

# SurgeLogic™ Surge Protective Device Transient Voltage Surge Suppressor IMA Kits for OEM Applications

Catalog

# 04

Class 1310 Catalog



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## DESCRIPTION

The SurgeLogic™ IMA series surge protective device is a modular parallel transient voltage surge suppressor (TVSS). The IMA device is a multi-stage suppression circuit consisting of field-proven, fast-acting 34 mm metal oxide varistors (MOVs).

A surge suppression path is provided for each mode, line-to-neutral (L–N), line-to-ground (L–G), and neutral-to-ground (N–G). Each surge suppression mode is individually fused and uses circuitry with thermal cutouts to isolate the TVSS and ensure shutdown in the event of MOV damage during sustained over-voltages—even when operated on high fault current power systems. The suppression elements are encapsulated in UL® Recognized potting material—another performance element that provides additional protection. The unit provides EMI/RFI noise attenuation. On-line diagnostics continuously monitor the device status, and LEDs signal a loss of a suppression circuit. An audible alarm with an enable/disable feature and dry contacts are included in the standard diagnostic package.

## Features



- Individually fused suppression modes
- Thermal cutout
- Solid state bi-directional
- Push-to-test on-line diagnostic display
- Backplane for easy module installation
- Front panel alarm with enable/disable switch
  - LED indicators indicate loss of protection or fully operational circuit
  - High-energy parallel design for IEEE C62.41 and C62.45 category A, B and C3 applications
  - Duty cycle tested (ANSI C62.41 C3, 10 kA, 20 kV) minimum 5,000 impulses
- 5-year warranty
- UL 1449 Recognized assembly.

**Table 1: Performance Features**

Surge Capacity Per Phase	Surge Capacity Per Mode		
	L–N	L–G	N–G
120 kA	60 kA	60 kA	120 kA
160 kA	80 kA	80 kA	120 kA
240 kA	120 kA	120 kA	120 kA

**Table 2: Voltage Specifications**

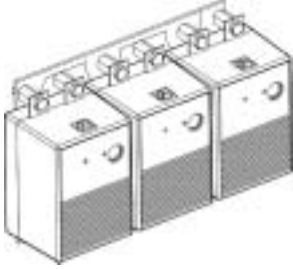
IMA Series Voltage Specifications		UL Suppression Voltage Rating				
Catalog Number	Service Voltage	L–N	L–G	N–G	L–L	MCOV <sup>1</sup>
TVS1IMA	120/240 V, 1-phase	400 V	400 V	400 V	800 V	150 V
TVS2IMA	208Y/120 V, 3-phase, 3- or 4-wire	400 V	400 V	400 V	800 V	150 V
TVS3IMA	240/120 V, 3-phase, high-leg delta	800/400 V	400 V	400 V	1500/800 V	275/150 V
TVS4IMA	480Y/277 V, 3-phase, 3- or 4-wire	800 V	800 V	800 V	1600 V	320 V
TVS7IMA	380Y/220 V, 3-phase, 3- or 4-wire	800 V	800 V	800 V	1600 V	320 V
TVS8IMA	600Y/347 V, 3-phase, 3- or 4-wire	1200 V	1200 V	1200 V	2000 V	420 V

<sup>1</sup> MCOV = Maximum Continuous Operating Voltage

## APPLICATION INFORMATION

### General

The effects of lightning and the damage caused by lightning-generated transients are well known. The failure of sensitive electronic equipment in a facility located in a high-lightning area can easily be attributed directly to lightning-generated transients. Transient protection can be installed on the power distribution system to protect this equipment from these externally generated transients. Lower magnitude transients generated within a facility and their effect on microprocessor-based equipment are less obvious than the transients induced by lightning. Transient voltages generated from inductive motors, pumps, electric welders, etc., may not be large enough to cause immediate damage, but they can cause sensitive equipment to malfunction.



A damaging transient voltage can enter a facility from several locations. The highest level of protection should be provided at the service entrance. A second level of protection should be provided at distribution points serving critical areas, for example, computer rooms, accounting areas, and laboratories. Other facility entry points that should be protected include panels serving outdoor lights or outdoor equipment, such as motors. Protection should also be provided for critical areas with sensitive equipment essential to the company.

### Integration

These kits allow manufacturers to add industry leading surge protection capabilities directly to their customized equipment. OEMs benefit from being able to integrate cost-effective Square D TVSS solutions while keeping wire lengths at a minimum. This optimizes the effective clamping voltage of the TVSS to create TVSS solutions unmatched by externally mounted devices. A flexible connection method makes SurgeLogic TVSS the most convenient and cost effective TVSS choice available.

