

## ***Using the F809F Fieldbus diagnostic module with the Emerson Delta V and AMS***

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**Introduction**

This technical support note is intended to give the user an understanding of how to integrate in the Delta V explorer and in AMS the F809F diagnostic module.

**References**

INM F809F                      FOUNDATION fieldbus    diagnostics module manual

*FOUNDATION fieldbus*    is a trademark of the Fieldbus Foundation

**Overview**

This document is intended to provide details of how the F809F rev 2 module easily integrates into the Delta V explorer and AMS. The F809F fieldbus module monitors the health of fieldbus segments and provides an indication of possible network failure.

The F809F device uses the DLL files to display its information in multiple TABs in AMS. The system transducer block displays 4 TABs and the segments transducer blocks display . Moreover you can have access to two kinds of views:

- Configure / setup
- Device Diagnostics

The Delta V explorer is used to configure the Delta V hardware (Controller, IO modules..) and the F809F diagnostic module (commissioning the devices).

AMS is used for configuring the F809F and for monitoring the diagnostic values.

It also provides instructions to integrate other FOUNDATION fieldbus field devices such as the Beka fieldbus displays in the Delta V environment.

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# 1 Hardware Requirements / Installation

## 1.1 Installation for communication



## 1.2 Configuration of fieldbus communication segment

The F809F is shipped preconfigured to communicate on segment 8.

The communication segment that will be used may be changed by configuring the connector on the front face of the module. A 6 pin comb, supplied with the module is used to define the communication segment by inserting it one of the two ways into the connector.

For communication on segment 8, place the comb in the connector so that the number 8 is visible on the top left surface.

For communication on segment 1, place the comb in the connector so that the number 1 is visible on the top left surface. (Order F809F-1 for module preconfigured to communicate on segment 1)

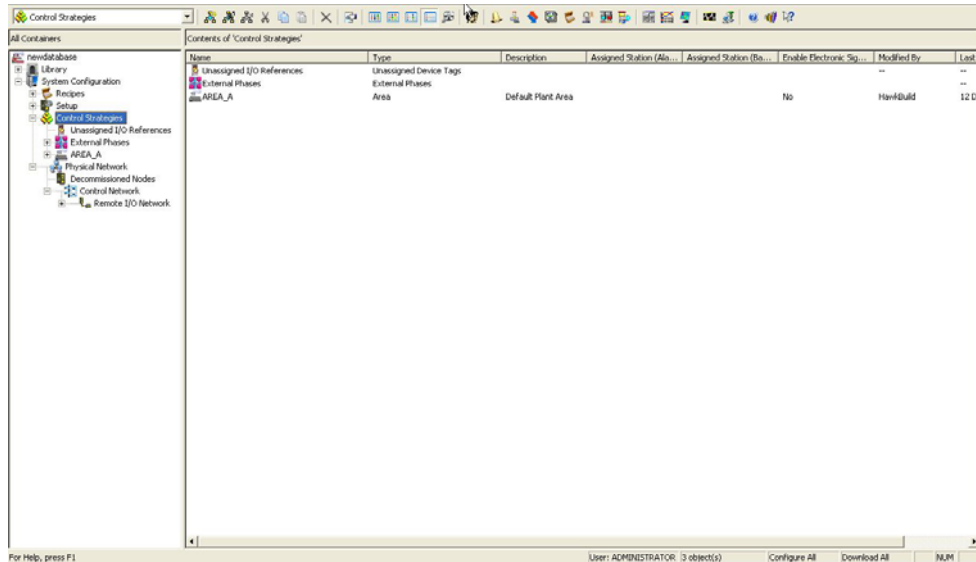
For communication on a separate segment , remove the comb and connect the segment to

connections 3+4 in the top connector or, in some cases, through dedicated connectors on the carrier. See INMF809F for further details. . (Order F809F-9 for module preconfigured to communicate on a separate segment)



## 2 Workstation and controller configuration

Launch the Delta V Explorer



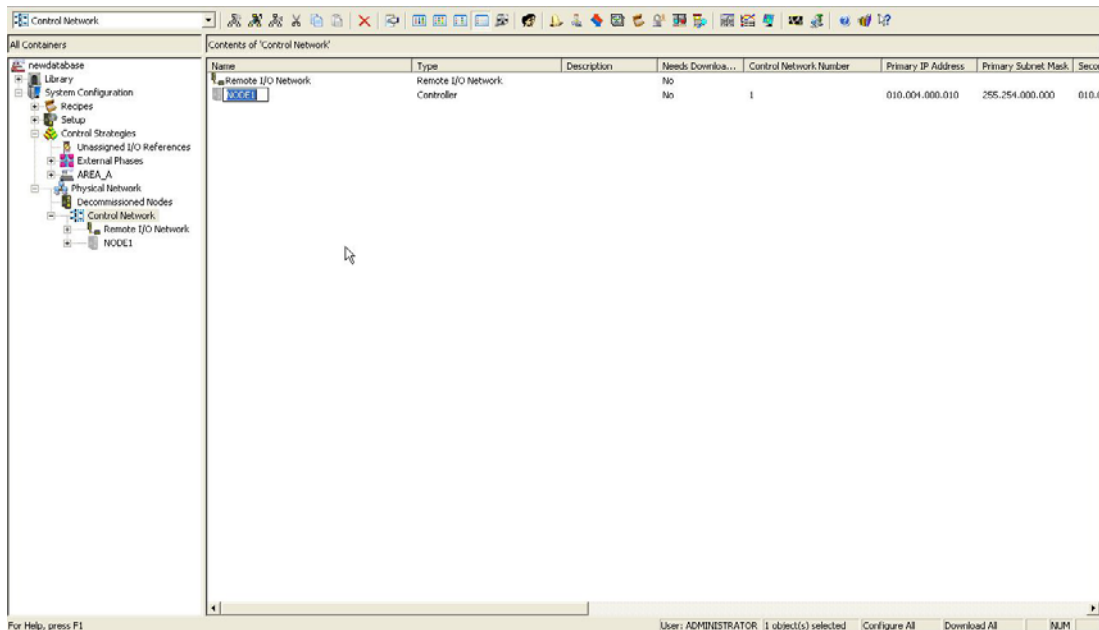
### 2.1 Add a node

Navigate to Control Network (System Configuration / Physical Network)

Right click on Control Network

Select New / Controller

Rename the node (controller name can include as many as 16 characters)



## 2.2 Adding controllers to the control network

When you add a controller to the Control Network, the Explorer automatically assigns an IP address and subnet mask to the controller. You can add connected controllers to the Control Network, or you can add controllers that are not yet connected to the Control Network. In other words, you can add controllers to the Control Network that are not physically present (a controller placeholder).

Before you assign a connected controller to the Control Network, it appears in the Decommissioned Controllers section of the Explorer. Assigning the controller to the Control Network is a simple drag and drop action to the Control Network or to a controller placeholder.

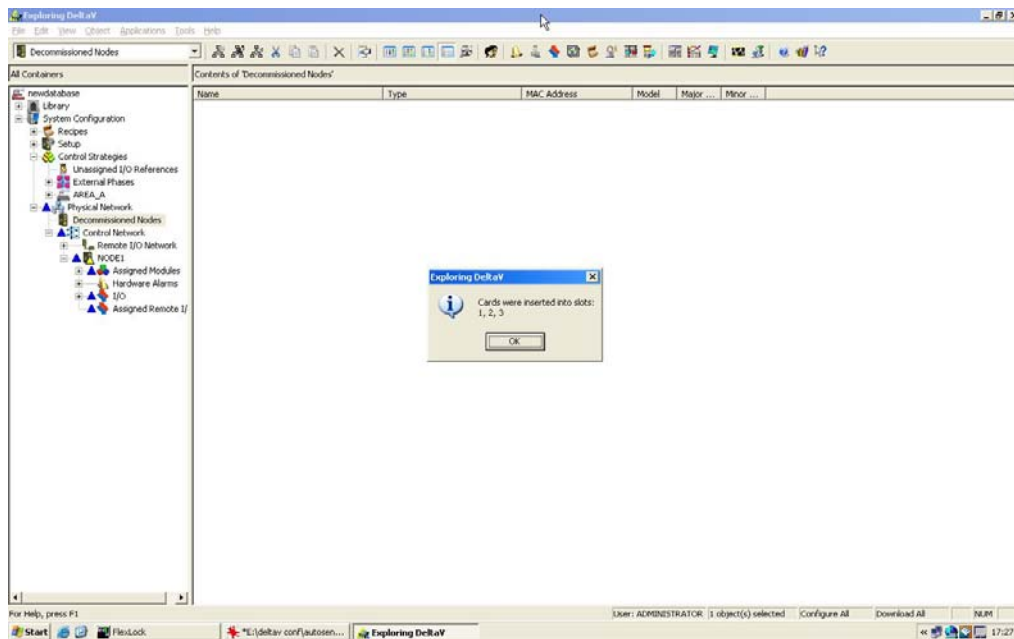
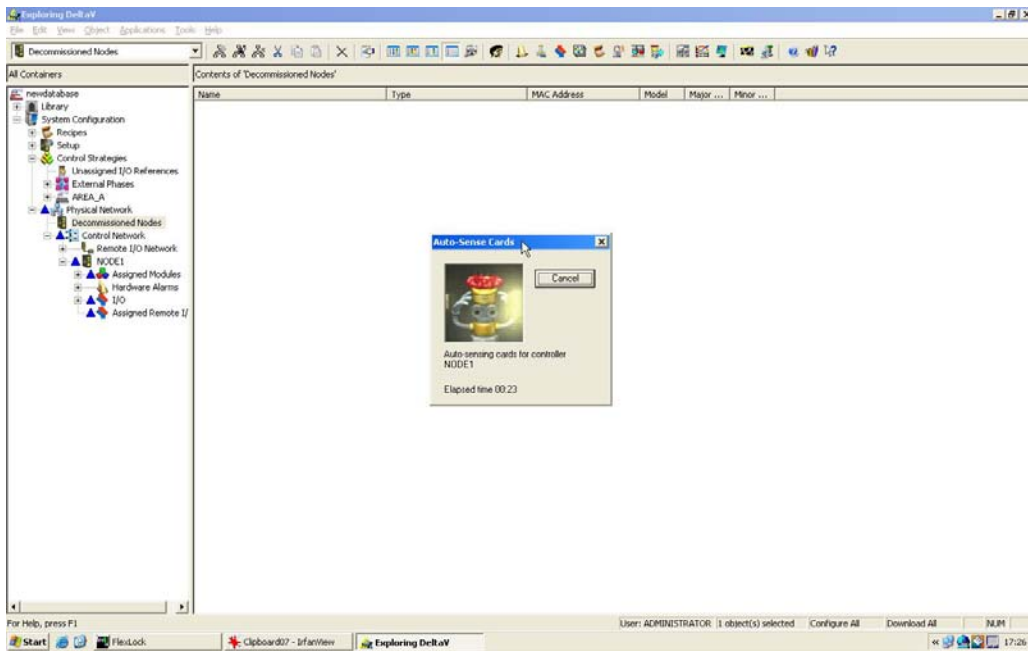
### 2.2.1 How to add connected controllers to the Control Network

Assign a decommissioned controller to the Control Network

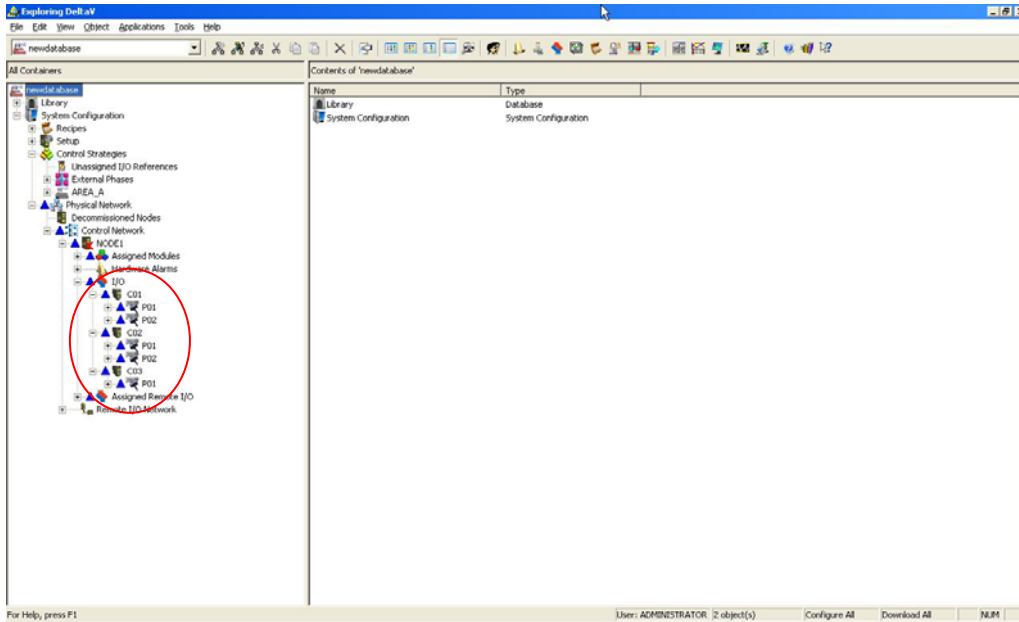
Navigate to the decommissioned controller you want to assign to the network (System Configuration/Physical Network/Decommissioned Controllers).

Select the controller you want to add to the Control Network.

Drag the controller to the Control Network. The Explorer asks if you want to auto-sense the I/O as well as the controller. If there is no I/O connected to the controller, click No.



After the Auto-Sense, make sure that the Delta V explorer has found all your I/O cards.



