

ADR-7000 / SAVER-7000 / GUARD-7

Addressable Fire Alarm Control Panel

Technical Manual



TELEFIRE FIRE & GAS DETECTORS LTD

PO Box 7036
Petach Tikva 49250
Israel

Tel: 972 3 970 0400

Fax: 972 3 921 1816

eMail: info@telefire.com

Web: www.telefire.com



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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 ADR-7000 before fully reading this manual.

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UL 864 Compatibility

Telefire's ADR-7000 product line complies with the requirements of several standards, including UL 864, IS 1220, EN 54, EN 12094, and GOST, and may comply with options or requirements of one of the standards and are not compliant with another standard.

Where the control panel allows setting of a parameter that are outside the range of one of the standards, we included an appropriate warning in the relevant area of the manual.

Parameter	Allowed?	Possible Range	Range per UL 864
Alarm verification by delayed confirmation	Yes	0-50 seconds	0-60 seconds Do not combine time-based alarm verification and cross zone alarm verification
Alarm verification by cross-zone	Yes	Cross zone or no verification	Cross zone or no verification Do not combine time-based alarm verification and cross zone alarm verification
Delay of releasing	Yes	0-50 seconds	0-60 seconds
Delay of first fault in an addressable device	Yes	0-240 seconds	0-180 seconds
Delay of buzzer notification of loss of AC power	Yes	0-240 minutes	0-3 minutes (0-180 seconds)
Keyboard locking	Yes	Continuously; after 10 minutes; after 30 minutes; after an hour	0-30 minutes

UL

UL 864 paragraph 59.1 Compliance

The following products mentioned in this manual were not tested or listed by UL and should not be installed where UL listing is required:

- TFH-280A and TFH-220A (Heat Detectors)
- ADR-812A and ADR-818A (Input modules)
- ADR-828A (LED Driver)
- TPS-34A (auxiliary power supply)
- TIP-224A (Sounder)
- ADR-833A (Extinguishing controller)
- TPH-482A and TPH 442A (photo / heat multi-sensor detectors)

Use a UL listed equivalent product where required.

1 Introduction

Telefire's ADR-7000 Advanced Addressable Control Panel is a UL 864 compliant system that can be used as a standard fire detection and alarm system including sprinkler supervision; fire detection and extinguishing release system; fireman phone system; a compliant smoke control.

The ADR-7000 control panel monitors addressable initiating devices such as smoke detectors; heat detectors; manual fire alarm call points; and flow switches. It also monitors and activates output devices such as sounders; strobes; indicating signs; etc.

The base control panel is modular and can be configured with 1, 2, 3, or 4 Class A or Class B loops. An expansion module allows extending the system by up to 4 additional loops (8 loops in total). The ADR-7000 includes two reversed-polarity notification alarm circuits (NACs) and three programmable dry contact Form C relays; 24Vdc outputs to devices that require additional 24Vdc supply are also included.

Up to 32 ADR-7000 control panels can be networked in a single peer-to-peer network. Each control panel is capable to communicate with up to 16 RM-7000 digital annunciators via an RS-485 interface.

The ADR-7000 has a built-in 150W power supply. Auxiliary 24Vdc to devices is expandable to hundreds and even thousands of watts using UL listed power supplies that can be distributed to avoid costly power losses over long cables.

All inputs and outputs are fully supervised. Outputs are monitored for over-current and are disconnected automatically when the current drawn from them exceeds the specified amount.

Input and output protection is done without the use of fuses, using an advanced current management that allows for high resilience of the system when encountering a shorted output and automatic return to normal operation when the short is resolved.

Telefire's ADR-7000 has a highly resilient power supply system, ensuring that a short on any input or output (including those located on SLC-connected I/O modules) affects only the specific point, and does not disable all devices that feed from the same 24Vdc supply.

It is possible to connect conventional initiating devices to the system via addressable input (monitor) modules. Conventional output devices may be connected via addressable NAC output modules.

Strobes connected to NAC outputs are synchronized at the control panel level (i.e., all strobes connected to an ADR-7000 are synchronized, regardless of the loop they are connected to). Strobes can be connected without protocol (i.e., two NACs activate separately the sounders and the strobes), or with protocol (i.e., a single pair of wires from the NAC to the sounder/strobe control both sounder and strobe via protocol). The ADR-7000 supports both Wheelock and Gentex protocols.

Every device in the system is individually monitored and controlled for all parameters such as day and night alarm sensitivity, pre-alarm, operation mode (quiescence, alarm, fault, and maintenance mode).

The control panel performs automatic drift compensation to adjust the detectors sensitivity and compensate for changes due to changes in environmental conditions and dust accumulation. The ADR-7000 includes a maintenance fault feature that alerts the user when a detector requires cleaning.

Detailed LED indication and a user-friendly graphic LCD provide clear display of the system's status.

Each event is clearly detailed and allows for a quick and convenient identification of alarms and faults to the end user, installer, and service technicians. Optional modules allow for zone indication.

All configuration programming may be done via the built-in keyboard or with Telefire-proprietary PC-based software. The ADR-7000's sophisticated microprocessor allows easy configuration and modification in the field without the use of dedicated tools, while providing access only to authorized personnel.

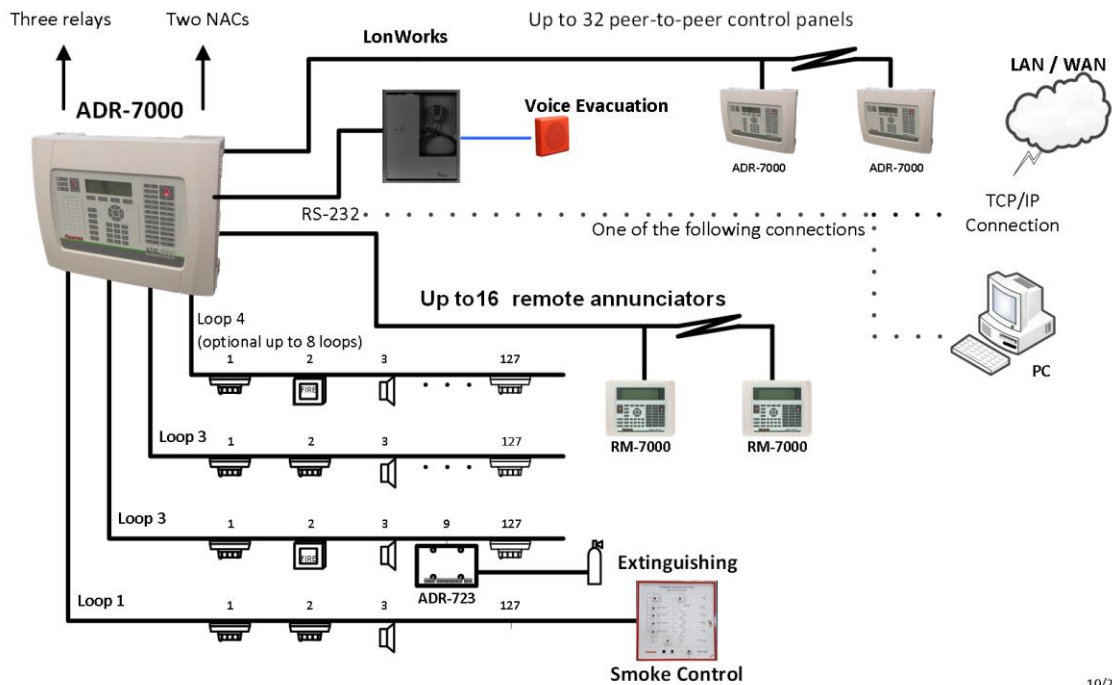


Figure 1 Typical ADR-7000 System

1.1 SAVER-7000 and GUARD-7 Differences

The SAVER-7000 is similar to the ADR-7000, but is stand-alone and can only have 2 loops and up to 3 RM-7000 remotes

The GUARD-7 is a stand-alone control panel that is limited to 60 addresses and can only have 2 loops and up to 3 RM-7000 remotes

2 ADR-7000 Control Panels

The ADR-7000 control panel provides user-friendly operation. The keyboard and the display that are mounted on the front panel contain an illuminated 260-by 64 pixel graphical LCD, LED indicators for major events, and functional keys. Access to all operations is secured by multi-level passwords.

The interior section of the cabinet is secured by a key-lock. It contains a power supply, the main board, line card(s), battery compartment space, and optional communication modules.

The ADR-7000's main board can contain one to four ADR-7002 line cards, enabling control of as many as 508 addressable initiating devices, notification appliances and I/O modules. Each line card can be configured as a Class B or Class A loop.

An optional expansion modules allows the installation of up to four additional ADR-7002 line cards (up to 1,016 addresses per control panel).

The system can be expanded beyond the base control panel by networking. An optional LON-7000 network communication module allows the connection of as many as 32 control panels to set up a peer-to-peer network. With appropriate programming each control panel on the network is able to respond to alarm and trouble events that occurred in other control panels.

The control panel has an integral real time clock and calendar that enables day and night sensitivity setting for each addressable detector according to weekly operation schedule and working hours. Daytime and nighttime hours can be programmed independently for each day of the week, as well as national holidays.

Events such as alarm, trouble, silencing, reset, programming, etc., are stored in the ADR-7000's memory in the order in which they occur, creating event-list history. An event record contains date, time, device type, and additional details. Event records can be displayed on screen and printed as a report.

All operations and configuration can be performed either from the system's front panel or from a PC. Telefire's user-friendly proprietary programming and control software (running on Windows™ operating system) allows operators/installers to easily configure any system parameter using its advanced graphical interface.

ADR-7000 control panel for a variety of communication interfaces that allow control and monitoring;

- RS 232 connection to a computer, NET-7000 TCP/IP module for control and monitoring via a local (LAN) or global (WAN) area network
- RS-485 for Class B or Class A connection to remote annunciators
- USB connector for connecting to a computer

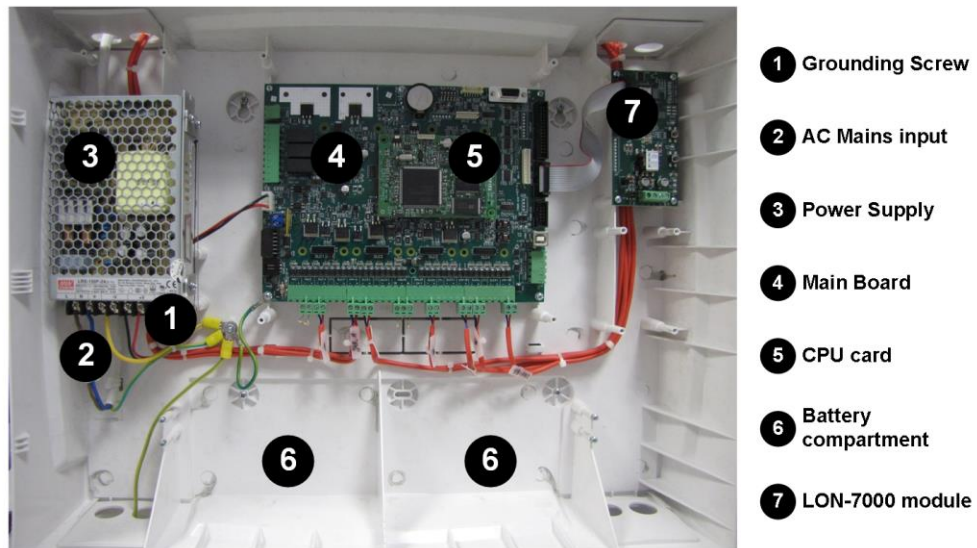


Figure 1 Schematic ADR-7000 subassemblies

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2.1 Main Board – ADR-7021

The ADR-7000's ADR-7021 main board is designed for ease of installation and maintenance. Connectors are located in logical groups; on the left are the input from the power supply and battery connection; three dry contact relays; and a connector for changing the addresses of addressable modules. On the bottom are the two general purpose NACs; SLC loops; 24Vdc supply to the field; and dialer activation and voltage supply. On the right are the display / keyboard connector; LON-7000 networking module; an RS-232 port for NET-7000 TCP/IP module, and a connector for the remote annunciator units.

2.2 SLC Line Card – ADR-7002

Up to four ADR-7002 line cards line cards are mounted on the ADR-7021 main board and control the bi-directional communication between the control panel and the addressable devices on the SLC loop.

The loop is electronically protected against shorts, and will be automatically disconnected if a short is sensed. Each line card can be configured to work in a Class B or Class A loop.

Two LEDs for each loop indicate loop condition and serve installers and technicians:

- The red LED flashes each time a device is addressed
- The yellow LED flashes when a fault is detected, even after a momentary interference that would not activate a trouble condition

2.2.1 Maximum Addresses – ADR-7000

All loop cards are capable of communicating with up to 127 addresses, and the maximum number of addresses is a 1,016 single control panel.

Line Cards	Max. Addresses
1	127
2	254
3	381

Line Cards	Max. Addresses
5	635
6	762
7	889

Line Cards	Max. Addresses
4	508

Line Cards	Max. Addresses
8	1,016

Table 1 Maximum addresses by configuration – ADR-7000

2.2.2 Maximum Addresses – SAVER-7000

All loop cards are capable of communicating with up to 127 addresses, and the maximum number of addresses is a 254.

Line Cards	Max. Addresses
1	127
2	254

Table 2 Maximum addresses by configuration – SAVER-7000

2.2.3 Maximum Addresses – GUARD-7

The GUARD-7 has 60 addresses.

2.3 Keyboard and Display Module – ADR-7003

The keyboard and display module contains a graphic LCD display (240 x 64 pixels), indicating LED display, and keys for programming and operation. The display and keypad meet the strict standards of UL 864, EN 54, and IS 1220.

The display and keypad have six main areas:

- Graphic LCD display
- General display area
- Fault display area
- Additional indication area
- Keyboard
- Zone indication LEDs

See detailed explanations on page 22.

2.4 Power Supply

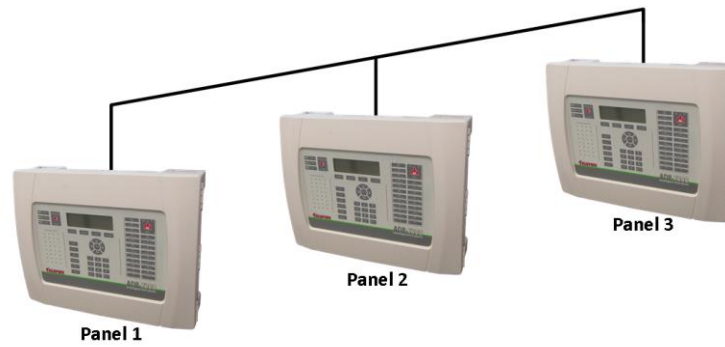
The ADR-7000 has a 150W power supply that accepts 110-240Vac (nominal) input.

2.5 Zone Alarm Module – ADR-7000ZM

The optional Zone Alarm Module may be installed in the ADR-7000 to visually indicate zones in alarm.

2.6 Network Communication Module – LON-7000

The LON-7000 is a communication module that enables connection between control panels to establish a network. A two-wire copper cable connection is required to interconnect between the control panels. Optionally fiber-optic connection is made possible with additional modules. The length of the wires depends on the connection topology and media type (copper or fiber optic). Please refer to the LON-7000 technical manual for further details.



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Figure 2 LON-7000 Networking communication module (ADR-7000 only)

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Note

Ensure that all panels in a network have the same software version and all LON-7000 modules are identical (both hardware and software).

2.6.1 Topology

An ADR-7000 LonWorks network can connect from 2 and up to as many as 32 ADR-7000 control panels in a peer-to-peer or Master-slave network. The physical topology of the network may be bus (figure 8), ring (figure 9) or free (figure 10) topology. Logical hierarchy may be peer-to-peer – where all messages are reported in all control panels, master/slave – where slave messages are reported on master control panels, or a combination of the two.

Ring topology requires LRW-102 Fiber Optic Repeaters.

Please refer to the LON-7000 technical manual for further details.

2.7 TCP/IP Module – NET-7000

The ADR-7000's internet-enabled features allow it to provide fire alarm control panel monitoring over LAN, WAN, or Internet using a standard web browser or Telefire's proprietary TCS-3040 software, and distribute alarm and trouble events via a built-in web server, e-mail notification and SMS paging.

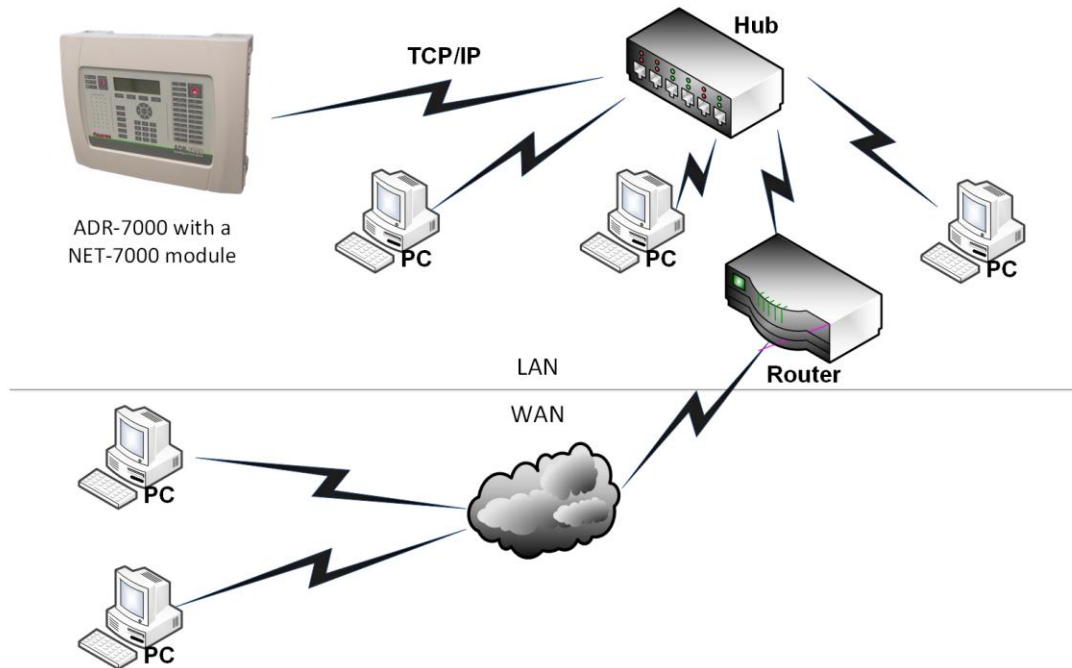


Figure 3 Remote control by TCP/IP NET-7000 module

2.8 Loop Expansion Card – ADR-7001EM1 – ADR-7000 only

The loop expansion card is designed for ease of installation and maintenance. Connectors are located in logical groups; on the left are the data and power inputs from the main board. On the bottom are connectors for SLC loops 5-8; and Ground and 24Vdc supply to the field.

The ADR-7001EM1 card supports 1 – 4 additional SLC loops.

2.9 Remote Annunciator – RM-7000

The RM-7000 Remote Panel and Annunciator enables control and supervision of the ADR-7000 fire alarm control panel from remote locations and key positions such as security officer, premises manager, or maintenance office.

The RM-7000 remote panel consists of an LCD display, keyboard, internal buzzer, and features such as alarm output, trouble output, and an interface relay that reduces the need for additional input/output interface modules.

The remote panels are connected to the main control panel via a twisted wire pair (RS-485). As many as 16 remote panels can be connected to the control panel using the same cable in a Class B or Class A configuration. Each remote panel should be configured with a unique address in the range of 1 to 16. The communication circuits are fully supervised.

In large systems incorporating several control panels connected via a peer-to-peer network as many as 16 remote panels can be connected to each of the control panels. The RM-7000 operates with a 24Vdc power source that can be supplied from the main control panel or an auxiliary power supply such as Telefire's TPS-73A or TPS-34A Addressable Auxiliary Power Supply.

Please refer to the RM-7000 technical manual for further details.

2.10 Access Levels

The control panel allows protection from unauthorized access through protection of certain functions by various access levels.

The control panel includes an electronic locking mechanism that allows work in 4 access levels:

- Access level 1 – not limited by password
- Access level 2 (operator) – protected by password. Provides all of access level 1 functions and allows access to additional functions that are performed on a regular basis by the system operator
- Access level 3 (programmer) – protected by password. Provides all of access level 2 functions and allows access to additional functions such as configuration and programming
- Access level 4 (manufacturer) – protected by dedicated tool

There are six users, each of which has a different password:

User	Position
User 1	Security guard
User 2	Operator – an employee of building owner or manager that has undergone user training
User 2	Operator – an employee of building owner or manager that has undergone user training
User 3	Programmer – someone who is qualified to install and configure the system
User 5	Programmer – someone who is qualified to install and configure the system
User 6	Master Programmer – a senior person who is qualified to install and configure the system

Action	User 1	Users 2 and 3	Users 4 and 5	User 6
	Guard	Operator	Programmer	Senior Programmer
Scrolling events	✓	✓	✓	✓
Silence buzzer	✓	✓	✓	✓
Silence sounders	✓	✓	✓	✓
Reset		✓	✓	✓
Device address programming		✓	✓	✓
Enable / disable device		✓	✓	✓
Walk test		✓	✓	✓
Setting time and date		✓	✓	✓
Setting holiday dates		✓	✓	✓
Control panel configuration			✓	✓

Action	User 1	Users 2 and 3	Users 4 and 5	User 6
	Guard	Operator	Programmer	Senior Programmer
Device programming			✓	✓
Keyboard unlock			✓	✓
Clearing extinguishing activated sign			✓	✓
Can change password for himself	-	✓	✓	✓
for user 1	-	✓	✓	✓
for users 2 and 3	-	self only	✓	✓
for users 4 and 5	-	-	self only	✓

3 Work States – Alarm, Fault, Supervisory, Disablement, and Test Modes

Alarm, fault or supervisory events are shown clearly by dedicated LEDs that are labeled **Fire**, **Fault**, and **Supervisory**, respectively. A detailed explanation in the LCD display includes all relevant details for troubleshooting and proper resolution of the event.

Fire alarms, fault conditions, and supervisory conditions are defined as events. When two events occur at the same time, the first event will be shown (alarms have a higher priority) and the event counters in the LCD display show the number of alarms, supervisory events, status events, faults, disablements, and addresses in test mode.

Fire alarms have a higher priority than fault events and are shown first.

To see the events in the order they occur, use the up and down arrow keys.

