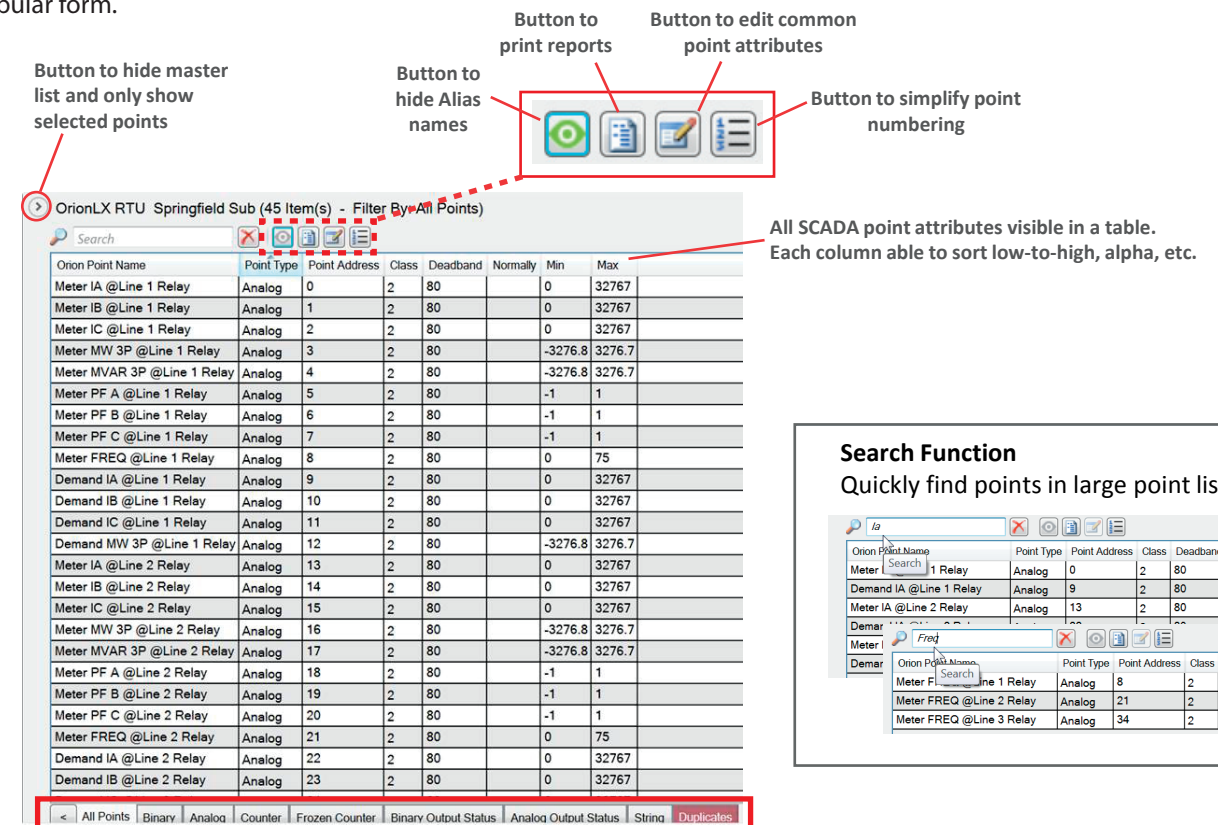


Recent Enhancements to the OrionLX DNP3 Server / Slave Protocol

Version 3.10 of the DNP3 Slave protocol, released June 12, 2014, provides new enhancements to simplify points list creation and editing. Key features are described below:

New Tabular Format for Selected Points

DNP3 SCADA points are selected from the master points list as they are today, but selected points are more easily viewed in tabular form.



Button to hide master list and only show selected points

Button to print reports

Button to edit common point attributes

Button to simplify point numbering

All SCADA point attributes visible in a table. Each column able to sort low-to-high, alpha, etc.

