



ReportWorX Express Quick Start



APPLICATION NOTE

September 2013

Description: An introduction to ReportWorX Express.

OS Requirement: Vista x64/ Windows 7 x64/ Windows 8 x64/ Windows Server 2008 x64/ Windows Server 2008 R2 x64/ Windows Server 2012

General Requirement: Microsoft Excel; GENESIS, Analytix, or HyperHistorian, v. 10.8.

Introduction

ReportWorX Express is an add-in feature for Microsoft Excel 2013/2010 that allows you easy access to your real-time and historical data repositories available in the GENESIS64 product suite. ReportWorX Express is installed with several different suites from ICONICS, including: GENESIS32, GENESIS64, Hyper Historian, and AnalytiX. With ReportWorX Express, you can configure and view reports related to your industrial processes quickly and easily. The reports can then be passed along to colleagues as a simple but powerful tool.

ReportWorX Express allows you to retrieve data from the following sources and display this data within Microsoft Excel:

- HDA data from an application server in GENESIS64
- HDA data from an HDA source in GENESIS32
- Historical alarms from an alarm log in GENESIS64
- Historical alarms from an alarm log in GENESIS32
- Data from an active Energy AnalytiX database

With ReportWorX Express, you can:

- Configure historical data access options
- Configure time ranges
- Configure aggregation modes
- Arrange received historical data on the Excel worksheet
- Access a list of recently browsed data points and connections, stored in a machine-wide profile

Additional Features:

- Integrates with the Excel Task pane
- Exposes several Excel Array Functions for accessing historical data, parameters being either direct values or references to cells containing values
- Provides a quick reporting capability with a wizard-like user interface

Configuring Real-Time Data Reports

ReportWorX Express allows you to display OPC UA data in real time within Microsoft Excel. Using the product, you can also update the report to show the most current information about your process.

To configure a real-time data report:

1. In the Real Time group on the ReportWorX Express ribbon, select the Current Value button.
2. For the Data Source Tag textbox, select the Data Browser Button  and choose a real-time data tag. For this example, we chose the simulation tag:
`@sim64:Double.Sine(Period[sec],Min,Max,Phase[deg]).Value`
3. For the Output Cell Range textbox, press the Select Range button  to select a range of cells in the report spreadsheet.

NOTE: You must select at least 3 rows.

NOTE: If the selected tag collects more new values than the number of rows you have selected for the Output Cell Range, these new values appear beneath your selection. For this reason, it is not recommended to place output cell ranges above or below one another within a single spreadsheet.

4. In the Select Display Columns area, enable the check boxes next to the elements of data you wish to display in your report. For this example, we choose Name, Server Timestamp, and Value.
5. The selection should look like similar to the figure below. Hit Apply.

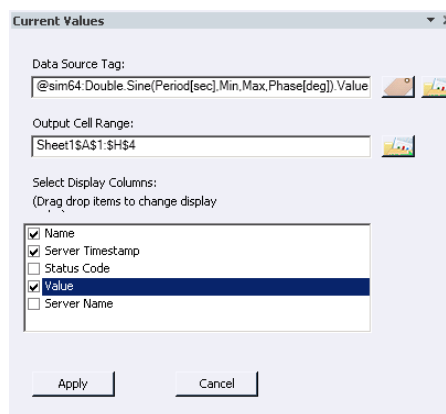


Figure 1 – Current Value Configuration

6. To view report data in the selected output range of the Microsoft Excel spreadsheet, update the report: . Your results should look similar to Figure 2.

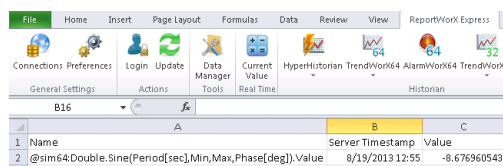


Figure 2 – Current Value



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Historical Data

Using ReportWorX Express, you can display historical data from an HDA data tag within Microsoft Excel. You can also retrieve the most current information about your process by updating the data displayed in the report.

ReportWorX Express supports the following types of data sources for producing historical reports:

- Historian
- Trends
- Alarms

In this app note, we will go over each type. ReportWorX Express also allows you to configure reports for three different types of historian values:

- Individual values from the historian server (Raw Values)
- Values from a specific point in time from the historian server (Timed Values)
- Summary data from the historian server (Aggregate Values)

Historian Timed Values

Using a historian configuration task pane, you can display information collected in data tags that you have configured in historian software, such as Hyper Historian from ICONICS.

