

SEL-3530-4

Real-Time Automation Controller (RTAC)



Powerful, reliable, and secure multifunction controller

- Operates as a SCADA remote terminal unit (RTU), IEC 61850 gateway, data concentrator, event collector, HMI, or substation controller.
- Employs an embedded operating system for system stability, withstands a wide temperature range for rugged outdoor use, and provides maximum reliability with no moving parts.
- Protects against malware and other cybersecurity threats with exe-GUARD[®] allowlist antivirus technology.
- Includes Ethernet ports, IRIG-B, and DB-9 EIA-232/-485 software-selectable serial ports.



Product Overview

Suitable for use in utility substations or industrial control and automation systems, the SEL-3530-4 RTAC provides complete and flexible system control with integrated security, seamless configuration, unified logic, and reliability. It converts data between multiple protocols, communicates with any configured and connected device, and comes with an embedded IEC 61131 logic engine. The RTAC is a robust automation control solution that offers the following benefits and features.

Powerful

- Powerful 32-bit microcontroller for logic and communications.
- IEC 61131 logic engine with an intuitive configuration environment.

Reliable

- Embedded operating system designed for stability.
- Industry-leading worldwide ten-year warranty.
- Wide operating temperature range of -40° to $+85^{\circ}\text{C}$ (-40° to $+185^{\circ}\text{F}$); for use indoors and in outdoor cabinets.
- Error-correcting code (ECC) RAM for data integrity.
- No fans: quiet, clean, and reliable.
- Optional conformal coating available.

Secure

- Exe-GUARD allowlist antivirus technology to allow only authorized applications to run.
- Ability to apply unique login accounts and profiles to comply with role-based requirements.
- Support for Lightweight Directory Access Protocol (LDAP) central authentication that works with your existing LDAP authentication server.
- Intrusion detection, notification, and logging to maintain system integrity.
- No backdoor passwords.

Accurate

Precision Time Protocol (PTP) and demodulated IRIG-B input that synchronizes the RTAC and connected IEDs to absolute time and drives the demodulated IRIG-B output, enabling synchronized control and management.

Flexible

- Two independent rear Ethernet ports available in either LC fiber (single- or multimode) or RJ45 copper and capable of operating on separate subnets.
- Three power supply options.
- Base configuration with many popular and useful client, server, peer-to-peer, and fieldbus communications protocols.

Robust Automation Control

Network Security Device

Make the SEL-3530-4 RTAC the secure access point into your substation or plant. The RTAC offers LDAP central authentication and role-based user authentication, access logs, and secure engineering access via Secure Shell (SSH). You can map security tags into SCADA reports for industry-leading integration of security technologies. In addition, allowlist antivirus exe-GUARD technology protects against malware and other cybersecurity threats.

SCADA RTU

Quickly design an integrated substation RTU system that includes protocol conversion, SCADA communications, synchrophasors, time synchronization, data management, and custom logic.

IEC 61850 Integration

Integrate modern IEDs into control and automation schemes with IEC 61850 GOOSE and the Manufacturing Message Specification (MMS) client and server.

Data Concentration

Communicate with any device through built-in client and server protocols. The RTAC exchanges data through DNP3, Modbus, IEC 60870-5-101/104, LG 8979, SES-92, SEL Fast Messaging, MIRRORRED BITS[®] communications, and IEEE C37.118 for synchrophasors. You can convert data between protocols, perform math and logic functions, and execute output logic for real-time control.

Event Collection

Detect, filter, and collect event data automatically from connected SEL relays. Fault location, fault current, and other data are populated into tags for easy retrieval through SCADA protocols. You can automatically collect and archive events through the RTAC using ACSELERATOR TEAM[®] SEL-5045 Software or the SEL Data Management and Automation (DMA) Blueframe[®] application suite.

Rugged, Industrial Design

No moving parts combined with an industrial design that meets and/or exceeds the IEEE 1613 specification for harsh environments means the SEL-3530-4 RTAC is a high-availability controller. We have designed and built the RTAC to withstand vibration, electrostatic discharge (ESD), and extreme temperatures.



Product Overview

SEL-3530-4

LEDs simplify diagnostics by indicating transmitted and received activity on each port.

Wide operating temperature range of -40° to $+85^{\circ}\text{C}$ (-40° to $+185^{\circ}\text{F}$).



