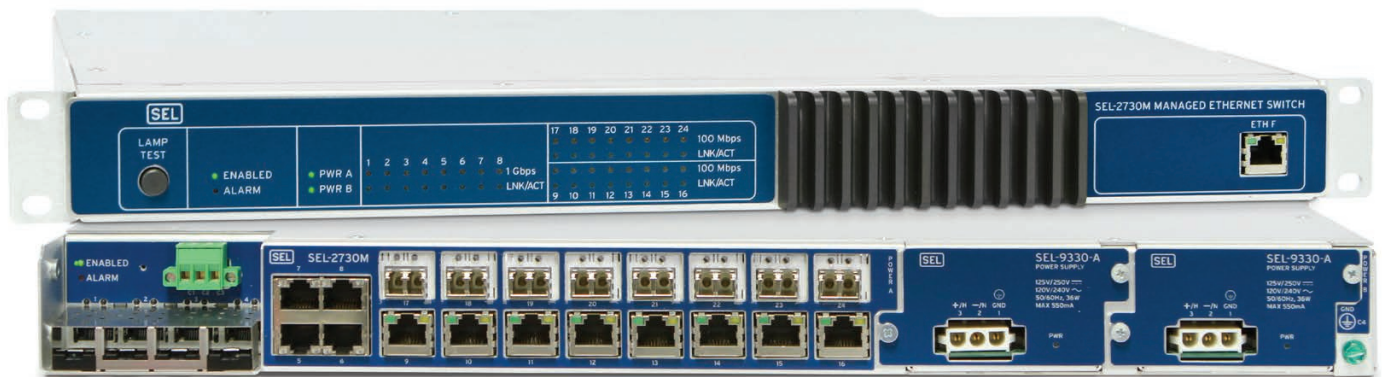# SEL-2730M

Managed 24-Port Ethernet Switch

Reliably Control and Monitor Your Substation and Plant Networks

Features and Benefits

Tough

Designed, built, and tested for trouble-free operation in extreme conditions, the SEL-2730M Managed 24-Port Ethernet Switch meets or exceeds IEEE 1613 (Class 2) and IEC 61850-3 standards for communications devices in electric power substations.

Reliable

SEL is committed to providing superior reliability and quality in all its products. The SEL-2730M is equipped with hot-swappable, dual power supplies, allowing simultaneous connection to primary and backup power sources. This ensures no loss of service due to a single power source failure.

Easy to Use

The SEL-2730M is easy to install and configure. Setting up priority messaging via virtual local area networks (VLANs) is simplified. Settings may be updated either through a secure web interface or offline for later upload to the switch.

Secure

Comprehensive security features ensure that only authorized users and traffic have access to the network.

Flexible, Modular Design

The base-model SEL-2730M has 4 Gigabit Ethernet copper ports and 16 10/100 Mbps copper Ethernet ports, built as 4-port modules. Each of these 10/100 Mbps copper port modules can be ordered as single- or multimode fiber-optic ports to meet your network's unique requirements. In addition, up to 4 fiber-optic Gigabit Ethernet ports may be added via small form-factor pluggable (SFP) transceivers, for a total of 24 ports.

Buy With Confidence

At SEL, we build all of our switches in U.S.-based manufacturing facilities using the same processes that we use to build our relays. And, we offer the same ten-year, worldwide, no-questions-asked warranty for our networking equipment that we do for protection and automation equipment.

Making Electric Power Safer, More Reliable, and More Economical®

Tough, Reliable, and Secure

The SEL-2730M is specifically designed to handle extreme conditions found in harsh substation environments. It withstands vibration, electrical surges, fast transients, electrostatic discharge, and extreme temperatures and humidity.

