

# Using the F809F diagnostic module with the Softing Linking device and the National Instruments Configuration tool



## 1 Introduction

This technical support note is intended to give the user an understanding of how to integrate in the National Instruments Configuration Tool the F809F diagnostic module with the Softing HSE/H1 linking device FG-100 FF/HSE.

# 2 References

INM F809F

FG\_100\_FF\_HSE\_Manual

FOUNDATION fieldbus  ${}^{\ensuremath{\mathcal{I}}\ensuremath{\mathcal{M}}}$  diagnostics module manual

al FOUNDATION fieldbus <sup>TM</sup> linking device manual

FOUNDATION fieldbus<sup>TM</sup> is a trademark of the Fieldbus Foundation

# 3 Overview

This document is intended to provide a "walk-through" for the NI FBUS Configuration tool and the F809F module. The F809F fieldbus module monitors the health of fieldbus segments and provides an indication of possible network failure.

The linking device is a gateway between a FF High Speed Ethernet (FF-HSE) subnet and FF-H1 links. It supports up to four separate FF-H1 links. In each of these links, the linking device operates as the Link Master as well as the SM Time Publisher.

It also provides instructions to integrate other FOUNDATION fieldbus  $^{TM}$  field devices such as MTL 9331-TI and the Beka fieldbus displays.

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# 4 Hardware Requirements / Installation

## 4.1 Installation for communication



9331-TI

## 4.2 Configuration of fieldbus communication segment

The communication segment that will be used is determined 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.



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# 5 HSE / H1 Linking device configuration

## 5.1 IP Configuration

Although the Linking Device is delivered with a pre-configured IP address (192.168.177.177), it must be assigned an IP address from your LAN address range. Furthermore, the subnet mask and gateway IP address must be set accordingly.

Parameter Name	Pre-Configured Value	Remark		
Host Name	FF_LD	Not used: you may leave this unchanged or empty		
IP address	192.168.177.177	Mandatory see next pages		
Subnet Mask	255.255.0.0	Mandatory see next pages		
Maintenance IP Address	172.20.11.198	See Softing manual for detail		
Broadcast Address	172.17.255.255	Not used		
Default Gateway	192.168.177.178	It is not necessary to configure a default gateway; if the host and the linking device share the same network. For details see Softing manual		

The IP address can be changed using one of the following methods:

- Via Ethernet, using a web browser
- Via the serial port (RS232), using a terminal program

Using a web browser is the most convenient way but access via Ethernet requires an operational IP connection between the Linking Device and a PC and therefore a valid IP configuration in the Linking Device.

## 5.1.1 Setting up an IP connection between PC and Linking device

Connect the Linking Device to your PC. For a direct connection between them, a *crossover* cable is required, but if a hub or a switch is used, a standard Ethernet patch cable can be used.

Assign a second IP address to your PC

- Select Start > Settings > Control Panel
- Double click the Network Connections icon



Double click Local Area Connection

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Local Area Connection	Status ?
General Support	
Connection	
Status:	Connected
Duration:	06:42:33
Speed:	100.0 Mbps
Activity	
Sen	R - Heceived
Packets:	/3,/3/   //,304
Properties Disab	ole
	Close

• Click on Properties

Local Area Connection Properties	?	×
General Advanced		
Connect using:		
Broadcom NetXtreme 57xx Gigabit C		
This connection uses the following items:		
Install Uninstall Properties		
Description		
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.		
<ul> <li>✓ Show icon in notification area when connected</li> <li>✓ Notify me when this connection has limited or no connectivit</li> </ul>	y	
OKCan	cel	

- Select Internet Protocol (TCP/IP)
- Click Properties

In the dialog Internet Protocol (TCP/IP) Properties, the regular first IP address, the subnet mask and the standard gateway address are shown. To add a second IP address click on Advanced



IP address 10.4.0.6		Subnet mask 255.255.0.0	
	Add	<u>E</u> dit	Remove
refault gateways: Gateway		Metric	
	A <u>d</u> d	Ediţ	Remove
Automatic metric —			

• Click the **Add** button in the IP Addresses box

P address:	192 . 168 . 177 . 10	
<u>à</u> ubnet mask:	255.255.0 .0	

- Enter the IP address and the Subnet mask
- Click on Add
- Confirm all windows with **OK** until you get back to the desktop

After an IP connection between the PC and the Linking Device has been set up, you can keep this configuration as a basis in order to be able to find the Linking Device with the NI Configurator. If you don't want to use this setting, start the web browser with the URL <u>http://192.168.177.177</u> (default address) or with the current IP address of the Linking Device. The page System Status will be displayed.

# 5.1.2 Setting up an IP address with an RS232 connection between PC and Linking Device

Usually it is not necessary to set up a serial RS232 connection to the Linking Device; however there are two occasions when it is required:

- when there is no valid IP configuration in the Linking Device and therefore, it is not possible to set up an IP connection
- when the firmware is corrupted and the device is not able to boot

Connect your PC and the Linking Device with a serial RS232 null modem cable.

