Operation and User Manual

FirePro – Advanced Sequential Activator (FP-SEQACT)

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Version 1.0

Reinventing
Fire Suppression

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1 Safety Precautions

1.1 General

WARNINGS DEFINE A HAZARD THAT CAN CAUSE SERIOUS OR FATAL HARM. FAILURE TO OBEY A WARNING CAN KILL OR SERIOUSLY INJURE YOU.

WARNINGS CAN ALSO GIVE PROCEDURES OR PRACTICES WHICH WILL DAMAGE FACILITIES OR EQUIPMENT IF NOT OBEYED.

Cautions define a hazard that can possibly cause damage to facilities or equipment, loss of data or cause a system to cease operating.

Notes draw your attention to extra information, relevant to the procedures or equipment.

1.2 Precautions

BEFORE YOU INSTALL THIS PRODUCT MAKE SURE THAT YOU COMPLY WITH THE RATINGS SHOWN INSIDE THE EQUIPMENT AND IN THE SPECIFICATIONS SECTION OF THIS MANUAL.

MAKE SURE THAT YOU HAVE READ AND UNDERSTOOD THE INSTRUCTIONS PROVIDED IN THIS MANUAL BEFORE YOU WORK ON THE PANEL. IF YOU ARE NOT SURE, STOP WORK AND SEEK GUIDANCE FROM THE MANUFACTURER OR SUPPLIER.

THIS EQUIPMENT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE DEVICES. MAKE SURE THAT YOU OBEY ANTI-STATIC PRECAUTIONS AT ALL TIMES WHEN WORKING ON THE SYSTEM. FAILURE TO OBEY ESDS PROCEDURES CAN DAMAGE THE EQUIPMENT.

Only trained, competent personnel should carry out installation, programming or maintenance on this equipment.

This equipment has been designed to comply with Low Voltage Safety and Electromagnetic Compatibility (EMC) Directives. Failure to follow the installation and maintenance procedures can prevent the equipment from conforming to these standards.

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2 Specification and Orders

Item	Specification Details
Product Code	FP-SEQACT
Approvals	Electromagnetic Compatibility Directive 2014/30
DC Auxiliary supply	18V DC to 30V DC
Auxiliary Current	13mA @ 24V DC
Releasing Input (V)	18V DC to 30V DC
Releasing Input (A)	Normal Standby 9mA Alarm 1.5A (Maximum)
Releasing Output	18V DC to 30V DC, pulsed, regulated to 1.2A
Terminals	Spring Leaf, 5mm pitch
Cable Capacity	0.5mm^2 to 2.5 mm^2
Number of Outputs	4, + Next Device output
Output Duration	1 second per output
Input Delay Time	275ms
Extinguish Delay time	Configurable 0 seconds to 5 minutes.
End of Line	Integrated end of line resistor
Weight	0.62 Kg (when packaged 0.76 Kg)
Operating Temperature	Between negative 5 and positive 40 degrees centigrade (-5^0 to 40^0 C)

Models, Sales Order Parts	
FP-SEQACT	Sequential Activator
Applications / Limitations	
The sequential activator is intended for use with FirePro aerosol generators, expanding the functionality of the host panel.	
Compatibility	
The FP-SEQACT was tested and proven fully compatible with Advanced ExGo (Ex-3001), Kentec Sigma XT, Kentec Sigma ZXT, FirePro Delta FS (Kentec Sigma A-XT), and Notifier RP-2002 control panels.	

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3 Introduction

The Sequential Activator is a peripheral component that forms part of a larger fire extinguishing system.

The Sequential Activator controls the timed release of multiple aerosol extinguishing units following the activation of the release output signal from the connected host panel.

Multiple Sequential Activators can be daisy chained together to form a system. The diagram below details the connections.

