

**Installation, Operation
and Maintenance Manual**

PN 750-0072-002

®
**Select[®]
Compact**
**Selenium-Enhanced
Suppression Filter System**

Compact



A member of the MasterPlan™ family of products

Table of Contents

Installation Assistance	3
Pre-Installation Checklist	3-4
Installation Methods	4
Service Configurations	5-6
3-Phase, 4-Wire WYE	5
3-Phase, 3-Wire DELTA	5
3-Phase, 4-Wire High-Leg DELTA	5
1-Phase, 3-Wire SPLIT-PHASE	6
Conductor Sizing and Overcurrent Protection	6
Mounting	6
Conduit Openings	6
Standard: Top Feed	7
Electrical Connections	8
Connecting Form C Dry Contacts	8
Before Applying Power	8-9
Verify Proper Operation	9-11
Troubleshooting	11
Operation/Maintenance	12
Options	12
Standards and Listings	12
Warranty, 15 Year Limited	13

Installation Assistance

The Importance of Correct Installation

WARNING!

Pre-Installation Checklist

Thank you for choosing the Current Technology Select® Compact Surge Suppression System. We look forward to fulfilling your facility-wide surge suppression filter system needs.

Monday through Friday, 800.238.5000 or 804.236.3300

This manual provides guidelines for the proper installation of the Select® Compact. Proper product selection and compliance with these guidelines will help your new suppression system provide years of reliable service. If installers are unsure about the facility electrical configuration or have other installation-related questions, it is recommended they consult with a master electrician or other qualified electrical professional.

When shortcuts are taken or installation procedures are not followed, the Select® Compact system may be damaged or may not provide adequate protection. It is extremely important to follow these installation procedures carefully.

WARNING! The Select® Compact warranty is voided if the unit is damaged as a result of improper installation or the installer's failure to verify the following conditions prior to installation.

Before beginning

➤ Confirm that the voltage(s) and service configuration shown on the Select® Compact product label affixed to the inside of the door are consistent with the voltage and service configuration of the facility to which it is being attached.

PRODUCT LABEL DESIGNATION	SYSTEM VOLTAGE, SERVICE CONFIGURATION
SLC-xx-120/240-2G	120/240VAC, 1Ø 3-wire SPLIT-PHASE, w/ground
SLC-xx-120/208-3GY	120/208VAC, 3Ø 4-wire WYE, w/ground
SLC-xx-220/380-3GY	220/380VAC, 3Ø 4-wire WYE, w/ground
SLC-xx-277/480-3GY	277/480VAC, 3Ø 4-wire WYE, w/ground
SLC-xx-120/240-3GHD	120/240VAC, 3Ø 4-wire high-leg DELTA, w/ground (B phase must be 208V)
SLC-xx-240-3DG	240VAC, 3Ø 3-wire DELTA, w/ground
SLC-xx-480-3DG	480VAC, 3Ø 3-wire DELTA, w/ground

Note: Indicate Select® Compact surge current rating by substituting 60 or 80 for "xx" in the above model numbers.

WARNING!

Installation Methods for Common Service Configurations for the Design Engineer and the Installer

► Check to ensure that a proper Xo bond is installed between the neutral and ground terminals at the transformer upstream from all 3 ϕ WYE, 3 ϕ high-leg DELTA, or 1 ϕ SPLIT-PHASE Select[®] Compact devices (see NEC article 250.) Lack of a proper bond will damage the Select[®] Compact and void the warranty.

► Confirm that the environmental conditions are consistent with the following ranges:

- Ambient Temperatures: Between -40° and +140°F.
- Relative Humidity: Between 5% and 95% non-condensing.
- Altitude: Less than 13,000 feet.