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Signal Name	DB-25 Pin	DB-9 Pin		DB-9 Pin	DB-25 Pin	
FG (Frame Ground)	1	-	Х	-	1	FG
TD (Transmit Data)	2	3	-	2	3	RD
RD (Receive Data)	3	2	-	3	2	TD
RTS (Request To Send)	4	7	-	8	5	CTS
CTS (Clear To Send)	5	8	-	7	4	RTS
SG (Signal Ground)	7	5	-	5	7	SG
DSR (Data Set Ready)	6	6	-	4	20	DTR
CD (Carrier Detect)	8	1	-	4	20	DTR
DTR (Data Terminal Ready)	20	4	-	1	8	CD
DTR (Data Terminal Ready)	20	4	-	6	6	DSR

## **Common Null-Modem Connection**

In most cases a three-wire cable (RD, TD and SG) works fine.

Open the terminal program (e.g. Hyper Terminal) with the following port settings:

- Baud rate: 115200 bit/s
- Data bits: 8
- Parity: No
- Flow control: none

When using HyperTerminal the setting Function, "arrow and ctrl keys act as terminal keys" must be selected in the settings tab.

Connect the Linking Device to the power supply in order to start the boot sequence. During the boot sequence enter the command **Stop** immediately after power on. The boot process will be stopped. Type run config and the following prompt will appear:

🏀 j - HyperTerminal		_ 🗆 ×
run config		
IP-Addr:		
Netmask: Gatewav:		
Plassa antan 'inaddm'		
riease enter ipauur		
00:00:16 connecté Détec. auto	115200 8-N-1 DÉFIL Maj Num Capturer Écho	

The following example shows how to use this command. User input requests are displayed in quotes followed by a colon (:).

The IP address must be entered, even if it will not be changed. The default values are 0.

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Fichier Edition Affichage Appeler Transfert ?	- O ×
run config	
IP-Addr:	
Gateway:	
Please enter 'ipaddr':192.168.177.177	
Please enter 'netmask':255.255.0.0	
DéEL Mai Num Capturer lécho	
🐼 i - HynerTerminal	
Fichier Edition Affichage Appeler Transfert ?	
[Nic2] @ 왕] = N 201 6인	
run config	
run config IP-Addr:	<u> </u>
run config IP-Addr: Netmask: Gatomau:	
run config IP-Addr: Netmask: Gateway: D	
run config IP-Addr: Netmask: Gateway: Please enter 'ipaddr':192.168.177.177 Please enter 'netmask':255.0.0	
run config IP-Addr: Netmask: Gateway: Please enter 'ipaddr':192.168.177.177 Please enter 'netmask':255.255.0.0 Please enter 'gatewayip':	
run config IP-Addr: Netmask: Gateway: Please enter 'ipaddr':192.168.177.177 Please enter 'netmask':255.255.0.0 Please enter 'gatewayip': IP-Addr: 192.168.177.177 U-teref. 255.255	
run config IP-Addr: Netmask: Gateway: Please enter 'ipaddr':192.168.177.177 Please enter 'netmask':255.255.0.0 Please enter 'gatewayip': IP-Addr: 192.168.177.177 Netmask: 255.255.0.0 Gateway:	
run config IP-Addr: Netmask: Gateway: Please enter 'ipaddr':192.168.177.177 Please enter 'netmask':255.255.0.0 Please enter 'gatewayip': IP-Addr: 192.168.177.177 Netmask: 255.255.0.0 Gateway: Saving Enviroment to Flash	[*
run config IP-Addr: Netmask: Gateway: Please enter 'ipaddr':192.168.177.177 Please enter 'netmask':255.255.0.0 Please enter 'gatewayip': IP-Addr: 192.168.177.177 Netmask: 255.255.0.0 Gateway: Saving Enviroment to Flash Ún-Protected 1 sectors	
run config IP-Addr: Netmask: Gateway: Please enter 'ipaddr':192.168.177.177 Please enter 'netmask':255.255.0.0 Please enter 'gatewayip': IP-Addr: 192.168.177.177 Netmask: 255.255.0.0 Gateway: Saving Enviroment to Flash 'Un-Protected 1 sectors Erasing Flash done	
run config IP-Addr: Netmask: Gateway: Please enter 'ipaddr':192.168.177.177 Please enter 'netmask':255.255.0.0 Please enter 'gatewayip': IP-Addr: 192.168.177.177 Netmask: 255.255.0.0 Gateway: Saving Enviroment to Flash Un-Protected 1 sectors Erasing Flash done Erased 1 sectors	
run config IP-Addr: Netmask: Gateway: Please enter 'ipaddr':192.168.177.177 Please enter 'netmask':255.255.0.0 Please enter 'gatewayip': IP-Addr: 192.168.177.177 Netmask: 255.255.0.0 Gateway: Saving Enviroment to Flash Ún-Protected 1 sectors Erasing Flash . done Érased 1 sectors Writing to Flash done	
<pre>run config IP-Addr: Netmask: Gateway: Please enter 'ipaddr':192.168.177.177 Please enter 'netmask':255.255.0.0 Please enter 'gatewayip': IP-Addr: 192.168.177.177 Netmask: 255.255.0.0 Gateway: Saving Enviroment to Flash in-Protected 1 sectors Erasing Flash done Erased 1 sectors Writing to Flash done</pre>	

:01:45 connecté Détec. auto 115200 8-N-1 DÉFIL Maj Num Capturer Écho

After this configuration, you should have an IP connection between the PC and the Linking Device. You may want to start the web browser with the URL <u>http://192.168.177.177</u> (default address) or with the current IP address of the Linking Device. The page System Status will be displayed.

