

SUBNET SEL Relay Data Emulator™

The SUBNET SEL Relay Data Emulator is an invaluable tool for assisting in the design, commissioning, or training of ANY integration solution using SEL Relays.

SUBNET SEL Relay Data Emulator™ (SUBNET SELRDE) is a SUBNET software application that emulates the data communications of SEL relays. SUBNET SEL Relay Data Emulator assists you in configuring substation systems without having direct access to devices.

Accessing live relay data isn't always possible when configuring a new system, and when it is available, there is potential to disrupt systems. Bench testing systems using actual relays can be expensive, time-consuming and disruptive.

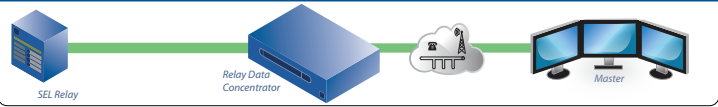
SUBNET SEL Relay Data Emulator makes things simple by transforming a desktop or laptop computer into a machine capable of emulating a large range of Schweitzer Engineering Laboratories Inc. (SEL®) relays. SUBNET SEL Relay Data Emulator automatically collects data from physical IP or serial connected relays in minutes, saves the information and settings as a "virtual" relay, and enables you to test and configure while off-line in a safe and controlled environment.

- Configure emulation for a wide range of SEL relays
- Complete message logging useful for testing
- Built in configuration wizard quickly emulates existing devices
- Virtual relays great for demonstrations and training

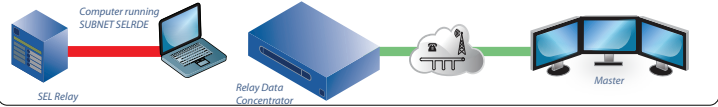


Application Scenarios

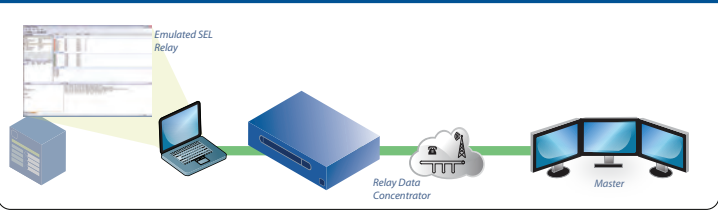
Step 1: Diagram of typical SEL relay integration system showing single relay



Step 2: Connect SUBNET SEL Relay Data Emulator software to a SEL relay and auto-configure



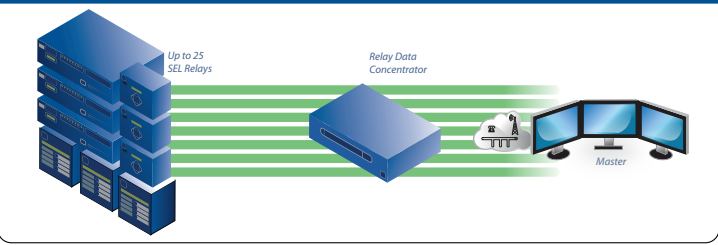
Step 3: Connect SUBNET SELRDE Software to Relay Data Concentrator and enable emulation for testing



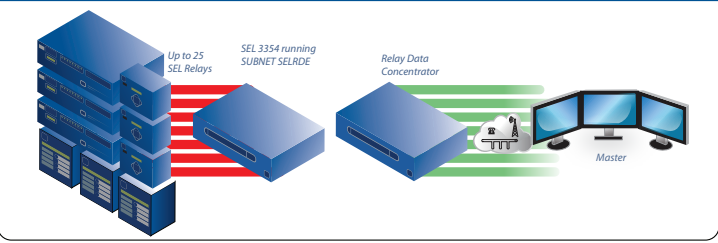
Learn and Emulate a SEL relay's Communication Capabilities

SUBNET SEL Relay Data Emulator Software (SUBNET SELRDE Software) can automatically learn a SEL relay's communication capabilities. SUBNET SELRDE Software can then be directly substituted for the physical SEL relay to safely and reliably commission relay communications. Effortlessly change target and meter data through SUBNET SELRDE Software without the inconvenience or risk of physically jumpering contacts or using expensive and often unavailable test sets to directly inject voltage/current. Furthermore, breaker and remote bits can be safely operated without the concern of an inadvertent mis-operation.

