

BD-SS and BDT-SS

Single-Ended, Reflected-Type, Addressable Beam Smoke Detector with SmartScan™



BD-SS with reflective plate (top);
and with BEAMMMK



Description

The Gamewell **BD-SS** and **BDT-SS** are intelligent, addressable projected beam smoke detectors with SmartScan™ protocol. They are uniquely suited for protecting open areas with high and sloping ceilings, and wide-open areas, where spot-type smoke detectors are difficult to install and maintain. Ideal applications are atriums, cathedral ceilings, aircraft hangers, warehouses, sporting arenas, concert halls, and enclosed parking facilities. Installation of the single-ended reflective design is much quicker than a dual-ended projected beam detector. Alignment is easily accomplished with an optical sight and a two-digit signal strength meter incorporated

into the beam detector. Listed for operation from -22°F to 131°F , the BD-SS and BDT-SS are usable in open area applications where temperature extremes exceed the design limits of other types of smoke detection.

The **BD-SS** and **BDT-SS** are a transmitter/receiver unit and a reflector. When smoke enters the area between the unit and the reflector it causes a reduction in the signal strength. When the smoke level (signal strength) reaches the predetermined threshold, an alarm is activated. The detectors have four standard sensitivity selections as well as two Acclimate™ settings. When either Acclimate™ setting is selected, the detector's advanced software algorithms automatically adjust to the optimum sensitivity for the specific environment. The protection range is 16 to 328 feet and there are built-in isolators for Style 7 operation.

The **BDT-SS** has an integral sensitivity test feature of a filter attached to a servomotor inside the detector optics. Activation of the RTS451 remote test station moves the filter into the pathway of the light beam, testing the detector's sensitivity. This sensitivity test feature allows the user to quickly and easily meet the annual maintenance and test requirements of NFPA 72, without physical access to the detector.

Sensitivity Selection

The detector has six sensitivity selections. Each of these selections is only acceptable over a specific distance separation between the detector and the reflector per UL 268. The chart below determines which selections are acceptable for your installed distance. The sensitivity of the detector can be set only when the housing is removed and the detector is not in the fine adjustment step of the alignment mode, indicated by the illumination of the dual digital display. To set the sensitivity, depress the sensitivity button one time. See *Switch Locations* diagram. Once the switch is pressed, the

Features

- Transmitter/receiver built into same unit.
- Six user-selectable sensitivity levels.
- 16' to 328' (use BEAMLRK beyond 230') protection range.
- Removable plug-in terminal blocks.
- Digital display — no special tools required.
- Built-in automatic gain control compensates for signal deterioration from dust buildup.
- Optional remote test station.
- Optional long-range kit (BEAMLRK) for applications in excess of 230' (70 m).
- Optional multi-mount kit (BEAMMMK) providing ceiling or wall mount capability with increased angular adjustment.
- Optional heater kits (BEAMHK and BEAMHKR) for prevention of condensation (not intended to increase or reduce the specified operating temperature).ing service.

Listings

Listings and approvals below apply to the basic BD-SS and BDT-SS beam smoke detectors. 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.

- UL Listed: file S1195.
- FM approved.
- MEA approved: file 269-04-E.
- CSFM approved: file 7260-1288:171.

Gamewell 
A 150-Year Tradition

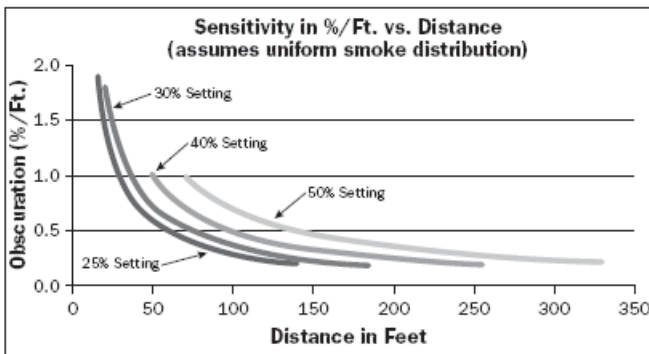
digital display will illuminate and read the current sensitivity setting in percent obscuration. To change the sensitivity, continue to depress the sensitivity switch until the desired setting is achieved. The digital display will turn off automatically if no further switch presses occur.

