# **Inductive Automation Connectors**

# **Ignition Real-time values**

This connector is used to get real time data from Ignition using the Ignition OPC UA server.

# **Prerequisites**

#### Verify OPC-UA Module

Ignition settings are available through a web browser. Open a web browser and navigate to:

localhost:8088

Log in to Ignition.



On the left, select Config, then under OPC UA select Server Settings.

Endpoint Configuration							
Bind Port	62541 (default: 62,541)						
Bind Addresses	111.111.1.11 (default: localhost)						
Endpoint Addresses	111.111.1.11, <hostname>,<localhost> (default: <hostname>, <localhost>)</localhost></hostname></localhost></hostname>						
Security Policies	None (default: Basic256Sha256)						
Authentication							
Anonymous Access Allowed	(default: false)						
User Source	opcua-module 🔻						

• Set the Bind Address to the IP address of the machine where the OPC UA server resides.

- Enter the same IP address as the first entry in the Endpoint Address field.
- Set Security Policies to those you wish to support.
- Click Save Changes.



On the left, select Config. Under OPC CLIENT select OPC Connections.

Config > Opc > OPC Connections							
	Name	Туре	Description	Read Only	Status		
	Ignition OPC UA Server	OPC UA	A "loopback" connection to the Ignition OPC UA server running on this gateway.	false	Connected	More 👻 edit	
	→ Create new OPC Connecti			endpoint			
	Note: For details about a connection's status, see the OPC Connection Status page.						

Next to the **Ignition OPC UA Server**, expand the **More** drop-down list and select **endpoint**. If the **Endpoint URL** contains *localhost* replace it with the IP address of the machine where the OPC UA server resides.

- Click Next three times.
- Click Finish.
- Click Save Changes.



On the left, select **Config**, then under **SYSTEM** select **Modules**.

#### Inductive Automation

Them benchicate						
Name	Version	Description	License	State		
Alarm Notification	5.0.7 (b2019122014)	Provides alarm notifications via email	Trial	Running	More 🔻	restart
Allen-Bradley Driver	5.0.7 (b2019122014)	Allen-Bradley driver suite for the OPC UA module.	Trial	Running	More <b>v</b>	restart
DNP3 Driver	3.0.7 (b2019122014)	A driver supporting DNP3 (Distributed Network Protocol) device.	Trial	Running	More <b>v</b>	restart
Enterprise Administration	3.0.7 (b2019122014)	A remote Gateway administration system, allowing you to manage Gateways and automate tasks from a single controller.	Trial	Running	More 🔻	restart
Logix Driver	4.0.7 (b2019122014)	A driver for communicating with Allen-Bradley Logix5000 series PLCs, and includes firmware version 21 support	Trial	Running	More 🔻	restart
Modbus Driver	6.0.7 (b2019122014)	A driver for communicating with devices via Modbus-TCP.	Trial	Running	More 🔻	restart
Omron Driver	3.0.7 (b2019122014)	A driver for Omron NJ series PLCs.	Trial	Running	More 🔻	restart
OPC-UA	8.0.7 (b2019122014)	Provides Ignition's OPC UA client and server functionality.	Trial	Running	More 🔻	restart
OpcCom	5.0.7 (b2019122014)	Bridge that exposes COM based OPC-DA servers to the system.	Trial	Running	More 🔻	restart
Perspective	1.0.7 (b2019122014)	A module that provides modern, responsive html based graphical interfaces for Ignition projects.	Trial	Running	More <b>v</b>	restart
Reporting	5.0.7 (b2019122014)	Adds reporting capability.	Trial	Running	More <b>v</b>	restart
SFC	4.0.7 (b2019122014)	Sequential Function Charts are customizable logic execution environments.	Trial	Running	More 🔻	restart

Make sure the State for the OPC-UA module is Running. If it is not, click the button to Start.

#### **Remote Communication**

If XLReporter is not installed on the same machine as Ignition, the workstation must also have the OPC core components installed. To determine if the core components are installed verify the following file exists:

- 64 bit OS C:\Windows\SysWow64\OPCEnum.exe
- 32 bit OS C:\Windows\system32\OPCEnum.exe

If the components are not installed, they are provided in the tools folder of the installation or from www.opcfoundation.org.

#### Connector

To configure the connector to the Ignition OPC UA server, from the **Project Explorer** select **Data**, **Connectors**.

