Hybrid sensor with integrated M18 threads for front and base mounting

Product description

The industry-proven ELF-3 family of hybrid photoelectric sensors offers basic functions for presence detection applications. These low-cost sensors provide a variety of features that can be optimized for customers to reduce installation and procurement costs. They are ideal for standard, short-range applications, such as conveyor systems, vending machines, packaging lines, or other simple on/off applications. ASIC (application-specific integrated circuit) technology, which is proprietary to SICK, guarantees the best optical performance. ELF-3 sensors are available in background suppression, energetic and retro-reflective variants. The background suppression variant offers a 50 mm fixed sensing distance. The energetic variant has a 155 mm sensing range and the retro-reflective variant has a 5 m sensing range. A clear back cover provides highly visible power and status indication. These multi-functional sensors are able to integrate optical and electronic elements into different housings. The ELF-3 comes with integrated M18 threads for front and base mounting.

At a glance

- Flush red lens
- Polarization filter
- Clear back cover for highly visible status indication
- 18 mm front and base mount
- Power and status indicator

Your benefits

- A wide range of customizable options reduces material and labor costs
- Flush red lens provides an increased sensing range for a broader range of application possibilities
- IP 67-rated housing has a longer service life that stands up to harsh environments, reducing maintenance time and costs
- Highly visible status/power indicator provides quick and easy troubleshooting from a distance
- M18 front and base mounting ensures quick and easy installation
- Small sensor footprint easily fits into applications with limited space

→ **www.mysick.com/en/ELF3**

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Detailed technical data

Features

	ET3	EL3	EL4
Sensor principle	Photoelectric proximity sensor	Photoelectric retro-reflective sensor	
Detection principle	Background suppression / energetic (depending on type)	–	
Dimensions (W x H x D)	23.8 mm x 45.4 mm x 33.6 mm		
Housing design (light emission)	Hybrid		
Thread diameter (housing)	M18		
Sensing range max.	0 mm ... 155 mm [1] (depending on type)	0.1 m ... 4.8 m [2]	
Sensing range	0 mm ... 155 mm [1] (depending on type)	0.1 m ... 3 m [2]	
Type of light	Infrared light / visible red light (depending on type)	Visible red light	
Light source [3]	LED		
Wave length			
Infrared light	880 nm	–	
Visible red light	660 nm		
Special feature	Focused optics	–	

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

[2] PL80A.

[3] Average service life of 100,000 h at T_A = +25 °C.

Mechanics/electronics

	ET3	EL3	EL4
Supply voltage [1]	10 V DC ... 30 V DC		
Ripple [2]	< 5 V_{pp}		
Power consumption [3]	< 20 mA		
Output type	PNP		
Switching mode	Light switching / Dark-switching (depending on type)		
Output current $I_{max.}$	50 mA		
Switching frequency [4]	200 Hz	400 Hz	
Connection type [5]	Cable, 2 m		
Circuit protection	A [6], D [7]		
Protection class [8]	III		
Weight	0.036 kg, 0.08 lbs		
Polarisation filter	–	✔	
Housing material	Glass fiber reinforced ABS plastic		
Enclosure rating	IP 67		
Ambient operating temperature	–25 °C ... +50 °C		
Ambient storage temperature	–40 °C ... +70 °C		

[1] Limit values.

[2] May not exceed or fall short of V_S tolerances.

[3] Without load.

[4] With light/dark ratio 1:1.

[5] Do not bend below 0 °C.

[6] A = V_S connections reverse-polarity protected.

[7] D = outputs overcurrent and short-circuit protected.

[8] Reference voltage: 50 V DC.

Ordering information

ET3

- **Sensor principle:** photoelectric proximity sensor
- **Output type:** PNP
- **Connection:** cable, 3-wire, 2 m, PVC

Detection principle	Type of light	Sensing range max. [1]	Light spot size (distance)	Switching mode	Connection diagram	Model name	Part no.
Background suppression	Infrared light	0 mm … 50 mm	10.5 mm x 10.5 mm (50 mm)	Light switching	Cd-043	ET3-P3215	1045187
				Dark-switching	Cd-043	ET3-F3215	1045189
Energetic	Visible red light	5 mm … 60 mm	8 mm x 8 mm (60 mm)	Light switching	Cd-043	ET3-P2215	1045195
				Dark-switching	Cd-043	ET3-F2215	1045196
	Infrared light	1 mm … 100 mm	20 mm x 20 mm (100 mm)	Light switching	Cd-043	ET3-P4215	1045191
				Dark-switching	Cd-043	ET3-F4215	1045193
		5 mm … 155 mm	31 mm x 31 mm (150 mm)	Light switching	Cd-043	ET3-P5215	1045199
				Dark-switching	Cd-043	ET3-F5215	1045200

