Limit Switches

Photoelectric Sensors

Inductive Sensors

Connectivity

5.1 Limit Switches

Product Overview V9-T5-2
E47 Precision V9-T5-3
Compact Prewired V9-T5-4
E49 Mini Metal V9-T5-5
E50 Heavy-Duty Plug-In V9-T5-6
LS-Titan Miniature DIN Switches V9-T5-7

5.2 Photoelectric Sensors

Product Overview V9-T5-9
Enhanced 50 Series V9-T5-10
SM Series V9-T5-12
Comet Series V9-T5-13
E58 Harsh-Duty Series V9-T5-15

5.3 Inductive Sensors

Product Overview V9-T5-17
iProx V9-T5-19
E57 Premium+ Series V9-T5-20
E57 Premium+ Series Short Barrel V9-T5-21
Global Proximity V9-T5-22
E52 Cube Style V9-T5-23

5.4 Connectivity

Product Overview V9-T5-24
Global Plus Connector Cables V9-T5-25

For our complete product offering, see Volume 8—Sensing Solutions, CA08100010E,

5

Product Overview

Limit Switches Selection Guide

Description	E47 Precision Switches	Compact Prewired Switches	E49 Mini Metal Switches	E50 Heavy-Duty Plug-in Switches	LS-Titan Miniature DIN Switches
	Page V9-T5-3	**Page V9-T5-4**	**Page V9-T5-5**	**Page V9-T5-6**	**Page V9-T5-7**
Overview	Specified when accurate repeatability, choice of operating forces and travel characteristics and tightly controlled action of cam or target in space restricted areas is of prime importance. Cost-effective and compact	Designed to be a versatile, slim device for hard-to-fit applications where sealing integrity is required; stackable ridge for ganged operations	Suitable for OEMs who require a small, cost-effective solution but cannot sacrifice durability and mechanical life as would be the case with a plastic IEC style switch	Versatile in design; high reliability; low maintenance costs with installation ease; best choice for heavy-duty limit switch applications; withstands physical and chemical abuse of harsh industrial environments	Eaton's LS-Titan limit switch line is a complete offering of safety position switches designed for worldwide application; economical insulated plastic or rugged metal enclosures and modular, plug-in operating heads and bodies make LS-Titan a flexible switching solution
Applications	Overhead, folding and elevator doors, sliding gates, automated guided vehicles and commercial instrumentation	Machine tool, food processing and packaging	Automatic vending machines, electronic assembly machines, elevators and lifts, injection molding, packaging	Punch presses, waste water treatment, machine tool, automotive, retrieval systems, industrial truck, car wash lines	Packaging, material handling, conveying, sorting and counting, positioning, and safety applications requiring positive opening contacts
Product features	Self-contained switches or with an enclosed cast housing for increased durability and conduit connection (1/2 in NPT) High current capacity for power load switching and motor handling capability Screw and solder terminations	Rugged aluminum alloy die cast housing Sealed construction with enclosure ratings of Type 4, 6 and 13 Prewired with 3M of 18 AWG, AWM 2517, 300V cable	Long life—rated for 10 million operations Pre-wired units with custom cable lengths available for high volume customers "Fingerproof" terminals protect against accidental shock	Modular operating heads, switch bodies and receptacles are interchangeable without field adjustment Order as complete assemblies or components for stocking and manufacturing flexibility 90 degree total travel, 5 degree pretravel characteristics are standard features	Modular, plug-in system (head and body components) Positive opening NC contacts for safety applications Wide variety of economical plastic and rugged metal versions available Operating heads can be rotated 90 degrees to suit specific direction of operation Unique electronic safety position switches (LSE models) provide analog (0–10 Vdc or 4–20 mA) outputs proportional to the actuator position and allow for easy configuration of a custom trip point Can be ordered as separate components (head and body) or as completely assembled switches
Contact ratings	NEMA A600, R300, AC-15, DC-13 15A/20A, 125 or 250 Vac	NEMA B300	5A at 250 Vac 5A at 30 Vdc	NEMA A600, R300 Lighted versions A150, R150 6A, 120 Vac; 10A continuous	AC-15, DC-13 6A at 240 Vac 3A at 24 Vdc 200 mA at 24 Vdc (LSE models)
Enclosure ratings	Enclosed—Type 1	Type 4, 6 and 13 IP67	IP65	Type 1, 3, 3S, 4, 4X, 6, 6P, 13 IP67	IP66, IP67
Construction	Basic—phenolic Enclosed—aluminum die cast	Aluminum alloy die cast	Zinc alloy	Zinc die cast	TBD
Approvals	UL® recognized CSA® certified	cULus	UL recognized	UL listed CSA certified IEC 947-5-1 TUV	Safety function by positive opening contacts per IEC/EN 60947-5-1 up to Category 4 per EN 954-1 TÜV-Rheinland certified for functional-safety (LSE models) CSA certified ULT listed CE CCC

For our complete product offering, see Volume 8—Sensing Solutions, CA08100010E,

E47 Precision

Features

- The cost-effective solution for highly accurate switching applications
- Compact housings are ideal for use where space is restricted
- Precision, snap-action operators provide accurate repeatability of electrical and mechanical operating characteristics
- High current capacity (up to 20A) allows power load switching and motor handling capability
- Enclosed boot versions (shown on the left, in gray) shield actuators from debris
- Solder and spade terminals available
- 15A models shown, 20A models also available

5

Product Selection

E47 Precision

Basic Switches

Description	Type	Catalog Number 15A	Specifications ①
Straight lever	Screw terminal	**E47BMS22**	OF max.—2.47 oz (70g)
			RF min.—0.49 oz (14g)
			PT max.—0.394 in (10 mm)
			OT max.—0.220 in (5.6 mm)
			MD max.—0.051 in (1.3 mm)
			FP max.—1.11 in (28.2 mm)
			OP—0.748 in (19 mm)
Standard lever	Screw terminal	**E47BMS20**	OF max.—3.53 oz (100g)
			RF min.—0.99 oz (28g)
			PT max.—0.197 in (5.0 mm)
			OT max.—0.079 in (2.0 mm)
			MD max.—0.039 in (1.0 mm)
			FP max.—0.976 in (24.8 mm)
			OP—0.748 in (19 mm)
Cross roller plunger	Screw terminal	**E47BMS11**	OF max.—12.3 oz (350g)
			RF max.—4.02 oz (114g)
			PT max.—0.016 in (0.4 mm)
			OT max.—0.14 in (3.58 mm)
			MD max.—0.002 in (0.05 mm)
			OP—1.315 in (33.4 mm)
Extended roller lever	Screw terminal	**E47BMS42**	OF max.—5.64 oz (160g)
			RF min.—0.78 oz (22g)
			PT max.—0.28 in (7.1 mm)
			OT max.—0.16 in (4 mm)
			MD max.—0.04 in (1.02 mm)
			FP max.—1.437 in (36.5 mm)
			OP—1.189 in (30.2 mm)
Roller lever	Screw terminal	**E47BMS30**	OF max.—5.64 oz (160g)
			RF min.—1.48 oz (42g)
			PT max.—0.106 in (2.7 mm)
			OT max.—0.094 in (2.4 mm)
			MD max.—0.02 in (0.5 mm)
			FP Mmax.—1.28 in (32.5 mm)
			OP—1.189 in (30.2 mm)

Enclosed Switches

Description	Catalog Number	Specifications ①
Roller lever	**E47BLS32**	OF max.—20.1 oz (570g)
		RF min.—6.0 oz (1700g)
		PT max.—0.157 in (4.0 mm)
		OT max.—0.236 in (6.0 mm)
		MD max.—0.016 in (0.4 mm)
Booted roller lever	**E47BLS33**	OF max.—22.57 oz (640g)
		RF min.—8.11 oz (230g)
		PT max.—0.197 in (5.0 mm)
		OT max.—0.236 in (6.0 mm)
		MD max.—0.016 in (0.4 mm)
Booted roller plunger	**E47BLS08**	OF max.—17.64 oz (500g)
	E47BLS12 (cross roller unit)	RF min.—3.53 oz (100g)
		PT max.—0.039 in (1.0 mm)
		OT max.—0.138 in (3.5 mm)
		MD max.—0.005 in (0.12 mm)
		OP—1.957 in (49.7 mm)
Booted wobble	**E47BLS14**	OF max.—2.11 oz (60g)
		RF min.—0.88 oz (25g)
		PT max.—0.520 in (13.2 mm)
		OT max.—0.315 in (8.0 mm)
		MD max.—0.039 in (1.0 mm)

Note

① OF = Operating Force; RF = Return Force; PT = Pre-Travel; OT = Overtravel; MD = Movement Differential; FP = Free Position; OP = Operating Position.

Compact Prewired

Features

- Rugged and dependable compact limit switch
- Rugged aluminum alloy die cast housing
- Sealed construction with enclosure ratings of Type 4, 6 and 13
- Prewired with 3m of 18 AWG, AWM 2517, 300V cable
- Stackable ridge for ganged operation

Product Selection

Compact Prewired

Compact Prewired

Actuator Type	Operating Force (Maximum)	Reset Force (Minimum)	Overtravel (Minimum)	Pre-Travel	Movement Differential (Maximum)	Operating Position	Catalog Number
Pin plunger	42.3 oz (1.2 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	0.62 ± 0.04 in (15.7 ± 1 mm)	**E47BCC05**
Sealed plunger	63.5 oz (1.8 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	0.99 ± 0.04 in (24.9 ± 1 mm)	**E47BCC06**
Roller plunger	42.3 oz (1.2 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	1.12 ± 0.04 in (28.5 ± 1 mm)	**E47BCC07**
Sealed roller plunger	63.5 oz (1.8 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	1.35 ± 0.04 in (34.3 ± 1 mm)	**E47BCC08**
Cross roller plunger	42.3 oz (1.2 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	1.12 ± 0.04 in (28.5 ± 1 mm)	**E47BCC11**
Sealed cross roller plunger	63.5 oz (1.8 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	1.35 ± 0.04 in (34.3 ± 1 mm)	**E47BCC12**
Bevel plunger	42.3 oz (1.2 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	1.12 ± 0.04 in (28.5 ± 1 mm)	**E47BCC13**
Roller lever	20.5 oz (580g)	5.3 oz (150g)	40°	25° max.	3°	—	**E47BCC15**
Wobble stick	5.3 oz (150g)	—	—	15° max.	—	—	**E47BCC20**

E49 Mini Metal

Features

- Long life—rated for 10 million operations
- "Fingerproof" terminals protect against accidental shock
- Double-spring mechanism for contact reliability
- Captive screws on enclosure cover make wiring hassle-free
- SPDT double break

Product Selection

E49 Mini Metal

E49 Mini Metal

Operating Head Type	Specifications Travel to Operate Contacts	Travel to Reset Contacts	Total Travel	Force to Operate Contacts	Minimum Return Force	Catalog Number—Assembled Units (Switch Body and Head) 1NO-1NC Contacts
Side rotary lever	20°	12°	70°	750g	100g	**E49G31AP3**
Adjustable side rotary lever	20°	12°	70°	750g	100g	**E49G31UP3**
Top pushbutton	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900g	150g	**E49G31BP3**
Top push roller	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900g	150g	**E49G31CP3**
Top push roller (90 degree roller)	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900g	150g	**E49G31C1P3**
Adjustable rod lever	20°	12°	70°	750g	100g	**E49G31DP3**
Wobble stick (nylon coil)	1.18 in (30 mm)	—	—	150g	—	**E49G31NP3**
Wobble stick (metal coil)	1.18 in (30 mm)	—	—	150g	—	**E49G31VP3**
Wobble stick (metal rod)	1.18 in (30 mm)	—	—	150g	—	**E49G31MP3**
Wobble stick (whisker)	1.18 in (30 mm)	—	—	150g	—	**E49G31XM3**

E50 Heavy-Duty Plug-In

Features

- Modular, plug-in components (head, body and receptacle) provide application flexibility, reduced inventory and less downtime
- Manufactured to take the physical and environmental abuse (including cutting fluids and chemicals) of harsh industrial environments
- Chemical-resistant Viton® gaskets, seals and boots are standard, and so are captive, posi-drive screws
- 600V rating, ridge-topped contacts and wiping action assure continuity even to logic level circuits
- Rotary heads are field convertible clockwise, counterclockwise or both, without special tools

Product Selection

E50 Heavy-Duty Plug-In

Assembled Switches—Standard

Note: Order assembled (as shown in this product guide) or as head, body, receptacle and lever components.

Operating Head Type		Catalog Number
Side rotary (requires an operating lever)	Standard spring return—E50DR1 ①	**E50AR1**
	Low force spring return—E50DL1 ①	**E50AL1**
	Maintained two-position—E50DM1	**E50AM1**
Side pushbutton, spring return—E50DS1		**E50AS1**
Side pushbutton, adjustable spring return—E50DS2		**E50AS2**
Side push roller, spring return—E50DS3 ②		**E50AS3**
Side pushbutton, maintained—E50DH1		**E50AH1**
Top pushbutton, spring return—E50DT1		**E50AT1**
Top pushbutton, adjustable spring return—E50DT2		**E50AT2**
Top push roller, spring return—E50DT3 ②		**E50AT3**
Wobble head, spring return (requires a wobble operator)	Standard duty—E50DW1	**E50AW1**
	Heavy-duty high strength steel—E50DW2	**E50AW2**

Notes

① CW (clockwise) and CCW (counterclockwise) operation, easily convertible to CW only or CCW only operation.
② Roller can be converted in the field between horizontal and vertical.

LS-Titan Miniature DIN Switches

Features

- Modular, plug-in system (head and body components)
- Safety rated, with positive opening contacts and TUV certification on electronic (LSE) models
- Wide variety of economical plastic and rugged metal versions available
- Operating heads can be rotated 90 degrees to suit specific direction of operation
- Unique electronic safety position switches (LSE models) provide analog (0–10 Vdc or 4–20 mA) outputs proportional to the actuator position and allow for easy configuration of a custom trip point
- Can be ordered as separate components (head and body) or as completely assembled switches

Product Selection

LS-Titan Miniature DIN Switches

Plastic Safety Switches

	Switch Body Catalog Number	LS-S02	LS-S20A	LS-S11S
	Output Function	2NC with positive opening contacts	2NC with slow make/break	1NO and 1NC with positive opening contact
	Terminal Connection	Screw terminal ①	Screw terminal ①	Screw terminal ①
	Contact Sequence			
Description	Operating Head Type Catalog Number—Heads Only	Catalog Number—Assembled Switches		
Top push roller plunger	LS-XP	LS-S02-P	LS-S20A-P	LS-S11S-P
Short roller lever	LS-XLS	LS-S02-LS	LS-S20A-LS	LS-S11S-LS
Angled roller	LS-XLA	LS-S02-LA	LS-S20A-LA	LS-S11S-LA
Rotary lever	LS-XRL	LS-S02-RL	LS-S20A-RL	LS-S11S-RL
Adjustable roller lever (with 18 mm roller)	LS-XRLA	LS-S02-RLA	LS-S20A-RLA	LS-S11S-RLA
Adjustable roller lever (with 40 mm roller)	LS-XRLA40	LS-S02-RLA40	LS-S20A-RLA40	LS-S11S-RLA40
Spring rod (wobble) ②	LS-XS	LS-S02-S	LS-S20A-S	LS-S11S-S

Notes

① Cage clamp versions available. Contact Application Engineering.