3.1 Normal (Quiescence) State

Normal state is a state where no alarm or fault event and all of the inputs and outputs are enabled. In this state, the green power LED is turned on and the LCD displays System OK.



Screen 1 Quiescence state

3.2 Alarm State



Screen 2 Alarm state

3.2.1 Alarm Verification

The alarm verification feature allows the control alarm to ignore momentarily false alarms that may cause a nuisance.

When an address is programmed for alarm verification, the control panel resets the device in alarm, waits for 0 to 59 seconds (depends on individual address programming) and rechecks whether the same address is still in alarm. During that time, the control panel will enter alarm state when receiving an alarm from the same or another address.

During alarm verification time, the control panel will enter alarm state immediately in case that there is another alarm indication even if that address is programmed as alarm verification.

In case only one alarm triggered the alarm verification clock, during and up to 120 seconds, no additional alarm is received, the clock will be reset and the control panel will be back in normal mode.

3.2.2 Alarm Operations

During an alarm in one of the addresses, the control panel performs the following operations

- Indicating the address in alarm on the LCD display
- Turning on the Fire LEDs in the LCD display and clarification area and the private alarm zone in the zoning alarm
- Displaying the alarm in the remote panel RM-7000 if connected
- Logging an event in alarm history
- Activating the NAC outputs in the panel
- Activating dialer output
- Activating internal buzzer
- Activating relays that were configured as alarm relays
- Activate output addresses as per matrix configuration

3.2.3 Acknowledge / Buzzer Off Operation

- Silences the internal buzzer

UL 864

UL Models

For UL models, pressing the **Acknowledge** key will stop the flashing of the LEDs and turn them solid on.

3.2.4 Acknowledge Operation

3.2.5 Silence Operation

Pressing the **Silence** key performs the following actions

- Stops the action of the horn output
- Stops the action of the internal buzzer
- Stops the alarm relay if it was programmed as silenceable
- Stops outputs that were programmed as silenceable

3.2.6 Action during a Second Alarm (Two Devices in Alarm at the Same Time)

Event 1/2 ALARM 10:49:05					
Ground floor electric panel 7					
Last ALARM 10:49:22					
Ground floor lift lobby 7					
Alarm	Super.	Status	Fault	Disab.	Test
2	0	0	0	0	0

Screen 3 Two concurrent alarms

When receiving a second alarm, (i.e., two devices are in alarm at the same time), the control panel perform the following operations

- Reactivation of all silenced output

- Increase the event counters on the LCD display.
- Activating outputs that were programmed to activate upon an alarm from these devices

3.2.7 Resetting an Alarm

Resetting an alarm can be done by pressing the **Reset** key.

3.3 Fault State



Screen 4 Fault state

A fault in the system will be shown indicated in the system by a flashing yellow LED in addition to the fault information in the LCD display.

3.3.1 Actions Taken in Fault State

When receiving a fault event at the control panel, the control panel will perform the following operations

- Indicating the fault in the display
- Turning on the **General Fault** LED
- Activating the internal buzzer in the control panel
- Logging an event in fault history
- Activating relays that were configured fault relays

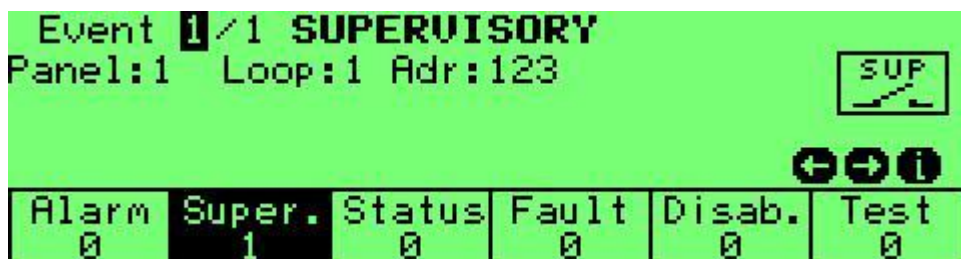
3.3.2 Actions Taken Upon Event Confirmation (Pressing the "#" Key)

- Stopping LED indicator flashing, - the LEDs shall stay on until the issue is resolved

3.3.3 Actions Taken Upon Pressing "Buzzer Off" Key

- Silencing the internal buzzer
- Stopping the flashing of the LEDs in the general alarm area and turning them solid on (UL version only)

3.4 Supervisory State



Screen 5 Supervisory state

The ADR-7000 has a supervisory function that conforms to UL and EN standards.

In certain cases, there is a need to activate an output following a fault such as indication of low pressure in an extinguishing cylinder, closed sprinkler valve, etc.

The supervisory function answers these need and allows monitoring switch conditions and reaction according to the state were using the fire alarm infrastructure.

Supervisory fault does not latch – at the end of the event, the system goes back to normal state without intervention.

3.4.1 Action Taken Upon a Supervisory Event

A supervisory event will cause the following events in the control panel

- Turning on the supervisory LED, the supervisory indication in the LCD display
- Indicating the fault event in the RM-7000 remote panel if connected
- Activating fault buzzer
- Logging of the event in the fault history
- Activating supervisory outputs that are in the same logical zone as the activated fault supervisory device, if defined
- Activating supervisory relays, if defined

3.4.2 Actions Taken Upon Pressing "Buzzer Off" Key

- Silencing the internal buzzer
- Stopping the flashing of the LEDs in the general alarm area, in the LCD display and clarification area and the private LEDs in the zones and turning them solid on

UL 864

UL Models

For UL models of the ADR-7000, pressing the **Acknowledge** key stops the flashing of the LEDs in the general alarm area, in the LCD display and clarification area and the private LEDs in the zones and turning them solid on.

3.5 Disablement State



Screen 6 Disablement state

Sometimes there is temporarily a need to disable a particular input, output, or relay.

The control panel will ignore alarms from disabled devices or zones and will not activate disabled outputs or relays.

When one of the devices, zones or outputs is disable, the disabled LED is turned on to indicate this status.

3.6 Test State



Screen 7 Test state

Test state allows testing the control panel without activating outputs. This state is indicated by the Test LED.

See page **Error! Bookmark not defined.** for additional information about Field Test.

3.7 Status State



Screen 8 Status state

Status state indicates events that are not alarm, supervisory, fault, disablement, or test states.

These events include:

- Evacuation
- Pre-alarm
- A call on the fireman phone system
- Extinguishing abort
- A loudspeaker selection switch activation
- Status change of a manual selector on a smoke panel
- Status report from a blower or damper in a smoke system

4 Installation

The planning process should take into consideration the entire system.

Start by going over the project plans and determine the quantity and location of various detectors, call points, sounders, strobes, and other fire-safety devices as required. Consider the NFPA 72 recommendation, local guidelines and regulations, and specific requirements set by the fire safety consultant.

Make a list of the equipment required, taking into consideration and additional items necessary as pre-requisite or optional accessories.

Calculate the number of addresses needed and make sure that there are sufficient quantities of control panels and loops per control panels and allow for some spare addresses for future requirements.

Calculate cable lengths – long cable runs may require additional control panels, loops or auxiliary power supplies.

Calculate the current-draw requirements, both for a quiescent system and in alarm. Calculate the size of batteries required and additional auxiliary power supplies that may be needed.

Specify logical zones and activation matrices so that the installing engineer can configure the control panels as necessary.

NFPA 72

NFPA 72 Recommendation

The NFPA (National Fire Protection Association) is the American association for the fire safety industry. Its guideline, NFPA 72 National Fire Alarm and Signaling Code specifies "the application, installation, location, performance, inspection, testing, and maintenance of fire alarm systems, fire warning equipment and emergency warning equipment, and their components" and is considered the de-facto standard of fire alarm design and implementation.

4.1 Pre-Installation Planning

Planning of quantity and location of detectors, push buttons, notification appliances and extinguishing devices shall be done according to the local codes and regulations and in accordance to the planning consultant's requirements.

4.1.1 Pre-Installation Planning – Capacity Planning

Calculate the number of addresses required by the system's devices.

Round up by 10% to provide sufficient available addresses to allow for future expansion and divide by 127. Round up to the nearest whole number to calculate the required number of SLC loops.

Divide the number of loops by 4 and round up to the nearest whole number to calculate the minimum number of control panels required.

In some cases site-specific requirements may determine the need for more loops and/or control panels than the minimum.

If you need more than one control panel, you will need to network multiple panels.

P/N	Description	QTY	Multiply by	Addresses
TFO-480A	Photo-Electric Smoke Detector		1	
TFH-280A	Heat Detector		4	
TPH-482A	Photo/Heat Detector		1	

P/N	Description	QTY	Multiply by	Addresses
ADR-705	Dual Switch Interface Module configured as a single address ¹		1	
ADR-705	Dual Switch Interface Module configured as two addresses ²		2	
ADR-71x	Multi Input Module configured as a single address ²		1	
ADR-71x	Multi Input Module configured as two addresses ²		2	
ADR-71x	Multi Input Module configured as four addresses ²		4	
ADR-71x	Multi Input Module configured as eight addresses ²		8	
ADR-723	High power output module configured as a single address ³		81	
ADR-723	High power output module configured as two addresses ³		2	
ADR-723	High power output module configured as three addresses ³		3	
ADR-741	Relay module		1	
ADR-812A	Two-Channel Input Module configured as a single input ⁴		1	
ADR-812A	Two-Channel Input Module configured as two inputs ⁴		2	
ADR-805A	Flow Switch Interface Module		1	
ADR-818A	Eight-Channel Input Module		8	
ADR-823A	Three-Channel I/O Module – as a single output ³		1	
ADR-823A	Three-Channel I/O Module in 2-address configuration ³		2	
ADR-823A	Three-Channel I/O Module – in 3-address configuration ³		3	
ADR-828A	Eight-Channel Output Module		8	

¹ The ADR-705 can be configured as a single-address, or two-address module.

² The ADR-71x can be configured as a single-address, or two-address module (factory default for ADR-712) or a four address or eight address module (factory default for ADR-718).

³ The ADR-723 and ADR-823A can be configured as a single-address, two-address, or three-address module as required.

⁴ The ADR-812A can be configured as a single-address or two-address module as required.

P/N	Description	QTY	Multiply by	Addresses
ADR-833A	Extinguishing Control Unit		1	
LI-3000	Line Isolation Module for Class A/B		1	
TIP-224A	Addressable Indoor Alarm Notification Sounder		1	
TPS-73A	Auxiliary Power Supply		1	
TPS-34A	Auxiliary Power Supply		1	
TFP-3000	Fireman Phone Control Unit		25	
TFP-1CP	Single Handset Fireman Phone Unit		1	
TFP-806	Fireman Phone Socket		1	
TFP-828A	8-Zone Display Module for the TFP-80C		8	

Table 3 Address Requirements

4.1.2 Power Requirement Calculation

Calculate the current consumption of the control panel and attached devices in quiescence state and during alarm to determine battery capacity and check if any auxiliary power supplies are required. Please refer to section **Error! Reference source not found.**, page **Error! Bookmark not defined.** for additional details.

An external power supply (TPS-74A or TPS-34A) is required if any of the following conditions are met:

- Quiescence (normal) mode current consumption is more than 0.5A
- Alarm current is more than 4.0A
- Required battery capacity is more than 12AH

Please see section **0 ("When are Auxiliary Power Supplies Needed?")** on page 84 for a detailed explanation about the requirements of auxiliary power supplies.

Please refer to the TPS-34A technical manual for further details.

4.1.3 Pre-Installation Planning – Effect of Cable Characteristics on System Performance

The following table summarizes wiring characteristics' influence on system performance.

	SLC	Outputs
Electric Resistance	Minimal	Very High
Capacitance	High	No Influence
Inductance	High	Minimal
Mechanical Strength	High	High

4.2 Cable Planning

4.2.1 Cable Planning – SLC (Loop) Cable

The ADR-7000 allows wiring of the SLC loop in a closed loop (NFPA Style 6 Class A) as well as branching T-shaped (NFPA Style 4 Class B) wiring configuration.

Class A configuration requires a minimum of one LI-3000 or LI-3000E module per loop. The outgoing wiring in Class B or Class A cabling should be connected to the SLC Out terminator on the left (marked as ↓), and the Class A return wire to the terminator on the right (marked as ↑).

A group of devices should be connected in a section between two isolators. Each section is protected from short-circuit that may occur in other loop sections. Configure the loop card as Class A.

Configuring a loop as Class A does not reduce loop capacity, other than the addresses taken by the isolation modules. Each SLC loop is capable of addressing 127 devices, including the addresses occupied by the LI-3000 modules.

Use up to 20 LI-3000 line isolators per SLC loop.

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Note

Class A is defined per line card in the ADR-7000. In a control panel that has more than one line card, it is possible to have some of the line cards working in Class A, and the others working in Class B.

4.2.2 Cable Planning – SLC (Loop) Cable Selection

Use a twisted pair wire 18 to 12 AWG and follow the guidelines in the table below for wire selection.

Wire Type	Cross-Section	Maximum SLC Branch Length for given cross-section	
18 AWG	0.8 mm ²	950 m	3,130 ft.
16 AWG	1.3 mm ²	1,520 m	4,970 ft.
14 AWG	2.1 mm ²	2,420 m	7,940 ft.
12 AWG	3.3 mm ²	3,830 m	12,580 ft.

Table 4 Maximum SLC Loop Length

4.2.3 Cable Planning – 24Vdc Supply to Devices

The length of activation lines and 24Vdc Out cabling depends on the required current and cable size. Cable resistance running between the 24Vdc source to the I/O module and from the I/O module to the device should be calculated. Ensure that no device receives a voltage below its specified minimum operating value and that the total voltage drop will not exceed 2 volts, (i.e., the last device on the line receives at least 22Vdc when activated).

4.2.4 Cable Planning – 24Vdc Supply to ADR-823A Modules

It is recommended to use ADR-723 with the ADR-7000. If there is a need to use ADR-823A modules with the ADR-7000, use an LDO-7000 voltage adaptor connected to the 24Vdc output on the ADR-7000. Connect the ADR-7000's 24Vdc output to the **In** TB of the LDO-7000, and the **Out** TB of the LDO-7000 to the field.

4.2.5 Cable Planning – NAC Outputs

The length of NAC activation lines cabling depends on the required current and cable size. Cable resistance running between the NAC outputs to the device should be calculated. Ensure that no device receives a voltage below its specified minimum operating value and that the total voltage drop will not exceed 2 volts, (i.e., the last device on the line receives at least 22Vdc when activated).

4.2.6 Cable Planning – Remote Annunciators

RM-7000 remote annunciators are connected to the control panel via a four-wire connection (two-wire, single-core RS-485 data cable, and two-wire, single-core 24Vdc supply from either the control panel or an auxiliary power supply).

Cabling will be done as per the recommendation of RS-485 and local fire regulations – the more stringent of the two. Long distance cables or cables between buildings or rooftops shall be shielded.

The cabling from the control panel to the remote panels is in linear (bus) topology. Maximum total cable length (control panel to the last RM-7000) is 1,220 m.

The RS-485 standard does not specify cable characteristics. However, it is based on the RS-422 standard, which recommends 24 AWG twisted pair cable with a shunt capacitance of 16 pF per foot and 100 Ohm characteristic impedance. These recommendations should be used for RS-485 systems as well.

Many available cables are designed specifically to meet the recommendations of RS-422 and RS-485 specification. Another choice is the same cable commonly used in the Shielded Twisted Pair Ethernet cabling. This cable, commonly referred to as STP Category 5 cable, is defined by the EIA / TIA / ANSI 568 specification. The extremely high volume of Category 5 cable used makes it widely available and very inexpensive, often less than half the price of specialty RS-422 / 485 cabling. The cable has a typical capacitance of 14.5pF/ft and characteristic impedance of 100 Ohms.

Maximum total cable length is 4,000' (1,220m).

4.2.7 Cable Planning – LON-7000 Galvanic Networks

It is possible to extend the ADR-7000's capacity by networking two or more (as many as 32) control panels in a Master/Slave or Peer-to-Peer network.

In order to maximize the distance between ADR-7000 control panels interconnected in a LonWorks network use a twisted pair cable of the types described in the following table.

The wires should enter the cabinet through the "**Power Limited**" wire entrances on either the top right or bottom right of the ADR-7000 cabinet.

Wire Type	Belden 85102	Belden 8471	Level IV 22 AWG	JY (St) Y 2*2*0.8
Bus topology: Maximum bus length (meters)	2,700	2,700	1,400	900
Free topology Maximum node-to-node distance (meters)	500	400	400	320
Free topology Maximum wire length (meters)	500	500	500	500
Resistance (Ω/km)	15	28	55	73
Capacitance (nF/km)	56	72	56 (at 1 MHz)	98

Table 1 Maximum LON Cabling Length

Cabling topology can be bus, free, redundant ring, or a mixture of any two or all three topologies.

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Note

Redundant ring topology can be done only via fiber-optic cabling.

4.2.8 Cable Planning – LON-7000 Fiber Optic Networks

Cable length limitations, requirements for galvanic isolation, or environmental electromagnetic interference may require network connection via a fiber-optic connection.

The LRW-102 provides an easy solution for implementation of extending LonWorks networks. The LRW-102 is completely transparent as far as the LonWorks protocol is concerned, and does not require any additional addresses. The LRW-102 allows implementation of fiber-optic networks in point-to-point, bus, or Class A redundant ring topologies. The LRW-102 has a built-in support for redundant ring topology.

4.2.9 Cabling Planning – ADR-7000 to TFP-3000 Fireman's Phone

Use two-wire cables (twisted-pair is recommended) 18 to 12 AWG (cross section of 0.8 to 3.3 mm²).

Two pairs from the ADR-7000 to the TFP-3000 – one pair for 24Vdc supply and one pair for SLC communication.

4.2.10 Pre-Installation Planning – Current Consumption and Battery Capacity

Additional TPS-34A power supplies are required if one or more of the following conditions is true:

- The quiescence 24V current draw exceeds the control panel's power supply limitations (0.5A for ADR-4004TSW)
- The 24V current draw in alarm exceeds the control panel's power supply limitations (4.0A for ADR-4004TSW)
- There is a need for batteries in capacity that exceeds the control panel's power supply limitations (12AH for ADR-4004TSW)
- The voltage drop on the 24V lines exceeds allowed limitation (no more than 2V at the furthest device, while still leaving sufficient voltage for the device to operate).

Calculate the power requirement for each ADR-7000 control panels to see whether additional power supplies are needed. See "When are auxiliary power supplies needed?" on page 86 for current draw calculations.

4.2.11 Pre-Installation Planning – Activation Matrices

Plan the activation logic as specified by the consultant and local standards and regulations.

4.2.12 Pre-Installation – Releasing Planning

The size and quantity of extinguishing devices shall be calculated by authorized personnel in accordance to the consultant's requirements and local regulations.

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Note

Do not activate extinguishing devices by a Global Matrix (activated by logical zones of devices physically connected to other control panels on the network).

4.3 Wiring

Cable selection and cabling work shall be done according the rules and regulations specified by the authority having jurisdiction and planning consultant.

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).

4.4 Installation of Detectors, I/O Modules, and Other Modules

Install detectors, I/O modules, and other equipment as necessary. Program each device's address prior to connecting it to the system.

4.4.1 Mounting the Control Panel's Cabinet

The control panel's cabinet should be installed in a clean, dry, vibration-free indoor location. Avoid exposure to severe conditions such as high humidity, dust and air pollution.

The ADR-7000 should be mounted on a solid wall in order to allow easy access for installation, daily operations and maintenance.

The cabinet should be mounted by using the two sliding slots on the upper back part of it and a screw hole on the lower part.

Mains input (AC power) should enter the cabinet through either the top left or bottom left knockout holes. Low voltage connections (SLC loops; 24Vdc; RS-232 to a NET-7000, printer, or PC; LonWorks connection to other control panels; RS-485 to RM-7000; and NAC outputs) should be connected through the top right, bottom right, or back knockout holes – according to the installer's convenience.

