

Using XLReporter with FactoryTalk® Alarms and Events

ISA-18.2 Alarm Management Compliance

Overview

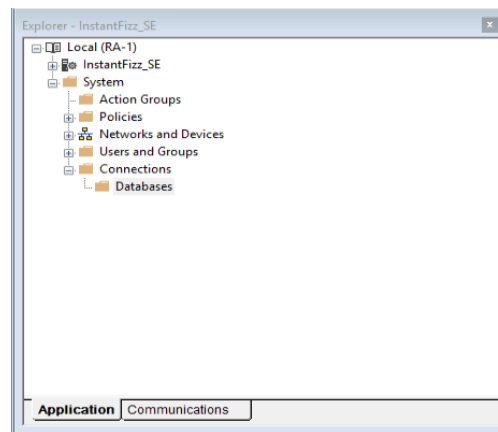
XLReporter takes raw data from the FactoryTalk Alarms and Events database and turns it into actionable information. This document describes the ISA-18.2 Alarm Management module that provides the report metrics described by the ISA-18.2 and IEC62682 standard. The reports will help identify systematic design issues and specific areas for improvement.

Setup FactoryTalk Alarms and Events

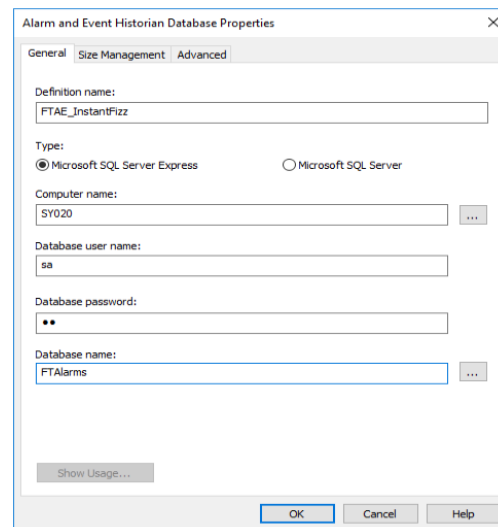
Define a Database

FactoryTalk Alarms and Events are logged to either Microsoft SQL Server or SQL Server Express. This database can be located on the local machine or across the network

To specify the database, open the **FactoryTalk View Studio**, expand **System, Connections, Database**.



Right-click **Database**, and select **New Database**.



Under the **General** tab specify the settings for your available *Microsoft SQL Server Express* or *Microsoft SQL Server* installation. For **Database name** browse to select an existing database or enter a new database name.

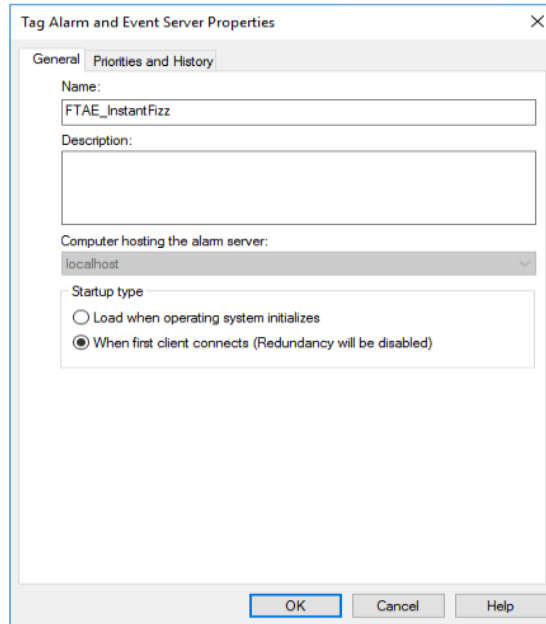
Configure Alarm Monitoring

FactoryTalk Alarms and Events supports device-based monitoring and tag-based monitoring.

Device-based monitoring is configured and downloaded to the controller with built-in alarm instructions.

Tag-based monitoring is configured in FactoryTalk View Studio by first adding a Tag Alarm and Event Server. On the left side of the Studio, right-click an application and select **Add New Server, Tag Alarm and Event Server**.

