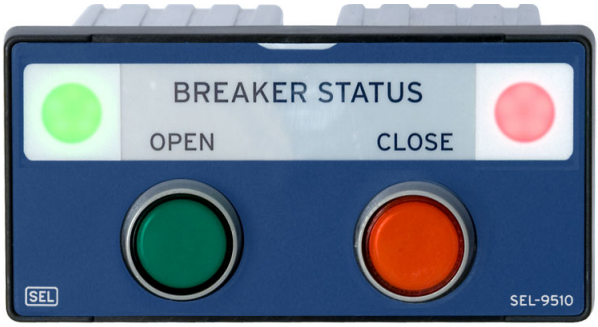
SEL-9510 Control Switch Module



Features, Benefits, and Applications

The SEL-9510 Control Switch Module provides breaker control and indication in a single rack-mount or panel-mount package. Rugged, color-coded pushbuttons control trip and close coils, and large, easy-to-see indicators signal breaker status and circuit continuity. Easily change the front-panel text and pushbutton color for any application requiring momentary control and status indication.

- Simplify panel wiring with integrated circuit breaker control and indication.
- Large, highly visible red and green indicators provide at-a-glance breaker status indication, even from the side.
- Rugged control pushbuttons can interrupt inductive trip/close current (up to 10 A @ 250 Vdc).
- Arc suppression technology included in the module has been field proven by years of service in SEL relays.
- Contacts and indicators are compatible with ac or dc systems and loads.
- Stocking options reduced with selectable indicator voltage (24/48 Vdc, 125/250 Vdc or Vac).
- Reliable design operates without control power.
- Customize applications using configurable buttons and indicator labels.
- Available in one-, two-, or three-unit rack-mount panels, or mount alongside an SEL-551.

Safety Information

Dangers, Warnings, and Cautions

This manual uses three kinds of hazard statements, defined as follows:

⚠DANGER
Indicates an imminently hazardous situation that, if not avoided, **will** result in death or serious injury.

⚠WARNING
Indicates a potentially hazardous situation that, if not avoided, **could** result in death or serious injury.

⚠CAUTION
Indicates a potentially hazardous situation that, if not avoided, **may** result in minor or moderate injury or equipment damage.

Safety Symbols

The following symbols are often marked on SEL products.

	**⚠CAUTION** Refer to accompanying documents.	**⚠ATTENTION** Se reporter à la documentation.
	Earth (ground)	Terre
	Protective earth (ground)	Terre de protection
	Direct current	Courant continu
	Alternating current	Courant alternatif
	Both direct and alternating current	Courant continu et alternatif
	Instruction manual	Manuel d'instructions

Safety Marks

The following statements apply to this device.

General Safety Marks

For use in Pollution Degree 2 environment.	Pour l'utilisation dans un environnement de Degré de Pollution 2.
For use on a flat surface of a Type 12 enclosure.	Pour l'utilisation sur une surface plane d'un boîtier de Type 12.
Terminal Ratings Tightening Torque Terminal Blocks: 1.0 Nm (9 in-lbs)	Valeurs nominales des bornes Couple de serrage Borniers : 1,0 Nm (9 livres-pouce)

Introduction

Figure 1 and *Figure 2* shows the SEL-9510 front and rear panels. The OPEN pushbutton controls two trip contacts. The trip contact at terminals 10 and 11 can switch ac or dc loads. The trip contact at terminals 12 and 13 includes arc suppression so it can interrupt trip current up to 10 Adc. Remove internal jumper JMP2 as shown in *Table 2* to disable the arc suppressor to allow this contact to switch ac loads as well.

Apply ac or dc voltage to the OPEN indicator terminals 8 and 9 to illuminate the front-panel open indicator.

The CLOSE pushbutton controls two close contacts. The close contact at terminals 3 and 4 can switch ac or dc loads. The CLOSE contact at terminals 1 and 2 includes arc suppression so it can interrupt close current up to 10 A dc. Remove internal jumper JMP1 as shown in *Table 2* to disable the arc suppressor to allow this contact to switch ac loads as well.

Apply ac or dc voltage to the CLOSED indicator terminals 5 and 6 to illuminate the front-panel closed indicator.

