ADR-712 / ADR-718

Addressable
Two- and Eight-Zone Input Module
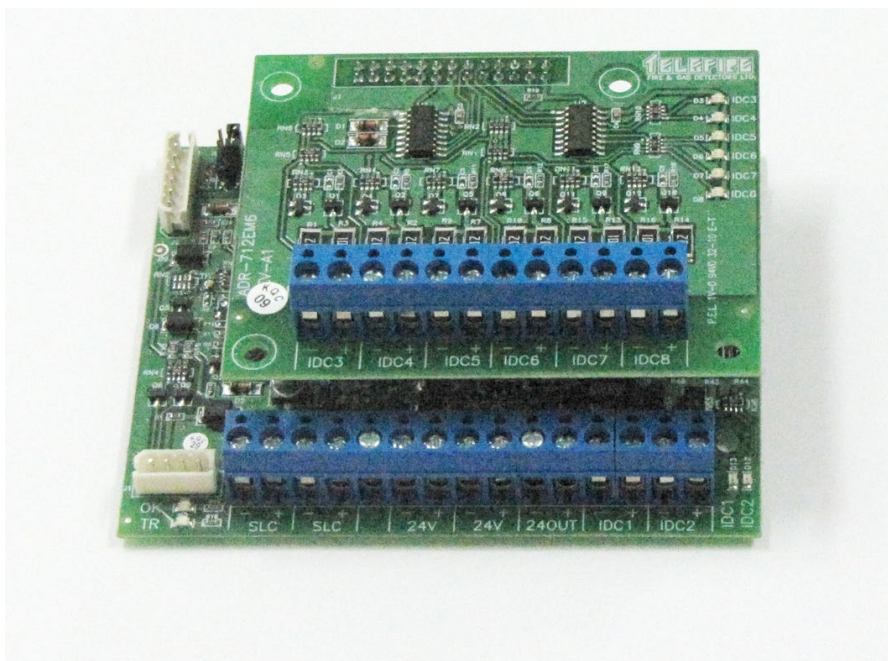
Technical Manual

ADR-71XEn102.pdf

Revision 1.02
August 2023

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Note

The terms "**Trouble**" as used in NFPA 72 guideline and UL standards and "**Fault**" as used in EN 54 standards are used interchangeably throughout this manual.

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Note

Do not install, operate, and maintain this product before fully reading this manual.
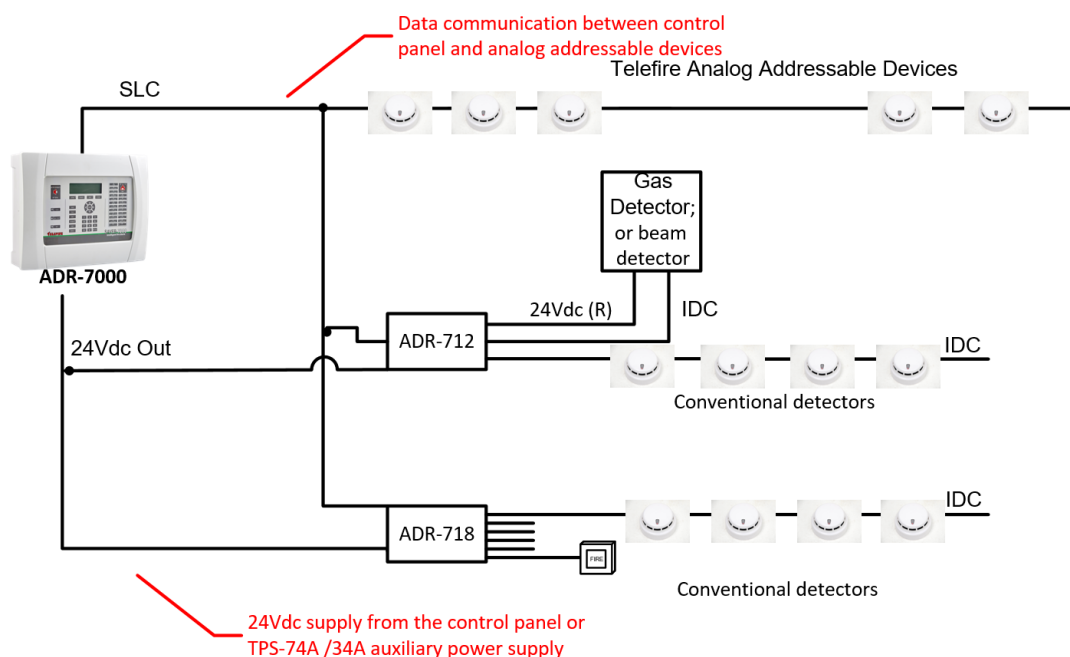
1   Introduction

