

AUTOPULSE 542DC Pre-Action and Deluge Control Panel

Description

The AUTOPULSE 542DC is a six-zone Pre-Action and Deluge Control Panel for single and dual hazard deluge and preaction applications. It provides reliable fire detection, signaling and protection for commercial, industrial and institutional buildings requiring water-based releasing. The AUTOPULSE 542DC is compatible with System Sensor's i3 detectors which are conventional smoke detectors that can transmit a maintenance trouble signal to the panel indicating the need for cleaning and a supervisory 'freeze' signal when the ambient temperature falls below the detector rating of approximately 45 °F (7 °C). In addition, the control panel is compatible with conventional input devices such as two-wire smoke detectors, four-wire smoke detectors, pull stations, waterflow devices, tamper switches and other normally-open contact devices. Refer to the Device Compatibility Document for a complete listing of compatible devices.

Four outputs are programmable as NACs (Notification Appliance Circuits) or releasing circuits. Three programmable Form-C relays (factory programmed for Alarm, Trouble and Supervisory) and 24 VDC special application resettable and non-resettable power outputs are also included on the main circuit board. The AUTOPULSE 542DC supervises all wiring, AC voltage, battery charger and battery level.

Activation of a compatible smoke detector or any normally-open fire alarm initiating device will activate audible and visual signaling devices, illuminate an indicator, display alarm information on the panel's LCD, sound the piezo sounder at the panel, activate the panel alarm relay and operate an optional module used to notify a remote station or initiate an auxiliary control function.

Features

- Listed to Standard ULC-S527-99
- Designed for sprinkler standards NFPA 13, 15 and 16
- Dual hazard operation
- Adjustable waterflow discharge timer and two soak timers
- Cross-zone (double-interlock) capability
- Six programmable Style B (Class B) IDCs (Initiating Device Circuit)
- System Sensor i3 series detectors compatible
- Four programmable Style Y (Class B) output circuits – (special application power)
- Strobe Synchronization:
 - System Sensor
 - Wheelock
- Three programmable Form-C relays
- Latching options for relays
- Pre-discharge relay option



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- 7.0 amps total 24 VDC output current
- Resettable and non-resettable output power
- Built-in Programmer
- ANN-BUS for connection to optional devices (one or two of any of the following):
 - ANN-RLY Relay Module
 - ANN-LED Annunciator Module (built-in)
- 80-character LCD display (backlit)
- Real-time clock/calendar with daylight savings time control
- History log with 256 event storage
- Piezo sounder for alarm, trouble and supervisory
- 24 volt DC operation
- Low AC voltage sense
- Outputs Programmable for:
 - Releasing circuits or NACS
- NACs programmable for:
 - Silence Inhibit
 - Auto-Silence
 - Strobe Synchronization
 - Selective Silence (horn-strobe mute)
 - Temporal or Steady Signal
 - Silenceable or Non-silenceable
 - Release Stage Sounder
- Disable/Enable control per input zone and output zone
- Extensive transient protection
- Automatic battery charger with charger supervision
- Optional Trim Ring TR-CE (red) for semi-flush cabinet mounting
- Optional CAC-5X Class A Converter Module for Outputs and IDCs
- Optional 4XTM-F Municipal Box Transmitter Module
- Optional Digital Alarm Communicators (411, 411UD, 411UDAC)

Features (Continued)

PROGRAMMING AND SOFTWARE:

- Custom English labels (per point) may be manually entered or selected from an internal library file
- Three programmable Form-C relay outputs
- Pre-programmed and custom application templates
- Continuous fire protection during online programming at the front panel
- Program Check automatically catches common errors not linked to any zone or input point

USER INTERFACE:

- Integral 80-character LCD display with backlighting
- Real-time clock/calendar with automatic daylight savings adjustments
- ANN-Bus for connection to annunciators
- Audible or silent walk test capabilities
- Piezo sounder for alarm, trouble, and supervisory

Controls and Indicators

LED INDICATORS

- FIRE ALARM (red)
- SUPERVISORY (yellow)
- TROUBLE (yellow)
- AC POWER (green)
- ALARM SILENCED (yellow)
- DISCHARGED (red)

CONTROL BUTTONS

- ACKNOWLEDGE
- ALARM SILENCE
- SYSTEM RESET (lamp test)
- DRILL

AC Power – TB1

- **AUTOPULSE 542DC:** 120 VAC, 60 Hz, 3.66 amps
- **Wire size:** Minimum #14 AWG (2.0 mm²) with 600V insulation
- Supervised, nonpower-limited

Battery (sealed lead acid only) – J12:

- **Maximum Charging Circuit – Normal Flat Charge:** 27.6 VDC @ 1.4 amp Supervised, nonpower-limited
- **Maximum Charger Capacity:** 18 Amp Hour battery (two 18 Amp Hour batteries can be housed in the panel cabinet. Larger batteries require separate battery box such as the BB-26 or NFS-LBBR).
- **Minimum Battery Size:** 12 Amp Hour

Initiating Device Circuits – TB4 and TB6

- Alarm Zones 1 – 5 on TB4
- Alarm Zone 6 on TB6
- Supervised and power-limited circuitry
- Style B (Class B) wiring with Style D (Class A) option
- **Normal Operating Voltage:** Nominal 20 VDC
- **Alarm Current:** 15 mA minimum
- **Short Circuit Current:** 40 mA max
- **Maximum Loop Resistance:** 100 ohms (700 ohms for linear heat detection)
- **End-of-Line Resistor:** 4.7K ohms, 1/2 watt
- **Standby Current:** 4 mA

Refer to the AUTOPULSE Device Compatibility Document for listed compatible devices.