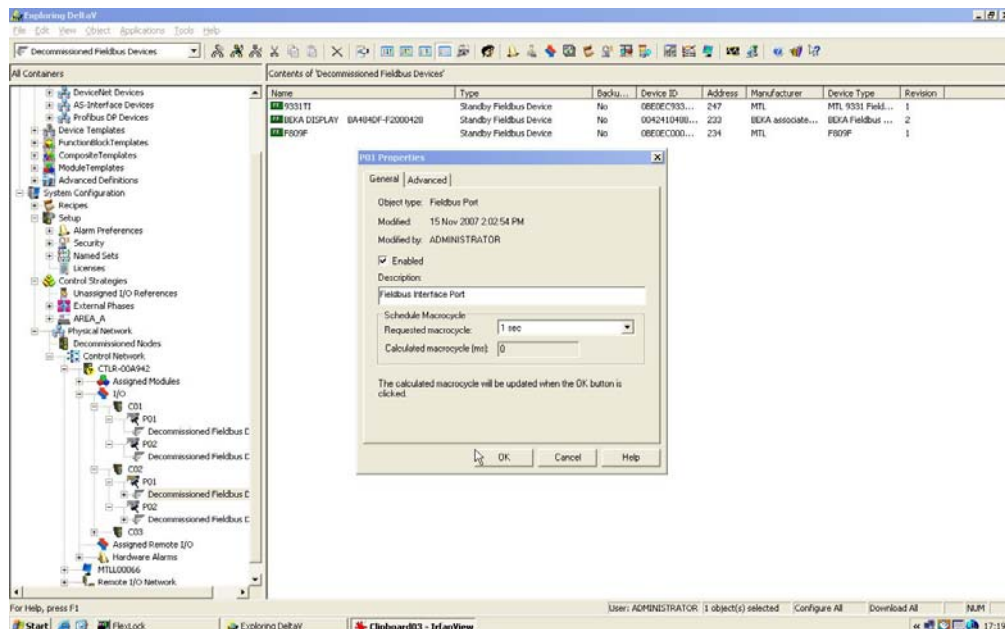
### 2.2.2 Enable the Fieldbus port on a Fieldbus Card

Navigate to the fieldbus H1 card (System Configuration / Control network / Controller / IO / Card)

Right click on port (P01 or P02)

Click Properties

Click the Enabled box



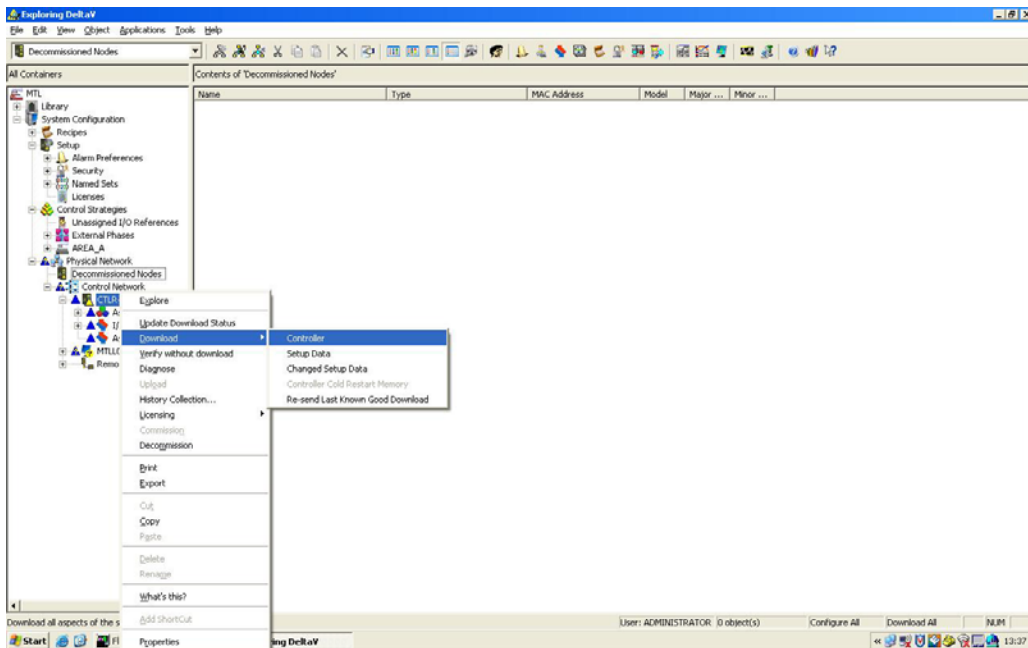


### 2.2.3 Download controller configuration

Navigate to the controller (System Configuration/Physical Network/Control Network).

Right click the controller you want to download.

Click Download Controller.



**Warning:** A download can potentially bump the I/O. To prevent this, place the block producing the outputs in manual mode before you download. Care must be taken to determine if the process can withstand this temporary disruption. To ensure the safety of the process, it may even be necessary to delay the download of the configuration changes until the process can be shut down.

**Note:** After downloading a redundant Data controller, check the controller integrity to make sure the standby controller is able to take over control.

The workstations and controllers in your DeltaV system require configuration data from the DeltaV database in order to operate. Initially, the DeltaV database stores all of the configuration data. You make changes to the configuration in the database without affecting the operation of the controllers and workstations. When the configuration is complete, you download that information to the workstations and controllers.

The data that you download allows the DeltaV system to manage your control strategy. For example, workstations need to know all of the other nodes in the system as well as which areas to monitor and where to record events. Likewise, controllers must have their assigned modules downloaded so that the modules can run in the controller. You must also download the I/O card data so that the controller knows the type and enabled status of the channels and the Device Tag associated with each channel.

You can download any data from within the DeltaV Explorer application. It is possible to download the entire configuration (entire database) or small parts of the configuration by making the appropriate selections within Explorer. For example, the Explorer lets you download a single controller, setup data, I/O card, or module by selecting the icon for that item and choosing Download on the context menu



(the menu that appears when you right click). In addition, you can download individual modules from within Control Studio.

#### Full (Total) Download (Workstation or Controller)

To download the entire configuration of a workstation or controller, select the item you want to download, right-click, and then click the Download option from the menu. This downloads the entire configuration for the node selected (workstation or controller) and is called a full (total) download.

Use a full download when the node has not yet been downloaded or has no configuration. Total controller downloads should be avoided when the process is running. If there is already configuration present in the controller, a total download will generally cause parameter values in the controller to be replaced with those from the configuration database. There are some exceptions where matching behaviour occurs, such as in controller function blocks directly connected to output channels and for fieldbus shadow blocks. Depending on your configuration you could experience an output disruption on a total controller download.

#### When to Download

The DeltaV Explorer marks the physical objects that require a download with the  symbol (blue triangle). However, if you are making changes to the setup data, you see the  symbol (blue triangle) next to the ProfessionalPLUS workstation (at the node level only). The setup data are global data. The changes you make to the setup data affect all of the controllers and workstations. You must download ProfessionalPLUS setup data (or changed setup data) in order for the setup data to be distributed to all workstations and controllers.

## 3 Fieldbus devices

### 3.1 Fieldbus Devices General Information

Each fieldbus device must have a unique physical device tag and a corresponding network address. The device tag is assigned to the device when it is commissioned and (for most device states), the device retains the tag in its memory when it is disconnected. The device does not retain the tag when the device is made Spare. When the device is made Spare, the tag information is lost. The network address is the current address that the fieldbus is using for the device. The Fieldbus Foundation uses addresses in the range 0-255. Group addresses and DLLs use addresses 0 - 15, commissioned devices use addresses 20-35, standby devices use addresses 232-247, and offline and spare devices use addresses 248-251.

**Unknown** - the fieldbus device class is not known at this time.

**Basic device** - sends and receives messages on the fieldbus but does not control when devices have access to the fieldbus. The Beka display and the F809F diagnostic module are both basic devices.

**Link Master** - controls when devices access the fieldbus and executes the link schedule which synchronizes communications with function block execution on the fieldbus. Link Master devices are capable of taking over as LAS if the Primary Link Master device fails. The backup Link Master must use address 20. The DeltaV H1 card is a Link Master.

**Note** Link Master devices should always be Commissioned. Unpredictable behavior could occur if a Link Master capable device is in Standby or Offline and the Primary Link Master device fails. Any temporary device should only be connected to the fieldbus as a Basic device.

## 3.2 Device Descriptions and Methods

### 3.2.1 Device Description

A Device Description is similar to a driver for the device. For fieldbus devices, the Device Description includes the calibration procedures, parameter procedures, and other information required by the control system to communicate with the fieldbus device. Standard Device Descriptions are provided by the Fieldbus Foundation and optional, incremental Device Descriptions are provided by the device manufacturer. Device Descriptions are written in the Device Description Language (DDL) and the host system such as the DeltaV system uses library functions called Device Descriptions Services to read the Device Descriptions. Device Description technology enables interoperability among fieldbus devices. Interoperability, a key benefit of fieldbus technology, is the ability of a host system to operate multiple devices, independent of manufacturer, on the same fieldbus segment without loss of minimum functionality.

The DeltaV system supports a number of fieldbus devices from different manufacturers. The device description files necessary to support these devices are included in the DeltaV install image. If a fieldbus device is not included in the DeltaV install image, you must install the device description for that device. The device description is specific to the device type and revision. The device description files must include a file with an .fhx extension to work with the DeltaV system. You can download the device description files to a disk, CD, or directory on your system and then use the DeltaV Explorer to add the device type to the DeltaV Explorer library. Install the device description files on the ProfessionalPLUS workstation and the DeltaV system synchronizes the device descriptions on the other workstations.

### 3.2.2 Add a fieldbus device type

The DeltaV system includes built-in support for several fieldbus devices from device manufacturers. The files required to support these devices are part of the DeltaV install image. If you want to use fieldbus devices that are not part of the DeltaV install image, you must install a set of device definition files on a ProfessionalPLUS workstation.

Insert the media containing the device definition files into the computer (the device definitions can also be on a local shared hard drive).

Navigate to Fieldbus Devices (Library/Device Definitions/Fieldbus Devices).

Right click on Fieldbus Devices

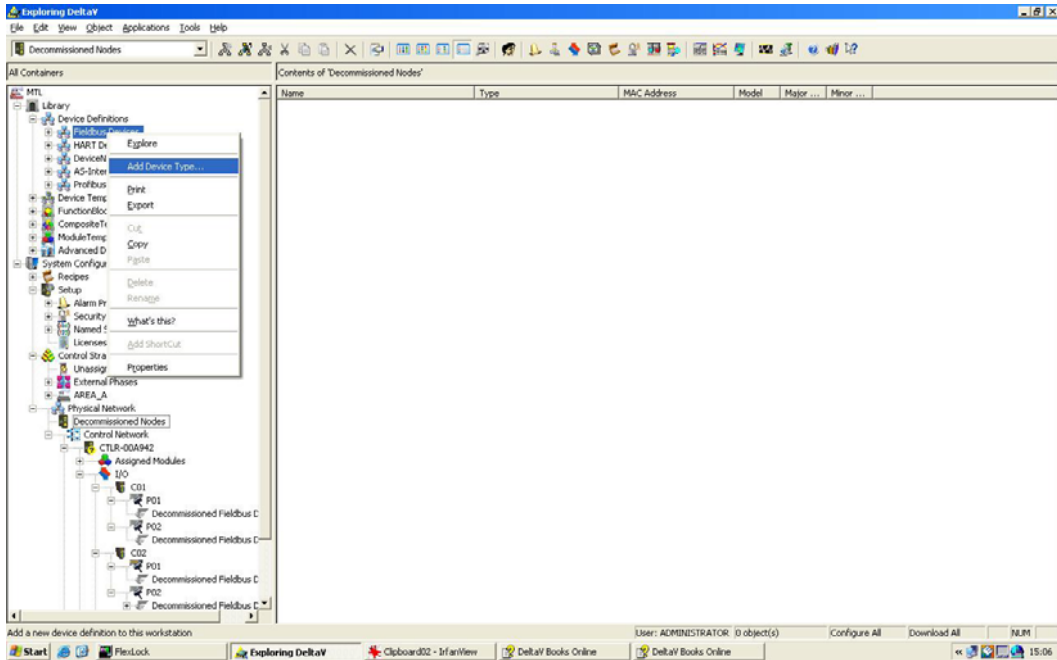
Then click Add Device Type.

Browse for the location of the drive or directory where the device definition files are stored and click OK. You are not required to select each file individually. The device definition files are automatically selected when you select the drive. (If the directory contains more than one file of a needed file type, an error is displayed. The duplicate file types must be removed before attempting to add the device.)

Read the Warning message. If you want to proceed with the installation, click Yes.

Follow the prompts to install the device definition files on the ProfessionalPLUS workstation.

The device definitions on other attached DeltaV workstations are automatically synchronized. It may be necessary to restart the DeltaV system before AMS Device Manager can access all of the new or updated data in the device files.



### 3.2.3 Methods

Device Descriptions can also include a set of processing routines called Methods. Methods provide a way to access and manipulate parameters within a device. For example a DD for a Valve Controller might include methods for automatically calibrating valve travel, manually calibrating travel, restarting a device, and calibrating the internal pressure sensor information for display. Methods are available from the device's context menu in DeltaV Explorer and AMS.

There are 3 configuration methods available in the MTL F809F Systems Transducer block.

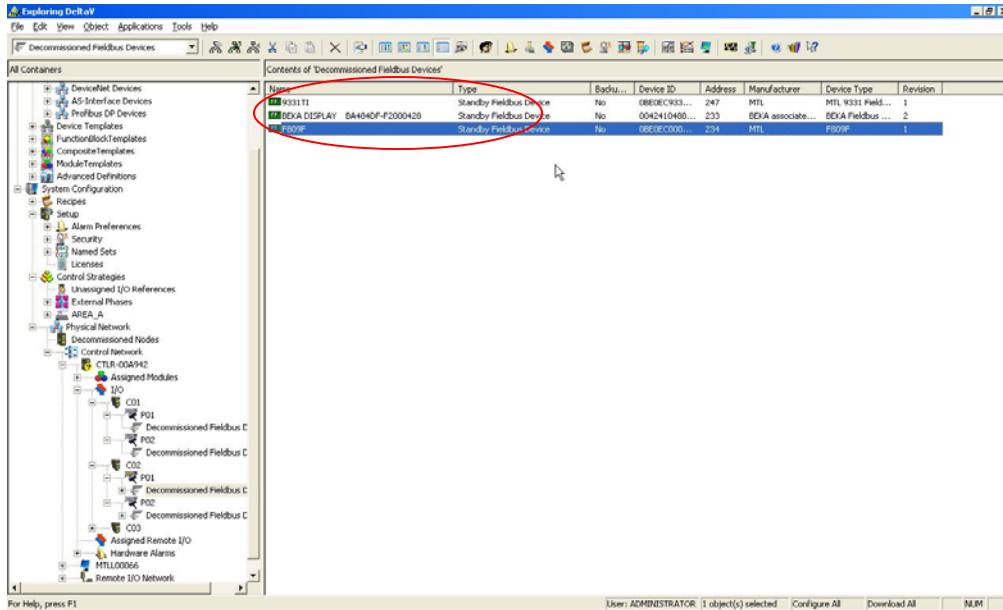
- Setting Date and Time
- Resetting retransmission counter
- Deleting device data

Note: Go to the AMS section in order to see how the methods work in the F809F

### 3.3 Autosensing Fieldbus Devices

When the H1 fieldbus cards are plugged into the I/O carrier, the fieldbus devices are connected to the H1 cards' terminal block, the Device Descriptions loaded, the H1 card automatically detects the fieldbus devices, recognizes the device types, and makes this information available to the DeltaV system.

The Device appears in the Decommissioned Fieldbus Device view in the H1 card.



### 3.4 Commissioning and Decommissioning Fieldbus Devices

Commissioning and decommissioning fieldbus devices is done in the DeltaV Explorer and involves moving the devices through several device states. Fieldbus devices have five stable states in the DeltaV system.

**Commissioned** - For a fieldbus device that is at its assigned address. To move a commissioned device to the Off-line or Spare state, you first decommission the device.

**Off-line** - For a fieldbus device that you want to disconnect for maintenance and then return to the segment at the same address. For example, you would take a device offline to recalibrate it. If an off-line device is reconnected, it automatically uses a standby address. You must commission the standby device by dragging and dropping it onto the appropriate placeholder. After the device is commissioned, download the device in order to make it function as it did prior to being decommissioned.

**Spare** - For a fieldbus device that you want to disconnect and no longer use in your DeltaV system. Each device has a device tag that designates the role the device performs in the DeltaV system. If you decide that you no longer want to use the device, you should clear its tag. To clear the tag, make the device spare. A spare device is part of your inventory of spare devices, not an instrument with a specific purpose. If, at some time, you decide to put a spare device back into service, the system moves it to Standby automatically when you attach the device to the segment.

**Standby** - A safety feature for fieldbus devices. The device is moved to a standby address until it is commissioned. A device comes to standby from the Off-line and Spare states.

**Mismatch** - The fieldbus device was commissioned on another control system and then connected to a DeltaV system. When the H1 card finds a device in the assigned address range that has not been commissioned for this particular segment, it designates it as a mismatched device. A mismatch device can be commissioned.

**Device Class Mismatch** - The attached field device is not the same class for which the device was commissioned.

**Schedule Download Failed** - The LAS Schedule could not be downloaded to this field device.

### 3.4.1 Commission a fieldbus device to a port

Navigate to the decommissioned fieldbus device (System Configuration/Physical Network/Control Network/controller/I/O/card/port/Decommissioned Fieldbus Devices).  
The decommissioned fieldbus devices appear in the right panel

A standby device has the words Standby State in its detailed view in the right pane. If the detailed view is not showing, click View | Details. If the device is not in the standby state, you must place it in standby.

