



Z sensor

Variety in a miniature size,
for standard short range applications

The Z sensor is a miniature photo-electric sensor with basic functions packed into different housings, which can be optimized for customer demands. Standard applications reside in the short range.

Examples of applications are conveyor systems, vending machines, automated garment handling, packaging lines, or other simple on/off applications. The Z sensor does not have adjustment possibilities or additional functions which is common in other SICK devices. However, these features are not necessary for simple on/off applications, the Z sensor is also economically attractive.

The integrated ASIC-technology "made by SICK" guarantees the best optical performance. Background suppression (50 mm fixed) and cross-talk immunity are just two of many highlights.

155 mm scanning range in an energetic switch and 5 m scanning range in a reflex type, these are impressive sensing ranges for a sensor which is not much bigger than a fingertip.

The possibility to integrate the optical and electronic elements into different housings, leads to a multi-functional use of the Z sensor.

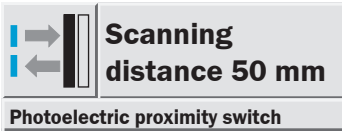
The Z1 and Z2 models come with integrated M18 threads and additional mounting holes for conventional mounting (24–25.4 mm flange mount). The Z3 model, or the "Eyeball", can be aligned in any direction, just like the human eye.

Finally, the Z sensor delights with its transparent design. And this is not just for the looks, it also serves an important function: It makes the indicator LED visible from any direction (360° around the sensor).

SENSORS
INCORPORATED

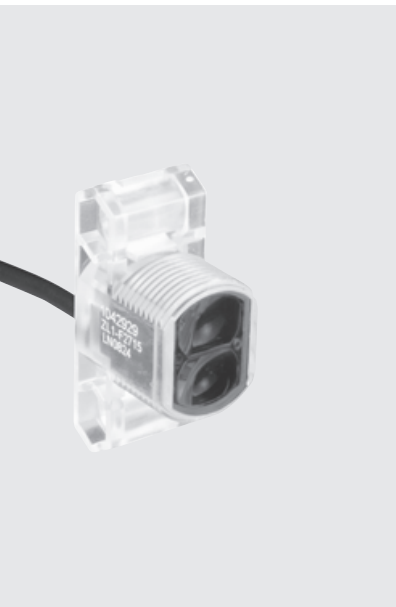
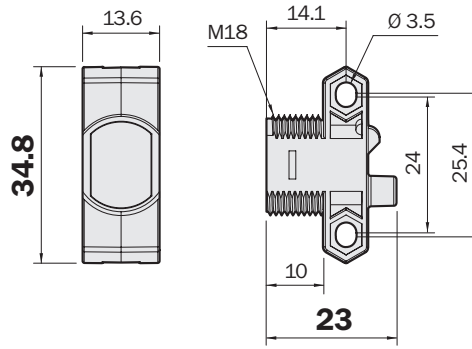
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SICK
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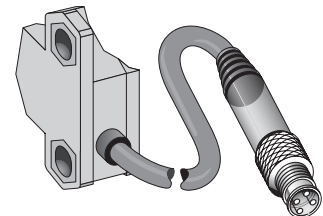
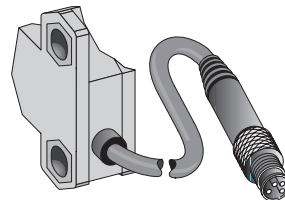
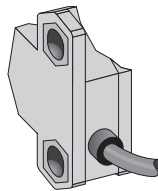
- Background suppression
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Output indicator

Dimensional drawing



Connection types

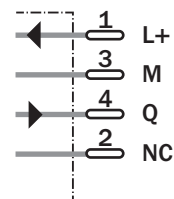
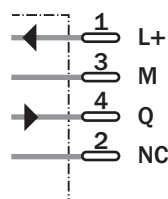
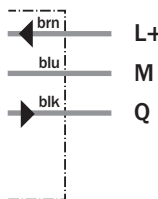
ZT1-N3215	ZT1-N3231	ZT1-N3221
ZT1-E3215	ZT1-E3231	ZT1-E3221



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



Accessories

- Reflectors
- Mounting systems



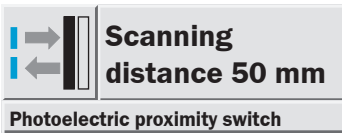
Technical data		ZT1-	N3215	E3215	N3221	E3221	N3231	E3231				
Scanning distance typ.	0 ... 50 mm											
Light source ¹⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 10.5 mm at 50 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: NPN											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

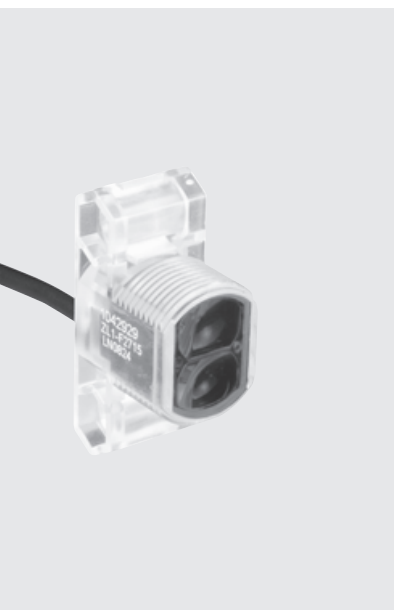
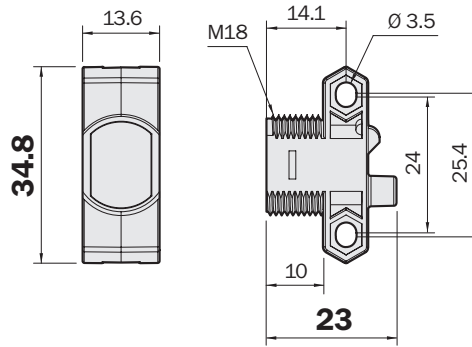
7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

Scanning distance		Order information	
1	0 50	Type	Order no.
2	2 48	ZT1-N3215	1045562
3	5 46	ZT1-E3215	1045565
	0 (mm) 10 20 30 40 50	ZT1-N3221	1045578
		ZT1-E3221	1045581
		ZT1-N3231	1045594
		ZT1-E3231	1045597
1	Scanning distance on white, 90 % remission		
2	Scanning distance on grey, 18 % remission		
3	Scanning distance on black, 6 % remission		



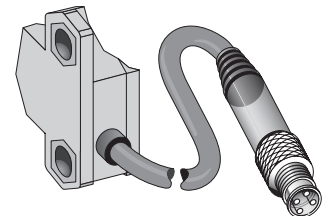
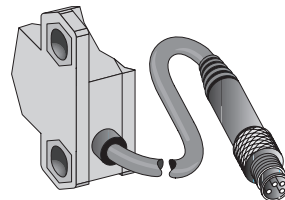
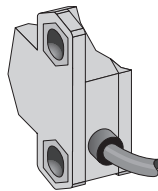
- Background suppression
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Output indicator

Dimensional drawing



Connection types

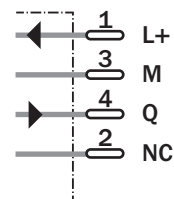
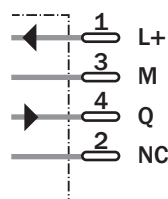
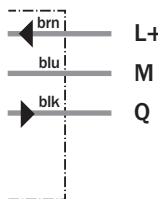
ZT1-P3215	ZT1-P3231	ZT1-P3221
ZT1-F3215	ZT1-F3231	ZT1-F3221



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



Accessories

- Reflectors
- Mounting systems



Technical data		ZT1-	P3215	F3215	P3221	F3221	P3231	F3231				
Scanning distance typ.	0 ... 50 mm											
Light source ¹⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 10.5 mm at 50 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

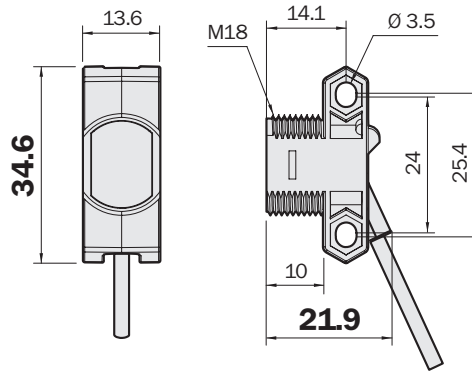
Scanning distance		Order information	
1	0 50	Type	Order no.
2	2 48	ZT1-P3215	1045563
3	5 46	ZT1-F3215	1045564
	0 (mm) 10 20 30 40 50	ZT1-P3221	1045579
		ZT1-F3221	1045580
		ZT1-P3231	1045595
		ZT1-F3231	1045596
1	Scanning distance on white, 90 % remission		
2	Scanning distance on grey, 18 % remission		
3	Scanning distance on black, 6 % remission		

Scanning distance 50 mm

Photoelectric proximity switch

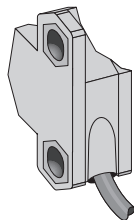
- Background suppression
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Output indicator

Dimensional drawing

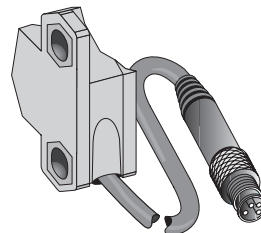
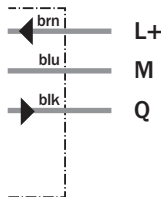


