



September 29, 2015  
Document Revision D  
© 2015 by NovaTech, LLC

NovaTech, LLC  
13555 West 107<sup>th</sup> Street  
Lenexa, KS 66215  
(913) 451-1880  
[www.novatechweb.com](http://www.novatechweb.com)  
[orion.support@novatechweb.com](mailto:orion.support@novatechweb.com)  
[orion.sales@novatechweb.com](mailto:orion.sales@novatechweb.com)

© Copyright 2001, 2015 by NovaTech, LLC

All Rights Reserved. All NovaTech trademarks are owned by NovaTech, LLC. Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. All other trademarks are the property of their respective owners.

### DISCLAIMER

This manual contains information that is correct to the best of NovaTech's knowledge. It is intended to be a guide and should be used as such. It should not be considered a sole source of technical instruction, replacing good technical judgment, since all possible situations cannot be anticipated. If there is any question as to the installation, configuration, or use of this product, contact NovaTech, LLC at (913) 451-1880.

To ensure that the equipment described in this User Manual, as well as all equipment connected to and used with it, operates in a satisfactory and safe manner, all applicable local and national codes that apply to installing and operating the equipment must be followed. Since these codes can vary geographically and can change with time, it is the user's responsibility to determine which codes and standards apply, and to comply with them.



**Failure to follow the instructions provided in this manual, and/or failure to comply with applicable codes and safety standards can result in damage to this equipment, damage to connected devices, and/or serious injury to personnel.**

All links to external websites have been verified as correct and appropriate at the time of the publication of this document. However, these links and websites, being outside of NovaTech LLC's control, are subject to change and may no longer be correct. In this case, please contact:

[orion.support@novatechweb.com](mailto:orion.support@novatechweb.com)







The documentation for the OrionLX and OrionLXm is structured as follows.

Manual name (see cover page of each manual)	Purpose
Quick Startup Guide	Describes out-of-the-box setup for quick installation.
Orion LX User Manual or OrionLXm User Manual	<ul style="list-style-type: none"> <li>• Description of OrionLX/OrionLXm hardware.</li> <li>• Setup of configuration using NCD (NovaTech Configuration Director)</li> <li>• OrionLX/OrionLXm:                             <ul style="list-style-type: none"> <li>○ Configuration of OrionLX/OrionLXm features</li> <li>○ Runtime features</li> </ul> </li> <li>• Functions of Orion MMI console</li> <li>• Setup and operation of the video option (-MMB) (OrionLX only)</li> </ul>
OrionLX Applications Manual	Specific setup and operation of OrionLX features, such as firewall, SFTP access, installation of SSL certificate, access to OrionLX's SQL database with Microsoft Access® and Excel®, and others.
Software Manuals	Software manuals explain all aspects of setup and operation of protocols such as DNP3 master and software options (Archive, Logic, DA Logic, etc.)
Tech Notes	Tech Notes provide solutions for general integration, such as scaling or setup of RS-485 networks.
Field Instructions	Field Instructions provide step-by-step instructions for installation of new hardware or software in the field.

See also [Appendix B – Additional References](#) for a list and locations of the recommended reference manuals.

## Styles and Symbols

In this document, fonts, text styles and symbols are used to distinguish standard text from keyboard input, program text, GUI messages, and hyperlinks as follows. Warnings and safety notices are indicated with ANSI symbols.

Displayed text or symbol	Description
This is normal text.	Standard text.
See <a href="#">OrionLX Setup</a>	Hyperlink to text in same document.
<a href="http://www.novatechweb.com">www.novatechweb.com</a>	Hyperlink to website.
<a href="mailto:orion.support@novatechweb.com">orion.support@novatechweb.com</a>	Clicking on this link starts email client on PC.
See <i>OrionLX User Manual</i>	Document name.
<b>Minimum value</b>	Menu item or text displayed by software.
<b>Name of the data point</b>	Text to be entered in input field or window.
<b>Save</b>	GUI button to be clicked.
<b>if frequency &lt; 60.0 then</b>	Program code.
<Enter>, <Ctrl>+<G>, <G>	Key to be pressed.
	This yellow triangle indicates a warning that must be observed by the users in order to avoid possible equipment damage or personal injury.
	This yellow triangle indicates an electrical hazard.
	Electrostatic sensitive device requires proper handling and grounding procedures to avoid equipment damage.
	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

Note that depending on the Windows® display settings on the computer running NCD, some of the screen shot details may appear differently than those shown in this manual. The screen shots in this manual have been taken using the setting “Windows Classic” which is available on Windows XP®, Windows Vista® and Windows 7®.

**Table of Contents**

**I. Introduction..... 7**

**II. NCD Port Configuration ..... 8**

    Setup of IEC 61850 Port..... 8

    Port Menu ..... 9

    Device Menu..... 11

    Inputs Menu..... 18

    Outputs Menu..... 20

**Appendix A – Tools and Buttons on the Input and Output Menus..... 22**

    1. Display/Hide Point Name List..... 22

    2. Text Filter..... 22

    3. Display/Hide Alias Name..... 23

    4. View Report ..... 23

    5. Edit Common Attributes ..... 23

    6. Font Size..... 25

    7. Slider Bar..... 25

**Appendix B – Additional References ..... 26**

**List of Figures**

**Figure 1: Configure New Port for IEC 61850 Client ..... 8**

**Figure 2: Select IEC 61850 as Protocol..... 8**

**Figure 3: Port Menu ..... 9**

**Figure 4: Port Options ..... 9**

**Figure 5: IEC61850 Device Menu..... 11**

**Figure 6: IEC61850 Device Parameters..... 12**

**Figure 7: Refresh, Fix, Import Buttons ..... 12**

**Figure 8: File Import Window..... 13**

**Figure 9: List with Imported Device Files..... 13**

**Figure 10: Device Configuration..... 14**

**Figure 11: Configured RCBs..... 16**

**Figure 12: GOOSE Control Blocks Set Up in Server Device ..... 16**

**Figure 13: Selection of GOOSE Variables ..... 17**

**Figure 14: IEC61850 Input Points ..... 18**

**Figure 15: Inputs Point Tabs..... 19**

**Figure 16: IEC61850 Output Points ..... 20**

**Figure 17: Outputs Point Filter ..... 21**

**Figure 18: Tools on Input Menu and Output Menu..... 22**

**Figure 19: Text Filter..... 22**

**Figure 20: View Report ..... 23**

**Figure 21: Edit Common Attributes ..... 24**

**Figure 22: Edit Common Attributes - Details ..... 24**

**Figure 23: Font Size Slider ..... 25**

**Figure 24: Slider Bar ..... 25**

---

**List of Tables**

<b>Table 1: Port Options Commands .....</b>	<b>9</b>
<b>Table 2: General Port Options .....</b>	<b>10</b>
<b>Table 3: Device Configuration Parameters.....</b>	<b>16</b>
<b>Table 4: Inputs Point Tabs .....</b>	<b>19</b>
<b>Table 5: Outputs Point Filter Tabs .....</b>	<b>21</b>
<b>Table 6: NovaTech Documentation .....</b>	<b>26</b>

## I. Introduction

The IEC 61850 Client Module enables the Orion to operate as a client or master to IEC 61850 servers such as IEDs, meters, and relays. The IEC 61850 Client can be set up to poll one or more slave devices in the field.

Within the Orion, the data polled by the IEC 61850 Client from the field device(s) is made available to any Orion slave port (through which master stations communicate with the Orion), as well as to an Orion logic module if present. Likewise, commands can be sent to the field device(s). The output commands are either received on one of the Orion's slave ports, or generated by an Orion logic module. In both cases, the output point must be mapped to the correct field device and point address for the IEC 61850 Client.

