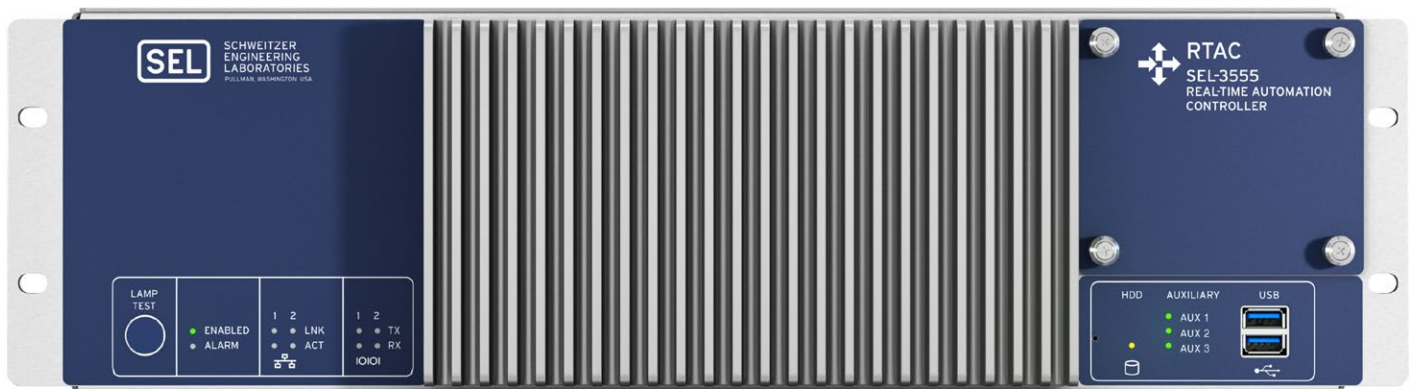# SEL-3555

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® allowlist 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.

SEL

Overview

Powerful

The SEL-3555 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°C (−40° to +167°F)
- Reliable operation in the presence of vibration, seismic, and shock (15 g) events as well as large electromagnetic fields or radio frequency interference
- Ten-year, no-questions-asked warranty