- Click Add
- Select Inductive Automation, Ignition Real-time values
- Click OK

OPC UA Settings	-		×
Connector Name Ignition_UA_1			
Server Connection			
Endpoint Filter Host Name		Port	
opc.tcp ~ 111.111.1.11		62541	
Servers at Host			
Ignition OPC UA Server	~	Find	
User Identity			
User		Select.	
Security Profile			
None Best Available Specific			
opc.tcp://111.111.1.11:62541 [SignAndEncrypt:Basic256Sha256:Bina	ry]	Select.	
Description Value			
		Connec	ot
	Apply	Clo	se

Under the Server tab, for **Host Name**, select or enter the name or IP address of the machine where the server is running. For **Port** specify the **Bind Port** as configured in the **Ignition OPC UA Settings**. This is typically either 4096 or 62541.

For Servers at Host click Find and then choose Ignition OPC UA Server.

If no servers populate or this times out, append */discovery* to the end of the **Port** number and click **Find** again. After selecting *Ignition OPC UA Server*, remove */discovery* from the port number field.

For User Identity click Select to specify.

Authenticate Ser	ver		×
Connection Settin Server URL	gs Ignition OPC U	A Server	
Authentication Set	tings		
User Name	User Name Password	opcuauser	
O X509 (Dir)	Certificate		
X509 (Store)	Store Path Certificate		
Apply	Close		

For Ignition this can be either *Anonymous* or *User Name*. Anonymous can be used if the **Anonymous Access Allowed** setting is enabled in the **Ignition OPC UA Settings**.

**Security Profile** defines the endpoint to connect to for the Ignition OPC UA Server. Select the profile that matches the **Security Policies** set in the **Ignition OPC UA Settings**. To use a specific endpoint, select Specific and click the Select button.

Click **Get Endpoints** to get the list of available endpoints, select the one that best fits with the server settings and click **OK**.

Click **Connect** to ensure connectivity. This may require an exchange of certificates between the client and the server. If prompted to exchange, click **Yes**. This action requires Windows administrator rights.

If the **Connect** fails, be sure that the client certificate is trusted by the server and then attempt to **Connect** again. For more information, see the Trusted Clients section below.

Under the **Connection** tab are **Certificate** options and general **Settings**.

OPC UA Setting	js		_		×
Connector Name	Ignition_UA_1				
Server Conne	ection				
Certific	ates				
	Cre	ate Client Certificate			
	Tru	ist Server Certificate			
Setting					
Re	quest timeout (sec)	20			
W	ait before request (sec)	0			
Re	quest retries before fail	2			
Re	quest retry interval (msec)	100			
			Apply	Clo	ose

The Client Certificate is automatically created on installation. If required, to recreate the certificate select **Create Client Certificate**. For most OPC UA servers, the default settings will be sufficient, but if the server requires more advanced certificate settings you can specify them with the **Advanced** button.

# **Trusted Clients**

In some cases, the client must be accepted by the server to make requests. From within Ignition, select **Config, OPC UA, Security**.

Under the Server tab, in Quarantined Certificates, accept the client certificate listed.

## **Verify Data Communication**

To verify communication to Ignition OPC UA, open the **Project Explorer** and select the **Tools** tab. Launch the **System Check** application.

- Click Add
- Choose the Ignition OPC-UA Connector from the dropdown list
- Click the pushbutton ([...]) next to Items to open the Tag Browser window.
- Select one or more tags, click **OK**
- Click **Start** to verify the communication

# **Ignition Historical values**

This connector is used to get historical data from the Ignition Historical Tag Provider database.

# Set up Historical Value Log

Ignition settings are available through a web browser. Open a web browser and navigate to: localhost:8088

Log in to Ignition.



On the left, select Config, then under Databases select Connections.

🔽 lg	nition-Ignition - Ignition Gatew 🗙	+						- 🗆 ×			
< →	C (i) localhost:8088/we	eb/config/database.connectio	ons?26					☆ \varTheta :			
<b>3</b> Ig	nition-Ignition							≗ SyTech   Sign Out →			
lgni	tion						Help 😮	Get Designer			
♠	SYSTEM	Config > Database > Da	tabase Connections								
Home	Overview	Trial Mode 1:45:36 We'r	e glad you're test driving our sol	tware. Have fun.				Activate Ignition			
du	Backup/Restore										
Status	Ignition Exchange	✓ Successfully u	✓ Successfully updated Database Connection "SQLServer"								
Config	Modules	Name	Description	JDBC Driver	Translator	Status					
	Projects										
	Gateway Settings	SQLServer	DB	Microsoft SQLServer	MSSQL	Valid		delete edit			
		→ Create new Data	abase Connection								
	NETWORKING	Notes For details of		the Detailers Constanting Chattan							
	Web Server	Note: For details ab	out a connection's status, si	e the Database Connection Status page.							
	Email Settings										
	SECURITY										
	Auditing										
	Users, Roles										
	Service Security										
	Security Levels										
	Security Zones										
	DATABASES										
	Drivers										
0	Store and Forward										
	0 Sauch										
	<b>4</b> Search							-			

• Click Create new Database Connection...