## 5.2 Web based IP configuration

After an IP connection between your PC and Linking Device has been set up, as described, you may access the Linking Device from your PC using a web browser.

Start your web browser with the URL <u>http://192.168.177.177</u> (pre-set IP address). The page **System Status** will be displayed. The menu bar offers four information pages, four configuration pages.

- Network configuration
- Firmware update
- RAM test configuration
- Set Password

All configuration pages require a login name and a password to execute the functions. The login name is **config**. The password is an empty string.

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🤹 • 🔶 • 🕑 🙆	http://192.168.72.177/		Google	9
🌮 Débuter avec Firefox 🔝 À	la une G Thibaut FANGET			
		FG-100 FF: MTL 192.168.72.177		
Information System Status System Diagnostics H1 Diagnostics H3 Diagnostics Version Information Configuration Network Configuration Automatic VCR Creation Set Password Contact	System Status PD Tag Device Id MAC Address IP Address IP Address (redundant Device) Subnet Mask Default Gateway Maintenance Server Operating State Redundancy CPU Clock	MTL 1E6011 4000 00000000000064800344 00:06:71:01:01:58 192:168:72.1 192:168:72.1 192:168:77.200 ok Primary, no backup 100MHz		

Terminé

Main page

# 5.2.1 Network configuration

🙂 FG-100 FF - Mozilla Fi	refox					- 2 🛛
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< - 🔶 - 💽 📀	http://192.168.72.177	/			▼ ▶ Google	Q.)
🗭 Débuter avec Firefox 🔯 À	la une G Thibaut FANGET					
			FG-100 FF: M	TL 192.168.72.177		
Information System Status System Diagnostics H1 Diagnostics Hardware Diagnostics Version Information Configuration Network Configuration Automatic VCR Creation Set Password Contact	Network Configur Login: Password: Host Name: IP Address: Subnet Mask: Default Gateway: Maintenance IP Address: Submit and Reboot	Fation           config           FF_LD           192 168.72.177           255 255 255.0           192 168.72.1           192 168.177 200	FG-100 FF: M	<u>IL 192168./2177</u>		
http://192.168.72.177/cgi-bin/ch	nangeconfig					

Enter the new IP configuration information

- IP address and Subnet Mask must be present in any case
- You may leave the Host name empty. It is reserved for future use

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- It is not necessary to configure a Default Gateway, if the Host and the Linking Device share the same network.
- The Maintenance IP Address is required to download the Linking Device Firmware from a Maintenance server.

When the entries are complete, click the Submit and Reboot button. The Linking Device will be rebooted after a few seconds and the new values will be accepted.

## 6 **NI-FBUS** configuration Software

The National Instruments configuration software is used to configure and demonstrate the Foundation Fieldbus F809F diagnostic module.

## 6.1 Configuring Communication Devices

This section describes how to configure communication devices using the National Instruments Configurator. Through the configuration, the Fieldbus network learns which network communication devices were installed.

#### Launch the NI-FBUS Interface Configuration Utility

Start | Programs | National Instruments | NI-FBUS | Utilities | Interface Configuration Utility

WI-FBUS Interface Configuration Utility	2 🛽
	ОК
	Import DD/CFF
	Add Interface
	Edit
	Help

Click on Add Interface

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🖪 Choo	se Interfa	се Туре		? 🔀
F	<b>э</b> сі	I CMCIA	Ethernet	Continue->
Ę HSE/	r∰ ∕H1 LD	CN/H1 LD	0ffline	Cancel
, Click an	interface typ	e then press "cor	itinue".	

Select the Ethernet icon and click on Continue

🖏 Add Ethernet Interface 🛛 🛃							
Adapter	[3] Broadcom 440x 10/100 Integrated 💌						
MAC address	00-16-D4-19-53-47						
IP Address	192.168.72.39						
Interface Name	Enet						
Usage © NI-F	BUS						
C Bus Monitor Cancel							

Select the Ethernet interface you want to use. You may have a Wireless card. Select the one you want to connect the Linking Devices to and click on OK



Select the HSE/H1 LD icon and click on continue

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ŀ	🛠 Add HSE/H1 Linking Device 🛛 🔀							
	IP Address	Device ID	Device Tag	Device Type	Ī			
	192.168.72.177	1E6D11400	MTL	Linking Device	Add			
					Modify Tag			
					Cancel			

The configuration utility interrogates over the Ethernet port for the configured Linking Devices. In the example above, it finds a Linking Device at 192.168.72.177.

R Add HSE/H1 Linking Device						
IP Address	Device ID	Device Tag	Device Type	Ī		
192.168.72.177	1E6D11400	MTL	Linking Device	Add		
				Modify Tag		
				Cancel		

Select the Linking Device and click on Add

🕸 HSE/H1 Linking Device Properties 🛛 🛛 🔀						
Device ID	1E6D11400000000000000006480034	Add				
Device Tag	MTL	Cancel				
IP Address	192.168.72.177					
# of Port	4					

Enter the name of the Linking Device and click on OK

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🖏 Add HSE LD Port3					
Interface Name E-LD PORT 1004	]				
Link ID 0x 1004	[				
Address 0x10 (16) 💌	[				
Device Type C Basic Device					
Eink Master Device					
Usage I NI-FBUS Usage Usage Usage Usage Usage	OK Cancel				

Leave the default parameters and click on Add. (four times, one per H1 interface)

The four H1 ports appear in the following screen, click on OK

W NI-FBUS Interface Configuration Utility	? 🛛
Board1	
Port0	
Board2	OK
F Port0	Import DD/CFF
<b>=</b> Port1	Add Interface
Port2	Edit
Port3	Help

The hardware has now been installed and configured.