Sensitivity Setting	Percent Obscuration	Display Reading	Acceptable DISTANCE between detector and reflector (ft)	Acceptable DISTANCE between detector and reflector (m)
Level 1	25%	25	16.4 to 120	5.0 to 36.6
Level 2	30%	30	25 to 150	7.6 to 45.7
Level 3	40%	40	60 to 220	18.3 to 67
Level 4	50%	50	80 to 328	24.4 to 100
Acclimate™ Level 1	30% to 50%	A1	80 to 150	24.4 to 45.7
Acclimate™ Level 2	40% to 50%	A2	80 to 220	24.4 to 67

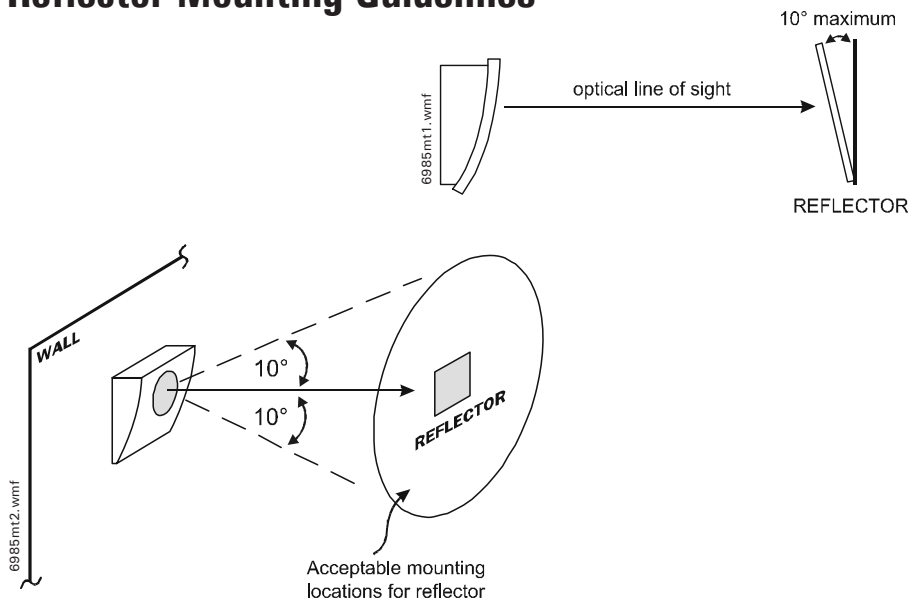
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In addition to the four standard sensitivity selections, the detector has two Acclimate™ settings. When either Acclimate™ setting is chosen, the detector will automatically adjust its sensitivity using advanced software algorithms to select the optimum sensitivity for the environment. The sensitivity will be continuously adjusted within the ranges specified in the chart above.

Total obscuration can be converted to percent per foot, assuming uniform smoke density for the entire length of the beam. The chart below converts total obscuration percent per foot for all acceptable sensitivity settings.



Reflector Mounting Guidelines



Specifications

Operational Specifications

Protection range

16 to 230 feet (5 to 70 m), 230 to 328 feet (70 to 100 m) using optional BEAMLRK kit.

Adjustment angle

± 10° horizontal and vertical. Note that the optics move independently of the unit.

Sensitivity (6 levels)

- Level 1 – 25%.
- Level 2 – 30%.
- Level 3 – 40%.
- Level 4 – 50%.
- Acclimate™ Level 5 – 30% to 50%.
- Acclimate™ Level 6 – 40% to 50%.

Fault condition (trouble)

- 96% or more obscuration blockage.
- In alignment mode.
- Improper initial alignment.
- Self-compensation limit reached.

Alignment aid

- Optical gunsight.
- Integral signal strength indication.
- Two-digit display.

Indicators

- Alarm – local red LED and remote alarm.
- Trouble – local yellow LED and remote trouble.
- Normal – local flashing green LED.