② Not to be used as a safety position switch. Use only in conjunction with snap-action contact.

Plastic Electronic Safety Position Switches

	Switch Body Catalog Number	**LSE-AI**	**LSE-AU**
	Output Function	Analog 4–20 mA	Analog 0–10V
		Additional diagnostic output that registers a 0V signal in the event of a fault. Self-test function continuously tests both outputs for overloads, short circuits to 0V and short circuits to +Ue.	
	Safety Functions and Approvals	Certified by TÜV to EN 954-1, Category 3 or 4. Suitable for protection of people or processes.	
	Contact Sequence	Analog 4–20 mA	Analog 0–10V

Description	**Operating Head Type Catalog Number—Heads Only**	**Catalog Number—Assembled Switches**	
Top push roller plunger	**LS-XP**	**LSE-AI-P**	**LSE-AU-P**
Short roller lever	**LS-XLS**	**LSE-AI-LS**	**LSE-AU-LS**
Angled roller	**LS-XLA**	**LSE-AI-LA**	**LSE-AU-LA**
Rotary lever	**LS-XRL**	**LSE-AI-RL**	**LSE-AU-RL**
Adjustable roller lever (with 18 mm Roller)	**LS-XRLA**	**LSE-AI-RLA**	**LSE-AU-RLA**
Adjustable roller lever (with 40 mm roller)	**LS-XRLA40**	**LSE-AI-RLA40**	**LSE-AU-RLA40**
Spring rod (wobble) ①	**LS-XS**	**LSE-AI-S**	**LSE-AU-S**

Note

① Not to be used as a safety position switch. Use only in conjunction with snap-action contact.

Product Overview

Photoelectric Sensors Selection Guide

Description	Enhanced 50 Series	SM Series	Comet Series	E58 Harsh-Duty Series
	Page V9-T5-10	**Page V9-T5-12**	**Page V9-T5-13**	**Page V9-T5-15**
Overview	Provides outstanding optical performance and application flexibility in a self-contained, industry-standard compact rectangular	Provides high performance and ease of use in an economical, miniature package	This high-performance, 18 mm flat tubular sensor family features a wide variety of models in all sensing modes	Designed to withstand the harshest physical, chemical and optical environments; available in 18 and 30 mm tubular enclosures
Sensing types and ranges	Thru-beam: 200 and 500 ft Reflex: 30 ft Polarized reflex: 16 ft Diffuse reflective: 5 and 10 ft Clear object detector: 45 in Infrared fiber optic: range varies with fiber Visible fiber optic: range varies with fiber	Thru-beam: 50 ft Polarized reflex: 10 ft Diffuse reflective: 8 in Perfect Prox® background rejection: 2 and 4 in	Thru-beam: 20 and 80 ft Reflex: 25 ft Polarized reflex: 15 and 10 ft Diffuse reflective: 8 and 24 in Focused diffuse reflective: 1.6 in Wide single diffuse: 6 in Fine spot Perfect Prox: 2 in Perfect Prox background rejection: 2, 4, 6 and 9 in Glass and plastic fiber optic: range varies with fiber	Thru-beam: 800 ft Reflex: 59 ft Polarized reflex: 34 ft Perfect Prox background rejection: 2, 4, 6 and 11 in
Product features	High optical performance, including 10-ft diffuse and 500-ft thru-beam versions Output options include a high-current 10A SPDT relay Built-in light/dark selection on all models	Highly visible LED indicators for power, output and alignment (TargetLock) TargetLock simplifies setup and ensures that the sensor operates at the highest level of reliability possible Perfect Prox models sense different colored targets at the same range and ignore objects in the background	The 18 mm tubular body has flat sides for added mounting flexibility Available in universal voltage AC/DC versions as well as DC only models Short circuit protection on all models	Designed to be the most rugged photoelectric sensor available Perfect Prox background rejection technology for unmatched optical performance Output status indictor is the brightest available and is visible from any angle and in any lighting condition
Operating voltage	24–240 Vac and 12–240 Vdc 10–40 Vdc	18–264 Vac and 18–50 Vdc 10–30 Vdc	90–132 Vac and 18–50 Vdc 20–264 Vac and 15–30 Vdc 10–30 Vdc	Two-wire models: 90–132 Vac and 18–50 Vac Three- and four-wire models: 20–132 Vac and 15–30 Vdc 10–30 Vdc
Output function	Selectable light or dark operate	Light and dark operate models available	Selectable light or dark operate	Light and dark operate models available
Maximum load current	DC units: 250 mA AC/DC units: 300 mA to 10A	AC/DC units—200 mA DC units—100 mA (NPN or PNP)	AC/DC units—300 mA DC units—250 mA (NPN), 100 mA (PNP)	AC/DC units—300 mA (100 mA for 18 mm diameter units) DC units—250 mA (NPN), 100 mA (PNP)
Enclosure ratings	IP67	Type 1, 3, 4, 4X, 6, 6P, 12 and 13 IP68	Type 1, 2, 3, 4, 4X, 6, 12 and 13	Type 1, 2, 3, 3R, 3S, 4, 4X, 6, 6P, 12, 12K and 13 IP69K
Response time range	DC operation: 2 ms AC operation: 15 ms	DC operation: 1 ms AC operation: 16 ms	DC operation: 1 ms AC operation: 10 ms 2W AC/DC operation: 32 ms	2 ms to 35 ms
Approvals	CSA approved Certified to UL standard, UL 508	UL listed cUL listed	UL recognized cUL recognized	UL listed cUL listed

Enhanced 50 Series

Features

- High-optical performance models, including a 500 ft (152m) thru-beam and a 10 ft (3m) diffuse reflective unit
- Output options include a 3A SPDT relay
- All units offer light/dark selection
- Logic options include ON-delay, OFF-delay and one-shot delay
- Fully potted construction for use in areas subject to washdown, high shock and/or vibration
- Choice of pre-wired power cable, built-in mini-connector, built-in micro-connector and pigtail micro-connector versions; standard pre-wired cable length is 6 ft (1.8m)

Product Selection

Enhanced 50 Series

Enhanced 50 Series Sensors

Description	Voltage Range	Sensing Range	Optimum Range	Sensing Beam	Thru-Beam Component	Output Type	Time Delay	Connection Type	Catalog Number
Thru-beam standard range	10–40 Vdc	200 ft (61m)	0.1–100 ft (0.03–31m)	Infrared	Source	N/A	N/A	4-pin Euro (micro) connector	**1150E-6547**
					Detector	NPN/PNP 250 mA	No		**1250E-6547**
	12–240 Vdc 24–240 Vac	200 ft (61m)	0.1–100 ft (0.03–31m)	Infrared	Source	N/A	N/A	4-pin micro connector	**1150E-6543**
					Detector	Isolated output solid-state relay 300 mA at 240 Vac/Vdc	No		**1250E-6543**
					Source	N/A	N/A	4-pin mini-connector	**1150E-6504**
					Detector	SPDT EM relay 3A at 120 Vac	No	5-pin mini-connector	**1250E-6504**
Thru-beam extended range	10–40 Vdc	500 ft (152m)	0.1–250 ft (0.03–77m)	Infrared	Source	N/A	N/A	4-pin Euro (micro) connector	**1151E-6547**
					Detector	NPN/PNP 250 mA	No		**1251E-6547**
	12–240 Vdc 24–240 Vac	500 ft (152m)	0.1–250 ft (0.03–77m)	Infrared	Source	N/A	N/A	4-pin micro connector	**1151E-6543**
					Detector	Isolated output solid-state relay 300 mA at 240 Vac/Vdc	No		**1251E-6543**
						N/A	N/A	4-pin mini-connector	**1151E-6504**
						SPDT EM relay 3A at 120 Vac	No	5-pin mini-connector	**1251E-6504**

Reflex, Diffuse, and Clear Object Sensors

Description	Voltage Range	Sensing Range ①	Optimum Range ①	Sensing Beam	Output Type	Time Delay	Connection Type	Catalog Number
Standard reflex	10–40 Vdc	30 ft (9m)	0.5–15 ft (0.2–4.6m)	Visible red	NPN/PNP 250 mA	No	4-pin Euro (micro) connector	**1450E-6547**
	12–240 Vdc 24–240 Vac	30 ft (9m)	0.5 5 ft (0.2–4.6m)	Visible red	isolated output solid-state relay 300 mA at 240 Vac/Vdc	No	4-pin micro connector	**1450E-6543**
					SPDT EM relay 3A at 120 Vac	No	5-pin mini-connector	**1450E-6504**
Polarized reflex ②	10–40 Vdc	16 ft (4.9m)	0.5–8 ft (0.2–2.5m)	Visible red	NPN/PNP 250 mA	No	4-pin Euro (micro) connector	**1451E-6547**
						Yes		**1451E-8547**
	12–240 Vdc 24–240 Vac	16 ft (4.9m)	0.5–8 ft (0.2–2.5m)	Visible red	Isolated output solid-state relay 300 mA at 240 Vac/Vdc	No	4-pin micro connector	**1451E-6543**
					SPDT EM relay 3A at 120 Vac	No	5-pin mini-connector	**1451E-6504**
Diffuse reflective extended range	10–40 Vdc	10 ft (3m) ③	1–60 in (25–1520 mm) ③	Infrared	NPN/PNP 250 mA	No	4-pin Euro (micro) connector	**1351E-6547**
	12–240 Vdc 24–240 Vac	10 ft (3m) ③	1–60 in (25–1520 mm) ③	Infrared	Isolated output solid-state relay 300 mA at 240 Vac/Vdc	No	4-pin micro connector	**1351E-6543**
					SPDT EM relay 3A at 120 Vac	No	5-pin mini-connector	**1351E-6504**
Clear object detector	10–40 Vdc	45 in (1.2m)	1–24 in (25–610 mm)	Visible red	NPN/PNP 250 mA	No	4-pin Euro (micro) connector	**1452E-6547**
	12–240 Vdc 24–240 Vac	45 in (1.2m)	1–24 in (25–610 mm)	Visible red	Isolated output solid-state relay 300 mA at 240 Vac/Vdc	No	4-pin micro connector	**1452E-6543**
					SPDT EM relay 3A at 120 Vac	No	5-pin mini-connector	**1452E-6504**

Notes

① Ranges based on 3 in retroreflector for reflex sensors.
② Polarized sensors may not operate with reflective tape. Test tape selection before installation.
③ Ranges based on 90% reflectance white card for diffuse reflective sensors.

SM Series

Features

- TargetLock technology makes SM Series™ the easiest photoelectric sensor to set up and use
- Highly visible LED indicators for power, output and TargetLock
- TargetLock simplifies setup and ensures the sensor operates at the highest level of reliability possible
- Perfect Prox models sense different colored targets at the same range and ignore objects in the background
- Visible beam on all models lets you see exactly where the sensor is pointing
- Compact size to fit in tight spaces
- Multiple mounting options, including industry-standard 18 mm threads
- Reverse polarity, overload and short circuit protection
- Full family includes thru-beam, polarized reflex, diffuse reflective and Perfect Prox background rejection

Product Selection

SM Series

SM Series Sensors

Description	Operating Voltage	Sensing Range ①	Optimum Range ②	Cutoff Range	Field of View	Thru-Beam Component	Connection Type	Light Operate Catalog Number	Dark Operate Catalog Number
Three-Wire and Four-Wire Sensors									
Thru-beam	10–30 Vdc	50 ft (1m)	0.1–25 ft (30 mm–7.5m)	—	10 in (254 mm) diameter at 10 ft (3m)	Source	4-pin micro DC connector	**E65-SMTS15-HAD**	—
						Detector	4-pin micro DC connector	—	**E65-SMTD15-HDD**
Polarized reflex	18–264 Vac 50/60 Hz or 18–50 Vdc	10 ft (3m)	0.1–5 ft (30 mm–1.5m)	—	1 in (25 mm) diameter at 50 in (1.3m)	—	4-pin micro AC connector	—	**E65-SMPR3-GDD**
	10–30 Vdc	10 ft (3m)	0.1–5 ft (30 mm–1.5m)	—	1 in (25 mm) diameter at 50 in (1.3m)	—	4-pin micro AC connector	—	**E65-SMPR3-HDD**
Diffuse reflective	18–264 Vac 50/60 Hz or 18–50 Vdc	8 in (200 mm)	0.25–5 in (6–127 mm)	—	2 in (50 mm) diameter at 5 in (127 mm)	—	4-pin micro AC connector	**E65-SMSD200-GLD**	—
	10–30 Vdc	8 in (200 mm)	0.25–5 in (6–127 mm)	—	2 in (50 mm) diameter at 5 in (127 mm)	—	4-pin micro DC connector	**E65-SMSD200-HLD**	—
Perfect Prox	18–264 Vac 50/60 Hz or 18–50 Vdc	2 in (50 mm)	0.4–1.8 in (10–45 mm)	2.3 in (58 mm) and beyond	0.25 in (6 mm) diameter at 2.25 in (57 mm)	—	4-pin micro AC connector	**E65-SMPP050-GLD**	—
	10–30 Vdc	2 in (50 mm)	0.4–1.8 in (10–45 mm)	2.3 in (58 mm) and beyond	0.25 in (6 mm) diameter at 2.25 in (57 mm)	—	4-pin micro DC connector	**E65-SMPP050-HLD**	—

Notes

① Sensor will detect a 90% reflectance white card at this range.
② Sensor will ignore a 90% reflectance white card at this range.