💋 Ignition-Ignition - Igi	nition Gatew × +			-					
→ C 🛈 lo	calhost:8088/web/config/c	database.connect	ions?27	\$	e				
Ignition-Ignition				La SyTech	Sign Ou				
gnition			Help 🛛	Get De	signer				
SYSTEM	Config	g > Database > D	atabase Connections						
e Overview	Trial Mo	ode 1:43:41 We	re glad you're test driving our software. Have fun.	Activa	te Igniti				
Backup/Res	tore								
Ignition Excl	hange								
Licensing	N N	Main Properties							
g Modules									
Projects		amo	SQLServer	roject default					
Redundancy	y Things	vallie	will start causing errors trying to connect to a connection is naw, any projects that refer to this connection by name instead or refering to their p will start causing errors trying to connect to a connection that no longer exists. Please verify that no projects refer to this connection by name, a	and update th	e				
Gateway Set	tungs		ones unacido.						
NETWORKING			DR						
Web Server	C	Description							
Gateway Ne	twork		h h						
Email Settin	lgs				_				
SECURITY		IDBC Driver	Microsoft SQLServer v						
Auditing			The JDBC driver dictates the type of database that this connection can connect to. It cannot be changed once created.						
Users, Roles					-				
Service Secu	urity		jdbc:sqlserver://SY020\SQLServer16 The Connect URLie: IDBC-driver energific: It usually contains the address of the machine that the database is running on						
Identity Prov	viders		The connect of a sobo-driver specific it dataly contains the address of the interime that the database is terming on.						
Security Lev	rels		jdbc:sqlserver://host\instanceName[:port] With the three parameters (in bold)						
Security Zon	nes (	Connect URL	host: The host name or IP address of the database server.						
DATABASES			instanceName: (optional) the instance to connect to on the host. If not specified, a connection to the default instance is made.						
Connection	IS								
Drivers			For SQL Server, you specify the database name to connect to using the databaseName property in the Extra Connection Properties.						
Store and Fo	orward	Jsername	sa						
<ul> <li>Search.</li> </ul>		Change	Check this hav to change the existing parament						
		10	— Check this box to change the existing password.						

Make the connection to an available database like MySQL or Microsoft SQL Server/SQL Server Express.

Under the **Configure** tab, on the left, click **Tags**, **History** and create a new **Historical Tag Provider**.

-	/web/comig/tags.history/60		4
ition		Help 🞯 🛛 🕞 Get D	esig
SYSTEM	Config > Tags > Histo	ry	
Overview	Trial Mode 8:56:59 We	Yre glad you're test driving our software. Have fun.	ate lg
Backup/Restore			
Ignition Exchange			
Licensing	Main		
Modules			
Projects	Provider Name	SQLServer	
Gateway Settings	Enabled		
NETWORKING		(default true)	
Web Server			
Gateway Network	Description		
Email Settings		li li	
SECURITY			
Auditing	Data Partitionin	ng sa	
Users, Roles		The built in partitioning system breaks up data into separate tables of a specified time frame. This can improve performance and make certain mainten	ince
Service Security	Enable Partitioning	tasks easier.	nee
Identity Providers		(default: true)	
Security Zevels		1	
Control Loneo	Partition Length	A How big a data partition should be (in time, with the units below)	
DATABASES		(default: 1)	
Connections	Doutition Units	Months v	
Connections Drivers	Partition Units		
Connections Drivers Store and Forward	Partition Units	(default: MON I H)	

Inductive Automation recommends enabling **Partitioning** to make data retrieval faster. This is supported by **XLReporter** at any **Unit** and **Length** available.

#### Enable Tag History

Select the **Design Launcher** from the program group and launch the project.

