RoHS compliant
Protection Method	Thermally protected MOVs, capacitive filter
Product Design	Individual thermally fused and protected MOVs, and all copper, tin-plated bus
Installation Location	Indoor
Operating Environment	-40 °C to +60 °C 5% – 95% Non-Condensing Humidity
Short Circuit Current Rating (SCCR)	200 kA
Connection Method	Parallel
Protection Modes	All Modes (L-N, L-G, N-G, L-L)
Operating Frequency	47 – 63 Hz
Warranty	15 Years

Filtering Attenuation Frequencies (Per Mil-Std-220B)*

10 KHz	100 KHz	1 MHz	10 MHz	Max at 142 KHz
18.1 dB	44 dB	22.8 dB	15.3 dB	54.6 dB

Maximum Continuous Operating Voltage (MCOV)

Voltage	L-N MCOV	Voltage	L-L MCOV
120 V	150 V	240 V	300 V
277 V	320 V	480 V	552 V
347 V	420 V	600 V	690 V

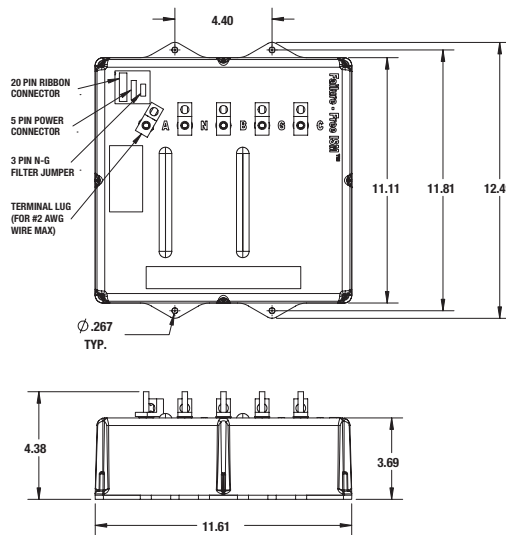


ISM™ – Integrated Suppression Module
Individual thermally fused and protected MOV component of SL3™, TG3™ and PX3™ products.

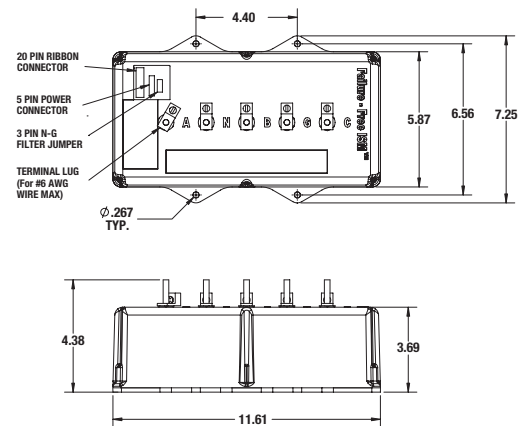
Typical Clamping Voltage Data

System Voltage	Mode	B3 Ringwave	B3/C1 Comb. Wave	C3 Comb. Wave	UL 1449 4 th Edition
240/120	L-N	300	400	550	600
208Y/120	L-G	400	400	600	600
	N-G	325	475	800	600
	L-L	425	725	900	1,000
480Y/120	L-N	500	875	1,050	1,000
	L-G	825	825	1,025	1,200
	N-G	650	875	1,200	1,000
	L-L	700	1,625	1,825	2,000

125 kA - 300 kA



50 kA - 100 kA



Voltage/Configuration Options

	1 Phase, Grounded	2 Phase, Grounded, Split Phase	3 Phase, Grounded Wye	3 Phase, Grounded High Resistance	3 Phase, Grounded, High Leg Delta	3 Phase, Grounded Delta
	1G	2G	3Y	3R	3H	3D
Voltage	Configuration					
120	X					
208	X		X	X		X
220	X	X		X		X
230	X					X
240	X	X			X	X
380		X	X	X		X
415		X	X	X		X
480		X	X	X		X
600		X	X	X		X

Not all voltage configurations are displayed, contact ABB for additional configurations.

