



SEL Axion Safety Information

Specifications

Dangers, Warnings, and Cautions

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



Refer to accompanying documents



Earth (ground)



Protective earth (ground)



Direct current



Alternating current



Both direct and alternating current



Instruction manual

To ensure proper safety and operation, equipment ratings, installation instructions, and operating instructions must be checked before commissioning or maintenance of the equipment. The integrity of any protective conductor connection must be checked before carrying out any other actions. It is the responsibility of the user to ensure that the equipment is installed, operated, and used for its intended function in the manner specified in this manual. If misused, any safety protection provided by the equipment may be impaired.

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.

Safety Marks

The following statements apply to this device.

CAUTION

Risk of fire if battery is replaced with incorrect type or polarity. Replace only with battery recommended by manufacturer. See Instruction Manual for safety instructions. The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat above 100°C, or incinerate. Dispose of used batteries according to the manufacturer's instructions. Keep battery out of reach of children.

DANGER

Disconnect or de-energize all external connections and short-circuit CT circuits before opening this device. Contact with hazardous voltages and currents inside this device can cause electrical shock resulting in injury or death.

WARNING

Do not look into fiber ports, connectors, or into the end of an optical cable connected to an optical output.

Device Placement

You can mount the Axion in a sheltered indoor environment (a building or an enclosed cabinet) that does not exceed the temperature and humidity ratings for the modules. Equipment must be installed in an enclosure that protects against shock and fire to meet UL requirements. Configurations with an SEL-2245-42 as the right-most module in a backplane should have the backplane installed in a metal enclosure to meet Radiated RF Immunity Type Test requirements. The Axion must be mounted such that modules are vertical and have at least 0.5 inches to the nearest solid surface above and below.

Note: For applications compliant with IEC 60255-26, surface-mount units must be installed in IP4X enclosures.

Compliance

Designed and manufactured under an ISO 9001 certified quality management system

UKCA Mark

IEC 60255-26:2013 – Relays and Protection Equipment: EMC

IEC 60255-27:2014 – Relays and Protection Equipment: Safety

IEC 60825-2:2004 + A1:2007 + A2:2010 for fiber-optic communications

IEC 61850-3:2013 Performance Class 1 – Comm Systems for Power Utility Automation

IEC 60529 Enclosure Protection

IP4X Front

IP2X Product Without SEL-2245-4, SEL-2245-411, or SEL-2245-42

IP1X Product With SEL-2245-4, SEL-2245-411, or SEL-2245-42

Note: The product must be mounted in a locked IP4X enclosure or restricted area such that rear terminals are accessible by trained maintenance or operation personnel only.

Specifications

See product label for ratings of the specific model.

Power Supply (SEL-2243)

Axion Power Coupler

High-Voltage Power Supply

Rated Supply Voltage: 120–240 Vac, 50–60 Hz
125–250 Vdc

Low-Voltage Power Supply

Rated Supply Voltage: 24–48 Vdc

Maximum Burden:

AC: 160 VA
DC: 75 W

Fuse Ratings (SEL-2243)**High-Voltage Power Supply Fuse**

Rating:	3.15 A
Maximum Rated Voltage:	250 Vac/300 Vdc

Low-Voltage Power Supply Fuse

Rating:	6.30 A
Maximum Rated Voltage:	250 ac/150 Vdc

Control Inputs (SEL-2244-2 and SEL-2244-4)

Voltage Range:	24, 48, 110, 125, 220, or 250 Vac/Vdc
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Output Contacts (SEL-2244-3)**DC Output Ratings**

Operational Voltage:	250 Vdc
Continuous Carry:	6 A

AC Output Ratings

Maximum Operational Voltage	
Rating:	240 Vac
Continuous Carry:	3 A@120 Vac 1.5 A@240 Vac

Fast High-Current Output Contacts (SEL-2244-5)**DC Output Ratings**

Operational Voltage:	250 Vdc
Continuous Carry:	6 A

AC Output Ratings

Maximum Operational Voltage	
Rating:	240 Vac
Continuous Carry:	6 A

DC Analog Inputs**Continuous Current Rating**

SEL-2245-2:	±2 mA, ±20 mA
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Continuous Voltage Rating

SEL-2245-2:	±10 Vdc
SEL-2245-22:	0-300 Vdc

DC Analog Outputs (SEL-2245-3)

Current Rating:	±20.48 mA
Voltage Rating:	± 10.24 Vdc

AC Inputs**Continuous Current Rating**

SEL-2245-22, SEL-2245-221, SEL-2245-4, SEL-2245-411:	22 Arms
SEL-2245-42:	15 Arms

Continuous Voltage Rating:

SEL-2245-22, SEL-2245-4, SEL-2245-42:	300 Vac
SEL-2245-221, SEL-2245-411:	22 Vac

Operating Environment

cULus:	0° to + 40°C
Insulation Class:	1
Pollution Degree:	2
Overvoltage Category:	II

Relative Humidity:	5%–95%, noncondensing
Indoor/Outdoor Use:	Indoor
Maximum Altitude	2000 m
Vibration, Earth Tremors:	Class 1
Atmospheric Pressure:	80 to 110 kPa

