

Internal Modular SPDs

Square D Internally Mounted Surge Protective Devices

Square D™ brand Surgellogic™ internal modular Surge Protective Devices (SPDs) deliver specification grade performance for service entrance or critical branch panel applications. This multi-phase system provides suppression for all critical modes inside electrical equipment and shorter lead lengths with superior SPD performance.



 **SQUARE D**
by Schneider Electric

Internal Modular SPDs Features



Internal panel modular Surge Protective Devices (SPDs) provide superior design and service life for a wide variety of commercial, industrial, or institutional applications. Square D brand Surgelogic SPDs offer first-rate performance and surge suppression for demanding service entrance applications or as part of a suppression network. The robust modular construction reduces possible down time and maintenance costs.

Superior Performance

Surgelogic SPDs utilize a high-energy suppression circuit that provides 10 modes of suppression from 100,000 to 480,000 peak Amps of surge current rating per phase. Modular SPDs feature circuitry that provides not only transient surge suppression, but also noise filtration.

Installation

Integral solutions come professionally pre-wired into electrical gear and panels from the factory insuring short lead lengths and high performance. All units are tested at the factory before delivery to their final destination, maintaining Square D brand's high standard of quality. There is also no need for additional enclosures or installation labor costs.

Warranty

Surgelogic internal modular SPDs have a 10-year warranty.

FEATURES	ADVANTAGES	BENEFITS
Integral to electrical gear and panels	SPDs are professionally installed inside electrical gear and panels	Delivers high levels of SPD performance and saves on enclosure and installation expenses
100,000 to 480,000 Amp Capacity (depending on model)	Longer service life and suppression against high-energy lightning strikes	High performance surge suppression even in severe electrical conditions
EMI/RFI Noise Rejection	Increased transient suppression	Improves surge suppression to the equipment
Advanced Diagnostics	Allows for visual indication/testing of the suppressor's functionality	Provides immediate response if suppressor is damaged
Suppression Status Alarms	Allows multiple methods of alarm notification	Provides immediate notification through audible, visual and remote signaling if reduced suppression occurs
Coordinated Fuse Technology	Coordinated fusing allows disconnection methods for thermal and high-current events	Provides premium surge suppression while managing both thermal and high-current end-of-life events

Internal Modular SPDs

Features (continued)

NF Panelboard



NF panelboards are primarily used for lighting and power distribution up to 600 Amps. These panelboards follow current National Electric Code changes, provide electrical capacity up to 84 circuit breakers, and will allow up to 72 circuits with surge protection installed. NF panels are designed with 200% rated copper neutrals for non-linear loads. (NF max volts 600/347 Vac)

SPD available surge current ratings: 100, 120, 160, 200, 240 kA

QED Switchboard



QED Switchboards are made for use as service entrance equipment or as distribution centers in commercial, institutional, and industrial applications. QEDs are extremely versatile providing front accessible load connections with multiple breaker and fusible switch options. QEDs enable easy access to power monitoring equipment such as products from our Square D brand PowerLogic™ brand. (Max volts 600 Vac, max current 4,000 Amps)

SPD available surge current ratings: 120, 160, 240, 320, 480 kA

Internal SPDs



Performance

Surge Current Rating per Phase	Up to 480kA
Short Circuit Current Rating	200kA
Modes of Protection	6, 10
Fusing	Individually fused MOVs
Thermal Fusing	Yes
Overcurrent Fusing	Yes
Sine Wave Tracking	Yes
EMI/RFI Filtering	Up to -42 dB
Operating Frequency	50/60 Hz

Mechanical Description

Connection Method	#10-#2 AWG Terminals
Mounting Method/Circuit Type	Parallel
Operating Altitude	Sea Level-12,000' (3,658 m)
Storage Temperature	-40° F (-40° C) to 149° F (65° C)
Operating Temp.	-4° F (-20° C) to 149° F (65° C)
LCD Operating Temp.	32° F (0° C) to 149° F (65° C)
Operating Humidity	0 to 95% non-condensing

Diagnostics

Push to test diagnostic switches, red and green status LEDs per phase (internal redundant status LEDs are green), module status LEDs per mode, dry contacts, audible alarm with disable switch, surge counter.