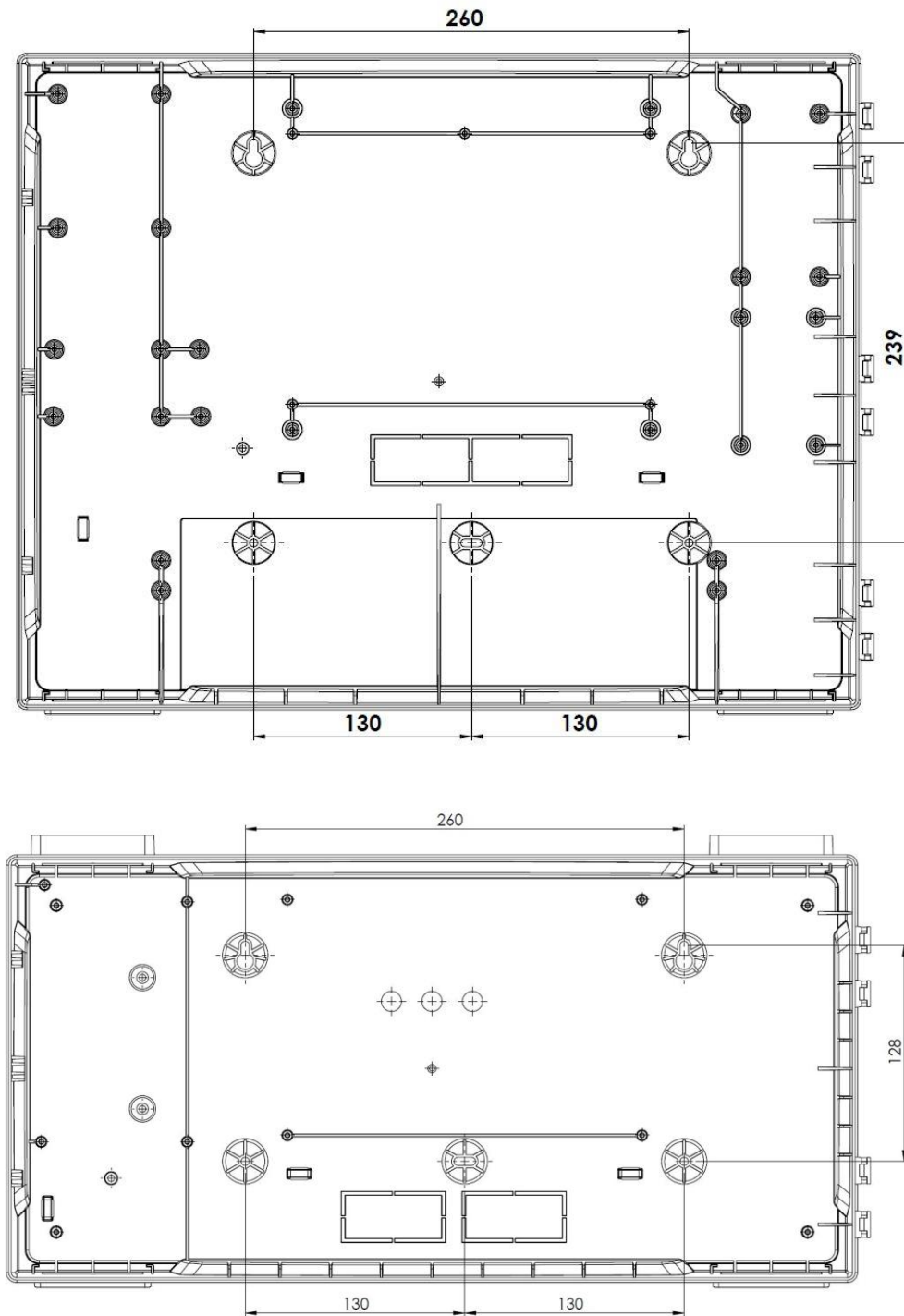


Figure 4 Mounting holes in the Chassis

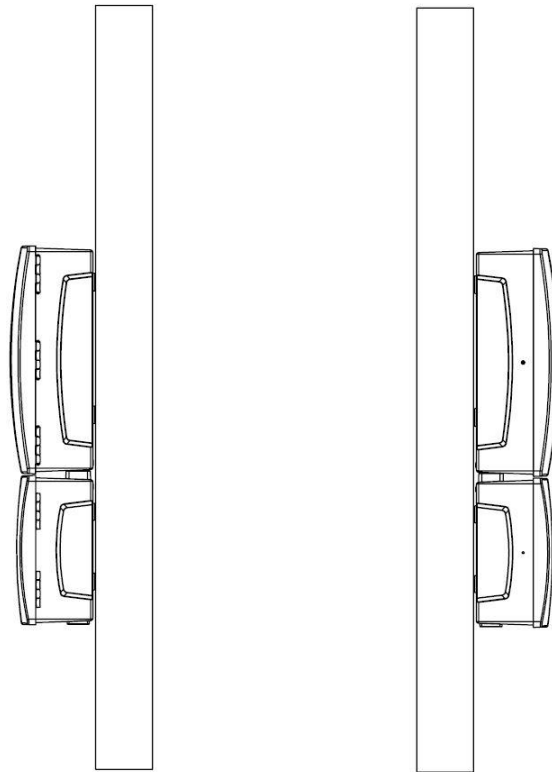


Figure 5 Mounting

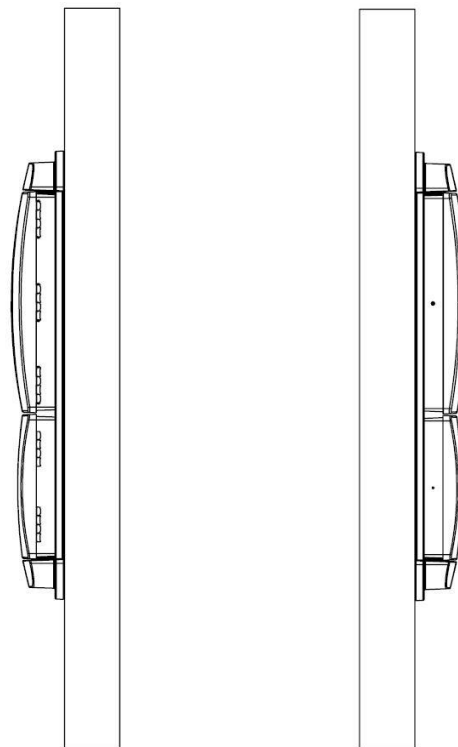


Figure 6 Flush Mounting

The wiring opening on the top right of the cabinet should be covered with a metal sheet. If no wires enter the cabinet through this opening close it with the plain cover, otherwise use the cover with two round holes and a plastic sealing grommet.

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Note

All power-limited circuit wiring must be at least 0.25" (6.35mm) away from any non power-limited circuit wiring. Use different entries of the cabinet or conduits. See Figure 27 on page 11).

4.4.2 Field Connection Diagram

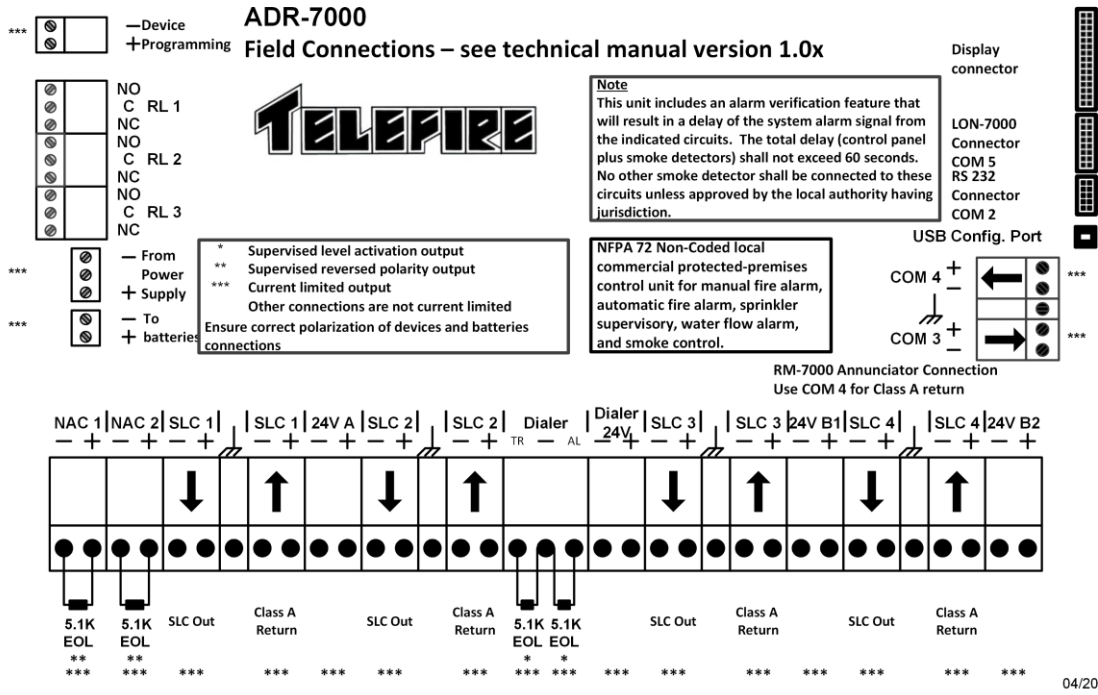


Figure 7 Connection Diagram – Main Board (ADR-7000 and SAVER-7000)

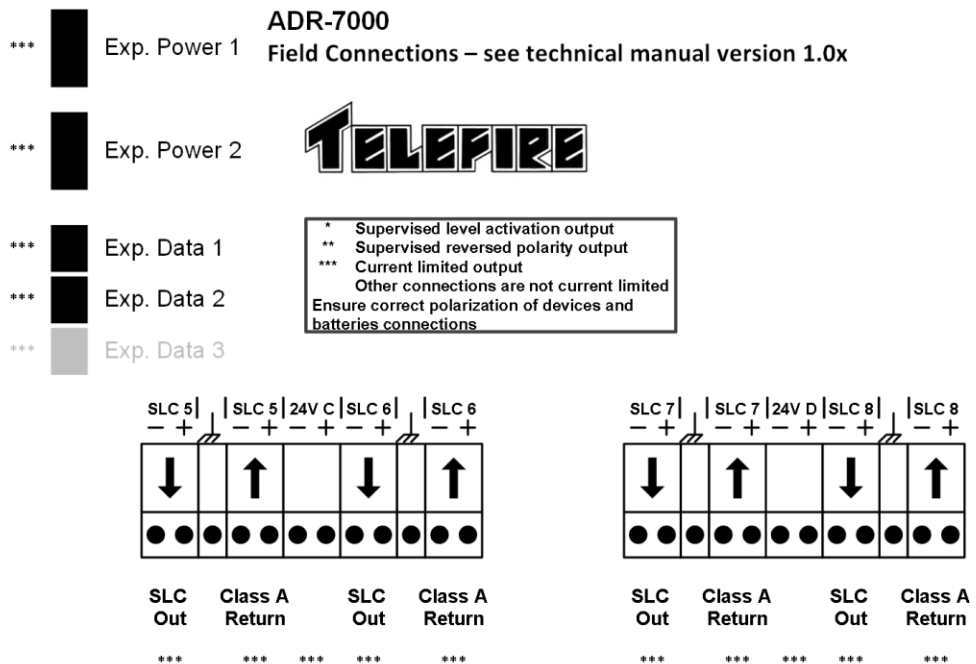


Figure 8 Connection Diagram – Loop Expansion Board (ADR-7000 only)

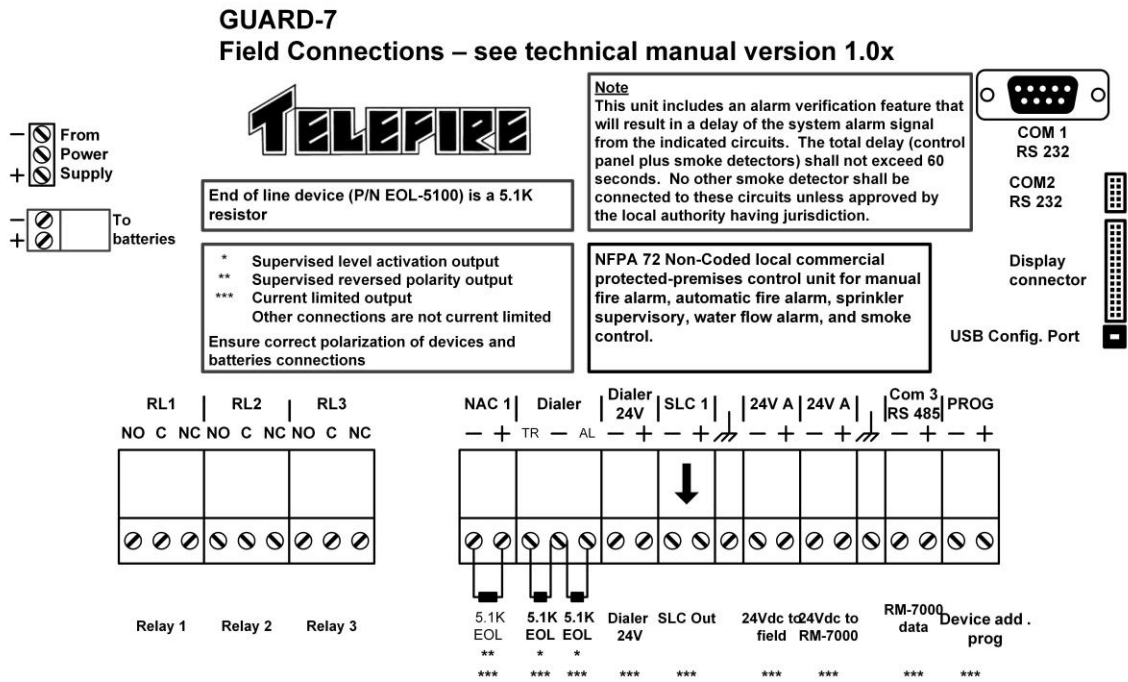


Figure 9 Connection diagram – GUARD-7

4.4.3 Testing the SLC Loops

Resistance measurements:

Short the end of one branch and measure the resistance from the connections of the loop to the control panel. Make sure that the resistance does not exceed 40Ω. Repeat for each input or SLC. For systems that have an NFPA SLC style 4 T branching repeat the test for each branch separately. Make sure that the sum of all branches in a loop does not exceed 40Ω.

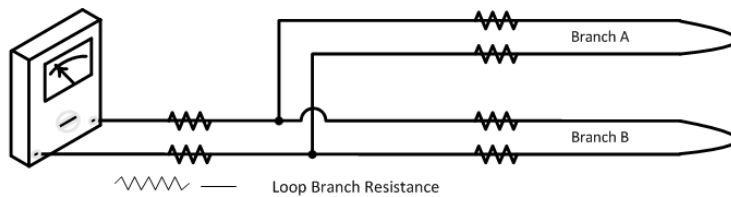


Figure 10 Testing Loop Resistance

Capacitance measurements:

Connect all branches and ensure that the total capacitance of a loop does not exceed 1.0μF

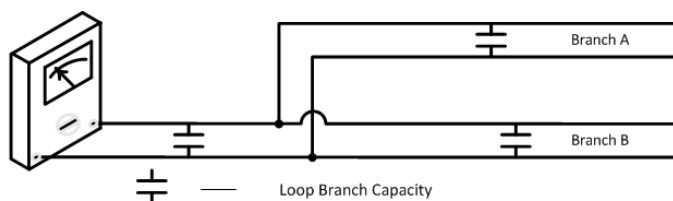


Figure 11 Testing Loop Capacitance

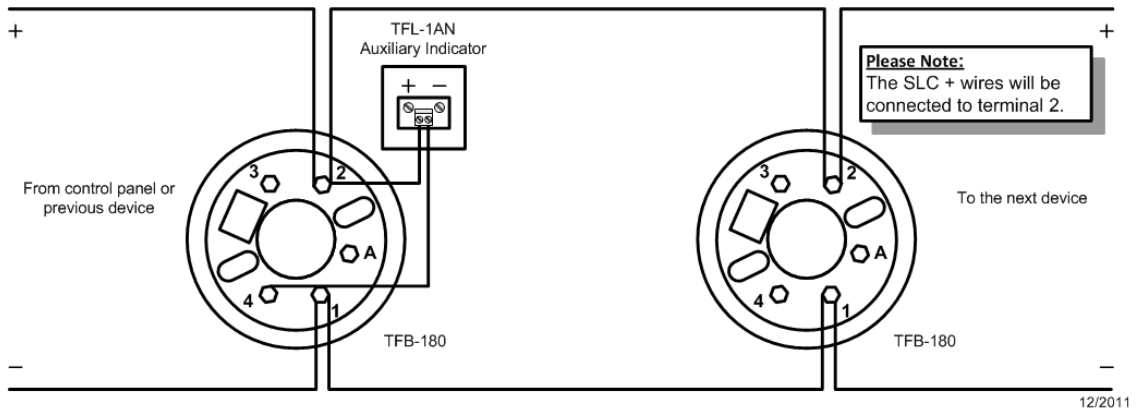


Figure 12 Example connection – detectors

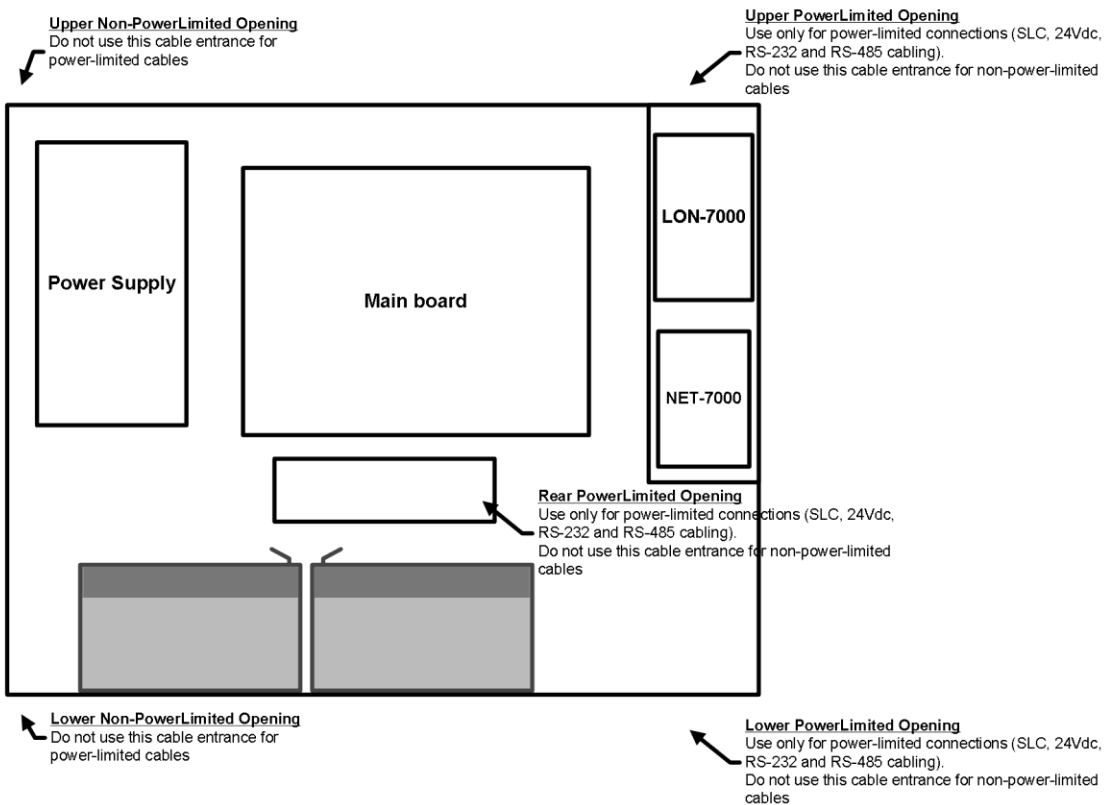


Figure 13 ADR-7000 cable routing

4.4.4 Connecting Low-Voltage Devices

Warning

Measure the wiring to ensure there are no shorts or ground faults prior to connecting field cabling to the control panel.

Connection or adding loops, i/o modules, detectors, etc., will be performed when all power supply sources (mains and batteries) are disconnected.

Connect the loops, 24Vdc supply to field, control panel outputs (dialer, NACs, relays), remote annunciators, and other panels, as applicable. See Figure 7 and Figure 8 for field connection diagram.



Warning

Do not connect extinguishing devices at this time. Use a dummy load to test.

4.4.5 Connecting AC Power

Connect the control panel's AC input line to a dedicated circuit breaker that is not shared by other appliances or equipment. It is recommended that the circuit breaker shall be clearly labeled "FIRE ALARM".

The power cable should enter the control panel through either the top left or bottom left knockout opening and separated from the field wiring. Use a plastic bushing that fits the opening. Connect the Live and Neutral wires to the proper terminal. Connect the Ground wire directly to the panel's chassis using the marked ground screw.

4.4.6 Site-Specific Configuration (Programming)

Control panel programming shall include the control panel's configuration; device properties and description; and activation matrices.

It can be done in one of two ways:

- Pre-planning by using the TCS-7030 software and creating a configuration plan and downloading it to the control panel. Compare planned and installed configuration after download.
- Perform auto-program by using **Error! Reference source not found.** (see section **Error! Reference source not found.** on page **Error! Bookmark not defined.**). The control panel shall scan every address on every loop. Every device that is physically connected to the control panel shall automatically be enabled, and configured as the default options for that particular device type. It is possible to modify parameters and options from the control panel or tcs730.

See chapter **Error! Reference source not found.** on page **Error! Bookmark not defined.** for a detailed description.

4.4.7 Ensure All Devices are identified

Compare the number of devices scanned by the control panel to planned devices to check for misconfigured or uninstalled devices.

4.4.8 Initialize Detectors

Each smoke detector adjusts itself gradually according to changes of environmental conditions, by measuring and calculating the new reference value needed for signal processing.

This process normally requires a period of several hours. When the system is turned on for the first time, or after installing or changing a detector, it is recommended to perform the initialization process.

If this action is not performed, the adjustment will be completed automatically within a few days of operation.

See section **Error! Reference source not found.** on page **Error! Bookmark not defined.** for an explanation on performing detector initialization.



Note

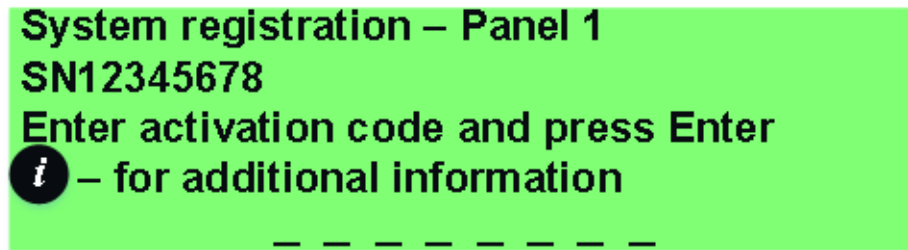
Ensure that detector initialization is performed when all detectors are in a smoke-free condition.

4.5 Post-Installation

4.5.1 Control Panel Activation

During the first power on you will be asked to key in an activation code. This 8 digit is unique to each control panel.

You can get the code with a mobile phone application **Telefire Reg7** that is available in Google Play app store for Android phones, or with a phone call to **03 970 0444**.



Screen 9 registration screen

4.5.2 Field Test

Perform a Walk Test and activate each initiating device to verify that it is working properly. See section **Error! Reference source not found.** on page **Error! Bookmark not defined.** for details on performing a Walk Test.



Warning

Testing detectors with an aerosol spray may cause increased contamination in the labyrinth chamber due to accumulation of oil residue and dust. This accumulation may shorten the detectors life-span and require it to be sent to the factory for cleaning.

4.5.3 Verification of Conditional Activation

Ensure that extinguishing devices are not armed. Connect a dummy load to extinguishing device outputs and test activations of all output devices.

When you are satisfied that all activation programming is according to design specifications and that there are no intermittent errors in the system you can arm the extinguishing devices.

4.5.4 Arm Extinguishing Systems

Ensure all input devices are in normal state and no devices are in alarm and arm the extinguishing mechanisms.

4.5.5 Change passwords

It is recommended to change the default passwords after completing the installation and system testing to prevent unauthorized access. See section **Error! Reference source not found.** on page **Error! Bookmark not defined.** for explanation on changing passwords.

**Warning**

Forgotten passwords require factory reset: if you lose or forget the password, the panel must be sent back to the factory to be reset. There is no field option for gaining access to the panel without a valid password.

Once you have changed the password, it is important that you write it down somewhere and store it in a safe place.

4.5.6 System Documentation

Attach the followings to the system's front panel, or place it in a prominent position nearby:

- A list of areas/zones as installed in the protected premises
- Actions to be taken upon events of alarm or fault by the operators
- The name of the installing company and the service telephone number should be clearly marked on the panel itself or on an attached diagram

5 Automatic Extinguishing

After receiving an alarm from the zone or across zones that belong to the automatic extinguishing outputs, the extinguishing process starts. If an extinguishing delay was defined, the delay system starts to operate. At the end of the delay the extinguishing output (NAC A in ADR-823A or any NAC in the ADR-723) is activated. The default duration of the extinguishing pulse is 15 seconds.

