# SEL-734B Data Sheet

## Advanced Monitoring and Control System

Full-Size Enclosure

Compact Enclosure

# Major Features and Benefits

The SEL-734B combines volt/VAR based capacitor bank control with power quality monitoring and advanced reporting through Ethernet and multiple serial ports.

The SEL-734B can be configured with low-energy analog (LEA) inputs for voltage and current sensing to connect industry standard current and voltage sensors. The SEL-734B can also be configured with voltage and current inputs to connect voltage transformers, current transformers, or industry standard voltage and current sensors.

- **One Controller, Many Applications.** The SEL-734B adapts to multiple applications ranging from basic three-pole control to intelligent single-pole control. Configurable logic and integrated communications ensure that the SEL-734B supports future system demands.
- **Preconfigured Control Strategies.** SEL offers a selection of ACSELERATOR QuickSet® SEL-5030 Software templates that support control strategies from basic voltage-based control to advanced single-pole kVAR control with voltage override. Some of the software templates also support other control strategies such as current, power factor, time, temperature, and time with temperature override.
- **Plug-and-Play Configurations.** SEL offers a selection of compact enclosures and full-size enclosures for application in different environments and installation sites. Rugged military-grade cables allow direct connections from the SEL-734B controller to line-post sensors and capacitor switches.
- **Advanced Power Quality Monitoring and Trending.** All SEL-734B models include harmonic measurements, load profile trending, voltage sag/swell/interruption (VSSI) recording, and waveform capture. The Advanced Power Quality and Monitoring option measures harmonics to the 50th order, captures waveforms at 8 kHz, and offers 192 channels of profile trending.
- **SEL DNA™ (Distribution Network Automation) Ready.** Capacitor controls are integral to system-wide volt/VAR control schemes. The SEL-734B integrates seamlessly into system-wide distribution control schemes to linearize voltage profiles and minimize VAR-induced $I^2R$ losses.
- **Auxiliary Power Supply to Power Accessories.** The SEL-734B can be configured with an optional 15 Vdc auxiliary power supply. The auxiliary power supply can be used to power accessories such as radios, clocks, and cellular routers.

# Power Quality and Recording Options

The SEL-734B is available with two different power quality and recording options. These features and their specifications are shown in *Table 1*.

**Table 1 SEL-734B Feature Availability**

| Power Quality and Recording Option | Standard: SEL-734 | Advanced: SEL-734P |
|---|---|---|
| Available Memory | 32 MB | 128 MB |
| Load Profile Recorder | | |
| Channels | 16 | 192 |
| Recorders | 1 | 12 |
| Acquisition rates | 1, 5, 10, 15, 30, 60 minutes | 3–59 s, 1, 5, 10, 15, 30, 60 minutes |
| Storage at 5-Minute Intervals in Days | | |
| 12 Channels | 770 | 2400 |
| 96 Channels | N/A | 280 |
| Flicker Measurement | N | Y |
| Highest Harmonic Order | 15th | 50th |
| Waveform Event Reports | | |
| Storage capacity in events | 64 | 16–3155 |
| Event duration | 0.25 s | 0.25, 0.5, 1, 2, 5, or 10 s |
| Sample rate | 1 kHz | 1 kHz or 8 kHz |
| Sequential Events Recorder | | |
| Number of events | >21,000 | >21,000 |
| Voltage Sag/Swell/Interruption Recorder | | |
| Typical number of summary events | 60 | 60 |
| Number of detailed rows | >11,000 | >11,000 |
| Time-of-Use | | |
| Number of self-reads | 15 | 15 |

The enclosure version of the SEL-734B is available in two form factors: compact and full size.

# SEL-734B Compact Enclosure

## Applications

The compact enclosure provides single-phase voltage and single-phase current monitoring (6-Jaw and 7-Pin) and three-pole control in a small outdoor IP45-rated fiberglass enclosure. The compact enclosure can be configured to have socket-based connectors or a 7-pin connector. The socket-based enclosure is available in two different 6-Jaw form factors (Option A, Option B) and one 4-Jaw form factor. The 7-Pin enclosure also has two options, including a 7-position terminal block for end-user access or a 7-pin circular connector on the bottom for a control and measurement cable connection to a junction box.

## Control Strategies

The compact enclosure supports the following capacitor bank control strategies:

- Voltage
- kVAR*
- Power Factor*
- Current*
- Time-Based
- Temperature-Based
- Time With Temperature Override Control

# Features

- SCADA, Auto, and Manual control modes
- Front-panel control and indicators
- Hunting prevention
- Adaptive voltage and kVAR processing*
- Voltage sensor phase and magnitude correction
- Current sensor phase and magnitude correction*
- Neutral unbalance alarm and lockout**
- Integrated 15 Vdc power supply for accessories
- LEA current measurement inputs*
- Harmonic measurements and lockout
- Overvoltage lockout
- Door switch with SCADA alarm***

*Available with the 6-Jaw and 7-Pin versions only.

