APPLICATION NOTEBOOK

NovaTech / Made in the USA

Table of Contents

How to Use This Book

Name of the application

NovaTech products are designed to perform a wide range of applications in the utility power system. Each is designed for a primary application, but may also take on other automation tasks. For example, the OrionLX™ is almost always applied as a “Smart RTU” to access data from IEDs and forward these to SCADA, but can also function as a “Substation HMI”, “Sequence of Events Recorder”, “Alarm Annunciator”, “Math and Logic Processor” and “Protective Relay Communications Processor”, saving money on panel space, wiring, engineering, and commissioning. New applications are being developed to make these products more flexible and valuable in your power system. Please let us know about your application needs.

Description of the application

Key Features

- ☑ Feature 1
- ☑ Feature 2
- ☑ Feature 3

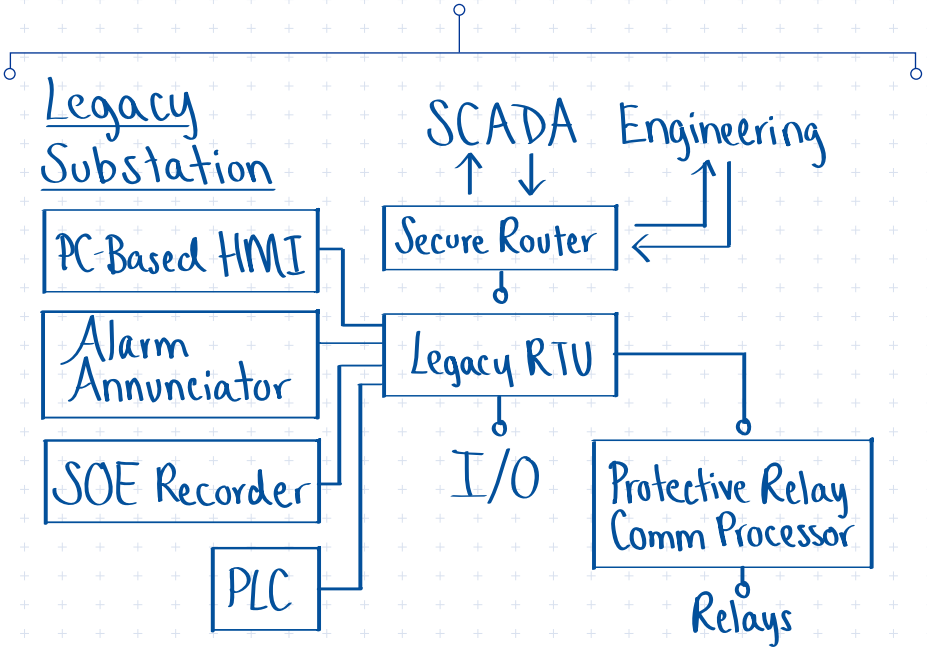
Distinguishing features of NovaTech products in this application

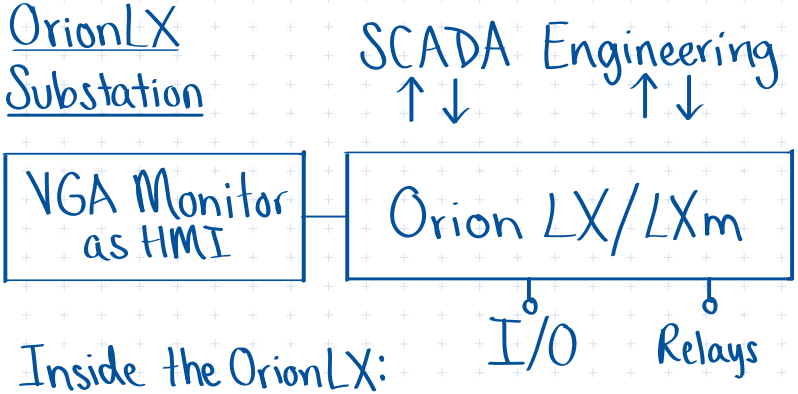
Application Components

- ☑ Software Component 1
- ☑ Software Component 2
- ☑ Hardware Component 1
- ☑ Hardware Component 2

The hardware and software modules that support this application (Each defined in the glossary at the end of the notebook)

Simplified diagram of the application





Inside the OrionLX:

- Secure Router
- PLC-Style IEC 61131-3
- Alarm Annunciator
- SOE Recorder

Alarm Annunciator

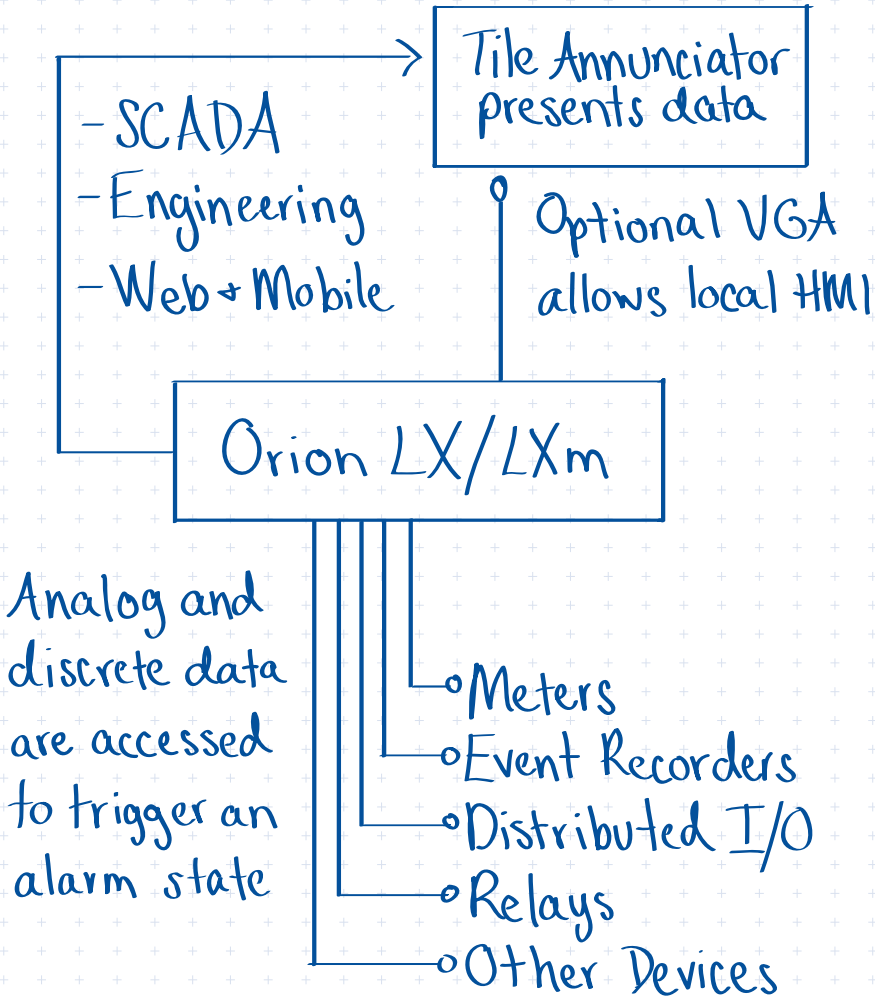
The OrionLX or LXm with the Alarm Archive Retentive software option can serve as a substation Alarm Annunciator. Selected analog and discrete data from substation meters, event recorders, relays, and other IEDs are accessed and set to trigger an alarm state. A standard tabular alarm web page, or tile annunciator, presents alarm data to multiple SCADA, engineering, web and mobile clients via secure HTTPS, email, and SMS texts. An optional VGA output on the OrionLX provides local visualization of alarm data through a touchscreen HMI, eliminating the need for a substation PC.

Key Features

- ☑ Alarm state retained through power cycling
- ☑ Alarm webpages are pre-configured; no special engineering required
- ☑ Alarms can be emailed with user-defined message

Application Components

- ☑ Alarm/Archive/Retentive (AAR)
- ☑ Alias
- ☑ Points Blocking
- ☑ PostgreSQL
- ☑ Text Generator
- ☑ Time Management
- ☑ Scheduler
- ☑ Email
- ☑ IED Master Protocols
- ☑ IRIG-B Port
- ☑ 1GB or 4GB Flash Memory
- ☑ Tile Annunciator


Tile Annunciator presents data
- SCADA
- Engineering
- Web + Mobile
Optional VGA allows local HMI
Orion LX/LXm
Analog and discrete data are accessed to trigger an alarm state
Meters
Event Recorders
Distributed I/O
Relays
Other Devices

Data Archive Appliance

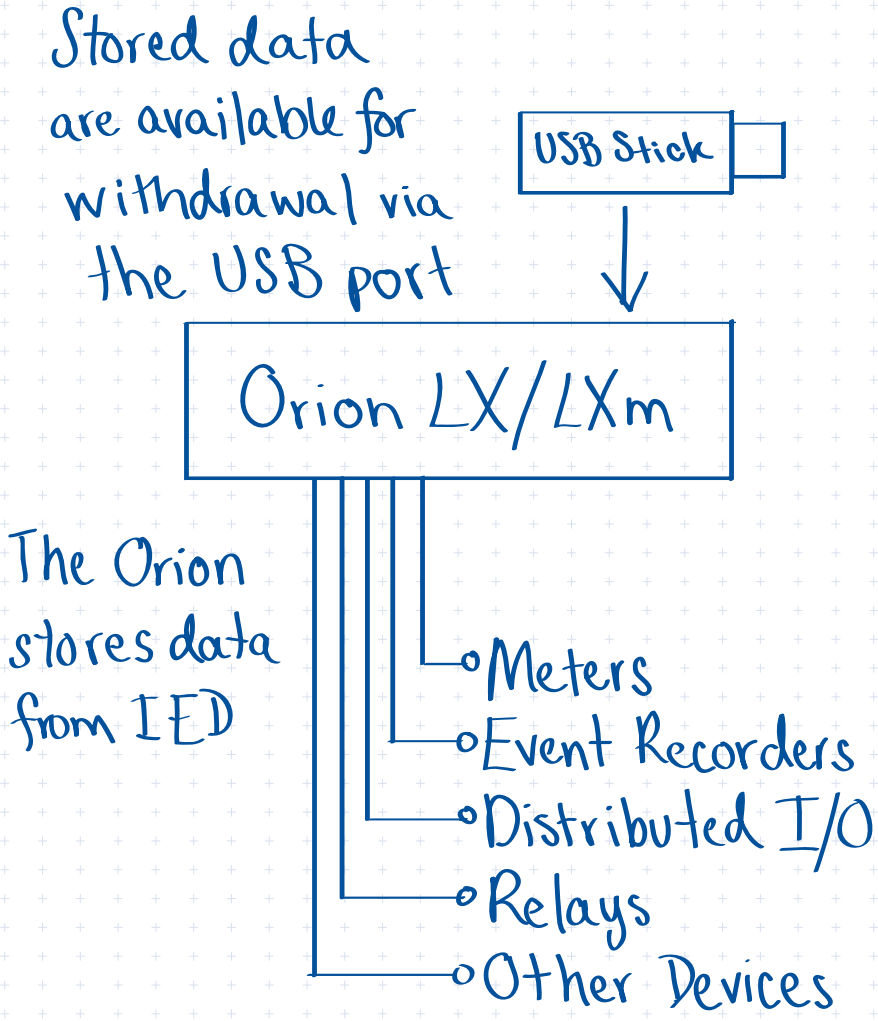
The OrionLX or LXm can serve as a Data Archive Appliance for remote substations without SCADA communication. Polled data from substation meters, event recorders, relays, and other IEDs are stored in Orion on-board, non-volatile memory, and are made accessible to substation engineers for periodic withdrawal via one of the rear USB ports.

