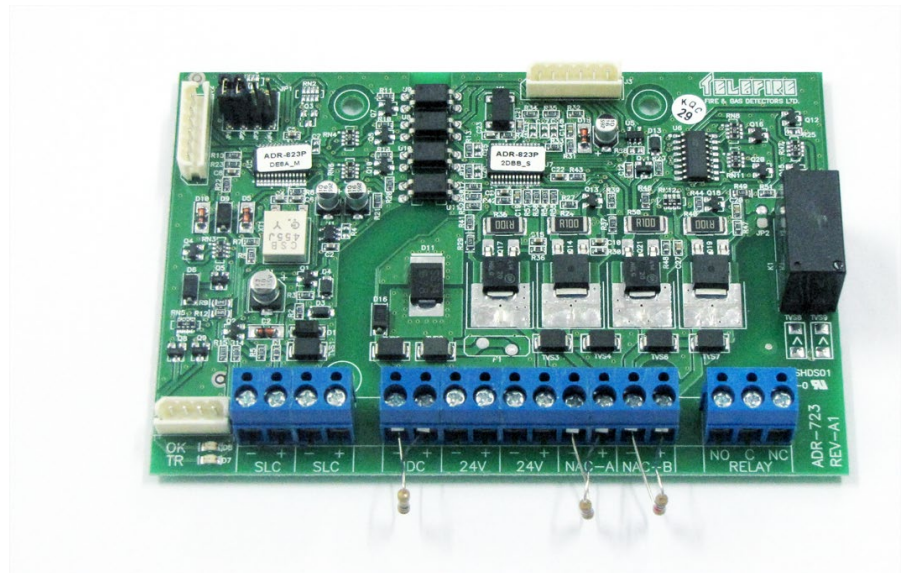


ADR-723

Addressable High-Power Output / Input Module

Technical Manual

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Note

The terms “**Trouble**” as used in NFPA 72 guideline and UL 864 standard 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

The ADR-723 is a three-channel input/output control module that contains two output circuits (NAC – Notification Alarm Circuit) and a single input circuit (IDC – Initiating Device Circuit). This module is intended for use wherever there is a need for multiple output and input modules to carry out supervisory, alarm, and automatic extinguishing functions.

The ADR-723 acts as an interface between an ADR-7000/3000 addressable control panel and conventional warning, alarm, and activating devices such as sounders, strobes, automatic extinguishing devices, pressure switches, valves, and flow switches.

The ADR-723 controls two 2-wire output lines. Both outputs are "reversed polarity" outputs. Output A activates an additional dry-contact relay.

Additionally, the unit includes a two-wire input circuit (IDC) intended for connection to a flow switch or alarm pushbutton as a separate address, or a supervisory pressure switch sharing the same address as NAC A.

The ADR-723 has four configurations that are set by jumpers on the module. The logical properties and number of addresses are selected accordingly.

The ADR-723 communicates and is controlled by the control panel through the SLC circuit and receives 24 Vdc from the control panel or a local addressable power supply such as Telefire's TPS-74A / 34A.

The module reports supervision status of the connected loads to the control panel. Load circuit status is reported as open or short circuit.

The ADR-723 occupies one to three consecutive addresses (jumper-setting dependant), the first of which is programmed by the PROG-4000.

2 Compatibility

2.1 Control Panels

The ADR-723 is compatible with the full line of Telefire's ADR-7000/3000 addressable control panel.

2.2 Input Devices

The ADR-723 is compatible with On / Off switches such as pressure switch, flow switch, valve open switch.

2.3 Output Devices

The ADR-723's outputs are compatible with the following output devices:

- TIP-224 Conventional Sounder
- TFS-214S sounder / strobe
- TRM-1 Relay Module
- Extinguishing devices (see below)

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Note

Extinguishing devices require an adaptor module (see Extinguishing Devices and Adaptors, below). Connect only one extinguishing device per output, except when using TLA-44/4 or TLA-42.

