



## Inform your decisions with a modern substation HMI

RuggedCom's Reflex™ Substation HMI is a purpose built solution for locally monitoring and controlling all aspects of substation operations. Whether you need support for users local or remote, Reflex makes information available through the following, ready to deploy features:

- Single Line diagram with rich graphics editor
- Multiple protocol support
- Faceplate emulation of many IEDs
- Alarm acknowledgement and summary
- Sequence of events summary
- Graphical trending of values
- Extensive reporting facility
- Historian option to record years of information

Custom screens and applications can also be quickly developed using the Reflex's advanced scripting language.

### Getting your data, all of it

The Reflex device interface library is large, with more than 50 protocol interfaces that allow you to get to data from decades-old RTUs as well as the latest 61850-based IEDs. Reflex can also be combined with our eLAN Substation Communications Server to extend data visualization to include non-operational data and enhance reliability by partitioning the data acquisition and visualization functions.

With its SQL-based architecture, Reflex goes well beyond the substation as well to incorporate enterprise information from disparate databases.

Configuring the system is simple, with templating and automatic population of data lists for certain devices types.

### Logical Data Creation

Using Reflex' integrated logic engine options users can manipulate actual data points to generate pseudo and logical data points. Beyond data generation, users can implement automation schemes using the logic engine or the optional Soft Programmable Logic Controller facility.

### Network View

When you want to see the state of your substation network at a glance, Reflex provides a highly customizable view that can be panned and zoomed quickly. Drill down into device faceplate emulations or detailed data summaries, while keeping a view of the network in the background.

### Alarm View

The purpose built Alarm View gives users an immediate snapshot of all alarm states, with the ability to acknowledge and clear on a selected basis. Alarms can be configured based on the following criteria:

- Binary change of state with the ability to customize alarm descriptions
- Analog dead bands with five severity levels
- Optionally send an Email or SMS text to a person or distribution list

### Hot Line Tagging

Reflex allows a user to select any system point or device and tag it with information or inhibit controls to devices such as a Breakers or Reclosers. A visual indicator on the single line diagram shows the operator at a glance which devices have Hot Line tags applied and will ensure that close commands cannot be given.

### Event View

The built-in Sequence of Events view uses our powerful data interface engine to generate a tabular, chronological view of event history regardless of device type. Binary state changes as well as logical data points moving out of range can be triggered to be included in either event or alarm views.

### Trending

Virtually any point can be displayed in the trend view with the ability to quickly alter the view based on:

- Data source assignment
- Multiple pen colors
- Slide bar display for date and time ranges
- Pan and zoom
- Real time or historical trending modes

### Historical Data Logging

On occasion, real time information isn't enough. For this reason, Reflex has an integrated historian feature using our open source database that allows users to tag data points for capture simply by checking a box. For most substation HMI applications this historian will grant rapid access to months and years of information.

### Email Notification

To enhance user awareness of critical system events, Reflex provides an easy to configure notification facility. Emails or text messages can be generated to notify individual users or user groups of events of interest, including relevant data files if necessary.

### Rapid Deployment

Reflex's web and database-centric architecture allows for ultimate flexibility in getting projects developed quickly and cost effectively. Electric utility specific templates and graphic elements allow for rapid design and deployment. Many device types such as commonly used relays, recloser controls, remote terminal units and power quality meters are supported out-of-the-box and are quickly configurable.

Updates to user screens made in the Reflex Designer are immediately reflected in the field, providing users with the ability to simply accept new changes to their view. No need to individually or manually update hundreds of clients.

### Powerful Graphics Editor

Users can go beyond the standard graphic elements such as breakers, buses, transformers and face plates to create their own customized view of the world. Drag and drop graphic elements and shapes as well as custom drawing tools are provided to allow for unlimited flexibility in tailoring your visibility.

### Cost Effective Client Access

With a web-launched Client architecture customers don't have to choose only a select few to have the system on their computer. Any desktop, laptop or tablet capable of running Java or a web browser can have access to information.

### Mobility without boundaries

Reflex's web-launched architecture also makes it easier than ever to support field personnel who need to securely monitor and control devices. Our Java engine insures cross platform support (Windows, Linux, iOS, Android) and visibility on virtually every laptop, tablet or smart phone. No client software installation is required, just connect to the Reflex server like any other user.