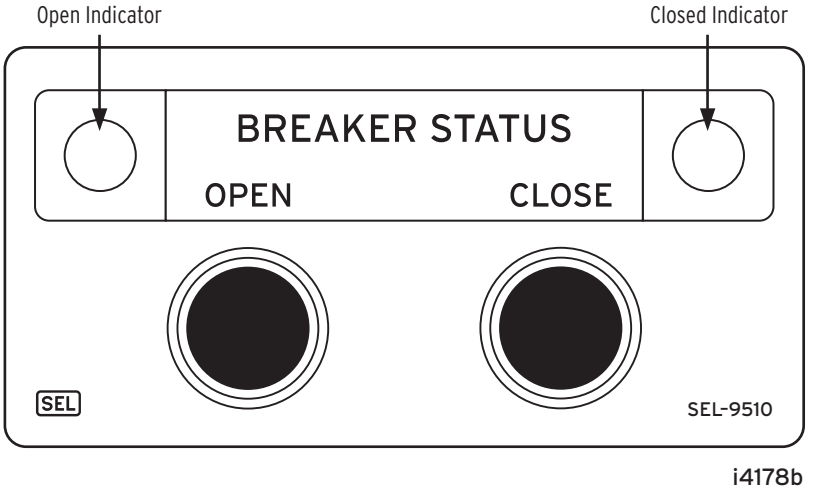


Figure 1 SEL-9510 Front Panel

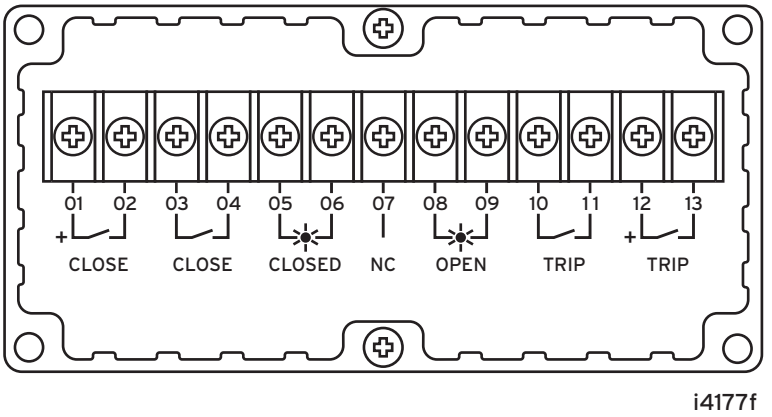


Figure 2 SEL-9510 Rear Panel

Installation

Product Configuration

Indicator Voltage

The serial number sticker on the side of the product shows the ordered indicator voltage level. To change the indicator voltage, follow these steps.

Step 1. Remove the SEL-9510 front panel and circuit board by removing two screws (top and bottom) and sliding the front panel away from the plastic housing as shown in *Figure 3*.

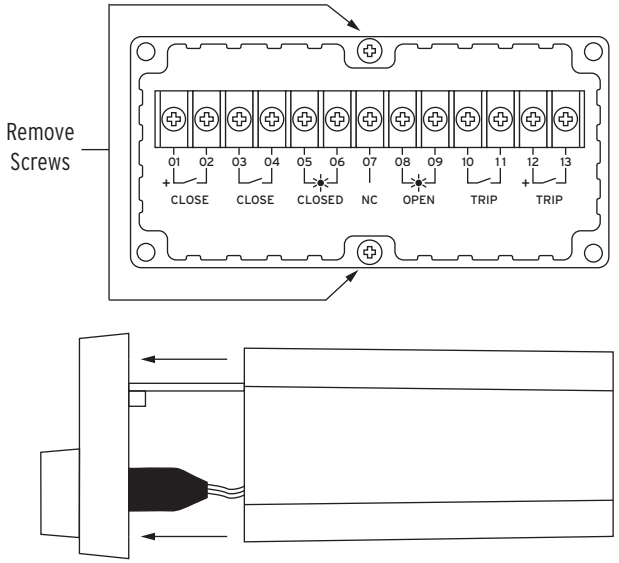
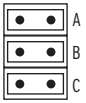
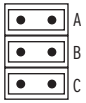
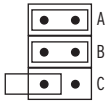
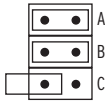
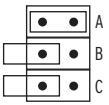
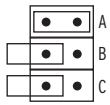
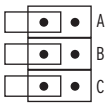
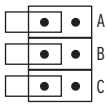


Figure 3 SEL-9510 Front Panel Removal

Step 2. Configure jumpers JMP3 and JMP4 for the desired indicator input voltages according to *Table 1*.