2.3.1 Extinguishing Devices and Adaptors

Device	Adaptor
SAFE Antinicendi solenoid gas cylinders	TLA-110/ TEC - 200
Bursan solenoid gas cylinders	TLA-120
Fike FIRERASER solenoid gas cylinders	TLA-130
Pemall solenoid gas cylinders	TLA-140
Kidde solenoid gas cylinders	TLA-150
Tyco solenoid gas cylinders	TLA-160
Minimax solenoid gas cylinders	TLA-165
Cereberus solenoid gas cylinders	TLA-170
Fenwal solenoid gas cylinders	TLA-180
Sevo Systems solenoid gas cylinders	TLA-190
GCA-Activated gas cylinders	TLA-22
Fike Impulse Cylinders	TLA-23
GreenEX aerosol generators	TLA-33
FirePro sequencer – each sequencer can activate two generators. Up to 11 sequencers can be daisy chained to NAC A	TLA-42C
FirePro aerosol generator (single generator)	TLA-44/1
FirePro aerosol generators (up to four generators)	TLA-44

3 Operating Modes

The ADR-723's operating modes are set by four jumpers. Jumpers JP1 and JP2 determine the number of addresses and the operating mode of the module's input.

Jumper JP3 determines whether the input is supervised (200 Ohm is considered activation, and a short is considered a fault) or semi-supervised (a short is considered activation). In both modes an open circuit (missing End-of-Line resistor) is considered as a fault.

Jumper JP4 allows using a Gentex sounder/strobe with a protocol.

3.1 Operating Mode Jumpers

The ADR-723 module can be configured in one of four different operating modes according to the following jumper-setting table:

Config	JP1	JP2	NAC A Address	NAC B Address	IDC Address ¹	Active Addresses
A	Off	On	First	Second	First – NO supervisory Input ²	2
B	On	Off	First	Second	First – NC Supervisory Input ²	2
C	Off	Off	First	Inactive	Inactive	1
D	On	On	First	Second	Third – Switch Input	3

¹ Supervisory circuit – intended for supervision of extinguishing cylinders' pressure switches, valves, and other switches. Displays only OK or supervisory status.

² Trouble messages for the IDC line are displayed using NAC A's address.