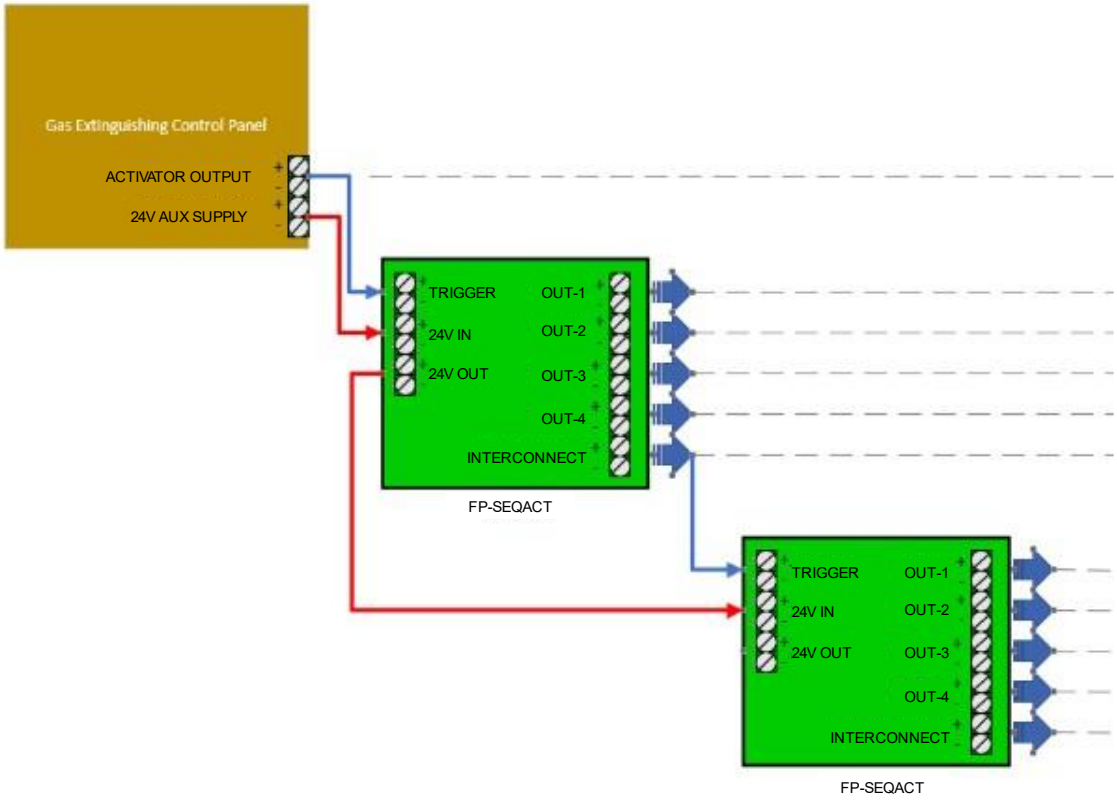

Figure 1 - Linked Sequential Activators

All Sequential Activators in a system share a common 24V Auxiliary Power Supply from the extinguishing panel. The extinguish signal is passed on to the devices from the extinguishing panel in a daisy chain topology. Once the last output circuit is activated on a sequential activator, it will pass the signal to the next sequential activator in the chain.

A programmable activation delay is available to postpone the activation of the first used aerosol output on each FP-SEQACT PCB. By default, this activation delay is set to 0 and it can be configured using an onboard push button dedicated to activation delay configuration. The delay configuration setting is saved and retrieved on any power cycle. Activation delay countdown will start when the extinguish signal is applied to the FP-SEQACT.

The FP-SEQACT output circuits are learned using an onboard push button dedicated to output circuit impedance learning. Each circuit's properties are tested, and existing circuit properties are saved and retrieved on any power cycle.

The unit connects directly to the host panel auxiliary supply and extinguishing outputs.

The FP-SEQACT features open and short circuit detection of all outputs during standby (non-alarm) condition and output current control during activation (alarm) condition.

