

W160T: With the smallest LED light spot



WTM160T “Mark”, the spot sensor for fast detection of colour contrasts. It resolves ten gray levels and colour changes in the spectral range HKS 33 N to 88 N.

WTB160T “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.

WL160T, the photoelectric reflex switch with red light and 1 m scanning range is ideal for detecting smaller and (semi-)transparent objects.

WTF160T “Focus”, an energetic scanner with focused light beam for detecting contrasts and smaller parts over larger distances.

WTE160T “Energetic”, an energetic scanner with large scanning ranges, available in infrared and red light models.

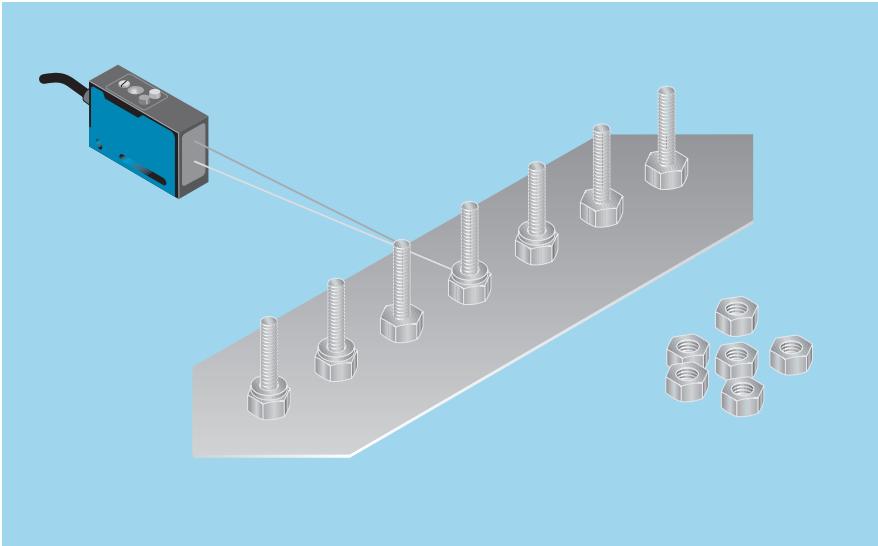
The W160T devices are especially successful in the application fields:

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

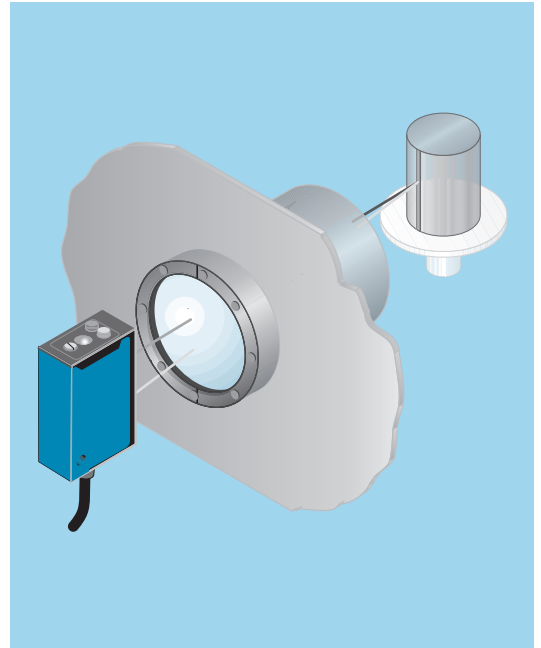
System focal points are small, precise light spot for small objects, including transparent ones, and high-speed applications. Teach-in function – external or at the push of a button – with high precision simplifies handling. Sturdy, sealed-in housing enables use even under difficult ambient conditions. The W160T even fits in small spaces thanks to its compact design. This makes it especially easy to mount. All W160T 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 |

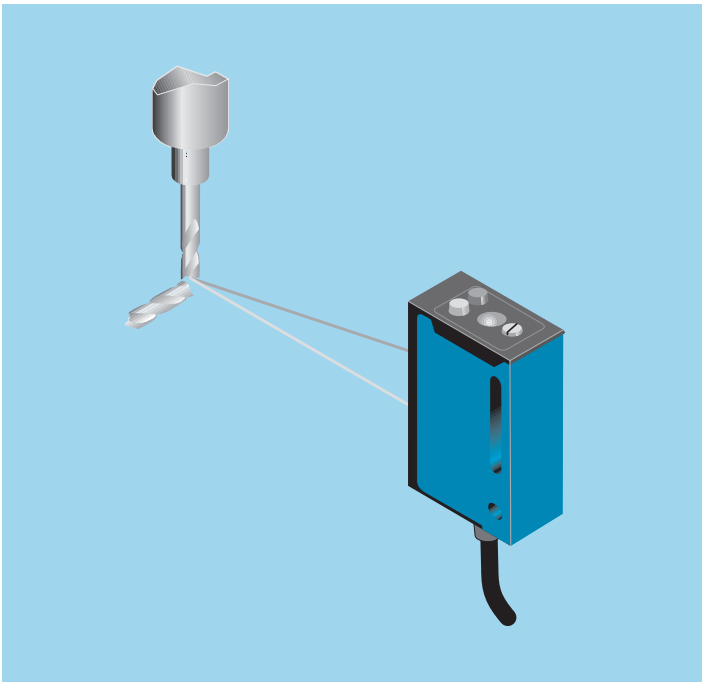




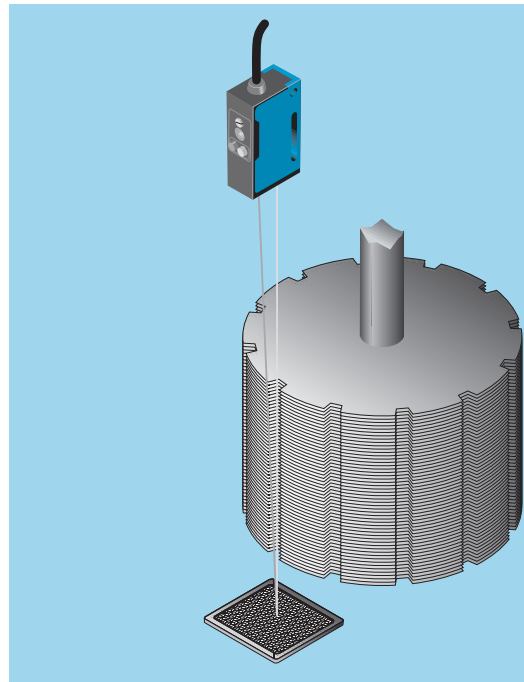
▲ WTB160T BGS detects the presence of washers, gasket rings and o-rings.



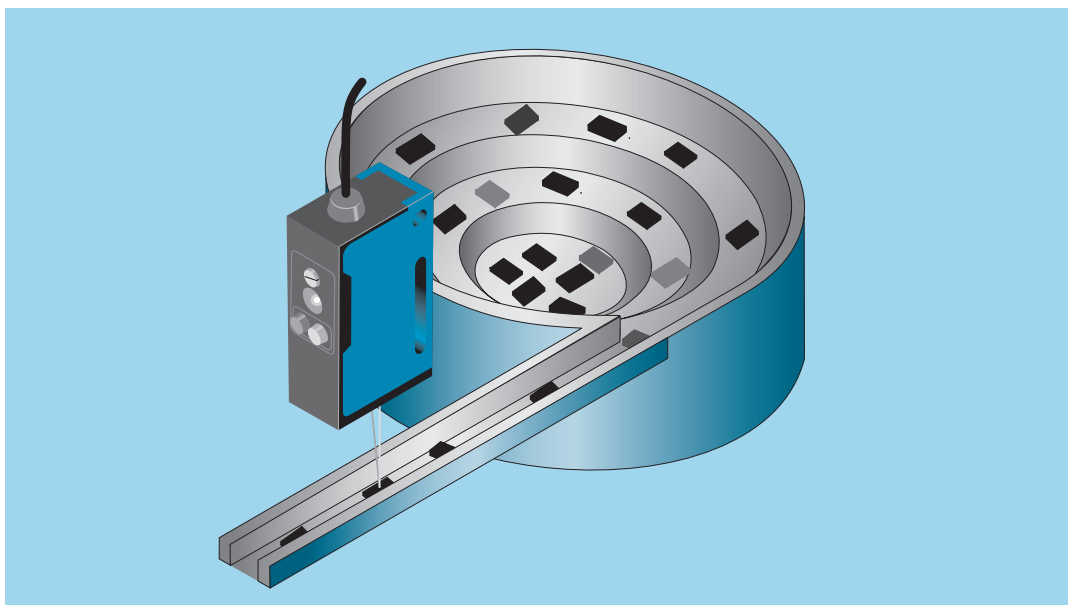
▲ The focused photoelectric proximity switch WTF160T checks the orientation of a groove in a vacuum chamber over a large distance.



▲ Monitoring of tool imprints, e.g., in printed circuit board manufacturing. The WTB160T BGS detects the smallest drills reliably down to 0,3 mm diameter.



◀ The WL160T photoelectric proximity switch detects the position of bundles of sheet metal and individual sheets of a rotor.



► The WTM160T Mark photoelectric proximity switch distinguishes the front and back sides of components in a vibration conveyor.

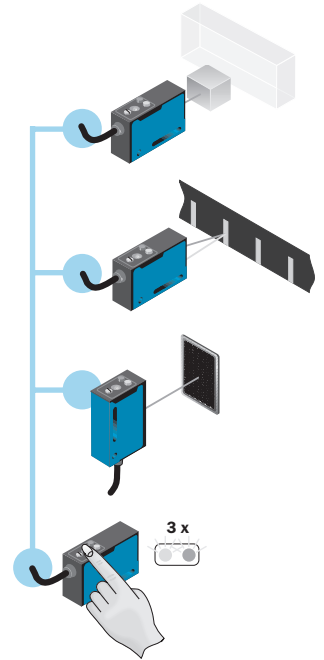
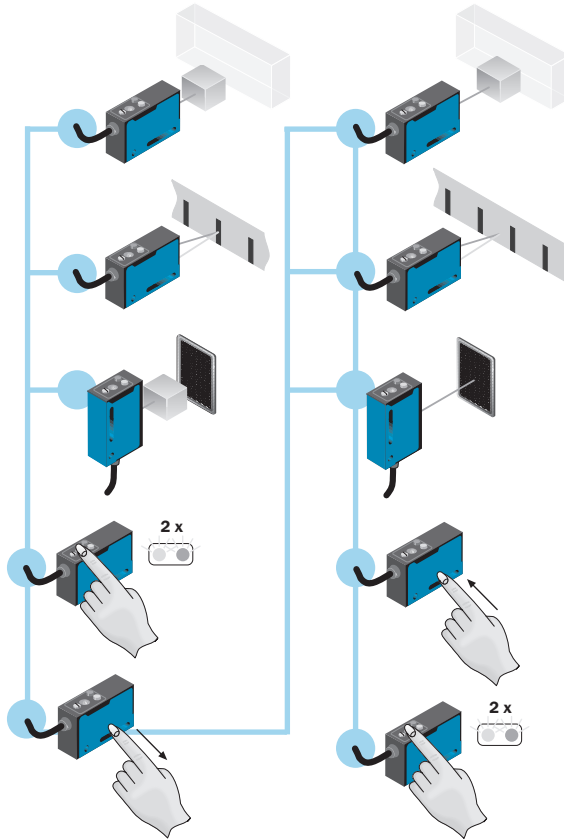
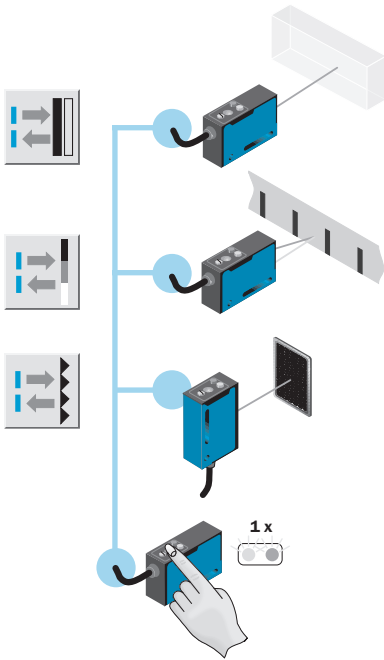
Condition

Teach-in

1-point Teach-in:

2-point Teach-in:

Position Teach-in



Status



Background will *just not* be detected.

Sensitivity aligned to the centre between the two teach-in points.

Object will *just* be detected.



Dark mark will *just not* be detected.

Sensitivity aligned to the centre between the two teach-in points.

Light mark will *just* be detected.

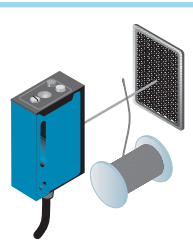
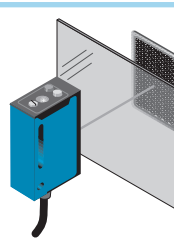
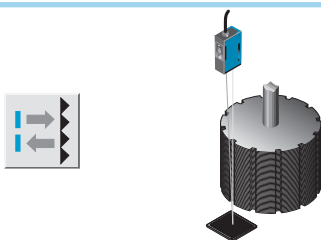
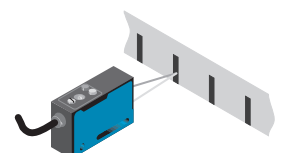
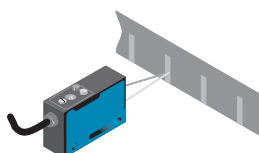
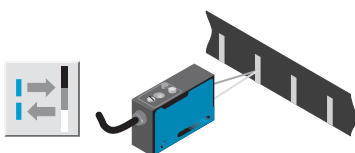
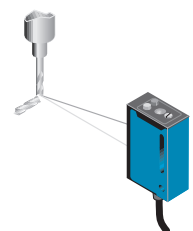
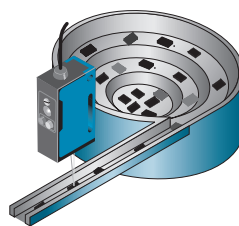
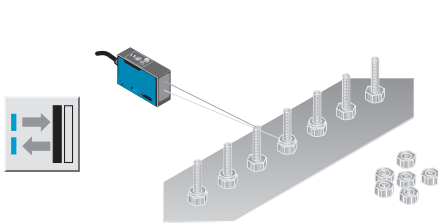



Reflector is detected *with reserve*.

Sensitivity aligned to the centre between the two teach-in points.

Reflector is detected *without reserve*.