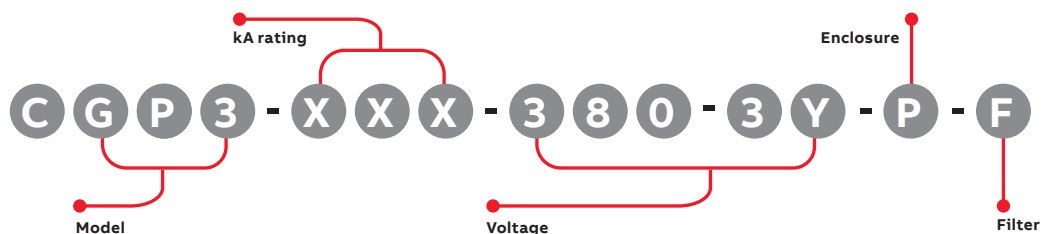
CurrentGuard® Plus series

CGP3



Features

- UL Listed 1449 4th edition for Type 1 and Type 2 SPD applications
- Thermally protected MOVs provide superior protection and continuous operation
- 200 kAIC short circuit current rating allows direct bus connection without the need for an upstream over-current protection device
- Advanced monitoring is standard with surge counter, tri-color LEDs, dry relay contacts, audible alarm, alarm silence button and fault light
- UL 1283 EMI/RF filter available as an option
- DTS-2 compatible for proactive testing
- Compact and lightweight design
- 15-year standard warranty



kA rating	Suffix
60 kA per mode, 120 kA per phase	060
80 kA per mode, 160 per phase	080
100 kA per mode, 200 per phase	100
125 kA per mode, 250 per phase	125
150 kA per mode, 300 per phase	150
200 kA per mode, 400 per phase	200

Enclosure option	Suffix
Polycarbonate, pre-wired	P
Powder-coated metal NEMA 4, pre-wired	M
Stainless steel NEMA 4X, pre-wired	S
Polycarbonate with termination lugs	PL
Powder-coated metal NEMA 4 with termination lugs	ML
Stainless steel NEMA 4X with termination lugs	SL

* 125, 150, 200 kA are only available with PL, ML, SL

Filter option	Suffix
8 UF filter *	F
No filter	N

* Standard filter

Voltage (must choose one)	Suffix
120 V, 1-phase, 2-wire + ground	120-1G
127 V, 1-phase, 2-wire + ground	127-1G
220 V, 1-phase, 2-wire + ground	220-1G
230 V, 1-phase, 2-wire + ground	230-1G
240 V, 1-phase, 2-wire + ground	240-1G
277 V, 1-phase, 2-wire + ground	277-1G
347 V, 1-phase, 2-wire + ground	347-1G
480 V, 1-phase, 2-wire + ground	480-1G
240/120 V, 2-phase, 3-wire + ground	240-2G
480/240 V, 2-phase, 3-wire + ground	480-2G
600/347 V, 2-phase, 3-wire + ground	600-2G
240Δ / 120 V, 3-phase high-leg, 4-wire + ground	240-3H
208Y/120 V, 3-phase Wye, 4-wire + ground	208-3Y
380Y/220 V, 3-phase Wye, 4-wire + ground	380-3Y
400Y/230 V, 3-phase Wye, 4-wire + ground	400-3Y
415Y/240 V, 3-phase Wye, 4-wire + ground	415-3Y
480Y/277 V, 3-phase Wye, 4-wire + ground	480-3Y
600Y/347 V, 3-phase Wye, 4-wire + ground	600-3Y
208 V, 3-phase Delta, 3-wire + ground	208-3D
240 V, 3-phase Delta, 3-wire + ground	240-3D
380 V, 3-Phase Delta, 3-wire + ground	380-3D
415 V, 3-phase Delta, 3-wire + ground	415-3D
480 V, 3-phase Delta, 3-wire + ground	480-3D
600 V, 3-phase Delta, 3-wire + ground	600-3D