Configuring Report Containing Raw Values from a Historian Server:

1. In the Historian group on the Ribbon, select the HyperHistorian button.
2. Select the Raw Values  drop-down button to create a report that displays individual trend values.
3. In the Historical Raw Values task pane on the right-hand side, select the Data Browser button  to the right of the Data Source.
4. Choose your historical tag. For this example, we chose: *@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History*
5. For the Output Cell Range textbox, press the Select Range button  to select a range of cells in the report spreadsheet.
6. In the Select Display Columns area, check Name, Server Timestamp, and Value.
7. The selection should look like similar to the figure below. Hit Apply.

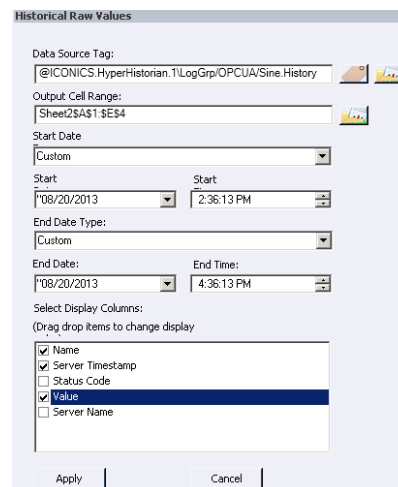
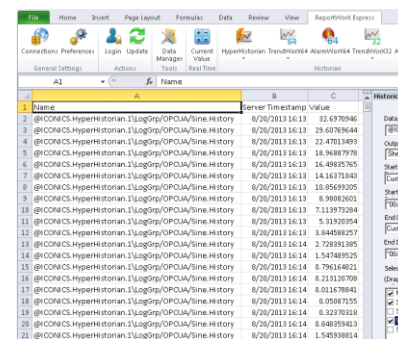


Figure 3 – Historian Raw Value Configuration

8. To view report data in the selected output range of the Microsoft Excel spreadsheet, update the report: . Your results should look similar to Figure 4.



Name	Server Timestamp	Value
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:13	32.6370946
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:13	29.6706444
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:13	23.47813493
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:13	18.36887979
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:13	14.49825765
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:13	14.34373343
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:13	10.9569205
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:13	8.99882601
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:13	7.21397284
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:13	5.3132054
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:13	3.84458257
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:14	2.72935395
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:14	1.54788925
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:14	0.79614821
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:14	0.21120708
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:14	0.02167841
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:14	0.0088755
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:14	0.02376319
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:14	0.04839343
@ICONICS.HyperHistorian.1\LogGrp\OPCUA\Sine.History	8/20/2013 16:14	1.548398814

Figure 4 – Historian Raw Values

Trend Raw Values

Using a trend task pane, you can display information collected in data tags that you have configured in trend configuration software, such as TrendWorX64. In this section, we will go over displaying individual values from the trending server (raw values). We will also implement a new Preset feature that will allow you choose a date more easily.

To configure trending reports based on raw historical data values:

1. Select the TrendWorX64 button.
2. Select the Raw Values  drop-down button to create a report that displays individual trend values.



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3. In the Historical Raw Values task pane on the right-hand side, select the Data Browser button  to the right of the Data Source.
4. Choose your historical trend tag. For this example, we chose: @ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History
5. For the Output Cell Range textbox, press the Select Range button  to select a range of cells in the report spreadsheet.
6. For Start Date, Select Preset. Choose the Last Day Last Week under the Start drop-down menu.
7. Keep the End Date Type as Custom.
8. Leave the default values for End Date and End Time.
9. In the Select Display Columns area, check all values.
10. Your selection should look like similar to the figure below. Hit Apply.

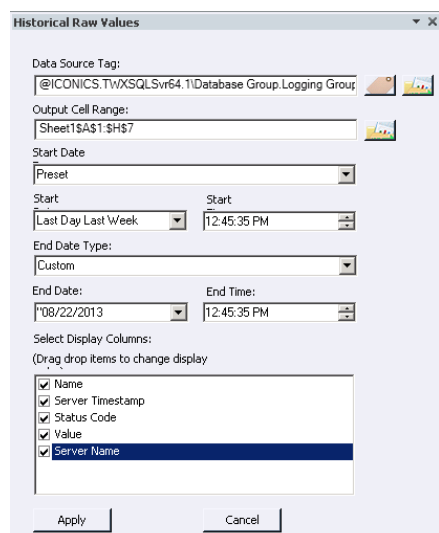
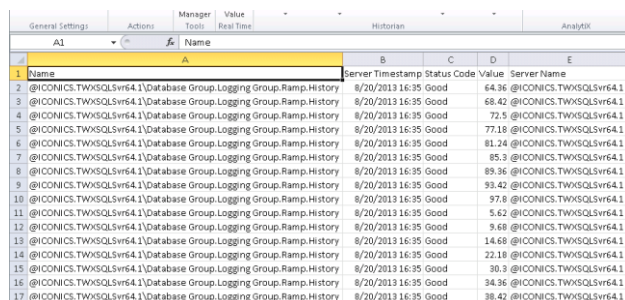


Figure 5 – Trend Raw Values Configuration

11. To view report data in the selected output range of the Microsoft Excel spreadsheet, update the report . Your results should look similar to Figure 6.