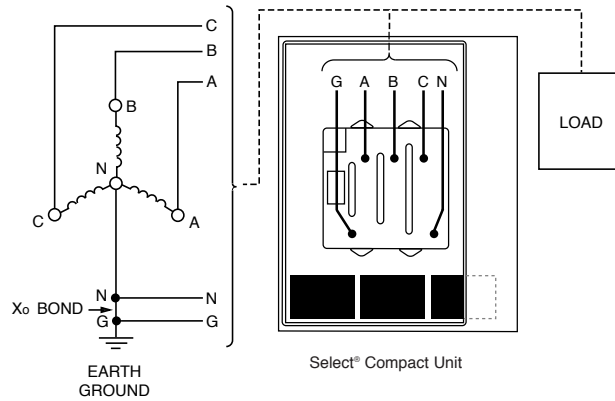
WARNING! Discontinue installation if (1) your conditions are inconsistent with the checklist above or (2) your conditions cannot be verified. Call Current Technology's Technical Support at 800.238.5000 if you have any questions.

The Select[®] Compact is to be connected in parallel with the electrical system. It may be connected via a circuit breaker, molded case switch, fused switch, or connected directly to the bus of the panelboard or switchboard it is protecting. The Select Compact is listed for use as a Type 1 or Type 2 SPD per UL 1449 3rd Edition.

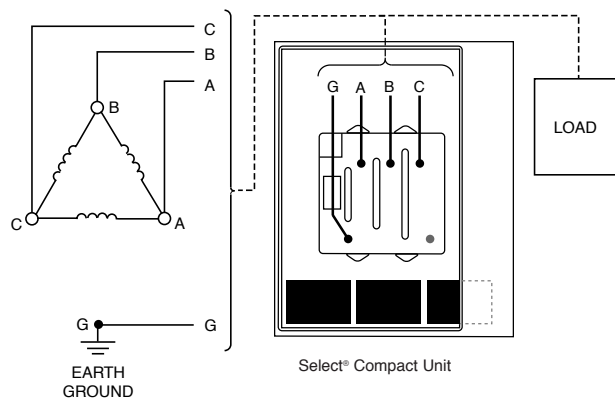
Service Configurations

Figures 1-4 show the electrical relationship between the Select® Compact and these four basic service configurations: WYE, DELTA, High-Leg DELTA and SPLIT-PHASE.

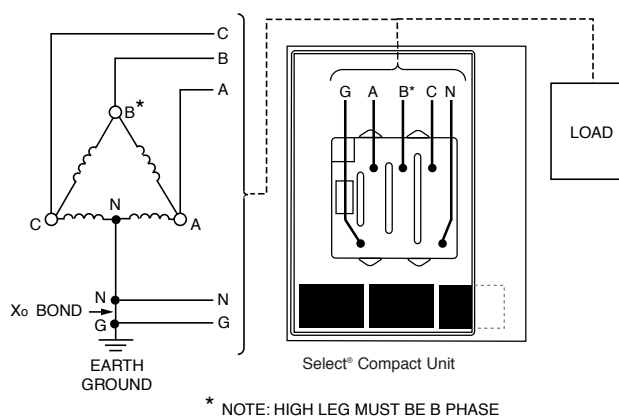
**FIG. 1:
3-Phase, 4-Wire WYE**



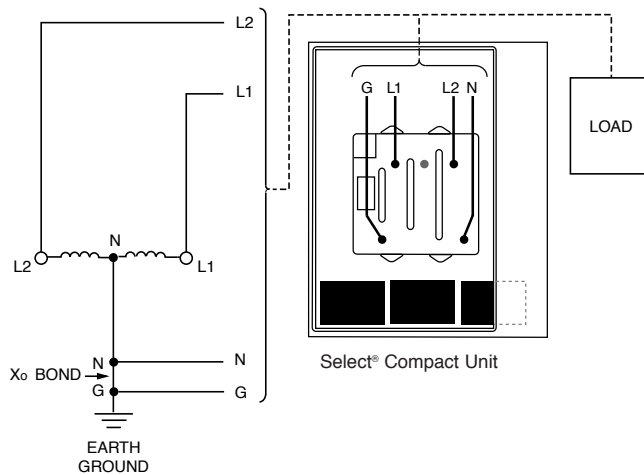
**FIG. 2:
3-Phase, 3-Wire DELTA**



**FIG. 3:
3-Phase, 4-Wire High-Leg DELTA**



**FIG. 4:
1-Phase, 3-Wire
SPLIT-PHASE**



Conductor Length / Sizing and Overcurrent Protection

Conductor Length and Sizing: Conductor length must be kept as short as possible and avoid sharp bends. Current Technology recommends using conductors less than 10 feet in length from phase bus through the Select® Compact product to the neutral bus or ground bus. The following conductor sizes for phase, ground and neutral connections are recommended. However, where space and bending radii permit, use a larger conductor size.

