

Reflectors

for industrial sensors

Sensing ranges overview for top products



Standard photoelectric retro-reflective sensors, maximum sensing ranges

- G 6

- W4/W4S
W9-3

- W11-2
W12-3

- W14-2
W18-3

- W23-2
W27-3

- MH15

- V180-2

Laser photoelectric retro-reflective sensors maximum sensing ranges

- WL100L

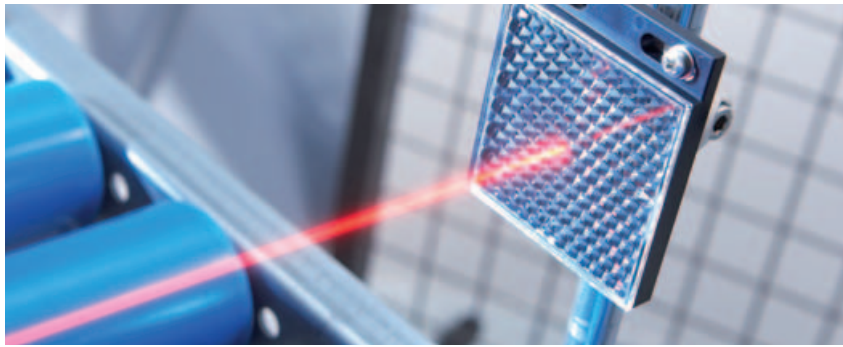
- WL9L-2

- WL12L-2

- VL18L

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Fine triple reflectors	Page 18
Special reflectors	Page 22
Reflectors for distance sensors	Page 30
Reflective tapes	Page 34



	PL22-1/ PL22-2/ PL22-3	PL20A/ PL21A	PL30A/ PL31A	P50-1	PL40A	P250	C110A	PL80A	REFLECTIVE TAPE	
									REF-DG/REF-DG-K	REF-Plus
	0.03 m ... 2.7 m 		0.03 m ... 4 m 		0.03 m ... 6 m 		0.03 m ... 7.2 m 		0.06 m ... 1.9 m 	0.06 m ... 2.0 m
	0 m ... 1.4 m/2.2 m 		0 m ... 2.5 m/3.2 m 		0 m ... 3 m/4 m 		0 m ... 4 m/5 m 		0.4 m ... 0.6 m 	0.5 m ... 0.8 m
	0 m ... 3 m/4 m 		0 m ... 5.5 m/6.3 m 		0 m ... 5 m/7 m 		0 m ... 7 m/10 m 		0.3 m ... 1 m/1.5 m 	0.3 m ... 1.2 m/1.8 m
	0 m ... 3 m 0.15 m ... 4.5 m * 		0 m ... 3.5 m/3.8 m 0.15 m ... 6.5 m * 		0 m ... 5 m/6 m 0.15 m ... 14 m * 		0 m ... 6 m/7 m 0.15 m ... 17 m * 		0.06 m ... 1.6 m/1.7 m 	0.06 m ... 1.8 m/2.0 m
	0.1 m ... 4 m/6 m 0.1 m ... 6 m/8 m * 		0.1 m ... 4 m/7 m 0.1 m ... 7.5 m/10 m * 		0.1 m ... 5 m/9 m 0.1 m ... 10 m/15 m * 		0.1 m ... 5 m/15 m 0.1 m ... 12 m/19 m * 		0.3 m ... 4 m/5 m 	0.3 m ... 4.4 m/5.5 m
	0.03 m ... 1.1 m 		0.03 m ... 1.2 m 		0.03 m ... 1.4 m/2.2 m 		0.03 m ... 4 m/5 m 		0.4 m ... 0.7 m 	0.4 m ... 0.8 m
	0.05 m ... 3 m 		0.05 m ... 4.5 m 		0.05 m ... 6 m 		0.05 m ... 7 m 		0.1 m ... 1.4 m 	0.1 m ... 1.6 m

* PinPoint variants

	PL10F	PL20F	P250F	REFLECTIVE TAPE REF-AC1000/ REF-AC1000-56/P41F
	0.1 m ... 6,5 m 	0.1 m ... 8,5 m 	0.1 m ... 12 m 	0 m ... 11 m
	0.1 m ... 5 m 	0.1 m ... 6 m 	0,15 m ... 7 m 	0 m ... 8 m
	0 m ... 6 m 	0 m ... 7,5 m 	0 m ... 12 m 	0 m ... 8 m
	0.1 m ... 25 m 	0.1 m ... 15 m 	0.1 m ... 30 m 	0 m ... 15 m

Sensing range information is intended as a rough guide. For sensing ranges attainable with a specific sensor/reflector combination, see the relevant sensor data sheet or else ask us about this.

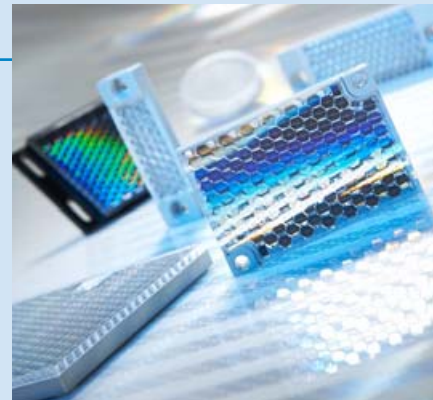
Useful information about reflectors and reflective tapes

- ▶ Reflectors are an indispensable counterpart for all photoelectric retro-reflective sensors. Together they form a fixed functional unit. Reliable detection of objects can only be guaranteed, even under critical application conditions, if both components are optimally coordinated with one another.
- ▶ Sensing range and efficiency of detection of a photoelectric retro-reflective sensor are significantly influenced by the quality and geometrical size of the reflector used.
- ▶ The larger the reflector, the greater the operating reserve and the larger the sensor sensing range possible.

Standard reflectors vs. reflective tapes

Standard reflectors from SICK differ according to size, geometry and mounting options. The large selection of different types guarantees optimal sensor operation at all times and perfect integration into systems.

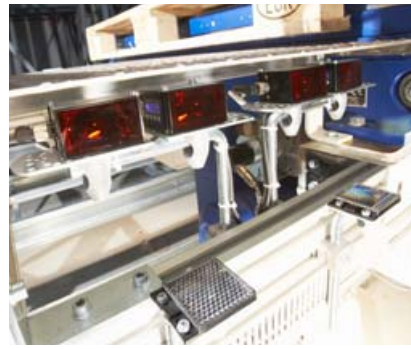
Reflective tapes (→ page 34 ff.) are typically used where use of a standard reflector is not possible due to mounting or space restrictions, or if the application requires a large, uninterrupted reflection area. It is important to note however that the sensing range of a photoelectric retro-reflective sensor is significantly reduced compared to a standard reflector of the same size when REF-DG or REF-Plus standard reflective tapes are used.



Reflectors and reflective tapes for laser sensors

Laser photoelectric retro-reflective sensors are particularly characterized by their large sensing ranges and very small light spots. These place special requirements on the reflector however. If the reflector's individual triple elements are too large, erroneous reflections may occur resulting in signal interruptions – particularly if the laser light spot passes over the reflector.

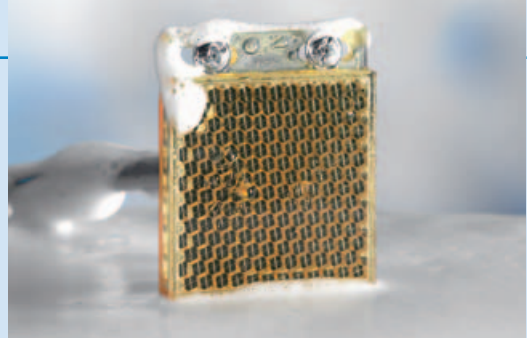
For this reason, SICK provides fine triple reflectors specially for laser photoelectric retro-reflective sensors (page 18 ff.) that have a particularly small triple structure and hence guarantee a stable reflection signal. In the case of reflective tapes, the REF-AC1000 with its uninterrupted microprism structure offers optimal signal stability and sensing range for laser photoelectric retro-reflective sensors. REF-Plus and REF-DG standard reflective tapes on the other hand are not suitable for laser photoelectric sensors due to their honeycomb structure.



Acid and alkali-proof reflectors

Sensors in the food and pharmaceuticals industry are subject to special requirements. They have to be permanently resistant to daily cleaning cycles with particularly aggressive chemical cleaning agents, high cleaning temperatures and pressures without any damage occurring to the sensor or reflector or impairment to its reflective properties.

CHEM reflectors by SICK will do justice to these requirements. For details, see page 23.



Polarization

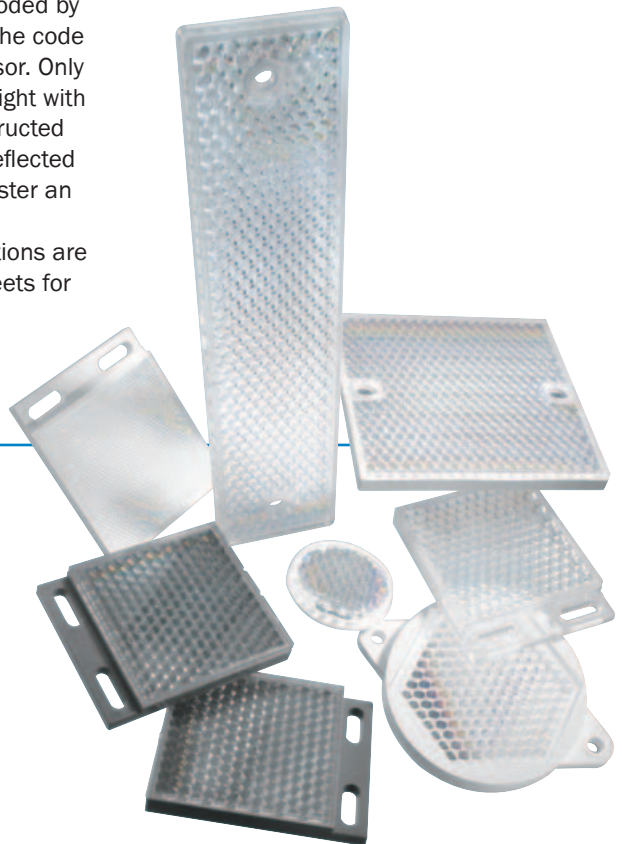
Photoelectric retro-reflective sensors are available with or without polarizing filter. The polarizing filter ensures that even highly-reflective objects in the beam path will be reliably detected. To do this, the light emitted is coded by the sensor's polarizing filter in a certain way. The reflector changes the code of the emitted light in a defined way and sends this back to the sensor. Only if the receiver of the photoelectric retro-reflective sensor receives the light with this modified code it will be interpreted by the sensor as an "unobstructed light path" i.e. "No object in the beam path". If the emitted light is reflected by another reflective object but there is no code, the sensor will register an object in the light path.

All SICK reflectors have this code-changing property. The only exceptions are a few reflective tapes. These are referred to explicitly in the data sheets for the relevant tape that follow.

The right reflector for virtually all applications

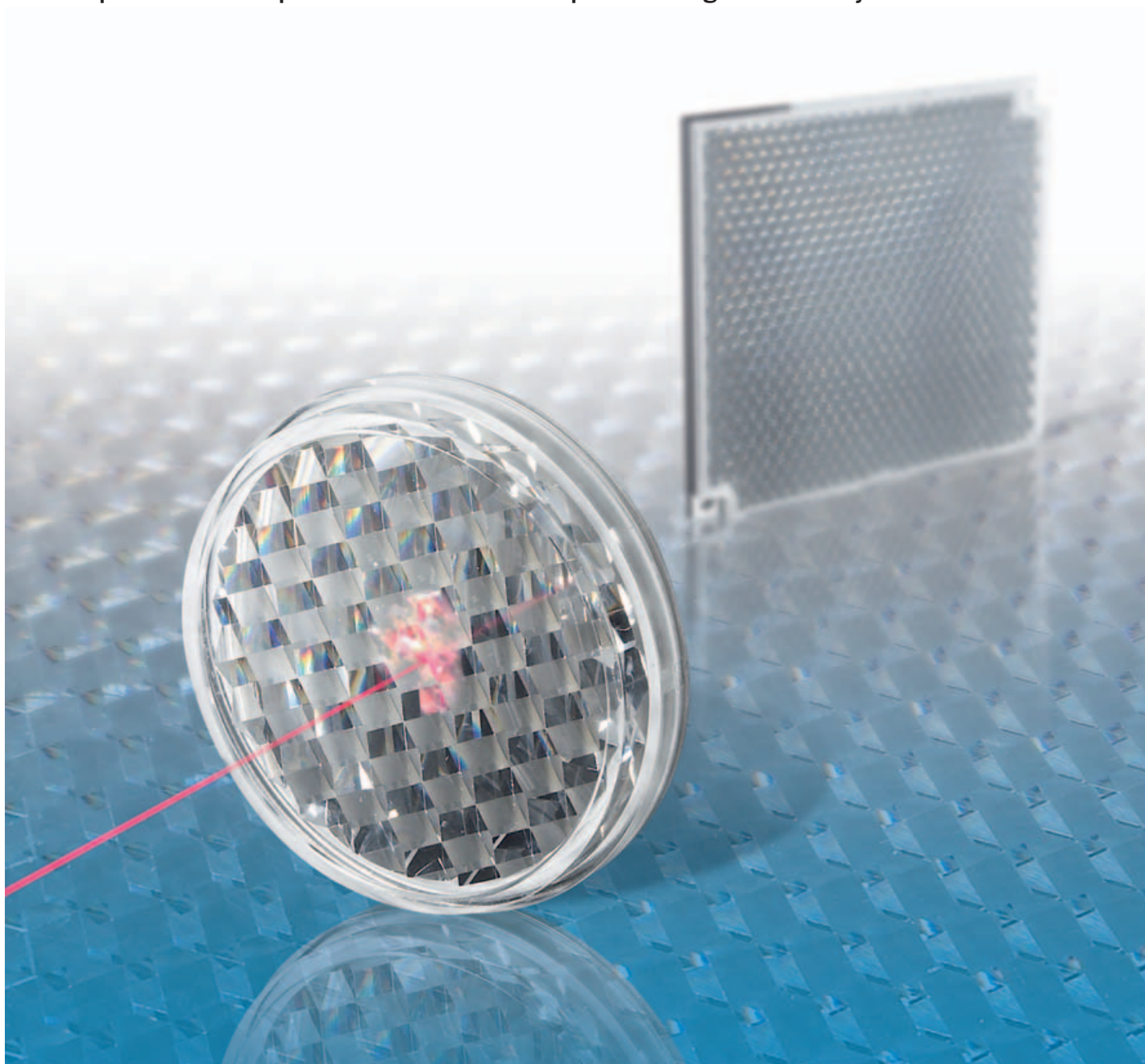
Most applications in industrial environments can be catered for using standard plastic reflectors or reflective tapes. Special applications require special sensors and reflectors however. SICK therefore offers a wide range of special solutions:

- Chemically-resistant reflectors
- Heatable reflectors (regulated and unregulated)
- Reflectors for high-temperature use
- Antifog reflectors
- Single-triple glass reflectors
- Dust-resistant and air-rinsed reflector solutions
- Large, premounted reflector plates
- Plus many more



Standard reflectors (round and rectangular)

Standard reflectors from SICK differ according to size, geometry and mounting options. The large selection of reflectors in different shapes and sizes guarantees optimal sensor operation at all times and perfect integration into systems.



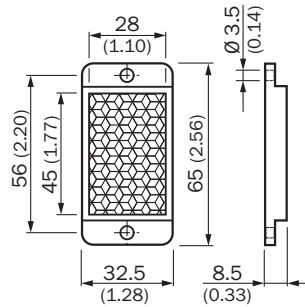
P32

Standard reflector, rectangular



Reflector, rectangular, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	28 mm x 45 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
P32	5314001

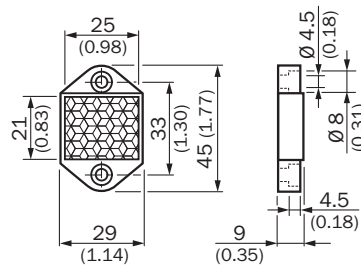
P40

Standard reflector, rectangular



Reflector, rectangular, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	21 mm x 25 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
P40	5313923

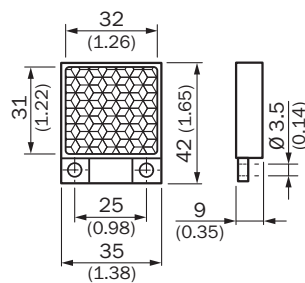
P42

Standard reflector, rectangular



Reflector, rectangular, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	31 mm x 32 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
P42	5314825

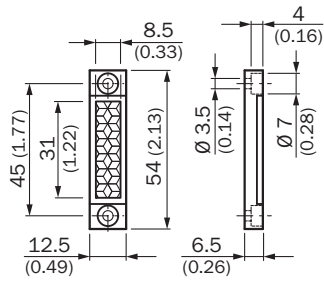
P45A

Standard reflector, rectangular



Reflector, rectangular, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	8.5 mm x 31 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
P45A	5320027

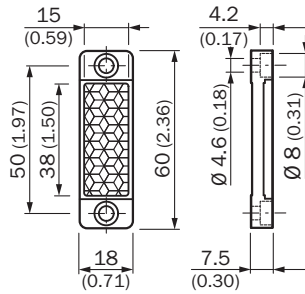
PL20A

Standard reflector, rectangular



Reflector, rectangular, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	15 mm x 38 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL20A	1012719

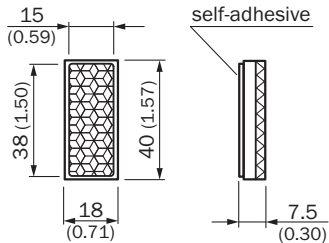
PL21A

Standard reflector, rectangular



Reflector, rectangular, self-adhesive

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	15 mm x 38 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL21A	1015172

PL30A

Standard reflector, rectangular

Reflector, rectangular, screw connection

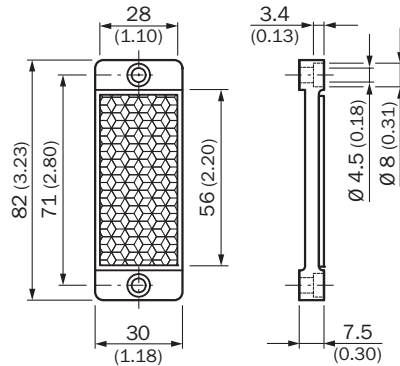
Dimensional drawing

Technical data

Reflection area	28 mm x 56 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL30A	1002314



All dimensions in mm (inch)

PL31A

Standard reflector, rectangular

Reflector, rectangular, self-adhesive

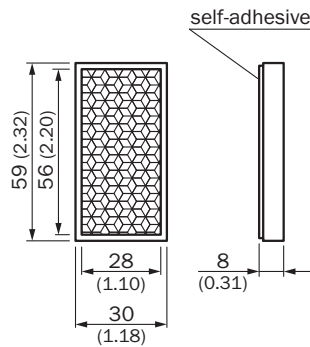
Dimensional drawing

Technical data

Reflection area	28 mm x 56 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL31A	1002315



All dimensions in mm (inch)

PL40A

Standard reflector, rectangular

Reflector, rectangular, screw connection

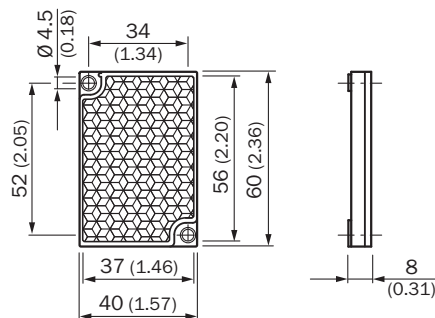
Dimensional drawing

Technical data

Reflection area	37 mm x 56 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL40A	1012720



All dimensions in mm (inch)

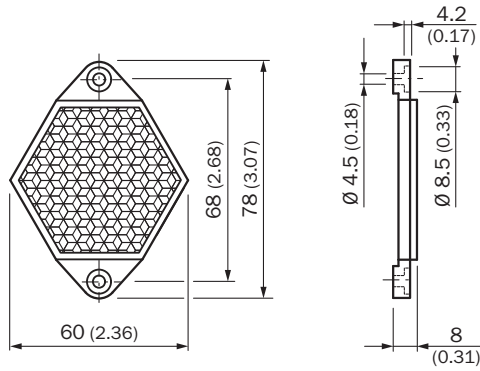
PL50A

Standard reflector, rectangular



Reflector, rectangular, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	a/f* 48 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

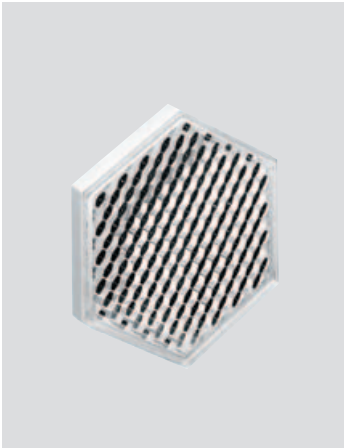
Ordering information

Model name	Part no.
PL50A	1000132

* a/f = width across flat

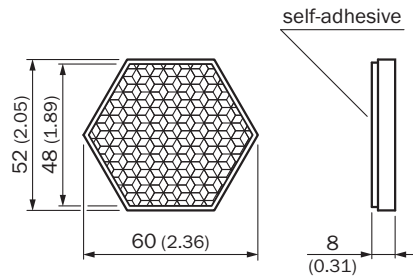
PL51A

Standard reflector, rectangular



Reflector, rectangular, self-adhesive

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	a/f* 48 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL51A	1001628

* a/f = width across flat

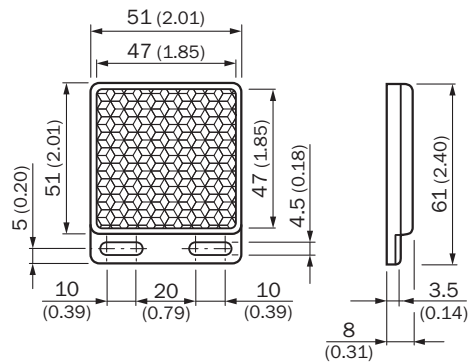
P250

Standard reflector, rectangular



Reflector, rectangular, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	47 mm x 47 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
P250	5304812

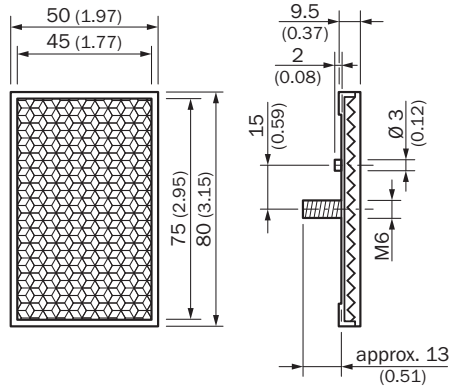
PL72-2

Reflector, rectangular, with M6x14 threaded bolts and locking device

Standard reflector, rectangular

Dimensional drawing

Technical data



Reflection area	45 mm x 75 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL72-2	5322723

All dimensions in mm (inch)

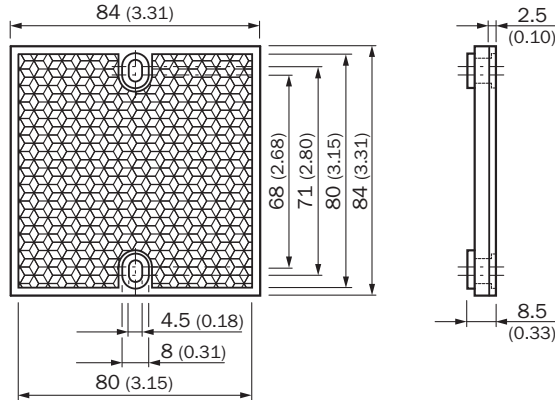
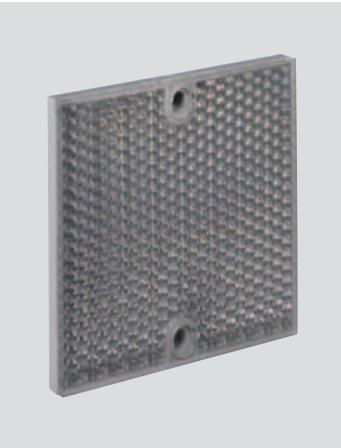
PL80A

Reflector, rectangular, screw connection

Standard reflector, rectangular

Dimensional drawing

Technical data



Reflection area	80 mm x 80 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL80A	1003865

All dimensions in mm (inch)

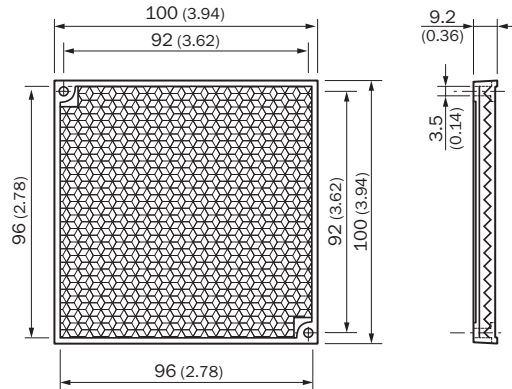
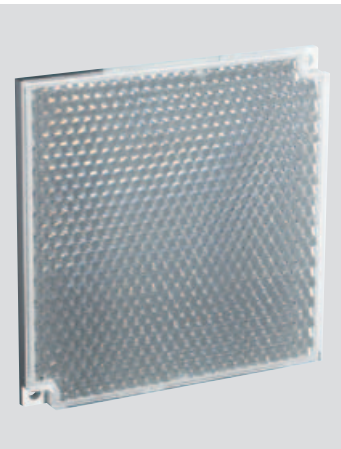
PL100

Reflector, rectangular, screw connection

Standard reflector, rectangular

Dimensional drawing

Technical data



Reflection area	96 mm x 96 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL100	5321625

