

Two 4-20mA inputs module



TFM420MA



Addressable module consisting of two supervised physical/logic units: 2 inputs for 4-20mA devices, uniquely identified by the System, max. 2 addresses used. Programmable functions: alert for single threshold, independent setting of Alert and Alarm thresholds, 4 operating criteria: generates alarm, generates acknowledgement, generates reset, none. 2 input state repeating outputs. 2 LEDs indicating input state. Full RSC® management of the device: setup, remote management and control of all functional parameters. Line splitter with dual insulator. Connection on LOOP.

Proprietary high speed communication protocol **FIRE-SPEED**.

Surface or omega DIN rail mounting (accessory TFDIN).

Degree of protection IP40. ABS V0 enclosure. Dimensions (L x H x P) 112 x 78 x 25mm.

White. **EN 54-18**: 2005/AC: 2007 - **EN 54-17**: 2005.

Homologation certificate 1293-CPR-0491.

Item no. TF4TFM420MA

OBLIGATIONS AND NOTICES

The module TFM420MA can be used only if connected to a detection loop of the Tecnofire control units models: TFA1-298, TFA2-596, TFA4-1192.

During design and installation, it is necessary to observe and apply the applicable regulations.

LOGIC UNITS

The module consists of two operational physical/logic units: two current inputs for 4-20mA sensors. It is possible to exclude from operation one of the two inputs (input 2), in this case the module will consist of one logic unit: one input. Depending on the configuration chosen, one or two logic units, each of them is assigned an identification number.

ADDRESSING

The physical address for module identification is programmed by two decimal rotary switches located under the top cover. The two switches enable to set the two digits which make up the physical address number. The switches are marked by writings which define the position of the digit to set: X10 for tens and X1 for units. The physical address programmed on the module is always assigned to the logic unit 1, the address of the second logic unit is automatically assigned by adding one unit to the physical address (see tables below). The numeric range of the allowed addresses is 01 to 99.

Note: setting the address 00 excludes the module from operation, yet it draws power from the loop.

	Logic unit 1	Physical address
 	Input 1	
	Input 2 included	
	Logic unit 2	Logic address
	Input 2	Physical address XX + 1

	Logic unit 1	Physical address
 	Input 1	
	Input 2 included	

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USE MODES OF THE INPUTS

The module has two inputs to which it is possible to assign one of the four operational criteria:

Generates alarm - Exceeding the threshold causes an alarm.

None - Exceeding the threshold does not cause any direct action; it can be used in an operational formula.

The inputs can take the functional state of standby or signalling, the input state is displayed using two dedicated LEDs. The module has two input state repeating outputs with which you can control remote repeaters.

Generates acknowledgement - non-approved mode EN 54

Generates reset - non-approved mode EN 54

Operating mode

- Generates alarm
- Generates alarm
- None
- Generates acknowledgement
- Generates reset

Operational criteria

Generates alarm	Exceeding the programmed thresholds generates an alarm
None	Exceeding the thresholds cannot be used as a variable in the operation formulas
Generates acknowledgement	Mode not approved EN 54
Generates reset	Mode not approved EN 54

SIGNALLING THRESHOLDS

The module can report in a separate and deferred way the fact that the controlled detector has exceeded the alert and alarm thresholds.

The alert threshold notice can be disabled.

Alert threshold - Setting of the maximum current value attributed to the alert threshold.

Alarm threshold - Setting of the maximum current value attributed to the alarm threshold.

The threshold values can be adjusted in steps of 0.5 mA from 4.0 to 20mA.

Single threshold alert

- Disabled
- Disabled
- Enabled

Single threshold alert

Enabled	Distinct and deferred reporting of the fact that the alert and alarm thresholds have been exceeded
Disabled	Reporting of the fact that the alarm threshold has been exceeded

Alarm threshold (mA)