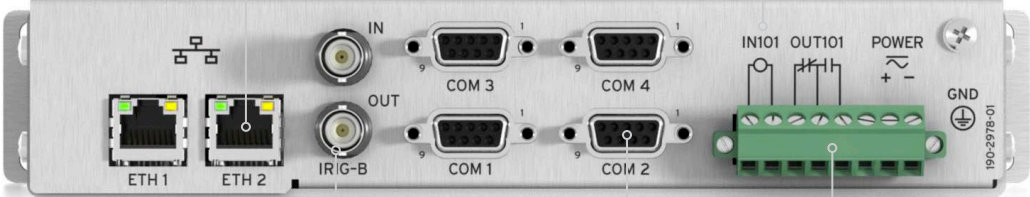
Lamp test pushbutton and diagnostic LEDs.

Programmable bicolor LEDs with configurable labels provide custom annunciation.

Rugged enclosure withstands EMI, RFI, shock, and vibration.

Independent Ethernet ports can be RJ45 or LC fiber.

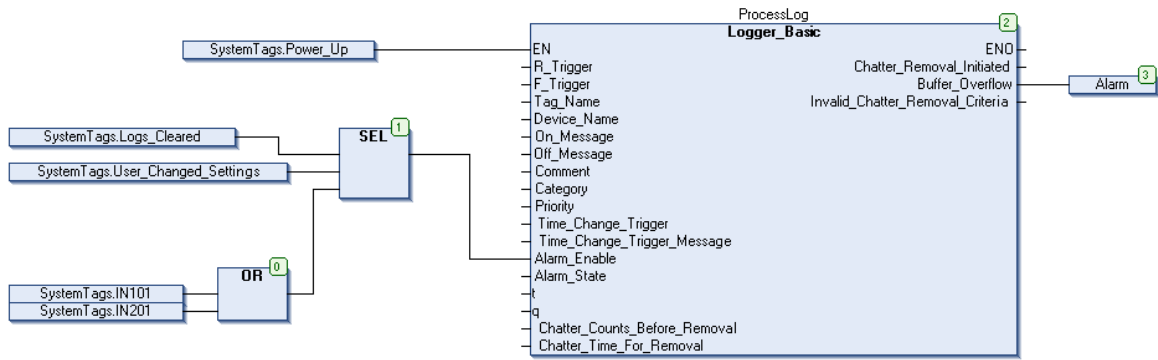
All terminals are clearly numbered and lettered for wiring and testing.



Demodulated IRIG-B input and output for high-accuracy time synchronization.

Serial ports are EIA-232/485 software-selectable.

Programmable input and alarm contact.



Task cycle time: 4-1000 ms

Task watchdog time: 4-10000 ms

POU Execution Order: Use default order

Enabled	POU	Order
True	Feeder1_421_SEL_Controller	1
True	Feeder2_351S_SEL_Controller	2
True	Feeder3_DNP_Controller	3
True	I_O_2411_SEL_Controller	4
True	SCADA1_DNP_Controller	5
True	ProcessLog	6
True	TagProcessing	7

Move Up Move Down

Function Block

Name:

Language: Continuous Function Chart

Insert Cancel

Implement Custom Logic Solutions

Design custom automation logic to control your system with acSELEATOR RTAC® SEL-5033 Software, or monitor system performance using prepopulated device tags. The RTAC lets you scale values and create logic equations in a flexible IEC 61131 configuration environment by applying integrated tools. You can perform complex math and logic calculations on any data using the built-in IEC 61131 logic engine with continuous function chart (CFC), structured text (ST), or ladder diagram (LD) programming.

Security Features

Exe-GUARD Allowlist
Antivirus Technology

Account Management

- LDAP central authentication
- User accounts
- User roles
- Strong passwords

Intrusion Detection

- Access/audit logs
- Alarm LED
- Alarm contact

Secure Encrypted Communications

- Transport Layer Security (TLS)
- SSH
- HTTPS
- Secure File Transfer Protocol (SFTP)

Automation Features

Disturbance Record Creation

Event Collection

Sequestered file system/File Transfer Protocol (FTP) server access for record retrieval

