

E51 Modular Limit Switch Style Sensors

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E51 Modular Limit Switch Style Sensors

Product Description

The E51 Inductive Proximity Sensor family from Eaton's Electrical Sector combines high performance with a familiar limit switch style housing. Modular, plug-in components provide application flexibility, ease of maintenance, less downtime and reduced inventory. Choose from two-wire sensors with AC/DC operation, or four-wire sensors in either AC or DC styles. Connection options include terminal, mini-connector or various lengths of cable.

Choose from standard sensors that detect all types of metallic targets. The next page provides more detail on these sensors.

Features

- Rugged construction is ideal for industrial environments
- Viton gaskets ensure a positive seal and high resistance to industry chemicals
- Direct replacement for worn out limit switches
- Sensor heads and bodies feature captive screws to eliminate loss
- All sensor heads include a selector switch to program output function to either NO or NC
- Sensor bodies feature bifurcated engagement prongs for a reliable connection when plugging into receptacle stabs

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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

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

Standard Sensors—Assembled with Terminal Wiring

Standard E51 sensors feature long sensing ranges and a choice of top or side sensing heads. Alternate frequency units eliminate interference when mounted close to standard frequency units. Order sensors in component form, as assembled plug-in units, or in a sealed version where the sensor body is factory assembled to an epoxy filled receptacle with tamper-proof screws to ensure a lasting seal.

Assembled Sensor



Assembled Sensors—Standard (with Terminal Wiring)

Sensor Body and Receptacle



Operating voltage

Two-Wire Sensors

20–264 Vac/dc

Four-Wire Sensors

120 Vac

10–30 Vdc

Output

NO or NC ^①

NO and NC complementary

NO and NC complementary

Sensor body

E51SAL**E51SCL****E51SCN**
Accepts logic
modules ^②**E51SPL**
PNP**E51SNL**
NPNReceptacle ^③**E51RA****E51RC****E51RCB****E51RN****E51RN**

Sensor Heads ^①

Top Sensing



Side Sensing

Sensing
Range

Shielding

Frequency

Sensor Head Only
Catalog NumberAssembled Sensors with Head, Sensor Body and Receptacle
Catalog Number

Top Sensing

0.51 in
(13 mm)

Shielded

Standard

E51DT1**E51ALT1**

C €

E51CLT1**E51CNT1****E51PLT1**

C €

E51NLT1

C €

Alternate

E51DT2**E51ALT2**

C €

E51CLT2**E51CNT2****E51PLT2**

C €

E51NLT2

C €

0.94 in
(24 mm)

Unshielded

Standard

E51DT5**E51ALT5**

C €

E51CLT5**E51CNT5****E51PLT5**

C €

E51NLT5

C €

Alternate

E51DT6**E51ALT6**

C €

E51CLT6**E51CNT6****E51PLT6**

C €

E51NLT6

C €

Side Sensing

0.51 in
(13 mm)

Shielded

Standard

E51DS1**E51ALS1**

C €

E51CLS1**E51CNS1****E51PLS1**

C €

E51NLS1

C €

Alternate

E51DS2**E51ALS2**

C €

E51CLS2**E51CNS2****E51PLS2**

C €

E51NLS2

C €

0.94 in
(24 mm)

Unshielded

Standard

E51DS5**E51ALS5**

C €

E51CLS5**E51CNS5****E51PLS5**

C €

E51NLS5

C €

Alternate

E51DS6**E51ALS6**

C €

E51CLS6**E51CNS6****E51PLS6**

C €

E51NLS6

C €

Notes

^① All sensor heads feature a programmable output selector switch for NO or NC operation. Operation is as follows:

For This Output Type:	Set Selector Position:	
	"TARGET"	"NO TARGET"
NO	Target present	Target absent
NC	Target absent	Target present

^② Logic module must be ordered separately, see **Page V8-T3-91**. 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:

Connection Option	Catalog Number	Code Suffix	Example
20 mm thread at the conduit entrance	—	20	E51ALT120
Mini-connector termination with epoxy filled receptacle, see Page V8-T3-92 for additional receptacle options	Two-wire, 3-pin connector	CSMS3F3CY1602	P3
	Four-wire, 5-pin connector	CSMS5D5CY1602	P5
Pre-wired cable with epoxy filled receptacle	8 ft long	—	S
	12 ft long	—	S12
	20 ft long	—	S20

Technical Data and Specifications

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Description	Specification
Output rating (NEMA D150)	
AC/DC models	0.5 A continuous
AC models	1 A continuous
DC models	0.6 A continuous
Protection	Latching short-circuit protection on two-wire AC/DC models; DC models: resettable short-circuit protection
Switching rate	AC models: 15 Hz; DC models: 50 Hz
Indicator LEDs	Lights when output is ON. One LED for each output
Alternate frequency	Standard and alternate frequencies allow side-by-side operation without interference
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
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-lbs; sensing head screws: 14–18 in-lbs
Vibration	10–55 Hz, 1 mm amplitude
Shock	30 g, 11 ms, 1/2 sine wave
Humidity	95% non-condensing
Burden current	<25 mA
OFF-state leakage	DC version: 120 µA; two-wire AC: 1.9 mA maximum; three-wire AC: 1.1 mA
ON-state leakage	<2.5 Vdc
Power-up delay	<150 ms