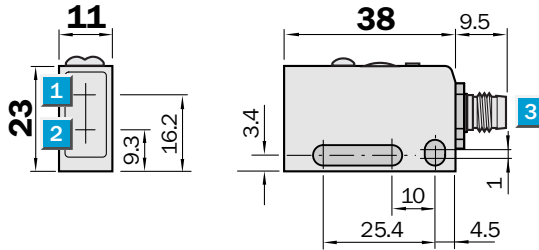
Application




Scanning distance
15 ... 50 mm
 Photoelectric proximity switch

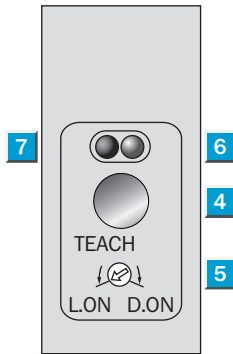
- Horizontal models
- Very small light spot to detect smallest objects
- Scanning distance adjustable via teach-in
- Precise background suppression
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

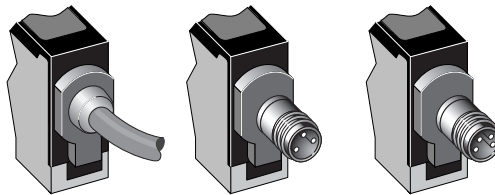
All types



- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Plug M8, 3/4-pin or connection cable
- 4 Teach-in button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 LED indicator orange: switching output active
- 7 LED indicator green: light reception with operating reserve > 1.1

Connection type

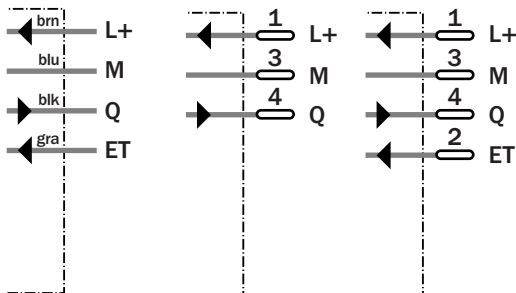
| | | |
|--------------|--------------|--------------|
| WTB160T-P212 | WTB160T-P311 | WTB160T-P412 |
| WTB160T-N212 | WTB160T-N311 | WTB160T-N412 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

* Mounting bracket included with delivery

| Technical data | | WTB160T- | P212 | P311 | P412 | N212 | N311 | N412 | | | | |
|--|---|----------|------|------|------|------|------|------|--|--|--|--|
| Scanning distance, max. typical | 10 ... 50 mm ¹⁾ | | | | | | | | | | | |
| Operating distance | 15 ... 50 mm ¹⁾ | | | | | | | | | | | |
| Adjustment of operating distance | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source ²⁾ | LED, red light, 650 nm | | | | | | | | | | | |
| Light spot diameter | Approx. 1.2 mm at 40 mm distance | | | | | | | | | | | |
| Dispersion angle | Focused, focus 40 mm | | | | | | | | | | | |
| Supply voltage V _S | 10 ... 30 V DC ³⁾ | | | | | | | | | | | |
| Residual ripple ⁴⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁵⁾ | ≤ 40 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | V _S - 1.8 V / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. V _S / < 1.8 V | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I _A max. | 100 mA | | | | | | | | | | | |
| Response time ⁶⁾ | ≤ 0.9 ms | | | | | | | | | | | |
| Switching frequency max. ⁷⁾ | 550/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁸⁾ ; 4 x 0.2 mm ² , Ø 4.2 mm | | | | | | | | | | | |
| plug | M8, 3-pin | | | | | | | | | | | |
| plug | M8, 4-pin | | | | | | | | | | | |
| VDE protection class | ⊕ | | | | | | | | | | | |
| Circuit protection ⁹⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | | |
| Ambient temperature | Operation -25 ... +55 °C Storage -40 ... +70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Horizontal | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

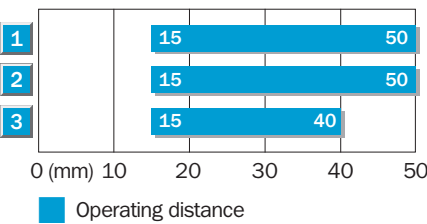
1) Object with 90% remission (with reference to standard white according to DIN 5033)
2) Average service life 100,000 h at T_A = +25 °C

3) Limit values, operation in short circuit protected network max. 8 A
4) Must be within V_S tolerances
5) Without load
6) With resistive load

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

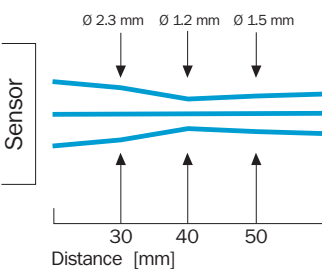
B = Inputs and outputs reverse-polarity protected
C = Interference suppression
D = Outputs overcurrent and short-circuit protected

Scanning distance



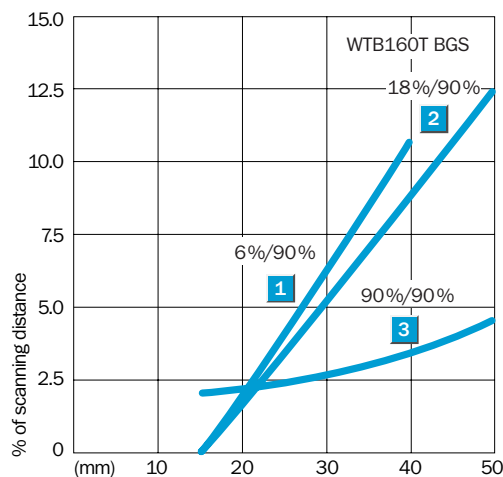
- 1 Scanning range on black, 6 % reflectance
- 2 Scanning range on grey, 18 % reflectance
- 3 Scanning range on white, 90 % reflectance

Light spot diameter WTB160T HGA



Order information

| Type | Order no. |
|--------------|-----------|
| WTB160T-P212 | 6020895 |
| WTB160T-P311 | 6021318 |
| WTB160T-P412 | 6020991 |
| WTB160T-N212 | 6020894 |
| WTB160T-N311 | 6021319 |
| WTB160T-N412 | 6020947 |

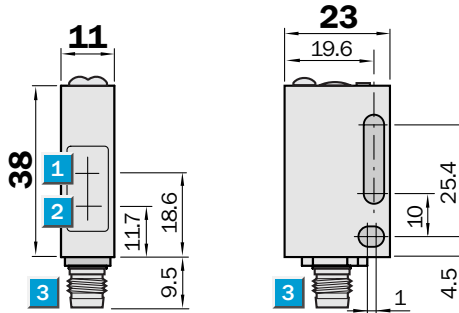


Scanning distance
15 ... 50 mm

Photoelectric proximity switch

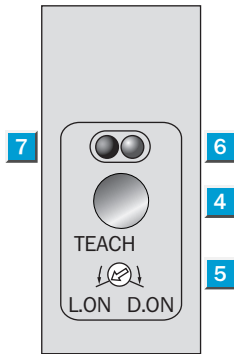
- Vertical models
- Very small light spot to detect smallest objects
- Scanning distance adjustable via teach-in
- Precise background suppression
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

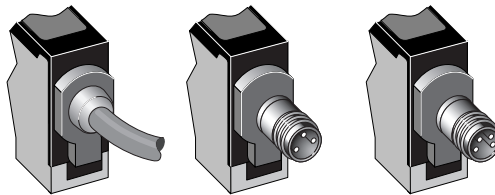
All types



- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Plug M8, 3/4-pin or connection cable
- 4 Teach-in button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 LED indicator orange: switching output active
- 7 LED indicator green: light reception with operating reserve > 1.1

Connection type

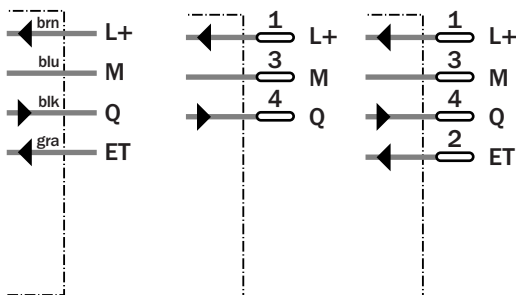
| | | |
|--------------|--------------|--------------|
| WTB160T-F212 | WTB160T-F311 | WTB160T-F412 |
| WTB160T-E212 | WTB160T-E311 | WTB160T-E412 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

* Mounting bracket included with delivery

| Technical data | | WTB160T- | F212 | F311 | F412 | E212 | E311 | E412 | | | | |
|--|---|----------|------|------|------|------|------|------|--|--|--|--|
| Scanning distance, max. typical | 10 ... 50 mm ¹⁾ | | | | | | | | | | | |
| Operating distance | 15 ... 50 mm ¹⁾ | | | | | | | | | | | |
| Adjustment of operating distance | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source ²⁾ | LED, red light, 650 nm | | | | | | | | | | | |
| Light spot diameter | Approx. 1.2 mm at 40 mm distance | | | | | | | | | | | |
| Dispersion angle | Focused, Focus 40 mm | | | | | | | | | | | |
| Supply voltage V _S | 10 ... 30 V DC ³⁾ | | | | | | | | | | | |
| Residual ripple ⁴⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁵⁾ | ≤ 40 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | V _S - 1.8 V / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. V _S / < 1.8 V | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I _A max. | 100 mA | | | | | | | | | | | |
| Response time ⁶⁾ | ≤ 0.9 ms | | | | | | | | | | | |
| Switching frequency max. ⁷⁾ | 550/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁸⁾ ; 4 x 0.2 mm ² , ø 4.2 mm | | | | | | | | | | | |
| plug | M8, 3-pin | | | | | | | | | | | |
| plug | M8, 4-pin | | | | | | | | | | | |
| VDE protection class | ⓘ | | | | | | | | | | | |
| Circuit protection ⁹⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | | |
| Ambient temperature | Operation -25 ... +55 °C Storage -40 ... +70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Vertical | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

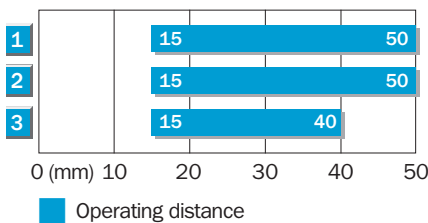
1) Object with 90% remission (with reference to standard white according to DIN 5033)
2) Average service life 100,000 h at T_A = +25 °C

3) Limit values, operation in short circuit protected network max. 8 A
4) Must be within V_S tolerances
5) Without load
6) With resistive load

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

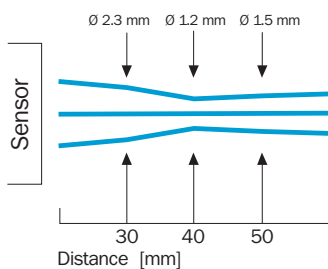
B = Inputs and outputs reverse-polarity protected
C = Interference suppression
D = Outputs overcurrent and short-circuit protected

Scanning distance



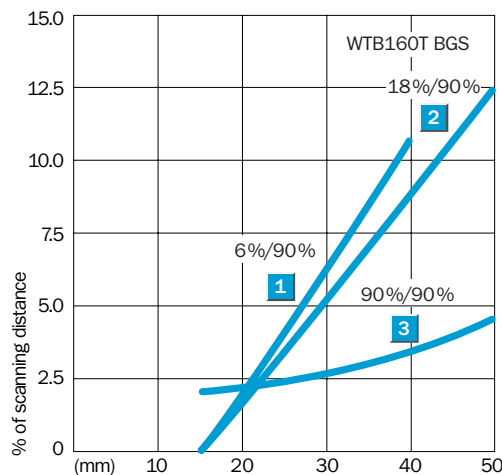
- 1 Scanning range on black, 6 % reflectance
- 2 Scanning range on grey, 18 % reflectance
- 3 Scanning range on white, 90 % reflectance

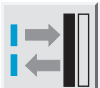
Light spot diameter WTB160T HGA



Order information

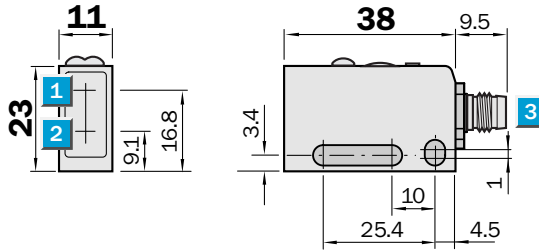
| Type | Order no. |
|--------------|-----------|
| WTB160T-F212 | 6020952 |
| WTB160T-F311 | 6021316 |
| WTB160T-F412 | 6021158 |
| WTB160T-E212 | 6020951 |
| WTB160T-E311 | 6021317 |
| WTB160T-E412 | 6021157 |




Scanning distance
50 ... 150 mm
 Photoelectric proximity switch

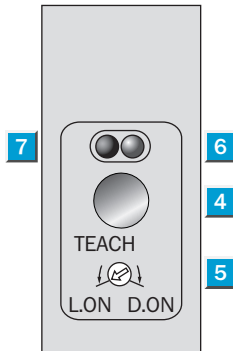
- Horizontal models
- Large scanning distance (150 mm)
- Scanning distance adjustable via teach-in
- Additional teach-in mode for shiny and structured surfaces
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

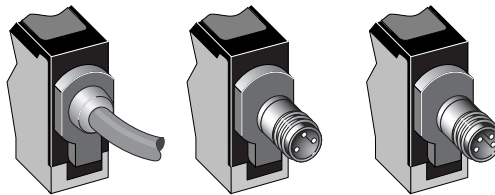
All types



- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Plug M8, 3/4-pin or connection cable
- 4 Teach-in button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 LED indicator orange: switching output active
- 7 LED indicator green: light reception with operating reserve > 1.1

Connection type

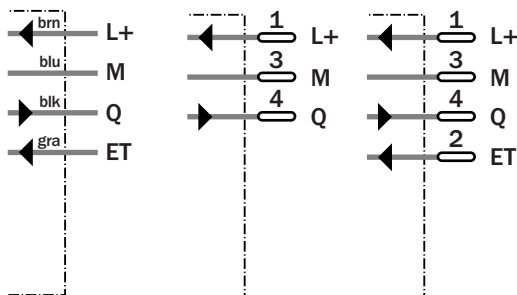
| | | |
|--------------|--------------|--------------|
| WTB160T-P232 | WTB160T-P331 | WTB160T-P432 |
| WTB160T-N232 | WTB160T-N331 | WTB160T-N432 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

* Mounting bracket included with delivery

| Technical data | | WTB160T- | P232 | P331 | P432 | N232 | N331 | 432 | | | | |
|--|---|----------|------|------|------|------|------|-----|--|--|--|--|
| Scanning distance, max. typical | 20 ... 150 mm ¹⁾ | | | | | | | | | | | |
| Operating distance | 50 ... 150 mm ¹⁾ | | | | | | | | | | | |
| Adjustment of operating distance | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source ²⁾ | LED, red light, 700 nm | | | | | | | | | | | |
| Light spot diameter | 10 mm at 150 mm distance | | | | | | | | | | | |
| Supply voltage V _S | 10 ... 30 V DC ³⁾ | | | | | | | | | | | |
| Residual ripple ⁴⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁵⁾ | ≤ 45 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | V _S - 1.8 V / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. V _S / < 1.8 V | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I _A max. | 100 mA | | | | | | | | | | | |
| Response time ⁶⁾ | ≤ 2.5 ms | | | | | | | | | | | |
| Switching frequency max. ⁷⁾ | 200/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁸⁾ ; 4 x 0.2 mm ² , Ø 4.2 mm | | | | | | | | | | | |
| plug | M8, 3-pin | | | | | | | | | | | |
| plug | M8, 4-pin | | | | | | | | | | | |
| VDE protection class | ⊕ | | | | | | | | | | | |
| Circuit protection ⁹⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | | |
| Ambient temperature | Operation -25 ... +55 °C Storage -40 ... +70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Horizontal | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