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4 Installation

THIS EQUIPMENT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE DEVICES. MAKE SURE THAT YOU OBEY ANTI-STATIC PRECAUTIONS AT ALL TIMES WHEN WORKING ON THE SYSTEM. FAILURE TO OBEY ESDS PROCEDURES CAN DAMAGE THE EQUIPMENT.

Do not hold any part of the printed circuit boards when you lift the chassis. Hold the chassis by the metal plate only. If you lift the chassis by the PCBs, you can damage the equipment.

Make sure that you isolate ALL sources of power before installing or removing any printed circuit board.

Use sufficient strength fixings to securely mount the activator assembly.

4.1 Mount the enclosure

1. Unscrew the two fixing screws and remove the front cover of the enclosure. See Figure 2.
2. Unscrew the four fixing screws and carefully remove the PCB assembly before you fix the enclosure in place. Store the removed PCB in a safe place for later.
3. Remove the required knockouts for the installation wiring. Install gland seals where you have removed the knockouts. See Figure 3.
4. Mark the positions of the three fixings on your chosen mounting surface. See Figure 4.
5. Drill three holes, using a 7.0 mm diameter drill-bit and fit 40mm or longer expansion plugs. Install the enclosure to the wall with M5 screws.
6. Remove any dust or swarf from inside the enclosure.
7. Put the PCB assembly over the four stand-offs and fit the four mounting screws.

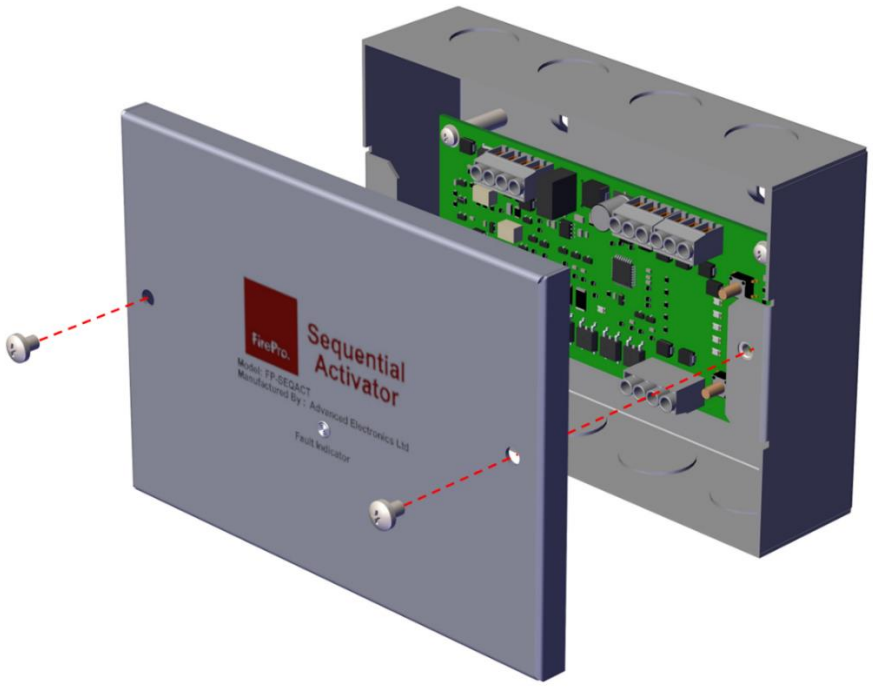

Figure 2 - Remove the enclosure cover.