All dimensions in mm (inch)

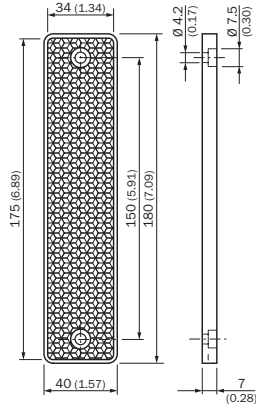
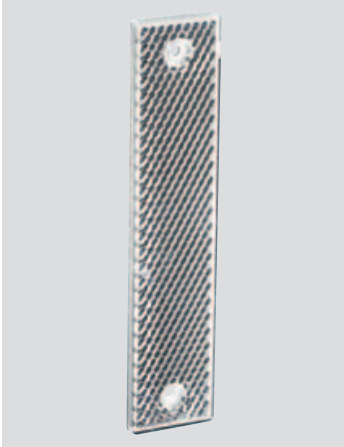
PL180E01

Reflector, rectangular, screw connection

Standard reflector, rectangular

Dimensional drawing

Technical data



All dimensions in mm (inch)

Reflection area	34 mm x 175 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL180E01	1013289

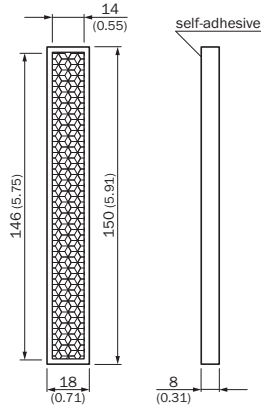
PL150

Reflector, rectangular, self-adhesive

Standard reflector, rectangular

Dimensional drawing

Technical data



All dimensions in mm (inch)

Reflection area	14 mm x 146 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL150	5315548

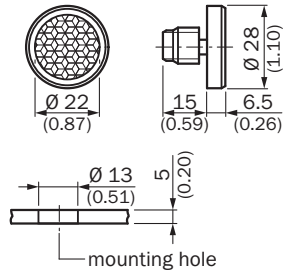
PL22-1

Reflector, round, pluggable

Standard reflector, round

Dimensional drawing

Technical data



Reflection area	Ø 22 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL22-1	1003546

All dimensions in mm (inch)

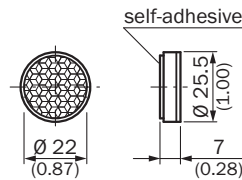
PL22-2

Reflector, round, self-adhesive

Standard reflector, round

Dimensional drawing

Technical data



Reflection area	Ø 22 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL22-2	1003621

All dimensions in mm (inch)

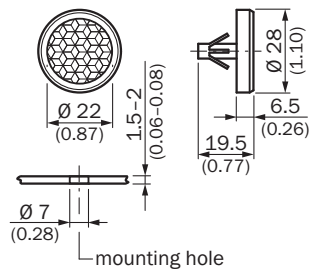
PL22-3

Reflector, round, pluggable for metal plates

Standard reflector, round

Dimensional drawing

Technical data



Reflection area	Ø 22 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL22-3	1004488

All dimensions in mm (inch)

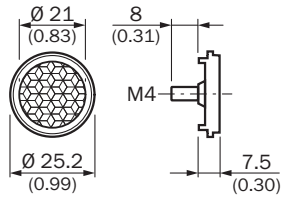
P25

Standard reflector, round



Reflector, round, M4x8 threaded bolts

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	Ø 21 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
P25	5315172

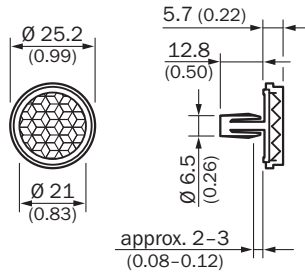
P25-2

Standard reflector, round



Reflector, round, pluggable

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	Ø 21 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
P25-2	5318969

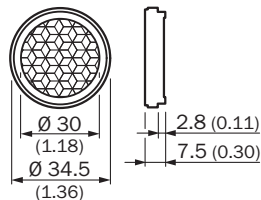
P34

Standard reflector, round



Reflector, round, planar

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	Ø 30 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
P34	5313922

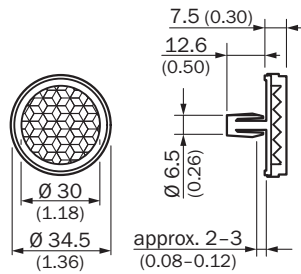
PL34-1

Reflector, round, pluggable

Standard reflector, round

Dimensional drawing

Technical data



Reflection area	Ø 30 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL34-1	5322257

All dimensions in mm (inch)

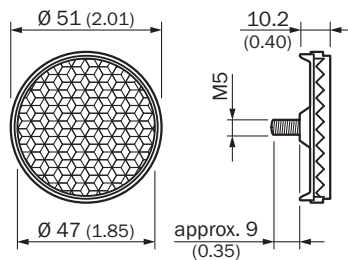
P50-1

Reflector, round, M5x9 threaded bolts

Standard reflector, round

Dimensional drawing

Technical data



Reflection area	Ø 47 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
P50-1	5322673

All dimensions in mm (inch)

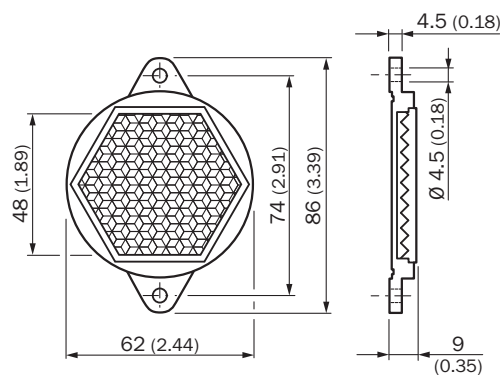
P55

Reflector, round, screw connection

Standard reflector, round

Dimensional drawing

Technical data



Reflection area	a/f* 48 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
P55	5318680

* a/f = width across flat

All dimensions in mm (inch)

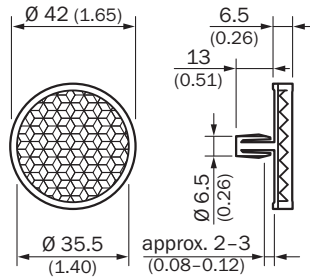
C42-1

Standard reflector, round



Reflector, round, pluggable

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	Ø 35.5 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
C42-1	5313506

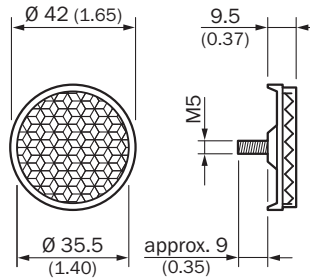
C42-2

Standard reflector, round



Reflector, round, M5x9 threaded bolts

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	Ø 35.5 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
C42-2	5324281

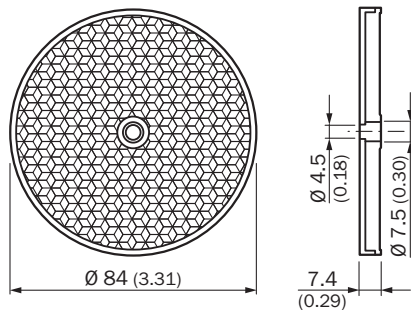
C110A

Standard reflector, round



Reflector, round, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

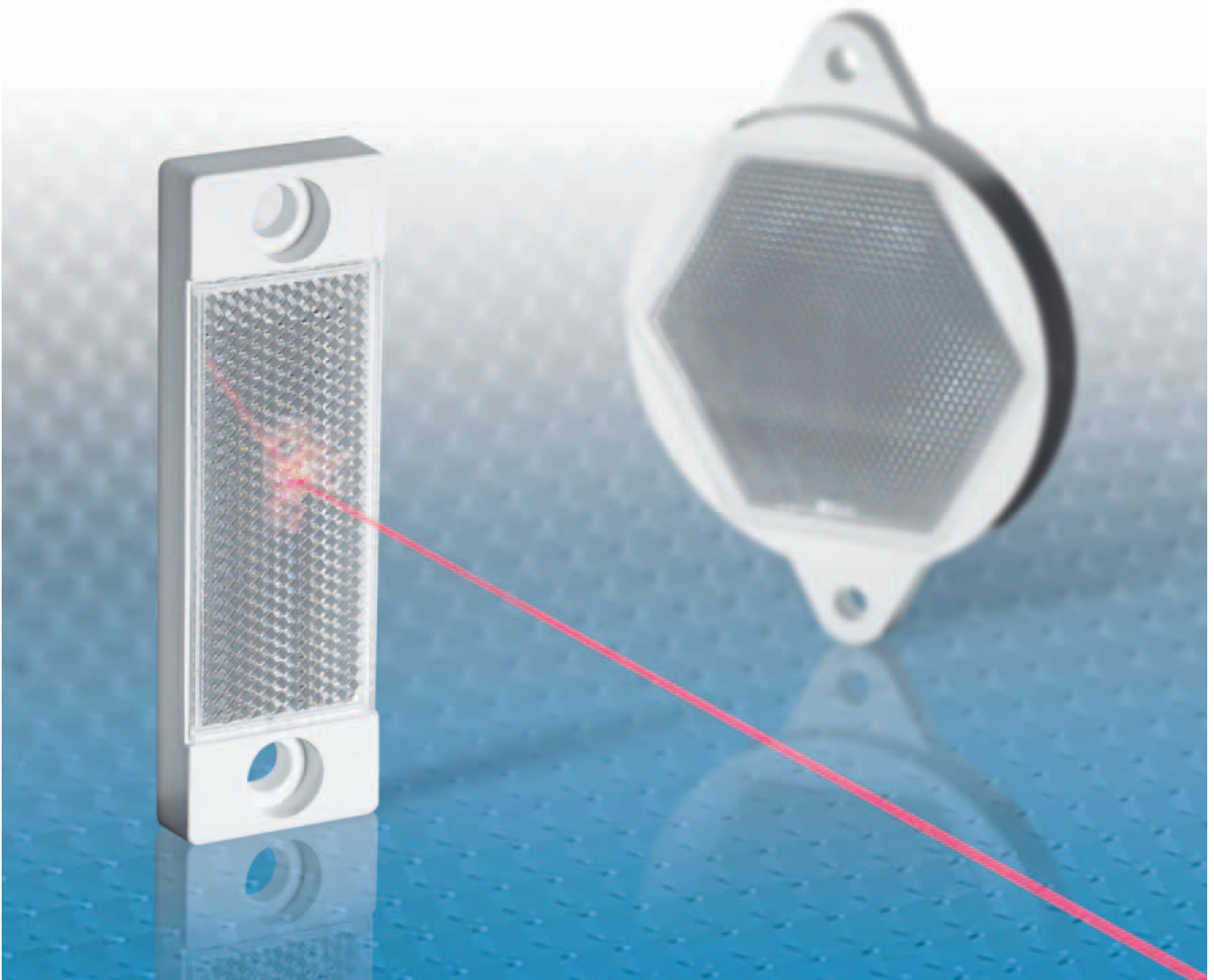
Reflection area	Ø 80 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
C110A	5304549

Fine triple reflectors

Fine triple reflectors are specially developed for use with laser photoelectric retro-reflective sensors. Their particularly small reflex triple structure enables the small light spot to be beamed across several triples simultaneously at all times. A stable reflection signal for the sensor is thereby guaranteed even when the light spot passes over the reflector.



