

E51 Limit Switch Style, Modular Sensors



Contents

<i>Description</i>	<i>Page</i>
E51 Limit Switch Style, Modular Sensors	
Product Selection	
Assembled Sensors . . . . .	V8-T5-98
Sensor Heads . . . . .	V8-T5-100
Sensor Bodies . . . . .	V8-T5-101
Logic Module . . . . .	V8-T5-102
Receptacles . . . . .	V8-T5-102
Compatible Connector Cables . . . . .	V8-T5-103
Accessories . . . . .	V8-T5-72
Technical Data and Specifications . . . . .	V8-T5-104
Excess Gain . . . . .	V8-T5-104
Wiring Diagrams . . . . .	V8-T5-105
Dimensions . . . . .	V8-T5-106

E51 Limit Switch Style, Modular Sensors

Product Description

E51 Limit Switch Style Modular Sensors from Eaton’s Electrical Sector are available in thru-beam, reflex, polarized reflex, diffuse reflective and fiber optic sensing modes to solve a wide variety of sensing applications. Modular, plug-in components are easy to maintain, meaning less downtime and reduced inventory. Choose between two-wire sensors with AC/DC operation and four-wire sensors in either AC or DC styles. Connection options include terminal, mini-connector and various lengths of cable. Sensors can be ordered in component form or as fully assembled units.

Features

- Choose from five different sensing modes including fiber optic
- All heads feature a selector switch for light or dark operation
- Logic modules are available to provide additional control functions
- Rugged construction, ideal for industrial environments
- Viton gaskets ensure a positive seal and high chemical resistance
- Sensor heads can be rotated to any of four positions
- Components are interchangeable with E51 proximity sensors
- Sensors accommodate both U.S. and DIN mounting dimensions
- Sensor bodies feature bifurcated engagement prongs for a reliable electrical connection when plugging into receptacle stabs

Standards and Certifications

- UL Listed
- CSA Certified
- CE (where shown)



**⚠ DANGER**

**THIS SENSOR IS NOT A SAFETY DEVICE AND IS NOT INTENDED TO BE USED AS A SAFETY DEVICE. This sensor is designed only to detect and read certain data in an electronic manner and perform no use apart from that, specifically no safety-related use. This sensor product does not include self-checking redundant circuitry, and the failure of this sensor product could cause either an energized or de-energized output condition, which could result in death, serious bodily injury, or property damage.**

For the most current information on this product, visit our Web site: [www.eaton.com](http://www.eaton.com)

For Customer Service in the U.S. call 1-877-ETN CARE (386-2273), in Canada call 1-800-268-3578. For Application Assistance in the U.S. and Canada call 1-800-426-9184.

#### Product Selection

#### Assembled Sensors

##### Assembled Sensor



##### Sensor Heads ④

##### Reflex



##### Polarized Reflex



##### Diffuse Reflective



##### Thru-Beam Detector



##### Thru-Beam Source



#### Reflex, Diffuse Reflective and Thru-Beam Sensors

##### Sensor Body and Receptacle



Operating voltage  
Output  
Sensor body

**Two-Wire Sensors**  
20–264 Vac/dc  
NO or NC ①  
**E51SAL**

**Four-Wire Sensors**  
120 Vac  
NO and NC complementary  
**E51SCL**  
**E51SCN**  
Accepts logic module ②

10–30 Vdc  
NO and NC complementary  
**E51SNL**  
NPN  
**E51SPL**  
PNP

Receptacle ③

**E51RA**

**E51RC**

**E51RCB**

**E51RN**

**E51RN**

**Sensing Range**

**Response Time**

**Sensing Beam**

**Sensor Head Only Catalog Number**

**Assembled Sensors with Head, Sensor Body and Receptacle Catalog Number**

##### Reflex

18 ft (5.5m)	Standard response	Infrared	<b>E51DP1</b>	<b>E51ALP1</b>	☺☺	<b>E51CLP1</b>	<b>E51CNP1</b>	<b>E51NLP1</b>	☺☺	<b>E51PLP1</b>	☺☺
35 ft (10.7m)	Standard response		<b>E51DP3</b>	—		<b>E51CLP3</b>	<b>E51CNP3</b>	<b>E51NLP3</b>	☺☺	<b>E51PLP3</b>	☺☺