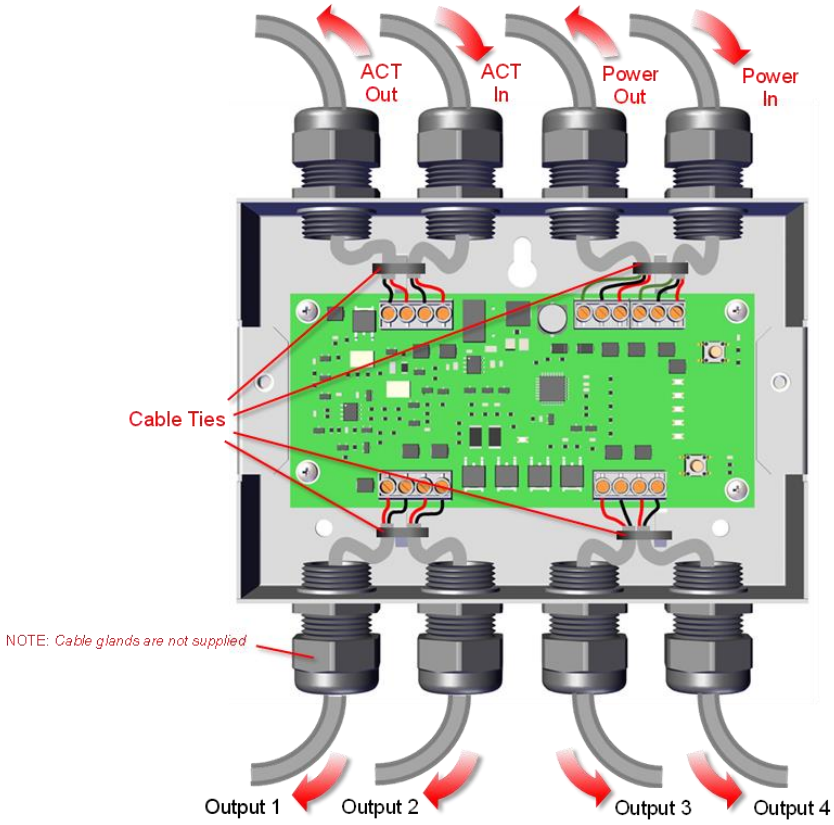

Figure 3 - FP-SEQACT knockout and gland positions.

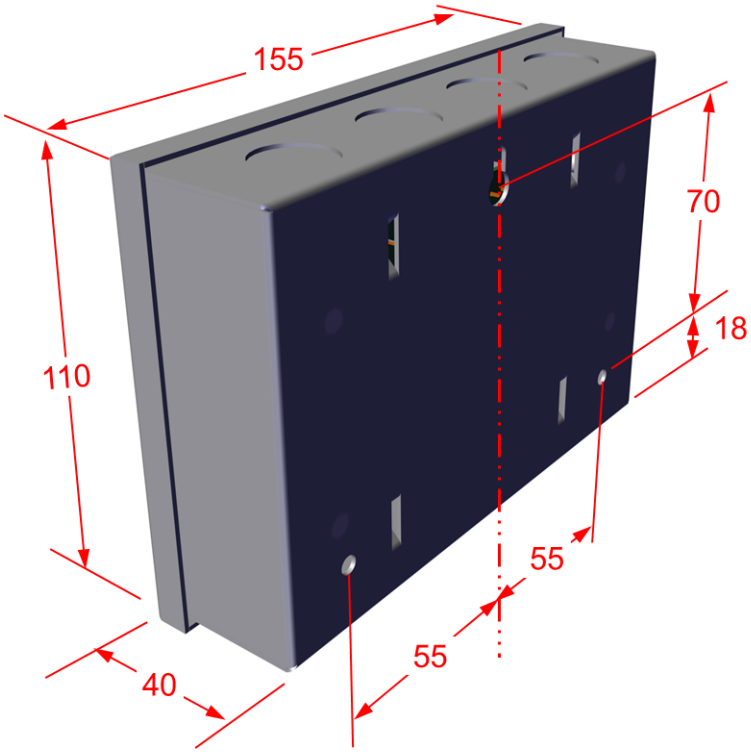

Figure 4 - Enclosure dimensions in mm

4.2 Wiring

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All electrical wiring installation work must be carried out in accordance with the code of practice or applicable national standards appropriate to the country of installation.

