

SEL-2522 Alarm Panel Instruction Manual



Features, Benefits, and Applications

The SEL-2522 is a station alarm panel that has 36 contact inputs and 36 alarm windows. The alarm windows contain red indicating LEDs that show the status of each respective contact input. In addition to the contact inputs for alarm, there are contact inputs for remote acknowledge, reset, and test functions. The SEL-2522 runs continuous self-diagnostics and provides a green LED on the front to indicate proper device operation, as well as a Form C output contact on the back to provide a contact indication upon diagnostic failure.

The SEL-2522 contains no firmware settings. All device configuration is done through a set of rear-mounted control (DIP) switches. These switches allow the user to select energize or de-energize assertion of each alarm LED, internal alarm horn activation, lamp or horn following action on a general purpose output contact, input filter time constant, alarm sequences, and the ability to enable or disable the use of remote contact inputs for the test, reset, and acknowledge functions.

- **Easy Set Up** lets you configure the SEL-2522 Alarm Panel without the need for any additional devices.
- **Manual Reset or Ringback Sequences** provide latching alarm sequences according to the ISA 18.1 standard for reliable, repeatable operation.
- **Rack or Panel Mounting** options give you the flexibility to put the alarm panel where it is easy to see and use.
- **User-Configurable Labels** allow fast and easy modification of alarm labels.
- **Connectorized® Terminal Blocks** for ease of installation and service.
- **Self-Testing** for increased reliability.
- **Test Sequence** for validating sequence operation and proper horn and LED operation.
- **Audible (Horn) or Visible (Lamp) Following Output** allows you to select a device for external indication of the alarm conditions.

Product Overview

WARNING

Operator safety may be impaired if the device is used in a manner not specified by SEL.

Figure 1, Figure 2, and Figure 3 show the functional overview of the SEL-2522 Alarm Panel.

The SEL-2522 is an excellent choice for the annunciation of alarms and operating events. With the ability to indicate the status of as many as 36 inputs, the SEL-2522 can be scaled to indicate as few or as many points as needed for each application. Multiple alarm panels can be used for high-density alarm applications. Field configurable labels give the alarm panel the ability to be modified if changes in the number or type of devices being monitored should occur. A wide range of power supply voltages, and contact input voltages allows the SEL-2522 to be installed in virtually any system.

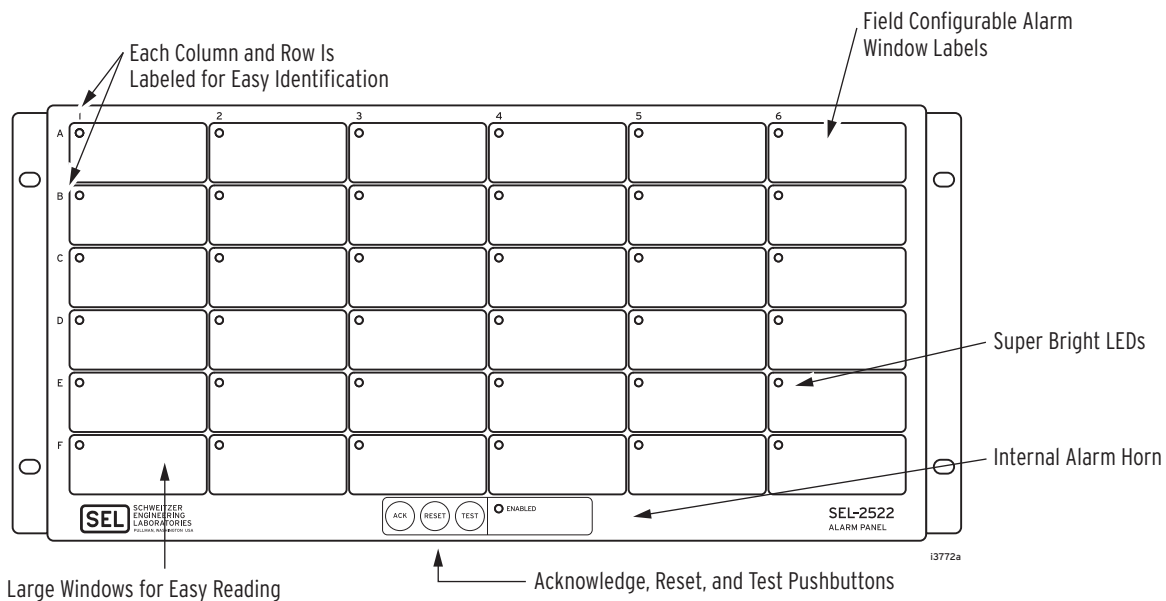


Figure 1 SEL-2522 Front View

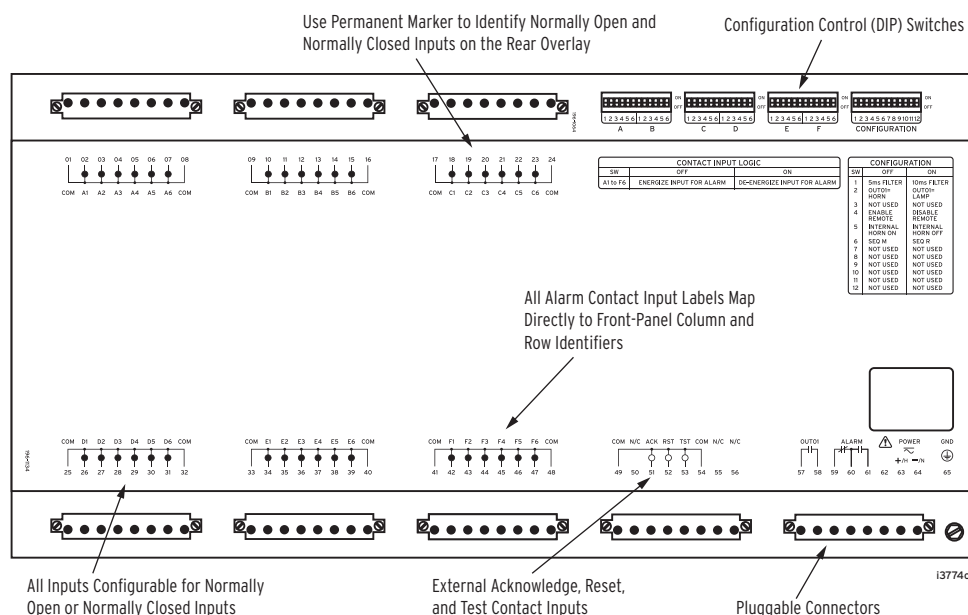


Figure 2 SEL-2522 Rear View

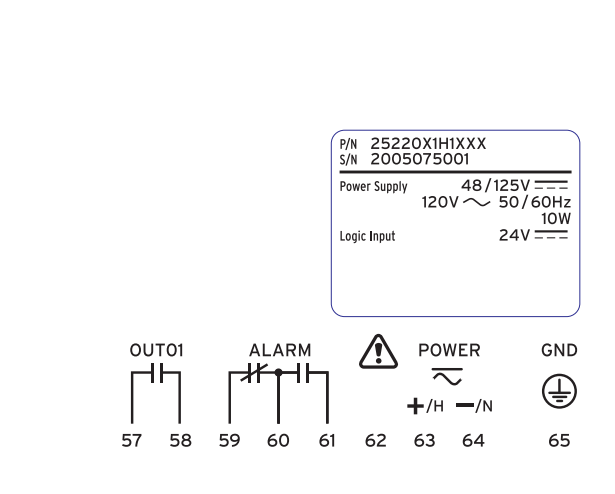


Figure 3 Serial Label

Applications

The following applications represent examples of typical alarm panel installations. Use the SEL-2522 alarm panel for indication of a wide variety of conditions including the following:

- System status
- Quantity high/low
- Timing status
- Intrusion/security status
- Device operational status
- Breaker/switch position

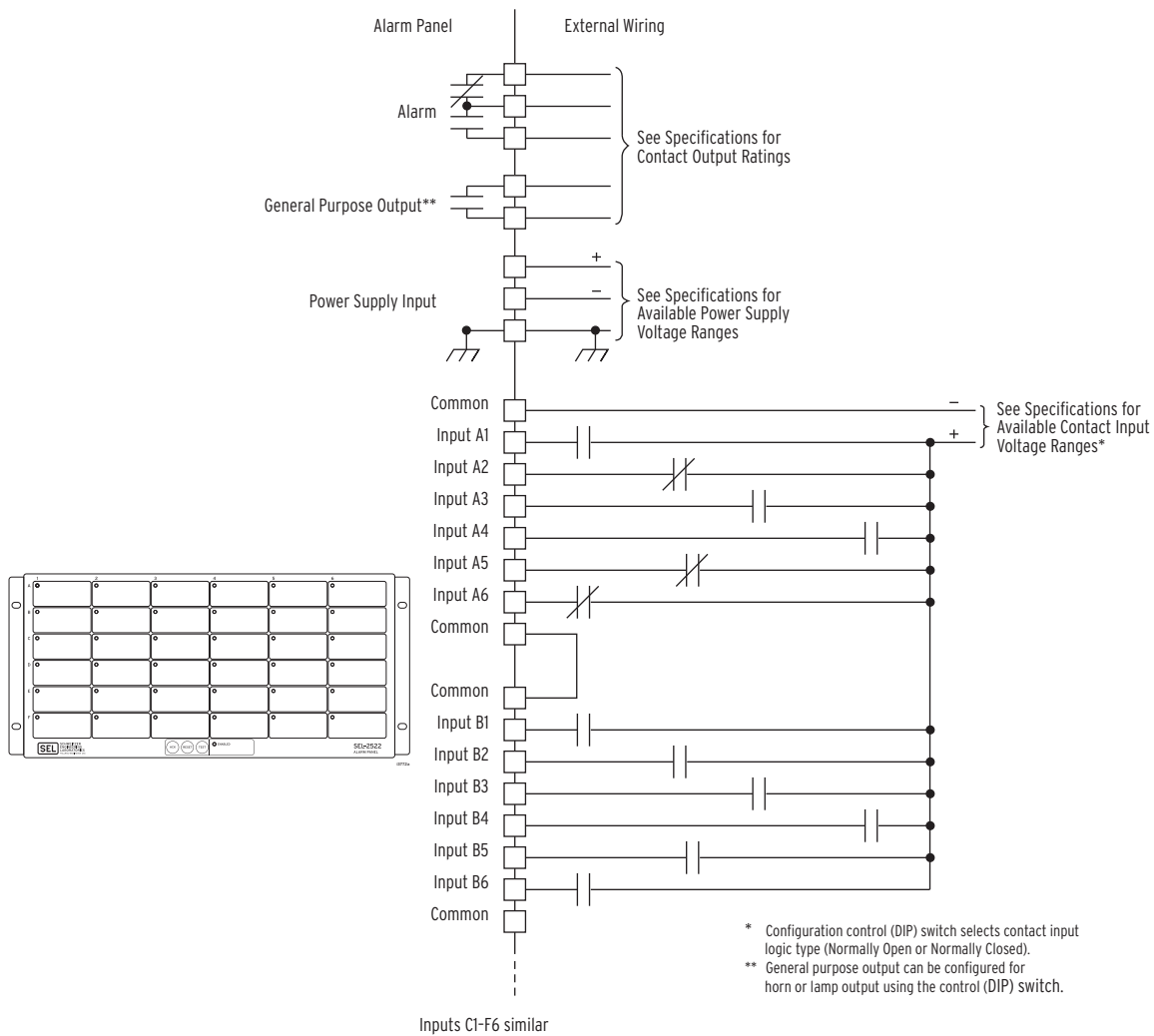


Figure 4 Single Alarm Panel Application

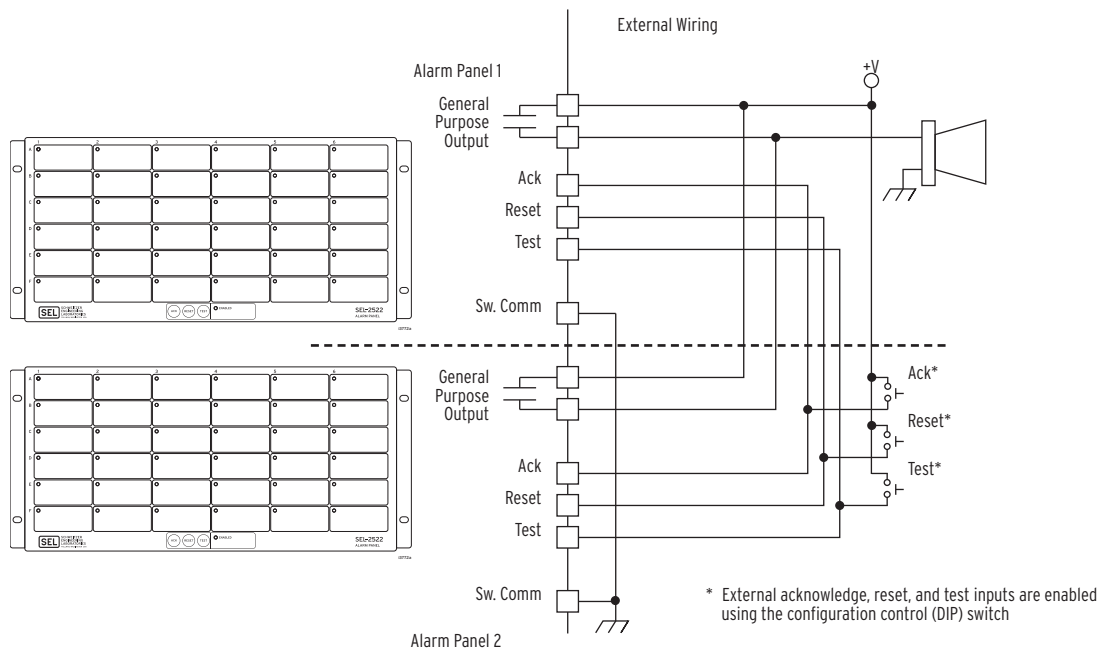


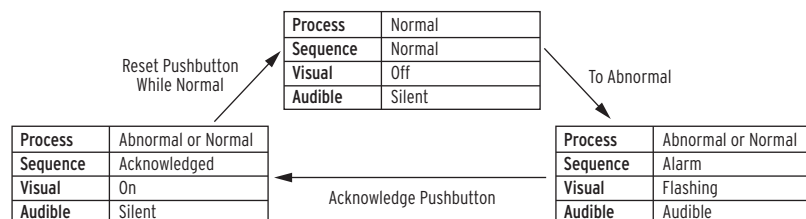
Figure 5 Multiple Alarm Panel Application