Dimensions**10-Slot Backplane**

Height (Mount Points):	221.5 mm (146.1 mm)
Width (Mount Points):	482.6 mm (465.1 mm)
Depth (with Touchscreen):	175.3 mm (208.5 mm)

Panel Mount Cutout:	223.5 mm x 450.9 mm
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4-Slot Backplane

Height (Mount Points):	221.5 mm (146.1 mm)
Width (Mount Points):	260.4 mm (242.8 mm)
Depth:	175.3 mm

Weight

SEL-2241 RTAC:	0.67 kg (1.47 lb)
SEL-2241-2 RTAC (Copper):	1.29 kg (2.84 lb)
SEL-2241-2 RTAC (SFP):	1.42 kg (3.13 lb)
SEL-2242 19 inch Backplane:	3.24 kg (7.13 lb)
Panel Mount Bezel:	0.28 kg (0.63 lb)
SEL-2242 10-Slot (19 in Rack Width) With 7 in Touchscreen Display:	4.00 kg (8.80 lb)
SEL-2243-1 HV Coupler:	0.85 kg (1.87 lb)
SEL-2243-2 LV Coupler:	0.89 kg (1.97 lb)
SEL-2244-2 24 DI:	0.45 kg (1.00 lb)
SEL-2244-3 16 DO:	0.59 kg (1.30 lb)
SEL-2244-4 32 DI:	0.40 kg (0.88 lb)
SEL-2244-5 10 FHCDO:	0.57 kg (1.26 lb)
SEL-2245-2 16 AI:	0.51 kg (1.12 lb)
SEL-2245-22 4 AI-ER:	0.42 kg (0.92 lb)
SEL-2245-221 4 LEA:	0.42 kg (0.92 lb)
SEL-2245-3 8 AO:	0.46 kg (1.01 lb)
SEL-2245-4 4 CT/4 PT:	0.54 kg (1.18 lb)
SEL-2245-411 4 CT/4 LEA:	0.54 kg (1.18 lb)
SEL-2245-42 3 CT/3 PT:	0.73 kg (1.60 lb)

Worst-Case Burden per Module

SEL-2241 RTAC (Copper):	12.5 W
SEL-2241 RTAC (Fiber):	15 W
SEL-2241-2 RTAC (Copper):	18 W
SEL-2241-2 RTAC (SFP):	20 W
SEL-2242 19 inch Backplane:	1 W
SEL-2242 10-Slot (19 in Rack Width) With 7 in Touchscreen Display:	4 W
SEL-2243 Power Coupler (Copper):	2.5 W ^a
SEL-2243 Power Coupler (Fiber):	5 W ^a
SEL-2244-2 24 DI:	2 W
SEL-2244-3 16 DO:	8 W
SEL-2244-4 32 DI:	2 W

SEL-2244-5 10 FHCDO:	6 W
SEL-2245-2 16 AI:	3 W
SEL-2245-22 4 AI-ER:	2 W
SEL-2245-221 4 LEA:	2 W
SEL-2245-3 8 AO:	13 W
SEL-2245-4 4 CT/4 PT:	3 W
SEL-2245-411 4 CT/4 LEA:	3 W
SEL-2245-42 3 CT/3 PT:	6 W

^a Each SEL-2243 will draw a minimum of 11 W (quiescent) when the total burden of all other modules in the node is less than 11 W.

Wire Sizes

Thermal Rating:	75°C
Connection Type:	Wire Size
Grounding	
(Earthing):	2.10 mm ² (14 AWG)
Power Coupler:	2.10–3.30 mm ² (14–12 AWG)
SEL-2244-2, SEL-2244-3, SEL-2244-5, SEL-2245-2, SEL-2245-22, SEL-2245-221, SEL-2245-3, SEL-2245-4, SEL-2245-411, SEL-2245-42:	0.20–3.30 mm ² (24–12 AWG)
	#8 ring or spade terminals for CT connections.
SEL-2244-4, SEL-2245-2:	0.10–1.30 mm ² (28–16 AWG)

Torque Ratings

Backplane Mounting	
Screws:	1.4–1.7 Nm (12–15 in-lb)
Serial Port Mounting	
Screws:	0.6–0.8 Nm (5–7 in-lb)
Terminal Block Mounting	
Ear Screws:	0.18–0.25 Nm (1.6–2.2 in-lb)

Terminal Ratings

I/O and Power Terminal	
Blocks:	0.6–0.8 Nm (5–7 in-lb)
CT Terminal Blocks	1.0–2.0 Nm (9–18 in-lb)

User-Replaceable Battery

Replace only with Rayovac BR1632 or equivalent recommended by manufacturer.

Rated Capacity:	130 mAh
Nominal Voltage:	3 V

Technical Support

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

Schweitzer Engineering Laboratories, Inc.
2350 NE Hopkins Court
Pullman, WA 99163-5603 U.S.A.
Tel: +1.509.338.3838
Fax: +1.509.332.7990
Internet: selinc.com/support
Email: info@selinc.com

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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



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