The IEC 61850 Client Module is available on both the OrionLXm and the OrionLX-CPX. When the term "OrionLX" is used in this manual, it refers to these two products, not the standard OrionLX.

For general information regarding IEC 61850 which is beyond the scope of this manual, refer to the International Electromechanical Commission (IEC) website: [www.iec.ch](http://www.iec.ch).

## II. NCD Port Configuration

### Setup of IEC 61850 Port

The IEC 61850 Client is set up on an Ethernet port of the OrionLX as follows. Note that only one IEC 61850 Client port can be set up on the Orion. Multiple IEC 61850 server devices can be handled by this IEC 61850 Client port.

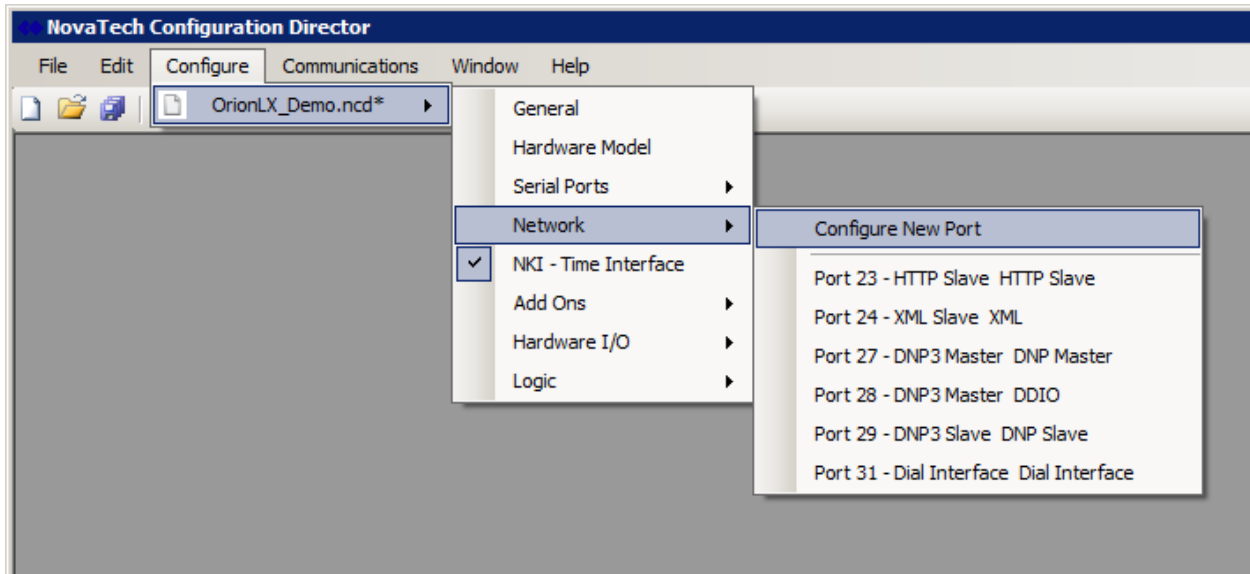


Figure 1: Configure New Port for IEC 61850 Client

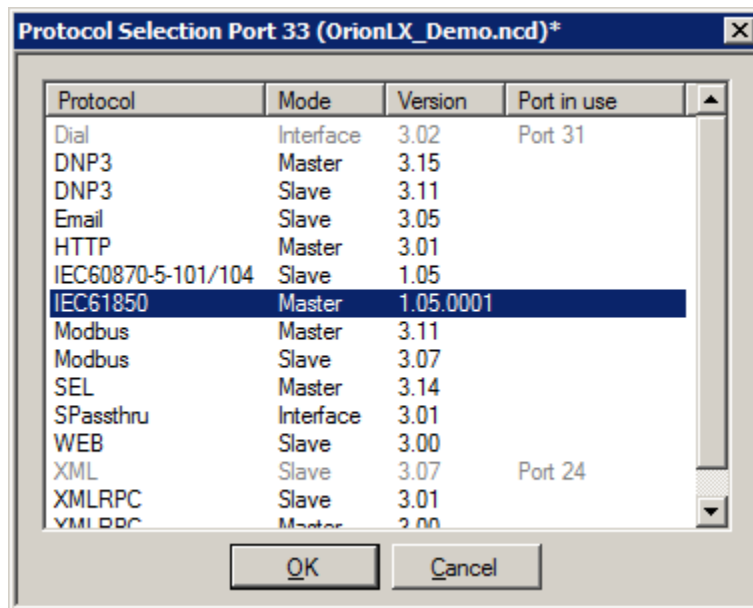


Figure 2: Select IEC 61850 as Protocol



### Port Menu

After the IEC61850 protocol is selected, the Port menu is displayed for configuring the general port options of the IEC 61850 Client.

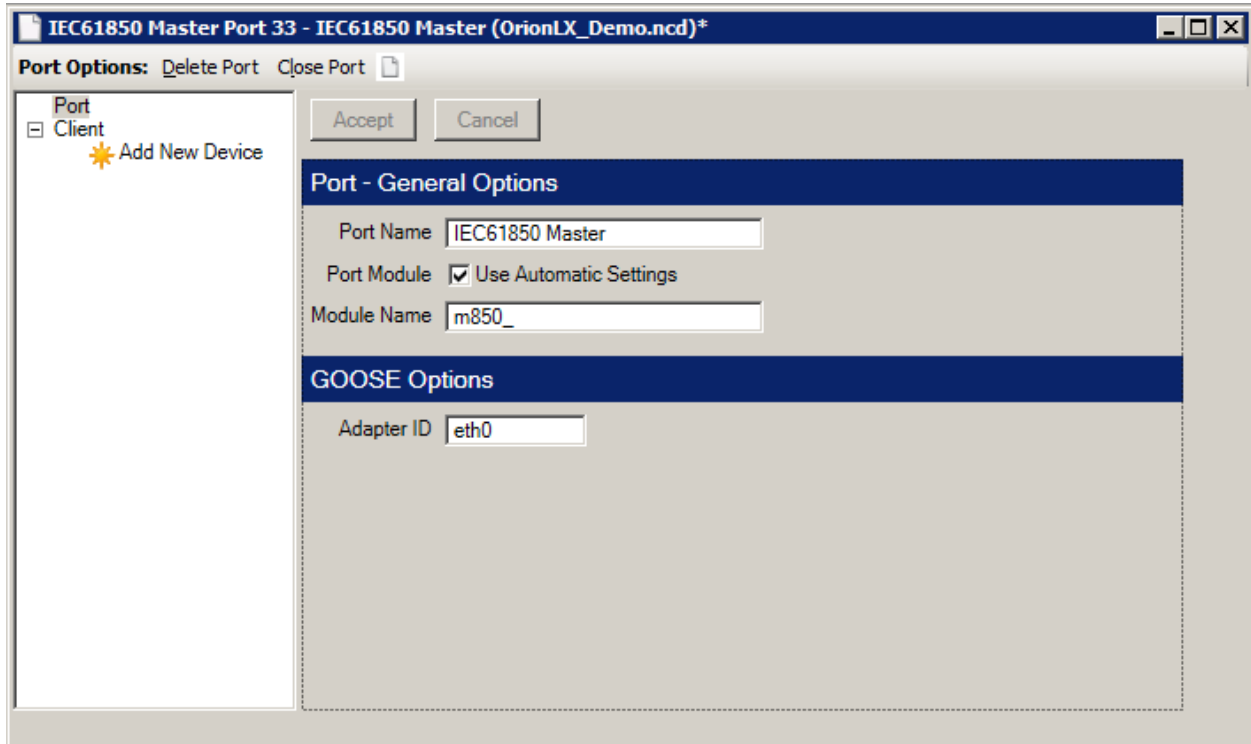


Figure 3: Port Menu

At the top of the above menu, as well as the other IEC 61850 menus, the Port Options menu is displayed (Figure 4).