3.2 Releasing Circuit with Normally Closed Pressure Switch

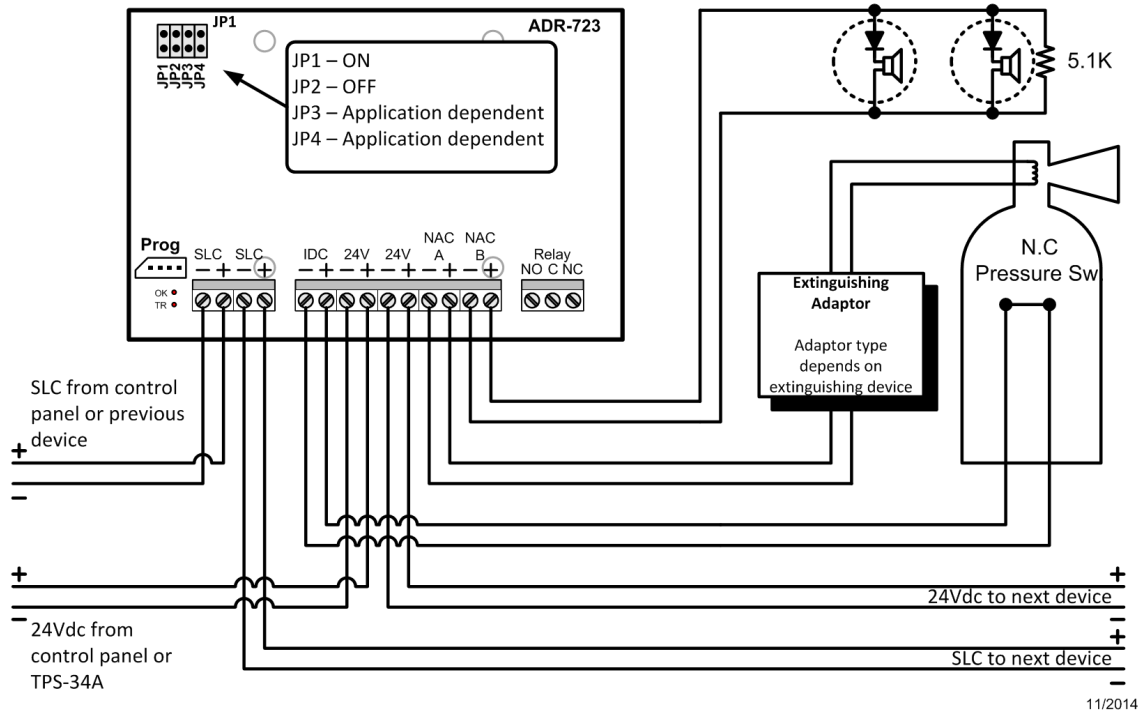


Figure 1 Wiring Releasing Circuit with Normally Closed Pressure Switch (Configuration A)

3.3 Releasing Circuit with Normally Open Pressure Switch

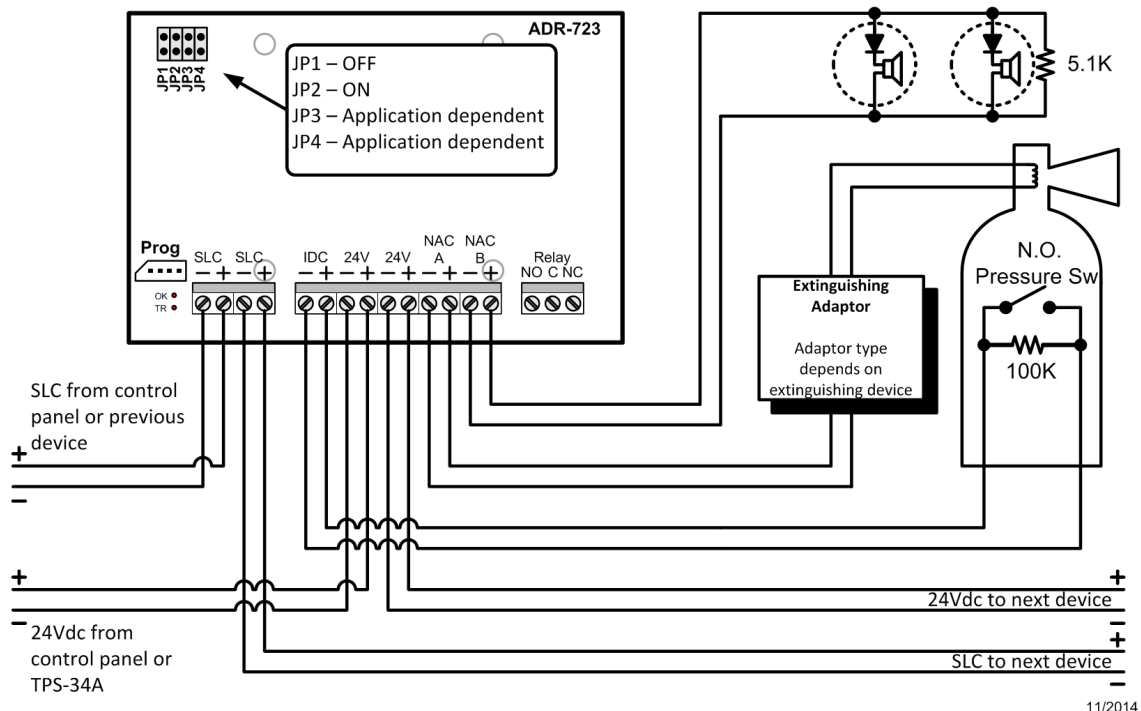
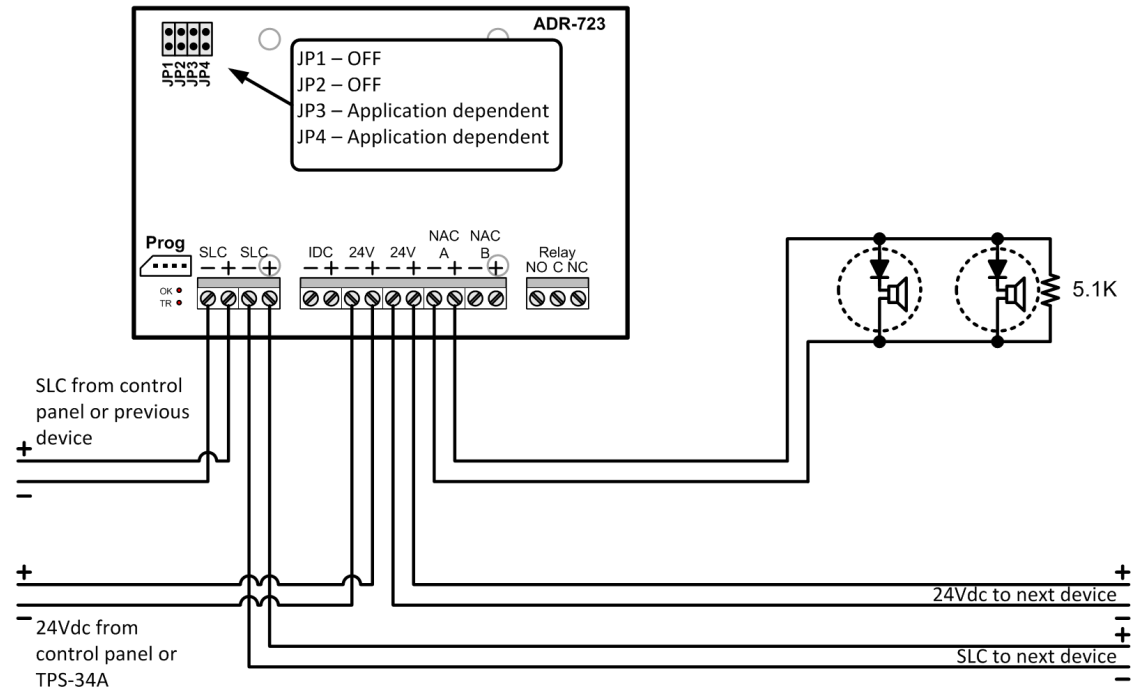


