



SEL-2730U 24-Port Unmanaged Ethernet Switch

Reliable Ethernet Communication for Substation and Plant Networks



The SEL-2730U Unmanaged Ethernet Switch is designed for the harsh environments commonly found in the energy and utility industries. The SEL-2730U supports communications infrastructures built for engineering access, supervisory control and data acquisition (SCADA), and offers the same reliability found in SEL protective relays.

- **Reliable.** Increase availability with the SEL-2730U, which is designed, built, and tested to function in harsh environments such as substations. Optional hot-swappable, dual power supplies provide for primary and backup power sources.
- **Flexible.** Maximize flexibility by using SEL-2730U ordering options to meet different network configurations. Order the SEL-2730U with Ethernet ports in combinations of copper, single-mode fiber, and multimode fiber. Add even more flexibility by using the four small form-factor pluggable (SFP) modules to change port configurations when network designs change.
- **Easy to Use.** Simply plug Ethernet devices into the SEL-2730U to start communications. There are no settings or configurations.

Functional Overview

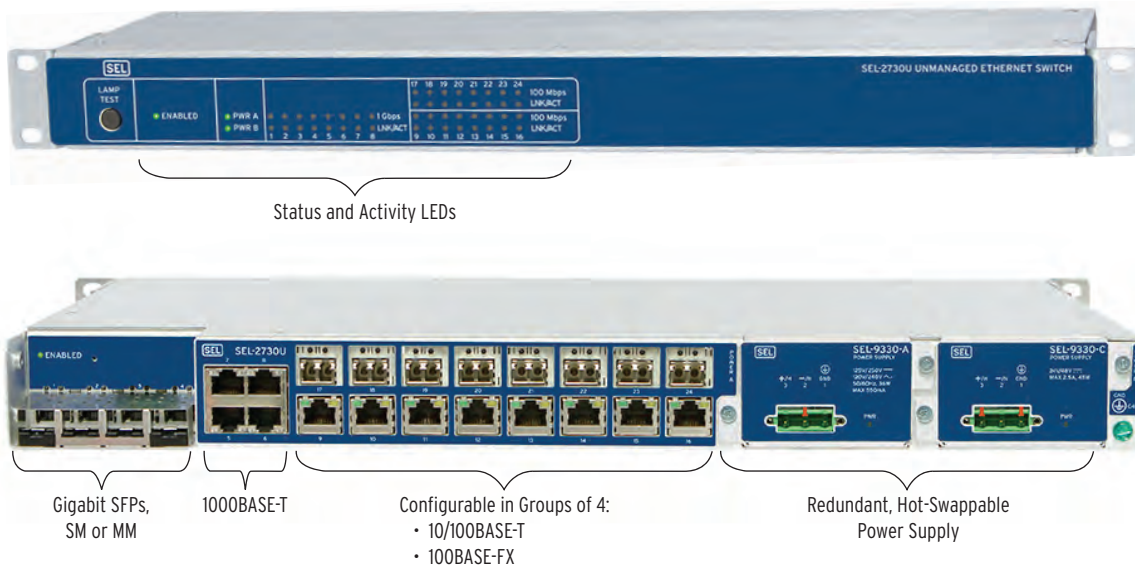


Figure 1 Functional Diagram

The base-model SEL-2730U has 4 Gigabit Ethernet copper ports and 16 10/100 Mbps copper Ethernet ports, built as 4-port modules. You can order each of the 10/100 Mbps copper port modules as single- or multi-mode fiber-optic ports to meet the unique requirements of your network. You can also add as many as four fiber-optic Gigabit Ethernet ports via small form-factor pluggable (SFP) transceivers, for a total of 24 ports.

- ▶ **Four small form-factor pluggable (SFP) ports.** Ports 1–4 support single or multimode fiber SFP transceivers.
- ▶ **Four Gigabit Ethernet ports.** Ports 5–8 support 10/100/1000 copper Gigabit Ethernet.
- ▶ **16 10/100 Mbps ports.** Ports 9–24 can be ordered in combinations of 4-port groups of either copper or fiber. When fiber is ordered for the 10/100 Mbps ports, far end fault indication (FEFI) is supported on those ports.
- ▶ **Redundant, hot-swappable power supplies.** Optional redundant power supplies provide failover protection. Connect a separate power source to each power supply. If one source fails,

the other continues to keep the switch operational. The power supply has an estimated MTBF of 3000 years.

