The SEL-2244 provides contact input and outputs for the SEL Axion®. Within an Axion node, install any combination of SEL-2244 modules you want.

**Front Panel**

![SEL-2244 Digital Input and Output Modules](image1)

**Mechanical Installation**

Each SEL-2242 chassis/backplane has ten slots, labeled A through J. Slots B-J support the SEL-2244 Digital Input and Digital Output modules.

To install an SEL-2244 module, tip the top of the module away from the chassis, align the notch on the bottom of the module (shown in Figure 2) with the slot you want on the chassis, and place the module on the bottom lip of the chassis as Figure 3 illustrates. The module is aligned properly when it rests entirely on the lip of the chassis.

![Notch for Module Alignment](image2)
Figure 3  Proper Module Placement

Next, carefully rotate the module into the chassis, making sure that the alignment tab fits into the corresponding slot at the top of the chassis (refer to Figure 4). Finally, press the module firmly into the chassis and tighten the chassis retaining screw.

Figure 4  Final Module Alignment

Connections

Inputs

The SEL-2244 optoisolated inputs are not polarity dependent. Refer to the Specifications on page 3 for optoisolated input ratings and Figure 1 for terminal assignments. You can configure inputs to respond to ac or dc control signals. Configure contact inputs by adding a Fieldbus I/O connection for each module in acSELERATOR RTAC® SEL-5033 Software. See the EtherCAT® portion in the Section 2: Communications in the acSELERATOR RTAC SEL-5033 Instruction Manual for details.

NOTE: Ensure that when you are applying ac power to inputs with common returns that ac neutral is connected to the common terminal.

Figure 5  Digital Inputs

Outputs

Refer to the Specifications on page 3 for output contact ratings and Figure 1 for terminal assignments. Depending on which module type you ordered, the module will have all Form A, all Form B, or some of each contact type. Standard and fast high-current outputs are wired the same. The fast high-current outputs are not polarity sensitive. Configure contact outputs by adding a Fieldbus I/O connection for each module in acSELERATOR RTAC. See the EtherCAT portion of Section 2: Communications in the acSELERATOR RTAC SEL-5033 Instruction Manual for details.

Figure 6  Digital Outputs

LED Indicators

Each input and output is associated with a red LED on the right edge of the module. The LED will be illuminated when you assert the point or depress the lamp test button.

The LEDs labeled ENABLED and ALARM are related to EtherCAT network operation. The green ENABLED LED will illuminate when the module is operating normally on the network. The ALARM LED will illuminate during network initialization or when there is a problem with the network. Refer to Section 3: Testing and Troubleshooting in the SEL-2240 Instruction Manual for more information.
Specifications

Compliance

Designed and manufactured under an ISO 9001 certified quality management system

UL Listed to U.S. and Canadian safety standards (File NRAQ, NRAQ7 per UL508, and C22.2 No. 14) (Not applicable to 250 V Input Option)

CE Mark

General

Operating Temperature Range

–40° to +85°C (–40° to +185°F)

Note: Not applicable to UL applications.

Operating Environment

Pollution Degree: 2

Overvoltage Category: II

Insulation Class: 1

Relative Humidity: 5–95%, noncondensing

Maximum Altitude: 2000 m

Optoisolated Control Inputs (SEL-2244-2)

When Used With DC Control Signals:

<table>
<thead>
<tr>
<th>Voltage</th>
<th>ON</th>
<th>OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 Vdc</td>
<td>200–275 Vdc</td>
<td>&lt; 150 Vdc</td>
</tr>
<tr>
<td>220 Vdc</td>
<td>176–242 Vdc</td>
<td>&lt; 132 Vdc</td>
</tr>
<tr>
<td>125 Vdc</td>
<td>100–135.5 Vdc</td>
<td>&lt; 75 Vdc</td>
</tr>
<tr>
<td>110 Vdc</td>
<td>88–121 Vdc</td>
<td>&lt; 66 Vdc</td>
</tr>
<tr>
<td>48 Vdc</td>
<td>38.4–52.8 Vdc</td>
<td>&lt; 28.8 Vdc</td>
</tr>
<tr>
<td>24 Vdc</td>
<td>15–30 Vdc</td>
<td>&lt; 10 Vdc</td>
</tr>
</tbody>
</table>