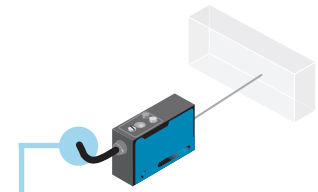
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6) With resistive load

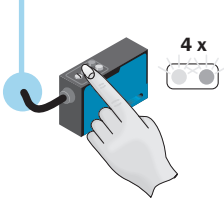
7) With light/dark ratio 1:1
8) 5 m are available on request, do not bend cable below 0 °C
9) A = V_S connections reverse-polarity protected

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

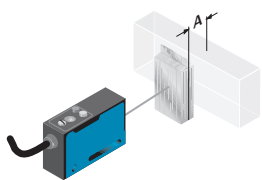
Condition



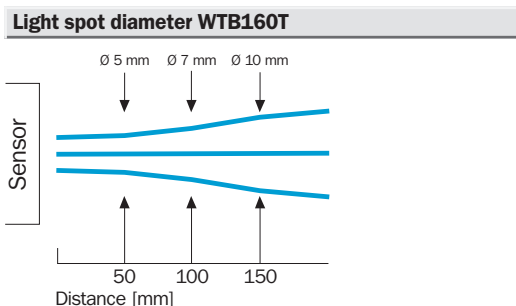
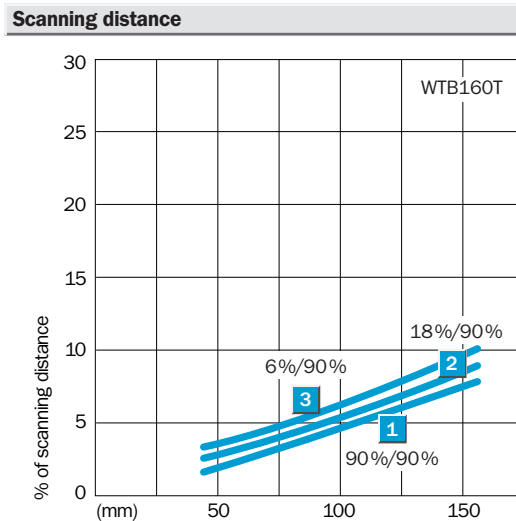
Teach-in



Status



Object in "A" area is detected.



Order information

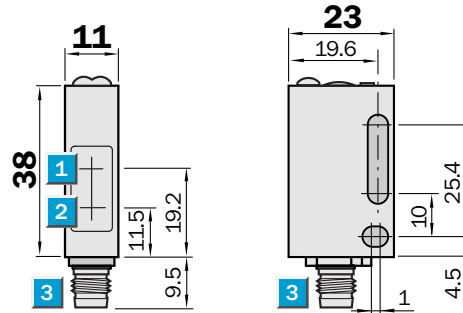
| Type | Order no. |
|--------------|-----------|
| WTB160T-P232 | 6021868 |
| WTB160T-P331 | 6021867 |
| WTB160T-P432 | 6021870 |
| WTB160T-N232 | 6021872 |
| WTB160T-N331 | 6021871 |
| WTB160T-N432 | 6021874 |

Scanning distance
50 ... 150 mm

Photoelectric proximity switch

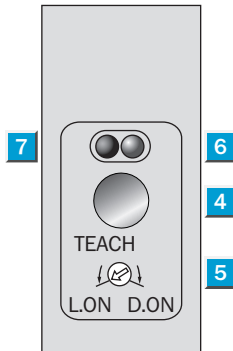
- Vertical models
- Large scanning distance (150 mm)
- Scanning distance adjustable via teach-in
- Additional teach-in mode for shiny and structured surfaces
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

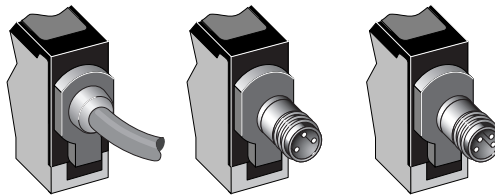
All types



- Centre of optical axis, receiver
- Centre of optical axis, sender
- Plug M8, 3/4-pin or connection cable
- Teach-in button
- Light/dark rotary switch:
L = light switching
D = dark switching
- LED indicator orange: switching output active
- LED indicator green: light reception with operating reserve > 1.1

Connection type

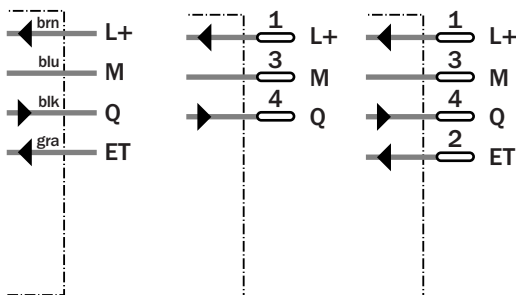
| | | |
|--------------|--------------|--------------|
| WTB160T-F232 | WTB160T-F331 | WTB160T-F432 |
| WTB160T-E232 | WTB160T-E331 | WTB160T-E432 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

* Mounting bracket included with delivery

| Technical data | | WTB160T- | F232 | F331 | F432 | E232 | E331 | E432 | | | | |
|--|---|----------|------|------|------|------|------|------|--|--|--|--|
| Scanning distance, max. typical | 20 ... 150 mm ¹⁾ | | | | | | | | | | | |
| Operating distance | 50 ... 150 mm ¹⁾ | | | | | | | | | | | |
| Adjustment of operating distance | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source ²⁾ | LED, red light, 700 nm | | | | | | | | | | | |
| Light spot diameter | 10 mm at 150 mm distance | | | | | | | | | | | |
| Supply voltage V _S | 10 ... 30 V DC ³⁾ | | | | | | | | | | | |
| Residual ripple ⁴⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁵⁾ | ≤ 45 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | V _S - 1.8 V / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. V _S / < 1.8 V | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I _A max. | 100 mA | | | | | | | | | | | |
| Response time ⁶⁾ | ≤ 2.5 ms | | | | | | | | | | | |
| Switching frequency max. ⁷⁾ | 200/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁸⁾ ; 4 x 0.2 mm ² , Ø 4.2 mm | | | | | | | | | | | |
| plug | M8, 3-pin | | | | | | | | | | | |
| plug | M8, 4-pin | | | | | | | | | | | |
| VDE protection class | ⊕ | | | | | | | | | | | |
| Circuit protection ⁹⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | | |
| Ambient temperature | Operation -25 ... +55 °C Storage -40 ... +70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Vertical | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

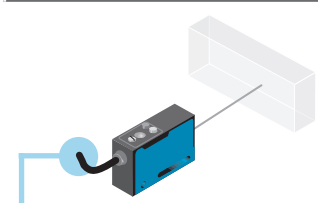
1) Object with 90% remission (with reference to standard white according to DIN 5033)
2) Average service life 100,000 h at T_A = +25 °C

3) Limit values, operation in short circuit protected network max. 8 A
4) Must be within V_S tolerances
5) Without load
6) With resistive load

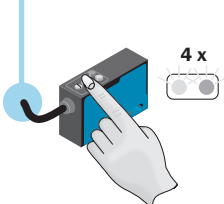
7) With light/dark ratio 1:1
8) 5 m are available on request, do not bend cable below 0 °C
9) A = V_S connections reverse-polarity protected

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

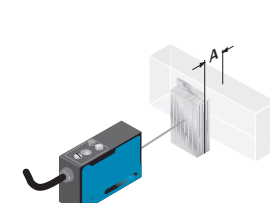
Condition



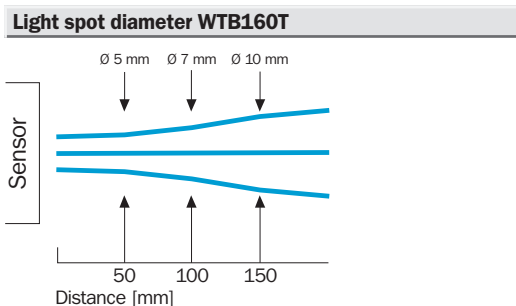
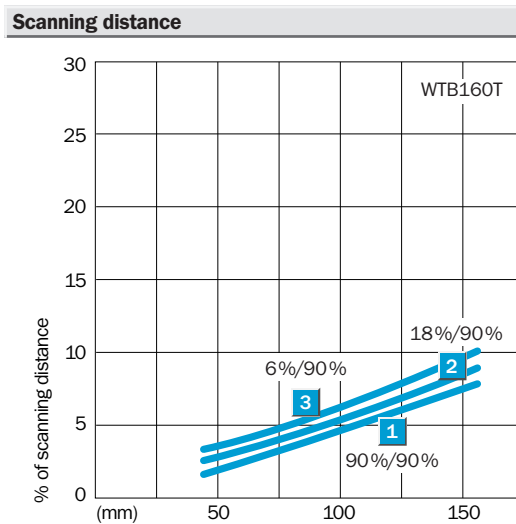
Teach-in



Status



Object in "A" area is detected.



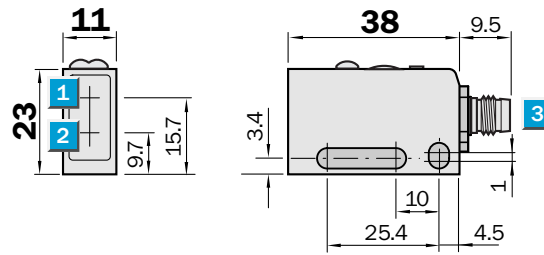
Order information

| Type | Order no. |
|--------------|-----------|
| WTB160T-F232 | 6021860 |
| WTB160T-F331 | 6021859 |
| WTB160T-F432 | 6021862 |
| WTB160T-E232 | 6021864 |
| WTB160T-E331 | 6021863 |
| WTB160T-E432 | 6021866 |

Scanning distance
10 mm
 Photoelectric proximity switch

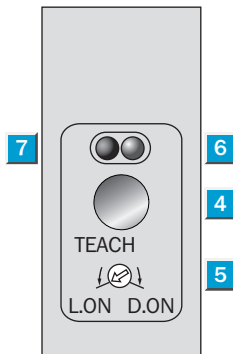
- Horizontal models
- Mark sensor
- Enclosure rating: IP 67
- Resolves ten gray levels
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

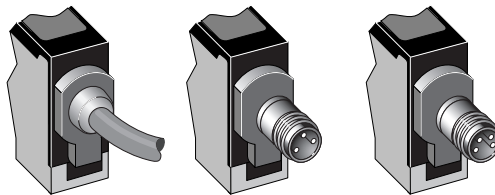
All types



- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Plug M8, 3/4-pin or connection cable
- 4 Teach-in button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 LED indicator orange: switching output active
- 7 LED indicator green: light reception with operating reserve > 1.1

Connection type

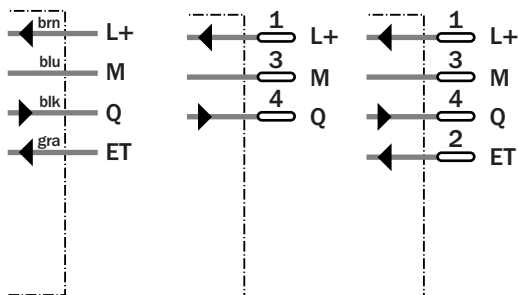
| | | |
|--------------|--------------|--------------|
| WTM160T-P292 | WTM160T-P391 | WTM160T-P492 |
| WTM160T-N292 | WTM160T-N391 | WTM160T-N492 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

* Mounting bracket included with delivery

| Technical data | | WTM160T- | P292 | P391 | P492 | N292 | N391 | N492 | | | | |
|--|---|----------|------|------|------|------|------|------|--|--|--|--|
| Operating distance | 10 ± 2 mm | | | | | | | | | | | |
| Adjustment of operating distance | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source¹⁾ | LED, green light, 540 nm | | | | | | | | | | | |
| Light spot diameter | Approx. 2 x 5 mm at 10 mm distance | | | | | | | | | | | |
| Dispersion angle sender | Focused, focus 10 mm | | | | | | | | | | | |
| Supply voltage V_S | 10 ... 30 V DC ²⁾ | | | | | | | | | | | |
| Residual ripple ³⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁴⁾ | ≤ 40 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q | | | | | | | | | | | |
| | NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | V _S - 1.8 V / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. V _S / < 1.8 V | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I _A max. | 100 mA | | | | | | | | | | | |
| Response time ⁵⁾ | ≤ 0.2 ms | | | | | | | | | | | |
| Switching frequency max. ⁶⁾ | 2500/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁷⁾ ; 4 x 0.2 mm ² , ø 4.2 mm | | | | | | | | | | | |
| plug | M8, 3-pin | | | | | | | | | | | |
| plug | M8, 4-pin | | | | | | | | | | | |
| VDE protection class | ⊕ | | | | | | | | | | | |
| Circuit protection ⁸⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | | |
| Ambient temperature | Operation - 25 ... + 55 °C | | | | | | | | | | | |
| | Storage - 40 ... + 70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g | | | | | | | | | | | |
| | With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Horizontal | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

1) Average service life 100,000 h at T_A = + 25 °C
 2) Limit values, operation in short circuit protected network max. 8 A
 3) Must be within V_S tolerances

4) Without load
 5) With resistive load
 6) With light/dark ratio 1:1
 7) 5 m are available on request, do not bend cable below 0 °C

8) A = V_S connections reverse-polarity protected
 B = Inputs and outputs reverse-polarity protected
 C = Interference suppression

D = Outputs overcurrent and short-circuit protected

Colour detection

Detection of colour 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.

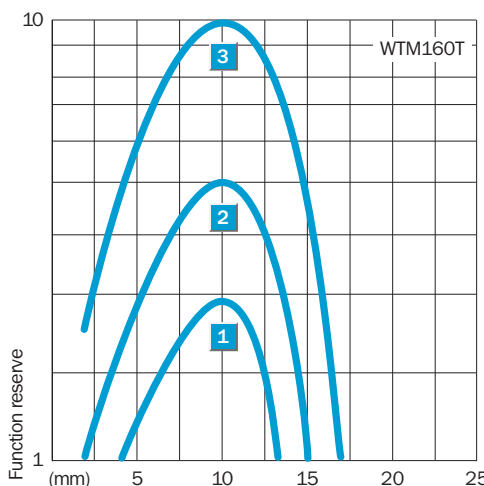
The following are not resolved:
 33 N (25 %)/88 N (25 %),
 33 N (25 %)/77 N (25 %),
 33 N (25 %)/23 N (25 %),
 43 N (50 %)/54 N (75 %),
 43 N (25 %)/77 N (25 %),
 43 N (25 %)/8 N (25 %),
 54 N (50 %)/4 N (75 %), and
 23 N (25 %)/77 N (25 %).

