

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
- Engagement key between sensor body and receptacle prevents improper assembly
- Sensors accommodate both U.S. and DIN mounting dimensions
- Wiring terminals feature captive pressure plate saddles for #18 to #12 AWG wire. A green screw identified ground terminal is also included
- Logic modules are available to provide additional control functions

Standards and Certifications

- UL Listed, E166051, E183975
- CSA Certified, 50513
- RoHS Compliant



⚠ 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.

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Inductive Proximity Sensors

E51 Modular Limit Switch Style Sensors

Standard Sensors—Assembled with Receptacles

Sensor body is attached to receptacle with tamper-proof screws.

Assembled Sensor

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Assembled Sensors—Standard (with Epoxy Filled Receptacles and Pre-wired Cables)

Sensor Base Type with 8 ft Cable ^②



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	PNP NPN

Sensor Heads ^①

Top Sensing



Side Sensing



Sensing Range	Shielding	Frequency	Sensor Head Only Catalog Number	Assembled Sensors with Head and Sensor Base Catalog Number			
Top Sensing							
0.51 in (13 mm)	Shielded	Standard	E51DT1	E51ALT16P	E51CLT16P	E51PLT16P	E51NLT16P
		Alternate	E51DT2	E51ALT26P	E51CLT26P	E51PLT26P	E51NLT26P
0.94 in (24 mm)	Unshielded	Standard	E51DT5	E51ALT56P	E51CLT56P	E51PLT56P	E51NLT56P
		Alternate	E51DT6	E51ALT66P	E51CLT66P	E51PLT66P	E51NLT66P
Side Sensing							
0.51 in (13 mm)	Shielded	Standard	E51DS1	E51ALS16P	E51CLS16P	E51PLS16P	E51NLS16P
		Alternate	E51DS2	E51ALS26P	E51CLS26P	E51PLS26P	E51NLS26P
0.94 in (24 mm)	Unshielded	Standard	E51DS5	E51ALS56P	E51CLS56P	E51PLS56P	E51NLS56P
		Alternate	E51DS6	E51ALS66P	E51CLS66P	E51PLS66P	E51NLS66P

Sensor Heads

Sensor Heads ^①

Top Sensing



Side Sensing



Sensing Range	Shielding	Frequency	Target Material	Catalog Number
Top Sensing				
0.51 in (13 mm)	Shielded	Standard	All metals	E51DT1
		Alternate		E51DT2
0.94 in (24 mm)	Unshielded	Standard	All metals	E51DT5
		Alternate		E51DT6
Side Sensing				
0.51 in (13 mm)	Shielded	Standard	All metals	E51DS1
		Alternate		E51DS2
0.94 in (24 mm)	Unshielded	Standard	All metals	E51DS5
		Alternate		E51DS6

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 Switch bases feature 8 ft of SOOW-A cable. Other connection options are available:

Connection Option ^③	Suffix	Example
Mini-connector mounted on 3 ft (0.9m) pigtail cable	T	E51ALT16PT
Mini-connector mounted to switch base	C	E51ALT16PC
Cable longer than 8 feet, add required length in 1 ft increments to listed catalog number—20 ft maximum	Length in ft	E51ALT16P12 for 12 ft

^③ See listing of compatible connector cables on **Page V8-T3-93**.

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

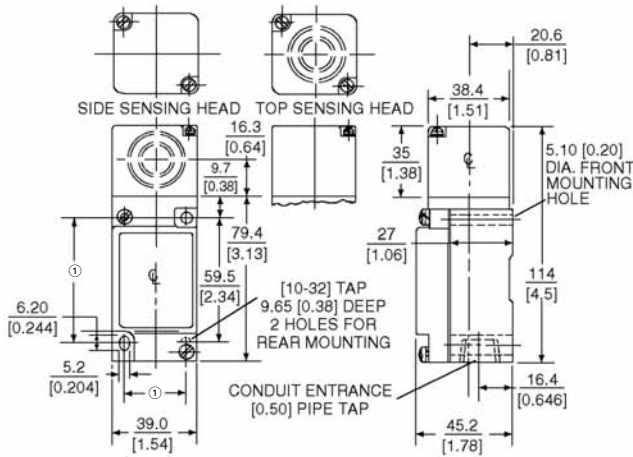
^① Changing output switch on sensor head will reverse output function (NO becomes NC, and NC becomes NO).

Dimensions

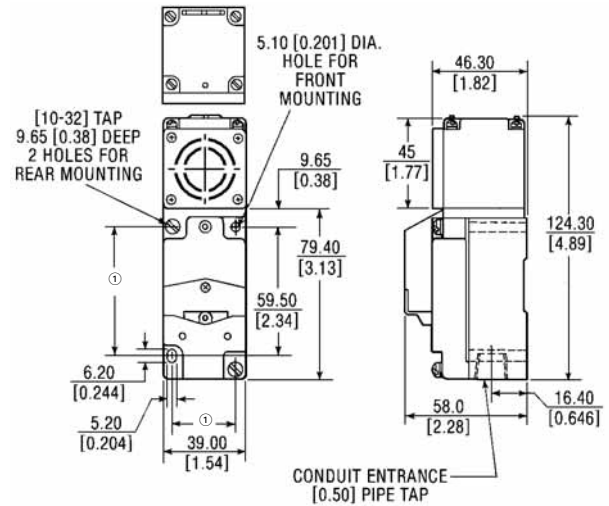
Approximate Dimensions in mm [in]

E51 Modular Limit Switch Style Sensors

Standard Sensors



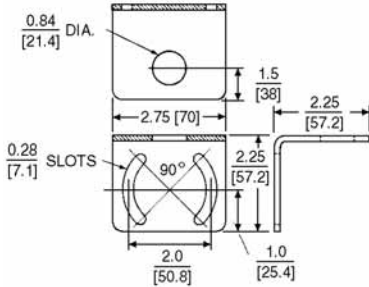
Sensor with Logic Module



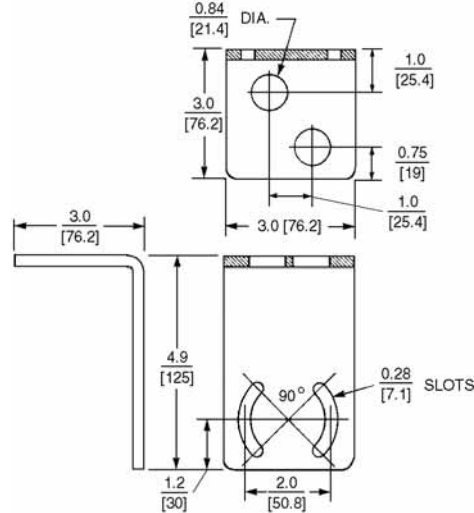
Accessories

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].