The extinguishing pulse can be configured from 5 to 55 seconds in 5 second steps; in steps of 1 minutes between one minute to 239 minutes, or constant (that is, it will stay on until the control panel is reset).

EN 12094

EN 12094 Requirement

See section 14.6 on page 87 for ADR-7000 EN 12094-1 compliance.

UL 864

UL Requirement

UL 864 paragraph 36.1.7 states that "An automatic delay provided prior to release operation by a system shall be a maximum of 60 seconds, timed from a release initiation condition, either from the actuation of a single detector, or from the actuation of the second circuit or detector for cross-zone and single-zone multiple-detector, or a combination of the two operations"

IS 1220

IS 1220 Requirement

Do not combine alarm verification utilizing delay and cross zone verification. Total delay for activation of extinguishing (detector verification delay and extinguishing activation delay) shall not exceed 60 seconds.

5.1 Extinguishing Output and Extinguishing Controller

An output device that is configured as an extinguishing controller or an extinguishing output differs from an output that is configured as an "And" matrix in several ways:

- An extinguishing can be configured to provide an extinguishing pulse with a configurable duration or until the control panel is reset
- An extinguishing output has a higher priority when allocating currents
- An extinguishing output can be configured to be triggered by a single input
- An extinguishing matrix may include inputs (Pressostat, Emergency Abort, Emergency Hold, Gas flow switch, or Manual Only switch)
- Activation of an extinguishing output will result in a notification that extinguishing was activated in the control panel. Pressing the **Reset** key will not cancel this indication in order to ensure extinguishing agent replacement or refill

5.2 Manual Activation

See chapter 8 on page 41 for a detailed explanation about device programming.

5.3 Extinguishing Delay



Note

The control panel supports EN 12094 "Hold" function and UL 864 "Abort" function as per the appropriate standard requirement.

The Control panel supports fire extinguishing Hold (EN 12094) / Abort (UL 864) buttons. A device defined as a fire extinguishing Hold (EN 12094) / Abort (UL 864) button delays fire extinguishing activation as long as the button is pressed.

Releasing the button will resume the countdown that had been suspended while the button was pressed, if the countdown had not ended. If the countdown had ended, fire extinguishing will activate within 5 seconds after the button was released.

Pressing the Extinguishing activation call point overrides this function.

See chapter 8 on page 41 for a detailed explanation about device programming.

5.4 Extinguishing Disconnect

UL 864

UL Requirement

UL 864 requires that extinguishing disconnect shall be a physical switch and not accomplished by software.

Extinguishing disconnect shall be shown as a supervisory event.

An extinguishing disconnect switch shall be installed near the extinguishing device.

Activating the cut off extinguishing switch (a key) will cut off the fire extinguishing output circuit. The fire extinguishing output circuit will be deactivated until the switch is returned to normal mode – this is intended for use during service and/or maintenance work.

The extinguishing disconnect is displayed on the control panel as a supervisory event.

The extinguishing disconnect switch will be installed near the fire extinguishing device.

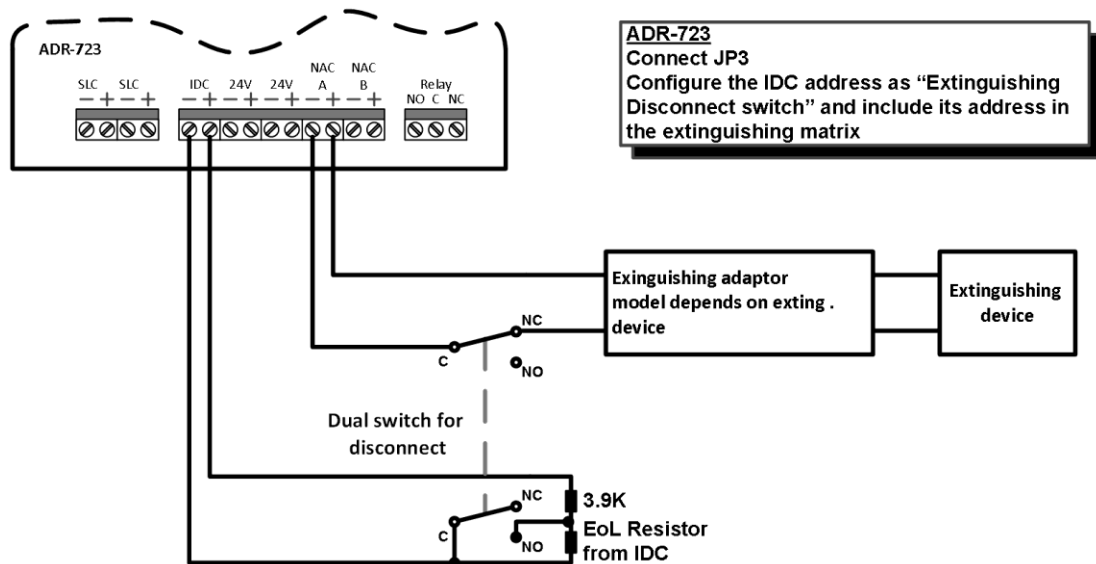


Figure 14 Extinguishing disconnect switch

See chapter 8 on page 41 for a detailed explanation about device programming.

5.5 Extinguishing Notification and Action to Perform after Release

After extinguishing activation, the display will indicate that an extinguishing device was activated.

Pressing the **Reset** key will not cancel this indication in order to ensure cylinder replacement or refill.

*i***Note**

Re-fill or replace the extinguishing device, enter programming mode and return the control panel to normal operation select **5 Utilities** on the main menu and then **2 Clear Activated Extinguisher** in order to return the control panel to normal operation.

This action shall be performed by authorized personnel.

Ensure that the control panel is back to normal operation.

UL 864**UL Requirement**

UL 864 paragraph 36.1.7 states that "An automatic delay provided prior to release operation by a system shall be a maximum of 60 seconds, timed from a release initiation condition, either from the actuation of a single detector, or from the actuation of the second circuit or detector for cross-zone and single-zone multiple-detector, or a combination of the two operations"

*!***Warning**

Connect only extinguishing devices that are authorized by Telefire and the authority having jurisdiction.

6 Display and Keyboard

This chapter describes the panel's display, which includes an LCD, LED system indicators, and keyboard that are used by operators for normal operations and by programmers during installation and maintenance. A password is required to respond from the panel keys.

The ADR-7000's user interface panel is divided into three parts:

The leftmost part has four keys to silence and resound alarms, perform practice drills, silence the buzzer, and reset the control panel. Below these keys in a space for optional zone display LEDs.

The central part had a 260 by 64 pixel graphical LCD, and various keys for the operator and allows the system Programmer/Supervisor to execute operations such as changing detector's sensitivity, turning devices Enable / Disable, setting operating modes, etc., Programmer / Supervisor actions can only be performed after keying in a second-level password.

On the right are status and informational indicating LEDs.

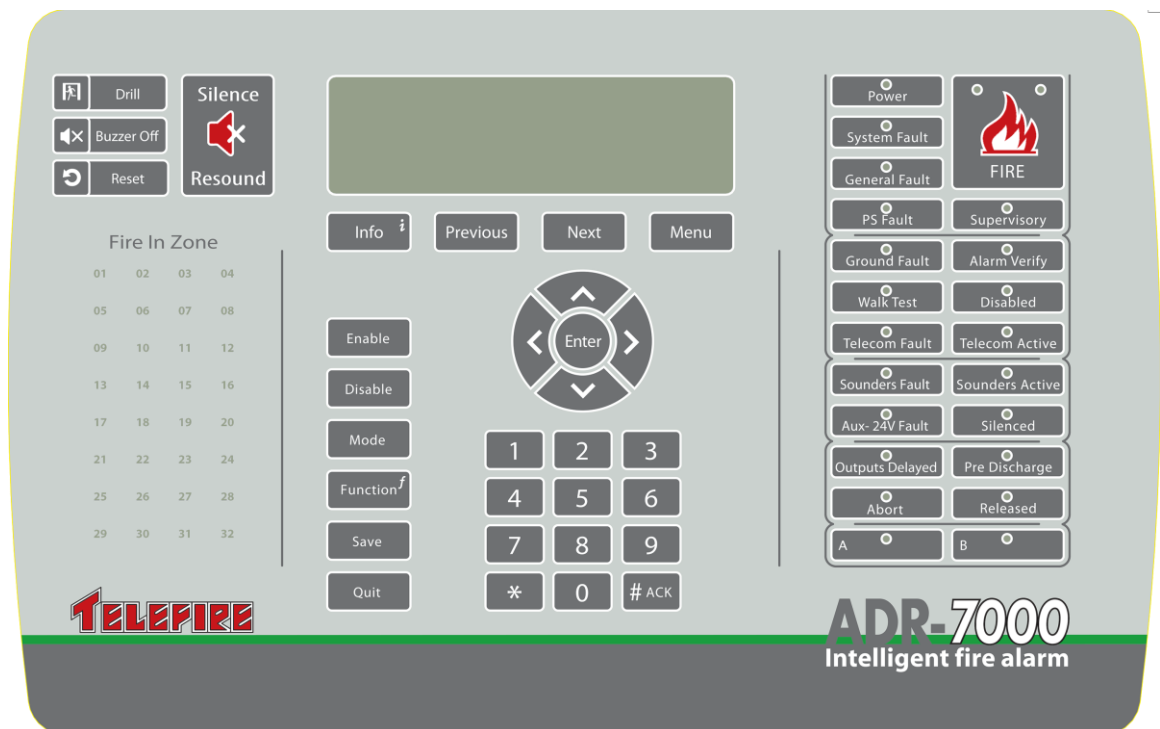


Figure 15 ADR-7000 Display and Keyboard

6.1 LCD Display

A 260 by 64 pixel graphical LCD is used to indicate clearly system status and events. It is lit when in use and will stay on for about two minutes after the last keypress. When on secondary power (batteries) the LCD will be lit for ten seconds after the last keypress.

6.2 LEDs

LED	Meaning
Power	Green LED. Indicates the presence of input power (AC or battery). <ul style="list-style-type: none"> • Always on in normal operation • Flashes when there is no main power until Acknowledge key is depressed. Additionally there will be additional warning in the LCD display. Pressing the Acknowledge key will turn the LED off.
System Fault	Yellow LED. Indicates a hung processor. <ul style="list-style-type: none"> • Off during normal operation • Solid on when the processor hangs.
General Fault	Yellow LED. Indicates a fault event or one of the connected devices – see additional yellow LEDs and the LCD display for addition display. <ul style="list-style-type: none"> • Off during normal operation • Flashes to indicate a fault event or one of the connected devices – see additional yellow LEDs and the LCD display for addition display. Pressing Acknowledge will turn the LED solid on until resolution of the problem
PS Fault	Yellow LED. Indicates a power fault (loss of AC power; Disconnected battery; Weak battery) <ul style="list-style-type: none"> • Off during normal operation • Flashes to indicate a ground fault. Pressing Acknowledge will turn the LED solid on until resolution of the problem
Ground Fault	Yellow LED. Indicates a ground leak. <ul style="list-style-type: none"> • Off during normal operation • Flashes to indicate a ground fault. Pressing Acknowledge will turn the LED solid on until resolution of the problem
Walk Test	Yellow LED. Indicates test mode. <ul style="list-style-type: none"> • Off during normal operation, • On during Field Test.
Telecom Fault	Yellow LED. Indicates a fault event in the dialer line. Additionally a fault alert marks this event. <ul style="list-style-type: none"> • Solid on in red during dialing • Flashes in yellow when there is a fault event in the dialer. Pressing the Acknowledge key will turn the LED on until the fault is resolved • Solid yellow when the dialer is disabled
Sounders Fault	Yellow LED. Flashes if present fault in general sounders, turns to solid yellow upon pressing # button.

LED	Meaning
Aux 24V Fault	Yellow LED. Indicates a fault in the auxiliary 24Vdc outputs. Additional detail is shown on the LCD display. <ul style="list-style-type: none"> • Off during normal operation • Flashes on upon a fault event in any output device (other than Horn and outputs configured as "General, Silenced"). Pressing Acknowledge will turn the LED solid on until resolution of the problem
Outputs Delayed	Yellow LED. Indicates that an output is delayed and will be activated once the countdown period is over. <ul style="list-style-type: none"> • Off during normal operation • On during the countdown process
Abort	Yellow LED. Indicates an aborted extinguishing operation. Off during normal operation <ul style="list-style-type: none"> • Off during normal operation • On following an abort
A	Reserved for future use
Fire	Red LED. Indicates fire alarm. The device in alarm is displayed on the LCD display. <ul style="list-style-type: none"> • Off in normal state • Flashes during alarm. Pressing the Acknowledge key will turn the LED on until the control panel is reset
Supervisory	Yellow LED. Indicates a supervisory event. <ul style="list-style-type: none"> • Off during normal operation • The LED flashes as long as the supervisory event is in force.
Alarm Verify	Yellow LED. Indicates alarm verification. Also displayed on the LCD display. <ul style="list-style-type: none"> • Off in normal operation • Flashes during alarm verification
Disabled	Yellow LED. Indicates a disabled input, or output. Additional detail is shown on the LCD display. <ul style="list-style-type: none"> • Off during normal operation • On when one of the inputs or outputs is disabled. Additional detail is shown on the LCD display. The LED will stay on until all inputs, and outputs are enabled.

LED	Meaning
Telecom Active	Yellow LED. Indicates a fault event in the dialer line. Additionally a fault alert marks this event. <ul style="list-style-type: none"> • Off in normal operation • Solid on in red during dialing • Flashes in yellow when there is a fault event in the dialer. Pressing the Acknowledge key will turn the LED on until the fault is resolved • Solid yellow when the dialer is disabled.
Sounders Active	Red/Yellow LED. Indicates a situation where the horns are disabled due to a fault in the horn line or disablement of the horn output. <ul style="list-style-type: none"> • Off during normal operation • Slid on red during horn activation • Flashes in Yellow when there is a fault in the horn line. Pressing Acknowledge will turn the LED solid on until resolution of the problem Solid yellow when horn output is disabled
Silenced	Red LED. Yellow LED. Indicates silenced condition. <ul style="list-style-type: none"> • Off during normal operation and during alarm • Flashes during alarm after silencing.
Pre Discharge	Red LED. Indicates that an extinguishing output is delayed and will be activated once the countdown period is over. <ul style="list-style-type: none"> • Off during normal operation • Flashes during the countdown process
Released	Red LED. Indicates that an extinguishing output was activated. <ul style="list-style-type: none"> • Off during normal operation • Flashes during the countdown process
B	Reserved for future use

Table 1 Operator Panel – Indicating LEDs

6.3 Operator Keys

Key	Function
Evacuate / Resound	Allows the Operator to initiate an evacuation procedure. Requires password. If a sounders was silenced, pressing Resound renewal all general sounders. Requires password.
Dialer	Allows the Operator to enable/disable the automatic dialer. Requires password.

Key	Function
Buzzer Off	Pressing this key silences only internal buzzer.
Recall Memory	<ul style="list-style-type: none"> • In normal mode – used to scan through the existing events. The top row of the LCD will show the recalled event number and description. The total number of events will be displayed on the lower right. • In program mode – moves the address to the next active device.
Silence	Pressing this key silences the devices connected to the General Alarm NAC (if defined as Silenced), HORN output, and all addressable outputs that are defined as "silenced".
Reset	Pressing this key resets and restores the system to normal operation mode. All NACs are turned off, input and output modules return to normal operation mode, addressable detectors receive a reset signal, the LCD displays "System OK" and history report is updated. The system will resound if any Alarm or Trouble occurs.

Table 2 Operator Panel – Operator Keys

6.4 Numerical and Arrow Keys

6.4.1 Numerical Keys

The numeric keys are used for entering values for system initialization, programming, daily operation, password entering, and selecting menu field values on the LCD.

6.4.2 Arrow Keys

The arrow keys are used for navigating from field to field on the screen during system programming and for browsing through the memory.

7 System Configuration (Programming) Process

The ADR-7000's site-specific data can be programmed and modified on site to respond to each site's specific requirements.

ADR-3000 programming requires level 3 access.

After entering programming mode it is possible to set system configuration; program devices, including alarm parameters and activation logic of NACs; create groups; change passwords; and re-initialize detectors.

7.1 Menu Structure

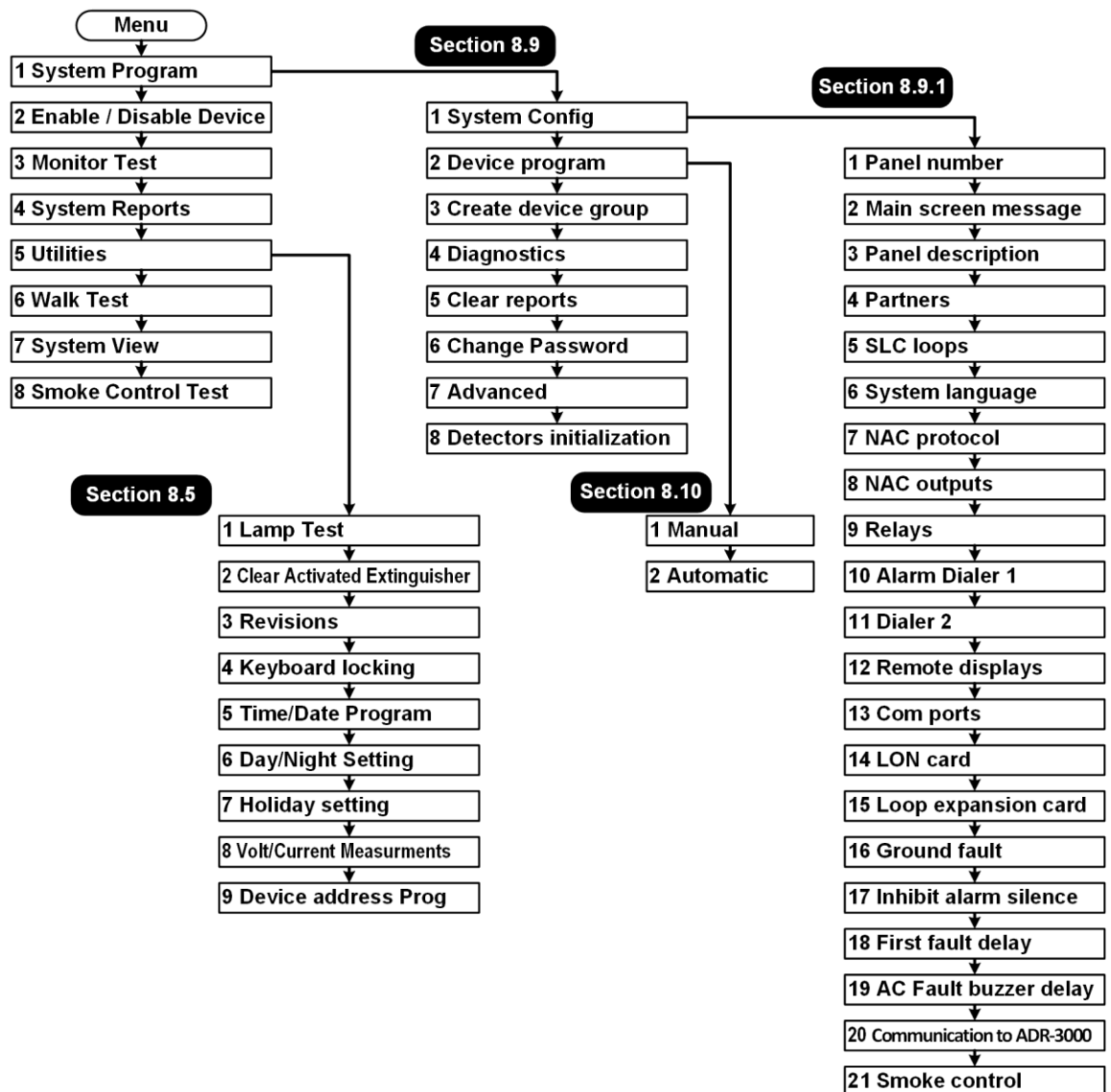


Figure 16 Menu structure

UL
UL 864 paragraph 59.1 Compliance

The ADR-7000 product family is UL 864 complaint, and does not allow setting that contradict the standard's requirements.

The following products mentioned in this manual were not tested or listed by UL and should not be installed where UL listing is required:

- TFH-280A and TFH-220A (Heat Detectors)
- ADR-812A and ADR-818A (Input modules)
- TPS-34A (auxiliary power supply – use a UL listed 24Vdc power supply)
- TIP-224A (Sounder)
- ADR-833A (Extinguishing controller)
- TPH-482A and TPH 442A (photo / heat multi-sensor detectors)
-

7.2 Entering Configuration State

Press Menu and select **1 System Program**. Enter the password and press **Enter**.

7.3 Configuration Process

Programming the system is in five steps:

- Enter programming state
- Program control panel general setting
- Program device-specific parameters for input devices
- Program output devices / NACs operating mode and activation conditions
- Save system configuration

i
Note

After about 30 minutes without keyboard activity during programming mode the control panel's buzzer is activated to remind you not to leave the system in programming mode.

7.4 Saving the Configuration and Exit Out of System Configuration

When exiting programming mode the control panel will display a menu with 3 choices:

- **1** – save and exit
- **2** – discard changes and exit
- **#** – cancel exit and go back to programming

Select the desired option by pressing the appropriate key.

UL 864**UL Requirement**

UL 864 paragraph 36.1.7 states that "An automatic delay provided prior to release operation by a system shall be a maximum of 60 seconds, timed from a release initiation condition, either from the actuation of a single detector, or from the actuation of the second circuit or detector for cross-zone and single-zone multiple-detector, or a combination of the two operations"

8 System Configuration (Programming)

Moving between fields is done with the ► and ◀ keys. Changing the field's value is done with the ▲ and ▼ keys or by entering the value with the numeric keys.

You can select menus by entering the menu number or by scrolling with the ▲ and ▼ keys.

8.1 System Configuration

The system programming menu supports matching the system to the site requirements. You can set the configure the system, program field devices, check reports, etc..

Please see sections 8.9 onwards starting on page 54 for a detailed explanation of the system programming.