Model	Use conductor lengths less than 10 feet
SLc-60	#2 AWG – #10 AWG
SLc-80	#6 AWG – #10 AWG

NOTE: The above conductor sizing recommendations ensure that the effective clamping voltage of the Select® Compact at the point of connection is kept to a minimum in order to maximize protection.

Mounting

Mount the Select® Compact to the building structure using construction methods and hardware appropriate for your site. Install the conduit and pull the conductors as specified above or according to the engineer’s design.

Conduit Openings

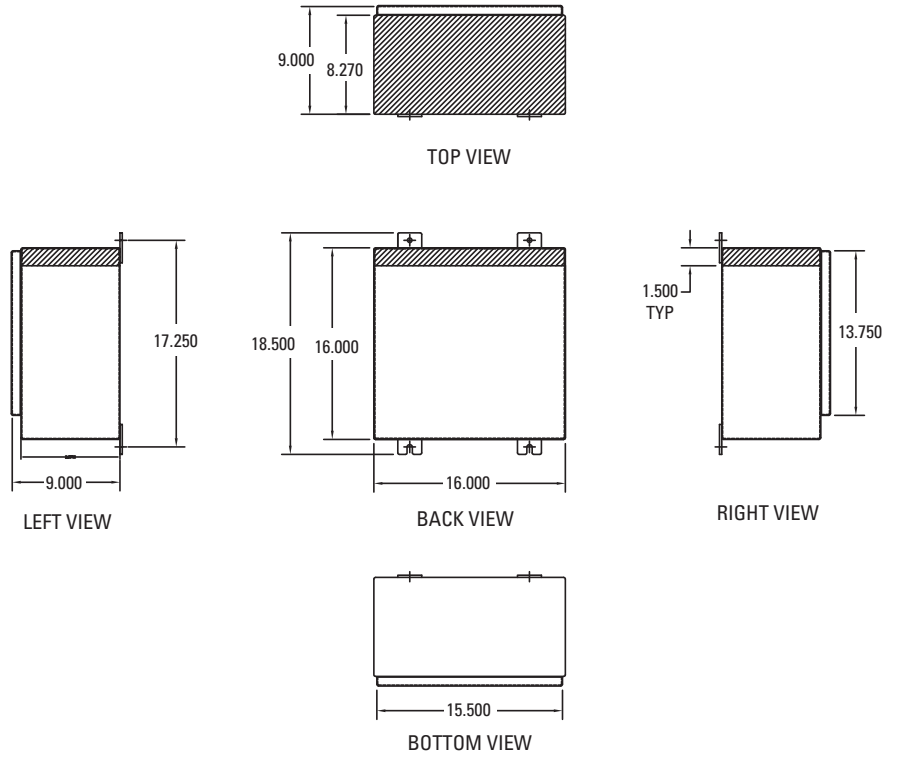
If desired, punch holes at this time for the conduit or nipple or wait until the Select® Compact is mounted to the building structure.

Punch holes only in the shaded areas as shown in the following illustration.

For the Select® Compact connect the phase conductors to the lugs labeled "A", "B", and "C" on the ISB and the ground and neutral* conductors to the lugs labeled "G" and "N".

* DELTA-connected Select® Compact products do not have a neutral conductor.

**Standard: Top Feed
Select® Compact Products**



	Weight	Dimensions
Slc-60-80-9"D	70 lbs. max	16" H x 16" W x 9" D

Electrical Connections

Connecting Form C Dry Contacts

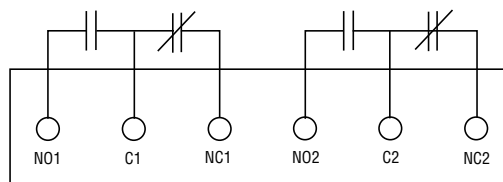
Dry Contacts: Select® Compact products equipped with Advanced Monitoring options have a dual set of Form "C" dry contacts available for connection to user-provided remote alarm and monitoring circuits.