Table 1 Jumper Configuration for Indicator Voltage Selection

Indicator Input Voltage	OPEN	CLOSED
	JMP3	JMP4
24 Vdc		
48 Vdc		
110/125 Vdc or Vac		
220/250 Vdc or Vac		

Step 3. Slide the SEL-9510 circuit board and front panel back into the plastic housing, ensuring that the circuit board is placed securely in its guides, and tighten top and bottom screws.

Arc Suppression Enable/Disable

Disable the contact arc-suppression on CLOSE terminals 1 and 2 or on TRIP terminals 12 and 13 to use those contacts with ac loads. Also disable arc suppression for dc loads smaller than those listed under *Resistive DC or AC Outputs With Arc Suppression Disabled* in the *Specifications* Section. Follow these steps to disable contact arc suppression.

Step 1. Remove the SEL-9510 front panel and circuit board by removing the two center screws and sliding the front panel away from the plastic housing (see *Figure 3*).

Step 2. Configure jumpers JMP1 and JMP2 according to *Table 2* to enable/disable arc suppression as needed.

Table 2 Jumper Configuration for Arc Suppression Enable/Disable

Option	TRIP Contact Terminals 12, 13	CLOSE Contact Terminals 1, 2
	JMP2	JMP1
Arc suppression enabled, dc operation only (factory default)		
Arc suppression disabled, ac or dc operation		

Step 3. Slide the SEL-9510 circuit board and front panel back into the plastic housing, ensuring that the circuit board is placed securely in its guides, and tighten the screws (top and bottom).

Configurable Labels

SEL-9510 modules have a pocket for a slide-in label. Units are shipped with a default label (default label is not removable). *Figure 4* shows the location where a blank slide-in label can be inserted into the unit in front of the default label.

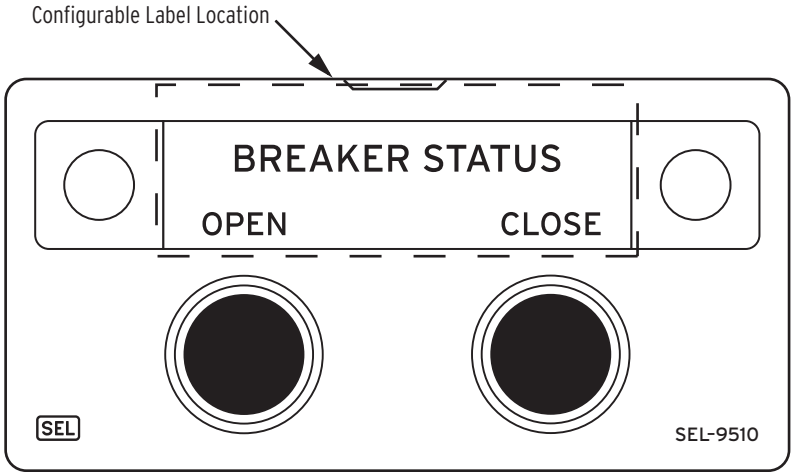


Figure 4 Configurable Label Location

For specific details on the use of configurable labels, see the instruction sheet included in the SEL-9510 Configurable Labels Kit (9260037).

Mounting

Install the SEL-9510 in any 19" rack using the rack-mount panels available from SEL, or in a panel cutout matching the dimensions in *Figure 8*. Mount the SEL-9510 using a screw in each of the mounting holes (four corners) as shown in *Figure 5*.