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Note

Telefire's ADR-7000 product line complies with the requirements of several standards, including UL 864, IS 1220, EN 54, EN 12094, and GOST, and may comply with options or requirements of one of the standards and are not compliant with another standard.

Where the control panel allows setting of a parameter that are outside the range of one of the standards, we included an appropriate warning in the relevant area of the manual.

UL 864

UL Requirement

UL 864 paragraph 36.1.7 states that "An automatic delay provided prior to release operation by a system shall be a maximum of 60 seconds, timed from a release initiation condition, either from the actuation of a single detector, or from the actuation of the second circuit or detector for cross-zone and single-zone multiple-detector, or a combination of the two operations"

IS 1220

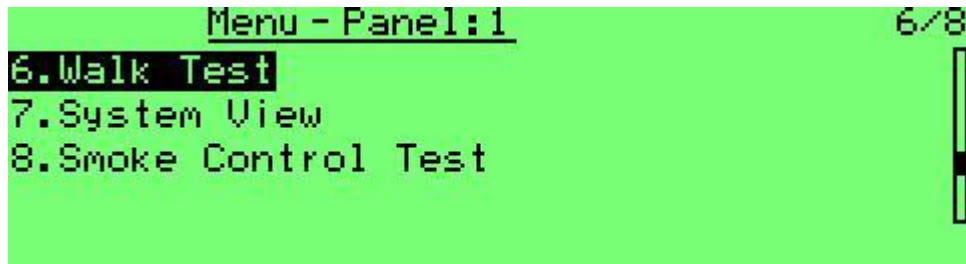
IS 1220 Requirement

Do not combine alarm verification utilizing delay and cross zone verification. Total delay for activation of extinguishing (detector verification delay and extinguishing activation delay) shall not exceed 60 seconds.

```

Menu - Panel:1 1/8
1.System Program
2.Enable/Disable Device
3.Monitor Test
4.System Reports
5.Utilities
    
```

Screen 10 Main Menu (1 of 2)



Screen 11 Main Menu (1 of 2)

8.2 Enablement / Disablement

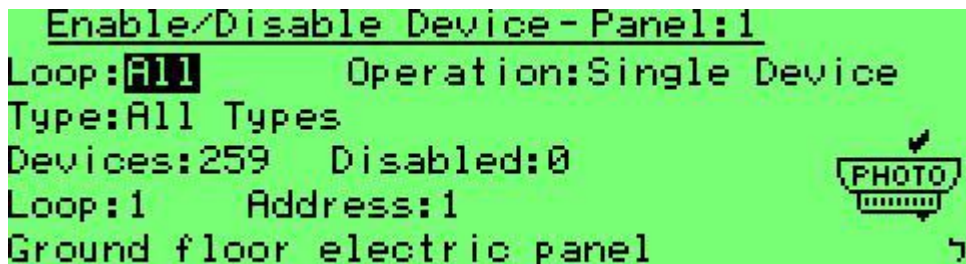
8.2.1 Enabling and Disabling a Device

This function is used for temporary disabling a device. A disabled device shall not cause any fault (with the exception of a Disablement notification); disable input devices shall not cause an alarm and a disabled output device shall not be activated in case of alarm. Press Menu to get to the main menu. Select 2. Enable/Disable Device. Select panel number and whether the operation shall be performed for a device, a Zone, a Group, or Main Board Outputs.



Screen 12 Enable / Disable primary screen

Press **Enter** and you can see the following screen:



Screen 13 Enable / Disable Device

Here you can select the device or devices that will be enabled or disabled:

- Loop: all loops, or a specific loop (1-8)
- Operation: single device or all devices with the following parameters:
- Device Type: All Types, or all devices of the following type:
 - Photoelectric detectors
 - Heat detectors (select all modes, fixed temp or rate of rise)
 - Gas detectors
 - Input modules (all input modules or only those modules who cause the following: Alarm input; Reset Switch; Silence; Disconnect; Supervisory; Abort; Release; Alarm Matrix; or Fan FC)

- Switch (select All Modes; Reset Switch; Silence; Disconnect; Supervisory; Abort; Release; Alarm Matrix; or Fan FC)
- Power Supply
- Sounder
- Lamp
- Extinguisher
- Extinguisher Control
- Control Output (select All Modes; Alarm; Fault; Fan; or Damper)
- Isolator
- CO / Heat Detector
- Photo / Heat Detector
- Supervisory Out
- Fire Phone Jack
- Fire Phone Lamp
- SCM (select all modes; Fan / Damper; or Engage)

After selecting device type you can select the specific device address.

8.2.2 Enabling and Disabling a Zone

Selecting Operation by Zone shall display the following screen:

```

Enable/Disable Device - Panel:1
Zone:1          Operation:All Devices
Type:All Types
Devices:0      Disabled:0
    
```

Screen 14 Enable / Disable Zone

This operation allows the disablement or enablement of devices in a specific logical zone, rather than a physical loop. Device selection and criteria are identical to the selection process by loop or address, as detailed in the previous paragraphs.

```

Enable/Disable Device - Panel:1
Group:1        Group 1
Devices:0      Disabled:0
    
```

Screen 15 Enable / Disable Group

This operation allows the disablement or enablement of devices by group, rather than a physical loop. Device selection and criteria are identical to the selection process by loop or address, as detailed in the previous paragraphs.

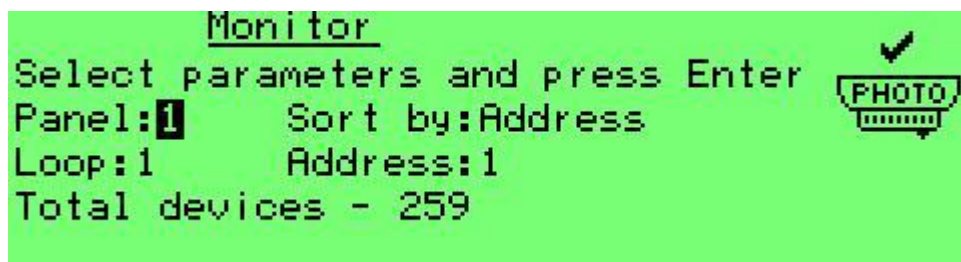


Screen 16 Enable / Disable Main Board Outputs

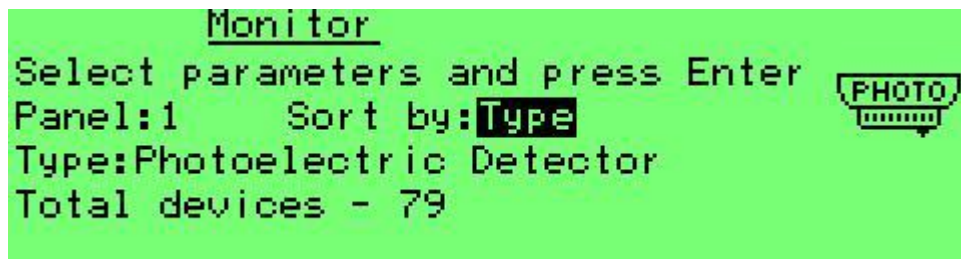
This operation allows the disablement or enablement of main board outputs (Alarm Dialer; FWRE Dialer; NAC 1; NAC 2; Relay 1; Relay 2; or Relay 3), rather than a physical loop. Select the specific device using the up / down arrows.

8.3 Monitor

The Monitor feature allows the graphic display of the physical sensor's output of a selected device. You can also perform a test of the device.



Screen 17 Monitor Screen: Sort by Address



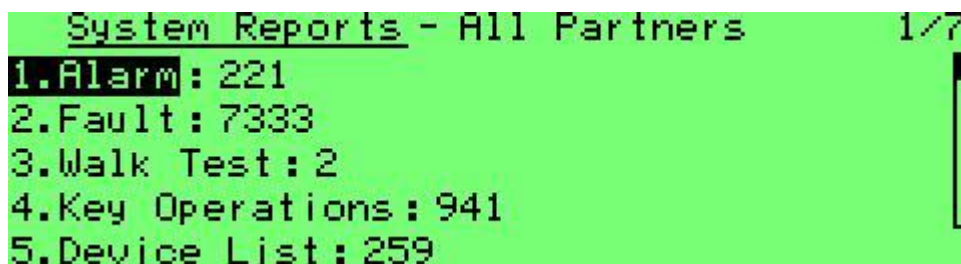
Screen 18 Monitor Screen: Sort by Type

Device selection is similar to device selection in Enable / Disable menu.

8.4 System Reports

System reports allows you to see a detailed report

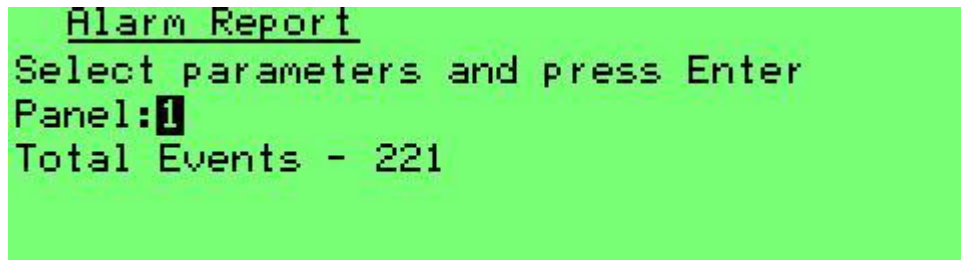
The System Reports Menu allows you to get details on the number of sirens, faults, testing the detectors in the field, key actions, the list of devices in the system, active output circuits, and maintenance recommendations.



Screen 19 System reports

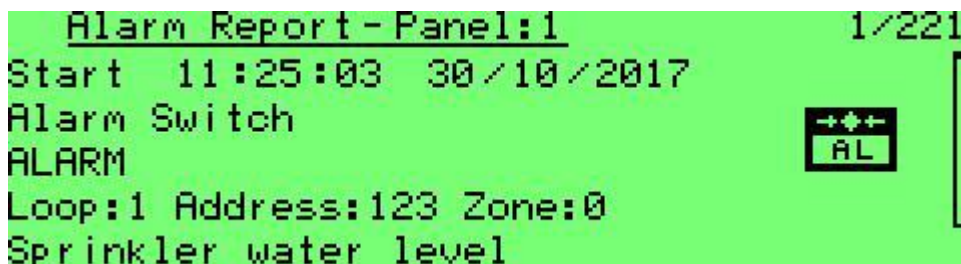
8.4.1 Alarms

System reports detail the number of alarms, faults, devices under test, key operations, device list, active outputs and preventive maintenance recommendations.



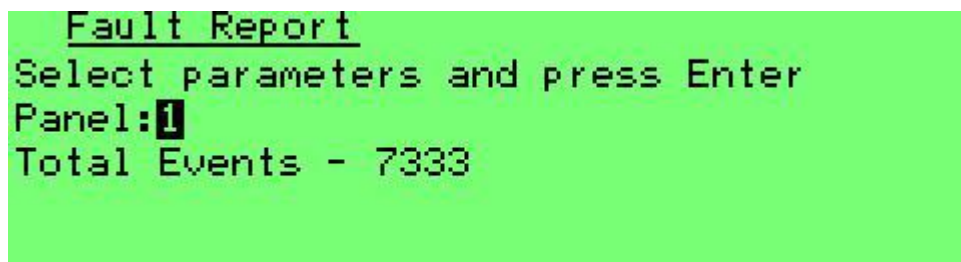
Screen 20 System reports – alarms (panel selection)

After selecting the panel it is possible to page through individual alarms with the arrow keys.



Screen 21 System reports – individual alarm

8.4.2 Faults



Screen 22 System reports – faults (panel selection)



Screen 23 System reports – individual fault

8.4.3 Field Test

```

Walk Test Report
Select parameters and press Enter
Panel:1
Total Events - 2
    
```

Screen 24 System reports – walk test (panel selection)

```

Walk Test Report - Panel:1 1/2
Start 12:27:39 07/06/2017
Alarm Switch
Alarm Test = Passed
Loop:1 Address:2 Zone:2
Sprinkler water level
    
```

Screen 25 System reports – individual walk test

8.4.4 Key Operations

```

Key Operations Report
Select parameters and press Enter
Panel:1
Total Events - 941
    
```

Screen 26 System reports – Key Operations (panel selection)

```

Key Oper. Report - Panel:1 1/941
19:01:06 31/10/2017
Device Program SSD REV. = 252
Executed from Panel:1 Programmer:3
    
```

Screen 27 System reports – individual key operation

Key Operation report displays activity reports for the following operations: panel configuration; hardware initialization; advanced configuration; device programming; creation of a device group; sounder silence; reset after an alarm; enablement or disablement; evacuation; and time and date configuration.

The report will indicate whether the configuration change was done from a PC or the control panel itself and the identity of the person who performed this task).

8.4.5 Device Listing

```

Device List Report - Panel:1          1/259
Sorted by - All Loops / All Types
Loop:1 Address:1 Zone:10
Photoelectric Detector              [i] PHOTO
                                     [ ]
Ground floor electric panel          7
    
```

Screen 28 System reports – device report

Device List report allows you to check device quantities. You can check all loops, a specific loop, and either all devices or a specific device type, such as heat detector or sounder. Selection is the same process used in enable / disable device.

8.4.6 Active Output

Active Outputs report indicates outputs that are active at the moment. You can select all loops, a specific loop, and either all devices or a specific device type (sounder; Lamp; Extinguisher; Extinguisher Control; Control Out; Supervisory Out; or Fire Phone Lamp).

```

Active Outputs Report
Select parameters and press Enter
Panel:1 By:Loop Loop:All Loops
Type:All Types
Active Outputs - 47
    
```

Screen 29 System reports – active outputs

8.4.7 Maintenance Recommendations

Maintenance recommendation report lists all detectors that are close to maintenance alarm. You can select all loops; a specific loop; a specific logical zone; and smoke detectors, photo / heat detectors, or both.

```

Maintenance Recommendation Report
Select parameters and press Enter
Panel:1 By:Loop Loop:All Loops
Type:All Types
Total devices - 0
    
```

Screen 30 System reports – Maintenance recommendation

i

Note

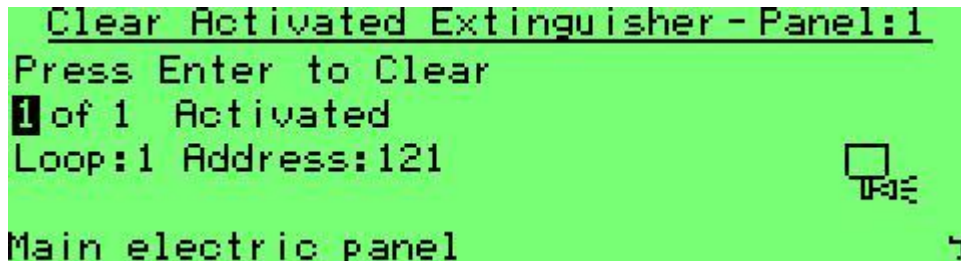
It is recommended to replace detectors that are close to maintenance alarm (detectors whose reference value – Vref – is equal or lower than 65).

8.5 Utilities

8.5.1 Lamp Test

Lamp test turns on all LEDs in the keyboard / display and activates the internal buzzers for a few seconds.

8.5.2 Clear Activated Extinguisher



Screen 31 Clearing Extinguishing activated indication

Activation of an extinguishing output will result in a notification in the control panel that extinguishing was activated. Pressing the **Reset** key will not cancel this indication in order to ensure extinguishing agent replacement or refill.

To return the control panel to normal operation refill or replace the extinguishing device, select the clear activated Extinguisher menu by pressing **Menu**, selecting **5 Utilities**, and selecting **2 Clear Activated Extinguisher**. Press Enter and ensure that the control panel is back to Quiescence state.

This operation shall be performed only by authorized personnel.

8.5.3 Revisions

This option shall display hardware and software revisions of the following modules:

1. CPU Card (ADR-7007)
2. SLC cards (ADR-7002)
3. Main Board (ADR-7021)
4. Display Card (ADR-7003)
5. LON Card (LON-7000)
6. TCP/IP Net Card (NET-7000)
7. Remote Displays (RM-7000)
8. Site Specific Data – Device Configuration
9. Site Specific Data – System Configuration

8.5.4 Keyboard Locking

The **Keyboard Locking** function prevents unauthorized people from activating functions by pressing accidentally the operator keys such as silencing an alarm or reset.

When the keyboard is locked, no action can be taken in the system, except acknowledge, browsing the memory and displaying alarm and trouble events.

The ADR-7000 default configuration is locked keyboard.

To change the keyboard locking mode, go to the Utilities menu and select **Keyboard Locking**. You will need to enter the programmer password to access this submenu.

The Up/Down arrow keys change the locking mode.

Changing to **Unlocked** mode enables the operator/programmer access to silence and reset functions without entering a password.

The keyboard will stay unlocked until the control panel is powered off.

The keyboard can be configured to auto-lock continuously, 10 minutes, 30 minutes, or one hour after last use.

IS 1220

IS 1220 Requirement

IS 1220 requires that auto lock timeout shall not exceed 30 minutes.
Set to auto lock continuously, 10 minutes, or 30 minutes to comply with IS 1220 requirement.

UL

UL Requirement

UL 864 requires that auto lock timeout shall not exceed 30 minutes.
Set to auto lock continuously, 10 minutes, or 30 minutes to comply with UL requirement.

NFPA 72

NFPA 72 Recommendation

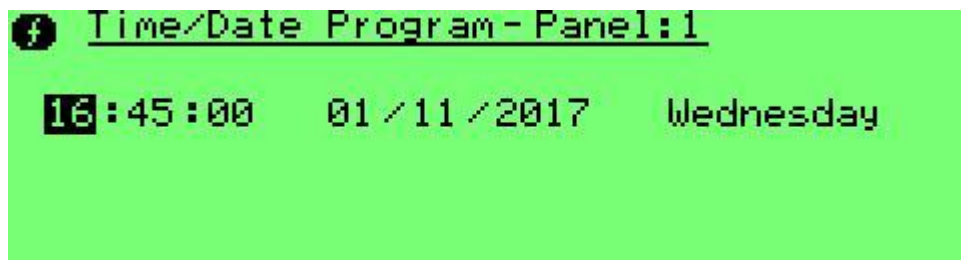
NFPA recommendation and local regulations in most countries require that the keyboard be locked.



Screen 32 Keyboard Locking – mode selection

8.5.5 Time / Date Program

Use this menu to set the date and time. Press **Function** and **1** to copy this value to other panels on the network. Only those panels that are configured as Partner shall be updated.



Screen 33 Setting time and date (date is European style – day / month / year)

8.5.6 Day / Night Setting

Here you can set whether the control panel shall work in a time-based

This sub-menu serves for setting system operating modes, by different time settings, to distinguish between normal operating hours (Day mode) and nighttime hours (Night mode).

Mode – This field indicates one of three operating modes.

- **Day** – Continuous operation in day mode (without automatic change).

- **Night** – Continuous operation in night mode (without automatic change).
- **Time-Related** – Automatic shifting from Day to Night mode and vice versa, according to time settings.

Select one of the modes by using the Up / Down keys. At Time-Related mode, each weekday can be programmed by selecting a day and then setting the nighttime between night start and night end.

Different time settings can be set for each day of the week. Use the arrow keys to toggle between fields.

Detector sensitivity will change according to the day and night sensitivity settings of each detector.

The Day / Night modes also affect dialer operation. An alarm that occurs during night mode will activate the dialer immediately. During day mode operation will be delayed if programmed thus.

```

Day/Night Settings - Panel:1
Mode: TIME RELATED
Day time Start / End settings
Mon Tue Wed Thu Fri Sat Sun
07:00 07:00 07:00 07:00 07:00 07:00 07:00
17:30 17:30 17:30 17:30 17:30 17:30 17:30
    
```

Screen 34 Setting daily night and day times

8.5.7 Holidays Setting

Here you can define public holiday (referred to in some countries as "national holidays" or "bank holidays") dates. The control panel shall work as nighttime mode all day.

```

Holidays Settings - Panel:1 1/32
Day/Month/Year
1. 25/12/17 01/01/18 06/01/18
2. 00/00/00 00/00/00 00/00/00
3. 00/00/00 00/00/00 00/00/00
4. 00/00/00 00/00/00 00/00/00
    
```

Screen 35 Setting holiday dates

8.5.8 Volt / Current Measurements

Allow measuring voltages and currents in the control panel:

1. Power and battery: power supply voltage; battery voltage; battery charging current; charging cycle.
2. NAC Outputs: NAC 1 and NAC 2 voltages and current
3. 24Vdc Outputs – Main board: 24V_A and 24V_B, and Dialer output voltages and current
4. 24Vdc Outputs – Loop expansion board: 24V_C and 24V_D voltages and current
5. Loop cards: input voltage and current draw
6. Alarm Dialer: voltage and current
7. Fault Dialer: voltage and current
8. Ground Fault graph

9. 3V Battery: battery voltage (this battery is used for configuration back up when the control panel is powered off)
10. Total current: total current from all 24Vdc outputs; both NACs and all loops
11. Temperature: main board temperature
12. RM Control:
13. RM Control:
14. RM Control:
15. LON Net Diagnostic: LON communication diagnostics (communication between control panels in a network)
16. I2C Diagnostics: I2C communication diagnostics (this is the internal communication between in the control panel)

8.5.9 Device Address Programming

Allows address programming to a detector that is connected to J28 on the main board.

- **Manual** – set an address to each detector
- **Automatic** – increases the address by 1 after each address setting.

8.6 Walk Test

This feature allows the testing of all the initiating devices of the system.

The device test is performed by placing a magnet near the detector's test point or by activating the alarm call-points with the test key (supplied with the call-points).

Entering the Walk Test mode is done through the main menu and requires a password.

From the main menu select **6 Walk Test**. The following message is displayed:

Key in 1 to select devices for testing. The next menu shall allow the selection of loops; zones; or groups for testing. Press Enable to add the devices to be tested. Press Exit and save changes.

The **Walk Test** LED shall turn on to indicate that a walk test is currently done.

Start testing by initiating the devices. Upon activation of the device, the device alarm indicating LED will light and the device address will be displayed on the LCD. After 15 seconds the system will perform automatic reset to the device. During the automatic test no outputs are activated.

An alarm received from a device that is not in Walk Test mode will abort the Walk Test will activate the alarm.

Two simultaneously alarms from the tested card will abort the Walk Test procedure and activate the alarm.

A device that is programmed as delayed will respond to the test immediately.

To stop the automatic test process, press the **Quit** key.

When you complete the testing go to the Walk Test menu and define the devices as normal operation again.

