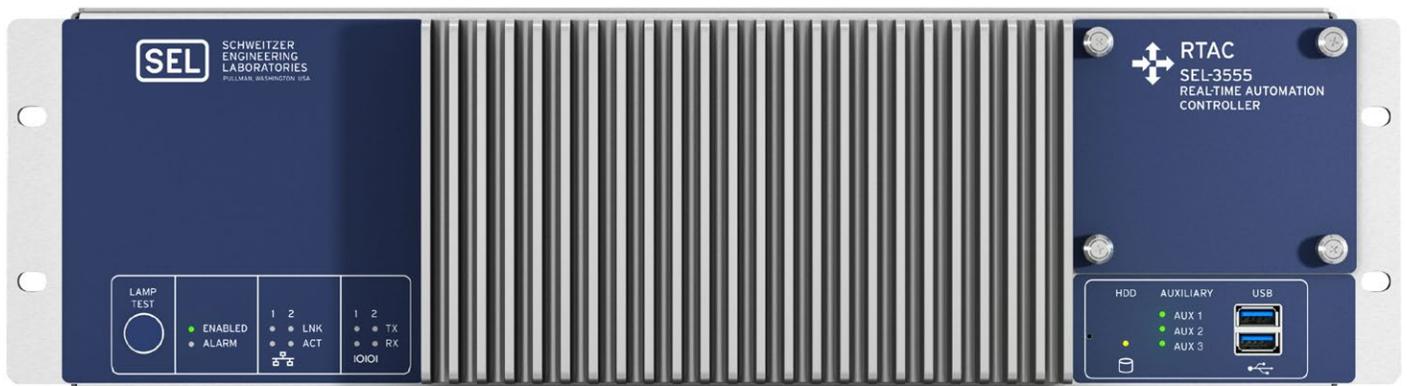


SEL-3555

Real-Time Automation Controller (RTAC)



The fastest and most powerful RTAC for advanced data concentration and control

- Processes data up to 55 times faster than previous-generation RTACs, providing powerful computing for large-scale automation projects.
- Increases cybersecurity with exe-GUARD® whitelist antivirus technology that allows only authorized applications to run.
- Provides 1 ms deterministic processing intervals for time-sensitive protection and automation control.
- Eliminates the need for an additional substation computer with an integrated video port and easy-to-use HMI.



Overview

Powerful

The SEL-3555 Real-Time Automation Controller (RTAC) is a powerful solution for advanced automation applications. It includes the following features:

- 2.0 GHz Intel Xeon quad-core processor
- Multithread IEC 61131 logic engine
- 8 GB of error-correcting code (ECC) RAM
- Three high-resolution display interfaces for local HMI support

Reliable

The following benefits ensure the SEL-3555 operates reliably in harsh environments:

- No fans, spinning drives, or moving parts to wear out
- Proven performance within operating temperature range of -40° to $+75^{\circ}\text{C}$ (-40° to $+167^{\circ}\text{F}$)
- Reliable operation in the presence of vibration, seismic, and shock (15 g) events as well as large electromagnetic fields or radio frequency interference (RFI)
- Ten-year, no-questions-asked warranty

