

W 160T: With the smallest LED light spot



WTM 160T “Mark”, the spot sensor for fast detection of color contrasts. It resolves ten gray levels and color changes in the spectral range HKS 33 N to 88 N.

WTB 160T “BGS” in two variants with precise background suppression: it focuses at a range of up to 50 mm or larger ranges up to 150 mm with additional Teach-In mode for shiny and irregular surfaces.

WL 160T, the photoelectric reflex switch with red light and 1 m scanning range is ideal for detecting smaller and (semi-)transparent objects.

WTF 160T “Focus”, an energetic scanner with focused light beam for detecting contrasts and smaller parts over larger distances.

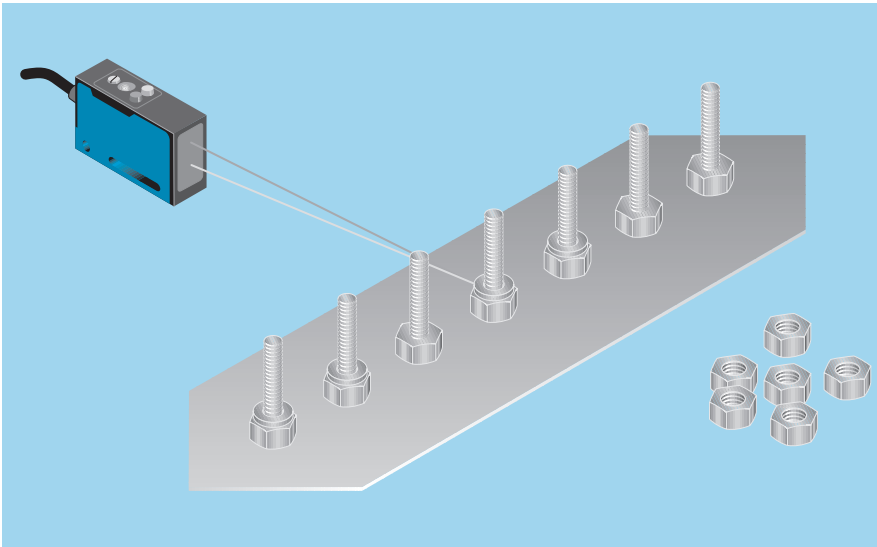
WTE 160T “Energetic”, an energetic scanner with large scanning ranges, available in infrared and red light models.

The W 160T devices are especially successful in the application fields:

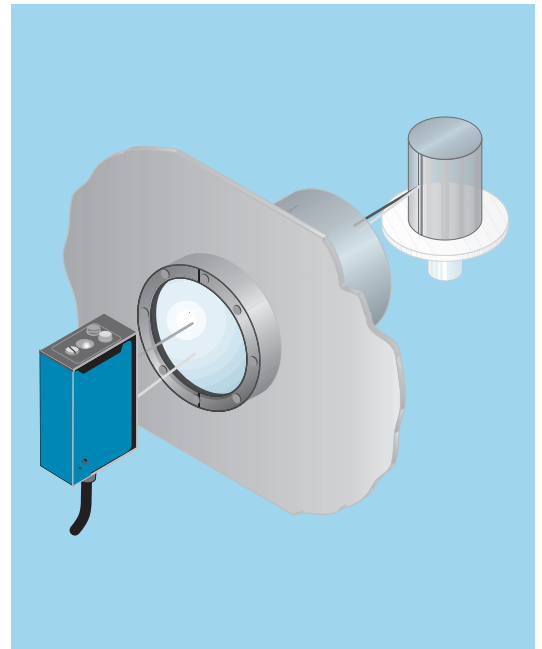
- Electronics and semiconductor manufacturing
- Packaging and graphic arts industries
- Assembly and handling (Pick & Place)
- Special mechanical engineering tasks
- Conveyor systems

System focal points are small, precise light spot for small objects, including transparent ones, and high-speed applications. Teach-In function – external or at the push of a button – with high precision simplifies handling. Sturdy, sealed-in housing enables use even under difficult ambient conditions. The W 160T even fits in small spaces thanks to its compact design. This makes it especially easy to mount. All W 160T variants are available in two housing models with axial or 90° light emission.

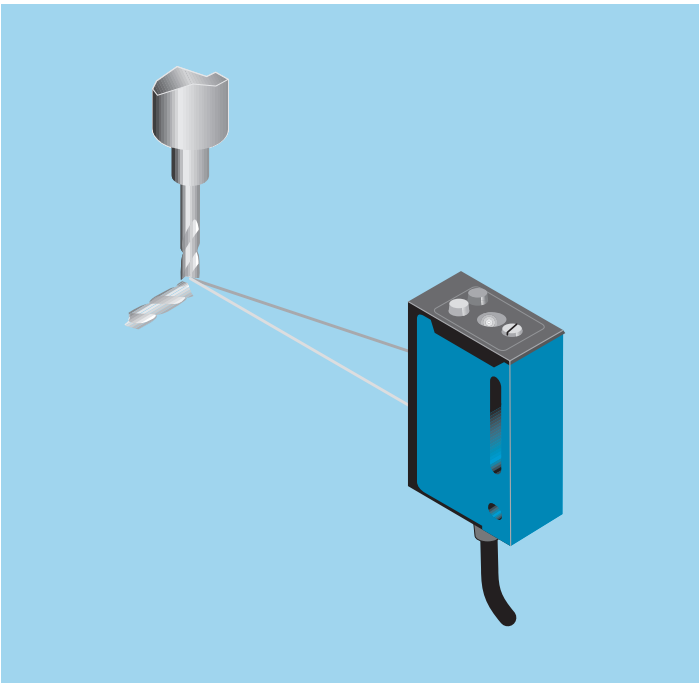
	BGS Photoelectric proximity switches
	Photoelectric proximity switches mark sensor
	Photoelectric proximity switches energetic
	Photoelectric reflex switches



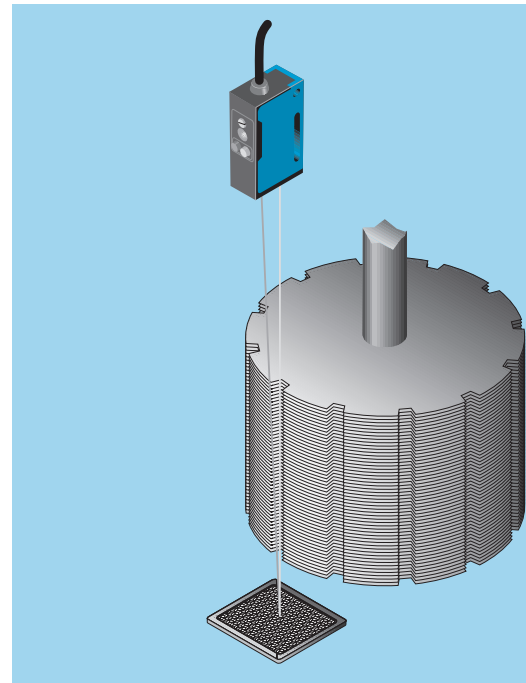
▲ WTB 160T BGS detects the presence of washers, gasket rings and o-rings.



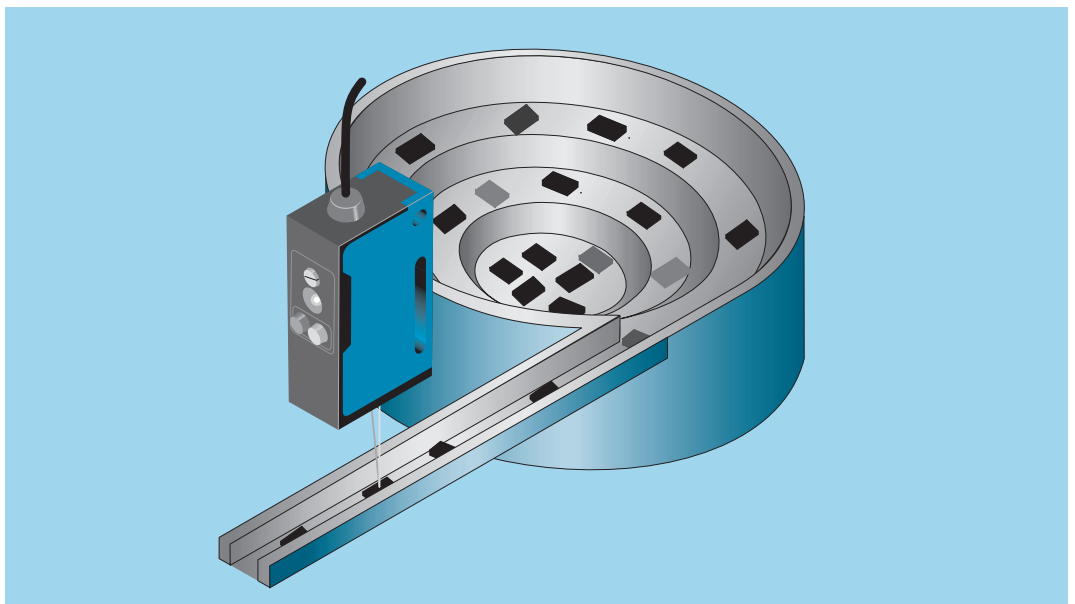
▲ The focused photoelectric proximity switch WTF 160T checks the orientation of a groove in a vacuum chamber over a large distance.



▲ Monitoring of tool imprints, e.g., in printed circuit board manufacturing. The WTB 160T BGS detects the smallest drills reliably down to 0.3 mm diameter.



◀ The WL 160T photoelectric proximity switch detects the position of bundles of sheet metal and individual sheets of a rotor.



► The WTM 160T Mark photoelectric proximity switch distinguishes the front and back sides of components in a vibration conveyor.