Sy tech - Ignition-Ignition - Ignition Designer			
File Edit View Project Component	Alignment Shape	Tools Help	
	14 🗆 - 🕨 🗡 -	• 🕫 🕲 🖂 🗶 🕲 📽	Q お日単語のつ水子 あわる 単品目をある。1・HI王
Project Browser	e -	×	1001-1-1-1-1-1001-1-1-1-1001-1-1-1-1001-1-1-1-1001-1-1-1-1001-1-1-1-10001-1-1-1-1-10001-1-1-1-1-10001-1-1-1-1-
Q- Filter	Project Properties		Pens 60
Negati Denser       Qr. Filter       Image: Section Composition Composite Composition Composition Composite Composition Composition Comp	e		Per
All Providers     Rename     Delete	Delete	~ <del> </del>	
Vision Property Editor		×	
1 2 2 m · · · · ·	CUITA	-	
E Common	Ctri+C		
Name Paste	Ctrl+V	GD 7.	*
Border Copy Tag Path	- D (	e é	
E Appearance V New Tag	•		
Background Co 💯 Multi-instance Wizard	i 🗸 🖌 🖉	60	
C+ Export		Ť	
-D Import Tags		6	
Restart Tag			
C Refresh Providers		-	
Le manean Providers		🔘 Welcome 🛅 Main Window 🗡	x
III Containen 10ant, Containen 1			

Under the Tag Browser panel select each tag to log historically, right click and select Edit Tag.

<ul> <li>History</li> </ul>		
History Enabled	true	<b>*</b>
Storage Provider		SQLServer 🔻
Deadband Style	Auto	•
Deadband Mode	Absolute	-
Historical Deadband		0.01
Sample Mode	On Change	-
Min Time Between Samples		1
Min Time Units	Seconds	-
Max Time Between Samples		0

- Select the **History** category on the left
- Set **History Enabled** to true.
- Set Storage Provider to the database connection configured. Click Apply when finished.

#### **Prerequisites**

#### Verify Database

Open the database configured as the database connector using the tool provided by the database vendor. If the database is Microsoft SQL Server or SQL Server Express, the **SQL Server Management Studio** is provided. If the database is **MySQL**, the **MySQL Workbench** is provided. Open the application and connect to the database.

SQLQuery1.sql - SY020\SQLSERVER16.lgnition (sa (56)) - M	icrosoft SQL Se	erver Manage	ement Stud	lio		(	Quick Launch (Ctrl+	Q) 👂 –		×
File Edit View Project Debug Tools Window	Help	606	9-0	- 🖳				🚽 Generic Debug	ger + 🚆	
🛙 💷 镪   Ignition 🔹   🦿 Execute Debug	= 🗸 🕎		··· •·•			45 34 Å	8 🗸			
Object Explorer 👻 🕂 🗙	SQLQuery1.s	ql - SY06.lg	gnition (sa	(56)) 🕫 🗙						-
Connect - 📲 🜉 = 🝸 🖒 📓	/*	**** S	cript	for Sel	lectTop	NRows co	ommand from	SSMS *****	*/	÷
Ignica     Ignica     Datase Diagrams     Datase Diagrams     System Tables     Single Tables     Single Tables     Datase     Datase Diagrams     Diagrams     Datase Diagrams     D	E SE	LECT TO ,[i ,[f, ,[s, ,[d ,[d ,[d ,[t FROM [I	P (100 ntvalu iloatva tringv lateval lataint stamp gnitio floatvalue NULL	0) [tag e] elue] value] ue] egrity] on].[dbc	gid] ] ].[sq] datevalue NULL	dataintegity 192	L_2020_01]			
	1 1	2	NULL	NULL	NULL	192	1579816539416			
	2 2	23	NULL	NULL	NULL	192	1579818255264			
	3 3	5	NULL	NULL	NULL	192	1579818271784			
	4 4	24	NULL	NULL	NULL	192	1579818287469			
	5 4	25	NULL	NULL	NULL	192	1579818300479			
	6 4	26	NULL	NULL	NULL	192	1579818360567			
	7 4	27	NULL	NULL	NULL	192	1579818420629			
	8 4	28	NULL	NULL	NULL	192	1579818480797			
	9 4	29	NULL	NULL	NULL	192	1579818540392			
	10 4	30	NULL	NULL	NULL	192	1579818600444			
	11 4	31	NULL	NULL	NULL	192	1579818660518			
	12 4	32	NULL	NULL	NULL	192	1579818720566			
	13 4	33	NULL	NULL	NULL	192	1579818780613			Ŧ
	🕜 Query ex	ecuted succ	essfully.		SY020	SQLSERVER16	6 (13.0 SP2)   sa (56)	Ignition 00:00:00	918 rov	vs
Produ										

Expand the Database configured for the history logs, then expand **Tables**. Right-click the *sqlth\_te* and *sqlt\_data* table with the most recent date on it and choose **Select Top 1000 Rows**.