- 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 ≙ Hostmann-Steinberg, K+E printing inks, Schminke & Co. HKS colours are printing inks, which were developed by the above-mentioned companies, to guarantee the precise reproducibility of a colour. They are standard in the graphic arts industry. HKS-N stands for uncoated paper in offset and letterpress printing with a colour spectrum of 1 (yellow) to 97 (black). The colour scale is available from SICK upon request. Order no.: 8006387.


Scanning distance

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



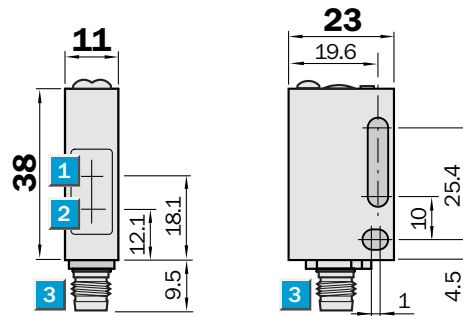
Order information

| Type | Order no. |
|--------------|-----------|
| WTM160T-P292 | 6020493 |
| WTM160T-P391 | 6021506 |
| WTM160T-P492 | 6020495 |
| WTM160T-N292 | 6020492 |
| WTM160T-N391 | 6021382 |
| WTM160T-N492 | 6020494 |


Scanning distance
10 mm
Photoelectric proximity switch

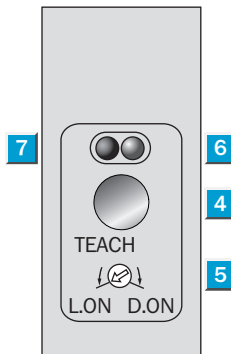
- Vertical models
- Mark sensor
- Enclosure rating: IP 67
- Resolves ten gray levels
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

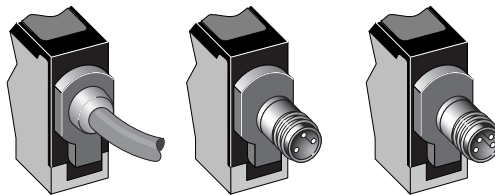
All types



- 1** Centre of optical axis, receiver
- 2** Centre of optical axis, sender
- 3** Plug M8, 3/4-pin or connection cable
- 4** Teach-in button
- 5** Light/dark rotary switch:
L = light switching
D = dark switching
- 6** LED indicator orange: switching output active
- 7** LED indicator green: light reception with operating reserve > 1.1

Connection type

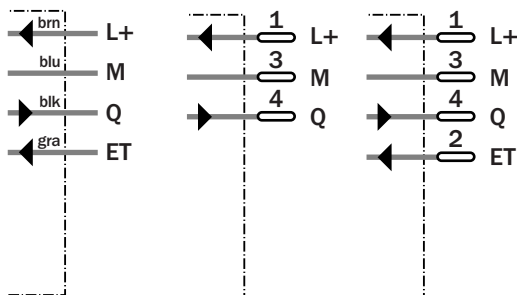
| | | |
|--------------|--------------|--------------|
| WTM160T-F292 | WTM160T-F391 | WTM160T-F492 |
| WTM160T-E292 | WTM160T-E391 | WTM160T-E492 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

* Mounting bracket included with delivery

| Technical data | | WTM160T- | F292 | F391 | F492 | E292 | E391 | E492 | | | | |
|--|---|----------|------|------|------|------|------|------|--|--|--|--|
| Operating distance | 10 ± 2 mm | | | | | | | | | | | |
| Adjustment of operating distance | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source¹⁾ | LED, green light, 540 nm | | | | | | | | | | | |
| Light spot diameter | Approx. 2 x 5 mm at 10 mm distance | | | | | | | | | | | |
| Dispersion angle sender | Focused, focus 10 mm | | | | | | | | | | | |
| Supply voltage V_S | 10 ... 30 V DC ²⁾ | | | | | | | | | | | |
| Residual ripple ³⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁴⁾ | ≤ 40 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q | | | | | | | | | | | |
| | NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | V _S - 1.8 V / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. V _S / < 1.8 V | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I _A max. | 100 mA | | | | | | | | | | | |
| Response time ⁵⁾ | ≤ 0.2 ms | | | | | | | | | | | |
| Switching frequency max. ⁶⁾ | 2500/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁷⁾ ; 4 x 0.2 mm ² , ø 4.2 mm | | | | | | | | | | | |
| plug | M8, 3-pin | | | | | | | | | | | |
| plug | M8, 4-pin | | | | | | | | | | | |
| VDE protection class | ⊕ | | | | | | | | | | | |
| Circuit protection ⁸⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | | |
| Ambient temperature | Operation - 25 ... + 55 °C | | | | | | | | | | | |
| | Storage - 40 ... + 70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g | | | | | | | | | | | |
| | With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Vertical | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

1) Average service life 100,000 h at T_A = + 25 °C
 2) Limit values, operation in short circuit protected network max. 8 A
 3) Must be within V_S tolerances

4) Without load
 5) With resistive load
 6) With light/dark ratio 1:1
 7) 5 m are available on request, do not bend cable below 0 °C

8) A = V_S connections reverse-polarity protected
 B = Inputs and outputs reverse-polarity protected
 C = Interference suppression

D = Outputs overcurrent and short-circuit protected

Colour detection

Detection of colour 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.

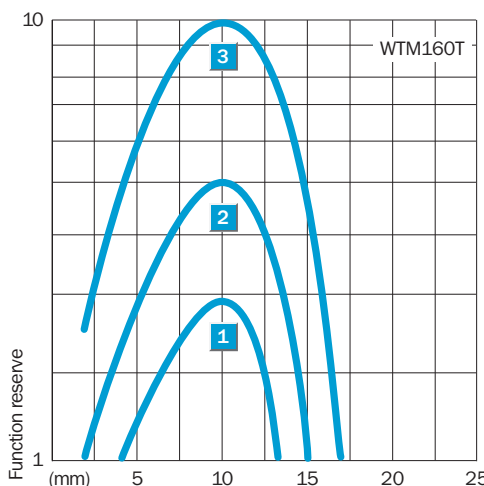
The following are not resolved:
 33 N (25 %)/88 N (25 %),
 33 N (25 %)/77 N (25 %),
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 43 N (25 %)/77 N (25 %),
 43 N (25 %)/8 N (25 %),
 54 N (50 %)/4 N (75 %), and
 23 N (25 %)/77 N (25 %).

- 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 ≙ Hostmann-Steinberg, K+E printing inks, Schminke & Co. HKS colours are printing inks, which were developed by the above-mentioned companies, to guarantee the precise reproducibility of a colour. They are standard in the graphic arts industry. HKS-N stands for uncoated paper in offset and letterpress printing with a colour spectrum of 1 (yellow) to 97 (black). The colour scale is available from SICK upon request. Order no.: 8006387.


Scanning distance

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



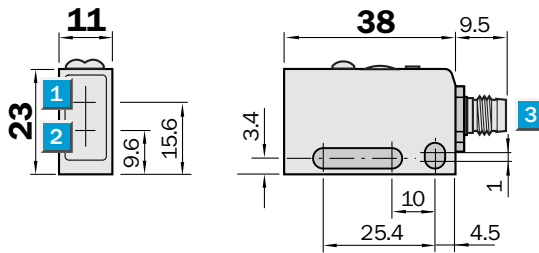
Order information

| Type | Order no. |
|--------------|-----------|
| WTM160T-F292 | 6020671 |
| WTM160T-F391 | 6021351 |
| WTM160T-F492 | 6020785 |
| WTM160T-E292 | 6020667 |
| WTM160T-E391 | 6021505 |
| WTM160T-E492 | 6020695 |


Scanning distance
 5 ... 120 mm
 Photoelectric proximity switch

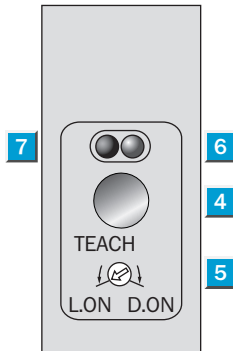
- Horizontal models
- Detects small objects and contrast differences at a large distance (100 mm)
- Focused light beam
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

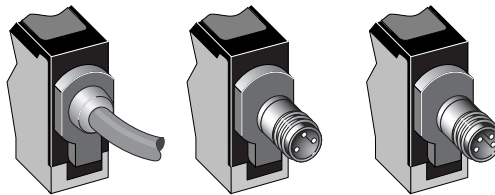
All types



- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Plug M8, 3/4-pin or connection cable
- 4 Teach-in button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 LED indicator orange: switching output active
- 7 LED indicator green: light reception with operating reserve > 1.1

Connection type

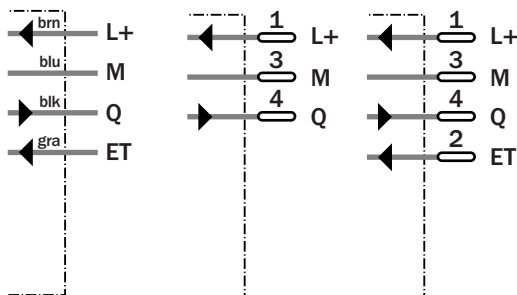
| | | |
|--------------|--------------|--------------|
| WTF160T-P212 | WTF160T-P311 | WTF160T-P412 |
| WTF160T-N212 | WTF160T-N311 | WTF160T-N412 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

* Mounting bracket included with delivery

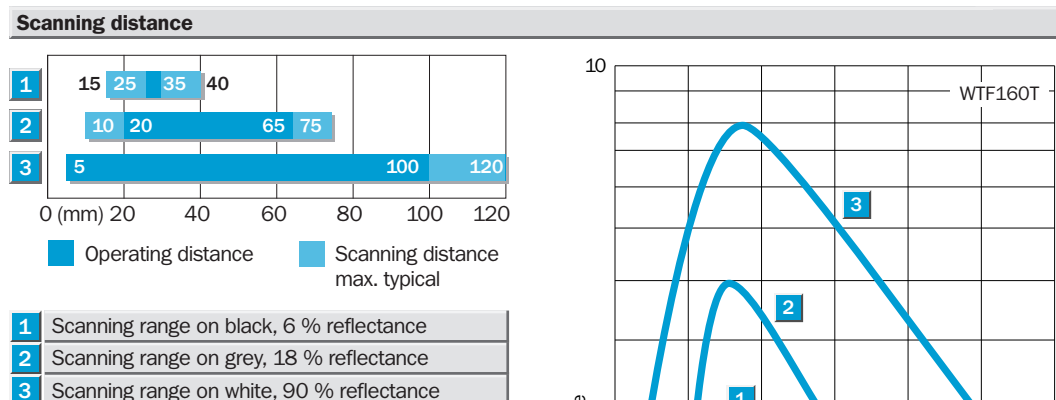
| Technical data | | WTF160T- | P212 | P311 | P412 | N212 | N311 | N412 | | | | |
|---|---|----------|------|------|------|------|------|------|--|--|--|--|
| Scanning distance , max. typical | 4 ... 120 mm ¹⁾ | | | | | | | | | | | |
| Operating distance | 5 ... 100 mm ¹⁾ | | | | | | | | | | | |
| Sensitivity control | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source ²⁾ | LED, red light, 650 nm | | | | | | | | | | | |
| Light spot diameter | Approx. 1 mm at 80 mm distance | | | | | | | | | | | |
| Dispersion angle | Focused, Focus 80 mm | | | | | | | | | | | |
| Supply voltage VS | 10 ... 30 V DC ³⁾ | | | | | | | | | | | |
| Residual ripple ⁴⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁵⁾ | ≤ 40 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q | | | | | | | | | | | |
| | NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | V _S - 1.8 V / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. V _S / < 1.8 V | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I _A max. | 100 mA | | | | | | | | | | | |
| Response time ⁶⁾ | ≤ 0.5 ms | | | | | | | | | | | |
| Switching frequency max. ⁷⁾ | 1000/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁸⁾ ; 4 x 0.2 mm ² , ø 4.2 mm | | | | | | | | | | | |
| plug | M8, 3-pin | | | | | | | | | | | |
| plug | M8, 4-pin | | | | | | | | | | | |
| VDE protection class | ⊕ | | | | | | | | | | | |
| Circuit protection ⁹⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | | |
| Ambient temperature | Operation -25 ... +55 °C | | | | | | | | | | | |
| | Storage -40 ... +70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g | | | | | | | | | | | |
| | With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Horizontal | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

1) Object with 90% remission (with reference to standard white according to DIN 5033)
 2) Average service life 100,000 h at T_A = +25 °C

3) Limit values, operation in short circuit protected network max. 8 A
 4) Must be within V_S tolerances
 5) Without load
 6) With resistive load

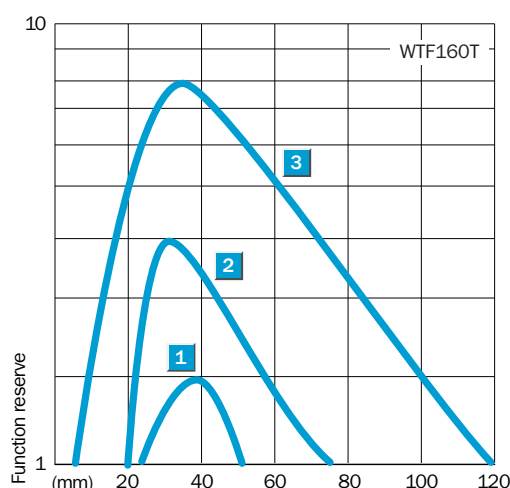
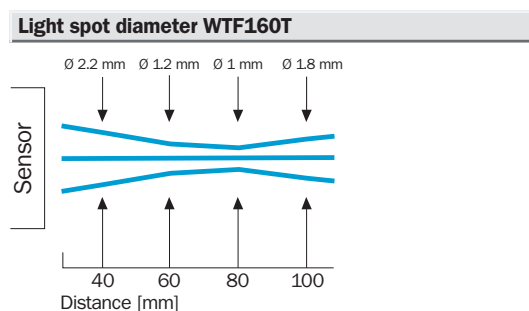
7) With light/dark ratio 1:1
 8) 5 m are available on request, do not bend cable below 0 °C
 9) A = V_S connections reverse-polarity protected


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



Order information

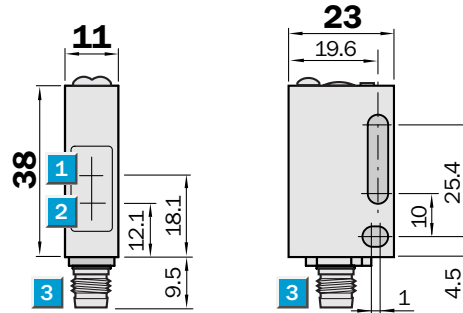
| Type | Order no. |
|--------------|-----------|
| WTF160T-P212 | 6021135 |
| WTF160T-P311 | 6020942 |
| WTF160T-P412 | 6021237 |
| WTF160T-N212 | 6021286 |
| WTF160T-N311 | 6021272 |
| WTF160T-N412 | 6021290 |