Condition

Teach-In

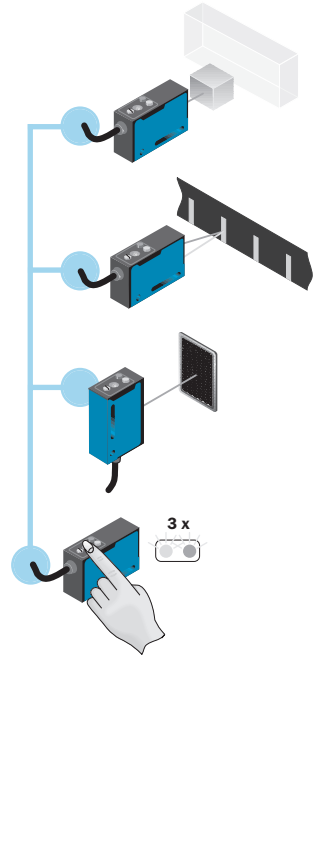
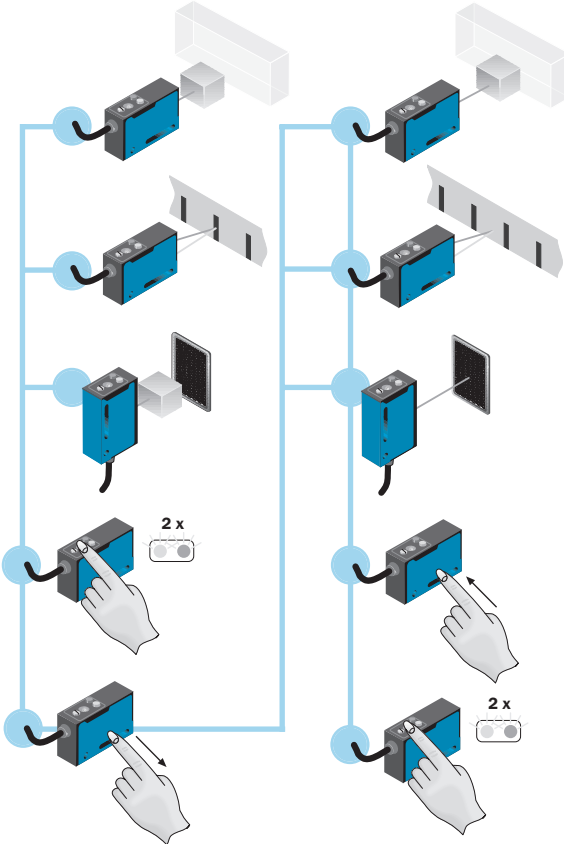
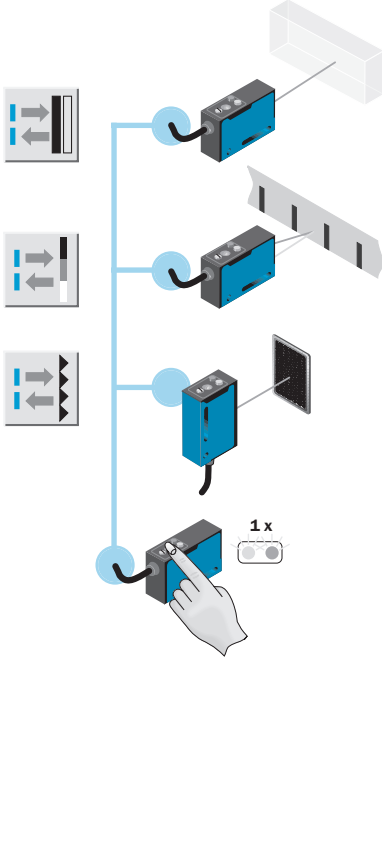
Status

Application

1-point Teach-In:

2-point Teach-In:

Position Teach-In



Background will *just not* be detected.

Sensitivity aligned to the center between the two Teach-In points.

Object will *just* be detected.

Dark mark will *just not* be detected.

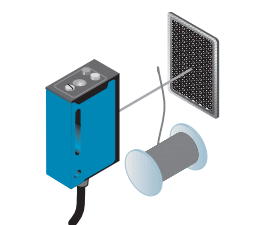
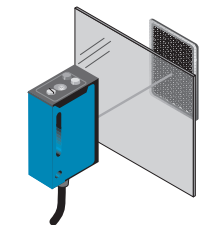
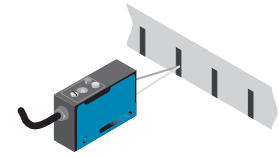
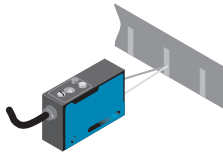
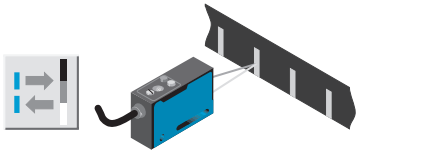
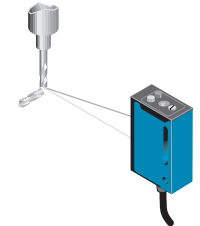
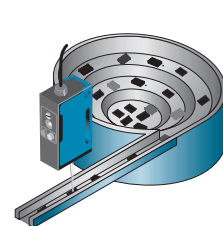
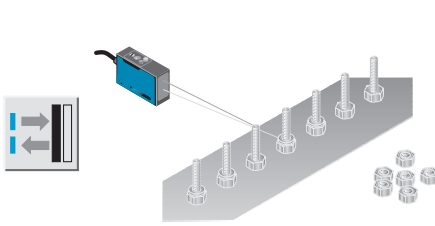
Sensitivity aligned to the center between the two Teach-In points.


Light mark will *just* be detected.

Reflector is detected *with reserve*.

Sensitivity aligned to the center between the two Teach-In points.

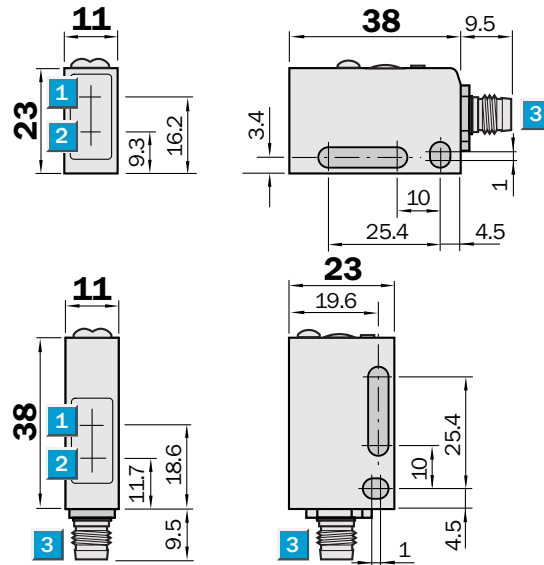
Reflector is detected *without reserve*.




Scanning distance
15 ... 50 mm
Photoelectric proximity switch

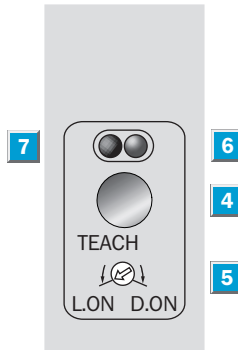
- Very small light spot
- Precise background suppression and great sensitivity
- Detects the smallest objects
- LED indicator: function reserve

Dimension illustration



Setting options

All types

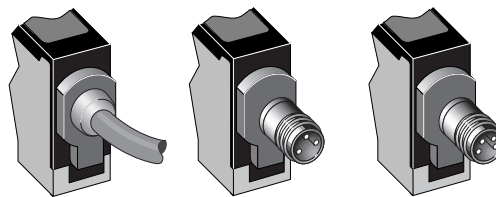


- 1** Optics center, receiver
- 2** Optics center, transmitter
- 3** Plug 3 pin/4 pin, M 8 or connection cable
- 4** Teach-In button
- 5** Light/dark rotary switch:
L = light switching
D = dark switching
- 6** Orange LED indicator: switching output active
- 7** Green LED indicator: light reception with operating reserve > 1.1



Connection type

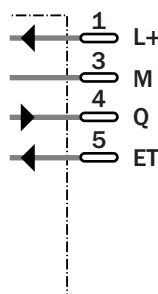
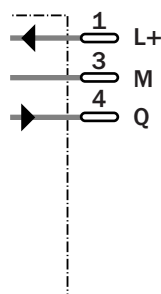
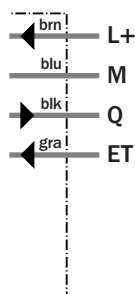
WTB 160T-P 212	WTB 160T-P 311	WTB 160T-P 412
WTB 160T-N 212	WTB 160T-N 311	WTB 160T-N 412
WTB 160T-F 212	WTB 160T-F 311	WTB 160T-F 412
WTB 160T-E 212	WTB 160T-E 311	WTB 160T-E 412



4 x 0.2 mm²

3 pin, M8

4 pin, M8



Accessories

Connectors

Mounting systems



Technical data		WTB 160T-									
		P ^{1)/F²⁾}	P ^{1)/F²⁾}	P ^{1)/F²⁾}	N ^{1)/E²⁾}	N ^{1)/E²⁾}	N ^{1)/E²⁾}				
		212	311	412	212	311	412				
Scanning distance	15 ... 50 mm ³⁾										
Sensitivity control	External Teach (ET)										
Light source⁴⁾	LED, red light										
Supply voltage V_s	10...30 V DC ⁵⁾										
Ripple ⁶⁾	± 10 %										
Current consumption ⁷⁾	≤ 40 mA										
Switching outputs	PNP, open collector: Q										
	NPN, open collector: Q										
Output current I _A max.	100 mA										
Light receiver, switching type	Light/dark switching per rotary switch										
Response time ^{8)/switching freq. max.⁹⁾}	≤ 0.7 ms / 550/s										
Connection type: cable	PVC, 2 m ¹⁰⁾ ; 4 x 0.2 mm ² , ø 4.2 mm										
	plug										
	plug										
VDE protection class	III										
Circuit protection ¹¹⁾	A, B, C, D										
Enclosure rating	IP 67										
Ambient temperature	Operation - 25...+ 55 °C										
	Storage - 40 ...+ 70 °C										
Weight	With cable 2/5 m approx. 60 g										
	With plug approx. 20 g										
Housing material	Housing: PBT; Optic: PMMA										