Secure

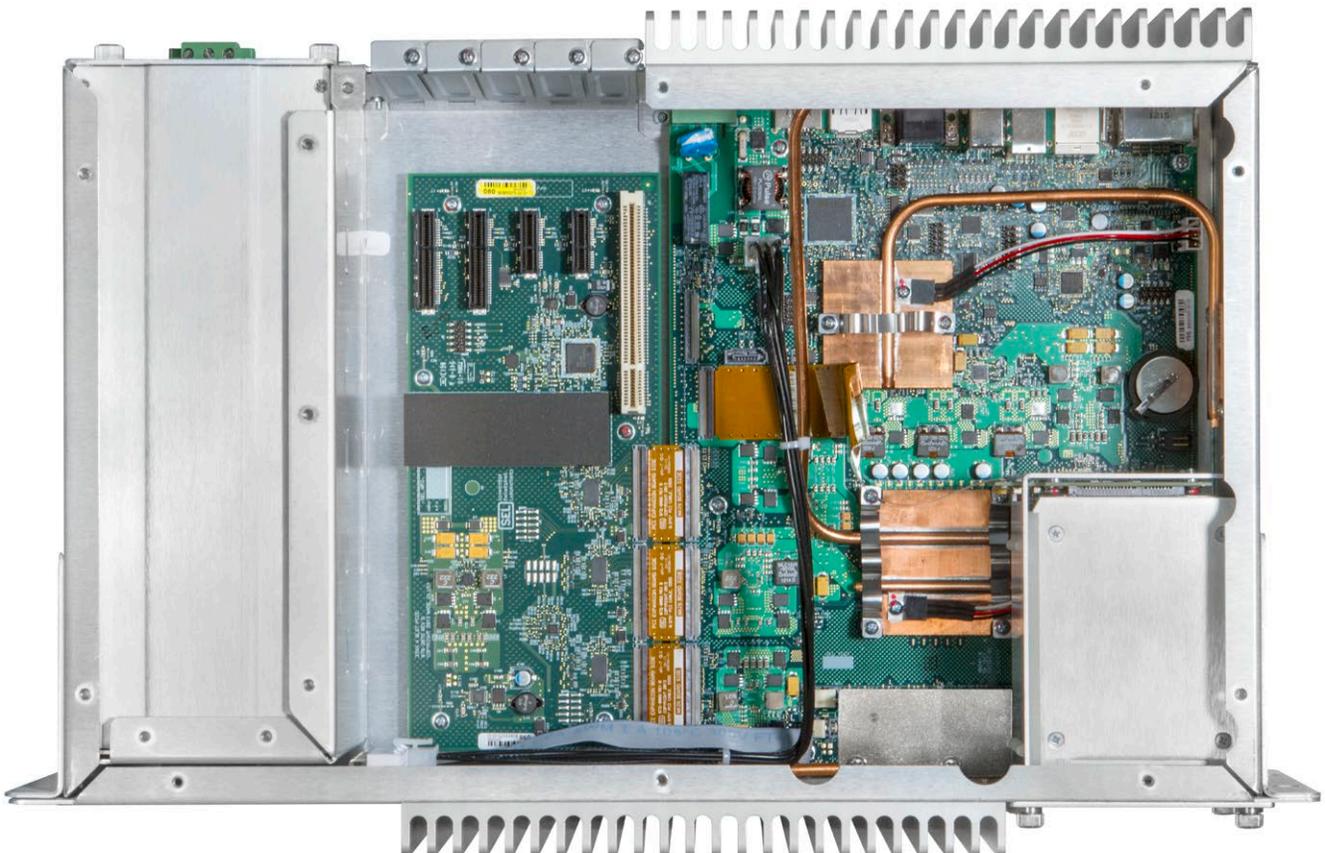
The SEL-3555 provides secure operation and access with the following features:

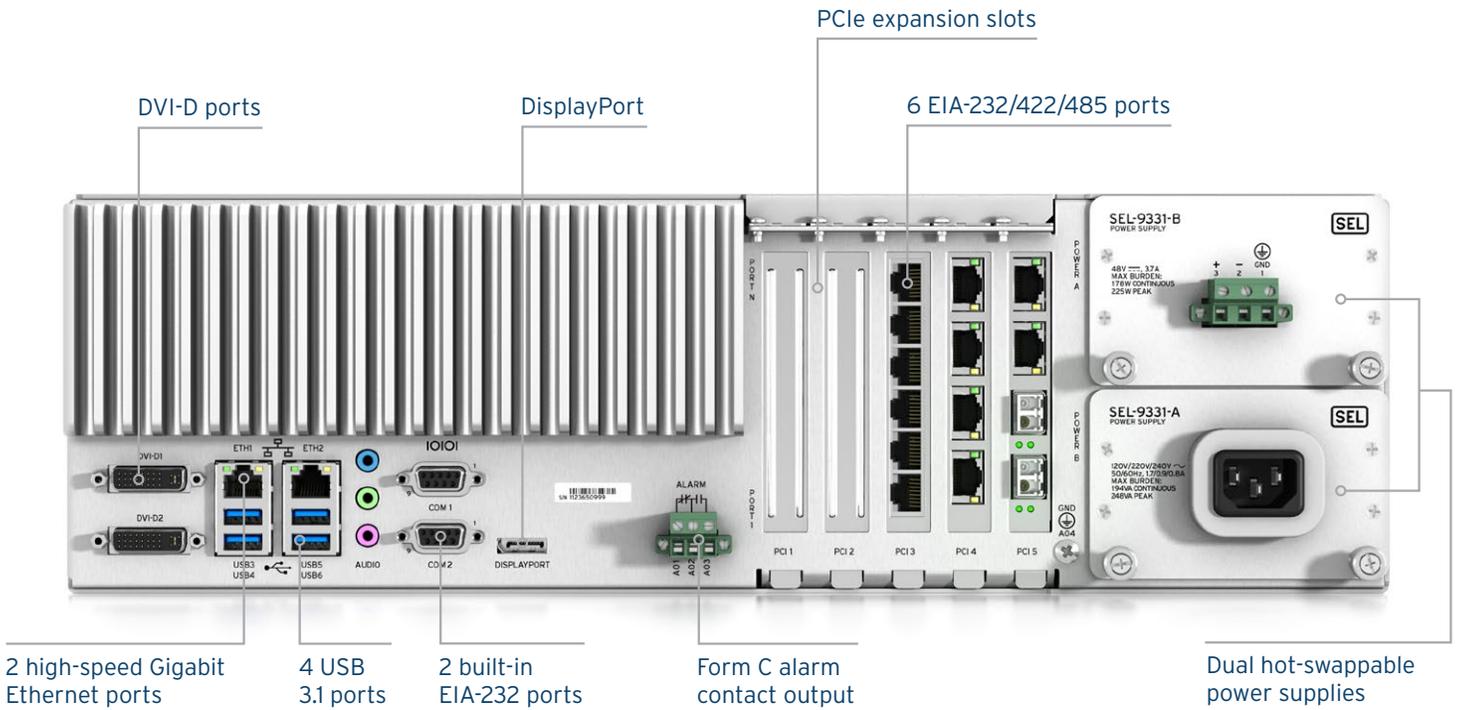
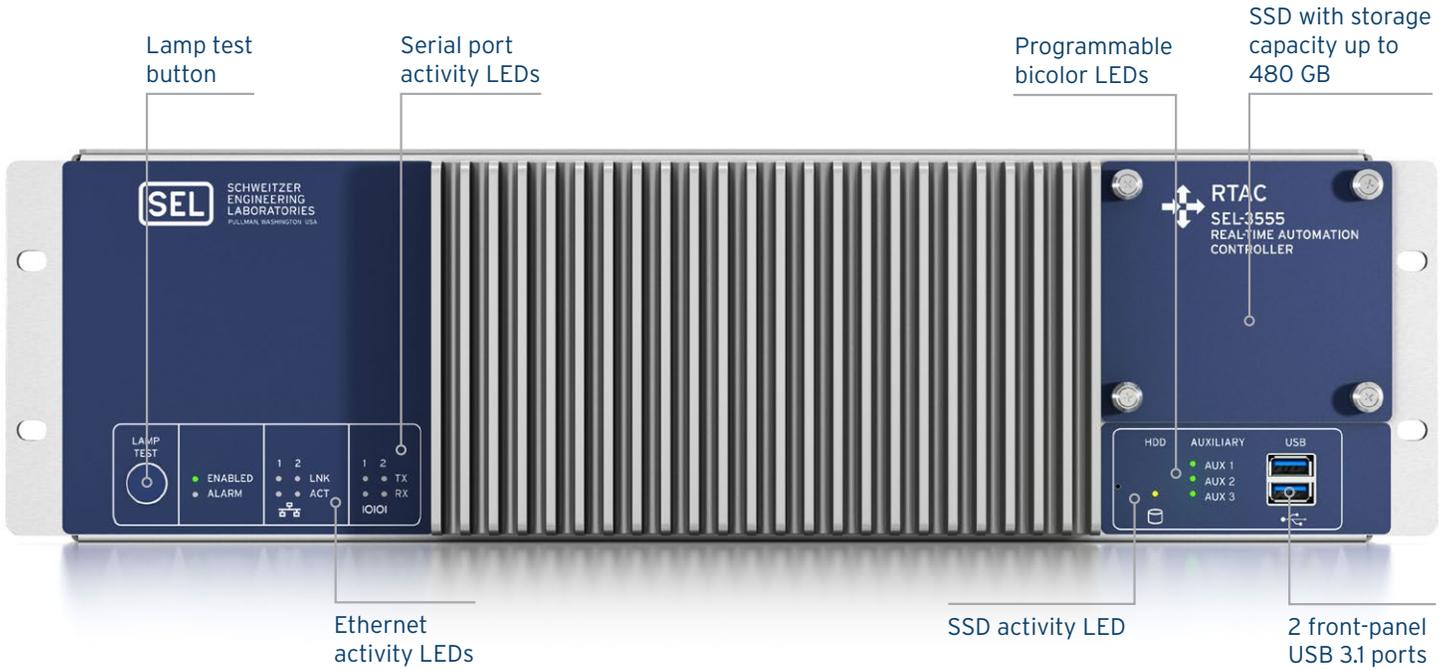
- exe-GUARD whitelist antivirus technology to protect against malware and other cybersecurity threats
- Individual and role-based accounts for configuration software and HMI operation
- Centralized authentication through the Lightweight Directory Access Protocol (LDAP)
- Alerts through syslog, text/email, and Sequence of Events (SOE) logging
- Encryption of all Ethernet communications using Secure Shell (SSH) and Secure Sockets Layer (SSL)/Transport Layer Security (TLS) tunneling

