

MANUAL

**ADVANCED
DIAGNOSTIC MODULE,
RELAY OUTPUT
HD2-DM-A.RO**



With regard to the supply of products, the current issue of the following document is applicable: The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship"

1	Safety Information	4
1.1	General	4
1.2	Used Symbols	4
1.3	Declaration of Conformity	5
1.4	Intended Use	5
1.4.1	Marking	5
1.5	Installation and Commissioning	5
1.5.1	Requirements for installation within Zone 2	5
1.5.2	General Information about Zone 2 Installations	6
1.6	Delivery, Transport and Storage	6
1.7	Repair	6
1.8	Disposal	6
2	Product Specifications.....	7
2.1	Function.....	7
2.2	Dimensions and Component Overview	7
3	Installation and commissioning.....	9
3.1	DIP Switch Settings / Configuring	9
3.2	Mounting the Diagnostic Module	10
4	Operation.....	12
4.1	LED Indication and fast Troubleshooting	12

1 Safety Information

1.1 General

The operator of the system is responsible in terms of planning, mounting, commissioning, operating and maintenance.

Installation and commissioning of all devices must be performed by a trained professional only.

Protection of operating personnel and the system is not ensured if the product is not used in accordance with its intended purpose.

Laws and regulations applicable to the usage or planned purpose of usage must be observed. Devices are only approved for proper usage in accordance with intended purpose. Improper handling will result in voiding of any warranty or manufacturer's responsibility.

The Declaration of Conformity, Certificate of Compliance and data sheets are an integral part of this document. The data sheet contains the electrical data of the Declaration of Conformity and the Certificate of Compliance.

The documents mentioned are available from <http://www.pepperl-fuchs.com> or contact your local Pepperl+Fuchs representative.

1.2 Used Symbols

Safety-relevant Symbols



Danger!

This symbol indicates a warning about a possible danger.

In the event the warning is ignored, the consequences may range from personal injury to death.



Warning!

This symbol indicates a warning about a possible fault or danger.

In the event the warning is ignored, the consequences may course personal injury or heaviest property damage.



Caution!

This symbol warns of a possible fault.

Failure to observe the instructions given in this warning may result in the devices and any connected facilities or systems develop a fault or fail completely.

Informative Symbols



Note!

This symbol brings important information to your attention.



Action

This symbol marks an acting paragraph.

1.3 Declaration of Conformity

All products have been developed and manufactured taking into consideration applicable European standards and regulations.



Note!

A corresponding declaration of conformity may be requested from the manufacturer.

The manufacturer of this product, Pepperl+Fuchs GmbH in D-68301 Mannheim, Germany, has a certified quality assurance system in conformity with ISO 9001.



1.4 Intended Use

The Advanced Diagnostic Module, Relay Output is a permanent monitoring tool for Fieldbus physical layer. It has to be mounted on the appropriate slot of a FieldConnex® Power Hub motherboard only.

1.4.1 Marking

Advanced Diagnostic Module, Relay Output

Pepperl+Fuchs GmbH
68301 Mannheim/ Germany
HD2-DM-A.RO
TÜV 04 ATEX 2500 X



II 3 G EEx nA II T4

1.5 Installation and Commissioning

1.5.1 Requirements for installation within Zone 2

The device must be mounted for installation in the hazardous area in category 3G / Zone 2 in a housing which corresponds at least to protection class IP 54 per EN 60529 and which is suitable for this type of installation.

The connection and disconnection of non-power-limited circuits carrying current is permitted only during installation or maintenance, or for purposes of repair.

Devices being operated in connection with hazardous areas may not be changed or manipulated. If there is a defect, the product must always be replaced with an original part.

If devices are operated in general electrical systems, they must thereafter not be operated in electrical systems that are connected to hazardous areas.

1.5.2 General Information about Zone 2 Installations

The temporary coexistence of potentially explosive atmosphere and installation, maintenance and repair work is considered improbable in Zone 2.

In a Zone 2 installation, connection or disconnection of energized non-energy-limited circuits on the trunk is only permitted during installation, maintenance or for repair purposes since the presence of an explosive atmosphere during the short period of installation, maintenance or repair is considered as improbable.

1.6 Delivery, Transport and Storage

Check the packaging and contents for damage. In the event of damage, notify the postal service or express agent and inform the supplier.

Check the scope of supply for completeness and correctness using the order and delivery papers.

Keep the original packaging.

