

2 inputs 1 output module



TFM21



Addressable module consisting of three supervised physical/logical units: 2 inputs and 1 output, uniquely identified by the System, addresses used max. 3. Programmable input functions - 4 operation criteria: generates alarm, generates muting and generates recovery, none. 2 input connection modes: Alarm or Fault. Programmable output functions - 2 operation criteria: can be muted or not. 2 output modes: contact or controlled line. Output with programmable actuation time and delay, actuation can be based on algebraic formula. Secure service input for powering external devices. 2 input state relay outputs. 3 LEDs indicating input and output state. Full RSC® management of the device: programming, remote management and control of all functional parameters. Line separator 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. Certificate of homologation 1293 CPR - 0419.

Item no. TF4TFM21

OBLIGATIONS AND NOTICES

The module TFM21 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 three functional physical/logical units: two inputs and one output. It is possible to exclude from operation one of the two inputs (input 2), in this case the module will consist of two logical units: an input and one output. Depending on the configuration chosen, two or three 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 logical unit 1, the address of the other logic units is automatically assigned by adding respectively one or two units to the physical address (see tables below). The numeric range of the allowed addresses for the detectors is 01 to 99.

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

3 LOGICAL UNITS	Logic unit 1		Physical address
	Input 1		
	Logic unit 2		Logical address
2 INPUTS 1 OUTPUT	Input 2 included		Physical address XX + 1
	Logic unit 3		Logical address
	Output 1		Physical address XX + 2

2 LOGICAL UNITS	Logic unit 1		Physical address
	Input 1		
1 INPUT 1 OUTPUT	Input 2 excluded		
	Logic unit 2		Logical address
	Output 1		Physical address XX + 1

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USE MODE OUTPUTS

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

Generates alarm - The activation of the input generates an alarm.

Generates muting - The activation of the input mutes the ongoing event.

Generates reset - The activation of the input causes system reset.

None - The activation of the input does not cause any direct action; its activation can be used in a operation formula. The connection of the inputs can be made in either Generate Alarm mode or Balanced (Fault) mode. The inputs can take the functional state of rest or signalling, the input state is displayed using two dedicated LEDs.

The module has two input state relay outputs with which it is possible to control remote relay devices.

Inputs use mode	Operational criteria			
	Generates alarm	Generates muting	Generates reset	None
	Connection mode			
	Generates alarm		Balanced (faulty)	

Connection mode "Generates alarm" functional states	Fault (short circuit)
	Alarm
	Rest
	Fault (open line)

"Balanced (Fault)" connection mode functional states	Fault (short circuit)
	Generic fault
	Rest
	Fault (open line)

USE MODE OUTPUT

The module has an output which can be assigned one of two available operational criteria: the output can be muted or not. The output connection can be made using either Potential free contact mode or Controlled line mode.

With the controlled line mode, the module monitors the termination of the output lines.

The output can take the functional state of rest or signalling, the output state is displayed using the dedicated LED. The operation of the output is characterized by the programming of the switching delay time and of the switching time. Moreover, the operation of the output can also be subject to an algebraic formula.

Output use mode	Operational criteria	
	The output can be muted	The output cannot be muted
	Connection mode	
	Potential free contact	Controlled line

Output functional programming	Switching delay	Switching time	Can be subject to formula
	0 to 600 sec.	0 to 600 sec.	✓

LINE SPLITTER

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

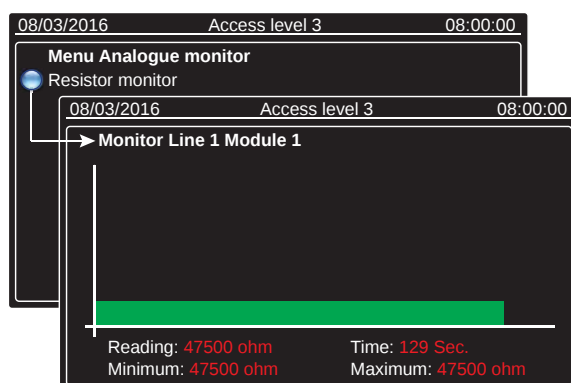
DIAGNOSTIC FUNCTIONS

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 termination resistance value.
- Read the statistics from the communication monitor
- Test the activation of the output module