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

EL3

- **Sensor principle:** photoelectric retro-reflective sensor
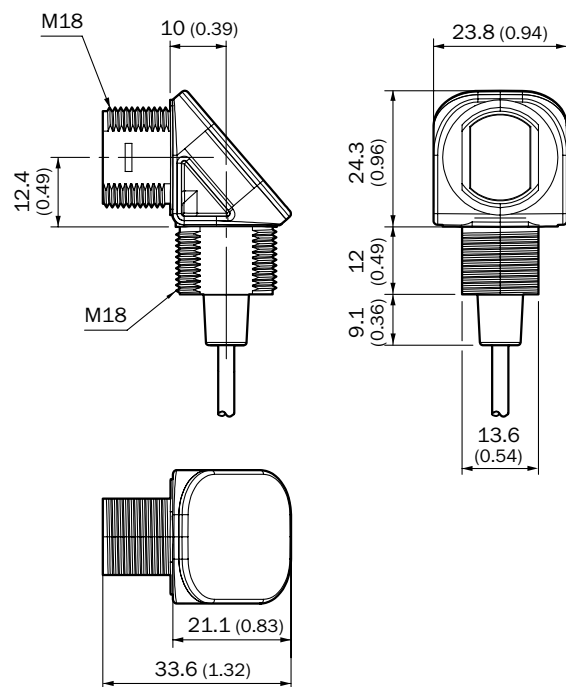- **Output type:** PNP
- **Connection:** cable, 3-wire, 2 m, PVC

Type of light	Sensing range max. [1]	Light spot size (distance)	Switching mode	Connection diagram	Model name	Part no.
Visible red light	0.1 m … 4.8 m	125 mm x 125 mm (1 m)	Light switching	Cd-043	EL3-P2415	1043960
			Dark-switching	Cd-043	EL3-F2415	1043961

[1] PL80A.

EL4

- **Sensor principle:** photoelectric retro-reflective sensor
- **Output type:** PNP
- **Connection:** cable, 3-wire, 2 m, PVC

Type of light	Sensing range max. [1]	Light spot size (distance)	Switching mode	Connection diagram	Model name	Part no.
Visible red light	0.1 m … 4.8 m	125 mm x 125 mm (1 m)	Light switching	Cd-043	EL4-P2415	1044683
			Dark-switching	Cd-043	EL4-F2415	1044684

[1] PL80A.

Dimensional drawings

Dimensions in mm (inch)

ET3, EL3

M18
10 (0.39)
23.8 (0.94)
24.3 (0.96)
12.4 (0.49)
12 (0.49)
9.1 (0.36)
M18
13.6 (0.54)
21.1 (0.83)
33.6 (1.32)

EL4

Ø 24 (0.94)
10 (0.39)
23.8 (0.94)
24.3 (0.96)
12.4 (0.49)
12 (0.49)
9.1 (0.36)
M18
13.6 (0.54)
21.1 (0.83)
33.6 (1.32)
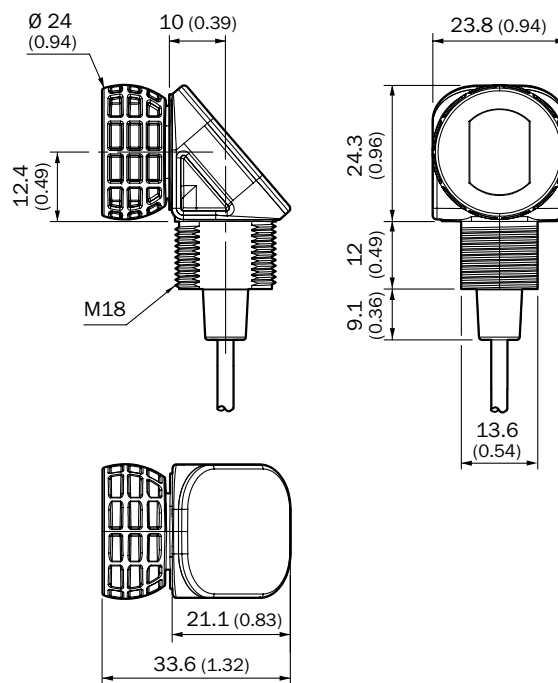
Characteristic curves

EL3

% of sensing range

Sensing range

Sensing range max.

① ④ ③ ②
⑤

0   1,000 (39.37)   2,000 (78.74)   3,000 (118.11)   4,000 (157.48)   5,000 (196.85)

Distance in mm (inch)
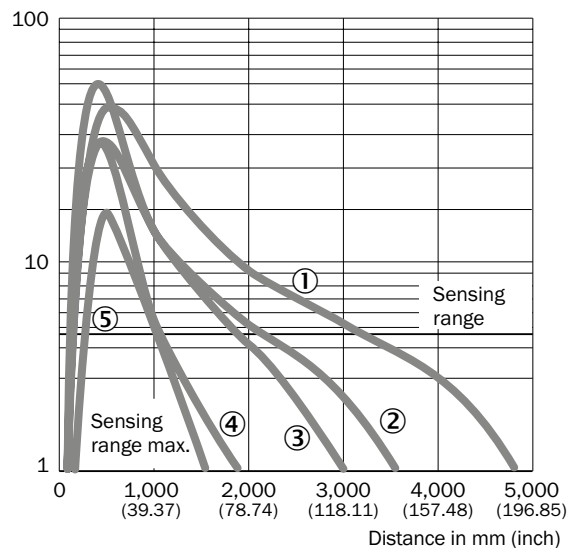
① PL80A
② P250
③ PL40A
④ PL20A
⑤ Reflective tape REF-Plus

