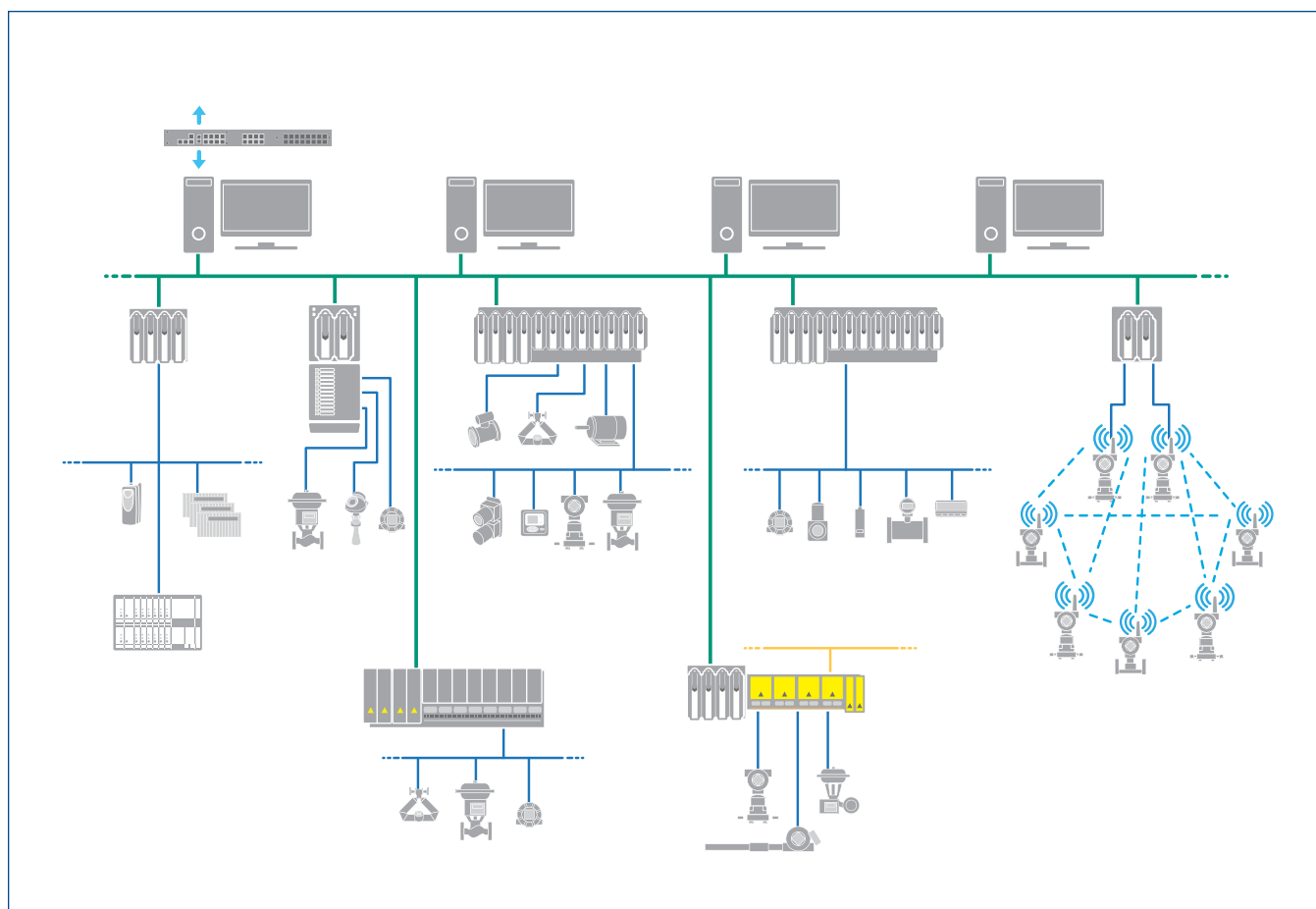# Configuring FF912 Alarms in a DeltaV™ System

This document describes how to configure device alarms on fieldbus devices supporting FF-912 specification.

DELTAV™

EMERSON

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Introduction

This document provides information on FF-912 device alerts in a DeltaV™ system. NAMUR, an international process industry end-user association based in Germany, has developed recommendations for the type of diagnostics functions and status reports for field devices (NAMUR NE-107). The Fieldbus Foundation has been collaborating with NAMUR and adopted NAMUR's NE-107 recommendations as part of the Foundation fieldbus Diagnostics Profile Specification (FF-912).

DeltaV is a registered Fieldbus host system supporting the new host profile that satisfies the intent of NAMUR's NE-107 recommendation. DeltaV v12 maintain a high level of usability in the DeltaV system by seamlessly integrating field devices that support NE-107 recommendation and presenting the device diagnostic alerts in a consistent manner for both Emerson and non-Emerson devices allowing the standardization of work practices.

This paper assumes that the reader is familiar with PlantWeb Alerts and the DeltaV alarms, including the definition of alarm priorities, as well as the function of plant areas within the alarm management scheme. For additional information on PlantWeb Alerts please refer to the White Paper Configuring PlantWeb Alerts in a DeltaV System.

Overview of FF-912 Alerts in the DeltaV System

NAMUR NE-107 is a set of recommendations for the self-monitoring and diagnosis of field devices. These recommendations are similar to the PlantWeb alarm features in DeltaV that in the same way as NE-107 provides consistent, predictive device condition monitoring and reporting. In the context of a DeltaV system these NE-107/FF-912 device alerts are mapped to PlantWeb Alerts.

FF-912 Alerts in FOUNDATION Fieldbus Devices

The field device itself must support NE-107. New Emerson devices will support both FF-912 and PlantWeb alarms. DeltaV v12 provides the user the capability of continuing to use the PlantWeb alarm as they are today and it also provides the additional feature of optionally using the FF-912 alarm objects in Emerson and non-Emerson devices which support NE-107.