##### Polarized Reflex

15 ft (4.5m)	Standard response	Visible red	<b>E51DP5</b>	—		<b>E51CLP5</b>	<b>E51CNP5</b>	<b>E51NLP5</b>	☺☺	<b>E51PLP5</b>	☺☺
--------------	-------------------	-------------	---------------	---	--	----------------	----------------	----------------	----	----------------	----

##### Diffuse Reflective

8 in (200 mm)	Standard response	Infrared	<b>E51DP2</b>	<b>E51ALP2</b>	☺☺	<b>E51CLP2</b>	<b>E51CNP2</b>	<b>E51NLP2</b>	☺☺	<b>E51PLP2</b>	☺☺
	Fast response		<b>E51DP22</b>	—		<b>E51CLP22</b>	<b>E51CNP22</b>	<b>E51NLP22</b>	☺☺	<b>E51PLP22</b>	☺☺
18 in (450 mm)	Standard response		<b>E51DP6</b>	—		<b>E51CLP6</b>	<b>E51CNP6</b>	<b>E51NLP6</b>	☺☺	<b>E51PLP6</b>	☺☺
40 in (1m)	Standard response		<b>E51DP4</b>	—		<b>E51CLP4</b>	<b>E51CNP4</b>	<b>E51NLP4</b>	☺☺	<b>E51PLP4</b>	☺☺

##### Thru-Beam Detector

300 ft (90m)	Standard response	—	<b>E51DC1</b>	<b>E51ALC1</b>	☺☺	<b>E51CLC1</b>	<b>E51CNC1</b>	<b>E51NLC1</b>	☺☺	<b>E51PLC1</b>	☺☺
--------------	-------------------	---	---------------	----------------	----	----------------	----------------	----------------	----	----------------	----

##### Thru-Beam Source ③

300 ft (90m)	—	Infrared with visible red alignment aid	<b>E51DEL</b>	<b>E51ELA</b> ⑤	<b>E51ELA</b> ⑤	<b>E51ELA</b> ⑤	<b>E51ELA</b> ⑤	<b>E51ELA</b> ⑤	<b>E51ELA</b> ⑤
			<b>E51DED</b>	<b>E51EDN</b> ⑥	<b>E51EDN</b> ⑥	<b>E51EDN</b> ⑥	<b>E51EDN</b> ⑥	<b>E51EDN</b> ⑥	<b>E51EDN</b> ⑥

##### Notes

☺☺ See listing of compatible connector cables on **Page V8-T5-103**.

① All sensor heads feature a light or dark operation selector switch which reverses the output function.

② Logic module must be ordered separately, see **Page V8-T5-102**. These sensor bodies are rated NEMA 4, 4X and 13.

③ Receptacles feature terminal wiring with a 1/2 in NPT thread at the conduit entrance. Other connection options are available (see below and **Page V8-T5-103**).

Connection Option		Suffix	Example
20 mm thread at the conduit entrance		<b>20</b>	<b>E51ALP20</b>
Built-in mini-connector with epoxy filled receptacle	2-wire, 3-pin connector	<b>P3</b>	<b>E51ALP3</b> ☺☺
	4-wire, 5-pin connector	<b>P5</b>	<b>E51CLP5</b> ☺☺
Pigtail with mini-connector	2-wire, AC/DC	<b>T3</b>	<b>E51RAP3</b> ☺☺
	4-wire, AC	<b>T5</b>	<b>E51RCPT5</b> ☺☺
	4-wire, DC	<b>T5</b>	<b>E51RNPT5</b> ☺☺
Pre-wired cable with epoxy filled receptacle	8 ft long	<b>S</b>	<b>E51ALP1S</b>
	12 ft long	<b>S12</b>	<b>E51ALP1S12</b>
	20 ft long	<b>S20</b>	<b>E51ALP1S20</b>

④ Includes sensor head mounted to sensor body. Head can be rotated to any of four discrete positions on body, 90° apart, but is not separate from body.

⑤ 120 Vac operation.

⑥ 10–30 Vdc operation.