See single-unit application for individual contact wiring

Functional Description

The SEL-2522 supports the ISA-18.1 Sequence M standard operational sequence for abnormal or test conditions or a ringback sequence for abnormal or test conditions. Use the ALM configuration control (DIP) switch to select the desired sequence. *Figure 6* shows the state logic diagram for Sequence M and the necessary inputs to transition from one state to the next. *Table 1* shows the tabular version of the Sequence M logic. *Figure 7* shows the state logic diagram for the ringback sequence. *Table 2* shows the tabular version of the ringback sequence logic. The test function in the SEL-2522 also conforms to the ISA-18.1 standard for test sequences. Initiate the test sequence either by pressing the **TEST** button on the front of the alarm panel or by enabling the use of remote switch inputs to the panel using the configuration control (DIP) switch and issuing a test contact input to the test (TST) input on the back of the device. Once in the test mode, all 36 inputs operate as if they have received a valid assertion of their alarm logic. All 36 LEDs flash in unison and the internal horn and follower contact output energize until an acknowledge input is given. In Sequence M, once the acknowledge signal is received, the LEDs remain steady and the alarm horn is silent. In the ringback sequence, after the acknowledge button is pressed or the corresponding input activated, all 36 inputs flash slowly and the audible signal beeps slowly. In either sequence, pressing the reset input clears all inactive alarms, resetting the LED to an OFF state. Alarms that were active before the test function remain active following the test cycle. *Figure 8* shows the test logic diagram for Sequence M and *Figure 9* the test logic diagram for the ringback sequence.

The SEL-2522 stores any change in the existing alarm state once every second. The stored alarm states are saved to nonvolatile memory and are returned to the last recorded state upon startup. This feature allows alarms recorded during events that cause power outages to be maintained for post-event analysis. The preserved states are reset using the standard reset sequence.



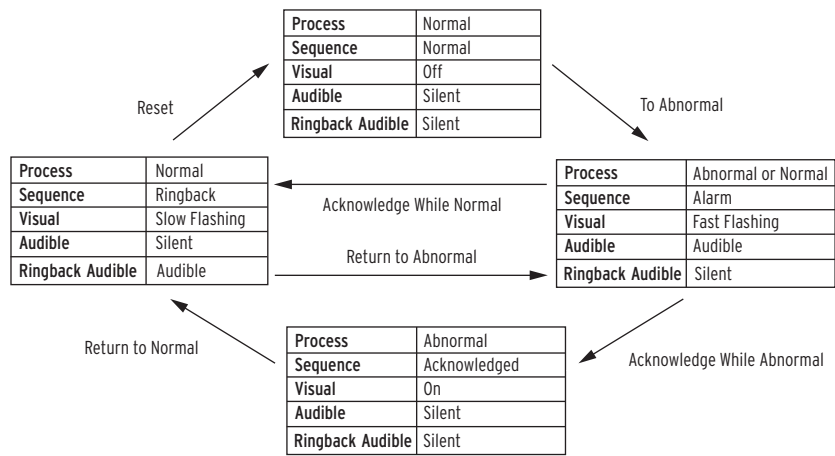
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Figure 6 Sequence M State Diagram

Table 1 Sequence M Table^a

Line	Process Condition	Pushbutton Operation	Sequence State	Visual Display	Audible Alarm Device	Remarks
1	Normal		Normal	Off	Silent	
2	Abnormal		Alarm	Flashing	Audible	Latched
3	Abnormal or Normal	Acknowledge	Acknowledged	On	Silent	Manual Reset Required
4a	Abnormal	Reset	To Line 3			
4b	Normal	Reset	Normal	Off	Silent	Manual Reset Required

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Note: Ringback Audible and Alarm Audible Use the Same Internal Alarm Horn

Ringback Sequence Features

- 1) Acknowledge, Reset, and Test Pushbuttons
- 2) Alarm Audible Device
- 3) Lock-In of Momentary Alarms Until Acknowledged
- 4) Audible Device Is Silenced and Fast Flashing Stops When Acknowledged
- 5) Ringback Visual and Audible Indications When Process Conditions Return to Normal
- 6) Manual Reset of Ringback Indications
- 7) Operational Test

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Figure 7 Ringback Sequence Diagram

Table 2 Ringback Sequence Table^a

Line	Process Condition	Pushbutton Operation	Sequence State	Visual Display	Audible Alarm Tone ^b	Ringback Audible Tone ^c	Remarks
1	Normal		Normal	Off	Silent	Silent	
2	Abnormal		Alarm	Fast Flashing ^d	Audible	Silent	Lock-In
3a	Abnormal	Acknowledge	Acknowledged	On	Silent	Silent	Maintained Alarm
3b	Normal	Acknowledge	To Line 4				Momentary Alarm
4	Normal		Ringback	Slow Flashing ^e	Silent	Audible	Manual Reset Required
5	Abnormal		To Line 2				Return to Abnormal
6	Normal	Reset	Normal	Off	Silent	Silent	Manual Reset

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^b Alarm audible tone produces a rising alarm tone on the internal horn every 2.5 seconds.

^c Ringback audible tone produces a single tone on the internal horn every 10 seconds.

^d Fast flashing rate is 2 flashes per second.

^e Slow flashing rate is 1 flash per second.