Comet Series

Features

- Industry-standard 18 mm diameter threaded body has flat sides allowing it to be mounted like a tubular sensor or against any flat surface
- Right-angle viewing models mount in a depth of only 6/10th of an inch
- Perfect Prox technology provides exceptional background rejection and application problem-solving
- Visible sensing beams let you see where the beam is aimed for quick setup and alignment
- Solid polyurethane housing completely encapsulates internal circuits for high resistance to shock and vibration

Product Selection

Comet Series

Reflex Sensors

Description	Operating Voltage	Sensing Range ①	Optimum Range ①	Field of View	Sensing Beam	Connection Type	Catalog Number
Three-Wire and Four-Wire Sensors							
Standard reflex forward viewing	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	25 ft (7.6m)	0.1–15 ft (0.03–4.5m)	1 in (25 mm) diameter at 50 in (1.3m)	Visible red beam	4-pin micro AC connector	**14102AQD03**
	10–30 Vdc (NPN and PNP)	25 ft (7.6m)	0.1–15 ft (0.03–4.5m)	1 in (25 mm) diameter at 50 in (1.3m)	Visible red beam	4-pin micro DC connector	**14102AQD07**
Polarized reflex forward viewing ②	20–64 Vac 50/60 Hz or 15–30 Vdc (NPN)	15 ft (4.5m)	0.1–15 ft (0.03–4.5m)	1 in (25 mm) diameter at 50 in (1.3m)	Visible red beam	4-pin micro AC connector	**14101AQD03**
	10–30 Vdc (NPN and PNP)	15 ft (4.5m)	0.1–10 ft (0.03–4.5m)	1 in (25 mm) diameter at 50 in (1.3m)	Visible red beam	4-pin micro DC connector	**14101AQD07**
Polarized reflex right-angle viewing ②③	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	10 ft (3m)	0.1–15 ft (0.03–4.5m)	1 in (25 mm) diameter at 50 in (1.3m)	Visible red beam	4-pin micro AC connector	**14101RQD03**
	15–30 Vdc	10 ft (3m)	0.1–15 ft (0.03–1.5m)	1 in (25 mm) diameter at 50 in (1.3m)	Visible red beam	4-pin micro DC connector	**14101RQD07**

Diffuse Reflective and Focused Diffuse Reflective Sensors

Description	Operating Voltage	Sensing Range ④	Optimum Range	Field of View	Sensing Beam	Connection Type	Catalog Number
Three-Wire and Four-Wire Sensors							
Diffuse reflective forward viewing	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	24 in (610 mm)	0.1–15 in (3–380 mm)	5 in (127 mm) diameter at 15 in (380 mm)	Infrared beam	4-pin micro AC connector	**13100AQD03**
	10–30 Vdc (NPN and PNP)						**13100AQD07**
Diffuse reflective right-angle viewing	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	24 in (610 mm)	0.1–15 in (3–380 mm)	5 in (127 mm) diameter at 15 in (380 mm)	Infrared beam	4-pin micro AC connector	**13100RQD03**
	10–30 Vdc (NPN and PNP)						**13100RQD07**

Notes

① Ranges based on a 3 in diameter retroreflector.
② Polarized reflex sensors may not operate with retroreflective tape. Test selected tape prior to installation.
③ Right-angle viewing polarized reflex models are rated Type 1 only.
④ Sensor will detect a 90% reflective white card at this range.

Perfect Prox Background Rejection Sensor

Description	Operating Voltage	Nominal Range ①	Optimum Range	Cutoff Range ②	Field of View	Sensing Beam Type	Connection Type	Catalog Number
Three-Wire and Four-Wire Sensors								
Perfect Prox forward viewing	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	2 in (50 mm) sharp cutoff	0.4–1.8 in (10–45 mm)	2.25 in 57 mm) and beyond	0.25 in (6 mm) diameter at 2.25 in (64 mm)	Visible red	4-pin micro AC connector	**13104AQD03**
		4 in (100 mm) sharp cutoff	0.5–3 in (13–76 mm)	5 in (127 mm) and beyond	0.35 in (9 mm) diameter at 5 in (127 mm)	Visible red		**13101AQD03**
	10–30 Vdc (NPN and PNP)	2 in (50 mm) sharp cutoff	0.4–1.8 in (10–45 mm)	2.25 in (57 mm) and beyond	0.25 in (6 mm) diameter at 2.25 in (64 mm)	Visible red	4-pin micro DC connector	**13104AQD07**
		4 in (100 mm) sharp cutoff	0.5–3 in (13–76 mm)	5 in (127 mm) and beyond	0.35 in (9 mm) diameter at 5 in (127 mm)	Visible red		**13101AQD07**
Perfect Prox right-angle viewing	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	2 in (50 mm) sharp cutoff	0.4–1.8 in (10–45 mm)	2.25 in (57 mm) and beyond	0.25 in (6 mm) diameter at 2.25 in (64 mm)	Visible red	4-pin micro AC connector	**13104RQD03**
		4 in (100 mm) sharp cutoff	0.5–3 in (13–76 mm)	5 in (127 mm) and beyond	0.35 in (9 mm) diameter at 5 in (127 mm)	Visible red		**13104RS5003**
	10–30 Vdc (NPN and PNP)	2 in (50 mm) sharp cutoff	0.4–1.8 in (10–45 mm)	2.25 in (57 mm) and beyond	0.25 in (6 mm) diameter at 2.25 in (64 mm)	Visible red	4-pin micro DC connector	**13104RQD07**
		4 in (100 mm) sharp cutoff	0.5–3 in (13–76 mm)	5 in (127 mm) and beyond	0.35 in (9 mm) diameter at 5 in (127 mm)	Visible red		**13104RS5007**
Fine spot Perfect Prox forward viewing	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	2 in (50 mm) sharp cutoff	0.9–1.8 in (23–45 mm)	2.25 in (57 mm) and beyond	0.05 in (1.3 mm) diameter at 1.7 in (43 mm)	Visible red	4-pin micro AC connector	**13105AQD03**
	10–30 Vdc (NPN and PNP)	2 in (50 mm) sharp cutoff	0.9–1.8 in (23–45 mm)	2.25 in (57 mm) and beyond	0.05 in (1.3 mm) diameter at 1.7 in (43 mm)	Visible red	4-pin micro DC connector	**13105AQD07**

Notes

① Sensor will detect a 90% reflectance card at this range.
② Sensor will ignore a 90% reflectance card at this range.

E58 Harsh-Duty Series

Features

- Sensors are available in 18 mm and 30 mm diameters
- Refined optics provide long range detection through high levels of lens or airborne contamination
- Perfect Prox technology provides exceptional background rejection and extremely high excess gain
- Resistant to the wide range of chemicals used in the automotive, food processing and forest products industries
- Suitable for high-temperature, high-pressure washdown (1200 psi)
- Visible sensing beam on all models lets you see where the beam is aimed for quick setup and alignment
- Output status indicator is the brightest available and is visible from any angle and in any lighting condition

Product Selection

E58 Harsh-Duty Series

Thru-Beam and Reflex Sensors

Description	Operating Voltage	Sensing Range	Optimum Range	Field of View	Thru-Beam Component	Connection Type	Catalog Number
Three-Wire and Four-Wire Sensors							
30 mm diameter thru-beam	20–132 Vac 50/60 Hz or 15–30 Vdc	800 ft (250m)	0.1–300 ft (0.03–90m)	33 in (830 mm) diameter at 25 ft (7.6m)	Source	4-pin micro AC connector	**E58-30TS250-GAP**
					Detector	4-pin micro AC connector	**E58-30TD250-GDP**
	10–30 Vdc	800 ft (250m)	0.1–300 ft (0.03–90m)	33 in (830 mm) diameter at 25 ft (7.6m)	Detector	4-pin micro DC connector	**E58-30TD250-HDP**
30 mm diameter reflex	20–132 Vac 50/60 Hz or 15–30 Vdc	59 ft (18m)	1–40 ft (0.03–12m)	6 in (150 mm) diameter at 20 ft (6m)	—	4-pin micro AC connector	**E58-30RS18-GDP**
	10–30 Vdc	59 ft (18m)	1–40 ft (0.03–12m)	6 in (150 mm) diameter at 20 ft (6m)	—	4-pin micro DC connector	**E58-30RS18-HDP**
30 mm diameter polarized reflex	20–132 Vac 50/60 Hz or 15–30 Vdc	34 ft (10m)	1–20 ft (0.03–6m)	6 in (150 mm) diameter at 20 ft (6m)	—	4-pin micro AC connector	**E58-30RP10-GDP**
	10–30 Vdc	34 ft (10m)	1–20 ft (0.03–6m)	6 in (150 mm) diameter at 20 ft (6m)	—	4-pin micro DC connector	**E58-30RP10-HDP**

Perfect Prox Background Rejection Sensors

Description	Operating Voltage	Nominal Range ①	Optimum Range ②	Cutoff Range	Field of View	Connection Type	Catalog Number
Two-Wire Sensors							
18 mm diameter Perfect Prox	90–132 Vac 50/60 Hz or 18–50 Vdc	4 in (100 mm)	0.5–3 in (13–76 mm)	5 in (127 mm) and beyond	0.38 in (10 mm) diameter at 4 in (100 mm)	2m cable	**E58-18DP100-EL**
Three-Wire and Four-Wire Sensors							
18 mm diameter Perfect Prox	10–30 Vdc	4 in (100 mm)	0.5–3 inches (13–76 mm)	5 in (127 mm) and beyond	0.38 in (10 mm) diameter at 4 in (100 mm)	4-pin micro DC connector	**E58-18DP100-HLP**
30 mm diameter Perfect Prox	20–132 Vac 50/60 Hz or 15–30 Vdc	11 in (280 mm)	1–9 in (26–228 mm)	12.5 in (318 mm)	1.0 in (26 mm) diameter at 11 in (280 mm)	4-pin micro AC connector	**E58-30DPS280-GLP**
	10–30 Vdc	11 in (280 mm)	1–9 in (26–228 mm)	12.5 in (318 mm)	1.0 in (26 mm) diameter at 11 in (280 mm)	4-pin micro DC connector	**E58-30DPS280-HLP**

Notes

① Sensor will detect a 90% reflectance card at this range.

② Sensor will ignore a 90% reflectance card at this range

Product Overview

Inductive Sensors Selection Guide

Description	iProx	E57 Premium+ Series	E57 Premium+ Series Short Barrel
	Page V9-T5-19	**Page V9-T5-20**	**Page V9-T5-21**
Overview	Standard features include extended sensing ranges, high noise-immunity, extreme durability and includes autoconfigure technology. Optional advanced features include output delay, speed detection and cloning with the ProxView Software	High-performance inductive sensors include stainless steel models, extended ranges and right-angle sensing	Full featured sensors with shorter overall length than standard tubular sensors
Applications	Automotive, machine tool, material handling where high sensing performance and inventory consolidation is a priority	A wide variety of applications, including those where customers require AC/DC universal inventory sensors	Automation, robotics, transfer lines, conveyors, material handling
Product features	Auto-configure technology automatically detects a sinking (NPN) or sourcing (PNP) connection and switches the sensor accordingly, without any user intervention Optional computer programming cable and windows-based ProxView configuration software makes it easy to customize sensors Clone the sensor to match the characteristics of more than 4,800 competitive models, or configure it to match your specific application needs	12, 18 and 30 mm diameters Two-wire and three-wire AC and DC sensors AC/DC models operate on 20–250 Vac or Vdc	Available in 12, 18 and 30 mm diameters Two-wire sensors offer 20–250 Vac or Vdc operation; AC only 20–135 Vac Three-wire models operate on 6–30 Vdc
Output ratings	AC—250–500 mA DC—300–500 mA	AC mode—250–500 mA DC mode—200 mA	AC—200–500 mA continuous DC—500 mA continuous
Enclosure ratings	Type 4, 4X, 6, 6P, 12, 13 IEC—IP67	Type 4, 4X, 6, 6P, 12, 13 IEC—IP67	Type 4, 4X, 6, 6P, 12, 13 IEC—IP67
Construction	Stainless steel	Stainless steel	Stainless steel Semi-shielded models: nickel-plated brass
Approvals	cUL listed	cUL listed	UL listed CSA certified

Product Selection Guide, continued

Description	Global Proximity	E52 Cube Style
	Page V9-T5-22	**Page V9-T5-23**
Overview	This full-line, tubular proximity sensor family provides a cost-effective solution for high volume OEM use	A family of industry-standard, cube-sized inductive sensors with long range capabilities
Applications	Machine tool detection, press applications, cam detection, material handling, valve and shaft position, automotive assembly	Automotive, manufacturing, machinery OEMs
Product features	8, 12, 18 and 30 mm diameters Two-wire sensors available in AC or DC versions Three-wire sensors available in DC versions	Long inductive proximity ranges available (up to 40 mm sensing distance) Four-wire DC models have complementary outputs (1NO-1NC) Four-wire DC models use auto-configure technology, which allows the sensor to automatically adapt for NPN or PNP without user intervention
Output ratings	AC mode—200 mA DC mode—100 mA	AC—400 mA maximum DC—300 mA maximum
Enclosure ratings	IP67	Type 4, 4X, 6, 6P, 12, 13 IEC—IP67
Construction	Nickel-plated brass 8 mm nano stainless steel	Zinc alloy PPS, PL
Approvals	cCSAus	cULus

iProx

Features

- Available in AC two-wire, DC three-wire and unique DC four-wire with complementary (NO-NC) or dual NO outputs
- Auto-configure technology automatically detects a sinking (NPN) or sourcing (PNP) connection and switches the sensor accordingly, without any user intervention
- Reliably detect metal targets at ranges superior to conventional shielded or unshielded tubular sensors
- Quality construction using a stainless steel barrel, 360-degree dual-color LED indicator, Ryton® impact-resistant face cap and vibration-absorbing potting compound
- Resistant to extreme temperatures (–40°C)

5

Product Selection

iProx

iProx Sensors

Description	Operating Voltage	Sensing Range	Shielding	Connection Type	NO Output ① Catalog Number
Three-Wire Sensors					
12 mm diameter	6–48 Vdc	4 mm	Shielded	4-pin micro DC connector	**E59-M12A105D01-D1**
		10 mm	Unshielded	4-pin micro DC connector	**E59-M12C110D01-D1**
18 mm diameter	6–48 Vdc	8 mm	Shielded	4-pin micro DC connector	**E59-M18A108D01-D1**
		18 mm	Unshielded	4-pin micro DC connector	**E59-M18C116D01-D1**
30 mm diameter	6–48 Vdc	15 mm	Shielded	4-pin micro DC connector	**E59-M30A115D01-D1**
		29 mm	Unshielded	4-pin micro DC connector	**E59-M30C129D01-D1**

iProx Complementary and Dual Output

Description	Operating Voltage	Sensing Range	Shielding	Output Type	Connection Type	Complementary Outputs (1NO-1NC) Catalog Number
Four-Wire Sensors						
12 mm diameter	6–48 Vdc	4 mm	Shielded	NPN (sinking)	4-pin micro DC connector	**E59-M12A105D01-D3NN**
				PNP (sourcing)	4-pin micro DC connector	**E59-M12A105D01-D3PP**
18 mm diameter	6–48 Vdc	18 mm	Unshielded	NPN (sinking)	4-pin micro DC connector	**E59-M18C116D01-D3NN**
				PNP (sourcing)	4-pin micro DC connector	**E59-M18C116D01-D3PP**

Note

① Sensors are ordered with pre-set outputs from the factory, but can be later programmed either NO or NC using ProxView software.