To place the device in standby

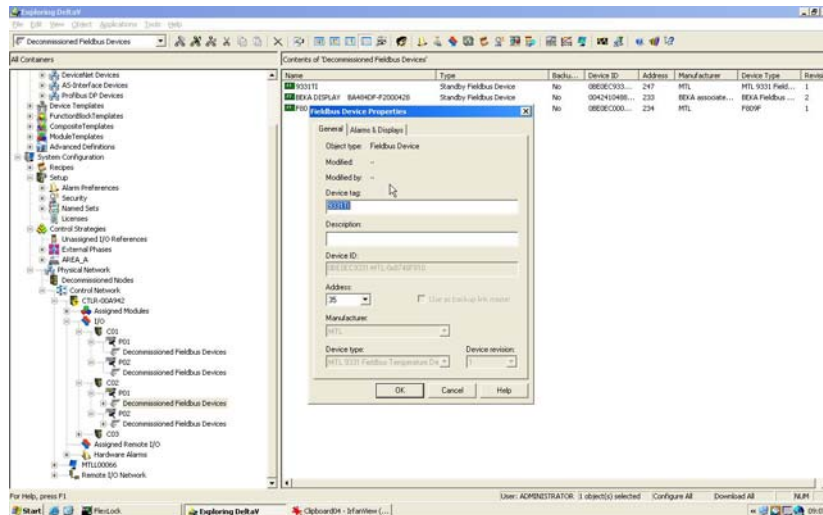
Navigate to the fieldbus device (System Configuration/Physical Network/Control network / controller/ I/O /card /port/Decommissioned Fieldbus Devices).

Click the device in the right panel

Right click Standby

Once the device in the Standby Mode:

Drag the device from the right panel to a fieldbus port on the left panel. The software displays the Device Commissioning Wizard.

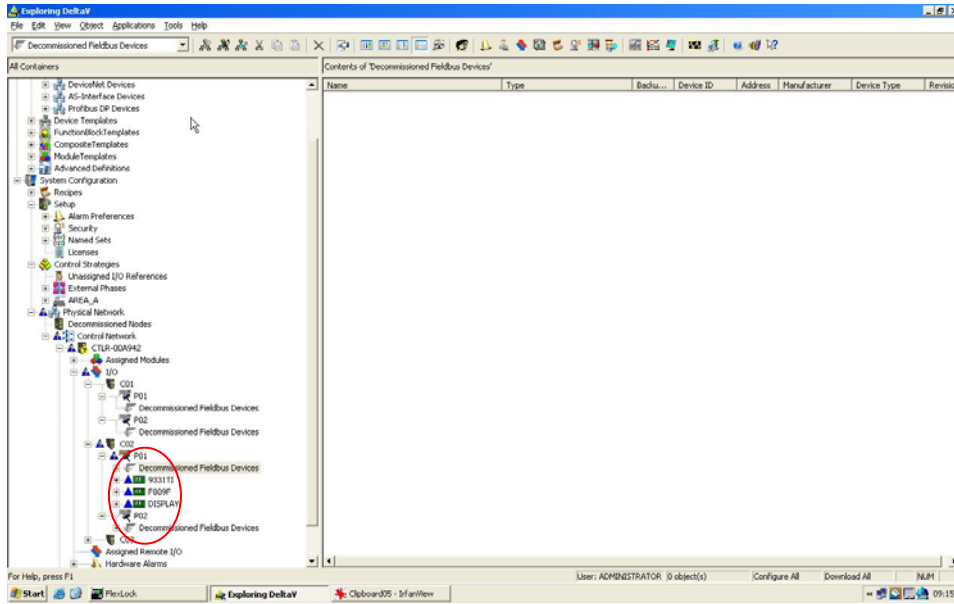


Enter the Device Tag, the description for this device and select the correct device address.

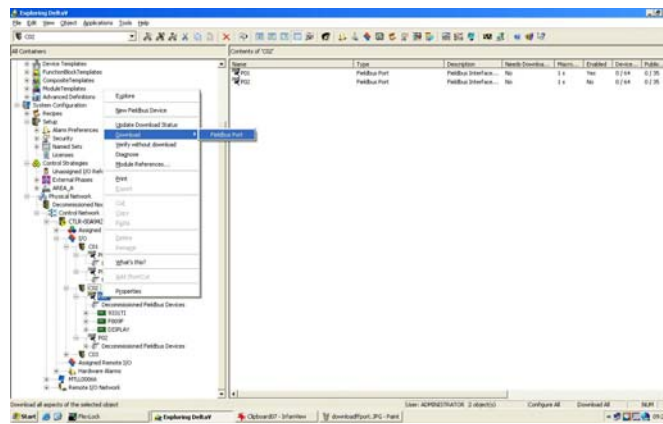
The Fieldbus Foundation uses addresses in the range 0-255. Group addresses and DLLs use addresses 0 - 15, commissioned devices use addresses 20-35, standby devices use addresses 232-247, and offline and spare devices use addresses 248-251.

Note: The Do Not Wait notice appears. If you click this, the state change continues in the background, but the notice goes away, enabling you to do other work.

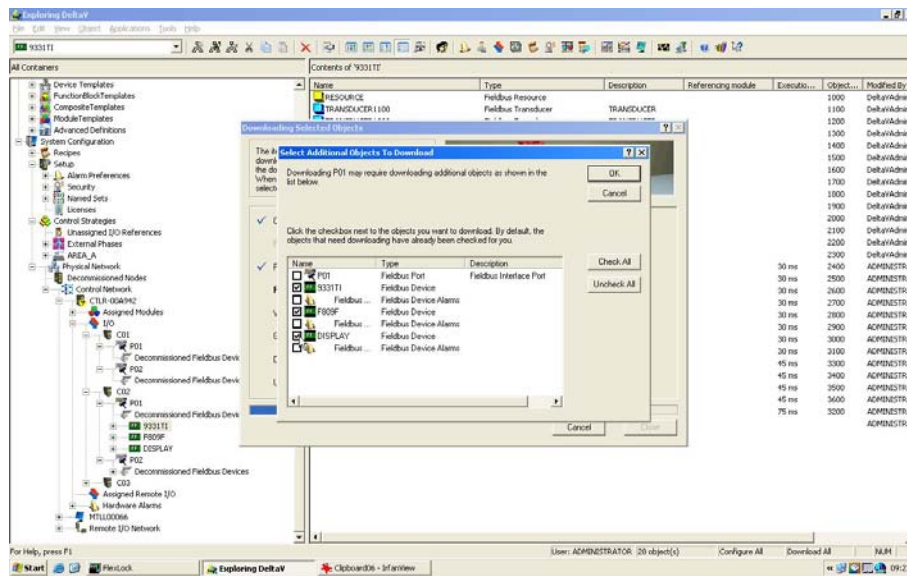
Once you have commissioned all your devices you will have the following window with blue triangle. You then need to download the Fieldbus H1 port to the controller.



To download the configuration to the port:  
 Navigate to the fieldbus Port (System Configuration/Physical Network/Control network / controller/ I/O /card /port).  
 Click the port in the right panel  
 Right click: Download / Fieldbus Port



And select the Fieldbus devices you have just commissioned.



### 3.5 Diagnosing Fieldbus Devices

The DeltaV Explorer, Control Studio, and Diagnostics programs as well as the H1 card itself provide a great deal of diagnostic information on fieldbus devices.

#### H1 Fieldbus Card

Communication information between the card and fieldbus devices is available from a visual inspection of the H1 card. The bottom two LEDs on the H1 card reflect communication between the port and fieldbus devices on that port. A blinking yellow LED indicates that the port is communicating with fieldbus devices but either a communication problem exists with an attached fieldbus device or no function blocks are configured on the segment. If the LED is off, either the port is disabled or the H1 card is not communicating with any fieldbus devices on the port. Use the DeltaV Explorer to enable and download the port and Control Studio to create and download configuration. A solid yellow LED indicates good communication between the port and devices on that port and at least one function block is configured on the segment.

#### DeltaV Explorer

Indicators in the DeltaV Explorer tell you if an H1 port or a fieldbus device needs to be downloaded or commissioned.

The blue triangle on an H1 port or device means that the port or device needs to be downloaded. Right click the port or device, and then select Download to open a dialog box that lists the fieldbus configuration information to be downloaded.

The yellow circle with an exclamation mark on a device means that the device needs to be commissioned. To commission the device, select it from the Decommissioned device list and drag it to either the port or device placeholder.

**The hardware configuration is now finished, in order to configure the fieldbus devices and to use the diagnostic module we need to configure and run AMS.**



## 4 AMS Device Manager

### 4.1 Network configuration overview

Installing a network component

The Network Configuration utility is the means by which you install a network component, and once installed, to view and change its properties. On a given AMS Device Manager station you can only configure network components for that station. However, once installed, the networks on a particular station are accessible from every other station, from within the AMS Device Manager application.

### 4.2 Add a Delta V network

To add a DeltaV network, your Microsoft Windows user account must have computer administrator privileges.

Shut down AMS Device Manager. If the Server icon appears in the Windows tray, right click it and select Stop AMS Device Manager Server.

On the Server Plus station, launch the Network Configuration utility by selecting Start | Programs | AMS Device Manager | Network Configuration from the Windows taskbar.

From the Select Network Component Type dialog box, select DeltaV Network and click Install.

From the Add DeltaV Network Wizard - Start dialog box, click Next.

Enter a unique name in the DeltaV Network Name field. click Next.

Select the desired option under Supported Devices.

In the DeltaV Workstation field, enter the computer name of the DeltaV ProfessionalPlus Station.

In the DeltaV Password field, enter the password associated with the DeltaVAdmin user account on the DeltaV ProfessionalPlus Station. The password is case sensitive. If you leave this field blank, AMS Device Manager attempts to use the default password for the DeltaVAdmin user account.

The DeltaVAdmin user account password must be same for all DeltaV networks installed on this station.

In the Confirm Password field, re-enter the password associated with the DeltaVAdmin user account.

Click Finish.

### 4.3 Rebuild hierarchy and scan operations

To ensure that the device information in AMS Device Manager is current with the live devices connected to a system interface network, you need to initiate Rebuild Hierarchy and Scan operations at appropriate times. Using these operations correctly saves time and optimizes AMS Device Manager performance.

#### 4.3.1 Rebuild Hierarchy operation

The Rebuild Hierarchy operation queries a host system to learn its current layout and potential device connection points. The hierarchy displayed for a system interface network is based on this information.

You must perform a Rebuild Hierarchy operation right after you install a system interface network, and then immediately follow it with a Scan New Devices operation. Thereafter, you should perform Rebuild Hierarchy on a network only when necessary, because the subsequent Scan operation can be time-consuming. You only need to use Rebuild Hierarchy when you add connection points to or remove connection points from the host system, and want AMS Device Manager to be aware of the change. For fieldbus devices it is a host tag or device tag. Commissioning and decommissioning fieldbus devices in DeltaV requires a Rebuild Hierarchy followed by Scan New Devices operation for AMS Device Manager to correctly display AMS Explorer or Device Connection views.

The Rebuild Hierarchy operation is launched from the context menu of the top-level icon in a system interface network. A Rebuild Hierarchy operation can be performed on a network from any AMS Device Manager station in the distributed system.

### **4.3.2 Scan operations**

The Scan operations manually synchronize the AMS Device Manager database with live fieldbus devices. AMS Device Manager has three types of Scan operations: Scan New Devices, Scan All Devices, and Scan Device.

Scan operations can be performed on any system interface network in the distributed system from any station in the distributed system, from the Physical Networks hierarchy in Device Explorer. AMS Device Manager Server must be running on a station for its networks to be accessible from other stations. If AMS Device Manager Server is not running on the device's station, the message "Unable to connect to live device. AMS Device Manager Server on station <station-name> may not be running" is displayed. If AMS Device Manager Server is running on the device's station but the device is not communicating with AMS Device Manager, the message "Unable to connect to live device" is displayed.

Scan operations can take a long time, particularly when using burst mode. To lessen the scan time, perform the Scan operation at the lowest level in the network hierarchy necessary to accomplish the task, and use Scan New instead of Scan All whenever possible.

When scanning more than a single device, AMS Device Manager can scan in two ways: linearly and concurrently. When scanning concurrently, AMS Device Manager does not wait for all of a device's parameters to be updated before scanning another device. If a system interface network supports scanning devices concurrently, Scan New or Scan All displays a dialog indicating the status of the scans for each device.

Note When a Scan operation is running, you cannot access, modify, or close any other open device views or the main application.

#### Scan New Devices operation

The Scan New Devices operation identifies all fieldbus devices known to AMS Device Manager (through the last Rebuild Hierarchy operation) below the point from which it is initiated, and then synchronizes the database with the fieldbus devices not previously scanned. Scan New does not synchronize devices that have been previously scanned.

The Scan New Devices operation can be performed on various levels of a network hierarchy, on all the networks on a local station (from the AMS Device Manager icon in Device Connection View), or on all the networks on another station in the distributed system (from a station icon in Device Explorer). The Scan New operation is launched from the context menu of these icons.

Use Scan New Devices in these situations:

After performing a Rebuild Hierarchy operation.

After adding a device to a connection point that is already known to AMS Device Manager (through a Rebuild Hierarchy operation).

After moving a device from an existing connection point to another existing connection point.

After physically replacing a device with another device.

After physically removing a device.

After changing a device's state in DeltaV, such as by commissioning or decommissioning, to update Device Explorer or Device Connection View.

#### Scan All Devices

The Scan All Devices operation identifies all fieldbus devices known to AMS Device Manager (through the last Rebuild Hierarchy operation) below the point from which it is initiated, and then synchronizes the database with all fieldbus devices.

The Scan All Devices operation can be very time-consuming. You should initiate it at as low a level in the hierarchy as is necessary, and only use it when changes have been made to devices in the field with a handheld communicator, a calibrator, or in the control system, and you do not know which devices have been changed and whether all those changes have been transferred to AMS Device Manager. If you know which devices have been changed outside of AMS Device Manager, then use Scan Device operation instead (see below).

#### Scan Device

The Scan Device operation synchronizes the database with a specific device. It is often used after performing an Identify Device operation. The Scan Device operation is launched from the context menu of a device icon.

#### Nonresponding devices

After a Scan operation, any device that was previously represented by a nonresponding device icon and is now communicating with AMS Device Manager is changed to the appropriate device icon and is scanned.