The system aborts the walk test and returns to normal operation if no devices are tested for 15 minutes.

8.6.1 Select Devices

Select the loops for testing. Press Enable while selecting the Test field to change field value from Test Disabled to Test Enabled.



Screen 36 Walk test – main screen

8.6.2 View Progress

Selection option **2 View Progress** shall show the total number of devices tested.



Screen 37 Walk test – progress report

8.6.3 Config Parameters

This menu allows setting the time until automatic reset during walk test (options are one second to 30 seconds in 1 second steps. Default: 10 seconds).

It is also possible to set the exit from test mode to be either manual (default) or automatic (5 to 60 minutes, default: 15 minutes).



Screen 38 Walk test parameter

IS 1220

IS 1220 Requirement

IS 1220 requires that exit from Walk Test shall be automatic and within 30 minutes. Ensure you change this setting to comply with IS 1220.

UL

UL Requirement

UL 864 requires that exit from Walk Test shall be automatic and within 30 minutes. Ensure you change this setting to comply with UL 864.

8.7 System View

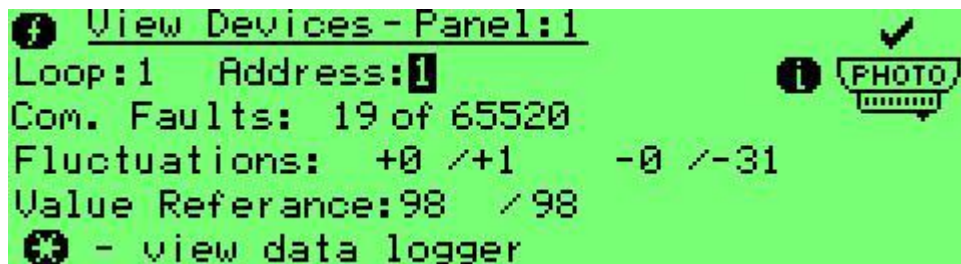
8.7.1 Licensing



Screen 39 System view – panel licensing

See section 4.5.1 on page 28 for explanation about panel registration.

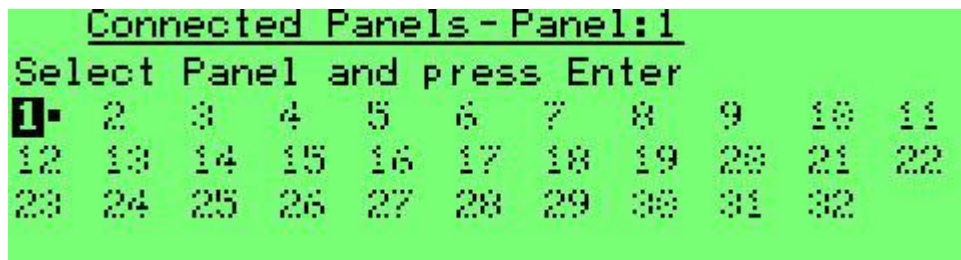
8.7.2 View Devices



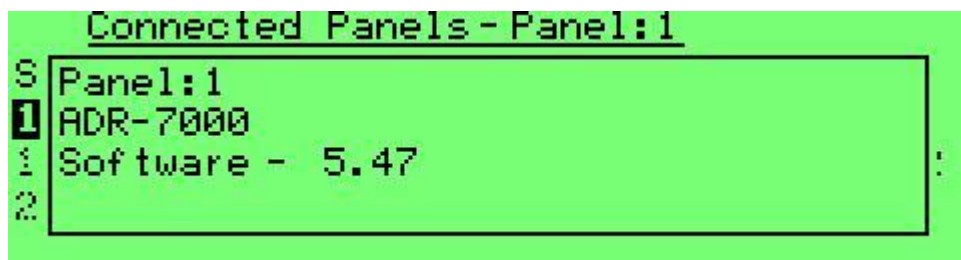
Screen 40 System view – view devices

Pressing the **Function** key will allow to clear the selected device (1) or all devices (2). You can return to screen 42 by pressing **Quit**.

8.7.3 Connected Panels

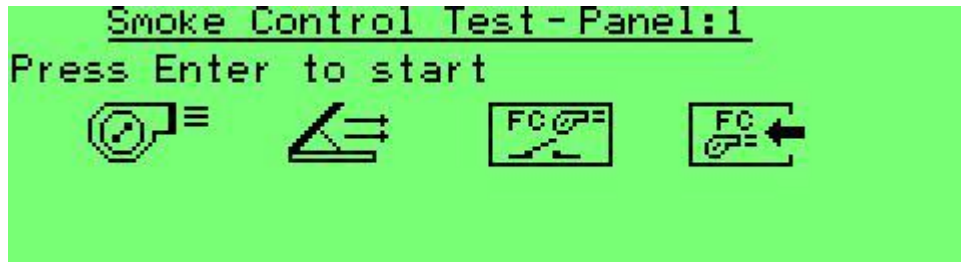


Screen 41 Connected panels

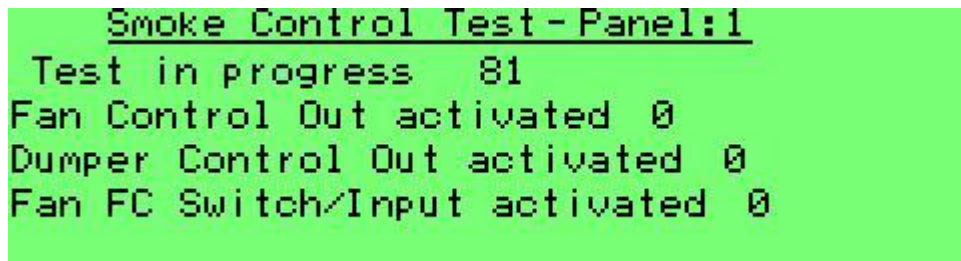


Screen 42 Connected panels – panel details

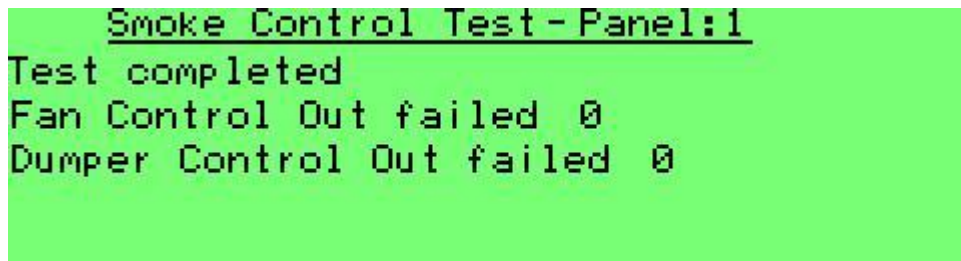
8.8 Smoke Control Test



Screen 43 Smoke control test



Screen 44 Smoke control test – test progress



Screen 45 Smoke control test – test report

8.9 System Configuration

This menu allows you to define the behavior of the control panel so that it matches the specific site requirements.

8.9.1 Panel Number

This menu allows you to change the panel number when working in a networked system. Select a number from 1 to 32.



Screen 46 System configuration – panel number

Panel No. 1 sets time synchronization to all the panels that are networked via the LON-7000 module. Make sure one of the panels is set to be No. 1.

SSD Revision (SSD = Site Specific Data) indicates the revision number of control panel configuration. This number increases by 1 every time the control panel configuration is updated.

8.9.2 Main Screen Message

This option allows to change the message that is displayed under the Telefire logo. You can key in up to 24 characters to indicate the service company name or phone number. Use the arrow keys to select each character and Enter to key it in. Quit and save to keep the new message.



Screen 47 System configuration – main screen message

8.9.3 Panel Description

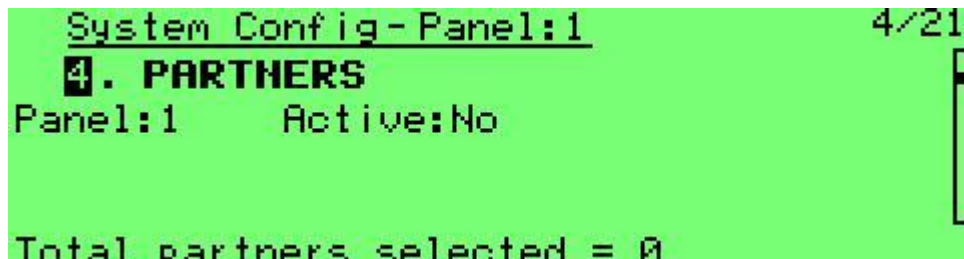
Used to key a 20 character panel description, such as "Panel 3, manufacturing". This will be displayed for system faults (such as batteries, ground fault, and AC fault) when pressing the **Info** key.



Screen 48 System configuration – panel description

8.9.4 Partners

A networked control panel shall display alarms, faults, and other events that occur on its partners. Configure the other panel as Active on the current panel to display events. The following screen shows Panel 2 as an active partner to panel 1 (that is, panel 2 alarms will be displayed on panel 1 as well).



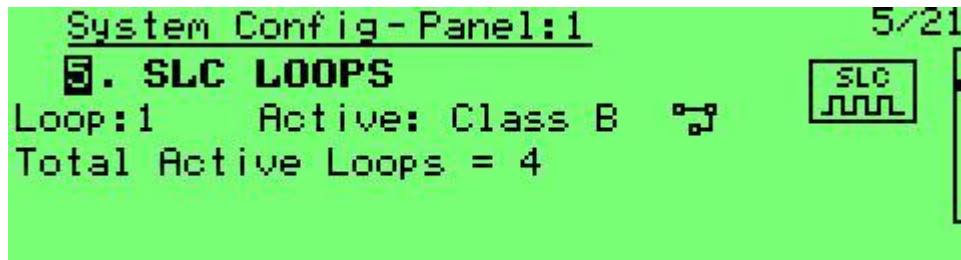
Screen 49 System configuration – partners

Once a panel is selected as partner, you can select which actions can be performed on the partner panel.

In the example above all events from panel 2 shall be displayed on the current panel (1). Perfuming Evacuation, Reset, and Silence in panel 1 shall be performed on panel 2 as well.

8.9.5 SLC Loops

You can define each loop as active or inactive (Active: No), or working in either Class B or Class A. You can also see the number of loops defined in the panel.



Screen 50 System configuration – SLC Loops

8.9.6 System Language

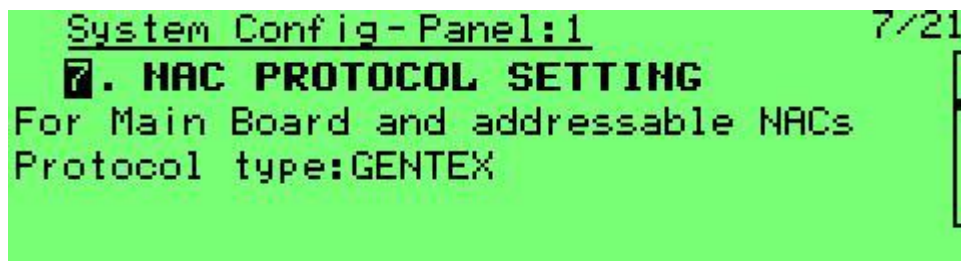
This will allow you to change between system languages configured in the control panel.



Screen 51 System configuration – system language

8.9.7 NAC Protocol Setting

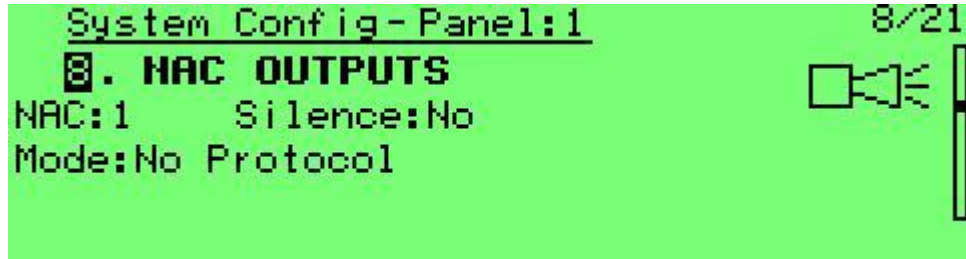
Here you can select whether NAC outputs shall work in Gentex or Wheelock protocol. Both system NACs (NAC 1 and NAC 2) and ADR-723 outputs that are configured to work in protocol operation (jumper setting on the ADR-723) shall work in this protocol. This protocol synchronizes strobes throughout the system and allows the connection of a sounder/strobe via 2-wires to the output. When the control panel is silenced, the sounders shall stop working, but the strobes shall keep on flashing until reset.



Screen 52 System configuration – NAC protocol selection

8.9.8 NAC Outputs

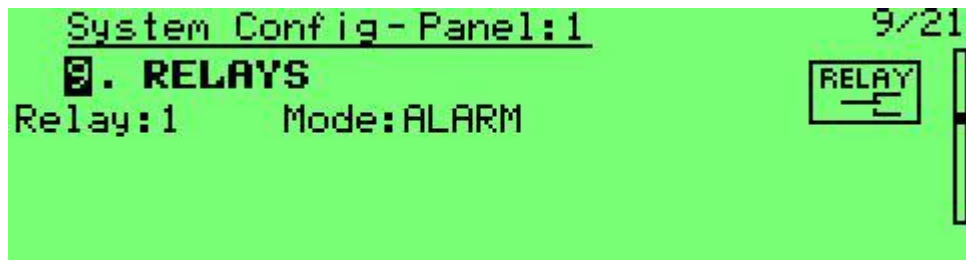
Here you can configure the parameters for NAC 1 and NAC 2. Each can be configured as Silenced (i.e., will stop operating when the control panel is silenced) or Unsilenced, (i.e., will continue operating until the control panel is reset). You can also define whether it operates as a standard output (No Protocol) or with the control panel's protocol (defined above).



Screen 53 System configuration – NAC output

8.9.9 Relays

This menu allows you to configure the operation of the main board's 3 relays. You can select between Alarm, Supervisory, Fault, and Pre-Alarm.



Screen 54 System configuration – relays

8.9.10 Alarm Dialer 1

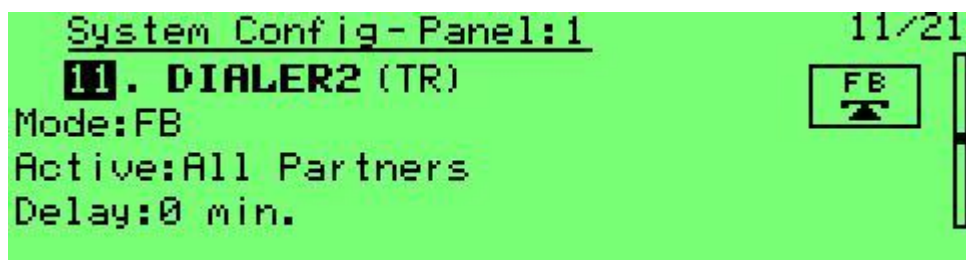
This menu allows you to configure the alarm dialer's activation conditions: will it be activated by any panel on the network that is defined as Partner or only from this panel; and the activation delay during day time hours (0 – 9 minutes, in 1 minute increments).



Screen 55 System configuration – alarm dialer 1

8.9.11 Dialer 2 (Tr)

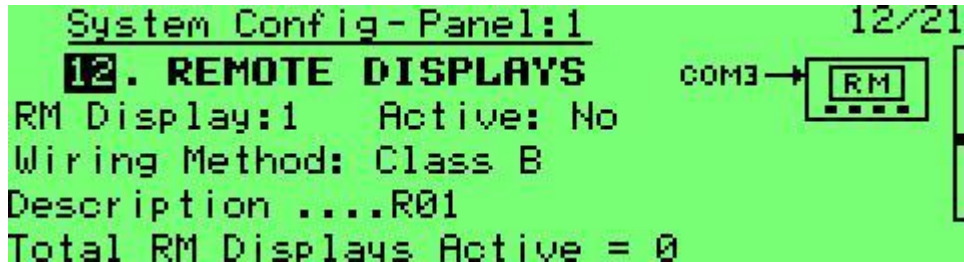
This menu allows you to configure the FWRE dialer's activation conditions: will it work as in FWRE model (Fault Warning Router Equipment – in this mode it is always on and switches off at any fault), or in FB mode (activated by either 2 detectors or any call point); will it be activated by any panel on the network that is defined as Partner or only from this panel; and the activation delay during day time hours (0 – 9 minutes, in 1 minute increments).



Screen 56 System configuration – alarm dialer 2

8.9.12 Remote Displays

This menu configures the RM-7000 remote annunciators. You can select whether each of the 16 RM-7000 is active or not; Class A or Class B wiring; and assign a 19 character description to each RM-7000.

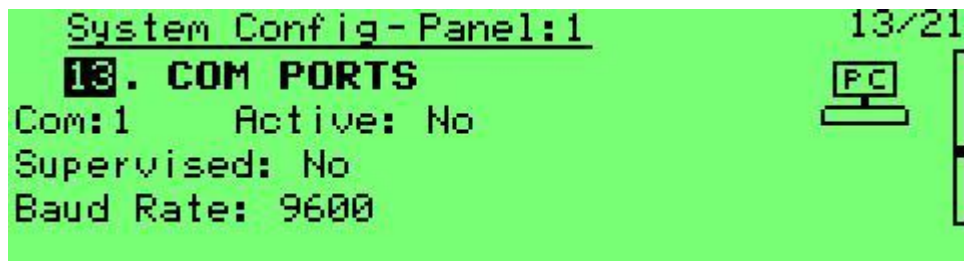


Screen 57 System configuration – remote displays

8.9.13 COM Ports

This menu allows you to select the operation mode of COM1, COM2, and COM5 as inactive, active an PC communication or NET-7000 TCP/IP interface; whether the communication is supervised or not; and Baud rate.

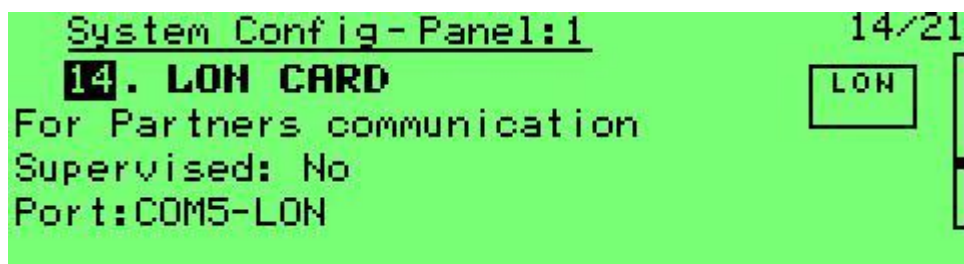
COM3 and COM4 are used as RM-7000 connections and can't be configured other than Class B or Class A operation (see above).



Screen 58 System configuration – com ports

8.9.14 LON Card

This menu allows the configuration of the LON-7000 port.



Screen 59 System configuration – LON cards

8.9.15 Loop Expansion Card

This menu allows you to configure whether an ADR-7022 SLC Expansion Module (for loops 5 – 8) is installed.



Screen 60 System configuration – loop expansion card

8.9.16 Ground Fault

This menu allows you to change the control panel's sensitivity to ground faults, or disable it completely.



Screen 61 System configuration – ground fault

8.9.17 Inhibit Alarm Silence

This menu allows disabling the option to silence alarms for a certain time after alarm initiation. Leave this option at the default unless required by local standard, regulation, or authority having jurisdiction.

CP 10

CP 10 Requirement

CP 10 requires that under certain conditions alarms should not be silenced for 3 minutes after first alarm. Change this value to 180 seconds if your local standard requires it.

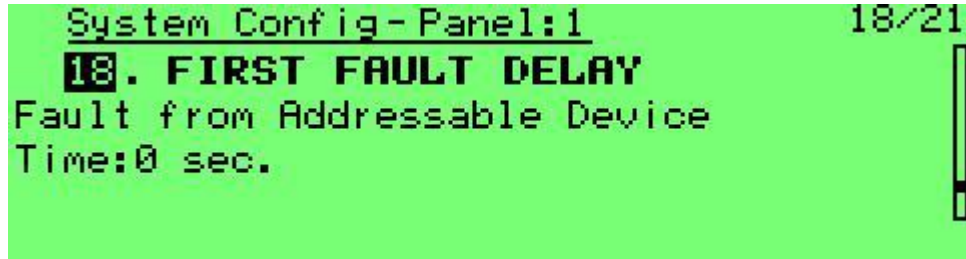


Screen 62 System configuration – inhibit alarm silence

8.9.18 First Fault Delay

This menu allows delaying first fault indication of addressable devices for a short time to avoid temporary faults. Applies only to first fault – repeat faults will be displayed immediately.

Range: 0 – 240 seconds. Default: 0 seconds.



Screen 63 System configuration – first fault delay

UL

UL Requirement

UL 864 compliance requires this value to be less than 180 seconds.

IS 1220

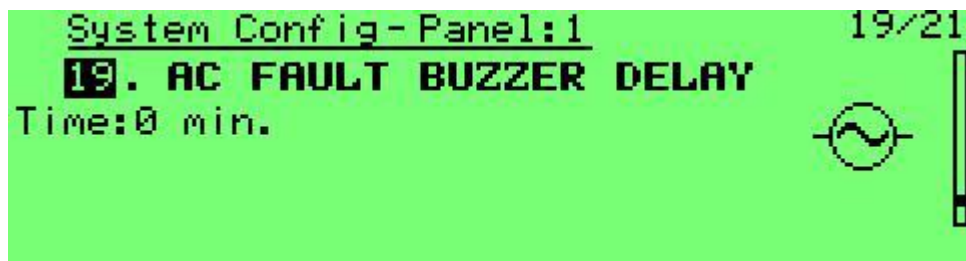
IS 1220 Requirement

IS 1220 compliance requires this value to be less than 180 seconds.

8.9.19 AC Fault Buzzer Delay

This menu allows to delay activating the fault buzzer in case of loss of AC mains supply. The fault is indicated visually immediately, regardless of this delay.

Range: 0 – 240 minutes. Default: 0 minutes.



Screen 64 System configuration – AC fault buzzer delay

UL

UL Requirement

UL 864 compliance requires this value to be less than 180 seconds.

IS 1220

IS 1220 Requirement

IS 1220 compliance requires this value to be less than 180 seconds.

8.9.20 Communication with ADR-3000

When set to **Yes** (default) the control panel shall warn that passwords were not changed from the factory set defaults. Warnings start a month after first installation and will repeat any time a password is required.