Deterministic

The SEL-3555 is ideal for time-sensitive control applications and provides the following:

- Configurable task cycle times as fast as 1 millisecond
- Multiple processing threads with the ability to prioritize every task
- Diagnostics to help you efficiently manage and optimize resources

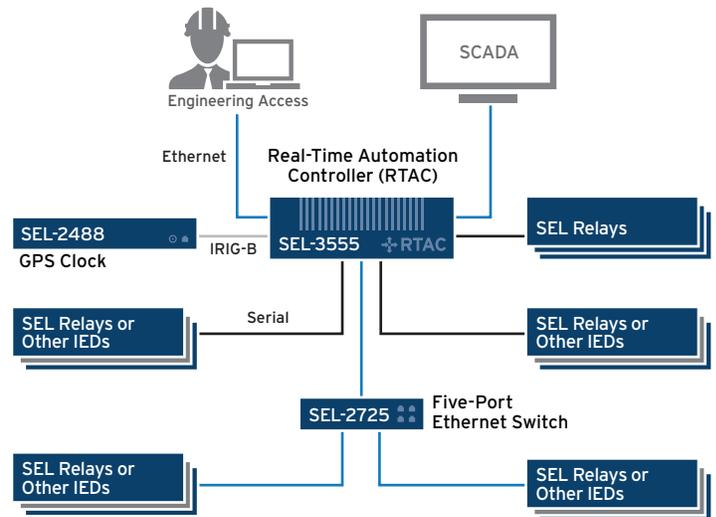




Applications

Data Concentration and Protocol Conversion

Deploy the RTAC as a data concentrator using modern and legacy protocols, such as IEC 61850 Manufacturing Message Specification (MMS), Modbus, DNP3, IEC 61850 GOOSE, LG 8979, IEC 60870-5-101/104, the Parallel Redundancy Protocol (PRP), the IEEE 1588 Precision Time Protocol (PTP) Version 2, or MIRRORING BITS® communications. You can integrate both serial and Ethernet intelligent electronic devices (IEDs) and enable logging on any system or IED data tag to view and archive station-wide event records. Transparent engineering access connections are available over serial or Ethernet communications.