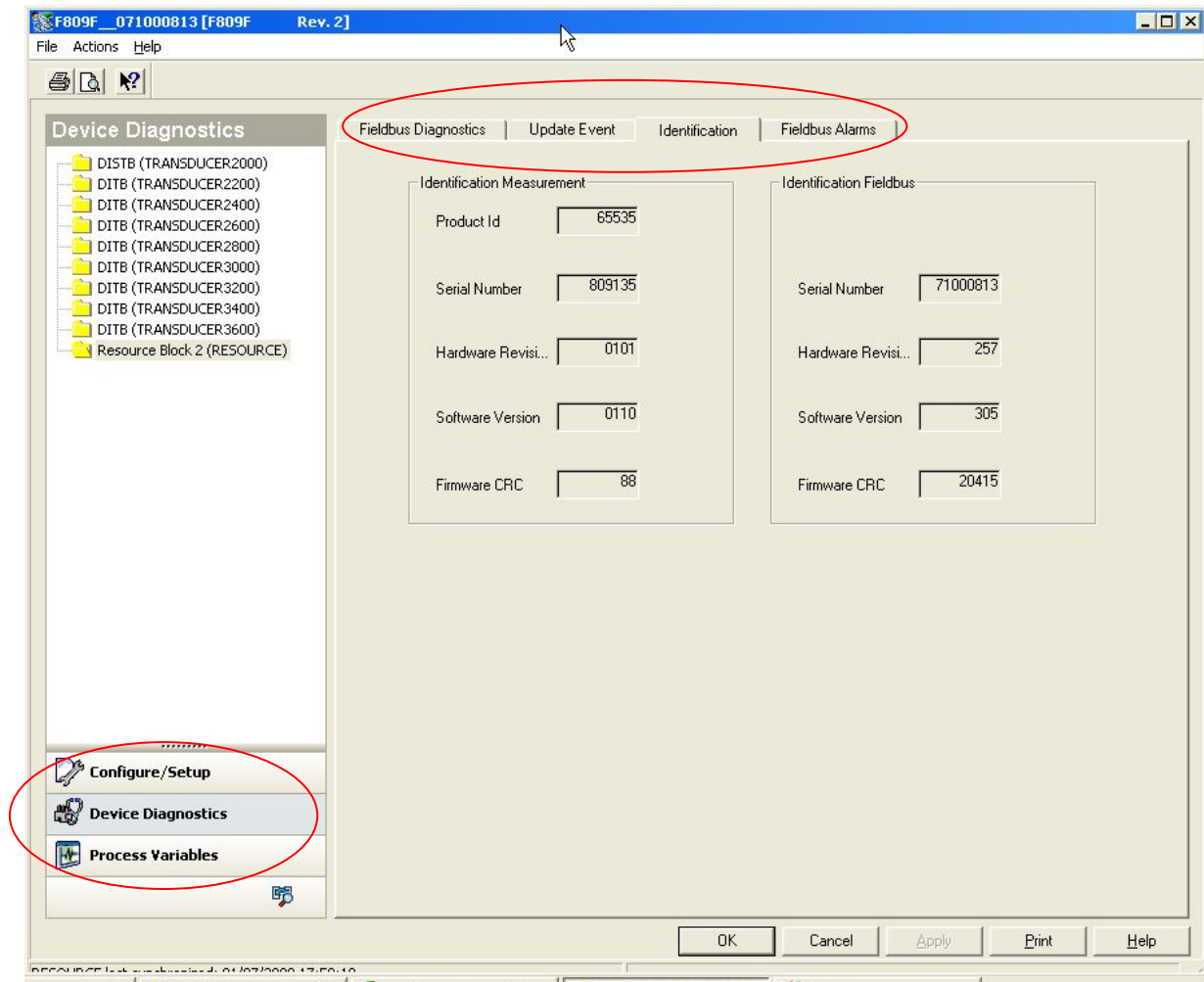
#### Effects of not performing Rebuild Hierarchy and Scan operations when needed

If you do not perform Rebuild Hierarchy and Scan operations when they are required (as documented in the above paragraphs), Alert Monitor may not work correctly and the wrong data may appear in other AMS Device Manager functions and in AMS Suite web applications.

#### Simultaneous Rebuild Hierarchy and Scan operations

Do not perform simultaneous Rebuild Hierarchy or Scan operations on a network.

## 5 Fieldbus Device F809F



*F809F device view*

The F809F device uses the DLL files to display its information in multiple TABs in AMS. The system transducer block displays 4 TABs and the segments transducer blocks display . Moreover you can have access to two kinds of views:

- Configure / setup
- Device Diagnostics

And here again the number of TABs will be different. In the next pages we'll go through the different views for the different blocks.

### 5.1 Resource Block

The resource block defines the physical resources of the device including type of measurement, memory, etc. The resource block also defines functionality, such as shed times, that is common across multiple blocks. The block has no linkable inputs or outputs.

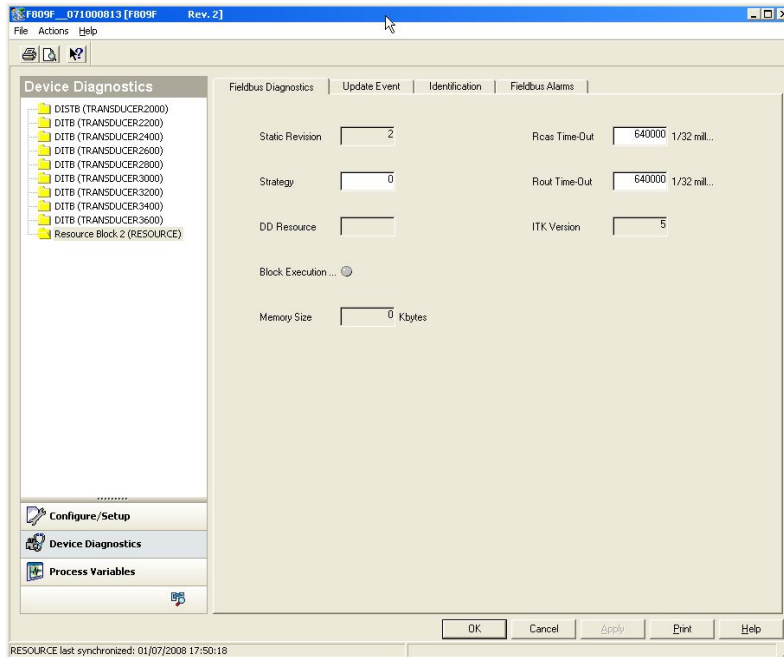
The resource block supports two modes of operation as defined by the MODE\_BLK parameter:

**Automatic (Auto):** The block is processing its normal background memory checks. In this mode, changes can be made to all configurable parameters.

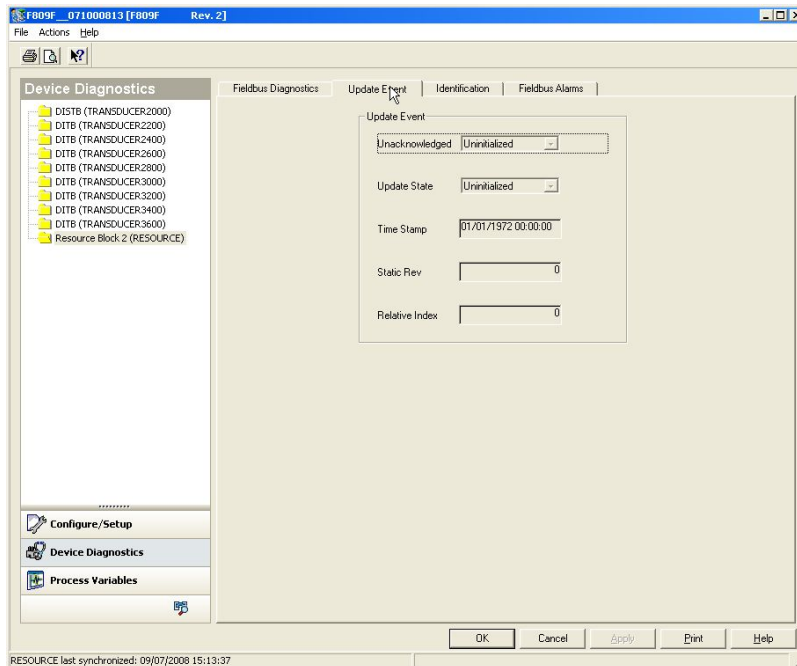
**Out of Service (OOS):** The block is not processing its tasks. The BLOCK\_ERR parameter shows Out Of Service. In this mode, changes can not be made to any configurable parameter.

In normal operation, the Block should be in AUTO

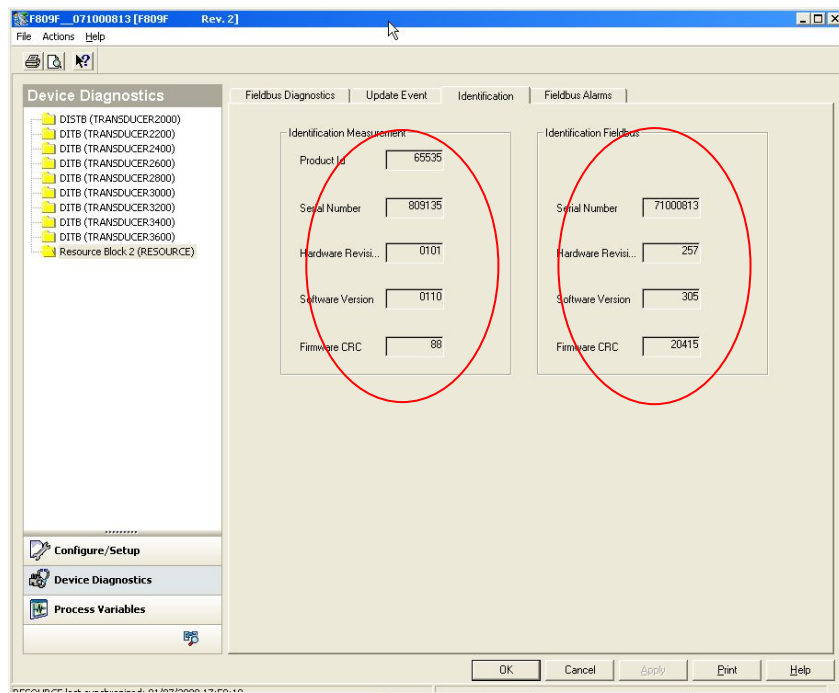
### 5.1.1 Resource Block: Device Diagnostics



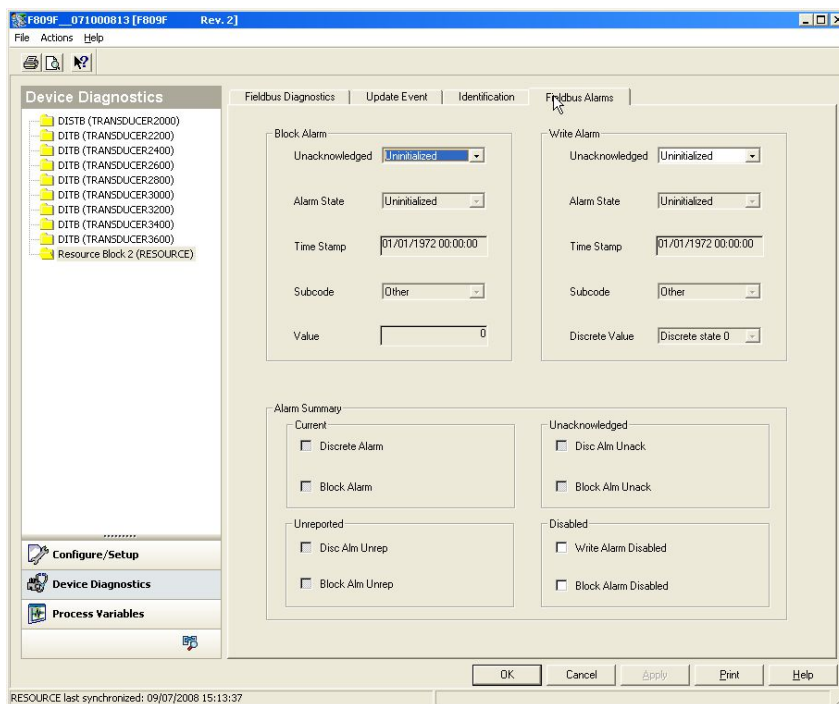
*Fieldbus diagnostics TAB: general information about Fieldbus*



*Update event TAB: general information on the Fieldbus*



*Identification TAB: Identification of the measurement board and the fieldbus board*



*Fieldbus alarm TAB: Fieldbus information*

### 5.1.2 Resource Block: Configure and Setup

There are no Configuration and Setup view for the Resource Block

## 5.2 Transducer block

There are two types of transducer block in our device:

- Sys TB: System Transducer block
- Seg TB: Segment Transducer block

The transducer block supports two modes of operation as defined by the MODE\_BLK parameter

**Automatic (Auto):** The block is processing its normal background memory checks. In this mode, changes can be made to all configurable parameters.

**Out of Service (OOS):** The block is not processing its tasks. The BLOCK\_ERR parameter shows Out Of Service. In this mode, changes can not be made to any configurable parameter.

### 5.2.1 System transducer block (Sys TB)

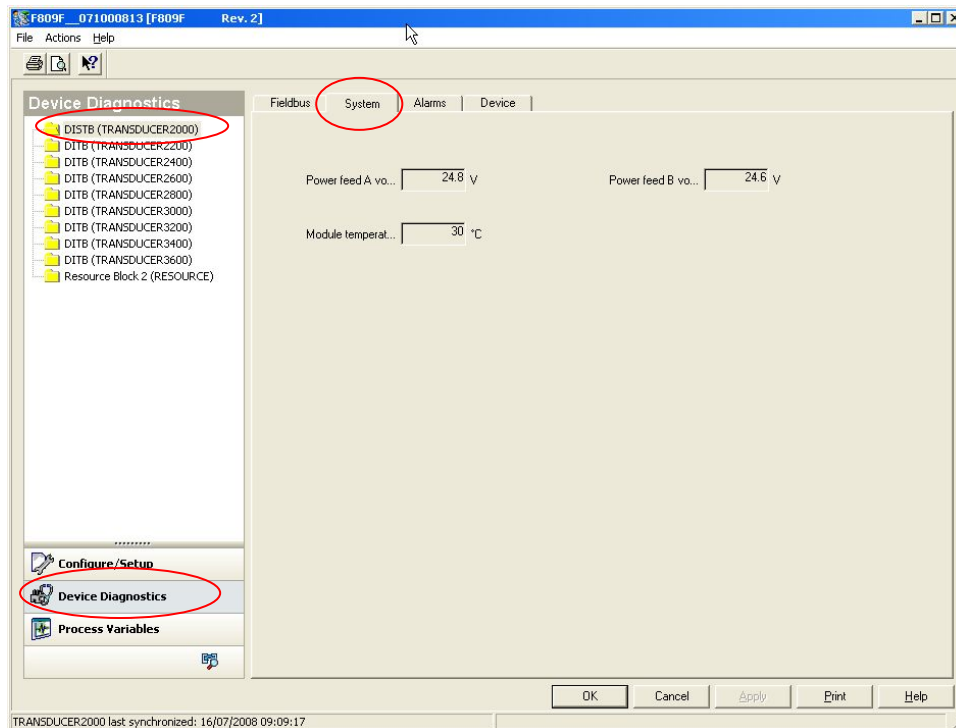
There is one Sys TB in the F809F, which allows the user to view system and self-test alarms together with the system power feed voltages and temperature. The SysTB allows configuration of the time, the date and the segments monitored.

For each device on each of the 8 monitored fieldbus segments, the retransmission counter can be reset and device history data can be deleted from within this block.

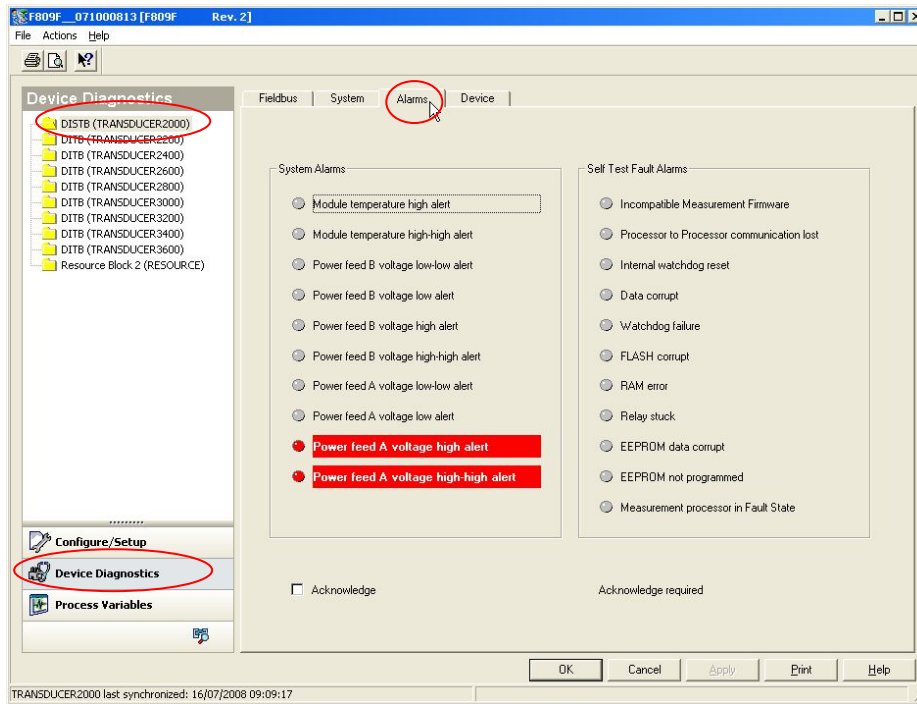
Additionally the Set alarm to Latch parameter gives you the possibility to configure the lLatchnig for each of the eight segments.