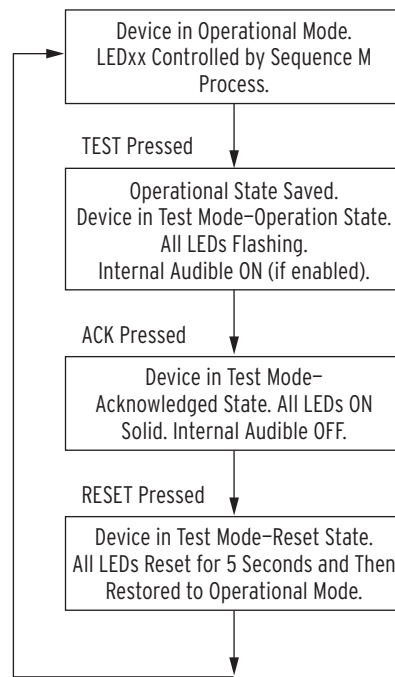


Figure 8 Sequence M Test Logic Diagram

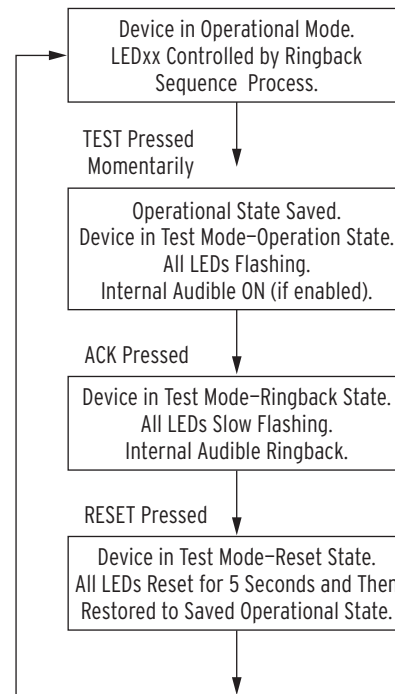


Figure 9 Ringback Sequence Test Logic Diagram

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

 WARNING This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than 250 V, 5 A.	 AVERTISSEMENT Ce produit s'appuie sur l'installation du bâtiment pour la protection contre les court-circuits (surintensité). Assurez-vous que le dispositif de protection évalué ne dépasse pas 250 V, 5 A.
 CAUTION Disconnect supply before changing fuse (1 A, 250 V).	 ATTENTION Débranchez l'alimentation avant de changer le fusible (1 A, 250 V).
For use in Pollution Degree 2 environment.	Pour l'utilisation dans un environnement de Degré de Pollution 2.
Terminal Ratings Wire Material Use 90°C (194°F) copper conductors only. Wire Size CT Connections: 12–26 AWG Tightening Torque Terminal Blocks: 0.6 to 0.8 Nm (5 to 7 in-lb)	Spécifications des bornes Type de filage Utiliser seulement conducteurs en cuivre 90 °C (194 °F). Calibre de fil Connexions du TC : 12–26 AWG Couple de serrage Borniers : 0.6 à 0.8 Nm (5 à 7 livres-pouce)

Other Safety Marks

<p>⚠ DANGER Contact with instrument terminals can cause electrical shock that can result in injury or death.</p>	<p>⚠ DANGER Tout contact avec les bornes de l'appareil peut causer un choc électrique pouvant entraîner des blessures ou la mort.</p>
<p>⚠ DANGER Contact with this circuitry may cause electrical shock that can result in injury or death.</p>	<p>⚠ DANGER Tout contact avec ce circuit peut être la cause d'un choc électrique pouvant entraîner des blessures ou la mort.</p>
<p>⚠ WARNING Use of this equipment in a manner other than specified in this manual can impair operator safety safeguards provided by this equipment.</p>	<p>⚠ AVERTISSEMENT L'utilisation de cet appareil suivant des procédures différentes de celles indiquées dans ce manuel peut désarmer les dispositifs de protection d'opérateur normalement actifs sur cet équipement.</p>
<p>⚠ WARNING Have only qualified personnel service this equipment. If you are not qualified to service this equipment, you can injure yourself or others, or cause equipment damage.</p>	<p>⚠ AVERTISSEMENT Seules des personnes qualifiées peuvent travailler sur cet appareil. Si vous n'êtes pas qualifiés pour ce travail, vous pourriez vous blesser avec d'autres personnes ou endommager l'équipement.</p>
<p>⚠ CAUTION Equipment components are sensitive to electrostatic discharge (ESD). Undetectable permanent damage can result if you do not use proper ESD procedures. Ground yourself, your work surface, and this equipment before removing any cover from this equipment. If your facility is not equipped to work with these components, contact SEL about returning this device and related SEL equipment for service.</p>	<p>⚠ ATTENTION Les composants de cet équipement sont sensibles aux décharges électrostatiques (DES). Des dommages permanents non-décelables peuvent résulter de l'absence de précautions contre les DES. Raccordez-vous correctement à la terre, ainsi que la surface de travail et l'appareil avant d'en retirer un panneau. Si vous n'êtes pas équipés pour travailler avec ce type de composants, contacter SEL afin de retourner l'appareil pour un service en usine.</p>

Installation

The SEL-2522 Alarm Panel is available in either 19" rack-mount or panel-mount versions. Select the desired mounting option when ordering the product by using the appropriate Ordering Information Sheet selection.

19" Rack-Mount Installation

The rack-mount version of the SEL-2522 alarm panel is designed for easy mounting in a standard 19" equipment rack. The SEL-2522 is 5U high and uses mounting ears for attachment to the equipment rack. The dimensions of the rack mount version are 19.00 inches (482.6 mm) wide, 8.72 inches (221.5 mm) high, and 2.81 inches (71.4 mm) deep. See *Figure 12* for device and mounting dimensions.

Panel-Mount Installation

The panel-mount version of the SEL-2522 is designed for mounting in a panel or door application. Mounting the SEL-2522 requires a cutout for the insertion of the device into the panel. #10-32 mounting lugs are provided for securing the SEL-2522 to the panel or door. The dimensions of the panel mount version are 19.80 inches (502.9 mm) wide, 10.15 inches (257.8 mm) high, and 2.81 inches (71.4 mm) deep. See *Figure 12* for device and mounting dimensions.

Wiring

The SEL-2522 alarm panel is designed for easy wiring. All points on the panel use screw-retained, pluggable terminal blocks. These terminal blocks use compression terminals where stripped wire is inserted into the terminal and held in place by tightening a small screw on top of each respective terminal.

Power Supply

The SEL-2522 is available with two power supply options. Select the desired option in the Ordering Information Sheet when ordering. The power supply input accepts ac or dc voltages. A grounding terminal is provided. This terminal is connected to chassis ground of the SEL-2522 and should be connected to an external ground per local wiring code.

Contact Inputs

There are six banks of contact inputs to the SEL-2522 alarm panel. Each bank of six inputs is isolated from all other inputs and outputs. Two common connections are provided for each bank of inputs to allow a continuous common connection between terminal blocks which share a common source. The contact inputs can be configured to assert upon the application of voltage to the terminal (normally open [N.O.] input type) or deassert upon the application of voltage to the terminal (normally closed [N.C.] input type). The configuration is set by using the individual contact input configuration control (DIP) switches located on the rear of the alarm panel.

A wide selection of contact input voltages are available as an ordering option for the SEL-2522. Select the desired option in the Ordering Information Sheet when ordering. Note that all contact inputs operate within the selected voltage range.

Contact Outputs

There are two dedicated contact outputs on the SEL-2522 alarm panel.

General Purpose Output

One set of Form A (N.O.) contact outputs is provided for use as a general purpose output. These contacts are configured using the configuration control (DIP) switch to follow a visual (lamp) or audible (horn) indicating sequence as shown in *Table 1* of this document. The general purpose output, when used, provides an external alarm horn or alarm lamp indication when any alarm condition exists on the SEL-2522 alarm panel.

Alarm Output

The alarm output provides a Form C (N.O. and N.C.) set of contacts as a means of indicating device operating status. The alarm output coil is normally energized and de-energizes upon loss of power, or loss of normal operation of the device. The SEL-2522 performs self checks on internal supply voltages, memory and code execution. Failure of any one of these functions will cause the alarm output coil to de-energize. In addition, a loss of input supply power to the SEL-2522 will cause the alarm output coil to de-energize.