Orion Point Name	Point Type	Point Address	Class	Deadband	Normally	Min	Max
Meter IA @Line 1 Relay	Analog	0	2	80		0	32767
Meter IB @Line 1 Relay	Analog	1	2	80		0	32767
Meter IC @Line 1 Relay	Analog	2	2	80		0	32767
Meter MW 3P @Line 1 Relay	Analog	3	2	80		-3276.8	3276.7
Meter MVAR 3P @Line 1 Relay	Analog	4	2	80		-3276.8	3276.7
Meter PF A @Line 1 Relay	Analog	5	2	80		-1	1
Meter PF B @Line 1 Relay	Analog	6	2	80		-1	1
Meter PF C @Line 1 Relay	Analog	7	2	80		-1	1
Meter FREQ @Line 1 Relay	Analog	8	2	80		0	75
Demand IA @Line 1 Relay	Analog	9	2	80		0	32767
Demand IB @Line 1 Relay	Analog	10	2	80		0	32767
Demand IC @Line 1 Relay	Analog	11	2	80		0	32767
Demand MW 3P @Line 1 Relay	Analog	12	2	80		-3276.8	3276.7
Meter IA @Line 2 Relay	Analog	13	2	80		0	32767
Meter IB @Line 2 Relay	Analog	14	2	80		0	32767
Meter IC @Line 2 Relay	Analog	15	2	80		0	32767
Meter MW 3P @Line 2 Relay	Analog	16	2	80		-3276.8	3276.7
Meter MVAR 3P @Line 2 Relay	Analog	17	2	80		-3276.8	3276.7
Meter PF A @Line 2 Relay	Analog	18	2	80		-1	1
Meter PF B @Line 2 Relay	Analog	19	2	80		-1	1
Meter PF C @Line 2 Relay	Analog	20	2	80		-1	1
Meter FREQ @Line 2 Relay	Analog	21	2	80		0	75
Demand IA @Line 2 Relay	Analog	22	2	80		0	32767
Demand IB @Line 2 Relay	Analog	23	2	80		0	32767

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2014 UTILITY TECHNICAL SYMPOSIUM SERIES

For 2014, this valuable series focuses on customer application papers and tutorials on Cyber Security, IEC 61850, IEC 61131-3, PRC-002 Recording and web-based SCADA and HMI. Certificates will be provided to attendees for the non-commercial application and training portion of each symposium, typically four to six hours.

Please join us for these upcoming technical symposiums:

August 22 - Wisconsin Dells, Wisconsin

October 16 - Chicago, Illinois

To register for these and all upcoming events and webinars online, please visit our website at:
<http://www.novatechweb.com/events/>



Customer presents at the 2014 Minneapolis Technical Symposium

LATEST SOFTWARE

Orion5/5r Firmware Version: 1.41.0
OrionLX Release: 8.3
Orion NCD3 Version: 3.26
Bitronics M87x firmware: v4.07
Bitronics 70 Series Configurator: v4.04
Bitronics M57x firmware: v4.07
Bitronics 50 Series Firmware: v3.09
BiView: v3.03

NOVATECH IS RECOGNIZED FOR PA EXPORT IMPACT AWARD

NovaTech was recently awarded by Pennsylvania Governor Tom Corbett the 2014 Governor's ImpACT Award for Exporting. This award was given to a company that has significantly increased its export sales and the number of new foreign markets it sells to since 2011.

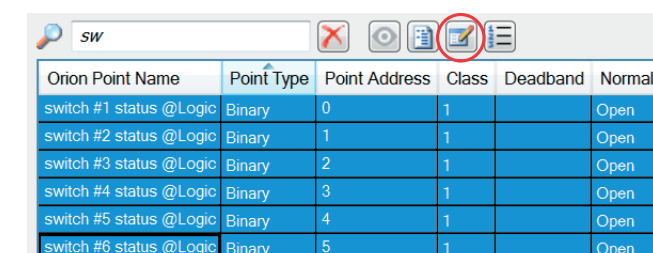
For the full story:

<http://www.novatechweb.com/export-award>

Edit Common Attributes for Selected Points

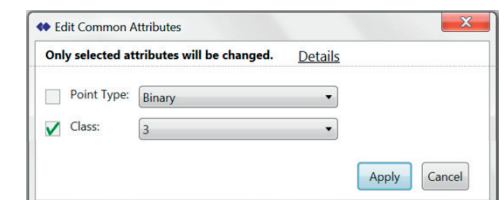
1. Select points that have an attribute that is common and must be edited to a different value. In this example the Class poll will be edited from Class 1 to Class 3.