Step 1: Diagram of typical SEL relay integration system showing multiple relays



Step 2: Connect each relay to SUBNET SEL Relay Data Emulator System and auto-configure



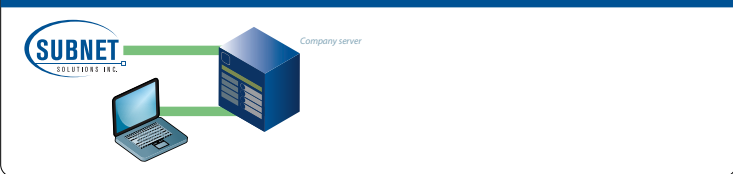
Step 3: Connect SUBNET SELRDE to Data Concentrator and enable emulation of up to 25 relays



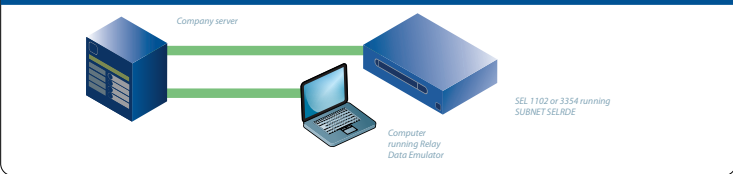
Learn and Emulate SEL Communications of an Entire Protection System

The SUBNET SEL Relay Data Emulator System (SUBNET SELRDE System) takes the SUBNET SELRDE software solution one step further by allowing for the emulation of up to 25 SEL relays simultaneously. Like the SUBNET SELRDE Software, the SUBNET SELRDE System can automatically learn and emulate a SEL relay's communication capabilities. However the SUBNET SELRDE System has the added capability of emulating 25 SEL relays concurrently, allowing you to more fully simulate real world conditions of a large SEL integration and automation system.

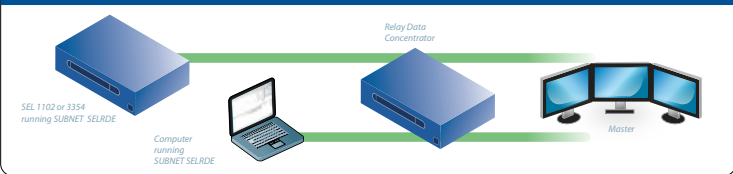
Step 1: Store configurations from your SEL relays or directly from SUBNET on an archive on your server



Step 2: Download these configurations to any SELRDE Software or SELRDE System



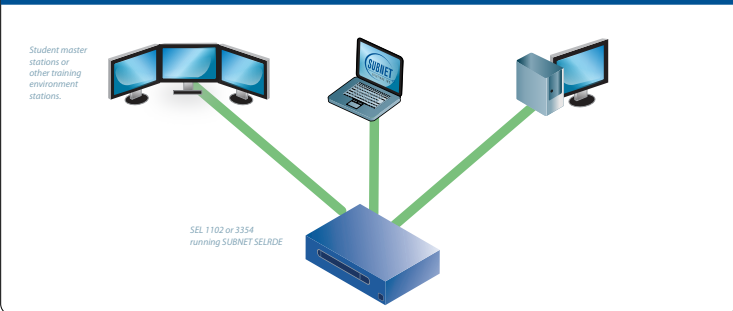
Step 3: Use these configurations to emulate any SEL relay, anywhere in your company



Create a Relay Library for Offline Testing

SUBNET SELRDE configuration files – created from the online relay configuration process – can be saved and stored to a directory or file archive. Other utility personnel with SUBNET SELRDE Software can open and run the files enabling them to instantaneously emulate any model and firmware version of a SEL relay stored in this archive. This eliminates the burden of requiring hardware inventory in a lab or office environment. Every engineer now has a cost effective method to test their SEL data collection applications using either SUBNET SELRDE Software or SUBNET SELRDE System depending on the number of required simultaneous SEL relay communications.

SUBNET SEL Relay Data Emulator training configuration



More Effective Interactive Personnel Training with LIVE relay communications

Hands-on-interaction is invaluable for effective training. However, it can be either costly or logistically difficult for each student to have their own dedicated SEL relay. SUBNET SELRDE System overcomes this obstacle by using a library of configuration files to simultaneously emulate up to 25 SEL relays so each user can have direct, dedicated access to one or more SEL relay models and firmware versions. Users can now use the SEL Relay masters such as the SEL-3332 or SEL-3351 (which both run SUBNET's SubSTATION Server software) and even legacy SEL-203x Communication processors to communicate directly with these virtual relays with real-time dynamic data exchange.