The installer must provide the appropriate raceway and wiring for this circuit observing the restrictions on conduit openings illustrated in an earlier section of this manual. The installer must route the monitoring conductors via the Select® Compact's door hinge to the blue terminal blocks on the door-mounted circuit board. Choose the appropriate materials and routing to allow the door to open and close.

The following diagram shows the Form "C" contact configuration. The annotations on the diagram match the markings on the blue terminal block.

► **Field Testing:** Your Select® Compact has been carefully tested before leaving the factory. However, the performance of this unit as a surge suppression device can be confirmed in the field prior to startup using a portable DTS-2 Tester.

The optional DTS-2 Tester may have been purchased along with your Select® Compact or Field Startup Testing Service may have been specified during the purchase of the Select® Compact.



FCC TERMINAL BLOCK

Before Applying Power: Checklist

Check with the owner or owner's representative to see if this test is required at your site.

If you have questions about Field Startup Testing or would like to arrange for this service call Current Technology's Technical Support at 800.238.5000.

- **Confirm Pre-Installation Checklist:** Confirm that the "Pre-Installation Checklist" found in the beginning of this manual was completed correctly before proceeding.
- **Battery Installation:** Your Select® Compact will be equipped with a 9-volt battery if you purchased "L2 Advanced Monitoring" or "L3 MasterMIND" monitoring. Look at the circuit board behind the door. If there is a 9-volt battery present it will need to be removed, turned around and reinserted into the holder so that the contacts "snap" into place. If the alarm sounds, press the "ALARM DISABLE" button on the front of the door. The battery is installed backwards for shipping purposes.

Before Applying Power: Checklist (continued)

- **Confirm Line Voltage:** Measure the line to line voltages feeding the panelboard and be sure they are within $\pm 10\%$ of the rated line voltage of the Select[®] Compact. Use the following table to determine the range of acceptable voltages for each model of the Select[®] Compact.

Acceptable Voltage Ranges for All Select[®]2 Models

Select [®] 2 MODEL NO.	NOMINAL L-L VOLTAGE	-10% TO +10% L-L VOLTAGE
SLC-xx-120/240-2G	240	216 to 264
SLC-xx-120/208-3GY	208	188 to 228
SLC-xx-220/380-3GY	380	342 to 419
SLC-xx-277/480-3GY	480	432 to 528
SLC-xx-120/240-3GHD	240	216 to 264
SLC-xx-240-3DG	240	216 to 264
SLC-xx-480-3DG	480	432 to 528

Note: "xx" specifies rating of 60 or 80 kA

WARNING!

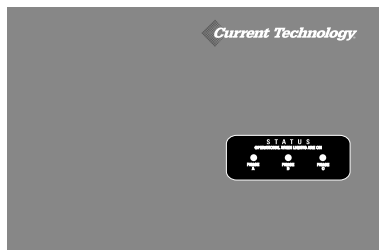
WARNING! Do not apply power if the measured voltage is not within the range specified for the Select[®] Compact model being installed.

- Apply power to the Select[®] Compact by closing the circuit breaker or switch (if any) feeding the Select[®] Compact or closing the Select[®] Compact.
- If you have either the L2 or L3 Advanced Monitoring options, be sure to re-enable the alarm by pressing the "ALARM DISABLE" button. The "ALARM DISABLED" light should not be illuminated and the alarm should not be audible.

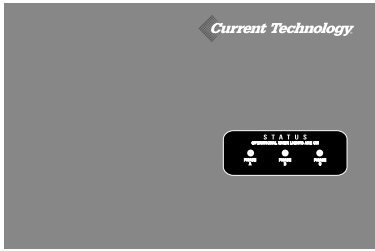
Depending on which monitoring option your Select[®] Compact came with, you can verify proper operation of the unit as follows:

- **If your Select[®] Compact has Base Monitoring** (see picture): Verify that the green indicating lights are illuminated. Three-phase units have three (3) green indicating lights labeled "A", "B", and "C". Split-phase units should only have lights "A" and "C" illuminated.