Figure 4: Port Options

Command	Description
Delete Port	Removes the IEC 61850 Client and all points on the port from the configuration.
Close Port	Closes the IEC 61850 Client menu.

Table 1: Port Options Commands

First, configure the port parameters as explained in the table below. Once all parameters have been set up, click **Accept**. Then click **Add New Device** in the upper left portion of the above menu ([Figure 3](#)), and proceed to the [Device Menu](#).

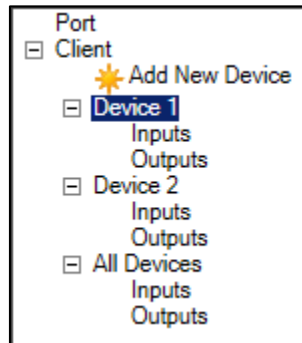
Parameter	Description
Port Name	Defines the port name used in the NCD configuration program and the name displayed in the Orion menus. The default name is <code>IEC61850 Master</code> . However, entering a port name that describes its purpose will provide self-explanatory diagnostic menus when the Orion is operating. The name can be up to 30 characters long and contain all printable characters except @, &, [, ], ', ", =, or commas.
Port Module Module Name	The default settings must not be changed. Only the latest version of the driver is stored on the Orion's flash memory because package installation requires removal of previous packages. If a previous version of a driver must be executed, the driver must be transferred to the Orion from a previous Orion package. Note that this overwrites the current version of the driver. Contact NovaTech technical support if this step is required.
Adapter ID	The IEC 61850 Client operates on only one of the Ethernet ports of the OrionLX. This Ethernet port must be specified in this field. If using an OrionLXm, the available Ethernet ports are eth0 and eth1. If using an OrionLX-CPX, the available Ethernet ports are enp3s0, enp3s1, and enp4s0 which are labeled eth0, eth1, and eth2 on the OrionLX-CPX enclosure.

**Table 2: General Port Options**

## Device Menu

To add a device, click **Add New Device** ([Figure 5](#)) at the top of the left pane (see [Figure 3](#)). A new device labeled **Device 1** is displayed with subheadings of **Inputs** and **Outputs**. Additional devices can be added by clicking **Add New Device** again. The next available device number in NCD will be assigned to the next additional device. Each device represents an IEC 61850 server device that the Orion will communicate with.

Also, a menu item labeled **All Devices** with **Inputs** and **Outputs** subheadings is displayed. The input and output points of all devices are displayed when this menu item is selected.



**Figure 5: IEC61850 Device Menu**

Each device's parameters are configured in the Device menu ([Figure 6](#)).

After configuring the device parameters as described in this section, click on **Inputs** and **Outputs** below each device to configure that device's input and output points. For detailed descriptions, see the chapters [Inputs Menu](#) and [Outputs Menu](#).

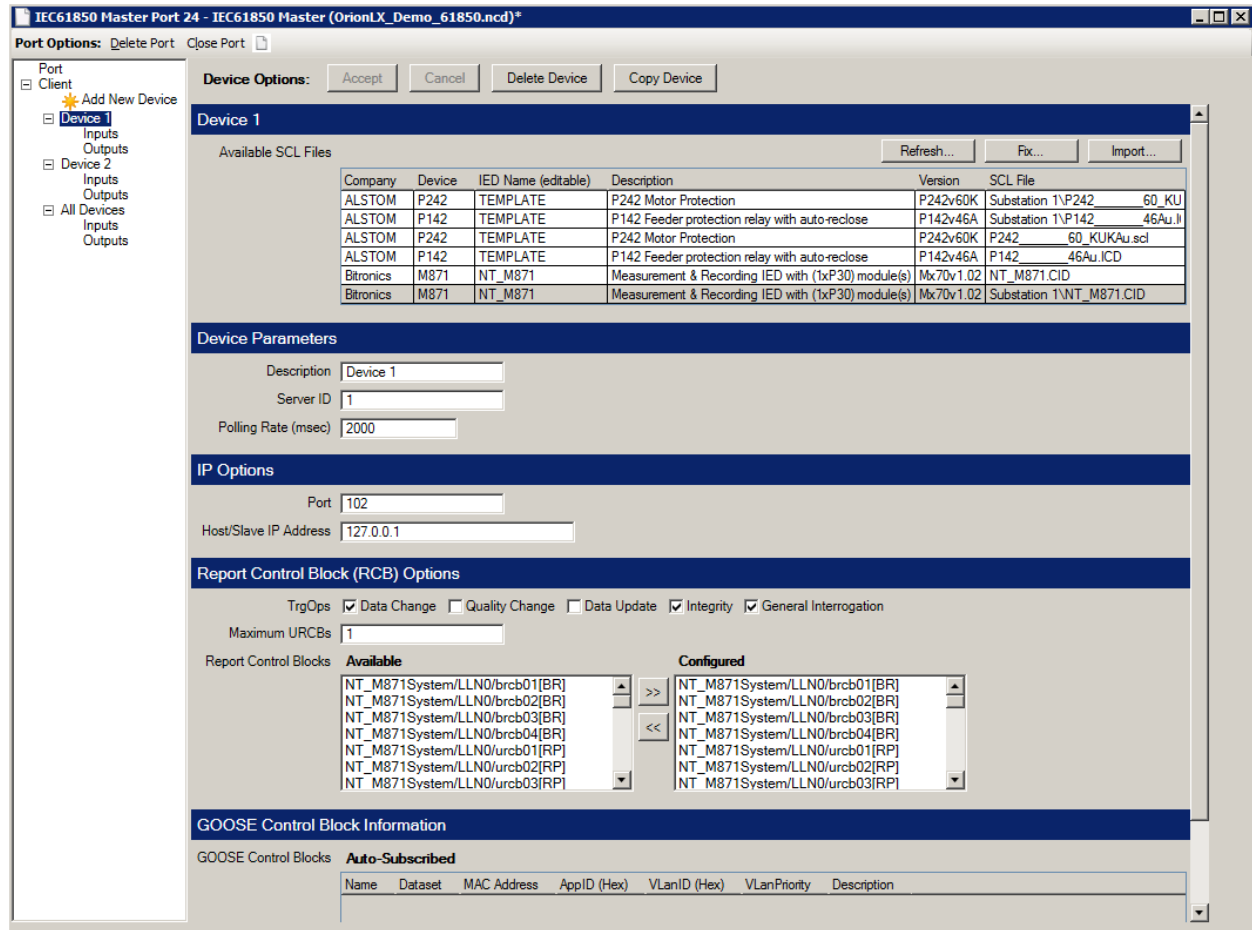


Figure 6: IEC61850 Device Parameters

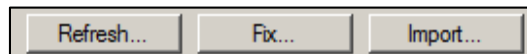


Figure 7: Refresh, Fix, Import Buttons

The IEC 61850 Client must import the .scl, .icd, or .cid file of the IEC 61850 server device from which the client will obtain data. These files contain the IEC 61850 server configuration and are generated with the software provided by the manufacturer of the IEC 61850 server device (IED, meter, relay). Clicking the **Import...** button opens the following window ([Figure 8](#)) for selection of the appropriate .scl, .icd, or .cid file.