Figure 2 Wiring Releasing Circuit with Normally Open Pressure Switch (Configuration B)

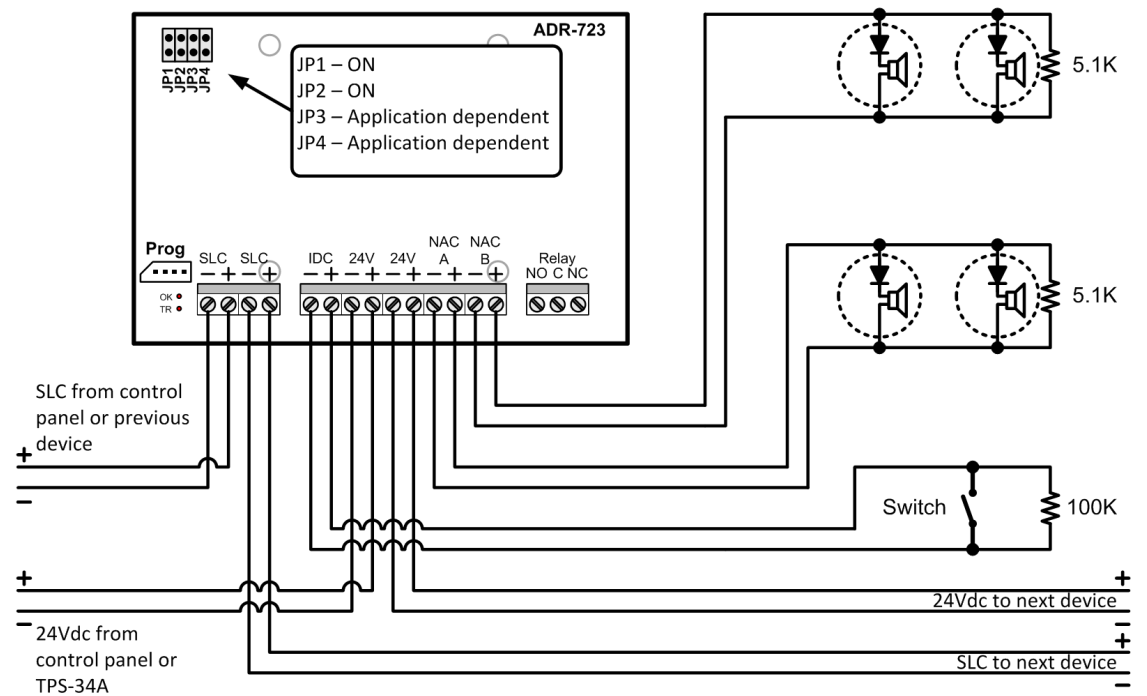
3.4 Single NAC Interface



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Figure 3 Wiring Single NAC Interface (Configuration C)