PL10F

Fine triple reflector

Reflector, fine triple, screw connection, suitable for laser sensors

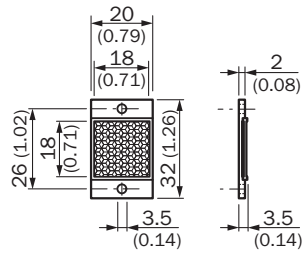
Dimensional drawing

Technical data

Reflection area	18 mm x 18 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL10F	5311210



All dimensions in mm (inch)



PL15F

Fine triple reflector

Reflector, fine triple, planar, suitable for laser sensors

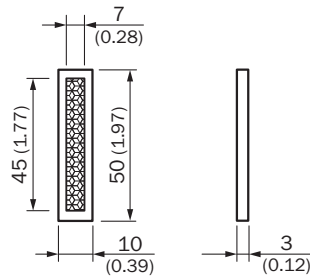
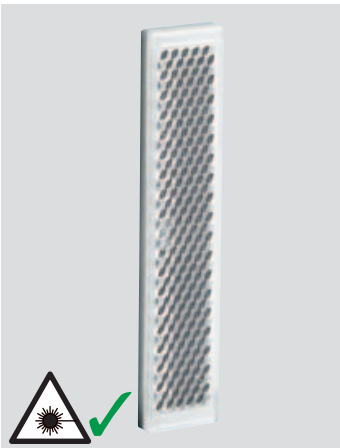
Dimensional drawing

Technical data

Reflection area	17 mm x 45 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL15F	5313849



All dimensions in mm (inch)



PL18F

Fine triple reflector

Reflector, fine triple, self-adhesive, suitable for laser sensors

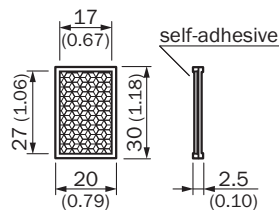
Dimensional drawing

Technical data

Reflection area	17 mm x 27 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL18F	5319994

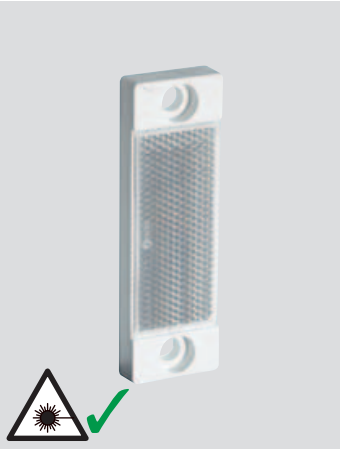


All dimensions in mm (inch)



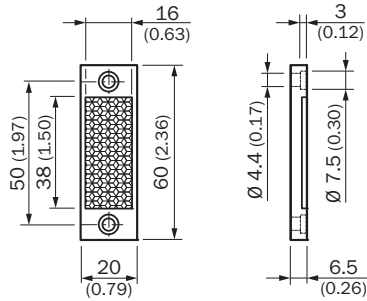
PL20F

Fine triple reflector



Reflector, fine triple, screw connection, suitable for laser sensors

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	16 mm x 38 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL20F	5308844

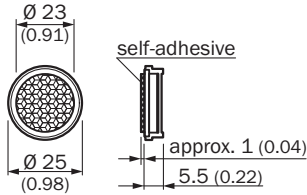
P25F-1

Fine triple reflector



Reflector, fine triple, self-adhesive, suitable for laser sensors

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	Ø 23 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
P25F-1	5319385

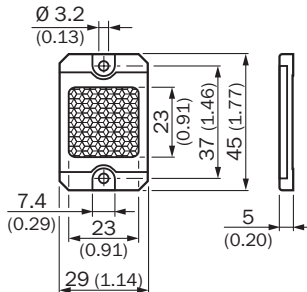
P41F

Fine triple reflector



Reflector with REF-AC1000 micropism reflective tape, suitable for laser sensors, alignment note: see page 38

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	23 mm x 23 mm
Material	PMMA/ABS
Temperature	-20 °C ... +60 °C

Ordering information

Model name	Part no.
P41F	5315128

P55F

Fine triple reflector

Reflector, fine triple, screw connection, suitable for laser sensors

Dimensional drawing

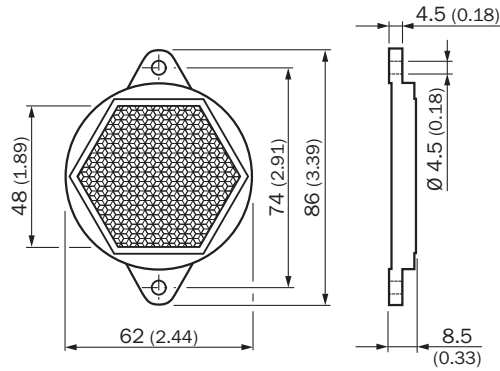
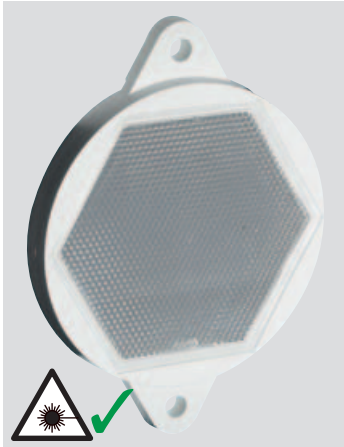
Technical data

Reflection area	a/f* 48 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
P55F	5313924

* a/f = width across flat



All dimensions in mm (inch)

P250F

Fine triple reflector

Reflector, fine triple, screw connection, suitable for laser sensors

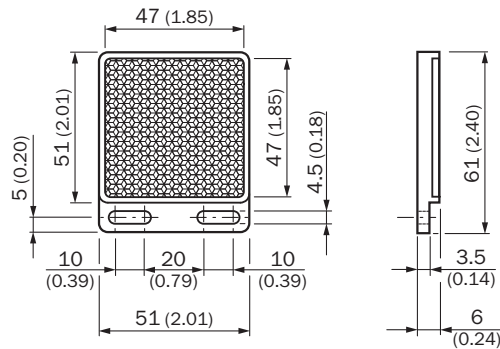
Dimensional drawing

Technical data

Reflection area	47 mm x 47 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

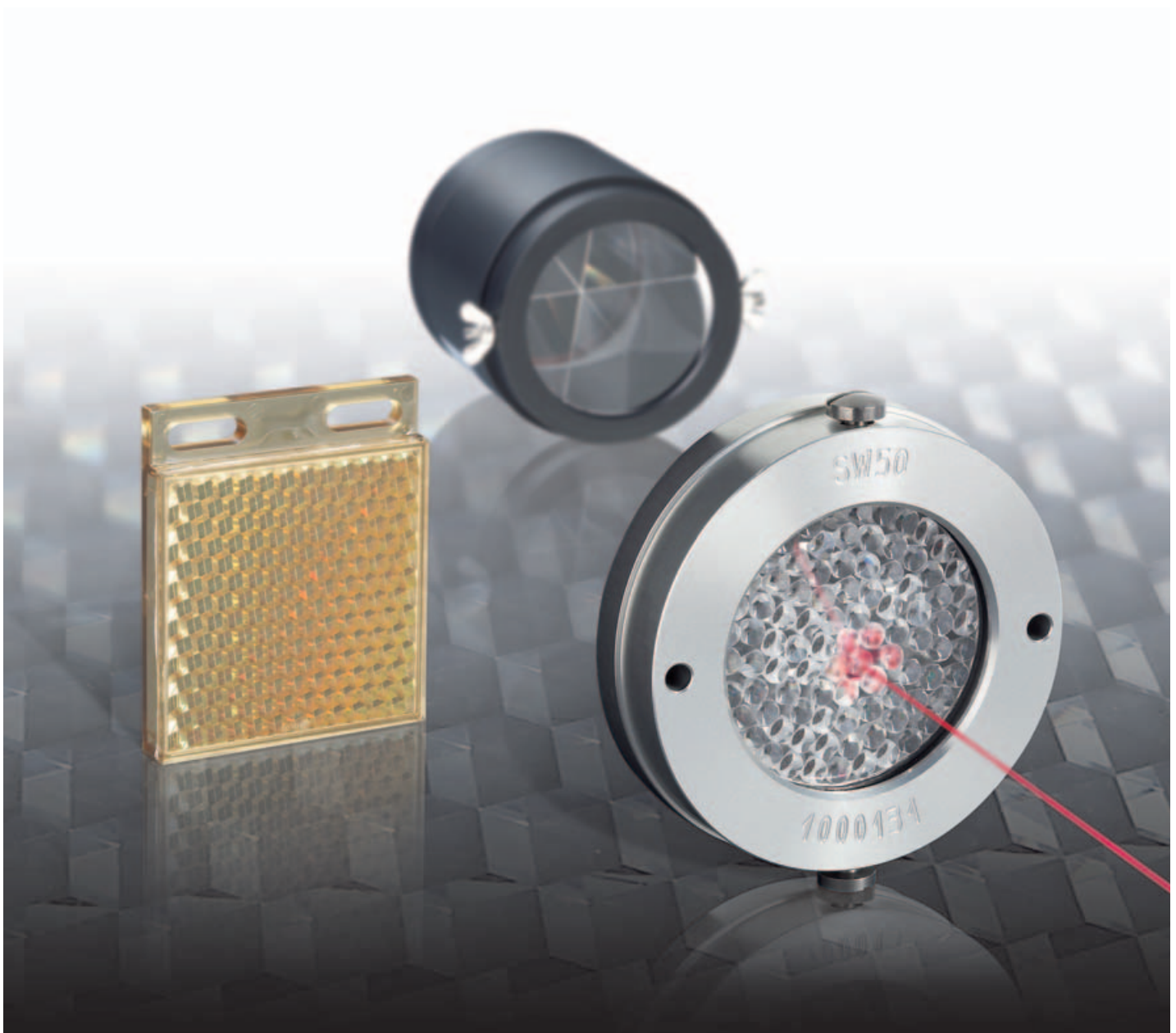
Model name	Part no.
P250F	5308843



All dimensions in mm (inch)

Special reflectors

Special application conditions require customized sensors – and suitable reflectors of course. For this reason, SICK offers a wide range of special reflectors that do justice to the most varied requirements. These include chemically resistant reflectors, high-temperature reflectors, dust-resistant solutions – and many more.



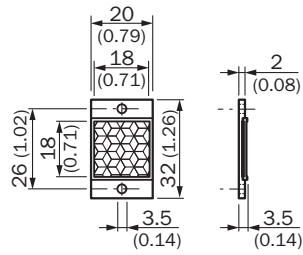
PL10F-CHEM

Special reflector



Reflector, fine triple, chemically resistant (see page 24), screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

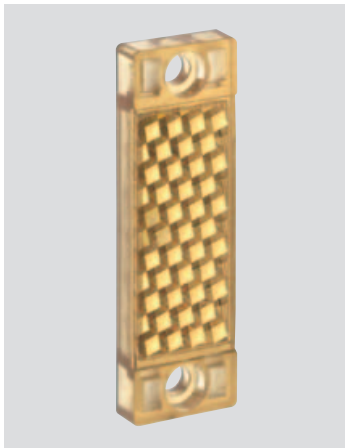
Reflection area	18 mm x 18 mm
Material	plastic
Temperature	-20 °C ... +140 °C

Ordering information

Model name	Part no.
PL10F-CHEM	5321636

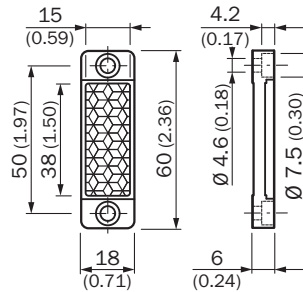
PL20CHEM

Special reflector



Reflector, chemically resistant (see page 24), screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

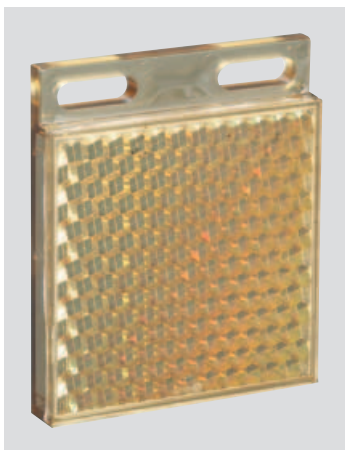
Reflection area	15 mm x 38 mm
Material	plastic
Temperature	-20 °C ... +140 °C

Ordering information

Model name	Part no.
PL20CHEM	5321089

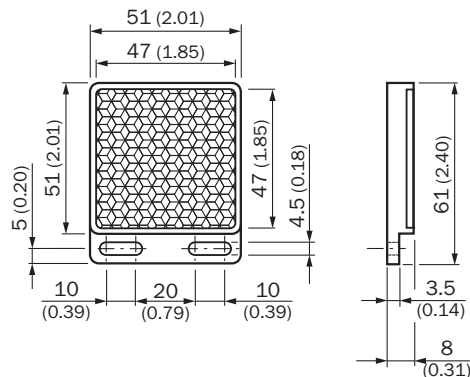
P250CHEM

Special reflector



Reflector, chemically resistant (see page 24), screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	47 mm x 47 mm
Material	plastic
Temperature	-20 °C ... +140 °C

Ordering information

Model name	Part no.
P250CHEM	5321097

PxxxCHEM – Assessment of chemical stress by TÜV Rheinland (Rhineland technical testing authority)

Liquid tested	Substance group/ component parts	Assessment after (composition, color)		
		1 day	7 days	14 days
Acetaldehyde	Aldehydes	0	0	0
Acetone	Ketones	1 (softening of surface)	1 (softening of surface)	1 (softening of surface)
Formic acid	Organic acids	0	0	0
Benzene	Aromat. hydrocarbon	0	0	1 (opacity)
1,3-Butanediol	Polyalcohols	0	0	0
Butylamine	Amines	0	0	0
Chlorobenzene	Chlor., aromat. hydrocarbon	0	0	0
Chloroform	CHC	0	0	0
Chlorosulfonic acid	Acid chlorides	0	0	0
Diesel fuel	Fuels	0	0	0
Diethyl ether	Ether	0	0	0
Dimethyl-formamide	Amides	0	0	0
Dimethyl sulfate	Ester	0	0	0
Glacial acetic acid	Organic acids	0	0	1 (slight fissures)
Acetic acid 10 %	Organic acids	0	0	0
Ethanol	Alcohols	0	0	1 (slight color change)
Ethylene glycol	Polyalcohols	0	0	0
Formaldehyde 37 %	Aldehydes	0	0	0
Heating oil EL	Fuels	0	0	0
Isopropanol	Alcohols	0	0	0
Kerosene	Fuels	0	0	0
m-Cresol	Phenols	0	0	0
Methanol	Alcohols	0	0	1 (opacity)
n-Heptane	hydrocarbon	0	0	0
Sodium hydroxide 10 %	Alkalis	0	0	0
Salt acid 20 %	Inorganic acids	0	0	0
Sulfuric acid 98 %	Inorganic acids	0	0	0
1, 1, 2, 2 Tetrachloroethane	Chlorinated hydrocarbon	0	0	0
Tetrachloromethane	Chlorinated hydrocarbon	0	0	0
Toluol	Aromat. hydrocarbon	0	0	0
Hydrogen peroxide (H ₂ O ₂), 10%		0	0	0
Cleaning agent Medicine ^a		0	0	0
Cleaning agent Food ^a		0	0	0

0 = no change
 1 = slight change (description required)
 2 = significant change (description required)
 a = Lysoformin® 3000 (contents: glyoxal, glutaral, didecyltrimethylammonium chloride)
 b = Bio Tec detergent (contents: alkylbenzene sulfonate, alkyl ether sulfate)

Measured values were taken from the inspection report by TÜV Rheinland (Rhineland technical testing authority) (Test no. 620/ 434628)

PxxxCHEM – Resistant to ECOLAB cleaning agent

Implementation:

- Immersion of the CHEM reflectors in various cleaning solutions and concentrates
- Temperature: +60 or +80 °C
- Duration: 2 weeks
- After 2 weeks, the reflectors are rinsed with DI water and optically and gravimetrically assessed.