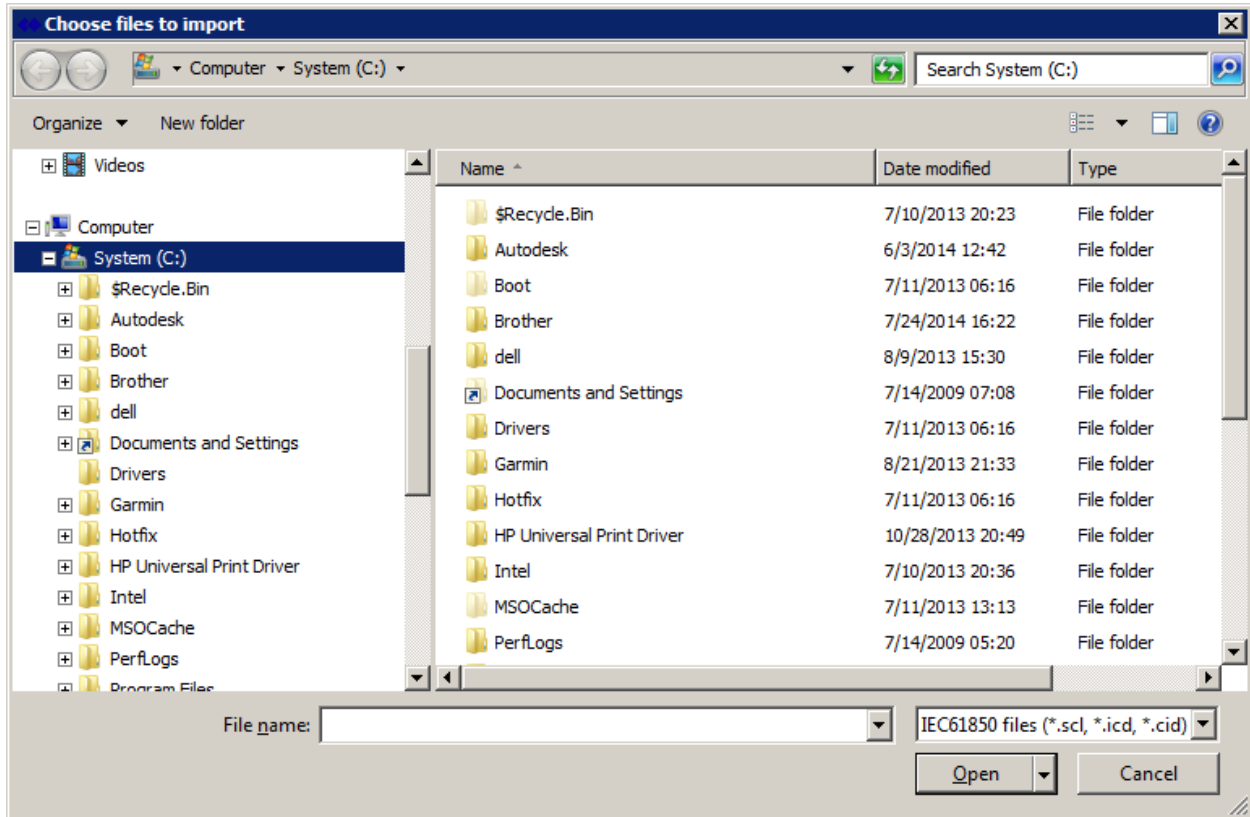


Figure 8: File Import Window

The Company, Device, IED Name, Description, Version, and SLC File name from the imported file are now added to the following window.

Choose IED/SCL File					
Company	Device	IED Name (editable)	Description	Version	SCL File
ABB	REF615	TEMPLATE	REF615	E	REF615.cid
AREVA	P546	TEMPLATE	P544/P546 Current Differential with Distance Protection - 2 sets of CTs	P546v57A	P546_57_K_B.icd
AREVA	P546	TEMPLATE	P544/P546 Current Differential with Distance Protection - 2 sets of CTs	P546v57A	P546_57_K_A.icd
Bitronics	M571	M571_103	Measurement & Recording IED with digital IO	Mx70v1.02	M571_103.CID
Bitronics	M871	NT_M871	Measurement & Recording IED with (1xP30) module(s)	Mx70v1.02	NT_M871.CID
Unknown	IEC61850 IED	Client3	Client3		REF615.cid
Unknown	IEC61850 IED	Client5	Client5		REF615.cid
Unknown	IEC61850 IED	Client4	Client4		REF615.cid
Unknown	IEC61850 IED	Client2	Client2		REF615.cid

Figure 9: List with Imported Device Files

SCL Files Company: ABB Device: REF615 IED Name: Dev7343 Refresh... Fx... Import...

Choose IED/SCL File

Company	Device	IED Name (editable)	Description	Version	SCL File
ABB	REF615	Dev7343	REF615	E	REF615.cid
AREVA	P546	TEMPLATE	P544/P546 Current Differential with Distance Protection - 2 sets of CTs	P546v57A	P546_57_K_B.icd
AREVA	P546	TEMPLATE	P544/P546 Current Differential with Distance Protection - 2 sets of CTs	P546v57A	P546_57_K_A.icd
Bitronics	M571	M571_103	Measurement & Recording IED with digital IO	Mx70v1.02	M571_103.CID
Bitronics	M871	NT_M871	Measurement & Recording IED with (1xP30) module(s)	Mx70v1.02	NT_M871.CID
Unknown	IEC61850 IED	Client3	Client3		REF615.cid
Unknown	IEC61850 IED	Client5	Client5		REF615.cid
Unknown	IEC61850 IED	Client4	Client4		REF615.cid
Unknown	IEC61850 IED	Client2	Client2		REF615.cid

**Device Parameters**

Description: Device 4  
 Server ID: 1  
 Polling Rate (msec): 2000

**IP Options**

Port: 102  
 Host/Slave IP Address: 192.168.0.254

**Report Control Block (RCB) Options**

TrgOps:  Data Change  Quality Change  Data Update  Integrity  General Interrogation  
 Maximum URCBs: 1

Report Control Blocks: Available

Dev7343LD0/LLN0/rcbStatNrmIA01[BR]
Dev7343LD0/LLN0/rcbStatNrmIA02[BR]
Dev7343LD0/LLN0/rcbStatNrmIA03[BR]
Dev7343LD0/LLN0/rcbStatNrmIA04[BR]
Dev7343LD0/LLN0/rcbStatNrmIA05[BR]
Dev7343LD0/LLN0/rcbStatNrmIB01[BR]
Dev7343LD0/LLN0/rcbStatNrmIB02[BR]

Configured

**GOOSE Control Block Information**

GOOSE Control Blocks: Auto-Subscribed

Name	Dataset	MAC Address	AppID (Hex)	VlanID (Hex)	VlanPriority	Description

Figure 10: Device Configuration

The following parameters are configured in the above menu.

Tab	Description
IED Name (editable)	Upon import of a file, the IED name is initially set to a placeholder name such as TEMPLATE (Figure 10). Before the file can be used to set up a device, a specific device name must be entered. The device name entered here (example: Dev7343) is prefixed to the names of the device's report control blocks in the Report Control Block (RCB) Options section (example: Dev7343LD0/LLN0/rcbStatNrmIA01[BR]). The maximum device name length is 8 characters. Only letters, digits, and underscore are permitted.