**Available only with the 6-Jaw Option A and 7-Pin versions.

***Available only with the socket-based enclosures that are equipped with a ground lug.

**Figure 1 Compact Enclosure With Terminal Block Connector**

# Interface Options

The following field interfaces are available in the compact enclosure:

- 4-Jaw Socket-Based
- 6-Jaw Option A Socket-Based
- 6-Jaw Option B Socket-Based
- 7-Pin Connector-Based (Connectorized)
- 7-Position Terminal Block (Self-Wired)

## 4-Jaw and 6-Jaw Option A and Option B Socket-Based Models

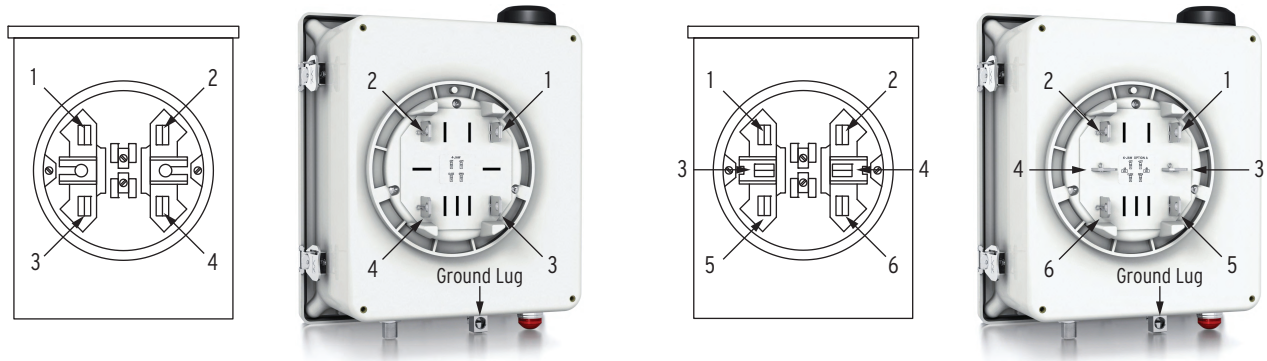


**Figure 2 Compact Enclosure Rear Plug and Meter Socket**

**Table 2 Socket Stab Configurations[a]**

| Enclosure Socket Option | Socket Stab Number and Function | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 4-Jaw | +CPT | –CPT | OPEN | CLOSE | — | — |
| 6-Jaw Option A | +CPT | –CPT | •IN | •IA | OPEN | CLOSE |
| 6-Jaw Option B | IA | –CPT | +CPT | OPEN | •IA | CLOSE |

[a] Where:
+CPT: 120 Vac Control Power Transformer, Positive Polarity
–CPT: 120 Vac Control Power Transformer, Neutral
OPEN: Open Operating Signal Output Contact
CLOSE: Close Operating Signal Output Contact
•IA: Phase Current Sensor Input, Positive Polarity
IA: Phase Current Sensor, Common
•IN: Neutral Current Sensor Input, Positive Polarity
**NOTE:** The ground lug is isolated from the control power transformer neutral.

## 7-Pin Compact Enclosures

**Table 3 Pinout of 7-Pin Compact Enclosure**

| Pin Number | Description |
|---|---|
| A | 120 Vac Control Power Transformer, Positive Polarity |
| B | Open Operating Signal Output Contact |
| C | Close Operating Signal Output Contact |
| D | Neutral Current Sensor, Common |
| E | Neutral Current Sensor Input, Positive Polarity |
| F | Phase Current Sensor Input, Positive Polarity |
| G | 120 Vac Control Power Transformer, Neutral |

### Connectorized

The enclosure contains one Amphenol® MS1302A20-15P circular connector that routes all measurement and control signals.

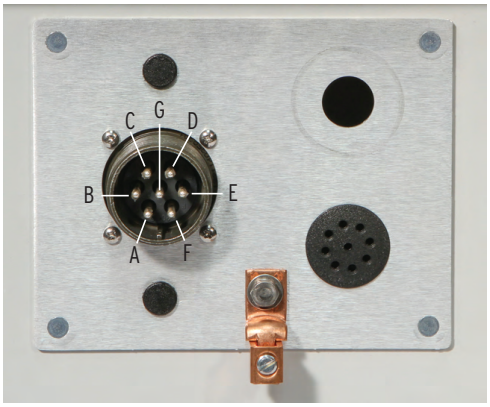


**Figure 3 Bottom View of the Compact Connectorized Enclosure**

### Terminal Block (7-Position)

This enclosure contains an accessible terminal block, allowing you to connect your own wires for measurement and control signals.