Options

- Remote monitor

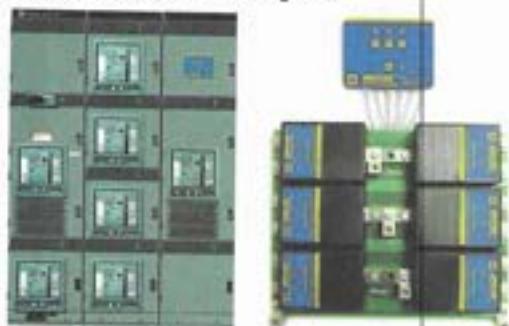
Safety and Performance

Type 2 SPD: cURus per UL 1449 4th Edition and CAN/CSA C22.2 No. 8-M1986.
Complies with UL 96A 12th Edition Master Label requirements for Lightning Protection Systems.

Type 1 SPD: URus per UL 1449 4th Edition and CAN/CSA C22.2 No. 8-M1986.
Complies with UL 96A 12th Edition Master Label requirements for Lightning Protection Systems.

Internal Modular SPDs Features (continued)

Power-Zone Switchgear



The Square D brand Power-Zone™ 4 low voltage metal-enclosed drawout switchgear is designed to provide superior electrical distribution and power quality management. Power-Zone 4 switchgear is designed to deliver maximum uptime, system selectivity, and ease of maintenance. All of these features are packed into one of the smallest footprints available for low voltage drawout switchgear. (Max volts 600 Vac, max current 5,000 Amps)

SPD available surge current ratings:
120, 160, 240, 320, and 480 kA

Motor Control Center



The feature-rich modular design minimizes space and maximizes ease-of-use and accessibility of motor control devices. The Model 6 MCC has integrated industry-leading components into the smallest and one of the most flexible footprints possible to meet industry's power, control, and automation needs. (Max volts 480 Vac, max current 2,500 Amps)

SPD available surge current ratings: 120, 160, 240 kA

QMB Panelboard



When specifications or electrical codes call for a fusible panelboard, the QMB family offers superior performance and time-saving installation features. The reliability of the QMB panelboard makes it the product of choice for large commercial and industrial applications. (Max volts 600 Vac, max current 400 Amps)

SPD available surge current ratings: 120, 160, 240 kA

Busway



Square D brand I-Line™ Busway is engineered to replace old cable and conduit systems. This next-generation power distribution system is loaded with exceptional features, including a 200% neutral and a 100% isolated ground path. (Max volts 600 Vac, max current 5,000 Amps)

SPD available surge current ratings: 120, 160, 240 kA

Internal Modular SPDs Specifications

DB

WYE Configured SPD Specifications

Voltage	Surge Current per Phase	Modes of Protection	Configuration	Model Number	MCOV	I _n	VPR				
							L-N	L-G	L-L	N-G	
120/240V	120kA	6	1 Ø, 3-wire+G	TVS11MA12	150V	20kA	700V	800V	1200V	700V	
208Y/120V ■	120kA	10	3 Ø, Wye, 4-wire+G	TVS21MA12	150V	20kA	700V	800V	1200V	700V	
480Y/277V ▲	120kA	10	3 Ø, Wye, 4-wire+G	TVS41MA12	320V	20kA	1200V	1200V	2000V	1200V	
600Y/347V	120kA	10	3 Ø, Wye, 4-wire+G	TVS81MA12	420V	20kA	1500V	1500V	2500V	1500V	
120/240V	160kA	6	1 Ø, 3-wire+G	TVS11MA16	150V	20kA	700V	800V	1200V	700V	
208Y/120V ■	160kA	10	3 Ø, Wye, 4-wire+G	TVS21MA16	150V	20kA	700V	800V	1200V	700V	
480Y/277V ▲	160kA	10	3 Ø, Wye, 4-wire+G	TVS41MA16	320V	20kA	1200V	1200V	2000V	1200V	
600Y/347V	160kA	10	3 Ø, Wye, 4-wire+G	TVS81MA16	420V	20kA	1500V	1500V	2500V	1500V	
120/240V	240kA	6	1 Ø, 3-wire+G	TVS11MA24	150V	20kA	700V	800V	1200V	700V	
208Y/120V ■	240kA	10	3 Ø, Wye, 4-wire+G	TVS21MA24	150V	20kA	700V	800V	1200V	700V	
480Y/277V ▲	240kA	10	3 Ø, Wye, 4-wire+G	TVS41MA24	320V	20kA	1200V	1200V	2000V	1200V	
600Y/347V	240kA	10	3 Ø, Wye, 4-wire+G	TVS81MA24	420V	20kA	1500V	1500V	2500V	1500V	
120/240V	320kA	6	1 Ø, 3-wire+G	TVS11MA32	150V	20kA	700V	800V	1200V	700V	
208Y/120V ■	320kA	10	3 Ø, Wye, 4-wire+G	TVS21MA32	150V	20kA	700V	800V	1200V	700V	
480Y/277V ▲	320kA	10	3 Ø, Wye, 4-wire+G	TVS41MA32	320V	20kA	1200V	1200V	2000V	1200V	
600Y/347V	320kA	10	3 Ø, Wye, 4-wire+G	TVS81MA32	420V	20kA	1500V	1500V	2500V	1500V	
120/240V	480kA	6	1 Ø, 3-wire+G	TVS11MA48	150V	20kA	700V	800V	1200V	700V	
208Y/120V ■	480kA	10	3 Ø, Wye, 4-wire+G	TVS21MA48	150V	20kA	700V	800V	1200V	700V	
480Y/277V ▲	480kA	10	3 Ø, Wye, 4-wire+G	TVS41MA48	320V	20kA	1200V	1200V	2000V	1200V	
600Y/347V	480kA	10	3 Ø, Wye, 4-wire+G	TVS81MA48	420V	20kA	1500V	1500V	2500V	1500V	