The SEL-2730M has the highest mean time between failures (MTBF) in the industry and reliably supports communications under high EMI and temperature stress with easy-to-provision settings geared specifically for IED messaging.
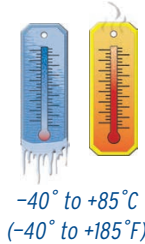

−40˚ to +85˚C
(−40˚ to +185˚F)

SEL Ethernet switches are designed and tested to withstand extreme temperatures and harsh conditions.

Keep the Network Running With Dual Hot-Swappable Power Supplies

Connect a separate power source to each power supply. If one source fails, the other source continues to keep the switch operational. Each power supply is highly reliable. However, should you ever need to replace one, you can remove one power supply module while the switch continues to function, powered by the other module.

The SEL-9330-A Power Supply has an estimated MTBF of 3,000 years. This means in a population of 3,000 power supply modules, you can expect one or fewer failures in a year.
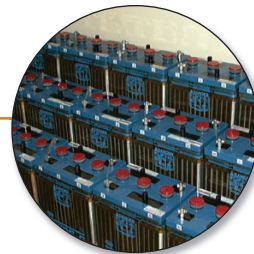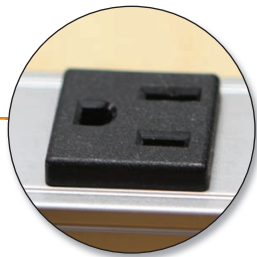
Both ac and station battery voltage sources may be used. If one supply fails, the network will not be affected.
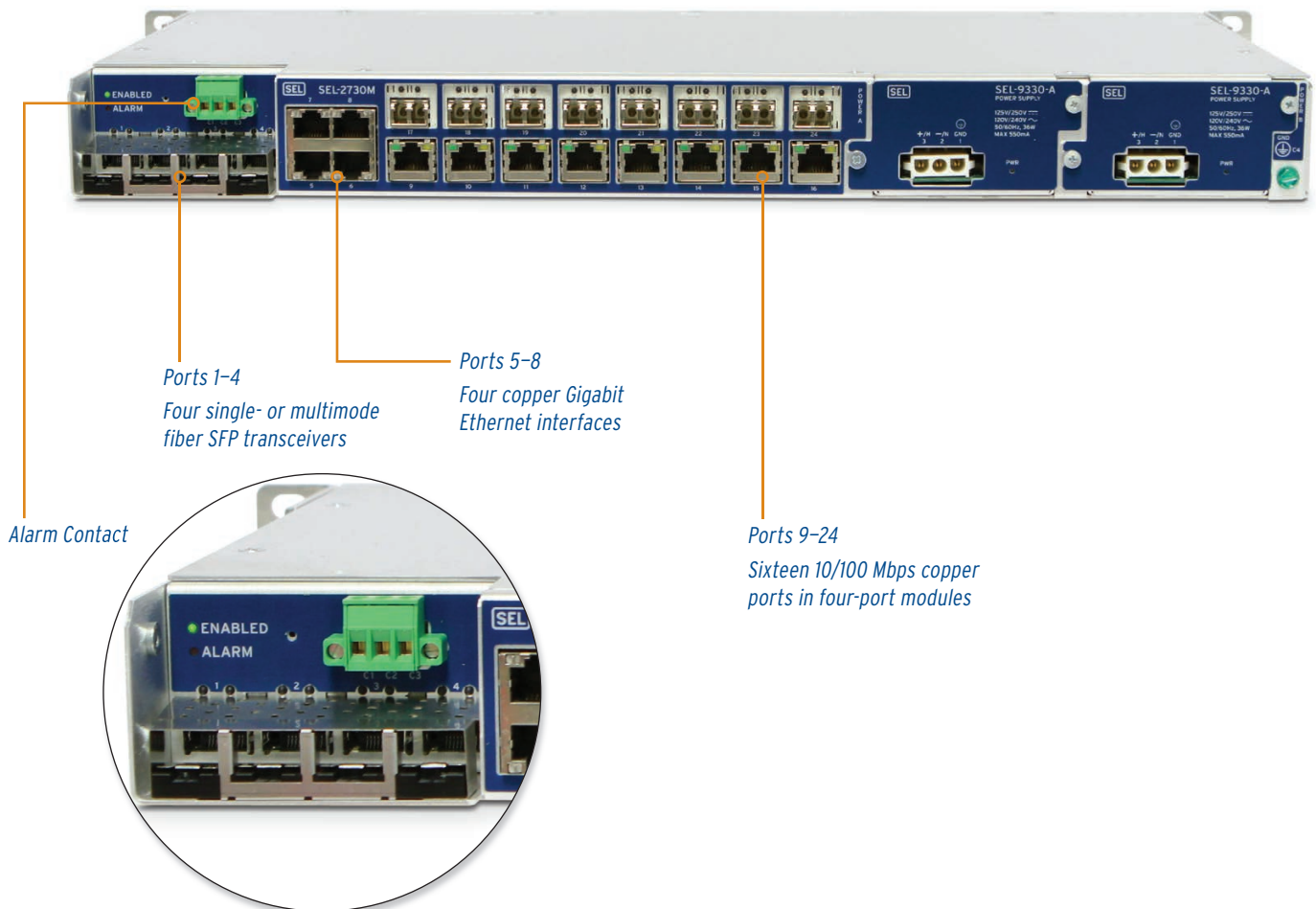
Flexible Modular Design