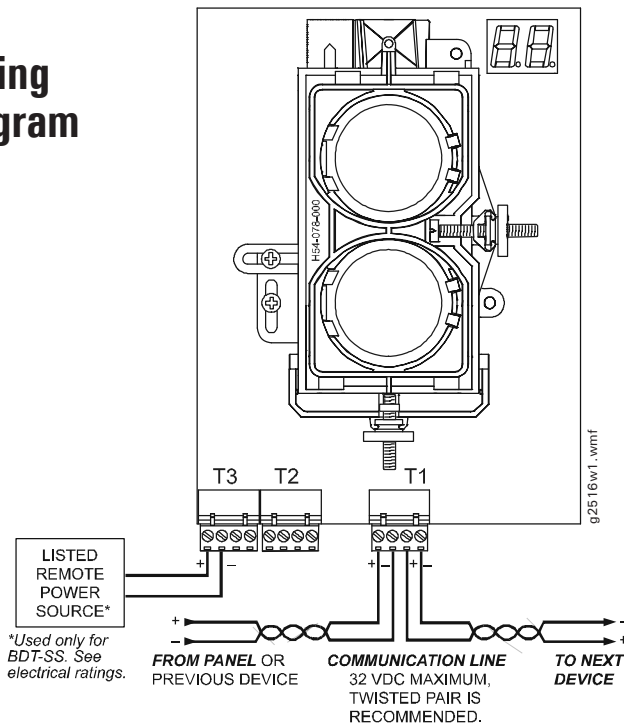
Test/reset features

- Integral sensitivity test filter (BDT-SS only, requires external power supply).
- Sensitivity filter (incremental scale on reflector).
- Local alarm test switch.
- Local alarm reset switch.
- Remote test and reset switch (compatible with RTS451 and RTS451KEY test stations).

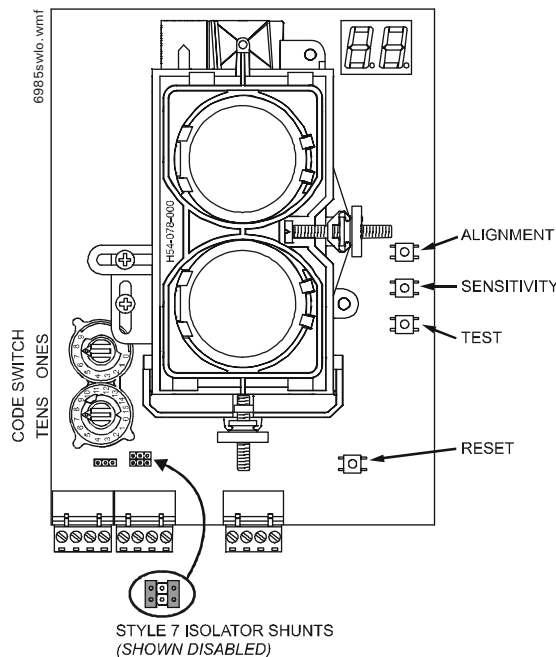
Smoke detector spacing

On smooth ceilings, 30 – 60 feet (9.1 to 18.3 m) between projected beams and not more than one-half that spacing between a projected beam and a sidewall. Other spacing may be used depending on ceiling height, airflow characteristics, and response requirements. See NFPA 72.

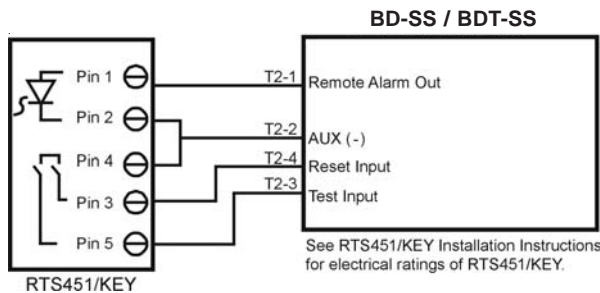
Wiring Diagram



Switch Locations



Wiring Diagram (with RTS451/KEY)



Specifications

Environmental Specifications

Temperature

-22°F to 131°F (-30°C to 55°C).

Humidity

10 - 93% RH noncondensing.

Electrical Specifications

Voltage

15 to 32 VDC.

Average standby current

24 VDC: 2 mA maximum (LED flashing, SLC @ 24 V).

LED current

6.5 mA maximum.

Remote annunciator current

11.2 mA maximum.

Average current during testing

500 mA maximum.

Alarm current

24 VDC; 8.5 mA maximum (LED on).

Trouble/fault current

24 VDC; 4.5 mA maximum (LED on).

Fault condition current

Add to standby current; 100 mA maximum.

Alignment mode current

24 VDC; 20 mA maximum.

External supply (BDT-SS only)

Voltage: 15 to 32 VDC.

Current: 0.5 A maximum.

Remote output (alarm)

Voltage: 15 to 32 VDC. *NOTE: Output voltage is the same as device input voltage.*

Current: 15 mA maximum, 6 mA minimum. *NOTE: Output current is limited by 2.2K ohm resistor.*

Heater kit BEAMHK

Voltage: 15 to 32 V. Current: 92 mA maximum @ 32 V (heater only).