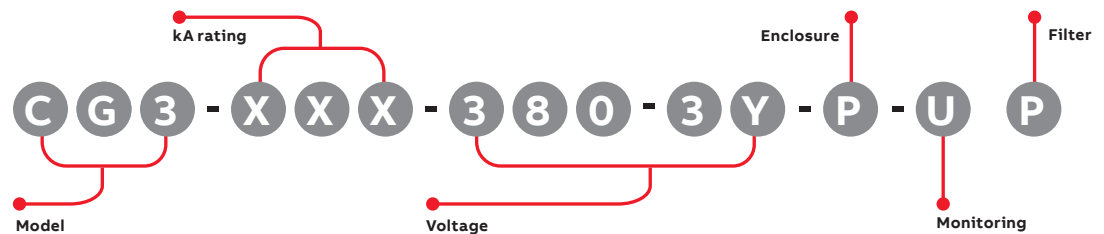
CurrentGuard® series

CG3



Features

- UL Listed 1449 4th edition for Type 1 and Type 2 SPD applications
- Thermally protected MOVs provide superior protection and continuous operation
- 200 kAIC short circuit current rating allows direct bus connection without the need for an upstream over-current protection device
- UL 1283 EMI/RF filter available as an option
- DTS-2 compatible for proactive testing
- Compact and lightweight design
- 10-year standard warranty



kA rating	Suffix
40 kA per mode, 80 kA per phase	040
60 kA per mode, 120 kA per phase	060
80 kA per mode, 160 per phase	080
100 kA per mode, 200 per phase	100
125 kA per mode, 250 per phase	125
150 kA per mode, 300 per phase	150
200 kA per mode, 400 per phase	200

Enclosure option	Suffix
Polycarbonate, pre-wired*	P
Powder-coated metal NEMA 4, pre-wired*	M
Stainless steel NEMA 4X, pre-wired*	S
Polycarbonate with termination lugs**	PL
Powder-coated metal NEMA 4 with termination lugs**	ML
Stainless steel NEMA 4X with termination lugs**	SL

*40 kA only available P,M,S.

** 125, 150, 200 kA only available with PL, ML, SL

Monitoring option (must choose one)	Suffix
Status indicator LED lights (one per phase)	B
Status indicator LED lights (one per phase), dry relay contacts, audible alarm with silence button, fault light	U

Filter option	Suffix
4 UF filter *	F
No filter	N

* Standard filter

Voltage (must choose one)	Suffix
120 V, 1-phase, 2-wire + ground	120-1G
127 V, 1-phase, 2-wire + ground	127-1G
220 V, 1-phase, 2-wire + ground	220-1G
230 V, 1-phase, 2-wire + ground	230-1G
240 V, 1-phase, 2-wire + ground	240-1G
277 V, 1-phase, 2-wire + ground	277-1G
347 V, 1-phase, 2-wire + ground	347-1G
480 V, 1-phase, 2-wire + ground	480-1G
240/120 V, 2-phase, 3-wire + ground	240-2G
480/240 V, 2-phase, 3-wire + ground	480-2G
600/347 V, 2-phase, 3-wire + ground	600-2G
240Δ /120 V, 3-phase high-leg, 4-wire + ground	240-3H
208Y/120 V, 3-phase Wye, 4-wire + ground	208-3Y
380Y/220 V, 3-phase Wye, 4-wire + ground	380-3Y
400Y/230 V, 3-phase Wye, 4-wire + ground	400-3Y
415Y/240 V, 3-phase Wye, 4-wire + ground	415-3Y
480Y/277 V, 3-phase Wye, 4-wire + ground	480-3Y
600Y/347 V, 3-phase Wye, 4-wire + ground	600-3Y
208 V, 3-phase Delta, 3-wire + ground	208-3D
240 V, 3-phase Delta, 3-wire + ground	240-3D
380 V, 3-Phase Delta, 3-wire + ground	380-3D
415 V, 3-phase Delta, 3-wire + ground	415-3D
480 V, 3-phase Delta, 3-wire + ground	480-3D
600 V, 3-phase Delta, 3-wire + ground	600-3D

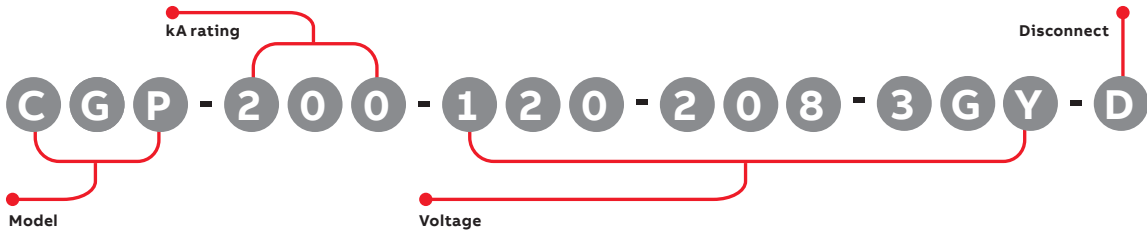
Stand-alone option (must be ordered as separate item)	Item no.
DTS-2 diagnostic test set	DTS