E57 Premium+ Series

Features

- High-performance inductive sensors include stainless steel models, extended ranges and right angle sensing
- New expanded offering of two-wire, three-wire, AC, DC, and AC/DC multiple range sensor models
- Designed with stainless steel barrel and new potting compound for robust, high-temperature, high-pressure washdown, as well as intense shock and vibration applications
- 360° output status indicator is visible from any angle and in any light condition
- Resettable short circuit protection and reverse polarity in select models
- Wide temperature range –13° to 158°F (–25° to 70°C) on cable, micro-style connections

Product Selection

E57 Premium+ Series

E57 Premium+ Series

Description	Operating Voltage	Sensing Range (Sn)	Shielding	Connection Type ①	NO Output Catalog Number
Three-Wire Sensors					
12 mm diameter end sensing	6–48 Vdc	2 mm (standard range)	Shielded (NPN)	4-pin micro DC connector	**E57LAL12T110SD**
		2 mm (standard range)	Shielded (PNP)	4-pin micro DC connector	**E57LAL12T111SD**
		4 mm (standard range)	Unshielded (NPN)	4-pin micro DC connector	**E57LAL12T110ED**
		4 mm (standard range)	Unshielded (PNP)	4-pin micro DC connector	**E57LAL12T111ED**
18 mm diameter end sensing	6–48 Vdc	5 mm (standard range)	Shielded (NPN)	4-pin micro DC connector	**E57LAL18T110SD**
		5 mm (standard range)	Shielded (PNP)	4-pin micro DC connector	**E57LAL18T111SD**
		8 mm (standard range)	Unshielded (NPN)	4-pin micro DC connector	**E57LAL18T110ED**
		8 mm (standard range)	Unshielded (PNP)	4-pin micro DC connector	**E57LAL18T111ED**
		20 mm (extended range)	Non-embeddable (PNP)	4-pin micro DC connector	**E57-18LE20-BD**
		5 mm	Shielded (PNP)	4-pin micro DC connector	**E57RAL18T111SD**
30 mm diameter end sensing	6–48 Vdc	10 mm (standard range)	Shielded (PNP)	4-pin micro DC connector	**E57LAL30T111SD**
		15 mm (standard range)	Unshielded (PNP)	4-pin micro DC connector	**E57LAL30T111ED**

Note

① For cable lengths longer than 2 meters, add the number of the desired length in meters to the end of the listed catalog number (for catalog numbers ending with a number, add an **S** and then the length). Examples for a 5-meter cable: E57-18LE12-A becomes E57-18LE12-A**5**; E57LAL12A2 becomes E57LAL12A2**S**5.

E57 Premium+ Series Short Barrel

Features

- The same quality constructions of the E57 Premium+ standard models, but much shorter
- Designed with stainless steel barrel and impact-absorbing new potting compound for robust, high-temperature, high-pressure washdown, as well as intense shock and vibration applications
- 360° output status indicator is visible from any angle and in any light condition
- Resettable short circuit protection in AC/DC and DC models
- Reverse polarity protection in three-wire DC versions
- Small size to fit in tight spaces

Product Selection

E57 Premium+ Series Short Barrel

Short Barrel Length Proximity Sensors

Description	Operating Voltage	Sensing Range (Sn)	Shielding	Connection Type ①	NO Output Catalog Number
Three-Wire Sensors					
12 mm diameter	6–48 Vdc	2 mm	Shielded (NPN)	4-pin micro DC connector	**E57SAL12T110SD**
			Shielded (PNP)	4-pin micro DC connector	**E57SAL12T111SD**
		4 mm	Unshielded (NPN)	4-pin micro DC connector	**E57SAL12T110ED**
			Unshielded (PNP)	4-pin micro DC connector	**E57SAL12T111ED**
18 mm diameter	6–48 Vdc	5 mm	Shielded (NPN)	4-pin micro DC connector	**E57SAL18T110SD**
			Shielded (PNP)	4-pin micro DC connector	**E57SAL18T111SD**
		8 mm	Unshielded (NPN)	4-pin micro DC connector	**E57SAL18T110ED**
			Unshielded (PNP)	4-pin micro DC connector	**E57SAL18T111ED**
30 mm diameter	6–48 Vdc	10 mm	Shielded (NPN)	4-pin micro DC connector	**E57SAL30T110SD**
			Shielded (PNP)	4-pin micro DC connector	**E57SAL30T111SD**
		15 mm	Unshielded (NPN)	4-pin micro DC connector	**E57SAL30T110ED**
			Unshielded (PNP)	4-pin micro DC connector	**E57SAL30T111ED**

Note

① Cable models are supplied as standard with a 2-meter cable. A 5-meter cable is available by adding **S5** to the catalog number.
Example: E57SAL12T110 becomes E57SAL12T110**S5**.

Global Proximity

Features

- Features solid performance and a basic feature set for reliable, cost-effective sensing
- Available in a variety of sizes to fit all applications: 8 mm, 12 mm, 18 mm and 30 mm diameters
- Operate on 10–30 Vdc in two-wire and three-wire (NPN or PNP) configurations
- Switching frequency of 2 kHz for DC models
- Shielded and unshielded versions available
- Terminations include 2m cable, micro-connector and nano-connector

Product Selection

Global Proximity

Global Proximity Sensors

Description	Operating Voltage	Sensing Range	Shielding	Output Type	Connection Type	Catalog Number
Three-Wire Sensors						
8 mm diameter	10–30 Vdc	3 mm (extended range)	Shielded	NO (NPN)	4-pin micro DC connector	**E57-08GE03-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-08GE03-GDB**
		6 mm (extended range)	Unshielded	NO (NPN)	4-pin micro DC connector	**E57-08GE06-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-08GE06-GDB**
12 mm diameter	10–30 Vdc	5 mm (extended range)	Shielded	NO (NPN)	4-pin micro DC connector	**E57-12GE05-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-12GE05-GDB**
		10 mm (extended range)	Unshielded	NO (NPN)	4-pin micro DC connector	**E57-12GE10-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-12GE10-GDB**
18 mm diameter	10–30 Vdc	8 mm (extended range)	Shielded	NO (NPN)	4-pin micro DC connector	**E57-18GE08-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-18GE08-GDB**
		18 mm (extended range)	Unshielded	NO (NPN)	4-pin micro DC connector	**E57-18GE18-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-18GE18-GDB**
30 mm diameter	10–30 Vdc	15 mm (extended range)	Shielded	NO (NPN)	4-pin micro DC connector	**E57-30GE15-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-30GE15-GDB**
		29 mm (extended range)	Unshielded	NO (NPN)	4-pin micro DC connector	**E57-30GE29-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-30GE29-GDB**

E52 Cube

Features

- Rugged inductive sensors in industry-standard cube package
- Long inductive proximity ranges available (up to 40 mm sensing distance)
- Four-wire DC models have complementary outputs (1NO-1NC)
- Four-wire DC models use auto-configure technology, which allows the sensor to automatically adapt for NPN or PNP without user intervention
- Robust design featuring vibration and impact-absorbing potting compound
- Ideal for extreme temperatures or high-pressure washdown environments

Product Selection

Note: Micro-connector models shown; mini-connector models also available.

E52 Cube Style

E52 Cube Inductive Proximity Sensors

Description	Voltage Type	Output Configuration	Shielding	Output Type	Sensing Range	Connector Style	Catalog Number
DC Four-Wire Sensors							
Cube package (40 x 40 x 40 mm)	10–48 Vdc	NPN/PNP autoconfigure ①	Shielded	1NO-1NC	15 mm	DC 4-pin micro	**E52Q-DL15SAD01**
			Unshielded	1NO-1NC	15 mm	DC 4-pin micro	**E52Q-DL15UAD01**
			Shielded	1NO-1NC	20 mm	DC 4-pin micro	**E52Q-DL20SAD01**
			Unshielded	1NO-1NC	20 mm	DC 4-pin micro	**E52Q-DL20UAD01**
			Unshielded	1NO-1NC	25 mm	DC 4-pin micro	**E52Q-DL25UAD01**
			Unshielded	1NO-1NC	30 mm	DC 4-pin micro	**E52Q-DL30UAD01**
			Unshielded	1NO-1NC	35 mm	DC 4-pin micro	**E52Q-DL35UAD01**
			Unshielded	1NO-1NC	40 mm	DC 4-pin micro	**E52Q-DL40UAD01**

Note

① Autoconfigure technology allows the sensor to automatically adapt to NPN or PNP without user intervention.

Product Overview

Connectivity Selection Guide

Description	Global Plus Connector Cables
	Page V9-T5-25
Overview	Includes a wide variety of single- and double-connector cables in a variety of sizes (mini, micro, nano), lengths and jacket materials to fit any application
Sensing types and ranges	Nano (M8) Micro (M12) Mini
Product features	Industry standard connector types Industrial-duty polymer jackets consisting of PVC, PUR, or irradiated PUR Stranded copper conductors and polymer jackets provide a high resistance to bending motions Right angle units for applications that have constricted space
Enclosure ratings	Type 6P, IP68
Approvals	UL, cUL, CSA

Global Plus Connector Cables

Features

- Cost effective and reliable quick-disconnect cables
- A wide variety of single- and double-connector cables available
- Custom lengths are available upon request from the factory
- A full offering of nano, micro and mini connector cables in a variety of lengths and jacket materials available
- Field wireable accessories
- Straight and right-angle connector ends

Catalog Number Selection

Global Plus Connector Cables

Global Plus

Note: This is a representative guide to the catalog numbering system. All possible combinations.may not be available for ordering.

CS D S 4 A 4 C Y 22 02 – D

Product
CS = Cordset

Electrical Version/ Connector Type
D = Euro (micro) connector
A = AC micro connector
M = AC/DC mini connector

Connector Type
S = Straight
R = Right angle

Pin Configuration

2 = 2-pin	**5** = 5-pin
3 = 3-pin	**9** = 9-pin
4 = 4-pin	

Wire Color Code
A = IEC color code
F = North American color code
D = Industrial color code

Wire Configuration

2 = 2-wire	**5** = 5-wire
3 = 3-wire	**9** = 9-wire
4 = 4-wire	

Jacket Material
C = PVC
R = PUR

Jacket Color
Y = Yellow
B = Black

Wire Gauge
24 = 24 AWG
22 = 22 AWG
16 = 16 AWG

Cable Length
01 = 1m (3.2 ft)
01.5 = 1.5m (4.9 ft)
02 = 2m (6.5 ft)
03 = 3m (9.8 ft)
04 = 4m (13 ft)
05 = 5m (16.4 ft)
10 = 10m (32.8 ft)

Connector Type
D = Double-ended
LN = LED NPN
LP = LED PNP

Product Selection

Micro Style, Single-Connector Cables

Description	Voltage Style	Number of Pins	Gauge	Length	PVC Jacket Catalog Number	Pin Configuration/Wire Colors (Face View Female Shown)
Standard Cables						
Micro style straight female	DC	4-pin 3-wire	22 AWG	6 ft (2m)	**CSDS4A3CY2202**	1-Brown 2-No wire 3-Blue 4-Black
		4-pin 4-wire	22 AWG	6 ft (2m)	**CSDS4A4CY2202**	1-Brown 2-White 3-Blue 4-Black
		5-pin 5-wire	22 AWG	6 ft (2m)	**CSDS5A5CY2202**	1-Brown 2-White 3-Blue 4-Black 5-Green/yellow
Micro style straight female	DC	4-pin 3-wire	22 AWG	6 ft (2m)	**CSDR4A3CY2202**	1-Brown 2-No wire 3-Blue 4-Black
		4-pin 4-wire	22 AWG	6 ft (2m)	**CSDR4A4CY2202**	1-Brown 2-White 3-Blue 4-Black
		5-pin 5-wire	22 AWG	6 ft (2m)	**CSDR5A5CY2202**	1-Brown 2-White 3-Blue 4-Black 5-Green/yellow

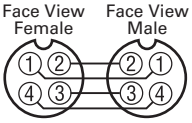
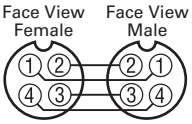
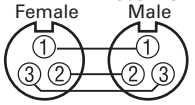
Mini Style, Single-Connector Cables

Description	Voltage Style	Number of Pins	Gauge	Length	PVC Jacket Catalog Number	Pin Configuration/Wire Colors (Face View Female Shown)
Standard Cables						
Mini style straight female	AC/DC	4-pin 4-wire	16 AWG	6 ft (2m)	**CSMS4A4CY1602**	1-Black 2-Blue 3-Brown 4-White
	AC/DC	4-pin 5-wire	16 AWG	6 ft (2m)	**CSMS5D5CY1602**	1-White 2-Red 3-Green 4-Orange 5-Black

Nano Style, Single-Connector Cables

Description	Voltage Style	Number of Pins	Gauge	Length	PVC Jacket Catalog Number	Pin Configuration/Wire Colors (Face View Female Shown)
Standard Cables						
Nano style straight female	—	3-pin 3-wire	24 AWG	6 ft (2m)	**CSNS3A3CY2402**	1-Brown 3-Blue 4-Black
Nano style right angle female	—	3-pin 3-wire	24 AWG	6 ft (2m)	**CSNR3A3CY2402**	1-Brown 3-Blue 4-Black

Micro and Mini Style, Double-Ended Connector Cables

Description	Voltage Style	Number of Pins	Gauge	Length	PVC Jacket Catalog Number	Pin Configuration/Wire Colors (Face View Female Shown)
Standard Cables						
Micro style straight female/male	DC	4-pin	22 AWG	6 ft (2m)	**CSDS4A4CY2202-D**	 Face View Female Face View Male
Micro style straight female/ right angle male	DC	4-pin	22 AWG	6 ft (2m)	**CSDR4A4CY2202-D**	 Face View Female Face View Male
Mini style straight female/male	AC/DC	3-pin	16 AWG	6 ft (2m)	**CSMS3F3CY1602-DP**	 Face View Female Face View Male