Telefire's ADR-712 Two-Input Module and ADR-718 Eight-Input Module were designed and operate in compliance with numerous standards, amongst which are EN 54-18; UL 864 edition 9; GOST; and IS 1220. These input modules interface between Telefire's addressable control panels and conventional detectors, flow switches, and other initiating devices. The ADR-712 also supports devices that require 24Vdc supply such as gas detectors, beam detectors and aspirating detectors.

- The ADR-712 supervises one or two detection zones (setting is jumper dependant), each with its own address. The ADR-712 occupies one or two sequential addresses.

- The ADR-718 is an ADR-712 with the optional expansion module ADR-712EM6. It supervises four or eight detection zones (setting is jumper dependant), each with its own address. The ADR-718 occupies eight sequential addresses.

The modules' first address is programmed into the module with the PROG-4000 Addressable Detector and Accessory Programmer. The module will occupy this address or two; four; or eight consecutive addresses, as configured by jumper setting (see section 3.2.1 on page 4).

The input lines are supervised for shorts, open circuit, and are monitored for over-current conditions. The module also includes a 24Vdc output that is protected and monitored and is interrupted during a Reset operation at the control panel to reset input devices that include a self-locking alarm.

The modules are supervised by the control panel and communicate with it via the SLC loop, and receive their 24Vdc supply from the control panel or an addressable power supply such as the TPS-74A. The SLC loop circuitry is galvanically isolated from the input zones and 24Vdc circuitry.

Data communication between control panel and analog addressable devices

SLC

Telefire Analog Addressable Devices

ADR-7000

Gas Detector; or beam detector

24Vdc (R)   IDC

24Vdc Out

ADR-712

IDC

Conventional detectors

ADR-718

IDC

Conventional detectors

24Vdc supply from the control panel or TPS-74A /34A auxiliary power supply

08/2023

Figure 1   Typical installation of ADR-712 and ADR-718

2   Compatibility

2.1   Control Panels

The ADR-712 and ADR-718 are compatible with the full range of Telefire's addressable control panels.

2.2   Input Devices

The ADR-712 and ADR-718 are compatible with the following Telefire conventional detectors:

- TFH-280F – Conventional Fixed-Temperature Heat Detector
- TFO-480 – Conventional Photoelectric Smoke Detector
- TPH-482 – Conventional Multisensor Photo / Heat Detector
- TFH-220F – Conventional Fixed-Temperature Heat Detector
- TFO-440 – Conventional Photoelectric Smoke Detector
- TPH-442 – Conventional Multisensor Photo / Heat Detector
- TPB-10R – Conventional Manual Fire Alarm Call Point
- TPB-101M – Conventional Manual Fire Alarm Call Point – Outdoor
- TXB-435 – Barrier for Explosion-Proof Areas
- Conventional devices such as beam detectors, aspiring detectors, gas detectors, etc., that provide an alarm relay and a trouble relay. Connecting such devices requires a TRA-1 Relay Adapter Module for each input line of the ADR-71x.

3   Installation

Planning of quantity and location of detectors and call points shall be done according to the local codes and regulations and in accordance to the planning requirements.

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> **Warning**
> **Disconnect all power supplies, main and batteries before connecting or disconnecting cables and devices to the control panel.**

3.1   Pre-Installation Planning

The module requires a four-wire connection: one pair for SLC communication with the control panel via SLC, and one pair for 24Vdc supply from the control panel or an auxiliary power supply such as the TPS-74A/34A. Twisted-pair cable is recommended.

3.1.1   Capacity Planning

Ensure that the control panel has sufficient free consecutive addresses for the equipment being added. See section 3.2.1 on page 4 for details about setting address ranges.

- The ADR-712 requires a single address or two consecutive addresses (configuration is jumper-dependant).
- The ADR-718 requires 4 or 8 consecutive addresses (configuration is jumper-dependant).