#### 5.2.1.1 System transducer block: Device Diagnostics

The device diagnostics TABs for the transducer block will give you the information about the health of the F800 power conditioners.



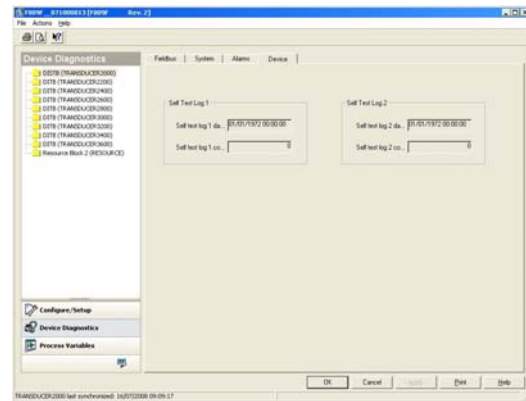
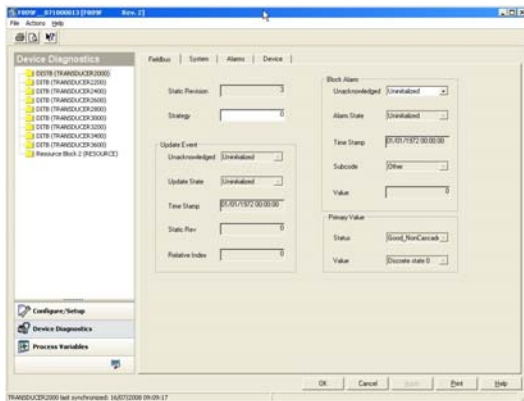
*System TAB: Gives the information about Power A and Power B voltage as well as the Module temperature*



*Alarms Tab: Display the active (in red) and inactive alarms for the system*

If any alarm is set within the Transducer Block then the “Need Maintenance Soon Bit” is set to in in the Block error parameter.

Additionally the system alarm DI BLOCK PV\_D will be set to one. See chapter “configuring the DI block in the fieldbus cyclic messaging).

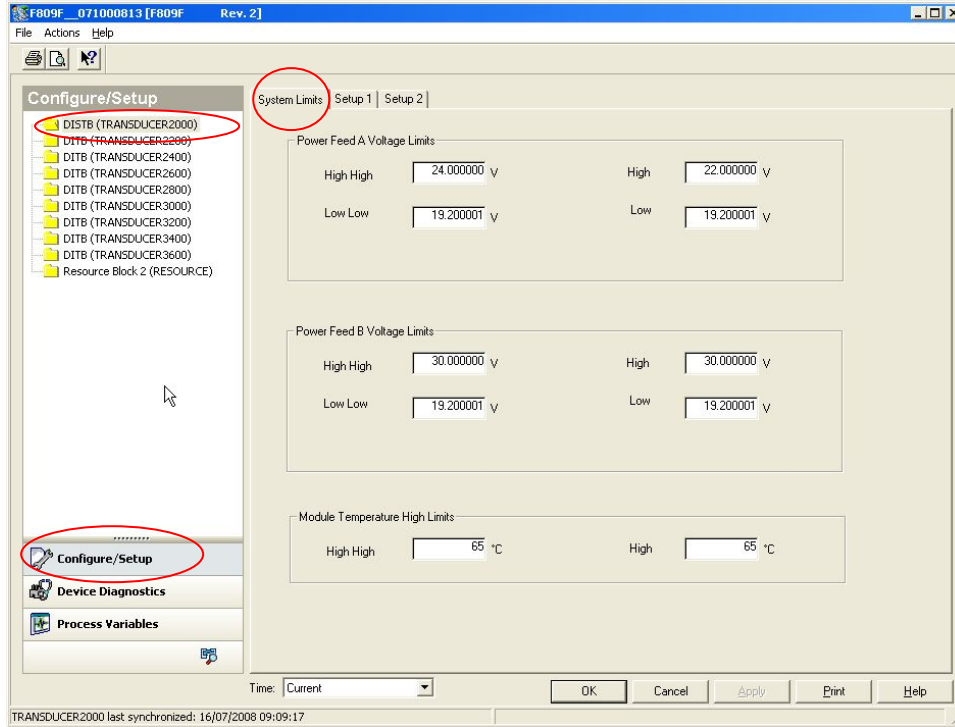


*Fieldbus and Device Tabs: Fieldbus Foundation information for the F809F itself*

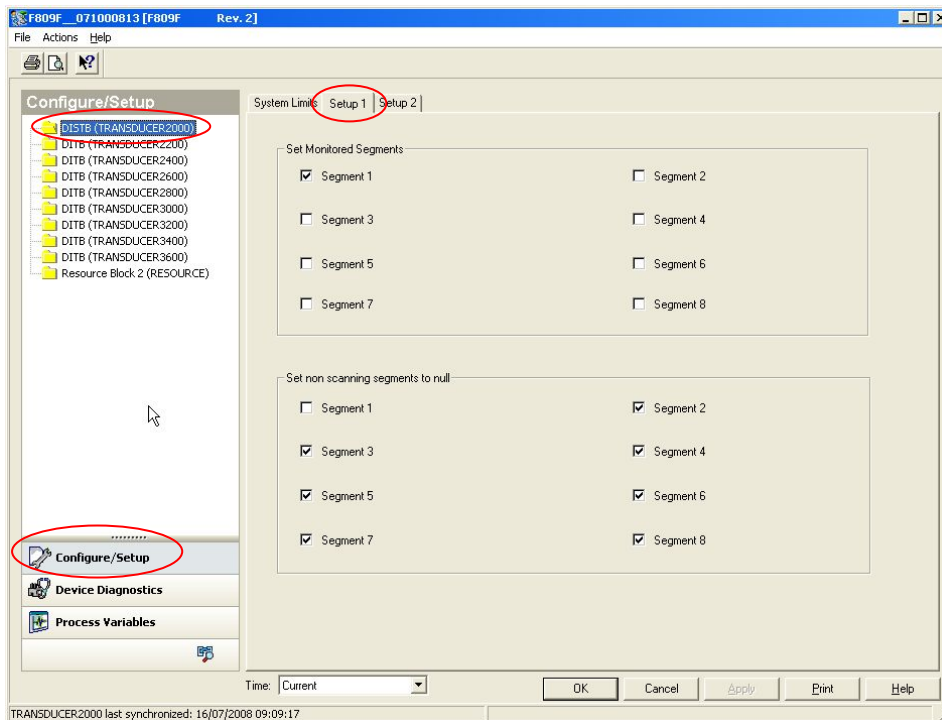


### 5.2.1.2 System transducer block: Configure / Setup

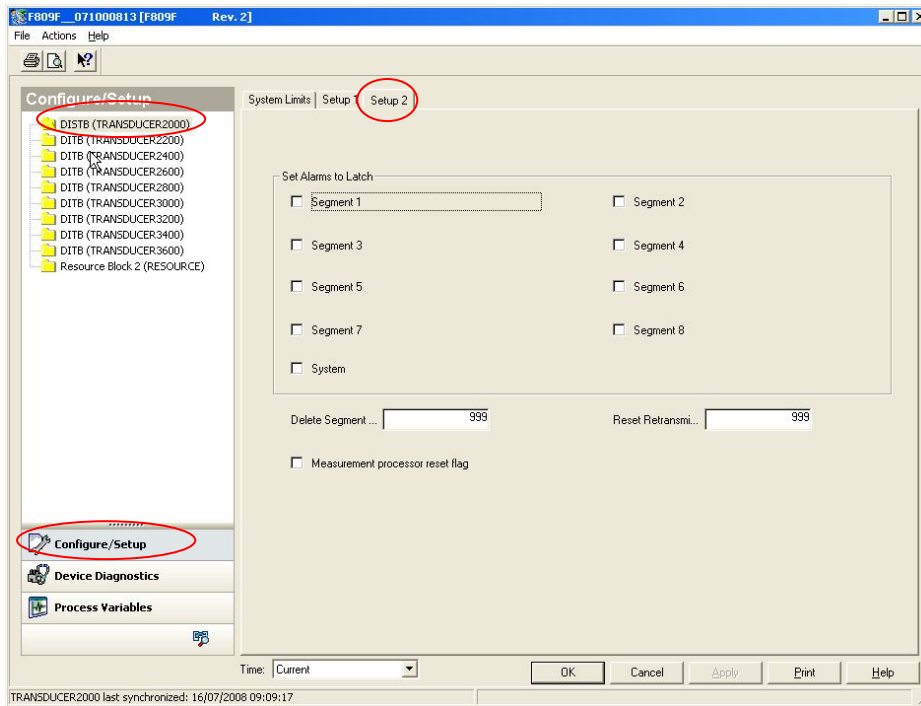
In the Configure / Setup TABs you will have access to the configuration parameters such as the alarms limits and the set monitored segments.



*System limits: The user may reset the values taking into account voltage drop and normal operating temperature*



*Setup 1: If any segment are not in use these may be omitted from the scan. If the segment is not in use it is recommended to set to display null values.*



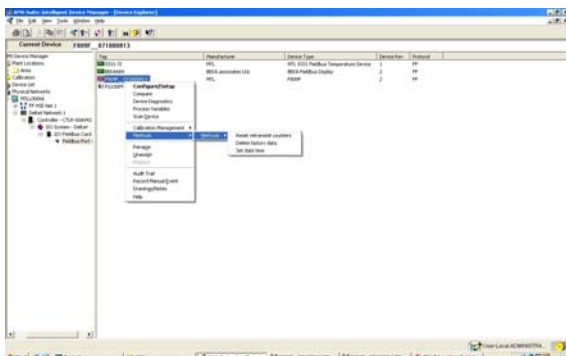
*Setup 2: If alarm acknowledgment is required set the parameter to one (Delete segment and Reset retransmission counter are used if the host system doesn't support method. In our case we will use methods to delete segment data. See chapter 8.2.1.3)*

### 5.2.1.3 Methods

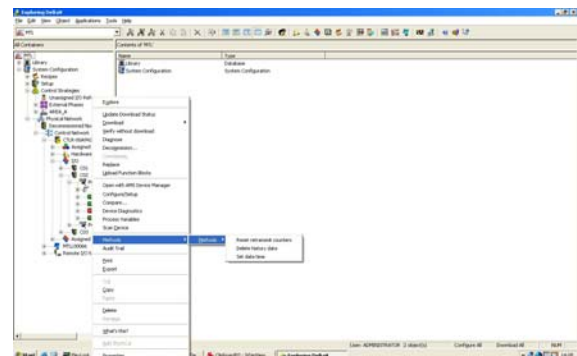
For Foundation Fieldbus hosts or configuration tools that support DD methods, there are 3 configuration methods available in the Systems Transducer Block. These methods are included with the Device Description (DD) software.

- Setting Date and Time
- Resetting retransmission counters
- Deleting device history data

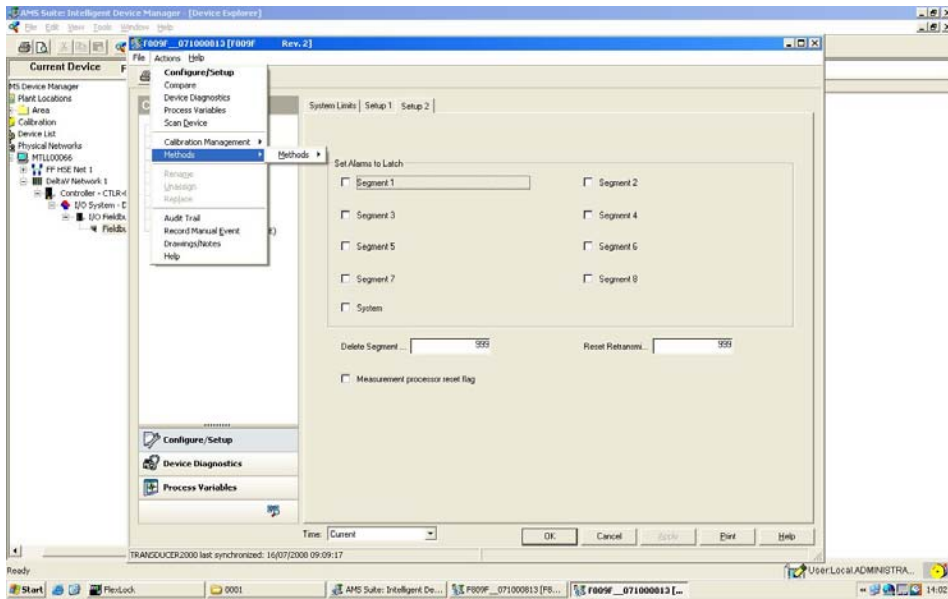
You access the methods from the Device view in AMS, from the Device explorer in AMS or from the Delta V explorer.



*Accessing methods from the Device explorer AMS*



*Accessing methods from the Delta V explorer*

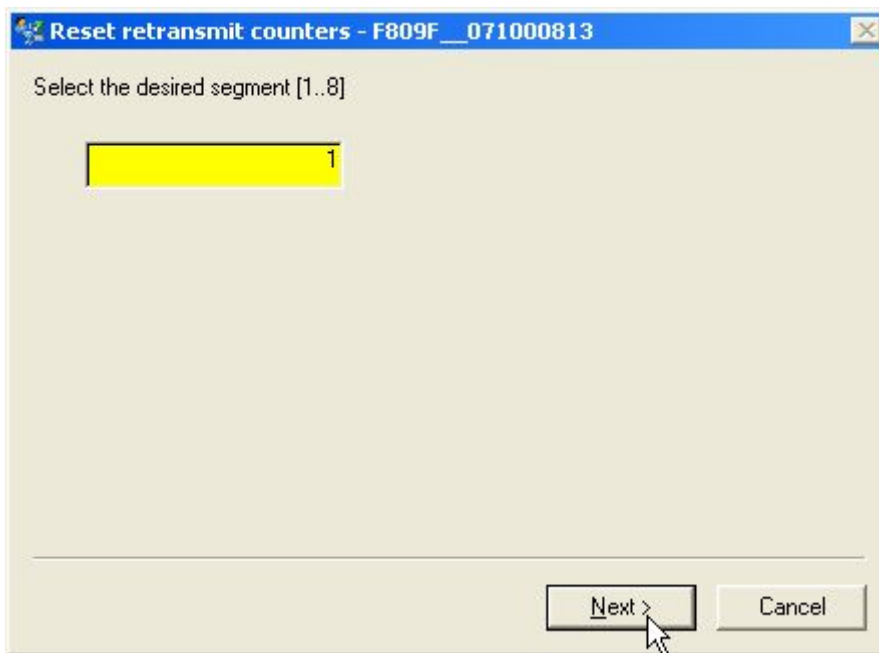


Accessing Method from the Device view in AMS  
 Choose the required method to run. In this example, Reset retransmit counters was selected



Choose the required option, in our example we'll choose option 3 (desired segment)

- All retransmission counters: Delete all counters*
- Desired segment and all its devices: Delete counters for one complete segment with all devices*
- Desired segment: Delete counters for the segment (keep the devices counters)*
- Desired device on a specific segment: Delete counter for a specific device only*



Select the desired segment from segment 1 to segment 8. (Segment 1 in our case)

### 5.2.2 Segment Transducer Block (SegTB)

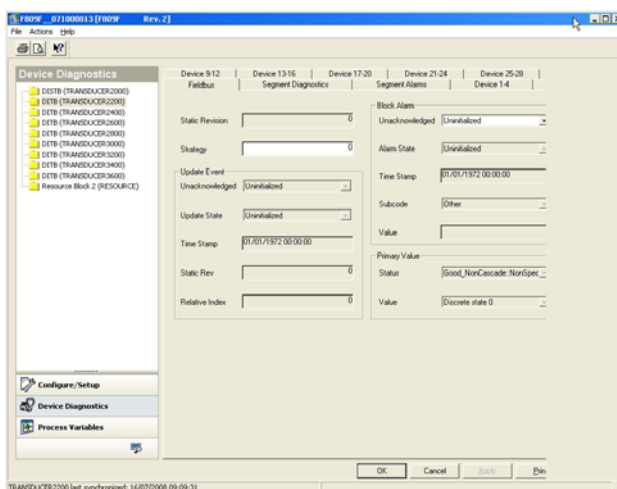
Each of the eight monitored segments are supported by a Seg TB that provides all the measured parameters and associated alarms for the fieldbus segment and devices. You can assign segment and device tags within this block.