Assembled Sensor



Sensor Heads ①

Glass Fiber Optic, Standard Fiber Mounting Style



Glass Fiber Optic, Collar Fiber Mounting Style



Glass Fiber Optic Sensors

Sensor Body and Receptacle



Operating voltage  
Output  
Sensor body

Two-Wire Sensors

20–264 Vac/dc  
NO or NC ①

Four-Wire Sensors

120 Vac  
10–30 Vdc  
NO and NC complementary  
NO and NC complementary

**E51SAL**

**E51SCL**

**E51SCN**  
Accepts logic module ②

**E51SNL**

NPN

**E51SPL**

PNP

Receptacle ③

**E51RA**

**E51RC**

**E51RCB**

**E51RN**

**E51RN**

Sensing Range

Response Time

Sensor Head Only Catalog Number

Assembled Sensors with Head, Sensor Body and Receptacle Catalog Number

Glass Fiber Optic, Standard Fiber Mounting Style ④

3 in (75 mm) ⑤ 25 in (650 mm) ⑥	Standard response	<b>E51DF1</b>	—	<b>E51CLF1</b>	<b>E51CNF1</b>	<b>E51NLF1</b>	Ⓢ Ⓣ	<b>E51PLF1</b>	Ⓢ Ⓣ
1 in (25 mm) ⑤ 9 in (225 mm) ⑥	Fast response	<b>E51DF11</b>	—	<b>E51CLF11</b>	<b>E51CNF11</b>	<b>E51NLF11</b>	Ⓢ Ⓣ	<b>E51PLF11</b>	Ⓢ Ⓣ

Glass Fiber Optic, Collar Fiber Mounting Style ④

3 in (75 mm) ⑤ 25 in (650 mm) ⑥	Standard response	<b>E51DF3</b>	—	<b>E51CLF3</b>	<b>E51CNF3</b>	<b>E51NLF3</b>	Ⓢ Ⓣ	<b>E51PLF3</b>	Ⓢ Ⓣ
1 in (25 mm) ⑤ 9 in (225 mm) ⑥	Fast response	<b>E51DF33</b>	—	<b>E51CLF33</b>	<b>E51CNF33</b>	<b>E51NLF33</b>	Ⓢ Ⓣ	<b>E51PLF33</b>	Ⓢ Ⓣ

Notes

- Ⓢ Ⓣ See listing of compatible connector cables on **Page V8-T5-103**.
- ① All sensor heads feature a light or dark operation selector switch which reverses the output function.
- ② Logic module must be ordered separately, see **Page V8-T5-102**. These sensor bodies are rated NEMA 4, 4X and 13.
- ③ Receptacles feature terminal wiring with a 1/2 in NPT thread at the conduit entrance. Other connection options are available (see below and **Page V8-T5-103**).

Connection Option		Suffix	Example
20 mm thread at the conduit entrance		<b>20</b>	<b>E51ALP120</b>
Built-in mini-connector with epoxy filled receptacle	2-wire, 3-pin connector	<b>P3</b>	<b>E51ALP1P3</b> Ⓢ Ⓣ
	4-wire, 5-pin connector	<b>P5</b>	<b>E51CLP1P5</b> Ⓢ Ⓣ
Pigtail with mini-connector	2-wire, AC/DC	<b>T3</b>	<b>E51RAPT3</b> Ⓢ Ⓣ
	4-wire, AC	<b>T5</b>	<b>E51RCPT5</b> Ⓢ Ⓣ
	4-wire, DC	<b>T5</b>	<b>E51RNPT5</b> Ⓢ Ⓣ
	Pre-wired cable with epoxy filled receptacle	<b>S</b>	<b>E51ALP1S</b>
	8 ft long	<b>S12</b>	<b>E51ALP1S12</b>
	12 ft long	<b>S20</b>	<b>E51ALP1S20</b>
	20 ft long		

- ④ Requires glass fiber optic cables for operation (not included), see **Tab 9, section 9.2**.
- ⑤ Sensing range for diffuse reflective mode for 0.125 in (3.2 mm) diameter fibers. See **Page V8-T5-104** for complete sensing range specifications.
- ⑥ Sensing range in thru-beam mode for 0.125 in (3.2 mm) diameter fibers. See **Page V8-T5-104** for complete sensing range specifications.

