The SEL-2245-3 provides dc analog outputs for the SEL Axion® platform. Within an Axion system, install as many as sixteen SEL-2245-3 modules with as many as three SEL-2245-3 modules per node.

**Front Panel**

![Figure 1 SEL-2245-3 DC Analog Output Module](image)

**Mechanical Installation**

Each SEL-2242 chassis/backplane has four or ten slots, labeled A–J. Slots B–J support the SEL-2245-3 modules.

![Figure 2 Notch for Module Alignment](image)

To install an SEL-2245-3 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.
Output Connections

The SEL-2245-3 dc analog outputs include a plus sign to indicate the positive convention. Refer to Specifications for analog output ratings and to Figure 1 for terminal assignments. You can configure outputs to drive ±20 mA or ±10 V signals. Configure outputs by adding a Fieldbus I/O connection for each module in acSELERATOR RTAC® SEL-5033 Software. See the EtherCAT® section in Section 2: Communications in the SEL-5033 software manual for details.

⚠️**CAUTION**
Use supply wires suitable for 60°C (140°F) above ambient. See product or manual for ratings.

⚠️**ATTENTION**
Utilisez des fils d'alimentation appropriés pour 60°C (140°F) au-dessus ambiante. Voir le produit ou le manuel pour les valeurs nominales.

LED Indicators

The LEDs labeled ENABLED and ALARM are related to EtherCAT network operation. The green ENABLED LED illuminates when the module is operating normally on the network. The ALARM LED illuminates 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)
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

DC Analog Outputs (SEL-2245-3)

Current Mode
Output Range: –20.48 to +20.48 mA
Load Impedance: 0–750 Ω @ 20 mA, 100 µF

Voltage Mode
Output Range: –10.24 to +10.24 volts
Load Impedance: >2000 Ω, 1 µF

Step Response:
1 ms (10–90% response typical)

Isolation:
2000 V dc between outputs or ground

Accuracy at 25°C

Outputs
Current Mode: ±0.3% of full scale typical
±2% of full-scale worst case (during an EMI event)
Voltage Mode: ±0.2% of full-scale typical
±2% of full-scale worst case (during an EMI event)

Accuracy Variation With Temperature

Outputs
±0.01% of full-scale/K (current or voltage mode)

Type Tests

Environmental Tests

IP3X excluding the terminal blocks

Vibration Endurance, Severity: Class 2
Vibration Response, Severity: Class 2

Bump Test, Severity: Class 1
Shock Withstand, Severity: Class 1
Shock Response, Severity: Class 2

Dielectric Strength and Impulse Tests

Impulse: IIEC 60255-5:2000
IEEE C37.90-2005
Severity Level: 0.5 Joule, 3 kV channel to chassis
0.5 Joule, 3 kV channel to channel

Dielectric (HiPot): IEC 60255-5:2000
IEEE C37.90-2005
Severity Level: 2000 V dc channel to chassis for
1 minute
2000 V dc channel to channel for
1 minute

RFI and Interference Tests

EMC Immunity

Electrostatic Discharge Immunity:
IEEE C37.90.3-2001
IEC 60255-22-2:2008
IEC 61000-4-2:2008
Severity Level: 8 kV contact discharge
15 kV air discharge

Radiated RF Immunity: IEEE C37.90.2-2004
Severity Level: 35 V/m
IEC 61000-4-3:2008
IEC 60255-22-3:2007
Severity Level: 10 V/m

Conducted RF Immunity: IEC 60255-22-6:2001
IEC 61000-4-6:2008
Severity Level: 10 V/m

IEC 61000-4-5:2005
Severity Level: 1 kV Line to Line,
2 kV Line to Earth
(The output accuracy will deviate from the specification unless a 1 s delay is implemented on the monitoring device.)

Fast Transient, Burst Immunity:
IEC 60255-22-4:2008
IEC 61000-4-4:2011
Severity Level: Class A: 4 kV, 5 kHz;
2 kV, 5 kHz on communication ports

Magnetic Field Immunity: IEC 61000-4-8:2009
Severity Level: 1000 A/m for 3 seconds,
100 A/m for 1 minute
IEC 61000-4-9:2001
Severity Level: 1000 A/m
IEC 61000-4-10:2001
Severity Level: 100 A/m

Surge Withstand Capability Immunity:
IEC 60255-22-1:1993
Quake Response, Severity: Class 2
Cold: IEC 60068-2-1:2007
–40°C, 16 hours
+85°C, 16 hours
Damp Heat, Cyclic: IEC 60068-2-30:2005
25°C to 55°C, 6 cycles,
95% relative humidity

Seismic: IEC 60255-21-3:1993
Quake Response, Severity: Class 2

(1) The output accuracy will deviate from the specification unless a 100 ms delay is implemented on the monitoring device.)
## Oscillatory Waves

**Immunity:**  
IEC 61000-4-12:2006  
Severity Level: Ring Wave: 2 kV common, 1.0 kV differential  
Oscillatory: 2.5 kV common, 1.0 kV differential

## Common Mode Disturbance Immunity

**Immunity:**  
IEC 61000-4-16:2002  
Frequency: 0 to 150 Hz  
Severity Level: Level 4, Segment 4: 30 Vrms open-circuit, 15 to 150 kHz

## Emissions

**Radiated and Conducted Emissions:**  
IEC 60255-25:2000  
Severity Level: Class A