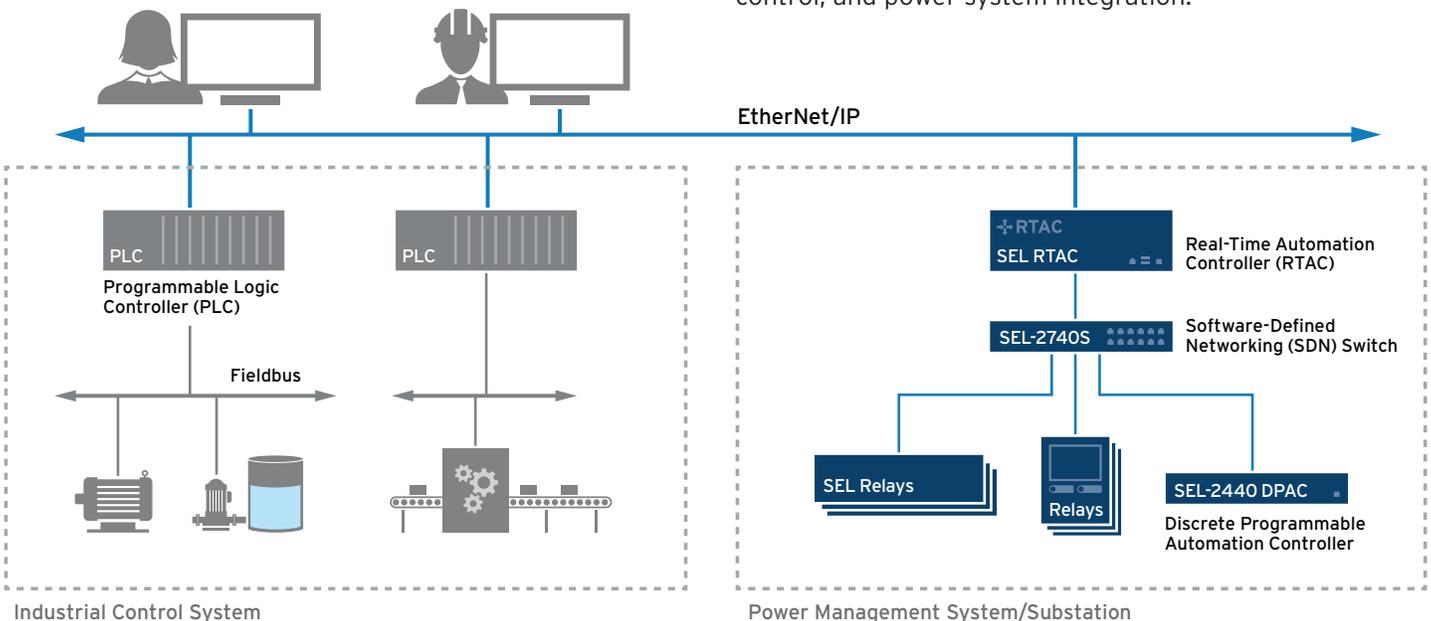


Distribution Automation or Microgrid Controller

Install the RTAC as the intelligence or front-end processor (FEP) for a microgrid system, and use its deterministic, automated control for real-time balancing of generation and load. You can use the task scheduler to prioritize control, SCADA, and other tasks. Coupled with the secure, self-healing network capabilities of the SEL ICON® Integrated Communications Optical Network and accurate time distribution to IEDs, the RTAC can control and monitor all aspects of a microgrid. It serves and displays data to operators with the built-in HMI.

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.



Visualize Data and System Control With the Integrated HMI



With advanced HTML5 technology, the RTAC HMI makes it easy to visualize data and create custom diagrams to monitor and control your system. The HMI allows authenticated access for multiple users and locations and is also viewable from a remote web browser. The video output port on the SEL-3555 RTAC connects directly to a monitor, allowing you to quickly and locally view HMI and SOE data without the need for an additional computer.