Limit Switches

Photoelectric Sensors

Inductive Sensors

Connectivity

5.1 Limit Switches

Product Overview V9-T5-2
E47 Precision V9-T5-3
Compact Prewired V9-T5-4
E49 Mini Metal V9-T5-5
E50 Heavy-Duty Plug-In V9-T5-6
LS-Titan Miniature DIN Switches V9-T5-7

5.2 Photoelectric Sensors

Product Overview V9-T5-9
Enhanced 50 Series V9-T5-10
SM Series V9-T5-12
Comet Series V9-T5-13
E58 Harsh-Duty Series V9-T5-15

5.3 Inductive Sensors

Product Overview V9-T5-17
iProx V9-T5-19
E57 Premium+ Series V9-T5-20
E57 Premium+ Series Short Barrel V9-T5-21
Global Proximity V9-T5-22
E52 Cube Style V9-T5-23

5.4 Connectivity

Product Overview V9-T5-24
Global Plus Connector Cables V9-T5-25

For our complete product offering, see Volume 8—Sensing Solutions, CA08100010E,

5

Product Overview

Limit Switches Selection Guide

Description	E47 Precision Switches	Compact Prewired Switches	E49 Mini Metal Switches	E50 Heavy-Duty Plug-in Switches	LS-Titan Miniature DIN Switches
	Page V9-T5-3	**Page V9-T5-4**	**Page V9-T5-5**	**Page V9-T5-6**	**Page V9-T5-7**
Overview	Specified when accurate repeatability, choice of operating forces and travel characteristics and tightly controlled action of cam or target in space restricted areas is of prime importance. Cost-effective and compact	Designed to be a versatile, slim device for hard-to-fit applications where sealing integrity is required; stackable ridge for ganged operations	Suitable for OEMs who require a small, cost-effective solution but cannot sacrifice durability and mechanical life as would be the case with a plastic IEC style switch	Versatile in design; high reliability; low maintenance costs with installation ease; best choice for heavy-duty limit switch applications; withstands physical and chemical abuse of harsh industrial environments	Eaton's LS-Titan limit switch line is a complete offering of safety position switches designed for worldwide application; economical insulated plastic or rugged metal enclosures and modular, plug-in operating heads and bodies make LS-Titan a flexible switching solution
Applications	Overhead, folding and elevator doors, sliding gates, automated guided vehicles and commercial instrumentation	Machine tool, food processing and packaging	Automatic vending machines, electronic assembly machines, elevators and lifts, injection molding, packaging	Punch presses, waste water treatment, machine tool, automotive, retrieval systems, industrial truck, car wash lines	Packaging, material handling, conveying, sorting and counting, positioning, and safety applications requiring positive opening contacts
Product features	Self-contained switches or with an enclosed cast housing for increased durability and conduit connection (1/2 in NPT) High current capacity for power load switching and motor handling capability Screw and solder terminations	Rugged aluminum alloy die cast housing Sealed construction with enclosure ratings of Type 4, 6 and 13 Prewired with 3M of 18 AWG, AWM 2517, 300V cable	Long life—rated for 10 million operations Pre-wired units with custom cable lengths available for high volume customers "Fingerproof" terminals protect against accidental shock	Modular operating heads, switch bodies and receptacles are interchangeable without field adjustment Order as complete assemblies or components for stocking and manufacturing flexibility 90 degree total travel, 5 degree pretravel characteristics are standard features	Modular, plug-in system (head and body components) Positive opening NC contacts for safety applications Wide variety of economical plastic and rugged metal versions available Operating heads can be rotated 90 degrees to suit specific direction of operation Unique electronic safety position switches (LSE models) provide analog (0–10 Vdc or 4–20 mA) outputs proportional to the actuator position and allow for easy configuration of a custom trip point Can be ordered as separate components (head and body) or as completely assembled switches
Contact ratings	NEMA A600, R300, AC-15, DC-13 15A/20A, 125 or 250 Vac	NEMA B300	5A at 250 Vac 5A at 30 Vdc	NEMA A600, R300 Lighted versions A150, R150 6A, 120 Vac; 10A continuous	AC-15, DC-13 6A at 240 Vac 3A at 24 Vdc 200 mA at 24 Vdc (LSE models)
Enclosure ratings	Enclosed—Type 1	Type 4, 6 and 13 IP67	IP65	Type 1, 3, 3S, 4, 4X, 6, 6P, 13 IP67	IP66, IP67
Construction	Basic—phenolic Enclosed—aluminum die cast	Aluminum alloy die cast	Zinc alloy	Zinc die cast	TBD
Approvals	UL® recognized CSA® certified	cULus	UL recognized	UL listed CSA certified IEC 947-5-1 TUV	Safety function by positive opening contacts per IEC/EN 60947-5-1 up to Category 4 per EN 954-1 TÜV-Rheinland certified for functional-safety (LSE models) CSA certified ULT listed CE CCC

For our complete product offering, see Volume 8—Sensing Solutions, CA08100010E,

E47 Precision

Features

- The cost-effective solution for highly accurate switching applications
- Compact housings are ideal for use where space is restricted
- Precision, snap-action operators provide accurate repeatability of electrical and mechanical operating characteristics
- High current capacity (up to 20A) allows power load switching and motor handling capability
- Enclosed boot versions (shown on the left, in gray) shield actuators from debris
- Solder and spade terminals available
- 15A models shown, 20A models also available

5

Product Selection

E47 Precision

Basic Switches

Description	Type	Catalog Number 15A	Specifications ①
Straight lever	Screw terminal	**E47BMS22**	OF max.—2.47 oz (70g)
			RF min.—0.49 oz (14g)
			PT max.—0.394 in (10 mm)
			OT max.—0.220 in (5.6 mm)
			MD max.—0.051 in (1.3 mm)
			FP max.—1.11 in (28.2 mm)
			OP—0.748 in (19 mm)
Standard lever	Screw terminal	**E47BMS20**	OF max.—3.53 oz (100g)
			RF min.—0.99 oz (28g)
			PT max.—0.197 in (5.0 mm)
			OT max.—0.079 in (2.0 mm)
			MD max.—0.039 in (1.0 mm)
			FP max.—0.976 in (24.8 mm)
			OP—0.748 in (19 mm)
Cross roller plunger	Screw terminal	**E47BMS11**	OF max.—12.3 oz (350g)
			RF max.—4.02 oz (114g)
			PT max.—0.016 in (0.4 mm)
			OT max.—0.14 in (3.58 mm)
			MD max.—0.002 in (0.05 mm)
			OP—1.315 in (33.4 mm)
Extended roller lever	Screw terminal	**E47BMS42**	OF max.—5.64 oz (160g)
			RF min.—0.78 oz (22g)
			PT max.—0.28 in (7.1 mm)
			OT max.—0.16 in (4 mm)
			MD max.—0.04 in (1.02 mm)
			FP max.—1.437 in (36.5 mm)
			OP—1.189 in (30.2 mm)
Roller lever	Screw terminal	**E47BMS30**	OF max.—5.64 oz (160g)
			RF min.—1.48 oz (42g)
			PT max.—0.106 in (2.7 mm)
			OT max.—0.094 in (2.4 mm)
			MD max.—0.02 in (0.5 mm)
			FP Mmax.—1.28 in (32.5 mm)
			OP—1.189 in (30.2 mm)

Enclosed Switches

Description	Catalog Number	Specifications ①
Roller lever	**E47BLS32**	OF max.—20.1 oz (570g)
		RF min.—6.0 oz (1700g)
		PT max.—0.157 in (4.0 mm)
		OT max.—0.236 in (6.0 mm)
		MD max.—0.016 in (0.4 mm)
Booted roller lever	**E47BLS33**	OF max.—22.57 oz (640g)
		RF min.—8.11 oz (230g)
		PT max.—0.197 in (5.0 mm)
		OT max.—0.236 in (6.0 mm)
		MD max.—0.016 in (0.4 mm)
Booted roller plunger	**E47BLS08**	OF max.—17.64 oz (500g)
	E47BLS12 (cross roller unit)	RF min.—3.53 oz (100g)
		PT max.—0.039 in (1.0 mm)
		OT max.—0.138 in (3.5 mm)
		MD max.—0.005 in (0.12 mm)
		OP—1.957 in (49.7 mm)
Booted wobble	**E47BLS14**	OF max.—2.11 oz (60g)
		RF min.—0.88 oz (25g)
		PT max.—0.520 in (13.2 mm)
		OT max.—0.315 in (8.0 mm)
		MD max.—0.039 in (1.0 mm)

Note

① OF = Operating Force; RF = Return Force; PT = Pre-Travel; OT = Overtravel; MD = Movement Differential; FP = Free Position; OP = Operating Position.

Compact Prewired

Features

- Rugged and dependable compact limit switch
- Rugged aluminum alloy die cast housing
- Sealed construction with enclosure ratings of Type 4, 6 and 13
- Prewired with 3m of 18 AWG, AWM 2517, 300V cable
- Stackable ridge for ganged operation

Product Selection

Compact Prewired

Compact Prewired

Actuator Type	Operating Force (Maximum)	Reset Force (Minimum)	Overtravel (Minimum)	Pre-Travel	Movement Differential (Maximum)	Operating Position	Catalog Number
Pin plunger	42.3 oz (1.2 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	0.62 ± 0.04 in (15.7 ± 1 mm)	**E47BCC05**
Sealed plunger	63.5 oz (1.8 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	0.99 ± 0.04 in (24.9 ± 1 mm)	**E47BCC06**
Roller plunger	42.3 oz (1.2 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	1.12 ± 0.04 in (28.5 ± 1 mm)	**E47BCC07**
Sealed roller plunger	63.5 oz (1.8 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	1.35 ± 0.04 in (34.3 ± 1 mm)	**E47BCC08**
Cross roller plunger	42.3 oz (1.2 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	1.12 ± 0.04 in (28.5 ± 1 mm)	**E47BCC11**
Sealed cross roller plunger	63.5 oz (1.8 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	1.35 ± 0.04 in (34.3 ± 1 mm)	**E47BCC12**
Bevel plunger	42.3 oz (1.2 kg)	15.9 oz (450g)	0.118 in (3 mm)	0.07 in (1.8 mm)	0.008 in (0.2 mm)	1.12 ± 0.04 in (28.5 ± 1 mm)	**E47BCC13**
Roller lever	20.5 oz (580g)	5.3 oz (150g)	40°	25° max.	3°	—	**E47BCC15**
Wobble stick	5.3 oz (150g)	—	—	15° max.	—	—	**E47BCC20**

E49 Mini Metal

Features

- Long life—rated for 10 million operations
- "Fingerproof" terminals protect against accidental shock
- Double-spring mechanism for contact reliability
- Captive screws on enclosure cover make wiring hassle-free
- SPDT double break

Product Selection

E49 Mini Metal

E49 Mini Metal

Operating Head Type	Specifications Travel to Operate Contacts	Travel to Reset Contacts	Total Travel	Force to Operate Contacts	Minimum Return Force	Catalog Number—Assembled Units (Switch Body and Head) 1NO-1NC Contacts
Side rotary lever	20°	12°	70°	750g	100g	**E49G31AP3**
Adjustable side rotary lever	20°	12°	70°	750g	100g	**E49G31UP3**
Top pushbutton	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900g	150g	**E49G31BP3**
Top push roller	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900g	150g	**E49G31CP3**
Top push roller (90 degree roller)	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900g	150g	**E49G31C1P3**
Adjustable rod lever	20°	12°	70°	750g	100g	**E49G31DP3**
Wobble stick (nylon coil)	1.18 in (30 mm)	—	—	150g	—	**E49G31NP3**
Wobble stick (metal coil)	1.18 in (30 mm)	—	—	150g	—	**E49G31VP3**
Wobble stick (metal rod)	1.18 in (30 mm)	—	—	150g	—	**E49G31MP3**
Wobble stick (whisker)	1.18 in (30 mm)	—	—	150g	—	**E49G31XM3**

E50 Heavy-Duty Plug-In

Features

- Modular, plug-in components (head, body and receptacle) provide application flexibility, reduced inventory and less downtime
- Manufactured to take the physical and environmental abuse (including cutting fluids and chemicals) of harsh industrial environments
- Chemical-resistant Viton® gaskets, seals and boots are standard, and so are captive, posi-drive screws
- 600V rating, ridge-topped contacts and wiping action assure continuity even to logic level circuits
- Rotary heads are field convertible clockwise, counterclockwise or both, without special tools

Product Selection

E50 Heavy-Duty Plug-In

Assembled Switches—Standard

Note: Order assembled (as shown in this product guide) or as head, body, receptacle and lever components.

Operating Head Type		Catalog Number
Side rotary (requires an operating lever)	Standard spring return—E50DR1 ①	**E50AR1**
	Low force spring return—E50DL1 ①	**E50AL1**
	Maintained two-position—E50DM1	**E50AM1**
Side pushbutton, spring return—E50DS1		**E50AS1**
Side pushbutton, adjustable spring return—E50DS2		**E50AS2**
Side push roller, spring return—E50DS3 ②		**E50AS3**
Side pushbutton, maintained—E50DH1		**E50AH1**
Top pushbutton, spring return—E50DT1		**E50AT1**
Top pushbutton, adjustable spring return—E50DT2		**E50AT2**
Top push roller, spring return—E50DT3 ②		**E50AT3**
Wobble head, spring return (requires a wobble operator)	Standard duty—E50DW1	**E50AW1**
	Heavy-duty high strength steel—E50DW2	**E50AW2**

Notes

① CW (clockwise) and CCW (counterclockwise) operation, easily convertible to CW only or CCW only operation.
② Roller can be converted in the field between horizontal and vertical.

LS-Titan Miniature DIN Switches

Features

- Modular, plug-in system (head and body components)
- Safety rated, with positive opening contacts and TUV certification on electronic (LSE) models
- Wide variety of economical plastic and rugged metal versions available
- Operating heads can be rotated 90 degrees to suit specific direction of operation
- Unique electronic safety position switches (LSE models) provide analog (0–10 Vdc or 4–20 mA) outputs proportional to the actuator position and allow for easy configuration of a custom trip point
- Can be ordered as separate components (head and body) or as completely assembled switches

Product Selection

LS-Titan Miniature DIN Switches

Plastic Safety Switches

	Switch Body Catalog Number	LS-S02	LS-S20A	LS-S11S
	Output Function	2NC with positive opening contacts	2NC with slow make/break	1NO and 1NC with positive opening contact
	Terminal Connection	Screw terminal ①	Screw terminal ①	Screw terminal ①
	Contact Sequence			
Description	Operating Head Type Catalog Number—Heads Only	Catalog Number—Assembled Switches		
Top push roller plunger	LS-XP	LS-S02-P	LS-S20A-P	LS-S11S-P
Short roller lever	LS-XLS	LS-S02-LS	LS-S20A-LS	LS-S11S-LS
Angled roller	LS-XLA	LS-S02-LA	LS-S20A-LA	LS-S11S-LA
Rotary lever	LS-XRL	LS-S02-RL	LS-S20A-RL	LS-S11S-RL
Adjustable roller lever (with 18 mm roller)	LS-XRLA	LS-S02-RLA	LS-S20A-RLA	LS-S11S-RLA
Adjustable roller lever (with 40 mm roller)	LS-XRLA40	LS-S02-RLA40	LS-S20A-RLA40	LS-S11S-RLA40
Spring rod (wobble) ②	LS-XS	LS-S02-S	LS-S20A-S	LS-S11S-S

Notes

① Cage clamp versions available. Contact Application Engineering.

