



# F809F

## Fieldbus diagnostic module

- Monitors health of fieldbus segments
- Provides early indication of possible network failure
- Communicates over FOUNDATION™ fieldbus H1 segment
- Installs on F800 power supply carrier
- Network status and parameters displayed in instrument management software
- Easily integrates into your choice of fieldbus control system



**The F809F Fieldbus Diagnostic Module** is available as an option for use with F800 Series and some F600 Series fieldbus power supplies. It plugs into the F8x0 or F6x8 Series power supply carrier or F8x8 diagnostic module carrier and monitors the performance of each of the eight fieldbus segments, providing information on the network health and capturing retransmissions between the fieldbus devices and control system.

**The parameters measured include** the bulk power supply input voltage, temperature, segment voltages and signal levels of all devices. Average and peak noise are measured in each of three frequency bands. Additionally the monitor checks for short-circuits between the fieldbus signal wires and cable shields. The measured physical layer parameters are used to predict the corrective action required. This allows problems to be rectified before poor network health results in devices being removed from the 'live list', which could affect the operation of the plant. Measurements may alternatively be captured and sent to off-site experts for interpretation.

**The F809F is a FOUNDATION™ fieldbus device**, and communicates with the host control system via a fieldbus segment. This allows the network status and measured parameters to be displayed in the host control system using the standard system instrument management software.

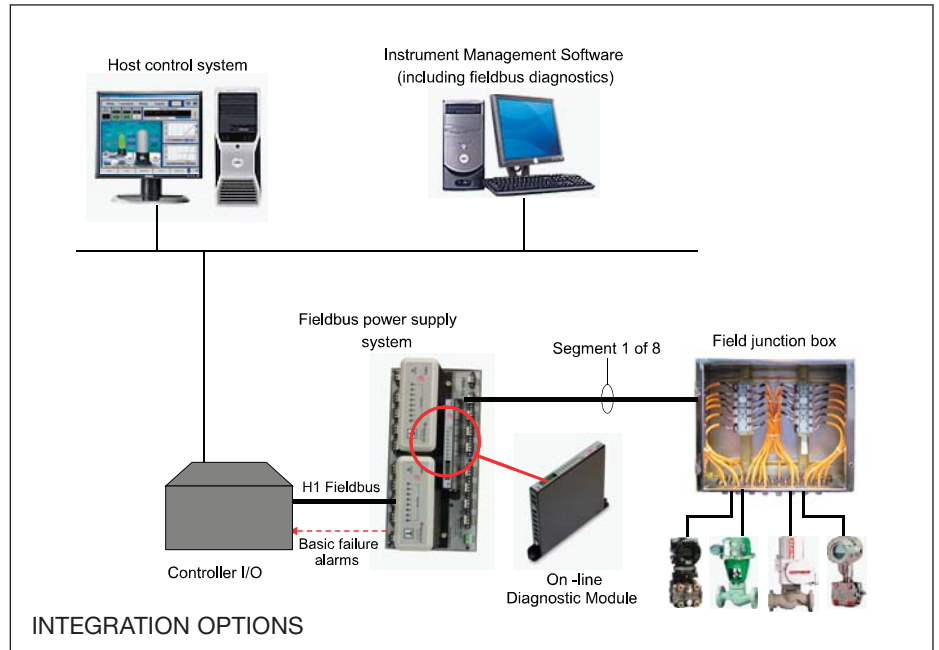
**The Fieldbus Function Blocks supported** are: ten DI function blocks to indicate active alarms; a resource block; one transducer block for system status and eight segment transducer blocks (one for each of the eight monitored segments). The F809F fieldbus device description file enables all the fieldbus physical layer diagnostic data and alarms to be easily integrated into your choice of fieldbus control system. The default alarm limits are based on the fieldbus specification and these are easily user configurable within your control system's instrument management software. This ensures that any instrument technician who knows how to view diagnostic data from a fieldbus device, can already get the full benefits of fieldbus physical layer diagnostics without any additional training.

**When monitoring a fieldbus segment** the F809F draws <1mA current from the segment and only monitors the communication of the segments, so it does not need to be considered in the design of the monitored segments. Segment scanning is configurable to scan any combination of the eight segments. The default is to scan all eight segments.

**The segment used for fieldbus communication** is easily configured using the plug-in connector supplied or by specifying when ordering. The options are: communicating on segment 1 or 8 on the power supply carrier or on a separate fieldbus segment. The F809F requires a voltage in the range 9–32V and draws a current of 15mA on the communicating fieldbus segment.