Product/concentration	T [°C]	Suitability
P3-cosa CIP 72	60	+
P3-cosa CIP 77	80	+
P3-cosa CIP 90	80	+
P3-cosa CIP 92	80	+
P3-cosa CIP 95	80	+
P3-cosa PUR 80	80	+
P3-cosa PUR 83	80	+
P3-cosa PUR 84	80	+
P3-cosa PUR 85	80	+
P3-cosa PUR 88	80	+
P3-cosa FOAM 40	80	+
P3-cosa DES	80	+
P3-cosa FLUX 22	80	+
P3-cosa FLUX 33	80	+
P3-cosa FLUX 44	80	+
P3-cosa FLUX 55*	80	0

+ = suitable
 0 = suitable in certain conditions
 - = unsuitable
 * = contains nitric acid

Note:

Information on this page is valid for the CHEM reflectors on page 23.

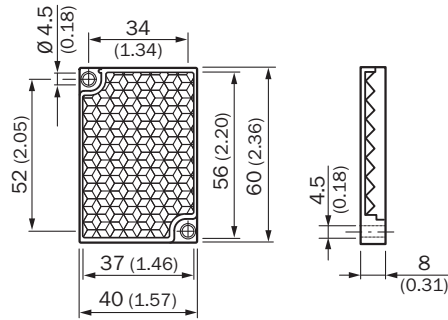
PL40A Antifog

Special reflector



Reflector, antifog, for prevention of moisture fogging on the reflection area, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	37 mm x 56 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL40A Antifog	5322011

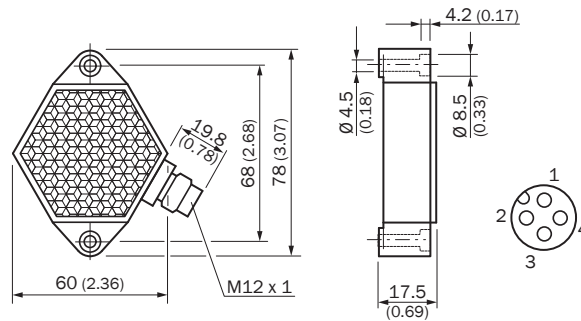
PL50HS

Special reflector



Reflector, heated, screw connection

Dimensional drawing



All dimensions in mm (inch)

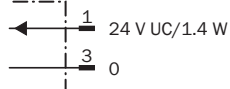
Technical data

Reflection area	a/f* 48 mm
Material	PMMA/ABS
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL50HS ¹⁾	1009871
PL50HK ²⁾	1011545

* a/f = width across flat
¹⁾ regulated heated, heating on:
 T < 15 °C
²⁾ permanently heated



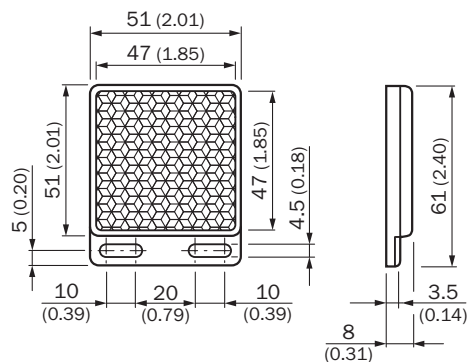
P250H

Special reflector



High-temperature reflector, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	47 mm x 47 mm
Material	HOT Thermoplast
Temperature	-20 °C ... +110 °C

Ordering information

Model name	Part no.
P250H	5315124

Special reflectors

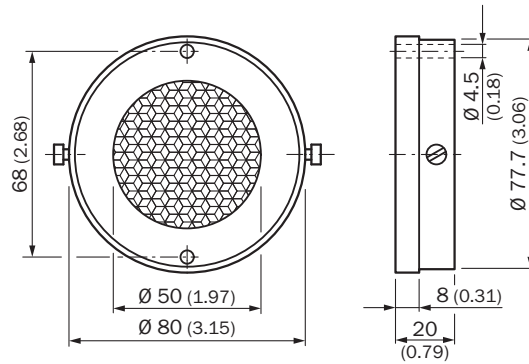
SW50

Special reflector



High temperature reflector, glass, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

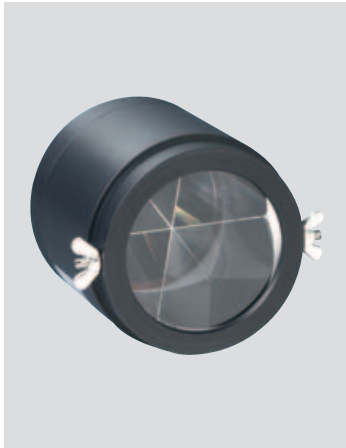
Reflection area	Ø 50 mm
Material	Aluminum (anodized)/borosilicate glass
Temperature	max. +300 °C

Ordering information

Model name	Part no.
SW50	1000131

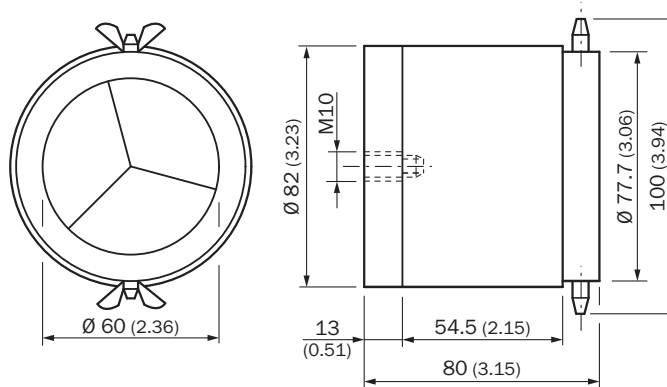
OP61

Special reflector



Single-triple glass reflector for high temperature applications, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

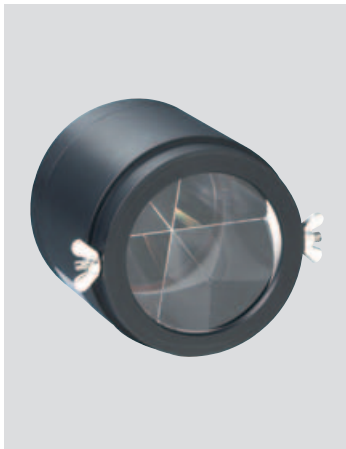
Reflection area	Ø 60 mm
Material	Aluminum (anodized)/glass
Temperature	max. +300 °C

Ordering information

Model name	Part no.
OP61	1002627

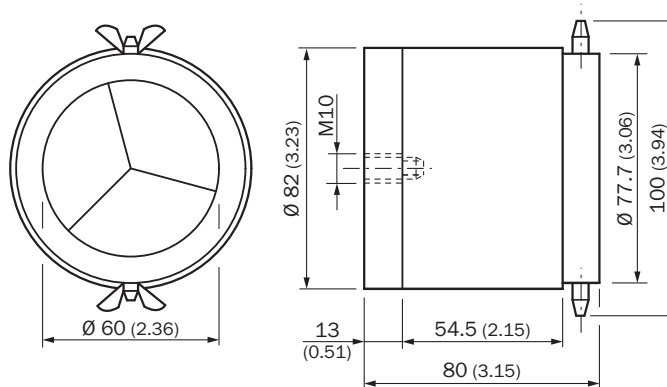
OP60-xx

Special reflector



Single-triple glass reflector for very high sensing ranges, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	Ø 60 mm
Material	Aluminum (anodized)/glass
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
OP60-00 ¹⁾	1000141
OP60-20 ²⁾	1000136

¹⁾ Focus = infinite

²⁾ Focus = 20 m

PL53A

Special reflector

Reflector, oil-proof, solvent-resistant, screw connection

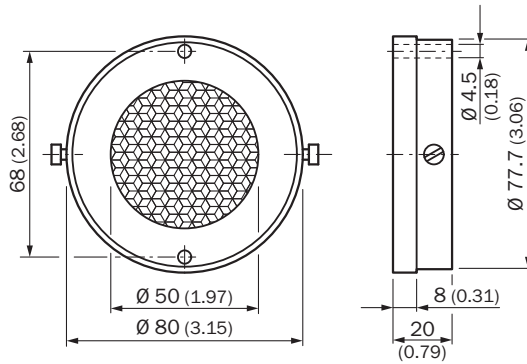
Dimensional drawing

Technical data

Reflection area	Ø 50 mm
Material	Aluminum (anodized)/ borosilicate glass
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL53A	1000382



All dimensions in mm (inch)

FLV-PL50

Special reflector

Adapter flange for SST DO 80-xxx dust protection tubes and SLV-PL50 rinse air adapter, for PL50A reflector

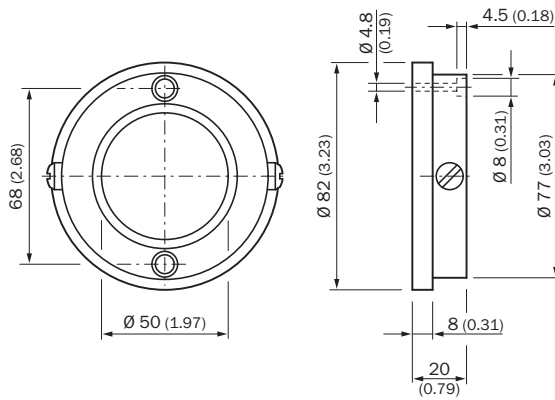
Dimensional drawing

Technical data

Material	Aluminum (anodized)
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Ordering information

Model name	Part no.
FLV-PL50	1000130



All dimensions in mm (inch)

SST DO 80-xxx

Special reflector

Dust protection tube, accessory for FLV-PL50, PL53A, SW50, OP60(-20), OP61, SLV-PL50

Dimensional drawing

Technical data

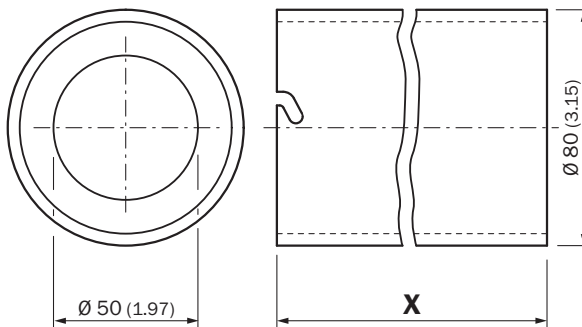
Material	Aluminum (anodized)
-----------------	------------------------

Ordering information

Model name	Part no.
SST DO 80-090 ¹⁾	1000252
SST DO 80-184 ²⁾	1000134

¹⁾ Length x = 90 mm

²⁾ Length x = 184 mm



All dimensions in mm (inch)

Special reflectors

SLV-PL50

Special reflector

Rinse air adapter for dust protection tubes, for FLV-PL50, PL53A, SW50, OP60(-20), OP61

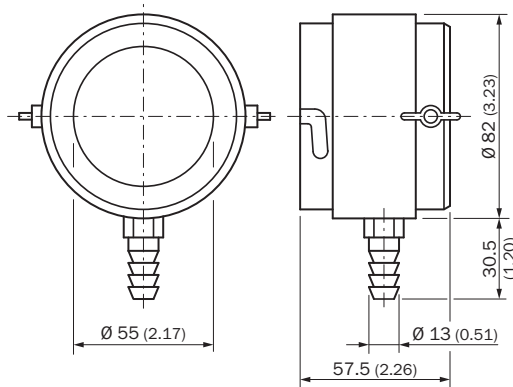
Dimensional drawing

Technical data

Reflection area	Ø 82 mm
Material	Aluminum (anodized)

