The **F809F-Plus Fieldbus Diagnostic Module** continuously monitors the performance of eight fieldbus segments, providing information on the health of the network physical layer. It mounts on a range of MTL 918x, F8xx or F6x8 power supply carriers, and collects diagnostic information without interruption to normal fieldbus communications.

As a **Foundation Fieldbus™ device** the F809F-Plus easily integrates with the chosen host control system via a fieldbus segment, allowing the network status and measured parameters to be displayed in the control system's instrument management software.

The **F809F-Plus** builds on the success of the F809F, the industry's first fieldbus-connected diagnostic module. New features of the Plus version include superior immunity to noise on the 'communicating' segment, enhanced short-to-shield detection, and extended power supply voltage measurement range for compatibility with new MTL power supply types. It may be used as a direct replacement for F809F in existing installations; when installed using appropriate DD files the full feature set of F809F-Plus become available with immediate effect.

The **F809F-Plus** is launched with fully updated versions of eEDDL and FDT/DTM user interfaces, with Namur NE107 compatible alarm categories with NAMUR specification NE107 ‘Self-Monitoring and Diagnosis of Field Devices’, providing clear standardised diagnostic alerts using three of the four categories; maintenance required, out of specification, and failure.

The **F809F-Plus fieldbus device description file** enables all the fieldbus physical layer diagnostic data and alarms to be easily integrated into the chosen fieldbus control system. The default alert limits for the F809F-Plus are based on the fieldbus specification. The basic DD, enhanced EDDL and DTM all provide an alarm optimisation wizard which sets pre-alert limits close to the actual value. The pre-alerts are categorised as maintenance required and alerts are categorised as out of specification. This ensures that an instrument technician who knows is familiar with diagnostic data from a conventional fieldbus device can enjoy the full benefits of fieldbus physical layer diagnostics without additional training.

**When monitoring a fieldbus segment** the F809F-Plus draws less than 1mA current from the segment. As it only monitors the communication on the segments, its effect does not need to be considered in the segment design. 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. The options are: communicating on segment 1 or 8 on the power supply carrier or on a separate fieldbus segment. The F809F-Plus 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-Plus. 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-Plus discrete input block each macrocycle and if any transducer block parameter is in alarm the DI block is set which then 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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Alarms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Feed A voltage</td>
<td>Low/high</td>
</tr>
<tr>
<td>Power Feed B voltage</td>
<td>Low/high</td>
</tr>
<tr>
<td>Module Temperature</td>
<td></td>
</tr>
</tbody>
</table>

### Segment Transducer Block Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Alarms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segment Tag, 32 character text string*</td>
<td></td>
</tr>
<tr>
<td>LAS Tag</td>
<td></td>
</tr>
<tr>
<td>LAS Address (Hex)</td>
<td></td>
</tr>
<tr>
<td>LAS Signal Level</td>
<td></td>
</tr>
<tr>
<td>Lowest Signal Level Device’s Tag</td>
<td></td>
</tr>
<tr>
<td>Lowest Signal Level Device’s Address (Hex)</td>
<td></td>
</tr>
<tr>
<td>Lowest Device’s Signal Level (mV)</td>
<td></td>
</tr>
<tr>
<td>Total Retransmissions On Segment</td>
<td></td>
</tr>
<tr>
<td>Retransmission Rate on Segment</td>
<td></td>
</tr>
<tr>
<td>Segment voltage</td>
<td>Low/high</td>
</tr>
<tr>
<td>Short to shield</td>
<td>+/- to shield</td>
</tr>
<tr>
<td>Average low frequency noise</td>
<td>High</td>
</tr>
<tr>
<td>Average in-band frequency noise</td>
<td>High</td>
</tr>
<tr>
<td>Average high frequency noise</td>
<td>High</td>
</tr>
<tr>
<td>Peak low frequency noise</td>
<td>High</td>
</tr>
<tr>
<td>Peak in-band frequency noise</td>
<td>High</td>
</tr>
<tr>
<td>Peak high frequency noise</td>
<td>High</td>
</tr>
<tr>
<td>Live device count</td>
<td>Low/high</td>
</tr>
</tbody>
</table>
**SPECIFICATION**

**Location of equipment**
Safe area, Zone 2 or Division 2 hazardous area

**ELECTRICAL**

Monitored segments
- Monitored segment voltage: 9 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 EN61326:2006 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

**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 EN 60529 (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:
- F918x power supply 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: 400g approx.

**USER INTERFACE**

Fieldbus device description
- Fieldbus enhanced EDDL
- Fieldbus FDT/DTM

**PHYSICAL NETWORKS**

IEC61158-2
- FOUNDATION™ fieldbus H1

**APPROVALS**

- for the latest certification information visit [www.mtl-inst.com/support/certificates/](http://www.mtl-inst.com/support/certificates/)

<table>
<thead>
<tr>
<th>Region (Authority)</th>
<th>Standards</th>
<th>Certificate</th>
<th>Approved for</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU (MTL ATEX) Category 3</td>
<td>EN 60079-0, EN 60079-15</td>
<td>MTL13ATEXF809FPLUSX</td>
<td>II 3 G Ex nA IIC T4 (-40°C≤Ta≤+70°C)</td>
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<tr>
<td>EU (IECEx)</td>
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<td>IECEx BAS 11.0110U</td>
<td>Ex nA IIC T4 Gc (-40°C≤Ta≤+70°C)</td>
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<tr>
<td>US (FM)</td>
<td>3600, 3611, 3810 ANSI/ISA 60079-15</td>
<td>Pending</td>
<td>NI/I/2/ABCD T4 (-40°C≤Ta≤+70°C)</td>
</tr>
<tr>
<td>Canada (cFM)</td>
<td>CSA C22.2 No. 213, CSA-C22.2 No.60079-15</td>
<td>Pending</td>
<td>NI/I/2/ABCD T4/I2/ExnA/IIC T4 (-40°C≤Ta≤+70°C)</td>
</tr>
</tbody>
</table>

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-Plus provides default alarm limits. Alarm limits are user configurable.