Connection types

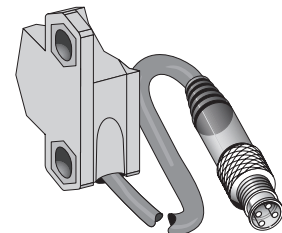
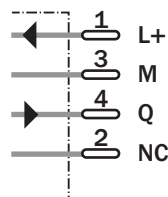
ZT2-N3215	ZT2-N3231	ZT2-N3221
ZT2-E3215	ZT2-E3231	ZT2-E3221



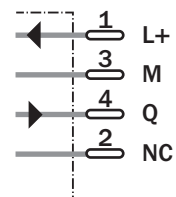
3 x 0.23 mm²



M8, 4-pin



M12, 4-pin



Accessories

- Reflectors
- Mounting systems



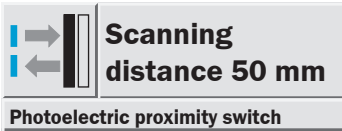
Technical data		ZT2-	N3215	E3215	N3221	E3221	N3231	E3231				
Scanning distance typ.	0 ... 50 mm											
Light source ¹⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 10.5 mm at 50 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: NPN											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection types	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

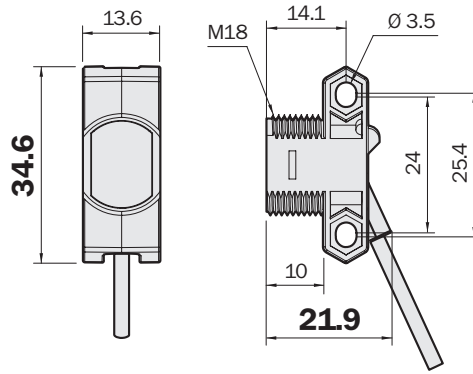
7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

Scanning distance		Order information	
1	0 50	Type	Order no.
2	2 48	ZT2-N3215	1045407
3	5 46	ZT2-E3215	1045410
		ZT2-N3221	1045423
		ZT2-E3221	1045426
		ZT2-N3231	1045439
		ZT2-E3231	1045442
1	Scanning distance on white, 90 % remission		
2	Scanning distance on grey, 18 % remission		
3	Scanning distance on black, 6 % remission		



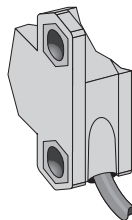
- Background suppression
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Output indicator

Dimensional drawing

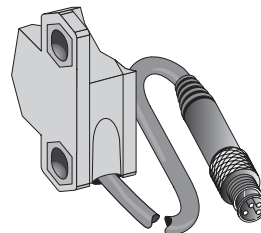
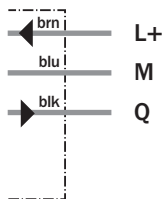


Connection types

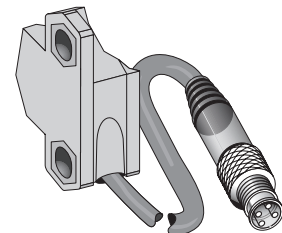
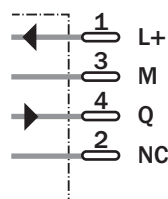
ZT2-P3215	ZT2-P3231	ZT2-P3221
ZT2-F3215	ZT2-F3231	ZT2-F3221



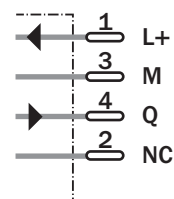
3 x 0.23 mm²



M8, 4-pin



M12, 4-pin



Accessories

- Reflectors
- Mounting systems



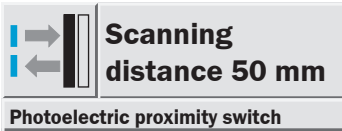
Technical data		ZT2-	P3215	F3215	P3221	F3221	P3231	F3231				
Scanning distance typ.	0 ... 50 mm											
Light source ¹⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 10.5 mm at 50 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection types	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

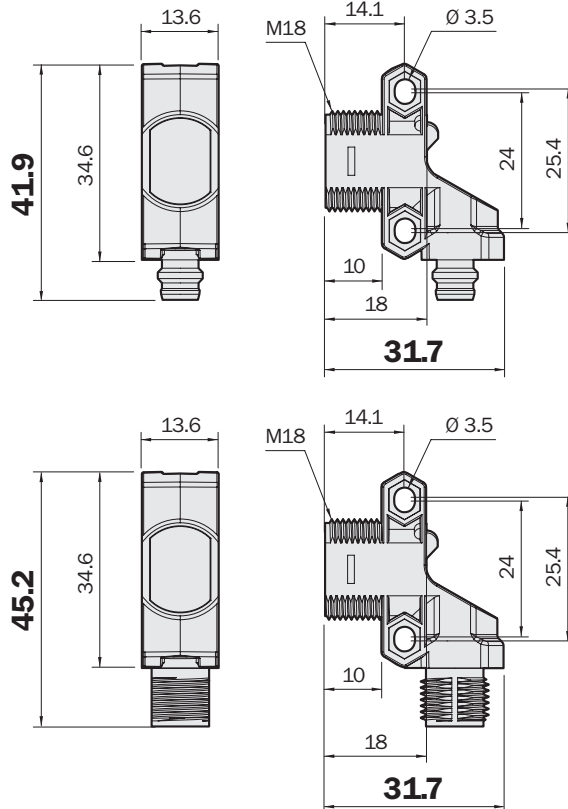
7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

Scanning distance		Order information	
1	0 50	Type	Order no.
2	2 48	ZT2-P3215	1045408
3	5 46	ZT2-F3215	1045409
		ZT2-P3221	1045424
		ZT2-F3221	1045425
		ZT2-P3231	1045440
		ZT2-F3231	1045441
1	Scanning distance on white, 90 % remission		
2	Scanning distance on grey, 18 % remission		
3	Scanning distance on black, 6 % remission		



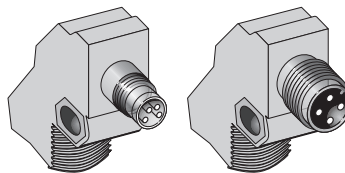
- Background suppression
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Output indicator

Dimensional drawing



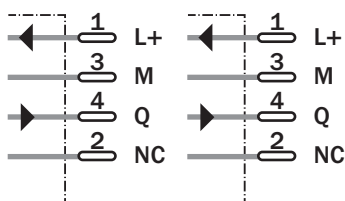
Connection types

ZT2-N3238	ZT2-N3228
ZT2-E3238	ZT2-E3228



M8, 4-pin

M12, 4-pin



Accessories

- Reflectors
- Mounting systems



Technical data		ZT2-	N3238	E3238	N3228	E3228					
Scanning distance typ.	0 ... 50 mm										
Light source ¹⁾, light type	LED, infrared light, 880 nm										
Light spot diameter	Approx. 10.5 mm at 50 mm										
Supply voltage V_S ²⁾	10 ... 30 V DC										
Ripple ³⁾	< 5 V _{PP}										
Current consumption ⁴⁾	< 20 mA										
Switching outputs	Q: NPN										
Switching mode	Light switching										
	Dark switching										
Output current I_A max.	50 mA										
Switching frequency ⁵⁾	200 Hz										
Connection type	M8 plug, 4-pin										
	M12 plug, 4-pin										
VDE protection class ⁶⁾	⊖										
Circuit protection ⁷⁾	A, D										
Enclosure rating	IP 67										
Ambient temperature	Operation -25 ... +50 °C										
	Storage -40 ... +70 °C										
Housing material	ABS, fibreglass reinforced										
Included with delivery	Mounting nut M18										

¹⁾ Average service life 100,000 h, at T_A = +25 °C

²⁾ Limit values

³⁾ Must be within V_S tolerances

⁴⁾ Without load

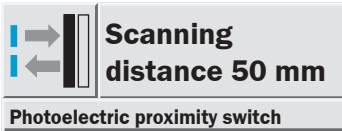
⁵⁾ With light/dark ratio 1:1

⁶⁾ Reference voltage 50 V DC

⁷⁾ A = V_S connections reverse-polarity protected

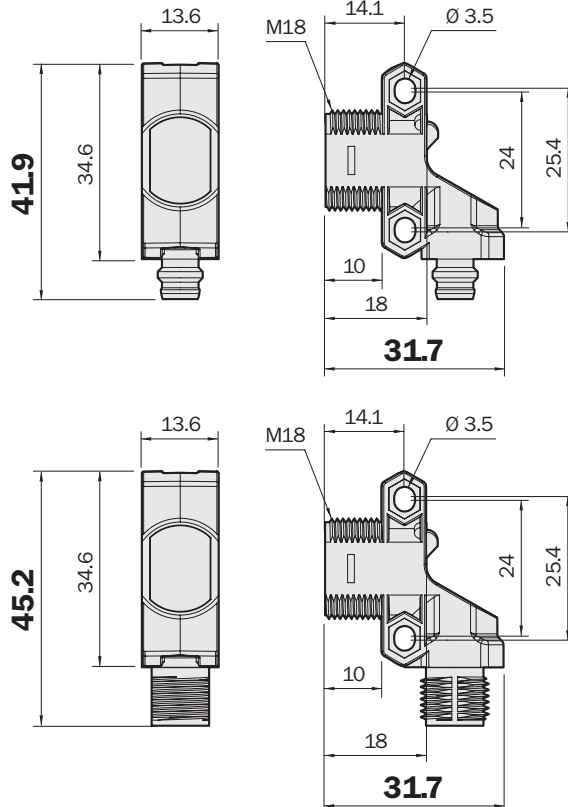
D = Outputs overcurrent and short-circuit protected