Scanning distance
5 ... 120 mm
Photoelectric proximity switch

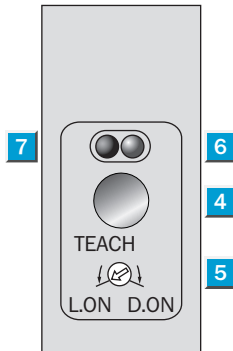
- Vertical models
- Detects small objects and contrast differences at a large distance (100 mm)
- Focused light beam
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

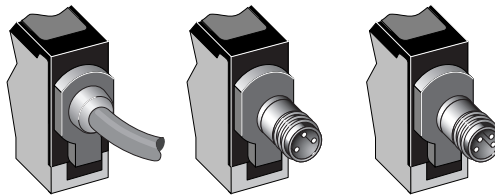
All types



- 1** Centre of optical axis, receiver
- 2** Centre of optical axis, sender
- 3** Plug M8, 3/4-pin or connection cable
- 4** Teach-in button
- 5** Light/dark rotary switch:
L = light switching
D = dark switching
- 6** LED indicator orange: switching output active
- 7** LED indicator green: light reception with operating reserve > 1.1

Connection type

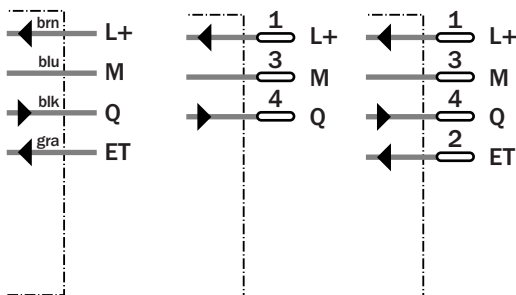
| | | |
|--------------|--------------|--------------|
| WTF160T-F212 | WTF160T-F311 | WTF160T-F412 |
| WTF160T-E212 | WTF160T-E311 | WTF160T-E412 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

* Mounting bracket included with delivery

| Technical data | | WTF160T- | F212 | F311 | F412 | E212 | E311 | E412 | | | | |
|---|---|----------|------|------|------|------|------|------|--|--|--|--|
| Scanning distance , max. typical | 4 ... 120 mm ¹⁾ | | | | | | | | | | | |
| Operating distance | 5 ... 100 mm ¹⁾ | | | | | | | | | | | |
| Sensitivity control | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source ²⁾ | LED, red light, 650 nm | | | | | | | | | | | |
| Light spot diameter | Approx. 1 mm at 80 mm distance | | | | | | | | | | | |
| Dispersion angle | Focused, Focus 80 mm | | | | | | | | | | | |
| Supply voltage V _S | 10 ... 30 V DC ³⁾ | | | | | | | | | | | |
| Residual ripple ⁴⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁵⁾ | ≤ 40 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q | | | | | | | | | | | |
| | NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | V _S - 1.8 V / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. V _S / < 1.8 V | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I _A max. | 100 mA | | | | | | | | | | | |
| Response time ⁶⁾ | ≤ 0.5 ms | | | | | | | | | | | |
| Switching frequency max. ⁷⁾ | 1000/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁸⁾ ; 4 x 0.2 mm ² , ∅ 4.2 mm | | | | | | | | | | | |
| | plug | | | | | | | | | | | |
| | plug | | | | | | | | | | | |
| VDE protection class | ⊕ | | | | | | | | | | | |
| Circuit protection ⁹⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 60K | | | | | | | | | | | |
| Ambient temperature | Operation - 25 ... + 55 °C | | | | | | | | | | | |
| | Storage - 40 ... + 70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g | | | | | | | | | | | |
| | With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Vertical | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

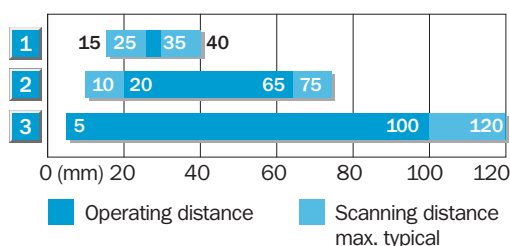
1) Object with 90% remission (with reference to standard white according to DIN 5033)
 2) Average service life 100,000 h at T_A = + 25 °C

3) Limit values, operation in short circuit protected network max. 8 A
 4) Must be within V_S tolerances
 5) Without load
 6) With resistive load

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

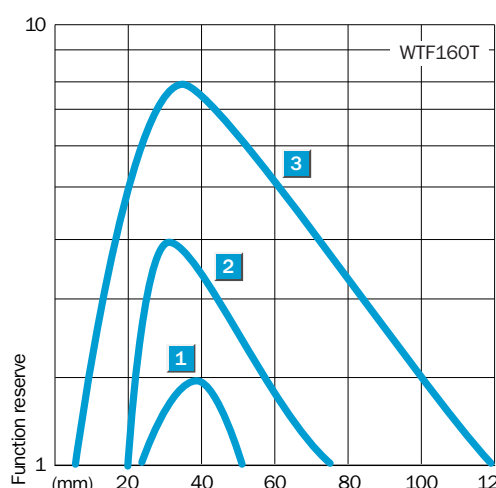
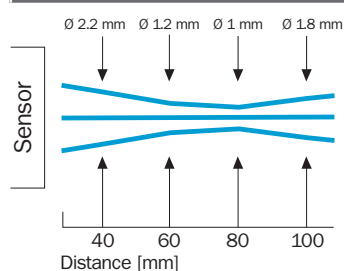
B = Inputs and outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

Scanning distance




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

Light spot diameter WTF160T



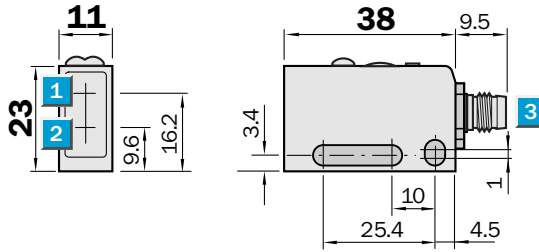
Order information

| Type | Order no. |
|--------------|-----------|
| WTF160T-F212 | 6021708 |
| WTF160T-F311 | 6021700 |
| WTF160T-F412 | 6021722 |
| WTF160T-E212 | 6020411 |
| WTF160T-E311 | 6020391 |
| WTF160T-E412 | 6020934 |


Scanning distance
0 ... 900 mm
Photoelectric proximity switch

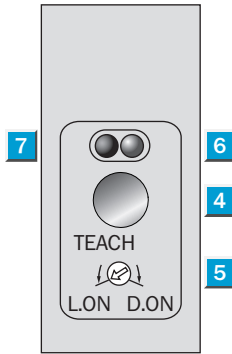
- Horizontal models
- Large scanning distance
- Red light variant for standard applications
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

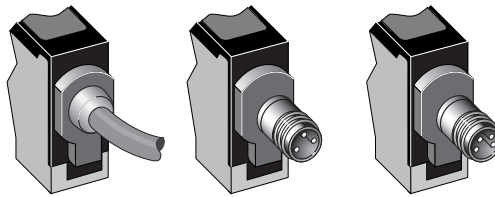
All types



- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Plug M8, 3/4-pin or connection cable
- 4 Teach-in button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 LED indicator orange: switching output active
- 7 LED indicator green: light reception with operating reserve > 1.1

Connection type

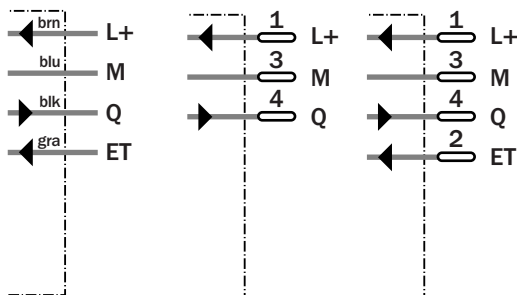
| | | |
|--------------|--------------|--------------|
| WTE160T-P232 | WTE160T-P331 | WTE160T-P432 |
| WTE160T-N232 | WTE160T-N331 | WTE160T-N432 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

* Mounting bracket included with delivery

| Technical data | | WTE160T- | P232 | P331 | P432 | N232 | N331 | N432 | | | | |
|--|---|----------|------|------|------|------|------|------|--|--|--|--|
| Scanning distance, max. typical | 0 ... 900 mm ¹⁾ | | | | | | | | | | | |
| Operating distance | 0 ... 700 mm ¹⁾ | | | | | | | | | | | |
| Sensitivity control | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source ²⁾ | LED, red light, 680 nm | | | | | | | | | | | |
| Light spot diameter | Approx. 45 mm at 700 mm distance | | | | | | | | | | | |
| Supply voltage V _S | 10 ... 30 V DC ³⁾ | | | | | | | | | | | |
| Residual ripple ⁴⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁵⁾ | ≤ 40 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | V _S - 1.8 V / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. V _S / < 1.8 V | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I _A max. | 100 mA | | | | | | | | | | | |
| Response time ⁶⁾ | ≤ 0.5 ms | | | | | | | | | | | |
| Switching frequency max. ⁷⁾ | 1000/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁸⁾ ; 4 x 0.2 mm ² , Ø 4.2 mm | | | | | | | | | | | |
| plug | M8, 3-pin | | | | | | | | | | | |
| plug | M8, 4-pin | | | | | | | | | | | |
| VDE protection class | ⓘ | | | | | | | | | | | |
| Circuit protection ⁹⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | | |
| Ambient temperature | Operation -25 ... +55 °C Storage -40 ... +70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Horizontal | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

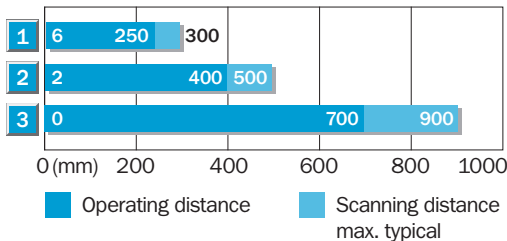
1) Object with 90% remission (with reference to standard white according to DIN 5033)
2) Average service life 100,000 h at T_A = +25 °C

3) Limit values, operation in short circuit protected network max. 8 A
4) Must be within V_S tolerances
5) Without load
6) With resistive load

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

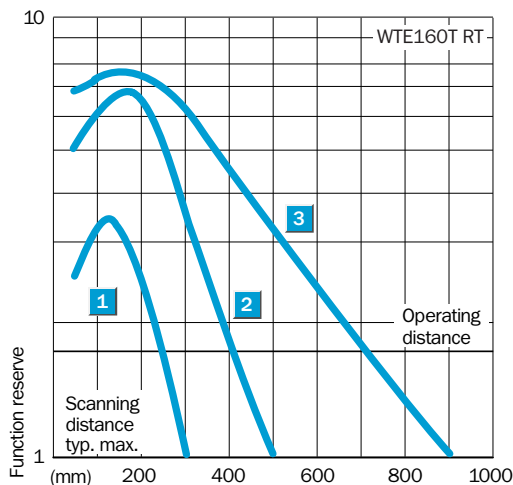
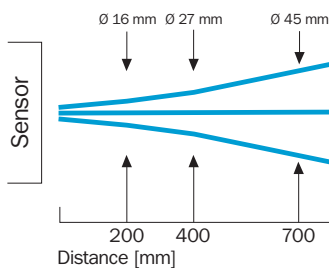
B = Inputs and outputs reverse-polarity protected
C = Interference suppression
D = Outputs overcurrent and short-circuit protected

Scanning distance



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

Light spot diameter WTE160T red light



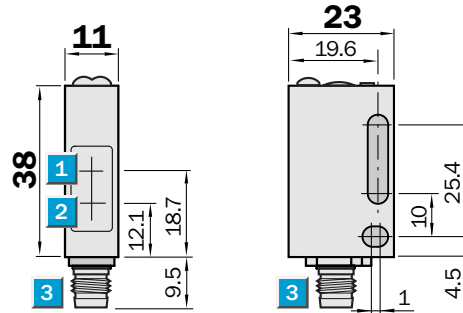
Order information

| Type | Order no. |
|--------------|-----------|
| WTE160T-P232 | 6021884 |
| WTE160T-P331 | 6021883 |
| WTE160T-P432 | 6021886 |
| WTE360T-N232 | 6021888 |
| WTE160T-N331 | 6021887 |
| WTE160T-N432 | 6021890 |

Scanning distance
 0 ... 900 mm
Photoelectric proximity switch

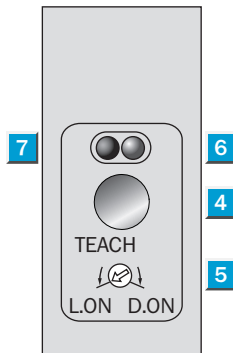
- Vertical models
- Large scanning distance
- Red light variant for standard applications
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

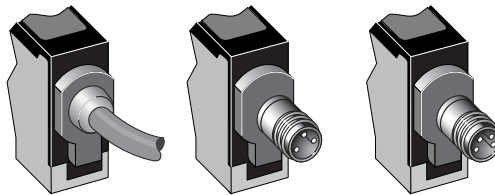
All types



- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Plug M8, 3/4-pin or connection cable
- 4 Teach-in button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 LED indicator orange: switching output active
- 7 LED indicator green: light reception with operating reserve > 1.1

Connection type

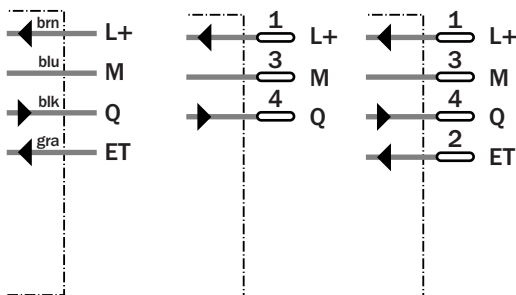
| | | |
|--------------|--------------|--------------|
| WTE160T-F232 | WTE160T-F331 | WTE160T-F432 |
| WTE160T-E232 | WTE160T-E331 | WTE160T-E432 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

* Mounting bracket included with delivery

| Technical data | | WTE160T- | F232 | F331 | F432 | E232 | E331 | E432 | | | | |
|--|---|----------|------|------|------|------|------|------|--|--|--|--|
| Scanning distance, max. typical | 0 ... 900 mm ¹⁾ | | | | | | | | | | | |
| Operating distance | 0 ... 700 mm ¹⁾ | | | | | | | | | | | |
| Sensitivity control | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source ²⁾ | LED, red light, 680 nm | | | | | | | | | | | |
| Light spot diameter | Approx. 45 mm at 700 mm distance | | | | | | | | | | | |
| Supply voltage VS | 10 ... 30 V DC ³⁾ | | | | | | | | | | | |
| Residual ripple ⁴⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁵⁾ | ≤ 40 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | V _S - 1.8 V / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. V _S / < 1.8 V | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I _A max. | 100 mA | | | | | | | | | | | |
| Response time ⁶⁾ | ≤ 0.5 ms | | | | | | | | | | | |
| Switching frequency max. ⁷⁾ | 1000/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁸⁾ ; 4 x 0.2 mm ² , Ø 4.2 mm | | | | | | | | | | | |
| plug | M8, 3-pin | | | | | | | | | | | |
| plug | M8, 4-pin | | | | | | | | | | | |
| VDE protection class | ⊕ | | | | | | | | | | | |
| Circuit protection ⁹⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | | |
| Ambient temperature | Operation -25 ... +55 °C Storage -40 ... +70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Vertical | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