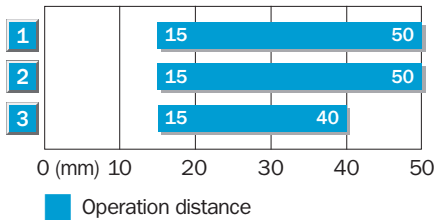
1) Housing form: horizontal
 2) Housing form: vertical
 3) Object with 90% reflectance
 (with reference to standard white according to DIN 5033)

4) Average service life 100,000 h at T_U = +25 °C
 5) Limit values
 6) Must be within V_s tolerances
 7) Without load

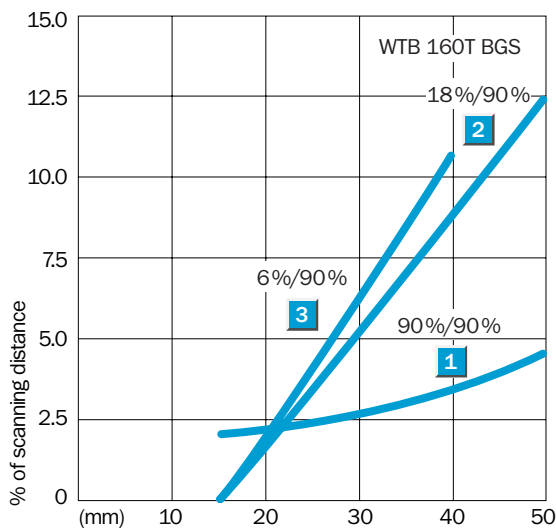
8) With resistive load
 9) With light/dark ratio 1:1
 10) 5 m are available on request, do not bend cable below 0 °C

11) A = V_s connections reverse-polarity protected
 B = Inputs and outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

Scanning distance



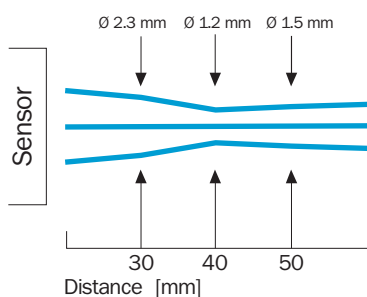
- 1 Scanning range on white, 90 % reflectance
- 2 Scanning range on grey, 18 % reflectance
- 3 Scanning range on black, 6 % reflectance



Order information

Type	Order no.
WTB 160T-P 212	6 020 895
WTB 160T-P 311	6 021 318
WTB 160T-P 412	6 020 991
WTB 160T-N 212	6 020 894
WTB 160T-N 311	6 021 319
WTB 160T-N 412	6 020 947
WTB 160T-F 212	6 020 952
WTB 160T-F 311	6 021 316
WTB 160T-F 412	6 021 158
WTB 160T-E 212	6 020 951
WTB 160T-E 311	6 021 317
WTB 160T-E 412	6 021 157

Light spot diameter WTB 160T HGA

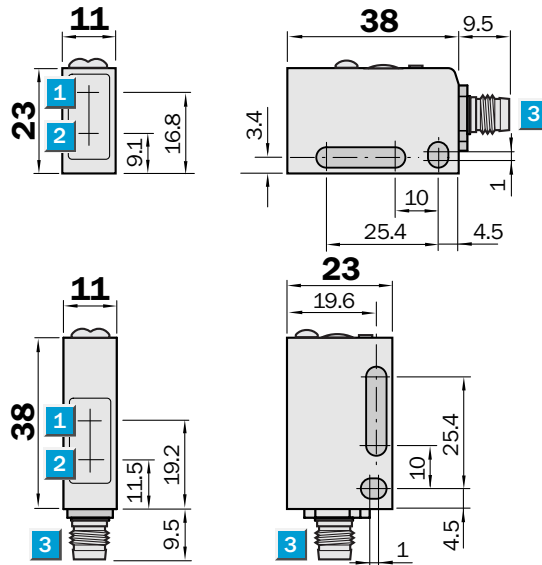


Scanning distance
50 ... 150 mm

Photoelectric proximity switch

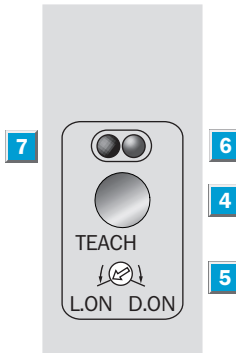
- Large scanning distance (150 mm)
- Additional Teach-In mode for shiny and structured surfaces
- LED indicator: function reserve

Dimension illustration



Setting options

All types

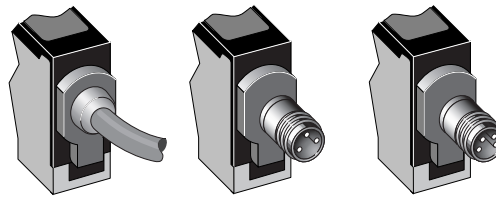


- Optics center, receiver
- Optics center, transmitter
- Plug 3 pin/4 pin, M 8 or connection cable
- Teach-In button
- Light/dark rotary switch:
L = light switching
D = dark switching
- Orange LED indicator: switching output active
- Green LED indicator: light reception with operating reserve > 1.1



Connection type

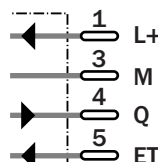
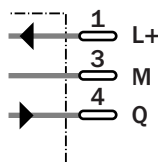
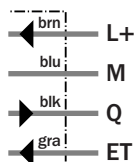
WTB 160T-P 232	WTB 160T-P 331	WTB 160T-P 432
WTB 160T-N 232	WTB 160T-N 331	WTB 160T-N 432
WTB 160T-F 232	WTB 160T-F 331	WTB 160T-F 432
WTB 160T-E 232	WTB 160T-E 331	WTB 160T-E 432



4 x 0.2 mm²

3 pin, M8

4 pin, M8



Accessories

Connectors

Mounting systems



Technical data		WTB 160T-		P ^{1)/F²⁾}	P ^{1)/F²⁾}	P ^{1)/F²⁾}	N ^{1)/E²⁾}	N ^{1)/E²⁾}	N ^{1)/E²⁾}				
				232	331	432	232	331	432				
Scanning distance	50 ... 150 mm ³⁾												
Sensitivity control	External Teach (ET)												
Light source⁴⁾	LED, red light												
Supply voltage V_s	10...30 V DC ⁵⁾												
Ripple ⁶⁾	± 10 %												
Current consumption ⁷⁾	≤ 45 mA												
Switching outputs	PNP, open collector: Q												
	NPN, open collector: Q												
Output current I _A max.	100 mA												
Light receiver, switching type	Light/dark switching per rotary switch												
Response time ^{8)/switching freq. max.⁹⁾}	≤ 2.5 ms / 200/s												
Connection type: cable	PVC, 2 m ¹⁰⁾ ; 4 x 0.2 mm ² , ø 4.2 mm												
	plug												
	plug												
VDE protection class	III												
Circuit protection ¹¹⁾	A, B, C, D												
Enclosure rating	IP 67												
Ambient temperature	Operation - 25...+ 55 °C												
	Storage - 40 ...+ 70 °C												
Weight	With cable 2/5 m approx. 60 g												
	With plug approx. 20 g												
Housing material	Housing: PBT; Optic: PMMA												

1) Housing form: horizontal
 2) Housing form: vertical
 3) Object with 90% reflectance (with reference to standard white according to DIN 5033)

4) Average service life 100,000 h at T_U = +25 °C
 5) Limit values
 6) Must be within V_s tolerances
 7) Without load

8) With resistive load
 9) With light/dark ratio 1:1
 10) 5 m are available on request, do not bend cable below 0 °C

11) A = V_s connections reverse-polarity protected
 B = Inputs and outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

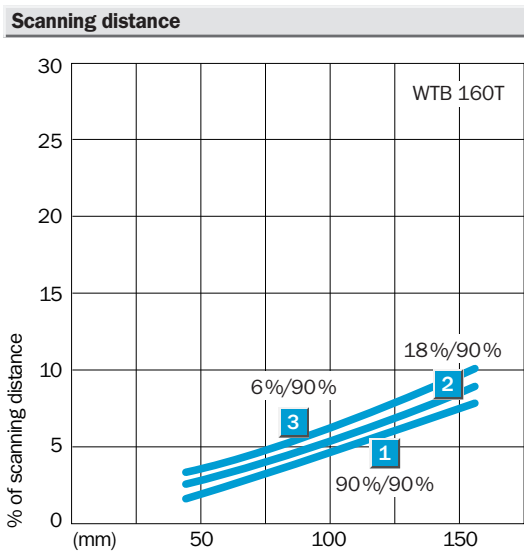
FGS Teach-In

Condition

Teach-In

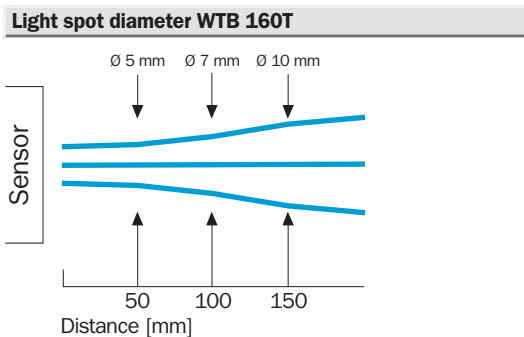
Status

Object in "A" area is detected.