Any cable glands, grommets or cord-clamp bushings used to route the cable through the 20mm knockouts must have a flame retardancy rating at UL94V-1 or better.

Minimum/maximum cable size for all external connections is limited to 0.5mm²/2.5mm² (22-14 AWG).

Connect the wires as shown in Figure 5.

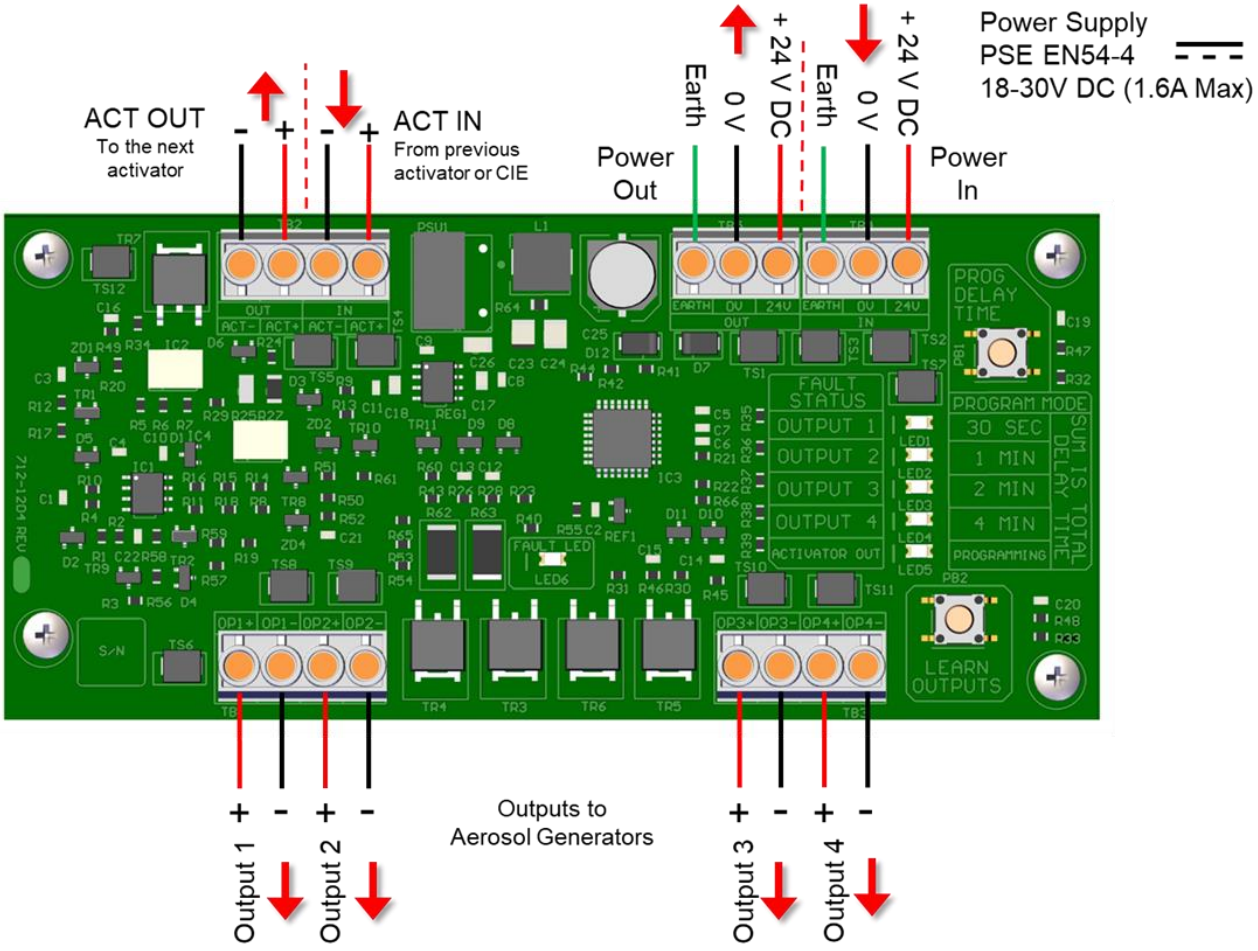

Figure 5 - FP-SEQACT wiring schematic

5 Programming

The Sequential Activator user interface comprises of 6 LEDs and two pushbuttons.