Secure

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

- exe-GUARD allowlist 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
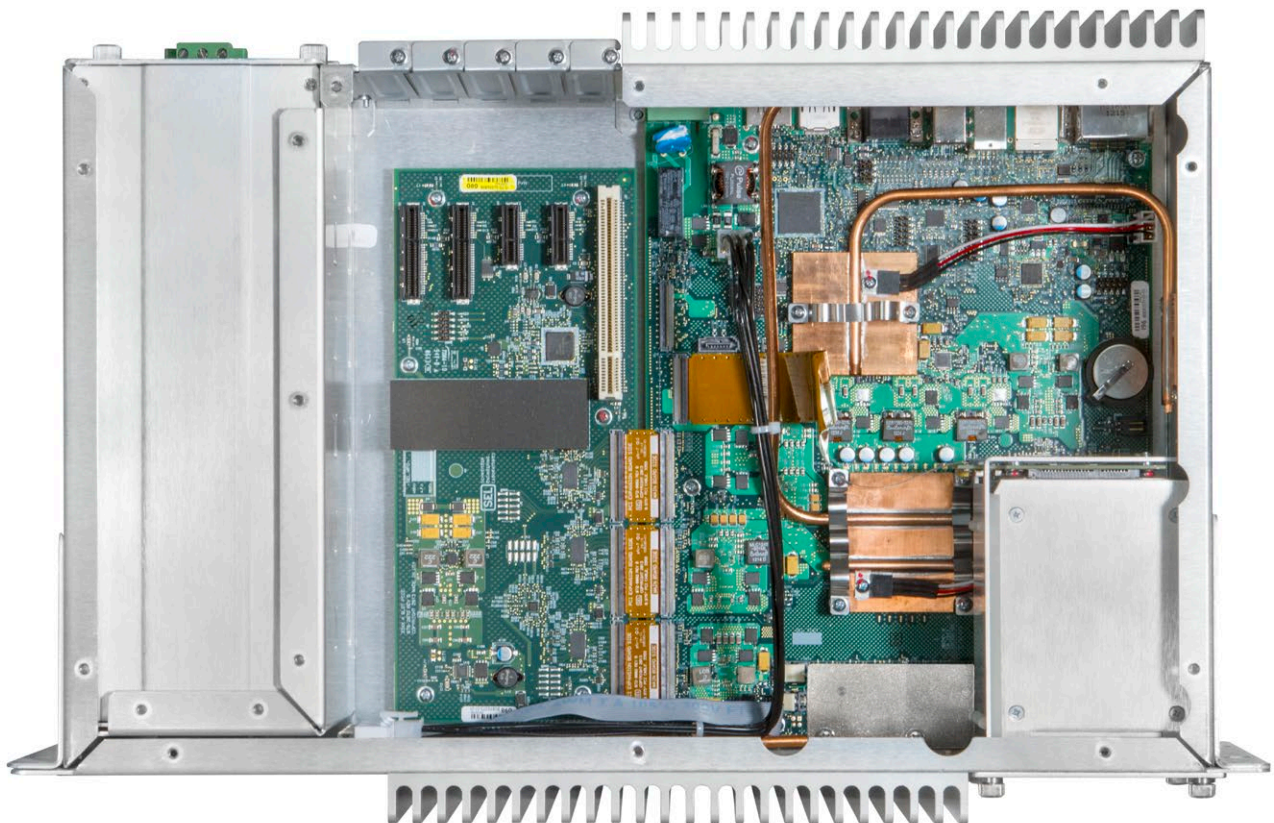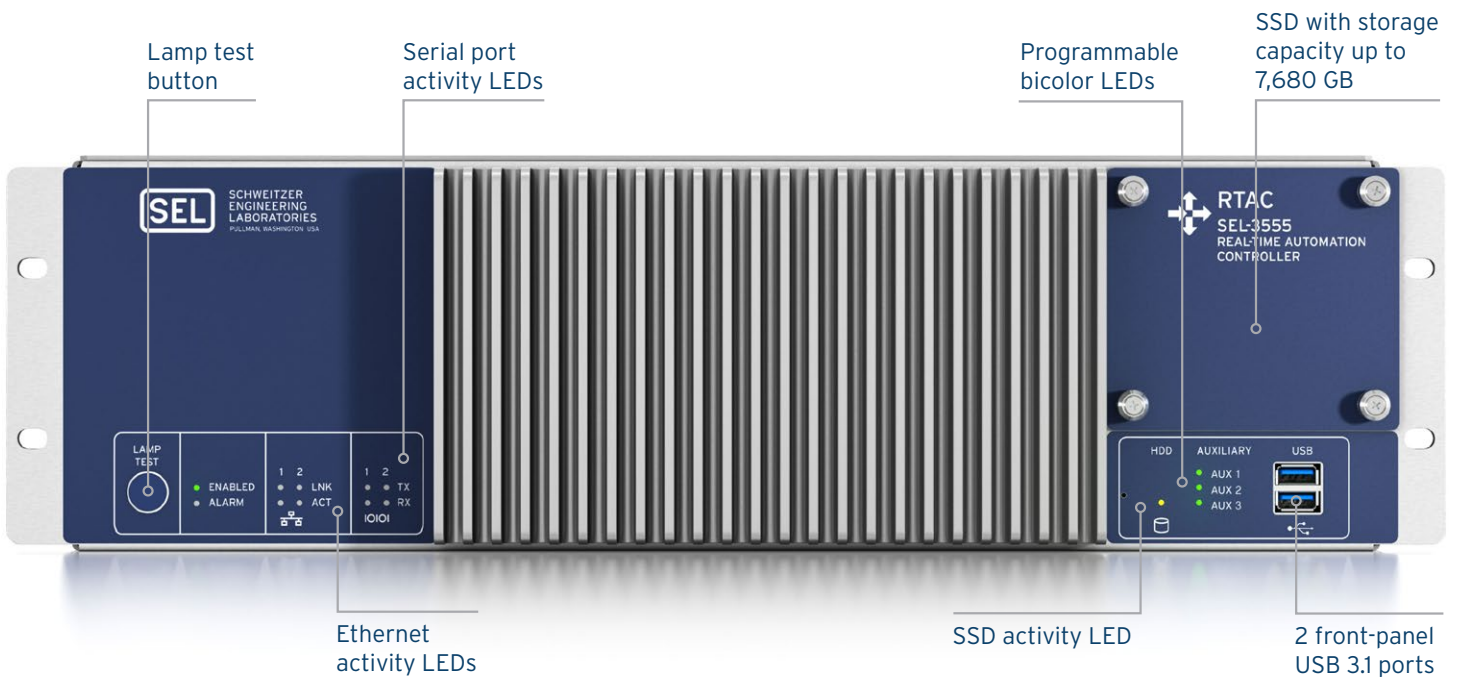
Lamp test button