The segment and device alarm limits may also be changed in this block.

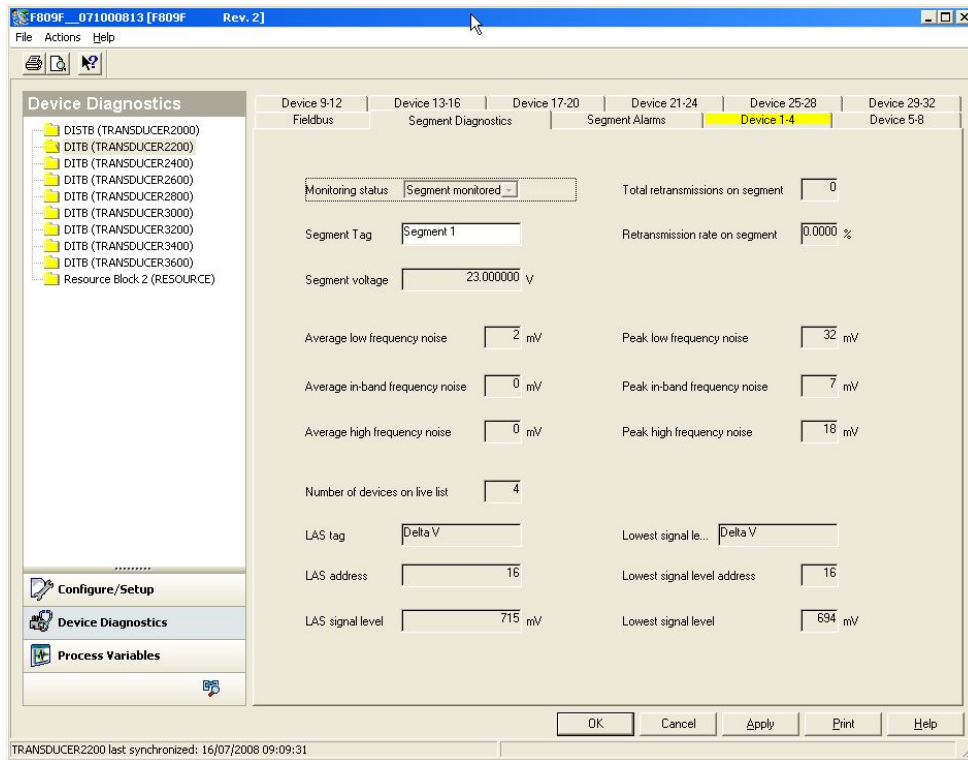
**Warning:** the tags are held in volatile memory. If both power feeds fail at the same time, or the F809F is removed from the carrier, then the segment and device tag data will be lost.

#### 5.2.2.1 Segment transducer block: Device Diagnostics

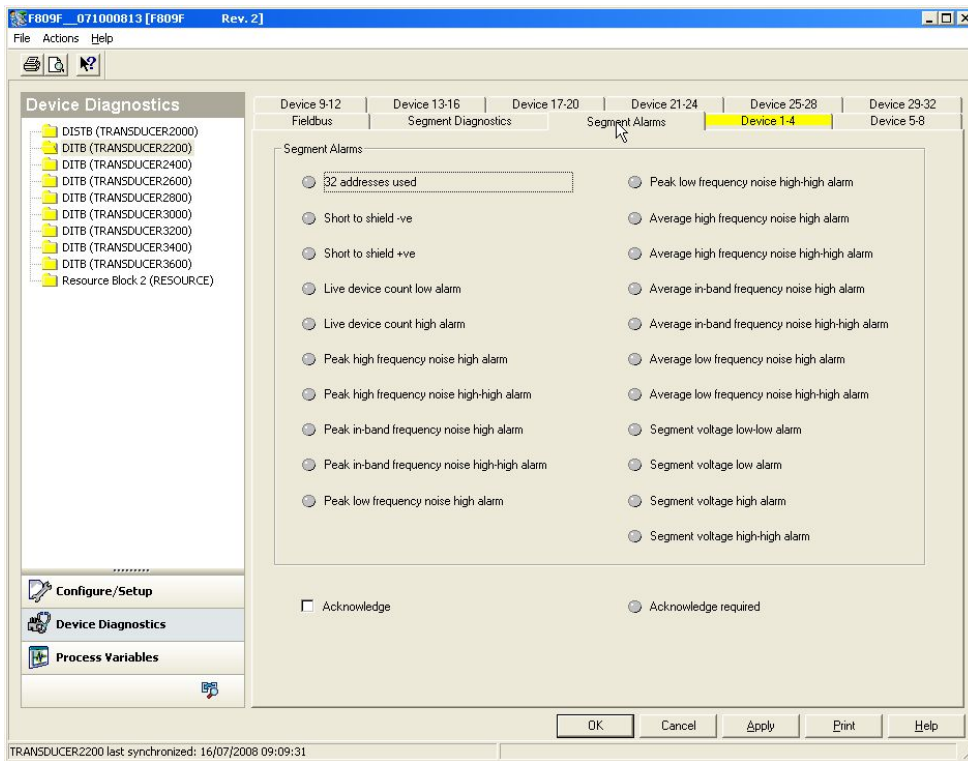
Eleven device diagnostics TABs for the transducer block will give you the information about the health of the dedicated segment and all its devices.



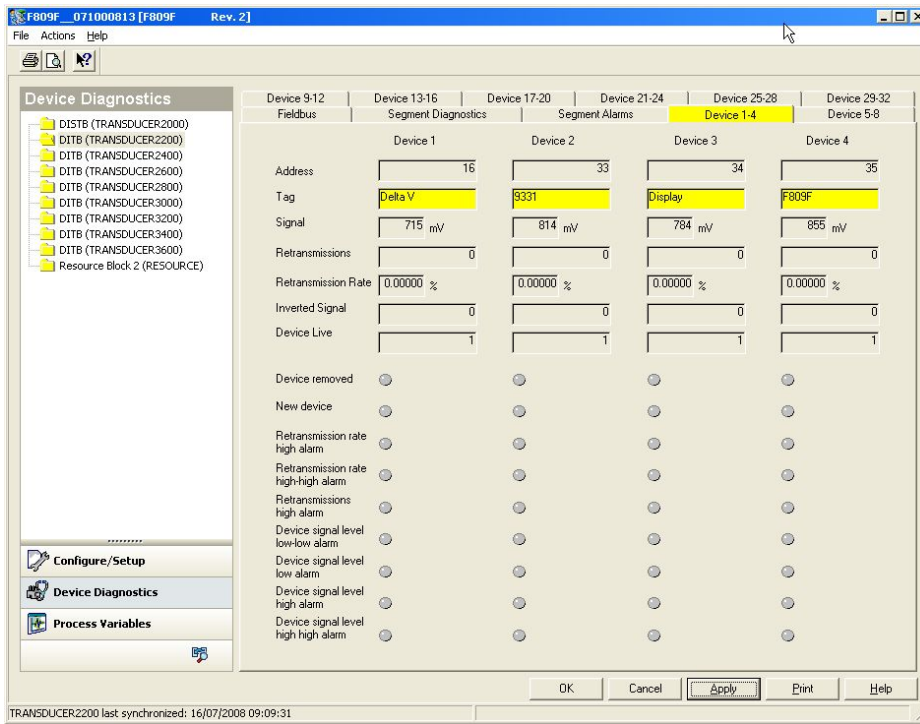
Fieldbus Tabs: Fieldbus Foundation information for the F809F itself



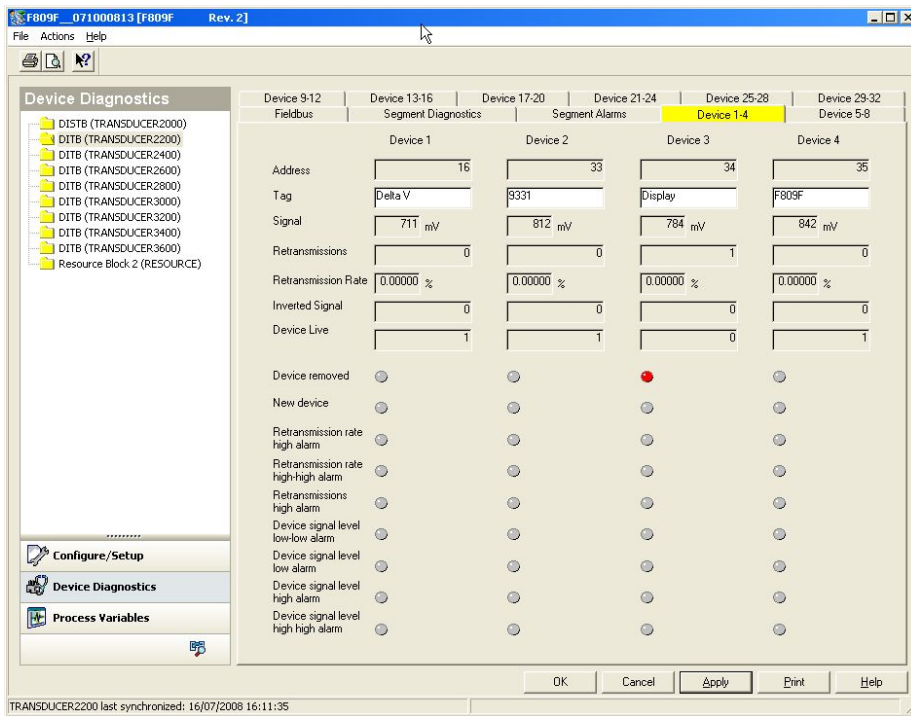
*Segment Diagnostics Tabs: Information for the segment (Tag, segment voltage, LAS, retransmissions...)*



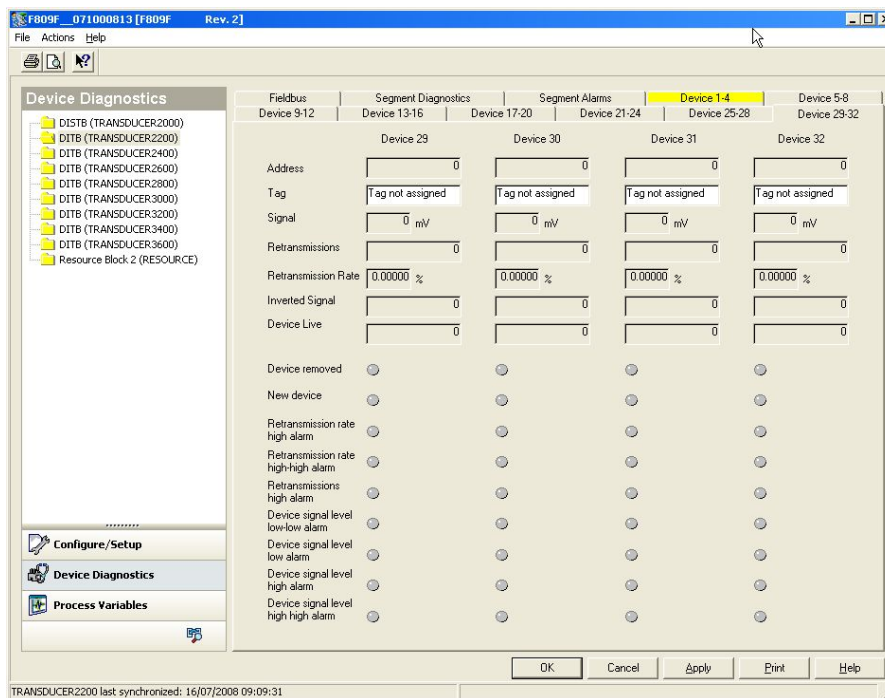
*Segments Alarms: Alarms for the segment parameters, active alarms are displayed in red*



*Device 1-4: Parameters for the devices 1 to 4, Device address, TAG, signal level and active alarms*



*Device 1-4: Active alarms are displayed with a red button, in this example the device 3 is removed*

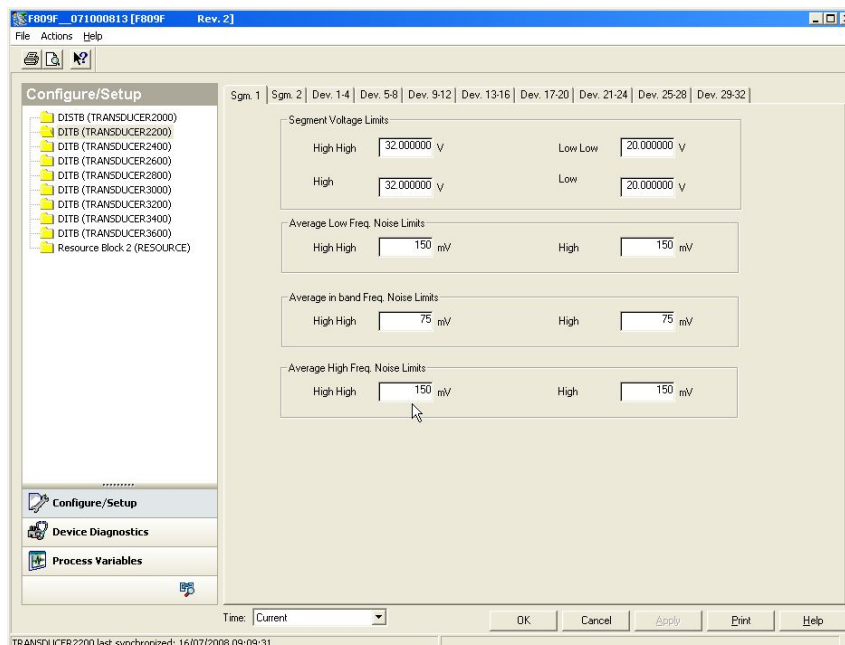


*Device 29-32 Tab: Parameters for the devices 29 to 32*

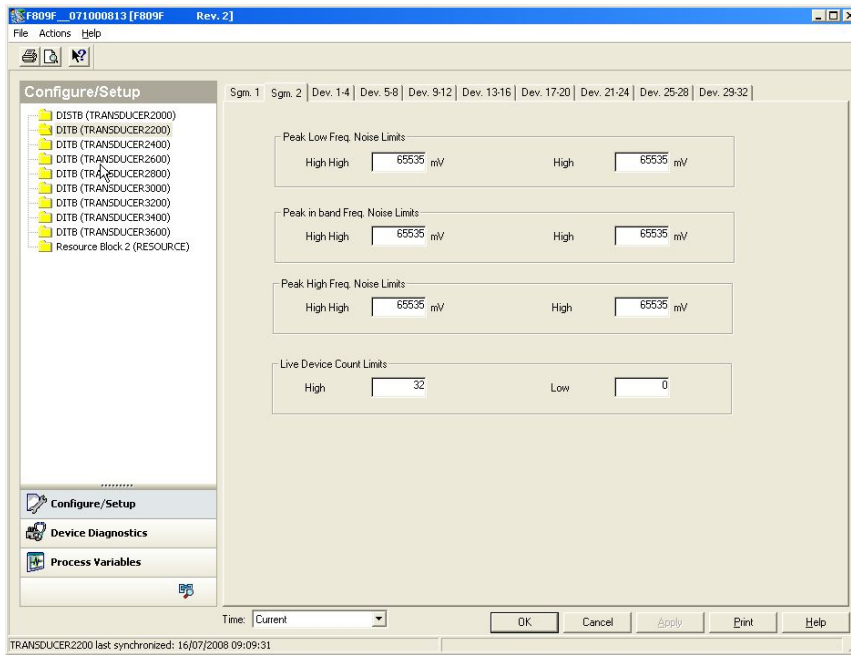
The Delta V H1 communication card does support only 16 devices. Because the F809F follow the specifications (32 devices could be connected to a segment) it can display parameters for 32 devices.