Ensure that the total number of input initiating devices (detectors, switches, call points, etc.,) does not exceed local regulations of the number of initiating devices per zone, area or other limitations. Ensure that the number of zones satisfies the requirements of the consulting planner.

> **Note**
>
> Do not connect more than 25 detectors and call points to each input (zone) of the ADR-712 / ADR-718.

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EN 54

> **EN 54 Requirement**
>
> Local regulations in some countries do not allow mixing detectors and call points in the same zone.

3.1.2 Cabling Planning – Wire Characteristics' Effect on System Performance

Cable type selection and wiring shall be done according to local regulations.

System connections shall be done when power sources are disconnected. Changing/installing electric activation modules shall be done after the system is in quiescence state (push buttons and detectors in normal state).

The following table shows the effect of wiring characteristics on system performance:

Characteristic	Effect on SLC	Effect on IDC
Electric resistance	Minimal	Minimal
Capacitance	High	No effect
Inductance	High	Minimal
Mechanical Strength	High	High

Table 1   Wire Characteristics' Effect on System Performance

3.1.3   Cabling Planning – Signaling Line Circuits (SLC)

The module connects to the control panel via a two-wire cable 12 – 18 AWG (cross section of $0.8mm^2$ to $3.3mm^2$). Twisted-pair cable is recommended.

Wire Size	Cross Section (mm^2)	Maximum SLC branch length for wire size
18 AWG	$0.8 \ mm^2$	950 m
16 AWG	$1.3 \ mm^2$	1,520 m
14 AWG	$2.1 \ mm^2$	2,420 m
12 AWG	$3.3 \ mm^2$	3,830 m

Table 2   Selecting SLC Wires

3.1.4   Cabling Planning – 24Vdc Supply

The module requires 24Vdc from the addressable control panel or an auxiliary power supply such as the TPS-74A/34A.

Use an auxiliary power supply such as the TPS-74A/34A whenever the module is installed a long distance from the addressable control panel or whenever the total current consumption of all NACs exceeds the capability of the addressable control panel's 24Vdc output.

3.1.5   Cabling Planning – Initiating Device Circuit (IDC – Zones)

The module connects to the initiating device via a two-wire cable 12 – 18 AWG (cross section of 0.8mm^2 to 3.3mm^2).

Wire Size	Cross Section (mm^2)	Maximum IDC length for wire size
18 AWG	0.8 mm^2	1,200 m
16 AWG	1.3 mm^2	1,900 m
14 AWG	2.1 mm^2	3,000 m
12 AWG	3.3 mm^2	4,800 m

Table 3   Selecting IDC (input) Wires

3.1.6   Cabling Planning –24Vdc Out (ADR-712 only)

Use a 2-wire cable, 12 – 18 AWG (0.8 to 3.3mm^2) for 24Vdc Out connections.

The length of activation lines and 24Vdc out cabling depends on the required current and cable size. Ensure that the maximum voltage drop to the end of the line at full load does not exceed 2V and will leave the last device the minimal operating voltage as per the manufacturer's specification.

3.2   Installation

Note

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Notify the operator or the security personnel that the system will be temporary disconnected before adding devices to a control panel.

Measure the wiring to ensure there are no shorts before connecting the wiring to the control panel.

Connecting or adding devices to a control panel shall be done when all power to the control power (AC and batteries) is off.

3.2.1   Module Configuration and Addressing

The module occupies one to eight consecutive addresses, depending on the setting of the configuration jumpers.

JP1	JP2	Total Addresses	Lower Module	Upper Module
Off	Off	1	1	–
Off	On	2	2	–
On	Off	4	2	2
On	On	8	2	6

3.2.2   Control Panel Definition

Define each address of the ADR-712 / ADR-718 as **Input Line**. Please see the control panel's technical manual for additional information on device configuration and matrix activations.

3.2.3   Location

The module should be installed in a closed location. Avoid exposure to outdoor environment to prevent high humidity or dust or air pollution.

Mount the module in an AIB-800 box on a solid wall at a height that will have comfortable access to connecting the cables and where it is possible to supervise and clearly see the LED indicators. Ensure that cable length limitations are met.

3.2.4   Connecting Zones, 24V, and SLC

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> **Note**
>
> Measure the wiring to ensure there are no shorts before connecting the wiring to the control panel.
>
> Connecting or adding inputs, outputs, and extinguishing devices shall be done when all power to the control power is disconnected (AC and batteries disconnected).