Tab	Description												
<b>Device Parameters</b>													
Description	This is the device name that is used throughout the Orion to identify the points from that device. The default names are Device 1, Device 2, etc. However, entering names such as CB266/21P that describe the device's function in the application provide self-explanatory MMI menus when the Orion is operating. This string can be up to 30 characters long, and can contain all printable characters except @, [, ], ', ", =, and commas.												
Server ID	Enter a server ID. By default, NCD assigns 1 to the first configured IEC 61850 server device and increments the server ID for each additional device. Each server device must have its unique server ID.												
Polling Rate (msec)	The polling rate applies only to points that are not defined in datasets associated with RCBs. Polling is only used as a fallback mechanism for points not associated with an RCB or if the RCB cannot be enabled. The range should be 100ms to 10,000ms. Default value: 2,000ms.												
<b>IP Options</b>													
Port	The port number of the server device defaults to the value imported with the .scl, .icd, or .cid file. It must be changed as needed depending on the port number used by the specific IEC 61850 server device.												
Host/Slave IP Address	The IP address of the server device defaults to the value imported with the .scl, .icd, or .cid file. It must be changed as needed depending on the IP address of the specific IEC 61850 server device.												
<b>Report Control Block (RCB) Options</b>													
TrgOps	<p>Report Control Blocks are sent by the server device based on the event types in the server device which are checked below:</p> <p>TrgOps <input checked="" type="checkbox"/> Data Change <input type="checkbox"/> Quality Change <input type="checkbox"/> Data Update <input checked="" type="checkbox"/> Integrity <input checked="" type="checkbox"/> General Interrogation</p> <table border="1" data-bbox="431 1270 1421 1801"> <thead> <tr> <th data-bbox="431 1270 727 1318">Trigger</th> <th data-bbox="727 1270 1421 1318">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="431 1318 727 1396">Data Change</td> <td data-bbox="727 1318 1421 1396">When deadbanded value changes, a report is triggered with one data item.</td> </tr> <tr> <td data-bbox="431 1396 727 1507">Quality Change</td> <td data-bbox="727 1396 1421 1507">When quality of data changes (for example, goes from OK to Invalid or questionable), a report is triggered with one data item.</td> </tr> <tr> <td data-bbox="431 1507 727 1585">Data Update</td> <td data-bbox="727 1507 1421 1585">When counter data is frozen, a report is triggered with one data item. This setting is typically not used.</td> </tr> <tr> <td data-bbox="431 1585 727 1696">Integrity</td> <td data-bbox="727 1585 1421 1696">Periodically, all data items are triggered in the report. User selects the "integrity period", for example, every 4 seconds for simple SCADA.</td> </tr> <tr> <td data-bbox="431 1696 727 1801">General Interrogation</td> <td data-bbox="727 1696 1421 1801">All data items are triggered upon command from the client (like "Integrity" except "Integrity" is self-triggered by server and GI is triggered by client).</td> </tr> </tbody> </table>	Trigger	Description	Data Change	When deadbanded value changes, a report is triggered with one data item.	Quality Change	When quality of data changes (for example, goes from OK to Invalid or questionable), a report is triggered with one data item.	Data Update	When counter data is frozen, a report is triggered with one data item. This setting is typically not used.	Integrity	Periodically, all data items are triggered in the report. User selects the "integrity period", for example, every 4 seconds for simple SCADA.	General Interrogation	All data items are triggered upon command from the client (like "Integrity" except "Integrity" is self-triggered by server and GI is triggered by client).
Trigger	Description												
Data Change	When deadbanded value changes, a report is triggered with one data item.												
Quality Change	When quality of data changes (for example, goes from OK to Invalid or questionable), a report is triggered with one data item.												
Data Update	When counter data is frozen, a report is triggered with one data item. This setting is typically not used.												
Integrity	Periodically, all data items are triggered in the report. User selects the "integrity period", for example, every 4 seconds for simple SCADA.												
General Interrogation	All data items are triggered upon command from the client (like "Integrity" except "Integrity" is self-triggered by server and GI is triggered by client).												

Tab	Description
Maximum URCBs	Set the maximum number of unbuffered RCB blocks. Check the server device manual for specific details. Default value: 1
Report Control Blocks	The RCBs in the Available pane are imported from the .scl, .icd, or .cid file. They can be moved to the Configured pane by highlighting the desired RCBs and clicking on the >> . Likewise, they can be removed from the Configured pane by clicking the << button. The data in the RCBs in the Configured pane are retrieved and stored in the Orion realtime database (see example in <a href="#">Figure 11</a> ).
<b>GOOSE Control Block Information</b>	
GOOSE Control Blocks	Any GOOSE control blocks which are set up in the server device are auto-subscribed and listed as shown in the example in <a href="#">Figure 12</a> .

Table 3: Device Configuration Parameters

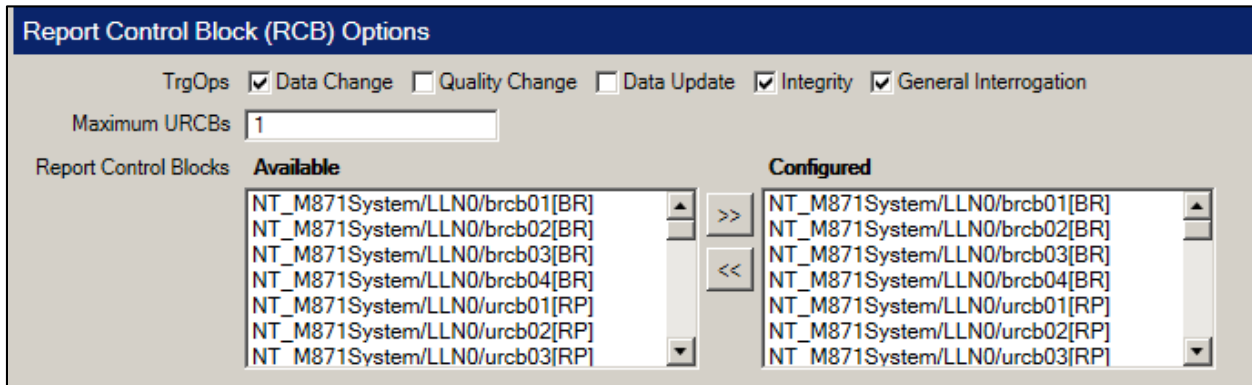


Figure 11: Configured RCBs

GOOSE Control Block Information							
GOOSE Control Blocks	Auto-Subscribed						
Name	Dataset	MAC Address	AppID (Hex)	VLANID (Hex)	VLANPriority	Description	
NT_M871System/LLN0/gcb01[GO]	Dataset1	01-0C-CD-01-00-01	0001	1F1	4	System GOOSE Control Block 1	

Figure 12: GOOSE Control Blocks Set Up in Server Device

Then the data points in the GOOSE control block can be selected for transfer to the Orion realtime database as shown in the following figure ([Figure 13](#), see also chapter [Inputs Menu](#)). Simply set the checkbox(es) for the desired point(s) and click >> to add them to the Orion Point Name window.