SCADA, IED-to-IED communications, and engineering access messages are sent and received via Ethernet-based communications. These messages may include legacy protocols, such as DNP3, proprietary IED protocols, and web- and Telnet-based device management access.

IT applications, such as video for facility security, and voice, are also easily managed through this switch.

Base Model SEL-2730M Configuration

The base model SEL-2730M comes populated with 4 Gigabit Ethernet interfaces, 4 fiber-optic SFP cages, and 16 additional copper ports. These 16 copper ports may be upgraded to fiber-optic interfaces (single- or multimode) in groups of four.

Ports 1–4

Four single- or multimode fiber SFP transceivers

Ports 5–8

Four copper Gigabit Ethernet interfaces

Alarm Contact

Ports 9–24

Sixteen 10/100 Mbps copper ports in four-port modules

Key Network Features

VLANs allow you to isolate network traffic between groups of IEDs or by message type, while Ethernet Class of Service (CoS) minimizes latency for mission-critical applications.

Priority VLAN assignments ensure critical data, including SCADA messages, take precedence over less important network traffic.

SEL utilizes a simple approach that allows the user to create a set of VLANs independent of whether the switch port is acting as an edge or trunk. The end result is a less complex provisioning activity that can be easily deployed by utility engineers to separate substation traffic into VLANs.

Network security is a critical component of any managed switch application. The SEL-2730M is designed with the following features:

- User-based account access
- Port disabling
- Secure SNMPv3 network monitoring
- MAC-based port filtering

The SEL-2730M supports SNMPv3/v2c and is compatible with existing NMS systems as well as the SEL-5051 Network Management System Software.

Switch configuration settings may be updated, either through a secure web interface or offline at your desk or laptop for later upload to the switch.

Manage the SEL-2730M via an HTTPS web management interface with user-based authentication. Syslog security information may be forwarded to up to three central servers making monitoring system activity simple and convenient.