2. Click on the "Edit Common Attributes" button.

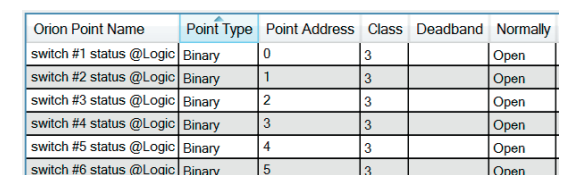


Orion Point Name	Point Type	Point Address	Class	Deadband	Normally
switch #1 status @Logic	Binary	0	1		Open
switch #2 status @Logic	Binary	1	1		Open
switch #3 status @Logic	Binary	2	1		Open
switch #4 status @Logic	Binary	3	1		Open
switch #5 status @Logic	Binary	4	1		Open
switch #6 status @Logic	Binary	5	1		Open

3. Select attribute to be change. Enter change and apply.



4. Done.



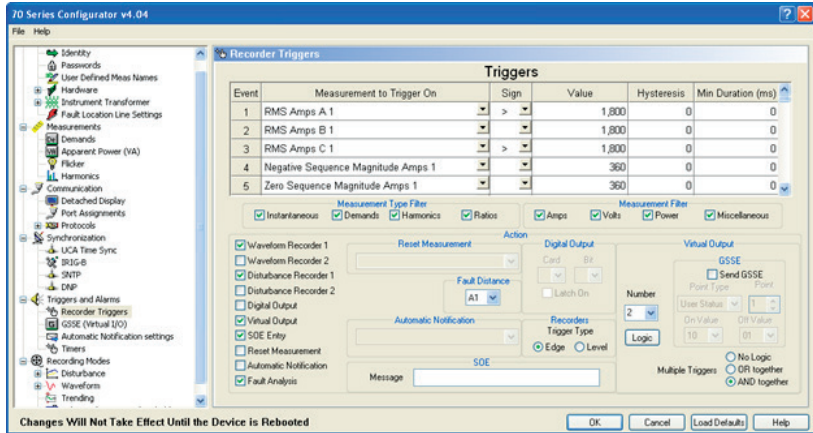
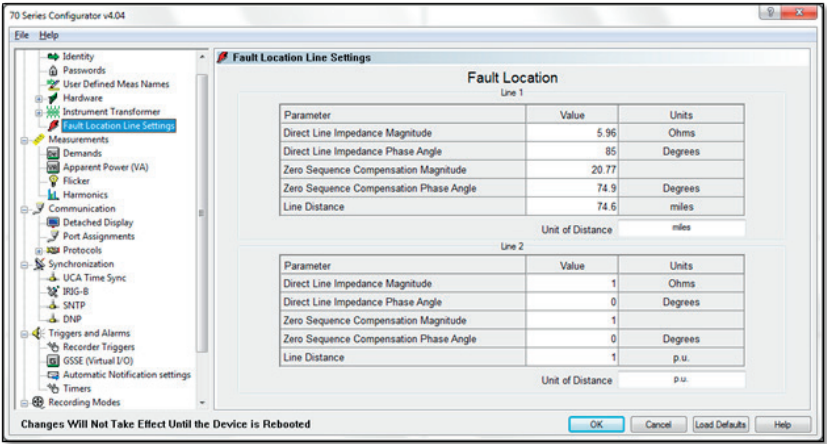
Orion Point Name	Point Type	Point Address	Class	Deadband	Normally
switch #1 status @Logic	Binary	0	3		Open
switch #2 status @Logic	Binary	1	3		Open
switch #3 status @Logic	Binary	2	3		Open
switch #4 status @Logic	Binary	3	3		Open
switch #5 status @Logic	Binary	4	3		Open
switch #6 status @Logic	Binary	5	3		Open

Using the Distance-to-Fault Function in Bitronics 70 Series

Perhaps you didn't know that the Bitronics 70 Series Single Line Recorders have the ability to provide a distance-to-fault determination. The 70 Series Recorders employ an impedance based Modified Takagi Method, as described in ANSI C37.114 to calculate a distance-to-fault, and this value is provided as a register or point value that can also be displayed on the optional 70 Series display. This Modified Takagi Method has the following characteristics:

- Well-recognized, standardized implementation
- Single-ended impedance-based algorithm
- Simple, doesn't require knowledge of source impedance
- Good for about ±5% accuracy on dead-short faults
- Good for line-line and line-ground faults

How does it work? The user fills in some information on the line settings page of the 70 Series Configurator software program. This includes the line length, direct line impedance and phase angle magnitude, and the zero sequence compensation magnitude and phase angle as shown in the example screenshot to the right.



The user then sets up triggers on the trigger page for each phase (triggers can include exceeding RMS threshold values, status inputs from other devices like protection relays, or logical combinations of event conditions) and selects “Fault Analysis” for the corresponding trigger(s). The phase that the trigger condition applies to is indicated in the “Fault Distance” Box. Other recordings (waveform capture, disturbance recording, Sequence of Event) can be selected as well with each trigger.