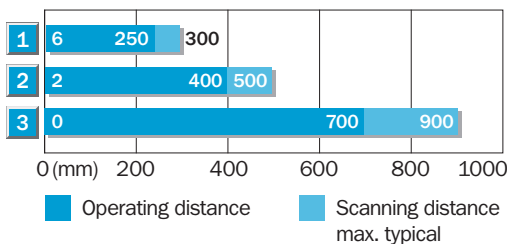
1) Object with 90% remission (with reference to standard white according to DIN 5033)
2) Average service life 100,000 h at T_A = +25 °C

3) Limit values, operation in short circuit protected network max. 8 A
4) Must be within V_S tolerances
5) Without load
6) With resistive load

7) Bei Hell-Dunkel-Verhältnis 1:
8) 5 m are available on request, do not bend cable below 0 °C
9) A = V_S connections reverse-polarity protected

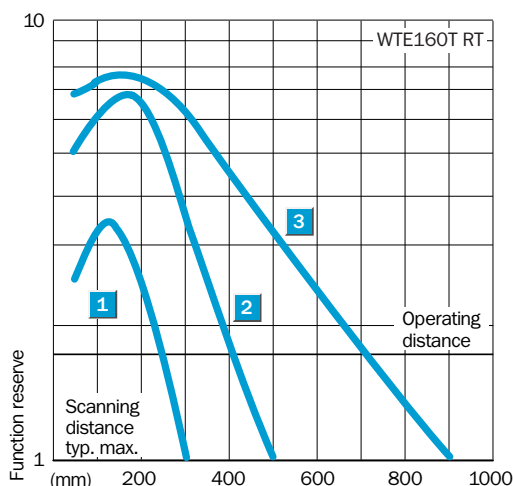
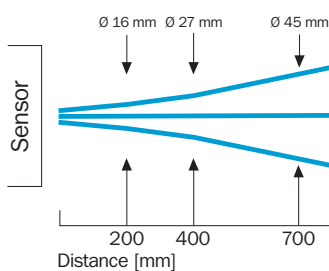
B = Inputs and outputs reverse-polarity protected
C = Interference suppression
D = Outputs overcurrent and short-circuit protected

Scanning distance




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

Light spot diameter WTE160T red light



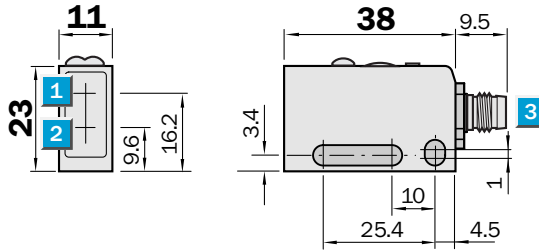
Order information

| Type | Order no. |
|--------------|-----------|
| WTE160T-F232 | 6021876 |
| WTE160T-F331 | 6021875 |
| WTE160T-F432 | 6021878 |
| WTE160T-E232 | 6021880 |
| WTE160T-E331 | 6021879 |
| WTE160T-E432 | 6021882 |


Scanning distance
0 ... 1300 mm
 Photoelectric proximity switch

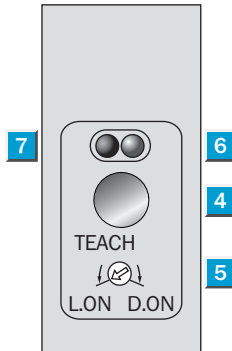
- Horizontal models
- Large scanning distance
- Infrared variant for objects with low reflectance
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

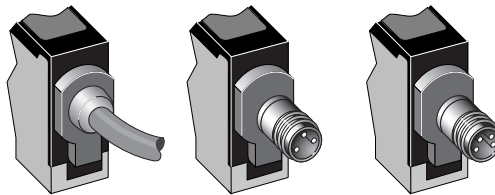
All types



- 1** Centre of optical axis, receiver
- 2** Centre of optical axis, sender
- 3** Plug M8, 3/4-pin or connection cable
- 4** Teach-in button
- 5** Light/dark rotary switch:
L = light switching
D = dark switching
- 6** LED indicator orange: switching output active
- 7** LED indicator green: light reception with operating reserve > 1.1

Connection type

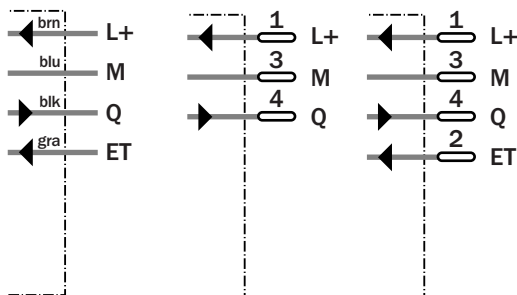
| | | |
|--------------|--------------|--------------|
| WTE160T-P262 | WTE160T-P361 | WTE160T-P462 |
| WTE160T-N262 | WTE160T-N361 | WTE160T-N462 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

* Mounting bracket included with delivery

| Technical data | | WTE160T- | P262 | P361 | P462 | N262 | N361 | N462 | | | | |
|---|---|----------|------|------|------|------|------|------|--|--|--|--|
| Scanning distance , max. typical | 0 ... 1300 mm ¹⁾ | | | | | | | | | | | |
| Operating distance | 0 ... 1000 mm ¹⁾ | | | | | | | | | | | |
| Sensitivity control | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source ²⁾ | LED, infrared light, 890 nm | | | | | | | | | | | |
| Light spot diameter | Approx. 85 mm at 1 m distance | | | | | | | | | | | |
| Supply voltage V _S | 10 ... 30 V DC ³⁾ | | | | | | | | | | | |
| Residual ripple ⁴⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁵⁾ | ≤ 40 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q | | | | | | | | | | | |
| | NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | V _S - 1.8 V / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. V _S / < 1.8 V | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I _A max. | 100 mA | | | | | | | | | | | |
| Response time ⁶⁾ | ≤ 0.5 ms | | | | | | | | | | | |
| Switching frequency max. ⁷⁾ | 1000/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁸⁾ ; 4 x 0.2 mm ² , ∅ 4.2 mm | | | | | | | | | | | |
| plug | M8, 3-pin | | | | | | | | | | | |
| plug | M8, 4-pin | | | | | | | | | | | |
| VDE protection class | ⊕ | | | | | | | | | | | |
| Circuit protection ⁹⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | | |
| Ambient temperature | Operation -25 ... +55 °C | | | | | | | | | | | |
| | Storage -40 ... +70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g | | | | | | | | | | | |
| | With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Horizontal | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

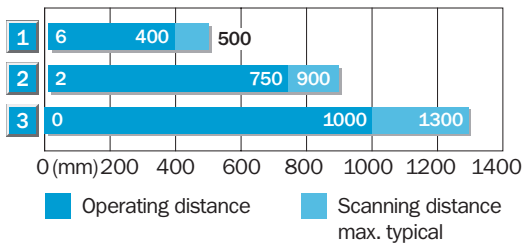
1) Object with 90% remission (with reference to standard white according to DIN 5033)
 2) Average service life 100,000 h at T_A = +25 °C

3) Limit values, operation in short circuit protected network max. 8 A
 4) Must be within V_S tolerances
 5) Without load
 6) With resistive load

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

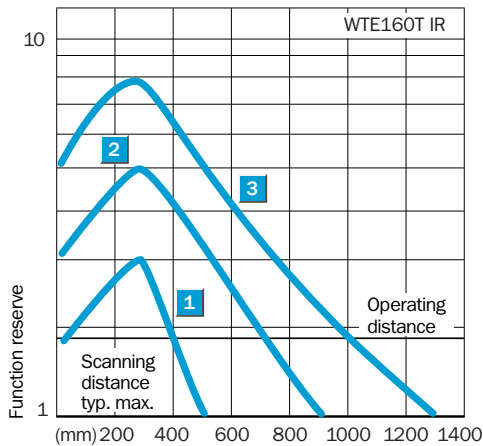
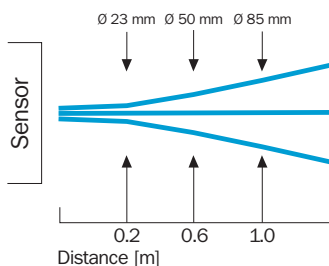
B = Inputs and outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

Scanning distance



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

Light spot diameter WTE160T infrared light



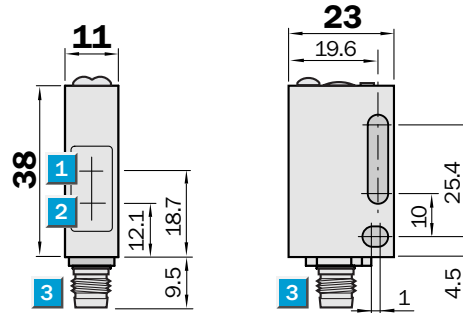
Order information

| Type | Order no. |
|--------------|-----------|
| WTE160T-P262 | 6021900 |
| WTE160T-P361 | 6021899 |
| WTE160T-P462 | 6021902 |
| WTE360T-N262 | 6021904 |
| WTE160T-N361 | 6021903 |
| WTE160T-N462 | 6021906 |

Scanning distance
0 ... 1300 mm
Photoelectric proximity switch

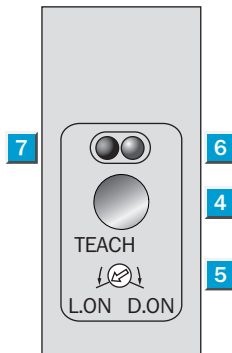
- Vertical models
- Large scanning distance
- Infrared variant for objects with low reflectance
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

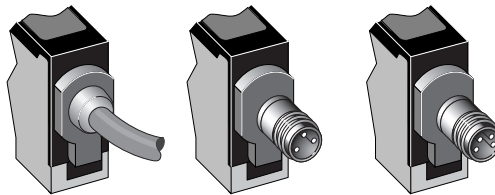
All types



- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Plug M8, 3/4-pin or connection cable
- 4 Teach-in button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 LED indicator orange: switching output active
- 7 LED indicator green: light reception with operating reserve > 1.1

Connection type

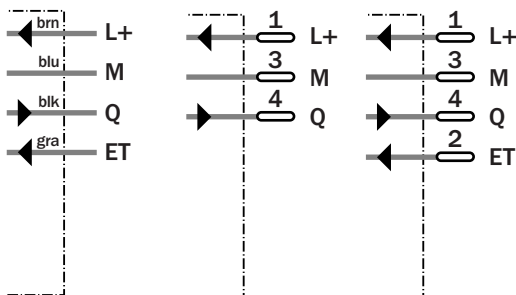
| | | |
|--------------|--------------|--------------|
| WTE160T-F262 | WTE160T-F361 | WTE160T-F462 |
| WTE160T-E262 | WTE160T-E361 | WTE160T-E462 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

* Mounting bracket included with delivery

| Technical data | | WTE160T- | F262 | F361 | F462 | E262 | E361 | E462 | | | | |
|---|---|-----------|------|------|------|------|------|------|--|--|--|--|
| Scanning distance , max. typical | 0 ... 1300 mm ¹⁾ | | | | | | | | | | | |
| Operating distance | 0 ... 1000 mm ¹⁾ | | | | | | | | | | | |
| Sensitivity control | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source²⁾ | LED, infrared light, 890 nm | | | | | | | | | | | |
| Light spot diameter | Approx. 85 mm at 1 m distance | | | | | | | | | | | |
| Supply voltage VS | 10 ... 30 V DC ³⁾ | | | | | | | | | | | |
| Residual ripple ⁴⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁵⁾ | ≤ 40 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q | | | | | | | | | | | |
| | NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | V _S - 1.8 V / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. V _S / < 1.8 V | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I _A max. | 100 mA | | | | | | | | | | | |
| Response time ⁶⁾ | ≤ 0.5 ms | | | | | | | | | | | |
| Switching frequency max. ⁷⁾ | 1000/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁸⁾ ; 4 x 0.2 mm ² , Ø 4.2 mm | | | | | | | | | | | |
| | plug | M8, 3-pin | | | | | | | | | | |
| | plug | M8, 4-pin | | | | | | | | | | |
| VDE protection class | ⊕ | | | | | | | | | | | |
| Circuit protection ⁹⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | | |
| Ambient temperature | Operation -25 ... +55 °C | | | | | | | | | | | |
| | Storage -40 ... +70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g | | | | | | | | | | | |
| | With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Vertical | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

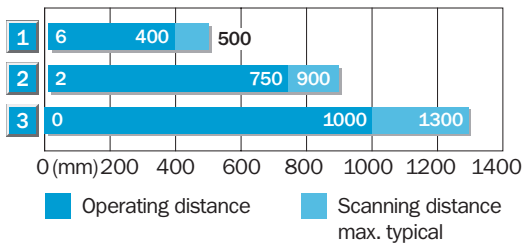
1) Object with 90% remission (with reference to standard white according to DIN 5033)
 2) Average service life 100,000 h at T_A = +25 °C

3) Limit values, operation in short circuit protected network max. 8 A
 4) Must be within V_S tolerances
 5) Without load
 6) With resistive load

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

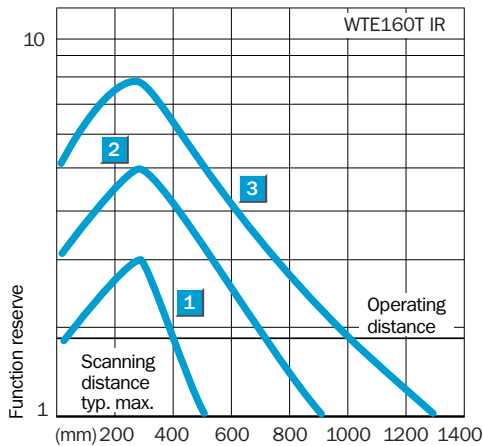
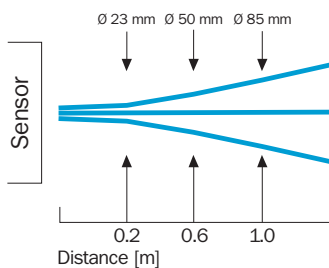
B = Inputs and outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

Scanning distance



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

Light spot diameter WTE160T infrared light



Order information

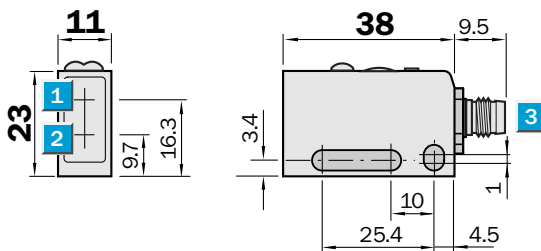
| Type | Order no. |
|--------------|-----------|
| WTE160T-F262 | 6021892 |
| WTE160T-F361 | 6021891 |
| WTE160T-F462 | 6021894 |
| WTE160T-E262 | 6021896 |
| WTE160T-E361 | 6021895 |
| WTE160T-E462 | 6021898 |