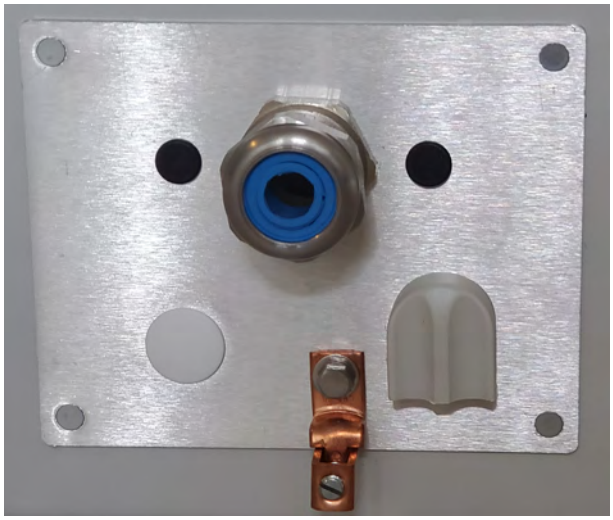

**Figure 4 Bottom View of the Compact 7-Position Terminal Block Enclosure**

# SEL-734B Full-Size Enclosure

## Applications

The full-size enclosure allows three-phase monitoring and ganged three-phase or individual phase control. Two enclosure styles offer flexibility: a combined sensor connector option and an individual sensor connector option. The combined sensor connector is intended for three-phase monitoring. Individual sensor connectors provide the option of single-phase monitoring or three-phase monitoring. Both styles are available in standard IP45-rated outdoor fiberglass enclosures.

## Control Strategies

The full-size enclosure supports the following control strategies:

- Voltage Control—Ganged three-phase or individual/single-phase
- VAR Control—Ganged three-phase or individual/single-phase
- Time Control—Ganged three-phase or individual/single-phase
- Temperature Control—Ganged three-phase or individual/single-phase
- Time with Temperature Override Control—Ganged three-phase or individual/single-phase

## Features

- SCADA, Auto, and Manual control modes
- Front-panel control and indicators
- Hunting prevention
- Sensor phase and magnitude correction
- Neutral unbalance alarm and lockout
- LEA voltage measurement inputs
- LEA current measurement inputs
- Switch monitoring through 52a/52b contacts and alarm
- Harmonic measurements
- Fault detection and indication
- Overvoltage lockout
- 15 Vdc power supply for accessories

Full-size enclosures include additional space to install one or more of the following SEL accessories:

- SEL-2401 Satellite-Synchronized Clock
- SEL-3061 Cellular Router
- Other accessories