## 6.2 Import DD Files.

#### Launch the NI-FBUS Interface Configuration Utility

Start | Programs | National Instruments | NI-FBUS | Utilities | Interface Configuration Utility

W NI-FBUS Interface Configuration Utility	? 🛛
Board1	
Port0	
Board2	ок
Port0	Import DD/CFF
Port1	Add Interface
Port2	E dit
Port3	Help
,	

#### Click on Import DD/CFF



Click on Browse to find the DD or CFF file you want to import in the National Instruments Configuration Software.

Interfac	ce Configuration Utility
į)	0102.ffo and 0102.sym and 010101.cff have been copied to directory C:\Program Files\National Instruments\NI-FBUS\data\0BE0EC\0001 DD import succeeded!
	OK

Import succeeded.

Import all DD files you want to use in your application (F809F, BEKA, 9331-TI...)

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## 6.3 Field devices configuration

Now that the communication devices have been configured and all DD files imported, the National Instruments Configurator is used to configure the Fieldbus devices and to demonstrate how to use the F809F module.

Run the NI-FBUS Configurator: Start | Programs | National Instruments | NI-FBUS | NI-FBUS Configurator

Click on yes to run the NI-FBUS communication manager.



Create a new project: File | New

n NI EBUS Configurat	ior/Vor 3 2)						
File Minu Mindow Hole	01 (Ver 5.2)						
New Window Help	CHIAN						
Open	Ctrl+O					1	Received and the second second
Print Setup							Help Window - used for displaying device descriptions and general configuration help information
1 C:\Program Files\\FC 2 MTL_9331LAS.fcp 3 C:\Program Files\\4-	P 1.fcp 20.fcp						conigatation nep intonnation.
Exit							
							-
							-
Status (Download) Errors)	Assignment\Live List/   •						• •
reate a new project							10/10/07 17:14:40
🏄 démarrer	💮 Thibaut Fanget - Inb.	🔄 TSNf809.doc - Micros	Linking Foundation Fi	Microsoft PowerPoint	Clipboard 13 - Irfan View	출동 NI-FBUS Configurator	TR 🕑 🖉 🖻 🏂 17:14

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The following dialog indicates that four FF channels in the Linking Devices were found and that it is connected via Ethernet.

Create New Project 🔀
Create New Project Any Project(contains both online and offline links) Offline Project (only contains offline links) Added link(s) VE-LD PORT 1001 VE-LD PORT 1002 VE-LD PORT 1003 VE-LD PORT 1004 VEnet
OK Cancel

Select the port you want to use.

- E-LD PORT 1001 for FF 1 port
- E-LD PORT 1002 for FF 2 port
- E-LD PORT 1003 for FF 3 port
- E-LD PORT 1004 for FF 4 port

By default, keep the fourth port active in your configuration and click on OK

The system performs a learn function to determine what is connected to the Foundation fieldbus segment. In the example no device is connected.





Once a device is connected, the configurator will automatically update the live list.

In this example we have three devices on the port 1001

- A Beka display BA484DF
- A MTL diagnostic module F809F
- A MTL temperature multiplexer 9331-TI

le Configure View Window Help	
Hide FUAP Grid 2, Hide Help	
2 🌲 🍇 🙏 💥 🖳 🔲 🌇 🍇 Charley 🖂	DEVICE "MTL" -
<ul> <li>See ELD PCRT 2001</li> <li>Scheckle</li> <li>Scheckle<th>10-1Ex01140000000000 H0ST. This device in bosts of configuration with the in open a device tog and device tog and device tog and device tog effect with the vendor. Fund blocks on a flore ended with this interface.</th></li></ul>	10-1Ex01140000000000 H0ST. This device in bosts of configuration with the in open a device tog and device tog and device tog and device tog effect with the vendor. Fund blocks on a flore ended with this interface.
read data objectsuccess	
read data object success (17:44:08)	
LINK "E-LD PORT 1001" is currently idle. (17:44.09)	
Status (Download) Ences (Assignment) [ no [ ist / ] ]	

Expand the trees in order to see all available blocks in your devices.

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## 6.4 Fieldbus Device F809F

### 6.4.1 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



F809F : Resource (RB2)			-				
Apply Values							
Resource (RB2) 🛛 🗹 🖾 🖾 🖳 🚝 🛟 🛅 😧							
✓ Periodic Updates 2 (sec)	•						
00S Auto							
Process Tuning Options Alarm	e Diagnostice	Others					
	T con		T 45. 1				
Parameter Tag Description	Value		Type & Extensions max len = 32)	He A			
			see (maxien = 52)	me			
Block Mode	Auto	×	enu	This			
Actual	Auto		enu	This D-6			
	Auto 1005		enu	This			
Resource State	<b>dim</b> Online		enu	Stat			
			_	=			
F Test Boolean	<b>6</b> FALSE						
- Test Integer8	dyn ()		18				
Test Integer16     Test Integer32			76				
- Test Unsigned8			132				
- Test Unsigned16	<b>am</b> 0		u16				
– Test Unsigned32	dyn U Gwr O		032				
– Test Visible String	dyn		str (max len = 32)				
Test Octet String		00.00.00 (UUUDD AAZ	🚾 (max len = 32)				
– Test Date		00:00:00 (MM/DD/11 10:00:00 (MM/DD/11					
- Test Time Difference	0:00:00:00	(DD:HH:MM:SS)	<u>.</u>				
F Test Bit String	3m 0x0000 ■ 01 /01 /72 i	00-00-00 (MM /DD AV	max len = 2)				
			9				
A Hard Tunes	Discrete Input		land)	The			
Write Changes			Read All				

#### Process TAB

Resource block: Permitted modes (AUTO / OOS), Actual Mode (Auto)

The resource block is often used to get the software revision for both, the measurement board and the Fieldbus Communication Board.