DeltaV Hardware and Software Requirements

Support for FF-912 Alerts is introduced in DeltaV v12 for both Emerson and non-Emerson devices supporting alarms based on FF-912/NE-107.

From a hardware perspective, the Series-2 H1 card is required to access PlantWeb Alerts in FOUNDATION Fieldbus.

FF-912 Alert Classifications

FF-912 classifies and reports device diagnostics conditions in a similar, but not identical way as PlantWeb Alerts. FF-912 alert conditions are organized into four categories, based on the impact of the condition to the health of the device:

■ **Failure** – The field device provides a non-valid output signal due to device malfunction.

■ **Out of Specification** – The field device operates out of the specification.

■ **Maintenance Required** – The field device is still able to provide a valid output signal but is about to lose functionality.

■ **Check Function** – The field device is temporarily non-valid due to some type of maintenance activity.

PlantWeb also classifies device alert conditions based on the impact of the condition to the health of the device:

- **Failed** – The field device is not able to perform its primary function and is probably impacting the process.

- **Maintenance** – The device is impaired and may be impacting the process.

- **Advisory** – The field device is in need of preventive maintenance or has information to be recorded.

- A fourth PlantWeb alerts is created by the DeltaV system, based on the ability to communicate with the device. This communication alarm is not generated by the device but by the DeltaV system when the device is no longer communicating on the H1 segment.

The DeltaV system maps the FF912 device alerts into PlantWeb alerts:

Mapping of Alarm Categories			
NE-107 Device Alarm Category		**DeltaV PlantWeb Alarm Category**	
Failed	❌	Failed	❌
Off-Specification	⚠	Maintenance	⚠
Maintenance	◆	Advise	ℹ
Check Function	🔧	Check Function*	🔧

*The Check Function is a new DeltaV device alarm that is introduced in v12. The default priority is LOG, which means it is only logged in the event chronicle and does not appear in the alarm banner.

FF-912 Alert Implementation

For devices that support FF-912, the user will have the choice of either using the current alarms and field device alarm parameters supported by DeltaV, or using the new FF-912 parameters.
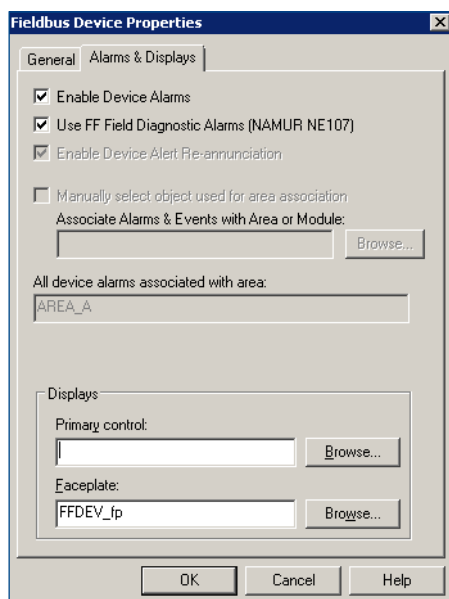
Enabling FF-912 Alerts

By default, the DeltaV system enables Device Alarms and use of NE107 alarms when a device supporting FF-912 is created in DeltaV Explorer.

For Emerson devices supporting PlantWeb alerts, unselecting the NE107 checkbox will allow the use of PlantWeb alerts as they are today.

For either non-Emerson devices or Emerson devices not supporting Plant alerts, unselecting the NE107 checkbox will allow the use of Standard Foundation fieldbus device conditions reported through a single alert type, ABNORMAL. Since all conditions are reported under the same ABNORMAL alert and with the same priority, it is difficult to distinguish which conditions are actionable by either operators or maintenance personnel.

The selection of the NE107 check box has the following impact on the alarm categories reported in DeltaV:

Device Alert Categories based on selection of NE107 functionality		
Device Type	**NE-107 Checkbox selected**	**NE-107 Check box no selected**
Emerson device supporting NE107	Failed Maintenance Advise Check Function Communication	Failed Maintenance Advise Communication
Non-Emerson device Supporting NE107	Failed Maintenance Advise Check Function Communication	Abnormal Communication

Setting FF-912 Alert Priority

FF-912 alerts are reporting as PlantWeb Alerts and follow the same priority assignment.

Alarm Re-Annunciation

The alarm re-annunciation feature allows a new alert condition to be reported if a previous condition has activated a particular alarm. DeltaV v11 supports re-annunciation as user option for PlantWeb Alarms. This behavior is continued in DeltaV v12 for Emerson devices, if the user chooses to use the PlantWeb alarms.

Devices must support re-annunciation to comply with FF-912. If the user chooses to use the FF-912 alarms, DeltaV v12 will automatically use the re-annunciation feature and the user will not be able to remove the re-annunciation functionality.

Summary

Out of the box, the DeltaV system provides a comprehensive device alert reporting system including support for FF912.

Fieldbus devices internally generate alert based on device conditions and report them to the DeltaV system for annunciation and logging. DeltaV v12 and later support devices using FF912. The DeltaV system maps the FF912 alerts into PlantWeb alerts and incorporate FF912 alerts into the overall alarm management system with the ability to fine-tune annunciation based on assignment of alarm priority, plant area, and workstation alarm banner threshold. Device plant area assignment automatically follows the control module where they are assigned.

DeltaV v12 provides functionality that satisfies the intent of NAMUR's NE-107 recommendation. Device alerts should be introduced methodically to a DeltaV system, to avoid inappropriate notifications to operators who either have no action to take when alerted or have not been training to respond. When properly deployed, device alerts can significantly improve system availability and reduce unscheduled outages.

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