Connect the zones, 24 Volt output and SLC cables.

Connect the 24Vdc supply from the control panel or TPS-34A power supply
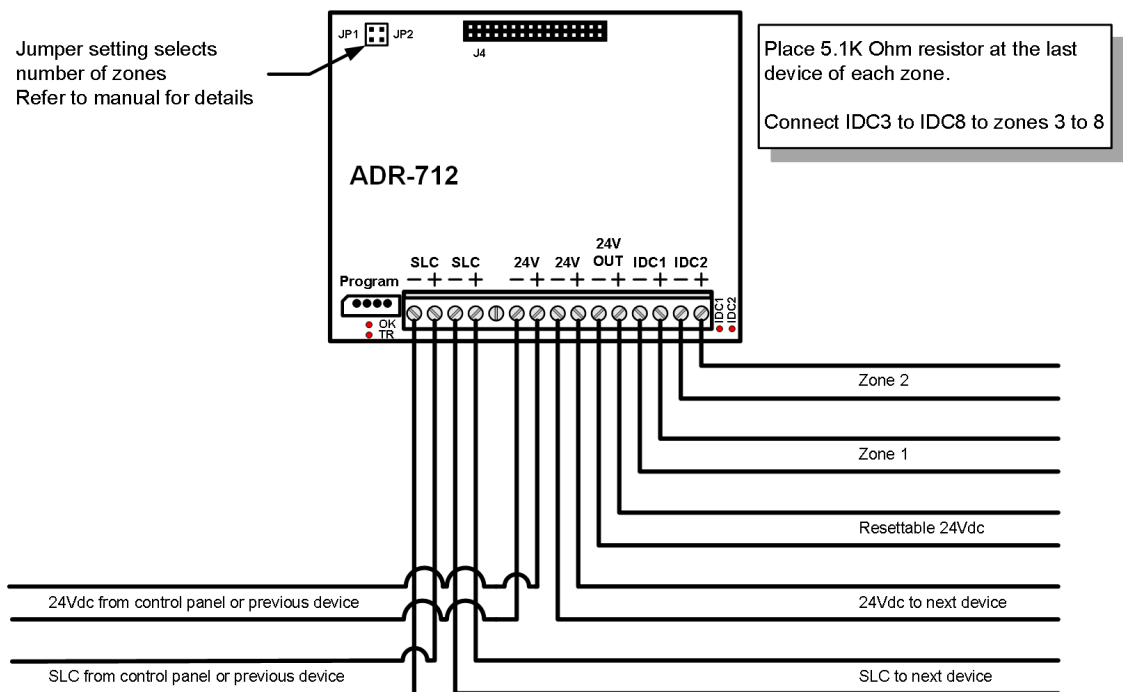
Figure 2   ADR-712 connection

Place 5.1K Ohm resistor at the last device of each zone.