Protocol Support

Client, server, peer-to-peer, and fieldbus

Engineering Access

SEL interleaved and direct-transparent modes

Programmable Control

IEC 61131 logic engine

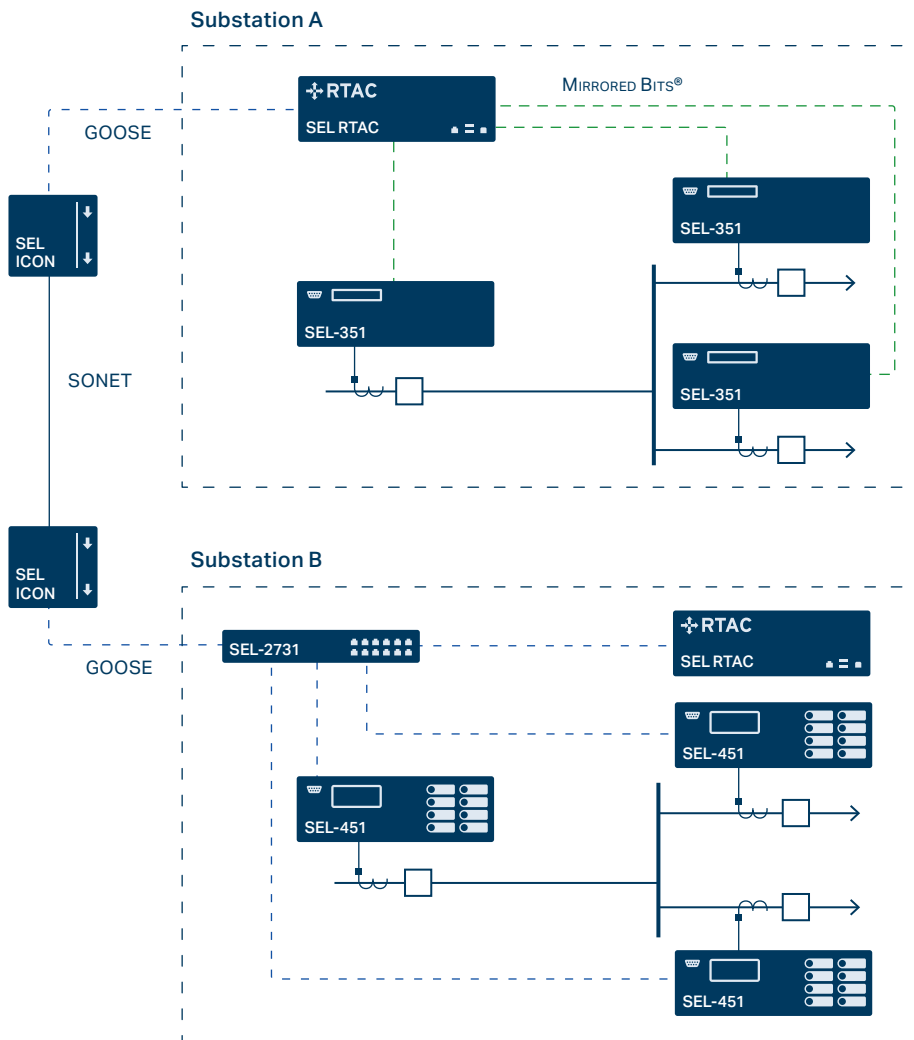
HMI

Flexible web-based HMI

Applications

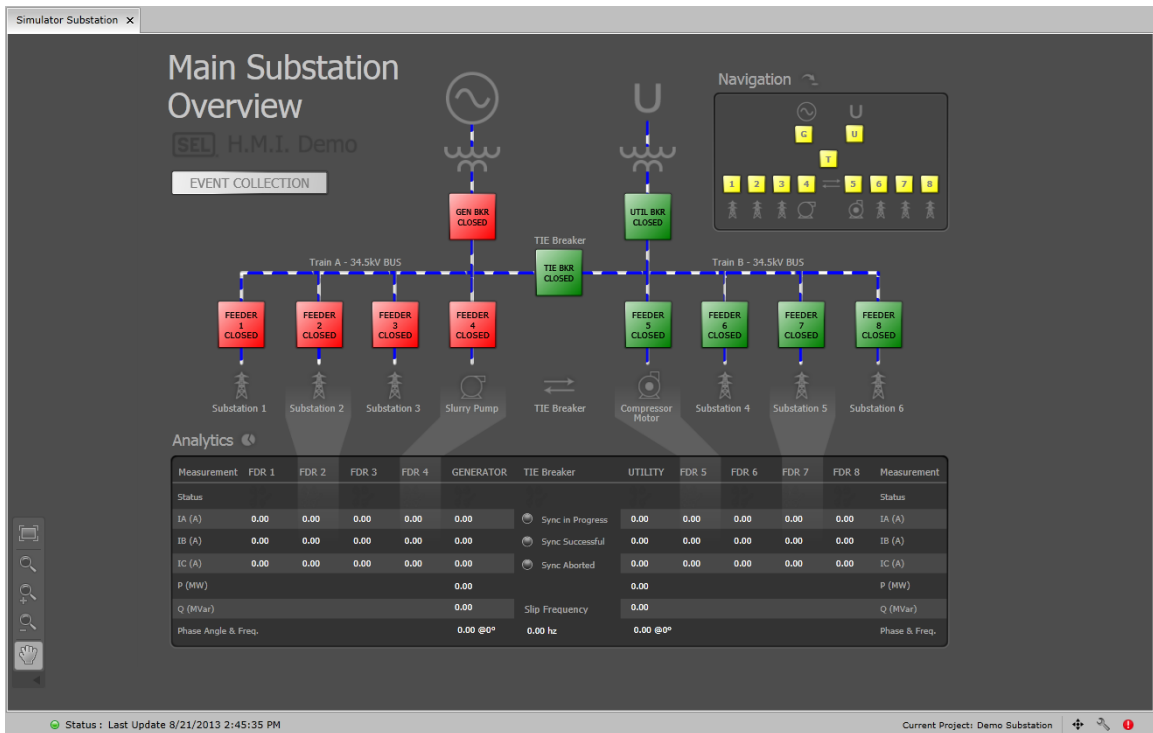
Power System Automation

Enable high-performance control and monitoring schemes. The RTAC provides a bridge between MIRRORRED BITS communications and IEC 61850 