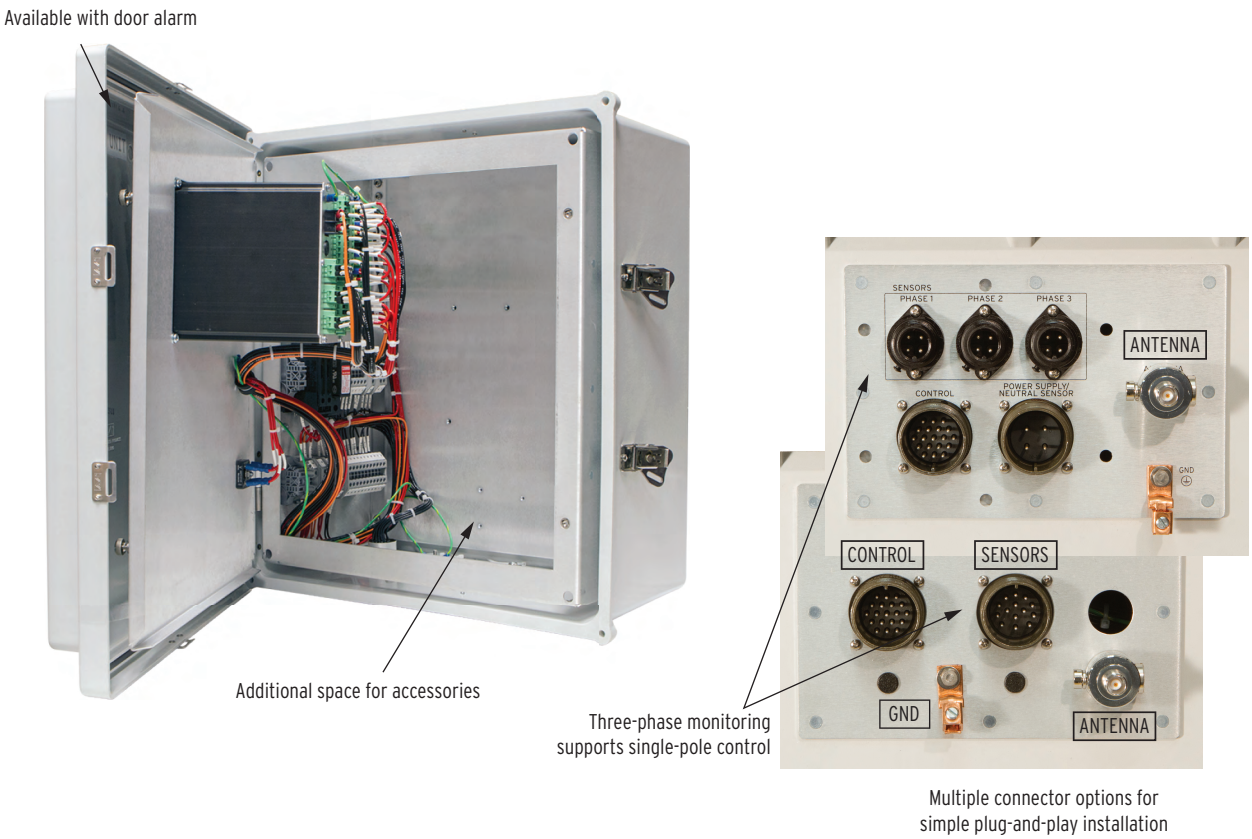


**Figure 5 Full-Size Enclosure**

# Interface Options

The following field interfaces are available in the full-size enclosure:

- Combined sensor connector
- Individual sensor connectors

## Combined Sensor Connector

The enclosure contains one 14-pin connector for all sensors and one 19-pin connector for three capacitor switches. The 14-pin connector connects to three primary current/voltage sensors and one neutral current sensor. The 19-pin connector connects to three capacitor bank switches.

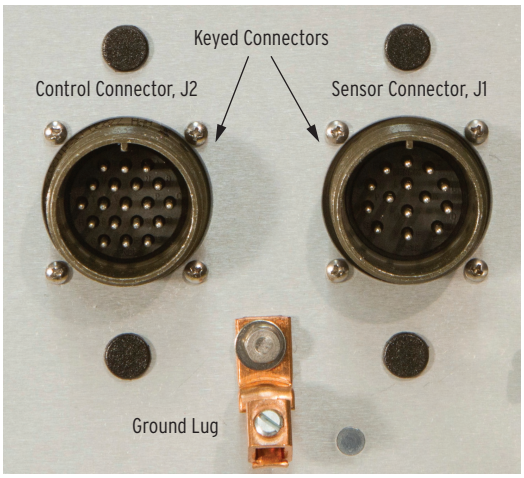


**Figure 6 Combined Sensor Connector Option**

**Table 4 14-Pin Sensor Connector Assignment**

| Pin Number | Description |
|---|---|
| A | Reserved |
| B | Reserved |
| C | Neutral Sensor, Positive Polarity |
| D | Neutral Sensor, Common |
| E | A-Phase Voltage Sensor |
| F | B-Phase Voltage Sensor |
| G | C-Phase Voltage Sensor |
| H | Voltage Sensors Common |
| J | A-Phase Current Sensor, Positive Polarity |
| K | Reserved |
| L | B-Phase Current Sensor, Positive Polarity |
| M | Current Sensors Common |
| N | C-Phase Current Sensor, Positive Polarity |
| P | Reserved |

**Table 5 19-Pin Control Connector Assignment**

| Pin Number | Description |
|---|---|
| A | 120 Vac Control Power Transformer |
| B | Control Power Transformer Neutral |
| C | Open A-Phase |
| D | Close A-Phase |
| E | Reserved |
| F | Open B-Phase |
| G | Close B-Phase |
| H | Reserved |
| J | Open C-Phase |
| K | Close C-Phase |
| L | Reserved |
| M | A-Phase 52a Auxiliary Contact |
| N | A-Phase 52b Auxiliary Contact |
| P | B-Phase 52a Auxiliary Contact |
| R | B-Phase 52b Auxiliary Contact |
| S | C-Phase 52a Auxiliary Contact |
| T | C-Phase 52b Auxiliary Contact |
| U | Reserved |
| V | Reserved |

## Individual Sensor Connectors

Three 4-pin connectors, located on the bottom of the enclosure, route each measurement signal to the SEL-734B.