Scanning range
2.2 m

Photoelectric reflex switch

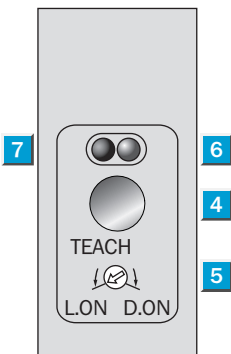
- Horizontal models
- Very small light spot
- Short response time
- Detection of transparent objects; min. attenuation 20%
- Detection of smallest objects
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

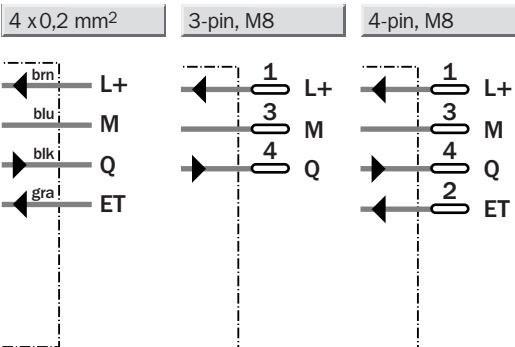
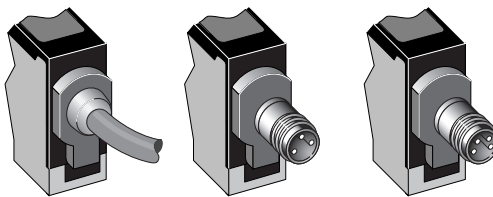
All types



- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Plug M8, 3/4-pin or connection cable
- 4 Teach-in button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 LED indicator orange: switching output active
- 7 LED indicator green: light reception with operating reserve > 1.1

Connection type

| | | |
|-------------|-------------|-------------|
| WL160T-P212 | WL160T-P311 | WL160T-P412 |
| WL160T-N212 | WL160T-N311 | WL160T-N412 |



Accessories

| |
|-----------------------|
| Cables and connectors |
| Mounting systems * |
| Reflectors ** |

* Mounting bracket included with delivery
** Reflector P250 included with delivery

| Technical data | WL160T- | P212 | P311 | P412 | N212 | N311 | N412 | | | | |
|--|---|------|------|------|------|------|------|--|--|--|--|
| Scanning range, max. typical | 0.03 ... 2.2 m | | | | | | | | | | |
| Operating range, recommended | 0.03 ... 1.5 m | | | | | | | | | | |
| Measurement condition | On reflector PL80A | | | | | | | | | | |
| Sensitivity control | Teach-in | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | |
| Light source ¹⁾ | LED, red light, 665 nm | | | | | | | | | | |
| Light spot diameter | Approx. 2 mm at 70 mm distance | | | | | | | | | | |
| Dispersion angle | Focused, focus 70 mm | | | | | | | | | | |
| Attenuation ²⁾ | Min. 20% | | | | | | | | | | |
| Supply voltage V_S | 10 ... 30 V DC ³⁾ | | | | | | | | | | |
| Residual ripple ⁴⁾ | ± 10 % | | | | | | | | | | |
| Current consumption ⁵⁾ | ≤ 40 mA | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q NPN, open collector: Q | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | $V_S - 1.8 V$ / approx. 0 V | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. $V_S / < 1.8 V$ | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | |
| Output current I_A max. | 100 mA | | | | | | | | | | |
| Response time ⁶⁾ | ≤ 0.2 ms | | | | | | | | | | |
| Switching frequency max. ⁷⁾ | 2500/s | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁸⁾ ; 5 x 0.2 mm ² , Ø 4.2 mm | | | | | | | | | | |
| plug | M8, 3-pin | | | | | | | | | | |
| plug | M8, 4-pin | | | | | | | | | | |
| VDE protection class | ⊕ | | | | | | | | | | |
| Circuit protection ⁹⁾ | A, B, C, D | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | |
| Ambient temperature | Operation -25 ... +55 °C Storage -40 ... +70 °C | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g With plug M8 approx. 20 g | | | | | | | | | | |
| Housing form | Horizontal | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | |

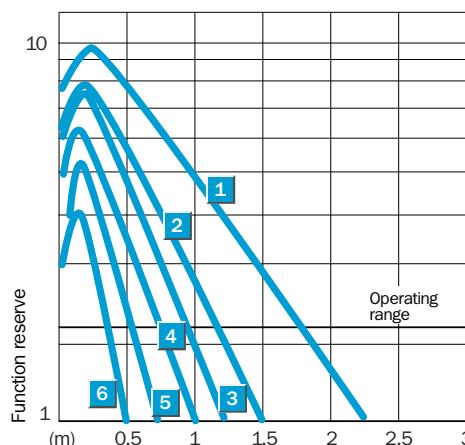
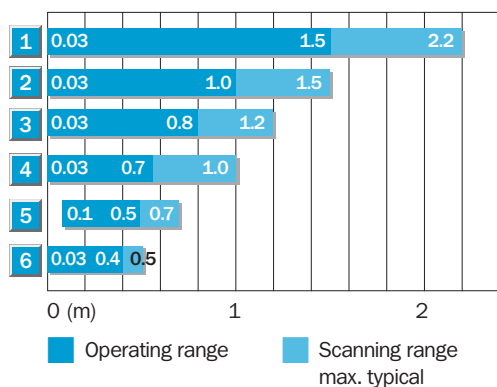
1) Average service life 100,000 h at $T_A = +25 °C$
 2) Detection of transparent objects
 3) Limit values, operation in short circuit protected network max. 8 A

4) Must be within V_S tolerances
 5) Without load
 6) With resistive load
 7) With light/dark ratio 1:1

8) 5 m are available on request, do not bend cable below 0 °C
 9) 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

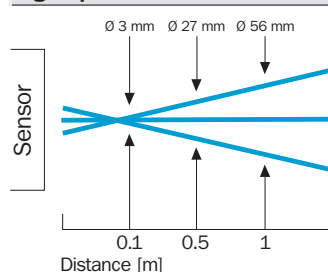


Order information

| Type | Order no. |
|-------------|-----------|
| WL160T-P212 | 6020481 |
| WL160T-P311 | 6021479 |
| WL160T-P412 | 6020483 |
| WL160T-N212 | 6020480 |
| WL160T-N311 | 6021515 |
| WL160T-N412 | 6020482 |

| Reflector type | Operating range |
|---------------------------------|-----------------|
| 1 PL80A | 0.03 ... 1.5 m |
| 2 P250/PL40/PL50A | 0.03 ... 1.0 m |
| 3 PL30A/31A | 0.03 ... 0.8 m |
| 4 PL20A | 0.03 ... 0.7 m |
| 5 Reflective tape Diamond Grade | 0.1 ... 0.5 m |
| 6 P45 | 0.03 ... 0.4 m |

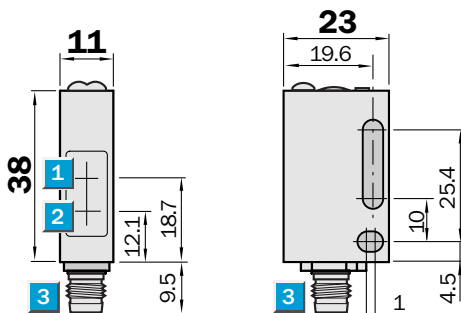
Light spot diameter WL160T



| | |
|------------------------------------|--------------------------------|
| | Scanning range 2.2 m |
| Photoelectric reflex switch | |

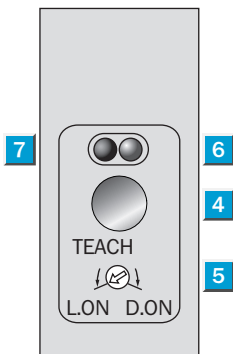
- Vertical models
- Very small light spot
- Short response time
- Detection of transparent objects; min. attenuation 20%
- Detection of smallest objects
- LED indicator: function reserve

Dimensional drawing



Adjustments possible

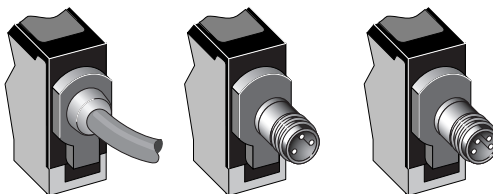
All types



- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Plug M8, 3/4-pin or connection cable
- 4 Teach-in button
- 5 Light/dark rotary switch:
L = light switching
D = dark switching
- 6 LED indicator orange: switching output active
- 7 LED indicator green: light reception with operating reserve > 1.1

Connection type

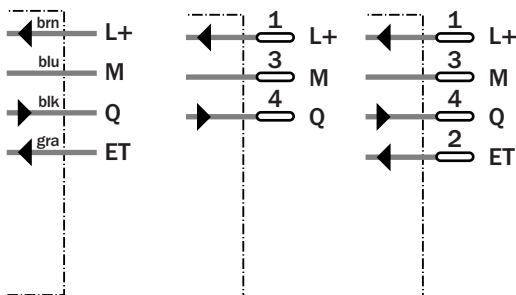
| | | |
|-------------|-------------|-------------|
| WL160T-F212 | WL160T-F311 | WL160T-F412 |
| WL160T-E212 | WL160T-E311 | WL160T-E412 |



4 x 0.2 mm²

3-pin, M8

4-pin, M8



Accessories

Cables and connectors

Mounting systems *

Reflectors **

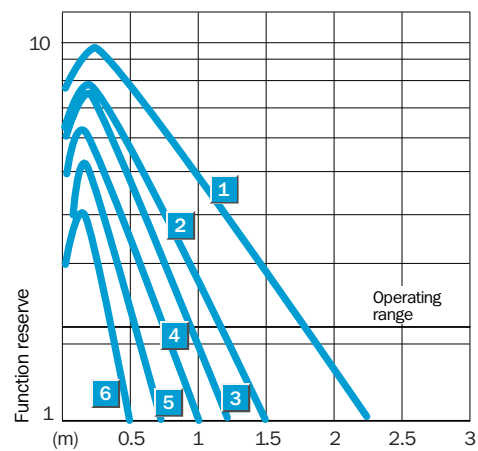
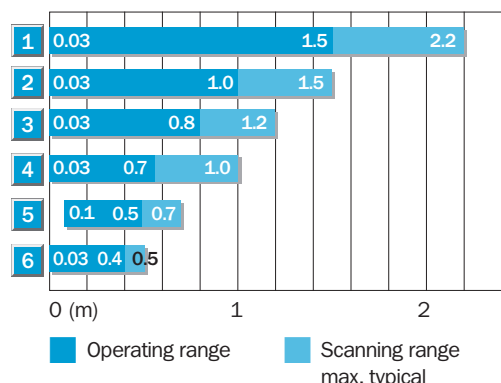
* Mounting bracket included with delivery

** Reflector P250 included with delivery

| Technical data | | WL160T- | F212 | F311 | F412 | E212 | E311 | E412 | | | | |
|--|---|---------|------|------|------|------|------|------|--|--|--|--|
| Scanning range, max. typical | 0.03 ... 2.2 m | | | | | | | | | | | |
| Operating range, recommended | 0.03 ... 1.5 m | | | | | | | | | | | |
| Measurement condition | On reflector PL80A | | | | | | | | | | | |
| Sensitivity control | Teach-in | | | | | | | | | | | |
| External Teach (ET) | | | | | | | | | | | | |
| Light source ¹⁾ | LED, red light, 665 nm | | | | | | | | | | | |
| Light spot diameter | Approx. 2 mm at 70 mm distance | | | | | | | | | | | |
| Dispersion angle | Focused, focus 70 mm | | | | | | | | | | | |
| Attenuation ²⁾ | Min. 20% | | | | | | | | | | | |
| Supply voltage V_S | 10 ... 30 V DC ³⁾ | | | | | | | | | | | |
| Residual ripple ⁴⁾ | ± 10 % | | | | | | | | | | | |
| Current consumption ⁵⁾ | ≤ 40 mA | | | | | | | | | | | |
| Switching outputs | PNP, open collector: Q NPN, open collector: Q | | | | | | | | | | | |
| Signal voltage PNP HIGH / LOW | $V_S - 1.8 V$ / approx. 0 V | | | | | | | | | | | |
| Signal voltage NPN HIGH / LOW | Approx. $V_S / < 1.8 V$ | | | | | | | | | | | |
| Switching mode, adjustable | Light/dark switching per rotary switch | | | | | | | | | | | |
| Output current I_A max. | 100 mA | | | | | | | | | | | |
| Response time ⁶⁾ | ≤ 0.2 ms | | | | | | | | | | | |
| Switching frequency max. ⁷⁾ | 2500/s | | | | | | | | | | | |
| Connection type: cable | PVC, 2 m ⁸⁾ ; 5 x 0.2 mm ² , Ø 4.2 mm | | | | | | | | | | | |
| plug | M8, 3-pin | | | | | | | | | | | |
| plug | M8, 4-pin | | | | | | | | | | | |
| VDE protection class | ⊕ | | | | | | | | | | | |
| Circuit protection ⁹⁾ | A, B, C, D | | | | | | | | | | | |
| Enclosure rating | IP 67 / IP 69K | | | | | | | | | | | |
| Ambient temperature | Operation -25 ... +55 °C Storage -40 ... +70 °C | | | | | | | | | | | |
| Weight | With cable 2 m approx. 60 g With plug M8 approx. 20 g | | | | | | | | | | | |
| Housing form | Vertical | | | | | | | | | | | |
| Housing material | Housing: PBT; Optic: PMMA | | | | | | | | | | | |

- 1) Average service life 100,000 h at $T_A = +25 °C$
 - 2) Detection of transparent objects
 - 3) Limit values, operation in short circuit protected network max. 8 A
 - 4) Must be within V_S tolerances
 - 5) Without load
 - 6) With resistive load
 - 7) With light/dark ratio 1:1
 - 8) 5 m are available on request, do not bend cable below 0 °C
 - 9) 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

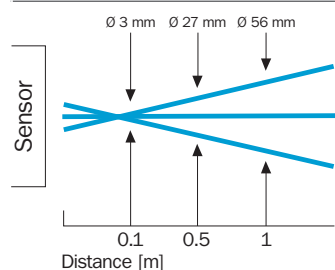


Order information

| Type | Order no. |
|-------------|-----------|
| WL160T-F212 | 6020487 |
| WL160T-F311 | 6021387 |
| WL160T-F412 | 6020489 |
| WL160T-E212 | 6020486 |
| WL160T-E311 | 6021438 |
| WL160T-E412 | 6020488 |

| Reflector type | Operating range |
|---------------------------------|-----------------|
| 1 PL80A | 0.03 ... 1.5 m |
| 2 P250/PL40/PL50A | 0.03 ... 1.0 m |
| 3 PL30A/31A | 0.03 ... 0.8 m |
| 4 PL20A | 0.03 ... 0.7 m |
| 5 Reflective tape Diamond Grade | 0.1 ... 0.5 m |
| 6 P45 | 0.03 ... 0.4 m |