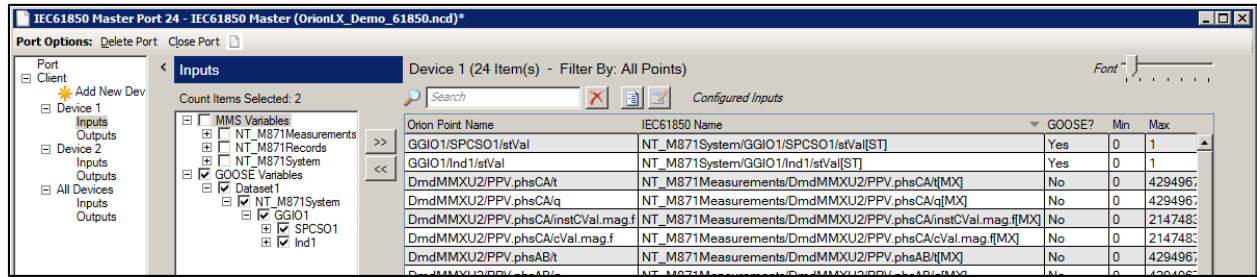


Figure 13: Selection of GOOSE Variables

After the desired parameters have been configured, click **Accept**. Once the updates have been accepted, the Inputs and Outputs menu setting options in the left pane are activated.

## Inputs Menu

The Inputs menu displays the available IEC61850 input points for selection for the Orion realtime database. The variables are presented in a familiar “tree” format, allowing specific selection of desired elements. The tree structure represents the logical structure of a device and its nodes, objects, and attributes. The + and – selectors expand or contract the options list. Clicking the checkbox selects or deselects the listed variable. Clicking the “parent” checkbox automatically selects all related “child” variables. However, if the “parent” checkbox is selected, the “child” checkboxes remain customizable. Selecting or deselecting a child element allows configuration for each variable listed.

For a complete description of all available tools and buttons in this menu, see [Appendix A – Tools and Buttons on the Input and Output Menus](#).

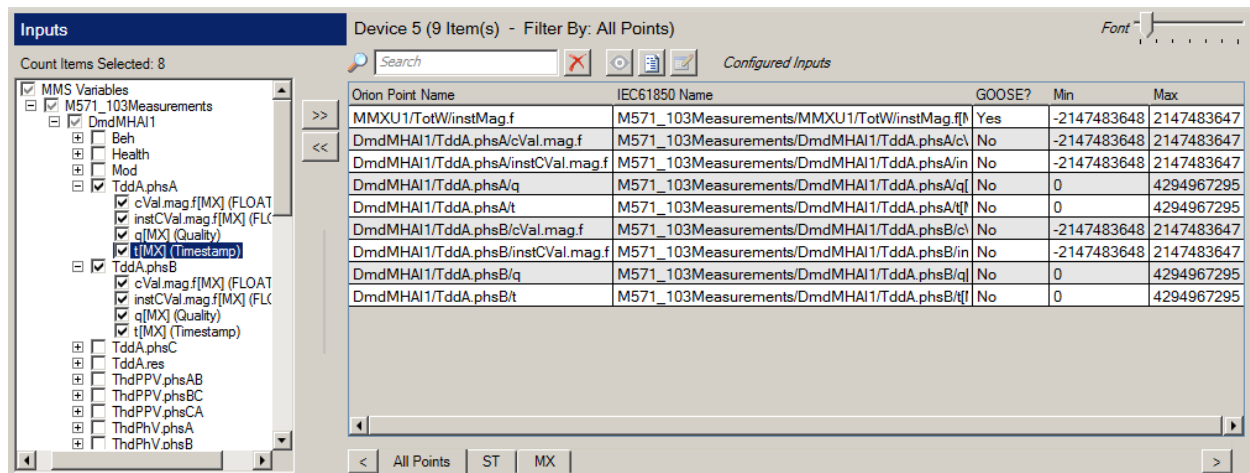


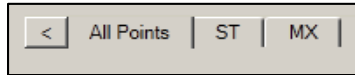
Figure 14: IEC61850 Input Points

Add the selected input points to the Orion Point Name pane by clicking **>>**.

To rename input points in the Orion Point Name field or enter a new minimum or maximum for scaling<sup>1</sup> in the Min/Max fields, highlight the desired items and enter the new name or value. Then press <Enter> to make the change.

<sup>1</sup> For details see *Analog/Accumulator Scaling Technical Note*.

Tabs for All Points, ST (Status Information), and MX (Measurands) at the bottom of the right pane allow sorting of the input points mapped to the Orion realtime database.



**Figure 15: Inputs Point Tabs**

Tab	Description
All Points	Display all configured input points in the Orion Point Name pane.
ST	Display only status information points whose value may be read, substituted, reported, and logged.
MX	Display only measurand information points whose value may be read, substituted, reported, and logged.

**Table 4: Inputs Point Tabs**

## Outputs Menu

The Inputs menu displays the available IEC61850 output points for selection for the Orion realtime database. The variables are presented in a familiar “tree” format, allowing specific selection of desired elements. The tree structure represents the logical structure of a device and its nodes, objects, and attributes. The + and – selectors expand or contract the options list. Clicking the checkbox selects or deselects the listed variable. Clicking the “parent” checkbox automatically selects all related “child” variables. However, if the “parent” checkbox is selected, the “child” checkboxes remain customizable. Selecting or deselecting a child element allows configuration for each variable listed.

For a complete description of all available tools and buttons in this menu, see [Appendix A – Tools and Buttons on the Input and Output Menus](#).

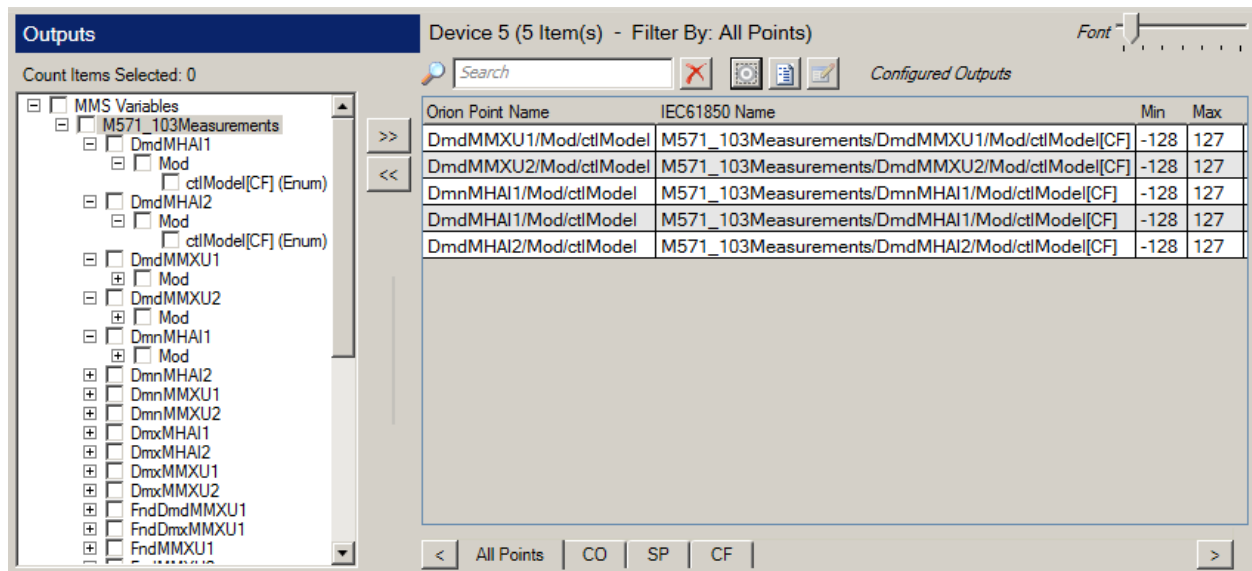


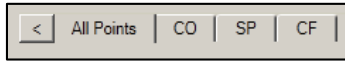
Figure 16: IEC61850 Output Points

Add the selected output points to the Orion Point Name pane by clicking **>>**.