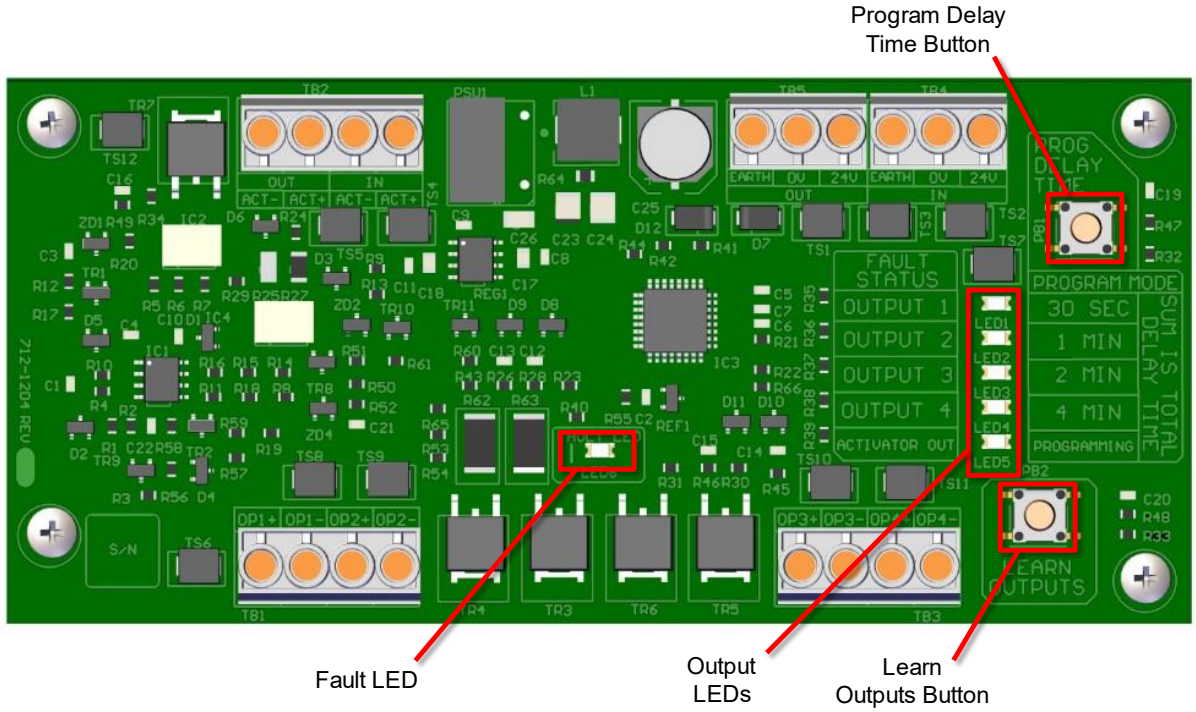

Figure 6 - SEQACT User Controls

5.1 Fault LED

The sequential activator fault LED is visible from the outside of the enclosure. On first power-up the fault LED will be on to indicate that the product has not been commissioned (learn performed).

In normal fault free operation, the fault LED will remain unlit. During a fault condition, the fault LED is lit, and the sequential activator's end of line resistor is switched out of circuit to report the fault to the host panel.

5.2 Output LEDs

The sequential activator contains five output LEDs, during normal operation, the output LEDs will remain off. During fault condition, an output LED will light in conjunction with the fault LED to indicate a fault on a particular output. Please see the trouble shooting section for further information.

