



SEL-3031 Serial Radio Transceiver

One Radio—Three Secure Data Links



Wirelessly monitor and control remote systems.



Features and Benefits

■ Three Ports in One Radio Reduce Costs

Simultaneously communicates with up to three independent ports and protocols.

■ Low Latency Enables Fast Control

Transfers control commands with a typical 5.5-millisecond latency with SEL MIRRORED BITS® communications.

■ Strong Security Thwarts Attackers

Protects critical data and repels malicious attacks with optional encryption card, using session authentication and strong 256-bit Advanced Encryption Standard (AES) technology.

■ Tough Radio Operates in Extreme Conditions

Is designed, built, and tested for trouble-free operation in extreme temperature, electromagnetic interference, shock, and vibration conditions.

■ No Licensing Reduces Delays and Expenses

Uses the license-free, 900 MHz ISM band for on-time, on-budget projects.

■ Precise Time Simplifies Analysis

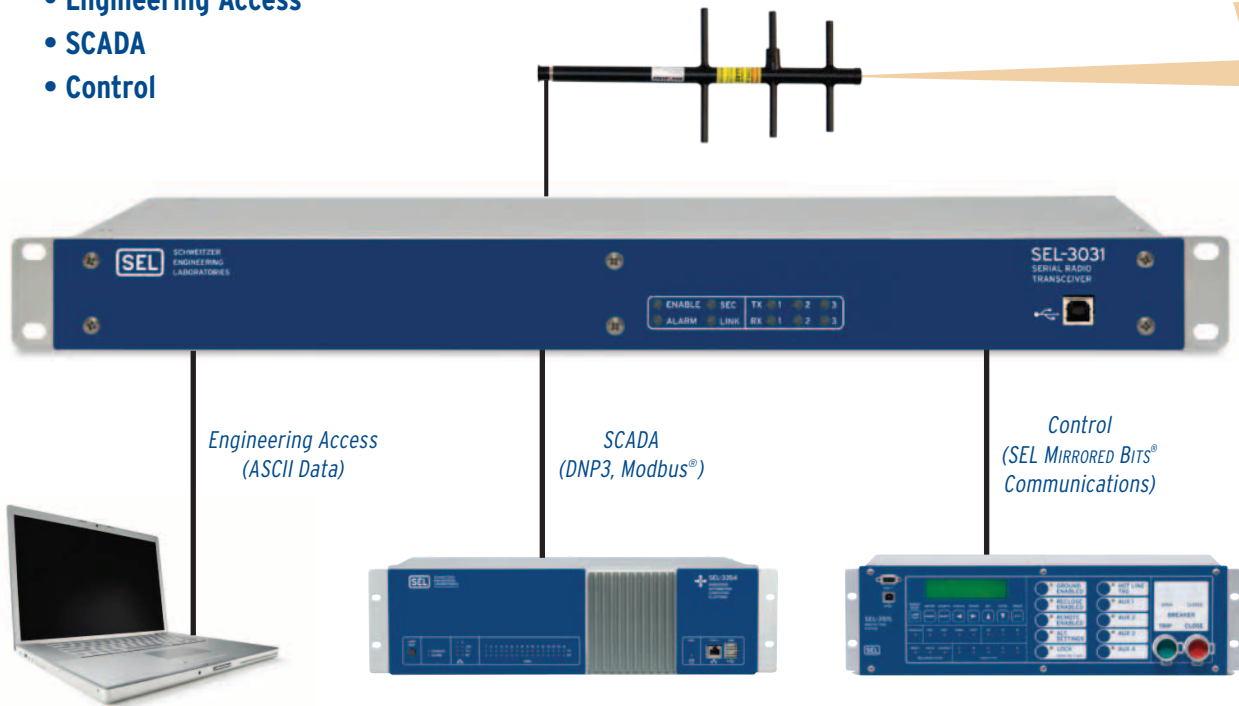
Synchronizes the internal clock to IRIG-B for accurately time-stamped event logs.

