Simplex®

Addressable Detection Products

UL, ULC, CSFM Listed;
*FM Approved**

Auto-Aligning Reflective Beam Smoke Detectors with IDNet Communications

Features

Auto-aligning reflective beam smoke detector system with on-board IDNet addressable communications:

- Compatible with Simplex® 4007ES, 4010ES, and 4100ES fire alarm control panels
- Simplex addressable beam smoke detectors add IDNet communications to the proven FireRay 5000 Series beam smoke detection system
- Communicates status information, and receives commands and sensitivity threshold selection from the host fire alarm control panel

Photoelectric transmitter and receiver are combined in a single, compact housing:

- Connect up to two remote detector heads to one ground level controller
- An infrared beam is reflected from a matching prism with the reflected light analyzed by an on-board microprocessor
- Operating range covers 26 ft, 3 inches to 330 ft (8 m to 100 m)
- Modular design with *easyfit* mounting system and LASER assisted prism mounting provides convenient mounting and adjustment
- *Auto-Align* beam alignment operation conveniently rotates beam to align to the prism center during installation
- *AutoOptimise* operation automatically maintains alignment for reliable operation
- Listed to UL 268 and ULC-S529

On-board microprocessor controlled operation includes:

- Ground level system controller with LCD
- Operating voltage range of 14 to 36 VDC
- Easy setup and alignment with built-in electronic UL/ULC obscuration acceptance test selectable from host control panel
- Automatic gain control; contamination compensation, building shift compensation with control and monitoring of alignment motors, and ability to change delay to Fire and delay to Fault timings

Host fire alarm control panel operations include:

- Sensitivity selection from 10% to 60% (35% default)
- Point type selection (fire, latched supervisory, or utility) and set Almost Dirty threshold
- Initiate obscuration test, Reset latched conditions, Enable/Disable, and control of beam head LED

Host fire alarm control panel information received includes:

- Smoke status, controller-to-detector communications status, rapid obscuration status (beam blocked), self-alignment status, almost dirty, excessively dirty, and summary (general) trouble status
- Analog values for signal strength and compensation level (see page 2 for more information)

Addressable Beam Detector Head

Addressable Beam Control Station

Applications:

- Large open areas such as warehouses, hotel atriums, industrial plants, and school gymnasiums
- Public areas where cosmetics are of prime importance and detector heads need to be small and unobtrusive (shopping malls, libraries, theaters, and churches)

Optional Accessories:

- Detector: adjustment bracket, back box, and cover plate
- Controller back box
- Extended prism mounting options

Description

Convenient Installation and Alignment. Simplex addressable beam smoke detection provides the proven FireRay 5000 system features of auto-aligning infrared beam smoke detection combined with IDNet addressable communications. Once the detector head is installed using the *easyfit* mounting system, an integral laser can be activated that is aligned along the optical path of the infrared beam, allowing the reflective prism to be quickly located. The *Auto-Align* beam alignment feature then allows the reflective prism to be located quickly and accurately.

* This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7260-0026:377 for allowable values and/or conditions concerning material presented in this document. Additional listings may be applicable; contact your local Simplex product supplier for the latest status. Listings and approvals under Simplex Time Recorder Co. are the property of Tyco Fire Protection Products.

Description *(Continued)*

AutoOptimise Beam Alignment. The *AutoOptimise* beam alignment system automatically steers and maintains the beam in the optimum position for reliable performance. The signal is generated in the transmitter element and reflected by the prism back to the receiver element, then analyzed for the presence of smoke. The beam control station determines an alarm condition when the predetermined level is reached. Alarm threshold levels are set from the host fire alarm control panel. Time to Fire and time to Fault are set at the beam control station.

Mounting Reference. The maximum distance of the Detector and Reflector from the ceiling must be 10% of the distance between floor and ceiling. Lateral detection may be up to 30 ft (9.144 m) on either side of the beam, providing a maximum total coverage area of up to 19,800 square feet (60 ft x 330 ft or 18.29 m x 100 m).

Refer to the Installation Instructions supplied with the product and to NFPA 72, the *National Fire and Signaling Code* for additional installation guidance.

Communications to the host control panel. The host fire alarm control panel receives status and numerical information from the beam controller to allow remote investigation of the beam head(s). The beam controller receives commands and the Smoke and Almost Dirty threshold levels are set from the host control panel.

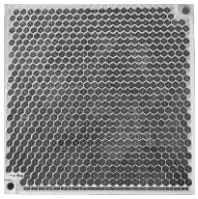
Numerical information received includes:
Signal Strength in % (to compare to alarm threshold level set by host control panel) and Compensation Level (indication of beam status and dirt accumulation).