Also, during activation of an output, the output LED corresponding to currently active output will light for the period of activation (1 second).

5.3 Push Buttons

The pushbuttons are used for programming or displaying the configuration of the sequential activator. They are used to put the sequential activator into four operation modes, the output LEDs display the status of the card in these operating modes.

- Display Activation Delay
- Program Activation Delay
- Display Used Outputs
- Learn Output Circuits

5.3.1 Program Delay Time Push-button

This button (labeled PROG DELAY TIME) is used to put the sequential activator into activation delay programming modes as follows:

- **Short Press:** Press and release the pushbutton to place the card in Display Activation Delay mode. The LEDs will display the current configured activation delay. The activation delay is calculated by summation of the delay represented by each LED. After a timeout of 5 seconds the card exits this mode to normal running mode.

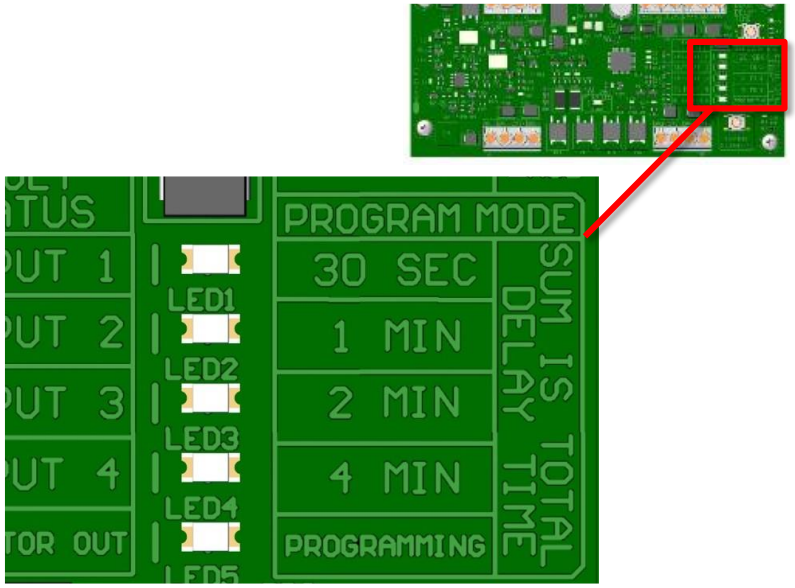

Figure 7 - Output LEDs

- **Press and Hold:** Hold the pushbutton for 2 seconds or more to place the sequential activator in Program Activation Delay mode. In this mode, the PROGRAMMING LED flashes in half-a-second periods to indicate the sequential activator is in Activation Delay Programming mode. To change the activation delay, short presses of the PROG DELAY TIME pushbutton will increase the delay by 30 seconds up to the maximum of 5 minutes. If no keypresses are registered withing 5 seconds, the current displayed delay will be stored, and the sequential activator will return to the normal running mode. The programmed delay can be confirmed using a short press of the PROG DELAY TIME button.