- ▶ **Reversible mounting.** The SEL-2730U comes with reversible mounting ears to support both front and rear-panel installations.

SEL manufactures the SEL-2730U using the same high standards as those for SEL protective relays and backs it with the same 10-year worldwide warranty.

The SEL-2730U supports far end fault indication (FEFI) on the 10/100 fiber ports. This is enabled by default. If you do not want FEFI, you can turn it off by removing the top panel, locating jumper J16, and asserting position 3 when you are facing the front of the product and counting from left to right.

The SEL-2730U meets or exceeds the IEEE 1613 Class 1, IEC 61850-3, and IEC 60255 industry standards for communications devices in electrical substations for vibration, electrical surges, fast transients, extreme temperatures, and electrostatic discharge.

Front- and Rear-Panel Diagrams

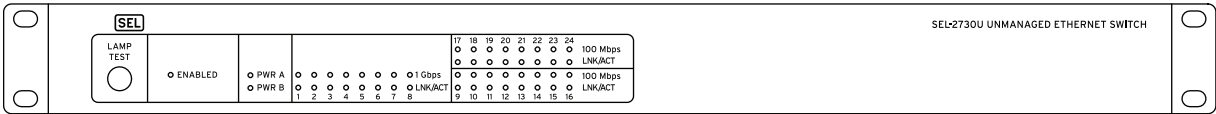


Figure 2 SEL-2730U Front-Panel Diagram

For some port options, a heat sink will be added to the front of the case.