All-in-One Performance

The SEL-3555 bundles automation processing and HMI visualization in one device. Because this eliminates the need to have an additional substation computer dedicated to running the HMI, you can reduce points of failure in your substation.

Live System Trend Values

Quickly visualize data values over a defined period of time. Create custom trends when configuring your HMI, or design trends on the fly in the HMI run time.

Simplified Tag Integration

Use RTAC tags in your HMI configuration. By sharing tags from the advanced logic processing engine, you can streamline HMI creation and design.

Easy-to-Use Diagram Configuration Tools

ACSELERATOR Diagram Builder™ SEL-5035 Software provides tools to simplify diagram creation. You can drag and drop controls onto a design palette, align and group diagram controls, and accelerate tag assignment with search-and-replace functionality.

RTAC Line of Automation Controllers

SEL RTACs offer everything from powerful data management solutions to precise, deterministic control for utility and industrial applications. Integrated cybersecurity features facilitate secure, mission-critical monitoring and control while ensuring regulatory compliance. With our ten-year, worldwide warranty and unmatched technical support, the RTAC is the right choice for high-speed, deterministic automation.

Features	SEL-3555	SEL-3530 3U/1U	SEL-3530-4	SEL-3505/ SEL-3505-3	SEL-3560	SEL-2240 Axion® With SEL-2241 Module
Processor	2.0 GHz Intel Xeon quad-core	533 MHz	533 MHz	333 MHz	2.0 GHz Intel Xeon quad-core	533 MHz
RAM	Up to 16 GB	1 GB	1 GB	512 MB	Up to 16 GB	1 GB
Storage	30 to 480 GB	2 GB	2 GB	2 GB	30 to 480 GB	2 GB
Operation Temperature	-40° to +75°C (-40° to +167°F)	-40° to +85°C (-40° to +185°F)			SEL-3560S: -40° to +75°C (-40° to +167°F) SEL-3560E: -40° to +60°C (-40° to +140°F)	-40° to +85°C (-40° to +185°F)
Graphical HMI and Video	Viewing and control via web browser; integrated video; 1 DisplayPort; 2 DVD-D ports	Viewing and control via web browser			Viewing and control via web browser; integrated video; 1 DisplayPort; 2 DVD-D ports	Viewing and control via web browser
Power Supply	Redundant 120/240 Vac, 125/250 Vdc; and/or 48 Vdc	Single 120/240 Vac, 125/250 Vdc; 48/125 Vdc, 120 Vac; or 24/48 Vdc		Single 12/24 Vdc or 24/48 Vdc	SEL-3560S: Optional redundant SEL-3560E: Single 120/240 Vac, 125/250 Vdc; and/or 48 Vdc	Redundant 120/240 Vac, 125/250 Vdc; and/or 24/48 Vdc
Ethernet Ports	2 standard (up to 8 additional with PCIe expansion)	3	2	2	SEL-3560S: 2 standard SEL-3560E: 2 standard (up to 8 additional with PCIe expansion)	2
Serial Ports	8 standard (up to 18 additional with PCIe expansion)	33 (3U)/ 17 (1U)	4	SEL-3505: 4 SEL-3505-3: 3	SEL-3560S: 2 standard SEL-3560E: 8 standard (up to 6 additional with PCIe expansion)	4
USB Ports	6 USB 3.1	USB-B	USB-B	USB-B	6 USB 3.1	USB-B
Size/Mounting	3U rack/ panel mount	3U or 1U rack/ panel mount	1U half-rack/ panel, surface, or DIN-rail mount	Surface or DIN-rail mount	Surface or DIN-rail mount	5U rack/panel or surface mount (10-slot, 4-slot, and dual 4-slot)
Digital and Analog Inputs and Outputs	1 DO	8 DO/24 DI (3U); 1 DO/1 DI (1U)	1 DO/1 DI	SEL-3505: 1 DO/1 DI SEL-3505-3: 3 DO/8 DI	1 DO	Available Modules DI, DO, Fast high-current DO, dc AI, ac AI, dc AO
Other Features	Conformal coating	Conformal coating	Conformal coating	SEL-3505: V.92 modem Both: Conformal coating, ambient light sensor, and accelerometer	Conformal coating	Conformal coating
RTAC HMI	Embedded RTAC HMI	Embedded RTAC HMI	Embedded RTAC HMI	N/A	Embedded RTAC HMI	Embedded RTAC HMI



SEL-3555 RTAC

The SEL-3555 RTAC is a powerful, full-size RTAC solution with flexible options for your most demanding applications.