### IT Friendly

Reflex is based entirely on modern, cross-platform technology, such as web (HTTP+SSL), SQL databases, and Java. This insures that your investment is not boxed in to a specific database or operating system.

### Scalability

Reflex is based on modern software architecture and systems: Java, web servers, databases and protocols. Combined with advanced features like load-balancing clustering and client re-targeting, its scalability is exceptional. From a single user HMI application to enterprise wide SCADA that spans service territories via corporate WANs to provide the base for a future Distribution Management System, Reflex is designed to expand to virtually any customer's requirements.

### Security

VThe Reflex was built with security in mind from the ground up. Communication channels are encrypted using SSL technology. SCADA projects use advanced role-based authentication, and can integrate seamlessly with corporate network security using Microsoft Active Directory®.

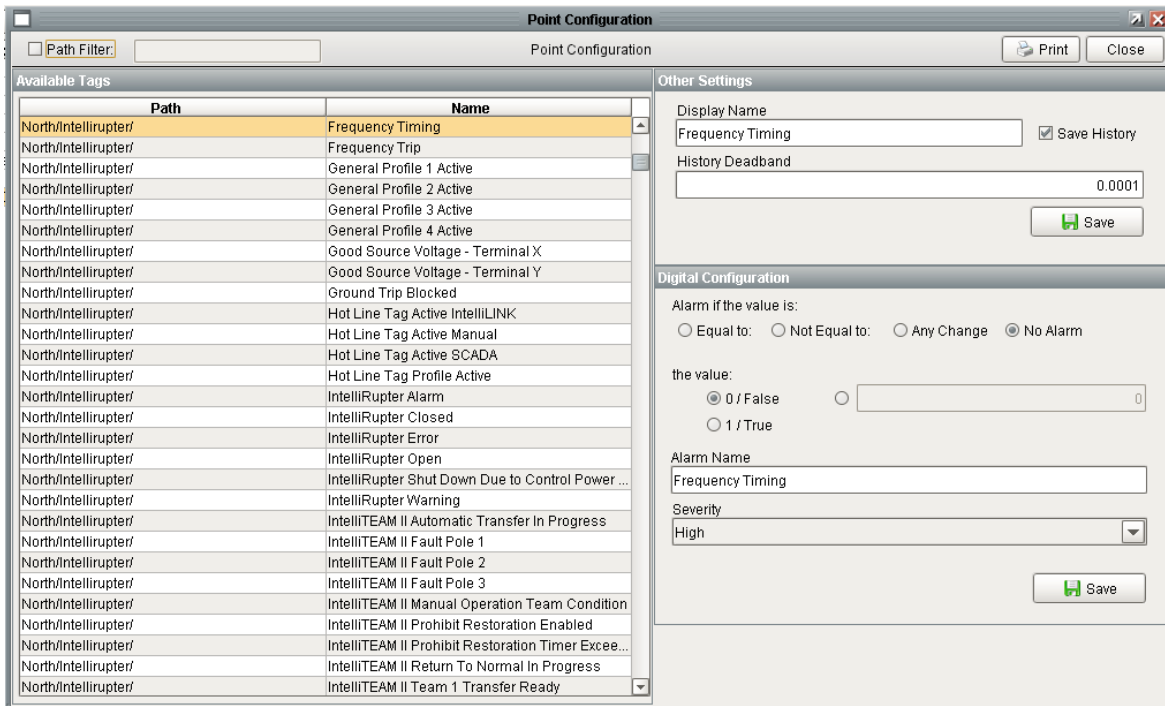
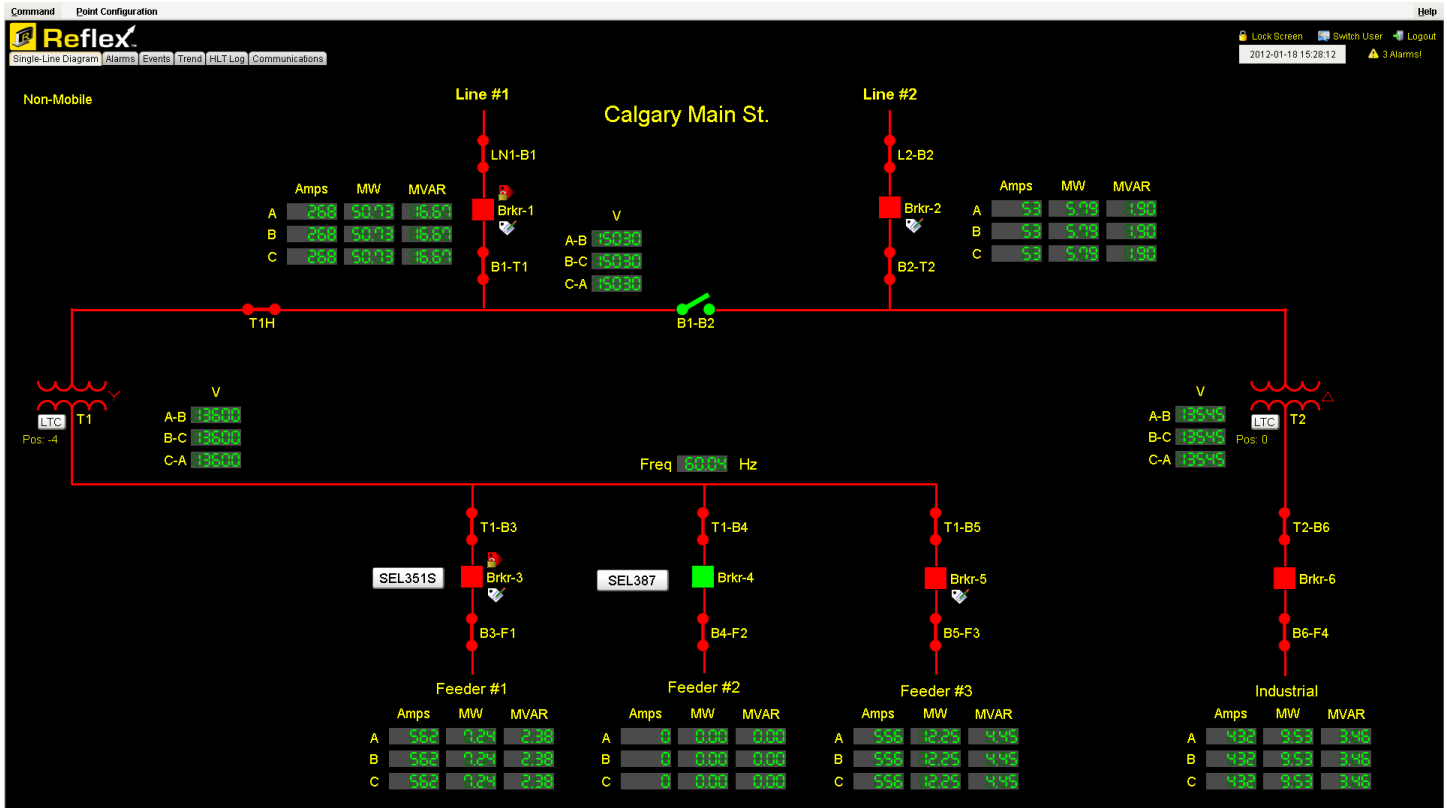
For additional information on our products and services, please visit our web site: [www.RuggedCom.com](http://www.RuggedCom.com)