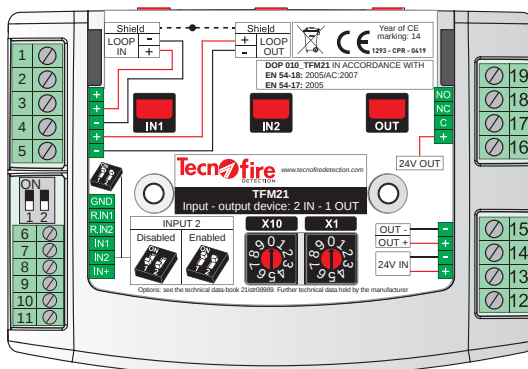
Diagnostic functions of the module	
Identification	Turns off the Leds of the device for its identification
Self declaration	Self declaration of the module type
Hardware version	Self declaration of the hardware version
Firmware version	Self declaration of the firmware version
Level measurement	Measurement of the electric values of operation
Analog monitor	Monitor of line termination resistance value
Statistics	Statistic/functional values related to communication
Activation	Activates the output (function valid only for output modules)

Draw	Frames sent
Supply level	Errors
Zero level	Success Rate
Draw level	Error rate
Line resistance	Latency time

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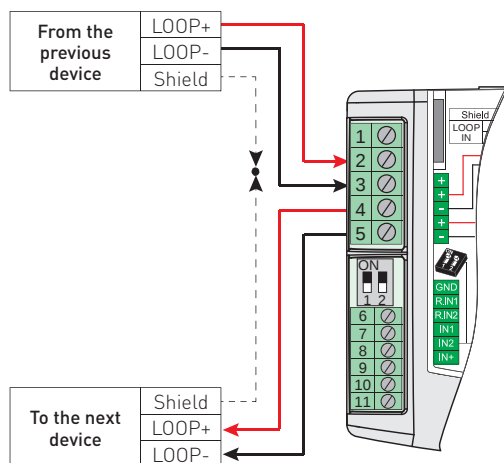
EQUIPMENT

1	LOOP + input (no breaker)
2	LOOP+ input
3	LOOP- input
4	LOOP+ output
5	LOOP- output
6	- reference relays
7	+ relay INPUT1
8	+ relay INPUT2
9	INPUT 1
10	INPUT 2
11	+ reference INPUT1-2

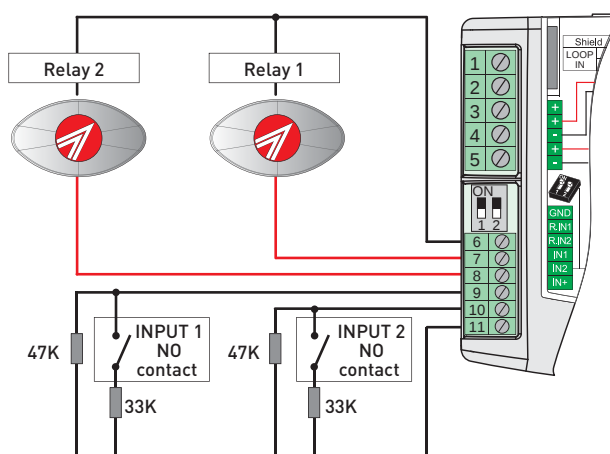


NO contact relay	19
NC contact relay	18
C contact relay	17
OUT +24V	16
OUT -24V terminated line	15
OUT +24V terminated line	14
IN -24V for user	13
IN +24V for user	12