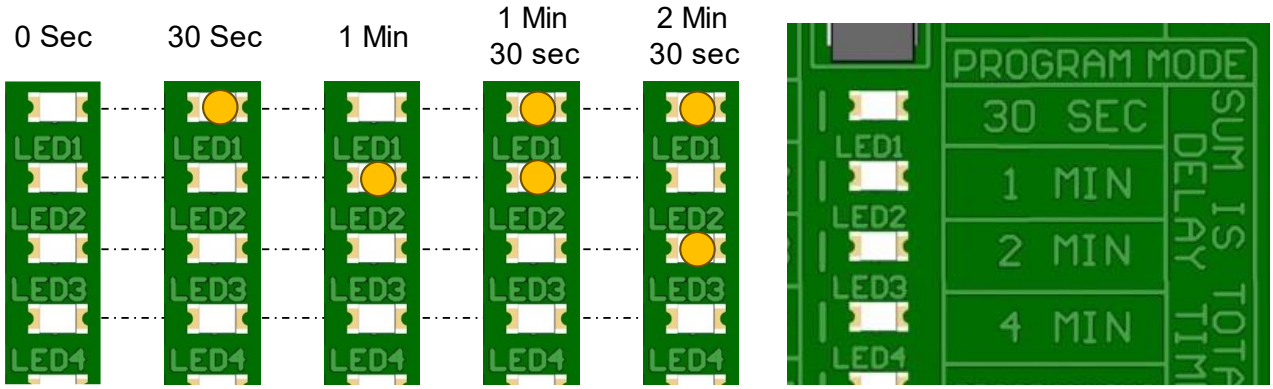

Figure 8 – Example Output LED Indications

5.3.2 Learn Outputs Pushbutton

Make sure that all circuitry is correct before you perform a learn operation.

This button (labeled LEARN OUTPUTS) is used to put the sequential activator into learning output circuit programming modes as follows:

- **Short Press:** Press and release the pushbutton to place the card in Display Used Outputs mode. The LEDs will display the outputs that are currently in use. After a timeout of 5 seconds the sequential activator exits this mode to normal running mode.
- **Press and Hold:** Hold the pushbutton for 2 seconds or more to place the sequential activator in Learn Output Circuits Programming mode. In this mode, all output circuits are scanned, and their impedances are stored. At the end of this mode, the LEDs will briefly display all currently used output circuits. The sequential activator exits this programming mode to the normal running mode after a five second timeout. The currently available output circuits can be confirmed using a short press of the Learn Outputs button.

5.3.3 Notes on Use

If the card is in activation countdown (delay programmed), and the activation signal is removed, the card will abort the activation process and resume normal running mode.

While the card is in activation countdown, configuration changes are not permitted, access to card configuration is restricted and displays current configuration only.

To erase the card configuration:

- Press and hold the Program Delay Time button until the **Programming** LED flashes.
- Press and release the **Learn Outputs** pushbutton.
- The fault LED will turn ON, and the integrated end of line resistor will be switched out of circuit to indicate to the CIE that the card is not configured.

During the commissioning of the system, the Learn Output procedure has to be carried out starting from the last sequential activator and ending to the first one. Not following the correct sequence might result in a false error free state of the system.

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6 Troubleshooting

The sequential activator has a fault LED that is visible from the outside of the enclosure. During a fault condition, the fault LED will turn ON, and the sequential activator's end of line resistor is switched out of circuit to report the fault to the CIE.

6.1 Outputs will not learn:

The output impedance is out of range, the acceptable range is 1.2Ω to 7.5Ω, please check the wiring and measure the impedance across the output with the sequential activator powered off.

6.2 Fault indication LEDs:

During a fault condition, the sequential activator's end of line resistor is switched out of circuit to indicate a fault to the CIE and the Fault LED is illuminated.

Where there is more than one sequential activator in a system, the fault is passed back to the panel by each sequential activator switching its end of line resistor out of circuit.

Along with the fault LED one or more of the 5 other LEDs will turn ON to indicate a fault or faults. The 5 other LEDs are only visible by removing the front cover of the sequential activator.

The table below shows the LED combinations and describes each fault during normal operation (non-alarm).

Fault detection is not active during an activation period. To diagnose a fault, make sure that the active (extinguish) signal is removed.

LED Pattern	Fault	Action
FAULT + OUTPUT1	OUTPUT 1	Check the output for open or short circuit
FAULT + OUTPUT2	OUTPUT 2	Check the output for open or short circuit
FAULT + OUTPUT3	OUTPUT 3	Check the output for open or short circuit
FAULT + OUTPUT4	OUTPUT 4	Check the output for open or short circuit
FAULT + ACTIVATOR OUT	ACTIVATOR OUT	Check the output for open or short circuit

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