Screen 65 System configuration – communication with ADR-3000

8.9.21 Smoke Control

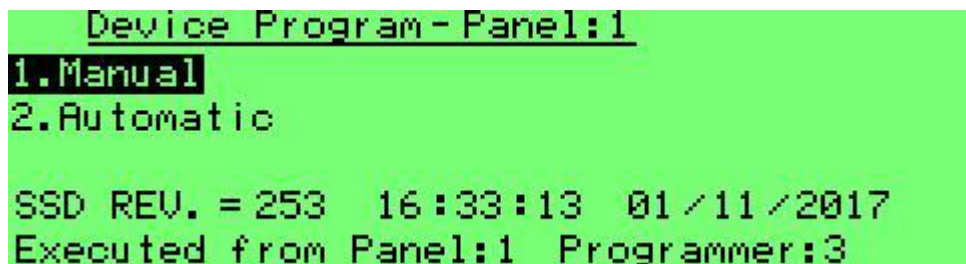
Allows to set the day and time of weekly Smoke Control system test.



Screen 66 System configuration – Smoke control test settings

8.10 Device Program

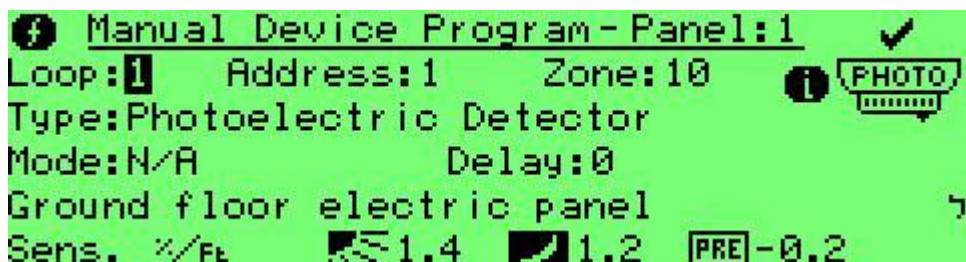
Select manual or automatic operation. Manual shall allow you to set parameters for a specific address. Manual shall scan through each possible address at each SLC Line Card. Each existing device shall be configured with the device's default setting, if it was not previously configured.



Screen 67 Device programming – main screen

8.10.1 Manual Device Programming

This option allows you to set device parameters manually.



Screen 68 System configuration – manual device program

- **Loop:** loop number (1 – 8)
- **Address:** device address (1 – 127)
- **Zone:** Logical Zone (1 – 511) of the device

- **Device Type:** the device type as follows:
 - **Photoelectric Detector:** (TFO-480A or TFO-440A)
 - **Heat Detector:** (TFH-280A or TFH-220A). Detector mode (Fixed Temperature (default) or Rate of Rise) is defined in the Mode field.
 - **Gas Detector:** reserved for future use
 - **Input Module** (ADR-712; ADR-718; ADR-812A or ADR-818A). **Mode** can be Alarm; Reset; Silence; Disconnect; Supervisory; Abort; Release; Alarm Matrix; or Fan PC).
 - **Switch:** (a manual call point (TPB-800ASR, TPB-800ASY, or TPB-101ASM), an input of an ADR-805A or ADR-705; or the IDC input or an ADR-723 or ADR-823A). Switch operating mode is defined in the **Mode** field, and can be Alarm; Reset; Silence; Disconnect; Supervisory; Abort; Release; Alarm Matrix; or Fan PC.
 - **Power supply:** an auxiliary power supply (TPS-34A)
 - **Sounder** (TIP-224A, or an ADR-723 or ADR-823A output that activates sounders). Operation mode is defined in the Mode field and can be No Protocol or with the Control Panel's protocol.
 - **Lamp:** an ADR-723 or ADR-823A output that activates a strobe
 - **Extinguisher:** an ADR-723 output that is used to release extinguishant. The Mode field specifies pulse length (5 seconds to 239 minutes, or continuous until reset). Default is 15 seconds.
 - **Extinguisher Control:** (ADR-833A).
 - **Control Out:** the output of an ADR-723 or ADR-823A; or the relay of an ADR-723, ADR-823A, or an ADR-741). The **Mode** field defines whether it is activated by an alarm or a fault.
 - **Isolator:** an addressable line isolation module (LI-3000)
 - **CO & Heat Detector:** reserved for future use
 - **Photo & Heat Detector:** (TPH-482A or TPH-442A)
 - **Supervisory Out:** the output of an ADR-723 or ADR-823A; or the relay of an ADR-723, ADR-823A, or an ADR-741 that is activated as a result of a Supervisory event.

Note

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A supervisory input or switch and its related supervisory out should be in the same logical zone.

- **Fire Phone Jack:** (TFP-806)
- **Fire Phone Lamp:** (and address of a TFP-828)
- **SCM:** the relay of an ADR-723, or an ADR-741 that is intended to activate or stop a smoke control blower.
- **Zone:** the device's logical zone. Can be in the range of 1 – 511.
- **Mode:** the device's operating mode, device dependent.
 - For heat detectors: fixed temperature or rate of rise
 - For Input module: Alarm; Reset; Silence; Disconnect; Supervisory; Abort; Release; Alarm Matrix; or Fan PC

- For switches: Alarm; Reset; Silence; Disconnect; Supervisory; Abort; Release; Alarm Matrix; or Fan PC
- For sounder / strobe: whether this NAC works as the protocol that is defined in the control panel or without protocol.
- For extinguishers: the extinguishing pulse length
- N/A for all other devices
- **Delay:** alarm verification time for detectors, or an output activation delay. Can be between 0 and 50 seconds.
- **Silenced:** whether this output is silenced
 - **0:** not silenced
 - **1:** silenced; re-activated by any alarm
 - **2:** silenced; re-activated only by devices in this output's matrix
- **Event Control:** activation conditions:
 - **General:** activated by any alarm
 - **Device Matrix:** a group of input devices should be selected to form a matrix in order to activate the configured output device. The number of devices in alarm required to activate the output device must be set between 1 (default) and 6.
 - **Zone Matrix:** A Zone Matrix is an activation array of one or several logical device zones that are assigned to an output device in order to form complex activation functions.
 - **Alarms from all selected zones:** number of alarms from any device in any of the selected zones (i.e., 2 selected alarms from zones 1, 2, and 3 would be activated by any 2 alarms from any 2 devices in zones 1, 2, and 3).
 - **Alarms in a selected zone:** number of alarms from any device in one of the selected zones (i.e., both alarms need to be in the same zone).
 - **Zones in alarm:** number of zones out of the selected sets that need to be in alarm (i.e., "2 zones in alarm" from zones 1, 2, and 3) requires that at least one device in each of two separate zones be in alarm.

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Note

An input module or switch that are configured as **Alarm Matrix** will activate a matrix output even if it requires two or more alarms to activate.

8.10.2 Automatic Device Programming

Automatic device programming causes the control panel to scan every possible address and populate its device map according to whatever devices are installed.

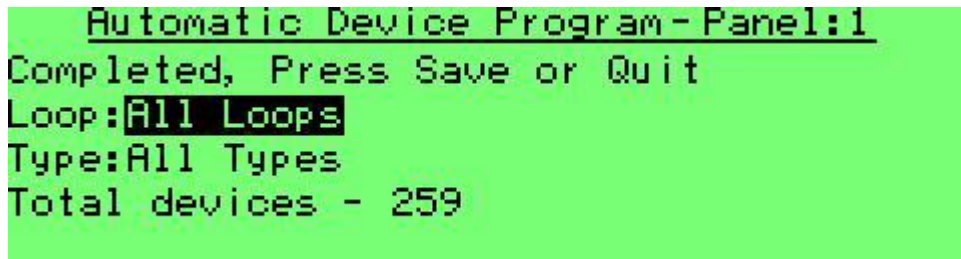
Every connected device shall be configured as "Active" and with the correct device type and the default configuration of that device type.

Setting logical zones, activation matrices, and other parameters requires operator intervention (manual programming).

This will allow comparing the system as installed to planned configuration in order to find any installation-related problems.



Screen 69 Automatic device programming

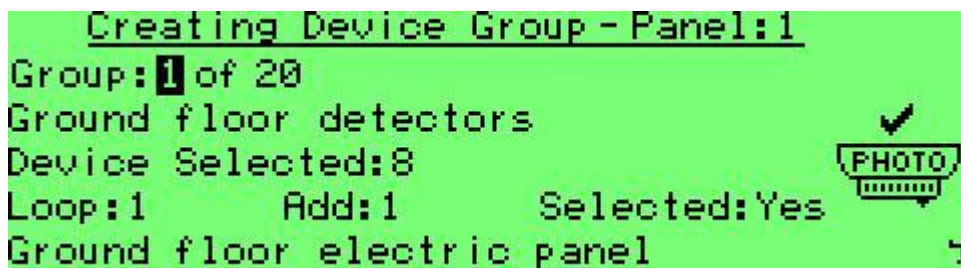


Screen 70 Automatic device programming – completion message

8.11 Creating Device Groups

Device groups are intended to assign the same entity to several devices without restrictions of loop, address, or zone in order to perform a single operation such as disablement in one step. It is possible to assign up to 20 groups.

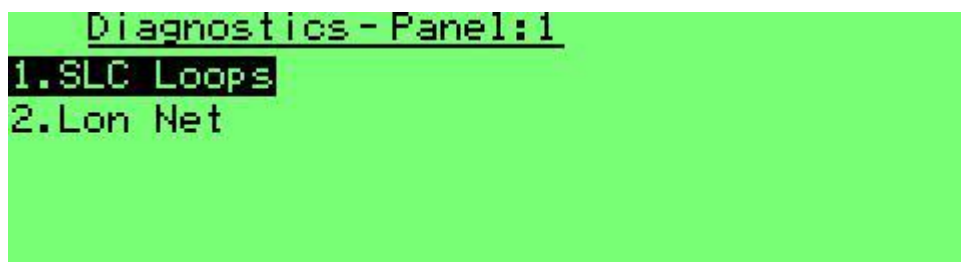
The second line allows you to assign a name to the group.



Screen 71 Creating groups

8.12 Diagnostics

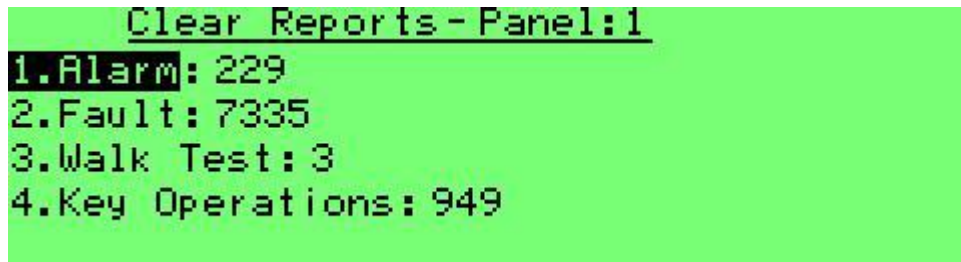
This option allows you to check validity of device programming or communication between various control panels.



Screen 72 Diagnostics

8.13 Clear Reports

System reports indicate the total number of alarms, faults, walk tests, and key operations (silencing, disablement, enablements and resets). Press Enter to clear. Respond with an asterisk (*) to confirm or hash sign (#) to cancel.



Screen 73 Clear reports

8.14 Change Passwords

This menu option allows you to change passwords. There are three IDs for Operator (EN 54 access level 2) passwords, and three IDs of Programmer (EN 54 access level 3) passwords.



Screen 74 System Program – Change password

Default passwords are:

- Operator 1: 111111
- Operator 2: 222222
- Operator 3: 333333
- Operator 4: 444444
- Operator 5: 555555
- Operator 6: 666666

8.15 Advanced

Not for field use.

8.16 Detector Initialization

This menu option allows you to force the control panel to perform detector initialization. It is highly recommended to perform the initialization process when the system is turned on for the first time, or after installing or changing a detector, as it may take several days under normal operation.



Screen 75 Detector initialization

Pressing **Enter** will activate the fast Initializing. The system will display the message "DONE!" upon completion. Pressing the **Quit** key exits this window without performing the fast update.

*i***Note**

Ensure that detector initialization is performed when all detectors are in a smoke-free condition.

9 Troubleshooting

9.1 LEDs

9.1.1 LEDs on the User Display

See section 6.2 on page 34 for an explanation of LEDs.

9.1.2 LEDs on the Main Board

The red LED light next to the battery connector on the main card turns on when the charger charges the batteries.

The addressable device communication circuit line (SLC) is electronically protected against short circuits. The circuit will break the loop if there is a short circuit and it will return to normal operations automatically upon removal of the short circuit. Each circuit line includes two LED indicator lights that allow maintenance to distinguish between the following situations:

- Flashing red light (LED 3) indicates that it is addressing an addressable device
- Solid yellow light (LED 4) indicates a communication fault, including in the event of a momentary fault that does not activate a system wide fault mode

9.1.3 LEDs on the Loop Card

The LEDs at the line cards have electronic protection from shorts. The circuitry shall disconnect the loop if it senses a short and will resume normal operation when the fault is rectified. Every line card has two LEDs to indicate the following conditions:

- A red LED (LED 1) flickers upon every communication with addressable device.
- A yellow LED (LED 2) is on whenever there is a communication error, even for a temporary error

9.2 Control Panel Error Messages

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Note

The pound sign (#) in the messages listed in the table of error notices represents a number that indicates the panel's number, loop card number, or device address.

9.3 System Faults

Error Messages	Possible Cause	Repair Action
Main Memory is defective		Control panel fault- send the device to the manufacturer for repair
Unavailable at this time	Password has been entered incorrectly 5 times	Wait for half an hour

Error Messages	Possible Cause	Repair Action
Main circuit <device> "-"	There is a negative line to earth fault on the indicated device (NAC1; 24V-A output circuit; dial-up alarm; dialer FWRE)dial up connection failure); batteries' charger; a loop; or the annunciator panel	Find the source of the fault –damaged wire or a water leak – and fix it.
Main circuit <device> "+"	There is a positive line to earth fault line on the designated device (NAC1; 24V-A output circuit; dial-up alarm; dialer FWRE (dial up failure); battery charger; or loop	Find the source of the fault –damaged wire or a water leak – and fix it.
Main circuit <device> limited current	The current has been limited on the designated device (AC1N; 24V-A output circuit; dial-up alarm; dialer FWRE dial up connection failure); battery charger; or a loop	Find the source of the fault –damaged wire or a water leak – and fix it.
Main circuit <device> low voltage	The voltage is low on the designated device (AC1N; 24V-A output circuit; dial-up alarm; dialer FWRE)dial up connection failure); battery charger; circuit loop; 3V battery backup or batteries	If the device is the battery or backup battery (3V): replace the battery or backup battery (R2032C). Control panel fault – send to the manufacturer for repairs
Main circuit <device> disconnect	The designated device is disconnected (NAC1; 24V-A output circuit; dial-up alarm; dialer FWRE)dial up connection failure)	Check line continuity and connect an end of line resistor (5.1KΩ) at the output circuit connectors.
Main circuit <device> short	There is a short circuit on the designated device (NAC1; 24V-A output circuit; dial-up alarm; dialer FWRE)dial up connection failure) battery charger; or loop	Find the cause of the short circuit and remove it
Main circuit <device> exists, not programmed	The designated device (the annunciator panel; detector; button; or an input or output module) is present in the system, but it has not been defined as yet.	Define the device

9.4 Addressable Device Faults

Error Messages	Possible Cause	Repair Action
<address> "-"	There is a negative line to earth fault at the indicated address	Find the source of the fault – damaged wiring or water leak – and fix it
<address> "+"	There is a positive line to earth fault at the indicated address	Find the source the fault – damaged wiring or water leak – fix it
<address> limited current	A short circuit at the designated address associated with an input or output circuit	Find the cause of the short circuit, remove the problem and replace the fuse
<address> loop with short		Find the source of the fault – damaged wire or a water leak – and fix it.
<address> low 24V voltage	Low or missing voltage; an card's input circuit voltage fault	Check the input voltage and its supply sources
<address> low voltage		Find the source of the fault – damaged wire or a water leak – and fix it.
<address> Blown fuse	A blown fuse in a 24V device	Find the cause of the short circuit, remove it, and replace the fuse
<address> disconnect	An input/output circuit in a device is disconnected	Check the line for breaks/damage and connect a resistor at the end of the line on the input/output connectors
<address> code not valid	Illegal Opcode	Replace the device indicated in the message
<address> short	A short circuit in an input/output device	Find the cause of the short circuit and remove it
<address> wrong answer	Trouble address Trouble address place Trouble opcode place Trouble opcode	Replace the device indicated in the message
<address> extinguishing circuit is disconnected	The extinguishing circuit is disconnected at the extinguishing controller	
<address> short in extinguishing circuit	A short circuit in an extinguishing circuit at the extinguishing controller	

Error Messages	Possible Cause	Repair Action
<address> sirens circuit is disconnected	The siren circuit is disconnected at the extinguishing controller	Reconnect
<address> output evacuation circuit is disconnected	The output evacuation circuit is disconnected at the extinguishing controller	Reconnect
<address> a short in the output evacuation circuit	A short circuit in an output evacuation circuit at the extinguishing controller	Reconnect
<address> disconnect on manual override	Manual override is disconnected at the extinguishing controller	Reconnect
<address> Short on manual override	Short circuit on Manual override at the extinguishing controller	Reconnect
<address> pressure switch is disconnected	Pressure switch is disconnected at the extinguishing controller	Reconnect
<address> short circuit on the pressure switch	Short circuit on pressure switch at the extinguishing controller	Reconnect
<address> abort extinguishing is disconnected	Abort extinguishing is disconnected at the extinguishing controller	Reconnect
<address> short circuit on abort extinguishing	Short circuit on abort extinguishing at the extinguishing controller	Reconnect
<address> empty extinguishing container	Empty extinguishing container is disconnected at the extinguishing controller	Reconnect
<address> extinguishing circuit is disconnected	The extinguishing circuit is disconnected at the extinguishing controller	Reconnect
<address> short in extinguishing circuit	A short circuit in an extinguishing circuit at the extinguishing controller	Resolve
<address> sirens circuit is disconnected	The siren circuit is disconnected at the extinguishing controller	Reconnect
<address> output evacuation circuit is disconnected	The output evacuation circuit is disconnected at the extinguishing controller	Reconnect

9.5 Programming Faults

Error Messages	Possible Cause	Repair Action
<address> exists, not programmed	There is a device attached to the addressable circuit that was not programmed	Program the device in, open system programming, programming devices, and add the device.
<address> same address	There are two devices with the same address	Run diagnostics. The control panel will turn on a red indicator light on all the devices with the same address. Change the address for one of the devices using PROG 4000.
Device Matrix: the number of devices is lower than the number of alarms	Alarm conditions cannot be met because the requirement is that there have to be more alarms than the number of devices defined within the matrix	Reduce the number of input devices required activate the output or add input devices to the operation matrix
Input device listed in matrix has been cancelled	This message will be received when the one of the system's input devices is removed, but the device still belongs to the activation matrix of the output device	
Disabled	A device or area is disabled	If you want to turn on the device: Open start/stop device menu from the main menu, select the device or the area indicated in the message, and click Enable.
Supervisory output circuit without a supervisory switch in a selected area	An output circuit has been defined as a Supervisory output circuit, but a supervisory switch has not been defined in the same area	Define a supervisory switch in the same area as a supervisory output circuit define the switch as an ordinary switch (siren, light, etc.)
The extinguishing output circuit cannot be programmed as a general output circuit	A mistake in the extinguishing output circuit definitions	Define the operating conditions as a matrix

Error Messages	Possible Cause	Repair Action
The area matrix includes a region that was removed from the programming	This message will be received when a region's definitions are changed in an input device or when an input device is cancelled in a way that causes a region that was previously defined for activation of an output device is no longer active.	Reactivate the disabled detectors or remove the missing from output device's list of areas
The device matrix includes a device which has been removed from programming		Restore the device to the programming matrix or change the matrix settings
The number of sirens cannot be greater than the number of the selected alarm areas	An alert that the number of areas enabled to activate an output device is larger than the total number of areas in the matrix	Reduce the number of areas under alarm necessary to activate the output device or add areas so that their number will be higher than the necessary minimum for activation
The number of sirens cannot be greater than the number of devices in the selected areas	An alert that the selected number of alerts required to activate an output device is greater than the total number of input devices in the selected under the matrix	Reduce the number of input devices required to activate the output device or add devices in the area so that the number is larger than the necessary minimum for activation
The number of alarms cannot be greater than the number of alarm devices in the area: #	An alert that the selected number of alarms necessary in one area to activate an output device is larger than the total number of input devices in one of the areas selected to activate the device matrix	Reduce the number of input devices required to activate an output device or add devices the area where the number of devices is too low under the activation matrix
The number of alarms cannot be greater than the number of selected alarm devices		Activate the device or remove the device from the output device operational matrix
The wrong device type	The type of device in the field does not match the programmed definition A locked control panel with unlocked detectors or an unlocked control panel with locked detectors	Correct the device definitions (programming) or adjust the type of device to match the instructions Replace the control panel or the detectors

9.6 Status Messages

These messages show a system status such as a phone call on a fireman phone system or Extinguishing Abort or Extinguishing Hold in progress. Information only – no need for any action.

9.7 Control Panel Network Faults

Error Messages	Possible Cause	Repair Action
Panel # communication error	A control panel that is defined as Partner is disconnected or powered off	Ensure that the control panel is on and verify connection

10 Periodic Tests

Periodic maintenance shall be, as a minimum, performed per NFPA 72. Maintenance shall be performed by a trained or authorized Telefire representative.

The system should be inspected entirely at least twice a year, or as required by national and/or local fire codes. All devices, system wiring and component functions should be tested and maintained. These inspections should be performed in addition to the routine maintenance activities such as cleaning the detectors (which should be performed in accordance with Telefire's instructions).

Maintenance and test actions shall be conducted by a company or service technician authorized by Telefire.

Records of all inspection and maintenance activities should be kept.

10.1 Weekly Test – Done by Site Supervisor

The site's safety supervisor should inspect the control panel weekly and verify that all of the following conditions exist:

- The green LED is on and is not blinking
- None of the yellow or red LEDs are on or blinking
- The control panel's trouble buzzer does not sound
- The LCD display states SYSTEM OK and the correct time

Open the control panel's front door and verify that the red LEDs on the line card flash occasionally.

Call your service company if any of these conditions is not met.