If no data is returned contact Inductive Automation technical support and correct these issues.

# **SQLite Considerations**

XLReporter does not support connections to Ignition History when it is configured to log to SQLite. Inductive Automation does <u>not</u> recommend SQLite for production systems as a historian database.

## Connector

To configure the connector, from the **Project Explorer** select **Data**, **Connectors**.

- Click Add
- Select Inductive Automation, Ignition Historical Values
- Click OK

gnition Historical val	ues		
Connector Name	Ignition_History_1		
Description			
Primary Server			
Name	192.168.9.45\sqlserver16	6	
User	sa		
Secondary Serve	r		
Name			
User			
		Set	ings
		ОК С	ancel

#### **Primary Server**

This defines a connection to the database where Ignition is logging historical data. A browse button [...] is provided to define.

#### **Secondary Server**

These settings define the (optional) secondary Ignition to connect to if a connection to the **Primary** Server fails.

#### Settings

The **Settings** button opens the **Settings** dialog that defines characteristics of the database that are used to retrieve data.

Settings	x
Client Wait Time (sec)	50 🔹
Table/Column Delimiter Start [[]	End ]
Date/Time Delimiter Start ['	End [
Date/Time Storage	
Local Date and	Time V
Date form	at is YYYY-MM-DD
	OK Cancel

Typically, these settings are defaulted correctly for the **Primary Server**.

If queries timeout, increase the Client Wait Time.

The delimiter and timestamp settings are typically filled in automatically for the database and can be modified for other databases.

The **Date/Time Storage** settings define how timestamps are stored in the database. Using this setting the timestamps are manipulated when data is retrieved so that local timestamps are submitted in and returned.

Many databases require the Date format to be **YYYY-MM-DD** so that no interpretation needs to occur based on the Region settings of the Windows Operating System. It is recommended to always have this option checked.

#### Data Group

The following describes the historical data group settings specific to the **Ignition Historical Values** connector.

**Group Types** 

📄 Select Group Type 🛛 🗙	
O Summary Values from Server	
<ul> <li>Summary Values from XLReporter</li> <li>use raw values</li> </ul>	
◯ Raw Values	
◯ Raw Text	
◯ Sampled Values	
O Live Values	
O Custom Values	
Base on	
<pre></pre>	
OK Cancel	

The following group types are available:

#### Summary Values from XLReporter

This group type retrieves sampled values from the database and performs calculations on those samples for reporting.

By default, summary values are calculated time weighted, and values are propagated based on the last known value. However, to change this so that summary values are calculated strictly on the data returned check **use raw values**.

#### **Raw Values**

This group retrieves every value logged to the database between the start and end time specified.

#### **Custom Values**

This option opens the Database Group builder where a query can be configured to retrieve data from any table in the database.

#### **Group Settings**

#### Setup Tab

	dit Previ	ew				
etun	Columna	Time Paried	Ditem			
otop	Columns	nine renou	Filters			
			Desc	ription		
			Retri	eval		
			Retri	eval Retrieval Mode	Raw Values V	
			Retri	eval Retrieval Mode	Raw Values ~	
			Retri	eval Retrieval Mode Rate (secs)	Raw Values ~	

#### **Retrieval (Summary Values for XLReporter Group)**

The **Retrieval** settings define how data is retrieved for the calculations selected for the group. The following settings are available:

Retrieval Mode

This setting defines how data is retrieved from the historian. For Ignition only *Raw Values* are available.

• Lead Time

The amount of time (in seconds) to retrieve data before the start time.

# Verify the Data Connector

From the XLReporter Project Explorer select, Tools, Connector Groups.

Select the Ignition historical connector and then select Add.

• Set the **Type** *Raw Values* and click **OK**.

On the **Columns** tab of the group, select the tag **Name**(s).