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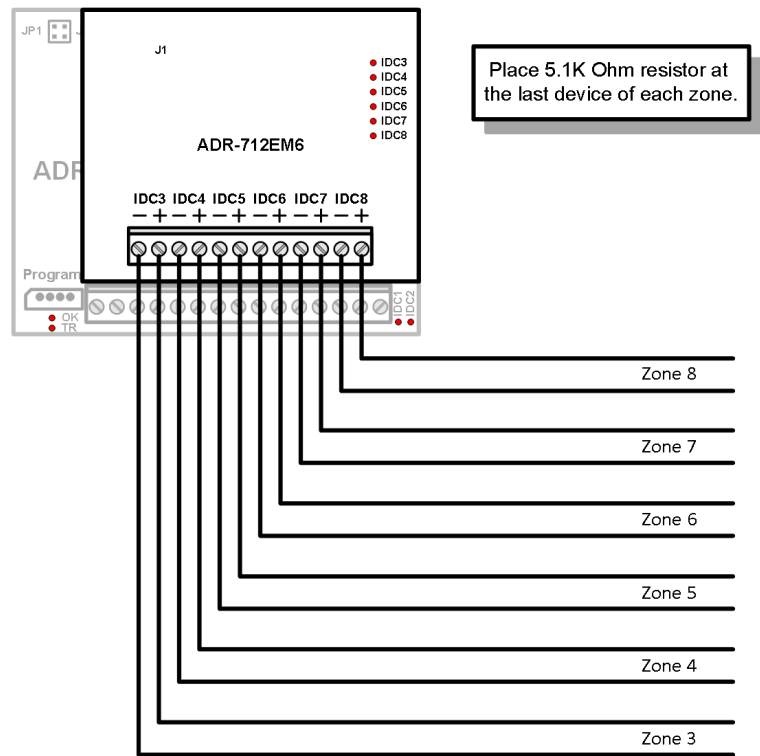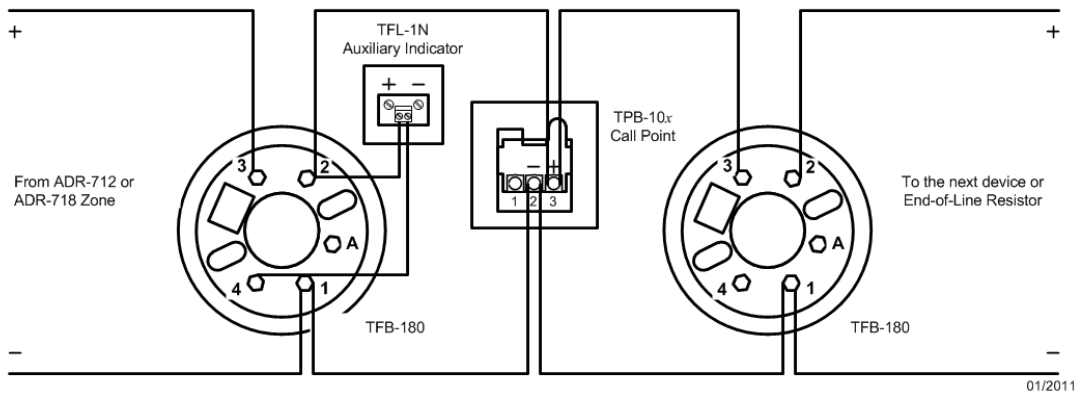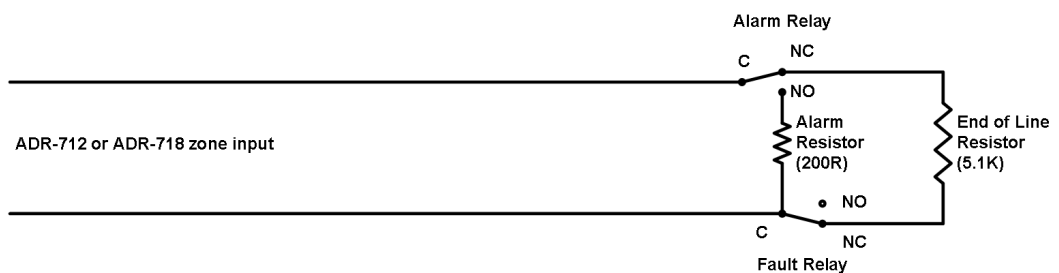**Figure 3   ADR-718 connection**

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Figure 4   Connecting two detectors and a TPB-10R call point to an ADR-712 or ADR-718 input

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Figure 5   Connecting a device that provides alarm and fault relays to a zone input

3.2.5   End of Line Device (E.O.L.)

Install the End of Line Device (E.O.L.) to the last device in the zone or output.

3.3   Post-Installation Testing

Perform a walk test – this test allows a single operator to perform a test for all field devices, including detectors, call points, and other inputs (see the control panel's documentation for instructions on performing walk test).

The testing process is automatic except for activation of the device which is done manually by means specified by the device's manufacturer.

Telefire's devices can be tested by putting a magnet to the test point of the detectors or activation of the call points through the testing tool (supplied with the call point).

Ensure that the module's addresses are included in the matrices as required by the consultant.

3.4   Documentation

Mark the module's addresses on the box.

4   Troubleshooting

4.1   ADR-712

The ADR-712 module has the following LEDs to indicate the modules status:

- A red **System OK** LED that flashes whenever one of the module's addresses is accessed
- A yellow **Fault** LED that flashes whenever one of the module's inputs has a fault such as a short, open circuit, or loss of 24Vdc supply
- **Zone-specific** indicating LEDs that flash whenever the zone's address is accessed. This LED is solid on upon an alarm from the specific zone. The LED shall flash about once per second upon a fault in the zone

An alphanumeric message on the control panel's LCD and attached remote panels will display detailed event (alarm or fault) information.