Wiring Diagrams

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

E51 Modular Limit Switch Style Sensors

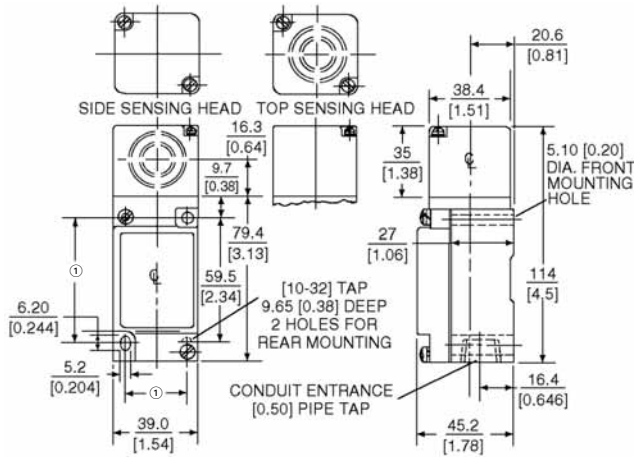
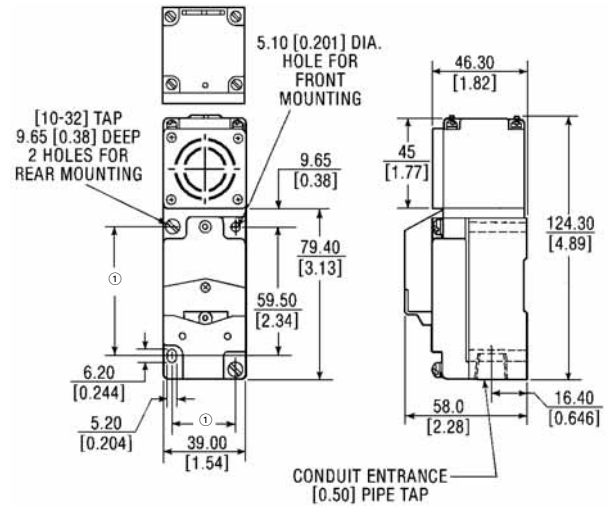
Operating Voltage	Output	Terminal and Cable Models	Mini-Connector Models (Face View Male Shown)
Two-Wire Sensors			
20–264 Vac or Vdc 50/60 Hz	NO or NC (NO shown, can be changed to NC using switch on sensor head)		
Four-Wire Sensors			
120 Vac 50/60 Hz	NO and NC ^①		
10–30 Vdc	NO and NC NPN ^①		
	NO and NC PNP ^①		

Note

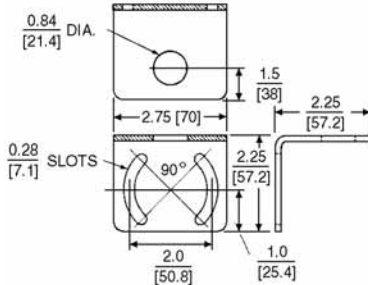
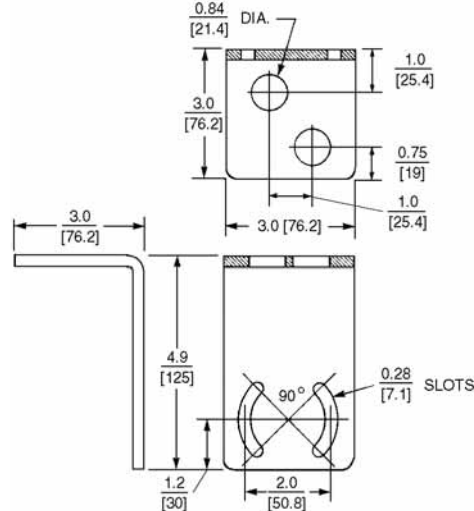
^① Changing output switch on sensor head will reverse output function (NO becomes NC, and NC becomes NO).

Dimensions

Approximate Dimensions in mm [in]

E51 Modular Limit Switch Style Sensors**Standard Sensors****Sensor with Logic Module****Accessories**

Approximate Dimensions in Inches [mm]

Universal Mounting Bracket—One Hole**Universal Mounting Bracket—Two Holes****Note**

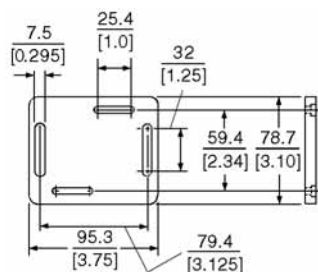
① Can accommodate both U.S., 29.4 [1.16] x 59.5 [2.34] and DIN, 30 [1.18] x 60 [2.36], mounting dimensions are in mm [in].

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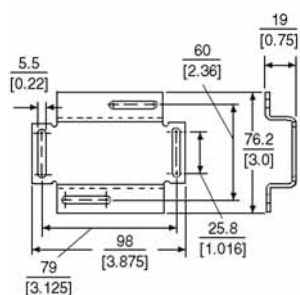
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Approximate Dimensions in mm [in]

Machine Mounting Bracket



Stand-Off Mounting Bracket



Remote Sensor Head Assembly