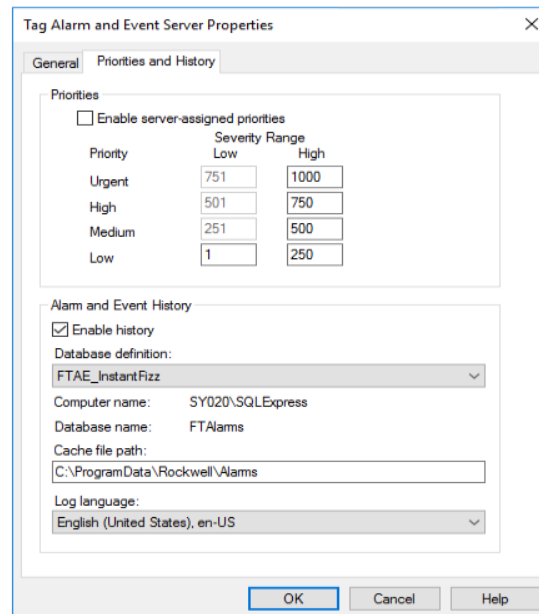
Under the **General** tab specify the **Name** for the server.



The screenshot shows the 'Tag Alarm and Event Server Properties' dialog box with the 'General' tab selected. The 'Name' field contains 'FTAE_InstanFizz'. The 'Description' field is empty. The 'Computer hosting the alarm server' dropdown is set to 'localhost'. Under 'Startup type', the radio button 'When first client connects (Redundancy will be disabled)' is selected. The 'OK', 'Cancel', and 'Help' buttons are at the bottom.

Under the **Priorities and History** tab

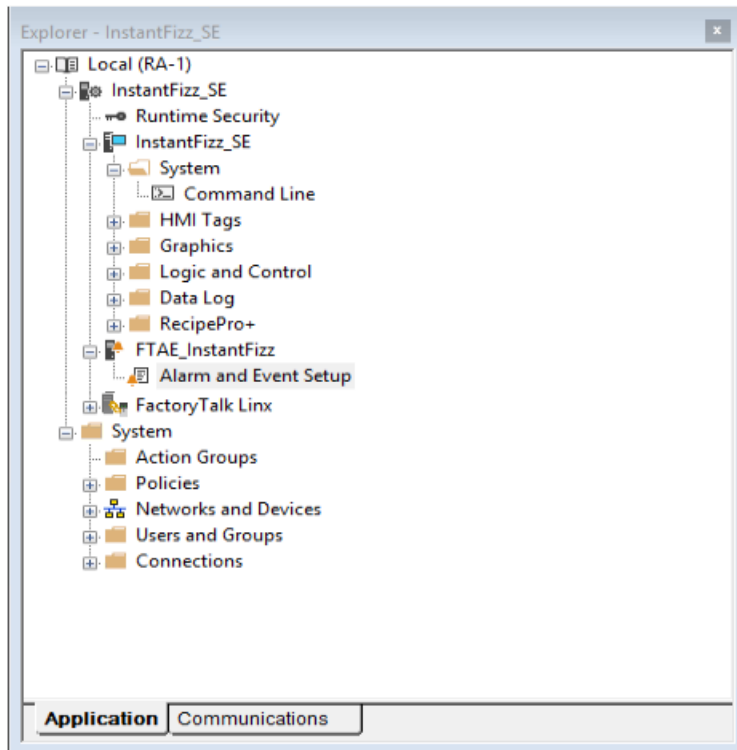
- Check **Enable History**
- Set **Database definition** to the name defined in the previous step