F809F : Resource (RB)	2)		
Apply Values			
Resource (RB2)	ei 🛛 🖀 🖬 🖳 🗖	*** 🛅 🚺 😯	
Periodic Updates 2 (sec			
00S Auto			
Process Tuning Options 4		1	
Parameter	Value	Type & Exten:	sions He
Alarm Summary     Current     Unacknowledged     Unreported     Disabled	am 0×0000 am 0×0000 am 0×0000 am 0×0000	ธิกษ ชิกษ ชิกษ ชิกษ	The The The The
<ul> <li>➡ Write Alarm</li> <li>➡ Unacknowledged</li> <li>➡ Alarm State</li> <li>➡ Time Stamp</li> <li>➡ Subcode</li> <li>➡ Discrete Value</li> </ul>	හිත Uninitialized හිත Uninitialized හිත 01/01/72 00:00 ( හිත Other හිත Discrete state 0	enu enu MM/DD/YY enu enu	A di A di The An ∢ The
<ul> <li>ITK Version</li> </ul>	5	<b>u16</b>	Мај
O Identification measureme     Serial Number     Hardware Revision     Software Version     Firmware CRC	nt 809135bb 0101 a103 ffff	ପ୍ତେ Display For ଲା Display For ଲା Display For ଲା Display For	nat=x Seri nat=.4Han nat=.4Soft nat=x Firm <sub>■</sub>
Identification fieldbus     Serial Number     Hardware Revision     Software Version     Firmware CRC	71000813 191 124 10912	082 015 016 016	Seri Harı Soft Firm
<			>
Write Change	:s	Read All	



## 6.4.2 Transducer blocks

There are two types of transducer block:

- 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.

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## 6.4.2.1 Transducer Block Alarm Detection

If any alarm (except the new and removed device alerts) is set within the Transducer Block then the "NEED MAINTENANCE SOON BIT" is set in the BLOCK\_ERR parameter.

Additionally, if any alarm is set in the Transducer Block then the Segment alarm DI BLOCK PV\_D will be set to 1. See chapter configuring the DI block in the fieldbus cyclic messaging (6.4.3)

F809F : SEG1 TB (DI1TB)		_ 🗆 💌
Apply Values Data access		
SEG1 TB (DI1TB)	🔯   🖄 🔤   💆 🚍 🛟   🛅	
Periodic Updates 2 (sec)		
00S Auto		
Process I/O Config Alarms Dia	gnostics Trends Others Method	s
Parameter	Value	Type & E:
Block Mode     Target     Actual     Permitted     Normal	Auto ami∆uto Auto   00S Auto	enu enu enu enu
Block Error	<b>Gm</b> DeviceMaintenance	enu
Transducer Error	0x00	enu
		>
Write Changes	Read All	

Device Need Maintenance Soon in the Diagnostic TAB

## 6.4.2.2 System Transducer Block (SysTB)

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 allow configuration of the time, the date and the segments monitored. Additionally, 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.

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F809F : SY TB (DISTB)		_ 🗆 🔀
Apply Values Data access		
SY TB (DISTB) 🛛 🕅 🛃	📓 1 🗃 🔤 🛛 🚆 🔤 😍	E 🖬 ?
Periodic Updates 2 (sec)	×	
00S Auto		
Process I/O Config Alarms Dia	gnostics Trends Others Meth	nods
Parameter	Value	Type & Ext
Block Mode	Auto	_
Actual	din Auto	enu
Permitted	Auto   OOS	enu
	Auto	enu
Block Error	an DeviceMaintenance	enu
Transducer Error	0x00	enu
		>
Write Changes	Read All	

Diagnostics TAB: Device Need Maintenance soon

F809F : SY TB (DISTB)		_ 🗆 🖂
Apply Values Data access		
SY TB (DISTB)	🔯 🛗 🖂 💆 🖶 🗱 🛅	
✓ Periodic Updates 2 (sec)	*	
00S Auto		
Brosses   1/0 Config   Alarma   Diac	anastics Trands Others Mathad	1
Process   1/0 Coning   Alarms   Diag	gnostics   Trenas   Others   Methods	
Power feed A voltage	dyn 24.7 V	Type a m
Power feed B voltage	aya 0.1 V	📻 Displ
Module temperature	am 30 °C	📧 max=
System alarms	Rower feed B voltage low alert	enu
Self test fault alarms	<b>Gm</b> 0x00	
Power Feed A Voltage Limits Power feed A voltage high aler Power feed A voltage low alert	r25∨ 20∨	f f
Power Feed B Voltage Limits Power feed B voltage high aler Power feed B voltage low alert	r25∨ 20∨	F
Module temperature high alert	65 °C	u16
Processor reset	aya 0x0000	enu
Set date time	-11	🔜 (max
Set Monitored Segments	Segment 1	enu
Reset Retransmit Counters		🔜 (max
Delete History Data		🔜 (max 🚽
Write Changes	Read All	