Operators can choose to use one, two, or all three sensor inputs. Settings allow you to configure the SEL-734B for a different number of sensors. The enclosure contains the following connectors:

- Three 4-pin connectors connect to each primary sensor
- One 4-pin connector connects to a neutral current sensor and a 120 Vac control power transformer (CPT)
- One 19-pin connector connects to three capacitor bank switches

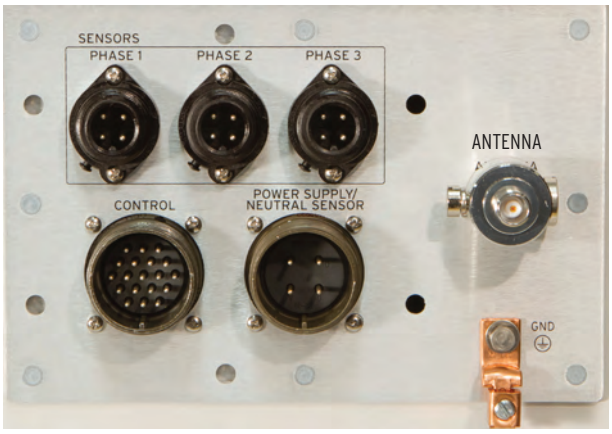


**Figure 7 Individual Sensor Connector Option**

**Table 6 4-Pin Sensor Connectors**

| Pin Number | Description |
|---|---|
| 1 | A-, B-, or C-Phase Current Sensor |
| 2 | Current Sensor Common |
| 3 | A-, B-, or C-Phase Voltage Sensor |
| 4 | Voltage Sensor Common |

**Table 7 19-Pin Control Connector Assignment**

| Pin Number | Description |
|---|---|
| A | Not Connected |
| B | System Neutral |
| C | Open A-Phase |
| D | Close A-Phase |
| E | Reserved |
| F | Open B-Phase |
| G | Close B-Phase |
| H | Reserved |
| J | Open C-Phase |
| K | Close C-Phase |
| L | Reserved |
| M | A-Phase 52a Auxiliary Contact |
| N | A-Phase 52b Auxiliary Contact |
| P | B-Phase 52a Auxiliary Contact |
| R | B-Phase 52b Auxiliary Contact |
| S | C-Phase 52a Auxiliary Contact |
| T | C-Phase 52b Auxiliary Contact |
| U | System Neutral |
| V | System Neutral |

**Table 8 Pinout of Power Supply and Neutral Connector**

| Pin Number | Description |
|---|---|
| A | 120 Vac Control Power Transformer |
| B | Control Power Transformer Neutral |
| C | Neutral Sensor, Positive Polarity |
| D | Neutral Sensor, Common |

# Enclosure Model Features

*Table 9* provides a complete reference about the available options.

**Table 9 Control Features of Enclosure Models**

| Available Control Strategies | Enclosure/Field Interface | | | | |
|---|---|---|---|---|---|
| | Full Size | Compact | | | |
| | | 4-Jaw | 6-Jaw Option A | 6-Jaw Option B | 7-Pin (Connectorized and Terminal Block) |
| Ganged Phase Control | x | x | x | x | x |
| Individual Phase Control | x | | | | |
| Voltage Control | x | x | x | x | x |
| kVAR Control | x | | x | x | x |
| Power Factor Control | | | x | x | x |
| Current Control | | | x | x | x |
| Time/Temp-Based Control | x | x | x | x | x |
| **Available Features** | | | | | |
| Adaptive Voltage and kVAR Processing | | | x | x | x |
| Neutral Unbalance Alarm and Lockout | x | | x | | x |
| Switch Monitoring | x | | | | |
| Capacitor Fault Detection | x | | x | | x |
| Integrated 15 Vdc Power Supply | x | x | x | x | x |
| Harmonic Lockout | | x | x | x | x |
| Overvoltage Lockout | x | x | x | x | x |
| Phase Overcurrent Fault Detection | x | | | | |
| Hunting Lockout | x | x | x | x | x |
| Hunting Delay (Short-Term Hunting Problems) | | x | x | x | x |
| Emergency Voltage Control | x | x | x | x | x |
| Separate Open and Close Delay Timers | x | x | x | x | x |

# Enclosure Accessory Options

*Table 10* provides a complete reference of the available compact enclosure accessory options.

**Table 10 Compact Enclosure Accessory Options**

| Options | 4-Jaw | 6-Jaw Option A | 6-Jaw Option B | 7-Pin (Connectorized) | 7-Pin (Terminal Block) |
|---|---|---|---|---|---|
| None | x | x | x | | x |
| Accessory Tray | x | x | x | | |
| Integrated 15 Vdc Power Supply for Accessories (40 W) and Accessory Tray | x | x | x | x | x |
| Integrated 15 Vdc Power Supply for Accessories (40 W) | x | x | x | | |
| Radio Surge Arrester With N-Type Female Terminations, Integrated 15 Vdc Power Supply for Accessories, and Accessory Tray | x | x | x | | |
| SEL-2401 Satellite-Synchronized Clock, Integrated 15 VDC Power Supply for Accessories (40 W), and Accessory Tray | x | x | x | | |

*Table 11* provides a complete reference of the available full-size enclosure accessory options.