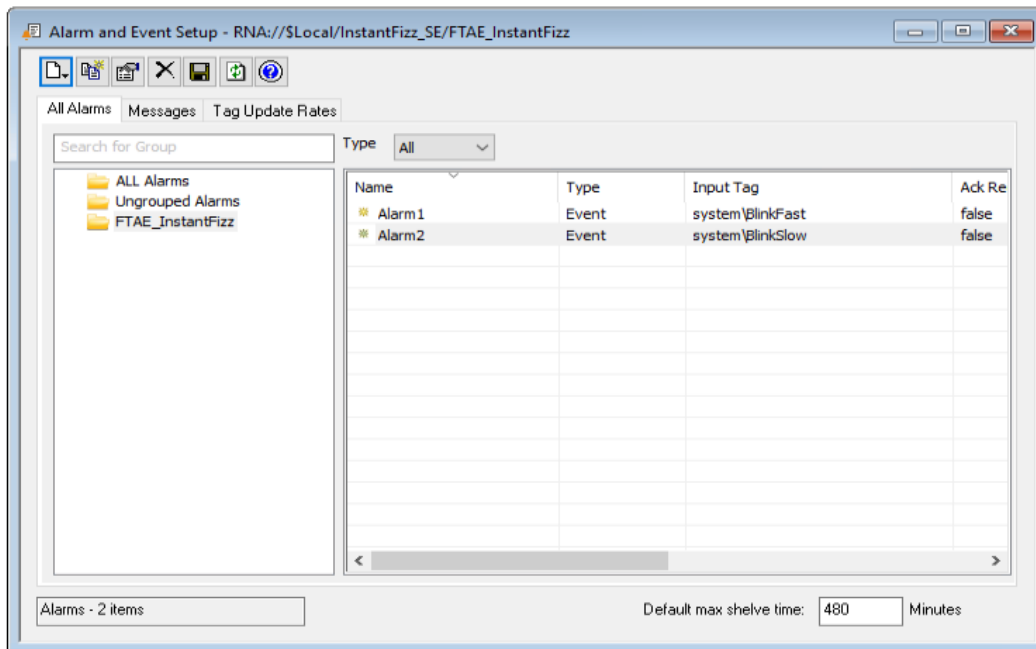
The screenshot shows the 'Tag Alarm and Event Server Properties' dialog box with the 'Priorities and History' tab selected. Under 'Priorities', the checkbox 'Enable server-assigned priorities' is unchecked. A table shows severity ranges for different priority levels. Under 'Alarm and Event History', the checkbox 'Enable history' is checked. The 'Database definition' dropdown is set to 'FTAE_InstanFizz'. Other fields include 'Computer name: SY020\SQLExpress', 'Database name: FTAlarms', 'Cache file path: C:\ProgramData\Rockwell\Alarms', and 'Log language: English (United States), en-US'. The 'OK', 'Cancel', and 'Help' buttons are at the bottom.


Priority	Severity Range	
	Low	High
Urgent	751	1000
High	501	750
Medium	251	500
Low	1	250


Tag-based alarms can now be configured in the Studio. Expand the Tag Alarm and Event Server defined in the previous step and double-click **Alarm and Event Setup**.



Tag-based alarms can be added, modified or removed within this application.



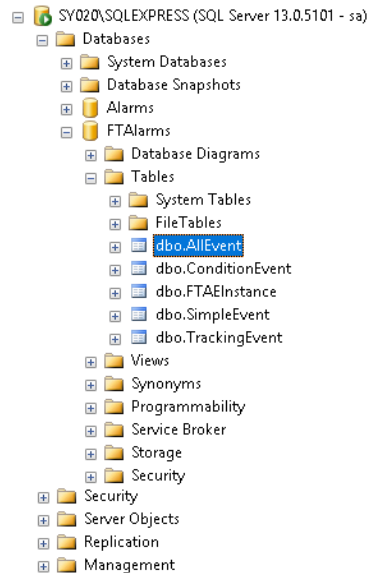
To add a new alarm to the Alarms and Events Server you defined, select it on the left hand side, then select the **New** icon  and choose the type of alarm to configure: *Digital*, *Deviation*, *Level* or *Event*. Refer to the FactoryTalk Alarms and Events System Configuration Guide for details on how to configure each alarm type.

Every alarm configured for the selected server is listed on the right. An existing alarm can be modified by double clicking anywhere on the row. An existing alarm can be deleted by selecting the row and clicking the **Delete** icon .

Prerequisites

Verify Database

Open Microsoft SQL Server Management Studio and connect to the SQL Server or SQL Server Express installation set up for the Alarms and Events Server.



Expand the Database configured for the Alarms and Events Server and expand **Tables**. Right-click *AllEvent* and choose **Select Top 1000 Rows**.

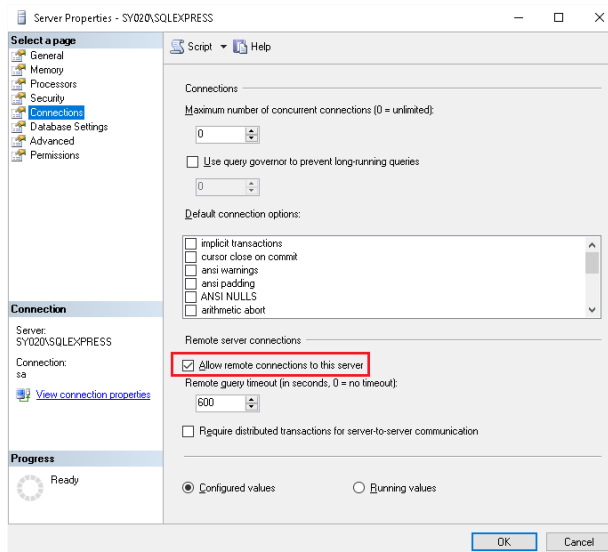
If no data is returned or there is anything described is missing contact Rockwell Automation technical support and correct these issues.