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

Power Utility Applications

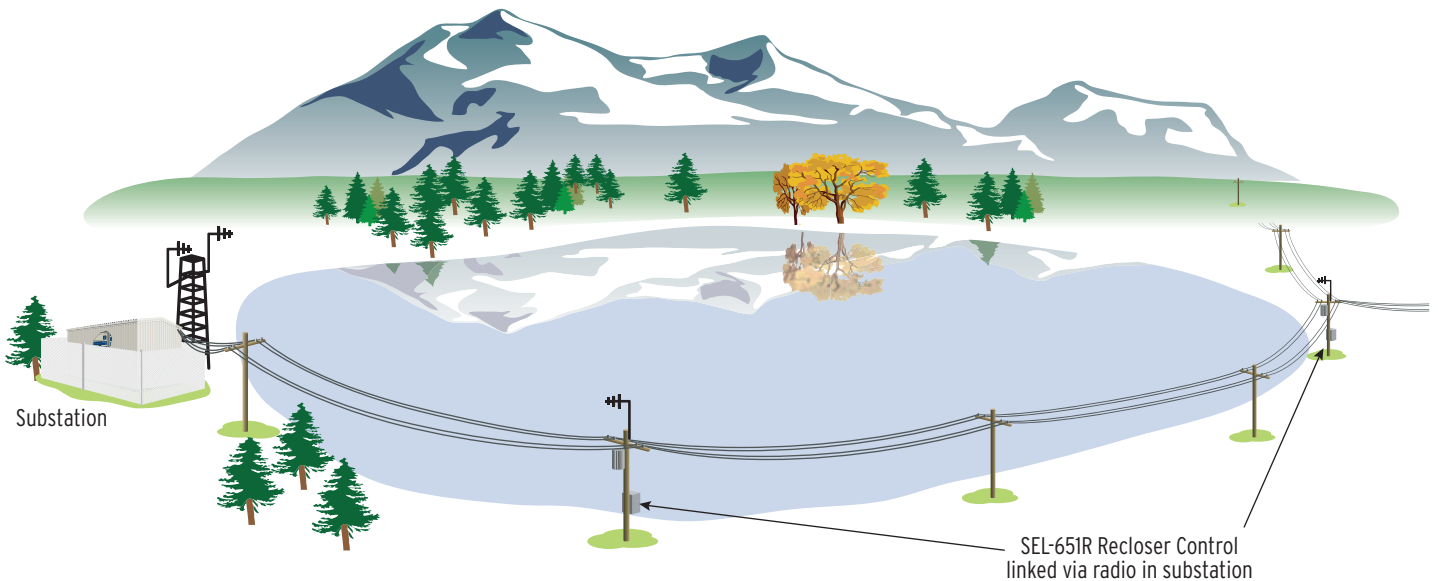
One Radio—Three Secure Data Links

- Engineering Access
- SCADA
- Control



Cost-Effective Wireless

Use wireless connections in situations where communication is required, but pulling cable is not cost effective or practical.



Power Utility Applications



Remotely Monitor and Control

- Recloser Controls
- Transmission
- Distribution
- Substations
- Capacitor Bank Controls
- Voltage Regulator Controls
- Distributed Generation

Encryption Protects Against Eavesdropping and Unauthorized Control

Order the radio with an SEL-3044 SEL Encryption Card to cryptographically secure your valuable data.

- 256-bit AES technology
- Easily configure with minimal settings
- Indicators verify data are encrypted
- Designed to meet FIPS 140-2 Level 2 certification
- Prevents man-in-the-middle and replay cyberattacks