Serial port activity LEDs

Programmable bicolor LEDs

SSD with storage capacity up to 7,680 GB

SEL SCHWEITZER ENGINEERING LABORATORIES PULLMAN, WASHINGTON USA

RTAC SEL-3555 REAL-TIME AUTOMATION CONTROLLER

LAMP TEST

ENABLED
ALARM

1 2
LNK
ACT

1 2
TX
RX

IOIOI

HDD AUXILIARY USB
AUX 1
AUX 2
AUX 3

Ethernet activity LEDs

SSD activity LED

2 front-panel USB 3.1 ports

PCIe expansion slots

DVI-D ports

DisplayPort

6 EIA-232/422/485 ports

SEL-9331-B POWER SUPPLY

SEL

48V ---, 37A
MAX BURDEN:
178W CONTINUOUS
225W PEAK

SEL-9331-A POWER SUPPLY

SEL

120V/220V/240V ~
50/60Hz, 1.7/0.9/0.8A
MAX BURDEN:
194VA CONTINUOUS
248VA PEAK

DVI-D1

DVI-D2

ETH1 ETH2

USB3
USB4

USB5
USB6

AUDIO

IOIOI

COM 1

COM 2

DISPLAYPORT

ALARM

AO1 AO2 AO3

AO4

PCI 1 PCI 2 PCI 3 PCI 4 PCI 5
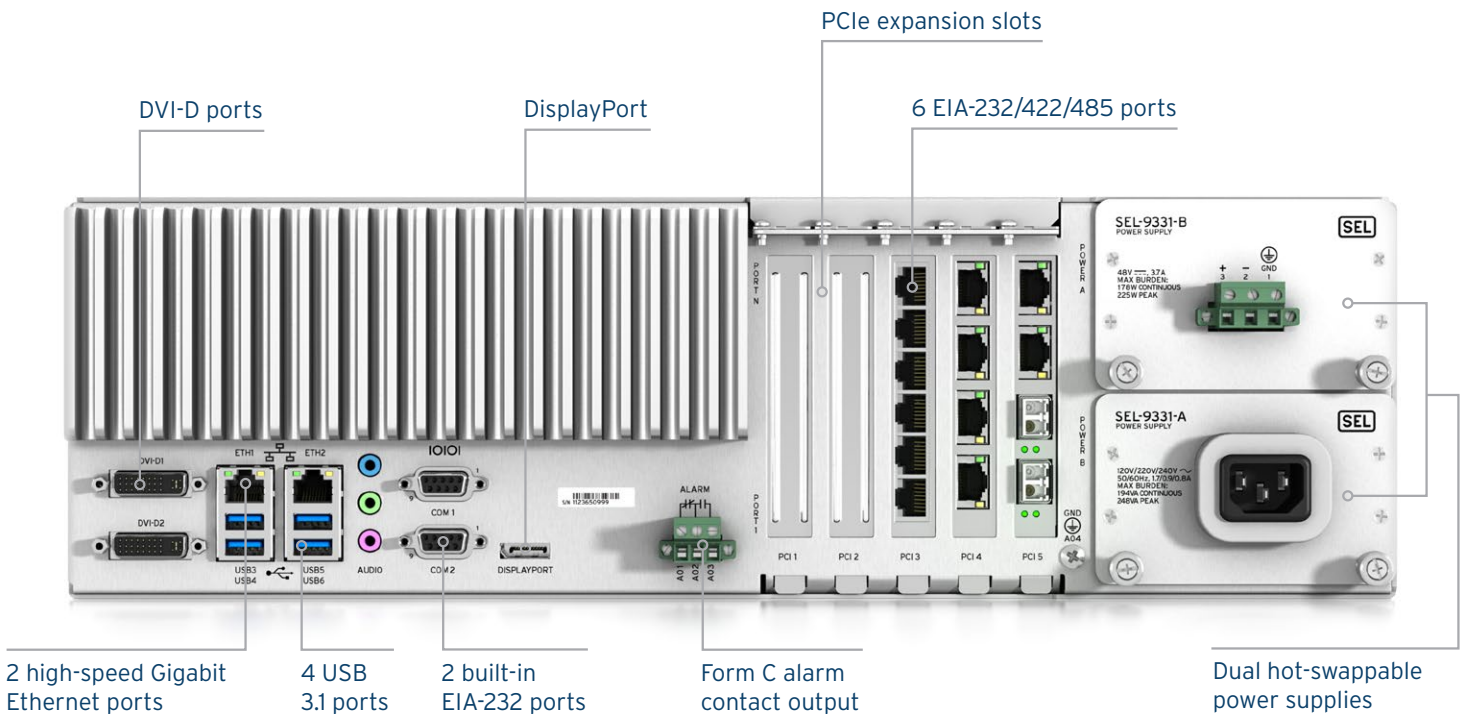
2 high-speed Gigabit Ethernet ports