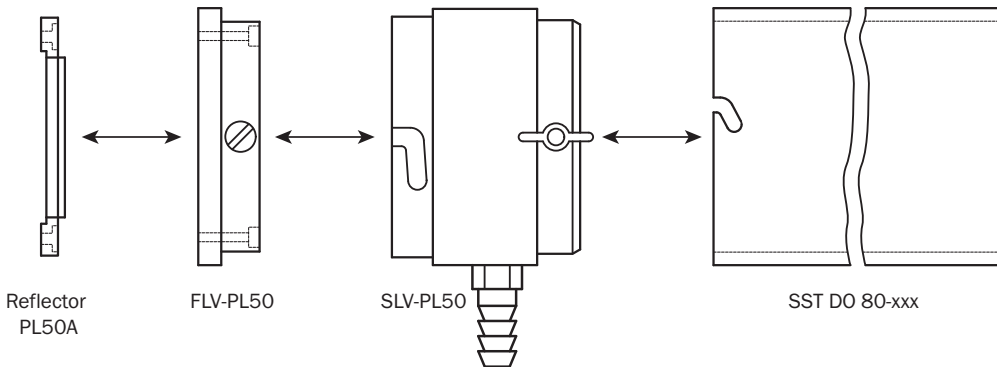
Ordering information

Model name	Part no.
SLV-PL50	1000309



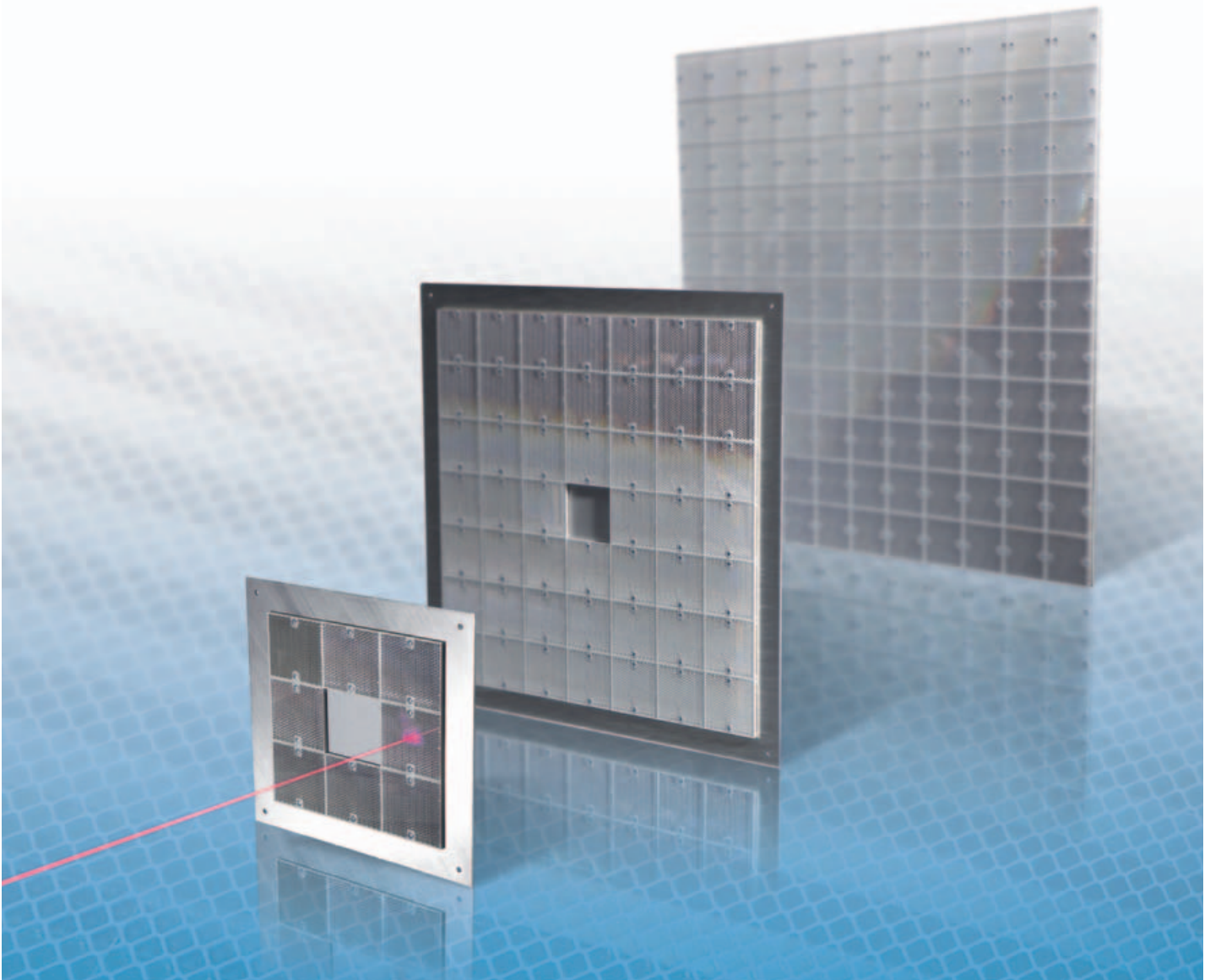
All dimensions in mm (inch)

Operating example of reflector with rinse air adapter and dust protection tube



Reflectors for distance sensors

Reflector-based distance sensors place special requirements on return beam elements used. In case of sensing ranges of up to 1200 meters or in outdoor use, the large reflector plates from SICK guarantee maximum possible operation reliability and measuring precision.



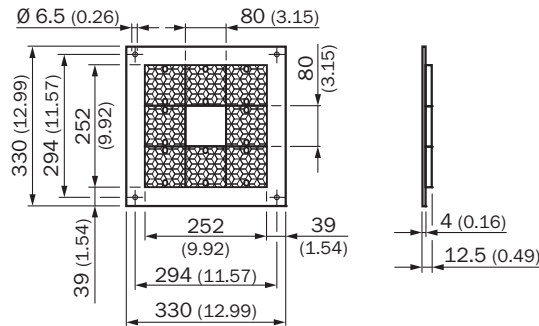
PL240F

Reflector for distance sensors



Reflector plate, 8 x PL80A, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	252 mm x 252 mm
Material	Base plate: Aluminum
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL240F	1013784

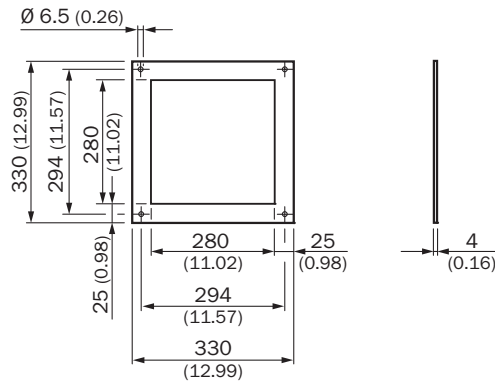
PL240 DG

Reflector for distance sensors



Reflector plate, DG tape, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	280 mm x 280 mm
Material	Base plate: Aluminum
Temperature	-34 °C ... +70 °C

Ordering information

Model name	Part no.
PL240 DG	1017910

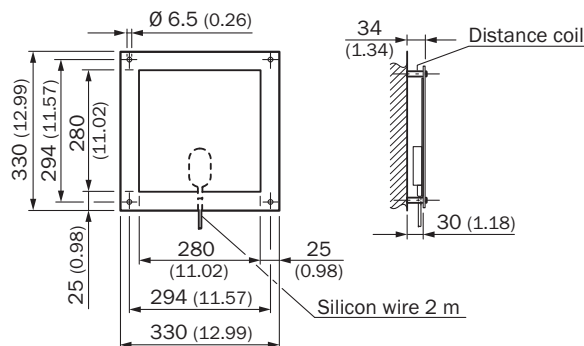
PL240 DG-H

Reflector for distance sensors



Reflector plate, DG tape, heated, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	280 mm x 280 mm
Material	Base plate: Aluminum
Temperature	-34 °C ... +70 °C

Ordering information

Model name	Part no.
PL240 DG-H	1022926

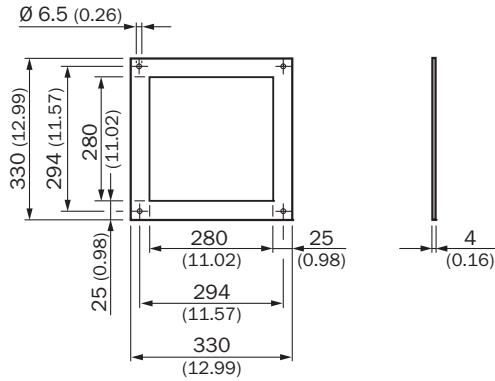
PL240-7610

Reflector for distance sensors



Reflector plate, 7610 tape, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

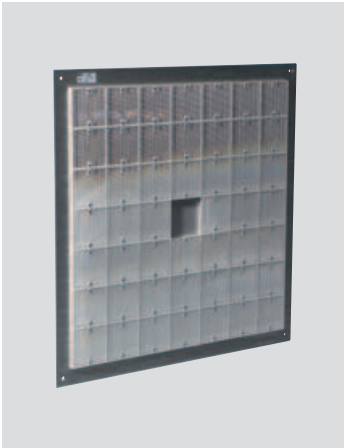
Reflection area	280 mm x 280 mm
Material	Base plate: Aluminum
Temperature	max. +65 °C

Ordering information

Model name	Part no.
PL240-7610	1019012

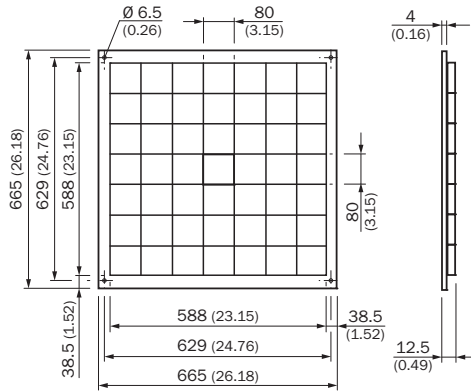
PL560F

Reflector for distance sensors



Reflector plate, 48 x PL80A, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	588 mm x 588 mm
Material	Base plate: Aluminum
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL560F	1013785

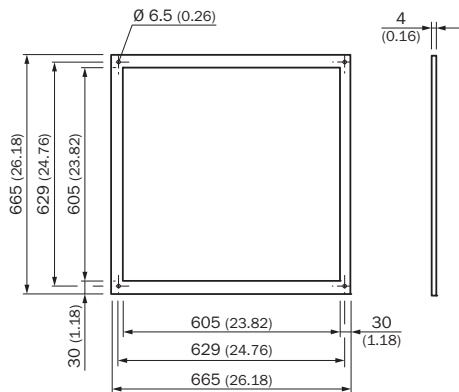
PL560 DG

Reflector for distance sensors



Reflector plate, DG tape, screw connection

Dimensional drawing



All dimensions in mm (inch)

Technical data

Reflection area	605 mm x 605 mm
Material	Base plate: Aluminum
Temperature	-34 °C ... +70 °C

Ordering information

Model name	Part no.
PL560 DG	1016806

PL880F

Reflector for distance sensors

Reflector plate, 11 x 11 PL80A, screw connection

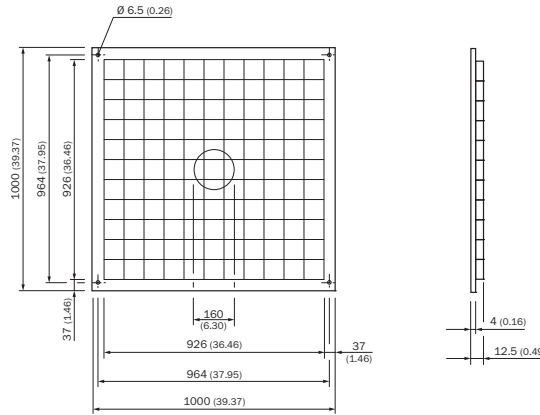
Dimensional drawing

Technical data

Reflection area	926 mm x 926 mm
Material	Base plate: Aluminum
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL880F	1013786



All dimensions in mm (inch)

PL880 DG

Reflector for distance sensors

Reflector plate, DG tape, screw connection

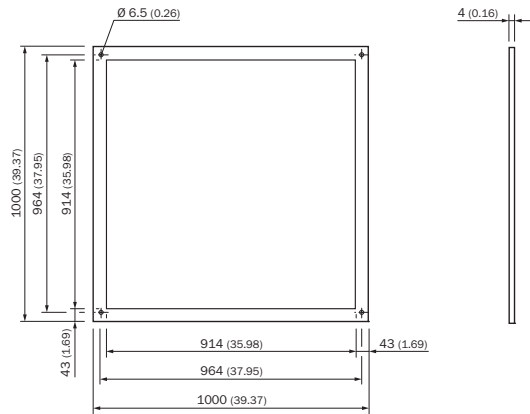
Dimensional drawing

Technical data

Reflection area	914 mm x 914 mm
Material	Base plate: Aluminum
Temperature	-34 °C ... +70 °C

Ordering information

Model name	Part no.
PL880 DG	1018975



All dimensions in mm (inch)