Key Features

- ☑ Archived data can be retrieved locally on a thumb drive
- ☑ Large non-volatile memory; up to 4GB
- ☑ Open relational PostgreSQL data supports standard SQL queries

Application Components

- ☑ Archived data can be retrieved locally on a thumb drive
- ☑ Large non-volatile memory
- ☑ PostgreSQL
- ☑ Time Management
- ☑ Master Protocols
- ☑ Auxiliary USB Ports
- ☑ IRIG-B Port
- ☑ 1GB or 4GB Flash Memory


Stored data are available for withdrawal via the USB port
USB Stick
Orion LX/LXm
The Orion stores data from IED
Meters
Event Recorders
Distributed I/O
Relays
Other Devices

Fault Location, Isolation, and Service Restoration (FLISR) Controller

An OrionLX or LXm can be configured as a FLISR Controller in a fault isolation and restoration scheme. Orion collects data from feeder-mounted reclosers, switches and sensors, and from substation devices. It identifies the faulted section, isolates it, and restores service to unfaulted sections from an alternate source. Logic in the Orion is pre-configured and requires only point and click for simple schemes. Math and Logic, including IEC 61131-3, is available for more complex schemes.

Key Features

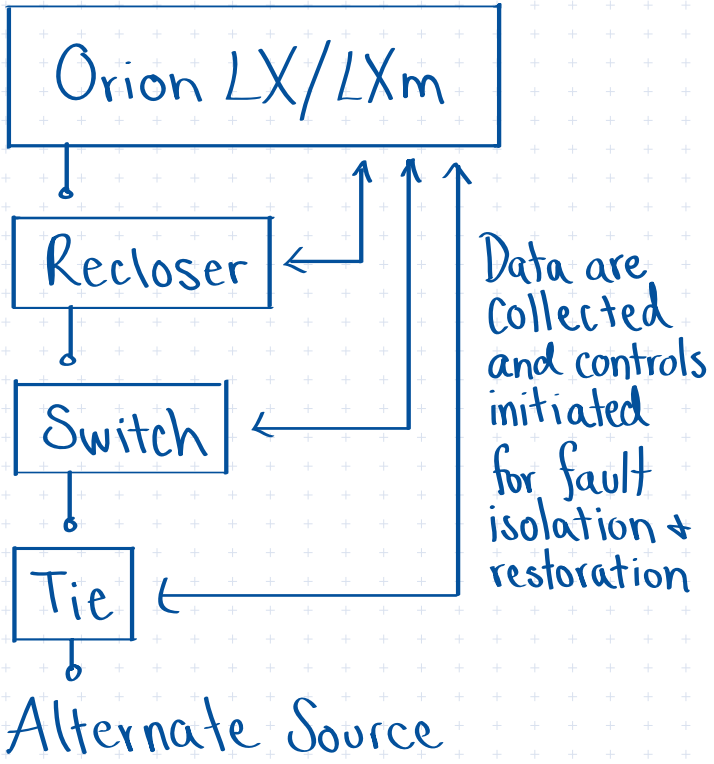
- ☑ Interface to feeder-mounted IEDs from multiple vendors:
  - SEL-651R on G&W reclosers
  - Cooper Form4c, Form5, and Form6 on Cooper reclosers
  - ABB PCD2000 on ABB reclosers
  - GE Dart
- ☑ Pre-configured logic for simple schemes
- ☑ Math and Logic for complex routines
- ☑ Secure Authentication DNP3 interface to feeder-mounted IEDs

Application Components

- ☑ DA Logic
- ☑ IEC 61131-3
- ☑ DNP3 Serial or TCP/IP Master
- ☑ DNP3 Secure Authentication (SA)

Automated fault isolation and Restoration with:

- DA Logic (for simple schemes)
- IEC 61131-3 (for complex schemes)



Math and Logic Processor

The OrionLX or LXm can serve as a substation Math and Logic Processor. Data polled from attached IEDs—meters, event recorders, I/O, relays breakers, etc.—can be manipulated using the following tools:

- Orion Math and Logic (based upon Visual Basic)
- Orion Advanced Math and Logic (based on the .lua language)
- LogicPak (eight pre-defined logic routines)
- IEC 61131-3 with PLC-style “Ladder Logic” and four other standard editors

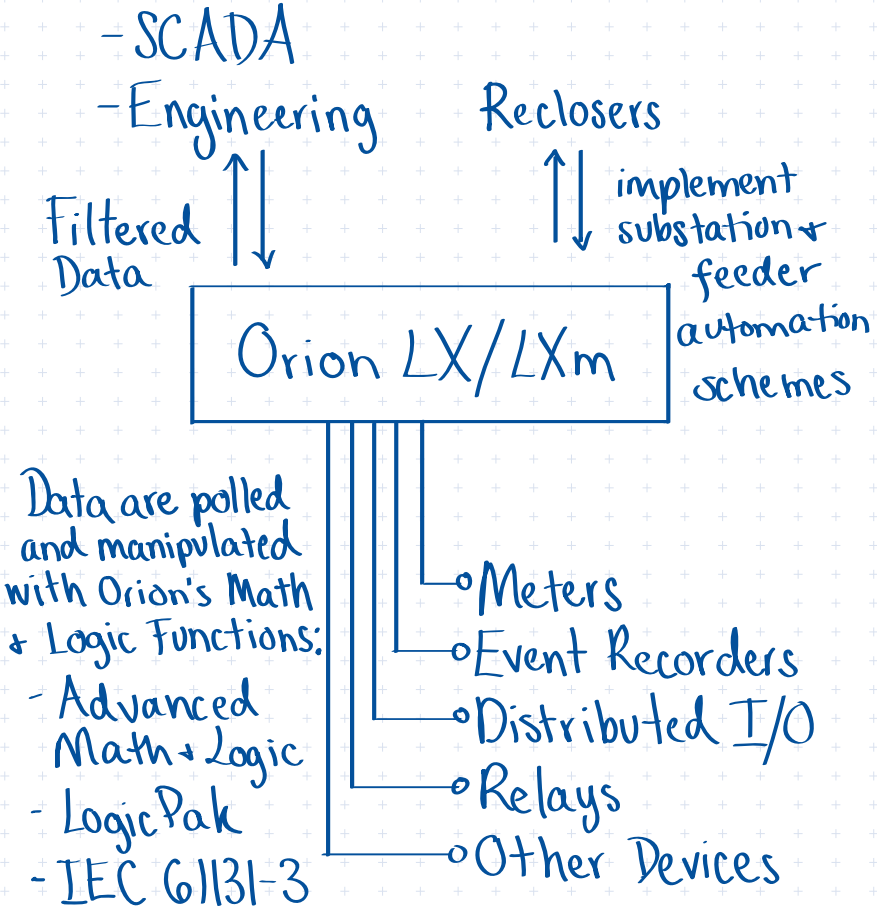
This OrionLX on-board logic can filter and condition substation data before presenting to SCADA and to Engineering clients, or can support substation and feeder automation schemes.

Key Features

- ☑ All logic tools integrated into the Orion configuration environment
- ☑ All logic tools based on open standards
- ☑ The right logic tools for any task

Application Components

- ☑ LogicPak
- ☑ Math and Logic (.bas)
- ☑ Advanced Math and Logic (.lua)
- ☑ IEC 61131-3 Editor
- ☑ High Performance CPU


- SCADA
- Engineering
Filtered Data
Reclosers
implement substation & feeder automation schemes
Orion LX/LXm
Data are polled and manipulated with Orion's Math & Logic Functions:
- Advanced Math & Logic
- LogicPak
- IEC 61131-3
Meters
Event Recorders
Distributed I/O
Relays
Other Devices