All type IMA TVSS Kits are UL 1449 recognized assemblies and come complete with TVSS modules mounted to the backplane, backplane mounting hardware, and a diagnostic display unit with 36 in. (0.91 m) cables. (Note: Longer cables are available). Simply drill the mounting holes, mount the backplane and diagnostic board, and make the electrical connections. Everything is included except the connection wire. CAD drawings are available for download from the OEM section of the Square D website, [www.SquareD.com](http://www.SquareD.com). *Modular assembly maximum dimensions: 6.100 H x 9.856 W x 2.872 D.*

## SELECTION AND SPECIFICATIONS

**Table 3: Selection (Select the surge rating desired for intended service voltage).**

Service Voltage	Peak Surge Current Rating	Catalog Number
120/240 Vac 1-phase, 3-wire + ground	120 kA	TVS1IMA120
	160 kA	TVS1IMA160
	240 kA	TVS1IMA240
208Y/120 Vac, 3-phase, 3-wire + ground	120 kA	TVS2IMA120
	160 kA	TVS2IMA160
	240 kA	TVS2IMA240
240/120 Vac, 3-phase, 4-wire high-leg delta + ground	120 kA	TVS3IMA120
	160 kA	TVS3IMA160
	240 kA	TVS3IMA240
480/277 Vac, 3-phase, 3- or 4-wire + ground	120 kA	TVS4IMA120
	160 kA	TVS4IMA160
	240 kA	TVS4IMA240
380Y/220 Vac, 3-phase, 3- or 4-wire + ground	120 kA	TVS7IMA120
	160 kA	TVS7IMA160
	240 kA	TVS7IMA240
600/347 Vac, 3-phase, 3- or 4-wire + ground	120 kA	TVS8IMA120
	160 kA	TVS8IMA160
	240 kA	TVS8IMA240

**For surge counter option, add "C" to the end of the catalog number; Ex. TVS1IMA120C**  
**Note: The last character of the Catalog Number is a letter, not a number.**

**Table 4: Options**

Option	Description	Option Code
Surge Counter	Displays the combined total number of transient voltage surges detected from L-G, L-L, L-N, and N-G, since the counter was last reset.	C
Dry Contacts	Provides available Form C Type contacts.	Standard
Remote Monitor	Displays the alarm status of the surge protective device up to 1,000 ft. (305 m) away from the unit. This option uses the dry contacts.	Order Catalog No. TVS12RMU
Audible Alarm Switch with Silent Switch	The audible alarm provides sound if an inoperative condition occurs.	Standard

**Table 5: Specifications**

Feature	Description
Environmental	Relative humidity: 0 to 95% non-condensing
	Operating frequency: 47—63 Hz
	Storage temperature: -40 to +65 °C (-40 to +149 °F) <sup>[1]</sup>
	Surge suppression operating temperature: -40 to +65 °C (-40 to +149 °F)
Safety Standards	CUL, UL 1449 Second Edition, UL 1283
Short-circuit Current Rating	200 kA
Fusing	Individually fused suppression modes (200 kAIR)

<sup>[1]</sup> Surge counter liquid crystal display may not indicate at temperatures less than -20 °C (-4 °F).

**Table 6: Module Replacement Specifications**

System Voltage	Peak Surge Current Rating	Catalog Number		
		Phase A	Phase B	Phase C
120/240 Vac, 1-phase, 3-wire	120 kA	MA1IMA12	Empty	MA1IMA12
	160 kA	MA1IMA16	Empty	MA1IMA16
	240 kA	MA1IMA24	Empty	MA1IMA24
208Y/120 Vac, 3-phase, 3- or 4-wire	120 kA	MA1IMA12	MA1IMA12	MA1IMA12
	160 kA	MA1IMA16	MA1IMA16	MA1IMA16
	240 kA	MA1IMA24	MA1IMA24	MA1IMA24
240/120 Vac, 3-phase, 4-wire, high-leg delta‡	120 kA	MA1IMA12	MA3IMA12	MA1IMA12
	160 kA	MA1IMA16	MA3IMA16	MA1IMA16
	240 kA	MA1IMA24	MA3IMA24	MA1IMA24
480Y/277 Vac, 3-phase, 3- or 4-wire	120 kA	MA4IMA12	MA4IMA12	MA4IMA12
	160 kA	MA4IMA16	MA4IMA16	MA4IMA16
	240 kA	MA4IMA24	MA4IMA24	MA4IMA24
380Y/220 Vac, 3-phase, 3- or 4-wire	120 kA	MA7IMA12	MA7IMA12	MA7IMA12
	160 kA	MA7IMA16	MA7IMA16	MA7IMA16
	240 kA	MA7IMA24	MA7IMA24	MA7IMA24
600Y/347 Vac, 3-phase, 3- or 4-wire	120 kA	MA8IMA12	MA8IMA12	MA8IMA12
	160 kA	MA8IMA16	MA8IMA16	MA8IMA16
	240 kA	MA8IMA24	MA8IMA24	MA8IMA24

‡ Phase B modules are different than Phase A and Phase C modules.