Scanning distance		Order information	
1	0 50	Type	Order no.
2	2 48	ZT2-N3238	1045488
3	5 46	ZT2-E3238	1045491
	0 (mm) 10 20 30 40 50	ZT2-N3228	1045472
		ZT2-E3228	1045475
1	Scanning distance on white, 90 % remission		
2	Scanning distance on grey, 18 % remission		
3	Scanning distance on black, 6 % remission		



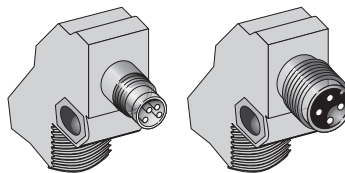
- Background suppression
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- Output indicator

Dimensional drawing



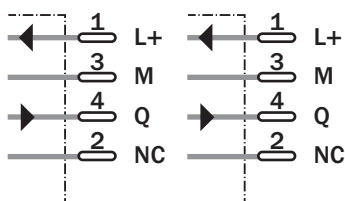
Connection types

ZT2-P3238	ZT2-P3228
ZT2-F3238	ZT2-F3228



M8, 4-pin

M12, 4-pin



Accessories

- Reflectors
- Mounting systems



Technical data		ZT2-	P3238	F3238	P3228	F3228						
Scanning distance typ.	0 ... 50 mm											
Light source ¹⁾ , light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 10.5 mm at 50 mm											
Supply voltage V _S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I _A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection types	M8 plug, 4-pin											
	M12 plug, 4-pin											
VDE protection class ⁶⁾	⊖											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

¹⁾ Average service life 100,000 h, at T_A = +25 °C

²⁾ Limit values

³⁾ Must be within V_S tolerances

⁴⁾ Without load


⁵⁾ With light/dark ratio 1:1

⁶⁾ Reference voltage 50 V DC

⁷⁾ A = V_S connections reverse-polarity protected

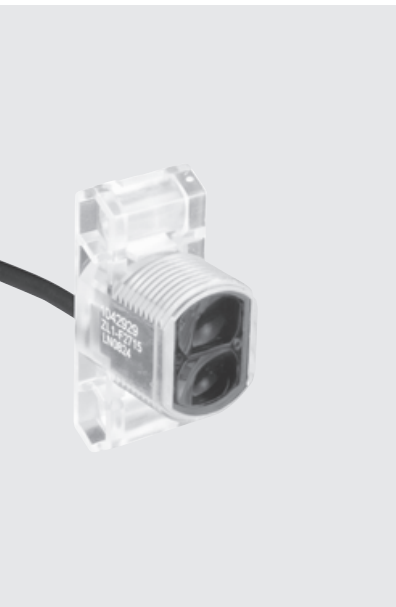
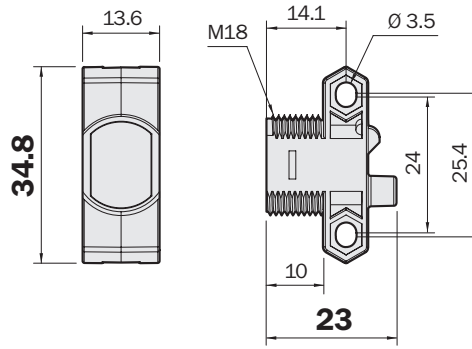
D = Outputs overcurrent and short-circuit protected

Scanning distance		Order information	
1	0 50	Type	Order no.
2	2 48	ZT2-P3238	1045489
3	5 46	ZT2-F3238	1045490
		ZT2-P3228	1045473
		ZT2-F3228	1045474
1	Scanning distance on white, 90 % remission		
2	Scanning distance on grey, 18 % remission		
3	Scanning distance on black, 6 % remission		


Scanning distance 100 mm
 Photoelectric proximity switch

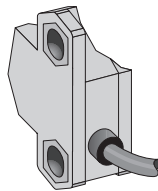
- Energetic type
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Output indicator

Dimensional drawing

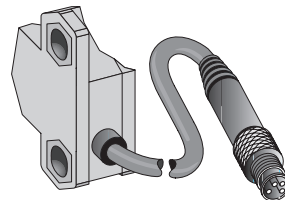
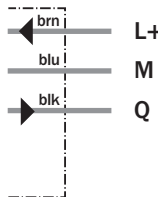


Connection types

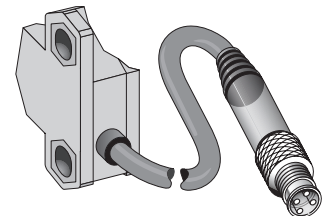
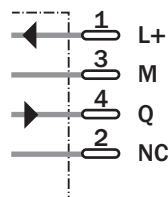
ZT1-N4215	ZT1-N4231	ZT1-N4221
ZT1-E4215	ZT1-E4231	ZT1-E4221



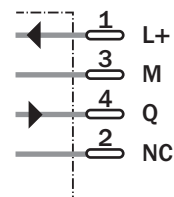
3 x 0.23 mm²



M8, 4-pin



M12, 4-pin



Accessories

- Reflectors
- Mounting systems



Technical data		ZT1-	N4215	E4215	N4221	E4221	N4231	E4231				
Scanning distance typ.	1 ... 100 mm											
Light source ¹⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 20 mm at 100 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: NPN											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											


1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

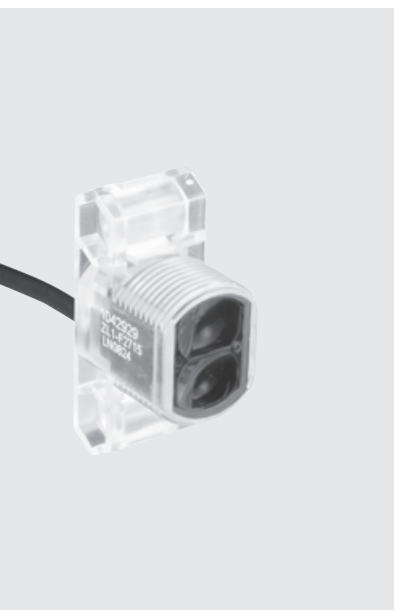
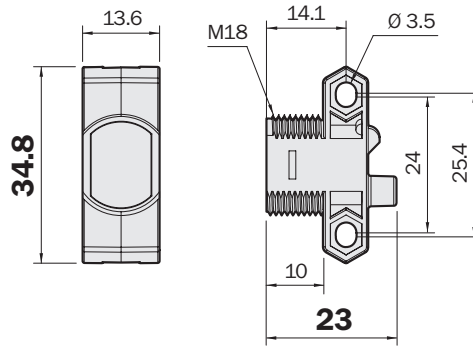
Scanning distance		Order information	
1	100	Type	Order no.
2	82	ZT1-N4215	1045566
3	74	ZT1-E4215	1045569
		ZT1-N4221	1045582
		ZT1-E4221	1045585
		ZT1-N4231	1045598
		ZT1-E4231	1045601

1	Scanning distance on white, 90 % remission
2	Scanning distance on grey, 18 % remission
3	Scanning distance on black, 6 % remission


Scanning distance 100 mm
 Photoelectric proximity switch

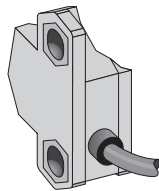
- Energetic type
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Output indicator

Dimensional drawing

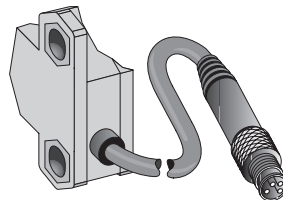
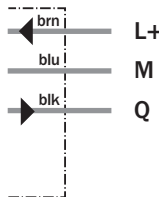


Connection types

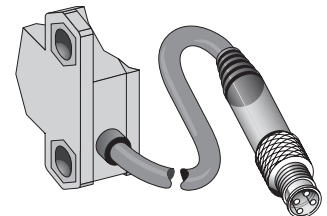
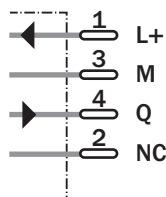
ZT1-P4215	ZT1-P4231	ZT1-P4221
ZT1-F4215	ZT1-F4231	ZT1-F4221



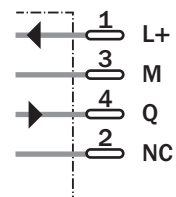
3 x 0.23 mm²



M8, 4-pin



M12, 4-pin



Accessories

- Reflectors
- Mounting systems



Technical data		ZT1-	P4215	F4215	P4221	F4221	P4231	F4231				
Scanning distance typ.	1 ... 100 mm											
Light source ¹⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 20 mm at 100 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											


1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

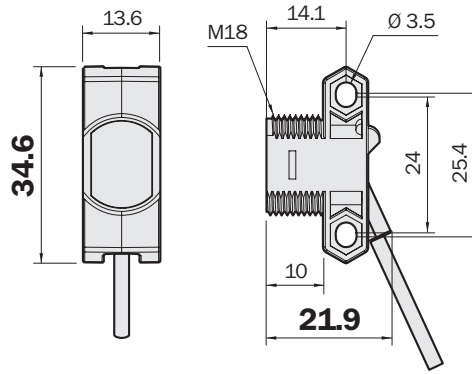
Scanning distance		Order information	
1	100	Type	Order no.
2	82	ZT1-P4215	1045567
3	74	ZT1-F4215	1045568
		ZT1-P4221	1045583
		ZT1-F4221	1045584
		ZT1-P4231	1045599
		ZT1-F4231	1045600