To rename output points in the Orion Point Name field or enter a new minimum or maximum for scaling<sup>2</sup> in the Min/Max fields, highlight the desired items and enter the new name or value. Then press <Enter> to make the change.

<sup>2</sup> For details see *Analog/Accumulator Scaling Technical Note*.

Tabs for All Points, CO (Control), SP (Setpoint), and CF (Configuration) at the bottom of the right pane allow sorting of the output points which are mapped to the Orion realtime database.



**Figure 17: Outputs Point Filter**

Tab	Description
All Points	Display all configured output points in the Orion Point Name pane.
CO	Display control points whose value may be operated (control model).
SP	Display setpoint points whose value may be controlled (control model).
CF	Display configuration points whose value may be written.

**Table 5: Outputs Point Filter Tabs**

## Appendix A – Tools and Buttons on the Input and Output Menus

For easy configuration, numerous tools and buttons are available as shown in [Figure 18](#) and described in the sections below. The tools and buttons described in this appendix are available for both the [Inputs Menu](#) and the [Outputs Menu](#). The Inputs menu and the Outputs menu are very similar, so the screenshots of either menu are nearly identical.

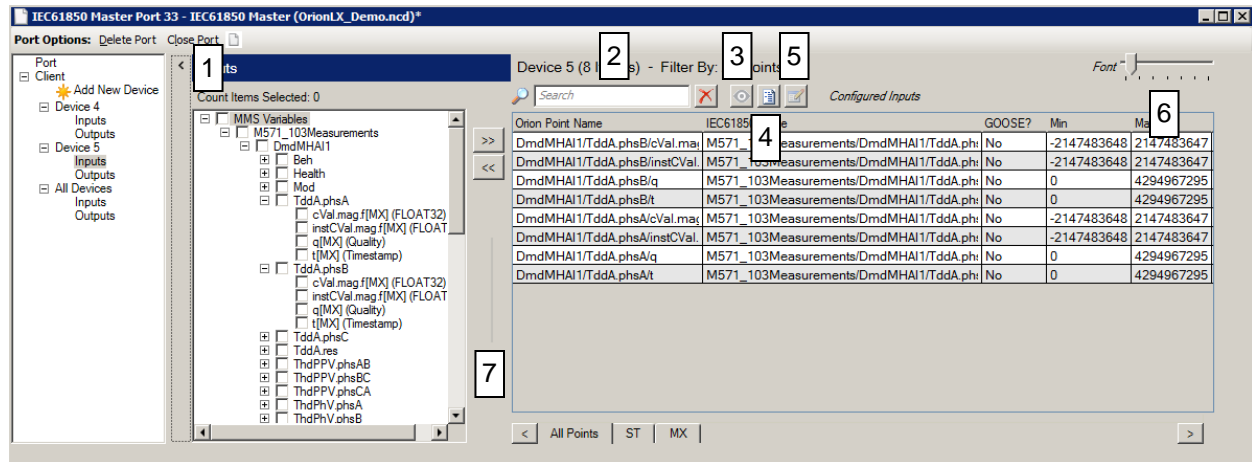


Figure 18: Tools on Input Menu and Output Menu

### 1. Display/Hide Point Name List

Clicking the button to the left of the Inputs or Outputs heading hides the Tag Name list, thus providing more usable screen space. Clicking the button displays the Tag Name list again.

### 2. Text Filter

The names of the points configured for DNP3 slave device can be filtered by entering a text string. Then only those points will be displayed whose name contains the text string. In the example below, the filter string is "Demand", and all points matching that filter are displayed.

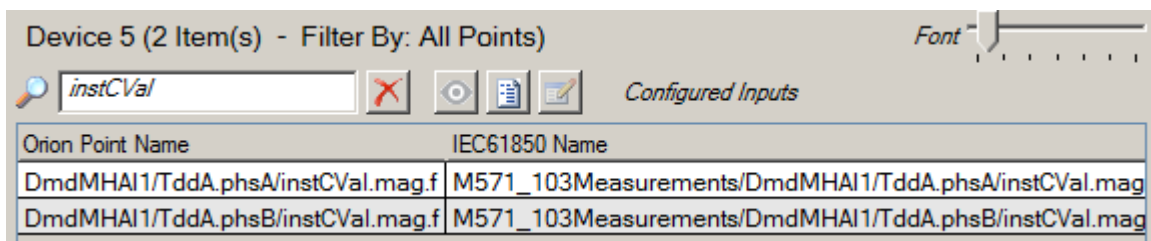




Figure 19: Text Filter

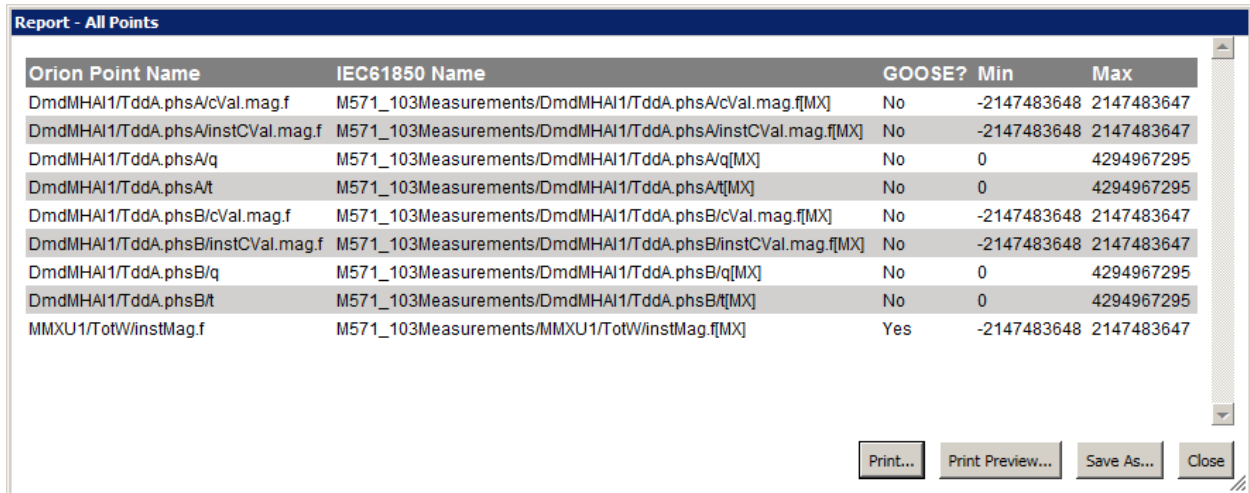
The filter can be cleared again by clicking on to the right of the filter field. Then all points will be displayed again.

### 3. Display/Hide Alias Name

If the Alias Module has been set up, the `Toggle Alias Column Visibility` button  is displayed above both point list panes. Clicking this button displays a column with each point's alias name. Clicking the button again hides the column.

### 4. View Report


The `View Report` button  generates a printable report for the points which are currently displayed in the `Orion Point Name` list. This report can be printed, previewed, or saved as a file on the PC.