② Not to be used as a safety position switch. Use only in conjunction with snap-action contact.

Plastic Electronic Safety Position Switches

	Switch Body Catalog Number	**LSE-AI**	**LSE-AU**
	Output Function	Analog 4–20 mA	Analog 0–10V
		Additional diagnostic output that registers a 0V signal in the event of a fault. Self-test function continuously tests both outputs for overloads, short circuits to 0V and short circuits to +Ue.	
	Safety Functions and Approvals	Certified by TÜV to EN 954-1, Category 3 or 4. Suitable for protection of people or processes.	
	Contact Sequence	Analog 4–20 mA	Analog 0–10V

Description	**Operating Head Type Catalog Number—Heads Only**	**Catalog Number—Assembled Switches**	
Top push roller plunger	**LS-XP**	**LSE-AI-P**	**LSE-AU-P**
Short roller lever	**LS-XLS**	**LSE-AI-LS**	**LSE-AU-LS**
Angled roller	**LS-XLA**	**LSE-AI-LA**	**LSE-AU-LA**
Rotary lever	**LS-XRL**	**LSE-AI-RL**	**LSE-AU-RL**
Adjustable roller lever (with 18 mm Roller)	**LS-XRLA**	**LSE-AI-RLA**	**LSE-AU-RLA**
Adjustable roller lever (with 40 mm roller)	**LS-XRLA40**	**LSE-AI-RLA40**	**LSE-AU-RLA40**
Spring rod (wobble) ①	**LS-XS**	**LSE-AI-S**	**LSE-AU-S**

Note

① Not to be used as a safety position switch. Use only in conjunction with snap-action contact.

Product Overview

Photoelectric Sensors Selection Guide

Description	Enhanced 50 Series	SM Series	Comet Series	E58 Harsh-Duty Series
	Page V9-T5-10	**Page V9-T5-12**	**Page V9-T5-13**	**Page V9-T5-15**
Overview	Provides outstanding optical performance and application flexibility in a self-contained, industry-standard compact rectangular	Provides high performance and ease of use in an economical, miniature package	This high-performance, 18 mm flat tubular sensor family features a wide variety of models in all sensing modes	Designed to withstand the harshest physical, chemical and optical environments; available in 18 and 30 mm tubular enclosures
Sensing types and ranges	Thru-beam: 200 and 500 ft Reflex: 30 ft Polarized reflex: 16 ft Diffuse reflective: 5 and 10 ft Clear object detector: 45 in Infrared fiber optic: range varies with fiber Visible fiber optic: range varies with fiber	Thru-beam: 50 ft Polarized reflex: 10 ft Diffuse reflective: 8 in Perfect Prox® background rejection: 2 and 4 in	Thru-beam: 20 and 80 ft Reflex: 25 ft Polarized reflex: 15 and 10 ft Diffuse reflective: 8 and 24 in Focused diffuse reflective: 1.6 in Wide single diffuse: 6 in Fine spot Perfect Prox: 2 in Perfect Prox background rejection: 2, 4, 6 and 9 in Glass and plastic fiber optic: range varies with fiber	Thru-beam: 800 ft Reflex: 59 ft Polarized reflex: 34 ft Perfect Prox background rejection: 2, 4, 6 and 11 in
Product features	High optical performance, including 10-ft diffuse and 500-ft thru-beam versions Output options include a high-current 10A SPDT relay Built-in light/dark selection on all models	Highly visible LED indicators for power, output and alignment (TargetLock) TargetLock simplifies setup and ensures that the sensor operates at the highest level of reliability possible Perfect Prox models sense different colored targets at the same range and ignore objects in the background	The 18 mm tubular body has flat sides for added mounting flexibility Available in universal voltage AC/DC versions as well as DC only models Short circuit protection on all models	Designed to be the most rugged photoelectric sensor available Perfect Prox background rejection technology for unmatched optical performance Output status indictor is the brightest available and is visible from any angle and in any lighting condition
Operating voltage	24–240 Vac and 12–240 Vdc 10–40 Vdc	18–264 Vac and 18–50 Vdc 10–30 Vdc	90–132 Vac and 18–50 Vdc 20–264 Vac and 15–30 Vdc 10–30 Vdc	Two-wire models: 90–132 Vac and 18–50 Vac Three- and four-wire models: 20–132 Vac and 15–30 Vdc 10–30 Vdc
Output function	Selectable light or dark operate	Light and dark operate models available	Selectable light or dark operate	Light and dark operate models available
Maximum load current	DC units: 250 mA AC/DC units: 300 mA to 10A	AC/DC units—200 mA DC units—100 mA (NPN or PNP)	AC/DC units—300 mA DC units—250 mA (NPN), 100 mA (PNP)	AC/DC units—300 mA (100 mA for 18 mm diameter units) DC units—250 mA (NPN), 100 mA (PNP)
Enclosure ratings	IP67	Type 1, 3, 4, 4X, 6, 6P, 12 and 13 IP68	Type 1, 2, 3, 4, 4X, 6, 12 and 13	Type 1, 2, 3, 3R, 3S, 4, 4X, 6, 6P, 12, 12K and 13 IP69K
Response time range	DC operation: 2 ms AC operation: 15 ms	DC operation: 1 ms AC operation: 16 ms	DC operation: 1 ms AC operation: 10 ms 2W AC/DC operation: 32 ms	2 ms to 35 ms
Approvals	CSA approved Certified to UL standard, UL 508	UL listed cUL listed	UL recognized cUL recognized	UL listed cUL listed

Enhanced 50 Series

Features

- High-optical performance models, including a 500 ft (152m) thru-beam and a 10 ft (3m) diffuse reflective unit
- Output options include a 3A SPDT relay
- All units offer light/dark selection
- Logic options include ON-delay, OFF-delay and one-shot delay
- Fully potted construction for use in areas subject to washdown, high shock and/or vibration
- Choice of pre-wired power cable, built-in mini-connector, built-in micro-connector and pigtail micro-connector versions; standard pre-wired cable length is 6 ft (1.8m)

Product Selection

Enhanced 50 Series

Enhanced 50 Series Sensors

Description	Voltage Range	Sensing Range	Optimum Range	Sensing Beam	Thru-Beam Component	Output Type	Time Delay	Connection Type	Catalog Number
Thru-beam standard range	10–40 Vdc	200 ft (61m)	0.1–100 ft (0.03–31m)	Infrared	Source	N/A	N/A	4-pin Euro (micro) connector	**1150E-6547**
					Detector	NPN/PNP 250 mA	No		**1250E-6547**
	12–240 Vdc 24–240 Vac	200 ft (61m)	0.1–100 ft (0.03–31m)	Infrared	Source	N/A	N/A	4-pin micro connector	**1150E-6543**
					Detector	Isolated output solid-state relay 300 mA at 240 Vac/Vdc	No		**1250E-6543**
					Source	N/A	N/A	4-pin mini-connector	**1150E-6504**
					Detector	SPDT EM relay 3A at 120 Vac	No	5-pin mini-connector	**1250E-6504**
Thru-beam extended range	10–40 Vdc	500 ft (152m)	0.1–250 ft (0.03–77m)	Infrared	Source	N/A	N/A	4-pin Euro (micro) connector	**1151E-6547**
					Detector	NPN/PNP 250 mA	No		**1251E-6547**
	12–240 Vdc 24–240 Vac	500 ft (152m)	0.1–250 ft (0.03–77m)	Infrared	Source	N/A	N/A	4-pin micro connector	**1151E-6543**
					Detector	Isolated output solid-state relay 300 mA at 240 Vac/Vdc	No		**1251E-6543**
						N/A	N/A	4-pin mini-connector	**1151E-6504**
						SPDT EM relay 3A at 120 Vac	No	5-pin mini-connector	**1251E-6504**

Reflex, Diffuse, and Clear Object Sensors

Description	Voltage Range	Sensing Range ①	Optimum Range ①	Sensing Beam	Output Type	Time Delay	Connection Type	Catalog Number
Standard reflex	10–40 Vdc	30 ft (9m)	0.5–15 ft (0.2–4.6m)	Visible red	NPN/PNP 250 mA	No	4-pin Euro (micro) connector	**1450E-6547**
	12–240 Vdc 24–240 Vac	30 ft (9m)	0.5 5 ft (0.2–4.6m)	Visible red	isolated output solid-state relay 300 mA at 240 Vac/Vdc	No	4-pin micro connector	**1450E-6543**
					SPDT EM relay 3A at 120 Vac	No	5-pin mini-connector	**1450E-6504**
Polarized reflex ②	10–40 Vdc	16 ft (4.9m)	0.5–8 ft (0.2–2.5m)	Visible red	NPN/PNP 250 mA	No	4-pin Euro (micro) connector	**1451E-6547**
						Yes		**1451E-8547**
	12–240 Vdc 24–240 Vac	16 ft (4.9m)	0.5–8 ft (0.2–2.5m)	Visible red	Isolated output solid-state relay 300 mA at 240 Vac/Vdc	No	4-pin micro connector	**1451E-6543**
					SPDT EM relay 3A at 120 Vac	No	5-pin mini-connector	**1451E-6504**
Diffuse reflective extended range	10–40 Vdc	10 ft (3m) ③	1–60 in (25–1520 mm) ③	Infrared	NPN/PNP 250 mA	No	4-pin Euro (micro) connector	**1351E-6547**
	12–240 Vdc 24–240 Vac	10 ft (3m) ③	1–60 in (25–1520 mm) ③	Infrared	Isolated output solid-state relay 300 mA at 240 Vac/Vdc	No	4-pin micro connector	**1351E-6543**
					SPDT EM relay 3A at 120 Vac	No	5-pin mini-connector	**1351E-6504**
Clear object detector	10–40 Vdc	45 in (1.2m)	1–24 in (25–610 mm)	Visible red	NPN/PNP 250 mA	No	4-pin Euro (micro) connector	**1452E-6547**
	12–240 Vdc 24–240 Vac	45 in (1.2m)	1–24 in (25–610 mm)	Visible red	Isolated output solid-state relay 300 mA at 240 Vac/Vdc	No	4-pin micro connector	**1452E-6543**
					SPDT EM relay 3A at 120 Vac	No	5-pin mini-connector	**1452E-6504**

Notes

① Ranges based on 3 in retroreflector for reflex sensors.
② Polarized sensors may not operate with reflective tape. Test tape selection before installation.
③ Ranges based on 90% reflectance white card for diffuse reflective sensors.

SM Series

Features

- TargetLock technology makes SM Series™ the easiest photoelectric sensor to set up and use
- Highly visible LED indicators for power, output and TargetLock
- TargetLock simplifies setup and ensures the sensor operates at the highest level of reliability possible
- Perfect Prox models sense different colored targets at the same range and ignore objects in the background
- Visible beam on all models lets you see exactly where the sensor is pointing
- Compact size to fit in tight spaces
- Multiple mounting options, including industry-standard 18 mm threads
- Reverse polarity, overload and short circuit protection
- Full family includes thru-beam, polarized reflex, diffuse reflective and Perfect Prox background rejection

Product Selection

SM Series

SM Series Sensors

Description	Operating Voltage	Sensing Range ①	Optimum Range ②	Cutoff Range	Field of View	Thru-Beam Component	Connection Type	Light Operate Catalog Number	Dark Operate Catalog Number
Three-Wire and Four-Wire Sensors									
Thru-beam	10–30 Vdc	50 ft (1m)	0.1–25 ft (30 mm–7.5m)	—	10 in (254 mm) diameter at 10 ft (3m)	Source	4-pin micro DC connector	**E65-SMTS15-HAD**	—
						Detector	4-pin micro DC connector	—	**E65-SMTD15-HDD**
Polarized reflex	18–264 Vac 50/60 Hz or 18–50 Vdc	10 ft (3m)	0.1–5 ft (30 mm–1.5m)	—	1 in (25 mm) diameter at 50 in (1.3m)	—	4-pin micro AC connector	—	**E65-SMPR3-GDD**
	10–30 Vdc	10 ft (3m)	0.1–5 ft (30 mm–1.5m)	—	1 in (25 mm) diameter at 50 in (1.3m)	—	4-pin micro AC connector	—	**E65-SMPR3-HDD**
Diffuse reflective	18–264 Vac 50/60 Hz or 18–50 Vdc	8 in (200 mm)	0.25–5 in (6–127 mm)	—	2 in (50 mm) diameter at 5 in (127 mm)	—	4-pin micro AC connector	**E65-SMSD200-GLD**	—
	10–30 Vdc	8 in (200 mm)	0.25–5 in (6–127 mm)	—	2 in (50 mm) diameter at 5 in (127 mm)	—	4-pin micro DC connector	**E65-SMSD200-HLD**	—
Perfect Prox	18–264 Vac 50/60 Hz or 18–50 Vdc	2 in (50 mm)	0.4–1.8 in (10–45 mm)	2.3 in (58 mm) and beyond	0.25 in (6 mm) diameter at 2.25 in (57 mm)	—	4-pin micro AC connector	**E65-SMPP050-GLD**	—
	10–30 Vdc	2 in (50 mm)	0.4–1.8 in (10–45 mm)	2.3 in (58 mm) and beyond	0.25 in (6 mm) diameter at 2.25 in (57 mm)	—	4-pin micro DC connector	**E65-SMPP050-HLD**	—

Notes

① Sensor will detect a 90% reflectance white card at this range.
② Sensor will ignore a 90% reflectance white card at this range.