■ 208Y/120 series also applies to the following voltage 220Y/127

▲ 480Y/277 series also applies to the following voltages 380Y/220, 400Y/230, and 415Y/240

High-Leg Delta (HLD) Configured SPD Specifications

Voltage	Surge Current per Phase	Modes of Protection	Configuration	Model Number	MCOV	I _n	VPR						
							L-N	H-N	L-G	H-G	L-L	H-L	N-G
240/120HLD	120kA	10	3 Ø, HLD*, 4-wire+G	TVS31MA12	150V	20kA	700V	1200V	800V	1200V	1200V	1500V	700V
240/120HLD	160kA	10	3 Ø, HLD*, 4-wire+G	TVS31MA16	150V	20kA	700V	1200V	800V	1200V	1200V	1500V	700V
240/120HLD	240kA	10	3 Ø, HLD*, 4-wire+G	TVS31MA24	150V	20kA	700V	1200V	800V	1200V	1200V	1500V	700V
240/120HLD	320kA	10	3 Ø, HLD*, 4-wire+G	TVS31MA32	150V	20kA	700V	1200V	800V	1200V	1200V	1500V	700V
240/120HLD	480kA	10	3 Ø, HLD*, 4-wire+G	TVS31MA48	150V	20kA	700V	1200V	800V	1200V	1200V	1500V	700V

Model numbers not recognized as line items in Schneider Electric ordering system until a suffix code is applied

TYPE 2 WYE AND HLD MODEL NUMBER SUFFIX CODES

- P NQ/NF panelboard (Not available in 320 and 480 kA)
- B QED switchboard
- B2 QED series 2 switchboard
- Z PZ3/PZ4 switchgear (Not available in TVS1 or TVS3)
- Q QMB panelboard (Not available in 320 and 480 kA)
- M Motor Control Center (Not available in 320 and 480 kA)

TYPE 1 WYE AND HLD MODEL NUMBER SUFFIX CODES

- P1 NQ/NF panelboard (Not available in 320 and 480 kA)
- B1 QED switchboard
- B21 QED series 2 switchboard
- Z1 PZ3/PZ4 switchgear (Not available in TVS1 or TVS3)
- Q1 QMB panelboard (Not available in 320 and 480 kA)
- M1 Motor Control Center (Not available in 320 and 480 kA)

Internal Modular SPDs Specifications (continued)