**Table 11 Full-Size Enclosure Accessory Options**

| Options | Combined Sensor Option | Individual Sensor Option |
|---|---|---|
| None | x | x |
| Integrated 15 Vdc Power Supply (40 W) | x | x |
| Integrated 15 Vdc Power Supply (40 W), SEL-2401 Satellite-Synchronized Clock | x | |
| Integrated 15 Vdc Power Supply (40 W), SEL-3061 Cellular Router | x | |
| Integrated 15 Vdc Power Supply (40 W), SEL-3061 Cellular Router, SEL-2401 Satellite-Synchronized Clock | x | |

# Specifications[a]

## Compliance

Designed and manufactured under an ISO 9001 certified quality management system

Radiated Emissions: FCC Part 15; Class A

SEL-734B Device: UL Listed to U.S. and Canadian safety standards (File E212775, File E220228; NRAQ, NRAQ7, File E475839; NRAG, NRAG7, File E470448)

## General

### Frequency and Rotation

60/50 Hz system frequency must be specified at time of order.
ABC/ACB phase rotation is user settable.
Frequency tracking range: 45 to 65 Hz
($V_A$ or $V_C$ required for frequency tracking).

### Power Supply

Continuous Operating Limits

| | |
|---|---|
| 125/250 Volt Supply: | 85–264 Vac (50/60 Hz)<br>85–275 Vdc |
| 24/48 Volt Supply: | 19–58 Vdc |
| 12/24 Volt Supply: | 9.6–36 Vdc |
| VA Rating: | <40 VA/15 W maximum<br><20 VA/7 W typical |

Interruption (IEC 60255-11:1979)

100 ms at 250 Vac/Vdc
50 ms at 125 Vac/Vdc

50 ms at 48 Vdc
10 ms at 24 Vdc

| | |
|---|---|
| Ripple (IEC 60255-11:1979): | 5% for dc inputs |
| Terminal Voltage Dropout: | <40 V within 1 minute of power removal |
| Rated Insulation Voltage (IEC 60664-1:2002): | 300 Vac |
| Dielectric Test Voltage: | 2.8 kVdc |
| Rated Impulse Voltage (IEC 60664-1:2002): | 4000 V |

## Instantaneous Metering/Monitoring

**Note:** These specifications do not apply when using Low Energy Analog (LEA) current or voltage inputs.

| | |
|---|---|
| Instantaneous (25 ms): | Accuracies are specified at 23°C and at nominal system frequency unless noted otherwise. |
| Frequency: | ±0.01 Hz |
| Power (kW) per Phase and Total: | ±2% |
| Reactive Power (kVAR) per Phase and Total: | ±2% |
| Apparent Power (kVA) per Phase and Total: | ±2% |
| Power Factor, at Unity PF: | ±2% |

### Harmonic Accuracy per IEC 61000-4-7 (2002-08)

| | |
|---|---|
| THD and THDG: | ±5% typical, ±10% worst case |
| K-Factor: | ±5% typical, ±10% worst case |
| Distortion Power: | ±3% typical, ±10% worst case |
| Flicker PST: | ±5% over the range 0.5–25 PST (10-minute interval) |
| PLT: | ±5% over the range 0.5–25 PLT (2-hour interval) |

## AC Voltage and Current Inputs

### Three-Phase Voltage Measurement Inputs, Low-Energy Analog (Full-Size Enclosure)

Three-Phase Wye (Line-to-Neutral) Voltage Measurement

| | |
|---|---|
| Input Impedance: | 10 MΩ |
| Range: | 0.40–25 Vac |
| Accuracy: | ±0.2% |
| Maximum Rating: | 300 V continuous<br>600 V for 10 seconds |

### Single-Phase AC Voltage Measurement Inputs (Compact Enclosure)

| | |
|---|---|
| Input Impedance: | 10 MΩ |
| Range: | 57–150 V |
| Accuracy: | ±0.15% |
| Maximum Rating: | 300 V continuous<br>600 V for 10 seconds |

### Current Measurement Inputs, Low-Energy Analog

Single-phase input for compact enclosure models

Three-phase inputs for full-size enclosure models

Neutral current measurement input on select models

| | |
|---|---|
| Input Impedance: | 1 MΩ |
| Range: | 0.1–12.5 Vac |
| Accuracy: | ±2% |
| Maximum Rating: | 100 V continuous<br>200 V for 10 seconds |

## 15 Vdc Integrated Power Supply

### Continuous Operating Limits

| | |
|---|---|
| Rated Input Voltage: | 110–240 Vac (50/60 Hz)<br>110–250 Vdc |
| Input Voltage Range: | 85–264 Vac (50/60 Hz)<br>85–275 Vdc |
| Input Current: | <1 A at 85 Vac<br><1 A at 85 Vdc |
| Output Voltage: | 15 Vdc ±5% for accessories, as power supply only |
| Output Current: | 2.75 A for accessories, as power supply only |