SUBNET SEL Relay Data Emulator is a versatile software tool used by a variety of people including:

Integrators

Integrators will appreciate having a whole host of virtual SEL relays at their fingertips. Integrators use SUBNET SEL Relay Data Emulator to bench-test systems and troubleshoot communication networks before performing the live installations.

For a fraction of what it would cost to house a family of SEL relays, instant access to simulated SEL relay data is as close as your laptop.

Engineers and Technicians

Commissioning substations, configuration testing, validation and firmware testing just became a whole lot easier. SUBNET SEL Relay Data Emulator automatically mirrors your actual SEL relays. Once configured, engineers and technicians can

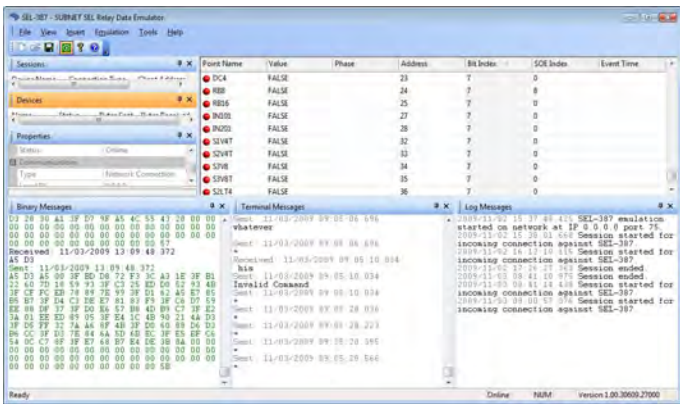
test firmware upgrades on remote terminals units (RTUs), configure human machine interface (HMI) applications, test master/slave communications, troubleshoot network connections and more.

Training

Training developers and instructors at every level will be thrilled to simulate SEL relay data. Whether you train people to use substation software applications, or you're a utility bringing new staff up to speed, SUBNET SEL Relay Data Emulator provides realistic relay data that can be manipulated and collected. Now you can bring all your simulated relay data into any classroom, anywhere.

Demonstrations

Sales and marketing personnel use SUBNET SEL Relay Data Emulator to help demonstrate substation products that interface with SEL relays. Use SUBNET SEL Relay Data Emulator to demonstrate RTUs, HMIs, sequence of event recorders (SERs) or software applications.



(Figure 1)

Simply emulate a SEL Relay in minutes

The configuration wizard imports connected device information in a matter of minutes. Once imported, you can disconnect from the device, and all of the imported data points will be displayed in the main window. Once you turn the emulation on, you can perform actions with the points, such as changing analog unit's magnitude and phase, changing values from true to false, or even simulating terminal commands or fault reports. (Figure 1)

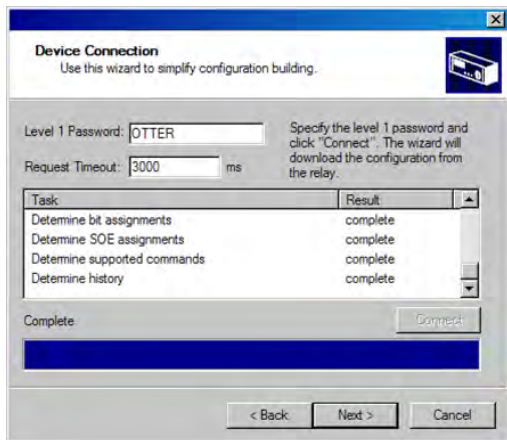
These changes can then be viewed in an HMI or master device, just as if the data was being produced by a real connected relay.

Features

Built-in configuration wizards enable you to set up an emulated device in a matter of minutes through an IP or serial connection: Simple connection wizards enable you to plug in to a physical relay and quickly download all of the relay's data. You can then unplug, and use the data for testing, training or demonstrations. (Figure 2)

Quickly establish communications between a master device and the emulated relay: Connect an HMI, RTU or substation communication server to the emulated relay, just as if you were connecting to an actual physical device.

Emulate a wide range of SEL relays: SUBNET SEL Relay Data Emulator currently supports many common standard SEL relays.