Order information

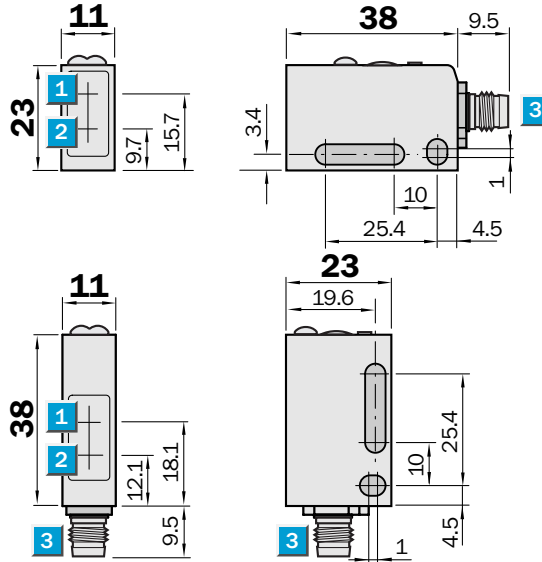
Type	Order no.
WTB 160T-P 232	6 021 868
WTB 160T-P 331	6 020 867
WTB 160T-P 432	6 021 870
WTB 160T-N 232	6 021 872
WTB 160T-N 331	6 021 871
WTB 160T-N 432	6 021 874
WTB 160T-F 232	6 021 860
WTB 160T-F 331	6 021 859
WTB 160T-F 432	6 021 862
WTB 160T-E 232	6 020 864
WTB 160T-E 331	6 020 863
WTB 160T-E 432	6 020 866



Scanning distance
10 mm
Photoelectric proximity switch

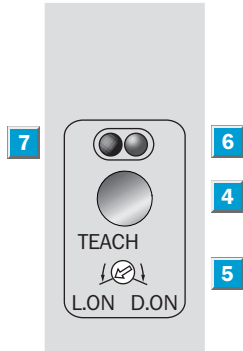
- Mark sensor
- Enclosure rating: IP 67
- Resolves ten gray levels
- LED indicator: function reserve

Dimension illustration



Setting options

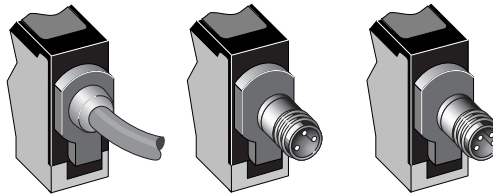
All types



- 1 Optics center, receiver
- 2 Optics center, transmitter
- 3 Plug 3 pin/4 pin, M 8 or connection cable
- 4 Teach-In button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 Orange LED indicator: switching output active
- 7 Green LED indicator: light reception with operating reserve > 1.1

Connection type

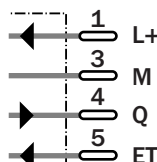
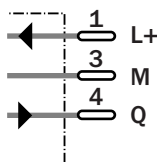
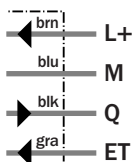
WTM 160T-P 292	WTM 160T-P 391	WTM 160T-P 492
WTM 160T-N 292	WTM 160T-N 391	WTM 160T-N 492
WTM 160T-F 292	WTM 160T-F 391	WTM 160T-F 492
WTM 160T-E 292	WTM 160T-E 391	WTM 160T-E 492



4 x 0.2 mm²

3 pin, M8

4 pin, M8



Accessories

- Connectors
- Mounting systems

Technical data		WTM 160T-									
		P ¹ /F ²	P ¹ /F ²	P ¹ /F ²	N ¹ /E ²	N ¹ /E ²	N ¹ /E ²				
		292	391	492	292	391	492				
Scanning distance	10 ± 2 mm										
Sensitivity control	External Teach (ET)										
Light source³⁾	LED, green light										
Light spot diameter	Approx. 2 x 5 mm at 10 mm distance										
Transmitter dispersion angle	Focused, Focus 10 mm										
Supply voltage V_s	10...30 V DC ⁴⁾										
Ripple ⁵⁾	± 10 %										
Current consumption ⁶⁾	≤ 40 mA										
Switching outputs	PNP, open collector: Q										
	NPN, open collector: Q										
Output current I _A max.	100 mA										
Light receiver, switching type	Light/dark switching per rotary switch										
Response time ⁷⁾ /switching freq. max. ⁸⁾	≤ 0.2 ms / 2500/s										
Connection type: cable	PVC, 2 m ⁹⁾ ; 4 x 0.2 mm ² , ø 4.2 mm										
plug	3 pin, M8										
plug	4 pin, M8										
VDE protection class	III										
Circuit protection ¹⁰⁾	A, B, C, D										
Enclosure rating	IP 67										
Ambient temperature	Operation - 25...+ 55 °C										
	Storage - 40...+ 70 °C										
Weight	With cable 2/5 m approx. 60 g										
	With plug approx. 20 g										
Housing material	Housing: PBT; Optic: PMMA										

¹⁾ Housing form: horizontal
²⁾ Housing form: vertical
³⁾ Average service life 100,000 h at T_U = +25 °C

⁴⁾ Limit values
⁵⁾ Must be within V_s tolerances
⁶⁾ Without load
⁷⁾ With resistive load

⁸⁾ With light/dark ratio 1:1
⁹⁾ 5 m are available on request, do not bend cable below 0 °C
¹⁰⁾ A = V_s connections reverse-polarity protected

B = Inputs and outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

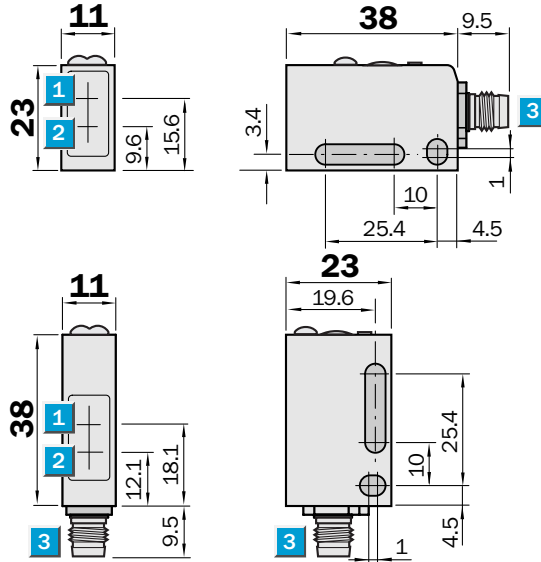
Color detection			
Detection of color changes in the spectral range HKS ¹¹⁾ 33 N (violet) to 88 N (black) from 25 % to 100 %. The orange LED or the green and orange LEDs light when there is detection.	The following are not resolved: 33 N (25 %)/88 N (25 %), 33 N (25 %)/77 N (25 %), 33 N (25 %)/23 N (25 %), 43 N (50 %)/54 N (75 %), 43 N (25 %)/77 N (25 %), 43 N (25 %)/8 N (25 %), 54 N (50 %)/4 N (75 %), and 23 N (25 %)/77 N (25 %).	88 N: black 77 N: brown 23 N: red 8 N: orange 4 N: yellow 54 N: green 47 N: light blue 43 N: dark blue 33 N: violet	¹¹⁾ HKS $\hat{=}$ Hostmann-Steinberg, K+E printing inks, Schminke & Co. HKS colors are printing inks, which were developed by the above-mentioned companies, to guarantee the precise reproducibility of a color. They are standard in the graphic arts industry. HKS-N stands for uncoated paper in offset and letterpress printing with a color spectrum of 1 (yellow) to 97 (black). The color scale is available from SICK upon request. Order no.: 8 006 387.

Scanning distance		Order information	
1	Scanning range on white, 90 % reflectance	Type	Order no.
2	Scanning range on grey, 18 % reflectance	WTM 160T-P 292	6 020 493
3	Scanning range on black, 6 % reflectance	WTM 160T-P 391	6 021 506
		WTM 160T-P 492	6 020 495
		WTM 160T-N 292	6 020 492
		WTM 160T-N 391	6 021 382
		WTM 160T-N 492	6 020 494
		WTM 160T-F 292	6 020 671
		WTM 160T-F 391	6 021 351
		WTM 160T-F 492	6 020 785
		WTM 160T-E 292	6 020 667
		WTM 160T-E 391	6 021 505
		WTM 160T-E 492	6 020 695

Scanning distance
 5 ... 100 mm
Photoelectric proximity switch

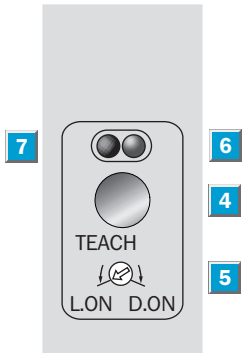
- Detects small objects and contrast differences at a large distance (100 mm)
- Focused light beam
- LED indicator: function reserve

Dimension illustration



Setting options

All types

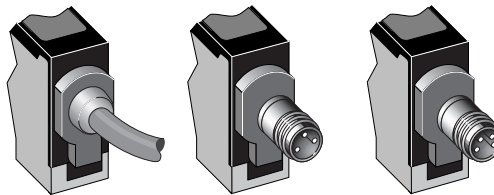


- 1** Optics center, receiver
- 2** Optics center, transmitter
- 3** Plug 3 pin/4 pin, M 8 or connection cable
- 4** Teach-In button
- 5** Light/dark rotary switch:
L = light switching
D = dark switching
- 6** Orange LED indicator: switching output active
- 7** Green LED indicator: light reception with operating reserve > 1.1



Connection type

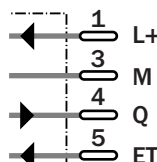
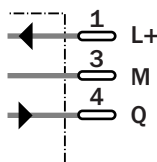
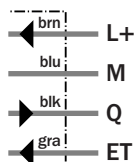
WTF 160T-P 212	WTF 160T-P 311	WTF 160T-P 412
WTF 160T-N 212	WTF 160T-N 311	WTF 160T-N 412
WTF 160T-F 212	WTF 160T-F 311	WTF 160T-F 412
WTF 160T-E 212	WTF 160T-E 311	WTF 160T-E 412



