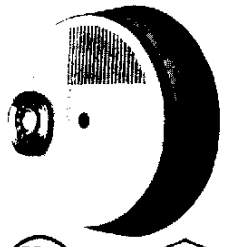
INSTRUCTION MANUAL

Part number 10759, REV 1192

ESL 422C SERIES
PHOTOELECTRONIC SMOKE DETECTORS

MODEL	DESCRIPTION	COMPATIBILITY IDENTIFIER
422C	Smoke Detector	S10P
422CT	Smoke Detector with 135°F heat sensor	S10P



California State Fire Marshal Approved

Patented

GENERAL DESCRIPTION

ESL's 422C Series are photoelectronic, two-wire system smoke detectors operating on the light-scattering detection principle. 422C Series smoke detectors are suited for commercial, industrial, and institutional fire alarm systems.

The detector is intended for two-wire connection to UL Listed compatible fire alarm control units. An integral heat sensor rated 135°F is available as an option on Model 422CT.

ELECTRICAL COMPATIBILITY

ESL's 422 Series are two-wire, system type, smoke detectors. Two-wire detectors and controls must have compatibility Listing with Underwriters Laboratories, Inc. For information on detector/control unit compatibility, see ESL Detector Compatibility Index Guide.

WARNING: SYSTEM MAY NOT OPERATE IF THE DETECTOR IS NOT CONNECTED TO THE CONTROL UNIT INITIATING DEVICE CIRCUIT AS SPECIFIED IN THE DETECTOR OR CONTROL UNIT LITERATURE.

INSTALLATION

The 422 Series smoke detectors mount to standard single-gang 4" octagonal (e.g., RACO #25 or equivalent) electrical boxes, and WIREMOLD No. 5739 fixture boxes or equivalent. The volume of the electrical box is determined by the number and size of conductors as required by the National Electrical Code (NFPA 70). All wiring must be installed in compliance with NEC or the local code(s) having jurisdiction.

All field wiring connections are made to a terminal block on the printed circuit board. Access this area by inserting the blade of an 1/8" screwdriver in the small slot on the detector base, opposite the hinge. Gently depress the cover release tab and swing the cover open. Remove the terminal block cover by gently pulling straight out. Dress all system wiring through the opening in the base of the smoke detector. Secure the detector to the mounting surface using the appropriate mounting holes and hardware. Strip 3/8" of insulation from each conductor and insert under the appropriate screw terminal. The barrier-type terminal block will accommodate one wire of 14 AWG to 22 AWG under each side of each screw/clamping plate. This design provides for supervision of conductors. See Diagram #2 WIRING for correct terminal use.

CHECK ALL WIRING AND MOUNTING CONNECTIONS. Dress wiring neatly and re-install the terminal block cover. Close and securely latch the detector cover.

NOTE: Positive air pressure from wire openings, conduit, mounting boxes, irregular mounting surfaces, or plenums causing air movement through and away from the detector may prevent proper operation. Seal all such openings causing unwanted air flow using UL Listed Expanding Foam or Duxseal.

TESTING THE INSTALLATION

After all connections are complete and the wiring is checked for errors, apply power to the system. There should be no alarm. If an alarm is reported, check to verify if an actual alarm has occurred or if there is a problem with the installation. If it is not an actual alarm, power down the system and check each detector for correct wiring. If no alarm has occurred, check each detector's LED to verify that it is pulsing at approximately one pulse every seven seconds. Go to the last detector and check the smoke detector power with a volt meter for the specified voltage.

To test each detector for alarm operation, use canned smoke, a smoldering punk stick or cotton wick. If canned smoke is used follow manufacturer's directions carefully to prevent damage to the detector. For smoldering punks or cotton wicks, hold smoke source near the smoke entry and gently direct smoke into the detector. Continue for up to 20 seconds or until an alarm is indicated. **BE SURE TO PROPERLY EXTINGUISH THE SMOKE SOURCE AFTER TESTING!**

This is a gross test and is not a reliable indication of the sensitivity of the detector. If it is a successful test the LED will light steady. To reset the detector, operate the system reset switch for 2 to 3 seconds to remove power from the detectors. Control unit alarm and all ancillary functions should be verified for a complete test of each detector. Follow this procedure for the remaining detectors.