Orion Point Name	IEC61850 Name	GOOSE?	Min	Max
DmdMHA1/TddA.phsA/cVal.mag.f	M571_103Measurements/DmdMHA1/TddA.phsA/cVal.mag.f[MX]	No	-2147483648	2147483647
DmdMHA1/TddA.phsA/instCVal.mag.f	M571_103Measurements/DmdMHA1/TddA.phsA/instCVal.mag.f[MX]	No	-2147483648	2147483647
DmdMHA1/TddA.phsA/q	M571_103Measurements/DmdMHA1/TddA.phsA/q[MX]	No	0	4294967295
DmdMHA1/TddA.phsA/t	M571_103Measurements/DmdMHA1/TddA.phsA/t[MX]	No	0	4294967295
DmdMHA1/TddA.phsB/cVal.mag.f	M571_103Measurements/DmdMHA1/TddA.phsB/cVal.mag.f[MX]	No	-2147483648	2147483647
DmdMHA1/TddA.phsB/instCVal.mag.f	M571_103Measurements/DmdMHA1/TddA.phsB/instCVal.mag.f[MX]	No	-2147483648	2147483647
DmdMHA1/TddA.phsB/q	M571_103Measurements/DmdMHA1/TddA.phsB/q[MX]	No	0	4294967295
DmdMHA1/TddA.phsB/t	M571_103Measurements/DmdMHA1/TddA.phsB/t[MX]	No	0	4294967295
MMXU1/TotW/instMag.f	M571_103Measurements/MMXU1/TotW/instMag.f[MX]	Yes	-2147483648	2147483647

Figure 20: View Report

### 5. Edit Common Attributes

Attributes which should be identical for multiple points configured for DNP3 Master can be edited in a single window. First, highlight all points for which the attributes shall be set up identically. Then click on the `Edit Common Attributes` button .

At this point, the following window is displayed ([Figure 21](#)). Only attributes which are common to all selected points are displayed, and any settings made in this window are applied to all selected points.

Note that all settings made in the `Edit Common Attributes` window can also be set directly with each data point.

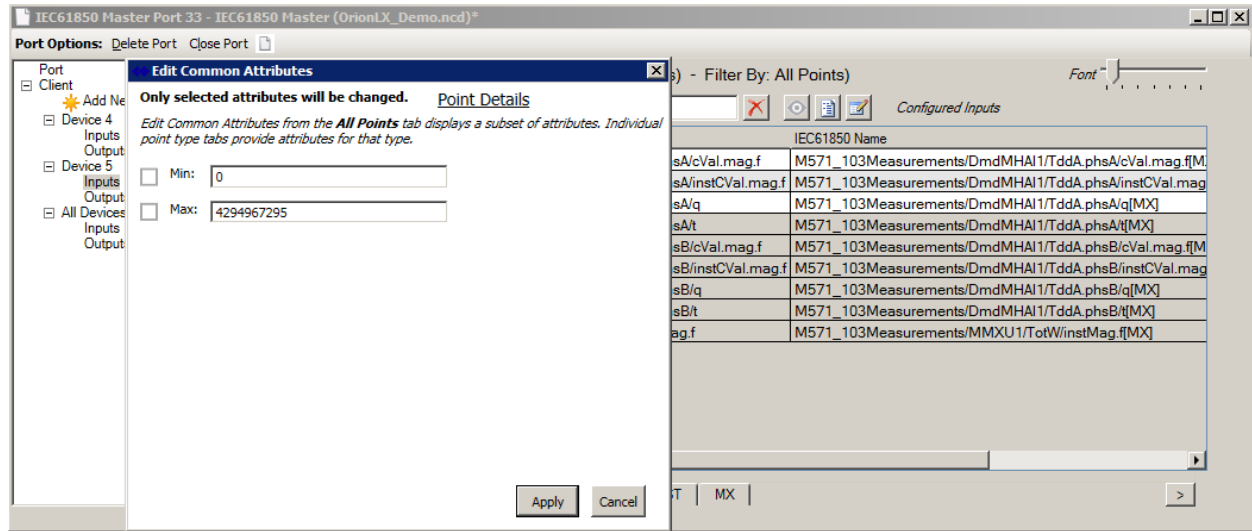


Figure 21: Edit Common Attributes

Clicking on Details in the Edit Common Attributes window lists the points for which any settings made in that window will be applied to.

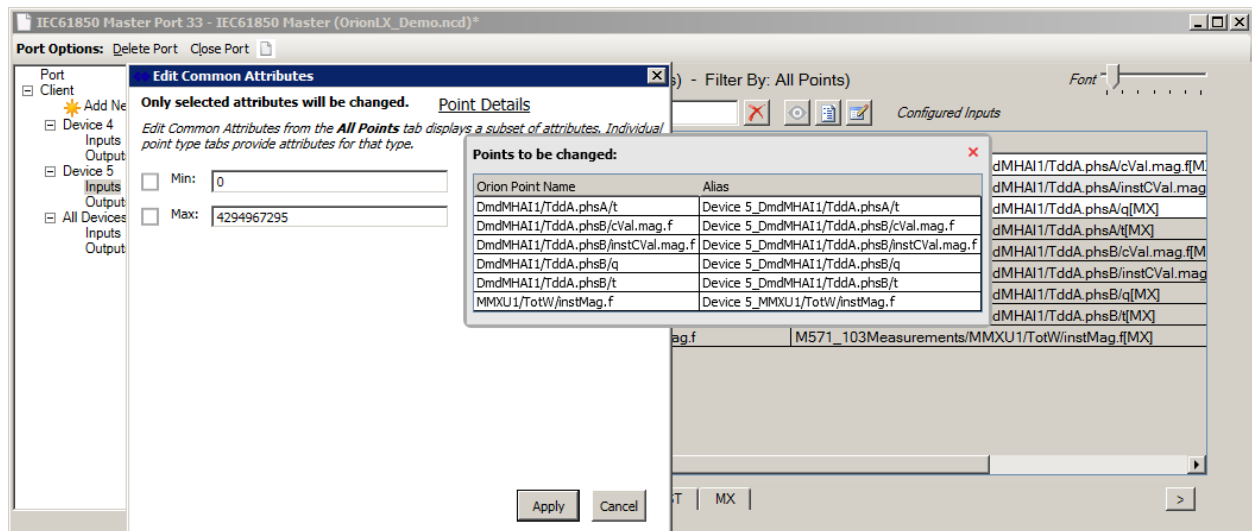


Figure 22: Edit Common Attributes - Details



## 6. Font Size

The font size of the Orion Point Name list can be adjusted by moving the slider.



**Figure 23: Font Size Slider**

## 7. Slider Bar

To enlarge either the left or the right points list, move the mouse pointer over the vertical Slider Bar ([Figure 24](#)), click and hold the left mouse button, and drag the slider left or right.



**Figure 24: Slider Bar**

## Appendix B – Additional References

The following additional documentation may be required for setting up and operating the OrionLX. In addition, for each specified NovaTech protocol, the respective manual is included on the installation CD.

The default NCD installation stores the NovaTech documentation files in C:\Program Files (x86)\NovaTech LLC\NCD3\Docs. Third-Party documentation is not included on the NovaTech installation CD and cannot be verified as accurate by NovaTech.

Document Title	File Name
<i>OrionLX User Manual</i>	OrionLX_User_Manual.pdf
<i>OrionLXm User Manual</i>	OrionLXm_User_Manual.pdf
<i>Analog/Accumulator Scaling Technical Note</i>	Technote_Scaling.pdf

**Table 6: NovaTech Documentation**

For additional information related to the IEC61850 protocol, refer to the International Electromechanical Commission (IEC) website: [www.iec.ch](http://www.iec.ch).

Revision	Date	Changes
A	11/08/12	Initial Release. MM
B	01/30/14	Updated screenshots, provided tables, improved descriptions. MM, BM
C	01/08/15	Updated screenshots, additional documentation, new features. MM, BM
D	09/29/15	Updated information for Adapter ID setting, clarified supported OrionLX products. NF