- 4.0
- 4.0
- 4,5
- 5,0

LINE SPLITTER

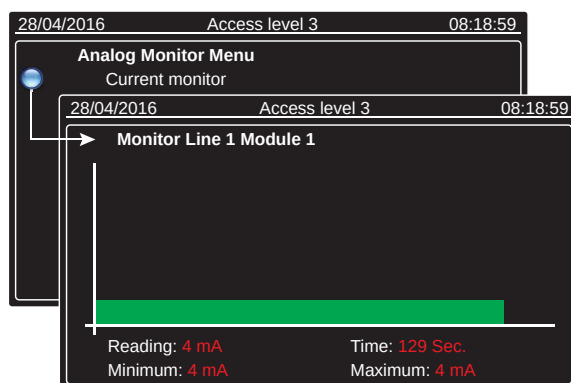
The module is provided with a line splitter with dual breaker. In case of short circuit of the Loop line, the splitter activates, switching off the faulty section of the line, safeguarding the correct operation of the devices connected upstream and downstream. The activation of the splitter ensures the correct operation of the module. At the same time the detection unit is sent the faulty notice "Splitter open".

DIAGNOSTIC FUNCTIONS

The control unit manages a set of diagnostic functions specialized for the different types of module.

The diagnostic functions that are available for the input/output modules allow to:

- Physically identify the module.
- Identify the type of module, the HW and FW version.
- Measure the electric data of operation.
- Monitor the detector output current.
- Read the statistics from the communication monitor



Diagnostic functions of the module

Identification	Turns on the Leds of the device for its identification
Self declaration	Self declaration of the module type
Hardware version	Self declaration of the hardware version
Firmware version	Self declaration of the firmware version
Level measurement	Measurement of the electric values of operation
Analog monitor	Monitor of the detector output current
Statistics	Statistic/functional values related to communication

Draw

Supply level

Zero level

Draw level

Line resistance

Frames sent

Errors

Success Rate

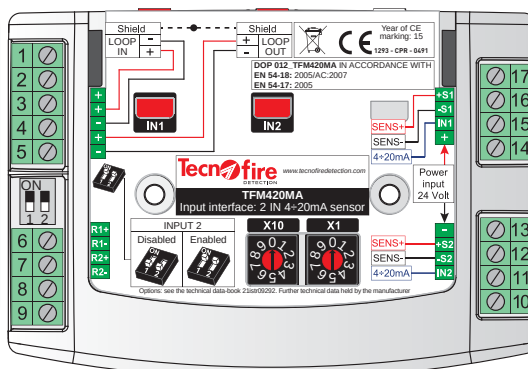
Error rate

Latency time

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EQUIPMENT

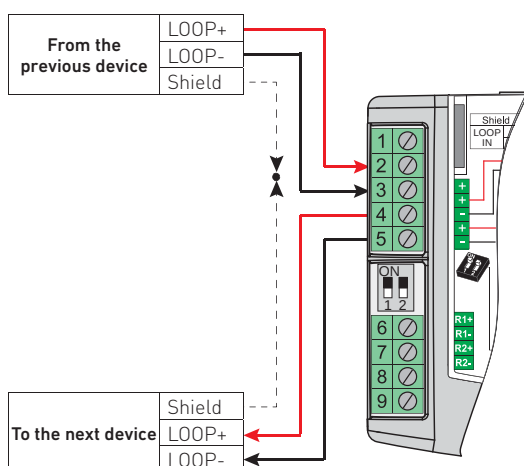
1	LOOP + input (no breaker)
2	LOOP+ input
3	LOOP- input
4	LOOP+ output
5	LOOP- output
6	Input 1 repeater control
7	Reference - repeater 1
8	Input 2 repeater control
9	Reference - repeater 2



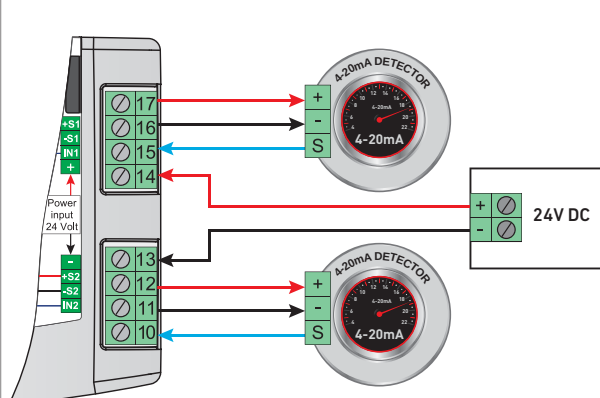
+ supply of detector 1	17	17
- supply of detector 1	16	16
Detector 1 input signal	15	15
+ supply for load	14	14
- supply for load	13	13
+ supply of detector 2	12	12
- supply of detector 2	11	11
Detector 2 input signal	10	10