Virtual local area networks (VLANs) allow you to isolate network traffic.
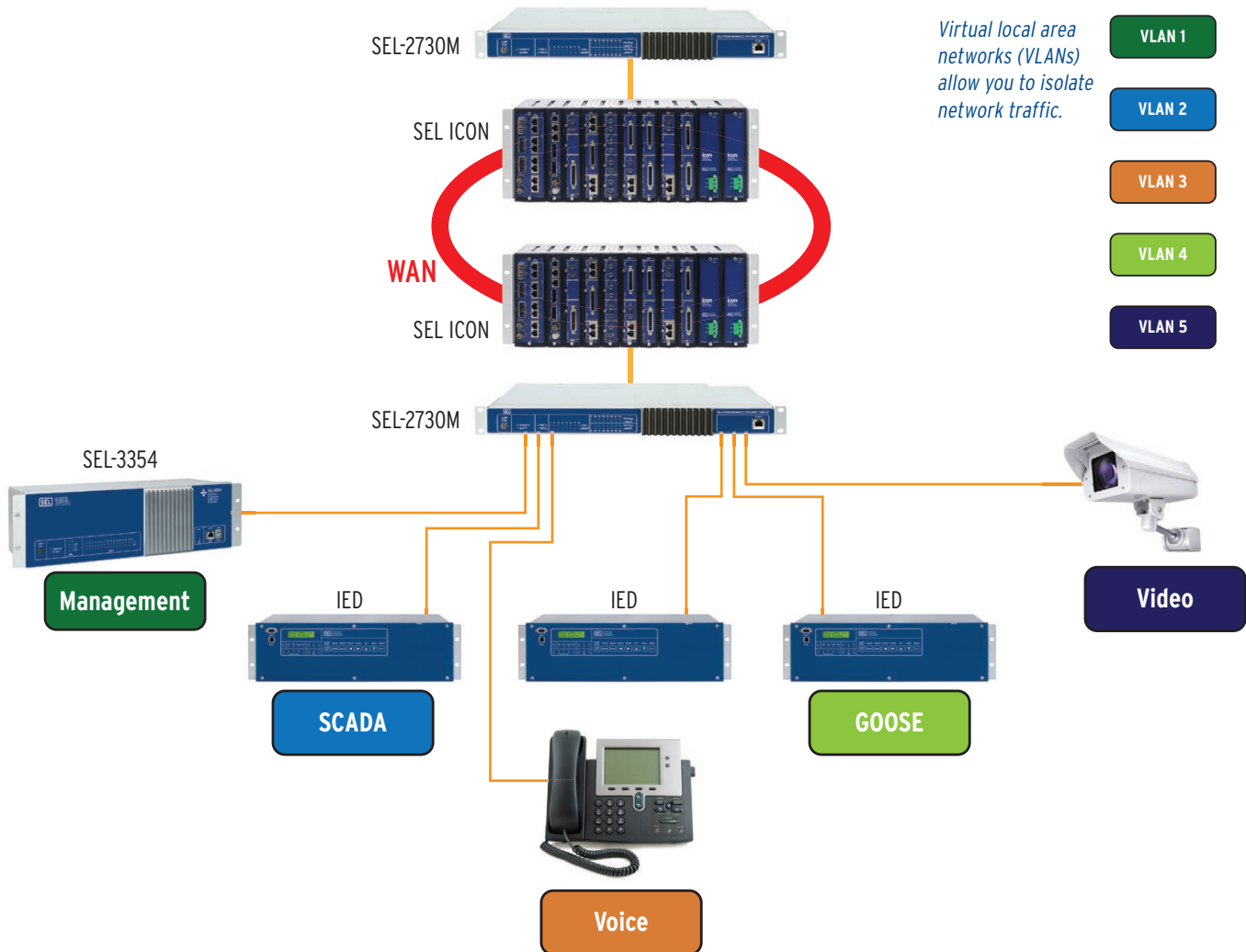
Integrated Communications

The SEL-2730M is designed for optimal performance with the SEL ICON™ Integrated Communications Optical Network, other SEL networking components, and substation IEDs.

The SEL-2730M is part of SEL a complete communications system for the substation LAN.

SEL's Ethernet switch complements the ICON by aggregating Ethernet LAN traffic for station-to-station Ethernet over SONET traffic. The ICON and SEL-2730M combination gives SEL an integrated communications solution for aggregation and transport, a huge benefit over point Ethernet switching solutions that rely purely on Ethernet switches for both WAN transmission and LAN connectivity.

