

TELEFIRE

Telefire Fire & Gas Detectors Ltd.

7000 Series

Addressable Control Panels



Technical Manual

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CE

Note

This product has been designed to comply with the requirements of the Low Voltage Safety and the EMC Directives. Failure to follow the installation instructions may compromise its adherence to these standards.

!

Note

Only trained service personnel should undertake the Installation, Programming and Maintenance of this equipment. Do not use this product until you have a full knowledge of the equipment, safety information and instructions.

Comparing 7000 Series Models:

	ADR-7000	SAVER-7000	Guard-7
Addresses per SLC loop	127	127	60
Maximum SLC Loops per Control Panel	8	2	1
Maximum Addresses per Control Panel	1,016	254	60
SLC Loop Wiring	Class B or A	Class B or A	Class B
Logical Zones	511	511	60
LED Alarm Zone Module Option	32-128 zones	32-128 zones	60
Remote Annunciators per Panel	16	3	3
Remote Annunciator Wiring	Class B or A	Class B or A	Class B
Multi-Panel Network	32 max	No	No
Supports Remote Supervision via TCP/IP	Yes	Yes	Yes
Built-In Power Supply Wattage	150W	100W	100W
AC Input Voltage	110-230 Vac	110-230 Vac	110-230 Vac
Maximum Battery Capacity	18AH	14AH	7AH
Auxiliary 24Vdc outputs	2 (1-4 loops) or 4 (5-8 loops)	1	1
General Alarm NAC outputs	2	1	1
Control Panel Relays	3	3	3
Firefighter Phone Support Option	Yes	Yes	Yes
Smoke Control Support	Yes	Yes	No
Protocol Support for Sounder / Strobes	Yes	Yes	Yes
Event Log: Alarms	9,999	9,999	250
Event Log: Faults	9,999	9,999	1,000

Table of Contents

RESTRICTION OF HAZARDOUS SUBSTANCES (ROHS)	IX
1 INTRODUCTION	1
2 7000 SERIES ADDRESSABLE CONTROL PANELS.....	3
2.1 MAIN BOARD ADR-7021.....	4
2.2 PROCESSOR BOARD (ADR-7007)	4
2.3 SLC LOOP CARD (ADR-7012).....	4
2.4 ADR-7000EM1 – EXPANSION MODULE FOR LOOPS 5-8	5
2.4.1 Maximum addresses	5
2.5 KEYBOARD AND DISPLAY MODULE.....	5
2.6 POWER SUPPLY	6
2.7 ZONE INDICATION MODULE	6
2.8 LON-7000 – CONTROL PANEL NETWORKING MODULES	6
2.8.1 Topology	7
2.9 TCP/IP MODULE	7
2.10 REMOTE ANNUNCIATOR RM-7000.....	8
2.11 ACCESS LEVEL AND SYSTEM USERS	10
3 OPERATION - ALARM, FAULT, SUPERVISORY, DISABLEMENT, AND TEST MODES.....	12
3.1 NORMAL (QUIESCENT) STATE	12
3.2 ALARM STATE	12
3.2.1 Alarm Verification	12
3.2.2 Actions Taken in Alarm	13
3.2.3 Actions Taken Upon Pressing "Buzzer Off" Key	13
3.2.4 Actions Taken Upon Event Confirmation (Pressing the "#" Key).....	13
3.2.5 Actions Taken Upon Alarm Silencing	13
3.2.6 Actions Taken When More Than One Device is in Alarm	13
3.2.7 Resetting an Alarm	14
3.3 FAULT STATE	14
3.3.1 Actions Taken in Fault State	14
3.3.2 Actions Taken Upon Event Confirmation (Pressing the "#" Key).....	14
3.3.3 Actions Taken Upon Pressing "Buzzer Off" Key	14
3.4 SUPERVISORY STATE	15
3.4.1 Action Taken Upon a Supervisory Event	15
3.4.2 Actions Taken Upon Pressing "Buzzer Off" Key	15
3.5 DISABLEMENT STATE.....	15
3.6 TEST STATE.....	16

3.7	STATUS STATE.....	16
4	INSTALLATION.....	17
4.1	PRE-INSTALLATION PLANNING.....	17
4.1.1	Pre-Installation Planning – Capacity Planning	17
4.1.2	Pre-Installation Planning – Effect of Cable Characteristics on System Performance	19
4.2	CABLE PLANNING	19
4.2.1	Cable Planning – SLC (Loop) Cable	19
4.2.2	Cable Planning – SLC (Loop) Cable Selection ADR-7012	19
4.2.3	Cable Planning – 24Vdc Supply to Devices	20
4.2.4	Cable Planning – NAC Outputs	20
4.2.5	Cable Planning – Remote Annunciators	20
4.2.6	Cable Planning – Galvanic Networks	20
4.2.7	AUX Power Supplies	21
4.2.8	Pre-Installation Planning – Activation Matrices	21
4.2.9	Pre-Installation – Releasing Planning	22
4.3	WIRING.....	22
4.4	INSTALLATION OF DETECTORS, I/O MODULES, AND OTHER MODULES.....	22
4.4.1	Mounting the Control Panel's Cabinet.....	22
4.4.2	Field Connection Diagram – ADR-7000	27
4.4.3	An example of connecting Class A and Class B loops	28
4.4.4	Testing the SLC Loops	29
4.4.5	Connecting Low-Voltage Devices	30
4.4.6	Connecting AC Power	31
4.4.7	Connecting the batteries	32
4.4.8	Site-Specific Configuration (Programming).....	32
4.4.9	Ensure All Devices are identified.....	33
4.4.10	Initialize Detectors	33
4.5	POST-INSTALLATION	33
4.5.1	Control Panel Activation	33
4.5.2	Field Test.....	33
4.5.3	Verification of Conditional Activation	33
4.5.4	Arm Extinguishing Systems.....	34
4.5.5	Change passwords.....	34
4.5.6	System Documentation	34
5	AUTOMATIC EXTINGUISHING	35
5.1	EXTINGUISHING OUTPUT AND EXTINGUISHING CONTROLLER.....	35
5.2	MANUAL ACTIVATION	35
5.3	ABORT AND HOLD.....	35
5.4	EXTINGUISHING DISCONNECT.....	36
5.5	EXTINGUISHING NOTIFICATION AND ACTION TO PERFORM AFTER RELEASE	36

6	DISPLAY AND KEYBOARD	38
6.1	LCD DISPLAY	38
6.2	LEDs	39
6.3	OPERATOR KEYS	42
6.4	NUMERICAL AND ARROW KEYS.....	42
6.4.1	Numerical Keys	42
6.4.2	Arrow Keys	43
7	SYSTEM CONFIGURATION (PROGRAMMING) PROCESS	44
7.1	MENU STRUCTURE	44
7.2	ENTERING CONFIGURATION STATE.....	45
7.3	CONFIGURATION PROCESS	45
7.4	SAVING THE CONFIGURATION AND EXIT OUT OF SYSTEM CONFIGURATION	45
8	SYSTEM CONFIGURATION (PROGRAMMING).....	46
8.1	SYSTEM CONFIGURATION	46
8.2	ENABLEMENT / DISABLEMENT.....	46
8.2.1	Enabling and Disabling a Zone	47
8.3	MONITOR.....	48
8.4	SYSTEM REPORTS.....	49
8.4.1	Alarms	49
8.4.2	Faults.....	49
8.4.3	Field Test.....	50
8.4.4	Key Operations.....	50
8.4.5	Device Listing	51
8.4.6	Active Outputs	51
8.4.7	Maintenance Recommendations.....	51
8.5	UTILITIES	52
8.5.1	Lamp Test.....	52
8.5.2	Clear Activated Extinguisher	52
8.5.3	Revisions	52
8.5.4	Keyboard Locking.....	52
8.5.5	Time / Date Program	53
8.5.6	Day / Night Setting.....	53
8.5.7	Holidays Setting.....	54
8.5.8	Voltage / Current Measurements	54
8.5.9	Device Address Programming.....	55
8.6	WALK TEST.....	56
8.6.1	Select Devices.....	56
8.6.2	View Progress	56
8.6.3	Config Parameters.....	57
8.7	SYSTEM VIEW	57

8.7.1	Licensing	57
8.7.2	View Devices	57
8.7.3	Connected Panels	58
8.8	SMOKE CONTROL TEST	58
8.9	SYSTEM CONFIGURATION	59
8.9.1	Panel Number	59
8.9.2	Main Screen Message	59
8.9.3	Panel Description	59
8.9.4	Partners	60
8.9.5	SLC Loops	60
8.9.6	System Language	61
8.9.7	NAC Protocol Setting	61
8.9.8	NAC Outputs	61
8.9.9	Relays	61
8.9.10	Alarm Dialer 1	62
8.9.11	Dialer 2 (Tr)	62
8.9.12	Remote Annunciators	62
8.9.13	COM Ports	63
8.9.14	LON Card	63
8.9.15	Loop Expansion Card	63
8.9.16	Ground Fault	64
8.9.17	Inhibit Alarm Silence	64
8.9.18	First Fault Delay	64
8.9.19	AC Fault Buzzer Delay	64
8.9.20	Communication with ADR-3000	65
8.10	DEVICE PROGRAM	65
8.10.1	Manual Device Programming	65
8.10.2	Automatic Device Programming	67
8.11	CREATING DEVICE GROUPS	68
8.12	DIAGNOSTICS	68
8.13	CLEAR REPORTS	68
8.14	CHANGE PASSWORDS	69
8.15	DETECTOR INITIALIZATION	69
8.16	ADVANCED PROGRAMMING USING VIRTUAL LOOP (LOOP 9)	70
8.16.1	Virtual Loop	70
9	TROUBLESHOOTING	72
9.1	LEDs	72
9.1.1	LEDs on the User Display	72
9.1.2	LEDs on the Main Board	72
9.1.3	LEDs on the Loop Card	72
9.2	CONTROL PANEL ERROR MESSAGES	72
9.3	SYSTEM FAULTS	72

9.4	ADDRESSABLE DEVICE FAULTS	74
9.5	PROGRAMMING FAULTS	76
9.6	STATUS MESSAGES	78
9.7	CONTROL PANEL NETWORK FAULTS	78
10	PERIODIC TESTS	79
10.1	WEEKLY TEST – DONE BY SITE SUPERVISOR	79
10.2	BATTERY TEST	79
10.3	EVACUATION DRILL	79
11	WARNINGS AND LIMITATIONS	80
12	COMPATIBILITY	81
12.1	INPUT DEVICES	81
12.1.1	Direct Attachment to the SLC Loop	81
12.1.2	Connection via an Input Module	81
12.1.3	Connection via a TRA-1 Adaptor and an Input Module	81
12.2	OUTPUT MODULES	81
12.2.1	Direct Attachment to the SLC Loop	81
12.2.2	Connection via an Output Module or to the control panels NAC Outputs	82
12.3	EXTINGUISHING DEVICES	82
12.4	OTHER DEVICES	82
13	SPECIFICATIONS	83
13.1	GENERAL SPECIFICATION	83
13.2	POWER SUPPLY	83
13.3	REMOTE ANNUNCIATORS	84
13.4	MAIN BOARD – FIELD CONNECTIONS	84
13.5	MAIN BOARD – RELAYS	85
13.6	EXPANSION MODULE FOR LOOPS 5 – 8 (ADR-7000 ONLY)	85
13.7	LOOP ATTACHED NACs	85
APPENDIX A – CURRENT CONSUMPTION AND BATTERY CAPACITY CALCULATION		86
WHEN ARE AUXILIARY POWER SUPPLIES NEEDED?		90
ADR-7000		90
SAVER-7000		90
APPENDIX B - DETECTOR SENSITIVITY SELECTION		91
SMOKE DETECTOR SENSITIVITY SETTINGS		91
HEAT DETECTOR SENSITIVITY SETTINGS		91
SMOKE DETECTOR SENSITIVITY SETTINGS		91

APPENDIX C – STANDARDS COMPLIANCE	92
EN 54 – 2: OPTIONS WITH REQUIREMENTS	92
EN 54 – 4 PSE FUNCTIONS	92
EN 54 – 13 SYSTEM FUNCTIONS	92
EN 54! – NON EN54 FUNCTIONS.....	92
CP-10	92
CE	93

Regulatory Standards

TELEFIRE'S 7000 Series Addressable Control Panels comply with the requirements of several standards, including SI 1220, EN 54, EN 12094, CE and GOST, and may comply with options or requirements of one of the standards that are not compliant with another standard.

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

► Please dispose WEEE (Waste of Electronic & Electric Equipment) only following national or local regulations after being scrapped or replaced.



Restriction of Hazardous Substances (RoHS) in electrical & electronic equipment and various plastic components. They help keep electronics, hazardous and plastic materials out of the waste stream, the US Environmental & Protection Agency (EPA) offers a list of companies that provide recycling options for electronics, hazardous and plastic materials.

1 Introduction

TELEFIRE'S 7000 Series Addressable Control Panels are EN-54 compliant systems that provide a wide range of flexible, scalable, and adaptable cost-effective solutions to meet the needs of the most demanding applications.

The 7000 Series addressable fire alarm systems provide support for sprinkler supervision, fire detection, extinguishing/releasing, firefighter phones, and smoke control.

The panels continuously monitor addressable initiating devices such as smoke detectors, heat detectors, multi-sensor detectors, manual fire alarm call points and flow switches. They also monitor and activate output devices such as sounders, strobes, and emergency signage (connected to ADR-723), etc.

The Guard-7 is ideal for small applications, providing 60 total addressable devices and 60 zones. The SAVER-7000 is suitable for medium to large applications, providing 254 total addressable devices and 511 zones, and also provides support for smoke control.

TELEFIRE'S flagship ADR-7000 panel was developed to meet the demands of the largest and most complex applications. For standalone applications, the ADR-7000 can support up to 1,016 addressable devices and up to 511 zones. For network applications, such as a college campus, up to 32 ADR-7000 panels may be connected together in peer-to-peer fashion and custom configured to meet the needs of the specific application.

The 7000 Series control panels perform automatic drift compensation to adjust the detector's sensitivity and compensate for changes in environmental conditions and dust accumulation. The panels include a maintenance fault feature that indicates when a detector requires cleaning.

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).

Detailed system status LEDs and a user-friendly graphic LCD provide clear display of the system's status. Each event is clearly detailed and allows for quick and convenient identification of alarms and faults to the fire authorities, end user, installer, and service technicians. Optional LED modules allow for zone indication.

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

All **TELEFIRE** 7000 Series Addressable Control Panels contain a highly resilient power supply system, ensuring that a short circuit 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 are being powered from the same 24Vdc supply. While each 7000 Series panel contains an internal power supply, auxiliary 24Vdc to field devices may be expanded by using remotely located EN-54 listed power supplies, to avoid costly power losses over long cables.

All inputs and outputs are fully supervised. Outputs are monitored for over-current conditions and are disconnected automatically should the current drawn from them exceed the specified limit. Input and output protection is provided without the use of fuses, using an advanced current management design that allows for high resilience of the system when encountering a shorted output and automatically return to normal operation when the short is resolved.

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 7000 Series Addressable Control Panels are synchronized, regardless of the loops 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 7000 Series panels support Gentex and Wheelock protocols.

Typical configuration of an ADR-7000 panel is shown below:

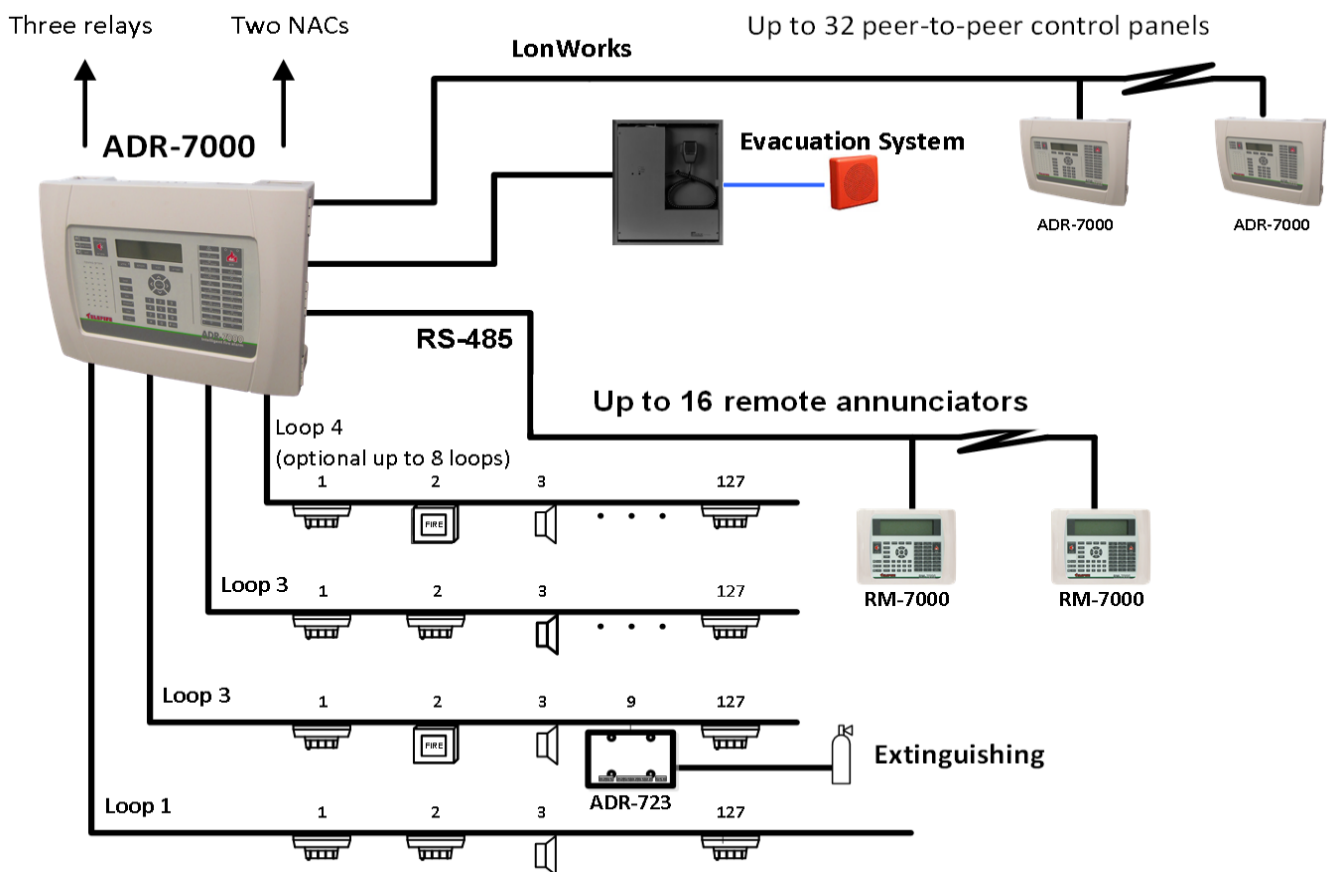


Figure 1 Typical ADR-7000 System

2 7000 Series Addressable Control Panels

The 7000 Series Addressable Control Panels provide user-friendly operation. The keyboard and display that are mounted on the front panel contain an illuminated 260 x 64 pixel based graphical LCD, LED system status indicators, 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-7012 SLC loop cards, enabling monitoring and controlling as many as 508 addressable devices, including initiating, notification, and I/O module devices. Each line card can be configured as a Class B or Class A loop.

An optional expansion module P/N: ADR-7000EM1 allows for support for up to four additional ADR-7012-line cards (up to 1,016 addresses total per ADR-7000 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 configured on a peer-to-peer network. With appropriate programming, each control panel on the network is able to respond to alarm and fault events that occur on other control panels.

The 7000 Series control panels have 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, fault, silencing, reset, programming, etc., are stored in the 7000 Series panel'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.

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

The 7000 Series Addressable Control Panels have a variety of communication interfaces:

- RS-232 connection to a computer.
- MCOM TCP/IP module local connection for configuration and maintenance.
- RS-485 for Class B or Class A communication with remote annunciators.
- USB connector for connecting to a computer for configuration and maintenance.