PL880 FS01

Reflector for distance sensors

Reflector plate, 11 x 11 PL80A, screw connection

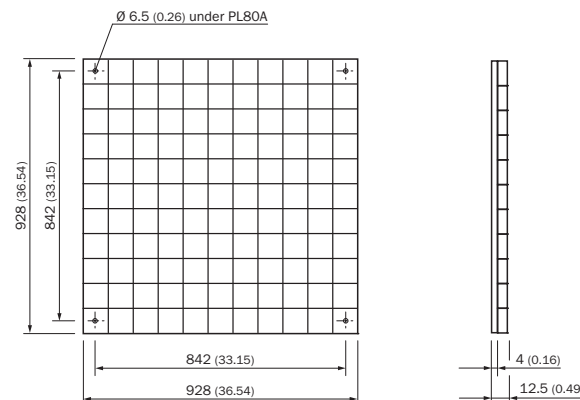
Dimensional drawing

Technical data

Reflection area	928 mm x 928 mm
Material	Base plate: Aluminum
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
PL880 FS01	1017865

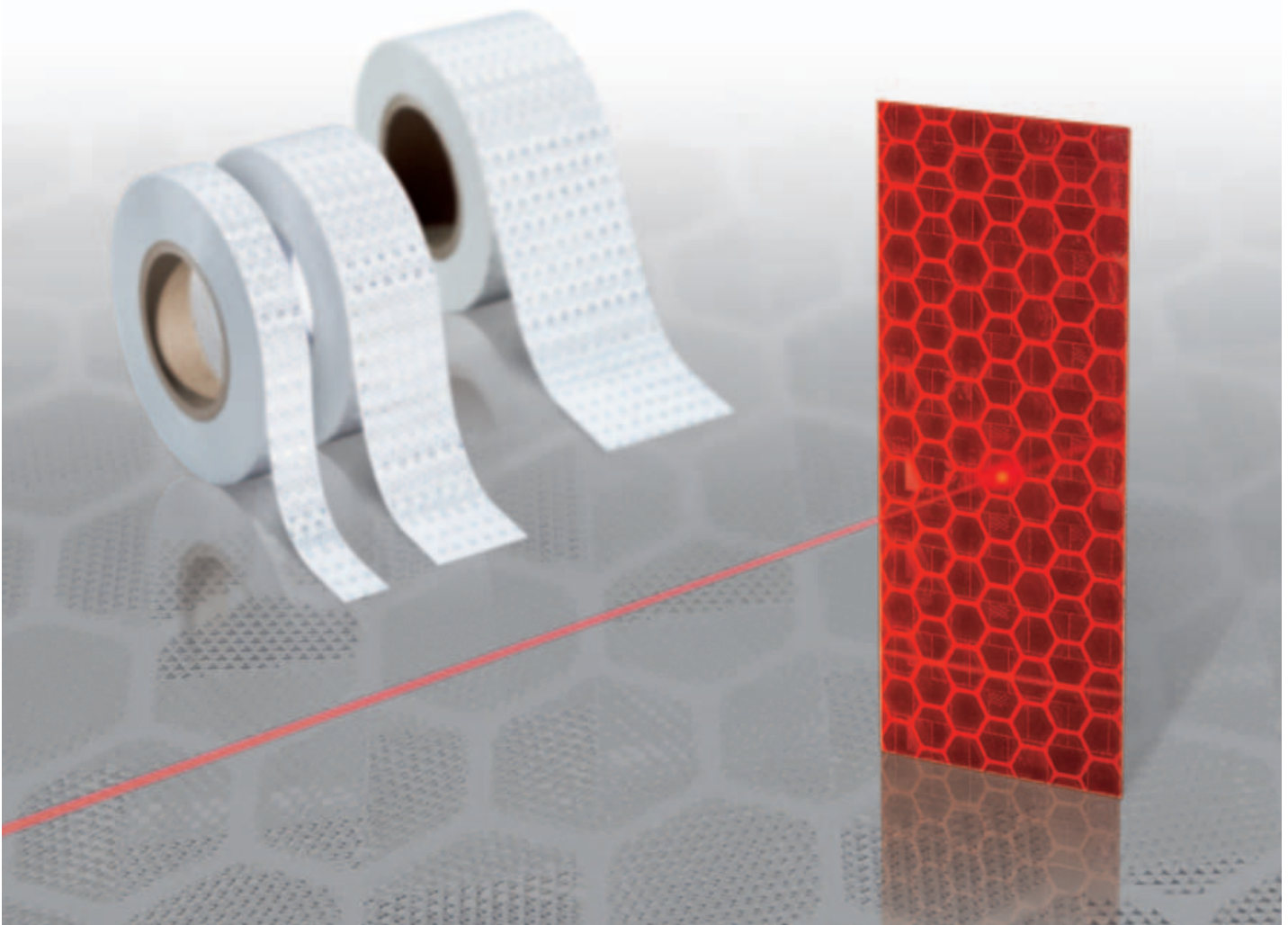


All dimensions in mm (inch)

Reflective tape

Reflective tapes are always an alternative where the application does not allow the use of a standard reflector. The use of standard reflective tapes from SICK (e.g. REF-Plus, REF-DG) reduces the sensing ranges of the sensor considerably however.

REF-AC1000 high-performance reflective tape from SICK on the other hand enables virtually the same sensing ranges as a standard reflector of the same size. The REF-AC1000 is also particularly suited to use with laser photoelectric retro-reflective sensors.



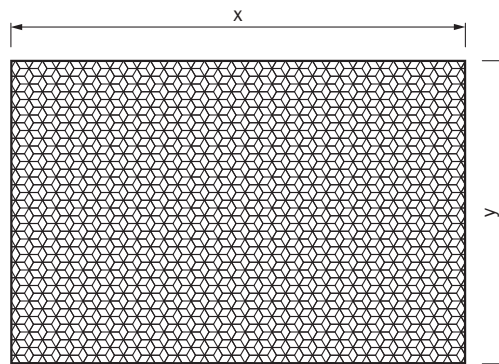
REF-IRF-56

Reflective tape



REF-Plus reflective tape, self-adhesive

Dimensional drawing



Technical data

Dimensions	x = 60 mm, y = 50 mm
Temperature	-20 °C ... +60 °C

Ordering information

Model name	Part no.
REF-IRF-56	5314244

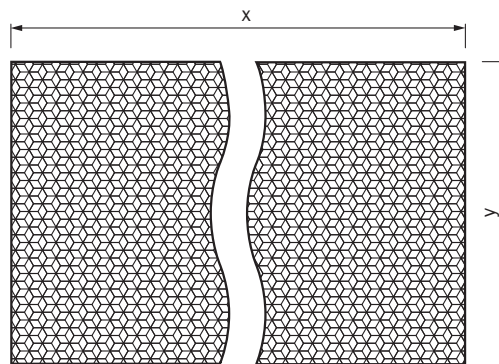
REF-Plus-R100

Reflective tape



REF-Plus reflective tape, roll, self-adhesive

Dimensional drawing



Technical data

Dimensions	x = 22.8 m, y = 100 mm
Temperature	-20 °C ... +60 °C

Ordering information

Model name	Part no.
REF-Plus-R100	5319915

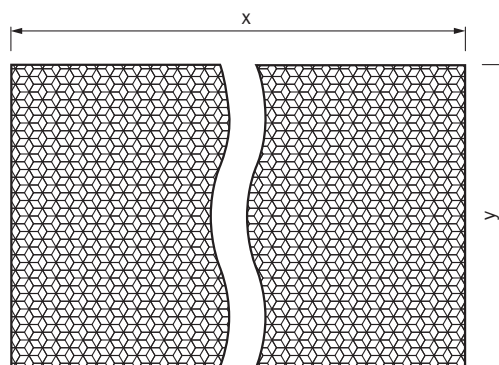
REF-Plus-R76

Reflective tape



REF-Plus reflective tape, roll, self-adhesive

Dimensional drawing



Technical data

Dimensions	x = 22.8 m, y = 76 mm
Temperature	-20 °C ... +60 °C

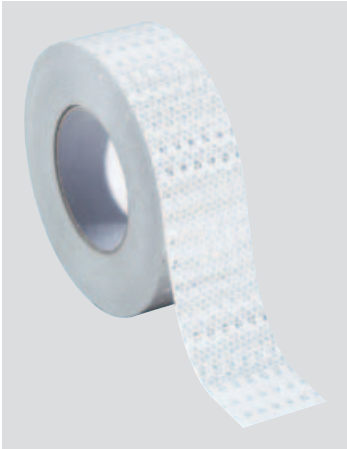
Ordering information

Model name	Part no.
REF-Plus-R76	5322215

Reflective tapes

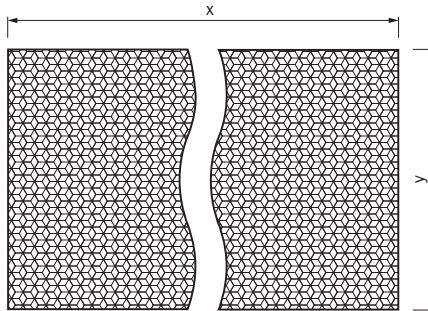
REF-Plus-R50(-K)

Reflective tape



REF-Plus reflective tape, self-adhesive

Dimensional drawing



Technical data

Temperature -20 °C ... +60 °C

Ordering information

Variants

Roll
Customizable by roll

Dimensions

x = 22.8 m, y = 50 mm
x max. = 22.8 m, y = 50 mm

Model name

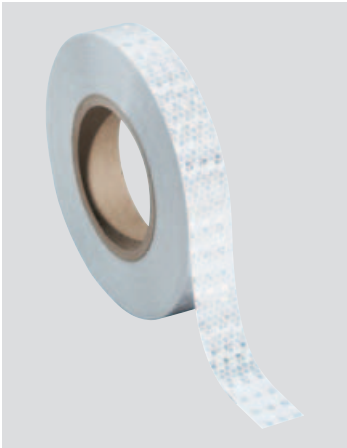
REF-Plus-R50
REF-Plus-R50-K

Part no.

5319981
4051185

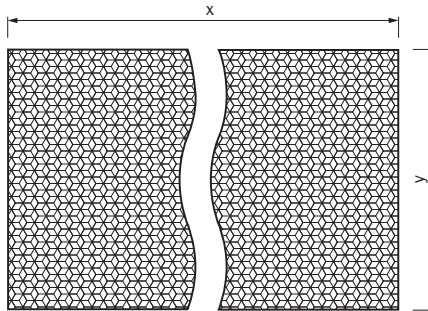
REF-Plus-R25(-K)

Reflective tape



REF-Plus reflective tape, self-adhesive

Dimensional drawing



Technical data

Temperature -20 °C ... +60 °C

Ordering information

Variants

Roll
Customizable by roll

Dimensions

x = 22.8 m, y = 25 mm
x max. = 22.8 m, y = 25 mm

Model name

REF-Plus-R25
REF-Plus-R25-K

Part no.

5319929
4051184

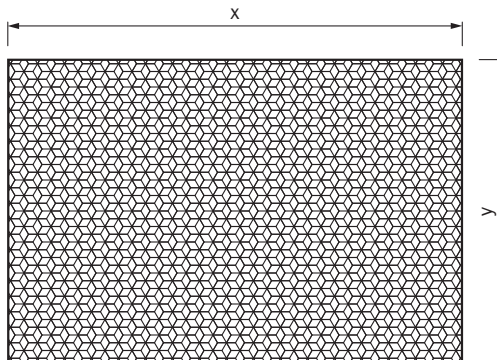
REF-Plus-3436

Reflective tape



REF-Plus reflective tape, 100 pieces per pack, self-adhesive

Dimensional drawing



Technical data

Reflection area x = 36 mm, y = 34 mm

Temperature -20 °C ... +60 °C

Ordering information

Model name

REF-Plus-3436

Part no.