CurrentGuard™ series

CurrentGuard™ Plus



- Features**
- UL 1449 4th Edition Type 1 SPD (Type 2 with UL 1283 filter)
 - Individually fused MOVs
 - 200 kA short circuit current rating (SCCR) allows direct bus connection without the need of an upstream overcurrent protection device (Type 1 SPD only)
 - Includes best-in-class UL 1283 EMI/RFI frequency dependent filter
 - All modes of protection (L-N, L-G, N-G and L-L)
 - Surge event counter – standard
 - DTS-2 compatible for proactive field testing
 - NEMA 4 steel enclosure
 - 15-Year standard product warranty



kA Rating	Voltage *		Configuration*		Standard Monitoring Features	Available Option	Stand-Alone Option (To be ordered as separate items)
060	208	120/240	G	1-Phase, 2-Wire Plus Ground	Status Indicator Lights (one per phase)	S Stainless Steel Enclosure	D External disconnect
080	240	208Y/120	2G	2-Phase, 3-Wire Plus Ground	Service Indicator Light		
100	380	380Y/220	3GY	3-Phase Wye, 4-Wire Plus Ground	Form C Contacts (NO/NC)		
120	480	480Y/277	3GHD	3-Phase High-Leg Delta, 4-Wire Plus Ground	Audible Alarm with Silence Button		
150	600	600Y/347	3DG	3-Phase Delta, 3-Wire Plus Ground	Surge Counter		
200							

*Consult factory for additional voltage configurations

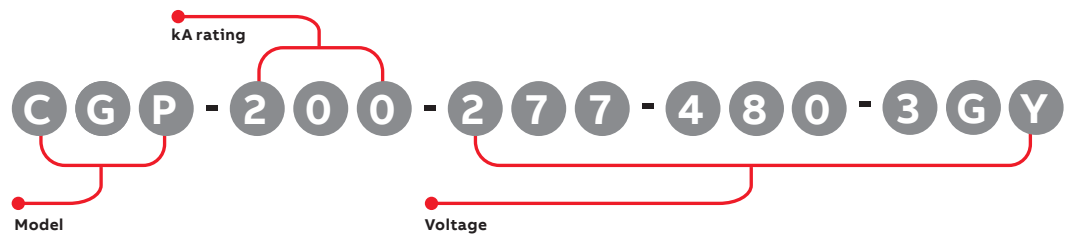
CurrentGuard™ series

CurrentGuard™



Features

- UL 1449 4th Edition Type 1 SPD
- Each mode protected by surge rated overcurrent fuse
- 200 kA short circuit current rating allows direct bus connection without the need of an upstream overcurrent protection device (Type 1 SPD only)
- UL 1283 EMI/RFI filter (Type 2 SPD with UL 1283 filter)
- All modes of protection (L-N, L-G, N-G and L-L)
- DTS-2 compatible for field testing
- NEMA 4 steel enclosure
- 10-Year standard product warranty



kA Rating	Voltage *		Configuration*		Standard Monitoring Features	Available Option	Stand-Alone Option (To be ordered as separte items)
040	208	120/240	G	1-Phase, 2-Wire Plus Ground	Status Indicator Lights (one per phase)	S Stainless Steel Enclosure	D External disconnect
060	240	208Y/120	2G	2-Phase, 3-Wire Plus Ground	Service Indicator Light		
080	380	380Y/220	3GY	3-Phase Wye, 4-Wire Plus Ground	Form C Contacts (NO/NC)		
100	480	480Y/277	3GHD	3-Phase High-Leg Delta, 4-Wire Plus Ground	Audible Alarm with Silence Button		
120	600	600Y/347	3DG	3-Phase Delta, 3-Wire Plus Ground			
150							
200							