Power consumption: nominal 1.6 W @ 24 V; maximum 3.0 W @ 32 V.

Heater kit BEAMHKR

Voltage: 15 to 32 V. Current: 450 mA maximum @ 32 V (per reflector). Power consumption (per reflector): nominal 7.7 W @ 24 V; maximum 15.0 W @ 32 V.

Mechanical Specifications

Detector dimensions

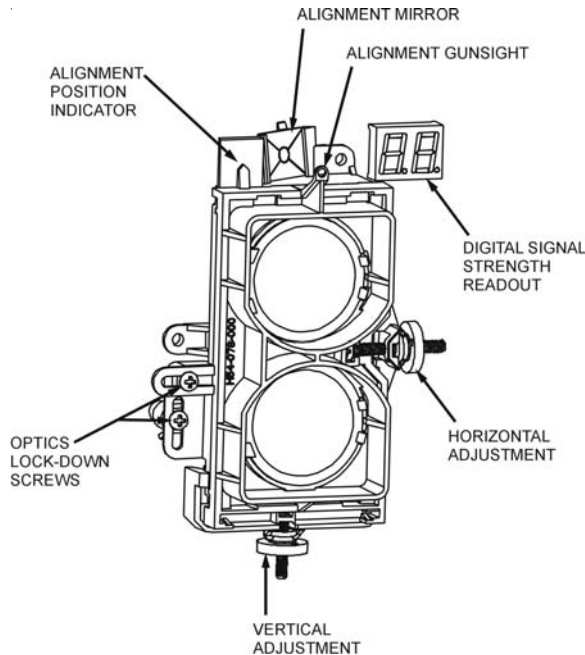
10.0" H x 7.5" W x 3.3" D (254 mm H x 191 mm W x 84 mm D).

Reflector dimensions

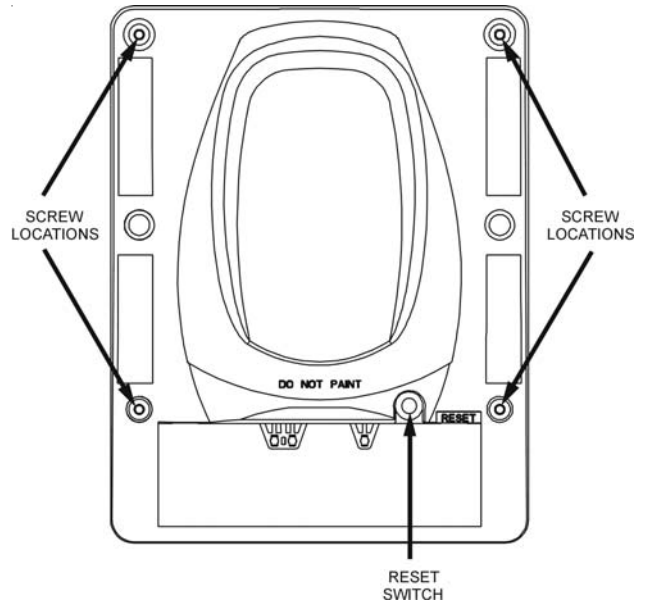
For 16' to 230' (5 to 70 m) applications: 7.9" x 9.1" (200 x 230 mm).

For applications beyond 230'/70 m: 15.7" x 18.1" (400 x 460 mm).

Alignment Adjustment Locations



Housing Screw Locations



Parts List

Item	Quantity
Transmitter/receiver unit	1
Paintable trim ring	1
Reflector	1
Plug-in terminal blocks	3
Isolator shunts	2
Instruction manual	1
Orange sticky paper	1

Ordering Information

BD-SS	Intelligent beam smoke detector
BD-SSA	Same as BD-SS with ULC Listing.
BDT-SS	Intelligent beam smoke detector with integral sensitivity test.
BDT-SSA	Same as BDT-SS with ULC Listing.
BEAMLRK	Long range accessory kit (<i>required for applications in excess of 230 ft/70 m</i>).
BEAMMMK	Multi-mount kit (<i>provides ceiling or wall mount capability with increased angular adjustment</i>).
BEAMSMK	Surface-mount kit.
RTS451	Remote test station.
RTS451KEY	Remote test station with key lock.
BEAMHK	Heating kit for use with the transmitter/receiver unit of BDT-SS. For prevention of condensation.
BEAMHRK	Heating kit for use with the reflector of BDT-SS. For prevention of condensation.



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