# 5.10

## Photoelectric Sensors

### E51 Limit Switch Style, Modular Sensors

#### Sensor Heads

#### Reflex, Diffuse Reflective and Thru-Beam Sensors<sup>①</sup>

Sensing Range <sup>②</sup>	Field of View	Response Time				Sensing Beam	Adjustment	Input Voltage	Catalog Number
		ON AC Sensor	DC Sensor	OFF AC Sensor	DC Sensor				
<b>Reflex</b>									
18 ft (5.5m)	6 in (152 mm) diameter at 15 ft (4.6m)	20 ms	20 ms	30 ms	22 ms	Infrared	—	—	<b>E51DP1</b>
		35 ft (10.7m)	12 in (305 mm) diameter at 35 ft (10.7m)	20 ms	20 ms				
<b>Polarized Reflex</b>									
15 ft (4.5m)	6 in (152 mm) diameter at 15 ft (4.6m)	20 ms	20 ms	30 ms	22 ms	Visible red	—	—	<b>E51DP5</b>
<b>Diffuse Reflective</b>									
8 in (200 mm)	1 in (25 mm) diameter at 4 in (101mm)	20 ms	20 ms	30 ms	22 ms	Infrared	Near/far <sup>③</sup>	—	<b>E51DP2</b>
		1 ms	0.5 ms	9 ms	0.5 ms				
18 in (450 mm)	1 in (25 mm) diameter at 9 in (228mm)	20 ms	20 ms	30 ms	22 ms	Infrared	Near/far <sup>③</sup>	—	<b>E51DP6</b>
40 in (1m)	1.5 in (38 mm) diameter at 40 in (1m)	20 ms	20 ms	30 ms	22 ms	Infrared	—	—	<b>E51DP4</b>
<b>Thru-Beam Detector</b>									
300 ft (90m)	18 in (457 mm) diameter at 20 ft (6.1m)	10 ms	5 ms	10 ms	5 ms	—	Sensitivity	—	<b>E51DC1</b>
<b>Thru-Beam Source<sup>④</sup></b>									
300 ft (90m)	36 in (914 mm) diameter at 20 ft (6.1m)	—	—	—	—	Infrared with visible red alignment aid	—	120 Vac	<b>E51DEL</b>
								10–30 Vdc	<b>E51DED</b>

#### Notes

- ① All sensor heads feature a light or dark operation selector switch.
- ② Reflex ranges are based on a 3 in retroreflector; diffuse reflective ranges are based on a 90% reflectance white card.
- ③ These sensor heads have a mechanical Near/Far adjustment which adjust the head for optimum performance at the expected target distance. The adjustment, which move the optics and adjustment indicator, is made before the head is mounted on the sensor body. Excess gain graphs are shown in the "Far" setting.
- ④ Includes sensor head mounted to sensor body. Use receptacles E51RA for AC or E51RN for DC sources. Head can be rotated to any of four discrete positions on body, 90° apart, but is not separate from the body.

**Glass Fiber Optic Sensors** ①

**Sensing Range** ②

Thru-Beam Mode		Diffuse Reflective Mode		Response Time		OFF		Sensing Beam	Adjustment	Catalog Number
0.063 In Dia. Fibers	0.125 In Dia. Fibers	0.063 In Dia. Fibers	0.125 In Dia. Fibers	ON AC Sensor	DC Sensor	AC Sensor	DC Sensor			
<b>Standard Fiber Mounting Style</b> ③										
8 in (200 mm)	25 in (650 mm)	0.6 in (15 mm)	3 in (75 mm)	20 ms	20 ms	30 ms	22 ms	Infrared	—	<b>E51DF1</b>
3 in (75 mm)	9 in (225 mm)	0.25 in (6 mm)	1 in (25 mm)	0.5 ms	0.5 ms	9 ms	0.5 ms	Infrared	—	<b>E51DF11</b>
<b>Collar Fiber Mounting Style</b> ③										
8 in (200 mm)	25 in (650 mm)	0.6 in (15 mm)	3 in (75 mm)	20 ms	20 ms	30 ms	22 ms	Infrared	Sensitivity	<b>E51DF3</b>
3 in (75 mm)	9 in (225 mm)	0.25 in (6 mm)	1 in (25 mm)	0.5 ms	0.5 ms	9 ms	0.5 ms	Infrared	Sensitivity	<b>E51DF33</b>
10 in (250 mm)	40 in (1000 mm)	0.8 in (20 mm)	4.5 in (115 mm)	20 ms	20 ms	30 ms	22 ms	Infrared	—	<b>E51DF4</b>