NERC CIP Cyber Secure Gateway

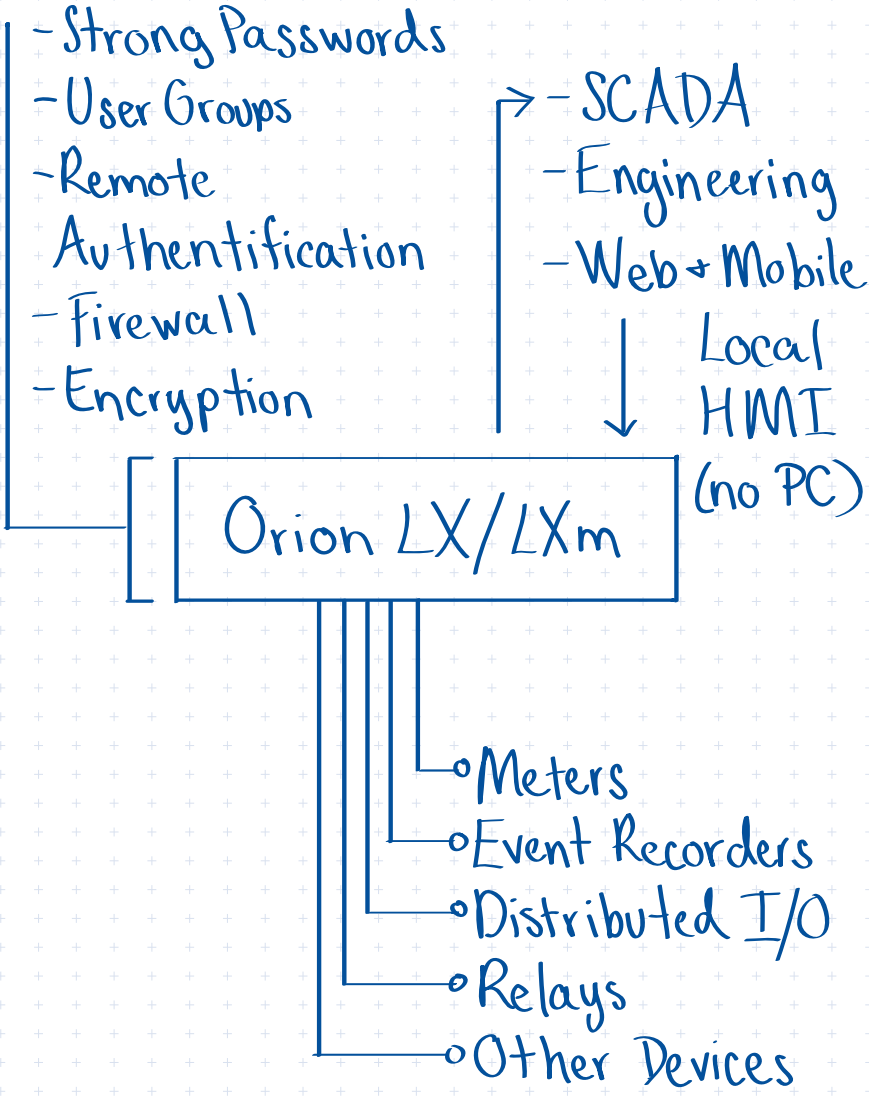
The OrionLX or LXm can serve as a NERC CIP secure substation gateway. Orion connects to substation IEDs using any combination of over 30 available IED protocols. Access to Orion and to these IEDs is controlled with comprehensive Orion security features including strong passwords, centralized user authentication, encrypted protocols, key management, stateful firewall, and NERC-compliant alarm and event logging. These features provide a Cyber Secure connection for remote SCADA and engineering clients, and are designed to operate with open, industry-standard IT infrastructure and practices to ensure compatibility. In addition, OrionLX can present data to a local touchscreen HMI using a VGA output, eliminating the need for a substation PC and its maintenance and security requirements. The OrionLX serves as a secure California ISO remote integration gateway (IRIG) in generation sites.

Key Features

- ☑ Meets the latest NERC CIP Version 5 requirements
- ☑ Security based on open standards

Application Components

- ☑ NERC CIP Security Suite
- ☑ SFTP
- ☑ HTTPS
- ☑ LDAP
- ☑ Sensor
- ☑ SSH
- ☑ SSL/TLS
- ☑ syslog
- ☑ SNMP


- Strong Passwords
- User Groups
- Remote Authentification
- Firewall
- Encryption
- SCADA
- Engineering
- Web + Mobile
Local HMI (no PC)
Orion LX/LXm
Meters
Event Recorders
Distributed I/O
Relays
Other Devices

NERC CIP Solutions

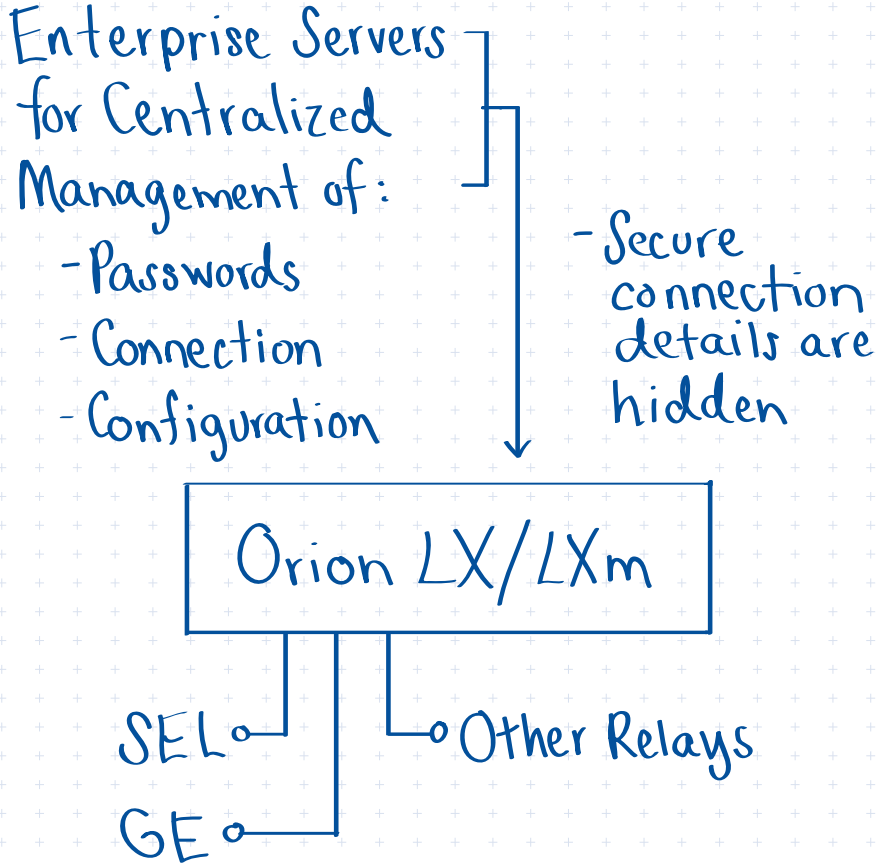
The NovaTech Identity Manager (NIM) manages user and relay passwords on a centralized enterprise server. The NovaTech Connection Manager (NCM) establishes an encrypted connection between the enterprise and the substation. These packages work with OrionLXs in the substations to address the NERC CIP requirements for NERC CIP-005 and -007 access control. The Configuration Manager Agent in the substation OrionLXs accesses IED configuration data and transfers these to the enterprise for analysis by NovaTech partner products to address NERC CIP-010 requirements.

Key Features

- ☑ Based on open, standard IT practices
- ☑ Establishes secure connections to Cyber Assets
- ☑ Manages both user and SEL® relay passwords

Application Components

- ☑ FileMover
- ☑ Scheduler
- ☑ NERC CIP Security Suite
- ☑ Configuration Manager Agent
- ☑ Connection Manager Agent
- ☑ High performance CPU to support strong ciphers


Enterprise Servers for Centralized Management of:
- Passwords
- Connection
- Configuration
- Secure connection details are hidden
Orion LX/LXm
SEL
GE
Other Relays

Pole Top Remote Terminal Unit (RTU)

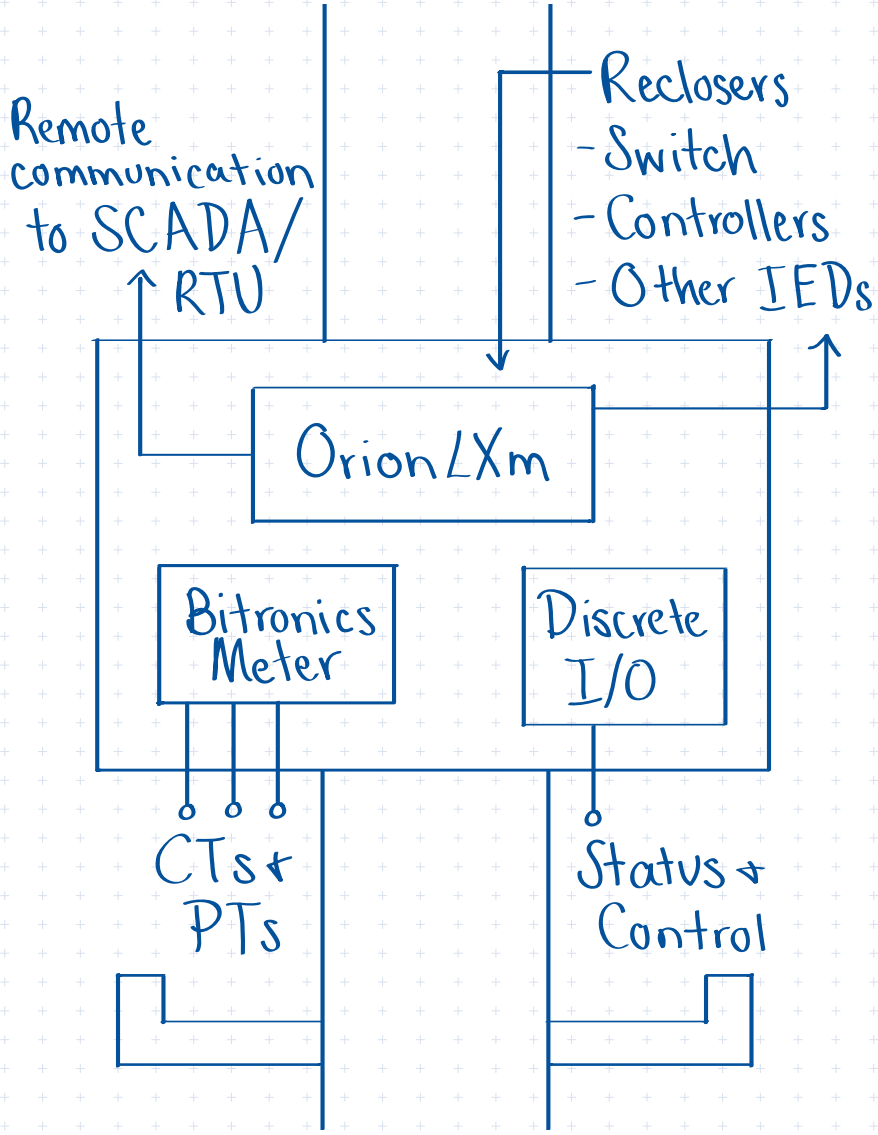
The small form factor of the OrionLXm makes it an ideal Pole Top Remote Terminal Unit or RTU. Inside of a metal enclosure on the pole, an OrionLXm connects to Bitronics® SCADA meters attached to PTs and optional split-core CTs to monitor line voltage and current. Discrete I/O monitors switch position and other inputs and actuates devices. The OrionLXm communicates remotely to the utility SCADA system directly or to an RTU at the substation, and initiates or passes through control actions to the line reclosers, switches, and other IEDs.