Application Note. Reflective beam smoke detectors may not be suitable for areas with highly reflective surfaces. Separate transmitter/receiver models may be required. Refer to NFPA 72 and contact your Simplex product representative for additional applications guidance.

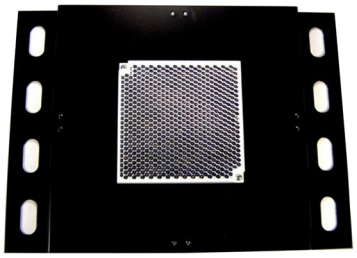
Accessory Reference (not shown to scale)

Beam Detector on
5000-005 Alignment Bracket

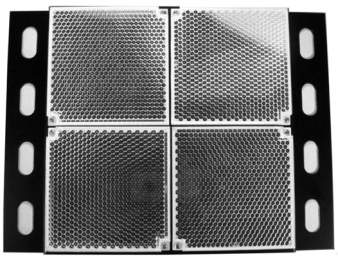
Beam Detector on 5000-011 Uni-Box



23901 Prism Reflector



One Prism on
5000-006 Mounting Bracket



Four Prisms on
5000-006 Mounting Bracket

5000-008 Single Prism Adapter
on a 5000-005 Alignment Bracket

5000-201 Adjustment Bracket

5000-007 Four Prism Adapter
on 5000-005 Alignment Bracket

Product Selection and Ordering Information

Addressable Beam Detector Selection

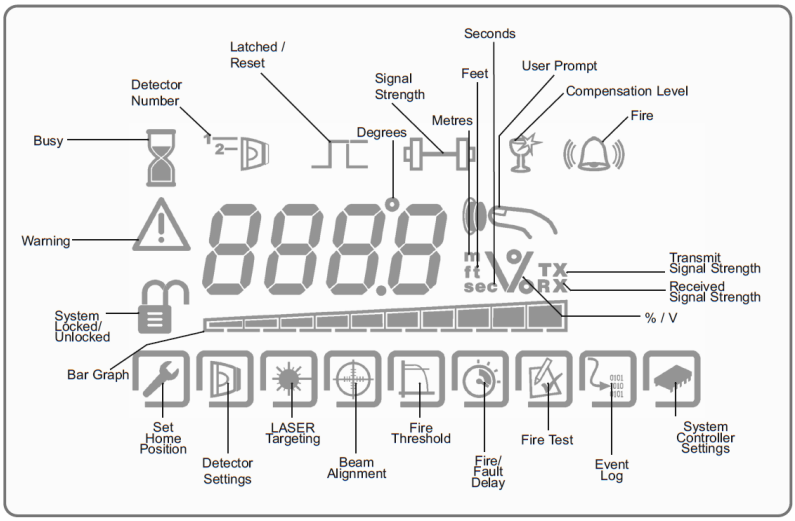
Model	Description		Dimensions
4098-9019	IDNet Communications Addressable Reflective Auto Align Beam Smoke Detector System; Includes: one 4098-9020 controller, one 5000-031 detector head, and one 23901 prism reflector; For control of up to two detector heads	Controller	9 ¼" H x 7 ⅞" W x 2 13/16" D (235 mm x 200 mm x 71 mm)
		Head	5 9/32" H x 5 5/16" W x 5 9/32" D (135 mm x 134 mm x 132 mm)
		Prism	4 ⅛" x 3 15/16" x ⅜" D (105 mm x 100 mm x 9.5 mm)
4098-9020	IDNet Communications Addressable Reflective Auto Align Beam Smoke Detector Controller only, for upgrade or replacement; select detector head(s) and prism reflector(s) separately as required;		9 ¼" H x 7 ⅞" W x 2 13/16" D (235 mm x 200 mm x 71 mm)