**Standard Fiber Mounting Style**



**Collar Fiber Mounting Style**



**Sensor Bodies**

**AC/DC**



**Two-Wire Sensors**

Operating Voltage	Output	Protection	Output Rating Continuous	Type	Catalog Number
<b>AC/DC</b>					
20–264 Vac/dc, 50/60 Hz	One output, load powered, NO or NC, programmable from head; OFF-state leakage current: 1.7 mA at 120 Vac/dc, <2.0 mA at 240 Vac	Latching short circuit and overload	0.5A	—	<b>E51SAL</b> ④ ☐ ☐

**Four-Wire Sensors**

**AC (E51SCN Shown)**



Operating Voltage	Output	Protection	Output Rating Continuous	Type	Catalog Number
<b>AC</b>					
120 Vac, 50/60 Hz	Two complementary outputs, line powered, NO and NC	—	1.0A to 158°F (70°C), linearly derated to 0.6A at 176°F (80°C)	—	<b>E51SCL</b> ④
			1.0A to 113°F (45°C), linearly derated to 0.3A at 176°F (80°C)	Accepts logic modules (see <b>Page V8-T5-102</b> )	<b>E51SCN</b> ⑤

**DC**



Operating Voltage	Output	Protection	Output Rating Continuous	Type	Catalog Number
<b>DC</b>					
10–30 Vdc	Two complementary outputs, line powered, NO and NC Burden current: <25 mA OFF-state leakage: <100 µA ON-state: <2.5 Vdc Power-up delay: <150 ms	Reverse polarity	0.6A to 104°F (40°C), linearly derated to 0.36A at 176°F (80°C)	NPN	<b>E51SNL</b> ④ ☐ ☐
				PNP	<b>E51SPL</b> ④ ☐ ☐

**Notes**

- ① All sensor heads feature a light or dark operation selector switch.
- ② Diffuse reflective ranges are based on a 90% reflectance white card.
- ③ Requires glass fiber optic cables for operation (not included), see **Tab 9, section 9.2**.
- ④ This sensor body is available in a factory-sealed, non plug-in configuration (with 8 ft cable), add **6P** to listed catalog number. Example: E51SAL**6P**.
- ⑤ Sensor body is black. E51SCN sensor bodies are rated NEMA 4, 4X and 13.

## Logic Module

## Logic Module ①



## Logic Module (for E51SCN Sensor Body Only)

Type	Reset Time	Description	Timing Range ②	Catalog Number
ON and OFF delay	25 ms minimum	Adjustable delay between time object is sensed and time switch function occurs  Adjustable delay between time object leaves sensing field and time switch transfers back to non-sensing state	0.15 to 15.0 seconds	<b>E51MTB</b>