Key Features

- ☑ Universal mounting
- ☑ Compact size

Application Components

- ☑ DNP3 Secure Authentication
- ☑ DNP3 Serial or TCP/IP Slave
- ☑ DIN Rail or Bracket Mounting


Remote communication to SCADA/ RTU
Reclosers
- Switch
- Controllers
- Other IEDs
Orion LXm
Bitronics Meter
Discrete I/O
CTs + PTs
Status + Control

Protective Relay Communication Processor

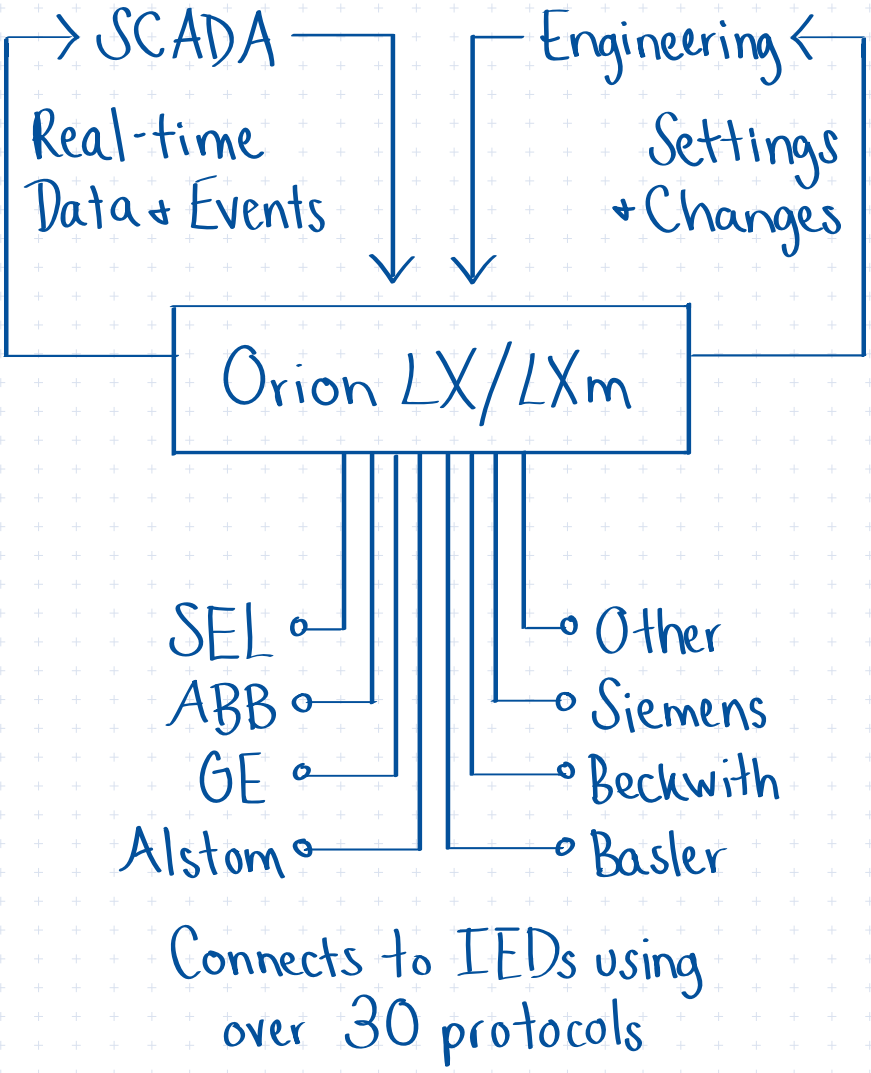
The OrionLX or LXm can serve as a protective relay communications processor by connecting to SEL, ABB, GE, Alstom/Areva, Basler, Beckwith, Siemens, and other relays using RS232, RS485, Fiber or Ethernet and over 30 available protocols. Orion then passes real-time data and event records from all attached relays to SCADA, and provides engineering groups with event records and the ability to manage settings and changes using secure “pass-through” communications.

Key Features

- ☑ Full support of SEL relays in native SEL protocol
- ☑ Accesses SEL event reports automatically
- ☑ Transparent pass-through to protective relays

Application Components

- ☑ iDial
- ☑ FileMover
- ☑ PassThru Interface Master
- ☑ PassThru Interface Slave
- ☑ ASCII IED Web
- ☑ Relay Data Logger
- ☑ Email
- ☑ SEL Master Protocol and SEL-2030 Protocol
- ☑ RS232, RS485, Fiber Communications Ports
- ☑ Modem-Serial Dial-In


SCADA
Real-time
Data + Events
Engineering
Settings
+ Changes
Orion LX/LXm
SEL
ABB
GE
Alstom
Other
Siemens
Beckwith
Basler
Connects to IEDs using
over 30 protocols

Remote Terminal Unit (RTU)

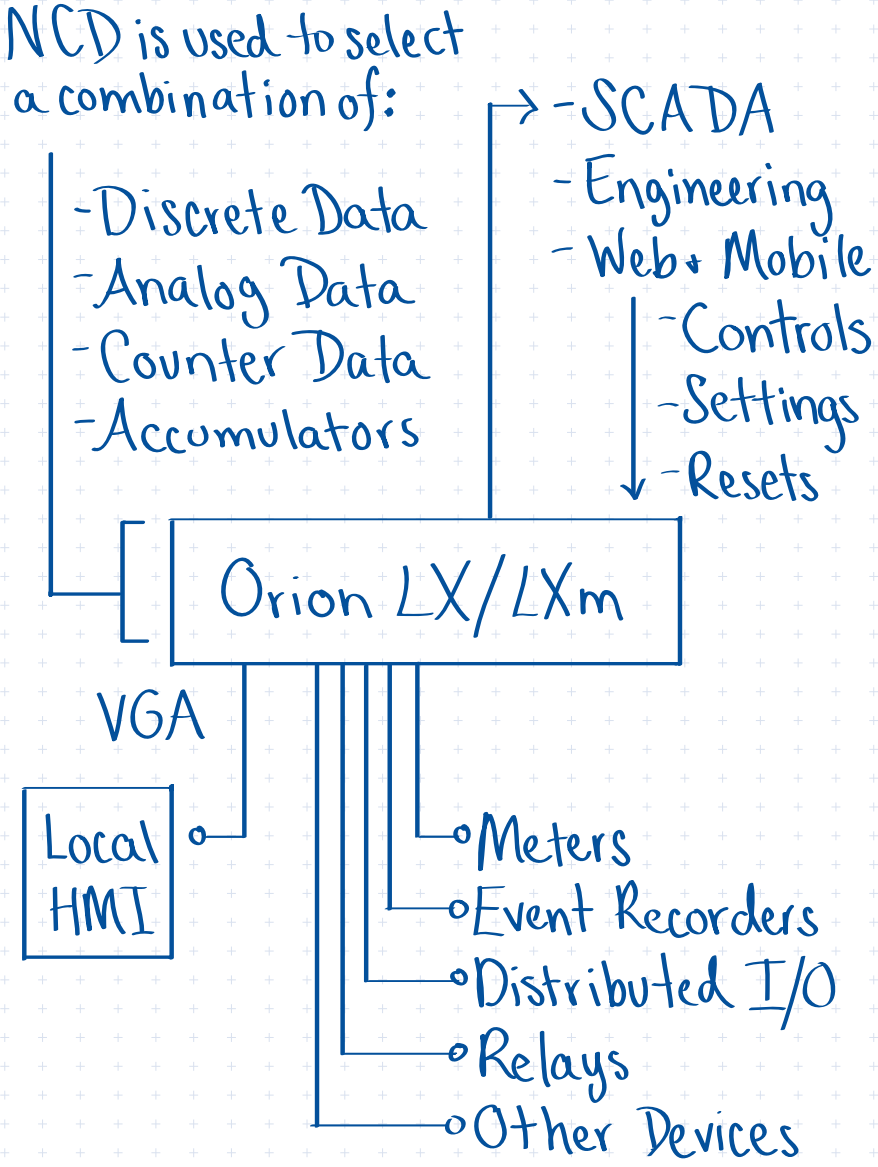
Setting up a NovaTech OrionLX or LXm Automation Platform to act as a substation Remote Terminal Unit is straightforward. Orion connects to substation IEDs using any combination of RS232, RS485, Fiber or Ethernet connections and over 30 available IED protocols. SCADA data accessed by Orion are presented to one or more SCADA masters, engineering groups, web or mobile clients using nearly any SCADA protocol. Controls, settings, and resets are passed through the OrionLX to substation IEDs, and on to substation devices. An OrionLX with the Direct Video option connects to a local touchscreen HMI and keyboard to allow for local access and control. No PC is required.