5321337

REF-Plus-RED-2550

REF-Plus reflective tape, 100 pieces per pack, red, self-adhesive

Reflective tape

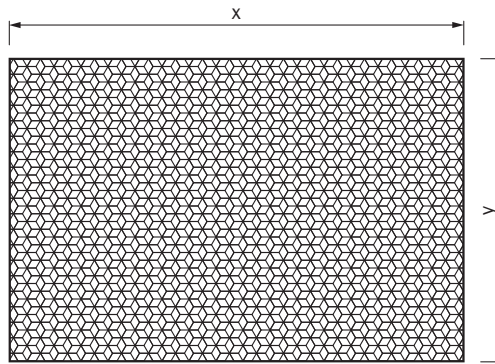
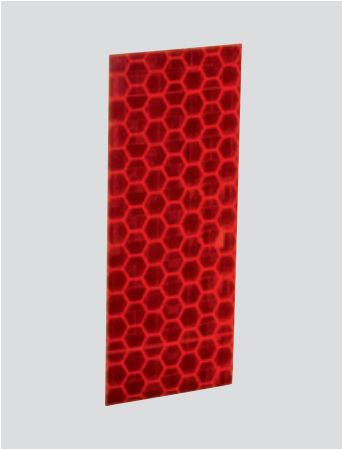
Dimensional drawing

Technical data

Reflection area	x = 50 mm, y = 25 mm
Temperature	-20 °C ... +60 °C

Ordering information

Model name	Part no.
REF-Plus-RED-2550	5320285



REF-DG(-K)

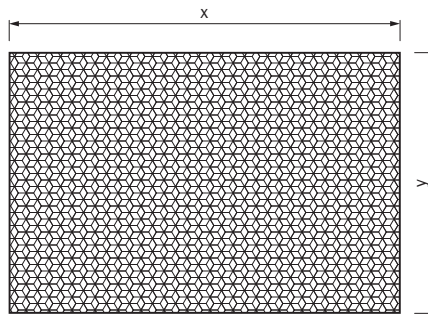
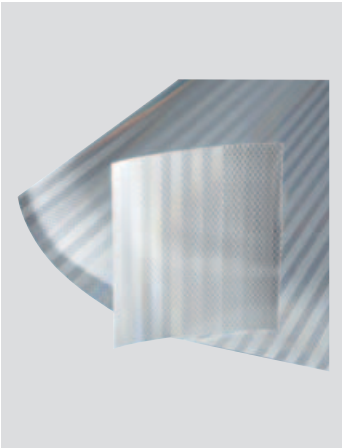
Diamond Grade reflective tape, self-adhesive

Reflective tape

Dimensional drawing

Technical data

Temperature	-34 °C ... +70 °C
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Ordering information

Variants	Dimensions	Model name	Part no.
Sheet	x = 914 mm, y = 749 mm	REF-DG	5320565
Customizable by sheet	x max. = 914 mm, y max. = 749 mm	REF-DG-K	4019634

Reflective tapes

REF-AC1000(-56)

AC1000 reflective tape, suitable for laser sensors, self-adhesive, alignment note: see below

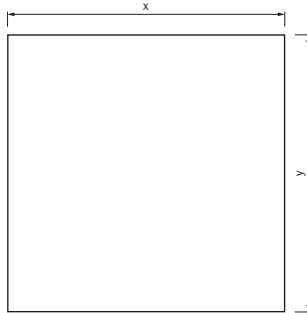
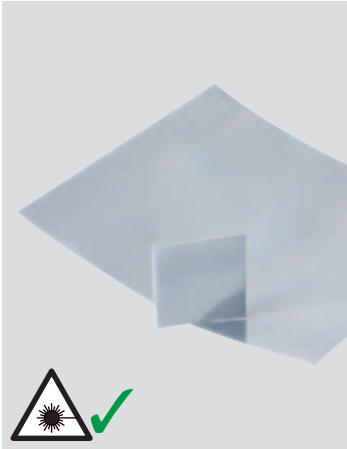
Reflective tape

Dimensional drawing

Technical data

Temperature

-20 °C ... +60 °C



Ordering information

Variants

Sheet

Cut

Dimensions

x = 225 mm, y = 225 mm

x = 56.3 mm, y = 56.3 mm

Model name

REF-AC1000

REF-AC1000-56

Part no.

5319429

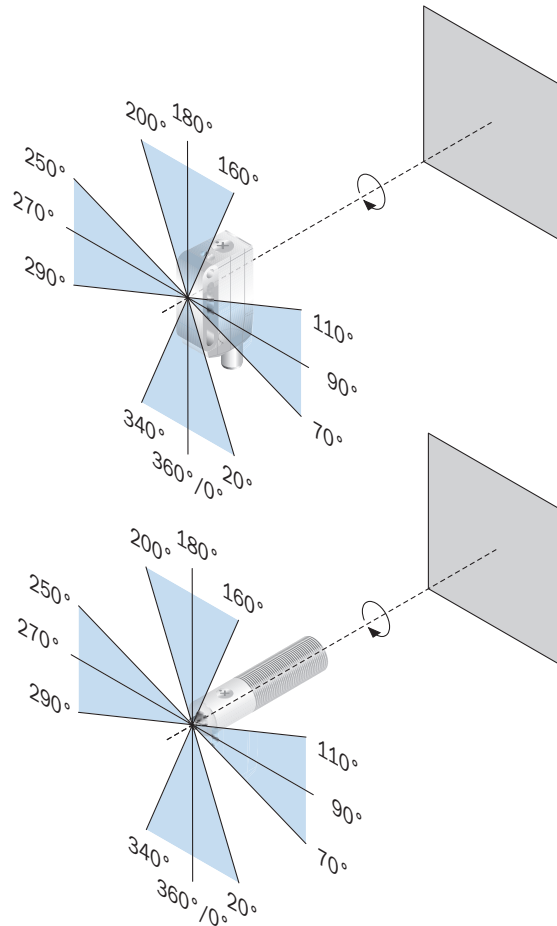
4063030

Operating range of REF-AC1000(-56) reflective tape and P41F reflector

When using the REF-AC1000 or REF-AC1000-56 reflective tape and the P41F reflector, attention must be paid to the operating range with respect to the angle of rotation. To guarantee reliable operation, the sensor and the reflector must only be used in the following angle of rotation ranges (rotation about the light beam axis), assuming the orientation between sensor and reflector shown in the diagram.

- 340° – 20°
- 70° – 110°
- 160° – 200°
- 250° – 290°

If the sensor is operated in another angle of rotation range when compared to the reflective tape, the reflection performance will be reduced to virtually zero.



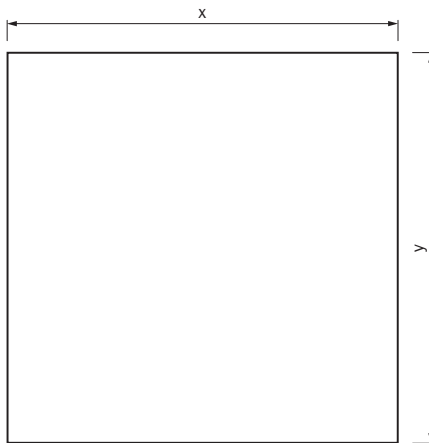
REF-APM

APM reflective tape, sheet, self-adhesive, suitable for laser sensors

Reflective tape

Dimensional drawing

Technical data



Reflection area	x = 225 mm, y = 225 mm
Temperature	-20 °C ... +60 °C

Ordering information

Model name	Part no.
REF-APM	4025097

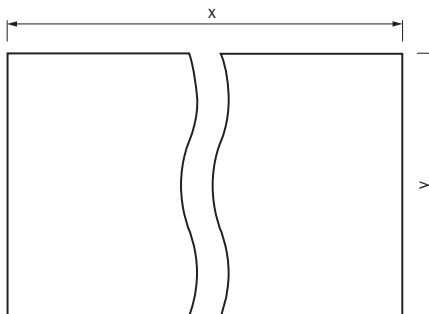
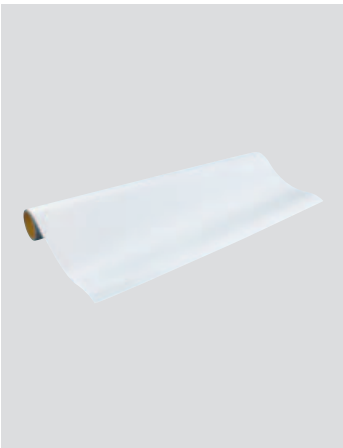
REF-3290(-K)

3290 reflective tape, self-adhesive, not suitable for photoelectric retro-reflective sensors with polarizing filter

Reflective tape

Dimensional drawing

Technical data



Temperature	-20 °C ... +65 °C
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Ordering information

Variants	Dimensions	Model name	Part no.
Length customizable by roll	x max. = 4.57 m, y = 914 mm	REF-3290	5301885
Dimensions customizable by roll	x max. = 4.57 m, y max. = 914 mm	REF-3290-K	4018696

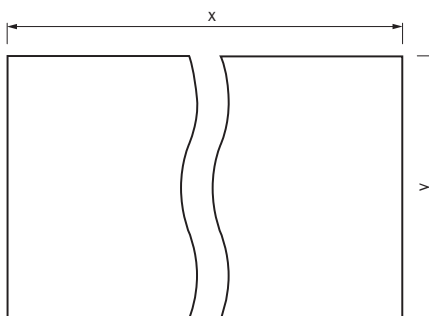
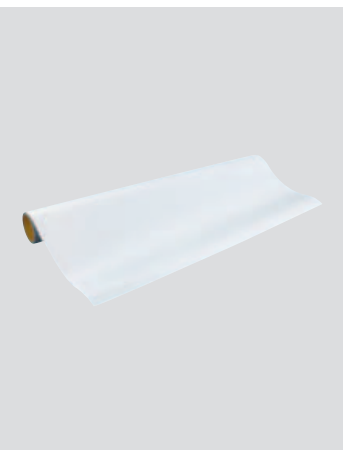
REF-3930-K2

3930 reflective tape, self-adhesive, not suitable for photoelectric retro-reflective sensors with polarizing filter

Reflective tape

Dimensional drawing

Technical data



Variants	Dimensions customizable by roll
Reflection area	x max. = 4.57 m, y max. = 914 mm
Temperature	-20 °C ... +65 °C

Ordering information

Model name	Part no.
REF-3930-K2	2057035

Reflective tapes

REF-5870

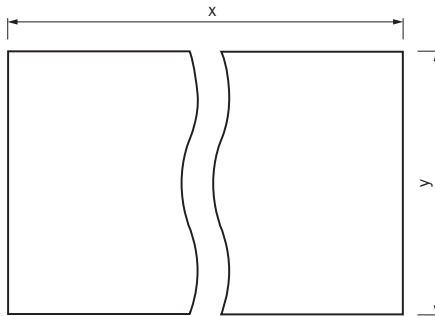
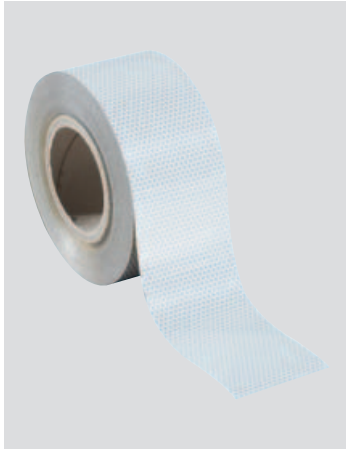
Reflective tape

5870 reflective tape, self-adhesive, not suitable for photoelectric retro-reflective sensors with polarizing filter

Dimensional drawing

Technical data

Temperature -25 °C ... +65 °C



Ordering information

Variants

Length customizable by roll

Dimensions customizable by roll

Dimensions

x max. = 45.7 m, y = 76 mm

x max. = 45.7 m, y max. = 76 mm

Model name

REF-5870-3K0

REF-5870-K

Part no.

5600292

4018616

REF-7610

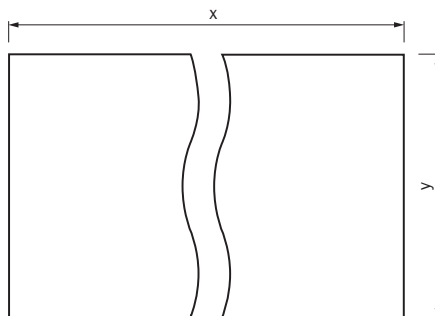
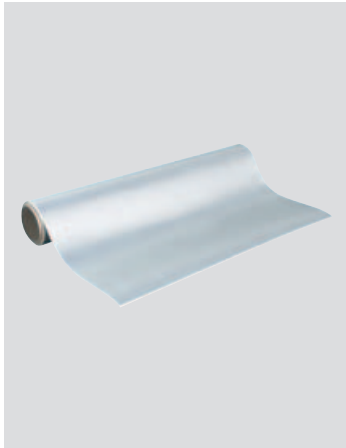
Reflective tape

7610 reflective tape, self-adhesive, not suitable for photoelectric retro-reflective sensors with polarizing filter

Dimensional drawing

Technical data

Temperature max. +65 °C



Ordering information

Variants

Length customizable by roll

Dimensions customizable by roll

Dimensions

x max. = 4.57 m, y = 610 mm

x max. = 4.57 m, y max. = 610 mm

Model name

REF-7610-OK4

REF-7610-K

Part no.

5600079

4018617

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Nederland
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Österreich
Polska
Republic of Korea
Republika Slovenija
România
Russia
Schweiz
Singapore
Suomi
Sverige
Taiwan
Türkiye
United Arab Emirates
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With its intelligent sensors, safety systems, and automatic identification applications, SICK provides comprehensive solutions for factory automation.



- Non-contact detecting, counting, classifying, and positioning of any type of object
- Accident protection and personal safety using sensors, as well as safety software and services

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Sensors made by SICK form the basis for automating material flows and the optimization of sorting and warehousing processes.



- Automated identification with barcode and RFID reading devices for the purpose of sorting and target control in industrial material flow
- Detecting volume, position, and contours of objects and surroundings with laser measurement systems

Process automation

Optimized system solutions from SICK ensure efficient acquisition of environmental and process data in many industrial processes.



- Precise measurement of gases, liquids and dust concentrations for continuous monitoring of emissions and the acquisition of process data in production processes
- Gas flow measurements with maximum accuracy thanks to compact gas meters