3.5 Two NACs and One IDC Interface



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Figure 4 Wiring Two NACs and One IDC Interface (Configuration D)

3.6 Input Supervision

JP3 sets the IDC input mode.

- Jumper JP3 Off – short is considered as activation

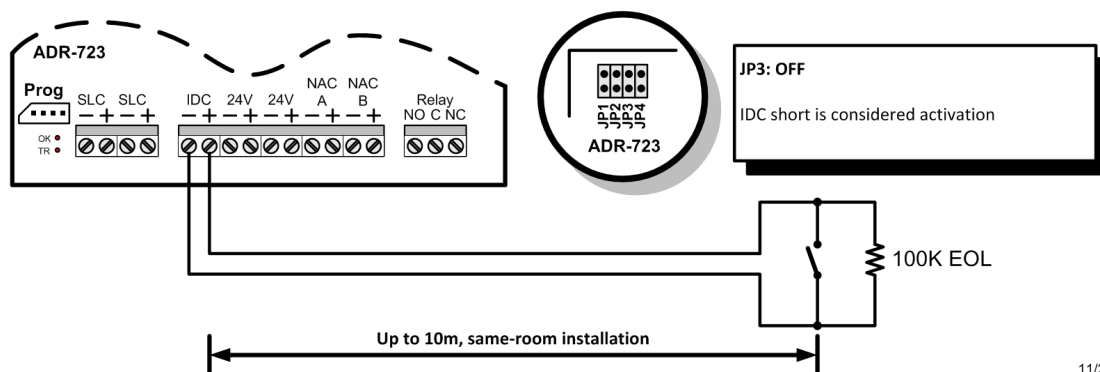


Figure 5 Connecting a switch to the IDC input – without short supervision

- Jumper JP3 On – short is considered as a fault, 3.9K Ohm input is considered as an activation

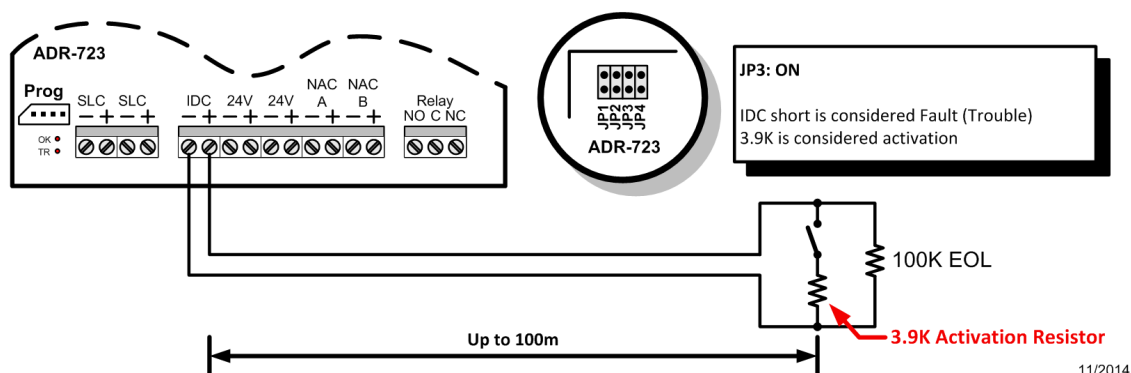


Figure 6 Connecting a switch to the IDC input – with short supervision

3.7 NAC A Protocol

- Jumper JP4 Off – No protocol support
- Jumper JP4 On – support for Gentex protocol in NAC A. This will allow connecting sounder/strobes with a single pair of wires. When the control panel is silenced, the sounders will stop operating, but the strobes will continue to flash until the control panel is reset.