The device should always be stored or transported in the original packaging.

Always store the device in a dry and clean environment. Observe the permissible storage temperature (see data sheet).

1.7 Repair

The devices may not be repaired, changed or manipulated. If there is a defect, the product must always be replaced with an original part.

1.8 Disposal

Disposal of devices and their packaging material must be performed in compliance with the applicable laws and guidelines of the corresponding country.

The devices do not contain batteries which need to be disposed of separately from the products.

2 Product Specifications

2.1 Function

The Advanced Diagnostic Module, Relay Output is a permanent monitoring tool for the fieldbus physical layer and plugs into the FieldConnex® motherboards. Passive input circuits leave the physical layer untouched, avoiding alteration of the signal.

For each value limit ranges are configurable via DIP switches. The module differs between two alarm types:

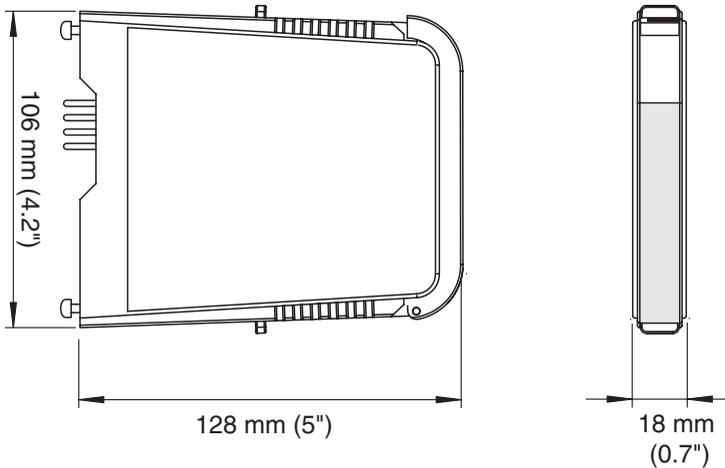
- Maintenance required alarms
- Out-of-specification alarms

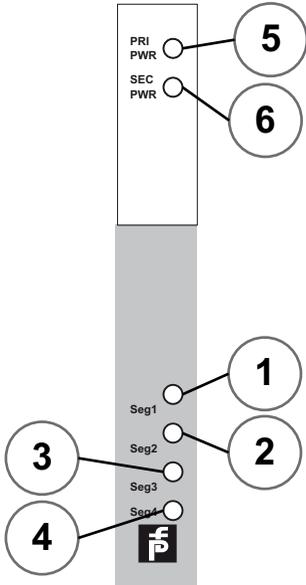
The maintenance required alarms are used to provide a possibility for proactive diagnosis. If a value violates the limit the relays contact opens and the appropriate segment LED is flashing yellow. By means of this proactive diagnosis, changes within the Fieldbus installation will be detected early and error sources can be found before communication fails.

If an out-of-specification alarm appears (red flashing LED, see chapter 6.1) a physical layer parameter has rapidly declined and moved out of the range of the maintenance required alarm. A fast examination of the appropriate segment is crucial to prevent a total drop-out of the segment in near future.

To set up appropriate limit values of your fieldbus installation a comprehensive diagnostic solution such as the Pepperl+Fuchs' Mobile Advanced Diagnostic Module is required during commissioning to derive the DIP switches positions.