SEL ICON™

SEL-3620

SEL-2730M

SEL Axion®

SEL-421

SEL-3354

SEL-2407®

Protective Relays
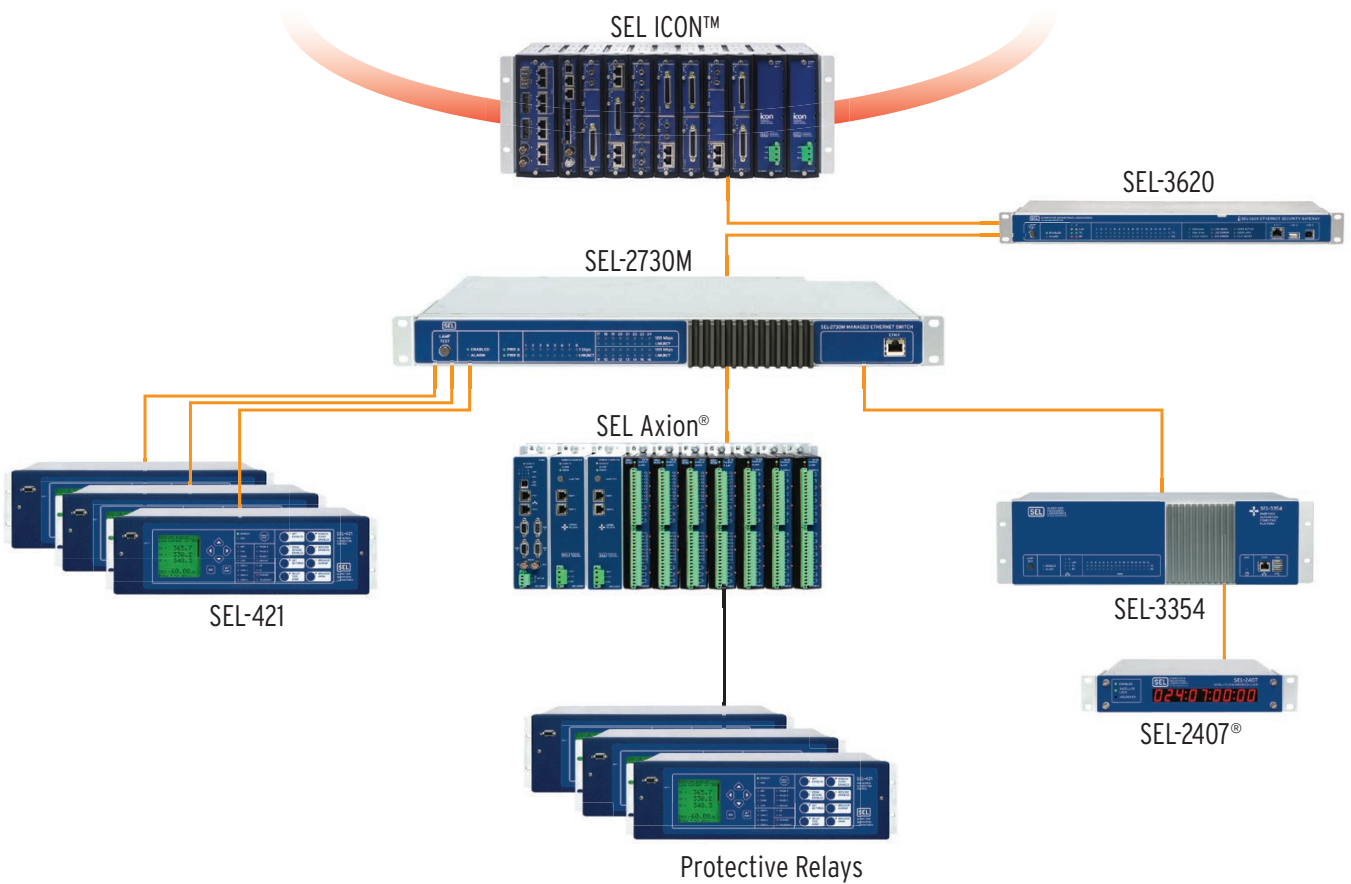
In this example of a substation network, the SEL-2730M supports engineering access from the SEL-3354 Embedded Automation Computing Platform, and aggregates IEC 61850 traffic from the SEL-2240 Axion® and SEL-421 Protection, Automation, and Control Systems.