EN 61010-1 and the SEL-2522

The listing of the following information assists with SEL-2522 compliance to EN (European Normal) 61010-1 requirements.

Rear-Panel Symbols

IMPORTANT: Do not connect power to the SEL-2522 until you have completed these procedures.

There are important safety precautions when you connect the SEL-2522 at terminals marked by these symbols. In particular, the danger symbol located on the rear panel corresponds to the following:

Contact with instrument terminals can cause electrical shock that can result in injury or death.

Be careful to limit access to these terminals.

The exclamation point symbol (inside the triangle of the Danger Symbol in *Figure 10*, for example) is referred to as Symbol 14 in EN 61010-1. The presence of Symbol 14 on a piece of equipment indicates to the user that the corresponding instruction manual should be consulted for further clarification (see *Safety Information* for details).



Figure 10 Rear-Panel Safety Symbols

Power Connections

Use 26 AWG to 14 AWG stranded wire, or 12 AWG solid wire, to connect to the **PWR** (Power) terminals. Strip the wire to expose 0.310 inches of conductor. Tightening torque for the terminal block screws is 0.6 Nm (5 in-lb) to 0.8 Nm (7 in-lb). When you use a dc power source, you must connect the source with the proper polarity, as indicated by the + (Terminal 63) and - (Terminal 64) symbols on the power terminals. Upon connecting power, you will see the **ENABLED** LED illuminate on the front panel of the SEL-2522.

Disconnect Device



Contact with instrument terminals can cause electrical shock that can result in injury or death.

Place an external circuit breaker no more than 3.0 m (9.8 ft) from the equipment. The circuit breaker (or equivalent approved disconnect device appropriate for the country of installation) must comply with IEC 60947-1 and IEC 60947-3 and be identified as the disconnect device for the equipment. This disconnect device must interrupt both the hot (H) and the neutral (N) power leads.

External Overcurrent Protection Device

External ac or dc rated overcurrent protection must be provided in accordance with local electrical installation code. External overcurrent protection should not be greater than 5 A.

Operational power is internally fused. The internal fuse is not user-replaceable. Should failure occur, return the unit to the factory for repair.

Wire Clamp Terminal Connectors

Use 26 AWG to 14 AWG stranded wire, or 12 AWG solid wire, to connect to the wire clamp terminal connectors of the SEL-2522. As many as two 16 AWG stranded wires can be connected to the same terminal. Strip the wire to expose 0.310 inches of conductor. Tightening torque for the terminal block screws is 0.6 Nm (5 in-lb) to 0.8 Nm (7 in-lb).

Grounding

Connect the grounding terminal labeled **GND** on the rear panel to a rack frame ground or main station ground for proper safety and performance. Use wire that is 12 AWG or larger and shorter than 2.0 m (6.6 ft) for this connection. The ground connection should be made before the power connections.

Cleaning

Use care when cleaning the SEL-2522. Use a mild soap or detergent solution and a damp cloth to clean the chassis. Be careful cleaning the front and rear panels because a permanent plastic sheet covers each panel; do not use abrasive materials, polishing compounds, or harsh chemical solvents (such as xylene or acetone) on any surface. The front panel contains slots for inserting configurable labels. Be careful not to allow water to accumulate inside these slots.

Alarm Window Labels

Customize the SEL-2522 Alarm Panel for your specific needs. Use the configurable front-panel labels to change the identification of alarm window LEDs.

The blank slide-in label set, shown in *Figure 11*, is included with the SEL-2522. When installing the configurable labels, ensure that the labels installed in the front-panel pockets at the factory are removed before installing the new labels. The aluminum chassis should be viewable through the front-panel windows when no labels are installed in the unit.

If you need additional configurable alarm window label supplies, order the labels kit or individual kit components (part number 9260016). Contact your Technical Service Center or the SEL factory to obtain these kits.

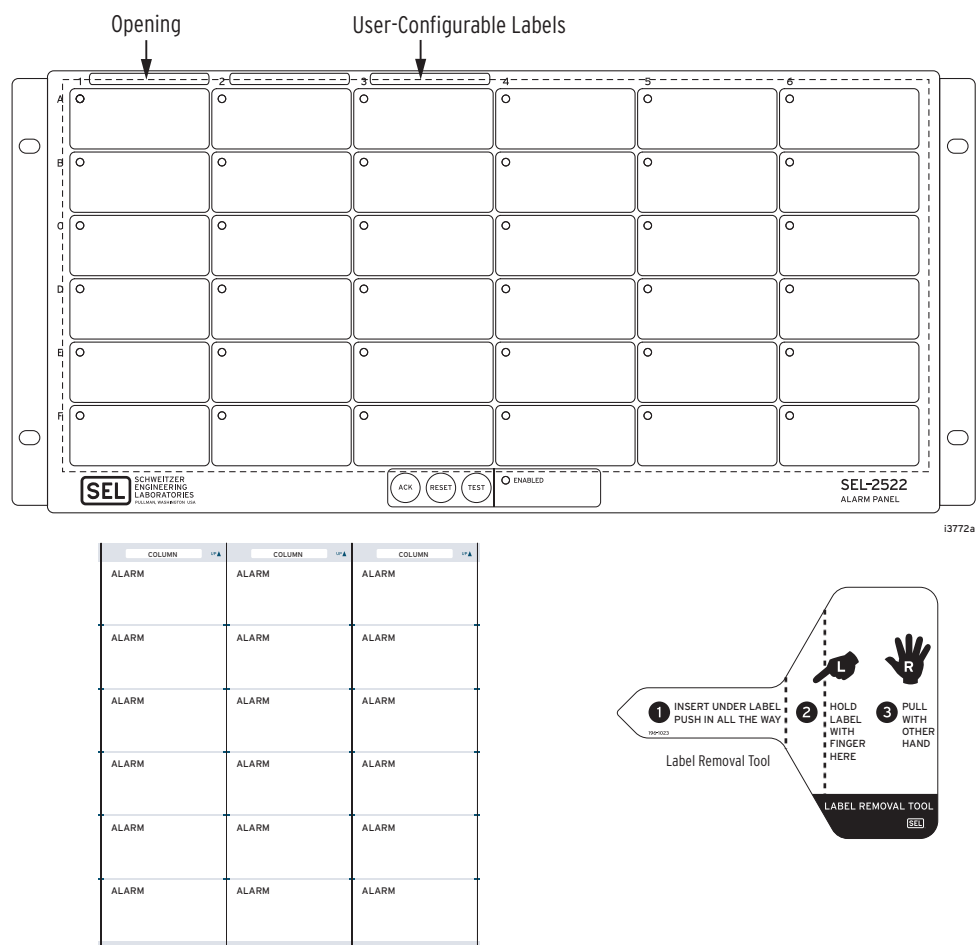


Figure 11 Blank Configurable Label Set and Label Removal Tool

Table 3 provides a list and description for the items contained in the configurable labels kit.