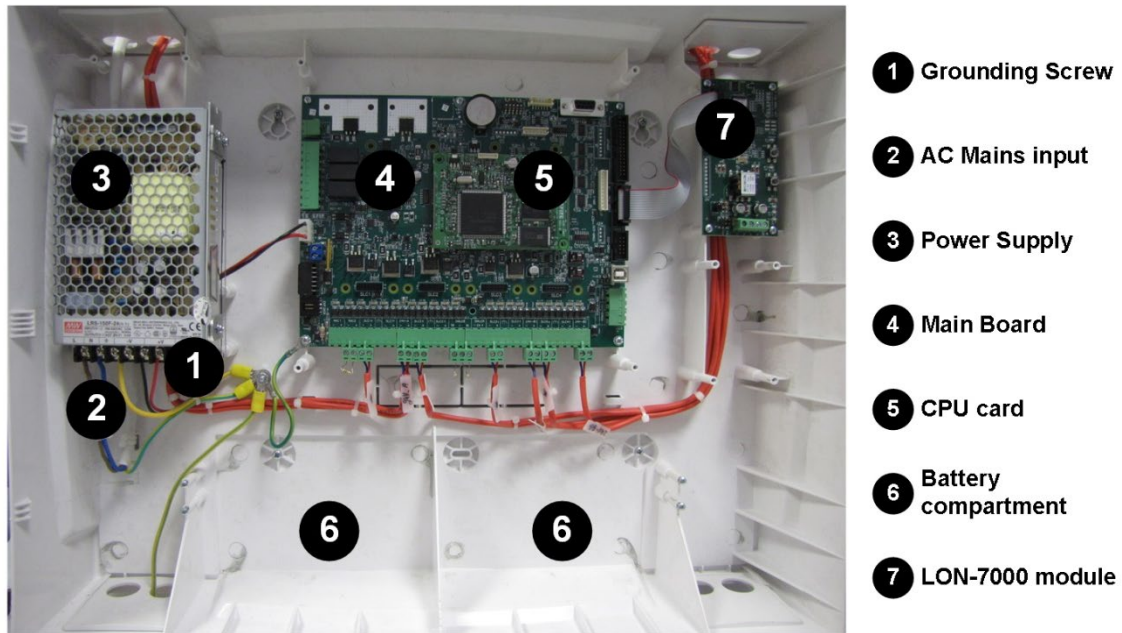


Figure 2 ADR-7000 subassemblies

2.1 Main Board ADR-7021

The 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 general purpose NACs (ADR-7000: 2 NACs, SAVER-7000 and Guard-7: 1 NAC); SLC loops (ADR-7000: 4 / SAVER-7000: 2 / Guard-7: 1), 24Vdc supply to the field (ADR-7000: 2 / SAVER-7000: 1 / Guard-7: 1). On the right are the display / keyboard connector, connector for LON-7000 networking module (ADR-7000 only), an RS-232 port for MCOM TCP/IP module, and a connector for the RM-7000 remote annunciator units. See section 4.4.2 for more details.

2.2 Processor Board (ADR-7007)

The processor board contains the processor; RAM; non-volatile memory containing site-specific data (programming) and history; and watchdog circuitry.

2.3 SLC Loop Card (ADR-7012)

Up to four ADR-7012 SLC loop cards can be mounted on the ADR-7000 main board (two ADR-7012 on the SAVER-7000) and control the bi-directional communication between the control panel and the addressable devices on the SLC loop.

Each SLC loop is electronically protected against shorts and will be automatically disconnected if a short is sensed. Each SLC loop 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 fault condition.

Models**Model differentiation**

ADR-7000 supports four (4) P/N: ADR-7012, SAVER 7000 supports two (2) P/N: ADR-7012

2.4 ADR-7000EM1 – Expansion Module for Loops 5-8

Models**Model differentiation**

ADR-7000: use P/N ADR-7000EM1

SAVER-7000: the expansion module is not compatible with the SAVER-7000

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-7000 supports 1 – 8 additional SLC loops such as ADR-7012.

The Saver-7000 supports 1 – 2 additional SLC loops such as ADR-7012.

2.4.1 Maximum addresses

Each SLC loop card is capable of communicating with up to 127 addresses. The maximum number of addresses supported by a single ADR-7000 control panel is 1,016 and the maximum number of addresses supported by a SAVER-7000 control unit is 254.

ADR-7012 loop cards	ADR-7000	SAVER-7000
1	127	127
2	254	254
3	381	N/A
4	508	N/A

ADR-7000EM1 loop card	ADR-7000	SAVER-7000
5	635	N/A
6	762	N/A
7	889	N/A
8	1,016	N/A

Table 2 Maximum addresses by configuration

2.5 Keyboard and Display Module

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

The display and keypad has six main areas:

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

See explanation in section 6, page 38 for additional details.

Models**Model differentiation**

ADR-7000: use P/N ADR-7003

SAVER-7000 and Guard-7: use P/N ADR-7063

2.6 Power Supply

The ADR-7000 has a 150W power supply.

The SAVER-7000 and the Guard-7 have a 100W power supply.

All models accept 110-230Vac (nominal) input.

Models**Model differentiation**

ADR-7000: use P/N PS-LRS-150F-27.8

SAVER-7000 and Guard-7: use P/N PS-LRS-100-27.8

2.7 Zone Indication Module

This optional module has alarm LEDs for the first 32 logical zones. Indication for up to 128 additional zones can be installed in an additional expansion chassis.

Models**Model differentiation**

ADR-7000: use P/N ADR-7000ZM

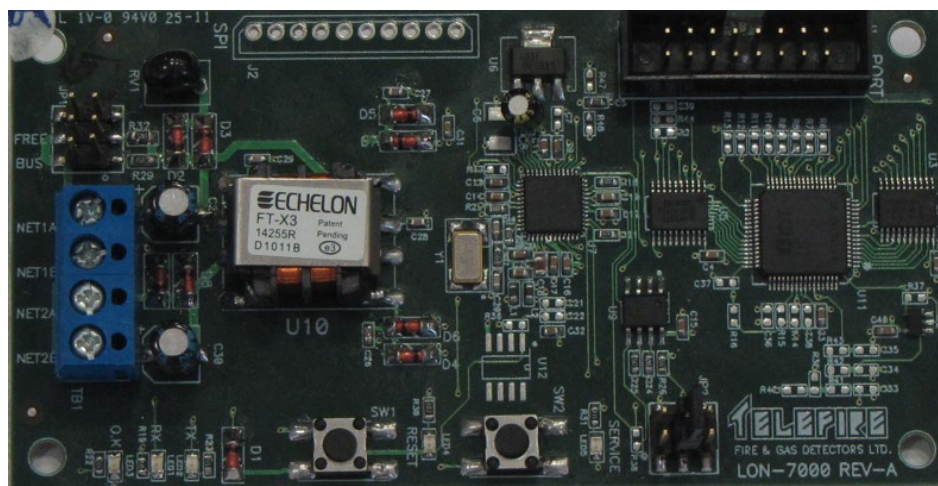
SAVER-7000 and Guard-7: not compatible with P/N ADR-7000ZM

2.8 LON-7000 – Control Panel Networking Modules**Models****Model differentiation**

ADR-7000: use P/N LON-7000

Not compatible with the SAVER-7000 and Guard-7

The LON-7000 is a communication module that enables connection between ADR-7000 control panels to establish a wire and/or a fiber optic cable network. The LON-7000 supports a two-wire copper cable connection - in a Ring, Bus or Free topology. The length and type of the wires depends on the connection topology. Please refer to the LON-7000 technical manual for further details.

**Figure 3 LON 7000 Networking communication module**

*i***Note**

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

2.8.1 Topology

An ADR-7000 LonWorks network can connect from 2, 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, ring, or free topology. Redundant ring topology is also available via fiber optic ring technology and LonWorks over fiber-optics transceivers. Logical hierarchy may be peer-to-peer (where all messages are reported to all control panels), master/slave (where slave messages are reported to master control panels), or a combination of the two.

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

2.9 TCP/IP Module

The MCOM card is a web gateway that sends the data to the cloud over the following protocols:

1. TCP/IP
 - a. Dynamic IP address
 - b. Static IP address
2. Cellular
3. Wi-Fi

The MCOM is part of **TELEFIRE** Connect Service and connects to the 7000 Series Addressable Control Panels over COM 1 or 2.



Figure 4 MCOM Card

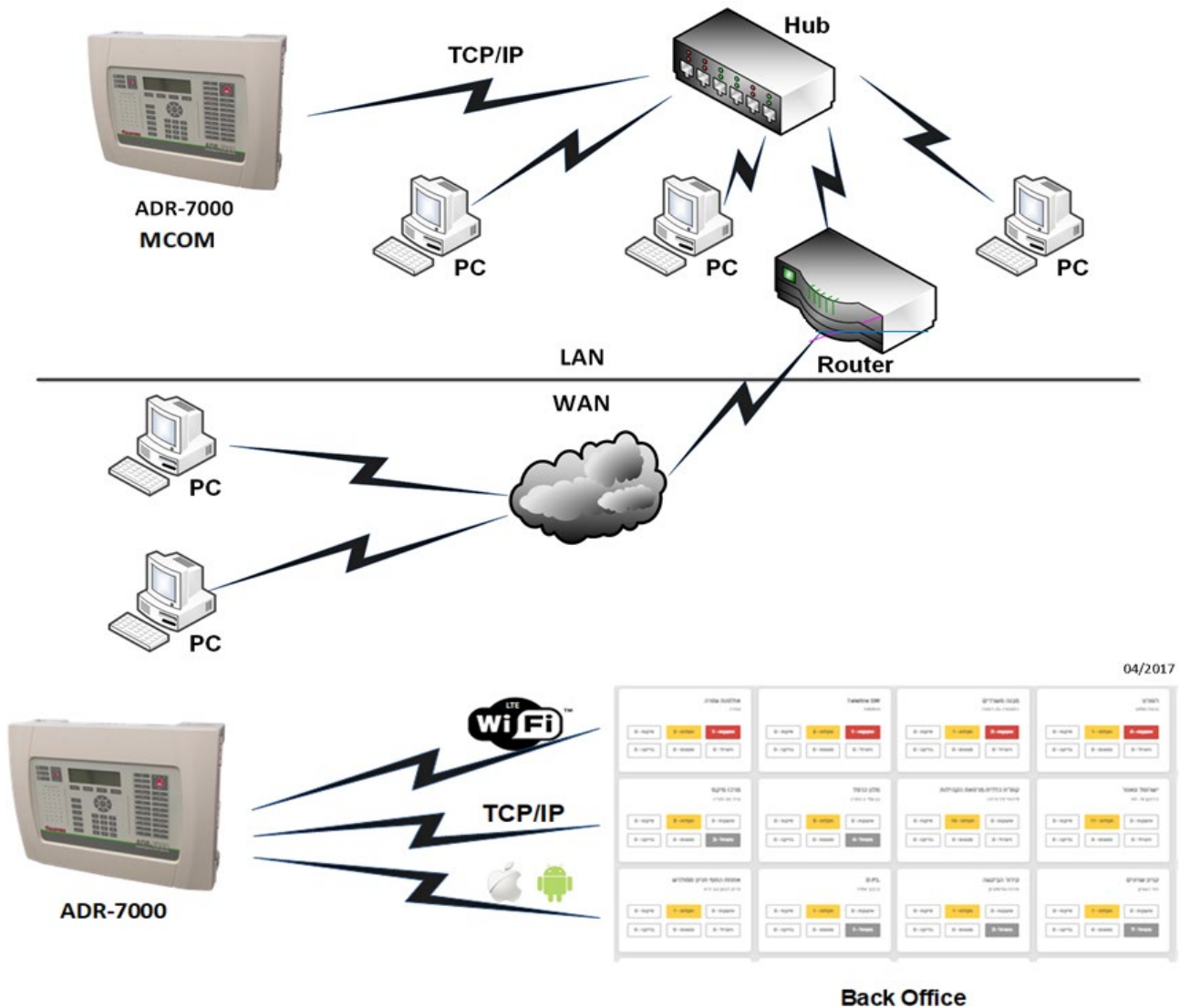


Figure 4 Cloud architecture networking communication

Models**Model differentiation**

ADR-7000: use P/N MCOM

SAVER-7000 and Guard-7: use P/N MCOM

2.10 Remote Annunciator RM-7000**Models****Model differentiation**

ADR-7000: use P/N RM-7000 (up to 16 maximum)

SAVER-7000 and Guard-7: use P/N RM-7000 (up to 3 maximum)

The RM-7000 Remote Annunciator enables control and supervision of the 7000 Series Addressable Control Panels from remote locations and from key positions such as security officer or facility manager.

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

The remote annunciators are connected to the main control panel via a twisted wire pair (RS-485). As many as 16 remote annunciators can be connected to the ADR-7000 control panel using Class B or Class A communication configuration and up to 3 remote annunciators can be connected to the SAVER 7000 and Guard-7 control panels. Each remote annunciator 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 ADR-7000 control panels connected via a peer-to-peer network, as many as 16 remote annunciators can be connected to each of the ADR-7000 control panels.

The RM-7000 requires a 24Vdc power source to operate that can be supplied from the main control panel or a TPS-74A or TPS-34A auxiliary power supply.

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



Figure 5 RM-7000 Remote Annunciator

2.11 Access Level and System Users

The 7000 Series Control Panels provide protection against unauthorized access through protection of certain functions by various access levels.

The control panels include an electronic locking mechanism that allows work in four access levels:

- **Access level 1** – not limited by password.
- **Access level 2** (operator) – authorized user, 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, programming, and service.
- **Access level 4** (administrator) – protected by dedicated tool (factory only – not available in the field).

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

User and default password	Position Example
User 1 (111111)	Security guard
User 2 (222222)	Operator 1 – an employee of building owner or manager that has undergone user training.
User 3 (333333)	Operator 2 – an employee of building owner or manager that has undergone user training.
User 4 (444444)	Programmer 1 – someone who is qualified to install and configure the system.
User 5 (555555)	Programmer 2 – someone who is qualified to install and configure the system.
User 6 (666666)	Master Programmer – a senior person who is qualified to perform advanced operations within the system.

Table 3 Users and their passwords

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

Table 4 Users' access levels

3 Operation - Alarm, Fault, Supervisory, Disablement, and Test Modes

Alarm, fault and 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 or more events occur at the same time, the first event will be shown (alarms have the highest priority) and the event counters in the LCD display show the total number of alarms, supervisory events, status events, faults, disablements, and addresses in test mode.

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

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

3.1 Normal (Quiescent) State

Normal state is a condition of the system when there are no active alarm or fault events, 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 Quiescent state

3.2 Alarm State



Screen 2 Alarm state

3.2.1 Alarm Verification

The alarm verification feature is a programmable option that is commonly used to prevent false or nuisance alarms.

When an address is programmed for alarm verification, the control panel will not go into alarm immediately, instead it resets the device in alarm, waits for up to 59 seconds (depends on individual address programming) and then rechecks whether the same address is in alarm. During this subsequent alarm confirmation time period, the control panel will enter the alarm state if an alarm is received from the same or another address.

During the alarm confirmation time period, the control panel will enter the alarm state immediately when there is another alarm event, even if that address is programmed for alarm verification.

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

3.2.2 Actions Taken in Alarm

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

- Indicates the description of the address in alarm on the LCD displaying the first Alarm filed. Additional information can be displayed using the buttons.
- Turns on the appropriate system status LED(s) on the front of the panel including General Alarm and Zone in Alarm.
- Displays the alarm on the remote RM-7000 annunciator(s) if connected.
- Logs the event in alarm history file.
- Activates the NAC outputs in the panel.
- Activates internal buzzer.
- Activates relays that were configured as alarm relays.
- Activates output addresses as per matrix configuration.

3.2.3 Actions Taken Upon Pressing "Buzzer Off" Key

- Silences the internal buzzer.

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

- Any new event will flash the appropriate LED, Pressing the **Acknowledge** or # keys will stop the flashing of the LEDs and turn them solid on to have clear visual indication that the event was acknowledged. Acknowledging applies only to the currently displayed event.

3.2.5 Actions Taken Upon Alarm Silencing

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

- Stops the action of the NAC outputs if "silenced" is configured.
- Stops the action of the internal buzzer.
- Stops the alarm relay if it was programmed as silenceable.
- Stops addressable outputs that were programmed as silenceable.

3.2.6 Actions Taken When More Than One Device is in Alarm

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

Screen 3 Two concurrent alarms

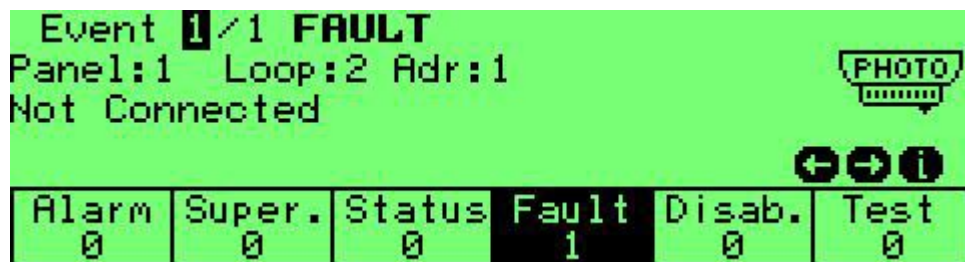
When receiving a second alarm, (i.e., two devices are in alarm at the same time), the control panel performs the following operations:

- Reactivates all silenced outputs.
- Increases the alarm event counter on the LCD display.
- Displays the second/last alarm in the second field.
- Activates 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 and entering the password.

3.3 Fault State



Screen 4 Fault state

A fault in the system will be indicated on the panel by a flashing yellow LED in addition to the fault information shown on 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:

- Indicates the type of fault event on the display.
- Turns on the **General Fault** LED.
- Activates the internal buzzer in the control panel.
- Logs the event in the fault history.
- Activates relays, on the main board or addressable, that were configured as fault relays.

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

- Stops LED indicator flashing. The LEDs will stay on until the fault condition is resolved or flash again if a new fault appears.

3.3.3 Actions Taken Upon Pressing "Buzzer Off" Key

- Silences the internal buzzer.

3.4 Supervisory State



Screen 5 Supervisory state

In certain applications, there may be a need to monitor, annunciate, and respond to various types of supervisory conditions such as disengage manually automatic extinguishing, closed sprinkler valve, etc.

The supervisory function supports monitoring of supervisory conditions and reacts according to system programming.

Supervisory conditions do not latch – at the end of the event, the system goes back to the normal state without manual intervention.

3.4.1 Action Taken Upon a Supervisory Event

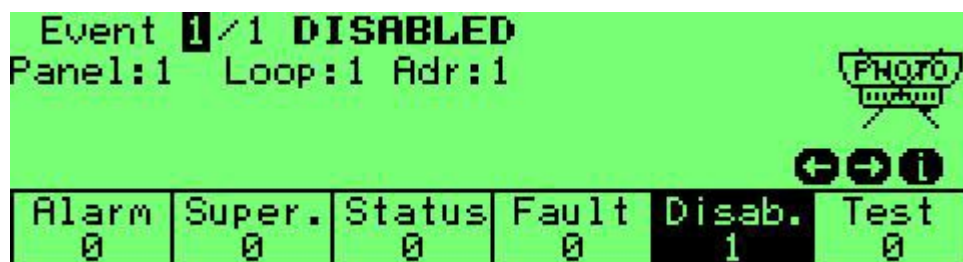
A supervisory event will cause the control panel to perform the following operations:

- Turns on the supervisory LED and displays the supervisory indication on the LCD display.
- Indicates the fault event on the RM-7000 remote annunciator(s) if connected.
- Activates the internal buzzer with a distinctive sound, logs the event in the fault history file.
- Activates supervisory outputs that are in the same logical zone as the activated supervisory device, if defined.
- Activates general supervisory relays, if defined.

3.4.2 Actions Taken Upon Pressing "Buzzer Off" Key

- Silences the internal buzzer.
- Pressing the acknowledge key "#" will stop the flashing of the system status LEDs, turning them solid.

3.5 Disablement State



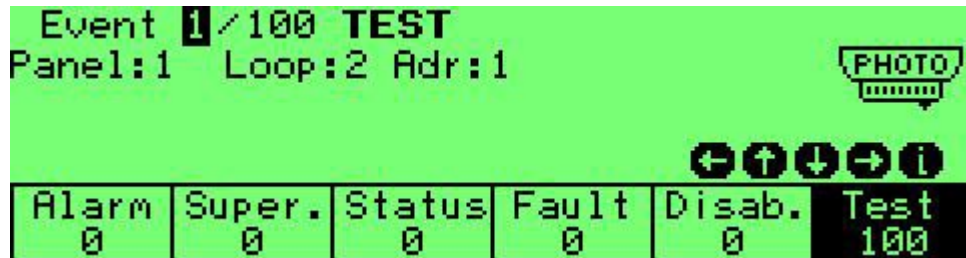
Screen 6 Disablement state

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 are disabled, the general disabled LED is turned on and a message similar to above is shown on the LCD displaying the number of total disabled devices and an "X" on each device icon.

3.6 Test State



Screen 7 Test state

Test State allows testing of the system's initiating devices, without activating outputs, and automatically resetting the device after each test. This state is indicated by the general Test LED and by message as shown above on the LCD display.