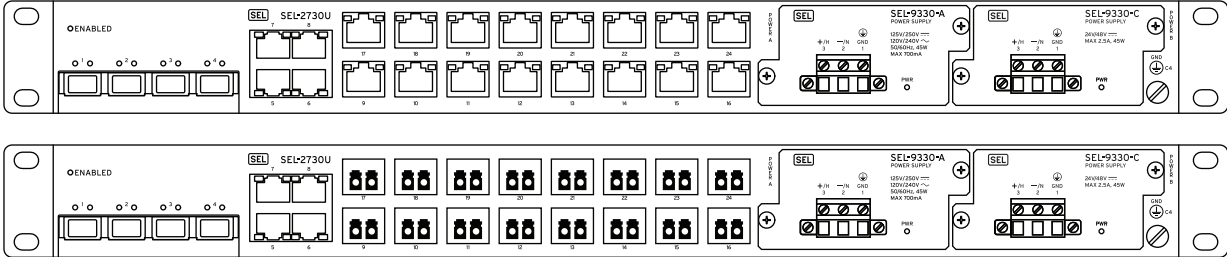


Figure 3 SEL-2730U Rear-Panel Diagrams

Dimensions

RACK-MOUNT CHASSIS

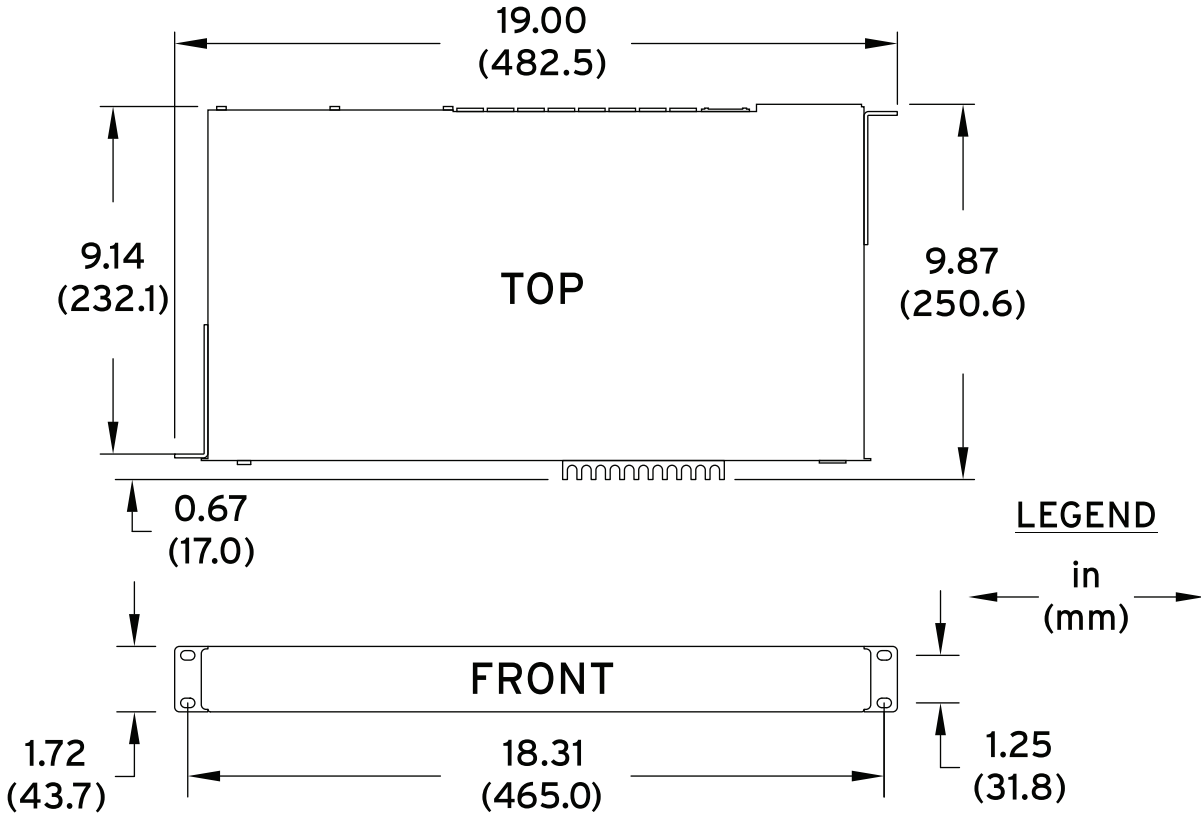


Figure 4 SEL-2730U Dimensions

Specifications

Compliance

ISO 9001:2008 Certified
47 CFR 15B, Class A
UL Recognized to US and Canadian safety standards (File E231500; NWGQ2, NWGQ8)
CE Mark

General

Operating Environment

Pollution Degree:	2
Overvoltage Category:	II

Dimensions

1U Rack Mount

Height:	43.7 mm (1.72 inches)
Depth:	232.1 mm (9.14 inches)
Width:	482.5 mm (19 inches)

Weight

1.96 kg (4.3 lbs)

Switching Properties

Switching Method:	Store and Forward
Switching Latency:	< 7 μ s
Switch Fabric Throughput:	19.2 Gbps
MAC Address Table Size:	8192 Addresses

Warranty

10 Years

Network

IEEE 802.3u:	100BASE-T and 100BASE-FX
IEEE 802.3:	10BASE-T
IEEE 802.x:	Flow control

RJ45 Ports

Recommended Cable:	Category 5(e) Shielded Twisted Pair Cable (STP) (SEL-C627)
Auto Negotiation:	10 or 100 MBps, full- or half-duplex and MDI/MDI-X crossover

Fiber Optics

Class 1 LASER/LED Product:	IEC 60825-1:1993 + A1:1997 + A2:2001
Data Rate:	100 Mbps
Connector Type:	LC
Wavelength:	1300 nm
Multimode Option:	62.5 μ m fiber
Lowest TX Level:	-20 dBm
Lowest RX Sensitivity:	-31 dBm
Optical Budget:	11 dBm
Max Distance:	2 Km

Single-Mode Option:	9 μ m fiber
Lowest TX Level:	-15 dBm
Lowest RX Sensitivity:	-25 dBm
Optical Budget:	10 dBm
Max Distance:	15 Km

Communications Ports

Ethernet Ports

Ports:	24 rear
Data Rate:	10, 100, or 1000 Mbps
Rear Connectors:	RJ45 Female or LC Fiber (single-mode or multimode)
Standard:	IEEE 802.3

Power Supply

125/250 Volt Power Supply

Rated Supply Voltage:	125/250 Vdc; 120/220/240 Vac, 50/60 Hz
Input Voltage Range:	88-300 Vdc or 85-264 Vac
Power Consumption:	AC: < 60 VA DC: < 45 W
Input Voltage Interruptions:	50 ms @ 125 Vac/Vdc 100 ms @ 250 Vac/Vdc