*Consult factory for additional voltage configurations

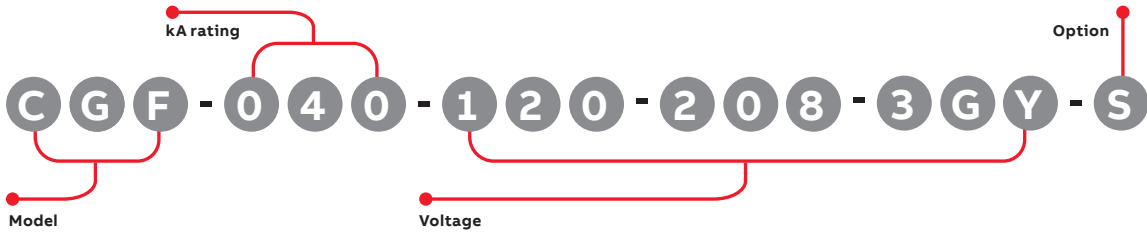
CurrentGuard™ series

CurrentGuard™ Flush Mount



Features

- UL 1449 4th Edition Type 1 SPD (without UL 1283 filter)
- Each mode protected by surge rated overcurrent fuse
- 200 kA short circuit current rating allows direct bus connection without the need of an upstream overcurrent protection device (Type 1 SPD only)
- Compact design to allow for flush mount installation
- Flush Mount plate available
- UL 1283 EMI/RFI filter in Type 2 SPD with filter option
- All modes of protection (L-N, L-G, N-G and L-L)
- DTS-2 compatible for field testing
- NEMA 4 steel enclosure
- 10-Year standard product warranty



kA Rating	Voltage*		Configuration*		Available Option		Standard Monitoring Features
040	208	120/240	G	1-Phase, 2-Wire Plus Ground	S	Stainless Steel Enclosure	Status Indicator Lights (one per phase)
060	240	208Y/120	2G	2-Phase, 3-Wire Plus Ground			Service Indicator Light
080	380	380Y/220	3GY	3-Phase Wye, 4-Wire Plus Ground			Form C Contacts (NO/NC)
	480	480Y/277	3GHD	3-Phase High-Leg Delta, 4-Wire Plus Ground			
	600	600Y/347	3DG	3-Phase Delta, 3-Wire Plus Ground			

*Consult factory for additional voltage configurations

LoadGuard™

Series-Connected Suppression Filter System



Series-connected Suppression Filter System

The LoadGuard™ MSU (Modular Series Unit) is engineered for hard-wired installation within or adjacent to electrical loads such as outdoor lighting, robotics, process automation systems, motors, HVAC systems, pumps, heaters, programmable logic controllers and other point-of-use applications.

Compact and powerful, the LoadGuard™ MSU protects these and other individual components from damaging electrical transients, high-frequency noise and high-energy disturbances. LoadGuard™ provides 50 kA of surge protection for loads up to 24 A.

Features

- Recognized to UL 1449 4th Edition as a Type 2 compliant assembly
- Series-connected design
- Rugged, nonmetallic enclosure
- Component-level fusing
- High frequency noise filtering
- Compact footprint/easy installation
- Status indicator light

Surge Current Protection

Parallel MOV Arrays: LoadGuard™ products employ MOVs in parallel arrays placed at the input and output terminals to protect critical loads from high-energy transient damage. MSU surge current capacity is 50 kA per mode.



kA/mode	Voltage*	Configuration*	Load Current	Modes of Protection
50 kA = 050	208 120/240	1G 1 Phase, Grounded	24 Amp	3 or 6
	240 208Y/120	2G 2 Phase, Grounded, Split Phase		
	380 380Y/220			
	480 480Y/277			

*Consult factory for additional voltage configurations

DTS-2

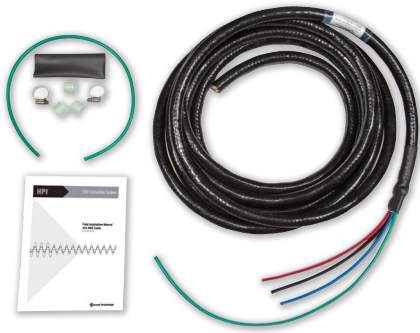
The DTS-2 tester provides clamping performance values for SPDs. Every product is evaluated with this tester at the factory to establish its benchmark of performance. The portable DTS-2 tester can be deployed in the field to test units that have been in service for the remaining useful life of an installed product by comparing its latest clamping values against its benchmark values. The end user is given the opportunity to repair or replace the SPD before it fails, rather than waiting for it to fail and being left unprotected.