# Easy to Install, Configure, Manage, and Maintain

Plug-and-Play Networking Product

Simple, user-friendly provisioning options allow the switch to be configured via any one of several options:

- Simple and secure web interface provides real-time provisioning.
- Offline desktop application allows delivery of files to field devices.
- SNMPv3/v2c provides network monitoring.
- SEL ICON provides access to SEL-5051 Network Management System Software, allowing users to monitor the SEL-2730M in the field.

The SEL-2730M has an easy-to-navigate web-user interface and intuitive configuration settings that enable fast set-up times for non-IT users.

The SEL-2730M is compatible with SNMP managers, including SEL-5051 Software, which is used to manage the ICON.
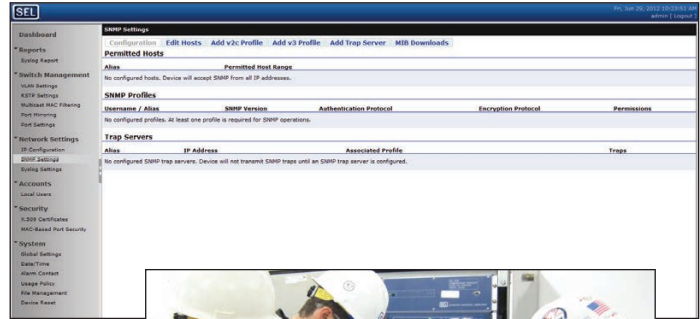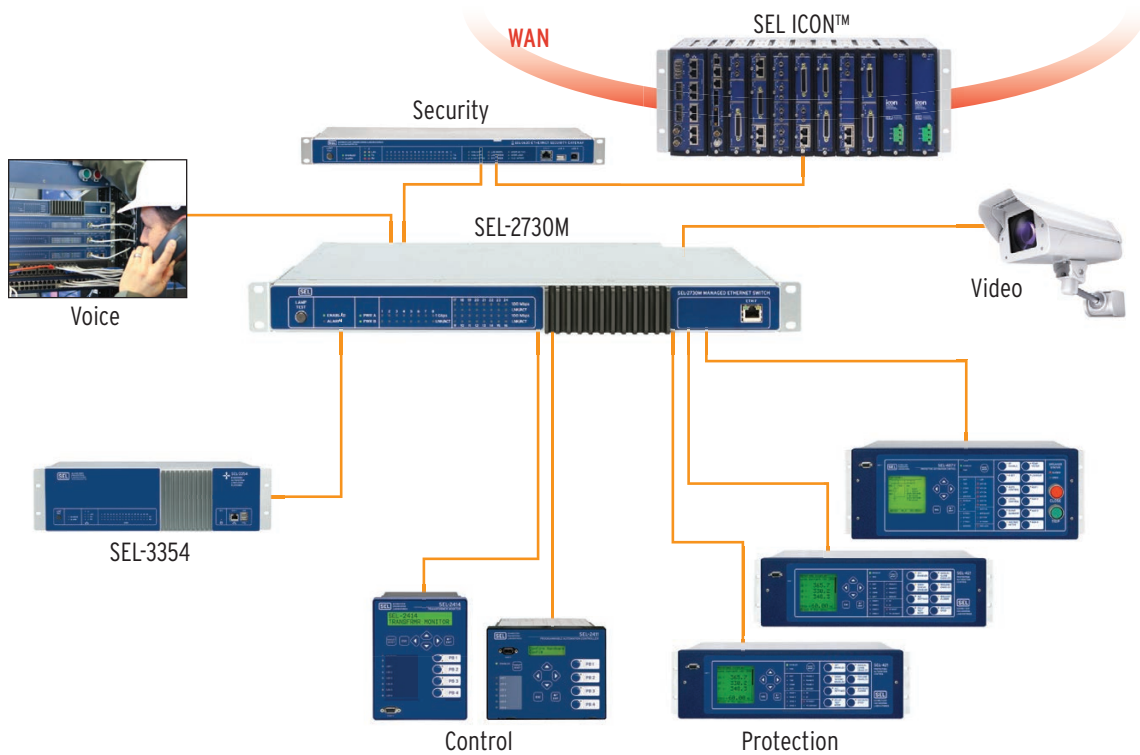
Count on SEL Communications Solutions for Critical Infrastructure