When Used With AC Control Signals:

<table>
<thead>
<tr>
<th>Voltage</th>
<th>ON</th>
<th>OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 Vdc</td>
<td>170.6–300 Vac</td>
<td>&lt; 106 Vac</td>
</tr>
<tr>
<td>220 Vdc</td>
<td>150.3–264 Vac</td>
<td>&lt; 93.2 Vac</td>
</tr>
<tr>
<td>125 Vdc</td>
<td>85–150 Vac</td>
<td>&lt; 53 Vac</td>
</tr>
<tr>
<td>110 Vdc</td>
<td>75.1–132 Vac</td>
<td>&lt; 46.6 Vac</td>
</tr>
<tr>
<td>48 Vdc</td>
<td>32.8–60 Vac</td>
<td>&lt; 20.3 Vac</td>
</tr>
<tr>
<td>24 Vdc</td>
<td>14–27 Vac</td>
<td>&lt; 5 Vac</td>
</tr>
</tbody>
</table>

Current Draw at Nominal DC Voltage: 2–4 mA (Except for 24 V, 8 mA)

Rated Insulation Voltage: 300 Vac

Rated Impulse Withstand Voltage ($U_{imp}$): 4000 V

SEL-2244-2 Digital Inputs Derating Curve:

Control Outputs (SEL-2244-3 Standard Contacts)

Mechanical Durability: 10 M no load operations

DC Output Ratings

Rated Operational Voltage: 250 Vdc

Rated Voltage Range: 19.2–275 Vdc

Rated Insulation Voltage: 300 Vdc

Make: 30 A @ 250 Vdc per IEEE C37.90

Continuous Carry: 6 A @ 70°C; 4 A @ 85°C

Continuous Carry (UL/CSA derating with all outputs asserted): 5 A @ < 60°C; 2.5 A 60 to 70°C

Thermal: 50 A for 1 s

Contact Protection: 350 Vdc, 145 J

Operating Time (coil energization to contact closure, resistive load): Pickup/Dropout time ≤ 8 ms typical

Breaking Capacity (10,000 operations) per IEC 60255-0-20:1974:

<table>
<thead>
<tr>
<th>Voltage</th>
<th>24 Vdc</th>
<th>48 Vdc</th>
<th>125 Vdc</th>
<th>250 Vdc</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.75 A L/R</td>
<td>0.5 A L/R</td>
<td>0.3 A L/R</td>
<td>0.2 A L/R</td>
<td></td>
</tr>
<tr>
<td>40 ms</td>
<td>40 ms</td>
<td>40 ms</td>
<td>40 ms</td>
<td></td>
</tr>
</tbody>
</table>

Cyclic Capacity (2.5 cycles/second) per IEC 60255-0-20:1974:

<table>
<thead>
<tr>
<th>Voltage</th>
<th>24 Vdc</th>
<th>48 Vdc</th>
<th>125 Vdc</th>
<th>250 Vdc</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.75 A L/R</td>
<td>0.5 A L/R</td>
<td>0.3 A L/R</td>
<td>0.2 A L/R</td>
<td></td>
</tr>
<tr>
<td>40 ms</td>
<td>40 ms</td>
<td>40 ms</td>
<td>40 ms</td>
<td></td>
</tr>
</tbody>
</table>

AC Output Ratings

Rated Operational Voltage (excluding EN 61010-1): 240 Vac

Rated Insulation Voltage: 300 Vac

Utilization Category: AC-15 (control of electromagnetic loads > 72 VA)

Contact Rating Designation: B300 (B = 5 A, 300 = rated insulation voltage)

Contact Protection: 250 Vac, 145 J

Continuous Carry: 3 A @ 120 Vac, 1.5 A @ 240 Vac

Conventional Enclosed Thermal Current ($I_{thc}$) Rating: 5 A

Rated Frequency: 50/60 ± 5 Hz

Operating Time (coil energization to contact closure, resistive load): Pickup/Dropout time < 8 ms typical