Key Features

- ☑ Lower cost than traditional “hard-wired” RTU
- ☑ Reduced I/O wiring costs; Orion accesses data from IEDs
- ☑ Multiple functions integrated; HMI, Math and Logic, protective relay access

Application Components

- ☑ Accumulator Freeze
- ☑ Time Management
- ☑ Alias
- ☑ Data Scaling
- ☑ Pseudo Master
- ☑ Sensor
- ☑ Cascaded Orions Master / Slave
- ☑ Points Blocking
- ☑ Legacy Protocols (50+)
- ☑ RS232, RS485, Fiber Communication Ports
- ☑ Dual Ethernet Ports


NCD is used to select a combination of:
- Discrete Data
- Analog Data
- Counter Data
- Accumulators
- SCADA
- Engineering
- Web + Mobile
- Controls
- Settings
- Resets
Orion LX/LXm
VGA
Local HMI
Meters
Event Recorders
Distributed I/O
Relays
Other Devices

Renewable Energy Integration Processor

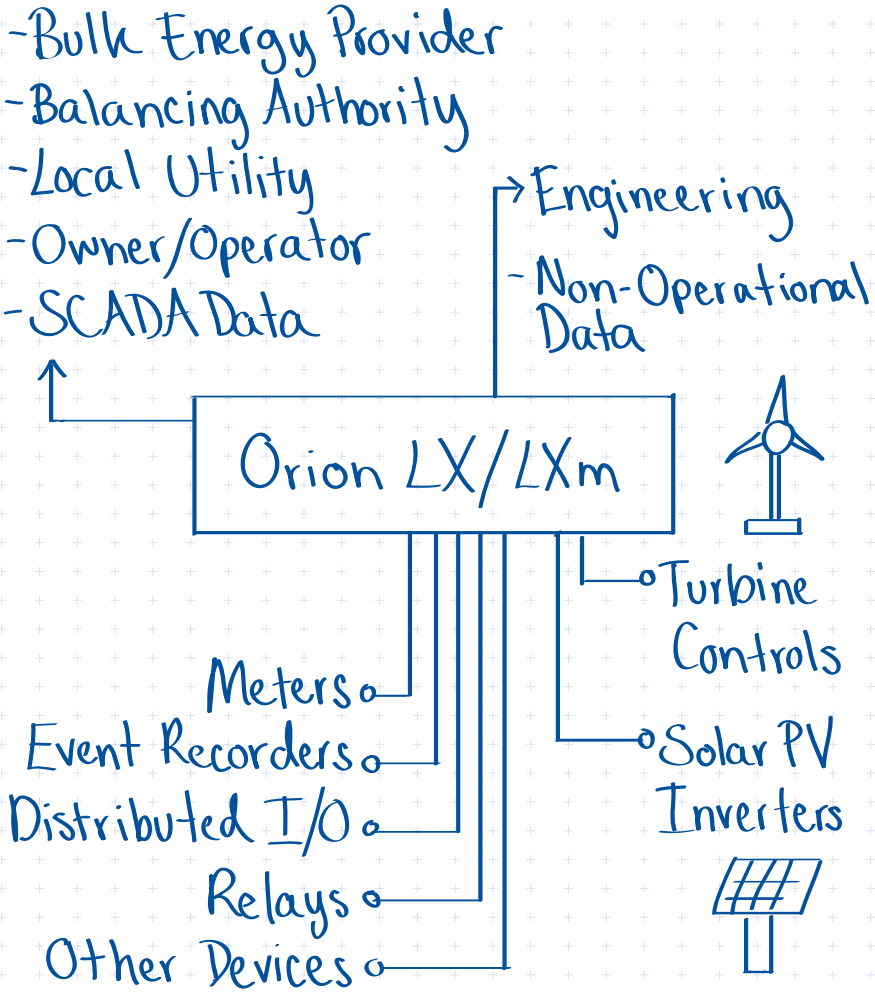
The OrionLX or LXm can serve as a Renewable Energy Integration Processor. All of the electronic devices in the farm – meters, event recorders, relays, other IEDs, solar PV inverters, turbine controls, etc. – are interfaced to Orion through over 30 available communication protocols, using RS232, RS485, Fiber or Ethernet. Orion then simultaneously provides relevant and authorized subsets of SCADA data to the bulk energy provider, balancing authority, local utility and the owner/operator of the facility, each in their specific protocol. Non-operational data are also supplied to the appropriate engineering groups.

Key Features

- ☑ Can support connection to multiple SCADA masters; to the Owner, to the balancing authority, to the T&D company
- ☑ Supports secure encrypted SCADA communication; same technique used at CALISO
- ☑ Integrates all IEDs in the farm

Application Components

- ☑ Time Management
- ☑ Alias
- ☑ Data Scaling
- ☑ Pseudo Master
- ☑ Sensor
- ☑ 30+ IED Protocols
- ☑ 20+ SCADA Protocols


-Bulk Energy Provider
-Balancing Authority
-Local Utility
-Owner/Operator
-SCADA Data
Engineering
-Non-Operational Data
Orion LX/LXm
Turbine Controls
Solar PV Inverters
Meters
Event Recorders
Distributed I/O
Relays
Other Devices

Sequence of Events Recorder

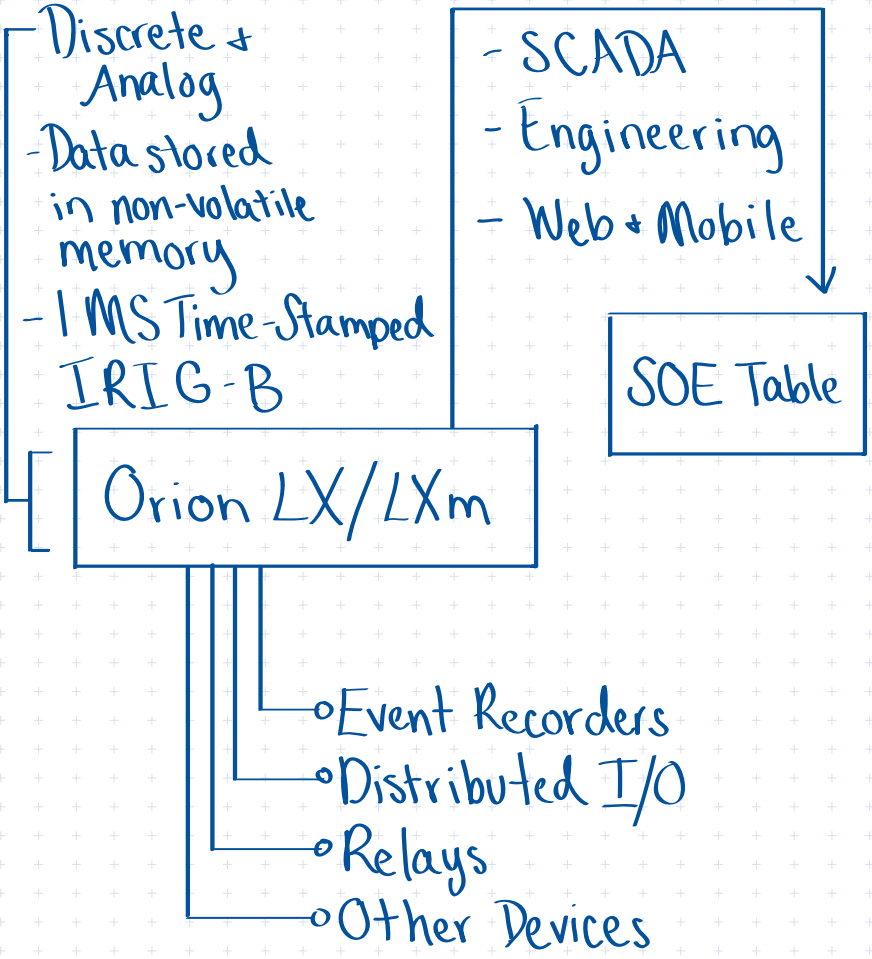
The OrionLX or LXm with the Alarm Archive Retentive software option can act as a substation Sequence of Events Recorder. Selected analog and discrete data from substation meters, event recorders, relays, and other IEDs are time-stamped to 1 millisecond using IRIG-B or another accurate time source. These data are stored in non-volatile memory in the OrionLX's resident SQL database. Time-stamped event records can be provided to SCADA, engineering, web and mobile clients via a Sequence of Events tabular web page, a CSV file transfer or in response to SQL Queries.

Key Features

- ☑ Can create an SOE record with data from multiple IEDs
- ☑ Flexible time synchronization; IRIG-B, NTP, DNP3, etc.

Application Components

- ☑ Alarm/Archive/Retentive (AAR)
- ☑ PostgreSQL
- ☑ FileMover
- ☑ IRIG-B Port
- ☑ 1GB or 4GB Flash Memory
- ☑ Time Management


Discrete + Analog
- Data stored in non-volatile memory
- 1 MS Time-Stamped IRIG-B
- SCADA
- Engineering
- Web + Mobile
SOE Table
Orion LX/LXm
Event Recorders
Distributed I/O
Relays
Other Devices

Shore Power

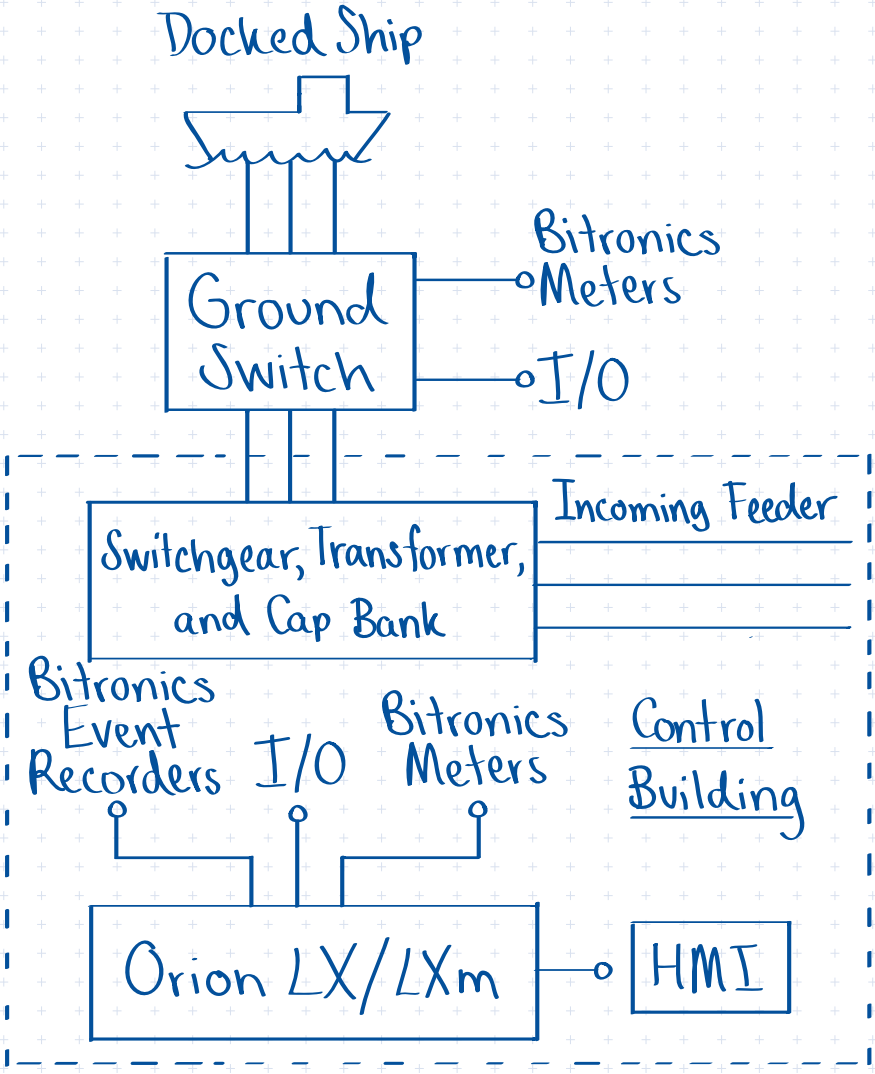
The OrionLX or OrionLXm acts as a data and control hub in an innovative shore power substation solution by Cochran Marine. In the application, ships anchored in harbor are connected to shore power through a combination of a tap changing transformer, capacitor bank, and circuit breaker. Bitronics recorders and meters, and Orion data processing and local HMI, tie it all together. Operators enter the voltage and frequency of the docked ship into the local HMI and initiate the switch to shore power. Docked ships running on shore power can turn off their diesel power, resulting in lower emissions and reduced environmental impact while the ship is docked.