5

## Receptacles

## Receptacles for E51 Limit Switch

Description	Style	Details	Cable Length	Conduit Entrance	
				1/2 In NPT Catalog Number	20 mm Catalog Number
<b>Surface Mount</b>					
<b>Surface Mount</b>					
Conduit entrance, front or rear mounting	2-wire, AC/DC	—	—	<b>E51RA</b>	<b>E51RA20</b>
	4-wire, AC	Gray	—	<b>E51RC</b>	<b>E51RC20</b>
		Black ③	—	<b>E51RCB</b>	<b>E51RCB20</b>
	4-wire, DC	—	—	<b>E51RN</b>	<b>E51RN20</b>
<b>Built-In Mini-Connector</b>					
<b>Built-In Mini-Connector</b>					
Epoxy filled receptacle with pre-wired mini-connector	2-wire, AC/DC	3-pin	—	<b>E51RAP3</b> ☺	—
	4-wire, AC	5-pin	—	<b>E51RCP5</b> ☺	—
	4-wire, DC	5-pin	—	<b>E51RNP5</b> ☺	—
<b>Pigtail with Mini-Connector</b>					
<b>Pigtail with Mini-Connector</b>					
Epoxy filled receptacle with mini-connector mounted on 3 ft (900 mm) cable	2-wire, AC/DC	3-pin	3 ft (0.9m)	<b>E51RAP3T3</b> ☺	—
	4-wire, AC	5-pin	3 ft (0.9m)	<b>E51RCP5T5</b> ☺	—
	4-wire, DC	5-pin	3 ft (0.9m)	<b>E51RNP5T5</b> ☺	—
<b>Prewired Cable</b>					
<b>Prewired Cable</b>					
Epoxy filled receptacle with pre-wired 16 gauge, yellow jacketed, type SOOW-A cable. Cable enters through hole threaded for conduit	2-wire, AC/DC	3-conductor	8 ft (2.4m)	<b>E51RAS</b>	<b>E51RA20S</b>
			12 ft (3.6m)	<b>E51RAS12</b>	—
			20 ft (6m)	<b>E51RAS20</b>	—
	4-wire, AC	5-conductor	8 ft (2.4m)	<b>E51RCS</b>	<b>E51RC20S</b>
			12 ft (3.6m)	<b>E51RCS12</b>	—
			20 ft (6m)	<b>E51RCS20</b>	—
	4-wire, DC	5-conductor	8 ft (2.4m)	<b>E51RNS</b>	<b>E51RN20S</b>
			12 ft (3.6m)	<b>E51RNS12</b>	—
			20 ft (6m)	<b>E51RNS20</b>	—

## Notes

☺ ☹ See listing of compatible connector cables on **Page V8-T5-103**.

① Rated NEMA 4, 4X and 13.

② Repeatability of the timing cycle is ±1% at constant voltage, ambient temperature and reset time.

③ Black receptacle is for color compatibility with E51SCN sensor body.

**Compatible Connector Cables**

**Mini Style  
Straight Female**








**E51 Limit Switch Style, Modular Sensors** ①

Current Rating at 600V	Voltage Style	Number of Pins	Gauge	Length	Pin Configuration/Wire Colors (Face View Female Shown)	Catalog Number
<b>Standard Cables—Mini Style</b>						
13A	AC/DC	3-pin	16 AWG	6 ft (2m)		CSMS3F3CY1602
8A	AC/DC	5-pin	16 AWG	6 ft (2m)		CSMS5D5CY1602

**Accessories**

**E51 Limit Switch Style, Modular Sensors**

Description	Catalog Number
<p><b>One-hole, Universal</b></p> <p><b>Universal Mounting Bracket</b></p> <p>One-hole, includes mounting hardware, stainless steel</p> 	<b>E51KH2</b>
<p><b>Two-hole, Universal</b></p> <p><b>Universal Mounting Bracket</b></p> <p>Two-hole, includes mounting hardware, steel</p> 	<b>E51KH4</b>
<p><b>Machine Mounting Bracket</b></p> <p><b>Machine Mounting Bracket</b></p> <p>Zinc die cast</p> 	<b>E50KH3</b>
<p><b>Stand-Off Mounting Bracket</b></p> <p><b>Stand-Off Mounting Bracket</b></p> <p>Steel</p> 	<b>E51KH3</b>
<p><b>Remote Sensor Head Assembly</b></p> <p><b>Remote Sensor Head Assembly</b></p> <p>Permits mounting sensor head up to 3 ft (0.9m) from sensor body</p> 	<b>E51KRM</b>

**Connector Cables**

A variety of cables, connector blocks and accessories, see **Tab 10, section 10.1**

**Dimensions**, see **Page V8-T5-106**.

**Note**

① For a full selection of connector cables, see **Tab 10, section 10.1**.

#### Technical Data and Specifications

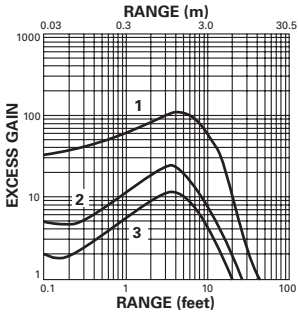
##### E51 Limit Switch Style, Modular Sensors

