Using RSLogix5000 (v16) Alarming Instructions with RSView SE/ME (v4.x)

Purpose of this Document: The alarming instructions, first made available in RSLogix 5000 v16, are designed to be used seamlessly with FactoryTalk View SE/ME (v5.0). They provide native compatibility with FactoryTalk View for SE v5.0, with FactoryTalk View ME supporting the instructions some time later. Because the timing of the releases of these different View products does not align with the release of RSLogix 5000 v16, there may be a need for projects that will be designed to take advantage of the benefits of FactoryTalk Alarms and Events, even though the visualization piece is not yet available

This document outlines how to manually configure RSViewSE and RSViewME v4.x to utilize the alarming instructions introduced in RSLogix 5000 (v16.0). Its intent is to allow systems to be brought online and operational before the release of the visualization portion of FactoryTalk Alarms and Events is installed. The expectation being that when the upgrade to FactoryTalk Alarms and Events visualization occurs, the system changes to both the controller and HMI are minimized.

This document will detail:

- What features of FactoryTalk Alarms and Events can reasonably be implemented in RSView v4.x products.
- How to configure RSView SE and ME alarms using the new RS Logix 5000 alarm instructions.
- Using export (CSV) files to automate configuration.
- Design considerations for RSLogix 5000 v16 projects when paired with RSView 4.x.
- Design considerations for RSView v4.x to minimize impact when upgrading to FactoryTalkView v5.x.
- Using the ALMA and ALMD faceplates.

The target audience is comprised of those engineers who want to utilize the new alarm instructions in RSLogix 5000 v16 but must design the HMI with RSView v4.x or RSView32. They may or may not opt to upgrade to FactoryTalkView 5.x.

1 What is alarming in FactoryTalk View v5.0?

There are two new alarm instructions available in RSLogix 5000 v16: the ALMA instruction for analog alarms and the ALMD instruction for digital alarms. All alarm configuration information is part of the controller logic, such as limits, severity level, and alarm text. They can be acknowledged and suppressed by program logic, from View objects like a custom faceplate, or from the alarm banner or summary screens in FactoryTalk View SE v5.0. These alarms are displayed automatically on the FactoryTalk View SE v5.0 station.

The benefits of controller-based alarming include:

- Alarms are reported to the HMI by exception, rather than burdening the network with constant polling
- Single-point configuration and maintenance
- Improved time stamp consistency for accurate first fault-finding in complex processes.
- Better alarm coordination between stand-alone HMI Displays.
- Single point of alarm acknowledgement and suppression
- Leaves alarm control and status at the ultimate owner of the alarm, the controller

1.1 Can RSViewSE 4.x HMI stations view these alarms too?

Yes! In View SE 4.x and earlier releases of View, alarms that are displayed on the HMI must be defined and configured in the HMI. So once the alarms are defined in the View project, some of the same functionality is possible in RSView SE 4.x as is available in FactoryTalk View SE.

The following table outlines the features from the instruction based alarming system that can be implemented in a RSView SE 4.x project.

1.2 Alarm and Events HMI Functionality Matrix

Using the ALMA and ALMD instructions, here is a functionality matrix comparing FactoryTalk View v5.x and RSView v4.x.

	FactoryTalk View v5.x		RSView v4.x		
HMI Functionality	**FactoryTalk SE[1] Alarm Viewer**	**Faceplate**	**RSView ME Alarm Viewer**	**RSView SE Alarm Viewer**	**Faceplate**
Alarm Notification by Exception (not Polling)	✓	◦	✗	✗	◦
Alarm Current Status	✓	✓	✓0	✓0	✓
Multi-language alarm messages	✓	◦	✓M	✓A	◦
Alarm Buffering at Controller	✓	◦	✗	✗	◦
Automatic Update of additional or changed alarms from the controller at runtime	✓	✗	✗	✗	✗
Controller Maintained Alarm Status	✓	◦	✗	✗	◦
Associate other tags with alarm event??	✓	◦	✗2	✗2	◦
Tag-reference compiled alarm messages	✓	◦	✗	✗	◦
Time Stamp Alarm	✓	◦	✓ (< 1 sec)	✓ (< 1 sec)	◦
High Resolution Controller Time Stamp	✓	◦	✗	✗	◦
Custom Time stamp from External Source	✓	◦	✗	✗	◦
Alarm Class and Event Category	✓	◦	✗	✗	◦
View Command from Instruction	✓	✗	✗	✓A	✗
Alarm Acknowledge to controller	✓	✓	✓M	✓A	✓
Alarm Acknowledge from controller	✓	✓	✓M	✓M	✓
Alarm Suppress to controller	✓	✓	✗	✗	✓
Alarm Suppress from controller	✓	✓	✗	✓M	✓
Alarm Disable to controller	✓	✓	✗	✗	✓
Alarm Disable from controller	✓	✓	✗	✗	✓
Alarm History Storage	✓ MS SQL	◦	✓	✓	◦
Alarm History Visualization	✓ FactoryTalk Log Viewer	◦	✓ Alarm Status List Object	✓ SE Alarm Log Viewer	◦

KEY: ✓ = available, ✗ = not available, ◦ = not applicable

A Feature must be implemented manually, but can be semi-automated via import/export (CSV) files.

M Feature must be implemented manually, with manual configuration in RSView Studio.

0 Alarms configured in the traditional way, using the ALMA and ALMD parameters described in this document.

1 FactoryTalk Viewer for ME to be released at a later date. Until then, alarms must be configured in the traditional way.