The Fieldbus Diagnostic Module is designed to place a minimal communication load on the communicating segment. In most applications the control system is configured to monitor the BLOCK\_ERR parameter in the nine transducer blocks (one power supply transducer block and eight segment blocks) in each F809F, typically every 60 seconds. If any transducer block parameter is in alarm the Needs Maintenance Soon bit is set that sets an alarm in the instrument management system. The instrument technician then opens the transducer block and can immediately see which alarm parameter is set and the current values of the monitored parameters. Help screens built into the fieldbus Device Description recommend corrective action for the parameter in alarm. This approach has no effect on the segment cyclic communication macrocycle loading.

Alternatively the control system can be configured to monitor the F809F discrete input block each macrocycle and if any transducer block parameter is in alarm the DI block is set that sets an alarm in the instrument management system. This approach has a minimal effect on the segment cyclic communication macrocycle loading as the DI block communication takes only a few milliseconds.



## Power Supply Transducer Block Parameters

Parameter	Alarms
Power Feed A voltage	Low/high
Power Feed B voltage	Low/high
Module Temperature	High

## Segment Transducer Block Parameters

Parameter	Alarms
Segment Tag, 32 character text string*	
LAS Tag	
LAS Address (Hex)	
LAS Signal Level	
Lowest Signal Level Tag	
Lowest Signal Level Address (Hex)	
Lowest Signal Level (mV)	
Total Retransmissions On Segment	
Retransmission Rate on Segment	
Segment voltages	Low/high
Short to shield	+/- to shield
Average low frequency noise	High
Average in-band frequency noise	High
Average high frequency noise	High
Peak low frequency noise	High
Peak in-band frequency noise	High
Peak high frequency noise	High
Live device count	Low/high



## 32 Sets of Device Data

The Fieldbus Diagnostic Module supports a maximum of 32 devices within each Segment Transducer Block. For typical fieldbus applications, two fieldbus I/O cards and up to 12 fieldbus devices are connected to each segment, so only 14 device data sets will be used.

If any of the transducer block parameters are in alarm, the "Device needs maintenance soon" bit is set in that transducer block's 16-bit BLOCK\_ERR parameter.

The F809F provides default alarm limits. Alarm limits are user configurable.

Parameter	Alarms
Device address	
Device Tag, 32 character text string*	
Device signal levels	Low/High
Retransmissions	High
Retransmission rate = Re-transmissions/Total pass token requests from LAS	High
Inverted signal	

## SPECIFICATION

### Location of equipment

Safe area

### ELECTRICAL

#### Monitored segments

Monitored segment voltage 15 to 32V DC  
 Monitored segment current draw <1mA

#### Isolation

Segment to segment: Functional 250Vac withstand  
 Power input to fieldbus communication port: Functional 250Vac withstand  
 Power input to monitored segments: Functional 250Vac withstand

#### EMC compliance

To EN61326:1998 Electrical equipment for measurement, control and laboratory use - EMC requirements

### INPUT

#### Redundant power feeds from carrier

##### Input voltage

19.2 - 30.0V DC

##### Current consumption

80mA @ 24 V DC input (max.)

#### Fieldbus communication segment

##### Input voltage

9.0 to 32.0V DC

##### Current consumption

15mA maximum

##### Power dissipation

2.4W max

### LED indicators

#### Power status (green)

On power on  
 Off power fail

#### Segment status (yellow)

On segment monitored  
 Off segment not monitored  
 Flashing active segment alarm

\* the segment tag and device tag data need to be entered into the F809F device description after the system has assigned addresses to the FF devices and downloaded to the F809F.

### ENVIRONMENTAL

#### Ambient temperature

Operating - optimum orientation † -40°C to +70°C  
 Operating - non-optimum orientation -40°C to +50°C  
 Storage -40°C to +85°C

† optimum orientation is when mounted in a vertical position as defined on carrier datasheets

#### Ingress protection

IP20 to BS EN6529 (Additional protection by means of enclosure)

#### Corrosive atmospheres

Designed to meet ten year service in Class G3 corrosive environment, as defined by ISA Standard SP71.04.

### MECHANICAL

#### Mountable on the following carriers:

F8xx power supply carriers  
 F6x8D power supply carriers  
 F8x8 diagnostic module carriers

#### Fieldbus communication segment used

The following options are selectable using the top connector:  
 Segment 1 of monitored segments  
 Segment 8 of monitored segments  
 A separate fieldbus segment

#### Dimensions (including top cover)

162(l) x 20(w) x 148(height from circuit board)

#### Weight

420g approx.

