



429 SERIES

Self-Diagnostic, Two-Wire, Photoelectric Smoke Detectors

Model numbers: 429AT, 429C, 429CT, 429CRT and 429CST



California State Fire Marshal Approved
MEA (New York City)

- **Intelligent, self-diagnostics**
- **Field-replaceable optical chamber**
- **Low-profile design**
- **Plug-in terminal block**
- **Advanced false alarm immunity**

The ESL 429 Series self-diagnostic, two-wire smoke detectors continually monitor their own sensitivity and operational status, and provide a visual trouble indication if they drift out of sensitivity range or fail internal diagnostics. This meets NFPA 72 field sensitivity testing requirements without the need for external meters.

Additional diagnostic information is activated by applying a magnet near the detector's integral reed switch. This initiates a self-diagnostic routine and provides visual indication of sensitivity level, or if service is required.

The 429 Series is easily cleaned by simply replacing ESL's proprietary field-replaceable optical chamber. All models are designed to reduce false alarms from dust, insects, RFI and external light.

An integral combination rate-of-rise and fixed 135°F (57°C), 50-foot rated, heat sensor is available with all "T" model detectors (see selection guide). An integrated silicon heat sensor and a dedicated microprocessor are used to detect heat and perform the rate of rise calculations, for earlier heat detection.

ESL 429 Series Smoke Detectors

Architectural and Engineering Specifications

The ESL 429 Series low-profile, self-diagnostic, two-wire smoke detectors work on the light scattering principle. A pulsed infrared light-emitting diode serves as the light source, and a high-speed photo-diode as the sensing element. When the amount of light reflected onto the photodiode reaches the sensitivity setting, the smoke sampling rate increases. Three (3) successive smoke sensings above the sensitivity setting are required to sound an alarm. This design has superior protection against false alarms caused by dust, insects, RF and ambient-light.

A confirmed alarm causes the normally flashing power indicator LED to light continuously and the optional alarm relay (available in "R" models) to operate. A trouble indication is automatically displayed by flashing the LED every second. This meets NFPA 72 field sensitivity testing requirements. An internal 85 dB horn (available in "S" models) emits a steady tone when the detector alarms and a pulsed tone when power polarity is reversed.

Product Data

Sensitivity	max	3.1 - 1.0%/ft.
	min	3.1 + 0.50%/ft.
Operating temperature range		32°F to 120°F
		0°C to 50°C
Operating humidity range		0 to 95% RH
Minimum voltage - C, CT, CRT, CST		8.5V
- AT		6.5V
Maximum voltage - C, CT, CRT, CST		33V
- AT		20V
Maximum ripple (peak to peak)		10%
Typical average standby current		70µA
Field wiring size		14 - 24 AWG
Alarm current.....		draws max of 60 mA if not limited by panel

The proprietary optical sensing chamber is field replaceable, allowing quick and easy cleaning and maintenance.

Models with auxiliary relays are approved for releasing service.

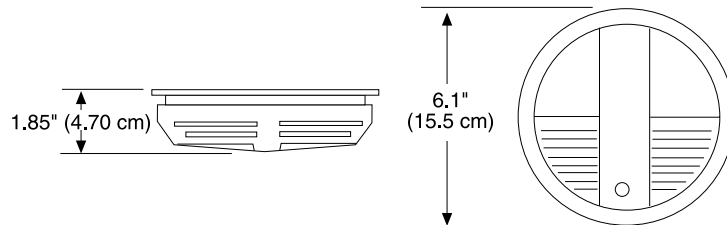
The very low profile 429 Series detectors are equipped with a hinged cover, a concealed tamper-resistant latch, and insect screens.

All wiring terminates in plug-in, clamp-type screw terminals. The detectors mount to a standard single-gang electrical box, a four-inch octagonal, four-inch square electrical box, or WIREMOLD No. 5739 fixture box.

Smoke Detector Spacing

On smooth ceilings (as defined in NFPA 72), 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.

Max. avg. polarity reverse current - CST	10mA
Sounder specifications	85dB at 10 ft.
Heat detector specifications:	
Fixed temp.	135°F ± 5°F (57.2°C ± 2.8°C)
Rate of rise	15°F/min., > 105°F (8.3°C/min., > 40.6°C)
Relay specifications	2A@28VDC or 120VAC
Packaging	10 detectors are packed in a carton
Color	white cover/white base
	with UV inhibitor to prevent yellowing
2-wire compatibility	see ESL Compatibility Index
Listings	UL 268, FM, CSFM and MEA (New York City)
	for Canadian ULC listed products use 428 series



Selection Guide

Designator	Feature	Description
H	Isolated Fixed Temp. and Rate of Rise Heat Detector	Isolated fixed 135°F (57°C) and rate of rise heat detector, independently trips the LED and alarm relay output. Smoke detector activates internal sounder (local alarm) and auxiliary relay, but does not latch. Approved as both single station smoke alarm and system heat detector. Ideal for hotel, motel and dormitory rooms where smoking is allowed.
R	Auxiliary Relay	Used to activate other devices such as elevator recall, door holders, strobes, etc. Listed for releasing service.
S	Built-in Sounder	85db built-in sounder alarms when smoke is detected or when power wiring polarity is reversed.
T	Integrated Fixed Temp. and Rate of Rise Heat Detector	Integrated fixed 135°F (57°C) temperature and rate of rise heat detector offers double protection. Either heat detector or smoke detector can trip and latch LED and alarm relay outputs.



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