Notification Appliance and Releasing Circuit(s) – TB5 and TB7

- Four Output Circuits
- Style Y (Class B) or Style Z (Class A) with optional converter module
- Special Application power
- Supervised and power-limited circuitry
- **Normal Operating Voltage:** Nominal 24 VDC
- **Maximum Signaling Current:** 7.0 amps (3.0 amps maximum per NAC)
- **End-of-Line Resistor:** 4.7K ohms, 1/2 watt
- **Max. Wiring Voltage Drop:** 2 VDC

Refer to the AUTOPULSE Device Compatibility Document for compatible listed devices.

Form-C Relays – Programmable – TB8

- Relay 1 (factory default programmed as Alarm Relay)
- Relay 2 (factory default programmed as fail-safe Trouble Relay)
- Relay 3 (factory default programmed as Supervisory Relay)
- Relay Contact Ratings:
 - 2 amps @ 30 VDC (resistive)
 - 0.5 amps @ 30 VAC (resistive)

Auxiliary Trouble Input – J6

The Auxiliary Trouble Input is an open collector circuit which can be used to monitor external devices for trouble conditions. It can be connected to the trouble bus of a peripheral, such as a power supply, which is compatible with open collector circuits.

Special Application Resettable Power – TB9

- **Operating Voltage:** Nominal 24 VDC
- **Maximum Available Current:** 500 mA – appropriate for powering 4-wire smoke detectors (see Note)
- Power-limited Circuitry

Special Application Resettable or Nonresettable Power – TB9

- **Operating Voltage:** Nominal 24 VDC
- **Maximum Available Current:** 500 mA (see Note)
- Power-limited Circuitry
- Jumper selectable by JP31 for resettable or non-resettable power

Note: Total current for resettable power, non-resettable power and Output Circuits must not exceed 7.0 amps.

Product Line Information

AUTOPULSE 542DC: Six-zone, 24 volt Deluge-Preaction Control Panel (includes backbox, power supply, technical manual, and a frame and post operating instruction sheet) for single and dual hazard deluge and preaction applications.

CAC-5X: Class A Converter Module can be used to convert the Style B (Class B) Initiating Device Circuits to Style D (Class A) and Style Y (Class B) Output Circuits to Style Z (Class A).

Note: Two Class A Converter modules are required to convert all four Output Circuits and six Initiating Device Circuits.

4XTM-F: Transmitter Module provides a supervised output for local energy municipal box transmitter and alarm and trouble reverse polarity. It includes a disable switch and disable trouble LED.

ANN-LED: Built-in Annunciator Module provides three LEDs for each zone: Alarm, Trouble and Supervisory.

ANN-RLY: Relay Module, which can be mounted inside or outside the cabinet, provides 10 programmable Form-C relays.

TR-CE: Trim-ring (red) is available as an option. The trim-ring allows semi-flush mounting of the cabinet.

BB-26: Battery box, holds up to two 26 Amp Hour batteries and CHG-75.

Battery Packs: 12V batteries available in sizes from 12AH to 65AH.

System Specifications

SYSTEM CAPACITY

- **Annunciators:** 2

ELECTRICAL SPECIFICATIONS

- **AUTOPULSE 542DC (FLPS-7 Power Supply):** 120 VAC, 60 Hz, 3.66 amps
- **Wire size:** minimum 14 AWG (2.0 mm²) with 600 V insulation, supervised, nonpower-limited

CABINET SPECIFICATIONS

Door: 19.26 in. (489 mm) high x 16.82 in. (427 mm) wide x 0.72 in. (18 mm) deep

Backbox: 19.00 in. (483 mm) high x 16.65 in. (423 mm) wide x 5.25 in. (133 mm) deep

Trim Ring (TR-CE): 22.00 in. (559 mm) high x 19.65 in. (499 mm) wide

SHIPPING SPECIFICATIONS

Dimensions:

- Height: 20.00 in. (508 mm)
- Width: 22.50 in. (572 mm)
- Depth: 8.50 in. (216 mm)

TEMPERATURE AND HUMIDITY RANGES

This system meets NFPA requirements for operation at 32 °F to 120 °F (0 °C to 49 °C) and at a relative humidity 93% ± 2% RH (non-condensing) at 90 °F ± 3 °F (32 °C ± 2 °C). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity.

Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 60 °F to 80 °F (15 °C to 27 °C).

NFPA STANDARDS

The AUTOPULSE 542DC complies with the following NFPA 72 Fire Alarm Systems requirements:

- **NFPA 13** Installation of Sprinkler Systems
- **NFPA 15** Water Spray Fixed Systems
- **NFPA 16** Deluge Foam-Water Sprinkler and Foam-Water Spray Systems
- **NFPA 72** National Fire Alarm Code for Local Fire Alarm Systems and Remote Station Fire Alarm Systems (requires an optional Remote Station Output Module)

Listings and Approvals

The listings and approvals below apply to the basic AUTOPULSE 542DC control panel. In some cases, certain modules may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **ULC Listed:** S635

Ordering Information

| Part No. | Description |
|----------|--|
| 436959 | 542DC Pre-Action and Deluge Control Panel, 120 VAC |

Note: The converted metric values in this document are provided for dimensional reference only and do not reflect an actual measurement.

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