

## EAGLE SERIES - FIRE ALARM SYSTEMS

### PROJECTED BEAM SMOKE DETECTOR

**LE-SPC-24**



#### FEATURES

- Low profile, 1.8" high (with base)
- 2 or 4 wire base compatibility, relay bases available
- Highly stable operation, RF/Transient protection
- Low standby current, 45µA at 24VDC
- Two built-in power/sensitivity supervision/alarm LEDs
- Non-directional smoke chamber
- Vandal resistant security locking feature
- Built-in magnetic go/no go detector test feature
- Removable smoke labyrinth for cleaning or replacement
- Automatic Sensitivity window verification function meets outlined requirements in NFPA 72, Chapter 2 & 7, Inspection, Testing and Maintenance
- Compatible with SIJ-24 ionization detectors
- Backwards compatible with Lifeco SLK and SIH detectors

#### SPECIFICATION

Light Source	GaAlAs Infrared Emitting Diode
Rated Voltage	17.7 - 30.0 VDC
Working Voltage	15.0 - 33.0 VDC
Maximum Voltage	42 VDC
Supervisory Current	45µA @ 24 VDC
Surge Current	160µA max. @ 24VDC
Alarm Current	150mA max. @ 24 VDC
Air Velocity Range	0-4000 fpm
Ambient Temperature	32°F to 120°F (0°C to 49°C)
Color & Case Material	Bone PC/ABS Blend
Sensitivity Test Feature	Automatic Sensitivity window verification test
Mounting	Refer to NS Conventional Detector Base Data Sheet



S24238



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#### APPLICATION

The Lifeco LE-SPC-24 Projected Beam Smoke Detector consists of an emitter and receiver. The projected beam smoke detector should be placed so that smoke generated by a fire will likely rise into the path of the beam. The receiver is constantly monitoring and measuring the intensity of the beam transmitted by the emitter. Should the smoke from a fire cause a decrease in the signal strength of a magnitude that exceeds the programmed obscuration setting, an alarm

signal is generated.

The LE-SPC-24 Projected Beam Smoke Detector can provide vital fire detection in applications where other types of detectors may not be able to respond quickly, or at all, to a fire condition. Examples of some applications where projected beam smoke detectors have been successfully used include:

atriums	gymnasiums	theatres
museums	factories	tunnels
churches	stables	warehouses
anechoic chambers	high air	velocity area

The Lifeco LE-SPC-24 Projected Beam Smoke Detector may also be used in conjunction with more traditional spot type smoke detection devices to provide an even more comprehensive detection system.

#### OPERATION

The near infrared pulsed beam generated by the emitter is sensed by the photodiode of the receiver, where it is converted into an electrical signal. This signal is then amplified and applied, via an analog to digital converter, to a microprocessor. The normal state signal (the initial beam data) once stored in the microprocessor is used as reference for comparison with subsequent beam signals. When there is a difference between actual beam strength and stored reference data that exceeds the programmed alarm obscuration reference level, a fire signal is produced. A trouble signal is generated if the beam is more than 90% obstructed (as opposed to partially obscured by smoke).

The microprocessor also provides compensation for a change in received signal value, with time, caused by contamination of the optics. Since such a change with time appears as a slow change in the beam signal, the microprocessor compensates in such a manner that the signal moves closer to the reference data at a rate approximately +1% per hour. When this compensating capability reaches a limit, the LE-SPC-24 automatically generates a trouble signal. A calibrated test filter is available upon request to test and verify the sensitivity setting of the LE-SPC-24 projected beam smoke detectors.

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#### ENGINEERING SPECIFICATION

The contractor shall furnish and install, where indicated on the plans, Lifeco LE-SPC-24 Projected Beam Smoke Detector. The projected beam smoke detector shall have a range of 32.8 feet to 328 feet. The projected beam smoke detector shall be field adjustable to one of the three obscuration settings of 25%, 50% or 70% per span. These settings shall be capable of being verified with calibrated filters. Side to side spacing shall be a maximum of 60 feet on center.

The projected beam smoke detector shall possess circuitry that automatically compensates for normal ambient changes in the intensity of the emitted beam strength. The microprocessor shall provide compensation for a change in received signal value, with time, caused by contamination of the optics. Since such a change with time appears as a slow change in the beam signal, the microprocessor shall compensate in such a manner that the signal moves closer to the reference data at a rate of approximately +1% per hour. When this compensating capability reaches a limit, the microprocessor shall automatically generate a trouble signal.

The projected beam smoke detector(s) shall also signal a trouble condition if the beam has a blockage of 90% or more for more than 20 seconds and automatically resets to normal when blockage is removed.

The projected beam smoke detector(s) shall be UL listed for these applications. Voltage and RF transient protection shall be integral to the internal circuitry of the projected beam smoke detector so as to minimize false alarm potential. To facilitate easy installation and setup, the projected beam smoke detectors shall employ signal strength indicating LED's. Alignment shall be facilitated by turning an alignment adjustment wheel and monitoring the relative signal strength based upon which LED's are illuminated.

The detectors shall also illuminate a red LED, which is visible externally, when an alarm condition is indicated. The projected beam smoke detector shall provide a Form "A" dry contact for alarm and Form "B" dry contact for trouble.

#### Installation

The Lifeco LE-SPC-24 Projected Beam Smoke Detector shall be installed in accordance with the Installation Instruction Guide provided with every unit. Refer to the applicable NFPA Standards for additional guidance on spacing, irregular ceiling surfaces and other design considerations.