Others TAB: Power Feed A/B voltage, module temperature, System Alarms, alarms settings, monitored segment

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#### 6.4.2.2.1 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

To access the methods open the Sys TB and click on the menu Data Access



Choose the require method to run. In this example, Reset retransmit counters was selected

📱 F809F : SY TB (DISTB) 📃 🗖 🔀
Apply Values Data access
SY TB (DISTB) 🛛 🖄 🛍 🔛 🚆 🖶 🛟 🛅 🔯 😯
Periodic Updates 2 (sec)
00S Auto
Process 1/0 Config   Alarms   Diagnostics   Trends   Others   Methods
Reset retransmit counters  Please select: 1) All retransmission counters 2) Desired sequent and all its devices 3) Desired sequent 4) Desired device on a specific segment Next Abort
Write Changes Read All

Reset retransmit counters

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- 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

F809F : SY TB (DISTB)	🛛 🔀
Apply Values Data access	
SY TB (DISTB) 🛛 🛛 🕅 🖾 🔤 🖉	2 🗁 🕸 🛅 🛅 😯
🗆 Periodic Updates 2 (sec) 📫	
00S Auto	
Process   I/O Config   Alarms   Diagnostics   Trends	Others Methods
Reset retransmit counters	
Please select: 1) All retransmission counters 2) Desired segment and all its da 3) Desired segment 4) Desired device on a specific s	evices segment
2 Select the desired segment [18, 8	]
Method execution has comple	 sted.
Write Changes	Read All

Method Execution: desired segment and all its devices on segment 8

#### 6.4.2.3 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.

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• F809F : SEG1 TB (DI1TB)			_ 🗆 🔀
Apply Values Data access			Agrar
SEG1 TB (DI1TB)		1 🖾 🖳 🗁 😫	
Periodic Updates 2 (sec)	•		
00S Auto			
Process 1/0 Config Alarms Dia	gnosti	<sup>cs</sup>   Trends   Others   Method	s   (
Parameter	Val	le	Type & E:
E  Block Mode	Auto		_
-Actual		uto	enu
- Permitted	Auto	100S	enu
└─ Normal	Auto		enu
Block Error	dyn D	eviceMaintenance	enu
Transducer Error	0x00		enu
			>
Write Changes		Read All	

Diagnostics TAB for the SegTB: Device Needs Maintenance soon bit set

F809F : SEG1 TB (DI1TB)		🛛 🔀			
Apply Values Data access					
SEG1 TB (DI1TB)	SEG1 TB (DI1TB) 🛛 📓 🕍 🔤 🖳 🖶 🐑 🛅 😧				
Periodic Updates 2 (sec)	*				
00S Auto					
Process I/O Config Alarms Dia	gnostics Trends Oth	ners Methods			
Parameter	Value	Туре 📐			
🖕 * Segment tag	Segment 1	str (ma			
Segment voltage	dyn 23 V	<b>F</b>			
Average low frequency noise	<mark>ayn</mark> 9 mV	<b>≣</b> Bar			
Average if-band frequency noise	omV 0 mV	<b>≣</b> Bar			
Average high frequency noise	omV 0 mV	nn Bar			
Peak low frequency noise	<b>am</b> 41 mV	<b>≣</b> Bar			
Peak if-band frequency noise	<b>3</b> mV	nns Rar			
Peak high frequency noise	<b>am</b> 16 mV	nns Rar			
Number of devices on live list	ayn 4	us Rar			
LAS tag	🚮 Tag not assigned	🛐 (ma 🥁 🛛			
		>			
Write Changes		Read All			

Others TAB: Segment tag and segment measurements

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<b>F809F : SEG1 TB (DI1TB)</b>		_ 🗆 🛛
Apply Values Data access		
SEG1 TB (DI1TB)	🛃   🗯 🔤   🖳	🖶 💱 🛅 🚺 🕐
Periodic Updates 2 (sec)	-	
00S Auto		
Process   1/0 Config   Alarms   Dia	gnostics Trends 0	Ithers Methods
Parameter	Value	Type 🔼
LAS tag	am NIFBUS	sm (ma 📟
LAS address	dyn 16	<b>₀</b> s]Bar
LAS signal level	am 938 mV	<b>≣</b> Bar
Lowest signal level tag	<b>dyn</b> NIFBUS	sn (ma
Lowest signal level address	ayn 16	<b>™</b> 8ar
Lowest signal level	am 925 mV	<b>≣</b> ∎ Rar
Total retransmissions on segmen	t 🚮 🛛	<b>≣</b> Bar
Retransmission rate on segment	am 0.00000 %	🖬 Dist 🗸
		>
Write Changes		Read All