Diagnostic Test Set

HPI™

SPD Connection System



Wire Gauge	Nominal Length	
	Factory Terminated Cable*	Unterminated Cable
6 AWG	5 – 30 ft.	10, 25, 50, 100 feet only
10 AWG	5 – 30 ft.	10, 25, 50, 100 feet only

*Lengths in 5 ft. increments (Factory Terminated Cable pictured above)

- Benefits
- Maximizes SPD unit performance
 - Increases installation location options
 - Improves installation quality
 - Offered either pre-terminated at the SPD end or unterminated at both ends

High-Performance Interconnect System

Installing SPD units using standard off-the-shelf cable can diminish the SPD's ability to perform as intended unless the cable length is kept short. An SPD's cable/wire length is represented as an electrical parameter known as impedance. The longer the cable/wire, the higher the impedance. The more impedance in the overall SPD installation, the SPD's ability to respond to surge will be reduced. This reduction results in higher "clamping voltage" also known as let-through voltage. ABB's High Performance Interconnect (HPI™) SPD Connection System provides the lowest possible impedance connection which provides the best environment for SPD performance.

The HPI™ – SPD Connection System has only 25% of the typical impedance of regular cable allowing the installer to increase the interconnection cable length by up to four times without significantly degrading the SPD's intended performance.

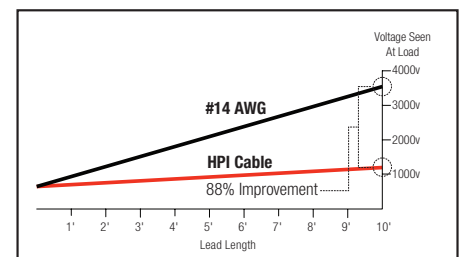
Using the HPI™ – SPD Connection System for the SPD installation, adds more location flexibility within the electrical room providing more installation possibilities without adversely influencing the SPD's ability to react to surge activity.

What is the HPI™ SPD Connection System?

The HPI™ – SPD Connection System is a dual shielded, triple-insulated multi-core power conductor specially constructed to minimize interconnection impedance for SPD installations. The HPI™ – SPD Connection System is a UL approved connection means for use with Current Technology SPD products only.

Six Inch Lead Length Test Criteria

Underwriter's Laboratories tests SPDs with only six inches of lead length outside of the enclosure per the test criteria outlined in ANSI/UL 1449. Six inches of lead length does not represent the actual lead length required for installing an SPD. ABB's SPD test laboratory applied a 20 kV/10 kA surge to a 14, 10, and 6 AWG wire measuring the voltage drop across a ten-foot section of each wire. The graph shows the impact ten feet of 14 AWG wire would have to the installed performance of the SPD. The SPD, as tested with only six inches of lead length may drop the surge down to 700 V, but with ten feet of 14 AWG wire, its installed performance is now 3,350 V. The HPI cable was tested with the same 20 kV/10 kA surge with significant improvement. With ten feet of HPI cable the installed performance of the same SPD could be 1,150 V. This represents an 88% improvement.



— Lead Length Test

Masterplan® facility-wide protection

Increased warranty

Standard Warranty

ABB warrants products to meet all applicable industry standards and specifications and be free from defects in materials and/or workmanship. Should there be any failure of the product to meet these requirements, ABB shall either repair or replace the defective product.

ABB shall have no liability under this warranty for any problems or defects directly or indirectly caused by the misuse of the product, alteration of the product, accidents, or improper installation, application, operation or repair of the product.

ABB's standard product warranty periods are provided below.

MasterPLAN® Warranty Upgrade

ABB also offers the upgraded warranty MasterPLAN®. If a Select® SL3–200 kA or greater unit is used on the service entrance of a facility, all ABB products installed downstream of that service entrance will have their respective warranty periods upgraded to 20 years. In order to qualify for the MasterPLAN® warranty upgrade, all ABB products must be purchased at the same time, installed at the same time, and be installed electrically downstream of the service entrance Select® SL3 unit.

Worldwide Sales and Service

Our customers are supported by our worldwide network of factory-trained representatives serving the protection needs of commercial, industrial, communications, government, military, education, retail, healthcare and transportation industries. Engineers and end-users with zero tolerance for downtime, data corruption or equipment damage resulting from routine or catastrophic electrical disturbances have made ABB the #1 name in surge suppression.

Signature MasterPLAN®
20-Year Warranty
Facility-Wide Protection



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