Beam Detector Heads, Prisms, and Accessories

Ordering Number*	Description	Dimensions
5000-031	Additional Detector Head and Prism, select up to 1 additional head per 4098-9019 System	5 9/32" H x 5 5/16" W x 5 9/32" D (135 mm x 134 mm x 132 mm)
5000-011	5000 Series Detector Uni-Box back box includes: hinged cover plate, conduit knock-outs on all sides, captive screw lock on cover plate, universal back plate mounting holes, and cover plate mounting holes for optional 1000-018 wire cage; box may be surface or flush mounted	7 ⅛" square x 2 1/16" D (181 mm x 52 mm) (including cover plate)
5000-012	Detector Cover Plate for mounting 5000 Series Detector to a double gang electrical box, surface or flush mount	6 7/16" square (164 mm) with 3/16" lip (5 mm)
5000-005	Alignment Bracket for detector or prism, surface mount; pivots for accurate alignment, order detector and prism parts separately	5 ¼" square footprint x 2 13/16" D (134 mm x 71 mm)
5000-201	Alignment Bracket for detector or prism, surface mount; provides 360° rotation plus 130° adjustment for accurate alignment, order detector and prism parts separately	3 27/32" H x 3 29/32" W (98 mm x 99.5 mm)
5000-009	Controller Back Box, surface or flush mount; mounts to single gang, double gang, or 4" square box for surface mounting	8 7/16" H x 7 7/16" W x 1 ¾" D (214 mm x 189 mm x 45 mm)
5000-010	Controller Back Box Semi-Flush Mount Trim Plate (for 5000-009 box)	10 5/16" H x 8 ¾" W (263 mm x 222 mm)
5000-006	Prism Wall Mount Bracket; mounts a single prism, for up to 160 ft (49 m); or four prisms, for 160 ft to 330 ft (49 m to 100 m); prisms are ordered separately	11 3/16" x 8 5/16" x ½" D (284 mm x 211 mm x 13 mm)
5000-008	Single Prism Alignment Adapter, mounts on 5000-005 Alignment Bracket; order Prism and Alignment Bracket separately	4" square (102 mm)
5000-007	Four Prism Alignment Adapter, mounts on 5000-005 Alignment Bracket; order Prisms and 5000-005 Alignment Bracket separately	8" square (204 mm)
23901.01	Replacement Prism Reflector	
5000-004	Long Range Prism Kit; provides three, 23901 Prisms for distances between 160 ft and 330 ft (50 m to 100 m)	
5000-014	Ceiling Pendant Mounting Bracket	
1000-018	Protective Wire Cage for 5000 Series Detector Heads	
1000-019	Protective Wire Cage for 5000 Series Controllers	

* Internal Ordering Note: These products can be found in Job Design under Fire Fighting Enterprises, OP category OPFFE.

Controller Display Detail Reference



Specifications

Mechanical and General Reference		
Housing		Flame Retardant ABS; IP rating = IP54
Finish		Light Grey/Black
Simplex Addressable Interface and Host Control Panel Programming Instructions		579-1039; (Additional Operating and Installation Instructions are shipped with the product)
Head and accessories reference		Fire Fighting Enterprises (A Halma Group Company); website: www.ffeuk.com/
Electrical		
Input Voltage		14 to 36 VDC, supplied from agency listed fire alarm power supply
Input Current		50 mA
Power Wiring to Controller		Terminal block connections; 18 to 14 AWG (0.82 mm^2 to 2.08 mm^2)
Wiring, Controller to Head		328 ft (100 m) maximum distance; use twisted wire pair; 18 to 16 AWG (1 mm^2 to 1.5 mm^2)
Beam Optical Wavelength		850 nm
Communications Reference	Details	IDNet addressable communications; communications circuit is isolated from input power, and controller-to-head communications
	Compatibility Reference (review for addition to installed systems)	**IDNet Communications Source** / **Firmware/Revision**
		4100ES and 4010ES Control Panels / System Firmware 2.02 or higher
		4100ES System Power Supplies (SPS) / Firmware 3.12.05 or higher
		4010ES Main System Supply (MSS) / Firmware 3.12.05 or higher
		Separate IDNet/IDNet+/IDNet 1+/IDNet 2+ 2 modules / Firmware 3.12.05 or higher
		IDNet communications PCC Chip 746-146 / Revision 2.02.03 or higher
		4007ES / Compatible beginning with first release
Addressing		On-board DIP switch selects a base address to communicate with the local controller and the first beam detector head; *for systems with two heads per controller, the next sequential address is automatically assigned*
Operating Specifications		
Sensitivity Threshold		Selectable from 10% to 60%; with 35% as default (this is % of beam obscuration drop from 100%); desired value is selected at host fire alarm control panel and communicated via IDNet communications
Operating Distance Range		26 ft, 3 inches to 330 ft (8 m to 100 m)
Beam Status Indicators		Multi-color LED on bottom front of beam detector head: Normal = Green; Alarm = Red; Fault (Trouble) = Yellow; LED flash is every 10 seconds
Service Status Indicators		One LED per detector, located under beam controller cover, indicates status of beam detector channel communications
Point Types		Fire, Latched Supervisory, or Utility, selected at host fire alarm control panel
Trouble Conditions		Communications fault, rapid obscuration fault (blocked beam), excessively dirty, and summary trouble (other general troubles not detailed)
UL Listed Temperature Range		32° F to 100° F (0° C to 38° C)
Operating Temperature Range		-4° F to 131° F (-20° C to 55° C); for indoor use only
Operating Humidity Range		0 to 93% RH, non-condensing