Plant Automation Applications



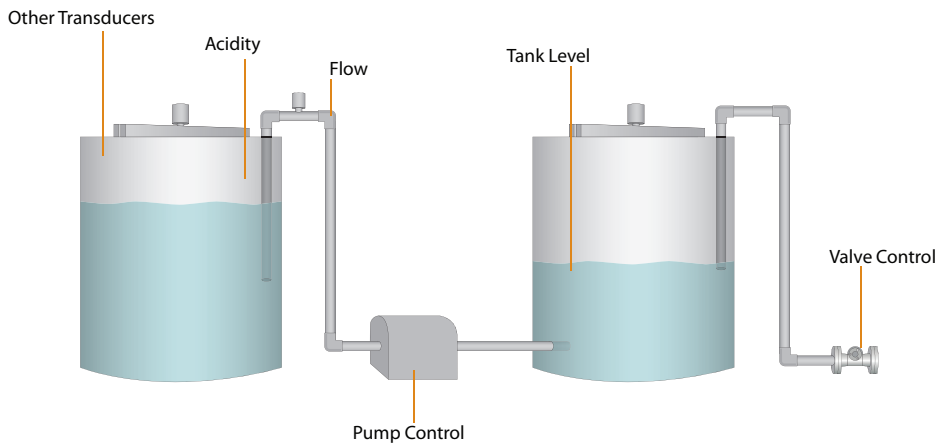
Apply SEL-3031 Serial Radio Transceivers for data acquisition, monitoring, and control of remote sites that are a part of overall plant facilities. Some examples include water intake structures for hydroelectric plants or water cooling systems for steam-powered generation or other process plants; electrical or pipeline substations affiliated with plants, refineries, or storage facilities; and environmental monitoring and valve control for treated water release points.

The SEL-3031 communicates and transmits important data over an encrypted, spread-spectrum radio link, keeping data confidential and defeating malicious attempts to control your facilities. The SEL-3031 provides three data ports that can send data from smart sensors and RTUs, such as SEL-2411 Programmable Automation Controllers (PACs). Connect one of the radio's additional data ports to a management port to securely maintain an RTU, PAC, PLC, or other device.



Water and Wastewater Applications

Difficult-to-Reach Water System Measurements



- Potential of Hydrogen (pH) Level
- Dissolved Oxygen (DO) Level
- Particulates Monitoring
- Chlorination Systems
- Nitrate Concentration
- Leak Detection
- Flow and Overflow
- Pressure
- Temperature
- Aeration Systems
- Alarm Signals
- Valve Control



The SEL-3031 offers a versatile and economical line-of-sight wireless communications system for water and wastewater facilities.

The three data ports on the radio provide a means to monitor and control remote systems for distances up to 20 miles, making it easy to reach the most challenging locations.

Precise time logs support plant operation and maintenance.



Transportation and Traffic Applications

Economical Traffic-Control Communications

- Supports EIA-232, EIA-485, and fiber-optic connections
- Exceeds NEMA TS 2 requirement for traffic-signaling equipment
- Costs less than trenching fiber or leasing communications



Existing Railway Applications

- Operates with serial trackside equipment
- Works with intermodal interchange—road and rail operation equipment
- Integrates with freight yard equipment



General-Purpose Serial Data Radio

- Carries any serial data
 - Plain ASCII
 - Automation protocols, such as DNP3 or Modbus®
 - Control loop information
- Supports wide range of applications
 - Meteorology
 - Noise monitoring
 - Operations
 - Baggage tracking



System Component Overview

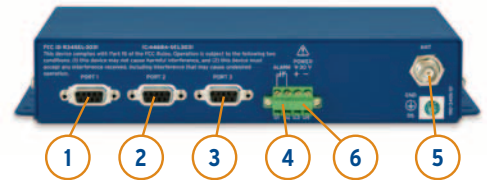
1. Data Port 1
2. Data Port 2
3. Data Port 3