SEL networking solutions include communications products and support services specifically designed for utility and industrial markets.

Substation Automation, Protection, and Management Applications

WAN

SEL ICON™

Security

SEL-2730M

Voice

Video

SEL-3354

Control

Protection

Accessories

Shielded, Twisted-Pair Category 5e Ethernet Cables

SEL-C627—Standard Ethernet STP cables

SEL-C628—Enhanced Ethernet cables with protection against EMI/RFI for industrial applications

Fiber-Optic Cables

SEL provides high-quality fiber-optic cable solutions in customer-specified lengths. Various cables sizes, jacket types, and strand counts are available. Field termination kits are also available.

SEL-C807 62.5/200 µm Core Fiber-Optic Cables

SEL-C808 Multimode 62.5/125 µm Core Fiber-Optic Cables

SEL-C809 Single-Mode Fiber-Optic Cables

Visit **www.selcables.com** for more information on SEL cable solutions.

SEL-2730M Managed 24-Port Ethernet Switch

Switch Functions

VLANs
Ethernet switch supports 802.1Q VLANs to separate line current differential and IEC 61850 GOOSE messages from other traffic.

Quality of Service
IEEE 802.1p traffic prioritization with four service levels supports critical substation messaging.

DHCP Server for Easy Setting
The default settings enable the front panel 10/100BASE-T Ethernet port to function as a DHCP server and easily connect a laptop computer during initial setup.

Security
SNMPv3 provides secure network management. An HTTPS secure web interface includes user-based accounts. The Ethernet switch can forward Syslog security logs to up to three central servers.

Failover and Redundancy
IEEE 802.1D-2004 Rapid Spanning Tree protocol (RSTP) enables fast network recovery after a topology change due to a link failure.

Port Monitoring and Statistics
Monitor ingress and egress traffic for each port, and view network statistics.

General Specifications

Ports 1–4
Ports 1 through 4 each accept an SFP transceiver, which adds a single- or multimode Gigabit Ethernet fiber-optic uplink port.

Distance and Fiber-Optic Mode

SFP options	0.5 km multimode
	2 km single-mode
	20 km single-mode
	80 km single-mode

Ports 5–8

Data rate	10/100/1000 Mbps
Connector	RJ45 female
Autoconfiguration	Crossover speed and half- or full-duplex mode

Ports 9–24

Standard

Data rate	10/100 Mbps
Connector	RJ45 female
Autoconfiguration	Crossover, speed, and half- or full-duplex mode

Optional (in groups of four: 9–12, 13–16, 17–20, and 21–24)
Multimode and single-mode optical interface

Data rate	100 Mbps
Connector	LC

Power Supply Ratings
Base unit includes one power supply; second supply is optional.

Voltage options
100/120/220/230 Vac @ 45–65 Hz, or 100/125/220/250 Vdc
24/48 Vdc

Operating Temperature Range
−40° to +85°C (−40° to +185°F)

Relative Humidity
5–95%, noncondensing