Description	Specification
Output ratings (NEMA D150)	
AC/DC models	0.5A continuous
AC models	1A continuous
DC models	0.6A continuous
Protection	Latching short circuit protection on two-wire AC/DC and four-wire DC models
Indicator LEDs	Lights when output is ON. One LED for each output
Enclosure material	Zinc die cast
Gasket material	Viton
Enclosure ratings	NEMA 3, 3S, 4, 4X, 6, 6P, 12 and 13 (IP67) E51SCN sensor body only: NEMA 4, 4X and 13 ①
Hazardous locations ratings	
Class I	Division II—GRPS ABCD
Class II	Division II—GRPS F and G
Class III	Division 2
Temperature range	-13° to 158°F (-25° to 70°C)
Torque requirements	Switch body screws: 25–30 in-lb; Sensing head screws: 14–18 in-lb
Vibration	10–55 Hz, 1 mm amplitude
Shock	30g, 11 ms, 1/2 sine wave
Humidity	95% non-condensing

#### Excess Gain

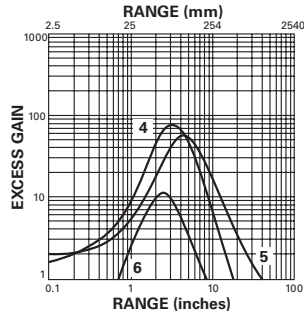
##### Sensor Heads—Reflex, Diffuse Reflective and Thru-Beam

##### Reflex (3 in diameter retroreflector)



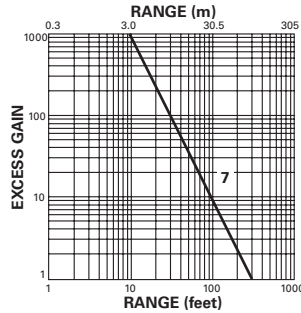
1. E51DP3
2. E51DP1
3. E51DP5

##### Diffuse Reflective (90% reflective white card)



4. E51DP6
5. E51DP4
6. E51DP2 and E51DP22

##### Thru-Beam



7. E51DEL and E51DED sources using E51DC1 detector

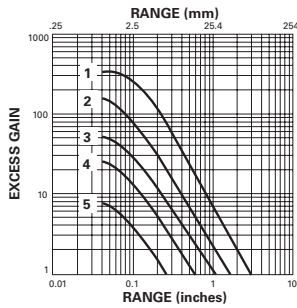
#### Note

① Our products conform to NEMA tests as indicated, however, some severe washdown applications can exceed these NEMA test specifications.



Sensor Heads—Glass Fiber Optic

Diffuse Reflective (90% reflective white card)



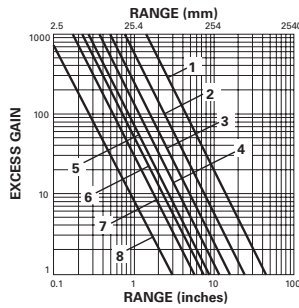
E51DF1 and E51DF3 high power sensor head with:

- 1. 0.125 in fiber bundle
- 2. 0.094 in fiber bundle
- 4. 0.063 in fiber bundle

E51DF33 fast response sensor head with:

- 3. 0.125 in fiber bundle
- 4. 0.094 in fiber bundle
- 5. 0.063 in fiber bundle

Thru-Beam



E51DF4 extended range sensor head with:

- 1. 0.125 in fiber bundle
- 4. 0.063 in fiber bundle

E51DF1 and E51DF3 high power sensor head with:

- 2. 0.125 in fiber bundle
- 3. 0.094 in fiber bundle
- 6. 0.063 in fiber bundle

E51DF33 fast response sensor head with:

- 5. 0.125 in fiber bundle
- 7. 0.094 in fiber bundle
- 8. 0.063 in fiber bundle

Wiring Diagrams

Pin numbers are for reference, rely on pin location when wiring.

E51 Limit Switch Style, Modular Sensors

Operating Voltage	Output ①	Terminal and Cable Models	Mini-Connector Models (Face View Male Shown)
<b>Two-Wire Sensors</b>			
20–264 Vac or Vdc 50/60 Hz	NO or NC		
<b>Four-Wire Sensors</b>			
120 Vac 50/60 Hz	NO and NC		
10–30 Vdc	NO and NC NPN		
	NO and NC PNP		

Note

① Changing light/dark switch on sensor head will reverse output function (NO becomes NC, and NC becomes NO).