2.2 Dimensions and Component Overview



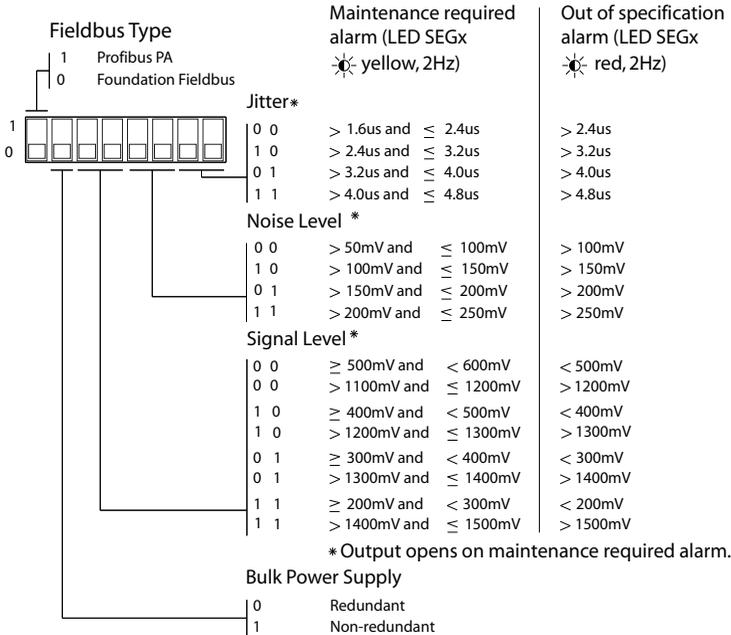


- 1 LED status segment 1
- 2 LED status segment 2
- 3 LED status segment 3
- 4 LED status segment 4
- 5 LED primary bulk power supply
- 6 LED secondary bulk power supply

3 Installation and commissioning

3.1 DIP Switch Settings / Configuring

For each monitored value (Jitter, Noise Level, Signal Level) four limit scopes can be set per adjustment of the DIP switch array. To figure out the appropriate scope for your special Fieldbus installation a previous in-depth analysis of all critical Fieldbus parameters with a comprehensive diagnostic solution such as the Pepperl+Fuchs' Mobile Advanced Diagnostic Module is required.



The voltage-free relay output opens if a value violates the preset maintenance required limit. (see chapter 6.1).

The alarm can not be disabled.

3.2 Mounting the Diagnostic Module



Mounting of HD2-DM* Modules on the motherboard



Caution!

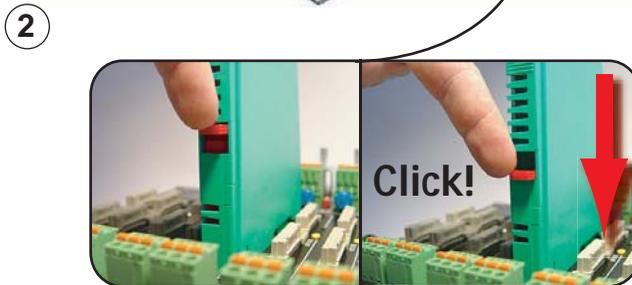
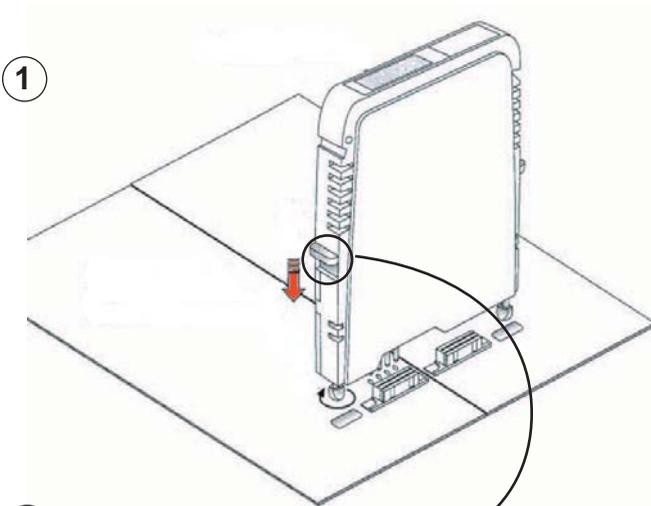
Hardware Damage

There is a special connection slot for the diagnostic modules HD2-DM* on the Power Hub motherboard, which is labeled "Diagnostic Module only".

Do not try to plug the Diagnostic module into an other connection slot. The module may be damaged.

To install a new module on the motherboard, proceed as follows:

1. Carefully center the polarisation holes and mate the two connectors, then gently press down the module.
2. Push down the red Quick LOK bars on each side of the module to fix it to the panel (no tools required).



The new module has been installed.



Dismounting of HD2* Modules from the Motherboard

To dismount a module from the motherboard, proceed as follows:

Push the red Quick LOK bars upwards and lift off the entire module gently.

The module has been removed from the motherboard.

4 Operation

4.1 LED Indication and fast Troubleshooting

Definiton of the LED Symbols



LED is off



LED lights steady



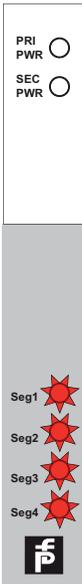
LED is flashing



Note!

The behavior of the LEDs for supply power (PRI PWR and SEC PWR) depends on the setting of the second array of the DIP switch. If the switch is set to 1 (non-redundant) the SEC PWR alarm is deactivated.

