

# End-to-End Beam Smoke Detector

## EC3000

### Description<sup>2</sup>

The EC3000 is an end-to-end infrared optical beam smoke detector that comprises an infrared transmitter, receiver, and controller. The transmitter and receiver are installed near the ceiling of the protected area up to 393 feet (120 m) apart, while the controller is mounted at ground level where it remains accessible for maintenance and setup functions. Each controller will handle up to two transmitter/receiver pairs, each with separate fire and fault relays.

The EC3000 is typically used in situations where it is impractical, inappropriate or not cost-effective to use point-type detectors. It also enables coverage of a large protected area at minimal cost, and is ideally suited for situations that might include high ceilings, dusty and dirty environments, or environments that are prone to temperature extremes.

The EC3000 features integrated laser alignment, which simplifies installation, and configurable detector sensitivity and drift compensation, which reduces nuisance alarms. These features and capabilities make the EC3000 a practical and effective wide area detection solution.

### Standard Features<sup>6</sup>

- Separate Transmitter and Receiver Heads
- Range 16.5 to 393 feet (5 m to 120 m), configurable per set of Detectors
- Lateral Spacing per NFPA 72 is 60 feet
- Integral Laser Alignment in Receiver
- 2-wire Interface between Controller and Receiver
- Single and Twin Channel capability
- Separate Fire and Fault Relays per Detector
- Low Level Controller with LCD display
- Programmable Sensitivity and Fire Threshold
- Automatic Gain Control (AGC) for drift compensation
- Built-in electronic UL/ULC obscuration-acceptance fire test
- Knockouts for ease of installation and wiring
- Built-in 1/2-inch/M-20 conduit knockouts on detectors and system controller

## Application 1

Beam smoke detectors are ideal for large open areas such as warehouses, hotel atrium, industrial plants and school gymnasiums. End-to-end beam smoke detectors are particularly useful where line of sight for the infrared detection path is narrow and where the building structure employs reflective surfaces.

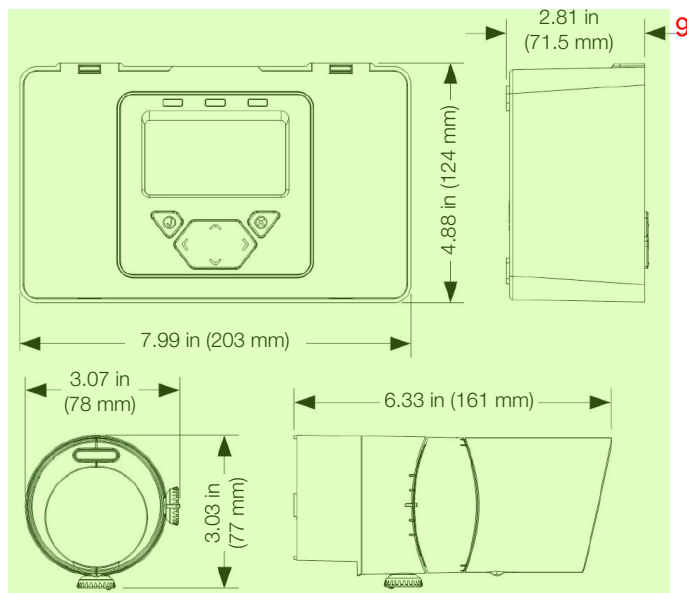
The EC300 is designed to be aesthetically pleasing making it equally suitable for modern architectural buildings, as well as historical sites – particularly where ornate ceilings exist.

Smoke stratification may be overcome by mounting pairs of receivers and transmitters at different heights, one of which will project an infrared beam below the heat layer and into the smoke layer.

Detection time will be longer in a building with a peaked roof if a fire occurs at the fringes of the protected area. If in doubt conduct appropriate smoke tests.

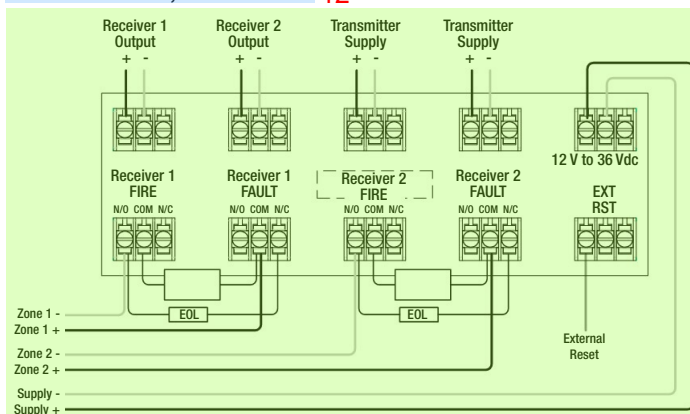
The ideal location and spacing of the detector is critical in a properly installed and operating fire alarm system. It is recommended that the detectors be located and spaced in accordance with NFPA 72, which allows for lateral spacing of up to 60 ft (18.3 m).