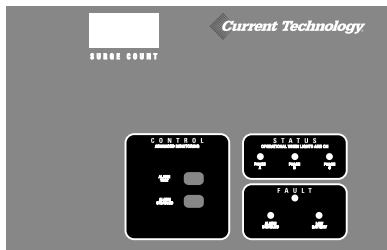
Verify Proper Operation



Select[®] Compact with base monitoring.



Select®Compact with L1 Advanced monitoring.



Select®Compact with L2 Advanced monitoring.

► **If your Select®Compact has L1 Advanced Monitoring** (*see picture*): Verify that only the green indicating lights are illuminated and that there are no red lights illuminated. Green lights indicate a normal condition for each phase. Red lights indicate a fault condition. Three-phase units have three (3) green indicating lights labeled "A", "B", and "C". Split-phase units should only have lights "A" and "C" illuminated.

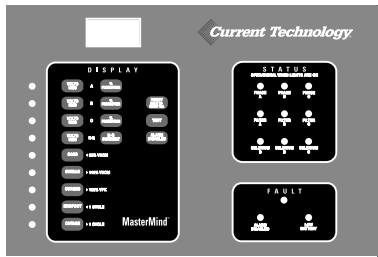
The L1 Advanced Monitoring option is equipped with 2 sets of Form "C" contacts. The relay containing the contacts is in the "alarm condition" when the power is off to the unit, when the unit is encountering loss of power to one or more phases, or the Select®Compact is encountering more than 50% loss of capacity due to internal fuse operation. Test the operation of the Form "C" contacts by de-energizing the Select®2 and checking the state of the contacts with a continuity tester or observing the effect of the contacts on the user-provided remote alarm circuits.

► **If your Select®Compact has L2 Advanced Monitoring** (*see picture*): Verify that the green indicating lights are illuminated and that the red "fault" light is off. Three-phase units have three (3) green indicating lights labeled "A", "B", and "C". Split-phase units should only have lights "A" and "C" illuminated.

The L2 Advanced Monitoring option contains an audible alarm that should not operate under normal conditions. The alarm can be tested by pressing the "ALARM TEST" button on the front of the door. The "LOW BATTERY" light should not be illuminated. If it is, change the 9 volt battery on the circuit board behind the door.

The L2 Advanced Monitoring option is also equipped with 2 sets of Form "C" contacts. The relay containing the contacts is in the "alarm condition" when the power is off to the unit, when the unit is encountering loss of power to one or more phases, or the Select®Compact is encountering more than 50% loss of capacity due to internal fuse operation. Test the operation of the Form "C" contacts by de-energizing the Select®Compact and checking the state of the contacts with a continuity tester or observing the effect of the contacts on the user-provided remote alarm circuits.

The L2 Advanced Monitoring option is equipped with a surge counter. The number of surges detected by the counter is displayed on a 6 digit LCD display on the front of the Select®Compact door. The surge counter will also increment each time power is applied to the unit after being in the "off" state.



Select®Compact with L3 MasterMIND monitoring.

Troubleshooting

► **If your Select®Compact has L3 MasterMIND Monitoring** (see picture): Verify that the green indicating lights are illuminated and that the red "fault" light is off. Three-phase units have three (3) green indicating lights labeled "A", "B", and "C" for each phase, three (3) green indicating lights labeled "A", "B", and "C" for the filter capacitors, and three (3) green indicating lights labeled "A", "B", and "C" for the selenium cells. Split-phase units should only have lights "A" and "C" illuminated for each group.

The L3 MasterMind Monitoring option contains an audible alarm that should not operate under normal conditions. The alarm can be tested by pressing the "ALARM TEST" button on the front of the door. The "LOW BATTERY" light should not be illuminated. If it is, change the 9-volt battery on the circuit board behind the door.