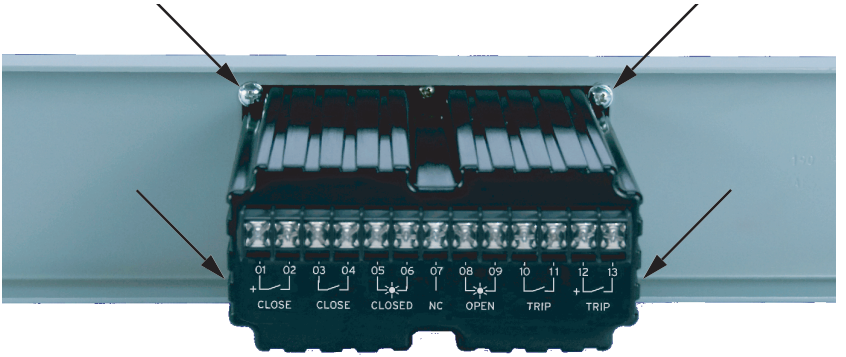


Figure 5 Mounting the SEL-9510

Wiring

Connect the necessary wiring to the rear panel of the SEL-9510. *Figure 6* shows example SEL-9510 wiring. Notice that the arc-suppressed contacts (indicated by **+** on the rear panel) are used for the trip and close circuits.

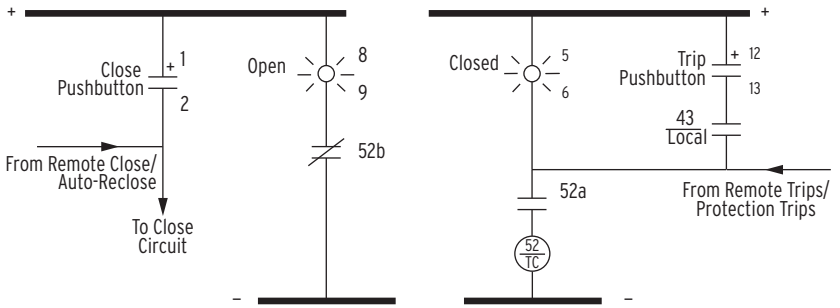


Figure 6 SEL-9510 Example Wiring Diagram

Use trip/close contacts at terminals 3 and 4 and 10 and 11 to signal breaker failure protection, trigger a data recorder or a breaker monitor, or to control a second breaker.

Accessories

Rack-Mount Panels

Four rack-mount panels are available from SEL for mounting SEL-9510 modules. *Table 3* lists the available panels. See *Mechanical Drawings* for illustrations.

Table 3 Available SEL-9510 Panels

Panel Description	Part Number
One SEL-9510 cutout, 19" Rack-Mount Panel—2U	915900114
Two SEL-9510 cutouts, 19" Rack-Mount Panel—2U	915900113
Three SEL-9510 cutouts, 19" Rack-Mount Panel—2U	915900112
One SEL-9510 cutout, half Rack-Mount Panel—2U (for mounting side-by-side with an SEL 500 series relay)	915900115

Pushbutton Guard Kit

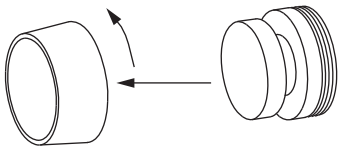
The pushbutton guard kit (9252001) is designed to help prevent accidental switch activation of the SEL-9510 pushbuttons. The pushbutton guard kit includes:

- Two aluminum bezels
- Two rubber covers
- Two red stickers
- Two green stickers

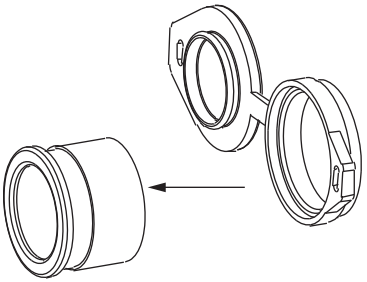
Follow these steps to install the pushbutton guards.

Step 1. Isolate the SEL-9510 to help prevent inadvertent tripping or closing.

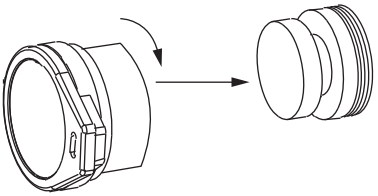
Step 2. Remove the plastic bezel from one of the pushbuttons by hand-turning counterclockwise.



