

Installation Instructions



APPLICATION

ERICO's SES 200 Series of Transient Voltage Surge Suppressors has been designed to deliver specification grade performance and features at an affordable price. The versatile and compact design provides high quality protection for a wide variety of commercial and industrial applications where sensitive electronic equipment is to be protected.

The SES provides a service life equivalent to up to 200kA, 8/20 μ s per line of surge material, making it ideal for the protection of service entrance panels and ensuring a long operational life under severe lightning conditions. Internal electronics continuously monitor SPD protection, and the status of each mode of protection is displayed on a 5-segment LED bar graph. Alarm contacts for remote monitoring is provided as standard.

The replaceable surge modules provide protection to L-N and N-G modes, ensuring effective protection from both common mode and differential transients. Following ERICO's position as a supplier of quality lightning and surge protection solutions, the SES 200

Series utilizes Transient Discriminating™ (TD) technology. Not only does this meet the safety standards of UL 1449 Edition 2, but provides a superior life by eliminating the common temporary overvoltage failure mode of most SPDs.

FEATURES

- 200kA, 8/20 μ s primary protection for service entrance panel applications
- NEMA Type 4/4X/12/13 enclosure
- Internal high interrupt capacity fusing for added safety
- Modular design allows easy replacement of surge modules
- Transient Discriminating™ (TD) technology for long service life. Ideal for sites with poor voltage regulation
- Combination MOV and SAD protection

PREPARATION

DANGER: *Electrical shock or burn hazard. The installation of this Transient Voltage Surge Suppressor should be made by qualified personnel. Failure to lockout electrical power during installation or maintenance can result in fatal electrocution or severe burns.*



CAUTION: *Check to make sure line voltage does not exceed Surge Protector voltage requirement. This system is designed for 120/240 1-phase or 120/208V or 277/480V 3-phase systems.*



CAUTION: *This unit must be installed in accordance with the National Electrical Code (ANSI/NFPA-70) and applicable local codes, and must be installed on the load side of the main overcurrent protection.*



These instructions should be read in their entirety before commencing installation.

PRIOR TO INSTALLATION

Confirm that the voltage system rating as shown on the SES 200 label located on inside of the enclosure is appropriate for the intended application.

Transient Voltage Surge Suppression**DISCONNECT / LOCKOUT POWER**

Disconnect and lockout power to the point where the SES 200 is to be installed. Follow all applicable electrical codes and safe working practices.

INSTALLATION**PHYSICAL LOCATION**

1. The SES 200 should be installed as close as possible to the service switchboard, switchgear, power distribution panelboard or other determined connection point. The location should be chosen to keep the interconnecting wiring as short as possible. Any sharp bends in the wiring should be avoided.

ENCLOSURE MOUNTING

2. The SEP 200 should be mounted utilizing the four mounting holes provided as part of the enclosure. Mount the SES 200 securely and rigidly to the surface or structural member.

CONDUIT HOLE LOCATION

3. The conductors should exit the enclosure at the top of the enclosure above the wiring terminals. The hole should be sized appropriately for the desired conduit fittings. If the conductors are required to exit the enclosure through the top wall, the hole should be placed directly above the terminals. If the enclosure is being located directly adjacent to a panelboard, the hole should be placed on the right or left side of the enclosure within 2" of the top. A straight nipple may be used; otherwise an appropriate conduit connector should be used.

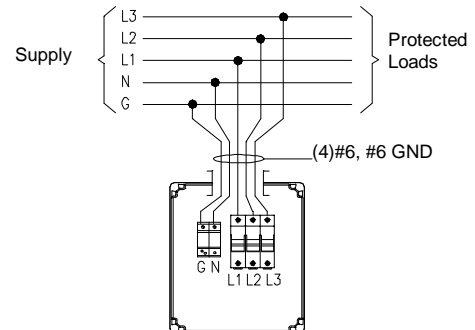
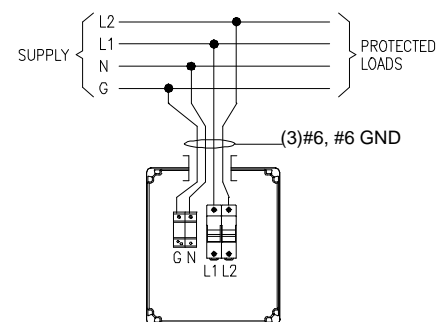
If remote alarming is required, an additional hole may need to be made for connection to the alarm contacts.

WIRING DIAGRAM

4. The wiring diagrams below show how the SES 200 is to be wired. This TVSS device is wired in parallel with the distribution system be protected. The SES 200 is supplied with a fuse holder with integral overcurrent protection. Additional external overcurrent protection is not necessary.

The recommended wire size for the SES 200 Series TVSS is #6 AWG and a #6 AWG ground. When terminating the wiring on the SES terminals, strip the

insulation 1/2," insert into the terminal and then tighten to a torque of 35 in-lbs.