4 USB 3.1 ports

2 built-in EIA-232 ports

Form C alarm contact output

Dual hot-swappable power supplies

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 MIRRORED 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.
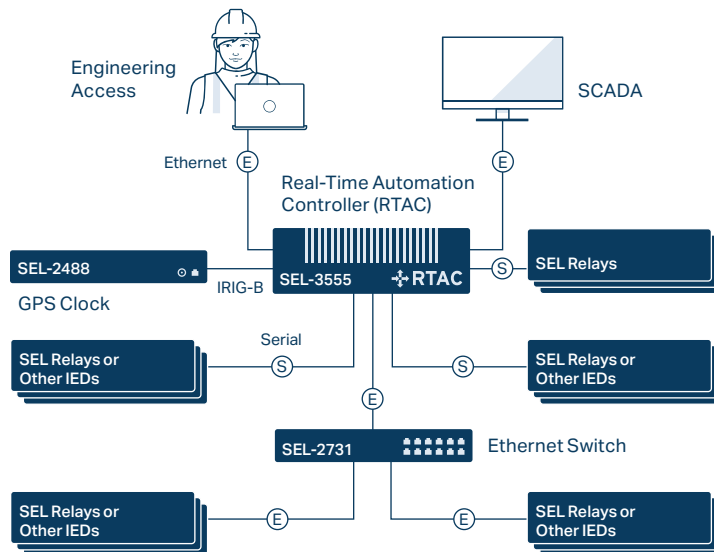
Integrate Power Management With Industrial Control

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.

EtherNet/IP

PLC
Programmable Logic Controller (PLC)

PLC

Fieldbus

Industrial Control System

RTAC
SEL RTAC
Real-Time Automation Controller (RTAC)

SEL-2741
Software-Defined Networking (SDN) Switch

SEL Relays

Relays

SEL-2440 DPAC
Discrete Programmable Automation Controller

Power Management System/Substation

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.

SEL-3555 Specifications

General

CPU	Xeon E3-1505L quad-core Speed: 2.0 GHz base, 2.8 GHz turbo Cache: 1 MB L2, 8 MB L3
Storage	30 to 7,680 GB
RAM	8 GB DDR4 ECC PC4-17000 (2,133 MHz) Expandable up to 16 GB
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
USB	4 rear-panel ports, 2 front-panel ports USB 3.1-compliant, 2,000 mA current each
Digital and Analog I/O	1 digital output
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)
Size/Mounting	3U rack/panel mount
Other Features	Conformal coating
Weight	9.072 kg (20 lb)

*Optional feature

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

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

OPC UA*

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

OPC UA*

SEL Protocols

SES-92

SNMP Agent

Peer-to-Peer
IEC 61850 GOOSE*

Network Global Variable List (NGVL)

SEL MIRRORED BITS Communications

Field Bus Protocol
EtherCAT to SEL Axion I/O Modules