	A	B	C	D	E
	Name	Server Timestamp	Status Code	Value	Server Name
1	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	64.36	@ICONICS.TWXSQSVr64.1
2	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	68.42	@ICONICS.TWXSQSVr64.1
3	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	72.5	@ICONICS.TWXSQSVr64.1
4	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	77.18	@ICONICS.TWXSQSVr64.1
5	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	81.24	@ICONICS.TWXSQSVr64.1
6	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	85.3	@ICONICS.TWXSQSVr64.1
7	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	89.36	@ICONICS.TWXSQSVr64.1
8	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	93.42	@ICONICS.TWXSQSVr64.1
9	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	97.6	@ICONICS.TWXSQSVr64.1
10	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	5.62	@ICONICS.TWXSQSVr64.1
11	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	9.68	@ICONICS.TWXSQSVr64.1
12	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	14.68	@ICONICS.TWXSQSVr64.1
13	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	22.18	@ICONICS.TWXSQSVr64.1
14	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	30.3	@ICONICS.TWXSQSVr64.1
15	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	34.36	@ICONICS.TWXSQSVr64.1
16	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good	38.42	@ICONICS.TWXSQSVr64.1
17	@ICONICS.TWXSQSVr64.1\Database Group.Logging Group.Ramp.History	8/20/2013 16:35	Good		

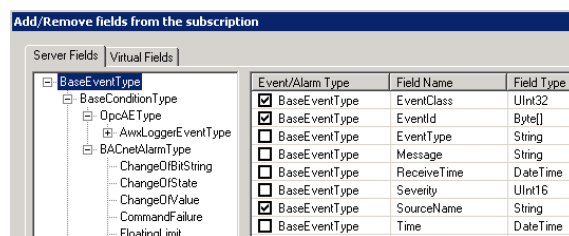
Figure 6 – Trend Raw Values

Alarms

Using an alarm task pane, you can display information collected by AlarmWorX64 or AlarmWorX32 Logger. In this section, we will configure historical reports based on historical alarm values using filtering expressions and event fields.

To configure historical reports based on historical alarm values:

1. Select the AlarmWorX64 button in the ReportWorX Express Ribbon
2. In the Historical Alarms task pane on the right-hand side, select the Data Browser button  to the right of the Data Source.
3. Choose your tag. In the Data Browser, browse to Historical Data → AlarmWorX64 Logger → Alarms → @ICONICS.AlarmSvr.1.Server. For this example, we chose: awx:Alarms/@ICONICS.AlarmSvr.1.Server
4. For the Output Cell Range textbox, press the Select Range button  to select a range of cells in the report spreadsheet.
5. For Start Date, Select Preset. Choose First Day Last Month under the Start drop-down menu.
6. Keep the End Date Type as Custom. Leave the default values for End Date and End Time.
7. For the Filtering Expression, click on the button  to Configure the expression for the filter.
8. For Standard Fields, click on AckRequired. This filter will appear on the right hand side. To the right of it, type " && " to use an AND expression.
9. Choose Severity (Priority) to complete the expression. Press OK.
10. Your resulting filtering expression should be: $x=\{[BaseConditionType.AckRequired]\} \&\& \{[BaseEventType.Severity]\}$
11. Leave 100 for the Page Size (Number of Alarms).
12. Select your Event Fields by clicking the button: .
13. This will open the "Add/Remove fields from the subscription" dialog box. For BaseEventType, make sure Event Class, EventId, and SourceName are checked, as in the following figure:



Event/Alarm Type	Field Name	Field Type
☒ BaseEventType	EventClass	UInt32
☒ BaseEventType	EventId	Byte[]
☒ BaseEventType	EventType	String
☒ BaseEventType	Message	String
☒ BaseEventType	ReceiveTime	DateTime
☒ BaseEventType	Severity	UInt16
☒ BaseEventType	SourceName	String
☒ BaseEventType	Time	DateTime

Figure 7a – Event Fields Configuration, BaseEventType



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14. Next, click on BaseConditionType. Make sure ActiveTime, ConditionName, and Status Code are checked, as in the following figure:

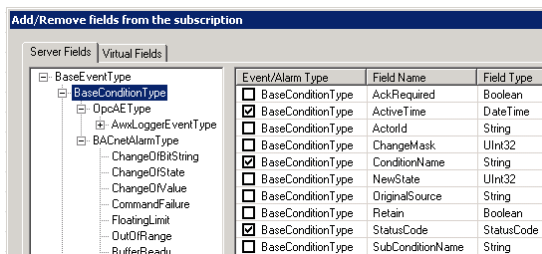


Figure 7b – Event Fields Configuration, BaseConditionType

15. Back on the pane, click and drag EventIdBaseEventType and EventClassBaseEventType towards the bottom of the Event Fields section. Your selection should look like similar to the figure below. Hit Apply.