Others TAB: Information on the LAS

F809F : SEG1 TB (DI1TB)		
Apply Values Data access		
SEG1 TB (DI1TB) 🛛 🛛 🛃	📓 🖀 📓 🚆 🖶 🗱 🛅	1 🕜
Periodic Updates 2 (sec)	×	
00S Auto		
Process   I/O Config   Alarms   Dia	gnostics Trends Others Methods	1
Parameter	Value T	уре 🔼
<ul> <li>Device 1 data</li> <li>Device address</li> <li>Device tag</li> <li>Signal level</li> <li>Retransmissions</li> <li>Retransmission rate</li> <li>Reserved</li> <li>Inverted signal</li> <li>Device live</li> </ul>	Iminia         Iminia<	Rar  (ma  Rar  Rar  Dist  Rar  Rar
<ul> <li>Device 2 data</li> <li>Device address</li> <li>Device tag</li> <li>Signal level</li> <li>Retransmission rate</li> <li>Reserved</li> <li>Inverted signal</li> <li>Device live</li> </ul>	Som 18     UIS       F809F     Stit       Som 1013 mV     UIS       Som 0     UIS       Som 0     UIS       Som 0     UIS       Som 0     UIS       Som 1     UIS	Rar  (ma  Rar  Rar  Dist  Rar   ₩
Write Changes	Read All	

Others TAB: Device Data for 32 devices

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F809F : SEG1 TB (DI1TB)	2
Apply Values Data access	
SEG1 TB (DI1TB) 🛛 🛛 🕅	1 🛗 🖂 🗳 🖶 🕫 🛅 😧
Periodic Updates 2 (sec)	•
00S Auto	
Process I/O Config Alarms Diagn	ostics Trends Others Methods
Parameter	Value 🛛 Type 🔼
Segment alarms	M0x0000 mm
🗆 📮 Device alarms	
Device 1 alarms	
Device 2 alarms	Device signal level high alarm
Device 3 alarms	m Device signal level nign alarm 🛛 🔤
Device 5 alarma	
Device Salarms	
Device 7 alarms	
Device 9 alarms	
Device 10 alarms	0x00
- Device 11 alarms	n 0x00
Device 12 alarms	vn 0x00 enu
Device 13 alarms 🛛 🛃	0x00 enu
Device 14 alarms 🛛 🛛 🗗	ox00 enu
Device 15 alarms 🛛 🛛 🗗	ox00 enu
Device 16 alarms 🛛 🛛	0x00 📷 🦳
Device 17 alarms 🛛 🔤	m 0x00 mu ≡
Device 18 alarms	
Device 19 alarms	
Device 20 alarms	
Device 21 alarms	
Device 22 alarms	
Device 23 alarms	
Device 24 diams	
Device 26 alarms	
Device 27 alarms	
Device 28 alarms	0x00
Device 29 alarms	Ox00 End
🛛 🗕 Device 30 alarms 🛛 🧧	vn OxOO enu
Device 31 alarms	vn OxOO enu
└─ Device 32 alarms 🛛 🛃	🖬 0x00 🔤 🥁
<	>
Write Changes	Read All

Others TAB: Segment alarms and Device alarms



■ F809F : SEG1 TB (DI1TB)	
Apply Values Data access	
SEG1 TB (DI1TB) 🛛 🛛 🖾 🕍 🔤 🖳 😫 🕫	1 🖬 🕐
Periodic Updates 2 (sec)	
00S Auto	
Process I/O Config Alarms Diagnostics Trends Others Metho	ods
Parameter Value	Туре 🔼
■ Segment voltage limits Voltage high alert limit 25 V Voltage low alert limit 19 V	1
Average low frequency noise high150 mV	016
Average if-band frequency noise 175 mV	016
Average high frequency noise hig150 mV	u16
Peak low frequency noise high alt65535 mV	o16 👝
Peak if-band frequency noise high65535 mV	016
Peak high frequency noise high a65535 mV	u16
<ul> <li>Live device count limits</li> <li>Live device count high limit 4</li> <li>Live device count low limit 1</li> </ul>	
Write Changes Read All	

Others TAB: Segment alarm limits

📱 F809F : SEG1 TB (DI1TB)			
Apply Values Data access			
SEG1 TB (DI1TB) 🛛 🛛 🖬 🔛 🖄 🔤 🖳 🛤 😫			
Periodic Updates 2 (sec)			
00S Auto			
Process I/O Config Alarms Diagnostics Trends Others Method	s		
Parameter Value	Туре 📐		
	016) 016		
Device 1 retransmissions limit 65535	u16		
Device 1 retransmission rate high 0.10000 %	📻 Disp		
Device 2 signal level limits     Device 2 signal level high alert 1000 mV     Device 2 signal level low alert 1200 mV	u16 u16		
Device 2 retransmissions limit 65535	u16		
Device 2 retransmission rate high 0.10000 %	🖬 Disp 🔲		
Device 3 signal level limits Device 3 signal level high alert 1000 mV Device 3 signal level low alert 1200 mV	u16 u16		
Device 3 retransmissions limit 65535	<b>u16</b>		
Device 3 retransmission rate high 0.10000 %			
Write Changes Read All			

Others TAB: Device alarm limits for 32 devices

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## 6.4.3 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, launch the Function block application by double clicking the application name

🗽 NI-FBUS Configurator(Ver 3.2) : FCP1 📃 🗖	$\mathbf{X}$
File Function Block Application Configure View Window Help	
Hide FBAP Grid ?, Hide Help	
🕑 💩 🦺 🐇 🍰 🚼 🤽 🖳 🔟 급 🖏 Show FBAP	144
-corrected by the second decision   -corrected decision <td></td>	
SEG7 TB (DI7TB)	
FFDI2 (DI) 	~
read data objectsuccess PARAMETER "DEVICE_10_SIGNAL_LEVEL_L read data objectsuccess (11: LINK "E-LD PORT 1001" is currently idle. (11:20 Status (Download) Eurors) Assignment) Live List / 4	
Ready 10/11/07 11:35:01	

Launch Function Block application





Drag and drop the DI function blocks in the application window. Three DI function blocks are shown in this example.