See chapter 8.4.3 onwards 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 (Drill)
- Pre-alarm
- 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

When such events occur, a description of the event similar to that shown above will be indicated on the LCD Display.

4 Installation

The planning process should take into consideration the entire system and any specific requirements of the intended application.

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 local codes and installation standards and consult with the local fire authority.

Make a list of the equipment required, taking into consideration any 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 panel 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 the quiescent state and the alarm state. 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 and system requirements as necessary.



Installation Recommendation

Be certain to adhere to the installation standards that will be applied to each application. (Note: these differ from country to country that allow EN-54 and CE certified products.)

4.1 Pre-Installation Planning

Planning of quantity and location of detectors, push buttons, notification appliances and extinguishing devices shall be done in accordance with the local codes, regulations, engineering consultant specifications and local fire authority requirements.

4.1.1 Pre-Installation Planning – Capacity Planning

Calculate the total number of addresses required by the system's addressable 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 8 and round up to the nearest whole number to calculate the minimum number of control panels required.

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

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

P/N	Description	Addresses
TFO-480A	Photo-Electric Smoke Detector	1
TFH-280A or TFH-220A	Photo-Electric Heat Detector	1
TPH-482A or TPH-442A	Combined Photo-Electric Smoke & Heat Detector	1
ADR-705	Dual Switch Interface Module configured as a single address ¹	1
ADR-705	Dual Switch Interface Module configured as two addresses ¹	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	1
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-805A	Flow Switch Interface Module	1
LI-3000	Line Isolation Module for Class A/B	1

Table 5 Address Requirements

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 modules (factory default for ADR-718).

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

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

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

Table 6 Effect of Cable Characteristics on System Performance

4.2 Cable Planning

4.2.1 Cable Planning – SLC (Loop) Cable

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Note

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

The ADR-7000 and SAVER 7000 allow wiring of the SLC loop in a closed loop (Class A) as well as branching T-shaped (Class B) wiring configurations. The Guard-7 is Class B only.

Class A configuration requires a minimum of one LI-3000 or LI-3000E isolation 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-circuits 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.

4.2.2 Cable Planning – SLC (Loop) Cable Selection ADR-7012

The module connects to the control panel via a two-wire cable 20 – 15 AWG (cross section of 0.5mm² to 3.3mm²). Twisted-pair cable is recommended.

Cable Type	Diameter mm ²	Width mm ²	Maximum Cable Length
20 AWG	0.812	0.518	320
18 AWG	1.024	0.823	410
15 AWG	1.380	1.50	610

Each loop can carry up to 550 mA while total load shall not exceed 2.5 A

Table 7 Maximum SLC Loop Length

4.2.3 Cable Planning – 24Vdc Supply to Devices

The length of high current (during 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 – NAC Outputs

The length of NAC line 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).

4.2.5 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 shall be done as per the recommendation of RS-485 standards 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 annunciators 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 specifications. 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 ft5 (1,220m).

4.2.6 Cable Planning – 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 8 Maximum LON Cabling Length

Cabling topology can be bus, free, or a mixture of any topologies.

4.2.7 AUX Power Supplies

Additional TPS-74A or TPS-34A 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 quiescent mode or 2.0A in alarm or,
- 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 or,
- There is a requirement for batteries with more than 18AH capacity or,
- Voltage drops 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 may be fed from a 120Vac / 60Hz or 230Vac / 50Hz input (nominal) 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.

Calculate the power requirement for each ADR-7000 control panel to see whether additional power supplies are needed. See "When are auxiliary power supplies needed?" on page 87 for current draw calculations.

4.2.8 Pre-Installation Planning – Activation Matrices

Plan the activation logic as required for the application and as specified by the consultant engineer and local fire authority, in compliance with local codes, standards and regulations.

4.2.9 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.



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 to the rules and regulations specified by the applicable installation standards, the local fire authority and the engineering consultant.

System connections shall be made when power sources are disconnected. Changing/installing electrical activation modules shall be done when the system is in a quiescent non alarm 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 7000 Series Control Panels 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 MCOM, or PC – for temporary connection; 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.

Computer interface is intended for temporary local connection for configuration and maintenance.

Please note the following:

- The panel weight is heavy when the batteries are installed. Use the appropriate fixing hardware to secure the panel to the wall. Observe recommended lifting practices to guard against spinal injury.
- Open enclosure door.
- Remove electronics following anti-static precautions:
 - This equipment is constructed with static sensitive components. Observe anti-static precautions at all times when handling printed circuit boards. Wear an anti-static earth strap connected to panel enclosure earth point. Before installing or removing any printed circuit boards, remove all sources of power (mains and battery).

- Remove knockouts before mounting enclosure to wall.
 - Drill the required holes in the supporting wall using a drill bit diameter 6 mm and plug with a suitable 6 mm or longer expansion plugs. Affix the panel to the wall with compatible screws. Use appropriate fixings to support the weight including the batteries.
 - Ensure that there is sufficient space to allow the door to be opened when the panel is mounted.
 - Finally, use a brush to remove any dust or debris from inside the enclosure.
- See figures below:

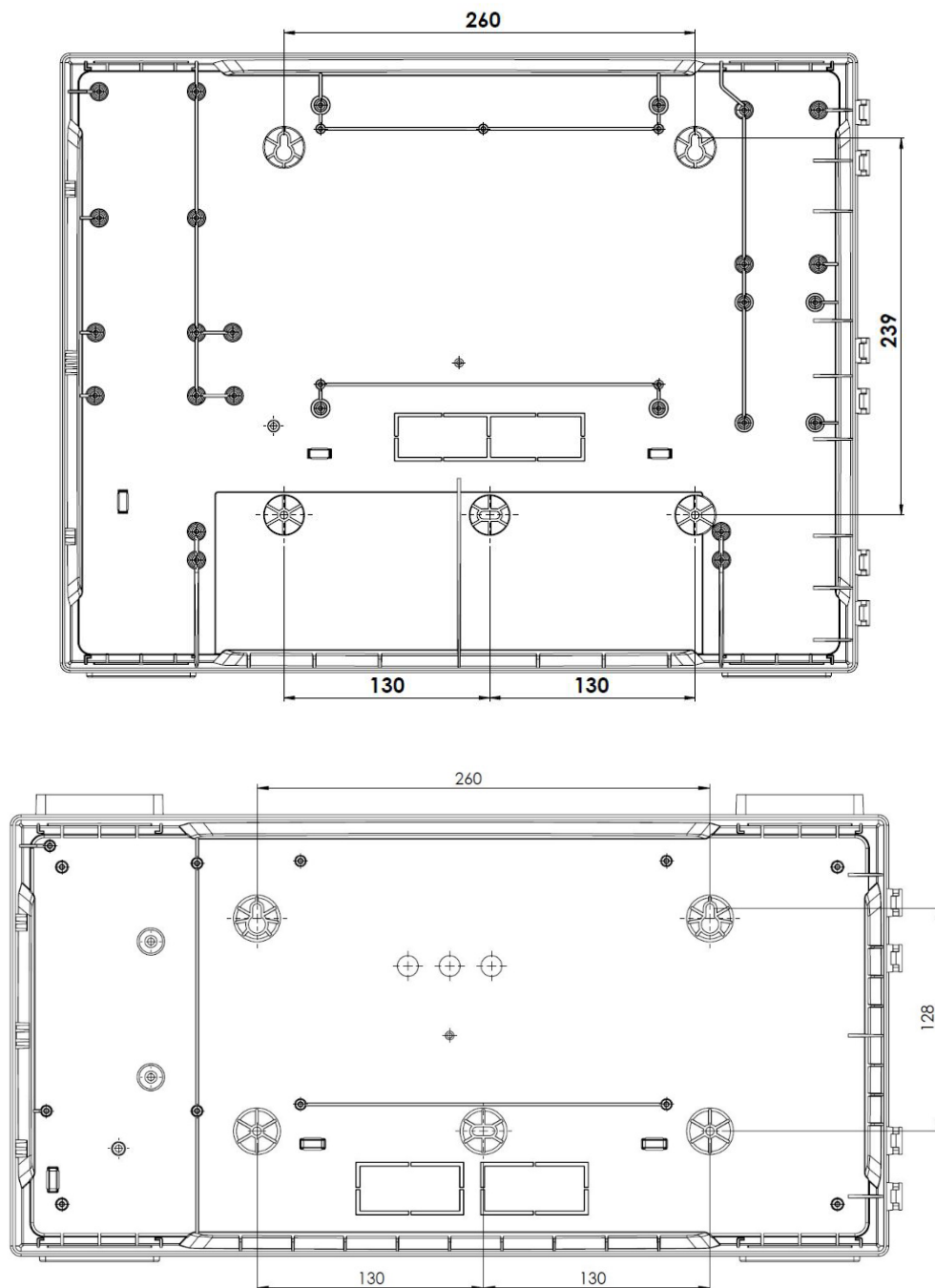


Figure 6 Mounting holes in the ADR-7000 Chassis

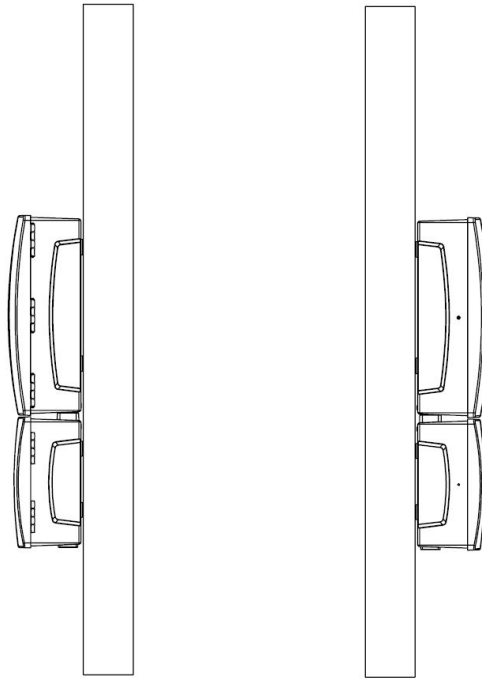


Figure 7 ADR-7000 Surface Mounting

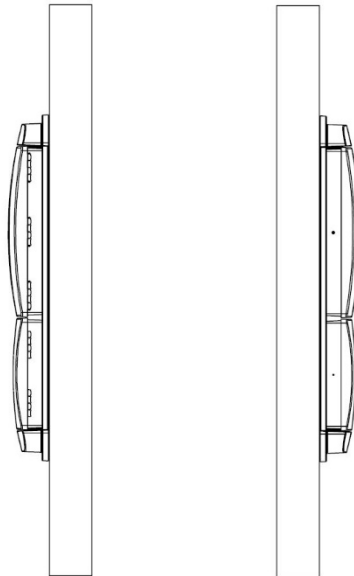


Figure 8 ADR-7000 Flush Mounting

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.

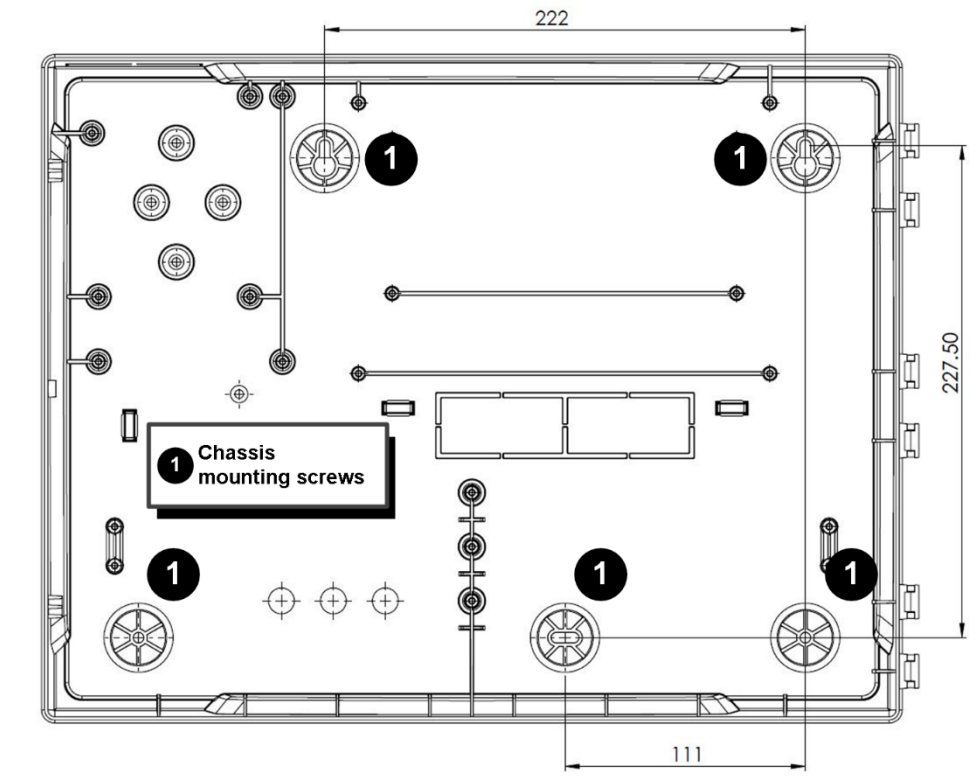


Figure 9 Mounting holes in the GUARD-7 Chassis

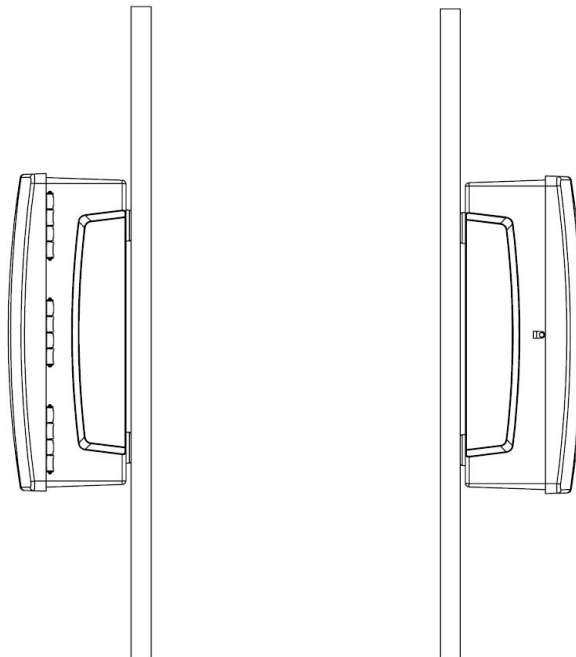


Figure 10 SAVER-700 OR GUARD-7 Surface Mounting

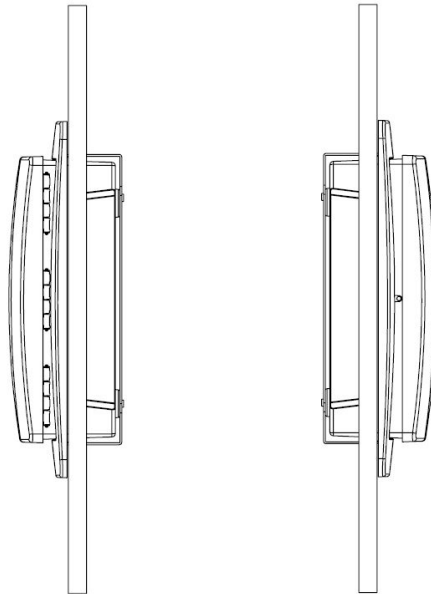


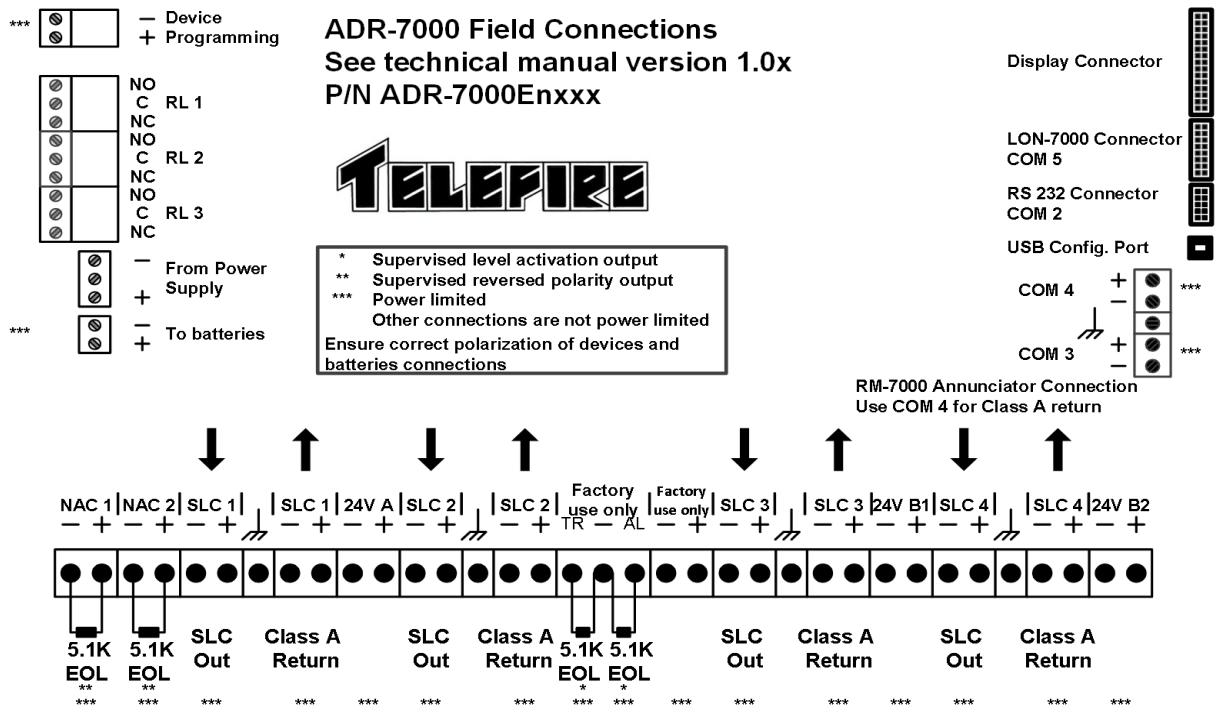
Figure 11 SAVER-7000 OR GUARD-7 Flush Mounting

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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 16).