TEST EVERY DETECTOR FOR PROPER OPERATION. This testing procedure should be conducted annually by qualified personnel. If a detector fails to function properly, obtain a Return Authorization Number by calling 1-800-648-7422 or 503-620-8540, then carefully pack it and return it prepaid to the manufacturer. Include an explanation of the suspected failure mode.

SENSITIVITY MEASUREMENT

The actual sensitivity of a detector may be determined by testing in a correlated UL 217/268 smoke test chamber. For a nominal charge ESL will perform this test and, if a detector is found to be outside of the marked sensitivity range, will clean the detector.

Contact ESL Customer Service for details on the return of the product.

As an alternate to the above procedure, you may use UL Listed control equipment arranged for the purpose, such as the Gemini Model 501 Aerosol Generator. Refer to the information provided with the Gemini for proper operation and flowmeter settings.

Sensitivity measurements should be taken on all detectors towards the end of the first 12 months of operation, and every 24 months subsequent. If a detector responds incorrectly, contact ESL Customer Service for details on the return of the product.

APPROVALS

The smoke detector is for use in commercial fire protective signaling systems (NFPA 71, 72A, 72B, 72C, or 72D) and in household fire warning systems (NFPA 74).

Listed by Underwriters Laboratories, Inc. California State Fire Marshal, New York City, Board of Standards and Appeals, Factory Mutual, State of Maryland, City of Cleveland approvals pending.

MAINTENANCE

The 422 Series smoke detectors are designed to require little maintenance. Once a year (more often in dusty environments), open the detector cover and use a vacuum and/or filtered compressed air to loosen and remove dust from the screen surrounding the optical sensing mechanism. For detectors installed in hostile (dusty) environments, it may be necessary to purge the chamber with canned or clean, dry compressed air. It is important to notify all concerned parties when any maintenance or testing of a fire alarm system is to occur. Always test each detector after cleaning. DO NOT attempt to adjust or alter the detector.

ELECTRICAL SPECIFICATIONS ALL MODELS

Standby Voltage*	8.5-33.0 VDC
Standby Current	50 uA Max.
Equivalent Capacitance	0.001 uF Max.
Alarm Voltage	33 VDC Max.
Alarm Current	50 mA ± 10 @ 24 VDC
Alarm Current @ 9 VDC	40 mA Min.

To insure reset, reduce detector voltage to 3.0 volts or less, or current to 1 mA or less. Reset time: 1 second Max.