		Selected Items	
		Name	
Ignition_History		svs second	
		sys minute	
E ohne		sys_hour	
E- Float		sys_day	
. String		sys_month	
. Date Time		sys_year	
ams			
splay Name V			
isplay Name V	>		
ams splay Name ✓ Iame watem second	>		
ans isplay Name ✓ Iame ysetm_second ys_day	>		
ams isplay Name ✓ lame lame system_second ys_day ys_hour	>		
sms splay Name ✓ Name Name system_second ys_fav ys_four ys_four ys_minute	>		
splay Name  V Name V Name V System_second Vys_four Sys_mourLe Sys_mouth	>		
Ims Isplay Name Vame Vame Vame Vame Vame Vame Vame V	>		
isplay Name  Vame Vame Vame Vame Vame Vame Vame Vame	>		
sms splay Name ✓ Name Name system_second sys_four sys_four sys_mouth sys_month sys_month sys_second sys_year	<		
Ima isplay Name Vame Vame system second ysys_hour ys_month ys_month ys_second ysyser	>		

Select Preview, pick a Start date and click Refresh.

# **Ignition Transaction Group values**

This connector is used to get historical data from an Ignition Transaction Group.

# Set up Historical Value Log

Ignition settings are available through a web browser. Open a web browser and navigate to:

localhost:8088

Log in to Ignition.



On the left, select Config, then under Databases select Connections.

🔽 Ign	ition-Ignition - Ignition Gatew 🗙	+					- U ×
← →	C i localhost:8088/we	b/config/database.connectio	ns?26				☆ 🖯 :
🛢 Igr	nition-Ignition						≗SyTech   Sign Out→
Ignit	tion						Help 🚱 Get Designer
<b>A</b>	SYSTEM	Config > Database > Da	tabase Connections				
Home	Overview	Trial Mode 1:45:36 We're	e glad you're test driving our sol	tware. Have fun.			Activate Ignition
da	Backup/Restore						
Status	Ignition Exchange Licensing	✓ Successfully up	pdated Database Connect	ion "SQLServer"			
Config	Modules	Name	Description	JDBC Driver	Translator	Status	
	Redundancy	SQLServer	DB	Microsoft SQLServer	MSSQL	Valid	delete edit
	Gateway Settings	→ Create new Data	base Connection				
	NETWORKING						
	Web Server	Note: For details abo	out a connection's status, se	ee the Database Connection Status page.			
	Email Settings						
	SECURITY						
	Auditing						
	Users, Roles						
	Service Security						
	Identity Providers						
	Security Zones						
	DATABASES						
	Drivers						
1	Store and Forward						
	Q Search						

• Click Create new Database Connection...

Ignition-Ignition - Ignition Gatew	× +		- 0
$\rightarrow$ C (i) localhost:808	8/web/config/database.connec	tions?27	☆ €
Ignition-Ignition			SyTech   Sign C
nition		Help 🚱	Get Designe
SYSTEM	Config > Database >	Database Connections	
Overview	Trial Mode 1:43:41 W	e're glad you're test driving our software. Have fun.	Activate Igni
Backup/Restore			
Ignition Exchange			
Licensing	Main Propertie		
Modules			
Projects	Name	SQLServer Warning: Changing the name of a database connection is risky. Any projects that refer to this connection by name (instead of refering to their r	project default)
Gateway Settings	nume.	will start causing errors trying to connect to a connection that no longer exists. Please verify that no projects refer to this connection by name,	and update the
Gateway Settings		unes traction.	
NETWORKING		DB .	
Web Server	Description		
Gateway Network			
Email Settings			
SECURITY	JDBC Driver	Microsoft SQLServer v	
Auditing		The JDBC driver dictates the type of database that this connection can connect to. It cannot be changed once created.	
Users, Roles			
Service Security		jdbc:sqlserver://SY020\SQLServer16 The Connect UPL is UDPC driver seering it usually contains the address of the machine that the database is supplied on	
Identity Providers		The format of the SQL Server connect URL is:	
Security Levels		jdbc:sqlserver://host\instanceName[:port] With the three parameters (in bold)	
Security Zones	Connect URL	host: The host name or IP address of the database server.	
DATABASES		instanceName: (optional) the instance to connect to on the host. If not specified, a connection to the default instance is made.	
Connections		porce optionally the porce connection interpretations and an you are using the delaute, you can omit the porcard the preceding	
Drivers		For SQL Server, you specify the database name to connect to using the databaseName property in the Extra Connection Properties.	
Store and Forward	Username	58	
9 Search			
Scarch	Change	Check this has to change the existing parsward	

Make the connection to an available database like MySQL or Microsoft SQL Server/SQL Server Express.

#### Set up Transaction Group

Select the Design Launcher from the program group and launch the project.



Under the **Project Browser** panel, right click **Transaction Groups** and select **New Transaction Group**, **New Historical Group**.

- Enter a Name.
- Click Create Group.