Table 3 Configurable Front-Panel Label Kit (Part No. 9260016)

Content Descriptions	Quantity	Part Number
Blank Customer Label Templates on perforated paper for laser printing	Five sets—three labels for each set	196-1061
Label Removal Tool	One	196-1023
SEL-2522 Instruction Manual (printed)	One	PM2522-01
SEL-2522 Product Literature CD-ROM	One	PM2522-01-CD

Removing Configurable Front-Panel Labels

Use the Label Removal Tool (shown in *Figure 11*) and the following procedure to remove configurable labels from the front-panel pocket.

- Step 1. Push the existing label all the way inside the label pocket.
- Step 2. Slide the tip of the tool under the label at the label pocket opening (see *Figure 11* for opening locations).
- Step 3. Push the exposed edge of the label against the Label Removal Tool while pulling out the combined label and Label Removal Tool.

Creating Laser-Printed Labels

NOTE: The template is a Word 2000 file. The default template font is Arial. You can use this font or choose a different font that is available on your computer system.

The purpose of this procedure is to create laser-printed configurable front-panel labels on blank Customer Label Templates (supplied in the kit). The source for label template files is the SEL-2522 Product Literature CD-ROM. In addition, you can find these files on the SEL website (selinc.com).

- Step 1. Insert the SEL-2522 Product Literature CD-ROM in your computer CD-ROM drive.

A Microsoft® Internet Explorer window will automatically open.

- Step 2. Save the Microsoft Word configurable label template file to your hard drive.

- a. Click on the View the Microsoft Word Configurable Label Template link.
- b. Save the file to a location on your hard drive (**File > Save As**).

- Step 3. Edit the new document to create custom labels.

- a. Place LED labels in the appropriate positions on the blank Customer Label Template.
- b. Fill in the fields.

Use the Tab and Arrow keys or your mouse to move from field to field. Field space is limited; only the text that displays on the screen prints on the label.

Save the file often to preserve your work in progress.

- Step 4. When all necessary entries are complete, save the file.

- Step 5. Test the position of the label text by printing the template file to plain paper.

- a. From the document, select **File > Print > OK**.
- b. Examine the printed sheet for proper alignment. Carefully compare the printed page to the perforated stock sheets.

NOTE: If your printer has duplex capability, be sure to set the printer to print single sided.

- c. If the printed sheet is not aligned properly, proceed to *Step 6*.
 - d. If the labels appear as desired, proceed to *Step 7*.
- Step 6. Make adjustments to margin settings, as necessary, to print in the proper location on the test sheet.
- a. Use the **File > Page Setup** menu to adjust only the top or left margins as needed to correct the alignment.
 - b. DO NOT adjust the right or bottom margins.
 - c. Do a test print on plain paper.
 - d. Examine the label positions.
 - e. Repeat as necessary until the alignment is correct.
- Step 7. Save the document.
- Step 8. Print the labels on the perforated stock sheets.
- If the labels are incorrect, repeat this procedure beginning with *Step 3*.
- Step 9. Fold and tear the perforated edges of the stock paper to remove the label from the sheet.
- Step 10. Remove the existing label from the front-panel label pocket with the Label Removal Tool.
- Step 11. Insert the newly created label in the pocket on the front panel.

To change the labeling again, remove the existing label and repeat the procedure.

Mechanical Diagram

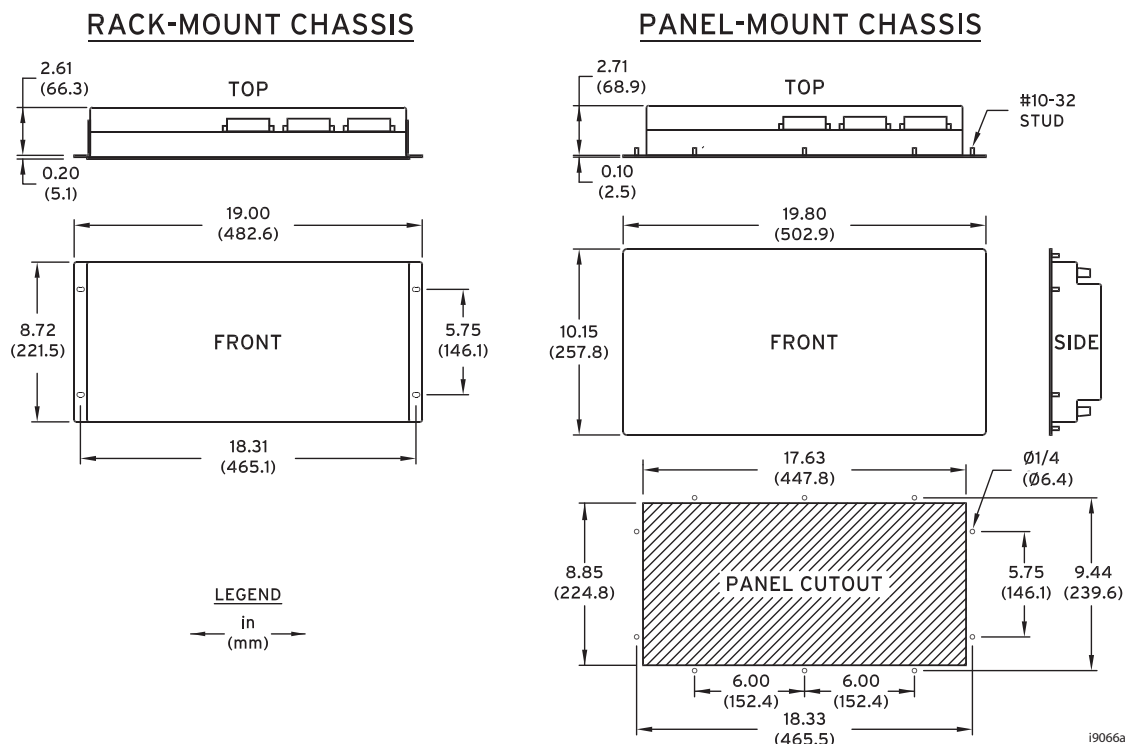


Figure 12 Rack- and Panel-Mount Versions

Configuring

The SEL-2522 is fully configurable through the banks of control (DIP) switches located on the rear of the alarm panel. These switches provide the ability to set input contact type, internal horn operation, input filter time constant, external pushbutton use, and General Purpose output function.

There are a total of 4 banks of control (DIP) switches on the SEL-2522. Each control (DIP) switch bank contains 12 individual control (DIP) switches. Note that on the front of the SEL-2522 there are numbers along the top of each column of windows and letters along the left side of each row of windows. This method of identifying each alarm window as a unique point is useful in identifying the individual contact inputs and input control (DIP) switch control located on the back of the unit.

As shown in *Figure 14*, three of the four 12-position control (DIP) switches are dedicated to providing the input logic configuration needed for allowing operation with normally open (Form A), or normally closed (Form B) contact inputs. Inputs configured for normally open operation will enter into an active alarm state (LED Flashing, Horn On) when input voltage is applied to the respective input. Inputs configured for normally closed operation will enter into an active alarm state when input voltage is removed from the respective contact input.