Comet Series

Features

- Industry-standard 18 mm diameter threaded body has flat sides allowing it to be mounted like a tubular sensor or against any flat surface
- Right-angle viewing models mount in a depth of only 6/10th of an inch
- Perfect Prox technology provides exceptional background rejection and application problem-solving
- Visible sensing beams let you see where the beam is aimed for quick setup and alignment
- Solid polyurethane housing completely encapsulates internal circuits for high resistance to shock and vibration

Product Selection

Comet Series

Reflex Sensors

Description	Operating Voltage	Sensing Range ①	Optimum Range ①	Field of View	Sensing Beam	Connection Type	Catalog Number
Three-Wire and Four-Wire Sensors							
Standard reflex forward viewing	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	25 ft (7.6m)	0.1–15 ft (0.03–4.5m)	1 in (25 mm) diameter at 50 in (1.3m)	Visible red beam	4-pin micro AC connector	**14102AQD03**
	10–30 Vdc (NPN and PNP)	25 ft (7.6m)	0.1–15 ft (0.03–4.5m)	1 in (25 mm) diameter at 50 in (1.3m)	Visible red beam	4-pin micro DC connector	**14102AQD07**
Polarized reflex forward viewing ②	20–64 Vac 50/60 Hz or 15–30 Vdc (NPN)	15 ft (4.5m)	0.1–15 ft (0.03–4.5m)	1 in (25 mm) diameter at 50 in (1.3m)	Visible red beam	4-pin micro AC connector	**14101AQD03**
	10–30 Vdc (NPN and PNP)	15 ft (4.5m)	0.1–10 ft (0.03–4.5m)	1 in (25 mm) diameter at 50 in (1.3m)	Visible red beam	4-pin micro DC connector	**14101AQD07**
Polarized reflex right-angle viewing ②③	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	10 ft (3m)	0.1–15 ft (0.03–4.5m)	1 in (25 mm) diameter at 50 in (1.3m)	Visible red beam	4-pin micro AC connector	**14101RQD03**
	15–30 Vdc	10 ft (3m)	0.1–15 ft (0.03–1.5m)	1 in (25 mm) diameter at 50 in (1.3m)	Visible red beam	4-pin micro DC connector	**14101RQD07**

Diffuse Reflective and Focused Diffuse Reflective Sensors

Description	Operating Voltage	Sensing Range ④	Optimum Range	Field of View	Sensing Beam	Connection Type	Catalog Number
Three-Wire and Four-Wire Sensors							
Diffuse reflective forward viewing	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	24 in (610 mm)	0.1–15 in (3–380 mm)	5 in (127 mm) diameter at 15 in (380 mm)	Infrared beam	4-pin micro AC connector	**13100AQD03**
	10–30 Vdc (NPN and PNP)						**13100AQD07**
Diffuse reflective right-angle viewing	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	24 in (610 mm)	0.1–15 in (3–380 mm)	5 in (127 mm) diameter at 15 in (380 mm)	Infrared beam	4-pin micro AC connector	**13100RQD03**
	10–30 Vdc (NPN and PNP)						**13100RQD07**

Notes

① Ranges based on a 3 in diameter retroreflector.
② Polarized reflex sensors may not operate with retroreflective tape. Test selected tape prior to installation.
③ Right-angle viewing polarized reflex models are rated Type 1 only.
④ Sensor will detect a 90% reflective white card at this range.

Perfect Prox Background Rejection Sensor

Description	Operating Voltage	Nominal Range ①	Optimum Range	Cutoff Range ②	Field of View	Sensing Beam Type	Connection Type	Catalog Number
Three-Wire and Four-Wire Sensors								
Perfect Prox forward viewing	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	2 in (50 mm) sharp cutoff	0.4–1.8 in (10–45 mm)	2.25 in 57 mm) and beyond	0.25 in (6 mm) diameter at 2.25 in (64 mm)	Visible red	4-pin micro AC connector	**13104AQD03**
		4 in (100 mm) sharp cutoff	0.5–3 in (13–76 mm)	5 in (127 mm) and beyond	0.35 in (9 mm) diameter at 5 in (127 mm)	Visible red		**13101AQD03**
	10–30 Vdc (NPN and PNP)	2 in (50 mm) sharp cutoff	0.4–1.8 in (10–45 mm)	2.25 in (57 mm) and beyond	0.25 in (6 mm) diameter at 2.25 in (64 mm)	Visible red	4-pin micro DC connector	**13104AQD07**
		4 in (100 mm) sharp cutoff	0.5–3 in (13–76 mm)	5 in (127 mm) and beyond	0.35 in (9 mm) diameter at 5 in (127 mm)	Visible red		**13101AQD07**
Perfect Prox right-angle viewing	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	2 in (50 mm) sharp cutoff	0.4–1.8 in (10–45 mm)	2.25 in (57 mm) and beyond	0.25 in (6 mm) diameter at 2.25 in (64 mm)	Visible red	4-pin micro AC connector	**13104RQD03**
		4 in (100 mm) sharp cutoff	0.5–3 in (13–76 mm)	5 in (127 mm) and beyond	0.35 in (9 mm) diameter at 5 in (127 mm)	Visible red		**13104RS5003**
	10–30 Vdc (NPN and PNP)	2 in (50 mm) sharp cutoff	0.4–1.8 in (10–45 mm)	2.25 in (57 mm) and beyond	0.25 in (6 mm) diameter at 2.25 in (64 mm)	Visible red	4-pin micro DC connector	**13104RQD07**
		4 in (100 mm) sharp cutoff	0.5–3 in (13–76 mm)	5 in (127 mm) and beyond	0.35 in (9 mm) diameter at 5 in (127 mm)	Visible red		**13104RS5007**
Fine spot Perfect Prox forward viewing	20–264 Vac 50/60 Hz or 15–30 Vdc (NPN)	2 in (50 mm) sharp cutoff	0.9–1.8 in (23–45 mm)	2.25 in (57 mm) and beyond	0.05 in (1.3 mm) diameter at 1.7 in (43 mm)	Visible red	4-pin micro AC connector	**13105AQD03**
	10–30 Vdc (NPN and PNP)	2 in (50 mm) sharp cutoff	0.9–1.8 in (23–45 mm)	2.25 in (57 mm) and beyond	0.05 in (1.3 mm) diameter at 1.7 in (43 mm)	Visible red	4-pin micro DC connector	**13105AQD07**

Notes

① Sensor will detect a 90% reflectance card at this range.
② Sensor will ignore a 90% reflectance card at this range.

E58 Harsh-Duty Series

Features

- Sensors are available in 18 mm and 30 mm diameters
- Refined optics provide long range detection through high levels of lens or airborne contamination
- Perfect Prox technology provides exceptional background rejection and extremely high excess gain
- Resistant to the wide range of chemicals used in the automotive, food processing and forest products industries
- Suitable for high-temperature, high-pressure washdown (1200 psi)
- Visible sensing beam on all models lets you see where the beam is aimed for quick setup and alignment
- Output status indicator is the brightest available and is visible from any angle and in any lighting condition

Product Selection

E58 Harsh-Duty Series

Thru-Beam and Reflex Sensors

Description	Operating Voltage	Sensing Range	Optimum Range	Field of View	Thru-Beam Component	Connection Type	Catalog Number
Three-Wire and Four-Wire Sensors							
30 mm diameter thru-beam	20–132 Vac 50/60 Hz or 15–30 Vdc	800 ft (250m)	0.1–300 ft (0.03–90m)	33 in (830 mm) diameter at 25 ft (7.6m)	Source	4-pin micro AC connector	**E58-30TS250-GAP**
					Detector	4-pin micro AC connector	**E58-30TD250-GDP**
	10–30 Vdc	800 ft (250m)	0.1–300 ft (0.03–90m)	33 in (830 mm) diameter at 25 ft (7.6m)	Detector	4-pin micro DC connector	**E58-30TD250-HDP**
30 mm diameter reflex	20–132 Vac 50/60 Hz or 15–30 Vdc	59 ft (18m)	1–40 ft (0.03–12m)	6 in (150 mm) diameter at 20 ft (6m)	—	4-pin micro AC connector	**E58-30RS18-GDP**
	10–30 Vdc	59 ft (18m)	1–40 ft (0.03–12m)	6 in (150 mm) diameter at 20 ft (6m)	—	4-pin micro DC connector	**E58-30RS18-HDP**
30 mm diameter polarized reflex	20–132 Vac 50/60 Hz or 15–30 Vdc	34 ft (10m)	1–20 ft (0.03–6m)	6 in (150 mm) diameter at 20 ft (6m)	—	4-pin micro AC connector	**E58-30RP10-GDP**
	10–30 Vdc	34 ft (10m)	1–20 ft (0.03–6m)	6 in (150 mm) diameter at 20 ft (6m)	—	4-pin micro DC connector	**E58-30RP10-HDP**

Perfect Prox Background Rejection Sensors

Description	Operating Voltage	Nominal Range ①	Optimum Range ②	Cutoff Range	Field of View	Connection Type	Catalog Number
Two-Wire Sensors							
18 mm diameter Perfect Prox	90–132 Vac 50/60 Hz or 18–50 Vdc	4 in (100 mm)	0.5–3 in (13–76 mm)	5 in (127 mm) and beyond	0.38 in (10 mm) diameter at 4 in (100 mm)	2m cable	**E58-18DP100-EL**
Three-Wire and Four-Wire Sensors							
18 mm diameter Perfect Prox	10–30 Vdc	4 in (100 mm)	0.5–3 inches (13–76 mm)	5 in (127 mm) and beyond	0.38 in (10 mm) diameter at 4 in (100 mm)	4-pin micro DC connector	**E58-18DP100-HLP**
30 mm diameter Perfect Prox	20–132 Vac 50/60 Hz or 15–30 Vdc	11 in (280 mm)	1–9 in (26–228 mm)	12.5 in (318 mm)	1.0 in (26 mm) diameter at 11 in (280 mm)	4-pin micro AC connector	**E58-30DPS280-GLP**
	10–30 Vdc	11 in (280 mm)	1–9 in (26–228 mm)	12.5 in (318 mm)	1.0 in (26 mm) diameter at 11 in (280 mm)	4-pin micro DC connector	**E58-30DPS280-HLP**

Notes

① Sensor will detect a 90% reflectance card at this range.

② Sensor will ignore a 90% reflectance card at this range

Product Overview

Inductive Sensors Selection Guide

Description	iProx	E57 Premium+ Series	E57 Premium+ Series Short Barrel
	Page V9-T5-19	**Page V9-T5-20**	**Page V9-T5-21**
Overview	Standard features include extended sensing ranges, high noise-immunity, extreme durability and includes autoconfigure technology. Optional advanced features include output delay, speed detection and cloning with the ProxView Software	High-performance inductive sensors include stainless steel models, extended ranges and right-angle sensing	Full featured sensors with shorter overall length than standard tubular sensors
Applications	Automotive, machine tool, material handling where high sensing performance and inventory consolidation is a priority	A wide variety of applications, including those where customers require AC/DC universal inventory sensors	Automation, robotics, transfer lines, conveyors, material handling
Product features	Auto-configure technology automatically detects a sinking (NPN) or sourcing (PNP) connection and switches the sensor accordingly, without any user intervention Optional computer programming cable and windows-based ProxView configuration software makes it easy to customize sensors Clone the sensor to match the characteristics of more than 4,800 competitive models, or configure it to match your specific application needs	12, 18 and 30 mm diameters Two-wire and three-wire AC and DC sensors AC/DC models operate on 20–250 Vac or Vdc	Available in 12, 18 and 30 mm diameters Two-wire sensors offer 20–250 Vac or Vdc operation; AC only 20–135 Vac Three-wire models operate on 6–30 Vdc
Output ratings	AC—250–500 mA DC—300–500 mA	AC mode—250–500 mA DC mode—200 mA	AC—200–500 mA continuous DC—500 mA continuous
Enclosure ratings	Type 4, 4X, 6, 6P, 12, 13 IEC—IP67	Type 4, 4X, 6, 6P, 12, 13 IEC—IP67	Type 4, 4X, 6, 6P, 12, 13 IEC—IP67
Construction	Stainless steel	Stainless steel	Stainless steel Semi-shielded models: nickel-plated brass
Approvals	cUL listed	cUL listed	UL listed CSA certified

Product Selection Guide, continued

Description	Global Proximity	E52 Cube Style
	Page V9-T5-22	**Page V9-T5-23**
Overview	This full-line, tubular proximity sensor family provides a cost-effective solution for high volume OEM use	A family of industry-standard, cube-sized inductive sensors with long range capabilities
Applications	Machine tool detection, press applications, cam detection, material handling, valve and shaft position, automotive assembly	Automotive, manufacturing, machinery OEMs
Product features	8, 12, 18 and 30 mm diameters Two-wire sensors available in AC or DC versions Three-wire sensors available in DC versions	Long inductive proximity ranges available (up to 40 mm sensing distance) Four-wire DC models have complementary outputs (1NO-1NC) Four-wire DC models use auto-configure technology, which allows the sensor to automatically adapt for NPN or PNP without user intervention
Output ratings	AC mode—200 mA DC mode—100 mA	AC—400 mA maximum DC—300 mA maximum
Enclosure ratings	IP67	Type 4, 4X, 6, 6P, 12, 13 IEC—IP67
Construction	Nickel-plated brass 8 mm nano stainless steel	Zinc alloy PPS, PL
Approvals	cCSAus	cULus

iProx

Features

- Available in AC two-wire, DC three-wire and unique DC four-wire with complementary (NO-NC) or dual NO outputs
- Auto-configure technology automatically detects a sinking (NPN) or sourcing (PNP) connection and switches the sensor accordingly, without any user intervention
- Reliably detect metal targets at ranges superior to conventional shielded or unshielded tubular sensors
- Quality construction using a stainless steel barrel, 360-degree dual-color LED indicator, Ryton® impact-resistant face cap and vibration-absorbing potting compound
- Resistant to extreme temperatures (–40°C)

5

Product Selection

iProx

iProx Sensors

Description	Operating Voltage	Sensing Range	Shielding	Connection Type	NO Output ① Catalog Number
Three-Wire Sensors					
12 mm diameter	6–48 Vdc	4 mm	Shielded	4-pin micro DC connector	**E59-M12A105D01-D1**
		10 mm	Unshielded	4-pin micro DC connector	**E59-M12C110D01-D1**
18 mm diameter	6–48 Vdc	8 mm	Shielded	4-pin micro DC connector	**E59-M18A108D01-D1**
		18 mm	Unshielded	4-pin micro DC connector	**E59-M18C116D01-D1**
30 mm diameter	6–48 Vdc	15 mm	Shielded	4-pin micro DC connector	**E59-M30A115D01-D1**
		29 mm	Unshielded	4-pin micro DC connector	**E59-M30C129D01-D1**

iProx Complementary and Dual Output

Description	Operating Voltage	Sensing Range	Shielding	Output Type	Connection Type	Complementary Outputs (1NO-1NC) Catalog Number
Four-Wire Sensors						
12 mm diameter	6–48 Vdc	4 mm	Shielded	NPN (sinking)	4-pin micro DC connector	**E59-M12A105D01-D3NN**
				PNP (sourcing)	4-pin micro DC connector	**E59-M12A105D01-D3PP**
18 mm diameter	6–48 Vdc	18 mm	Unshielded	NPN (sinking)	4-pin micro DC connector	**E59-M18C116D01-D3NN**
				PNP (sourcing)	4-pin micro DC connector	**E59-M18C116D01-D3PP**

Note

① Sensors are ordered with pre-set outputs from the factory, but can be later programmed either NO or NC using ProxView software.