1	Scanning distance on white, 90 % remission
2	Scanning distance on grey, 18 % remission
3	Scanning distance on black, 6 % remission


Scanning distance 100 mm
 Photoelectric proximity switch

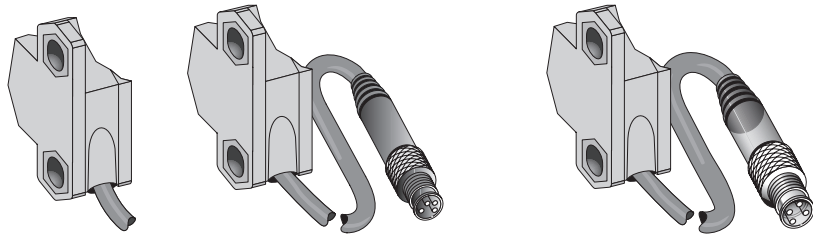
- Energetic type
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Output indicator

Dimensional drawing



Connection types

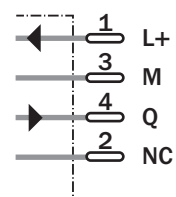
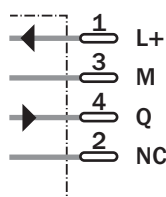
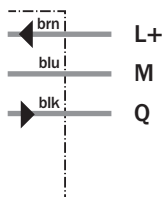
ZT2-N4215	ZT2-N4231	ZT2-N4221
ZT2-E4215	ZT2-E4231	ZT2-E4221



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



Accessories

Reflectors
Mounting systems

Technical data		ZT2-	N4215	E4215	N4221	E4221	N4231	E4231				
Scanning distance typ.	1 ... 100 mm											
Light source ¹⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 20 mm at 100 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V_{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: NPN											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection types	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											


1) Average service life 100,000 h, at $T_A = +25$ °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

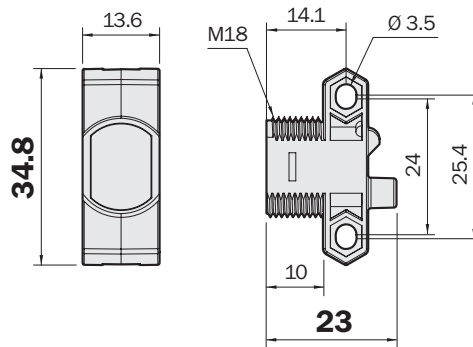
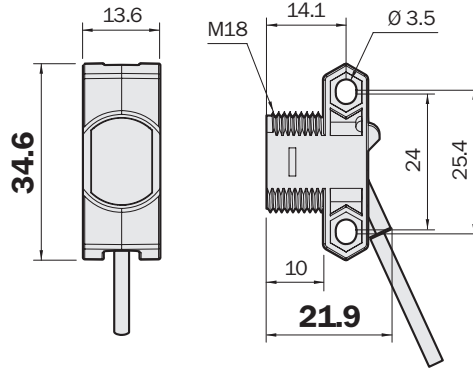
Scanning distance		Order information	
1	100	Type	Order no.
2	82	ZT2-N4215	1045411
3	74	ZT2-E4215	1045414
		ZT2-N4221	1045427
		ZT2-E4221	1045430
		ZT2-N4231	1045443
		ZT2-E4231	1045463

1	Scanning distance on white, 90 % remission
2	Scanning distance on grey, 18 % remission
3	Scanning distance on black, 6 % remission


Scanning distance 100 mm
 Photoelectric proximity switch

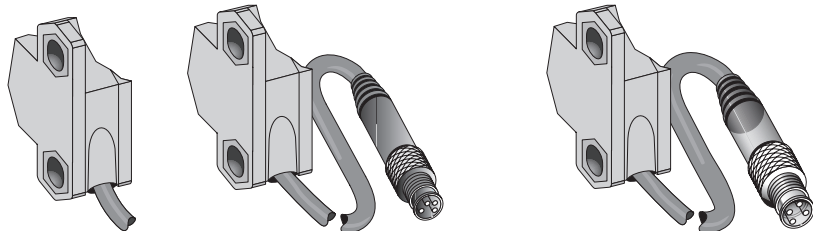
- Energetic type
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Output indicator

Dimensional drawing



Connection types

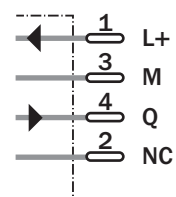
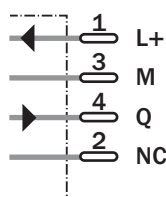
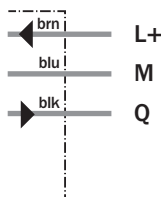
ZT2-P4215	ZT2-P4231	ZT2-P4221
ZT2-F4215	ZT2-F4231	ZT2-F4221



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



Accessories

Reflectors
Mounting systems

Technical data		ZT2-	P4215	F4215	P4221	F4221	P4231	F4231				
Scanning distance typ.	1 ... 100 mm											
Light source ¹⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 20 mm at 100 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection types	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											


1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

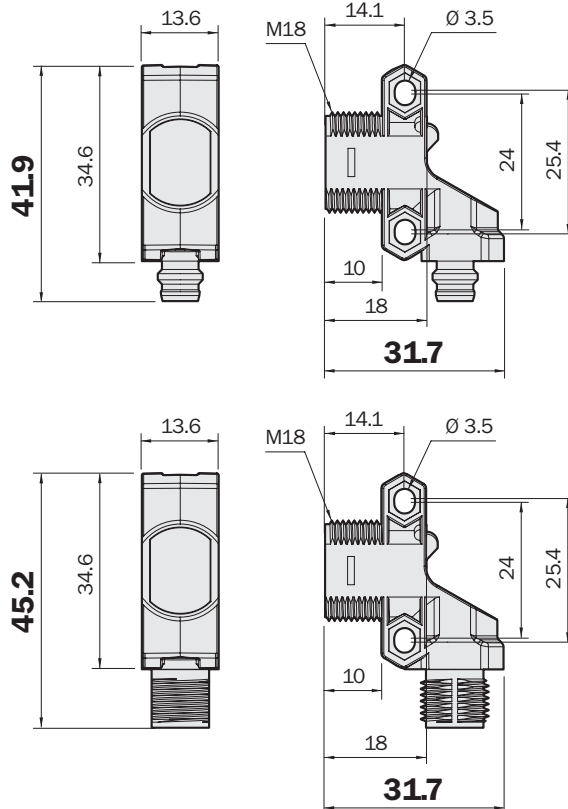
Scanning distance		Order information	
1	100	Type	Order no.
2	82	ZT2-P4215	1045412
3	74	ZT2-F4215	1045413
		ZT2-P4221	1045428
		ZT2-F4221	1045429
		ZT2-P4231	1045444
		ZT2-F4231	1045445

1	Scanning distance on white, 90 % remission
2	Scanning distance on grey, 18 % remission
3	Scanning distance on black, 6 % remission


Scanning distance 100 mm
 Photoelectric proximity switch

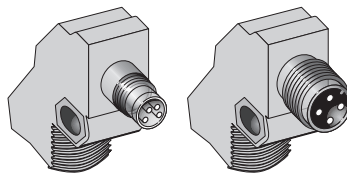
- Energetic type
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Output indicator

Dimensional drawing



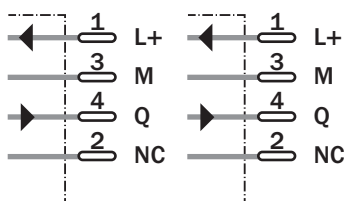
Connection types

ZT2-N4238	ZT2-N4228
ZT2-E4238	ZT2-E4228



M8, 4-pin

M12, 4-pin



Accessories

Reflectors
Mounting systems



Technical data		ZT2-	N4238	E4238	N4228	E4228					
Scanning distance typ.	1 ... 100 mm										
Light source ⁴⁾, light type	LED, infrared light, 880 nm										
Light spot diameter	Approx. 20 mm at 100 mm										
Supply voltage V_S ²⁾	DC 10 ... 30 V										
Ripple ³⁾	< 5 V _{PP}										
Current consumption ⁴⁾	< 20 mA										
Switching outputs	Q: NPN										
Switching mode	Light switching										
	Dark switching										
Output current I_A max.	50 mA										
Switching frequency ⁵⁾	200 Hz										
Connection type	M8 plug, 4-pin										
	M12 plug, 4-pin										
VDE protection class ⁶⁾	⊖										
Circuit protection ⁷⁾	A, D										
Enclosure rating	IP 67										
Ambient temperature	Operation -25 ... +50 °C										
	Storage -40 ... +70 °C										
Housing material	ABS, fibreglass reinforced										
Included with delivery	Mounting nut M18										