SEL-3560 RTAC

The SEL-3560 Compact Industrial RTAC comes in two form factors and offers the power and flexibility of the SEL-3555 in a smaller package.



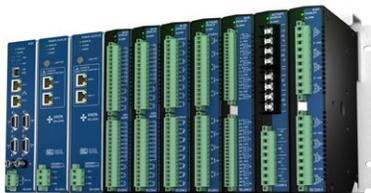
SEL-3530/3530-4 RTAC

The SEL-3530/3530-4 RTACs are ideal for substation data concentration, for protocol conversion, and to provide a local or remote HMI for visualization and control.



SEL-3505/3505-3 RTAC

Suitable for use in utilities and industrial environments, the SEL-3505/3505-3 RTACs are lower-voltage versions of the SEL-3530. These compact RTACs are ideally suited for small enclosures, such as recloser controls, capacitor bank controls, or inverter cabinets that are exposed to harsh environments.



SEL-2240 Axion With RTAC Module

The SEL-2240 Axion is a fully integrated, modular I/O and control solution ideally suited for utility and industrial applications. It combines the communications, built-in security, and IEC 61131 logic engine of SEL RTACs with a durable suite of I/O modules that provide high-speed, deterministic control performance over an EtherCAT® network.

SEL-3555 Specifications

General		Protocols	
CPU	Xeon E3-1505L quad-core Speed: 2.0 GHz base, 2.8 GHz turbo Cache: 1 MB L2, 8 MB L3	Client	CDC Type II Courier CP 2179 DNP3 Serial, DNP3 LAN/WAN eDNA 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)
RAM	8 GB DDR4 ECC PC4-17000 (2,133 MHz) Expandable up to 16 GB	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
Video	Intel HD Graphics P530 Controller Independent display outputs: 3 DVI-D maximum resolution: 1920 × 1200 bpp DisplayPort 1.2 maximum resolution: 4096 × 2304 bpp Video storage: 30 to 480 GB	Peer-to-Peer	IEC 61850 GOOSE* Network Global Variable List (NGVL) SEL MIRRORING BITS Communications
USB	4 rear-panel ports, 2 front-panel ports USB 3.0-compliant, 2,000 mA current each	Field Bus Protocol	EtherCAT to SEL Axion I/O Modules
Ethernet	ETH 1: Intel WGI219LM, 10/100/1000 Mbps ETH 2: Intel WGI210IT, 10/100/1000 Mbps SEL-3390E4 PCIe x4 Ethernet Expansion Cards: As many as 8 additional 10/100/1000 Mbps ports, copper or LC fiber small form-factor pluggable (SFP)*		
Serial	2 EIA-232 ports, DB-9 connectors, 300 to 115200 bps 6 EIA-232/422/485 ports, RJ45 connectors, 300 to 921600 bps SEL-3390S8 PCIe x1 Serial Expansion Cards: As many as 18 additional EIA-232/422/485 ports, RJ45 connectors, 300 to 921600 bps*		
HMI	Viewable remotely or via the local display*		
Time Code I/O	Input with supplied SEL-3390S8 Expansion Card, RJ45 connector, demodulated IRIG-B TTL-compatible		
Power Supply	120/240 Vac or 125/250 Vdc, and/or 48 Vdc; 50/60 Hz Dual power supplies*		
Operating Temperature Range	−40° to +75°C (−40 to +167°F)		
Weight	9.072 kg (20 lb)		

*Optional feature

EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

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