Project Browser Q- Filter Alarm Notification Pipelines Sequential Function Charts	8 _ X	New Group Running Basic OPC/Group Items (	7)		<b>•</b>	nabled 🕞 Disat	oled 🚺 Pause	•
E Scripting		Item Name	Source Value	Latched Val	Target Name	Data Type	Properties	
Perspective		Svs Second	13	12	Svs Second	Int4	Troperates	
Transaction Groups		Sys Minute	58	58	Svs Minute	Int4		
📃 느 🖅 New Group 🕨		Sys_Hour	10	10	Sys_Hour	Int4		
▼		Sys_Day	24	24	Sys_Day	Int4		
Client Events		Sys_Month	0	0	Sys_Month	Int4		
Windows		Sys_Year	2020	2020	Sys_Year	Int4 Int4		
Templates	~	Value2	2	2	J valuez	11104		
Named Cheries	•							
Tag Browser	6 _ X							
Q C 🛛 🖬 💿 🗗 🕞	₽.							
Tag Val I	DatTrai							
🔻 🖀 Tags								
Data Types		Run-Always Expression It	ems (ignore trigger)	(0)				~~
Sys_Day Expression	🗿	Item Name	Source Value	Latched Val	Target Name	Data Type	Properties	
Sys_Hour Expression	🔊							
Sys_Minute Expression	🖸	Triggered Expression Ite	ms (0)				•	~ ~
Sys_Month Expression 0	🕲	Item Name	Source Value	Latched Val	Target Name	Data Type	Properties	
Sys_Second Expression	🕲	^ Y						
Sys_Year Expression		😭 Status 🛛 💭 Events						
Value2 Memory 2	🙂	Message			Time			Count
System		Constants alterna	des texcis en dissible.	-h	Triller 04 004540	567 0000		
All Providers		Croup state change	u to project_disable	u	Fri jan 24 09:16:10	2020		U
		Group state change	d to 'paused'		Fri Jan 24 09:35:14	EST 2020		U
		Group state change	d to 'unknown'		Fri Jan 24 09:35:24	EST 2020		0
		1.4						

To add tags to the **Transaction Group**, drag and drop the tags from the **Tag Browser** panel of the **Ignition Designer**.

Under the **Action** tab on the right,

Action	💋 Trigger 🛛 🗐	Options				
Execution Scheduling:						
O Timer 🔾 Schedule						
1	second(s)	-				
Data sourc	e:					
SQLServer	r					
Table name	2:					
group_tab	le					
Automa	tically create table					
Use cus	tom index column:	group_table_ndx				
🗹 Store tir	mestamp to:	t_stamp				
Store qu	uality code to:	quality_code				
Delete i	records older than:					
1 0	1 day(s) 🔻					
<	1111111	>				

- Set **Execution Scheduling** to the rate at which data should be collected for the group.
- Set **Data source** to the database connection configured.
- Set **Table name** to the name of the table to log to in the database.
- If the table specified does not exist, check **Automatically create table** to ensure it is created in the database.
- Check **Start** timestamp to and leave the setting as *t\_stamp*.

Click **Enabled** when finished.

# Prerequisites

#### Verify Data Log

Select the **Design Launcher** from the program group and launch the project. Under the **Project Browser** panel, open the transaction group.

Under **Table name**, click the browse database option  $\boxed{10}$ .

Database Query Brow	/ser						
SELECT * FROM	group_table						€xecute
Resultset 1						<	SQLServer 🔹 🗸
group_tabl	Sys_Second	Sys_Minute	Sys_Hour	Sys_Day	Sys_Month	2	Schema 🗟 History
1	24	35	9	24	^		aroun table
2	25	35	9	24	=		group_table
3	26	35	9	24			sqit_data_1_2020_01
4	27	35	9	24			sqith_arv
5	28	35	9	24		_	sqith_partitions
6	29	35	9	24			sqith_sce
7	30	35	9	24			sqlth_scinfo
8	31	35	9	24			sqlth_te
9	32	35	9	24			
10	33	35	9	24			
11	34	35	9	24			
10	25	25	0	24	~ ~		
286 rows fetched	in 0.184s		🛞 Auto Refresh	🥖 Edit √ App	ly 💥 Discard		

- Enter a simple query to test like: *SELECT \* FROM GroupTable* Where *GroupTable* is the Table name as set under the **Action** tab of the group.
- Select **Execute** for the on the transaction table.

If no data is returned contact Inductive Automation technical support and correct these issues.

#### Connector

To configure the connector, from the Project Explorer select Data, Connectors.