The rear overlay on the SEL-2522 is designed for easy identification of N.O. and N.C. inputs. Simply use any fine-point permanent marker to draw a line diagonally through the input symbol for any inputs that are using Form B N.C. contact input logic. Leave any inputs that are Form A N.O. contact input logic in their original state (no mark required). *Figure 13* shows the recommended graphics for N.O. and N.C. inputs. Configuration of the contact input logic is set using the contact input logic control (DIP) switches.

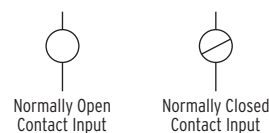


Figure 13 Recommended Graphics for Normally Open and Normally Closed Inputs

The fourth control (DIP) switch bank is used for configuration of the SEL-2522.

The first control (DIP) switch in the fourth bank, labeled FIL in *Figure 14*, is used to select the filter time constant for all contact inputs to the SEL-2522 alarm panel. When this switch is in the Off position a 5 ms debounce time is used to provide rapid response with a minimal time delay. When this switch is in the On position, a 10 ms debounce time is used to provide a more secure input response for signals which require a longer settling time. The factory-default setting for this switch is the 5 ms setting.

There is a single output contact on the SEL-2522 alarm panel that is used as a general purpose output. OUT01 is dedicated to provide this feature, and can be configured to follow either the internal horn or the LED state of the annunciator panel.

When the General Purpose Output (GPO) control (DIP) switch is switched to the lower position (OFF), the general purpose output contact duplicates the action of the internal horn during alarm conditions. Specifically, the GPO closes when there is any new active alarm condition and opens once this condition is acknowledged.

If the GPO control (DIP) switch is switched to the upper (ON) position, the output contact duplicates the action of the LED outputs. Any active alarm input causes the GPO to close. When all active alarms are acknowledged, the General Purpose contact output remains closed until the acknowledge alarms are cleared from the panel by the reset cycle. It also remains closed if new alarms enter the panel.

The PB control (DIP) switch (see *Figure 14*) is used to enable or disable contact inputs used for remote operation of the Acknowledge, Test, and Reset pushbutton functions. When this control (DIP) switch is in the lower (OFF) position, the remote pushbutton functions are enabled and operate in parallel with the integrated pushbuttons for those functions found on the front of the alarm panel. When the PB control (DIP) switch is in the upper (ON) position, the remote pushbutton functions are disabled, effectively blocking any operation of the remote inputs.

The HRN control (DIP) switch (see *Figure 14*) is used to enable or disable the internal alarm horn. When the HRN control (DIP) switch is in the lower (OFF) position, the internal alarm horn is enabled and follows the audible indications shown in *Table 1*.

When the HRN control (DIP) switch is in the upper (ON) position, the internal alarm horn is disabled and does not provide any audible output for any state of operation. Note that this control (DIP) switch only controls the operation of the internal alarm horn. The external alarm horn, if configured for use, continues to follow the audible device actions regardless of the position of this switch.

The ALM control (DIP) switch (see *Figure 14*) is used to select the alarm sequence. When the ALM control (DIP) switch is in the lower (OFF) position, the manual sequence is selected, and alarm conditions are processed using the manual reset logic shown in *Figure 7*. When the ALM control (DIP) switch is in the upper (ON) position, the ringback sequence is selected (see *Figure 7*).

There are several unused control (DIP) switches in the fourth bank. These switches are reserved for future use.

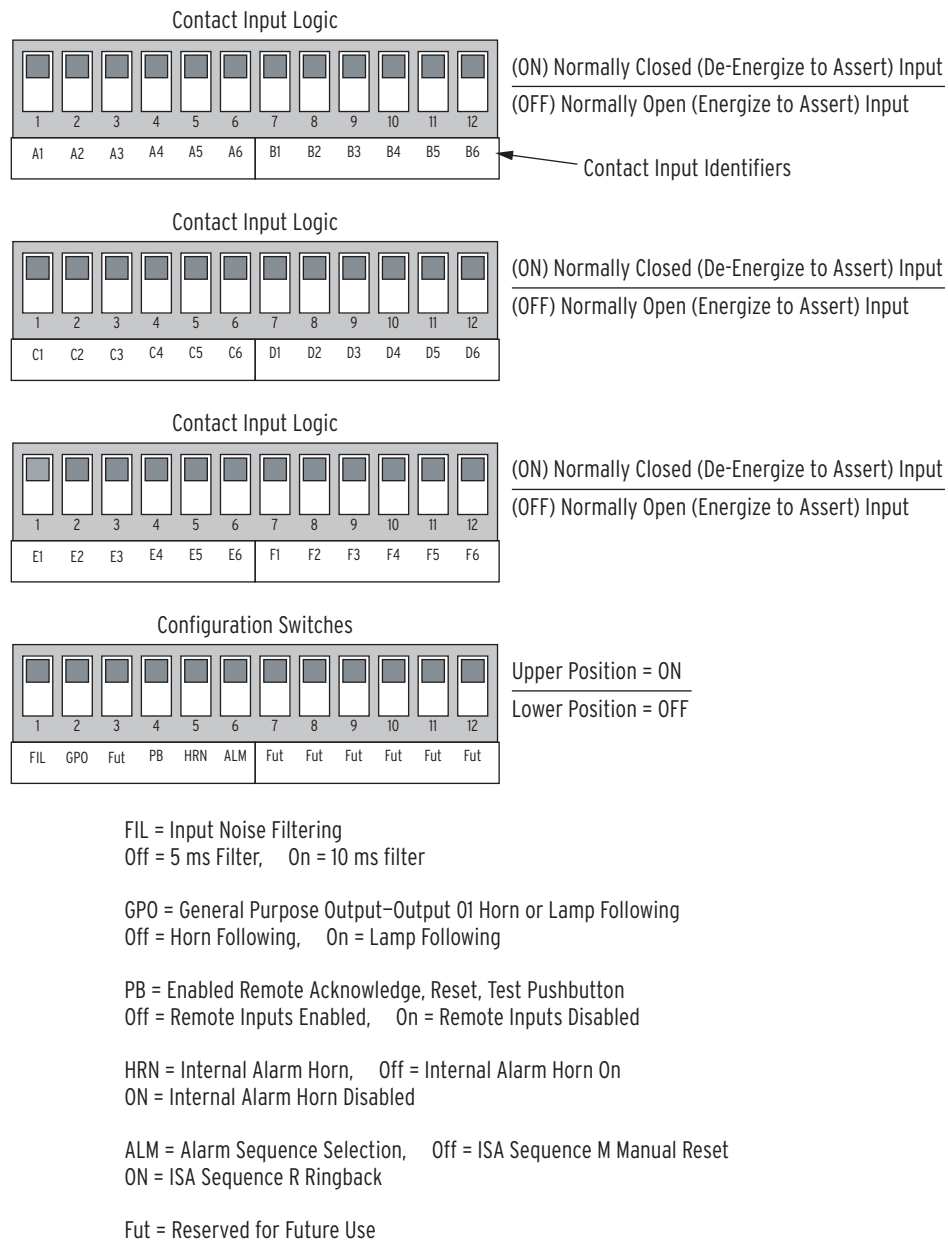


Figure 14 Control (DIP) switch Configuration Settings

Testing and Troubleshooting

Testing

Testing of the SEL-2522 consists of issuing a test command to the alarm panel either through the front **TEST** pushbutton located at the bottom of the front panel or by issuing a TEST contact input to the dedicated TEST input at the rear of the alarm panel. Issuing a test input drives the alarm panel into a test sequence, as shown in *Figure 8* and *Figure 9* in the *Functional Description* portion of this document. *Figure 8* shows the test sequence for SEL-2522 alarm panels configured for the manual reset sequence and *Figure 9* shows the test sequence for SEL-2522 alarm panels configured for the ringback sequence.