¹⁾ Average service life 100,000 h, at T_A = +25 °C

²⁾ Limit values

³⁾ Must be within V_S tolerances

⁴⁾ Without load

⁵⁾ With light/dark ratio 1:1


⁶⁾ Reference voltage 50 V DC

⁷⁾ A = V_S connections reverse-polarity protected

D = Outputs overcurrent and short-circuit protected

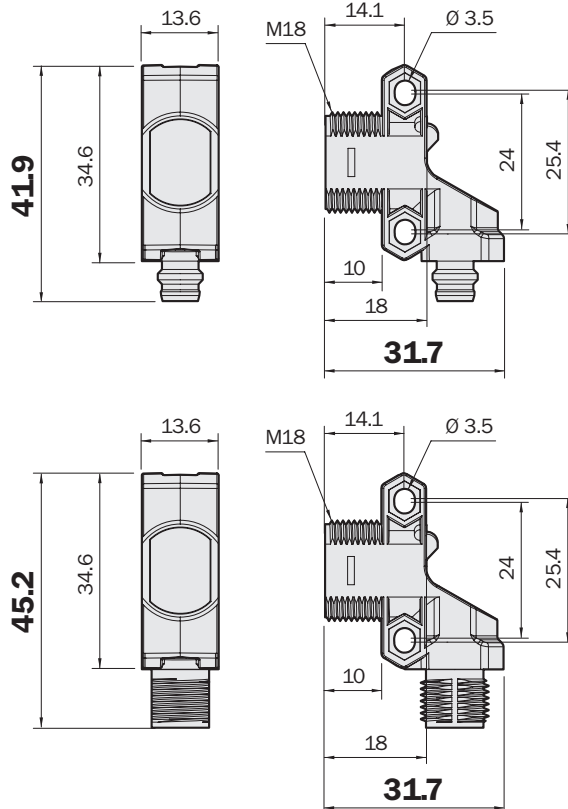
Scanning distance		Order information	
1	100	Type	Order no.
2	82	ZT2-N4238	1045492
3	74	ZT2-E4238	1045495
		ZT2-N4228	1045476
		ZT2-E4228	1045479

1	Scanning distance on white, 90 % remission
2	Scanning distance on grey, 18 % remission
3	Scanning distance on black, 6 % remission


Scanning distance 100 mm
 Photoelectric proximity switch

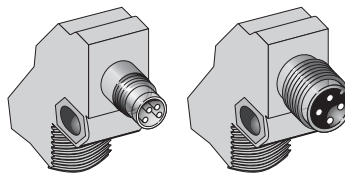
- Energetic type
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Output indicator

Dimensional drawing



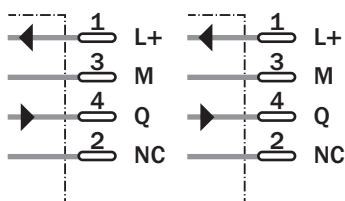
Connection types

ZT2-P4238	ZT2-P4228
ZT2-F4238	ZT2-F4228



M8, 4-pin

M12, 4-pin



Accessories

Reflectors
Mounting systems



Technical data		ZT2-	P4238	F4238	P4228	F4228						
Scanning distance typ.	1 ... 100 mm											
Light source ⁴⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 20 mm at 100 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection types	M8 plug, 4-pin											
	M12 plug, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C

2) Limit values

3) Must be within V_S tolerances

4) Without load

5) With light/dark ratio 1:1

6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected

D = Outputs overcurrent and short-circuit protected

Scanning distance		Order information	
1	100	Type	Order no.
2	82	ZT2-P4238	1045493
3	74	ZT2-F4238	1045494
		ZT2-P4228	1045477
		ZT2-F4228	1045478

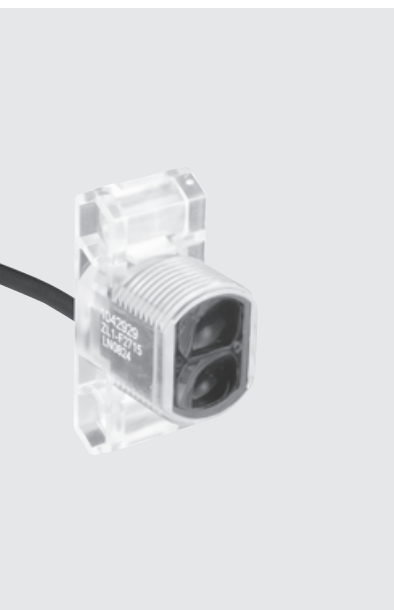
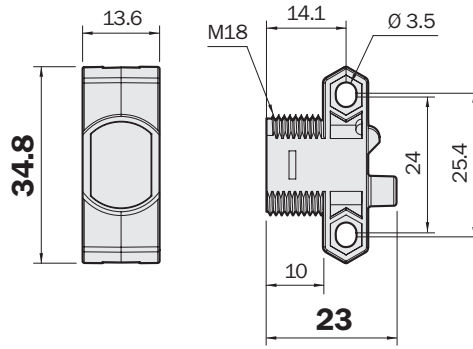
1	Scanning distance on white, 90 % remission
2	Scanning distance on grey, 18 % remission
3	Scanning distance on black, 6 % remission

Scanning distance 60 mm

Photoelectric proximity switch

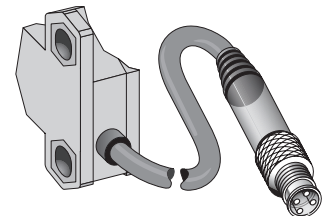
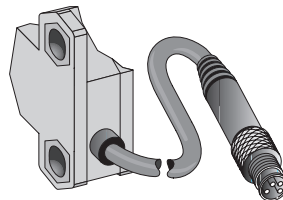
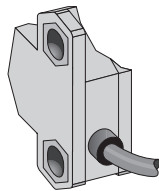
- Energetic type with V-optic
- Red light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Power and output indicator

Dimensional drawing



Connection types

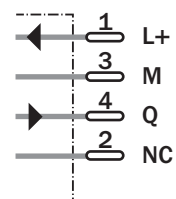
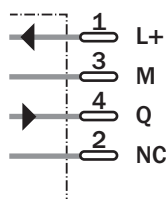
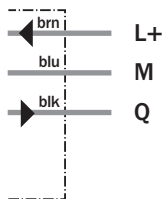
ZT1-N2215	ZT1-N2231	ZT1-N2221
ZT1-E2215	ZT1-E2231	ZT1-E2221



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



Accessories

- Reflectors
- Mounting systems



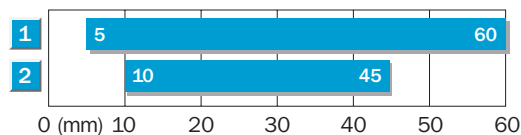
Technical data		ZT1-	N2215	E2215	N2221	E2221	N2231	E2231				
Scanning distance typ.	5 ... 60 mm											
Light source ¹⁾, light type	LED, red light, 660 nm											
Light spot diameter	Approx. 8 mm at 60 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: NPN											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection types	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected


Scanning distance



- 1 Scanning distance on white, 90 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on black, 6 % remission

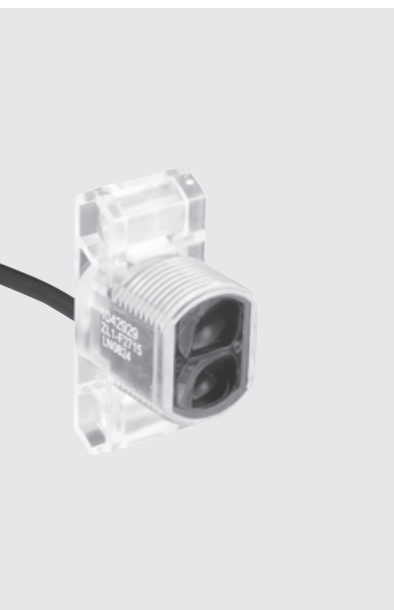
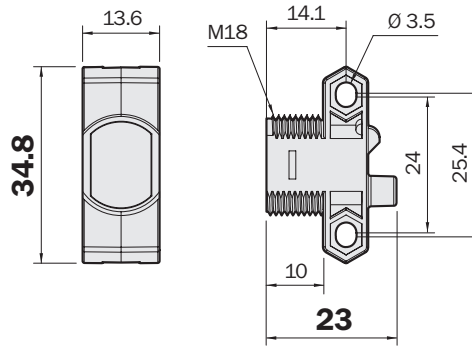
Order information

Type	Order no.
ZT1-N2215	1045554
ZT1-E2215	1045557
ZT1-N2221	1045570
ZT1-E2221	1045573
ZT1-N2231	1045586
ZT1-E2231	1045589


Scanning distance 60 mm
 Photoelectric proximity switch

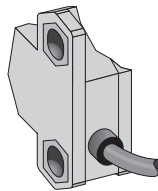
- Energetic type with V-optic
- Red light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Power and output indicator

Dimensional drawing

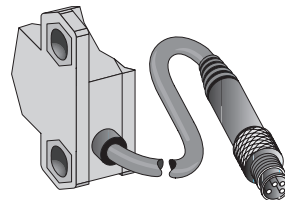
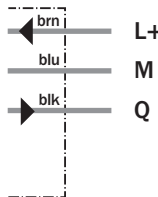


Connection types

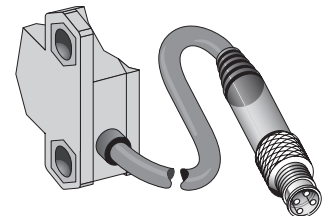
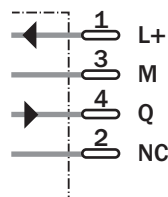
ZT1-P2215	ZT1-P2231	ZT1-P2221
ZT1-F2215	ZT1-F2231	ZT1-F2221



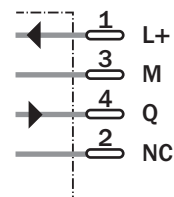
3 x 0.23 mm²



M8, 4-pin



M12, 4-pin



Accessories

- Reflectors
- Mounting systems



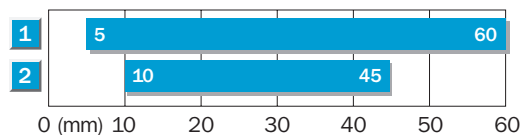
Technical data		ZT1-	P2215	F2215	P2221	F2221	P2231	F2231				
Scanning distance typ.	5 ... 60 mm											
Light source ¹⁾, light type	LED, red light, 660 nm											
Light spot diameter	Approx. 8 mm at 60 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection types	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected


Scanning distance



- 1 Scanning distance on white, 90 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on black, 6 % remission

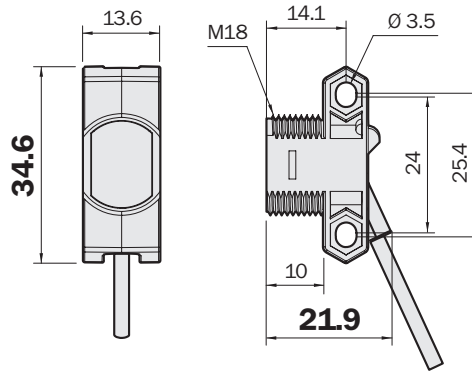
Order information

Type	Order no.
ZT1-P2215	1045555
ZT1-F2215	1045556
ZT1-P2221	1045571
ZT1-F2221	1045572
ZT1-P2231	1045587
ZT1-F2231	1045588


Scanning distance 60 mm
 Photoelectric proximity switch

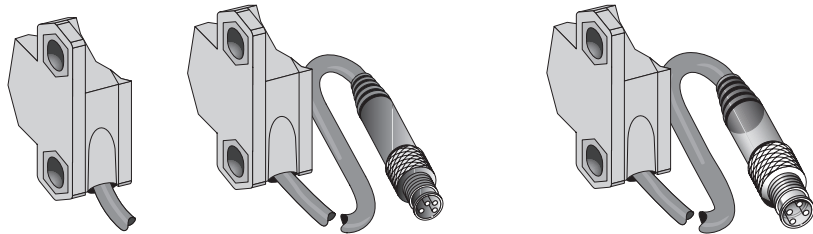
- Energetic type with V-optic
- Red light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Power and output indicator

Dimensional drawing



Connection types

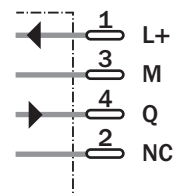
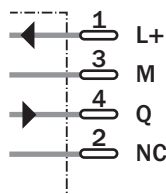
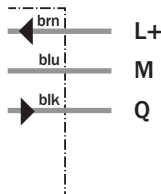
ZT2-N2215	ZT2-N2231	ZT2-N2221
ZT2-E2215	ZT2-E2231	ZT2-E2221



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



Accessories

Reflectors
Mounting systems




Technical data		ZT2-	N2215	E2215	N2221	E2221	N2231	E2231				
Scanning distance typ.	5 ... 60 mm											
Light source ¹⁾, light type	LED, red light, 660 nm											
Light spot diameter	Approx. 8 mm at 60 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: NPN											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection types	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

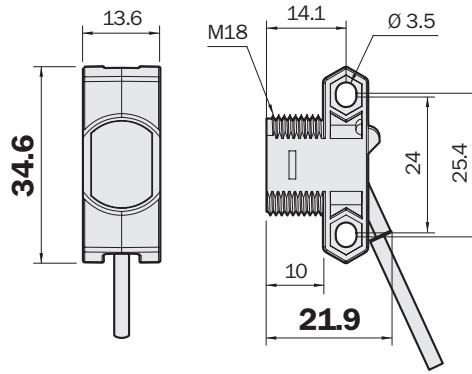
7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

Scanning distance		Order information	
1	5 60	Type	Order no.
2	10 45	ZT2-N2215	1045399
	0 (mm) 10 20 30 40 50 60	ZT2-E2215	1045402
		ZT2-N2221	1045415
		ZT2-E2221	1045418
		ZT2-N2231	1045431
		ZT2-E2231	1045434
1	Scanning distance on white, 90 % remission		
2	Scanning distance on grey, 18 % remission		
3	Scanning distance on black, 6 % remission		


Scanning distance 60 mm
 Photoelectric proximity switch

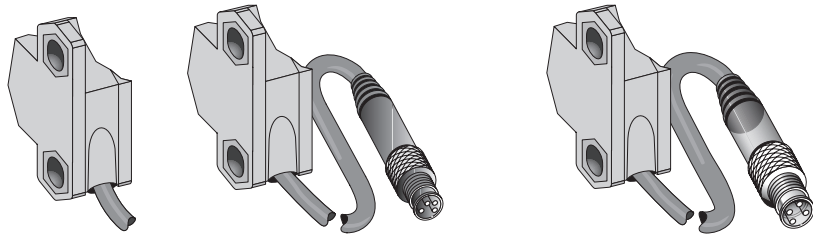
- Energetic type with V-optic
- Red light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Power and output indicator

Dimensional drawing



Connection types

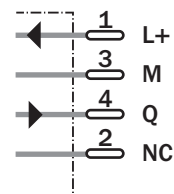
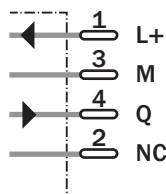
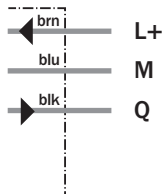
ZT2-P2215	ZT2-P2231	ZT2-P2221
ZT2-F2215	ZT2-F2231	ZT2-F2221



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



Accessories

Reflectors
Mounting systems




Technical data		ZT2-	P2215	F2215	P2221	F2221	P2231	F2231				
Scanning distance typ.	5 ... 60 mm											
Light source ¹⁾, light type	LED, red light, 660 nm											
Light spot diameter	Approx. 8 mm at 60 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection types	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

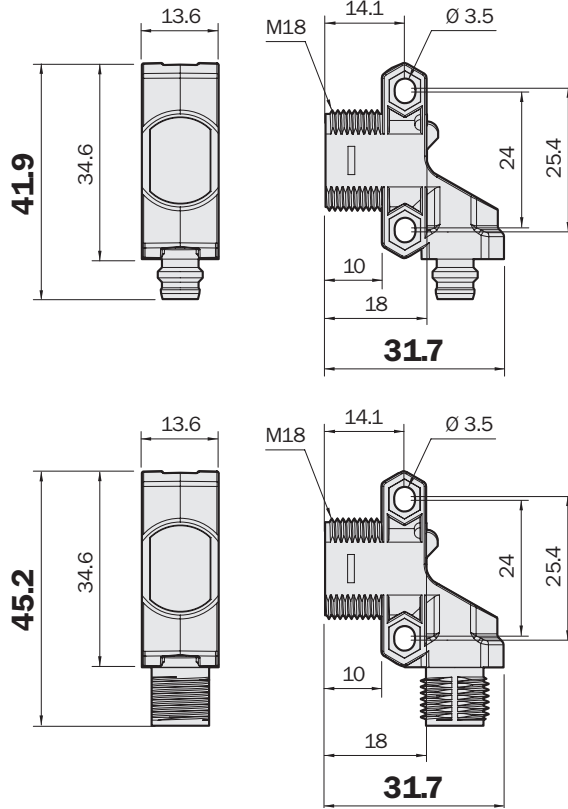
7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

Scanning distance		Order information	
1	5 60	Type	Order no.
2	10 45	ZT2-P2215	1045400
		ZT2-F2215	1045401
		ZT2-P2221	1045416
		ZT2-F2221	1045417
		ZT2-P2231	1045432
		ZT2-F2231	1045433
1	Scanning distance on white, 90 % remission		
2	Scanning distance on grey, 18 % remission		
3	Scanning distance on black, 6 % remission		


Scanning distance 60 mm
 Photoelectric proximity switch

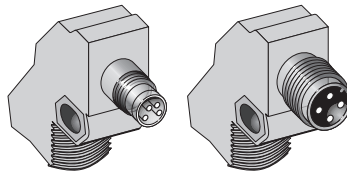
- Energetic type with V-optic
- Red light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Power and output indicator

Dimensional drawing



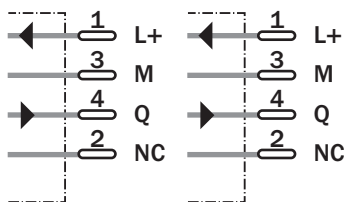
Connection types

ZT2-N2238	ZT2-N2228
ZT2-E2238	ZT2-E2228



M8, 4-pin

M12, 4-pin



Accessories

- Reflectors
- Mounting systems



Technical data		ZT2-	N2238	E2238	N2228	E2228					
Scanning distance typ.	5 ... 60 mm										
Light source ¹⁾ , light type	LED, red light, 660 nm										
Light spot diameter	Approx. 8 mm at 60 mm										
Supply voltage V_S ²⁾	10 ... 30 V DC										
Ripple ³⁾	< 5 V _{PP}										
Current consumption ⁴⁾	< 20 mA										
Switching outputs	Q: NPN										
Switching mode	Light switching										
	Dark switching										
Output current I_A max.	50 mA										
Switching frequency ⁵⁾	200 Hz										
Connection types	M8 plug, 4-pin										
	M12 plug, 4-pin										
VDE protection class ⁶⁾	⊖										
Circuit protection ⁷⁾	A, D										
Enclosure rating	IP 67										
Ambient temperature	Operation -25 ... +50 °C										
	Storage -40 ... +70 °C										
Housing material	ABS, fibreglass reinforced										
Included with delivery	Mounting nut M18										