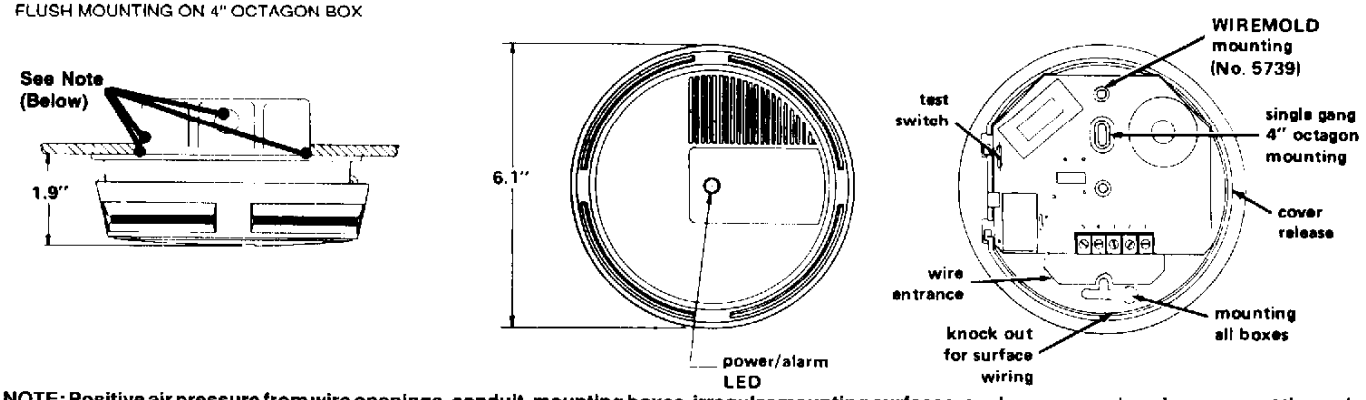
*VDC - Filtered; 10% Maximum Ripple

OPERATIONAL DATA

Operating Temperature Range	0°C to 50°C; 32°F to 120°F
Operating Humidity Range	0 to 95% RH
Detector Size: Diameter	6.1 in. 15.5 cm
Height	2.0 in. 5.0 cm
Weight	8.8 oz. 0.25 kg.
Power/Alarm Indicator LED	Standby - Flashing Alarm - Steady
Electronic Alarm Latch	Reset by momentary power interruption
Sensitivity to Smoke	3.1 ± 0.5%/ft.

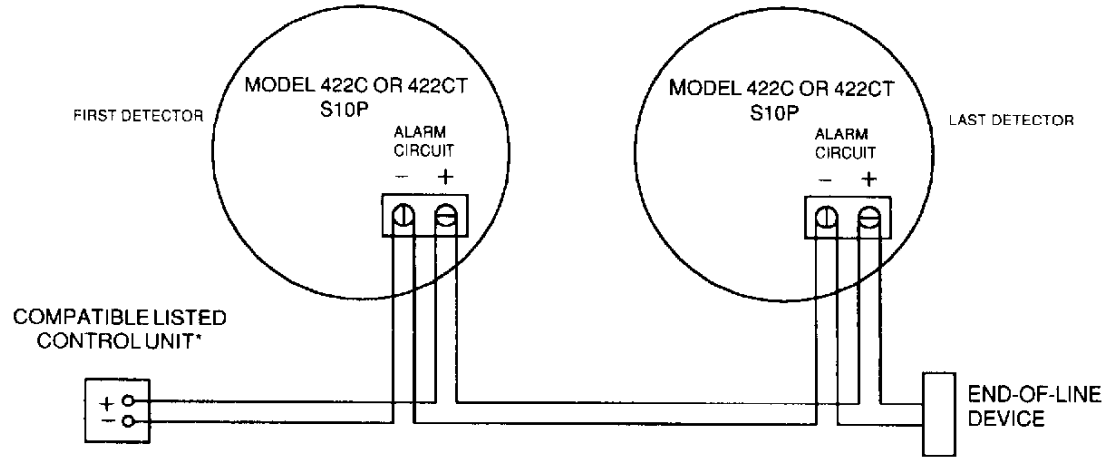
INSTALLATION (Diagram #1)

FLUSH MOUNTING ON 4" OCTAGON BOX



NOTE: Positive air pressure from wire openings, conduit, mounting boxes, irregular mounting surfaces, or plenums causing air movement through and away from the detector may prevent proper operation. Seal all such openings causing unwanted air flow using UL Listed Expanding Foam or Duxseal.

WIRING CONNECTIONS (Diagram #2)



*ESL 1500 Series Control unit with BMB, ZEM Styles B or D wiring. Maximum line resistance = 100 ohms. Compatibility identifier is C01. Compatible Detectors are ESL Models 422C, 422CT: Compatibility identifier S10P: Maximum 40 detectors per circuit.

Emergency operation [Style D(Class A)]: Return initiating circuit wiring to appropriate control unit terminals and connect the end of line devices per the control unit instructions.

CAUTION: DO NOT use looped wire under screw terminals. These terminals are designed to prevent looping of unbroken wire around or under a terminal screw in a mannner that would permit the looped wire to remain unbroken during installation. This would preclude supervision if the wire were to dislodge from the terminal.

SMOOTH CEILING SPACING

On smooth ceilings, spacing of 30 feet (9.1 meters) may be used as a guide. Other spacing may be used depending on ceiling height, high air movement, and other conditions or response requirements.

In all installations, good engineering judgment should govern.

Consult National Fire Protection Association Publications', "NFPA 72E, Standard on Automatic Fire Detectors," and, where applicable, "NFPA 74, Standard for the Installation, Maintenance, and Use of Household Fire Warning Equipment."

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