GOOSE networks. Protection applications include directional-element-based bus protection and replacement of tone-channel equipment for communications-assisted blocking, unblocking, permissive, and transfer trip schemes.



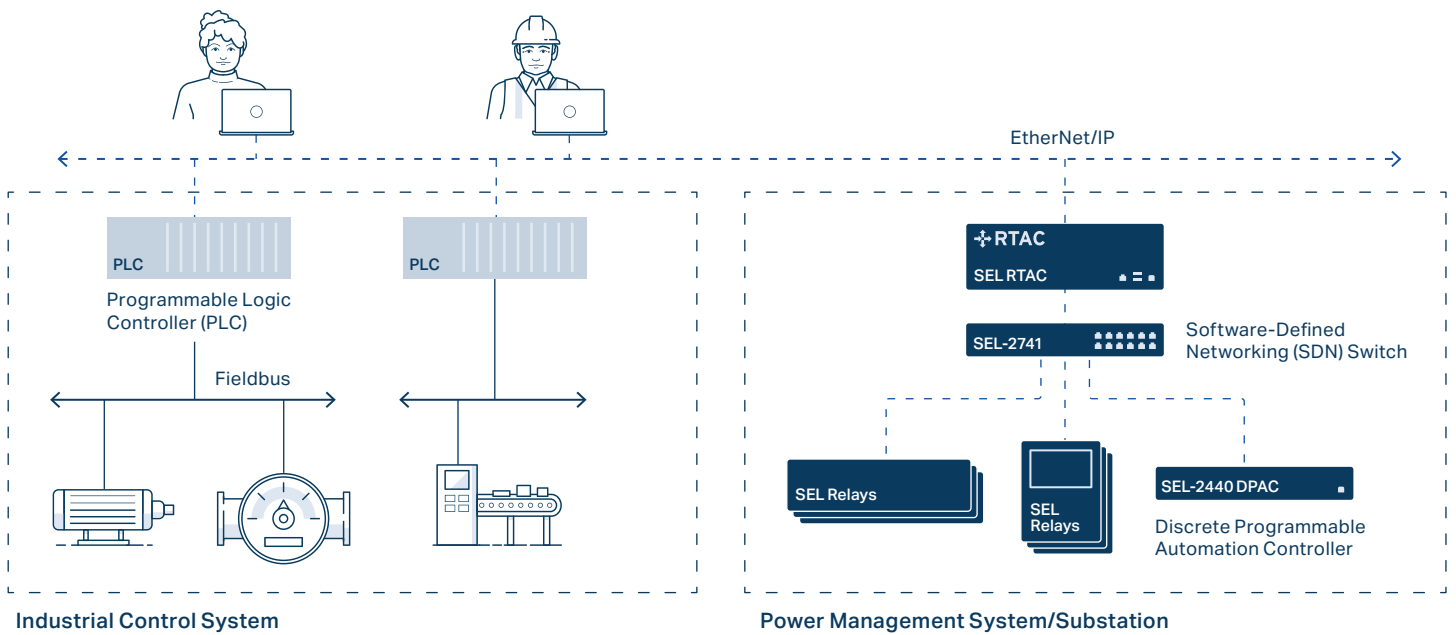
Integrated HMI

Build custom HMI displays quickly and easily without the need for mapping data tags. Because the interface is web-based, no special software is needed to view HMI displays.