¹⁾ Average service life 100,000 h, at T_A = +25 °C

²⁾ Limit values

³⁾ Must be within V_S tolerances

⁴⁾ Without load

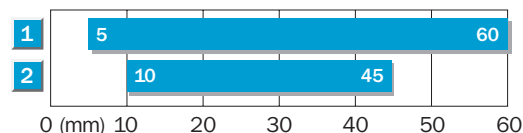
⁵⁾ With light/dark ratio 1:1

⁶⁾ Reference voltage 50 V DC

⁷⁾ A = V_S connections reverse-polarity protected

D = Outputs overcurrent and short-circuit protected


Scanning distance



- 1 Scanning distance on white, 90 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on black, 6 % remission

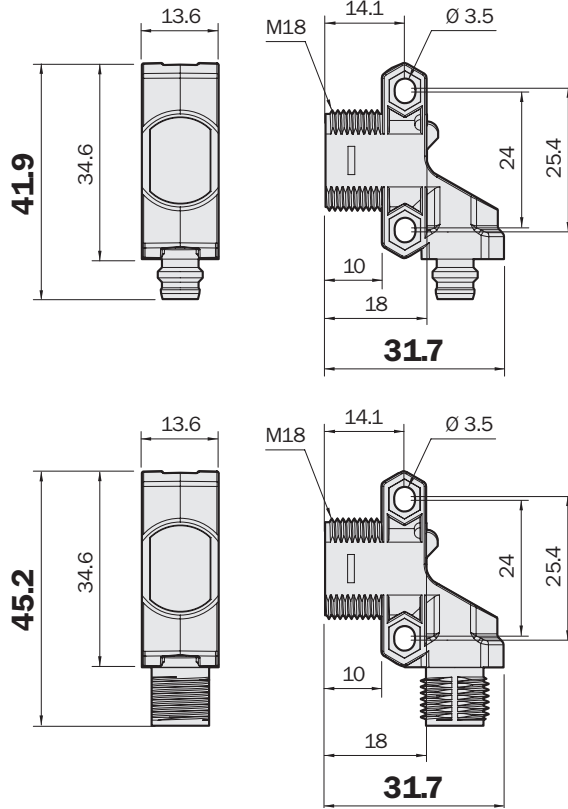
Order information

Type	Order no.
ZT2-N2238	1045480
ZT2-E2238	1045483
ZT2-N2228	1045464
ZT2-E2228	1045467


Scanning distance 60 mm
 Photoelectric proximity switch

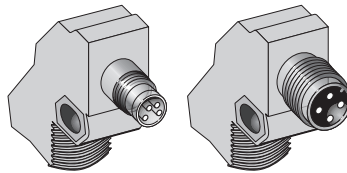
- Energetic type with V-optic
- Red light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Power and output indicator

Dimensional drawing



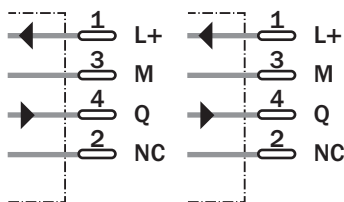
Connection types

ZT2-P2238	ZT2-P2228
ZT2-F2238	ZT2-F2228



M8, 4-pin

M12, 4-pin



Accessories

- Reflectors
- Mounting systems



Technical data		ZT2-	P2238	F2238	P2228	F2228						
Scanning distance typ.	5 ... 60 mm											
Light source ¹⁾ , light type	LED, red light, 660 nm											
Light spot diameter	Approx. 8 mm at 60 mm											
Supply voltage V _S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I _A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection types	M8 plug, 4-pin											
	M12 plug, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

¹⁾ Average service life 100,000 h, at T_A = +25 °C

²⁾ Limit values

³⁾ Must be within V_S tolerances

⁴⁾ Without load

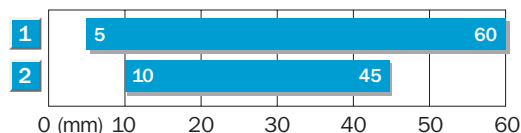
⁵⁾ With light/dark ratio 1:1

⁶⁾ Reference voltage 50 V DC

⁷⁾ A = V_S connections reverse-polarity protected

D = Outputs overcurrent and short-circuit protected


Scanning distance



- 1 Scanning distance on white, 90 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on black, 6 % remission

Order information

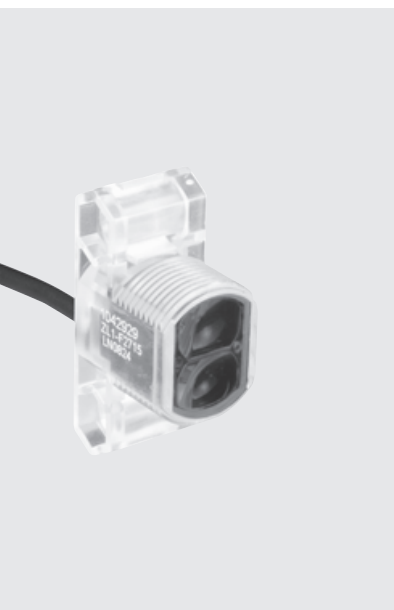
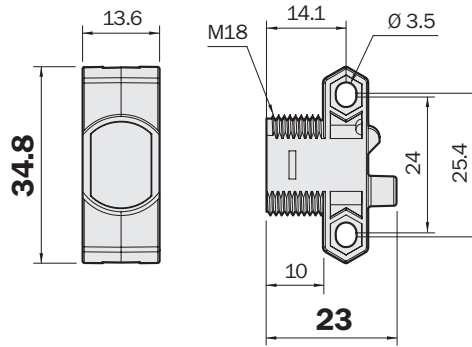
Type	Order no.
ZT2-P2238	1045481
ZT2-F2238	1045482
ZT2-P2228	1045465
ZT2-F2228	1045466

 **Scanning distance 155 mm**

Photoelectric proximity switch

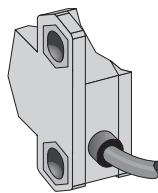
- Energetic type with V-optic
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Power and output indicator

Dimensional drawing

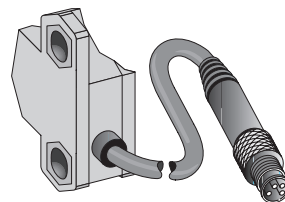
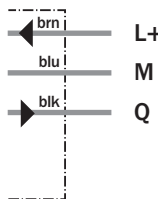


Connection types

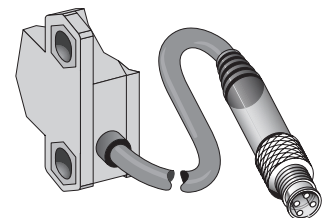
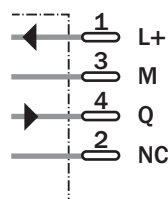
ZT1-N5215	ZT1-N5231	ZT1-N5221
ZT1-E5215	ZT1-E5231	ZT1-E5221



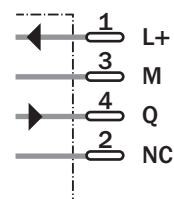
3 x 0.23 mm²



M8, 4-pin



M12, 4-pin



Accessories

Reflectors
Mounting systems

Technical data		ZT1-	N5215	E5215	N5221	E5221	N5231	E5231				
Scanning distance typ.	5 ... 155 mm											
Light source ¹⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 31 mm at 150 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: NPN											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											


1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

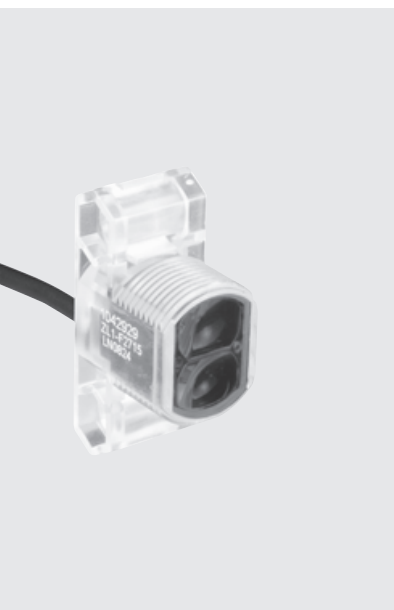
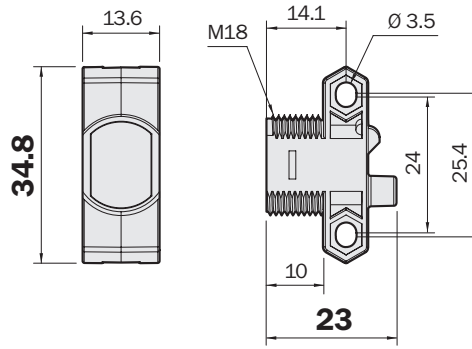
Scanning distance		Order information	
1	5 155	Type	Order no.
2	10 115	ZT1-N5215	1045558
3	20 68	ZT1-E5215	1045561
		ZT1-N5221	1045574
		ZT1-E5221	1045577
		ZT1-N5231	1045590
		ZT1-E5231	1045593

1	Scanning distance on white, 90 % remission
2	Scanning distance on grey, 18 % remission
3	Scanning distance on black, 6 % remission


Scanning distance 155 mm
 Photoelectric proximity switch

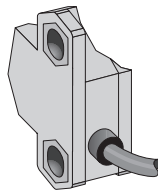
- Energetic type with V-optic
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Power and output indicator

Dimensional drawing

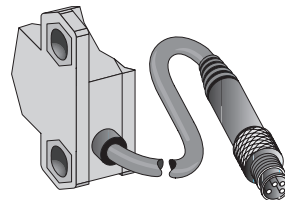
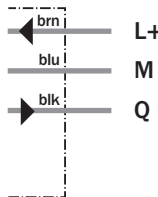