Key Features

- ☑ NovaTech provides complete solution
- ☑ Orion and Bitronics handle all requirements; monitoring, control, display

Application Components

- ☑ WEBserver
- ☑ Advanced Math and Logic
- ☑ Multimedia Board


Docked Ship
Ground Switch
Bitronics Meters
I/O
Switchgear, Transformer, and Cap Bank
Incoming Feeder
Bitronics Event Recorders
I/O
Bitronics Meters
Control Building
Orion LX/LXm
HMI

Substation Data Server

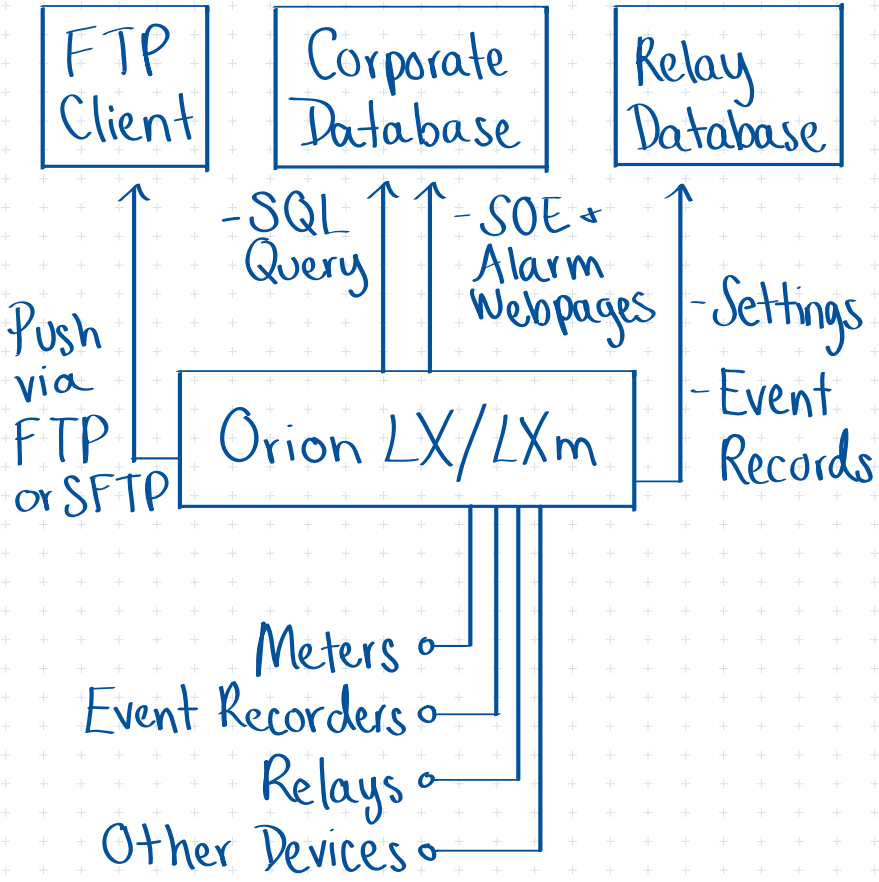
The OrionLX or LXm can serve as a Substation Data Server. Selected non-operational analog and discrete data from substation meters, event recorders, relays, and other IEDs – including files and calculated data – are stored in non-volatile Orion memory. Any subset of these data can be presented to multiple clients using flexible communication options. For example, files can be pushed to an FTP client using secure SFTP, or Orion can respond to SQL Queries from corporate databases. Sequence of events and alarms can be served out on web pages, and relay settings and event records can be pushed out to a relay database.

Key Features

- ☑ Accesses data from any substation IED
- ☑ Open relational PostgreSQL database supports standard SQL queries
- ☑ Provides the right data to the right people at the right time in the right format

Application Components

- ☑ FileMover
- ☑ PostgreSQL
- ☑ Scheduler
- ☑ Text Generator
- ☑ ASCII IED Web
- ☑ WEBserver XML
- ☑ Email
- ☑ NERC CIP Security Suite


FTP Client
Corporate Database
Relay Database
- SQL Query
- SOE & Alarm Webpages
- Settings
- Event Records
Push via FTP or SFTP
Orion LX/LXm
Meters
Event Recorders
Relays
Other Devices

Substation Human Machine Interface (HMI)

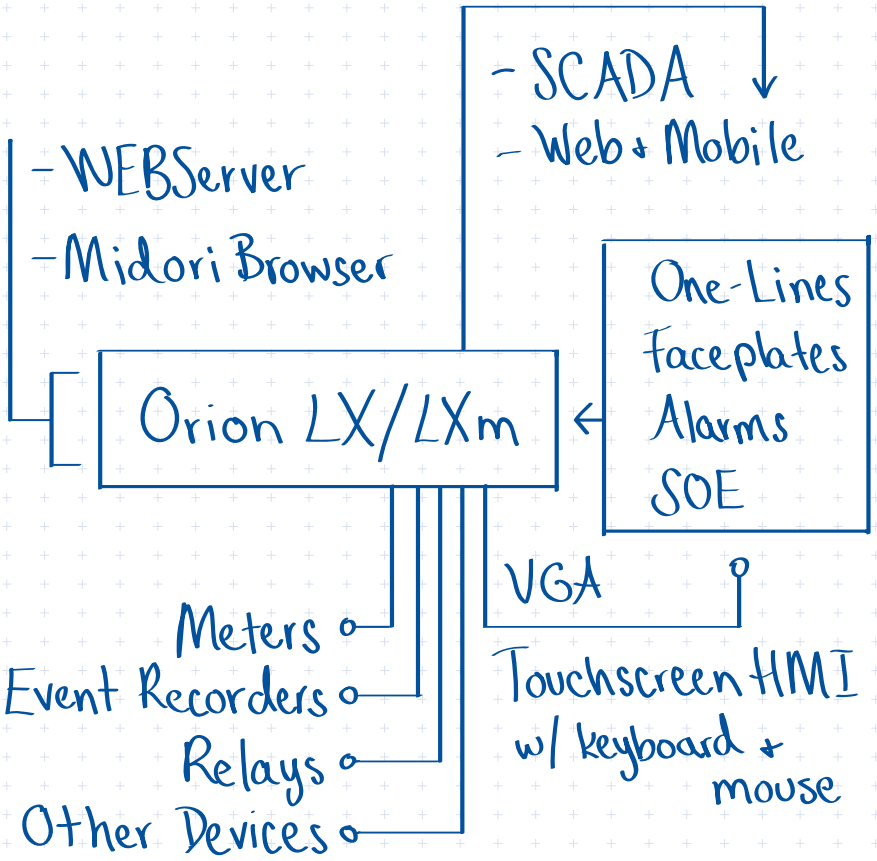
The OrionLX can serve as a cost-effective HMI in the electric utility substation. Selected data from substation meters, event recorders, relays, and other IEDs are accessed and used to animate HMI web pages. These pages are viewed with an on-board, open-source Midori browser, and exported through a VGA port to a local touchscreen HMI. Keyboard and mouse are connected to USB ports on the OrionLX. This eliminates the need for a substation PC, along with its Cyber Security and software update challenges. Users can use a standard library of single-line diagrams, faceplates, alarm, and sequence of events pages, and can create custom SVG screens with the open source graphics tool Inkscape. All screens visible on the local substation HMI are also browsable by remote SCADA and mobile clients, providing a low-cost, secure, and flexible substation HMI solution.