4 x 0.2 mm²

3 pin, M8

4 pin, M8



Accessories

- Connectors
- Mounting systems



Technical data		WTF 160T-									
		P ¹ /F ²	P ¹ /F ²	P ¹ /F ²	N ¹ /E ²	N ¹ /E ²	N ¹ /E ²				
		212	311	412	212	311	412				
Scanning distance	5 ... 100 mm ³⁾										
Sensitivity control	External Teach (ET)										
Light source ⁴⁾	LED, red light										
Supply voltage V _s	10...30 V DC ⁵⁾										
Ripple ⁶⁾	± 10 %										
Current consumption ⁷⁾	≤ 40 mA										
Switching outputs	PNP, open collector: Q										
	NPN, open collector: Q										
Output current I _A max.	100 mA										
Light receiver, switching type	Light/dark switching per rotary switch										
Response time ⁸⁾ /switching freq. max. ⁹⁾	≤ 0.5 ms / 1000/s										
Connection type: cable	PVC, 2 m ¹⁰⁾ ; 4 x 0.2 mm ² , ø 4.2 mm										
	plug										
	plug										
VDE protection class	III										
Circuit protection ¹¹⁾	A, B, C, D										
Enclosure rating	IP 67										
Ambient temperature	Operation -25...+55 °C										
	Storage -40...+70 °C										
Weight	With cable 2/5 m approx. 60 g										
	With plug approx. 20 g										
Housing material	Housing: PBT; Optic: PMMA										

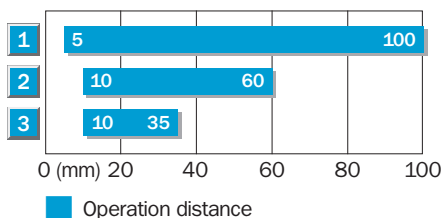
1) Housing form: horizontal
 2) Housing form: vertical
 3) Object with 90% reflectance (with reference to standard white according to DIN 5033)

4) Average service life 100,000 h at T_U = +25 °C
 5) Limit values
 6) Must be within V_s tolerances
 7) Without load

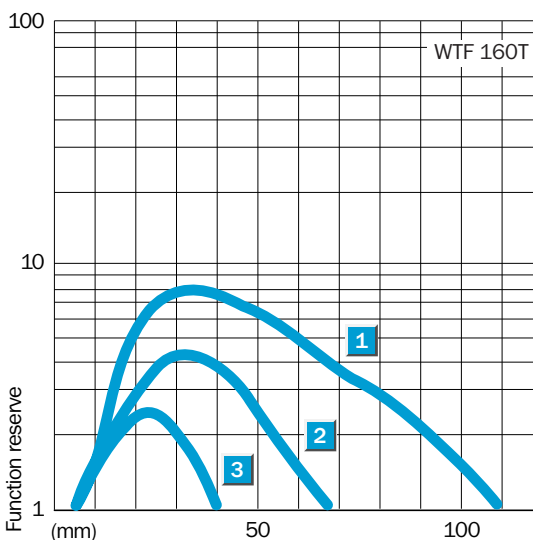
8) With resistive load
 9) With light/dark ratio 1:1
 10) 5 m are available on request, do not bend cable below 0 °C

11) A = V_s connections reverse-polarity protected
 B = Inputs and outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

Scanning distance



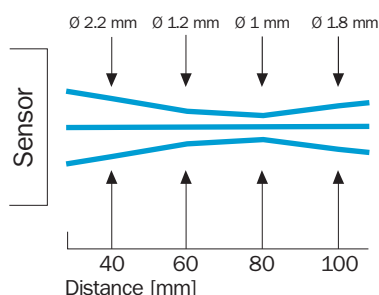
- 1 Scanning range on white, 90 % reflectance
- 2 Scanning range on grey, 18 % reflectance
- 3 Scanning range on black, 6 % reflectance



Order information

Type	Order no.
WTF 160T-P 212	6 021 135
WTF 160T-P 311	6 020 942
WTF 160T-P 412	6 021 237
WTF 160T-N 212	6 021 286
WTF 160T-N 311	6 021 272
WTF 160T-N 412	6 021 290
WTF 160T-F 212	6 021 708
WTF 160T-F 311	6 021 700
WTF 160T-F 412	6 021 722
WTF 160T-E 212	6 020 411
WTF 160T-E 311	6 020 391
WTF 160T-E 412	6 020 934

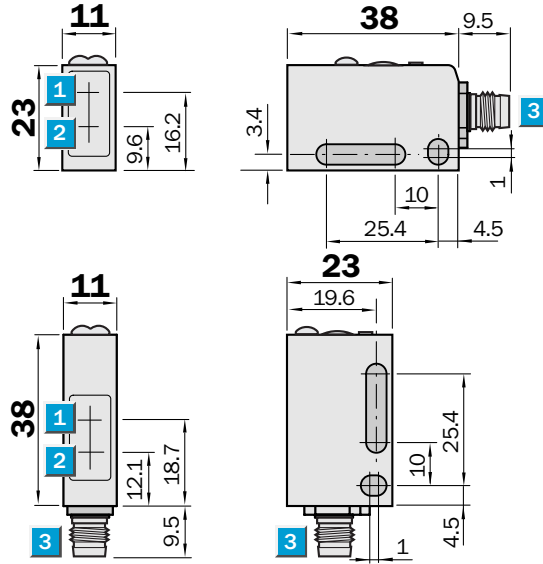
Light spot diameter WTF 160T



Scanning distance
 0 ... 700 mm
 Photoelectric proximity switch

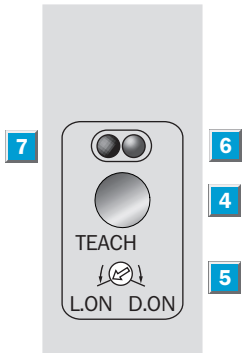
- Large scanning distance
- Red light variant for standard applications
- LED indicator: function reserve

Dimension illustration



Setting options

All types

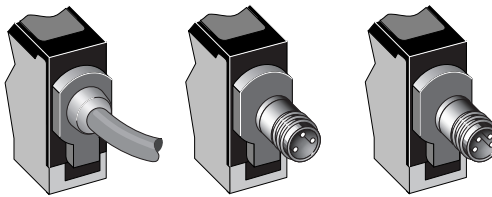


- 1 Optics center, receiver
- 2 Optics center, transmitter
- 3 Plug 3 pin/4 pin, M 8 or connection cable
- 4 Teach-In button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 Orange LED indicator: switching output active
- 7 Green LED indicator: light reception with operating reserve > 1.1



Connection type

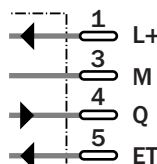
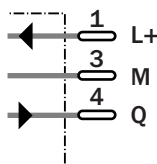
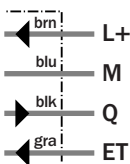
WTE 160T-P 232	WTE 160T-P 331	WTE 160T-P 432
WTE 160T-N 232	WTE 160T-N 331	WTE 160T-N 432
WTE 160T-F 232	WTE 160T-F 331	WTE 160T-F 432
WTE 160T-E 232	WTE 160T-E 331	WTE 160T-E 432



4 x 0.2 mm²

3 pin, M8

4 pin, M8



Accessories

- Connectors
- Mounting systems



Technical data		WTE 160T-		P ^{1)/F²⁾}	P ^{1)/F²⁾}	P ^{1)/F²⁾}	N ^{1)/E²⁾}	N ^{1)/E²⁾}	N ^{1)/E²⁾}				
				232	331	432	232	331	432				
Scanning distance	0 ... 700 mm ³⁾												
Sensitivity control	External Teach (ET)												
Light source⁴⁾	LED, red light												
Supply voltage V_s	10...30 V DC ⁵⁾												
Ripple ⁶⁾	± 10 %												
Current consumption ⁷⁾	≤ 40 mA												
Switching outputs	PNP, open collector: Q												
	NPN, open collector: Q												
Output current I _A max.	100 mA												
Light receiver, switching type	Light/dark switching per rotary switch												
Response time ^{8)/switching freq. max.⁹⁾}	≤ 0.5 ms / 1000/s												
Connection type: cable	PVC, 2 m ¹⁰⁾ ; 4 x 0.2 mm ² , Ø 4.2 mm												
	plug												
	plug												
VDE protection class	III												
Circuit protection ¹¹⁾	A, B, C, D												
Enclosure rating	IP 67												
Ambient temperature	Operation -25...+55 °C												
	Storage -40...+70 °C												
Weight	With cable 2/5 m approx. 60 g												
	With plug approx. 20 g												
Housing material	Housing: PBT; Optic: PMMA												

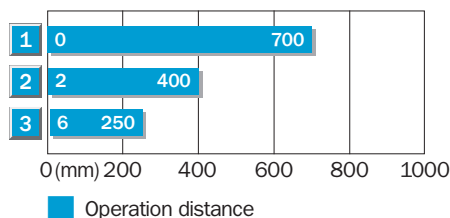
1) Housing form: horizontal
 2) Housing form: vertical
 3) Object with 90% reflectance (with reference to standard white according to DIN 5033)

4) Average service life 100,000 h at T_U = +25 °C
 5) Limit values
 6) Must be within V_s tolerances
 7) Without load

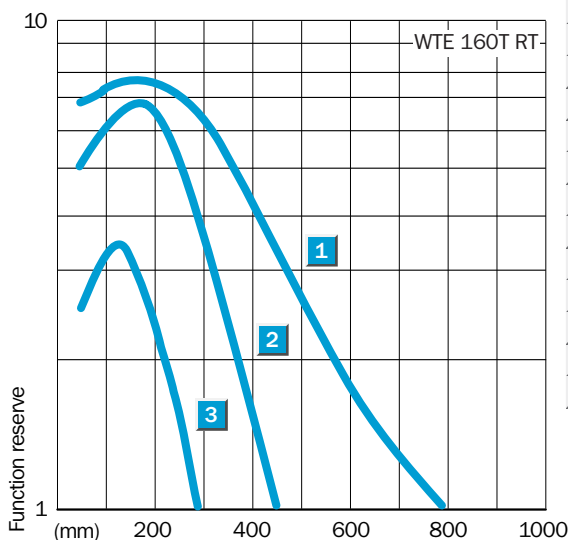
8) With resistive load
 9) With light/dark ratio 1:1
 10) 5 m are available on request, do not bend cable below 0 °C

11) A = V_s connections reverse-polarity protected
 B = Inputs and outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