SQL Server Considerations

Remote Connection

In order for XLReporter to communicate to SQL Server or SQL Server Express remotely, remote server connections must be enabled in SQL Server. Open the SQL Server Management Studio and connect.

- Right click the server at the top and select **Properties**.



- Under **Select a Page**, select **Connections**.
- In the **Remote server connections** section, check **Allow remote connections to this server**.

Authentication

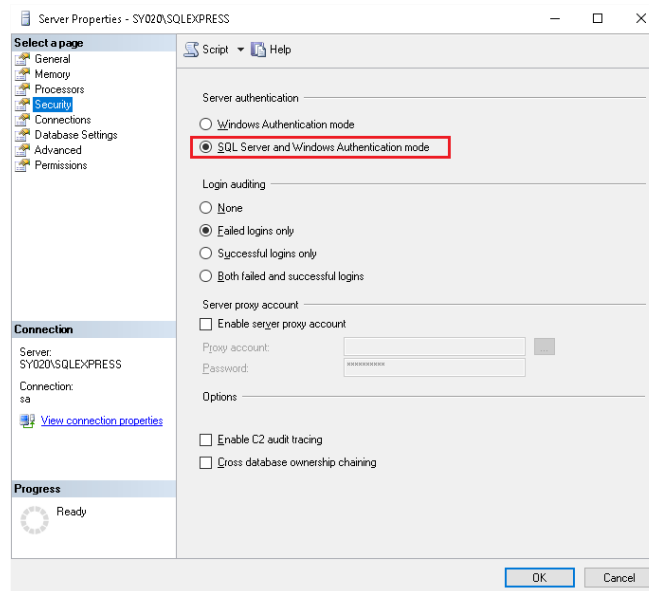
When connecting to SQL Server, authentication is either by Windows Authentication or by SQL Server Authentication depending on how the server is set up.

Windows Authentication uses credentials of the currently active Windows user. If the connection is remote, that user may not be valid on the system with SQL Server.

SQL Server Authentication allows you to specify a user name and password as configured in SQL Server as part of the connection. This can be used anywhere on the network.

To use SQL Server authentication, open the SQL Server Management Studio and connect.

- Right click the server at the top and select **Properties**.



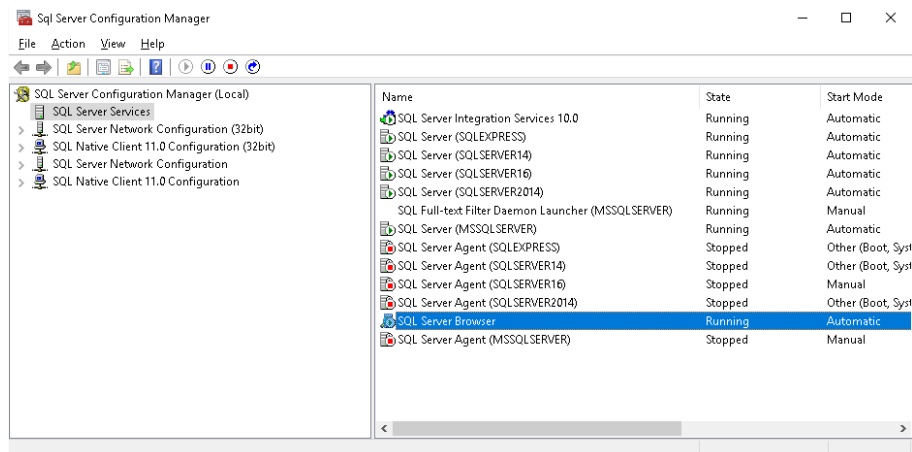
- Under **Select a Page**, select **Security**.
- In the **Server Authentication** section, select **SQL Server and Windows Authentication mode**.

At this point users can be added to SQL Server by expanding **Security** and right-clicking **Logins**.

Browsing

To browse SQL Server names across the network, the SQL Server Browser Service can be enabled.

From the Microsoft SQL Server program group open SQL Server Configuration Manager.



- Under SQL Server Configuration Manager (Local) select **SQL Server Services**.
- On the right, right-click **SQL Server Browser** and choose **Start** to start the service.