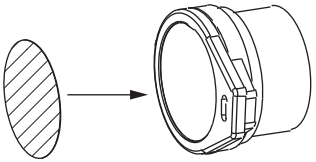
Step 3. Slip the retainer portion of the rubber cover over the aluminum bezel.



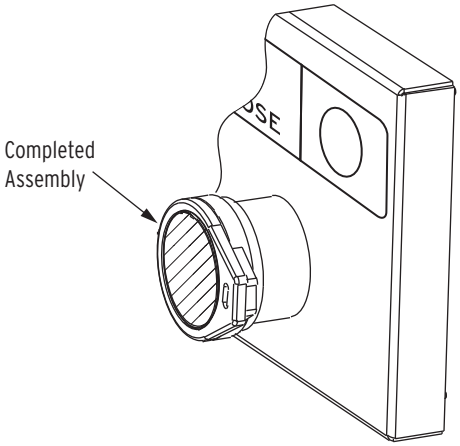
Step 4. Install the aluminum bezel assembly onto the pushbutton by hand-tightening clockwise (pay attention to proper thread alignment).



Step 5. Attach the colored sticker to the front of the cover lid to indicate switch color (extra stickers are provided).



Step 6. Open the cover and press the pushbutton to see that it moves freely and has the expected “snap” when fully pressed and then released.



The assembly is complete. Close the cover if desired.

Note that the closed cover has in-line holes that allow a tag or some other "sealing" device to be inserted to help prevent the cover from being opened or to serve as an operations warning/notification.

Step 7. Repeat the preceding installation steps for the other pushbutton, if desired.

Step 8. Return the isolated circuits to normal.

Pushbutton Lens Color Kit

The SEL-9510 lens colors can be changed to match any application. The lens color kit (9252004) includes one lens in each of the following colors:

- Red
- Green
- Amber
- Blue
- Yellow
- White

Follow these steps to install the lens covers (see *Figure 7*).

Step 1. Isolate the SEL-9510 pushbuttons, to help prevent inadvertent breaker tripping or closing.

Step 2. Remove the plastic bezel from one of the pushbuttons by hand-turning counterclockwise.

Step 3. Remove the lens from the pushbutton by hand-turning it counter clockwise.

Step 4. Install the desired lens by hand-tightening clockwise. Be careful not to over tighten.

Step 5. Install the plastic bezel onto the pushbutton by hand-tightening clockwise.

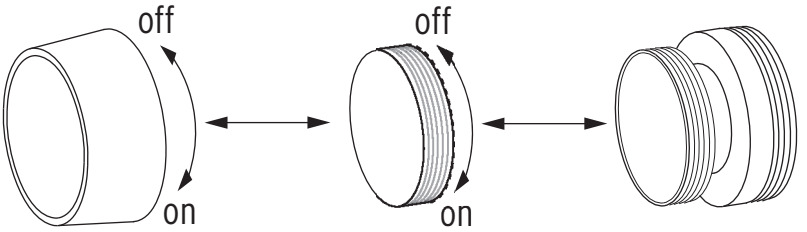


Figure 7 Replace/Install Lens Cover

Step 6. Repeat for the other pushbutton if desired.

Step 7. Return the isolated circuits to normal.