### 5.2.2.2 Segment transducer block: Configure / Setup

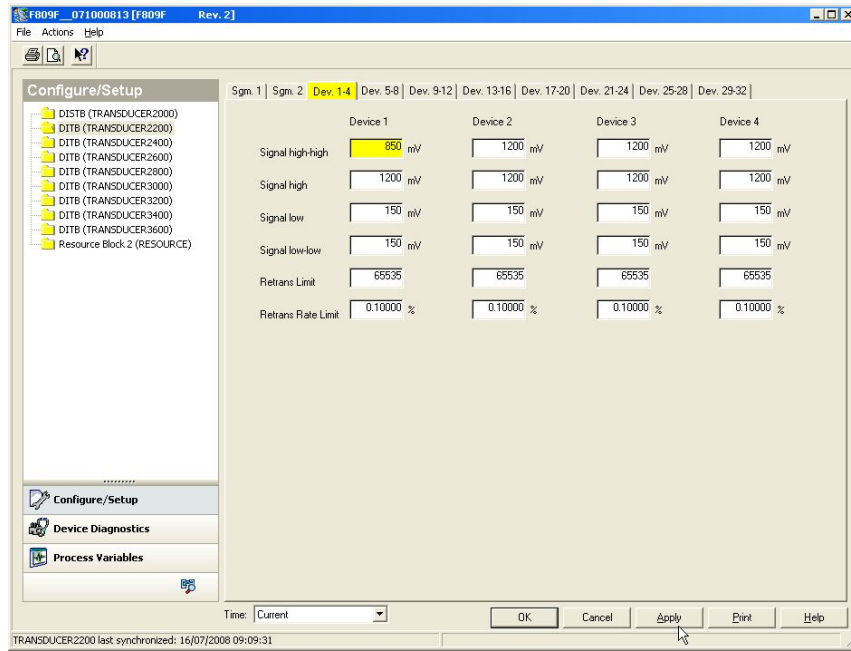
In the Configure / Setup TABs you will have access to the configuration parameters such as the alarms limits for the segment and limits for devices. There are two Tabs for the segment limits and eight Tabs for the devices.



*Seg 1Tab: Configuration for the Segment voltages and the average noise limits.*



Seg 2 Tab: Configuration for the peak noise and the device count limits.



Dev 1-4 Tab: Configuration for device 1 to 4 limits (signal and retransmissions)

The 7 other Tabs contain the same information as above but for the devices 5-8, 9-12.....

Once a parameter has been changed, the box where the parameter is yellow colored and as well as the Tab name. Changes should be applied by clicking the Apply button.

The Delta V H1 communication card does support only 16 devices. Because the F809F follow the specifications (32 devices could be connected to a segment) it can display parameters for 32 devices.



### 5.2.3 Discrete Input Block

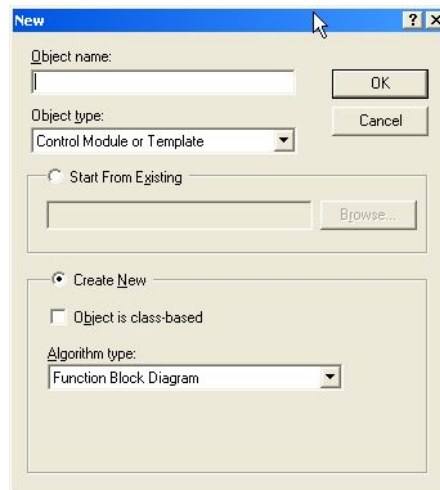
The discrete input blocks' PV\_D value is calculated from the current value of the alarm parameters of the transducer blocks and the OUT\_D value is calculated according to the Discrete Input Block algorithm.

Alarm DI Block: PV\_D will be set to 1 if any system alarm, segment / device alarm or self-test fault alarm bits are set. Selected by channel value 12.

System Alarm DI Block: PV\_D will be set to 1 if any System alarm and self-test fault alarm bits are set. Selected by channel value 13.

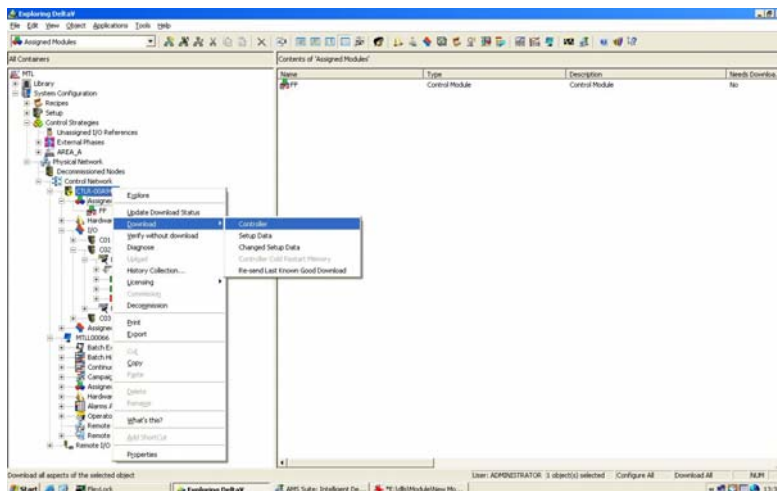
Segment Alarm DI Block 1-8: PV\_D will be set to 1 if any of the segment / device alarm bits are set for the specific segment. Selected by channel value 14 – 21 for segments 1 – 8.

In order to use the DI block you need to create a control strategy. To create a control strategy, go to the Delta V explorer, right click on “Assign new Module” and “Create New module”.



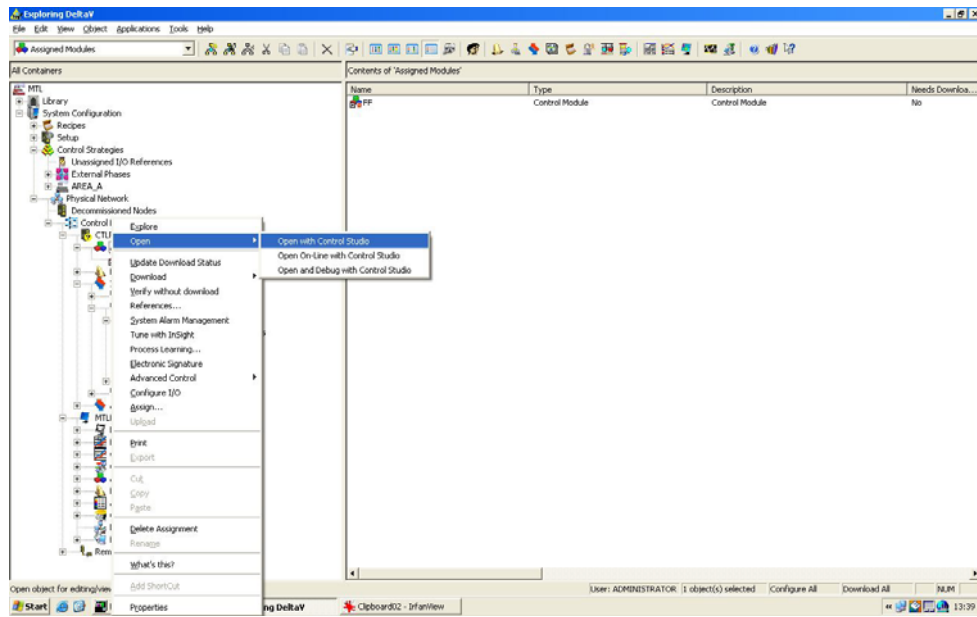
*New module*

Once created, load the new module in the controller: right click on the controller and “Download Controller”



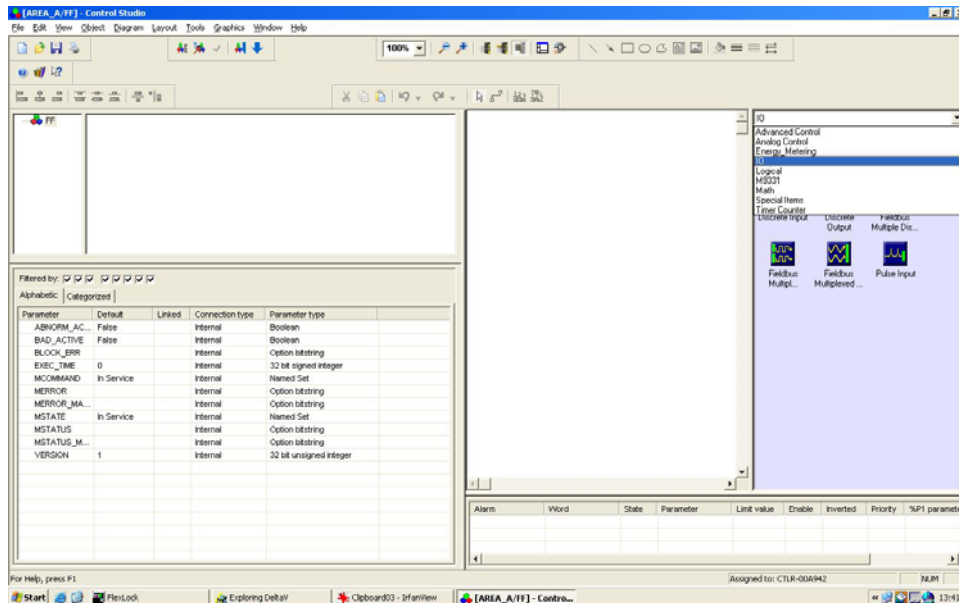
*Download the new module*

Open the module: Rick click on the module “Module” and “Open with Control Studio”



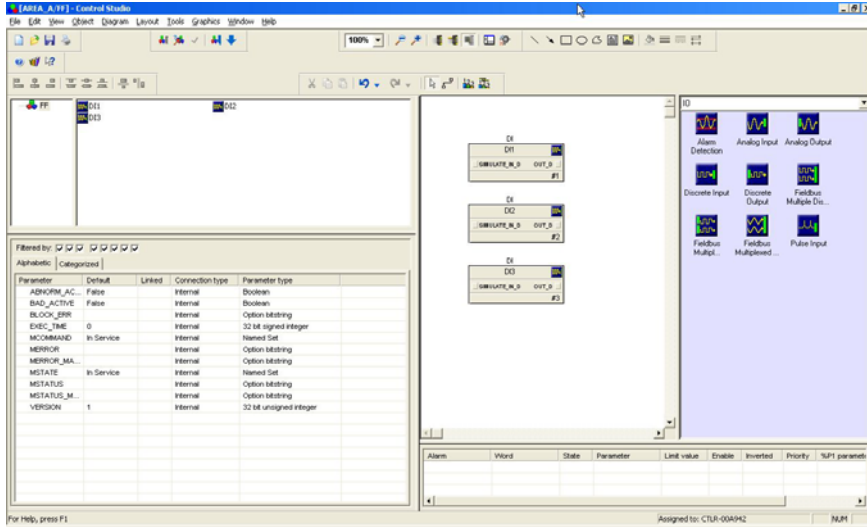
*Open the module with Control Studio*

Select the IO library



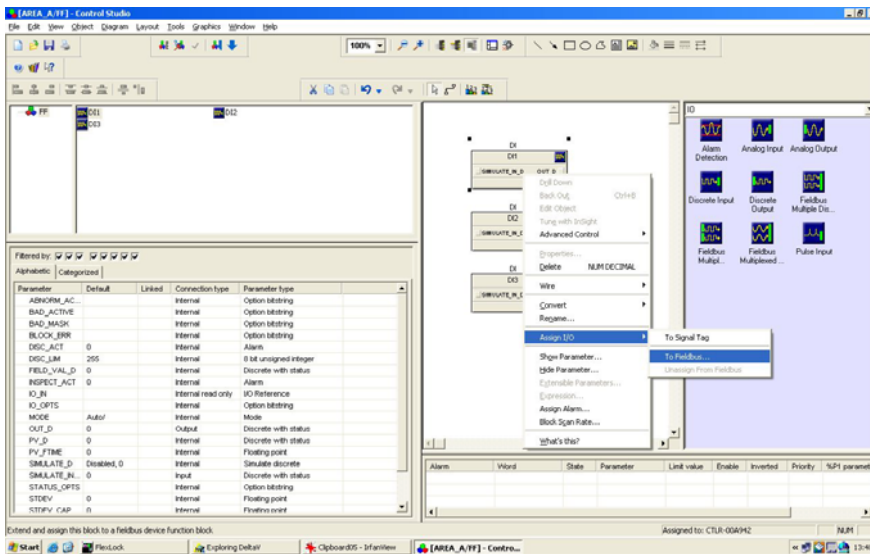
*IO library in the control studio*

Drag and drop the number of Digital Input block you want to use. In our case we have dropped three DI blocks.



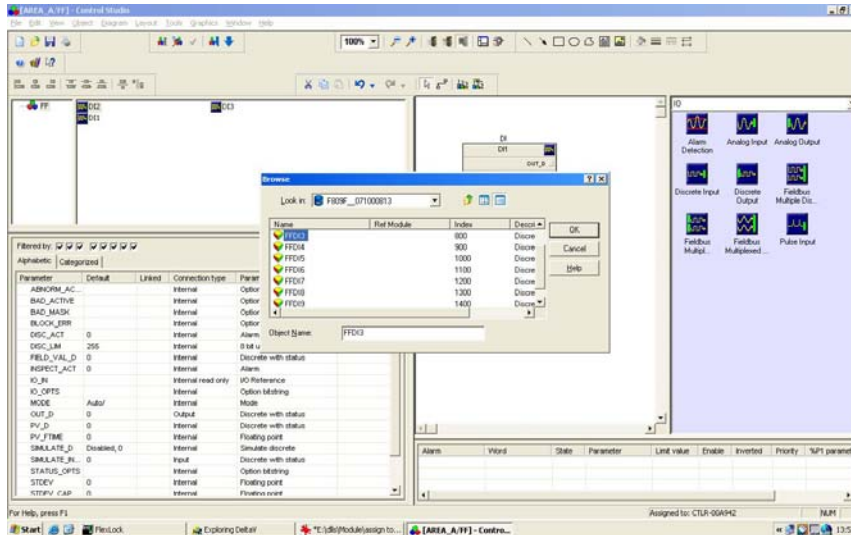
*Three DI function block*

Assign your Digital Input blocks to the Fieldbus Signal: Right click on the DI block “Assign”, “To Fieldbus”