🗖 F809F : FFDI1 (DI)				
Apply Values	Apply Values			
FFDI1 (DI)		1 🔯 1 1 🖬	🖳 📇 😫 📗	
Periodic Updates	2 (sec)	÷		
00S Auto Ma	nual			
Diagnostics	T	rends	Others	
Process	Tuning	Options	Alarms	
Parameter		Value	<u>^</u>	
⊢Value ⊟-Status		Discrete state 0		
		Bad		
LIMITS		NonSpecific NotLimited		
Transducer State		0		
Output State		0		
Channel		12		
🗆 🖕 Field Value Disc	rete	Discustor stat		
E Status		dyn Discrete stai	ie U	
		Bad NavCasai6a		
		NotLimited		
Write Change	s	Read	IAI	

Open the Process TAB of the DI block in order to configure the channel value: 12 this block will be used for the System, Segment / device or self test fault alarms

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📮 F809F : FFDI2 (DI)			
Apply Values			
FFDI2 (DI) 🛛 🕅	📓 🕍 🔤 🖳 🖶 😫 📘		
Periodic Updates 2 (sec)	•		
00S Auto Manual			
Process Tuning Options Alarm	s Diagnostics Trends Others	1	
Parameter	Value	Туре 🔼	
Output Discrete     Value     Statem	Discrete state 0	enu	
	Bad NonSpecific NotLimited	enu enu enu	
Transducer State	0	<b>616</b>	
Output State	0	016	
Channel	13	one min:	
	dm Discrete state 0	Envi	
	Bad NonSpecific NotLimited	enu enu enu	
		>	
Write Changes	Read All		

Open the Process TAB of the DI block in order to configure the channel value: 13 this block will be used for the System alarms

F809F : FFDI3 (DI)				
Apply Values				
FFDI3 (DI) 🛛 🕅	FFDI3 (DI) 📧 📧 🕍 🔤 🖳 🚍 💱 🛅 😧			
Periodic Updates 2 (sec)	•			
00S Auto Manual				
Process Tuning Options Alarms	Diagnostics Trends Others			
Parameter	Value	Туре 📐		
□ ► Output Discrete Value □ Status	Discrete state 0	enu		
	Bad NonSpecific NotLimited	enu enu enu		
Transducer State	0	016		
Output State	0	016		
Channel	14	📷 min:		
□ ● Field Value Discrete - Value I Status	🚛 Discrete state 0	enu		
LUMITS	Bad NonSpecific NotLimited	enu enu enu		
<		>		
Write Changes	Read All			

Open the Process TAB of the DI block in order to configure the channel value: 14 this block will be used for the Segment / Device alarms for the segment 1

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編 NI-FBUS Configurator(Ver 3.2): FCP1 - [E-LD PORT 1001: Fu	nction Block Application]	- 2 🛛
😘 File Edit Configure Zoom View Window Help		_ & ×
Hide FBAP Grid ?, Hide Help		
🥝   🍰 🦓 🍰 🚉 🔡 🔟 🖬 🏪 🔂 Show FBAP	📧 🛛 Loop Time = 1 sec 📑 Stale Limit = 1 📑 🤡 🔈 🗞 🏈 🐧 🎓 🗛 🎾 📷 🎺 💺 🗸	SCHEDULE "Schedule"
Image: PCD PCR1 1001         Image: PCD PCR1 1001           Image: PCD PCR1 1002         Image: PCR1 1003           Image: PCD PCR1 1003         Image: PCR1 1003	FFD1 (D) Output Discrete Alams Trends FFD2 (D) Output biscrete Alams Trends Trends Trends	Schedule help - (Dirional) Double click or right click on this object to view or edit this link's schedule. The schedule is automatically generated, but you may change at a sy path. You can also use the schedule of the blocks.
read data objectsuccess PARAMETER "CHANNEL":		-
read data objectsuccess (11: LINK "E-LD PORT 1001" is currently idle (11:4	3:02)	
Anna E EP Fort foot is currently fulle. (11.4	, er,	-
Status (Download) Errors) Assignment Live List		Þ
Download project to link		10/11/07 11:43:21

Download the application by clicking the download project button in the tool bar

Download Config	uration		
Block FFD1 (DI) FFD12 (DI) FFD12 (DI) FFD13 (DI)	Target Mode Auto Auto Auto Auto Auto	Auto Auto Auto Auto Auto Auto	Choose desired TARGET mode of function blocks. NORMAL mode is typical for "Normal" operation at the end of configuration. Set All Targets To NORMAL Then press Continue. Force to Continue >>
End task write blockmodes			
Cancel	Close	Help	

After the download make sure that all blocks are in AUTO.





Go online in order to see the PV\_D values, click on the monitoring mode button in the tool bar

Uncheck the Monitor only wired parameters box and click the Start Monitoring button





The outputs of the alarm blocks can then be seen on screen..

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