	LED indicating input state	Flashing in standby Lit when signalling
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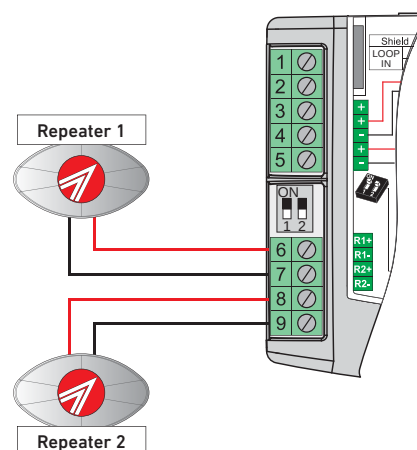
CONNECTION TO THE LOOP



INPUT CONNECTION



REPEATERS CONNECTION



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DEDICATED ACCESSORIES

TFDIN

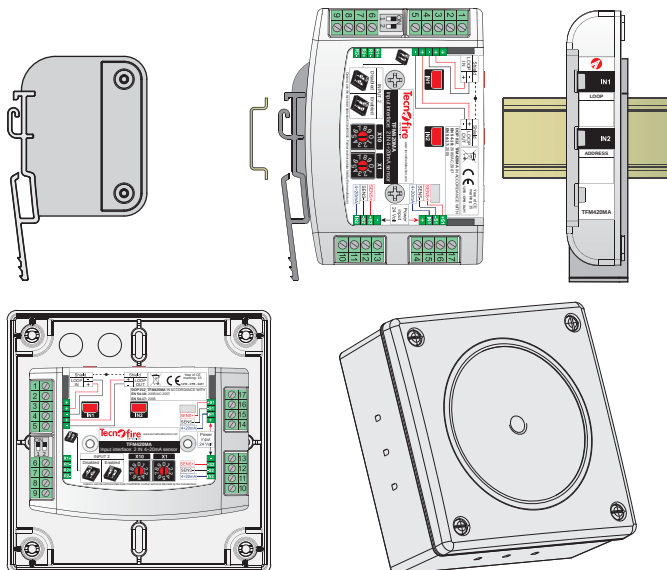
Support accessory for mounting the module on omega DIN rail.

Code: TF5TFDIN

TFBOX-M

Junction box with mounting footprints to house the interface modules. ABS V0 enclosure.
Dimensions (L x H x P) 136 x 136 x 63mm.
White.

Code: TF5TFBOXM



TFM420MA - Technical specifications and functions

Overview	Device Name	TFM420MA
	Description	Two 4-20mA inputs module
	Communication protocol	FIRE-SPEED
	Addressing	2 rotary switches
	Addresses used	1 address for each input (max. 2)
Setup	Polling frequency	2 levels
	Transmission LED	Excludable signal
	Single threshold alert	Programmable
	Operational criteria	4
	Alert threshold (mA)	Programmable
	Alarm threshold (mA)	Programmable
Electrical specifications	Power supply	From loop
	Rated Voltage	24V DC
	Operating voltage	18V...30V DC
	Draw (idle)	410µA @ 24V DC when non transmitting
	Power requirements in alarm	2.3mA @ 24V DC
	Output for repeater	9.4V DC 6mA (protected)
	Line splitter	Intelligent breaker (without loss of devices)
4-20mA interface features	External power supply	Range from 18 to 30V DC
	Power supply output +SENS	Max. total draw 500mA
	Inputs 4-20	Max. current from sensor output 70mA
	Nominal impedance input	152 ohm (to ground)
Physical specifications	Operating temperature:	-15°C...+70°C
	Relative Humidity	10% ... 93% (non-condensing)
	Protection Degree	IP40
	Enclosure	ABS V0
	Dimensions (L x H x D)	112 x 78 x 25mm
	Weight	165g
Conformity	Standards	EN 54-18: 2005/AC: 2007 - EN 54-17: 2005
	Approval certificate	1293-CPR-0491
	Year of CE marking	15
	Number of the declaration of performance	012_TFM420MA
	Certification body	EVPU

N.B. The declarations of conformity and performance can be found at: www.tecnofiredetection.com