4.4.2 Field Connection Diagram – ADR-7000



08/2018

Figure 12 Field Connection Diagram – Main Board

ADR-7000 Field Connections
See technical manual version 1.0x
P/N ADR-7000Enxxx

TELEFIRE

* Supervised level activation output
** Supervised reversed polarity output
*** Power limited
Other connections are not power limited
Ensure correct polarization of devices and batteries connections

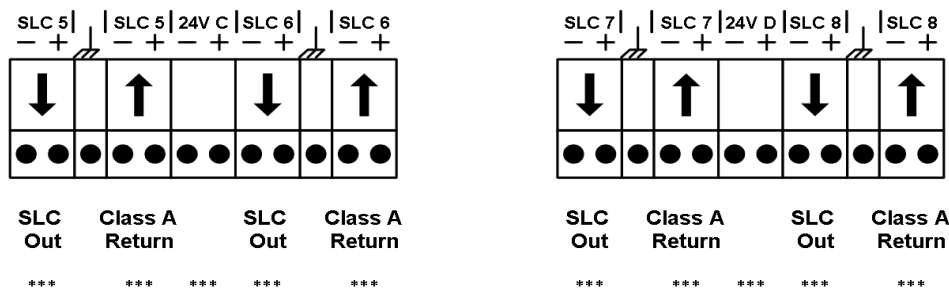
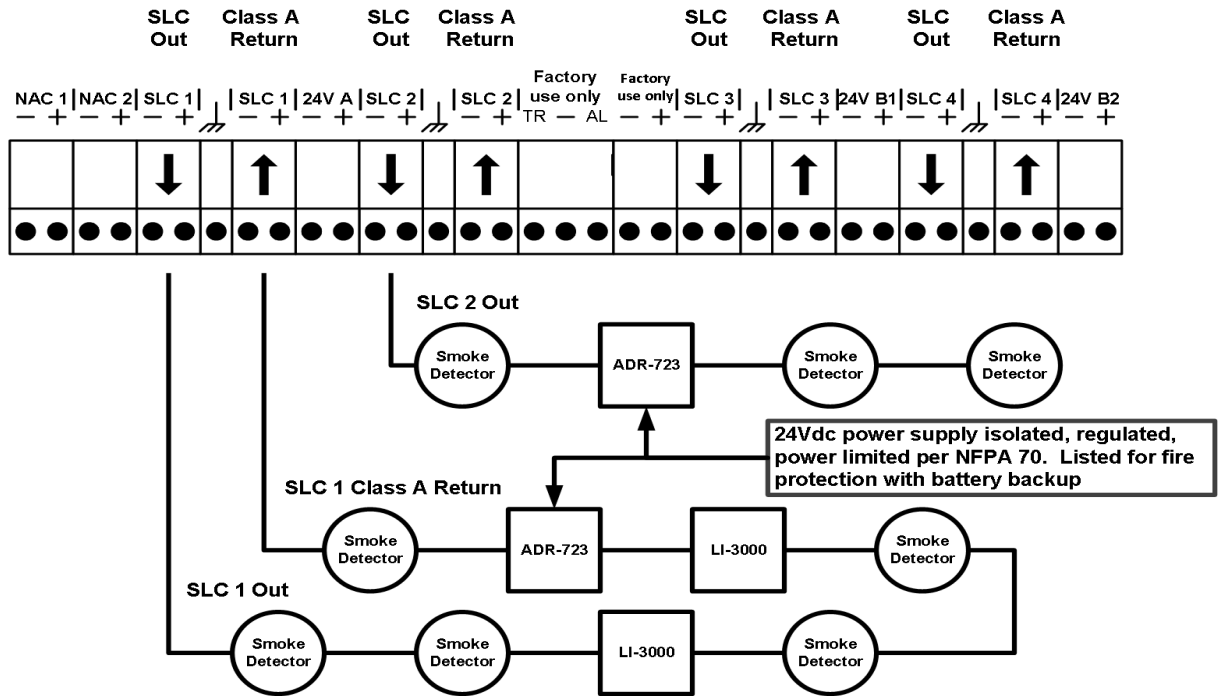


Figure 13 Field Connection Diagram – Loop Expansion Board

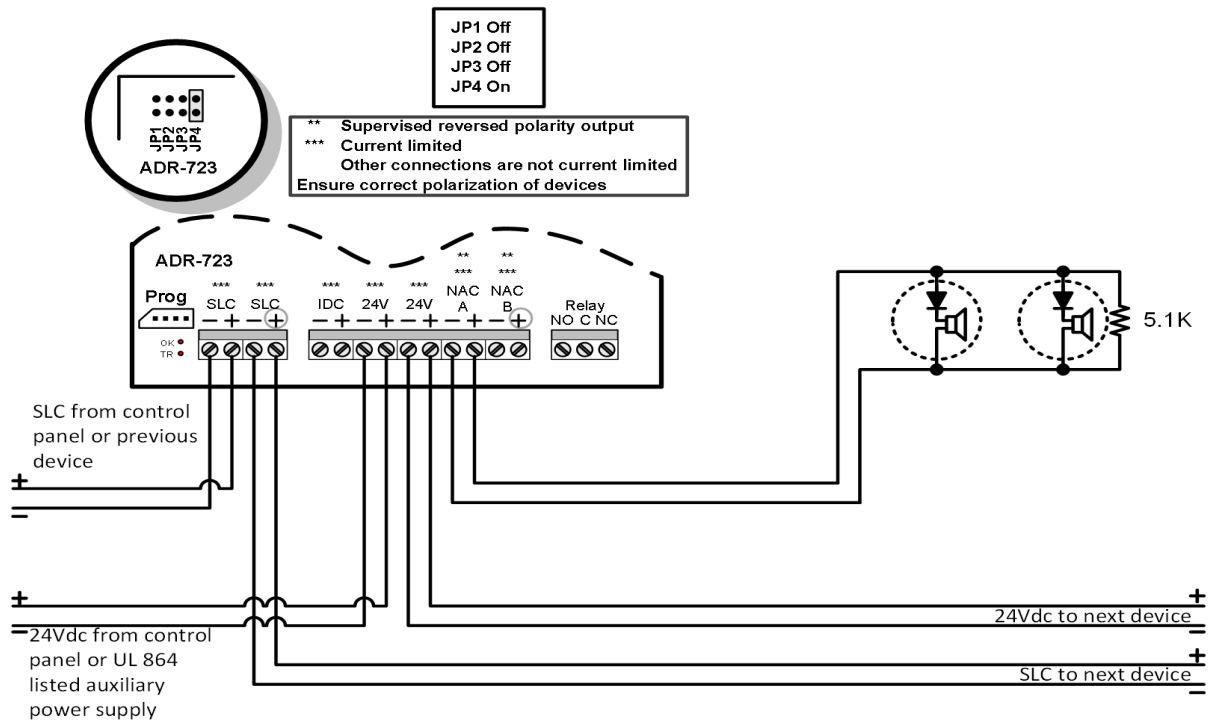
4.4.3 An example of connecting Class A and Class B loops

ADR-7000 Field Connections



10/2018

Figure 14 Connecting devices in Class A (SLC 1) and Class B (SLC 2)



06/2018

Figure 15 Wiring Single NAC Interface to an ADR-723

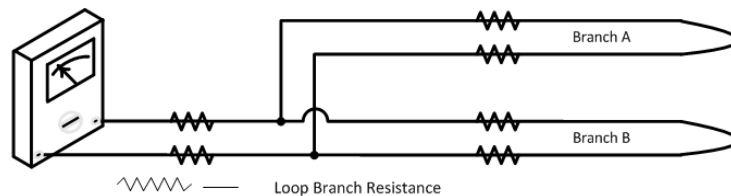
Please refer to the ADR-723 manual, P/N ADR-723Enxxx.pdf (xxx is a number that corresponds to the document revision) for additional details regarding NAC connections and configuration.

Please refer to the LON-7000 technical manual (LON-7000Enxxx.pdf, where xxx is a number that corresponds to the document revision) for details about wire connections, etc.

4.4.4 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 T branching, repeat the test for each branch separately. Make sure that the sum of all branches in a loop does not exceed 40Ω .

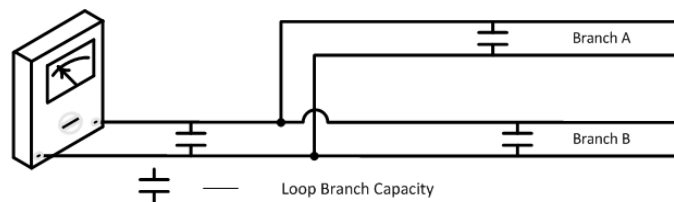


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Figure 16 Testing Loop Resistance

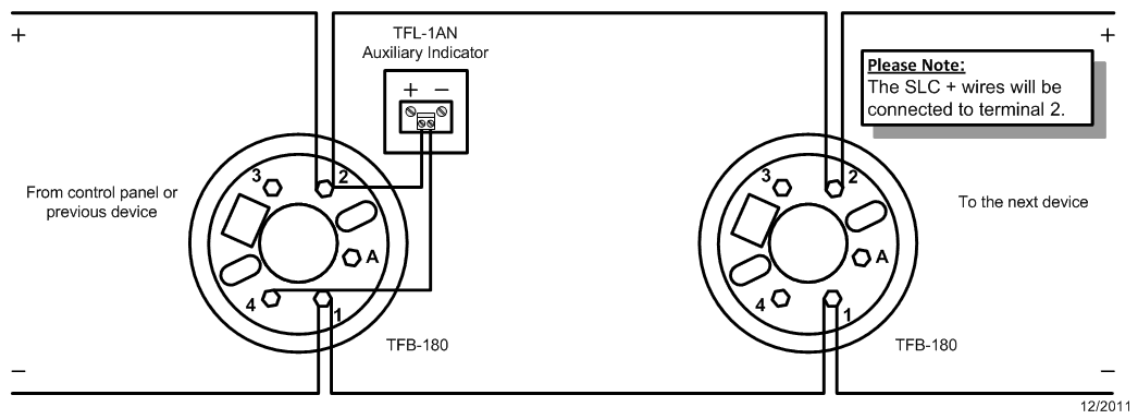
Capacitance measurements:

Connect all branches and ensure that the total capacitance of a loop does not exceed $1.0\mu\text{F}$.



05/2009

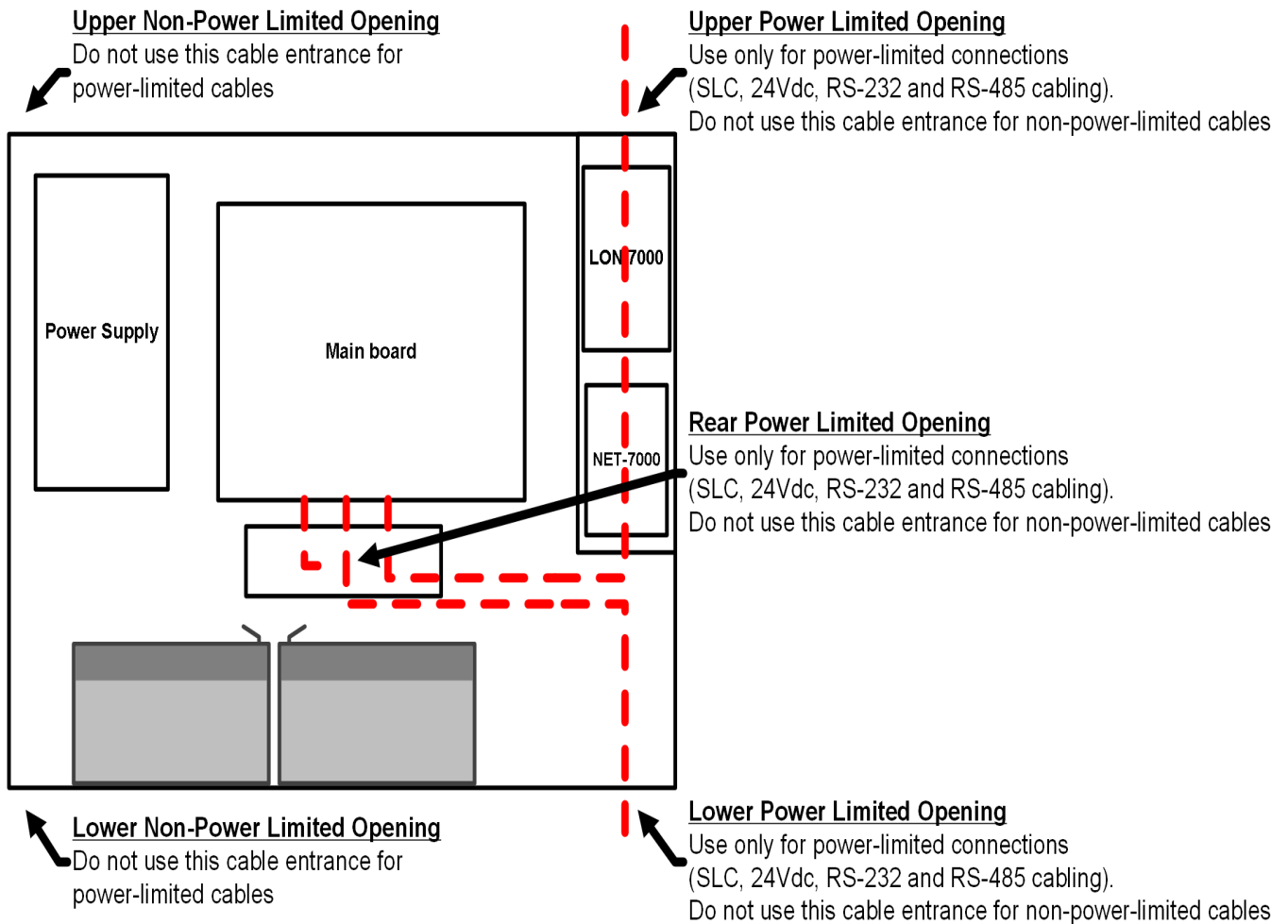
Figure 17 Testing Loop Capacitance



12/2011

Figure 18 Example connection – detectors

Note: do not loop wire under screw terminals of detector base. Be sure to break wire under screw terminal for proper wiring fault supervision.



08/2018

Figure 19 ADR-7000 cable routing

4.4.5 Connecting Low-Voltage Devices



Warning

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

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

Connect the loops, 24Vdc supply to field, control panel outputs (NACs, relays), remote annunciators, and other panels, as applicable. See Figure 9 and Figure 10 for field connection diagrams.

**Warning**

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

4.4.6 Connecting AC Power



Connect the GND (yellow/green) wire to the grounding screw using the appropriate hardware. Do not disconnect the factory-installed ground cables from the main board and the power supply's Ground terminal.

Connect the Line and Neutral wires to the proper terminals, marked L and N, respectively

08/2018

Figure 20 Connecting Mains AC power

Connect the control panel's AC input line to a dedicated 10A circuit breaker that is not shared by other appliances or equipment. It is recommended that the circuit breaker shall be clearly labeled "FIRE ALARM".

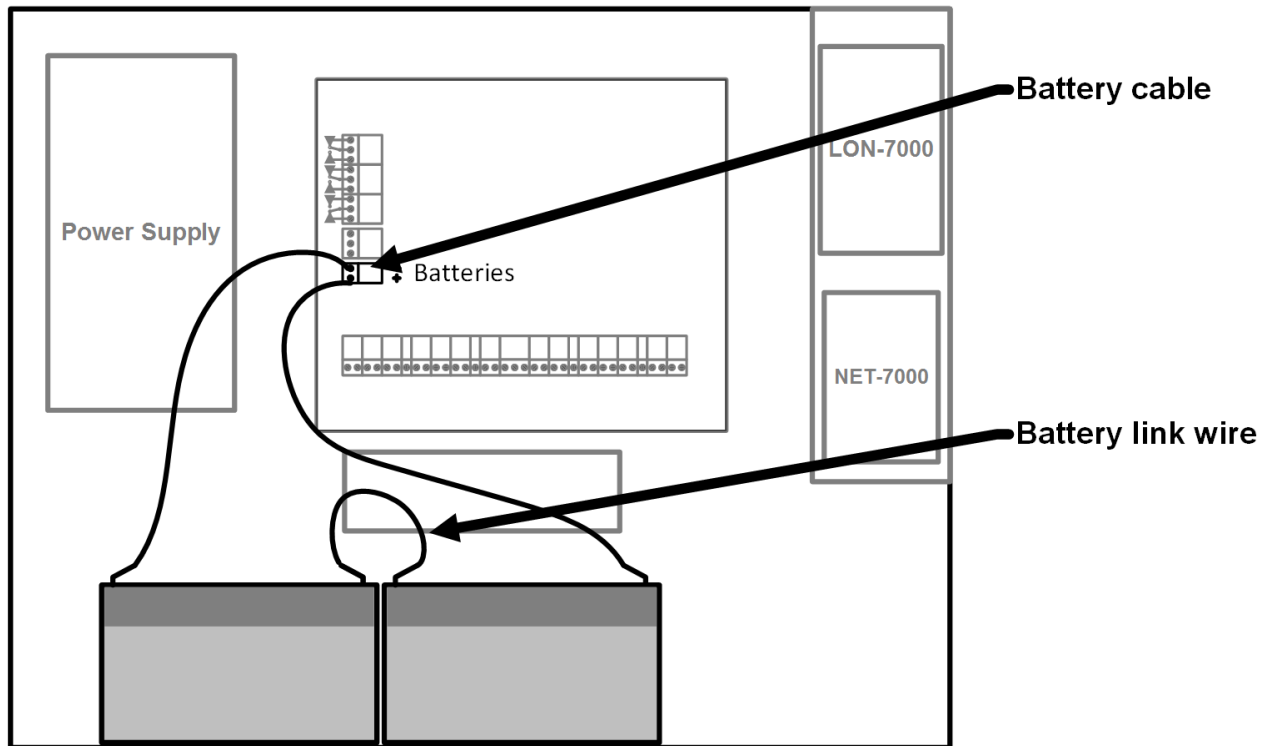
The power cable should enter the control panel through either the top left or bottom left knockout opening and be separated from the field wiring. Use a plastic bushing that fits the opening. Connect the Live and Neutral wires to the proper terminals. Connect the Ground wire directly to the panel's chassis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

Use appropriate bushing/grommet that fits the knockout openings, to ascertain that there are no sharp edges, to prevent damage or abrasion to the cable during assembly and use. Connect the GND (yellow/green) wire to the grounding screw using the appropriate hardware. Do not disconnect the factory-installed ground cables from the main board and the power supply's Ground terminal.

Then connect the Line and Neutral wires to the proper terminals. Tighten the terminal block screws.

VERIFY THAT THE 7000 SERIES PANEL IS PROPERLY GROUNDED BEFORE CONNECTING AC POWER.

4.4.7 Connecting the batteries



08/2018

Figure 21 Battery connection

- 1 Connect the two batteries in series by plugging the red connector of the supplied link wire to the red connector of one of the batteries, and its black connector to the black connector of the other battery.
- 2 Connect the red battery lead from the control panel's BAT connector to the battery with the free red connector. **Do not connect the black wire at this time.**
- 3 Turn on the control panel's AC supply.
- 4 Connect the black battery lead from the control panel's BAT connector to the battery with the free black connector.

4.4.8 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 configuration software and creating a configuration plan and downloading it to the control panel. Compare planned and installed configuration after download.
- Auto-programming: by using Telefire's configuration software. (see section 8.5.9) 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 the configuration software.

4.4.9 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.

4.4.10 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 8.15 for an explanation on performing detector initialization.

I**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. These 8 digits are unique to each control panel.

You can get the code with a mobile phone application **TELEFIRE Alerto+**, or with a phone call to **TELEFIRE** Technical Support at +972-(0)3 970 0444.

4.5.2 Field Test

Perform a Walk Test and activate each initiating device to verify that it is working properly.

!**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 detector's lifespan 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 8.14 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 following 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 (any NAC in the ADR-723) is activated. The default duration of the extinguishing pulse is 15 seconds.

5.1 Extinguishing Output

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

- An extinguishing output 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.

Please refer to the ADR-723 manual, P/N ADR-723Enxxx (xxx is a number that corresponds to the document revision) for additional details regarding installation, connection, and configuration of extinguishing devices.

5.2 Manual Activation

A device configured as **Input Module** with mode defined as **Release** or **Switch** with mode defined as **Release** shall activate the release of extinguishant.



Note

Release has a higher priority than Abort and will always override it.

If manual Release is activated after Abort is activated the control panel shall release the extinguishant.

If Abort is activated after manual Release is activated the system shall not abort and release will be activated.

5.3 Abort and Hold



Note

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

The Control panel supports fire extinguishing Abort buttons. A device defined as a fire extinguishing Abort 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 8 seconds after the button was released. Pressing the Extinguishing activation call point overrides this function.

See section 8.5.9 explanation about device programming.

Note

Release has a higher priority than Abort.

If manual Release is activated after Abort is activated the control panel shall release the extinguishant.

If Abort is activated after manual Release is activated the system shall not abort and release will be activated.

5.4 Extinguishing Disconnect

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 shall be installed near the fire extinguishing device.

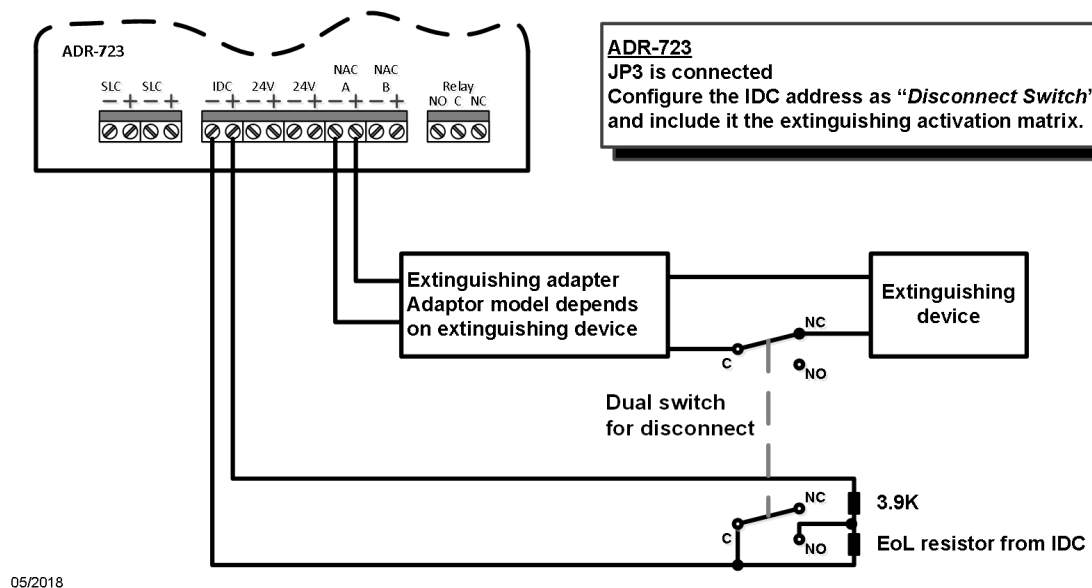


Figure 22 Extinguishing disconnect switch

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.