4.2   ADR-718

The ADR-718 module has the following LEDs to indicate the modules status:

- A red **System OK** LED that flashes whenever one of the module's addresses is accessed
- A yellow **Fault** LED that flashes whenever one of the module's inputs has a fault such as a short, open circuit, or loss of 24Vdc supply
- **Zone-specific** indicating LEDs that flash whenever the zone's address is accessed. This LED is solid on upon an alarm from the specific zone. The LED shall flash about once per second upon a fault in the zone

An alphanumeric message on the control panel's LCD and attached remote panels will display detailed event (alarm or fault) information.

5 Specification

5.1 ADR-712

Module PCB dimensions (W / H)................................... 100 / 80 / mm

AIB-800 dimensions (W / H / D) .... 167 / 125 / 33 mm

Weight .... 70 gr.

Operating Temperature range...................................... -10°C – +60°C

Relative Humidity Range .... 10% – 93% non-condensing

Operating Voltage
    (supplied by the control panel via SLC)................. 21 V, modulated
    (supplied by control panel or aux. power supply).... 24 Vdc nominal ± 10%

Maximum current consumption (SLC).......................... 300µA (quiescence mode)
                                                   15mA (alarm – single zone)

Maximum current consumption (24Vdc)....................... 50mA (quiescence mode)
                                                   75mA (one zone in alarm)

Maximum current – 24Vdc output 0.75A

Zones .... 1 or 2 (setting dependent)

NFPA wiring style .... NFPA Style 4 Class B

Typical voltage supplied to IDC................................... 22.5Vdc

Maximum detectors per zone is dependent on local regulations and limitations, and the maximum allowable load

Resistance range for alarm activation .... 40 – 600 Ohm

Maximum zone resistance .... 30 Ohm

E.O.L. .... 5.1 KΩ resistor

Current protection .... electronic current limit

Local Indication   A red System OK LED that flashes whenever one of the module's addresses is accessed; a yellow Fault LED that flashes whenever one of the module's inputs has a fault such as a short, open circuit, or loss of 24Vdc supply; and zone-specific indicating LEDs that flash whenever the zone's address is accessed. These LEDs are solid on upon an alarm from the specific zone and flash about once per second upon a fault in the zone

5.2 ADR-718

Module PCB dimensions (W / H / D) .... 100 / 80 / 40 mm

AIB-800 dimensions (W / H / D) .... 167 / 125 / 33 mm

Weight .... 120 gr.

Operating Temperature range...................................... -10°C – +60°C

Relative Humidity Range .... 10% – 93% non-condensing

Operating Voltage
    (supplied by the control panel via SLC)................. 21 V, modulated
    (supplied by control panel or aux. power supply).... 24 Vdc nominal ± 10%

Maximum current consumption (SLC).......................... 300µA (quiescence mode)
                                                   15mA (Alarm)

Maximum current consumption (24Vdc)....................... 50mA (quiescence mode)
                                                   350mA (all zones in alarm)

Maximum current – 24Vdc output 0.75A

Zones .... 4 or 8 (setting dependent)

NFPA wiring style .... NFPA Style 4 Class B

Typical voltage supplied to IDC.................................... 22.5Vdc

Maximum detectors per zone is dependent on local regulations and limitations, and the maximum allowable load

Resistance range for alarm activation .... 40 – 600 Ohm

Maximum zone resistance .... 30 Ohm

E.O.L. .... 5.1 KΩ resistor

Current protection .... electronic current limit

Local Indication	A red System OK LED that flashes whenever one of the module's addresses is accessed; a yellow Fault LED that flashes whenever one of the module's inputs has a fault such as a short, open circuit, or loss of 24Vdc supply; and zone-specific indicating LEDs that flash whenever the zone's address is accessed. These LEDs are solid on upon an alarm from the specific zone and flash about once per second upon a fault in the zone

All values are nominal. Specifications are subject to change without prior notice

6   Certification

Telefire's ADR-71X Addressable Conventional Two- and Eight-Zone Input Module has the following approvals:

- EN 54 Approved
- UL 864 Edition 9 Approved
- GOST Compliant
- IS 1220 Approved
- CE Marked