Scanning distance



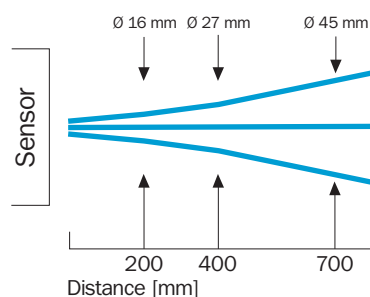
- 1 Scanning range on white, 90 % reflectance
- 2 Scanning range on grey, 18 % reflectance
- 3 Scanning range on black, 6 % reflectance



Order information

Type	Order no.
WTE 160T-P 232	6 021 884
WTE 160T-P 331	6 021 883
WTE 160T-P 432	6 021 886
WTE 360T-N 232	6 021 888
WTE 160T-N 331	6 021 887
WTE 160T-N 432	6 021 890
WTE 160T-F 232	6 021 876
WTE 160T-F 331	6 021 875
WTE 160T-F 432	6 021 878
WTE 160T-E 232	6 021 880
WTE 160T-E 331	6 021 879
WTE 160T-E 432	6 021 882

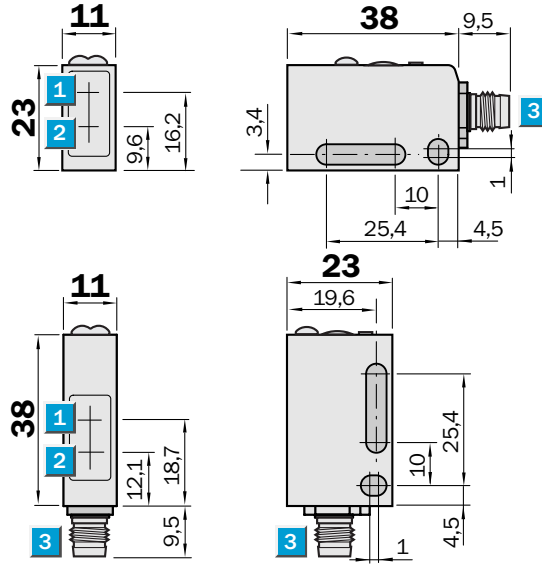
Light spot diameter WTE 160T R



Scanning distance
 0 ... 1 m
 Photoelectric proximity switch

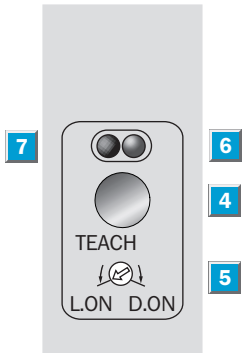
- Large scanning distance
- Infrared variant for objects with low reflectance
- LED indicator: function reserve

Dimension illustration



Setting options

All types

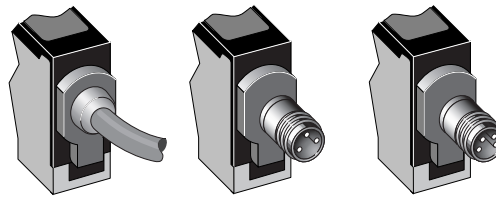


- 1 Optics center, receiver
- 2 Optics center, transmitter
- 3 Plug 3 pin/4 pin, M 8 or connection cable
- 4 Teach-In button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 Orange LED indicator: switching output active
- 7 Green LED indicator: light reception with operating reserve > 1.1



Connection type

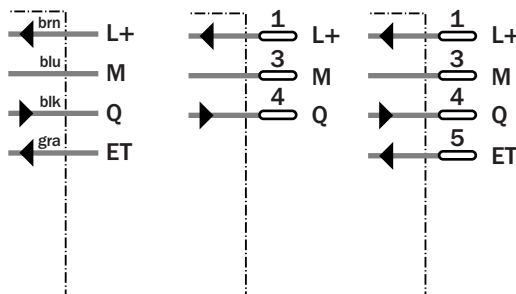
WTE 160T-P 262	WTE 160T-P 361	WTE 160T-P 462
WTE 160T-N 262	WTE 160T-N 361	WTE 160T-N 462
WTE 160T-F 262	WTE 160T-F 361	WTE 160T-F 462
WTE 160T-E 262	WTE 160T-E 361	WTE 160T-E 462



4 x 0.2 mm²

3 pin, M8

4 pin, M8



Accessories

- Connectors
- Mounting systems



Technical data		WTE 160T-									
		P ¹ /F ²	P ¹ /F ²	P ¹ /F ²	N ¹ /E ²	N ¹ /E ²	N ¹ /E ²				
		262	361	462	262	361	462				
Scanning distance	0...1 m ³⁾										
Sensitivity control	External Teach (ET)										
Light source⁴⁾, Lichtart	LED, infrared light										
Supply voltage V_s	10...30 V DC ⁵⁾										
Ripple ⁶⁾	± 10 %										
Current consumption ⁷⁾	≤ 40 mA										
Switching outputs	PNP, open collector: Q										
	NPN, open collector: Q										
Output current I _A max.	100 mA										
Light receiver, switching type	Light/dark switching per rotary switch										
Response time ⁸⁾ /switching freq. max. ⁹⁾	≤ 0.5 ms / 1000/s										
Connection type: cable	PVC, 2 m ¹⁰⁾ ; 4 x 0.2 mm ² , ø 4.2 mm										
	plug										
	plug										
VDE protection class	III										
Circuit protection ¹¹⁾	A, B, C, D										
Enclosure rating	IP 67										
Ambient temperature	Operation -25...+55 °C										
	Storage -40...+70 °C										
Weight	With cable 2/5 m approx. 60 g										
	With plug approx. 20 g										
Housing material	Housing: PBT; Optic: PMMA										

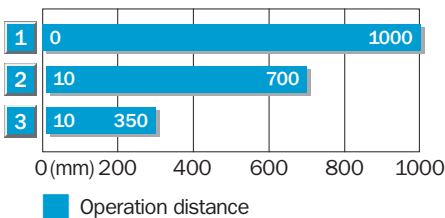
1) Housing form: horizontal
 2) Housing form: vertical
 3) Object with 90% reflectance (with reference to standard white according to DIN 5033)

4) Average service life 100,000 h at T_U = +25 °C
 5) Limit values
 6) Must be within V_s tolerances
 7) Without load

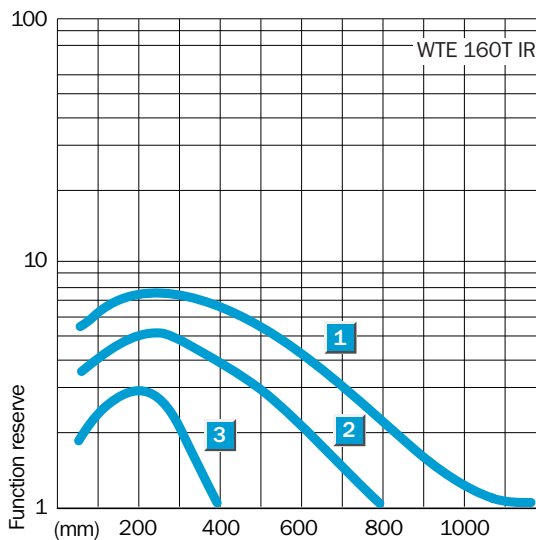
8) With resistive load
 9) With light/dark ratio 1:1
 10) 5 m are available on request, do not bend cable below 0 °C

11) A = V_s connections reverse-polarity protected
 B = Inputs and outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

Tastweite



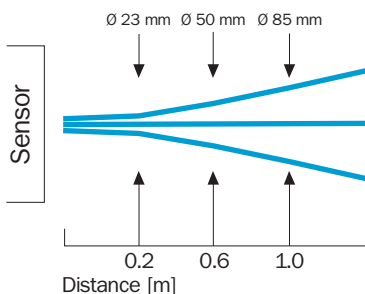
- 1 Scanning range on white, 90 % reflectance
- 2 Scanning range on grey, 18 % reflectance
- 3 Scanning range on black, 6 % reflectance




Order information

Type	Order no.
WTE 160T-P 262	6 021 900
WTE 160T-P 361	6 021 899
WTE 160T-P 462	6 021 902
WTE 360T-N 262	6 021 904
WTE 160T-N 361	6 021 903
WTE 160T-N 462	6 021 906
WTE 160T-F 262	6 021 892
WTE 160T-F 361	6 021 891
WTE 160T-F 462	6 021 894
WTE 160T-E 262	6 021 896
WTE 160T-E 361	6 021 895
WTE 160T-E 462	6 021 898

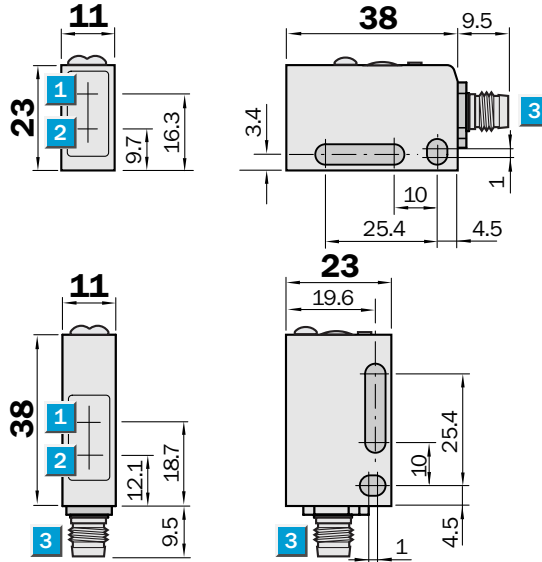
Light spot diameter WTE 160T IR




Scanning range
1 m
 Photoelectric reflex switch

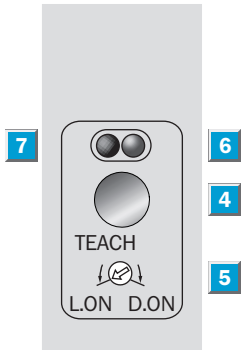
- Very small light spot
- Short response time
- Detection of (semi-)transparent objects
- Detction of smallest objects
- LED indicator: function reserve