!**Warning**

Connect only extinguishing devices that are authorized by TELEFIRE and the local fire authority.

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 installation/service companies during installation, programming and maintenance. A password is required to respond from the panel keys at levels 2, 3 and 4. See section 2.11 for more details.

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 internal buzzer, and reset the control panel. Below these keys is a space for optional fire in zone identification LEDs.

The central part has a 260 by 64-pixel graphical LCD, and various keys for performing operations without a password and for performing other operations such as changing detector's sensitivity, enabling / disabling devices, setting operating modes, etc., that require a password.

On the right are system status and supplemental information indicating LEDs.

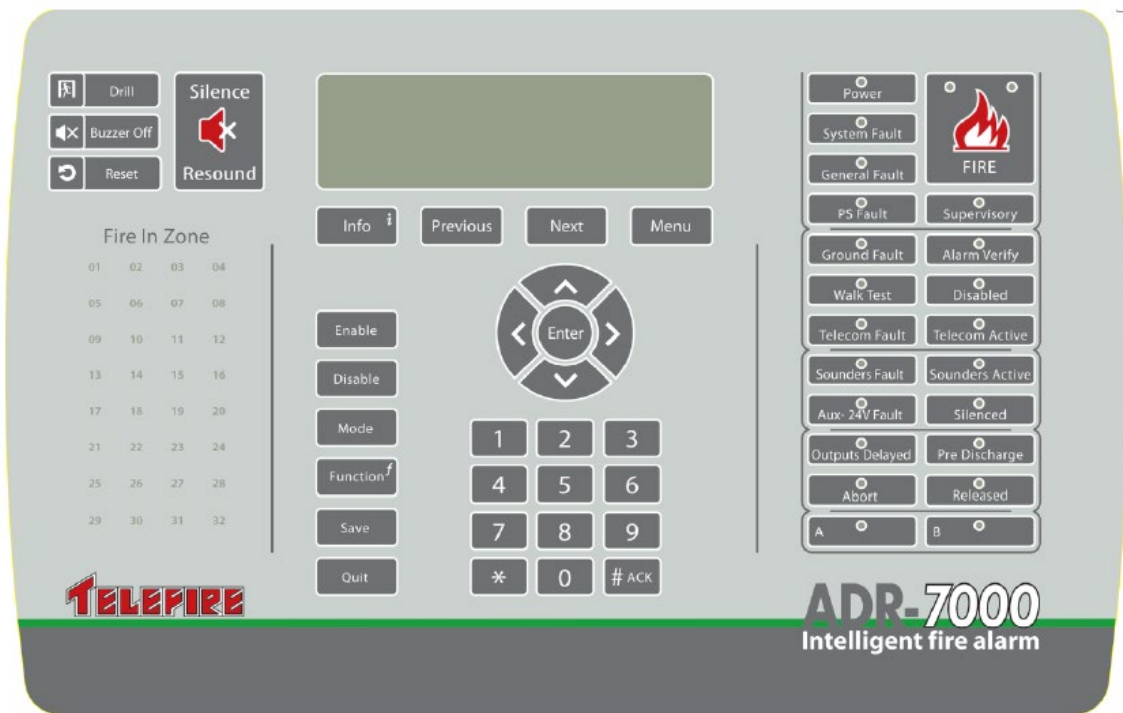


Figure 23 ADR-7000 Display and keyboard

6.1 LCD Display

A 260 by 64-pixel graphical LCD provides text-based information regarding the 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	
Power	<p>Green LED. Indicates the presence of input power (AC or battery).</p> <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	<p>Yellow LED. Indicates a hung processor.</p> <ul style="list-style-type: none"> Off during normal operation. Solid on when the processor hangs.
General Fault	<p>Yellow LED. Indicates a system fault condition or fault on one of the connected devices – see additional yellow LEDs and the LCD display for additional information.</p> <ul style="list-style-type: none"> Off during normal operation. Flashes to indicate a system fault condition or fault on one of the connected devices – see additional yellow LEDs and the LCD display for additional information. Pressing Acknowledge will turn the LED solid on until resolution of the problem.
PS Fault	<p>Yellow LED. Indicates a power fault (loss of AC power; Disconnected battery; Weak battery)</p> <ul style="list-style-type: none"> Off during normal operation. Flashes to indicate a power fault. Pressing Acknowledge will turn the LED solid on until resolution of the problem.
Ground Fault	<p>Yellow LED. Indicates a leak to earth ground.</p> <ul style="list-style-type: none"> Off during normal operation. Flashes to indicate a ground fault condition. Pressing Acknowledge will turn the LED solid on until resolution of the problem.
Walk Test	<p>Yellow LED. Indicates walk test mode.</p> <ul style="list-style-type: none"> Off during normal operation. On during Walk Test.
Sounders Fault	<p>Yellow LED.</p> <p>Flashes if present fault in general and/or SLC controlled sounders, turns to solid yellow upon pressing # button.</p>

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

LED	
Sounders Active	<p>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.</p> <ul style="list-style-type: none"> Off during normal operation. Turns 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. <p>Solid yellow when horn output is disabled.</p>
Silenced	<p>Yellow LED. Indicates silenced condition.</p> <ul style="list-style-type: none"> Off during normal operation and during alarm. Flashes during alarm after silencing.
Pre-Discharge	<p>Red LED. Indicates that an extinguishing output is delayed and will be activated once the countdown period is over.</p> <ul style="list-style-type: none"> Off during normal operation. Flashes during the countdown process.
Released	<p>Red LED. Indicates that an extinguishing output was activated.</p> <ul style="list-style-type: none"> Off during normal operation. Flashes during the countdown process.
B	Reserved for future use.

Table 9 Operator Panel: Indicating LEDs

6.3 Operator Keys

Key	Function
Drill	Allows the Operator to initiate an evacuation procedure (Drill). Requires password. If a sounder was silenced, pressing Resound will turn on all general sounders. Requires password.
Buzzer Off	Pressing this key silences only internal buzzer.
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, Supervisory or Fault event occurs. Requires password if in alarm.
Silence / Resound	Pressing this key silences the devices connected to the NACs (if defined as Silenced) and all addressable outputs that are defined as "silenced". Pressing this key again before the control panel is reset will cause all the silenced outputs to re-activate. Requires password if in alarm.

Table 10 Operator Panel: Operator Keys – upper left

6.4 Numerical and Arrow Keys

Key	Function
Info	Provides information on the addressable device or main board.
Previous	Shows the previous alarm, supervisory or fault. In programming mode, it will move to the previous address.
Next	Shows the next alarm, supervisory or fault. In programming mode, it will move to the next address.
Menu	Shows the menu.
Enable	Enables an addressable device.
Disable	Disables an addressable device.
Mode	Reserved for future use.
Function	From main menu: allows disablement of device. From a device menu: allows to turn the device's indicating LED on or off.
Save	Saves SSD (Site-Specific Data) after programming.
Quit	Goes to the previous menu option.

Table 11 Operator Panel: Operator Keys – central area

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 records.

7 System Configuration (Programming) Process

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

7000 Series' 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

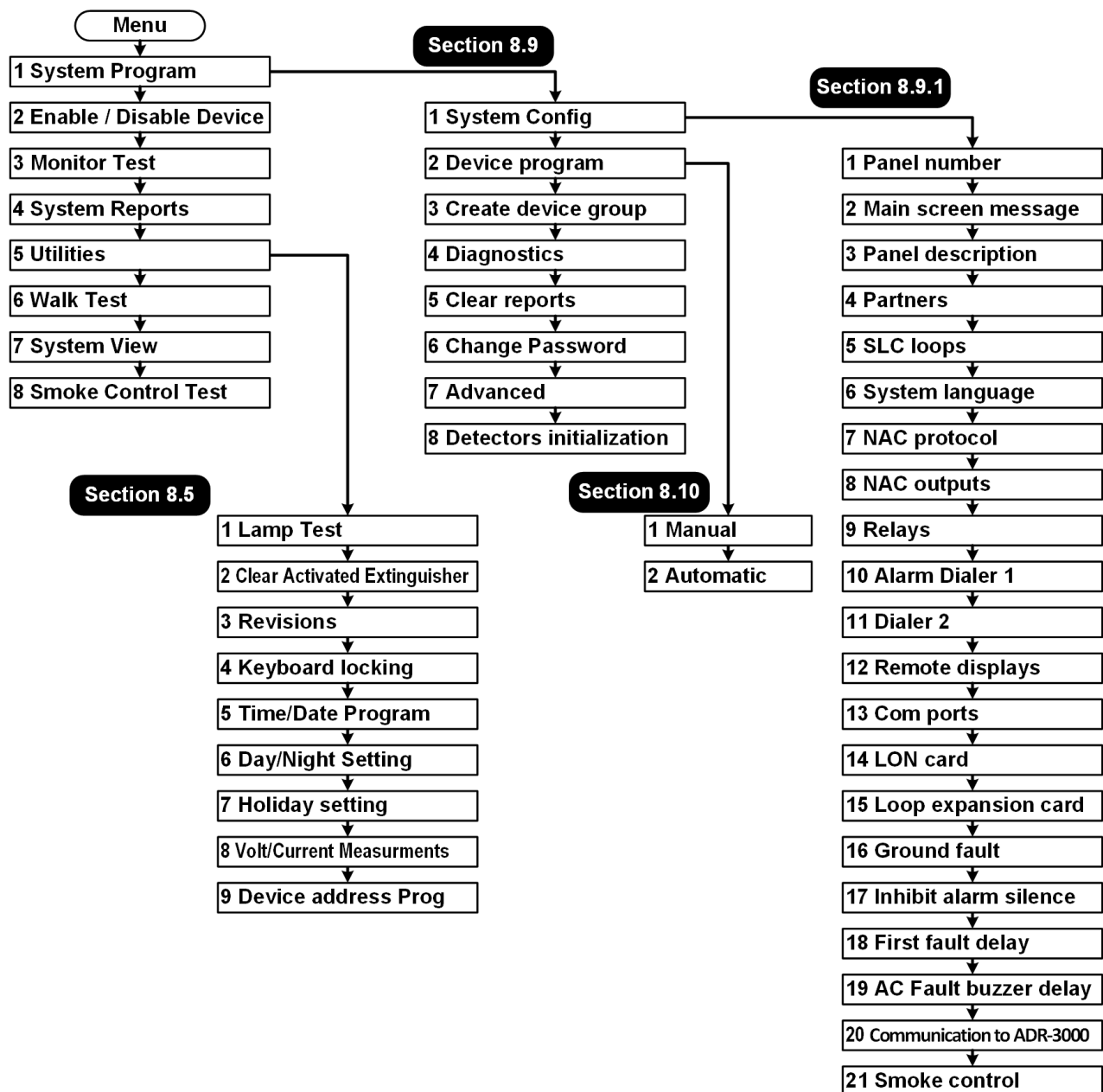


Figure 24 Menu structure

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.

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 configure the system, program field devices, check reports, etc.

Please see sections 7 & 8 for a detailed explanation of the system programming.

i

Note

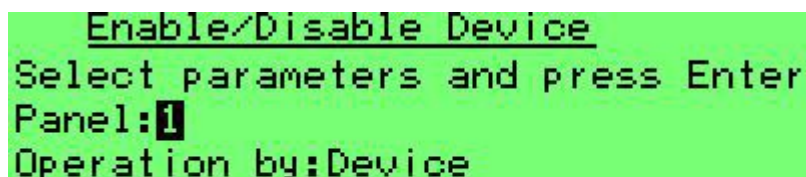
TELEFIRE'S 7000 Series Control Panels comply with the requirements of several standards, including SI 1220, EN 54, EN 12094, CE, and GOST, and may comply with options or requirements of one of the standards that are not compliant with another standard.

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

8.2 Enablement / Disablement

This function is used for temporarily disabling of a device. A disabled device shall not cause any fault (with the exception of a Disablement notification); disabled input devices shall not cause an alarm and a disabled output device shall not be activated in case of alarm.

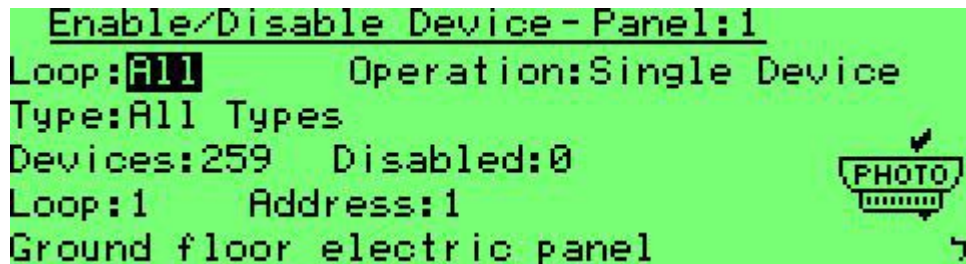
Press Menu to get to the main menu. Select 2. Enable/Disable Device. Select panel number (Note: SAVER-7000 and Guard-7 are fixed at panel 1.) and whether the operation shall be performed for a device, a Zone, a Group, or Main Board Outputs.



```
Enable/Disable Device
Select parameters and press Enter
Panel:1
Operation by:Device
```

Screen 9 Enable / Disable primary screen

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



```

Enable/Disable Device - Panel:1
Loop: All 1      Operation: Single Device
Type: All Types
Devices: 259    Disabled: 0
Loop: 1        Address: 1
Ground floor electric panel
  
```

Screen 10 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
 - Input modules (all input modules or only those modules that cause the following: Alarm input; Reset Switch; Silence; Disconnect; Supervisory; Abort; Release; Alarm Matrix; or Fan Feedback)
 - Switch (select All Modes; Reset Switch; Silence; Disconnect; Supervisory; Abort; Release; Alarm Matrix; or Fan Feedback)
 - Sounder
 - Lamp
 - Extinguisher
 - Control Output (select All Modes; Alarm; Fault; Fan; or Damper)
 - Isolator
 - Supervisory Out
 - SCM (select all modes; Fan / Damper; or Engage)

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

8.2.1 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 11 Enable / Disable Zone

This operation allows the disablement or enablement of devices in a specific logical zone, rather than a physical loop. Zone 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 12 Enable / Disable Group

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

```

Enable/Disable Device - Panel:1
Description Panel 1
Main Board Outputs:1/7   Disabled:0
Alarm Dialer 1

```



Screen 13 Enable / Disable Main Board Outputs

This operation allows the disablement or enablement of main board outputs (NAC 1; NAC 2; Relay 1; Relay 2; or Relay 3), rather than a physical loop. Select the specific output 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.

```

Monitor
Select parameters and press Enter
Panel:1    Sort by:Address
Loop:1     Address:1
Total devices - 259

```




Screen 14 Monitor Screen: Sort by Address

```

Monitor
Select parameters and press Enter
Panel:1    Sort by:Type
Type:Photoelectric Detector
Total devices - 79

```



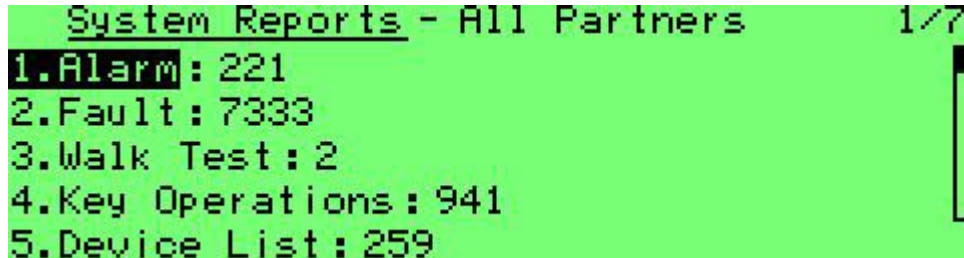
Screen 15 Monitor Screen: Sort by Type

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 alarms, faults, devices tested, key system operations/actions, the list of addressable devices in the system, active output circuits, and maintenance recommendations.

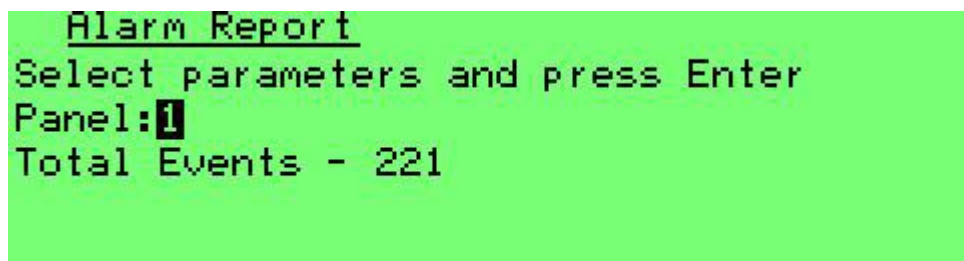


```
System Reports - All Partners 1/7
1.Alarm: 221
2.Fault: 7333
3.Walk Test: 2
4.Key Operations: 941
5.Device List: 259
```

Screen 16 System reports

8.4.1 Alarms

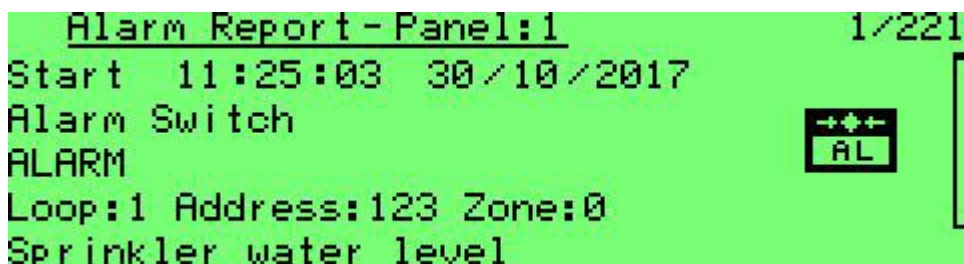
System reports detail the number of alarms, faults, devices under test, key operations, device list, active outputs and preventive maintenance recommendations.



```
Alarm Report
Select parameters and press Enter
Panel: 1
Total Events - 221
```

Screen 17 System reports – alarms (panel selection)

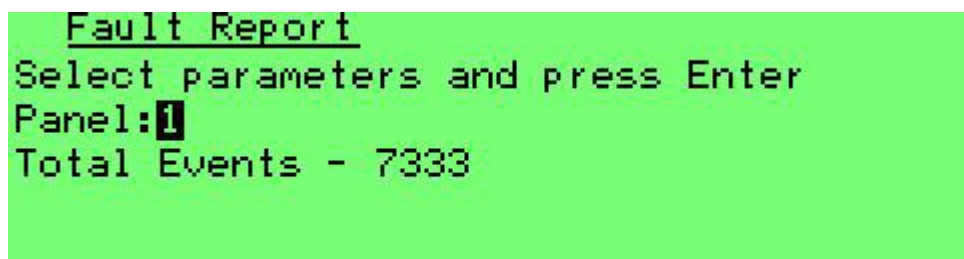
After selecting the panel, it is possible to page through individual alarms with the arrow keys.



```
Alarm Report - Panel: 1 1/221
Start 11:25:03 30/10/2017
Alarm Switch
ALARM
Loop: 1 Address: 123 Zone: 0
Sprinkler water level
```

Screen 18 System reports – individual alarm

8.4.2 Faults



```
Fault Report
Select parameters and press Enter
Panel: 1
Total Events - 7333
```

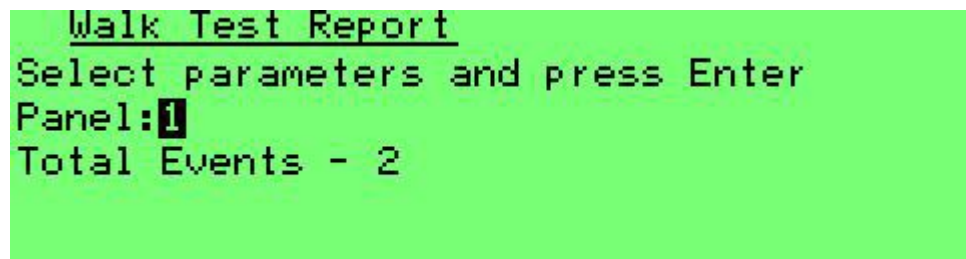
Screen 19 System reports – faults (panel selection)



Fault Report - Panel:1 9/7333
End 10:53:40 30/10/2017
Photoelectric Detector
Not Connected
Loop:2 Address:1 Zone:10
Ground floor lift lobby