Key Features

- ☑ No PC required; VGA monitor connects directly to OrionLX
- ☑ Open source development tools for custom screens
- ☑ All web-based

Application Components

- ☑ PostgreSQL
- ☑ Alarm/Archive/Retentive
- ☑ ASCII IED Web
- ☑ WEBserver XML
- ☑ NERC CIP Security Suite
- ☑ Multimedia Board


- SCADA
- Web + Mobile
- WEBServer
- Midori Browser
Orion LX/LXm
One-Lines
Faceplates
Alarms
SOE
VGA
Meters
Event Recorders
Relays
Other Devices
Touchscreen HMI
w/ keyboard +
mouse

Web-Based SCADA for Small Utilities

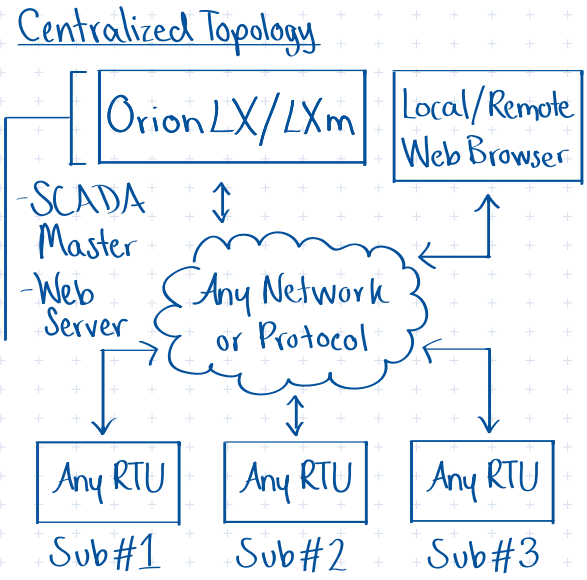
The OrionLX and LXm can be used to create a web-based SCADA system in either a centralized or distributed topology. In the centralized configuration, a single OrionLX polls existing RTUs at multiple substations, using any SCADA Master protocol or network connection. Using the OrionLX WEBserver options and Direct Video options, the centralized OrionLX serves out web pages for single-line diagrams, faceplates, trends and real-time data to a locally connected touchscreen HMI, or to remote computers and mobile devices using HTTPS. In the distributed topology, multiple OrionLX's or LXm's collect data at each substation and present web-based SCADA screens to multiple remote PCs or mobile clients.

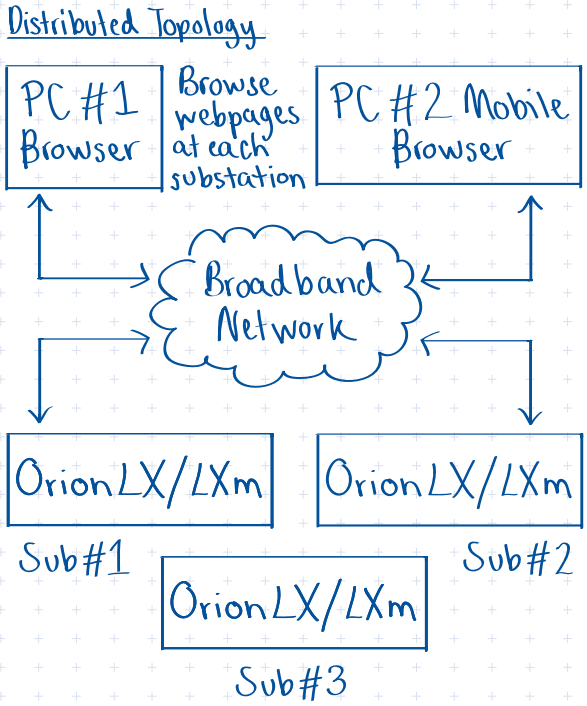
Key Features

- ☑ No licensing fees
- ☑ Includes engineering access to protective relays
- ☑ Built-in Cyber Security

Application Components

- ☑ PostgreSQL
- ☑ NERC CIP Security Suite
- ☑ WEBserver XML
- ☑ HTTPS
- ☑ High Performance CPU


Centralized Topology
Orion LX/LXm
Local/Remote Web Browser
-SCADA Master
-Web Server
Any Network or Protocol
Any RTU
Any RTU
Any RTU
Sub#1
Sub#2
Sub#3

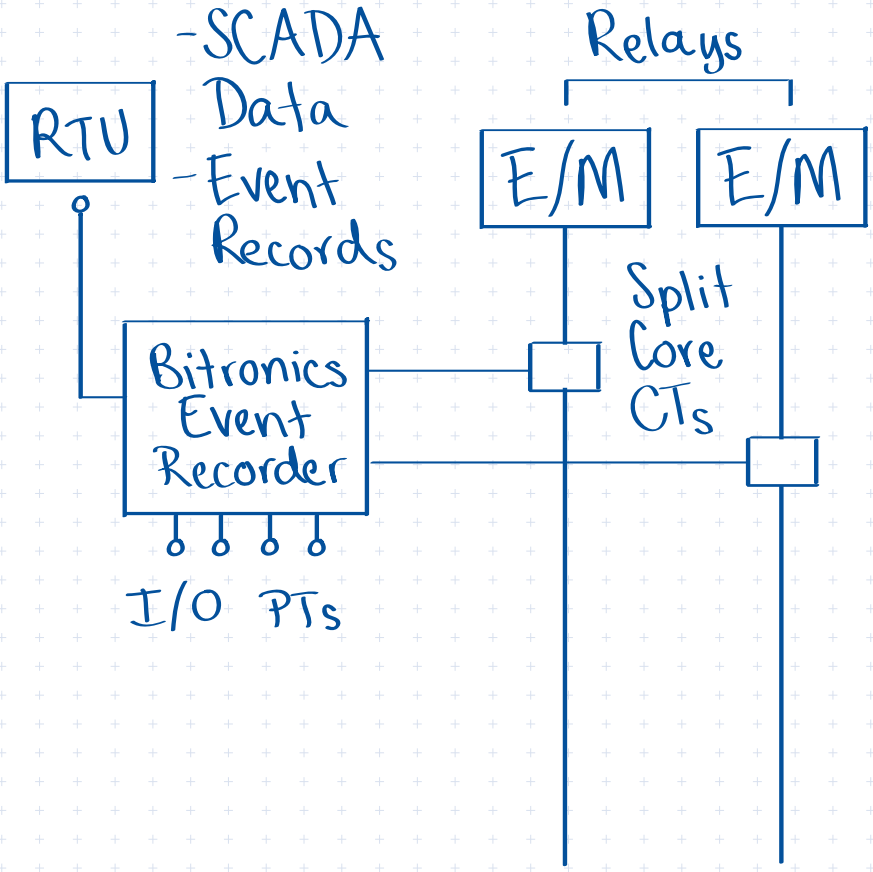

Distributed Topology
PC #1 Browser
Browse webpages at each substation
PC #2 Mobile Browser
Broadband Network
Orion LX/LXm
Orion LX/LXm
Orion LX/LXm
Sub#1
Sub#2
Sub#3

Automating Electromechanical Relay Substations

A Bitronics 70 Series Event Recorder can provide substation automation, event recording and SCADA functionality in a substation that still uses electromechanical relays. By connecting to local discrete I/O, PTs, and the relaying circuits of the electromechanical relays using split-core CTs, the Bitronics Event Recorder provides SCADA data and event records to the local RTU, providing complete substation and fault data to the utility while preserving the investment in reliable electromechanical protection equipment.

Application Components

- ☑ 70 Series Configurator Software
- ☑ M871/M872 Event Recorders
- ☑ PowerPlex II Automation IED
- ☑ Split-Core External CTs


RTU
-SCADA Data
-Event Records
Relays
E/M
E/M
Split Core CTs
Bitronics Event Recorder
I/O PTs

Distributed Event Recording

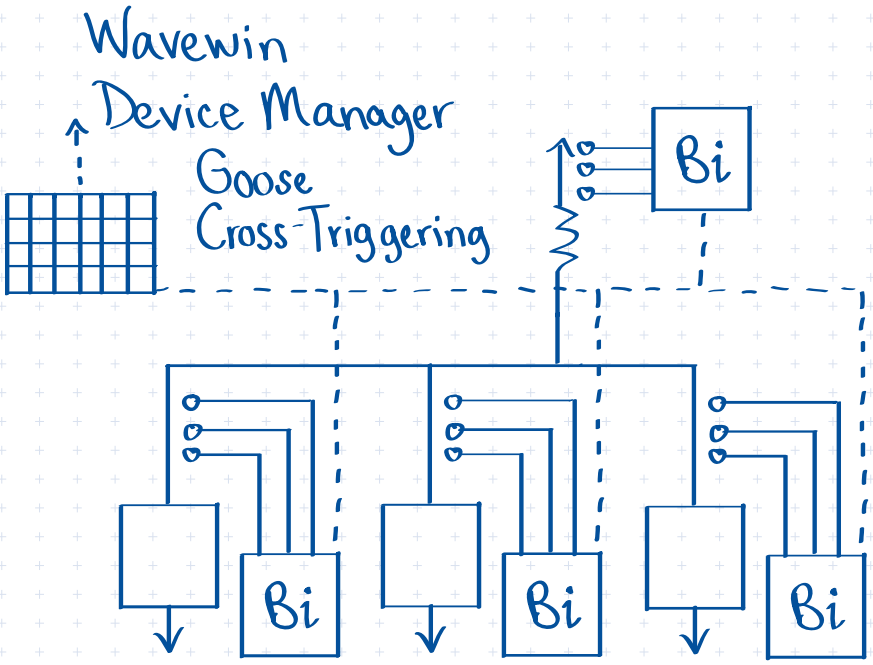
Conventional centralized disturbance recorders require several sets of CT and PT wires to be run from every monitored point on the feeder back to the station house and the centralized Digital Fault Recorder. All this wiring is expensive and can present ground differential problems.

Multiple Bitronics Event Recorders installed next to feeders, buses and transformers reduce these costs. They can be set to trigger on various current and frequency thresholds, and can utilize IEC 61850 GOOSE cross-triggering to trigger event captures from other Event Recorders.

Records are automatically retrieved using Wavewin Bitronics Device Manager and Wavewin Event Analysis Software.

Application Components

- ☑ IEC 61850 GOOSE Messaging
- ☑ Wavewin Bitronics Device Manager
- ☑ Wavewin Event Analysis Software
- ☑ M871/M872 Event Recorders
- ☑ Split-Core External CTs


Wavewin
Device Manager
Goose
Cross-Triggering
Bi
Bi
Bi
Bi

PRC-002 Disturbance Monitoring

Bitronics 70 Series Event Recorders meet all three PRC-002 Disturbance Monitoring requirements – SOE Equipment, Fault Recording, and Dynamic Disturbance Recording – in a single unit. Once connected to local I/O, PTs and optional split-core CTs, the Bitronics Event Recorder collects time-stamped events, waveform, and trend data. Files are made accessible to the Wavewin Bitronics Device Manager software via serial or Ethernet FTP transfer. The Bitronics 70 Series can be retrofitted quickly into existing circuit without taking an outage.