Mechanical Drawings

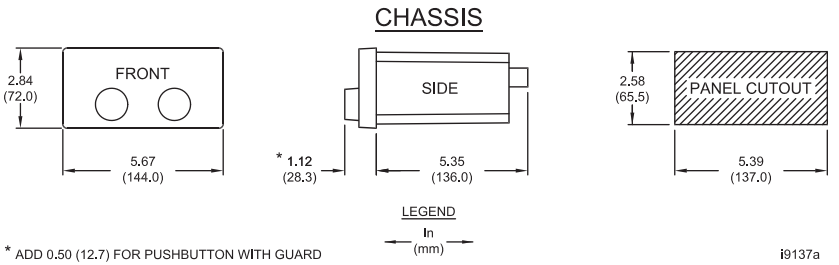


Figure 8 SEL-9510 Dimension Drawing

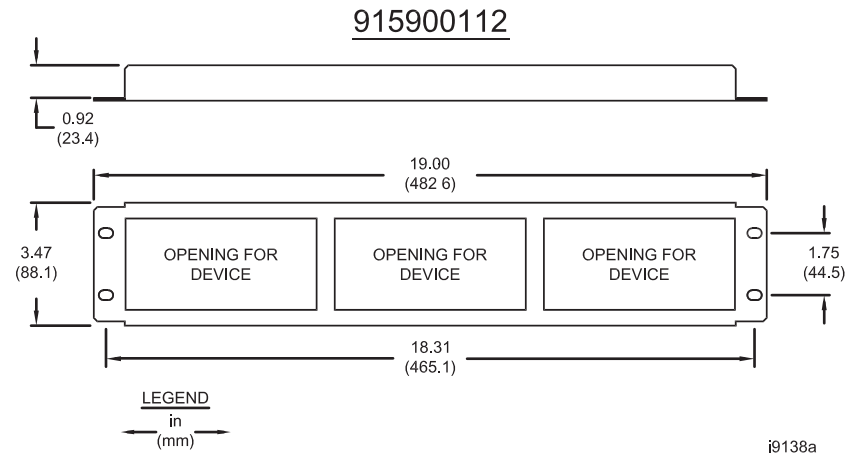


Figure 9 SEL-9510 Three-Opening Panel Cutout Dimension Drawing

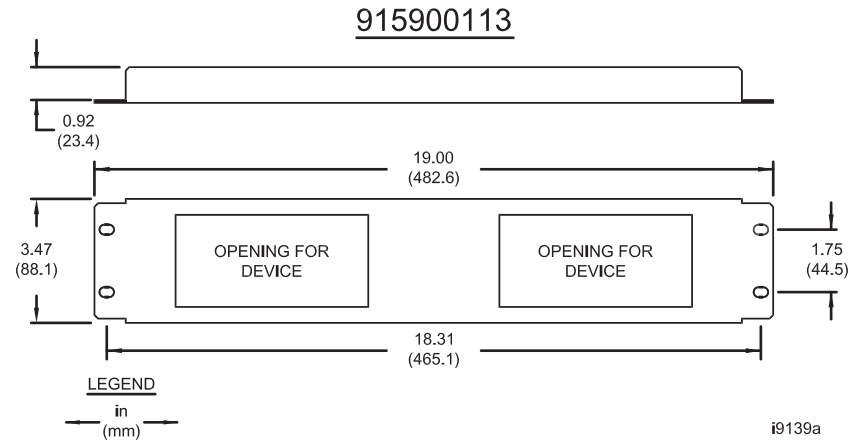


Figure 10 SEL-9510 Two-Opening Panel Cutout Dimension Drawing

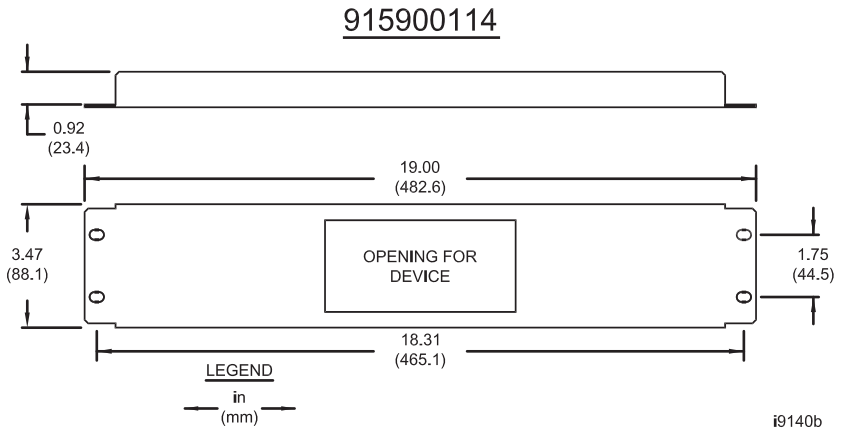


Figure 11 SEL-9510 Single-Opening Panel Cutout Dimension Drawing

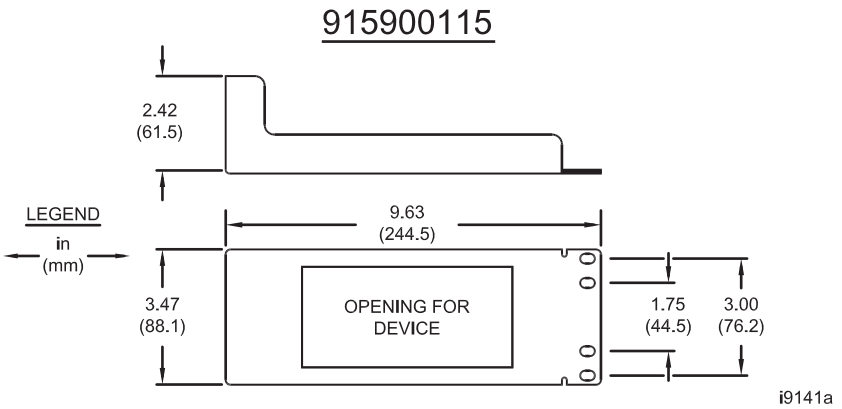


Figure 12 SEL-9510 Half-Rack Single-Opening Panel Cutout Dimension Drawing (for mounting side-by-side with an SEL-500 series relay)

Specifications

Compliance

ISO 9001:2008 Certified
UL Listed to US and Canadian safety standards (File E202915; NKCR, NKCR7)

Pushbuttons

Resistive DC or AC Outputs With Arc Suppression Disabled

Make:	30 A
Carry:	6 A continuous carry

1s Rating: 50 A

MOV Protection: 250 Vac/330 Vdc/130 J

Continuous Voltage: 250 Vac/330Vdc

Breaking Capacity (10000 operations):

48 V	0.50 A	L/R = 40 ms
125 V	0.30 A	L/R = 40 ms
250 V	0.20 A	L/R = 40 ms

Note: Make per IEEE C37.90-1989.

High Interrupt DC Outputs With Arc Suppression Enabled

Make: 30 A

Carry: 6 A continuous carry

1 s Rating: 50 A

MOV Protection: 330 Vdc/130 J

Continuous Voltage: 330 Vdc

Breaking Capacity (10000 operations):

48 V	10 A	L/R = 40 ms
125 V	10 A	L/R = 40 ms
250 V	10 A	L/R = 20 ms