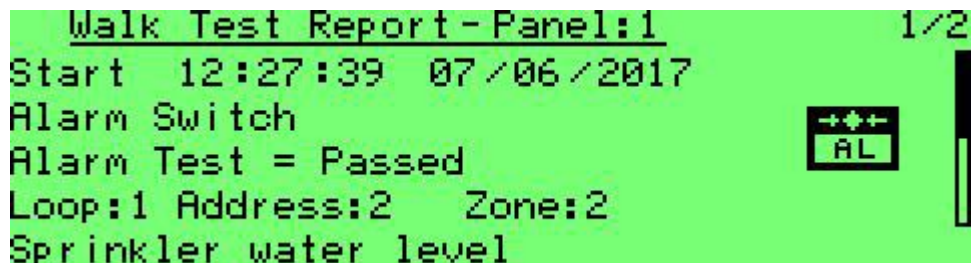
Screen 20 System reports – individual fault

8.4.3 Field Test



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

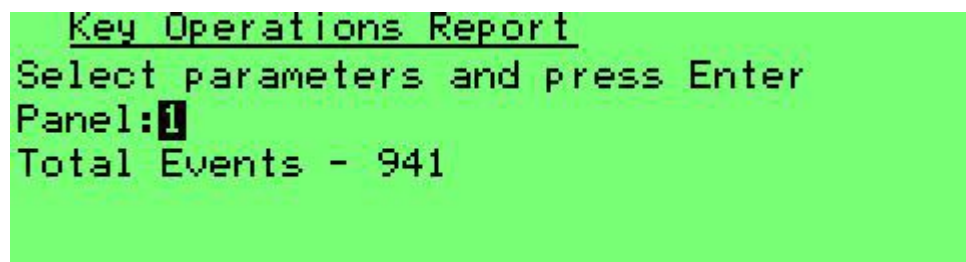
Screen 21 System reports – walk test (panel selection)



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

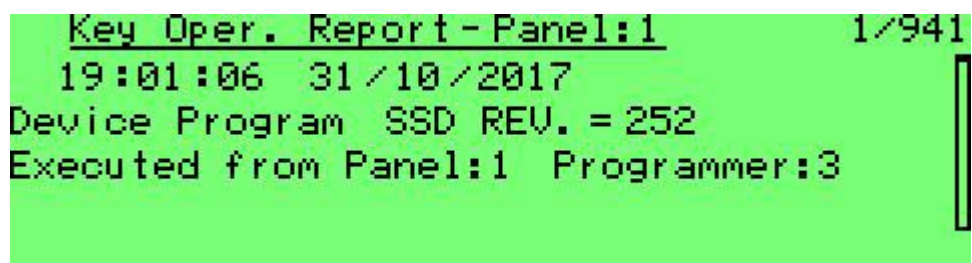
Screen 22 System reports – individual walk test

8.4.4 Key Operations



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

Screen 23 System reports – Key Operations (panel selection)



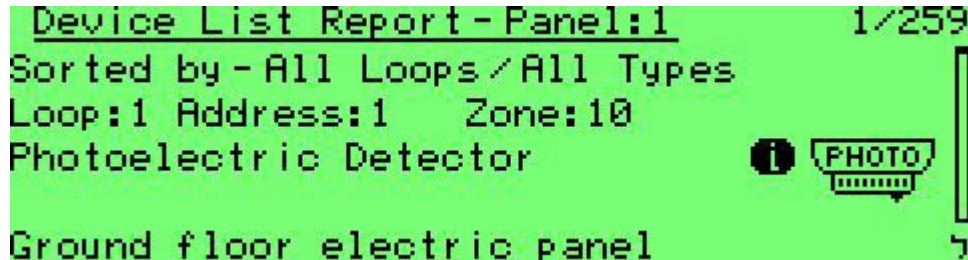
Key Oper. Report - Panel:1 1/941
19:01:06 31/10/2017
Device Program SSD REV. = 252
Executed from Panel:1 Programmer:3

Screen 24 System reports – individual key operation

Key Operations 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 drill, 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



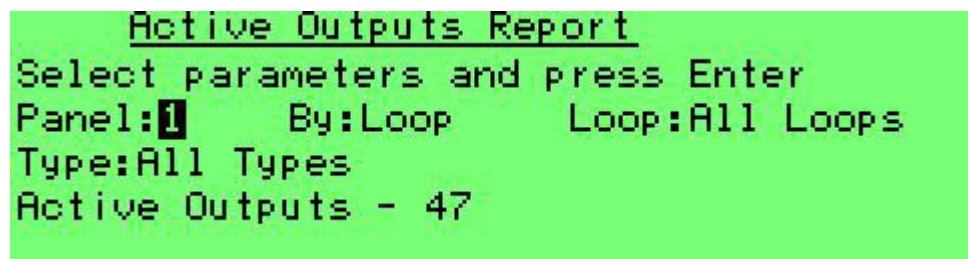
```
Device List Report - Panel:1 1/259
Sorted by - All Loops / All Types
Loop:1 Address:1 Zone:10
Photoelectric Detector
Ground floor electric panel
```

Screen 25 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 smoke detector or sounder. Selection is the same process used in enable / disable device.

8.4.6 Active Outputs

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, Control Out, or Supervisory Out).

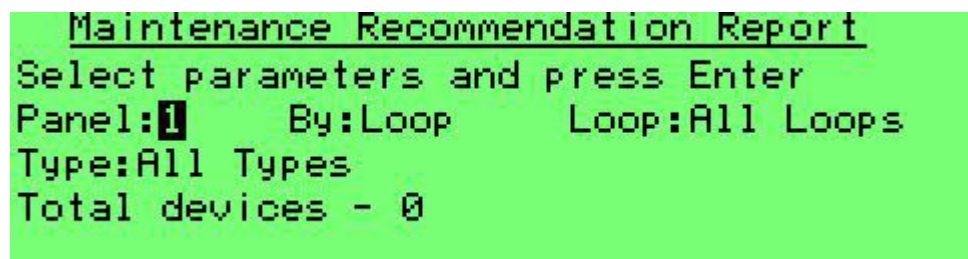


```
Active Outputs Report
Select parameters and press Enter
Panel:1 By:Loop Loop:All Loops
Type:All Types
Active Outputs - 47
```

Screen 26 System reports – active outputs

8.4.7 Maintenance Recommendations

Maintenance recommendations report lists all detectors that are close to maintenance alarm. You can select all loops, a specific loop, or a specific logical zone.



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

Screen 27 System reports – Maintenance recommendation

*i***Note**

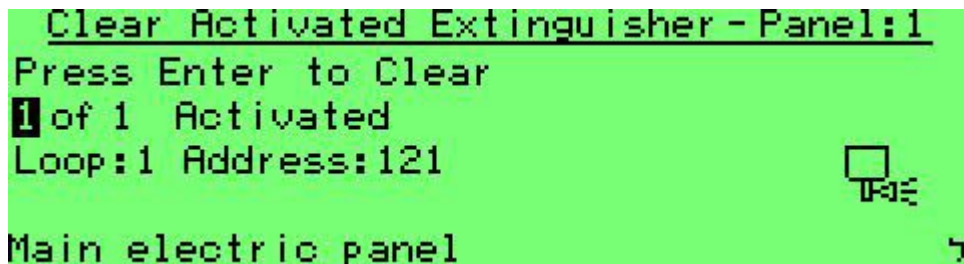
It is recommended to replace detectors that are close to maintenance alarm (detectors whose reference value – Vref – is equal or lower than 65).

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 28 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 quiescent 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-7012)
3. Main Board (ADR-7021)
4. Display Card (ADR-7003)
5. LON Card (LON-7000)
6. TCP/IP Net Card (MCOM)
7. Remote Annunciators (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 accidentally by pressing 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, supervisory and fault events.

The 7000 Series panel's 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 level password to access this submenu.

The Up/Down arrow keys change the locking mode.

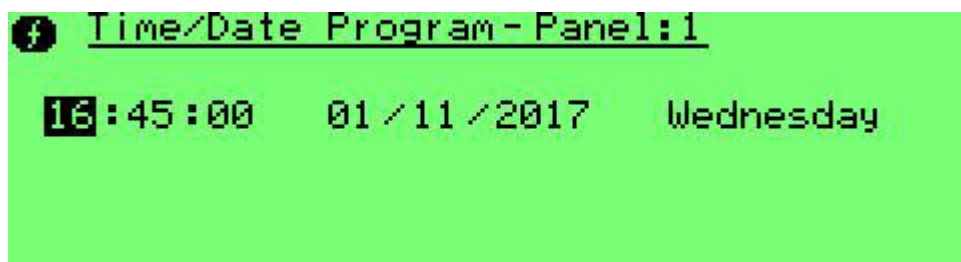
Changing to **Unlocked** mode enables the operator/programmer access to silence and reset functions without entering a password.

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.

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 29 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). The day/night setting affects the detector's sensitivity and the dialer delay capability.

A dialer delay if applicable, is enabled during the day only.

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. With 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.

```

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 30 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. This setting shall cause the control panel to 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 31 Setting holiday dates

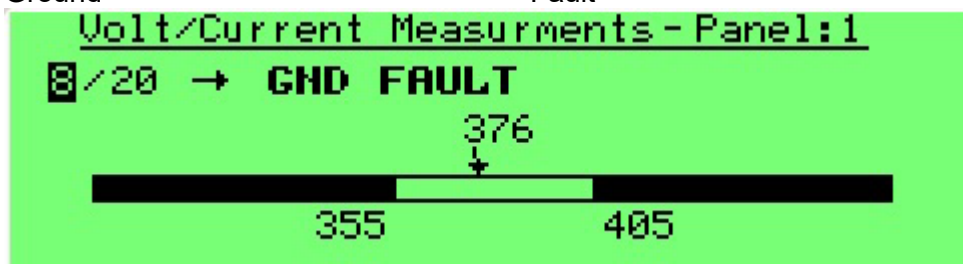
8.5.8 Voltage / Current Measurements

Allows for observing voltages and currents in the control panel during all modes of operation such as normal operation, alarm, fault etc.

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 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. Reserved
7. Reserved
8. Ground

Fault

graph



Screen 32 Ground Fault Detection Value

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: 1
13. RM Control: 2
14. RM Control: 3
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

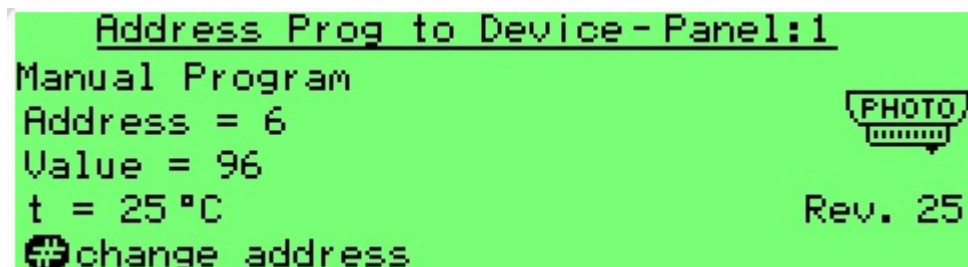
Each **TELEFIRE** addressable device must be programmed before installation to one of the addresses in the range 1-127. It can be performed using the portable programmer, Prog-4000, or the programmer included in the control panel.

Use the programming adaptor kit TFC-7000.

Connect the programming base (for detectors) or connector (for addressable devices) to the terminal marked "program" on the main board.

Enter the program menu and follow the instructions.

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



Screen 33 Address Programming Menu

After connecting a detector or addressable card, the present address and values will appear.

To change the address press "#", type in the new address, in the range of 1-127 using the keyboard and press "enter", the new address will be displayed.



TFC-7000 Programming Adaptor Kit

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 select the devices to be tested. Press Exit and save changes.

The **Walk Test** LED shall be turned on to indicate that a walk test is currently in process.

Start testing by initiating the devices. Upon activation of each 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 an automatic reset to the device. The initiating devices under test will not activate any outputs. During the automatic test no outputs are activated.

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

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

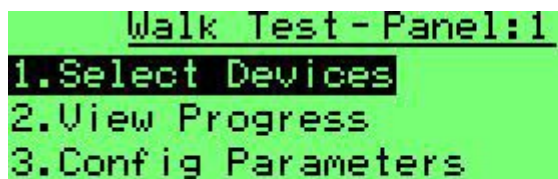
To stop the automatic test process, press the **Quit** key.

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

The Walk Test setting menu enable to select manual quitting as required by EN-54 or automatic return to 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.

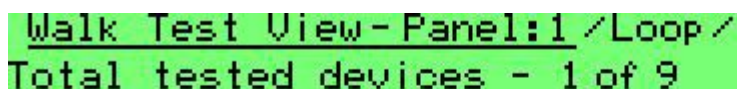


```
Walk Test - Panel:1
1.Select Devices
2.View Progress
3.Config Parameters
```

Screen 32 Walk test – main screen

8.6.2 View Progress

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



```
Walk Test View - Panel:1 / Loop /
Total tested devices - 1 of 9
```

Screen 33 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 34 Walk test parameter

EN54

EN54 Requirement:

To comply with EN-54 use the manual exit (default).

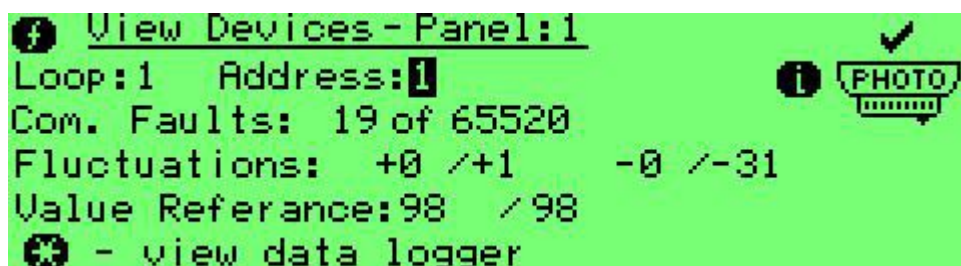
8.7 System View

8.7.1 Licensing



Screen 35 System view – panel licensing

8.7.2 View Devices



Screen 36 System view – view devices

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

8.7.3 Connected Panels

Use this menu option to view all the panels configured in a network.

```

    Connected Panels - Panel:1
    Select Panel and press Enter
    1- 2  3  4  5  6  7  8  9  10 11
    12 13 14 15 16 17 18 19 20 21 22
    23 24 25 26 27 28 29 30 31 32
  
```

Screen 37 System View - connected panels

```

    Connected Panels - Panel:1
    S Panel:1
    1 ADR-7000
    1 Software - 5.47
    2
  
```

Screen 38 Connected panels – panel details

8.8 Smoke Control Test

```

    Smoke Control Test - Panel:1
    Press Enter to start
    [Icon: Fan] [Icon: Dumper] [Icon: FC Switch] [Icon: FC Switch]
  
```

Screen 39 Smoke control test

```

    Smoke Control Test - Panel:1
    Test in progress 81
    Fan Control Out activated 0
    Dumper Control Out activated 0
    Fan FC Switch/Input activated 0
  
```

Screen 40 Smoke control test – test progress

```

    Smoke Control Test - Panel:1
    Test completed
    Fan Control Out failed 0
    Dumper Control Out failed 0
  
```

Screen 41 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.



```
System Config - Panel:1 1/21
1. PANEL NUMBER
Current Number:1      New Number:1

SSD REV. = 143 10:27:46 30/10/2017
Executed from Panel:1 Programmer:2
```

Screen 42 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. Programmer indicates which programmer made the last programming modification.

8.9.2 Main Screen Message

This option allows for changing 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 then press the enter key. Quit and save to keep the new message.



```
System Config - Panel:1 2/21
2. MAIN SCREEN MESSAGE
[Fire Detection and Alarm] (24 chr)
Displayed Under the LOGO
```

Screen 43 System configuration – main screen message

8.9.3 Panel Description

Use 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.



```

System Config - Panel:1      3/21
3. PANEL DESCRIPTION
[Description_Panel_1_] (20chr)
Description during Panel Event
  
```

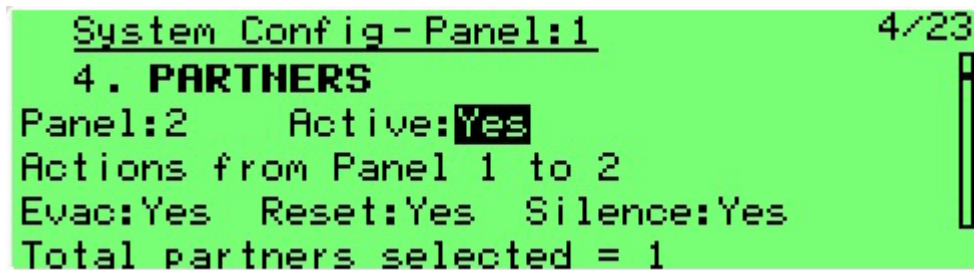
Screen 44 System configuration – panel description

8.9.4 Partners

Networked control panels can be configured as a "Peer to Peer" or "Master Slave".

In a peer-to-peer configuration, all of the events including alarms, supervisories, faults, and other events, will be displayed on all the panels in the network, and enable to perform Reset, Evac and Silence from each panel according the configuration on the next screen. Configure the other panels as Active on the current panel to display events.

In the following screen, panel number 1 will allow to display the events of panel 2. If panel 2 will allow panel 1, both panels will act as a peer-to-peer connection. If panel 2 will not configure panel 1 as active, panel 1 will act as a Master and panel 2 as a Slave.



```

System Config - Panel:1      4/23
4. PARTNERS
Panel:2    Active:Yes
Actions from Panel 1 to 2
Evac:Yes  Reset:Yes  Silence:Yes
Total partners selected = 1
  
```

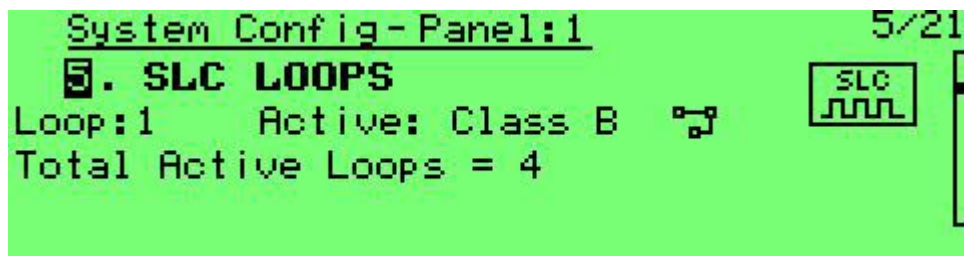
Screen 45 System configuration – partners

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). Performing Evacuation (Drill), 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 installed and configured in the panel.