In addition to the manual test, the SEL-2522 performs continuous self-tests for processor operation, various on board memories, and the power supply voltages. Failure to pass any of these continuous self-tests will result in the

green **ENABLED** LED on the front of the alarm panel to extinguish, and the de-energization of the ALARM relay, which drives contact outputs on the rear of the panel.

Troubleshooting

The SEL-2522 is designed for reliable operation in extreme environments. It uses a fixed operating sequence which is described in the *Functional Description* of this document. If the device does not operate as expected, follow the troubleshooting chart below to help find the root cause. If the troubleshooting chart does not solve the problem, contact your SEL representative for further support.

Table 4 Troubleshooting Guide

Symptom	Possible Cause
Green Enable LED on faceplate is not on.	Power supply is disconnected. Verify voltage to terminal block and terminal block connection to the alarm panel.
Single contact input is not providing alarm indication when asserted.	<p>Wiring to terminal block may be loose. Check the wire to the problem input for proper connection.</p> <p>Configuration control (DIP) switch for the input may not be fully switched. Check the control (DIP) switch associated with the contact input and make sure it is fully pushed to either end of the switch slot.</p> <p>Input may be incorrectly configured. Verify configuration control (DIP) switch setting matches the input function.</p>
Groups of contact inputs are not providing alarm indications when asserted.	<p>Loose common connection. Verify the common connection for the contact input group is properly connected to the terminal block, and to the source.</p> <p>Contact input power supply is out of tolerance. Measure the contact input voltage at the terminal block to verify proper voltage level.</p> <p>Loose terminal block. Verify the terminal block is properly seated, and the securing screws are tightened.</p>
Internal horn does not sound when alarm is present.	Horn activation control (DIP) switch. Verify the configuration control (DIP) switch for the internal horn is in the proper position.
External horn/lamp operation does not follow the proper sequence when alarm indications are present.	<p>General Purpose Output (GPO) is configured wrong. Verify GPO configuration switch is set for the proper output function.</p> <p>Alarm sequence selection is configured incorrectly. Verify that the alarm sequence matches the desired alarm sequence.</p>
External horn/lamp does not operate when alarm indications are present.	<p>External device connection. Check voltage range and connections to the external indicating device.</p> <p>External device operation. Check with device manufacturer for specific operating information.</p>

Specifications

Compliance

Designed and manufactured under an ISO 9001 certified quality management system

UL Listed to U.S. and Canadian safety standards (File E220228; NRAQ, NRAQ7)

FCC: CFR 47 Part 15, Class A

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may be likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Any changes or modifications not expressly approved by the manufacturer can void the user's authority to operate the equipment.

Tightening Torque (Terminal Block)

I/O and Power
Connectors: 0.6–0.8 Nm (5–7 in-lb)

Terminal Connections

Stranded or solid copper wire. Strip insulation to expose 0.310 inches of conductor.

Minimum temperature rating of 105°C (221°F).

Output Contacts and Alarm Contact

Make: 30 A
Carry: 6 A
Rated: 250 Vdc
MOV Protection: 360 Vdc continuous

Optoisolated Inputs

250 Vdc: Pickup 200–300 Vdc
Dropout <150 Vdc
220 Vdc: Pickup 176–264 Vdc
Dropout <132 Vdc
125 Vdc: Pickup 105–150 Vdc
Dropout <75 Vdc
110 Vdc: Pickup 88–132 Vdc
Dropout <66 Vdc
48 Vdc: Pickup 38.4–60 Vdc
Dropout <28.8 Vdc
24 Vdc: Pickup 15–30 Vdc

Power Supply

125/250 Vdc or 120/230 Vac (50/60 Hz)

Range: 85–300 Vdc or 85–264 Vac
Burden: <10 W

48/125 Vdc or 120 Vac (50/60 Hz)

Range: 36–200 Vdc or 85–140 Vac
Burden: <10 W

Operating Temperature

–40° to +85°C (–40° to +185°F) with 50% of contact inputs continuously energized.

Humidity

0 to 95% without condensation

Altitude

2000 m Maximum

Operating Environment

Pollution Degree: 2
Overvoltage Category: II
Indoor Use

Weight

7.3 kg (10.0 lb)

Dimensions

Refer to *Figure 12*

Printable Window Size

1.20" High x 2.40" Wide
30.5 mm x 61 mm

Contact Input Update Rate

2 ms

Type Tests

Dielectric: IEC 60255-5:2000
IEEE C37.90-1989
Cold: IEC 60068-2-1:1990
Dry Heat: IEC 60068-2-2:1974
Damp Heat Cycle: IEC 60068-2-30:1980
Radiated and Conducted Emissions: EN 55011:1998 + A1:1999 + A2:2002
Class A
Canada ICES-001 (A) / NMB-001 (A)
Power Interruption Tests: Interruptions: IEC 61000-4-11:1994
Electrostatic Discharge Immunity: IEC 60255-22-2:1996
IEC 61000-4-2:1995
IEEE C37.90.3-2001
Radio Frequency: IEC 61000-4-3:1998
IEC 60255-22-3:2000, 10 V/m
IEEE C37.90.2-1995, 35 V/m
Conducted Immunity: IEC 60255-22-6:2001
EN 61000-4-6:1994, 10 V emf
Fast Transient Burst: IEC 60255-22-4:2002, Class A
IEC 61000-4-4:1995, Class A
EN 61000-4-4:1995, Class A
Surge Withstand: IEC 60255-22-1:2002
IEEE C37.90.1-2002
Surge Immunity: IEC 61000-4-5:1995
IEC 60255-22-5:2002
1 kV line-to-line
2 kV line-to-earth
5 kV Impulse: IEC 60255-5:2000
Vibration: IEC 60255-21-1:1988
Endurance: Class 1
Response: Class 2

Shock and Bump:	IEC 60255-21-2:1988
Bump:	Class 1
Shock Withstand:	Class 1
Shock Response:	Class 2
Seismic:	IEC 60255-21-3:1993
Quake Response:	Class 2
Enclosure Protection:	IP 30 Front, IP 20 Rear

Operating Sequences

Sequence M—Manual Reset per ISA-18.1-1979 (R1992)

Ringback Sequence—Ringback per ISA-18.1-1979 (R1992)

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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