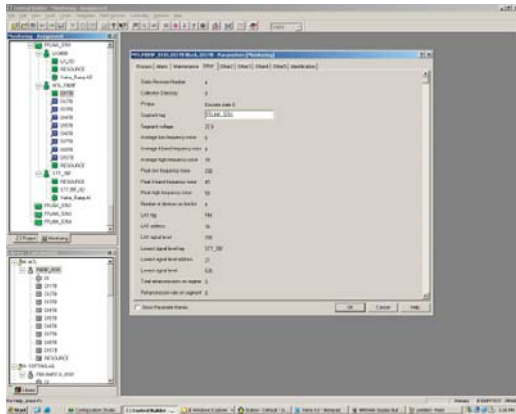
### PHYSICAL NETWORKS

IEC61158-2  
 FOUNDATION™ fieldbus H1



## SCREEN IMAGES

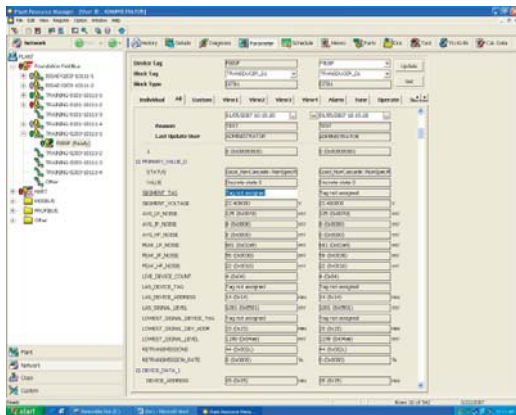
### F809F Function Blocks



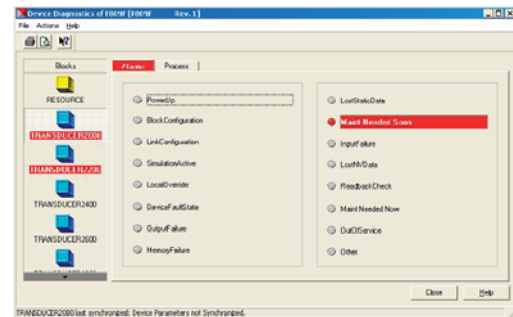
### System Data

Parameter	Name	Value	Unit	On/Off	Type	Range	Class	Comment
12	Collection Display	0			Enum(1)		CONT	
12.1	0	0			Enum(4)		CONT	
13	PIValue				Record		DYN CONT	
13.1	Status	Good, Normal			Enum(4)		DYN CONT	
13.2	Value	Discrete state 1			Enum(4)		DYN CONT	
14	Power feed A voltage	25.3	V		Fault(1 octet)		CONT	
15	Power feed B voltage	0.4	V		Fault(1 octet)		CONT	
16	Module temperature	34	°C		Enum(2) sct(1 - 32768, 1023)		DYN CONT	
17	System alarm				Enum(4)		DYN CONT	
17.1	Module temperature				Enum(4)		DYN CONT	
17.2	Power feed B volt				Enum(4)		DYN CONT	
17.3	Power feed B volt				Enum(4)		DYN CONT	
17.4	Power feed A volt				Enum(4)		DYN CONT	
17.5	Power feed A volt				Enum(4)		DYN CONT	
18	Self test fail alarm				Enum(4)		DYN CONT	
18.1	Watchdog failure				Enum(4)		DYN CONT	
18.2	FLASH corrupt				Enum(4)		DYN CONT	
18.3	RAM error				Enum(4)		DYN CONT	
18.4	Relay stuck				Enum(4)		DYN CONT	
18.5	EXPRM data co				Enum(4)		DYN CONT	
18.6	EXPRM not pio				Enum(4)		DYN CONT	
18.7	Measurement pio				Enum(4)		DYN CONT	
19	Power Feed A Voltage				Record		CONT	
18.1	Power feed A volt	30.3	V		Fault(1 octet)		CONT	
18.3	Power feed A volt	19.7	V		Fault(1 octet)		CONT	

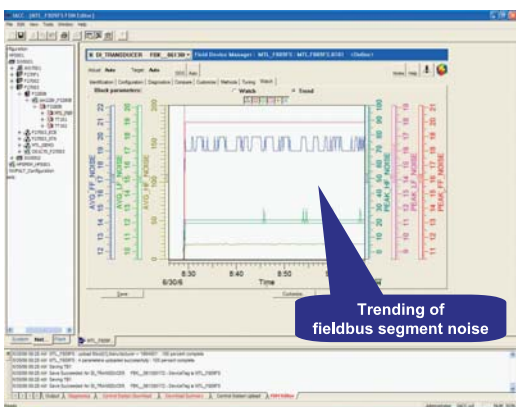
### Segment Data



### Alarm Set



### Trending of Segment Noise



## ORDERING INFORMATION

- | Part No        | Configuration   |
|----------------|---|
| <b>F809F</b>   | Communicates on segment 8 (eight) of the monitored field bus segments |
| <b>F809F-1</b> | Communicates on segment 1 (one) of the monitored fieldbus segments    |
| <b>F809F-9</b> | Communicates on a separate fieldbus segment                           |



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