### Ride-Through Performance (With a 25 W Auxiliary Load)

| | |
|---|---|
| 120 Vac Input: | 50 ms |
| 125 Vdc Input: | 20 ms |

### Safety

| | |
|---|---|
| Isolation Rating: | 2.5 kVac minimum at 60 Hz |
| Insulation Rating: | 300 Vrms (IEC 60664-2:2002) |
| Impulse Rating: | 4 kVpk (1.2/50 µs per IEC 60664-1:2002) |
| Overvoltage Category: | II (IEC 60664-1:2000) |
| Insulation Type: | Reinforced for Input-to-Output (IEC 60664-1:2000)<br>Basic for Input-to-Input (IEC 60664-1:2000) |

## Compact Enclosure Output Contacts

Output ratings were determined with IEC 60255-23:1994, using the simplified method of assessment.

| | |
|---|---|
| Make Rating: | 250 Vdc, 7.2 kVA (Cos theta = 1), 30 A per IEEE C37.90-1989 |
| Carry: | 8 A at 120 Vac, 50/60 Hz |
| Durability: | >100,000 cycles for:<br>Three motor-operated switches as high as 1/4 HP each<br>Three solenoid-operated switches as high as 12 A each |
| Pickup/Dropout Time: | <35 ms |
| Maximum Operating Voltage: | 240 V |
| Rated Insulation Voltage: | 300 V |

## Full-Size Enclosure Output Contacts

| | |
|---|---|
| Make Rating: | 3.6 kVA (Cos theta = 0.3), 30 A per IEEE C37.90-1989 |
| Break Rating: | 360 VA (Cos theta = 0.3) |
| Carry: | 3 A at 120 Vac, 50/60 Hz |
| 1 s Rating: | 50 A |
| Durability: | >10,000 cycles at rated conditions |
| Pickup/Dropout Time: | <25 ms |
| Maximum Operating Voltage: | 250 V |
| Rated Insulation Voltage: | 300 V |

## Physical

### Operating Temperature

| | |
|---|---|
| SEL-734B Device: | IEC 60068-2: –40° to +85°C (–40° to +185°F) |
| LCD: | –20° to +70°C (–4° to +158°F) |

Device in Compact Enclosure With Integrated 15 Vdc Power Supply

| | |
|---|---|
| 0 W of Accessories: | –40° to +65°C (–40° to +149°F) |
| 15 W of Accessories: | –40° to +60°C (–40° to +140°F) |
| 40 W of Accessories: | –40° to +50°C (–40° to +122°F) |
| Without Direct Sunlight: | Increase max. temperatures by 15°C (27°F) |

Device in Full-Size Enclosure

| | |
|---|---|
| 0 W of Accessories: | –40° to +70°C (–40° to +158°F) |
| 15 W of Accessories: | –40° to +65°C (–40° to +149°F) |
| 30 W of Accessories: | –40° to +55°C (–40° to +131°F) |
| Without Direct Sunlight: | Increase max. temperatures by 15°C (27°F) |

### Operating Environment

| | |
|---|---|
| Pollution Degree: | 2 (SEL-734B Device) |
| Maximum Altitude: | 2000 m |
| Maximum Humidity: | 95% RH |

### Dimensions

| | |
|---|---|
| SEL-734B Device Dimensions: | 5.7" x 6.63" x 7.56" |
| Compact Enclosure Exterior Dimensions: | 13.7" x 11.8" x 8.0" |
| Full-Size Enclosure Exterior Dimensions: | 18.0" x 16.0" x 10.9" |

### Weight

| | |
|---|---|
| 6-Jaw Compact Enclosure Model: | 8.8 kg (19.4 lb) (including SEL-2401 and SEL-3061) |
| Full-Size Enclosure Model: | 12.0 kg (26.5 lb) (including SEL-2401 and SEL-3061) |

## Dielectric Test

| | |
|---|---|
| LEA Current Measurement Inputs: | 1.0 kVac for 1 s |
| Voltage Inputs: | 2.2 kVac for 1 s |
| Optoisolated Inputs and Output Contacts: | 2.2 kVac for 1 s |
| AC Power Supply: | 3.11 kVdc for 1 s |

## Processing Specifications

### AC LEA Inputs

16 samples per power system cycle for instantaneous quantities

8000 samples per second for rms quantities and harmonics

3 dB low-pass filter cut-off frequency of 3000 Hz

Control Processing: 25 ms processing interval

## Type Tests

### Electromagnetic Compatibility

Emissions: Canada ICES-001(A) / NMB-001(A)