4. Alarm Contact Terminal
5. Antenna TNC Connector
6. Power Supply Terminal

Rack Mount

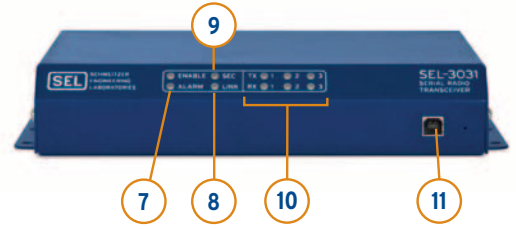
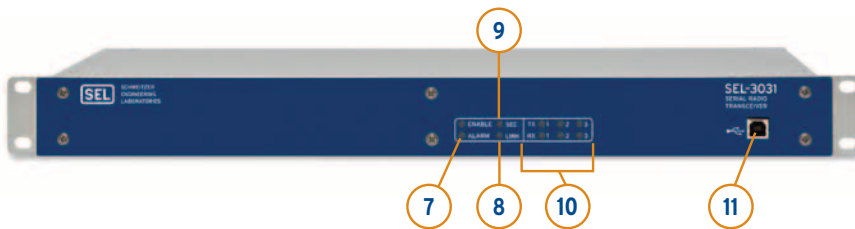


Wall/Surface Mount



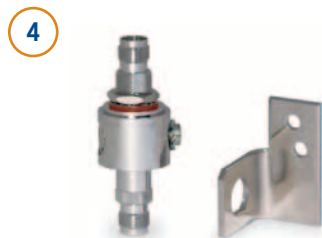
7. Alarm Status LED
8. Link Status LED
9. SEC (SEL Encryption Card) Status LED

10. Transmit/Receive Data Port 1, 2, 3 Status LEDs
11. USB Management Port



Radio System Accessories

1. A weatherproof, five-element, no-tuning, Yagi directional antenna with 11.1 dBi gain optimized to achieve superior performance with less than 1.5 VSWR over the entire 890 to 960 MHz band.
2. A weatherproof, three-element, no-tuning, Yagi directional antenna with 8.5 dBi gain optimized to achieve superior performance with less than 1.5 VSWR over the entire 890 to 960 MHz band.
3. A weatherproof, one-quarter-wavelength, no-tuning, omnidirectional vertical antenna with 2.15 dBi gain optimized to achieve superior performance with less than 1.5 VSWR over the entire 890 to 960 MHz band.
4. Gas tube coaxial surge protector and mounting bracket.
5. RG-8 TNC to N connectors and coaxial cable, RG-8 TNC to TNC connectors and coaxial cable, LMR-400 TNC to N connector, and LMR-400 TNC to TNC coaxial cable and connectors.



SEL-3031 Serial Radio Transceiver

General Specifications

Wireless

ISM Band 902–928 MHz Frequency-Hopping Spread Spectrum (FHSS)

Point-to-Point Link

Output Power 1 Watt (30 dBm)

Adjustable Power 20–30 dBm

Optional SEL Encryption Card

256-bit AES encryption

Session authentication

Designed to meet FIPS 140-2 Level 2 security requirements

Three Serial Data Ports

Standard Interface EIA-232

Standard Connector 9-pin female, DCE

Port 1 Options EIA-485 or serial fiber-optic port

Speed Up to 19.2 kbps full-duplex per port

Data

Send data via protocols, such as DNP3, Modbus,

SEL MIRRORING BITS, and SEL ASCII

IRIG-B time code on Port 2

Built-In Clock

May be set by IRIG-B signal

Alarm Output

Integrate radio with annunciators and alarm panels

Distance

Communicates up to 20 miles line of sight

USB Management Port

Local diagnostics, signal strength, settings, and packet quality

Mounting and Power Supply Options

Wall Mount 9–30 Vdc

Rack Mount 125/250 Vdc or Vac, 24–48 Vdc

NEMA 3R 125/250 Vdc or Vac

Regulatory Approvals

FCC Part 15 Class A, ICES-003 Class A

FCC Part 15.247, IECS-001 RSS 210

Substation- and Plant-Grade Equipment

Designed, built, and tested with the same practices, processes, and standards that we use for our protective relays, information processors, and other products. This includes compliance with IEEE and IEC standards for electrostatic discharge, fast transients, radiated emissions, surge-withstand capability, dielectric strength, pulsed magnetic fields, and disturbances. Specifications and tests are per the IEEE 1613 communications and ANSI/IEEE C37.90-1989 and IEC 60255 protective relay standards.



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