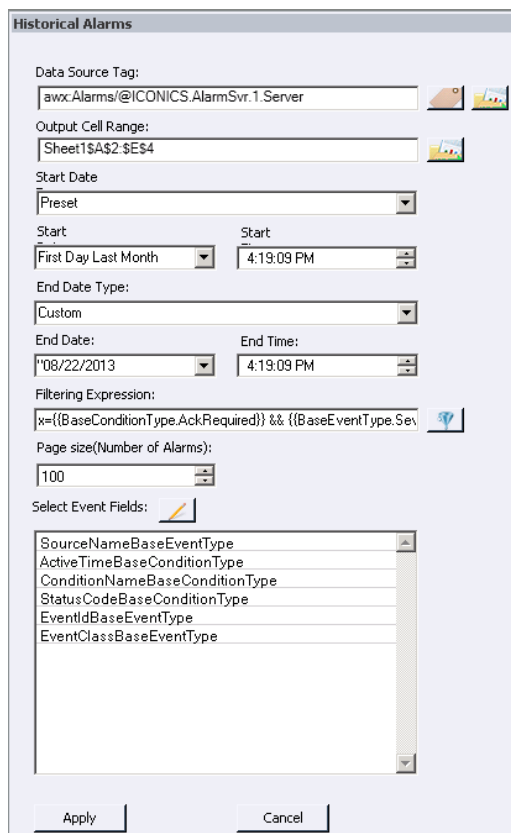


Figure 8 – Historical Alarm Configuration

	A	B	C	D	E
1	SourceNameBaseEventType	ActiveTimeBaseConditionType	ConditionNameBaseConditionType	StatusCodeBaseConditionType	EventIdBaseEventType
2	@ICONICS.AlarmSvr.1.Level Gauge Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
3	@ICONICS.AlarmSvr.1.Tank PS Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
4	@ICONICS.AlarmSvr.1.VPressure/ Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
5	@ICONICS.AlarmSvr.1.Level Gauge Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
6	@ICONICS.AlarmSvr.1.VHumidity Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
7	@ICONICS.AlarmSvr.1.VCoolant Level Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
8	@ICONICS.AlarmSvr.1.VCompressor Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
9	@ICONICS.AlarmSvr.1.Box Line Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
10	@ICONICS.AlarmSvr.1.VBelt Speed Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
11	@ICONICS.AlarmSvr.1.VArm Torque Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
12	@ICONICS.AlarmSvr.1.VTemperature/ Deviation Condition	8/22/2013 11:23	Deviation	Good	System.Byte[]
13	@ICONICS.AlarmSvr.1.VArm Torque Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
14	@ICONICS.AlarmSvr.1.VPressure/ Deviation Condition	8/22/2013 11:23	Deviation	Good	System.Byte[]
15	@ICONICS.AlarmSvr.1.VHumidity Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
16	@ICONICS.AlarmSvr.1.Box Line Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
17	@ICONICS.AlarmSvr.1.VCoolant Level Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
18	@ICONICS.AlarmSvr.1.VPressure/ Limit Condition	8/22/2013 11:23	Limit	Good	System.Byte[]
19	@ICONICS.AlarmSvr.1.VPressure/ Deviation Condition	8/22/2013 11:23	Deviation	Good	System.Byte[]
20	@ICONICS.AlarmSvr.1.VSmoke Detector 1 Digital Condition	8/22/2013 11:23	Digital	Good	System.Byte[]
21	@ICONICS.AlarmSvr.1.VIOCTrigger Rate of Change Condition	8/22/2013 11:23	Rate of Change	Good	System.Byte[]

Figure 9 – Historical Alarm Values

Conclusions

In addition to gathering data, you can filter data that falls within a specific time interval or satisfies the conditions of built-in array functions in Excel. Also, you can combine data into summary statistics using a variety of aggregation methods with ReportWorX Express. You can even adjust access privileges to allow colleagues to access the data relevant to them.

Using the intuitive point-and-click wizard interface in an Excel task pane, you can easily select the data you wish to access, select a location within the spreadsheet to view the data, and include any filters you wish to apply to the data.

Once you have used ReportWorX Express several times, the product saves your recent data-browsing history and common network connections, storing this information in a machine-wide profile for your convenience.

16. To view report data in the selected output range of the Microsoft Excel spreadsheet, update the report . Your results should look similar to Figure 9.