24/48 Volt Power Supply

Rated Supply Voltage:	24/48 Vdc (polarized)
Input Voltage Range:	19.2 Vdc to 57.6 Vdc
Power Consumption:	< 45 W
Input Voltage Interruptions:	50 ms @ 48 Vdc

Environmental

Operating Temperature

-40° to +85°C (-40° to +185°F)

Relative Humidity

0 to 95% non-condensing

Altitude

2000 m

Green Product

Compliant with the European Union's RoHS directive

Type Tests

Communication Product Testing

IEC 61850-3:2002
IEEE 1613, Class 1

Electromagnetic Compatibility Emissions

IEC 60255-25:2000
Generic Emissions: CFR 47 Part 15
Severity Level: Class A

Electromagnetic Compatibility Immunity

Conducted RF Immunity:	IEC 60255-22-6:2001 Severity Level: 10 Vrms IEC 6100-4-6:2008 Severity Level: 10 Vrms
Electrostatic Discharge Immunity:	IEC 60255-22-2:2008 Severity Level: 2, 4, 6, 8 kV contact; 2, 4, 8, 15 kV air IEC 61000-4-2:2008 Severity Level: 2, 4, 6, 8 kV contact; 2, 4, 8, 15 kV air IEEE C37.90.3:2001 Severity Level: 2, 4, and 8 kV contact; 4, 8, and 15 kV air
Fast Transient/Burst Immunity:	IEC 60255-22-4:2008 Severity Level: Class A - 4 kV, 5 kHz; 2 kV, 5 kHz on communications ports IEC 61000-4-4:2011 Severity Level: 4 kV, 5 kHz
Magnetic Field Immunity:	IEC 61000-4-10:2001 Severity Level: 100 A/m 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
Power Supply Immunity:	IEC 60255-11:2008 IEC 61000-4-11:2004 IEC 6100-4-29:2000
Radiated Radio Frequency Immunity:	IEC 60255-22-3:2007 Severity Level: 10 V/m IEC 61000-4-3:2010 Severity Level: 10 V/m IEEE C37.90.2:2004 Severity Level: 35 V/m
Surge Immunity:	IEC 60255-22-5:2008 Severity Level: 1 kV line-to-line, 2 kV line-to-earth IEC 61000-4-5:2005 Severity Level: 1 kV line-to-line, 2 kV line-to-earth
Surge Withstand Capability Immunity:	IEC 60255-22-1:2007 Severity Level: 2.5 kV peak common mode, 1.0 kV peak differential mode IEEE C37.90.1:2002 Severity Level: 2.5 kV oscillatory, 4 kV fast transient waveform

Environmental

Cold:	IEC 60068-2-1:2007 Severity Level: 16 hours at -40°C
Damp Heat, Cyclic:	IEC 60068-2-30:2005 Severity Level: 25°C Relative Humidity: 93% Duration: 4 days
Dry Heat:	IEC 60068-2-2:2007 Severity Level: 16 hours at +85°C
Vibration (Front-Panel Mount Only):	IEC 60255-21-1:1988 Severity Level: Class 1 endurance, Class 2 response IEC 60255-21-2:1988 Severity Level: Class 1 - Shock withstand, bump, and Class 2 - Shock response IEC 60255-21-3:1993 Severity Level: Class 2 (quake response)

Safety

Dielectric Strength:	IEC 60255-5:2000 3100 Vdc on power supply. Type tested for 1 minute. IEEE C37.90:2005 3100 Vdc on power supply. Type tested for 1 minute.
Impulse:	IEC 60255-5:2000 Severity Level: 0.5 Joule, 5 kV IEEE C37.90:2005 Severity Level: 0.5 Joule, 5 kV
Laser (LED) Safety:	IEC 60825-1:1993 +A1:1997 + A2:2001 [BS EN 60825-1:1994 + A1:1996 + A2:1997 + A3:2002] Complies with 21 CFR Chapter 1, Subchapter J, Part 1040.10.



Safety:	IEC 60950-1:2001 [EN 60950-1:2001]
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This product is covered by the standard SEL 10-year warranty. For warranty details, visit selinc.com or contact your customer service representative.

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