# 5.10

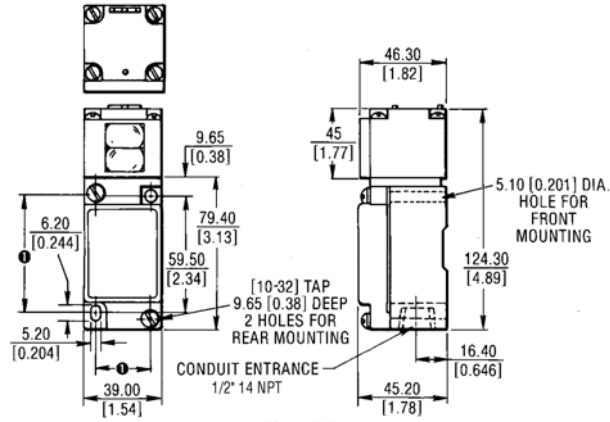
## Photoelectric Sensors

### E51 Limit Switch Style, Modular Sensors

#### Dimensions

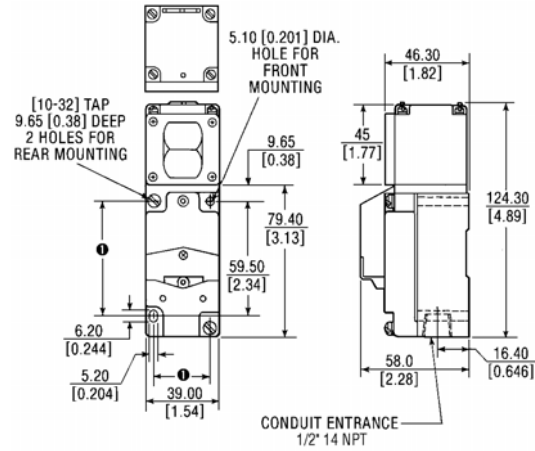
Approximate Dimensions in mm [in]

#### Standard Sensor



① CAN ACCOMMODATE BOTH U.S. 29.4 x 59.5 [1.16 x 2.34] AND DIN 30 x 60 [1.18 x 2.36] MOUNTING DIMENSIONS.

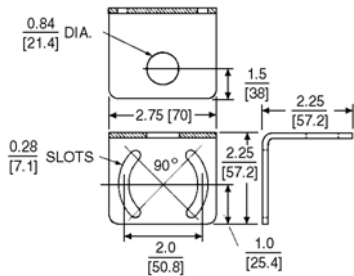
#### Sensor with Logic Module



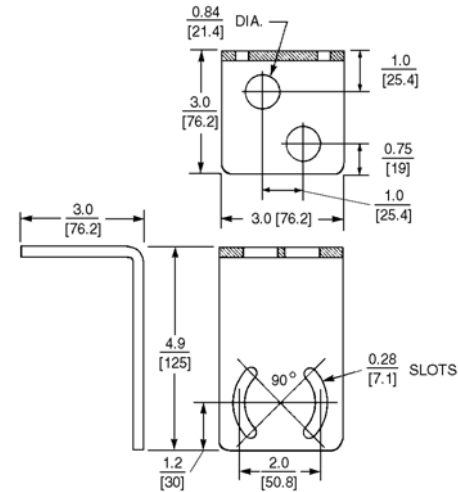
#### Accessories

Approximate Dimensions in Inches [mm]

#### Universal Mounting Bracket—E51KH2

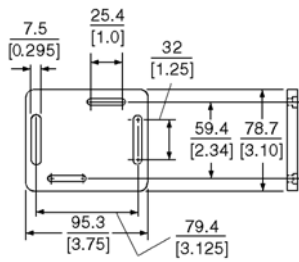


#### Universal Mounting Bracket—E51KH4

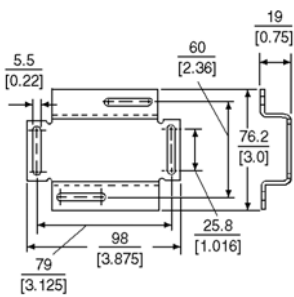


Approximate Dimensions in mm [in]

**Machine Mounting Bracket**



**Stand-Off Mounting Bracket**



Approximate Dimensions in Inches [mm]

**Remote Sensor Head Assembly**