- Click Add
- Select Inductive Automation, Ignition Transaction Group values
- Click OK

Ignition Transaction G	oup values	×
Connector Name	Ignition_Transaction_1	
Description		
Primary Database		
Туре	Microsoft SQL Server	
Data Source	192.168.9.45\sqlserver16	
Table/Column		
Table	group_table	~
Date Column	t_stamp	$\sim$
	Date includes Time	
Time Column		$\sim$
		0
		Settings
		OK Cancel

#### **Primary Database**

These settings define the connection to the database where the Ignition Transaction Group is configured to log data. Use the browse button [...] to define.

#### Table/Column

Once the Primary Database is configured, set **Table** to the database table containing the Transaction Group data.

**Date Column** should always be set to *t\_stamp* with **Date includes Time** checked.

#### Settings

The **Settings** button opens the **Settings** dialog that defines characteristics of the database that are used to retrieve data.

Settings
Scangs
Client Wait Time (sec) 60
Table/Column Delimiter End ]
Date/Time Delimiter End ['
Date/Time Storage
Date format is YYYY-MM-DD
OK Cancel

Typically, these settings are defaulted correctly for the **Primary Server**.

If queries timeout, increase the Client Wait Time.

The delimiter and timestamp settings are typically filled in automatically for the database and can be modified for other databases.

The **Date/Time Storage** settings define how timestamps are stored in the database. Using this setting the timestamps are manipulated when data is retrieved so that local timestamps are submitted in and returned.

Many databases require the Date format to be **YYYY-MM-DD** so that no interpretation needs to occur based on the Region settings of the Windows Operating System. It is recommended to always have this option checked.

# Data Group

The following describes the historical data group settings specific to the **Ignition Historical Values** connector.

**Group Types** 

📄 Select Group Type	×
O Summary Values from Server	
<ul> <li>Summary Values from XLReporter</li> <li>use raw values</li> </ul>	
◯ Raw Values	
◯ Raw Text	
Sampled Values	
C Live Values	
Custom Values	
Base on	
 dlank> ~	
OK Can	cel

The following group types are available:

#### Summary Values from XLReporter

This group type retrieves sampled values from the database and performs calculations on those samples for reporting.

By default, summary values are calculated time weighted, and values are propagated based on the last known value. However, to change this so that summary values are calculated strictly on the data returned check **use raw values**.

#### **Raw Values**

This group retrieves every value logged to the database between the start and end time specified.

#### **Custom Values**

This option opens the Database Group builder where a query can be configured to retrieve data from any table in the database.

# **Group Settings**

### Setup Tab

Setup Columns Time Period	Filters		
	Description		
	Description		
	Database		
	Definition	Specific v	
	TableAliew	Tables Views	
		group_table ~	
	Date Column	t_stamp ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
		Date includes Time	
	Time Column	~	1
	Retrieval		
	Retrieval Mode	Raw Values	1
	Dete (sees)		1
	nate (secs)	30	
	Lead Time (secs	) 30	

#### **Retrieval (Summary Values for XLReporter Group)**

The **Retrieval** settings define how data is retrieved for the calculations selected for the group. The following settings are available:

#### Retrieval Mode

This setting defines how data is retrieved from the historian. For Ignition only *Raw Values* are available.

• Lead Time The amount of time (in seconds) to retrieve data before the start time.

#### **Filters** Tab

If the **Perform by Server** option is checked, any filter configured in this tab is put into the *WHERE* clause of the query sent to the database to retrieve data for the group. Otherwise, the configured filtering is performed by the reporting engine after the values are returned. It is recommended to leave this setting checked as the performance is much better.

# Verify the Data Connector

From the XLReporter Project Explorer select, Tools, Connector Groups.

Select the Ignition Transaction Group connector and then select Add.

• Set the **Type** *Raw Values* and click **OK**.

On the **Columns** tab of the group, select the tag **Name**(s).

	9	alacted Rome	
<ul> <li>Parables</li> <li>Igrafication</li> <li>Catalog</li> <li>Ordine</li> <li>@ group_table</li> </ul>	S	elected tens Name Sys_Second Sys_Bhate Sys_Boar Sys_Day Sys_Boarth Sys_Year	Î
tens Displey Name ✓ Name ✓ group_Isble_ndx Sys_Second	>		
Sys_Minute Sys_Hour Sys_Day	>>		
Sys_Month Sys_Year Value2	<<		
Filter			OK Cancel

Select Preview, pick a Start date and click Refresh.

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