Logic for the typical condition shown above is shown in the following table:

Event	CAUSE			EFFECT				
	Condition			VO	Logic	Fault Anal.	WR1	DR1
1	RMS Amps A 1	>	1,800	2	AND			
2	RMS Amps B 1	>	1,800	3	AND			
3	RMS Amps C 1	>	1,800	4	AND			
4	Negative Sequence Magnitude Amps 1	>	360	1	OR			
5	Zero Sequence Magnitude Amps 1	>	360	1	OR			
6	Virtual Output 1	-	1	2	AND			
7	Virtual Output 1	-	1	3	AND			
8	Virtual Output 1	-	1	4	AND			
9	Virtual Output 2	-	1			A 1	X	X
10	Virtual Output 3	-	1			B 1	X	X
11	Virtual Output 4	-	1			C 1	X	X

Imbalance, either line-line OR line-ground as indicated by the Sequence Magnitudes, asserts Virtual Output 1 (VO1), a “soft point.” High IA AND the soft point representing imbalance (VO1), asserts VO2. This in turn triggers the Fault Analysis calculation, disturbance recordings, and an entry in the SOE Log. The B and C phases would be setup similarly using VO3 and VO4 respectively.

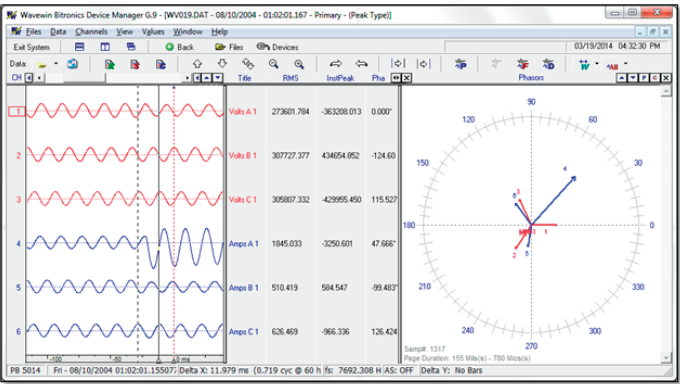
What is the Outcome?

When triggered, the recorder determines:

- Distance to fault
- Type of fault (line-line, line-ground, phases involved)
- Peak fault current

The outputs from the distance-to-fault calculation can include:

- Local display
- DNP3 SCADA Points
- Binary targets (discrete I/O, communications)
- SOE Log entry



Oscillography for fault analysis, saved in Comtrade format, downloaded via FTP.

DNP Points		
Point	Measurement	
AI:53		
AI:54	Fault Type Bus 1	
AI:55	Fault Distance XAN1	
AI:56	Fault Distance XBN1	
AI:57	Fault Distance XCN1	
AI:58	Fault Distance XAB1	
AI:59	Fault Distance XBC1	
AI:60	Fault Distance XCA1	

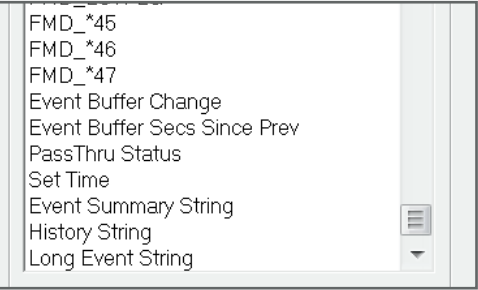
Adding the DNP Points for Fault Distance

70D		
Measurements to Display		
Measurement 1	Fault Distance Top Display Bus1 usr	
Measurement 2	Fault Distance Mid Display Bus1 usr	
Measurement 3	Fault Distance Bot Display Bus1 usr	
Alphanumeric Display	Distance	

Setting the Display to Show Fault Distance

Did You Know?

The “Short Event Summary” text string obtained from SEL® relays (using SEL Master Protocol) can be directly mapped to the new DNP3 Object 110 recently added to the OrionLX DNP3 Server (Slave) Protocol. This means that SCADA Masters supporting DNP3 Object 110 can now directly acquire, display and log Short Event Summary data. This represents a big improvement over past techniques that required reading multiple points, interpreting numerical codes, or parsing.



Mapping the data from SEL Master Protocol to DNP3 Server (Slave) is straightforward: The “Event Summary String” point is available for selection in SEL® default files. Note the other String points for “History” and “Long Event” in the screenshot to the left.

The “Event Summary String” point can then be mapped to DNP Server (Slave). Select “String” as the point type:

Orion Point Name	Point Type	Point Address	Class	Deadband	Normally	Min	Max	RTU
Event Summary String @Device 1	String	0	1			0	0	RTU 1

Other OrionLX applications such as Math and Logic, HMI, email, and WEBserver SCADA can manipulate and annunciate the text string available from the Event Summary String obtained from SEL relays.