Electrical Durability Make VA Rating: 3600 VA, cosø = 0.3

Electrical Durability Break VA Rating: 360 VA, cosø = 0.3

Control Outputs (SEL-2244-5 Fast High-Current Contacts)

Mechanical Durability: 10 M no load operations

DC Output Ratings

Rated Operational Voltage: 250 Vdc

Rated Voltage Range: 19.2–275 Vdc
Rated Insulation Voltage: 300 Vdc
Make: 30 A @ 250 Vdc per IEEE C37.90
Continuous Carry: 6 A @ 70°C; 4 A @ 85°C
Continuous Carry (UL/CSA derating with all outputs asserted): 5 A @ < 60°C; 2.5 A 60 to 70°C
Thermal: 50 A for 1 s
Contact Protection: 330 Vdc, 145 J MOV protection across open contacts
Operating Time (coil energization to contact closure, resistive load): Pickup time: ≤ 12 µs at 250 Vdc, 16 µs at 125 Vdc, 65 µs at 19.2 Vdc typical (results with 100 kΩ resistive load)
Dropout time: ≤ 8 ms typical
Inductive Breaking Capacity (100,000 operations) per IEC 60255-0:20:1974: 24 Vdc 10 A L/R = 40 ms followed by 2 mins idle thermal dissipation per IEC 60255-0:20:1974: 250 Vdc 10 A L/R = 20 ms
Cyclic Capacity (4 cycles/second followed by 2 mins idle thermal dissipation) per IEC 60255-0:20:1974: 24 Vdc 10 A L/R = 40 ms
Continuous Carry (UL/CSA derating with all outputs asserted): 5 A @ < 60°C; 2.5 A 60 to 70°C
Thermal: 50 A for 1 s
Contact Protection: 250 Vac, 145 J MOV protection across open contacts
Operating Time (coil energization to contact closure, resistive load): Pickup time: ≤ 12 µs at 250 Vdc, 16 µs at 125 Vdc, 65 µs at 19.2 Vdc typical (results with 100 kΩ resistive load)
Dropout time: ≤ 8 ms typical

Note: Make rating per IEEE C37.90-1989.

Environmental Tests
Enclosure Protection: IEC 60529:2001 + CRGD:2003 IP3X excluding the terminal blocks
Seismic: IEC 60255-21-3:1993 Quake Response, Severity: Class 1
Cold: IEC 60068-2-1:2007 -40°C, 16 hours

Type Tests

Rated Operational Voltage: 110/120/220/240 Vac Voltage Range: 19.2–250 Vac Rated Insulation Voltage: 250 Vac Make: 30 A @ 240 Vac Continuous Carry: 6 A @ 70°C; 4 A @ 85°C Continuous Carry (UL/CSA derating with all outputs asserted): 5 A @ < 60°C; 2.5 A 60 to 70°C Thermal: 50 A for 1 s Contact Protection: 250 Vac, 145 J MOV protection across open contacts Operating Time (coil energization to contact closure, resistive load): Pickup time: ≤ 12 µs at 250 Vdc, 16 µs at 125 Vdc, 65 µs at 19.2 Vdc typical (results with 100 kΩ resistive load)
Dropout time: ≤ 8 ms typical
Inductive Breaking Capacity (100,000 operations) per IEC 60255-0:20:1974: 24 Vdc 10 A L/R = 40 ms followed by 2 mins idle thermal dissipation per IEC 60255-0:20:1974: 250 Vdc 10 A L/R = 20 ms
Cyclic Capacity (4 cycles/second followed by 2 mins idle thermal dissipation) per IEC 60255-0:20:1974: 24 Vdc 10 A L/R = 40 ms
Continuous Carry (UL/CSA derating with all outputs asserted): 5 A @ < 60°C; 2.5 A 60 to 70°C
Thermal: 50 A for 1 s
Contact Protection: 250 Vac, 145 J MOV protection across open contacts
Operating Time (coil energization to contact closure, resistive load): Pickup time: ≤ 12 µs at 250 Vdc, 16 µs at 125 Vdc, 65 µs at 19.2 Vdc typical (results with 100 kΩ resistive load)
Dropout time: ≤ 8 ms typical

Note: Make rating per IEEE C37.90-1989.
Emissions