```

System Config - Panel:1      5/21
5. SLC LOOPS
Loop:1    Active: Class B
Total Active Loops = 4
  
```

Screen 46 System configuration – SLC Loops

8.9.6 System Language

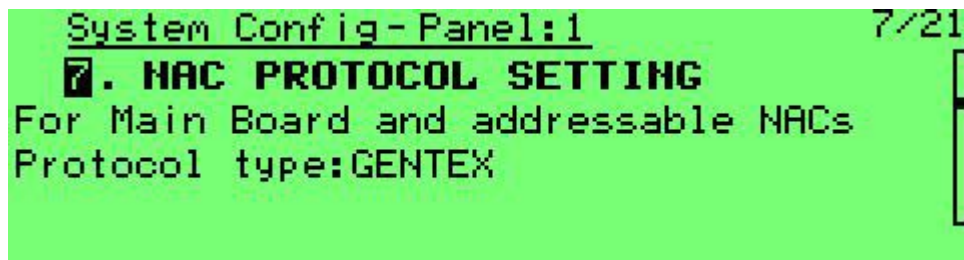
This will allow you to change between system languages configured in the control panel.



Screen 47 System configuration – system language

8.9.7 NAC Protocol Setting

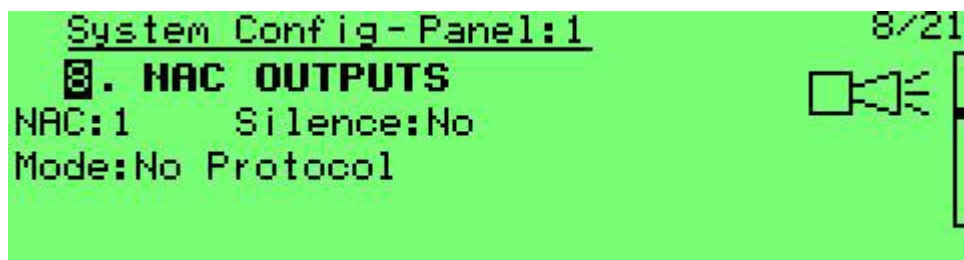
Here you can select whether NAC outputs shall work in Gentex or Wheelock protocols or without a protocol. Both panel NACs on the ADR-7000 (NAC 1 and NAC 2), the single NAC on the SAVER-7000 and Guard-7 and ADR-723 outputs that are configured to work in protocol operation (jumper setting on the ADR-723) 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 48 System configuration – NAC protocol selection

8.9.8 NAC Outputs

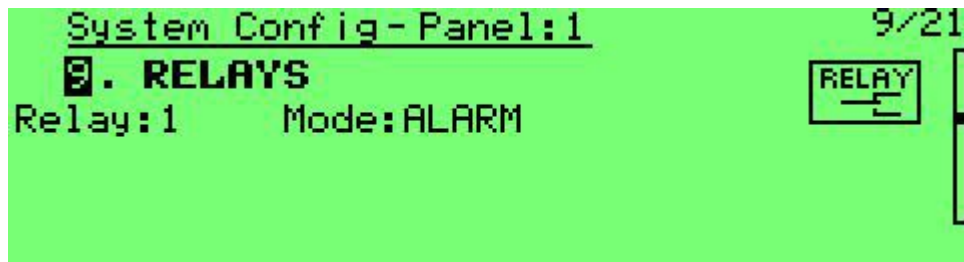
Here you can configure the parameters for NAC 1 and NAC 2 on the ADR-7000 and NAC1 on the SAVER 7000 and Guard-7 panels. Each can be configured as Silenced (i.e., will stop operating when the control panel is silenced) or Unsilenced, (i.e., will continue operating until the control panel is reset). You can also define whether it operates as a standard output (No Protocol) or with the control panel's protocol (defined above).



Screen 49 System configuration – NAC output

8.9.9 Relays

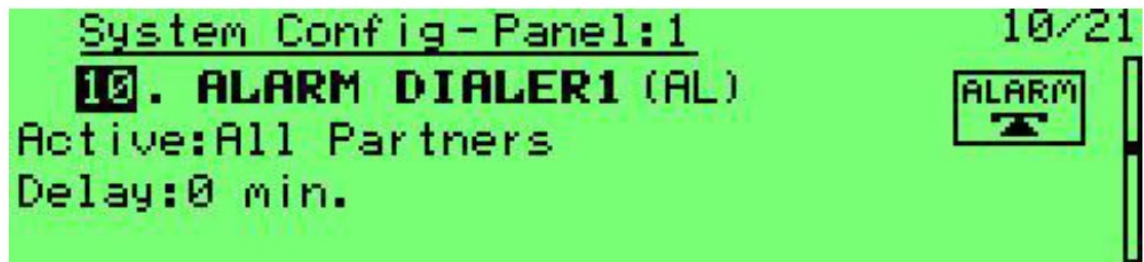
This menu allows you to configure the operation of the main board's 3 relays. You can select between Alarm, Supervisory, Fault, and Pre-Alarm.



Screen 50 System configuration – relays

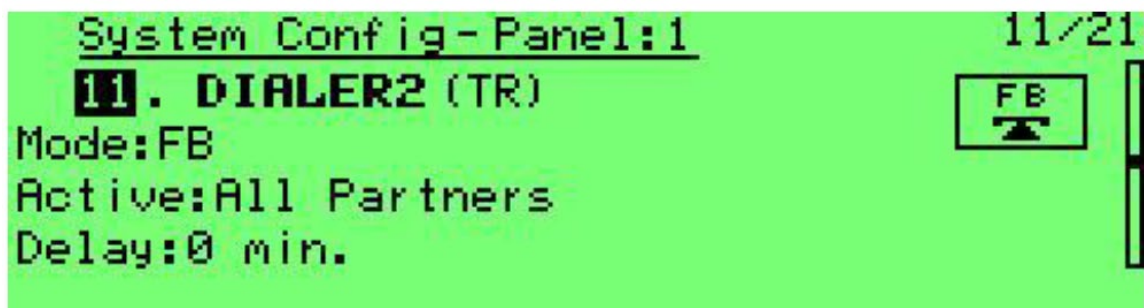
8.9.10 Alarm Dialer 1

This menu allows you to configure (if installed) 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 daytime hours (0 – 9 minutes, in 1-minute increments).



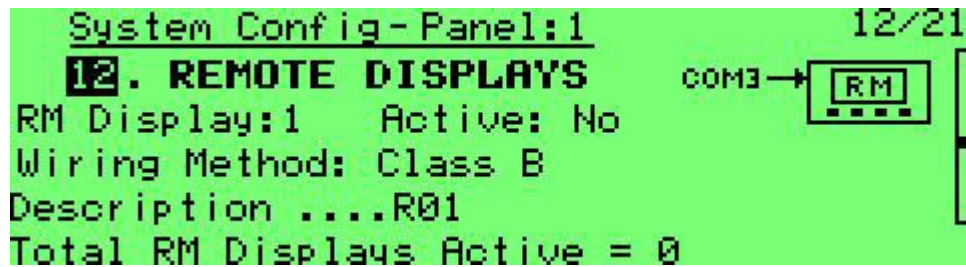
8.9.11 Dialer 2 (Tr)

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)



8.9.12 Remote Annunciators

This menu configures the panel for supporting RM-7000 remote annunciators. The ADR-7000 supports up to 16 annunciators maximum, the SAVER 7000 and the Guard-7 support up to 3 annunciators maximum. You can select whether each of the RM-7000s are active or disabled, Class A or Class B wired, and assign a 19-character description to each RM-7000.

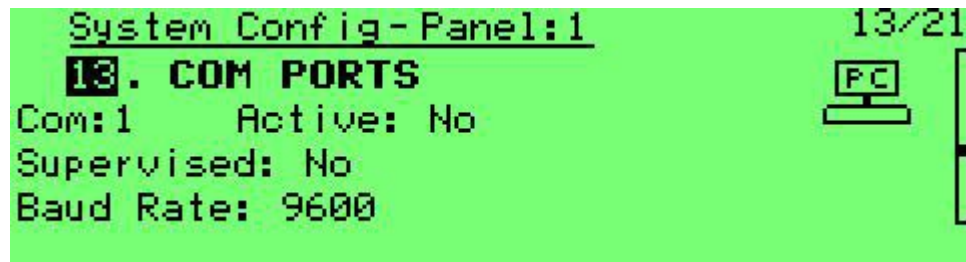


Screen 53 System configuration – remote displays

8.9.13 COM Ports

This menu allows you to select the operation mode of COM1, COM2, and COM5 as inactive, active for PC communication or MCOM TCP/IP interface, whether the communication is supervised or not, and can set the Baud rate. PC connection is intended for temporary local connection for configuration and maintenance.

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 54 System configuration – com ports

8.9.14 LON Card

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



Screen 55 System configuration – LON cards

8.9.15 Loop Expansion Card

This menu allows you to configure whether an ADR-7000EM1 SLC Expansion Module (for loops 5 – 8) is installed.



Screen 56 System configuration – loop expansion card

8.9.16 Ground Fault

This menu allows you to change the control panel's sensitivity to ground faults.



Screen 57 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 local fire authority.



Screen 58 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.

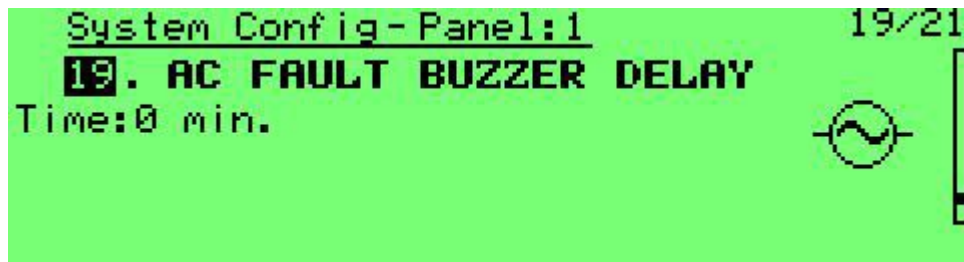


Screen 59 System configuration – first fault delay

8.9.19 AC Fault Buzzer Delay

This menu allows setting a delay when 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 60 System configuration – AC fault buzzer delay

8.9.20 Communication with ADR-3000

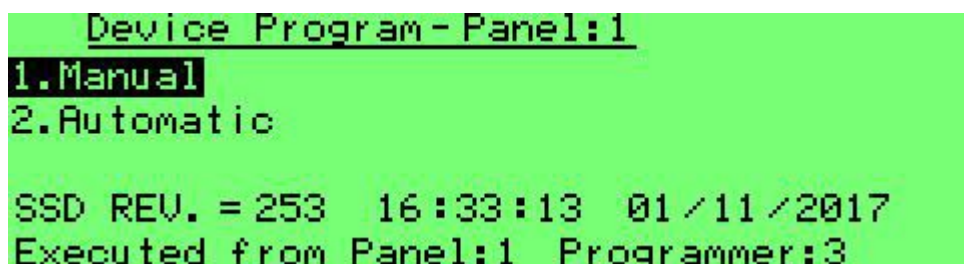
Allows to set the day and time of weekly Smoke Control system test.



Screen 61 System configuration – Smoke control test settings

8.10 Device Program

Select either the manual or automatic programming option. The manual option allows you to set parameters for a specific address. Manual programming allows you to scan through each possible address on each SLC Line Card. Each existing device shall be configured with the device's default setting if it was not previously configured.



Screen 62 Device programming – main screen

8.10.1 Manual Device Programming

This option allows you to set device parameters manually:



Screen 63 System configuration – manual device program

- **Loop:** loop number (1 – 8) on ADR-7000, (1-2) on SAVER-7000, (1) on Guard-7.

- **Address:** device address (1 – 127)
- **Zone:** Logical Zone (1 – 511) of the device for **ADR-7000 and SAVER 7000, 1-60 zones for Guard-7.**
- **Device Type:** the device type as follows:
 - **Smoke detector** (TFO-480A or TFO-440A)
 - **Input Module** (ADR-712 or ADR-718). **Mode** can be Alarm, Reset, Silence, Disconnect, Supervisory, Abort, Release, Alarm Matrix, or Fan Feedback.
 - **Switch:** (a manual call point (ADR-801), an input of an ADR-805A or ADR-705, or the IDC input or an ADR-723). Switch operating mode is defined in the **Mode** field and can be Alarm, Reset, Silence, Disconnect, Supervisory, Abort, Release, Alarm Matrix, or Fan Feedback.
 - **Sounder** (an ADR-723 output that activates sounders or sounder / strobes). Operation mode is defined in the Mode field and can be No Protocol or with the Control Panel's protocol. (Gentex or Wheelock protocol. See section 8.9.7)
 - **Lamp:** an ADR-723 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.
 - **Control Out:** the output of an ADR-723; or the relay of an ADR-723, 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).
 - **Supervisory Out:** the output of an ADR-723; or the relay of an ADR-723, or an ADR-741 that is activated as a result of a Supervisory event.

*i***Note**

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

- **SCM:** Manual Engage and fan/damper activation switches in an TSC-7000 Smoke Control Panel.
- **Zone:** the device's logical zone. Can be in the range of 1 – 511 on ADR-7000, 1-254 On the SAVER 7000, 1-60 zones for Guard-7.
- **Mode:** the device's operating mode, device dependent.
 - For Input modules: Alarm, Reset, Silence, Disconnect, Supervisory, Abort, Release, Alarm Matrix, or Fan Feedback.
 - For switches: Alarm, Reset, Silence, Disconnect, Supervisory, Abort, Release, Alarm Matrix, or Fan Feedback.
 - 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.
- **Description:** a 40-character free text description of the device, its location, etc.
- **Sensitivity:** day (sun icon); night (moon icon) and pre-alarm settings in percent per foot. See Appendix B for details.

- **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.

*i***Note**

An input module or switch that is 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 across all SLC lines 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.

```

Automatic Device Program - Panel:1
Auto Learning in progress
Loop:2 Address:28
████████████████████████████████████████
Total devices - 22
  
```

Screen 64 Automatic device programming



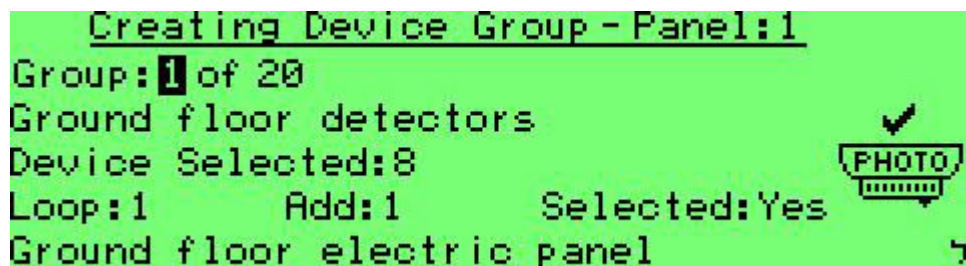
```
Automatic Device Program - Panel:1
Completed, Press Save or Quit
Loop: All Loops
Type: All Types
Total devices - 259
```

Screen 65 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.



```
Creating Device Group - Panel:1
Group: 1 of 20
Ground floor detectors
Device Selected: 8
Loop: 1      Add: 1      Selected: Yes
Ground floor electric panel
```

Screen 66 Creating groups

8.12 Diagnostics

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

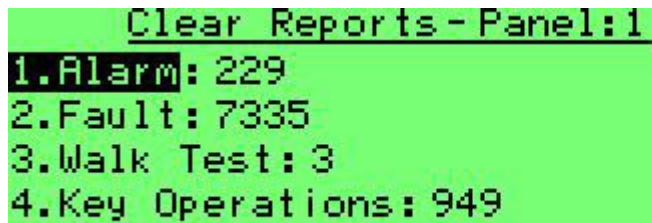


```
Diagnostics - Panel:1
1. SLC Loops
2. Lon Net
```

Screen 67 Diagnostics

8.13 Clear Reports

System reports indicate the total number of alarms, faults, walk tests, and key operations (silencing, disable / enable, and resets). Press Enter to clear. Respond with an asterisk (*) to confirm or hash sign (#) to cancel. (Requires level 4-6 password.)



```
Clear Reports - Panel:1
1.Alarm: 229
2.Fault: 7335
3.Walk Test: 3
4.Key Operations: 949
```

Screen 68 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 for Programmer (EN 54 access level 3) passwords.



```
Change Password - Panel:1
NEW OLD
Programmer: 3 666666 666666
```

Screen 69 System Program – Change password

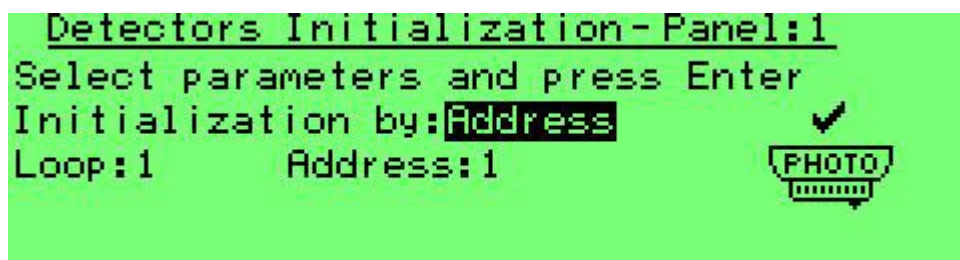
Default passwords are:

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

8.15 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.