Bar diagrams

ET3, 50 mm
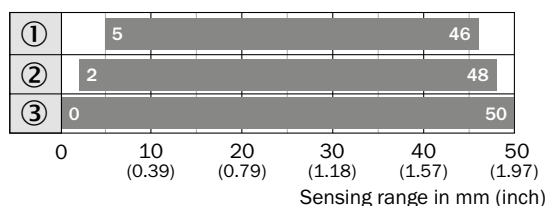
①	5	46
②	2	48
③	0	50

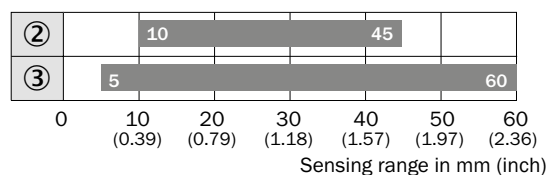0 — 10 (0.39) — 20 (0.79) — 30 (1.18) — 40 (1.57) — 50 (1.97)

Sensing range in mm (inch)
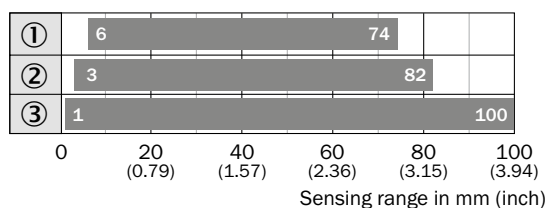
① Sensing range on black, 6 % remission
② Sensing range on gray, 18 % remission
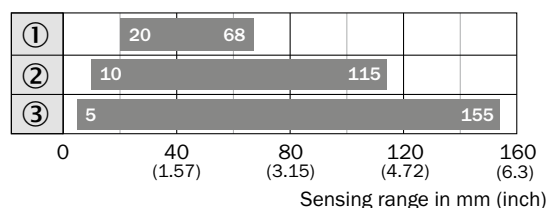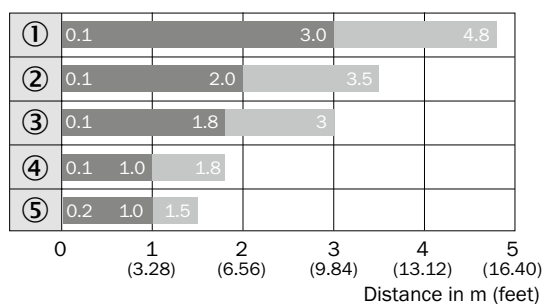③ Sensing range on white, 90 % remission

ET3, 60 mm

②	10	45
③	5	60

0 — 10 (0.39) — 20 (0.79) — 30 (1.18) — 40 (1.57) — 50 (1.97) — 60 (2.36)

Sensing range in mm (inch)

② Sensing range on gray, 18 % remission
③ Sensing range on white, 90 % remission

ET3, ET4, 100 mm

①	6	74
②	3	82
③	1	100

0 — 20 (0.79) — 40 (1.57) — 60 (2.36) — 80 (3.15) — 100 (3.94)

Sensing range in mm (inch)

① Sensing range on black, 6 % remission
② Sensing range on gray, 18 % remission
③ Sensing range on white, 90 % remission

ET3, 150 mm

①	20	68
②	10	115
③	5	155

0 — 40 (1.57) — 80 (3.15) — 120 (4.72) — 160 (6.3)

Sensing range in mm (inch)

① Sensing range on black, 6 % remission
② Sensing range on gray, 18 % remission
③ Sensing range on white, 90 % remission

EL3, EL4

①	0.1	3.0	4.8
②	0.1	2.0	3.5
③	0.1	1.8	3
④	0.1	1.0	1.8
⑤	0.2	1.0	1.5

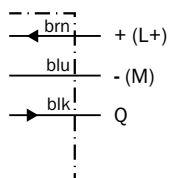0 — 1 (3.28) — 2 (6.56) — 3 (9.84) — 4 (13.12) — 5 (16.40)

Distance in m (feet)

■ Sensing range   ■ Sensing range max.

① PL80A
② P250
③ PL40A
④ PL20A
⑤ Reflective tape REF-Plus

Connection diagram

Cd-043

brn — + (L+)
blu — - (M)
blk — Q

Recommended accessories

Reflectors

Angular

- **Description:** Rectangular, screw connection

Figure	Material	Dimensions	Model name	Part no.
		47 mm x 47 mm	P250	5304812
		38 mm x 15 mm	PL20A	1012719
	PMMA/ABS	56 mm x 28 mm	PL30A	1002314
		37 mm x 56 mm	PL40A	1012720
		80 mm x 80 mm	PL80A	1003865

Reflective tape

Figure	Description	Dimensions	Model name	Part no.
	Self-adhesive	50 mm x 60 mm	REF-IRF-56	5314244

Round

Figure	Description	Material	Diameter	Model name	Part no.
	Round, screw connection	PMMA/ABS	80 mm	C110A	5304549