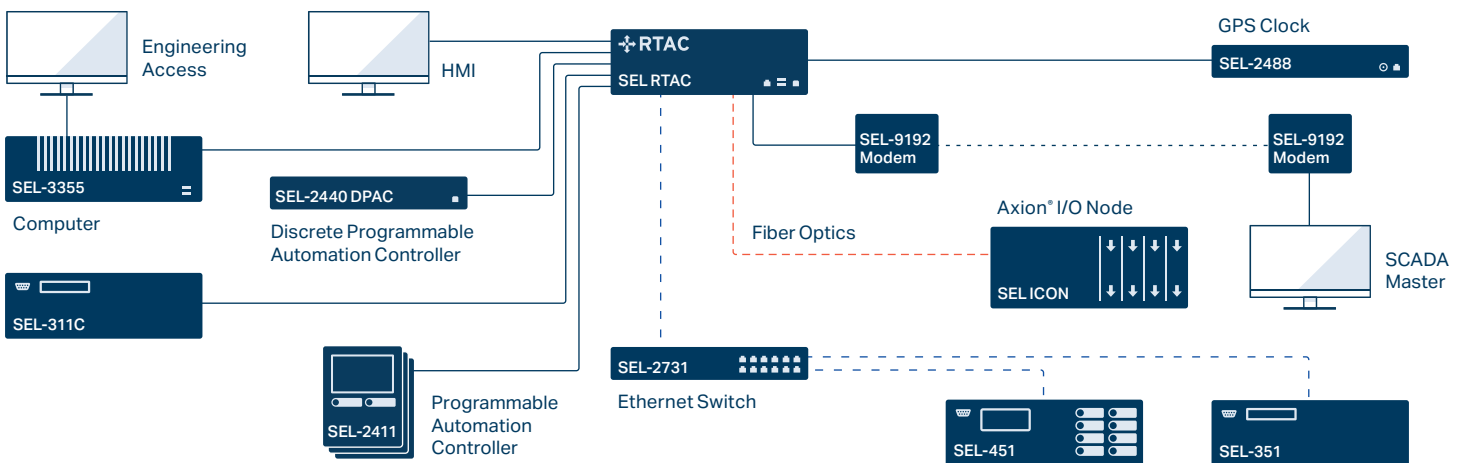
Integrate Power Management With Industrial Control

The RTAC provides a powerful gateway between the substation and the factory using EtherNet/IP. This popular industrial protocol facilitates reliable communication between electronic devices in industrial automation systems. You can use the RTAC EtherNet/IP adapter to exchange critical data for real-time monitoring, process control, and power system integration.



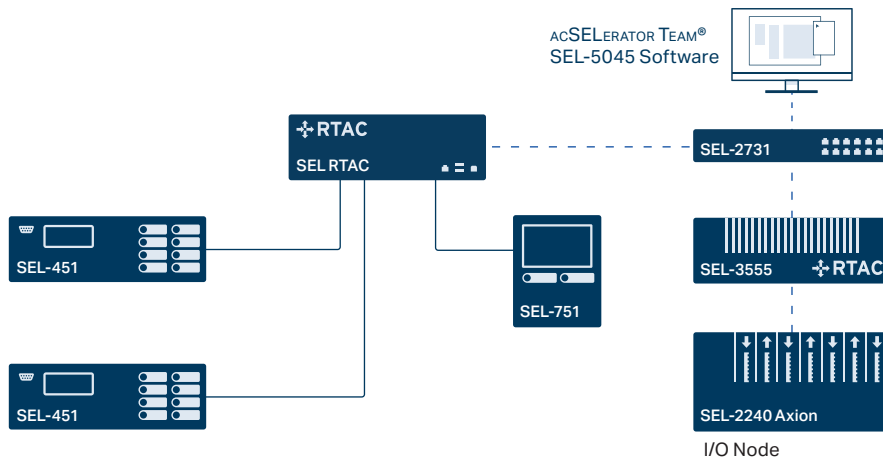
Data Concentration and SCADA

Deploy the RTAC as a data concentrator using protocols such as IEC 61850 MMS client, Modbus, DNP3, IEC 61850 GOOSE, LG 8979, IEC 60870-5-101/104, and MIRRORRED BITS communications. By enabling the logging on any system or IED tag, you can view and archive station-wide event records. Support for both serial and Ethernet communications provides flexibility for integrating IEDs and enabling multiple SCADA connections.