LED display	Possible cause	Remedy
	<ul style="list-style-type: none"> • PRI and SEC PWR solid green • Seg LED yellow 	<p>Primary and secondary bulk power supply is available and within specification. Communication on all segments active, no error.</p>

LED display		Possible cause	Remedy
	<ul style="list-style-type: none"> all LEDs are off 	<p>No bulk power supply.</p> <p>Module is not properly mounted.</p>	<p>Check the bulk power supply.</p> <p>Remove and mount Diagnostic Module again (see chapter 5.2)</p>
	<ul style="list-style-type: none"> PRI and/or SEC PWR are off all Seg LEDs are flashing red 	<p>Bulk power supply is out of specification: Using Power Supply Modules</p> <ul style="list-style-type: none"> less than 19.2 V higher than 35 V <p>Using at least one Power Conditioner Module</p> <ul style="list-style-type: none"> less than 19.2 V higher than 32 V 	<p>Check bulk the power supply voltage.</p>

LED display	Possible cause	Remedy
 <p>PRI PWR <input type="checkbox"/></p> <p>SEC PWR <input checked="" type="checkbox"/></p> <p>Seg1 </p> <p>Seg2 </p> <p>Seg3 </p> <p>Seg4 </p> <p></p>	<ul style="list-style-type: none"> • PRI PWR is off • SEC PWR solid green • all Seg LEDs are flashing red <p>Primary bulk power supply is missing or out of specification: Using Power Supply Modules</p> <ul style="list-style-type: none"> • less than 19.2 V • higher than 35 V <p>Using at least one Power Conditioner Module</p> <ul style="list-style-type: none"> • less than 19.2 V • higher than 32 V 	<p>Check the primary bulk power supply voltage.</p>
 <p>PRI PWR <input checked="" type="checkbox"/></p> <p>SEC PWR <input type="checkbox"/></p> <p>Seg1 </p> <p>Seg2 </p> <p>Seg3 </p> <p>Seg4 </p> <p></p>	<ul style="list-style-type: none"> • PRI PWR solid green • SEC PWR is off • all Seg LEDs are flashing red <p>Redundant power supply Secondary bulk power supply is missing or out of specification: Using Power Supply Modules</p> <ul style="list-style-type: none"> • less than 19.2 V • higher than 35 V <p>Using at least one Power Conditioner Module</p> <ul style="list-style-type: none"> • less than 19.2 V • higher than 32 V <p>Non-redundant power supply</p> <ul style="list-style-type: none"> • wrong DIP switch setting 	<p>Check the secondary bulk power supply voltage.</p> <p>Set second DIP switch array to 0 (non-redundant)</p>

LED display		Possible cause	Remedy
	<ul style="list-style-type: none"> • PRI and SEC PWR solid green • Seg2 LED is flashing yellow 	<p>Maintenance alarm active at segment 2. One of the monitored maintenance required limits is violated.</p>	<p>Connect a comprehensive Diagnostic Module for further diagnosis to the affected segment.</p>
	<ul style="list-style-type: none"> • PRI and SEC PWR solid green • Seg2 LED is flashing red 	<p>Out of specification alarm active at segment 2. One of the monitored out-of-specification limits is violated.</p>	<p>Connect a comprehensive Diagnostic Module for further diagnosis to the affected segment.</p>

LED display	Possible cause	Remedy
 <p>The diagram shows a vertical LED display. At the top, there are two green circles labeled 'PRI PWR' and 'SEC PWR'. Below them are four red circles labeled 'Seg1', 'Seg2', 'Seg3', and 'Seg4'. At the bottom is a black square with a white 'PF' logo.</p>	<ul style="list-style-type: none"> • PRI and SEC PWR solid green • all Seg LEDs solid red <p>A hardware fault inside the Diagnostic Module is detected.</p>	<p>Replace the device with a new one!</p>



PROCESS AUTOMATION – PROTECTING YOUR PROCESS



Worldwide Headquarters

Pepperl+Fuchs GmbH
68307 Mannheim · Germany
Tel. +49 621 776-0
E-mail: info@de.pepperl-fuchs.com

For the Pepperl+Fuchs representative
closest to you check www.pepperl-fuchs.com/pfcontact

www.pepperl-fuchs.com

Subject to modifications
Copyright PEPPERL+FUCHS • Printed in Germany

 **PEPPERL+FUCHS**
PROTECTING YOUR PROCESS

204430 / TDOCT-1383_ENG

09/2007