4 Installation

Planning of quantity and location of flow switches, supervisory switches, notification appliances and extinguishing devices shall be done according to the local codes and regulations and in accordance to the planning requirements.

Planning the quantity, size and activation matrices for extinguishing devices shall also be done at this stage.

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Note

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

All connections shall be done when power sources are disconnected.

4.1 Pre-Installation Planning

4.1.1 Capacity Planning

Ensure that you have sufficient available addresses on the ADR-7000/3000. The ADR-723 takes 1, 2, or 3 consecutive addresses, based on configuration (see "Operating Modes" on page 2).

4.1.2 Calculating Current Requirement

Ensure that the control panel has sufficient power. Add TPS-74A/34A Auxiliary Power Supplies as necessary (see note on page 7)

4.1.3 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).

Characteristic	Effect on SLC	Effect on IDC	Effect on Outputs
Electric Resistance	Minimal	Minimal	Very High
Capacitance	High	No effect	No Influence
Inductance	High	Minimal	Minimal
Mechanical Strength	High	High	High

4.1.4 Cabling Planning – Signaling Line Circuits (SLC)

The module connects to the control panel via a two-wire cable. Use a fire-resistant cable that is 12 – 18 AWG (cross section of 0.8mm² to 3.3mm²). Twisted-pair cable is recommended.

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

4.1.5 Cable Planning – 24Vdc Supply from Control Panel or Auxiliary Power Supply

The module requires 24Vdc from the ADR-7000/3000 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 ADR-7000/3000 or whenever the total current consumption of all NACs exceeds the capability of the ADR-7000's/3000's 24Vdc output.

Use a fire-resistant cable that is 12 – 18 AWG (cross section of 0.8mm² to 3.3mm²).

4.1.6 Cable Planning – Module Inputs

The module connects to the initiating device via a two-wire cable. Use a fire-resistant cable that is 12 – 18 AWG (cross section of 0.8mm² to 3.3mm²). The initiating device should be no farther than 10m and in the same room as the ADR-723.

4.1.7 Cabling Planning – Module Outputs

Use a 2-wire fire-resistant cable that is 12 – 18 AWG (cross section of 0.8mm² to 3.3mm²) for Activation Lines and 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.

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Note

- When supplying 24Vdc power from the ADR-7000/3000 use a three-wire connection (+SLC, -SLC, and +24Vdc)
- When supplying 24Vdc power from an auxiliary power supply such as the TPS-74A/34A use a two-wire SLC connection (+SLC, -SLC) and a two-wire 24Vdc supply (+24V and -24V)
- 24Vdc cables that supply voltage to several loops shall be split only at the control panel. Do not interconnect 24Vdc cables to multiple loops away from the control panel.
- TPS-74A/34A Addressable Auxiliary Power Supplies should be installed as close as possible to the devices they activate to reduce power loss.
- TPS-74A/34A auxiliary power supplies should not be shared between multiple control panels or between line cards on the same control panel. TPS-74A/34A auxiliary power supplies may be shared between the two loops of a single ADR-3002C line card.

4.1.8 Activation Matrices Planning

Plan the activation logic according to the requirements of the consultant.

4.1.9 Extinguishing Device Planning

Size and quantity of extinguishing cylinders shall be calculated by authorized personnel in accordance to the requirements of the consultant and local regulations

4.2 Module Installation

4.2.1 ADR-723 Configuration

Set the ADR-723's configuration jumper JP1 – JP4 according to the desired configuration (see table on page 22).

Assign the module's first address prior to installation by using the PROG-4000 Addressable Detector and Accessory Programmer. Please refer to the PROG-4000 manual for additional details.

Mount AIB-800 on a clean firm surface and install the ADR-723 module in it.

4.2.2 Configuring the ADR-7000/3000

1. Configure the module's first two addresses as "Extinguisher", "Sounder", "Lamp", or "Supervisory Out", as appropriate, in the ADR-7000/3000.

2. Program the activation matrix for each output. Configure the activation delay and define the output as "**Silenced**" or "**Non-Silenced**" as required. Usually sounders are configured as "**Silenced**", and lamps are configured as "**Non-Silenced**".
3. Configure the module's third address as "**Supervisory Switch**", or "**Push Button**", as appropriate, in the ADR-7000/3000.