**Figure 1. SES 200 Three-Phase Wiring Diagram****Figure 2. SES 200 Single-Phase Wiring Diagram****INDICATORS**

5. The SES 200 has TDS™-MOVTECs as the TVSS elements. Each of these MOVTECs has a 5 LED bar graph arranged so that they are visible through the front of the enclosure. When all 5 LEDs on each MOVTEC are illuminated, the protection circuitry is operating correctly for that line. If one LED has extinguished, the Surge Protector has sustained a surge, which has reduced the remaining capacity, and the protection has been compromised. If two LEDs are extinguished, the surge capacity has been reduced to 60% of total capacity. The alarm relay will drop out at this point. While there is still some protection provided, the Surge Protector should be replaced as soon as possible.

Transient Voltage Surge Suppression**EXTERNAL ALARM**

- Each of the blue TDS™-MOVTEC units inside the SES 200 unit provides an alarm relay contact indicating its status. These contacts are wired to the X5 and X7 terminals on top of the unit. When the unit is correctly powered and operational, the relay will be operated and these two terminals will be connected together. If power is removed from the unit or the MOVTEC module becomes damaged due to excessive surge energy, the relay contacts will open.

To provide external alarm indication from the unit, the two alarm contacts from each MOVTEC are connected in series. That is, for the single-phase unit with 3 MOVTECs, the external alarm wiring is connected to "X5 MOVTEC 1" and "X7 MOVTEC 3". A small interconnecting link of the same wiring type is connected from ("X7 MOVTEC 1" to "X5 MOVTEC 2") and from ("X7 MOVTEC 2" to "X5 MOVTEC 3"). Connection is made to the terminals by depressing the orange tab, inserting a stripped wire (22 AWG – 16 AWG) and releasing the orange tab. These contacts are rated at 2A, 30Vdc; 0.6A, 110Vdc; 0.6A, 125Vac. For the three-phase units, ensure the 4th MOVTEC is wired in series in the same manner.

ENGAGING POWER

- Verify all wiring connections, replace the enclosure door lid and engage power feeding the SES 200. All MOVTEC surge module bar graphs should be illuminated.

If any of the status LEDs are not illuminated, disconnect power, check wiring, rectify any deficiencies, and re-power the unit. If still experiencing difficulties, please contact your supplier or the manufacturer.

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REPLACEMENT OF TDS™ -MOVTECS

Should a TDS™-MOVTEC module require replacement, they are designed to be replaceable in the field by a Licensed Electrical Contractor, following the steps below:

- Identify the module to be replaced, and obtain a replacement module. Confirm that the replacement module is the same model number and is designed for the same voltage.
- Disconnect and lockout power to the SES 200. Follow all applicable electrical codes and safe working practices.
- Unscrew the wired terminals on the module to be replaced and carefully remove the wiring from the module, noting where each wire is connected.
- Remove the module to be replaced from the back panel.
- Install the replacement module in place, again checking that it is the same part number as the faulty module.
- Replace the wiring into the correct terminals, tightening each terminal to a torque of 13 in-lb.
- Verify all wiring connections, close the SEP enclosure door and engage power to the system.
- All MOVTEC surge module protection indicators should all be illuminated.

MAINTENANCE

This unit requires no regular preventative maintenance, apart from periodically observing the indicators to verify continued correct operation.

SES 200 SPECIFICATIONS**OPERATION:**

Models available: SES200	120/240	120/208	277/480
Nominal line voltage	120/240Vrms	120/208Vrms	277/480Vrms
Distribution system	1PH 3W +G	3Ph 4W+G	3Ph 4W+G
Input frequency	50/60 Hz		

PROTECTION*:

Surge material per line (8/20 μ s)	200/100kA
L-N	200/100kA
N-G	200/100kA
Protection modes	L-N and N-G
SPD circuit description	Parallel hybrid with TD technology
Short Circuit Interrupt Rating	200 kAIC
Surge Fuse Rating	100kA 8/20 μ s per line

ALARMS AND INDICATORS

Status indication	5-segment LED bar graph, alarm relay contacts
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PHYSICAL DATA:

Dimensions (W x H x D)	Approx. 11" x 16" x 7" (280 x 406 x 180mm)
Weight	Approx. 17 lbs.
Enclosure material	Polycarbonate
Connection means	#6 AWG wiring terminals
Environmental rating	NEMA 4, 4X, 12, 13
Operating temperature	+14 to +149°F (-10 to +65°C)
Humidity	0-90%
Altitude	0-12,000 ft (0-3650m)
Warranty	5 years

TEST STANDARDS:

Listing	cULus 1449 Edition 2
Surge rated to meet	ANSI/IEEE C62.41-1991 Cat A, Cat B & Cat C

*Surge ratings are quoted "Aggregate MOV material/NEMA LS1 tested rating."

Due to a policy of continual product development, specifications are subject to change without notice.