10.2 Battery Test

The battery supervising and charging circuitry includes a battery supervision and battery test that are managed by the control panels' microprocessor. This includes disconnection, charging current, battery voltage, and the batteries' ability to supply the required current under load. If any of the parameters is outside the required parameters will cause a detailed fault indication.

Replace the battery if you encounter an error indicating inability to supply sufficient current.

Ensure that the battery connectors are clean and free of corrosion and that there is a proper (mechanically secure) connection. Tighten as needed.

11 Warnings and Limitations

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Note

Fire alarm systems are composed and assembled of different devices and subsystems, such as control panels, annunciators, smoke detectors, heat detectors, manual call points, extinguishing activation devices, and annunciating devices intended to alert to fire / smoke.

Using this system does not ensure protection from or prevention of fire and/or smoke damages, but proper use of the system may reduce fire and smoke damages.

Proper system configuration design, including all of its components and infrastructure, as well as proper installation according to the manufacturers' instructions and the applicable standards – are a conditioned precedent for the proper and efficient function of the system.

The designer and installer should have the appropriate skills and qualifications for performing said installation and all damages or losses resulting from improper design and/or installation lie with the designer and/or installer alone.

All loss or damage caused by improper action shall lie with the originator of said improper action.

The manufacturer shall not be liable for any fire and/or fire damages caused by fire in location where fire systems are installed and or results of direct or indirect fire damage that may be caused to any persons and/or property and/or third parties as a result of using the ADR-7000 and/or resulting from its inaction.

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Note

Do not install, operate, or maintain this ADR-7000 before fully reading this manual.

12 Compatibility

The ADR-7000 control panel is compatible with all of the following devices:

12.1 Input Devices

12.1.1 Direct Attachment to the SLC Loop

- ADR-7xx Addressable Multi Input Module
- ADR-805A Addressable Flow Switch Interface Module
- ADR-812A Addressable Two-Channel Input Module
- ADR-818A Addressable Eight-Channel Input Module
- TFH-280A Addressable Heat Detector
- TFO-480A Addressable Photo-Electric Smoke Detector
- TPH-482A Addressable Photo/Heat Detector

12.1.2 Connection via an Input Module

- TPH-482 and TPH-442 conventional smoke/heat detectors
- TFO-480 and TFH-440 conventional smoke detectors
- TFH-280F, TFH-281F, TFH-281R, TFH-282F, TFH-282R, TFH-283F, TFH-283R and TFH-220F conventional heat detectors
- TPB-10R, TPB-10Y and TPB-10B conventional call points
- TXB-435 barrier

12.1.3 Connection via a TRA-1 Adaptor and an Input Module

- TBD-50, TBD-100, TBD-40, and TBD-8100 beam detectors
- LASD-1 and LASD-2 aspirating detectors
- Sensitron Smart 3 gas detectors
- OSID –TRALIS camera detector

12.2 Output Modules

12.2.1 Direct Attachment to the SLC Loop

- ADR-723 Addressable High power output module
- ADR-741 Addressable relay module
- ADR-742 Addressable speaker switching
- ADR-823A Addressable Three-Channel I/O Module
- ADR-828A Addressable Eight-Channel Output Module
- TIP-224A Addressable Indoor Alarm Notification Sounder
- TFP-3000 fireman phone

12.2.2 Connection via an Output Module or Directly to NACs

- TIP-224 and TIP-114 sounders
- TFS-214S and TFS-214 sounder / strobes
- TFS-4406a and TFS-4460– waterproof sounders
- TFS-4484 – waterproof sounder strobe
- TES-553 – extinguishing activated signs

- TES-553B – extinguishing activated signs / sounders
- TDH-315 and TDH-369 – door magnets

12.2.3 Extinguishing devices

- SAFE (older series) gas cylinders via TLA-110 adaptor
- SAFE (TFN series) gas cylinders via TLA-115 adaptor
- Fike FIRERASER gas cylinders via TLA-130 adaptor
- Fike GCA gas cylinders via TLA-22 adaptor
- Fike Impulse gas cylinders via TLA-23 adaptor
- Firepro aerosol generators via TLA-44 adaptor
- Greenex aerosol generators via TLA-33 adaptor

12.2.4 Other devices

- LI-3000, LI-3000C, and LI-3000E short circuit isolators
- TPS-74A and TPS-34A auxiliary power supplies

12.3 UL Listing

UL

UL Certification

Please note that the ADR-7000 was certified to UL 864 with the following devices:

- TFO-480A and TFO-440A Photoelectric Smoke Detectors
- ADR-705 and ADR-805A Addressable Switch Input
- ADR-712 and ADR-718 Input Modules
- ADR-723 and ADR-823A Output Modules
- LI-3000, LI-3000C, and LI-3000E sort circuit isolators
- TPS-73A Addressable Auxiliary Power Supply

13 Specification

13.1 General Specification

Dimensions (W / H / D)	140 / 332 / 505 mm
Operating Temperature range.....	-10°C – +60°C (14°F – 140°F)
Operating Voltage.....	230 Vac
Mains AC Current Consumption	
basic configuration (1 loop)	60.0mA
each additional loop card	17.0mA
LON-7000	10.0mA
NET-7000	120.0mA
Mains AC Current Consumption – 2 devices in alarm (control panel only)	
basic configuration (1 loop)	280.0mA
each additional loop card	17.0mA
LON-7000	10.0mA
NET-7000	120.0mA
Ground fault resistance	
low sensitivity	14kΩ - 30KΩ
medium sensitivity.....	30KΩ - 60KΩ
high sensitivity	50KΩ - 90KΩ
Event log	
9,999 alarms / 9,999 faults	
Drift compensation update time	3 hours

13.2 Power Supply

The ADR-7000 contains a 150W power supply. The SAVER-7000 and GUARD-7 contain a 100W power supply.

Battery charging..... automatic, variable current automatically controlled. Max charging current 1,500mA ±10%

Batteries

two sealed lead-acid batteries, total voltage 24Vdc (two 12V batteries in series) with a max capacity of 18AH (ADR-7000) or 12AH (SAVER-7000 or GUARD-7)

Battery capacity shall be determined according to the authority having jurisdiction.

13.3 Remote Annunciators

Remote annunciators

ADR-7000	up to 16 RM-7000 annunciators
SAVER-7000 / GUARD-7.....	up to 3 RM-7000 annunciators

13.4 Main Board – Field Connection

NAC 1

Activation mode	Reversed polarity, silenceable
NFPA classification	NFPA 72 Style Y
Activation condition	any alarm, silenceable
Current protection	electronic current limit
Max Current:	1.0A 24Vdc
EOL Resistor	5.1 KΩ

- NAC 2 – See NAC 1
unavailable for SAVER-7000
- SLC card 1
 - NFPA classification: Class B (NFPA style 4) or Class A (NFPA style 6 or 7)
 - Class B or Class A is configurable at single loop level
 - current protection electronic
 - max loop current 400mA
 - Nominal loop voltage 21V, modulated
 - Maximum loop impedance 40Ω
 - Maximum loop capacitance 1.0 μF
 - left connector (marked SLC ↓) is used for outgoing (Class B or Class A)
 - right connector (marked as SLC ↑) is used for return (Class A only)
- 24V_A auxiliary output
 - Activation condition always on
 - Current protection electronic current limit
 - Max Current: 2.0A 24Vdc
- SLC card 2 – see SLC card 1
- 24 V_A Dialer
 - mode constant voltage supply
 - current protection electronic
 - max current 0.3A @ 24Vdc
- Dialer activation
 - mode level activation
 - max current AL output 70mA @ 24Vdc
 - max current TR output 70mA @ 24Vdc
- SLC card 3 – see SLC card 1
inactive in SAVER-7000
- 24V_B1 auxiliary output⁵
 - Activation condition always on
 - Current protection electronic current limit
 - Max Current: 2.0A 24Vdc
- SLC card 4 – see SLC card 1
inactive in SAVER-7000
- 24V_B2 auxiliary output⁵
 - Activation condition always on
 - Current protection electronic current limit
 - Max Current: 2.0A 24Vdc

13.5 Main Board – Relays

-
- Relays 3, unsupervised
 - Relay activation programmable, silenceable
 - Max rating 1.5A 48Vdc
 - Relay contacts are unsupervised and are intended for same room connection only.**

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

⁵ Combined 24V_B1 and 24V_B2 output current shall not exceed 2.0A

14 Certification

Telefire's ADR-7000 Addressable Control Panels have the following approvals:

- EN 54 Approved
- UL 864 Edition 10 Listed
- GOST Approved
- CP 10 Compliant
- IS 1220 Approved
- CE Marked

Appendix A – Current Consumption and Battery Capacity Calculation

Repeat this process separately for each control panel.

Fill in the following table to calculate the total load on the system’s power supply during quiescence (standby) state and alarm.

	Device	QTY	Quiescence		Alarm	
			Current	Total	Current	Total
Internal modules and NACs	ADR-7000/1 (single loop)	{ } X	76.00 mA	=	280.0 mA	=
	Additional loops	{ } X	17.00 mA	=	17.0 mA	=
	LON-7000	{ } X	10.00 mA	=	10.0 mA	=
	NET-7000	{ } X	120.00 mA	=	120.0 mA	=
	GIM-232	{ } X	1.50 mA	=	1.5 mA	=
	TDM-500i	{ } X	20.00 mA	=	300.0 mA	=
	TIP-224	{ } X	0 mA	= 0	40.0 mA	=
	Other NAC	{ } X	mA	=	mA	=
	Other NAC	{ } X	mA	=	mA	=
	Other NAC	{ } X	mA	=	mA	=
Current to loops	TFO-480A/440A	{ } X	0.29 mA	=	2.6 mA	=
	TFH-280A/220A	{ } X	0.20 mA	=	2.6 mA	=
	TPH-482A/442A	{ } X	0.29 mA	=	2.6 mA	=
	TFL-1AN	{ } X	0 mA	= 0	10.0 mA	=
	TPB-800ASR	{ } X	0.12 mA	=	2.0 mA	=
	TPB-800ASY	{ } X	0.12 mA	=	2.0 mA	=
	LI-3000C	{ } X	2.20 mA	=	4.0 mA	=
	LI-3000E	{ } X	0.5 mA	=	4.0 mA	=
	ADR-712	{ } X	0.3 mA	=	15.0 mA	=
	ADR-718	{ } X	0.3 mA	=	15.0 mA	=
	ADR-723	{ } X	0.2 mA	=	2.8 mA	=
	ADR-741	{ } X	0.3 mA	=	3.2 mA	=
	ADR-805A Rev B	{ } X	0.26 mA	=	3.0 mA	=
	ADR-805A Rev C	{ } X	0.20 mA	=	2.0 mA	=
	ADR-812A	{ } X	0.15 mA	=	2.1 mA	=
	ADR-818A	{ } X	0.26 mA	=	2.1 mA	=
	ADR-823A	{ } X	0.30 mA	=	2.8 mA	=
	ADR-828A	{ } X	0.39 mA	=	3.0 mA	=
	ADR-833A	{ } X	6.50 mA	=	6.5 mA	=
	TIP-224A	{ } X	0.12 mA	=	5.0 mA	=
	TPS-34A	{ } X	0.34 mA	=	0.5 mA	=
	TFP-3000	{ } X	15.00 mA	=	70.0 mA	=
	TFP-1CP	{ } X	0.25 mA	=	2.8 mA	=
	TFP-806	{ } X	0.25 mA	=	2.8 mA	=
TFP-828	{ } X	0.39 mA	=	3.0 mA	=	
	Totals		(a)	=	(b)	=

Table 3 Power Requirement – Internal and SLC

At least one and no more than two line cards (ADR-3002 and ADR-3002C) of any combination can be installed in the ADR-7000.

Only one module (NET-7000 or GIM-232) can be installed in the lower expansion slot.

	Device	QTY	Quiescence Current	Total	Alarm Current	Total
SLC connected modules and devices	ADR-712	{ } X	50 mA	=	mA	=
	ADR-718	{ } X	50 mA	=	mA	=
	ADR-723	{ } X	0.9 mA	=	mA	=
	ADR-812A	{ } X	11.5 mA	=	80.0 mA	=
	ADR-818A	{ } X	40.0 mA	=	100.0 mA	=
	ADR-823A	{ } X	4.0 mA	=	32.0 mA	=
	ADR-828A	{ } X	10.0 mA	=	125.0 mA	=
	ADR-833A	{ } X	20.0 mA	=	120.0 mA	=
	TIP-224A	{ } X	0.1 mA	=	45.0 mA	=
	RM-4005	{ } X	40.0 mA	=	70.0 mA	=
	TLA-22	{ } X	2.0 mA	=	0.0 mA	=
	TLA-23	{ } X	2.0 mA	=	0.0 mA	=
	TLA-33	{ } X	3.0 mA	=	0.0 mA	=
	TLA-42	{ } X	2.0 mA	=	0.0 mA	=
	TLA-44/1 or TLA-44	{ } X	5.0 mA	=	0.0 mA	=
	TLA-110	{ } X	1.5 mA	=	0.0 mA	=
	TLA-120	{ } X	1.5 mA	=	0.0 mA	=
	TLA-130	{ } X	1.5 mA	=	0.0 mA	=
	TLA-140	{ } X	1.5 mA	=	0.0 mA	=
	TLA-150	{ } X	1.5 mA	=	0.0 mA	=
	TLA-160	{ } X	1.5 mA	=	0.0 mA	=
	TLA-165	{ } X	1.5 mA	=	0.0 mA	=
	TLA-170	{ } X	1.5 mA	=	0.0 mA	=
	TLA-180	{ } X	1.5 mA	=	0.0 mA	=
	TLA-190	{ } X	1.5 mA	=	0.0 mA	=
	TFP-3000	{ } X	34.0 mA	=	80.0 mA	=
	TFP-1CP	{ } X	0.0 mA	=	2.0 mA	=
	TFP-806	{ } X	0.0 mA	=	2.0 mA	=
	TFP-828	{ } X	10.0 mA	=	125.0 mA	=
	Other NAC	{ } X	mA	=	mA	=
Other NAC	{ } X	mA	=	mA	=	
Other NAC	{ } X	mA	=	mA	=	
	Total 24Vdc current consumption		(c)		(d)	

Table 4 Power Requirement – 24Vdc

First fill in the quantities of devices attached to the system in Table 3 and calculate total current load of the internal configuration and load on the SLC loop.

Secondly calculate the power draw from the system's 24V output (Table 4).

Thirdly copy the appropriate fields into Table 5 and calculate battery requirement and system load.

Multiply the number of devices of each type with the current and calculate the total current.

When connecting indicating output devices such as horns and bells to output modules, add their current to the total current for both standby mode and alarm mode.

Standby Mode Current from Control Panel (A) (a)	+	Standby Mode Current from the 24Vdc source (A) (c)	X	24 Hours 60 Hours 4 Hours	=	Standby Mode Amp Hr.
({ } + { })			X	{ }	=	
						+
Alarm Mode Current from Control Panel (A) (b)	+	Alarm Mode Current from the 24Vdc source (A) (d)	X	5 Minutes (0.084H)	=	Alarm Mode Amp Hr.
({ } + { })			X	{ }	=	
Ampere Hours Sum					=	
Ampere Hours Sum X 1.2 derating factor					=	

Table 5 Power Requirement – Final Calculation

The ADR-7000's power supply module can charge batteries in capacity of up to 12AH. The battery enclosure can contain two 12V sealed lead-acid batteries, up to 20 (W) by 7 (D) by 12 (H) cm each.

For fire alarm control panels requiring larger batteries use the BC-3000 external battery enclosure. This enclosure can contain two 12V sealed lead-acid batteries, up to 20 (W) by 10 (D) by 15 (H) cm each.

If the system requires larger battery capacity than 12 AH add the TPS-34A Auxiliary Power Supply with its own batteries. Please refer to the TPS-34A manual for additional details about the TPS-34A auxiliary power supply.

Additional TPS-34A power supplies are required if one or more of the following conditions is true:

- The quiescence 24V current draw exceeds the control panel's power supply limitations (0.5A for ADR-4004TSW)
- The 24V current draw in alarm exceeds the control panel's power supply limitations (4.0A for ADR-4004TSW)
- There is a need for batteries in capacity that exceeds the control panel's power supply limitations (12AH for ADR-4004TSW)
- The voltage drop on the 24V lines exceeds allowed limitation (no more than 2V at the furthest device, while still leaving sufficient voltage for the device to operate).

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Note

TPS-34A Addressable Auxiliary Power Supplies should be installed as close as possible to the devices they provide power to in order to reduce power loss.

TPS-34A auxiliary power supplies should not be shared between multiple control panels or between line cards on the same control panel. TPS-34A auxiliary power supplies may be shared between the two loops of a single ADR-3002C line card.

When are Auxiliary Power Supplies Needed?

Large fire detection and alarm systems that require high current 24Vdc power may be expanded by installing TPS-34A auxiliary power supplies. These power supplies may be used to add 24Vdc power to the system.

Auxiliary power supplies are required if at least one of the following conditions are met:

- Current draw from the 24Vdc outputs is more than 0.5A in quiescence mode or 1.5A in alarm
- The total power consumption of the control panel (the control panel itself and devices attached and powered by it) is more than 4.0A in alarm
- There is a requirement for batteries with more than 12AH capacity
- Voltage drop to the last device fed by the 24Vdc output is more than 2V, or does not allow high enough voltage at the last device to operate it

Auxiliary power supplies should be installed in the field as close as possible to the devices that they supply 24Vdc to, thereby saving both cabling cost and power losses.

This provides high resilience as the power supplies are distributed and a problem with one power supply will not affect the rest of the system.

There is no limit to the quantity of power supplies that can be added to the system, up to hundreds of amperes.

The power supplies are fed from a 230Vac input and include a power supply, battery charger, and control circuitry. Communication and reporting to the control panel is done via the SLC, with the power supply occupying a single address.

The power supply can supply up to 4A during alarm. Please see the power supply manual for further details.

Appendix B – Detector Sensitivity Selection

14.1 Smoke Detector Sensitivity Settings

Sensitivity	Least Sensitive			Day Default	Night Default		Most Sensitive
Obscuration (% per foot)	2.0	1.8	1.6	1.4	1.2	1.0	0.8

Table 1 Smoke Detector Sensitivity

14.2 Heat Detector Sensitivity Settings

Heat Detectors can be set in two modes:

- **Fixed temperature** – The alarm point can be set between 50°C – 90°C in steps of 1°C.
- **Rate of rise** – The detector will alarm when the rate of temperature rise is equal or higher than the setting in the Sensitivity Field, in the range of 7°C/minute – 13°C/minute in 1°C/minute steps.

Sensitivity	Least Sensitive	Default	Most Sensitive
Fixed Temperature	90°C	50°C	50°C
Rate of Rise	13°C per minute	9°C per minute	7°C per minute

Table 2 Heat Detector Sensitivity

UL

UL Compliance

Please note:

Configure the heat detector as Rate of Rise in the range of 8-13°C per minute or as Fixed Temperature in the range of 58-70°C to comply with UL 521.

14.3 Multi-Sensor Detectors Sensitivity Settings

A smart algorithm is used by the TPH-482A's powerful processor to analyze the ambient temperature, its rate of rise and the trend of these parameters. It then passes a value to the control panel.

Set the detector's sensitivity between 2 (most sensitive) and 10 (least sensitive).

Sensitivity	Least Sensitive	Default	Most Sensitive
Multi-sensor setting	10	5	2

Table 3 Multisensor Detector Sensitivity

Appendix C – Standards Compliance

14.4 UL 864 Compliance

UL

UL 864 Compliance

The ADR-7000 is a UL 864 compliant system that can be used as a standard fire detection and alarm system including sprinkler supervision; fire detection and extinguishing release system; fireman phone system; a compliant smoke control.

Please see section 12.3, UL Listing on page 77 for a list of devices tested for UL compliance with the ADR-7000.

14.5 EN 54 – Options with Requirements

EN 54

EN 54-2 Compliance

The ADR-7000 complies with all EN 54-2 mandatory functions and the following options with requirements:

Section 7.8: Output to alarm devices

Section 7.9: Control of fire alarm routing equipment

Section 7.10: Outputs to fire protection equipment

Section 7.11: Delays to outputs

Section 7.12: Dependencies on more than one alarm signal

Section 7.13: Alarm counter

Section 8.3: Fault signals from points

Section 8.4: Total loss of the power supply

Section 8.9: Output to fault warning routing equipment

Section 9.5: Disablement of addressable points

EN 54-4 Compliance

The ADR-7000 complies with EN 54-4 requirements.

Ancillary Functions

The ADR-7000 provides the following additional features:

Auxiliary 24Vdc outputs

View and change user and programmer passwords

Lamp test

View event list

View software and hardware versions

Restore defaults

The ADR-7000 conforms fully to European standards BS EN 54-2:1998 and BS EN 54-4:1998 and the following optional features:

- *Output to fire alarm devices* – EN 54-2 Section 7.8 option with requirements

- *Output to fire alarm routing equipment* – EN 54-2 Section 7.9 option with requirements
- *Output to fire protection equipment* – EN 54-2 Section 7.10 option with requirements
- *Alarm Counter* – EN 54-2 Section 7.13 option with requirements
- *Total loss of power supply* – EN 54-2 Section 8.4 option with requirements
- *Output to fault warning routing equipment* – EN 54-2 Section 8.9 option with requirements
- *Test condition* – EN 54-2 Section 10 option with requirements

14.6 EN 12094-1 Compliance

EN 12094

EN 12094 Compliance

The ADR-7000 complies with EN 12094-1 mandatory functions and the following options with requirements:

Section 4.17: Delay of extinguishing signal

Section 4.18: Signal representing the flow of extinguishing agent

Section 4.19: Monitoring of the status of components

Section 4.20: Emergency hold device

Section 4.21: Control of flooding time

Section 4.22: Initiating of flooding time

Section 4.23: Manual only mode

Section 4.24: Triggering signals to equipment within the system

Section 4.25: Extinguishing signals to spare cylinders

Section 4.26: Triggering signals to equipment outside the system

Section 4.27: Emergency abort device

Section 4.28: Control of extended discharge

Section 4.29: Release of the extinguishing media for selected flooding zones

Section 4.30: Activation of alarm devices with different signals

14.7 CP-10

CP 10

CP 10 Compliance

The ADR-7000 complies with CP 10:2005 requirements and includes the following features:

- Fire alarm sounder silencing – Clause 2.5.8
- Fire alarm buzzer silencing – Clause 2.5.9
- Alarm verification feature (AVF) – Clause 2.5.11