2 Note that in RSView v4.x the ability to include the analog value in the alarm message is lost.

1.3 Summary of Functionality

- Individual traditional HMI digital alarms can be created and linked to ALMA and ALMD tag parameters.
- In RSViewSE v4.x, though alarm collection is still based in the HMI, much of the FactoryTalk View v5.x Alarm and Event functionality can be supported through both the Alarm Summary display object and faceplate. Some manual configuration is required, but tools can be used to make HMI alarm configuration easier and quicker.
- In RSViewME v4.x, alarm collection is still based in the HMI and only basic FactoryTalk View v5.x Alarm and Event functionality can be supported due to the ME architecture. Alarms must be configured in the traditional manual way. In applications that require more A&E functionality from the ME stations, the faceplates can be used.
- HMI alarm configuration can be made easier through the use of a conversion tool that will automatically generate RSView CSV files from RSLogix 5000 CSV files.

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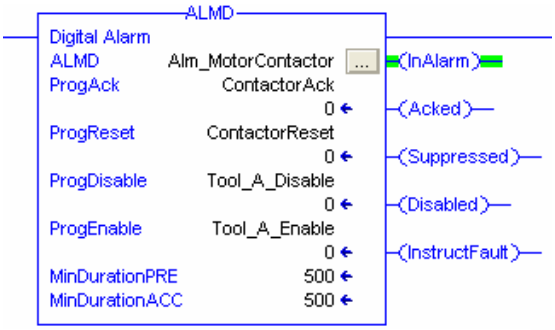
2 The anatomy of the RSLogix 5000 v16 Alarm Instructions



The instructions are each a single data type with many read/write parameters

Starting with FactoryTalk View SE v5.0, the HMI requires little or no configuration to display these alarms. The information is available directly from the controller by means of FactoryTalk Alarm and Events.

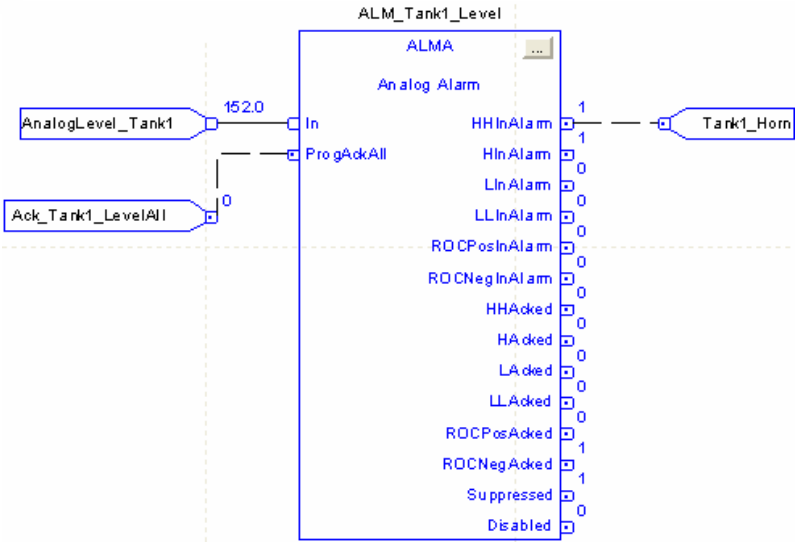
For RSView v4.x and until FactoryTalk View v5.x is available, the tag parameters can be used to configure traditional HMI digital alarms.

The following tables list the primary tags necessary to implement RSLogix 5000 v16 alarm instructions in RSView v4.x.

The instructions are defined in RSLogix 5000 as an alarm datatype and configured using property panels. All necessary alarm properties that previously had to be defined and maintained in the HMI, such as alarm limit and current status, are now defined and maintained in the controller as tag parameters.

There are two instructions:
1. ALMA for analog alarms
2. ALMD for digital alarms

Name	Data Type
ALMATag01	ALARM_ANALOG
ALMATag02	ALARM_ANALOG
ALMDTag01	ALARM_DIGITAL
ALMDTag02	ALARM_DIGITAL



2.1 ALMD: Digital Alarms

In Alarm Status Parameter: Read Only				
Read	**Write**	**Parameter Name**	**Read Parameter**	**Write Parameter**
●		General Status – In Alarm	. InAlarm	◦

Acknowledgement by Operator Parameter: Read and Write				
Read	**Write**	**Parameter Name**	**Read Parameter**	**Write Parameter**
●	●	General Status – Acknowledge	.Acked	.OperAck

Suppression by Operator Parameters: Read and Write				
Read	**Write**	**Parameter Name**	**Read Parameter**	**Write Parameter**
●	●	Alarm Suppression (by Operator)	.Suppressed	.OperSuppress
	●	Alarm Unsuppression (by Operator)	◦	.OperUnsuppress

Disable by Operator Parameters: Read and Write				
Read	**Write**	**Parameter Name**	**Read Parameter**	**Write Parameter**
●	●	Alarm Disable (by Operator)	.Disabled	.OperDisable
	●	Alarm Enable (by Operator)	◦	.OperEnable

The alarm message text is NOT exposed to the controller as a tag, but can be accessed from an RSLogix 5000 export (CSV) file. Sample from RSLogix 5000 CSV file:

Text Messages			
TYPE	**NAME**	**DESCRIPTION**	**SPECIFIER**
ALMMSG:en-us	ALMD Tag Name	Alarm text for operator in English	AM
ALMMSG:de-ch	ALMD Tag Name	Mitteilung für den Operator auf Deutsch	AM