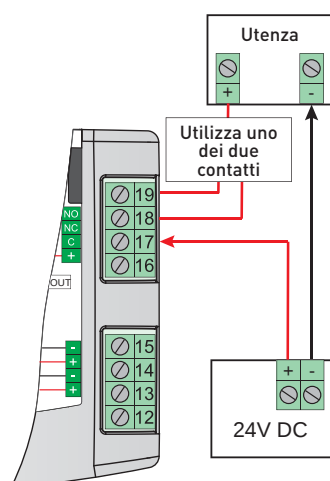
CONNECTION TO THE LOOP



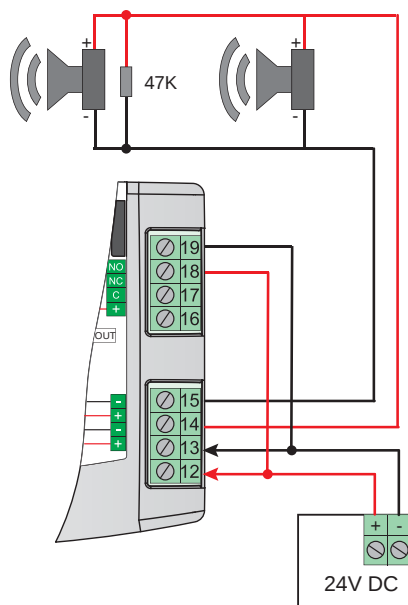
INPUT CONNECTION



POTENTIAL FREE CONTACT OUTPUT CONNECTION



CONTROLLED OUTPUT CONNECTION



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DEDICATED ACCESSORIES

TFDIN

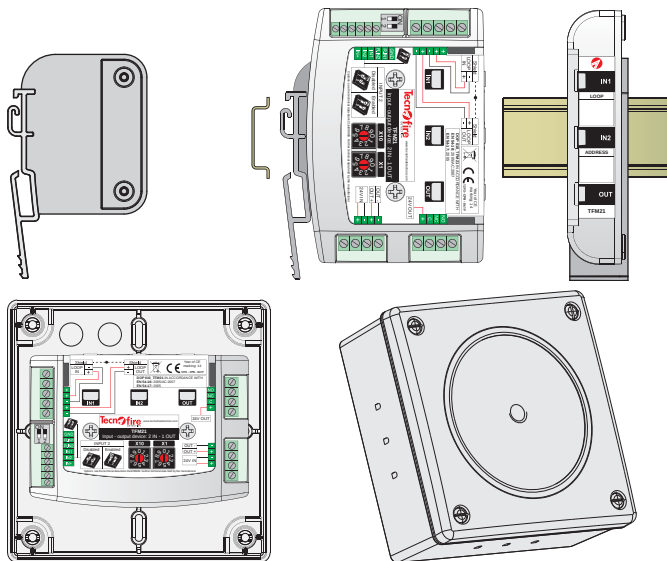
Support accessory for mounting the module on omega DIN rail.

Item no. TF5TFDIN

TFBOX-M

Junction box with mounting footprints for the interface modules. ABS V0 enclosure. Dimensions [L x H x P] 136 x 136 x 63mm. White.

Item no. TF5TFBOXM



TFM21 - Technical and functional specifications

Overview	Device name	TFM21
	Description	2 inputs 1 output module
	Communication protocol	FIRE-SPEED
	Addressing	2 rotary switches
	Addresses used	1 address for each input/output (max. 3)
Programming	Polling frequency	2 levels
	Transmission LED	Excludable signal
	Operational criteria	4 for the inputs - 2 for the output
	Type of inputs	Alarm or fault
	Type of output	Contact or controlled line
	Activation delay	Programmable
	Activation time	Programmable
	Output activation	Subject to algebraic formula
Electrical specifications	Power supply	From loop
	Rated voltage	24V DC
	Operating voltage	18V...30V DC
	Draw when on	500µA @ 24V DC when non transmitting
	Power requirements in alarm	2.3mA @ 24V DC
	Output for relay	9.4V DC 6mA (protected)
	Line splitter	Intelligent breaker (without loss of devices)
	Relay contacts	Max 30V DC 1A (resistive load)
Physical specifications	Out auxiliary supply	18V...30V DC (max. 500mA)
	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
Conformity	Weight	165g
	Standards	EN 54-18: 2005/AC: 2007 - EN 54-17: 2005
	Certification number	1293-CPR-0419
	Year of CE marking	14
	Declaration of performance	010_TFM21
	Notified body	EVPU

N.B. The declarations of conformity and performance are available on the website: www.tecnofiredetection.com