(Figure 2)

One-click emulation on/off functionality: Turn the emulation on or off with a single click.

Optional audible alarms: Audible voice alarms are available for session start and end, emulation start, stop and fail, and for receiving a control request or sending a fault summary.

Insert terminal commands and responses in just a few clicks: Insert a terminal command and response sequence using the intuitive terminal command dialog boxes. Terminal commands and responses are recorded and logged in the Terminal Messages pane. *(Figure 3)*

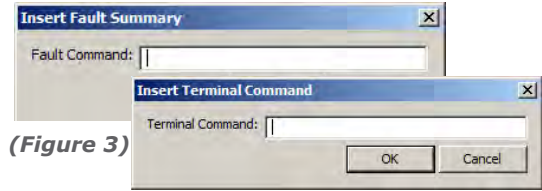
Insert fault reports and responses in just a few clicks: Insert a fault report summary and response using the intuitive fault summary dialog boxes. Fault summaries and responses are recorded and logged in the Terminal Messages pane. *(Figure 3b)*

Complete binary message display: The Binary Message pane displays messages sent and received, each time-stamped with the time the first byte is received. This is useful for manual troubleshooting of devices. *(Figure 4)*

View sent and received commands: The Terminal Message pane displays a running log of all terminal commands sent and received. The shown commands will match what is displayed in Hilgraeve® HyperTerminal® or another terminal emulation application.

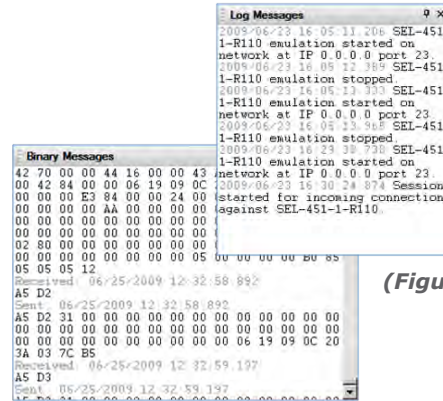
Complete message logging time-stamped to the millisecond: The Log Messages pane displays a running log of emulated device activity. Each entry is time-stamped to the millisecond. *(Figure 5)*

Easy-to-use, familiar interface, with movable task and message panes: SUBNET SEL Relay Data Emulator has a familiar 'paned' interface. Each pane can be hidden or undocked and moved to any position on your desktop. *(Figure 6)*



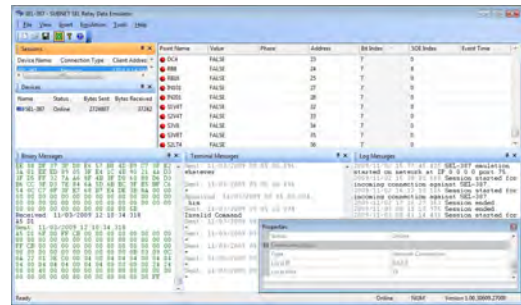
(Figure 3)

(Figure 3b)



(Figure 5)

(Figure 4)



(Figure 6)

Two Options to Buy

- 1. SUBNET SELRDE SOFTWARE** = Enables your laptop to emulate SEL Relays communications.
- 2. SUBNET SELRDE SYSTEM** = A complete hardware and software solution to enable users everything they need to simulate communications of up to 25 SEL Relays at once.

Specifications:

- Hardware Requirements:**
- 2.0GHz or faster processor
 - 1 GB of RAM
 - 200MB of available hard-disk space
 - 1024x768 or higher display
 - Sound card recommended
 - PC serial port (used to connect to SEL relay for initial configuration)
 - 100baseT - network port (used to connect to SEL relay for initial configuration)

- Software Requirements:**
- Microsoft® Windows® XP with Service Pack 2 or Microsoft® Windows Vista® 32-bit Home Premium, Business, Ultimate, or Enterprise.



Making Substations More Intelligent®

About SUBNET Solutions Inc.

SUBNET Solutions Inc. is a global software product developer providing solutions for electric utilities. SUBNET focuses on Making Substations More Intelligent®. Founded in 1992, SUBNET provides intelligent solutions that securely connect real time electric utility field information with utility business systems to enable Smart Grid solutions. Over 200 utilities worldwide rely on SUBNET software to safely manage and monitor thousands of substations that deliver electricity to customers. For more information visit www.SUBNET.com.

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