The L3 MasterMind Monitoring option is equipped with 2 sets of Form "C" contacts. The relay containing the contacts is in the "alarm condition" when the power is off to the unit, when the unit is encountering loss of power to one or more phases, when one or more filter capacitors has failed, when one or more of the selenium fuses has operated, or the Select®Compact is encountering more than 50% loss of capacity due to internal fuse operation. Test the operation of the Form "C" contacts by de-energizing the Select®Compact and checking the state of the contacts with a continuity tester or observing the effect of the contacts on the user-provided remote alarm circuits.

Your Current Technology Select®Compact surge suppression system does not require periodic maintenance. The unit's heavy-duty design should preclude the need for any repairs; however, the following indications and procedures may be appropriate:

INDICATION	PROCEDURE
One or more phase indicator lights are off.	<ol style="list-style-type: none"> 1. Check that the external power source supplying power to unit is energized. 2. Check that the circuit breaker or switch (if appropriate) feeding the Select®2 is turned "on." 3. Check the cables connecting the door-mounted devices to the suppression module. 4. If all of above are O.K., contact factory. 5. If breaker is tripped, use a portable Diagnostic Test Set (DTS-2) to verify unit integrity before resetting the breaker.
MasterTest hand-held test unit or MasterMind Advanced Monitoring indicates less than 50% available capacity.	Contact factory.
Portable Diagnostic Test Set (Current Technology Model DTS-2) indications are not in range for the product.	Contact factory.

Operation / Maintenance

The Select®Compact Surge Suppression System should provide years of uninterrupted service.

With several levels of monitoring available, the user should be able to verify the normal operation of the Select®Compact and confirm that it is connected correctly to the power system.

Current Technology recommends two periodic tests to:

- Verify that the unit is able to clamp surges to an acceptable level.
- Verify that the unit has acceptable surge handling capacity.

These tests should be coordinated with scheduled maintenance events in your facility. They can be performed in house with the aid of the DTS-2 Portable Test Set and the MasterTEST Portable Set or requested as a service from Current Technology or their authorized service representative.

Options

The Select®Compact Surge Suppression System is available with the following options:

- L1 Advanced Monitoring
- L2 Advanced Monitoring
- L3 MasterMIND Monitoring
- DTS-2 Portable Test Kit
- MasterTEST Portable Test Kit

Standards and Listings

The following standards and listings apply to the Select®Compact product line:

IEEE C62.41.1-2002, C62.41.2-2002 and C62.45-1992

IEEE C62.11 and C62.34

Canadian Standards (CUL)

National Fire Protection Association (NFPA 70 [NEC], 75 and 78)

Underwriters Laboratories UL 1449 3rd Edition 2009 Revision (effective 9/29/2009),

UL 1283.

15 Year Limited Warranty

Current Technology warrants that Select®Compact selenium-enhanced® suppression filter systems (the "Product"), shall meet applicable industry standards and specifications and be free from defects in materials and/or workmanship. Should any failure of the Product to conform to this warranty appear within fifteen (15) years from the date of the purchase of the Product, Current Technology shall either repair or replace the defective Product, or part thereof, upon return to Current Technology manufacturing facility in Richmond, Virginia with transportation charges prepaid.

Current Technology shall have no liability under this warranty for any problems or defects directly or indirectly caused by misuse of the Product, alteration of the Product (including removal of any warning labels), accidents, or improper installation, application, operation, or repair of the Product.

THIS WARRANTY REPRESENTS THE ENTIRE WARRANTY OF CURRENT TECHNOLOGY ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ORAL OR WRITTEN, INCLUDING, BUT NOT LIMITED TO, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

The liability of Current Technology under this warranty is expressly limited to the replacement or repair of the defective part thereof, at Current Technologys' sole option.

IN NO EVENT SHALL CURRENT TECHNOLOGY BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND OR CHARACTER, NOR SHALL CURRENT TECHNOLOGYS' LIABILITY EVER EXCEED THE PURCHASE PRICE PAID FOR SUCH DEFECTIVE PRODUCT.

This warranty is not transferable and may only be enforced by the sole purchaser. Claims under this warranty must be submitted to Current Technology within thirty (30) days of discovery of any Select®Compact product defect.



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