Dimension illustration



Setting options

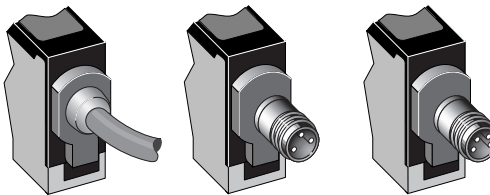
All types



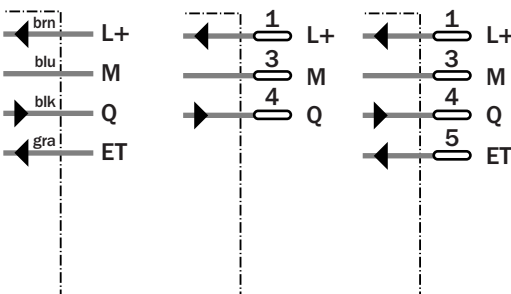
- 1 Optics center, receiver
- 2 Optics center, transmitter
- 3 Plug 3 pin/4 pin, M 8 or connection cable
- 4 Teach-In button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 Orange LED indicator: switching output active
- 7 Green LED indicator: light reception with operating reserve > 1.1

Connection type

WL 160T-P212	WL 160T-P311	WL 160T-P412
WL 160T-N212	WL 160T-N311	WL 160T-N412
WL 160T-F212	WL 160T-F311	WL 160T-F412
WL 160T-E212	WL 160T-E311	WL 160T-E412



4 x 0.2 mm ²	3 pin, M8	4 pin, M8
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Accessories

Connectors
Mounting systems
Reflectors

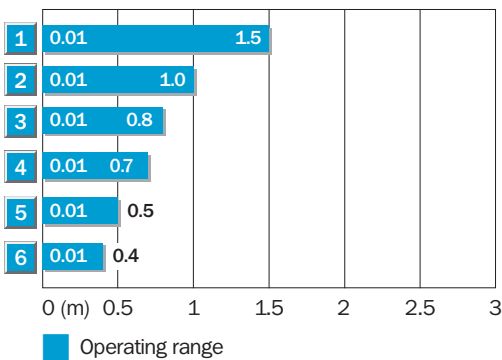
Technical data		WL 160T-									
		P ¹ /F ²	P ¹ /F ²	P ¹ /F ²	N ¹ /E ²	N ¹ /E ²	N ¹ /E ²				
		212	311	412	212	311	412				
Scanning range	0.01 ... 1.0 m/P 250 (included)										
Sensitivity control	External Teach (ET)										
Light source³⁾	LED, red light with polarizing filter										
Supply voltage V_s	10...30 V DC ⁴⁾										
Ripple ⁵⁾	± 10 %										
Current consumption ⁶⁾	≤ 40 mA										
Switching outputs	PNP, open collector: Q										
	NPN, open collector: Q										
Output current I _A max.	100 mA										
Light receiver, switching type	Light/dark switching per rotary switch										
Response time ⁷⁾ /switching freq. max. ⁸⁾	≤ 0.2 ms / 2500/s										
Connection type: cable	PVC, 2 m ⁹⁾ ; 5 x 0.2 mm ² , ø 4.2 mm										
plug	3 pin, M8										
plug	4 pin, M8										
VDE protection class	III										
Circuit protection ¹⁰⁾	A, B, C, D										
Enclosure rating	IP 67										
Ambient temperature	Operation - 25...+ 55 °C										
	Storage - 40...+ 70 °C										
Weight	With cable 2/5 m approx. 60 g										
	With plug approx. 20 g										
Housing material	Housing: PBT; Optic: PMMA										

1) Housing form: horizontal
 2) Housing form: vertical
 3) Average service life 100,000 h at T_U = +25 °C
 4) Limit values

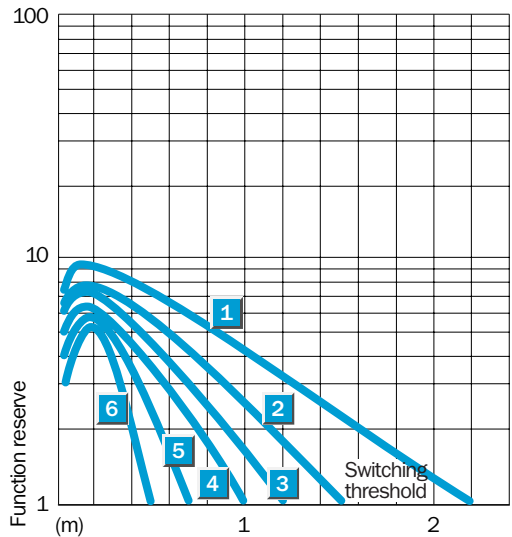
5) Must be within V_s tolerances
 6) Without load
 7) With resistive load
 8) With light/dark ratio 1:1
 9) 5 m are available on request, do not bend cable below 0 °C

10) A = V_s connections reverse-polarity protected
 B = Inputs and outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

Scanning range and function reserve



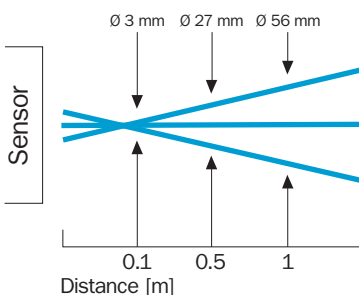
Reflector type	Operating range
1 PL80 A	0.01... 1.5 m
2 P250/PL40/50 A	0.01... 1.0 m
3 PL30 A/31 A	0.01... 0.8 m
4 PI 20 A	0.01... 0.7 m
5 Reflexionsfolie Diamond Grade	0.01... 0.5 m
6 P 45	0.01... 0.4 m



Order information

Type	Order no.
WL 160T-P212	6 020 481
WL 160T-P311	6 021 479
WL 160T-P412	6 020 483
WL 160T-N212	6 020 480
WL 160T-N311	6 021 515
WL 160T-N412	6 020 482
WL 160T-F212	6 020 487
WL 160T-F311	6 021 387
WL 160T-F412	6 020 489
WL 160T-E212	6 020 486
WL 160T-E311	6 021 438
WL 160T-E412	6 020 488

Light spot diameter WL 160T



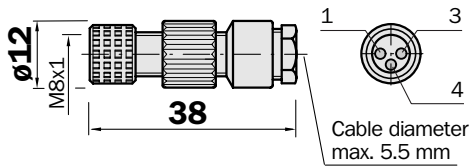
Dimension illustrations and ordering information

■ Contact assignment according to EN 50044

SENSICK circular screwing system M 8, 3 pin/4 pin, Enclosure rating IP 67

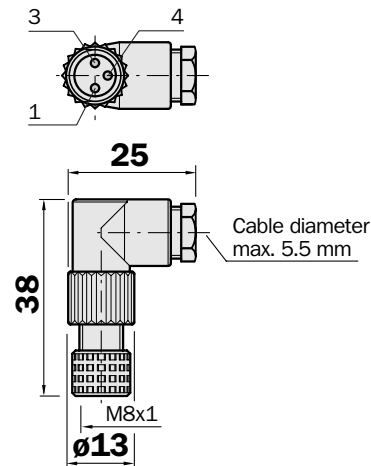
M 8 Cable receptacles, 3 pin, straight

Type	Order no.
DOS-0803-G	7 902 077



M 8 Cable receptacles, 3 pin, angled

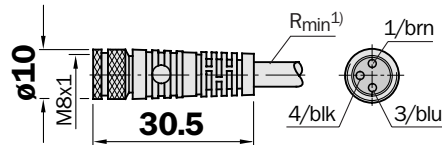
Type	Order no.
DOS-0803-W	7 902 078



M 8 Cable receptacles, 3 pin, straight

Cable diameter 5 mm, 3 x 0.34 mm², PVC coating

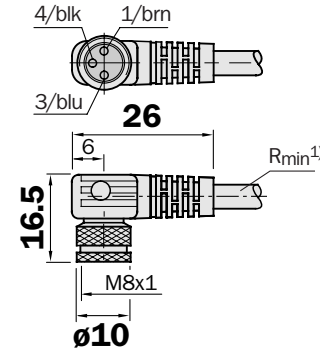
Type	Order no.	Cable length
DOL-0803-G02M	6 010 785	2 m
DOL-0803-G05M	6 022 009	5 m
DOL-0803-G10M	6 022 011	10 m



M 8 Cable receptacles, 3 pin, angled

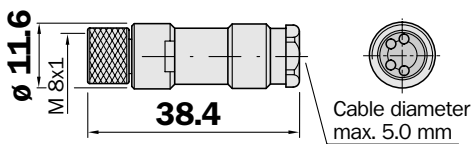
Cable diameter 5 mm, 3 x 0.34 mm², PVC coating

Type	Order no.	Cable length
DOL-0803-W02M	6 008 489	2 m
DOL-0803-W05M	6 022 010	5 m
DOL-0803-W10M	6 022 012	10 m



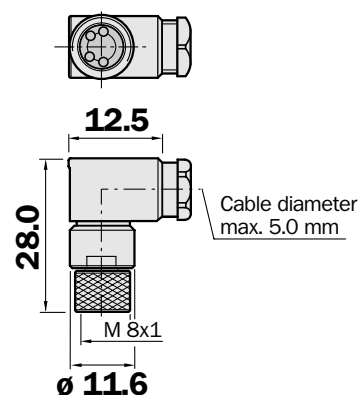
M 8 Cable receptacles, 4 pin, straight

Type	Order no.
DOS-0804-G	6 009 974



M 8 Cable receptacles, 4 pin, angled

Type	Order no.
DOS-0804-W	6 009 975

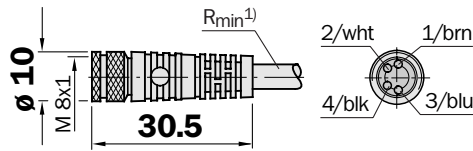


Dimension illustrations and ordering information

M 8 Cable receptacles, 4 pin, straight

Cable diameter 5 mm, 4 x 0.25 mm², coating PVC

Type	Order no.	Cable length
DOL-0804-G02M	6 009 870	2 m
DOL-0804-G05M	6 009 872	5 m
DOL-0804-G10M	6 010 754	10 m