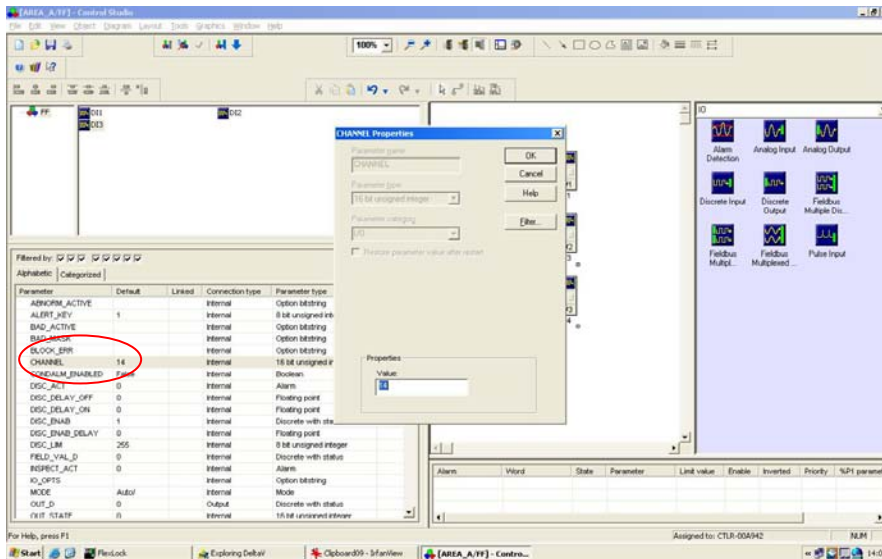
*Assign signal to Fieldbus*

Browse the controller up to the fieldbus port where the F809F is installed: and select the F809F DI block you want to connect your block to. In the example below we will use the three first DI blocks. (DI1, DI 2 and DI3)

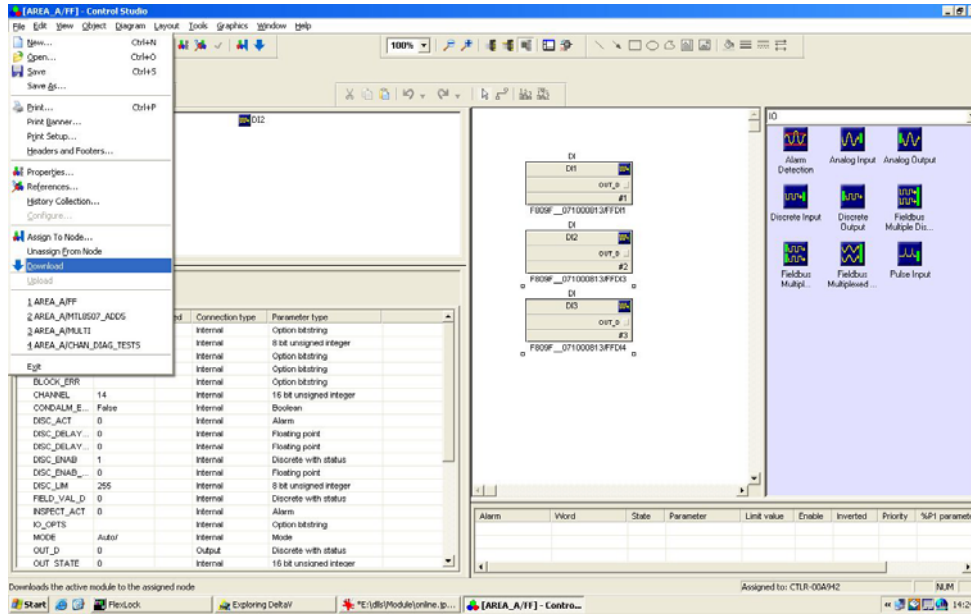


*Assign to F809F FFDI3*

Select the channel number in the block properties. Select the block number you want to change and click "Channel" on the bottom left windows.

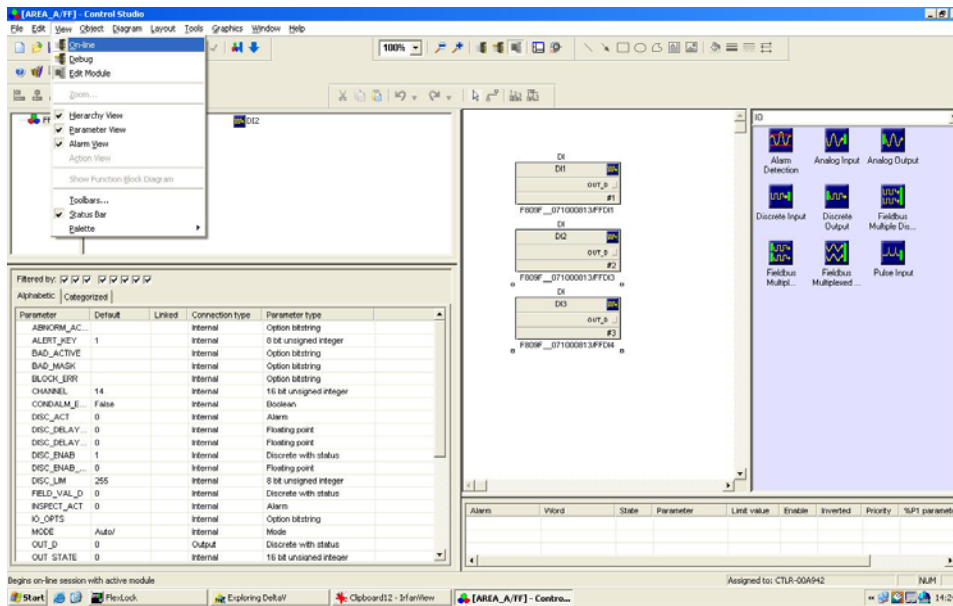


Download your configuration to the controller: Click on “File” and “Download”

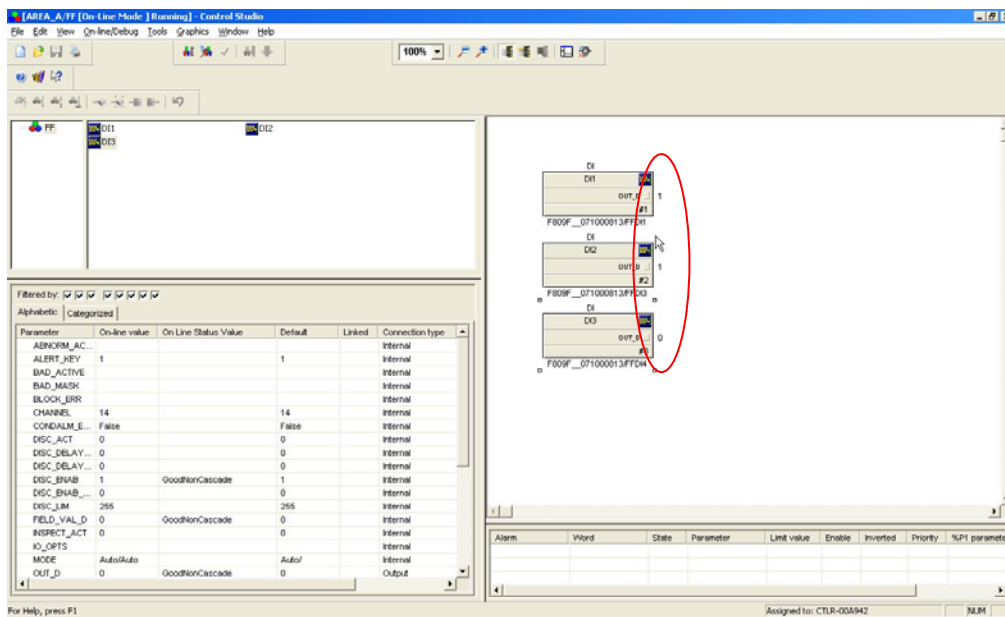


*Download configuration*

You can then have access to the ONLINE mode to check if it works



*Go Online*

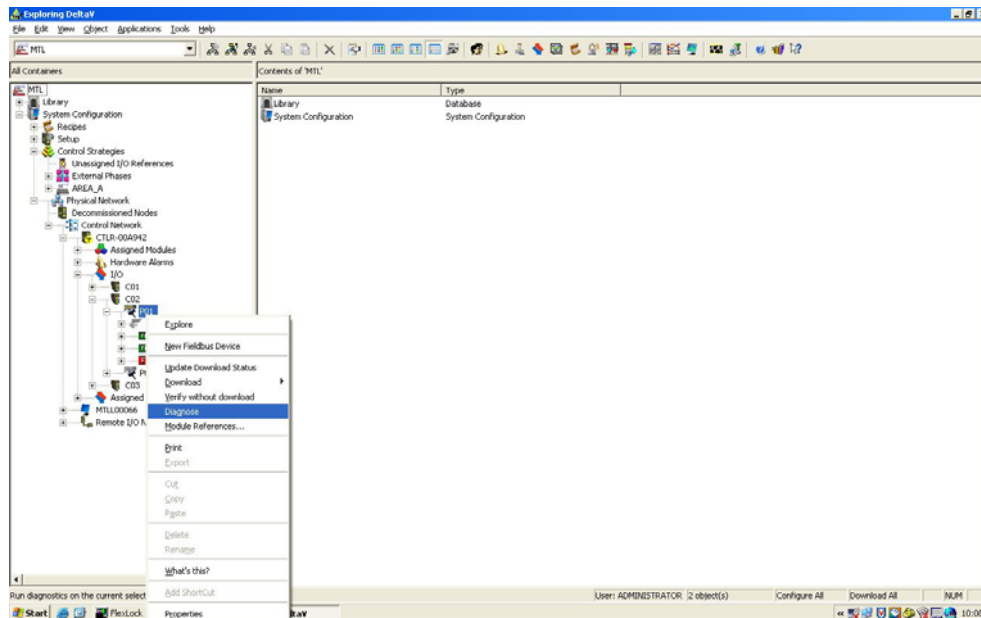


Mode Online: Both Channel 12 and 13 are set to “ONE” and Channel 14 (segment 1) to “ZERO”

## 6 Frequently Asked Questions

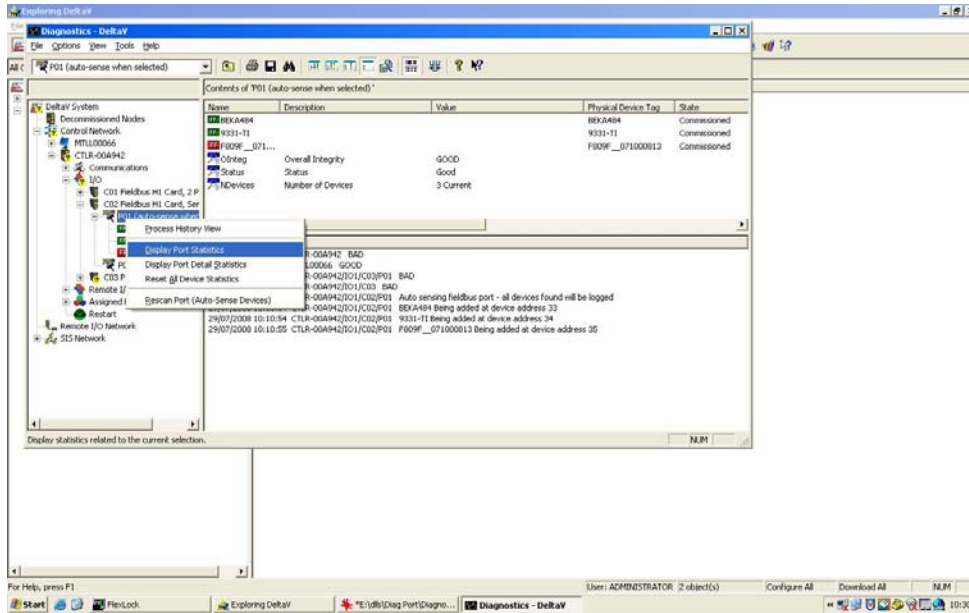
### 6.1 How can I access H1 port and devices statistics on the system

Right click on the H1 port you want to diagnose and click “Diagnose”

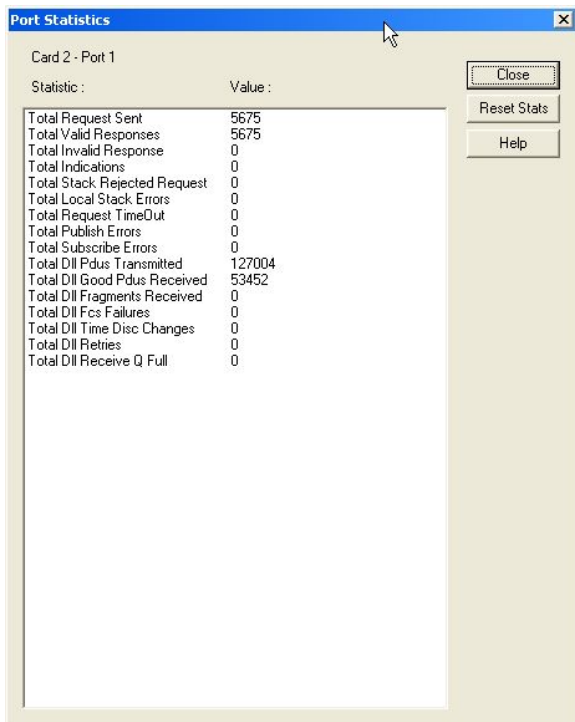


Access to the diagnostic view

Right click on the port you want to diagnose and click "Display Port Statistics"



*Access the port diagnostics*



Total request sent: The total number of fieldbus request that have been sent on this port

Total valid responses: The total number of successful requests that have been sent on this port

Total Invalid responses: The total number of fieldbus requests that failed due to a fieldbus device returning an error

Total request timeout: The total number of fieldbus request that failed because the fieldbus device did not return a response

You can also access the communication statistics device per device.  
 Rick click on the device and click "Display Communication Statistics"

Statistic :	Value :
RequestsSent	12
AbortsRxd	0
InitsSent	1
InitPosConRxd	1
InitNegConRxd	0
AbortsSent	0
AbortPosConRxd	0
AbortNegConRxd	0
PcrTimeoutsRxd	0
RejectsRxd	0
NumFasAborts	2
LastAbortLocal	255
LastAbortReason	0
NumDIDtPduSent	4191
NumDIDtPduReceived	4197
NumDIDtTransferTimeouts	0
NumStackReceiveQFulls	0
NumDIRetrys	0
NumDIITokenPassTimeouts	6
Negative Conf	0
LocalStackErr	0
MissedViewListScan	0
NumLiveListAppearances	3



## 6.2 How can I access the DD help file

Select the parameter on which you want to have the online help and press F1

Or press on the Question mark button and select the parameter

The screenshot shows the 'Device Diagnostics of F809F\_090301762 [F809F Rev. 2]' window. The 'Segment Alarms' section is active, listing various diagnostic parameters. The 'Live device count low alarm' is selected and highlighted in red. A yellow help box is overlaid on the bottom right, providing detailed instructions for troubleshooting the selected alarm.

**32 addresses used; Short to shield:** Check for shield connections to the fieldbus cable including stray strands of wire at wire terminations or un-insulated shield wire loose at the device. Disconnect portions of cable and check if the short goes away. Verify the fieldbus power supply is isolated from ground. Check for damaged or waterlogged cable, junction box or device; Live device count low: Check for device failed or removed for maintenance; Live device count high: Check if additional device has been added to segment, if new device is approved and segment documentation has been updated, reset live device count limits; High and High-High Peak High Frequency Noise: If frequent alarms check: for sources of high frequency noise such as welding on plant, poor grounding of frequency controlled drives; High and High-High Peak In Band Frequency Noise: If frequent alarms check: fieldbus screen grounding, AC cabling close to fieldbus cabling, the wire terminations are properly secured, for welding on plant, poor grounding of frequency controlled drives; High and High-High Peak Low Frequency Noise: If frequent alarms check: fieldbus screen grounding, AC cabling close to fieldbus cabling, wire terminations are properly secured; High and High-High Average High Frequency Noise: Check: for sources of high frequency noise such as welding on plant, poor grounding of frequency controlled drives; High and High-High Average In Band Frequency Noise: Check: fieldbus screen grounding, AC cabling close to fieldbus cabling, the wire terminations are properly secured, for welding on plant, poor grounding of frequency controlled drives, check wire terminations are properly secured; High and High-High Average Low Frequency Noise: Check: fieldbus screen grounding, AC cabling close to fieldbus cabling, wire terminations are properly secured; Low and Low-Low Segment Voltage: check for segment short circuit and fieldbus power supply operation; High Segment Voltage: Check fieldbus power supply operation;

**Check for device failed or removed for maintenance**

*DD Help*