### Alarm

The purpose built Alarm View gives users an immediate snapshot of all alarm states, with the ability to acknowledge and clear on a selected basis. Alarms can be configured for any real or pseudo point based on the following criteria:

- Binary change of state with the ability to customize alarm descriptions
- Analog dead bands with five severity levels
- Optionally send an Email or SMS text to a person or distribution list

## Screenshots



## Screenshots

**5802**

OVERCURRENT 1xyz FAULT [Reset]    OVERCURRENT 2xyz FAULT [Reset]

LOCAL SWITCH READY    TEAM READY    ALARM    BATTERY LOW

1xyz [Closed] [Trip] [Open]    2xyz [Closed] [Trip] [Open]

Op count: [Slider] [Open]    Op count: [Slider] [Open]

AUTO OPERATION 1xyz [Enable] [Disable]    AUTO OPERATION 2xyz [Enable] [Disable]

ENABLED DISABLED [Disable]    ENABLED DISABLED [Disable]

DEVICE STATUS			
CABINET DOOR	[Icon]	OPEN	
BATTERY VOLTAGE	[Icon]	NORMAL	
CABINET TEMPERATURE	[Icon]	NORMAL	
TEMPERATURE SENSOR ALARM	[Icon]	NORMAL	

INDIVIDUAL PHASE VALUES			
	VOLTAGE	CURRENT	DIRECTION
1x	[Value]	[Value]	SWARD
1y	[Value]	[Value]	SWARD
1z	[Value]	[Value]	SWARD
1neutral	[Value]	[Value]	
2x	[Value]	[Value]	SWARD
2y	[Value]	[Value]	SWARD
2z	[Value]	[Value]	SWARD
2neutral	[Value]	[Value]	

3 PHASE VALUES			
	MVA	MW	MVAR
1xyz	[Value]	[Value]	[Value]
2xyz	[Value]	[Value]	[Value]

View Detail Summary    Close

ENABLED    TRIP INST    COMM SOTF    50    51    81

RECLOSING STATE: RESET    CYCLE    LOCKOUT

FAULT TY...: A    B    C    N

GROUND ENABLED    HOT LINE TAG

RECLOSING ENABLED    AUX 1

REMOTE ENABLED    AUX 1

ALTERNATE SETTINGS    CLOSE    BREAKER CLOSED

LOCK    TRIP    BREAKER OPEN

## Screenshots

Command Point Configuration Help

**Reflex** Lock Screen Switch User Logout

Single-Line Diagram Alarm Summary SOE Log Trend HLT Log Communications 2012-01-11 13:15:09 3 Alarms!

Alarm Summary Excel Print

Device/Point:   Alarm:   Historical From: 01/10/2012 to 01/11/2012

Device/Point	Alarm	Severity	Alarm Time	Cleared Time	Acknowledged Time	Acknowledged by
West/5801/Phase C Current	Current too low	High	2012-01-09 13:26:35			
West/5801/Phase B Current	Current too low	High	2012-01-09 13:16:36			
West/5801/Phase A Current	Current too low	High	2012-01-09 13:06:25			
West/5801/Neutral Current	Current too low	High	2011-10-29 07:28:39		2011-10-31 16:17:47	admin
Substation XDNP Demo Data/Brkr4-BrkrStateBrkr4-BrkrState		High	2012-01-11 13:13:27	2012-01-11 13:13:27		
West/5801/Phase C Voltage	Really low voltage	High	2012-01-11 11:42:15	2012-01-11 12:32:45		
West/5801/Phase B Voltage	Really low voltage	High	2012-01-11 11:32:14	2012-01-11 12:22:44		
West/5801/Phase A Voltage	Really low voltage	High	2012-01-11 11:22:15	2012-01-11 12:12:45		
Substation XDNP Demo Data/Brkr6-BrkrStateBrkr6-BrkrState		High	2012-01-10 17:14:12	2012-01-10 17:14:12		
Substation XDNP Demo Data/Brkr5-BrkrStateBrkr5-BrkrState		High	2012-01-10 17:14:06	2012-01-10 17:14:06		
Substation XDNP Demo Data/Brkr3-BrkrStateBrkr3-BrkrState		High	2012-01-10 17:14:00	2012-01-10 17:14:00		
Substation XDNP Demo Data/Brkr2-BrkrStateBrkr2-BrkrState		High	2012-01-10 17:13:56	2012-01-10 17:13:56		
Substation XDNP Demo Data/Brkr1-BrkrStateBrkr1-BrkrState		High	2012-01-10 17:13:51	2012-01-10 17:13:51		
West/5801/Phase C Voltage	Really high voltage	High	2012-01-01 03:50:26	2012-01-09 13:16:55		
West/5801/Phase C Current	Dangerous - do not come near	High	2012-01-01 03:40:45	2012-01-09 13:26:16		
West/5801/Phase B Voltage	Really high voltage	High	2012-01-01 03:40:26	2012-01-09 13:06:46		
West/5801/Phase B Current	Dangerous - do not come near	High	2012-01-01 03:30:46	2012-01-09 13:16:15		
West/5801/Phase A Voltage	Really high voltage	High	2012-01-01 03:30:26	2012-01-09 13:04:16		
West/5801/Phase A Current	Dangerous - do not come near	High	2012-01-01 03:20:36	2012-01-09 13:06:06		

Acknowledge Alarm Acknowledge All Alarms

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Rev 1b-01/23/12

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