Please refer to the ADR-7000/3000 technical manual for a detailed description of programming and configuration.

4.2.3 Mounting the module

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 to a solid wall so it will have comfortable access to connecting the cables from the input and output devices and maintenance personnel for ongoing operations and in a location where it is possible to supervise and clearly see the display and indicators.

4.2.4 Connecting Inputs and Outputs

Connect the IDC, NACs, SLC, and 24Vdc input from the control panel or an auxiliary power supply such as the TPS-74A / 34A. Move the EOL resistors to the end of the IDC and NAC cables. Use 5.1K EOL resistors for the NACs and 100K EOL resistor for the IDC.

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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).

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Warning

Ensure that extinguishing devices are disconnected when installing, replacing, or maintaining the ADR-723.

Do not connect the extinguishing activation circuits at this time. Use a dummy load.

4.3 Post-Installation

4.3.1 Post-Installation Test

Test the module to ensure that it operates properly and verify that it is included in the appropriate matrices as specified by the planning consultant by activating the appropriate initiating devices and verify that the outputs are activated as specified by the planning consultant.

When using the ADR-723 as an extinguishing activation device perform the activation test using a dummy load to ensure that the system can supply sufficient energy through the module and cabling to activate the extinguishing device.

4.3.2 Arming Extinguishing Devices

Ensure that the system operates normally and that there are no devices in alarm prior to connecting or replacing extinguishing devices.

Remove the dummy load from NAC A and connect the extinguisher after testing.

4.4 Documentation

Indicate the module's addresses on a label that is easily visible. Indicate what does it activate (e.g., "extinguishing cylinder in wiring closet (NAC A) and Extinguishing Activated lamp (NAC B)" and the activation logic.

5 Indication and Troubleshooting

The ADR-723 includes two LEDs for indication of module status.

The red LED flashes on each system communication request to one of the module's addresses. At alarm mode of the IDC circuit, the LED will latch on.

The yellow LED flashes whenever a trouble mode occurs such as short circuit, low 24V input voltage, or open circuit. The control panel will display the relevant trouble event.

The control panel's LCD display on the control panel and remote annunciators will indicate a detailed error message.

6 Specification

Module PCB dimensions (W / H).....	80 / 120 mm
Weight	60 gr.
Operating Temperature range.....	-10°C – +60°C
Relative Humidity Range	10% – 93% non-condensing
Operating Voltage	
(supplied by ADR-3000 via SLC)	21 V, modulated
(supplied by ADR-3000 or aux. power supply)	24 Vdc nominal ± 10%
Maximum current consumption (SLC).....	200µA (quiescence mode) 2.8mA (Alarm)
Maximum current consumption (24Vdc).....	0.9mA (quiescence mode) 70.0mA (Alarm)
Input	
NFPA Classification	Style 4 Class B
Current protection	electronic current limit
EOL Resistor	100K
NAC A	
NFPA classification	NFPA 72 Style Y
Activation mode	Reversed polarity, silenceable
Current protection	electronic current limit
Max current.....	2.0A
Momentary max current (up to 22mS).....	5.5A
End of Line Resistor.....	5.1 K
NAC B	
NFPA classification	NFPA 72 Style Y
Activation mode	Reversed polarity, silenceable
Current protection	electronic current limit
Max current.....	2.0A
Momentary max current (up to 22mS).....	5.5A
End of Line Resistor.....	5.1 K

Max concurrent NAC A and NAC B current draw 2.0A

Relay

Dry contacts.....	one set
Relay activation	NAC A logic
Max rating of relay contacts	2.0A / 30Vdc

Relay contacts – same room connection only.

Local Indication

Two LEDs – a red LED that flashes on each system communication request to one of the addresses of the module and latches on upon alarm; and a yellow LED that flashes whenever a trouble mode occurs.

Connect only approved devices

All specifications are for ADR-723 only – add the current consumption of devices connected to the ADR-723 when calculating current consumption.

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

7 Certification

Telefire's ADR-723 Addressable High-Power Output Module has the following approvals:

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