Create a Project

From the **XLReporter Project Explorer** select **File, New** to start the **Project Wizard**. This will give step-by-step instructions on creating a project

Step 1

- Enter a **Project Name** and **Description** (optional).

The screenshot shows the 'New Project' dialog box with the following fields and options:

- Project Name:** XLR_Project
- Project Off Line
- Description:** Customer or Site name
- Project Location:** c:\XLRprojects

Buttons at the bottom: < Back, Next >, Finish, Cancel

Step 2

- Configure the data connector, click **Add**

The screenshot shows the 'New Project' dialog box with the following elements:

- Step 2 : Configure the Connectors (data sources) of the Project.**
- Buttons: + Add, Modify, X Delete, Catalog
- Table with columns: Name, Provider, Description
- Table content: *

Select **Advanced Modules, Alarm Management (ISA-18.2)**

The screenshot shows the configuration dialog box with the following fields and options:

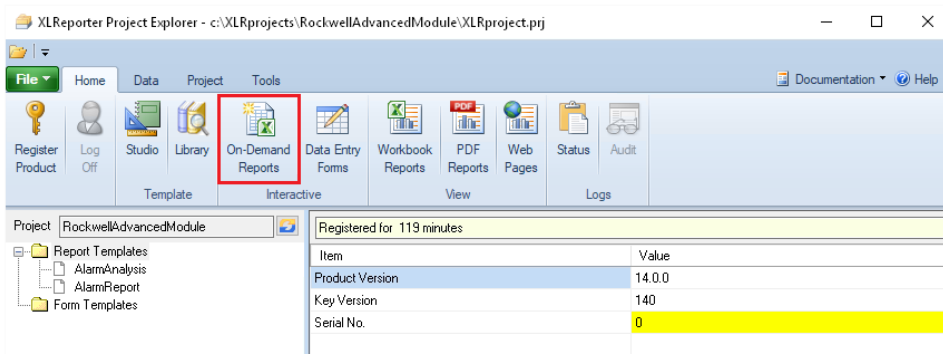
- Connector Name:** Alarm_Management
- Description:** (empty)
- Provider:** Rockwell Software FactoryTalk Alarms and Events
- Primary Database:**
 - Type:** Microsoft SQL Server
 - Data Source:** SY020\SQLSERVER16
- Table/View:**
 - Name:** AllEvent
- Buttons: Settings, OK, Cancel

- Set the **Provider** to *Rockwell Software FactoryTalk Alarms and Events*
- Set the **Primary Database**
- Select the *AllEvent* table

Verify Data Communication

On-Demand Report

From the **XLReporter Project Explorer**, select **On-Demand Reports** to open the On-Demand application.



The templates *AlarmReport* and *AlarmAnalysis* will be listed in the left pane.

- Select *Alarm Report*
- Enter a valid *start* and *end* date
- Click **Refresh**

Alarm Performance Dashboard

Data Source Area (s)	Alarm Data All Areas	Report Start Date	Report End Date	Alarm Period (hrs)		
		7-Jun-17	23-Jun-17		384	
Key Performance Indicators						
Total Number of New Alarms		27091		Total Number of Stale Alarms Sources	0	
Total Number of Alarm Floods		0		Standing Alarms at Period End	0	
Total Number of Alarm Suppression Actions		0		Not including alarms > 384+ hours old		
Average Alarm Rate per day		1693.19		Average Alarm Rate per 10 min		11.76
Acceptable limits		Acceptable limits		Acceptable limits		limits
Manageable 150		Manageable 12		Manageable 2		2
Critical 750		Critical 30		Critical 5		5
>30 Alarms per hour		67.45%		>10 Alarms per 10 min		33.72%
Acceptable limits		Acceptable limits		Peak Alarms per 10 min		130
Manageable 1%		Manageable 1%		Acceptable limits		limits
Critical 10%		Critical 5%		Manageable 10		10
Flood per period		0.00%		Critical 20		20
Acceptable limits		Acceptable limits		Chattering/Fleeting per period		0
Manageable 1%		Manageable 5%		Acceptable limits		limits
Critical 5%		Critical 20%		Manageable 1		1
Stale per period		0		Critical 2		2
Acceptable limits		Average Alarm per hour during flood		Average Alarm per hour excluding flood		70.55
Manageable 1		Acceptable limits		Acceptable limits		limits
Critical 2		Manageable 12		Manageable 12		12
		Critical 30		Critical 30		30