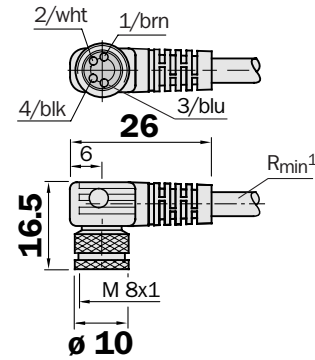


1) Minimum bending radius with dynamic use
 $R_{min} = 20 \times \text{cable diameter}$

M 8 Cable receptacles, 4 pin, angled

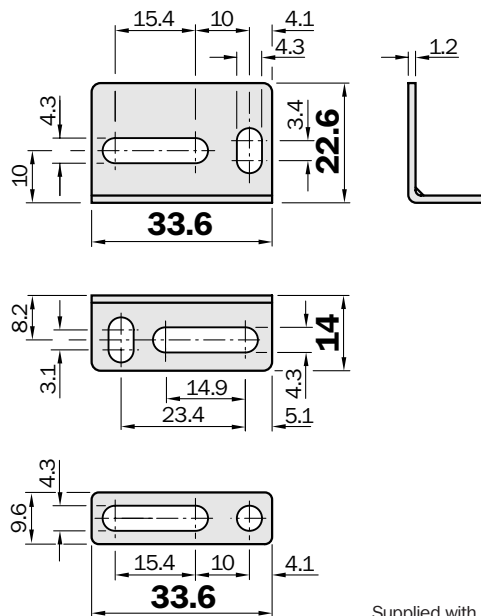
Cable diameter 5 mm, 4 x 0.25 mm², coating PVC

Type	Order no.	Cable length
DOL-0804-W02M	6 009 871	2 m
DOL-0804-W05M	6 009 873	5 m
DOL-0804-W10M	6 010 755	10 m



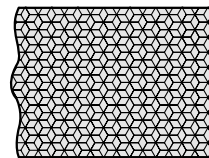
Mounting brackets for W 160

Type	Order no.
BEF-W 160	5 305 197



Reflective tape

Type	Order no.	
REF-DG-K	4 019 634	Ready-made
REF-DG	5 304 334	Sheet 749 x 914 mm

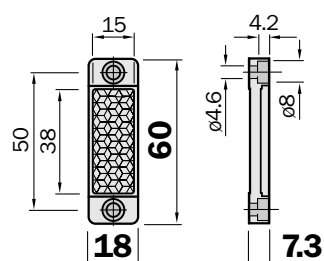


Supplied with WL 160T, WTB 160T BGS, WTE 160T, WTF 160T and WTM 160T Mark.

Plastic model for temperatures up to 65 °C

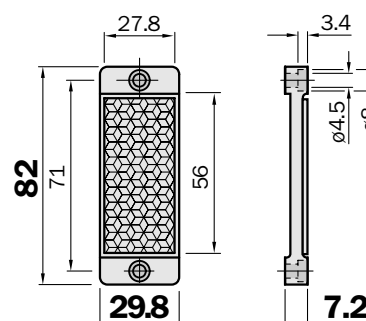
Reflector 20 x 40 mm

Type	Order no.
PL 20 A	1 012 719



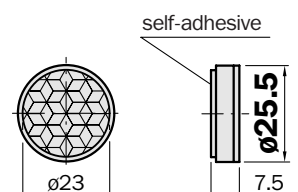
Reflector 30 x 50 mm

Type	Order no.
PL 30 A	1 002 314



Reflector 30 x 50 mm

Self-adhesive	
Type	Order no.
PL 31 A	1 002 315

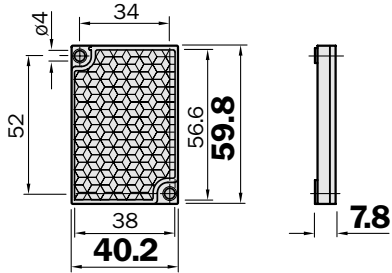


Dimension illustrations and ordering information

Reflector 40 x 60 mm

Self-adhesive

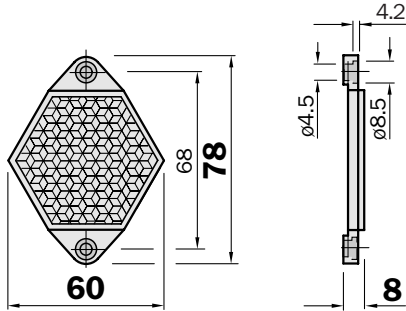
Type	Order no.
PL 40 A	1 012 720



Reflector, hexagonal

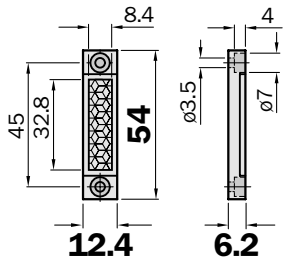
Opening width 48 mm

Type	Order no.
PL 50 A	1 000 132



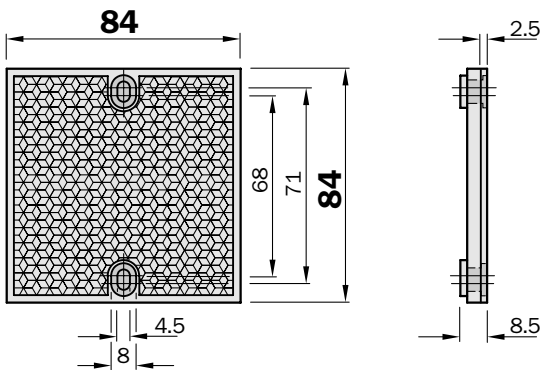
Reflector 8 x 30 mm

Type	Order no.
P 45	5 308 002



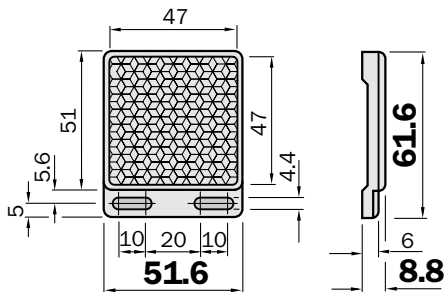
Reflector 80 x 80

Type	Order no.
PL 80 A	1 003 865



Reflector 47 x 47 mm

Type	Order no.
PL 250	5 304 812



Supplied with WL 160T.

Dimension illustrations and ordering information

Universal bracket for rod mounting

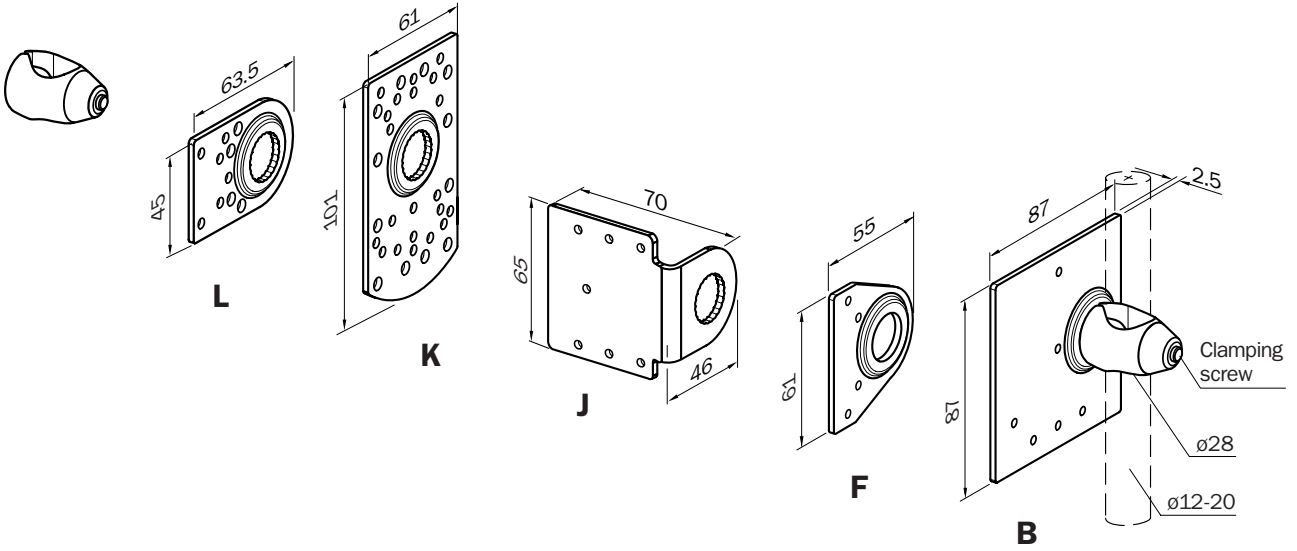


Plate	Type	Order no. ¹⁾	Sensors/reflectors
B	BEF-KHS-B01	2 022 459	P 250, PL 30 A, PL 40 A, PL 50 A, PL 80 A, C 110
F	BEF-KHS-F01	2 022 463	W 260, PL 20 A, P 250
J	BEF-KHS-J01	2 022 719	PL 20 A, PL 40 A, PL 50 A, P 250, C 110
K	BEF-KHS-K01	2 022 718	W 11, W 12-2, W 12L-2, W 14, W 18-2, W 23, W 24-2, W 27-2, W 30, W 32, W 34, W 36, KT 2, KT 5, KT 10, CS, LUT 3, DS 60, PL 20 A, PL 30 A, PL 40 A, PL 50 A, PL 80, A, P 250, C 110
L	BEF-KHS-L01	2 023 057	W 9-2, W 140, W 160, W 250, P 250
	BEF-KHS-KH1	2 022 726	Clamp bracket rod mounting without attachment plate and mounting material

¹⁾ Universal bracket and mounting screws included