### Electromagnetic Compatibility Immunity

| | |
|---|---|
| Surge Withstand Capability: | IEEE C37.90.1-2002 Elec. Relays<br>2.5 kV oscillatory, 4 kV fast transient<br>IEC 60255-22-1:2007<br>2.5 kV peak common, 2.5 kV peak differential mode, 1.0 kV peak common mode on communications ports |
| Surge Immunity: | IEC 62052-11:2003<br>SEL-734B Device:<br>4 kV for current, voltage, and power supply mains; 1 kV for LEA inputs and auxiliary circuits<br>Compact Socket-Based Enclosure:<br>6 kV for power supply mains, 4 kV for voltage inputs, 1 kV for LEA current inputs and auxiliary circuits<br>Full-Size Enclosure:<br>6 kV for power supply mains, 1 kV for LEA inputs and auxiliary circuits |
| Power Frequency Magnetic Field Immunity: | IEC 61000-4-8:2009<br>1000 A/m for 3 seconds, 100 A/m for 1 minute |
| Pulse Magnetic Field Immunity: | IEC 61000-4-9:1993, 1000 A/m |
| Electrostatic Discharge Immunity: | IEC 61000-4-2:2008<br>Elec. disturbance, Section 2: ESD, Severity Level: 4<br>IEC 60255-22-2:2008<br>Elec. disturb. Section 2: ESD, Severity Level: 4; both polarities at Levels 1, 2, 3, and 4 |
| Radiated Radio Frequency Immunity: | IEC 61000-4-3:2010<br>Severity Level: X (15 V/m)<br>IEC 60255-22-3:2007<br>Elec. relays, Section 3: Radiated electromagnetic field disturb., Severity Level: 3 (10 V/m)<br>ANSI C12.20 (1998)<br>Severity Level: 15 V/m |

| | |
|---|---|
| Conducted Radio Frequency Immunity: | IEC 61000-4-6:2008<br>Severity Level: 3 |
| Fast Transient/Burst Immunity: | IEC 61000-4-4:2011<br>Severity Level: 4 |

## Environmental Tests

| | |
|---|---|
| Cold: | IEC 60068-2-1:2007<br>Envir., Test Ad, Severity: 16 hours at –40°C |
| Dry Heat: | IEC 60068-2-2:2007<br>Envir., Part 2: Test Bd<br>SEL-734B device, Severity: 16 hours at +85°C<br>Device in Cabinet, Severity: 16 hours at +70°C |
| Damp Heat, Cyclic: | IEC 60068-2-30:2005<br>Basic envir., Part 2: Test Db<br>Severity: 25° to 55°C, 6 cycles, 95% humidity |
| Enclosure Protection: | IEC 60529:2001, IP45 |
| Seismic (Compact Enclosure Only): | IEC 60255-21-3:1993<br>Class 2 Response (Method A) |

## Safety

| | |
|---|---|
| Dielectric Strength/Impulse: | IEC 60255-5:2000<br>Elec. relays, Part 5: Insulation, Section 6:<br>2.5 kVac on ac current inputs, contact inputs, and contact outputs<br>3.1 kVdc on power supply<br>2.2 kVdc on EIA-485 port for 60 sec.<br>Severity:<br>2500 Vac on analog inputs, contact inputs, and contact outputs<br>3100 Vdc on power supply<br>IEC 60255-5:2000<br>0.5 Joule, 5 kV on power supply, contact inputs, contact outputs, ac current inputs, and voltage inputs<br>Section 8: Impulse Voltage: 2200 Vdc on EIA-485, Severity Level: 0.5 Joule, 5 kV |

### High-Voltage Line Surges

| | |
|---|---|
| SEL-734B Device: | IEC 61000-4-5:2005<br>Level 4 (4 kV) on LEA voltage measurement inputs and power supply inputs.<br>Level 2 (1 kV) on LEA current measurement inputs and auxiliary circuits |
| SEL-734B in Compact Socket-Based Enclosure: | IEEE C62.41:2002<br>Location Category B (6 kV) on LEA voltage measurement inputs and power supply inputs<br>IEC 61000-4-5:2006<br>6 kV on power supply, voltage inputs, and auxiliary power supply<br>IEC 61000-4-5:2005<br>Level 2 (1 kV) on LEA current measurement inputs and auxiliary circuits |
| SEL-734B in Full-Size Enclosure: | IEC 61000-4-5:2005<br>6 kV on power supply inputs, Level 2 (1 kV) on LEA current measurement inputs and auxiliary circuits |
| Impulse Voltage Test: | IEC 60060-1<br>4 kV on power supply, ac current inputs, and voltage inputs |

[a] **Unless specified otherwise, all ratings apply to the SEL-734B device.**

# Notes

© 2014—2025 by Schweitzer Engineering Laboratories, Inc. All rights reserved.

Content subject to change without notice.

Unless otherwise agreed in writing, all SEL product sales are subject to SEL's terms and conditions located here: https://selinc.com/company/termsandconditions/.

SCHWEITZER ENGINEERING LABORATORIES, INC.
2350 NE Hopkins Court • Pullman, WA 99163-5603 U.S.A.
Tel: +1.509.332.1890 • Fax: +1.509.332.7990
selinc.com • info@selinc.com