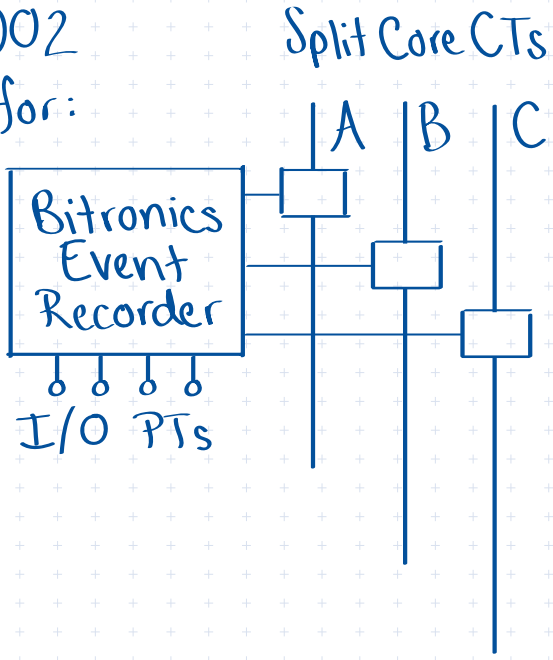
Application Components

- ☑ Wavewin Bitronics Device Manager
- ☑ M871/M872 Event Recorder
- ☑ Split-Core External CTs

Meets PRC-002 Requirements for:

- SOE Equipment
- Fault Recording
- Dynamic Disturbance Recording

in one unit.



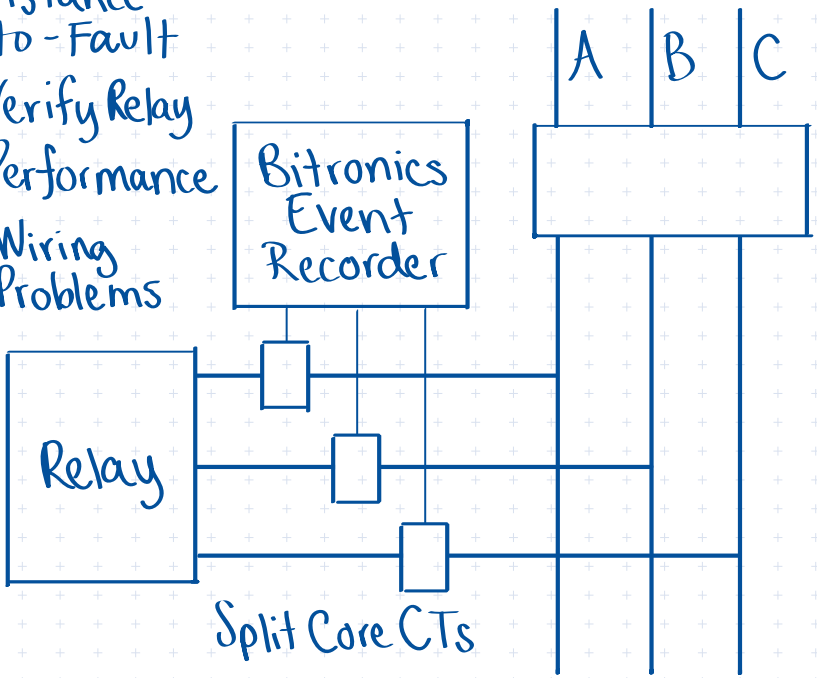
Power System Analysis

Bitronics 70 Series Event Recorders provide comprehensive event recording and power system analysis functions. When connected to a local relaying circuit using split-core CTs, a Bitronics Event Recorder can provide critical diagnostic information such as Peak Fault Current and Distance-to-Fault, can be used to verify relay performance, and can be used to diagnose wiring problems in the substation.

Application Components

- ☑ Distance-to-Fault
- ☑ Peak Fault Current
- ☑ M871/M872 Event Recorder
- ☑ Split-Core External CTs

- Peak Fault Current
- Distance-to-Fault
- Verify Relay Performance
- Wiring Problems



Real-Time Synchronization

Bitronics 70 Series Event Recorders and PowerPlex II Digital Transducers can be used for generator synchronization in OEM diesel generator and renewable energy applications. The Bitronics Instruments measure voltage and frequency on each side of the tie breaker with up to 4 millisecond measurement speed. These measurements are forwarded to a PLC or other controller which closes the breaker when conditions are within synchronism guidelines.

Application Components

- ☑ Hi-Speed RMS Updates
- ☑ 4ms RMS for M871/M872 or 100ms for PowerPlex II
- ☑ M871/M872 Event Recorder
- ☑ PowerPlex II Automation IED
- ☑ Split-Core External CTs

If You Can Draw It, We Can Do It

NovaTech products are built with the end application in mind. After decades of successful projects, we've seen (and configured) just about every kind of application out there. So sketch out your toughest power measurement, relay integration, Cyber Security or substation automation application, email it to sales@novatechweb.com, and we'll get in touch with how we'd solve it.

Glossary

Accumulator Freeze: Enables the OrionLX to process freeze commands from the master, or to autogenerate freeze commands.

Advanced Math and Logic: Comprehensive math and logic editor based on .lua programming language. Includes simulation tool.

Alarm/Archive/Retentive: Stores both discrete and analog events based on time or change.

Alias: Enables the user to create an alternate name for any point in the OrionLX database.

ASCII IED Web: Auto-generate HTML interface for ASCII relay communications.

Cascaded Orions Master/Slave: Simplifies the integration of multiple Orions in large substations.

Configuration Manager Agent: Software module for the OrionLX. Enables Orion to retrieve configuration data from substation IEDs and forward these data securely to the enterprise for archival and analysis.

Connection Manager Agent: Software module for the OrionLXm or OrionLX CPX. Works with the NovaTech Connection Manager (NCM) to establish an encrypted connection between substation and enterprise.

DA Logic: Enables Orion to act as a controller in a Fault Location, Isolation, and Service Restoration (FLISR) scheme.

Data Scaling: Enables the range of data values originating from an IED to be simply scaled to another range when these data are presented to SCADA or other applications in OrionLX.

DNP3 Secure Authentification: Protects against Spoofing, Modification, Replay, and Eavesdropping - on exchanges of cryptographic keys.

DNP3 Serial and DNP3 IP: Compliant with Level 2. Includes support for redundant Master connections, UDP support and “DNP3 Passthrough - to enable DNP-based IED vendor software to pass through Orion to connected IEDs.

Email: Enables email messages containing alarm or SEL fault record information to be sent out from Orion.

FileMover: Enables user-selected files (relay records, .csv SOE files, etc.) to be automatically transferred from the OrionLX to a remote FTP site using FTP or SFTP.

FTP/SFTP: Network application protocols used to transfer files from an OrionLX to another host over a TCP-based network. SFTP adds SSH-based security.

High Performance CPU: Three times the processing power for applications demanding more speed and logic. Required for driving MultiMedia Board.

HTTP/HTTPS: Network application protocols for viewing and interacting with OrionLX webpages.

IEC 61131-3: The international standard for programmable logic controller (PLC) programming and includes Ladder Diagram, Function Block Diagram, Structured Text, Instruction List and Sequential Function Chart programming tools.

LDAP (Lightweight Directory Access Protocol): Network protocol for accessing and maintaining distributed directory information services over an Internet Protocol (IP) network.

LogicPak: Provides eight pre-configured logic functions for commonly-used routines including "Or", "And", "Negate" (input), "PrimarySecondary", "Delay", KYZ input, output "Negate" (output) and "LocalRemote".

Math and Logic: Complete math and logic editor based on a Basic-like language. Includes simulation tool.

MultiMedia Board: Allows Orion to drive a touchscreen HMI via direct video. Also adds an extra Ethernet port, two USB ports and an audio out.

PassThru Interface Master: For using Orion as a port switch. Not required when using SEL Master protocol or OPTIMHO Master protocol.

PassThru Interface Slave: For using Orion as a port switch. This software is for the network port (e.g. Ethernet port) attached to Orion. Not required when using iDial.

Points Blocking: Enables points or groups of points to be manually "blocked" from reporting state changes. Useful during installation, commissioning, and maintenance.

PostgreSQL Module: Open object-relational database management system used in the OrionLX when Expanded Memory is ordered.

Pseudo Master: Supports the "mailbox" application, where one Master places data into the OrionLX mailbox using one protocol and another Master reads these data from the OrionLX mailbox using a different protocol.

Relay Data Logger or I-Log: Enables Orion to capture and record a stream of data into user-defined files. Useful for capturing the full length event reports from SEL relays.

Scheduler: Enables tasks such as Email and FileMover to be scheduled.

SEL Protocol: For communications to SEL Relays.

SEL-2030 Protocol: Supports Fast Messaging protocol to obtain SEL data directly from SEL-2020, 2030 and 2032.

Sensor: Enables users to assign discrete, analog and counter points to real-time OrionLX diagnostic and operating conditions, which can in turn be mapped to other applications. Examples include: Orion temperature, power supply health, Ethernet activity, user login name and status, etc.

SNMP (Simple Network Management Protocol): Network protocol for managing devices on IP networks.

SSH: Cryptographic network protocol for secure data communication, remote command-line login, remote command execution, and other secure network services between OrionLX and another networked computer that connects, via a secure channel over an insecure network.

SSL/TLS: Transport Layer Security (TLS) and its predecessor, Secure Sockets layer (SSL), are cryptographic protocols that provide communication security between OrionLX and another networked computer.

syslog: Protocol for computer data logging. It separates the software that generates messages from the system that stores them and the software that reports and analyzes them.

Text Generator: Enables the OrionLX to operate as a text generator for attaching text to numeric-based points based on prioritized conditions or rules.

Time Management: Enable OrionLX to accept any common time protocol – IRIG-B, DNP3 or NTP – to synchronize its clock and time-stamp events. Also enables OrionLX to send out IRIG-B, DNP3, NTP or SEL ASCII to attached IEDs. Includes the NKI Time Interface Module that report clock accuracy and synchronization status.

Tile Annunciator: Software-based alarm annunciator for up to 1000 alarms. Provides up to 20 pages of user-defined tile layouts and user-defined names.

Webserver XML (for WEBserver HMI and SCADA applications):
Moves data from the Orion environment into the webpage environment for custom webpage development.

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