E57 Premium+ Series

Features

- High-performance inductive sensors include stainless steel models, extended ranges and right angle sensing
- New expanded offering of two-wire, three-wire, AC, DC, and AC/DC multiple range sensor models
- Designed with stainless steel barrel and new potting compound for robust, high-temperature, high-pressure washdown, as well as intense shock and vibration applications
- 360° output status indicator is visible from any angle and in any light condition
- Resettable short circuit protection and reverse polarity in select models
- Wide temperature range –13° to 158°F (–25° to 70°C) on cable, micro-style connections

Product Selection

E57 Premium+ Series

E57 Premium+ Series

Description	Operating Voltage	Sensing Range (Sn)	Shielding	Connection Type ①	NO Output Catalog Number
Three-Wire Sensors					
12 mm diameter end sensing	6–48 Vdc	2 mm (standard range)	Shielded (NPN)	4-pin micro DC connector	**E57LAL12T110SD**
		2 mm (standard range)	Shielded (PNP)	4-pin micro DC connector	**E57LAL12T111SD**
		4 mm (standard range)	Unshielded (NPN)	4-pin micro DC connector	**E57LAL12T110ED**
		4 mm (standard range)	Unshielded (PNP)	4-pin micro DC connector	**E57LAL12T111ED**
18 mm diameter end sensing	6–48 Vdc	5 mm (standard range)	Shielded (NPN)	4-pin micro DC connector	**E57LAL18T110SD**
		5 mm (standard range)	Shielded (PNP)	4-pin micro DC connector	**E57LAL18T111SD**
		8 mm (standard range)	Unshielded (NPN)	4-pin micro DC connector	**E57LAL18T110ED**
		8 mm (standard range)	Unshielded (PNP)	4-pin micro DC connector	**E57LAL18T111ED**
		20 mm (extended range)	Non-embeddable (PNP)	4-pin micro DC connector	**E57-18LE20-BD**
		5 mm	Shielded (PNP)	4-pin micro DC connector	**E57RAL18T111SD**
30 mm diameter end sensing	6–48 Vdc	10 mm (standard range)	Shielded (PNP)	4-pin micro DC connector	**E57LAL30T111SD**
		15 mm (standard range)	Unshielded (PNP)	4-pin micro DC connector	**E57LAL30T111ED**

Note

① For cable lengths longer than 2 meters, add the number of the desired length in meters to the end of the listed catalog number (for catalog numbers ending with a number, add an **S** and then the length). Examples for a 5-meter cable: E57-18LE12-A becomes E57-18LE12-A**5**; E57LAL12A2 becomes E57LAL12A2**S**5.

E57 Premium+ Series Short Barrel

Features

- The same quality constructions of the E57 Premium+ standard models, but much shorter
- Designed with stainless steel barrel and impact-absorbing new potting compound for robust, high-temperature, high-pressure washdown, as well as intense shock and vibration applications
- 360° output status indicator is visible from any angle and in any light condition
- Resettable short circuit protection in AC/DC and DC models
- Reverse polarity protection in three-wire DC versions
- Small size to fit in tight spaces

Product Selection

E57 Premium+ Series Short Barrel

Short Barrel Length Proximity Sensors

Description	Operating Voltage	Sensing Range (Sn)	Shielding	Connection Type ①	NO Output Catalog Number
Three-Wire Sensors					
12 mm diameter	6–48 Vdc	2 mm	Shielded (NPN)	4-pin micro DC connector	**E57SAL12T110SD**
			Shielded (PNP)	4-pin micro DC connector	**E57SAL12T111SD**
		4 mm	Unshielded (NPN)	4-pin micro DC connector	**E57SAL12T110ED**
			Unshielded (PNP)	4-pin micro DC connector	**E57SAL12T111ED**
18 mm diameter	6–48 Vdc	5 mm	Shielded (NPN)	4-pin micro DC connector	**E57SAL18T110SD**
			Shielded (PNP)	4-pin micro DC connector	**E57SAL18T111SD**
		8 mm	Unshielded (NPN)	4-pin micro DC connector	**E57SAL18T110ED**
			Unshielded (PNP)	4-pin micro DC connector	**E57SAL18T111ED**
30 mm diameter	6–48 Vdc	10 mm	Shielded (NPN)	4-pin micro DC connector	**E57SAL30T110SD**
			Shielded (PNP)	4-pin micro DC connector	**E57SAL30T111SD**
		15 mm	Unshielded (NPN)	4-pin micro DC connector	**E57SAL30T110ED**
			Unshielded (PNP)	4-pin micro DC connector	**E57SAL30T111ED**

Note

① Cable models are supplied as standard with a 2-meter cable. A 5-meter cable is available by adding **S5** to the catalog number.
Example: E57SAL12T110 becomes E57SAL12T110**S5**.

Global Proximity

Features

- Features solid performance and a basic feature set for reliable, cost-effective sensing
- Available in a variety of sizes to fit all applications: 8 mm, 12 mm, 18 mm and 30 mm diameters
- Operate on 10–30 Vdc in two-wire and three-wire (NPN or PNP) configurations
- Switching frequency of 2 kHz for DC models
- Shielded and unshielded versions available
- Terminations include 2m cable, micro-connector and nano-connector

Product Selection

Global Proximity

Global Proximity Sensors

Description	Operating Voltage	Sensing Range	Shielding	Output Type	Connection Type	Catalog Number
Three-Wire Sensors						
8 mm diameter	10–30 Vdc	3 mm (extended range)	Shielded	NO (NPN)	4-pin micro DC connector	**E57-08GE03-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-08GE03-GDB**
		6 mm (extended range)	Unshielded	NO (NPN)	4-pin micro DC connector	**E57-08GE06-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-08GE06-GDB**
12 mm diameter	10–30 Vdc	5 mm (extended range)	Shielded	NO (NPN)	4-pin micro DC connector	**E57-12GE05-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-12GE05-GDB**
		10 mm (extended range)	Unshielded	NO (NPN)	4-pin micro DC connector	**E57-12GE10-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-12GE10-GDB**
18 mm diameter	10–30 Vdc	8 mm (extended range)	Shielded	NO (NPN)	4-pin micro DC connector	**E57-18GE08-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-18GE08-GDB**
		18 mm (extended range)	Unshielded	NO (NPN)	4-pin micro DC connector	**E57-18GE18-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-18GE18-GDB**
30 mm diameter	10–30 Vdc	15 mm (extended range)	Shielded	NO (NPN)	4-pin micro DC connector	**E57-30GE15-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-30GE15-GDB**
		29 mm (extended range)	Unshielded	NO (NPN)	4-pin micro DC connector	**E57-30GE29-CDB**
				NO (PNP)	4-pin micro DC connector	**E57-30GE29-GDB**

E52 Cube

Features

- Rugged inductive sensors in industry-standard cube package
- Long inductive proximity ranges available (up to 40 mm sensing distance)
- Four-wire DC models have complementary outputs (1NO-1NC)
- Four-wire DC models use auto-configure technology, which allows the sensor to automatically adapt for NPN or PNP without user intervention
- Robust design featuring vibration and impact-absorbing potting compound
- Ideal for extreme temperatures or high-pressure washdown environments

Product Selection

Note: Micro-connector models shown; mini-connector models also available.

E52 Cube Style

E52 Cube Inductive Proximity Sensors

Description	Voltage Type	Output Configuration	Shielding	Output Type	Sensing Range	Connector Style	Catalog Number
DC Four-Wire Sensors							
Cube package (40 x 40 x 40 mm)	10–48 Vdc	NPN/PNP autoconfigure ①	Shielded	1NO-1NC	15 mm	DC 4-pin micro	**E52Q-DL15SAD01**
			Unshielded	1NO-1NC	15 mm	DC 4-pin micro	**E52Q-DL15UAD01**
			Shielded	1NO-1NC	20 mm	DC 4-pin micro	**E52Q-DL20SAD01**
			Unshielded	1NO-1NC	20 mm	DC 4-pin micro	**E52Q-DL20UAD01**
			Unshielded	1NO-1NC	25 mm	DC 4-pin micro	**E52Q-DL25UAD01**
			Unshielded	1NO-1NC	30 mm	DC 4-pin micro	**E52Q-DL30UAD01**
			Unshielded	1NO-1NC	35 mm	DC 4-pin micro	**E52Q-DL35UAD01**
			Unshielded	1NO-1NC	40 mm	DC 4-pin micro	**E52Q-DL40UAD01**

Note

① Autoconfigure technology allows the sensor to automatically adapt to NPN or PNP without user intervention.

Product Overview

Connectivity Selection Guide

Description	Global Plus Connector Cables
	Page V9-T5-25
Overview	Includes a wide variety of single- and double-connector cables in a variety of sizes (mini, micro, nano), lengths and jacket materials to fit any application
Sensing types and ranges	Nano (M8) Micro (M12) Mini
Product features	Industry standard connector types Industrial-duty polymer jackets consisting of PVC, PUR, or irradiated PUR Stranded copper conductors and polymer jackets provide a high resistance to bending motions Right angle units for applications that have constricted space
Enclosure ratings	Type 6P, IP68
Approvals	UL, cUL, CSA

Global Plus Connector Cables

Features

- Cost effective and reliable quick-disconnect cables
- A wide variety of single- and double-connector cables available
- Custom lengths are available upon request from the factory
- A full offering of nano, micro and mini connector cables in a variety of lengths and jacket materials available
- Field wireable accessories
- Straight and right-angle connector ends

Catalog Number Selection

Global Plus Connector Cables

Global Plus

Note: This is a representative guide to the catalog numbering system. All possible combinations.may not be available for ordering.

CS D S 4 A 4 C Y 22 02 – D

Product
CS = Cordset

Electrical Version/ Connector Type
D = Euro (micro) connector
A = AC micro connector
M = AC/DC mini connector

Connector Type
S = Straight
R = Right angle

Pin Configuration

2 = 2-pin	**5** = 5-pin
3 = 3-pin	**9** = 9-pin
4 = 4-pin	

Wire Color Code
A = IEC color code
F = North American color code
D = Industrial color code

Wire Configuration

2 = 2-wire	**5** = 5-wire
3 = 3-wire	**9** = 9-wire
4 = 4-wire	

Jacket Material
C = PVC
R = PUR

Jacket Color
Y = Yellow
B = Black

Wire Gauge
24 = 24 AWG
22 = 22 AWG
16 = 16 AWG

Cable Length
01 = 1m (3.2 ft)
01.5 = 1.5m (4.9 ft)
02 = 2m (6.5 ft)
03 = 3m (9.8 ft)
04 = 4m (13 ft)
05 = 5m (16.4 ft)
10 = 10m (32.8 ft)

Connector Type
D = Double-ended
LN = LED NPN
LP = LED PNP

Product Selection

Micro Style, Single-Connector Cables

Description	Voltage Style	Number of Pins	Gauge	Length	PVC Jacket Catalog Number	Pin Configuration/Wire Colors (Face View Female Shown)
Standard Cables						
Micro style straight female	DC	4-pin 3-wire	22 AWG	6 ft (2m)	**CSDS4A3CY2202**	1-Brown 2-No wire 3-Blue 4-Black
		4-pin 4-wire	22 AWG	6 ft (2m)	**CSDS4A4CY2202**	1-Brown 2-White 3-Blue 4-Black
		5-pin 5-wire	22 AWG	6 ft (2m)	**CSDS5A5CY2202**	1-Brown 2-White 3-Blue 4-Black 5-Green/yellow
Micro style straight female	DC	4-pin 3-wire	22 AWG	6 ft (2m)	**CSDR4A3CY2202**	1-Brown 2-No wire 3-Blue 4-Black
		4-pin 4-wire	22 AWG	6 ft (2m)	**CSDR4A4CY2202**	1-Brown 2-White 3-Blue 4-Black
		5-pin 5-wire	22 AWG	6 ft (2m)	**CSDR5A5CY2202**	1-Brown 2-White 3-Blue 4-Black 5-Green/yellow

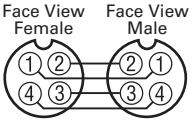
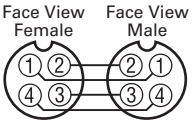
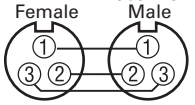
Mini Style, Single-Connector Cables

Description	Voltage Style	Number of Pins	Gauge	Length	PVC Jacket Catalog Number	Pin Configuration/Wire Colors (Face View Female Shown)
Standard Cables						
Mini style straight female	AC/DC	4-pin 4-wire	16 AWG	6 ft (2m)	**CSMS4A4CY1602**	1-Black 2-Blue 3-Brown 4-White
	AC/DC	4-pin 5-wire	16 AWG	6 ft (2m)	**CSMS5D5CY1602**	1-White 2-Red 3-Green 4-Orange 5-Black

Nano Style, Single-Connector Cables

Description	Voltage Style	Number of Pins	Gauge	Length	PVC Jacket Catalog Number	Pin Configuration/Wire Colors (Face View Female Shown)
Standard Cables						
Nano style straight female	—	3-pin 3-wire	24 AWG	6 ft (2m)	**CSNS3A3CY2402**	1-Brown 3-Blue 4-Black
Nano style right angle female	—	3-pin 3-wire	24 AWG	6 ft (2m)	**CSNR3A3CY2402**	1-Brown 3-Blue 4-Black

Micro and Mini Style, Double-Ended Connector Cables

Description	Voltage Style	Number of Pins	Gauge	Length	PVC Jacket Catalog Number	Pin Configuration/Wire Colors (Face View Female Shown)
Standard Cables						
Micro style straight female/male	DC	4-pin	22 AWG	6 ft (2m)	**CSDS4A4CY2202-D**	 Face View Female Face View Male
Micro style straight female/ right angle male	DC	4-pin	22 AWG	6 ft (2m)	**CSDR4A4CY2202-D**	 Face View Female Face View Male
Mini style straight female/male	AC/DC	3-pin	16 AWG	6 ft (2m)	**CSMS3F3CY1602-DP**	 Face View Female Face View Male