Note: Make per IEEE C37.90-1989.

Indicators

250 Vdc: 300 Vdc max., 288 Vac max.
125 Vdc: 150 Vdc max., 144 Vac max.
48 Vdc: 60 Vdc max.
24 Vdc: 30 Vdc max.

Note: With nominal control voltage applied, each indicator draws 3.5 mA (max.).

Type Tests

Environmental

Object Penetration:	IEC 60529:2001 + CRGD:2003, IP3X for terminals
Protect Against Water:	IEC 60529:2001 + CRGD:2003, IPX4 for enclosed panel
Vibration, Shock, and Bump:	IEC 60255-21-1:1988, Class 1 & 2 IEC 60255-21-2:1988, Class 1 & 2 IEC 60255-21-3:1993, Class 2
Cold:	IEC 60068-2-1:1990 + A1:1993 + A2:1994
Dry Heat:	IEC 60068-2-2:1974 + A1:1993 + A2:1994

Electromagnetic Compatibility Immunity

Conducted RF Immunity:	IEC 60255-22-6:2001
Radiated Frequency Immunity:	IEEE C37.90.2-2004, 35 V/m IEC 61000-4-3:2006, 10 V/m ENV 50204:1995 IEC 60255-22-3:2000

Surge Withstand:	IEEE C37.90.1:2002, 2.5 kV oscillatory, 4 kV fast transient
Electrostatic Discharge:	IEC 60255-22-2:1996, Class 3 IEC 61000-4-2:2001 IEEE C37.90, 3-2001, Class 4 Levels 2, 4, and 8 kV contact Levels 2, 4, 8, and 15 kV air

Safety

Dielectric Strength:	IEC 60255-5:2000 IEEE C37.90-2005, 2500 Vac
Impulse:	IEC 60255-5:2000, 0.5 Joule, 5 kV

Factory Assistance

We appreciate your interest in SEL products and services. If you have questions or comments, please contact us at:

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