```
Detectors Initialization - Panel:1
Select parameters and press Enter
Initialization by: Address
Loop:1 Address:1
```

Screen 70 Detector initialization

Pressing **Enter** will activate the fast Initializing (few seconds). 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.

8.16 Advanced Programming Using Virtual Loop (Loop 9)

In large smart buildings there may be a need for complex matrix activations for system integration. It is possible to build these complex matrices by using the virtual loop (loop 9 on the ADR-7000). This loop is made up of 127 virtual "logic output" devices.

8.16.1 Virtual Loop

All devices in the virtual loop are logic outputs. The difference between a virtual output and a physical output is that a virtual output can also act as an input to another matrix.

Each of the addresses in the virtual loop can be configured to have its own matrix – this can be a device matrix, zone matrix, general matrix, and global matrix.

Each address in the virtual loop can also be an input to another logical loop (using a higher address) or as an input to a matrix of a real device installed in the field.

The virtual loop allows configurations that are not possible using real (physical devices):

- Chaining a matrix output to act as an input to another matrix (provided it has a higher address than the input).
- Combination of logical conditions (AND, OR, General. Global [global only in ADR-7000 control panels]).
- Combining devices and zones.

In this example, if the local fire authority requires a complex logical programming when at least one of the following conditions is met:

- An activation of a manual call point in any floor, from the ground level to the roof.
- Any water flow sensor in any of the sprinkler systems on any floor, from the ground level to the roof.
- Two concurrent alarms on any floor, from the ground level to the roof.

Division into logical zones

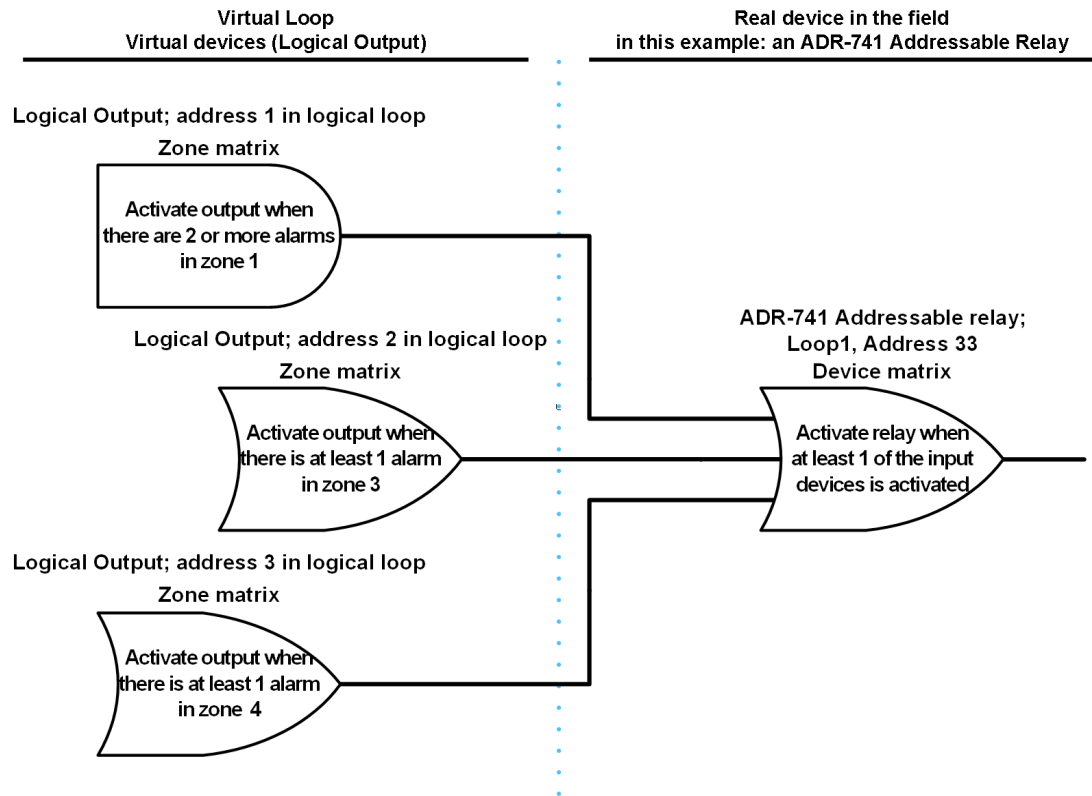
- Configure all detectors as Logical Zone 1.
- Configure all manual call points as logical zone 3.
- Configure all water flow switches as logical zone 4.

Virtual Loop Configuration

- Configure address 1 in loop 9 as a zone matrix that is activated by any two alarms in logical zone 1 – this logical output shall be activated by any two alarms from any detector.
- Configure address 2 in loop 9 as a zone matrix that is defined by any alarm in logical zone 3 – this logical output shall be activated by any activation of a manual call point.
- Configure address 3 in loop 9 as a zone matrix that is defined by any alarm in logical zone 4 – this logical output shall be activated by any activation of a water flow switch.

Configuration on an ADR-741 Addressable Relay

Configure an addressable relay (ADR-741) as a device matrix that is activated by any alarm from the flowing addresses: loop 9, address 1; loop 9, address 2; or loop 9, address 3.



05/2018

Figure 25 An example of a logical device used for complex logical programming

9 Troubleshooting

9.1 LEDs

9.1.1 LEDs on the User Display

Add LEXAN EN

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 operation 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 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

i

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); 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 on the designated device (NAC1; 24V-A output circuit); 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); 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 (NAC 1 or NAC 2; one of the 24V auxiliary output circuits; battery charger; or SLC circuitry).	If the device is the battery or backup battery (3V): replace the battery or backup battery (CR2032). Control panel fault – send to the manufacturer for repairs.
Main circuit <device> disconnect	The designated device is disconnected (NAC 1 or NAC 2; one of the 24V auxiliary output circuits; battery charger; or SLC circuitry).	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 (NAC 1 or NAC 2; one of the 24V auxiliary output circuits; battery charger; or SLC circuitry).	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.

Error Messages	Possible Cause	Repair Action

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> no connection	There is no communication with the device.	Check wiring. Replace device if required.
<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 24Vdc voltage; a card's input circuit voltage fault.	Check the input voltage and its supply sources.
<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.

Error Messages	Possible Cause	Repair Action
<address> wrong action	Wrong sequence of operator action, such as aborting release before releasing condition are met.	Reset control panel
<address> additional device	There are two devices with identical addresses.	The control panel turns on the alarm LED of the devices with duplicate addresses, to help identify them. Correct the address of one of the devices.
<address> programmed, does not exist	A configured device is not installed.	Check connections. Remove from programming if necessary.
<address> exists, not programmed	A device found in the system is not configured.	Add to configuration.
<address> loop disconnected	Multiple devices are missing.	Find the disconnect along loop wiring and resolve.
<address> short in loop	Short along loop wiring.	Find the short along loop wiring and resolve.
<address> extinguishing activated	Extinguisher was released.	Replace extinguishant, clear extinguishing activated indication (menu > utilities > clear extinguishing activation).
<address> short in SLC Out loop connection	There is a short along the loop out connector path (indicated with arrow down).	Troubleshoot the wiring and resolve.
<address> open in SLC Out loop connection	There is an open wire along the loop out connector path (indicated with arrow down).	Troubleshoot the wiring and resolve.
<address> short in SLC In loop connection	There is a short along the loop In connector path (indicated with arrow up).	Troubleshoot the wiring and resolve.
<address> open in SLC In loop connection	There is an open wire along the loop In connector path (indicated with arrow up).	Troubleshoot the wiring and resolve.
Ground fault "+"	Ground fault along one of the positive wires (SLC or 24Vdc).	Disconnect all wiring and reconnect one at the time to identify the source.
Ground fault "-"	Ground fault along one of the negative wires (SLC or 24Vdc).	Disconnect all wiring and reconnect one at the time to identify the source.

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 removed.	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.	Remove the device from the matrix.
Disabled	A device or zone is disabled.	If you want to turn on the device: Open enable/disable device menu from the main menu, select the device or zone indicated in the message, and 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.).
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 alarms 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 alarms 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 Extinguishing Abort 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 EN54. 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 battery supervision and battery test that are managed by the control panel's microprocessor. This includes disconnection, charging current, battery voltage, and the batterie's ability to supply the required current under load. If any of the parameters is outside the required parameters this 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.

10.3 Evacuation Drill

Perform an evacuation drill as required by the local fire authority.

- Press the **Drill** key on the top left of the control panel.
- Enter the password.
- Pressing the **Silence** key during an Evacuation Drill will not silence the sounders.
- To finish the drill, press the **Reset** key and enter the password.

11 Warnings and Limitations

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 manufacturer's 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/SAVER-7000/Guard-7 and/or resulting from its inaction.

Note

Do not install, operate, or maintain this ADR-7000/SAVER-7000/Guard-7 before fully reading this manual and having completed **TELEFIRE** training.

12 Compatibility

The ADR-7000, SAVER-7000 and Guard-7 control panels are compatible with all of the following devices:

12.1 Input Devices

12.1.1 Direct Attachment to the SLC Loop

- TFO-480a, TFO-440a and TFO-770A – Addressable Photoelectric Smoke Detectors
- TFH-280A and TFH-220A – Addressable Heat Detectors
- TPH-482A and TPH-442A – Addressable Multi-sensor Photo/Heat detector
- TPB-800ASR and TPB-800ASY – Pushbuttons
- DTH-800 and DTH-400A
- ADR-705 and ADR-805A – Addressable Switch Input Modules
- ADR-712 and ADR-718 – Multi-Input Modules
- TLD-24 – Input Module

12.1.2 Connection via an Input Module

The following devices can be connected via an ADR-712, ADR-718, ADR-812, or ADR-818A:

- TFO-480 and TFO-440 – Conventional Smoke Detectors
- TFH-281S; TFH-281R; TFH-282S; TFH-282R; TFH-280F; and TFH-220F – Conventional Heat Detectors
- TPH-482 and TPH-442 – Conventional Multisensor Photo/Heat detector
- TPB-10R and TPB-10Y – Conventional Pushbuttons
- TXB-435 – Intrinsically Safe Detectors

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

- TBD-50 and TBD-100 – Beam Detectors
- TBD-40 – Beam Detector
- LASD 1 and LASD 2 – Aspirating Detectors
- Smart 3 gas detectors
- OSID – camera detectors by XTRALIS

12.2 Output Modules

The ADR-7000, SAVER-7000 and Guard-7 support the following devices:

12.2.1 Direct Attachment to the SLC Loop

- ADR-723 and ADR-823A – Addressable Output Modules
- ADR-741 – Addressable Relay Module
- ADR-742 – Addressable Loudspeaker Switching Module
- ADR-828A – Output Module
- TLD-24
- TFP-7000 – Firefighter's Phone

12.2.2 Connection via an Output Module or to the control panels NAC Outputs

- TIP-224 and TFS-114 – Indoor Sounders
- TFS-214S – Sounder / Strobe
- TFS-4406 – Outdoor Strobe
- TFS-4460 – Outdoor Sounders
- TFS-4484 – Outdoor Sounder/Strobe
- TFS-314 – Indoor Sounder / Strobe
- TFS-324 – Outdoor Sounder / Strobe
- TFS-GEC3W – Wall Mount Combination Horn/Strobe
- TFS-IP44 – Waterproof Sounder/Strobe
- TFS-SYSVAV – Internal Sounder/Strobe + Message
- TES-333B – Extinguishing Activated Sign (with sounder)
- TES-553 – Extinguishing Activated Sign (without sounder)
- TES-553B – Extinguishing Activated Sign (with sounder)
- TES-553WP – Waterproof Extinguishing Activated Sign (without sounder)
- TDH-315 and TDH-369 – Door Magnets

12.3 Extinguishing Devices

The ADR-7000, SAVER-7000 and Guard-7 can activate the following extinguishing devices via an ADR-723

- Old style SAFE cylinders using TLA-110 Extinguishing Adapter
- New style SAFE cylinders using TEC-200 Extinguishing Adapter
- Fike FIRERASER cylinders using TLA-130 Extinguishing Adapter
- Fike Impulse cylinders using TLA-23 Extinguishing Adapter
- Fike GCA systems using TLA-22 Extinguishing Adapter
- FirePro aerosol generators using TLA-44 Extinguishing Adapter
- GreenEX aerosol generators using TLA-33 Extinguishing Adapter

12.4 Other Devices

The ADR-7000, SAVER-7000 and Guard-7 control panels can be connected to the following miscellaneous devices:

- LI-3000C and LI-3000E – Short Circuit Line Isolators
- TPS-74A or TPS-34A – Auxiliary Power Supplies
- TFP-7000; TFP-1CP; TFP-806; AND TFP-828A – Firefighter Phone
- TSC-7000 – Smoke Control Panel – to the ADR-7000 and SAVER-7000 only!

13 Specifications

13.1 General Specification

Dimensions:

ADR-7000 (W / H / D) 150 / 410 / 520 mm

Expansion Module (W / H / D) 150 / 260 / 530 mm

SAVER-7000 (W / H / D)..... 150 / 360 / 464 mm

GUARD-7 (W / H / D)..... 120 / 310 / 410 mm

Operating Temperature range..... 0°C – +49°C

Operating Voltage

120Vac / 60Hz or 230Vac / 50Hz

Mains AC Current Consumption..... **230Vac** **120Vac**

Basic configuration (1 loop)..... 60.0mA 130mA

Each additional loop card..... 17.0mA 40mA

LON-7000 10.0mA 25mA

MCOM 120.0mA 255mA

Mains AC Current Consumption – 2 devices in alarm (control panel only)

..... **230Vac** **120Vac**

Basic configuration (1 loop)..... 280.0mA 590mA

Each additional loop card..... 17.0mA 40mA

LON-7000 10.0mA 25mA

Branch circuit overcurrent circuit breaker

Connect the control panel's AC input line to a dedicated 10A circuit breaker that is not shared by other appliances or equipment. It is recommended that the circuit breaker be clearly labeled "FIRE ALARM".

Ground fault resistance

Low sensitivity..... 14KΩ – 30KΩ

Medium sensitivity..... 30KΩ – 60KΩ

High sensitivity..... 50KΩ – 90KΩ

Event log (ADR-7000, SAVER-7000)..... 9,999 alarms/9,999 faults

Event log (Guard-7)..... 250 alarms/1,000 faults

Drift compensation update time 3 hours

A detector that is close to end of correct sensitivity range will announce a

Maintenance Alarm. Please see section 8.4.7 on page 51 for additional details on maintenance alarm.

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 for ADR-7000, SAVER 7000 and Guard-7.

Batteries

Two sealed lead-acid batteries, total voltage 24Vdc (two 12V batteries in series) with a max capacity of 18AH for ADR-7000, 14AH for SAVER 7000, 7AH for Guard-7.

Battery capacity shall be determined according to the local fire codes and local fire authority.

The total power consumption of the control panel (the control panel itself and devices connected to and are powered by it) should not exceed 4.0A in alarm.

13.3 Remote Annunciators

Remote annunciators

ADR-7000 up to 16 RM-7000 annunciators

SAVER 7000 up to 3 RM-7000 annunciators

Guard-7 up to 3 RM-7000 annunciators

Cabling requirement standard RS 485 cabling

13.4 Main Board – Field Connections

NAC 1 (supervised)

Activation mode Reversed polarity, silenceable

NFPA classification Class B

Activation condition any alarm, silenceable

Current protection electronic current limit

Max Current (Special application) 1.0A 24Vdc

Max Current (Regulated) 0.1A 24Vdc

EOL Resistor 5.1 K Ω – use P/N EOL-5100

Max number of Gentex GEC3-24WW units 14

Maximum line impedance 10 Ω

NAC 2 (ADR-7000 only) – See NAC 1

SLC card 1 (supervised)

NFPA classification: Class B or Class A

Class B or Class A is configurable at single loop level

current protection electronic

Maximal loop current 550mA

Maximal total SLC current 2.5 A

Nominal loop voltage 21V, modulated

Maximum loop impedance 40 Ω

Maximum loop capacitance 1.0 μ F

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

Current protection electronic current limit

Max Current: 2.0A 24Vdc

SLC card 2 – see SLC card 1

SLC card 3 (ADR-7000 only) – see SLC card 1

24V_B1 auxiliary output⁴

Current protection electronic current limit

Max Current: 2.0A 24Vdc

SLC card 4 (ADR-7000 only) – see SLC card 1

⁴ Combined 24V_B1 and 24V_B2 output current shall not exceed 2.0A

24V_B2 auxiliary output⁴

Current protection electronic current limit

Max Current: 2.0A 24Vdc

13.5 Main Board – Relays

Relays

Resistive load (power factor load 1.0)

Dry contacts 3, unsupervised

Relay activation programmable, silenceable

Max rating of relay contacts 1.5A 48Vdc

Supervision is typically provided by the product it is connected to. If connected to a non-supervised circuit relay, wiring should be limited to the same room, within 20' (6.1m) of each other and shall be enclosed within conduit or equivalently protected against mechanical injury.

13.6 Expansion Module for Loops 5 – 8 (ADR-7000 only)

Expansion Module

basic configuration (1 loop) 28mA

each additional loop card 17mA

SLC card see SLC card 1

24V_C auxiliary output see 24V_A auxiliary output

24V_D auxiliary output see 24V_A auxiliary output

13.7 Loop attached NACs

Maximum number of NACs per loop 50 addresses

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

TELEFIRE's ADR-7000, SAVER-7000 and Guard-7 Addressable Control Panels have the following approvals:

- EN 54 Approved
- EN 12094-1 Approved
- GOST Compliant
- CP 10 Compliant
- SI 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 devices and NACs	ADR-7000 Single line card	{ } X	130.0mA		210.0mA	
	SAVER-7000 Single line card	{ } X	130.0mA		210.0mA	
	Each additional line card	{ } X	45.0mA		70.0mA	
	LON-7000	{ } X	10.00mA		10.0mA	
	MCOM	{ } X	120.00mA		120.0mA	
	GIM-232	{ } X	1.50mA		1.5mA	
	TDM-500I	{ } X	20.00mA		300.0mA	
	TIP-224	{ } X	0.00mA		40.0mA	
	Other devices	{ } X	mA		mA	
	Other devices	{ } X	mA		mA	
	Other devices	{ } X	mA		mA	
SLC Loop Current	TFO-480A or TFO-440A	{ } X	0.29mA		2.0mA	
	TFH-280A or TFH-220A	{ } X	0.20mA		2.6mA	
	TPH-482A or TPH-442A	{ } X	0.29mA		2.0mA	
	TFL-1AN	{ } X	0.00mA		10.0mA	
	TPB-800ASR or TPB-800ASY	{ } X	0.12mA		2.0mA	
	ADR-705	{ } X	0.20mA		3.5mA	
	ADR-712	{ } X	0.30mA		15.0mA	
	ADR-718	{ } X	0.30mA		15.0mA	
	ADR-723	{ } X	0.20mA		2.8mA	
	ADR-741	{ } X	0.28mA		3.2mA	
	ADR-742	{ } X	0.28mA		3.2mA	
	ADR-805A	{ } X	0.26mA		3.0mA	

	Device	QTY	Quiescence		Alarm	
			Current	Total	Current	Total
	ADR-812A	{ } X	0.15mA		2.1mA	
	ADR-818A	{ } X	0.26mA		2.1mA	
	ADR-823A	{ } X	0.30mA		3.0mA	
	ADR-828A	{ } X	0.39mA		3.0mA	
	ADR-833A	{ } X	6.50mA		6.5mA	
	TLD-24	{ } X	1.3mA		25.0mA	
	TPS-74A or TPS-34A	{ } X	0.34mA		0.5mA	
	TFP-7000	{ } X	15.00mA		15.0mA	
	TFP-1CP	{ } X	0.25mA		2.5mA	
	TFP-806	{ } X	0.25mA		2.5mA	
	TFP-828	{ } X	0.40mA		40.0mA	
	Total		(a)		(b)	

Table 12 Power Requirement – Internal and SLC

At least one line card (ADR-7012) should be installed in the ADR-7000 and SAVER-7000 panels.

	Device	QTY	Quiescence		Alarm	
			Current	Total	Current	Total
24vdc Out Current Draw	RM-7000	{ } X	40.0mA		70mA	
	ADR-712	{ } X	50.0mA		75.0mA	
	ADR-718	{ } X	50.0mA		350mA	
	ADR-723	{ } X	0.9mA		70.0mA	
	ADR-812A	{ } X	11.0mA		80.0mA	
	ADR-818A	{ } X	40.0mA		100.0mA	
	ADR-823A	{ } X	4.0mA		32.0mA	
	ADR-828A	{ } X	10.0mA		125.0mA	
	ADR-833A	{ } X	20.0mA		120.0mA	
	TLD-24	{ } X	mA		mA	
	TFP-7000	{ } X	80mA		80mA	
	TFP-1CP	{ } X	mA		mA	
	TFP-806	{ } X	mA		mA	
	TFP-828	{ } X	10.0mA		80.0mA	

	Device	QTY	Quiescence		Alarm	
			Current	Total	Current	Total
	Total		(a)		(b)	

Table 13 Power Requirement – 24Vdc

First fill in the quantities of devices attached to the system in Table 12 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.

Thirdly copy the appropriate fields into Table 14 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 14 Power Requirement – Final Calculation

The ADR-7000's power supply module can charge batteries in capacity of up to 18AH, the SAVER-7000 up to 14AH and the Guard-7 up to 7AH.

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-7000 external battery enclosure. This enclosure can contain up to two 12V 18 AH sealed lead-acid batteries, up to 20 (W) by 10 (D) by 15 (H) cm each.

If the system requires larger battery capacity greater than 18 AH, add a TPS-74A or TPS-34A auxiliary power supply with its own batteries.

*i***Note**

TPS-74A or TPS-34A auxiliary power supplies should be installed as close as possible to the devices they provide power to in order to reduce power loss.

TPS-74A or TPS-34A auxiliary power supplies should not be shared between multiple control panels or between line cards on the same control panel.



Figure 26 BC-7000 + ADR-7000B, A Battery box for 18AH

When are Auxiliary Power Supplies Needed?

Large fire detection and alarm systems that require high current 24Vdc power may be expanded by installing TPS-74A or TPS-34A auxiliary power supplies. These power supplies may be used to add 24Vdc power to the system.

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.

ADR-7000

Additional TPS-74A or TPS-34A 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 2.0A 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 18AH capacity.
- Voltage drops 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.

SAVER-7000

Additional TPS-74A or TPS-34A auxiliary power supplies are required if at least one of the following conditions are met:

- Current draw from the 24Vdc output is more than 0.5A in quiescence mode or 2.0A in alarm.
- The total power consumption of the control panel (the control panel itself and devices attached and powered by it) is more than 3.25A in alarm.
- There is a requirement for batteries with more than 14AH capacity.
- Voltage drops 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.

Appendix B - Detector Sensitivity Selection

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 15 Smoke Detector Sensitivity

Heat Detector Sensitivity Settings

Heat detectors can work in one of two modes:

- Fixed Temperature – 50°C to 90°C in 1°C steps
- Rate of Rise – rate of rise of 7°C to 13°C per minute in 1°C steps

Default configuration is fixed temperature heat detector (50°C). There is no difference in day and night sensitivity for heat detectors' default configuration.

Mode	Less 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

i

Note

Set the detectors to between 55°C – 58°C fixed temperature or at a rate of rise of 8°C per minute to conform to EN54 requirements.

Smoke Detector Sensitivity Settings

Mode	Less sensitive	Default	Most sensitive
Multi-sensor	10	5	2

Appendix C – Standards Compliance

The 7000 Series fire panels conform fully to European standards EN 54-2:1998 and EN 54-4:1998 and the following optional features:

EN 54 – 2: Options with Requirements

- *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
- *Investigation Delays to Outputs* – EN 54-2 7.11 option with requirements
- *Co-incident Detection* – 7.12 EN 54-2 option with requirements
- *Alarm Counter* – EN 54-2 Section 7.13 option with requirements
- *Fault Signals from Points* – EN54-2 clause 8.3
- *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
- *Disabling of Points* – EN54-2 clause 9.5
- *Test condition* – EN 54-2 Section 10 option with requirements
- *Standardized I/O* – EN54-2 clause 11

EN 54 – 4 PSE Functions

- Operation from a main power supply – EN54-4 clause 5.1
- Operation from a standby battery – EN54-4 clause 5.2
- Monitor and Charge the Standby Battery – EN54-4 clause 5.3
- Recognize and Notify Supply Faults – EN54-4 clause 5.4

EN 54 – 13 System Functions

- Transmission Path Integrity - EN54-13 clause 4.5
- Networks (non-hierarchical) - EN54-13 clause 4.3

EN 54! – Non EN54 Functions

This Fire Alarm Control Panel also supports additional functions that are not covered by EN54. These are as follows:

- Auxiliary Power Supply Output
- Auxiliary Relay Outputs
- Programmable Cause / Effect on Outputs
- Others

CP-10

The ADR-7000 conforms to Singapore standard SS CP 10:2005 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

CE

TELEFIRE declares that the products identified below conform to the essential requirements specified in the Construction Products Regulation EU 305/2011:

EN54-2: 1997 +A1:2006

Control and indicating equipment for fire detection and fire alarm systems for buildings.

Provided options:

- Outputs to Fire Alarm Devices
- Output to Fire Routing Equipment
- Output to Fire Protection Equipment
- Output to Fault Routing Equipment
- Investigation Delays to Outputs
- Dependency on more than one alarm signal
- Fault Signals from Points
- Disablement of Points
- Alarm Counter
- Test Condition
- Standardized Input/Output

EN54-4: 1997 +A1:2002 +A2:2006

Power supply equipment for fire detection and fire alarm systems for buildings.

In addition, the products comply with the following:

- Low Voltage Directive 2014/35/EU
- EN63368-1:2014 +A11:2017 Audio/video, information and communication technology equipment. Safety requirements
- Electromagnetic Compatibility Directive 2014/30/EU
- EN61000-6-3: 2007 +A1:2011 Emissions, Class B
- EN50130-4: 1995 +A1:1998 +A2: 2003 Immunity, Product Family Standard
- EN50130-4: 2011 +A1:2014 Immunity, Product Family Standard