## Dimensions 7

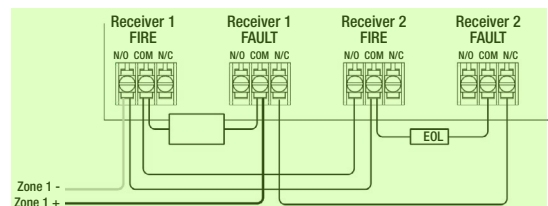


## Typical Wiring 8

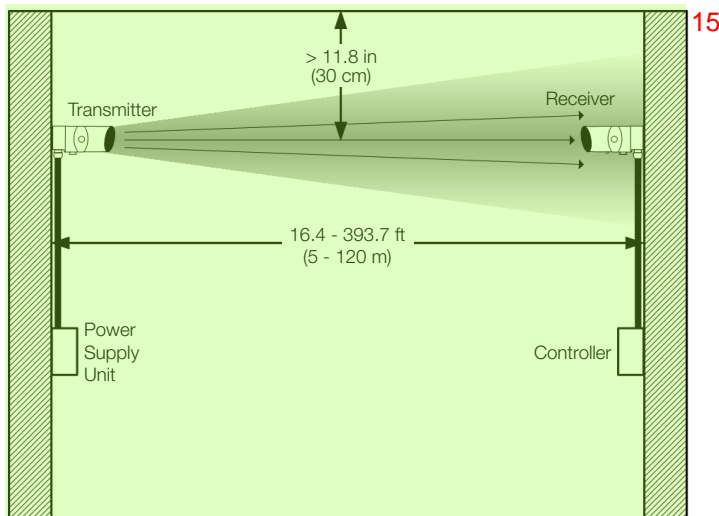
### Two Receivers, two zones... 12



### Two Receivers, one zone... 13

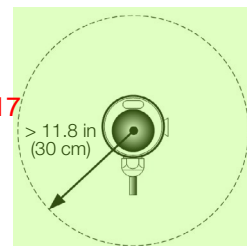


## Installation 10



The distance between the ceiling and transmitter/receiver must be no more than 10 percent of the distance between floor and ceiling.

Leave at least 11.8 inches (30 cm) unobstructed space around the receiver and transmitter.



## Technical Specifications

Operating Voltage Range	12 to 36V DC $\pm 10\%$
Operating Controller Current (with 1 or 2 Receivers)	14mA (constant)
Operating Transmitter Current	8mA (per Transmitter)
Alarm Threshold	25%-60%
Power Down Reset Time	>20 seconds
Fire and Fault Relay Contacts	Resistive VFCO 2A @ 30 Volts DC
Operating Temperature (non-condensing):	-4°F to +131°F (-20°C to +55°C)
Optical Wavelength	850nm
Operating Range	16.5 to 393 feet (5-120m)
Maximum Cable Distance Between Receiver and Controller	330 Feet (100m)
Cabling between each Receiver and Controller	18-14 AWG 1-Pair – Twisted, Jacketed
IP Rating	IP54
Relative Humidity (non-condensing)	93%
Dimensions and Weight, Control Unit	7.99 x 4.88 x 2.81in (203 x 124 x 71.5mm) 1.34lbs (0.607kg)
Dimensions and Weight, Transmitter & Receiver	3.07 x 3.03 x 6.33in (78 x 77 x 161mm) 0.456lbs (0.206kg)
Agency Listings	UL/ULC S3417, FM Pending, CSFM 7260-1508-105
LED Indications	
Control Unit:	Red = Fire, Amber = Fault, Green = System OK
Receiver:	Red = Fire, Alignment LEDs for single person alignment

## Ordering Information

EC3000-103	End to End beam smoke detector 16.5ft. to 393ft. (5 m to 120 m). System includes one transmitter, one receiver, and one system control unit.
EC3000-016	Additional Detector Pack (set of transmitter and receiver heads). Use up to one additional Detector Pack per EC3000-103.
3000-201	Adjustment Bracket
3000-202	Surface Mount Adapter
3000-203	4-inch Square Cover Plate
5000-011	Surface Mount Detector Back Box (Requires one 3000-202 Surface Mount Adaptor for each head - ordered separately).
3000-209	Controller Backbox
3000-210	Semi Flush Trim Plate
1000-018	Wire Cage for EC3000 when used with the 5000-011 Detector Backbox and 3000-202 (ordered separately).

## Engineering Specification

The projected beam type smoke detector shall be listed to U.L. 268 and shall consist of up to two transmitters, two receivers and a single low level remote control unit. The detector shall operate between a range of 16.5 ft. to 393 ft. (5m to 120m). The temperature range of the system shall be -4°F to 131°F (-20°C to 55°C). The receiver shall include an integral built-in laser pointer to assist in optimum alignment.

The beam detector shall feature automatic gain control, which will compensate for gradual signal deterioration from dirt accumulation on the lenses. The receiver heads shall incorporate a Wide Field of View to ensure the unit is always receiving maximum signal available. The system shall include a low level remote display and control unit with LCD read-out for set-up, reporting and testing of up to two separate sets of heads. The system shall be capable of sending separate Trouble and Alarm signals for each of the sets of heads. The system shall be capable of programming alarm thresholds of 25% to 60% in 1% increments.

The system shall be capable of programming delay to fault and delay to alarm from 2 seconds to 30 seconds in 1 second increments.

Test and acceptance of the system shall be carried out by using the UL/ULC approved internal electronic obscuration fire test. The projected beam type smoke detector shall be a 4-wire 24 VDC device to be used with a Nationally Recognized Testing Laboratory's Listed and separately supplied 4-wire control panel. The End to End beam type smoke detector shall be an EDWARDS EC3000.