Light spot diameter WL160T

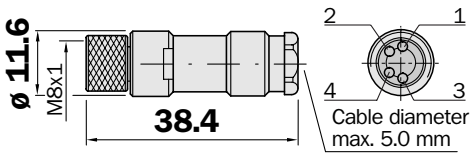


Dimensional drawings and order information

SENSICK screw-in system M8, 3- or 4-pin, enclosure rating IP 67

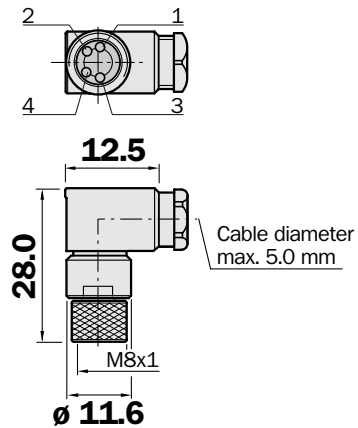
Female connector M8, 3- or 4-pin, straight

| Type | Order no. | Contacts |
|------------|-----------|----------|
| DOS-0803-G | 7902077 | 3 |
| DOS-0804-G | 6009974 | 4 |



Female connector M8, 3- or 4-pin, angled

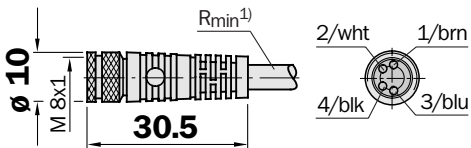
| Type | Order no. | Contacts |
|------------|-----------|----------|
| DOS-0803-W | 7902078 | 3 |
| DOS-0804-W | 6009975 | 4 |



Female connector M8, 3- or 4-pin, straight

3 x 0.34 mm² or 4 x 0.25 mm², sheath PVC

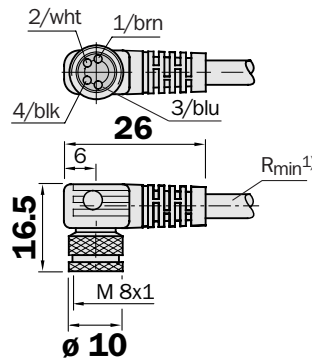
| Type | Order no. | Contacts | Cable length |
|---------------|-----------|----------|--------------|
| DOL-0803-G02M | 6010785 | 3 | 2 m |
| DOL-0803-G05M | 6022009 | 3 | 5 m |
| DOL-0803-G10M | 6022011 | 3 | 10 m |
| DOL-0804-G02M | 6009870 | 4 | 2 m |
| DOL-0804-G05M | 6009872 | 4 | 5 m |
| DOL-0804-G10M | 6010754 | 4 | 10 m |



Female connector M8, 3- or 4-pin, angled

3 x 0.34 mm² or 4 x 0.25 mm², sheath PVC

| Type | Order no. | Contacts | Cable length |
|---------------|-----------|----------|--------------|
| DOL-0803-W02M | 6008489 | 3 | 2 m |
| DOL-0803-W05M | 6022010 | 3 | 5 m |
| DOL-0803-W10M | 6022012 | 3 | 10 m |
| DOL-0804-W02M | 6009871 | 4 | 2 m |
| DOL-0804-W05M | 6009873 | 4 | 5 m |
| DOL-0804-W10M | 6010755 | 4 | 10 m |



¹⁾ Minimum bend radius in dynamic use
R_{min} = 20 x cable diameter

Dimensional drawings and order information

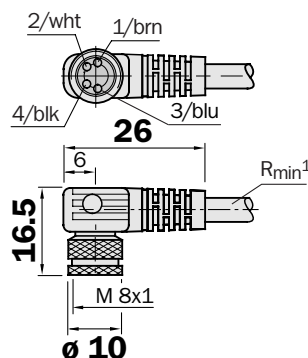
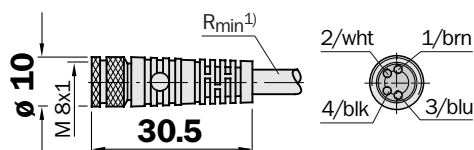
SENSICK screw-in system M8, 3- or 4-pin, enclosure rating IP 67

Female connector M8, 3- or 4-pin, straight
3/4 x 0.34 mm², sheath PUR halogen free

| Type | Order no. | Contacts | Cable length |
|----------------|-----------|----------|--------------|
| DOL-0803-G02MC | 6025888 | 3 | 2 m |
| DOL-0803-G05MC | 6025889 | 3 | 5 m |
| DOL-0803-G10MC | 6025890 | 3 | 10 m |
| DOL-0804-G02MC | 6025894 | 4 | 2 m |
| DOL-0804-G05MC | 6025895 | 4 | 5 m |
| DOL-0804-G10MC | 6025896 | 4 | 10 m |

Female connector M8, 3- or 4-pin, right angle
3/4 x 0.34 mm², sheath PUR halogen free

| Type | Order no. | Contacts | Cable length |
|----------------|-----------|----------|--------------|
| DOL-0803-W02MC | 6025891 | 3 | 2 m |
| DOL-0803-W05MC | 6025892 | 3 | 5 m |
| DOL-0803-W10MC | 6025893 | 3 | 10 m |
| DOL-0804-W02MC | 6025897 | 4 | 2 m |
| DOL-0804-W05MC | 6025898 | 4 | 5 m |
| DOL-0804-W10MC | 6025899 | 4 | 10 m |

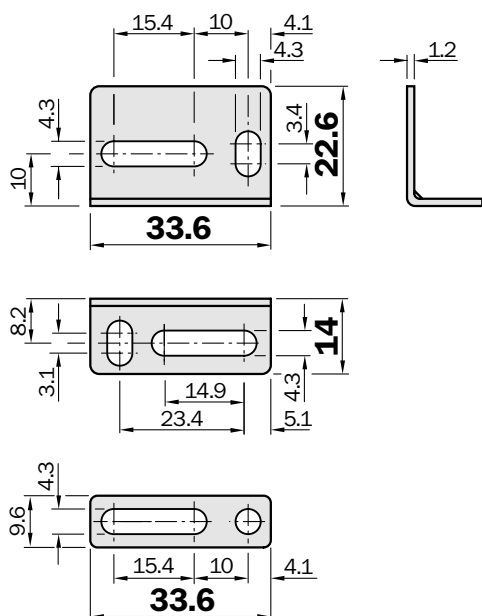


¹⁾ Minimum bend radius in dynamic use
R_{min} = 20 x cable diameter

Mounting systems

Mounting brackets for W160 *

| Type | Order no. |
|----------|-----------|
| BEF-W160 | 5305197 |

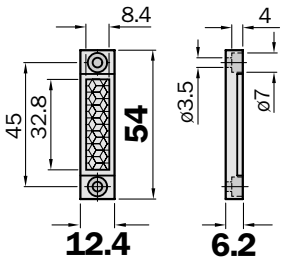


* Supplied with WL160T, WTB160T BGS, WTE160T, WTF160T and WTM160T Mark.

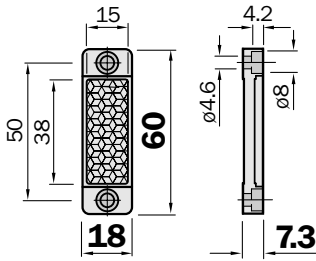
Dimensional drawings and order information

Plastic model for temperatures up to 65 °C

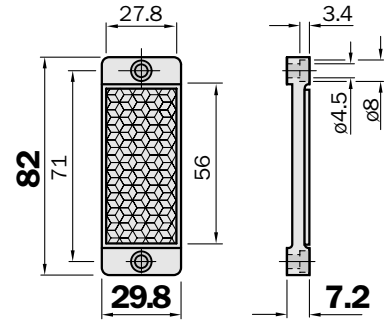
| Reflector 8 x 30 mm ² | |
|----------------------------------|-----------|
| Type | Order no. |
| P45 | 5308002 |



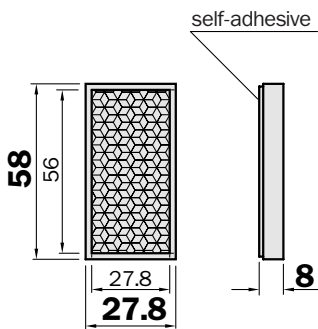
| Reflector 20 x 40 mm ² | |
|-----------------------------------|-----------|
| Type | Order no. |
| PL20A | 1012719 |



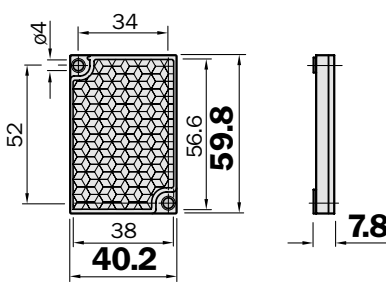
| Reflector 30 x 50 mm ² | |
|-----------------------------------|-----------|
| Type | Order no. |
| PL30A | 1002314 |



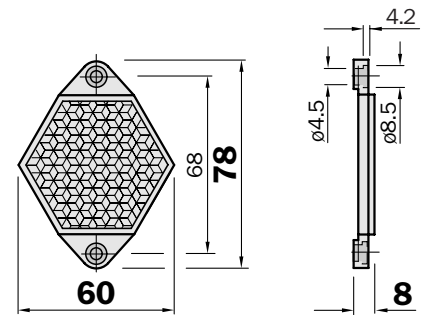
| Reflector 30 x 50 mm ² | |
|-----------------------------------|-----------|
| Self-adhesive | |
| Type | Order no. |
| PL31A | 1002315 |



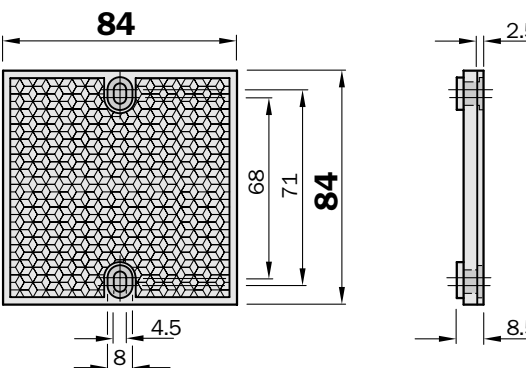
| Reflector 40 x 60 mm ² | |
|-----------------------------------|-----------|
| Type | Order no. |
| PL40A | 1012720 |



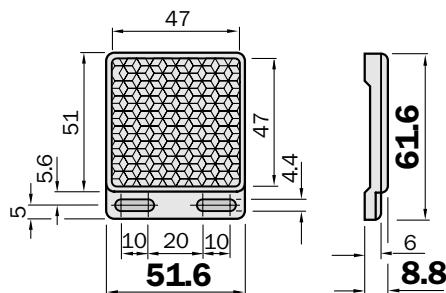
| Reflector, hexagonal | |
|----------------------|-----------|
| Opening width 48 mm | |
| Type | Order no. |
| PL50A | 1000132 |



| Reflector 80 x 80 mm ² | |
|-----------------------------------|-----------|
| Type | Order no. |
| PL80A | 1003865 |



| Reflector 47 x 47 mm ² *) | |
|--------------------------------------|-----------|
| Type | Order no. |
| P250 | 5304812 |



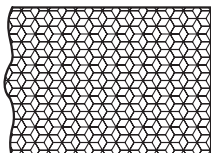
*) Included with delivery WL160T.

Dimensional drawings and order information

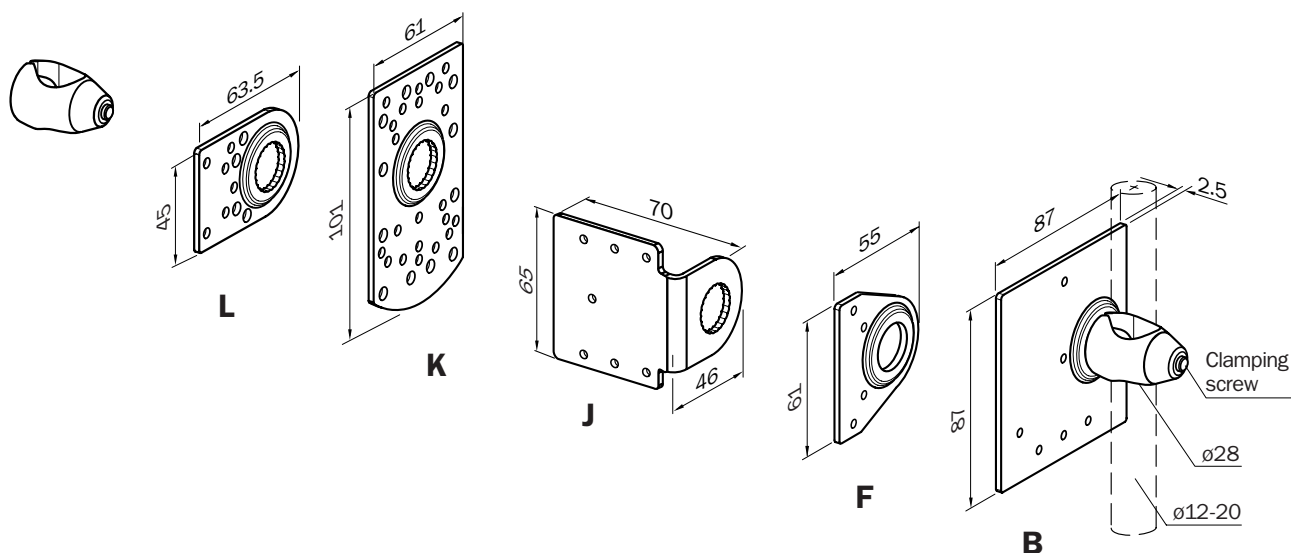
Plastic model for temperatures up to 65 °C

Reflective tape

| Type | Order no. | |
|----------|-----------|--------------------|
| REF-DG-K | 4019634 | Cut to size |
| REF-DG | 5304334 | Sheet 749 x 914 mm |



Universal bracket for rod mounting



| Plate | Type | Order no. ¹⁾ | Sensors/reflectors |
|----------|-------------|-------------------------|---|
| B | BEF-KHS-B01 | 2022459 | P250, PL30A, PL40A, PL50A, PL80A, C110A |
| F | BEF-KHS-F01 | 2022463 | W260, PL20A, P250 |
| J | BEF-KHS-J01 | 2022719 | PL20A, PL40A, PL50A, P250, C110A |
| K | BEF-KHS-K01 | 2022718 | W11, W12-2, W12L-2, W14, W18-2, W23, W24-2, W27-2, W30, W32, W34, W36, KT2, KT5, KT10, CS, LUT3, DS60, PL20A, PL30A, PL40A, PL50A, PL80, A, P250, C110A |
| L | BEF-KHS-L01 | 2023057 | W9-2, W140, W160, W250, P250 |
| | BEF-KHS-KH1 | 2022726 | Clamp bracket rod mounting without attachment plate and mounting material |

¹⁾ Universal bracket and mounting screws included

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