Delta/High-Resistance Ground (HRG) Configured SPD Specifications

Voltage	Surge Current per Phase	Modes of Protection	Configuration	Model Number	MCOV	I _n	VPR			
							L-N	L-G	L-L	N-G
240V DELTA	100kA	6	3 Ø, Delta, 3-wire+G	TVS81MA10_	300V	20kA	N/A	1200V	1200V	N/A
480V DELTA ■	100kA	6	3 Ø, Delta, 3-wire+G	TVS51MA10_	640V	20kA	N/A	1800V	2000V	N/A
600V DELTA ▲	100kA	6	3 Ø, Delta, 3-wire+G	TVS91MA10_	700V	10kA	N/A	2500V	2500V	N/A
240V DELTA	120kA	6	3 Ø, Delta, 3-wire+G	TVS81MA12_	300V	20kA	N/A	1200V	1200V	N/A
480V DELTA ■	120kA	6	3 Ø, Delta, 3-wire+G	TVS51MA12_	640V	20kA	N/A	1800V	2000V	N/A
600V DELTA ▲	120kA	6	3 Ø, Delta, 3-wire+G	TVS91MA12_	700V	10kA	N/A	2500V	2500V	N/A
240V DELTA	160kA	6	3 Ø, Delta, 3-wire+G	TVS81MA16_	300V	20kA	N/A	1200V	1200V	N/A
480V DELTA ■	160kA	6	3 Ø, Delta, 3-wire+G	TVS51MA16_	640V	20kA	N/A	1800V	2000V	N/A
600V DELTA ▲	160kA	6	3 Ø, Delta, 3-wire+G	TVS91MA16_	700V	10kA	N/A	2500V	2500V	N/A
600V DELTA ▲	180kA	6	3 Ø, Delta, 3-wire+G	TVS91MA18_	700V	10kA	N/A	2500V	2500V	N/A
240V DELTA	200kA	6	3 Ø, Delta, 3-wire+G	TVS81MA20_	300V	20kA	N/A	1200V	1200V	N/A
480V DELTA ■	200kA	6	3 Ø, Delta, 3-wire+G	TVS51MA20_	640V	20kA	N/A	1800V	2000V	N/A
600V DELTA ▲	200kA	6	3 Ø, Delta, 3-wire+G	TVS91MA20_*	700V	10kA	N/A	2500V	2500V	N/A
240V DELTA	240kA	6	3 Ø, Delta, 3-wire+G	TVS81MA24_	300V	20kA	N/A	1200V	1200V	N/A
480V DELTA ■	240kA	6	3 Ø, Delta, 3-wire+G	TVS51MA24_	640V	20kA	N/A	1800V	2000V	N/A
600V DELTA ▲	240kA	6	3 Ø, Delta, 3-wire+G	TVS91MA24_*	700V	10kA	N/A	2500V	2500V	N/A
240V DELTA	320kA	6	3 Ø, Delta, 3-wire+G	TVS81MA32_	300V	20kA	N/A	1200V	1200V	N/A
480V DELTA ■	320kA	6	3 Ø, Delta, 3-wire+G	TVS51MA32_	640V	20kA	N/A	1800V	2000V	N/A
600V DELTA ▲	320kA	6	3 Ø, Delta, 3-wire+G	TVS91MA32_	700V	10kA	N/A	2500V	2500V	N/A
240V DELTA	480kA	6	3 Ø, Delta, 3-wire+G	TVS81MA48_	300V	20kA	N/A	1200V	1200V	N/A
480V DELTA ■	480kA	6	3 Ø, Delta, 3-wire+G	TVS51MA48_	640V	20kA	N/A	1800V	2000V	N/A

■ 480V Delta series also applies to the following voltage 480Y/277V HRG

▲ 600V Delta series also applies to the following voltage 600Y/347V HRG

* Note: 200kA and 240kA in 600V DELTA are 6 module systems and will require more installation room

Model numbers not recognized as line items in Schneider Electric ordering system until a suffix code is applied

TYPE 2 DELTA MODEL NUMBER SUFFIX CODES

- B QED switchboard
- B2 QED series 2 switchboard
- M Motor Control Center (Not available in 320 and 480 kA for all voltages, 600V DELTA not available also in 200 and 240 kA)
- Z PZ3/PZ4 switchgear (Not available in TVS1 or TVS3)

TYPE 1 DELTA MODEL NUMBER SUFFIX CODES

- B1 QED switchboard
- B21 QED series 2 switchboard
- M1 Motor Control Center (Not available in 320 and 480 kA for all voltages, 600V DELTA not available also in 200 and 240 kA)
- Z1 PZ3/PZ4 switchgear (Not available in TVS1 or TVS3)



SPD OPTIONS

Remote Monitor - TVS12RMU

The remote monitor has a single red/green LED status indicator, audible alarm with enable/disable button, and can be wired up to 1,000' feet away. This device connects directly to the dry contact interface of the SPD and will alarm if the SPD enters a fault condition.

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