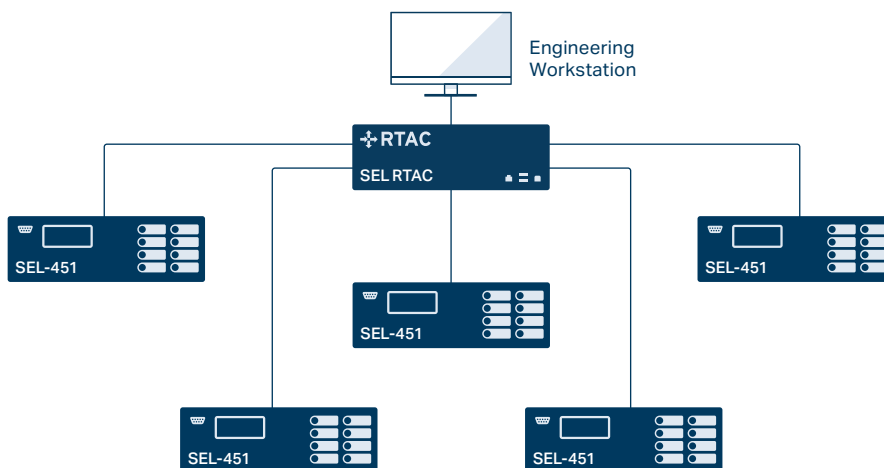
Event Collection

Automatically detect, filter, and collect event data from connected SEL relays. Fault location, fault current, and other data are populated into tags for easy retrieval through SCADA protocols. With TEAM or DMA on SEL Blueframe, you can automatically collect events through the RTAC.



Engineering Access

Securely gain remote access to the RTAC and connected devices via Ethernet to configure IEDs, monitor logs, and analyze diagnostics. Engineering access channels in the RTAC enable remote connections to devices using serial or Ethernet communications.



Specifications

General

Processor	533 MHz
RAM	1,024 MB DDR2 ECC RAM
Storage	2 GB
USB Ports	1 device port, Type B
Ethernet Ports	2 rear: RJ45 female or LC fiber (single-mode or multimode, 100 Mbps only)
Serial Ports	4 rear EIA-232/-485 (software-selectable) 300 to 115,200 bps DB-9 female IRIG-B outputs via Pins 4 and 6 +5 Vdc power on Pin 1 (500 mA maximum)
IRIG-B Ports	2 rear Input: Modulated or demodulated IRIG-B (female BNC) Output: Demodulated (female BNC)
Onboard I/O	Contact input (programmable) Contact output (programmable)
Power Supply Options	Option 1 125/250 Vdc, 120/240 Vac, 50/60 Hz Range: 85–300 Vdc or 85–264 Vac Option 2 48/125 Vdc, 120 Vac, 50/60 Hz Range: 38.4–137.5 Vdc or 88–132 Vac Option 3 24/48 Vdc Range: 18–60 Vdc (polarity-dependent)

Protocols

Client

CDC Type II
Courier
CP 2179
DNP3 Serial, DNP3 LAN/WAN
EtherNet/IP—Explicit Message Client*
File Transfer Protocol (FTP)/Secure FTP (SFTP)*
Flex Parse
IEC 60870-5-101/104
IEC 60870-5-103
IEC 61850 MMS and MMS Client File Services*
IEEE C37.118 Synchrophasors
LG 8979
Modbus RTU, Modbus TCP
SEL Protocols
SES-92
Simple Network Management Protocol (SNMP)

Server

CDC Type II
DNP3 Serial, DNP3 LAN/WAN
EtherNet/IP—Implicit Message Adapter*
FTP/SFTP
IEC 60870-5-101/104
IEC 61850 MMS and MMS Server File Services*
IEEE C37.118 Synchrophasors
LG 8979
Modbus RTU, Modbus TCP
SEL Protocols
SES-92
SNMP Agent

Peer-to-Peer

IEC 61850 GOOSE*
Network Global Variable List (NGVL)
SEL MIRRORRED BITS Communications

Field Bus Protocol

EtherCAT to SEL Axion I/O Modules

*Optional feature

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SEL SCHWEITZER ENGINEERING LABORATORIES

Making Electric Power Safer, More Reliable, and More Economical
+1.509.332.1890 | info@selinc.com | selinc.com

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