Connection types

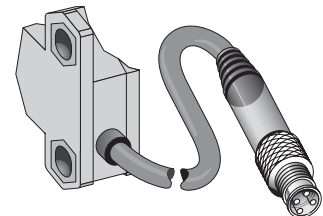
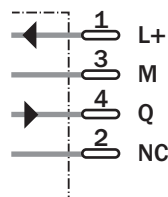
ZT1-P5215	ZT1-P5231	ZT1-P5221
ZT1-F5215	ZT1-F5231	ZT1-F5221



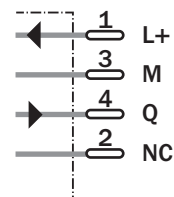
3 x 0.23 mm²



M8, 4-pin



M12, 4-pin



Accessories

- Reflectors
- Mounting systems



Technical data		ZT1-	P5215	F5215	P5221	F5221	P5231	F5231				
Scanning distance typ.	5 ... 155 mm											
Light source ¹⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 31 mm at 150 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											


1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

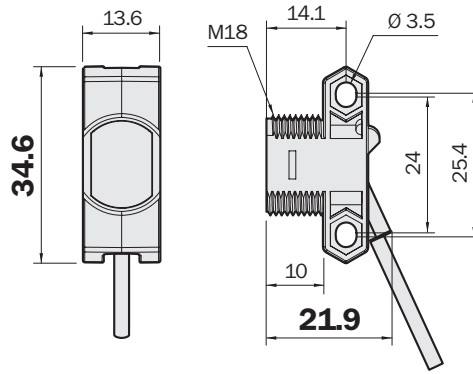
Scanning distance		Order information	
1	5 155	Type	Order no.
2	10 115	ZT1-P5215	1045559
3	20 68	ZT1-F5215	1045560
		ZT1-P5221	1045575
		ZT1-F5221	1045576
		ZT1-P5231	1045591
		ZT1-F5231	1045592

- 1 Scanning distance on white, 90 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on black, 6 % remission


Scanning distance 155 mm
 Photoelectric proximity switch

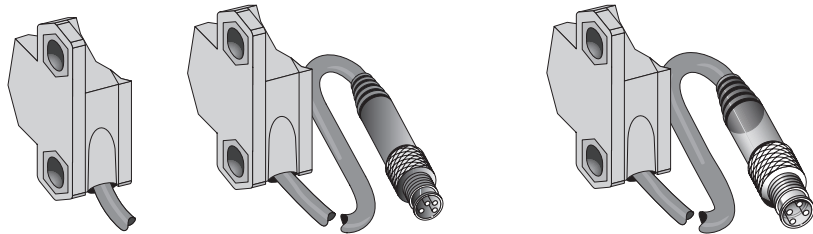
- Energetic type with V-optic
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Power and output indicator

Dimensional drawing



Connection types

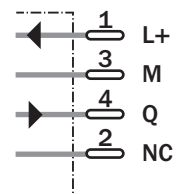
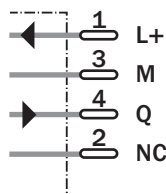
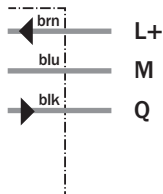
ZT2-N5215	ZT2-N5231	ZT2-N5221
ZT2-E5215	ZT2-E5231	ZT2-E5221



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



Accessories

Reflectors
Mounting systems


Technical data		ZT2-	N5215	E5215	N5221	E5221	N5231	E5231				
Scanning distance typ.	5 ... 155 mm											
Light source ¹⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 31 mm at 150 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: NPN											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

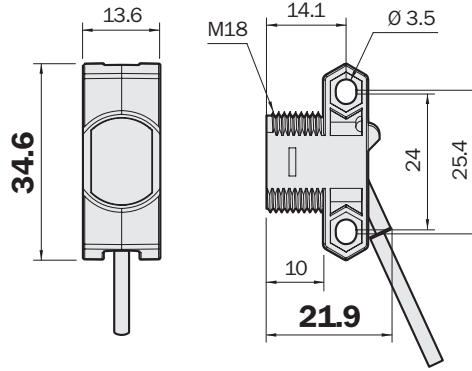
7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

Scanning distance		Order information	
1	5 155	Type	Order no.
2	10 115	ZT2-N5215	1045403
3	20 68	ZT2-E5215	1045406
		ZT2-N5221	1045419
		ZT2-E5221	1045422
		ZT2-N5231	1045435
		ZT2-E5231	1045438
1	Scanning distance on white, 90 % remission		
2	Scanning distance on grey, 18 % remission		
3	Scanning distance on black, 6 % remission		


Scanning distance 155 mm
 Photoelectric proximity switch

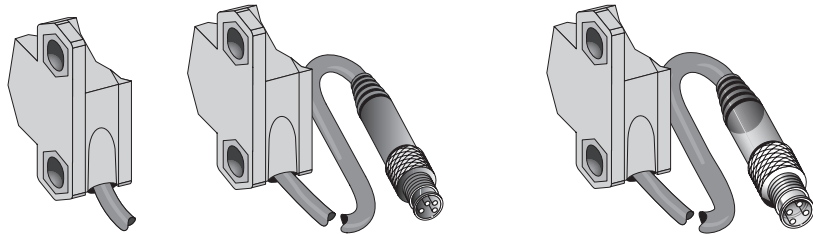
- Energetic type with V-optic
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Power and output indicator

Dimensional drawing



Connection types

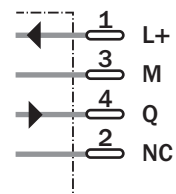
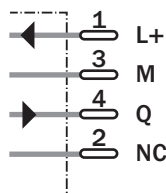
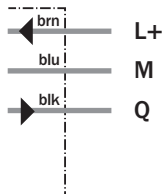
ZT2-P5215	ZT2-P5231	ZT2-P5221
ZT2-F5215	ZT2-F5231	ZT2-F5221



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



Accessories

Reflectors
Mounting systems




Technical data		ZT2-	P5215	F5215	P5221	F5221	P5231	F5231				
Scanning distance typ.	5 ... 155 mm											
Light source ¹⁾, light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 31 mm at 150 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

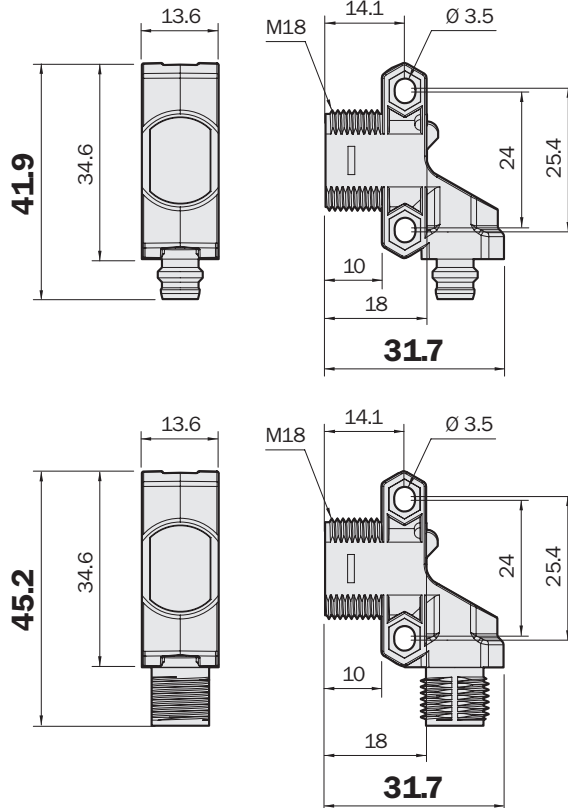
7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

Scanning distance		Order information	
1	5 155	Type	Order no.
2	10 115	ZT2-P5215	1045404
3	20 68	ZT2-F5215	1045405
		ZT2-P5221	1045420
		ZT2-F5221	1045421
		ZT2-P5231	1045436
		ZT2-F5231	1045437
1	Scanning distance on white, 90 % remission		
2	Scanning distance on grey, 18 % remission		
3	Scanning distance on black, 6 % remission		


Scanning distance 155 mm
 Photoelectric proximity switch

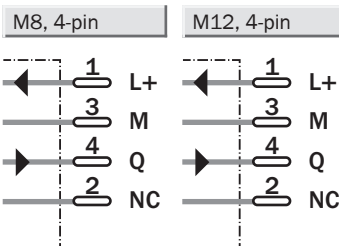
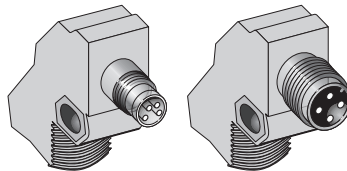
- Energetic type with V-optic
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Power and output indicator

Dimensional drawing



Connection types

ZT2-N5238	ZT2-N5228
ZT2-E5238	ZT2-E5228



Accessories

Reflectors
Mounting systems



Technical data		ZT2-	N5238	E5238	N5228	E5228					
Scanning distance typ.	5 ... 155 mm										
Light source ⁴⁾ , light type	LED, infrared light, 880 nm										
Light spot diameter	Approx. 31 mm at 150 mm										
Supply voltage V_S ²⁾	10 ... 30 V DC										
Ripple ³⁾	< 5 V _{PP}										
Current consumption ⁴⁾	< 20 mA										
Switching outputs	Q: NPN										
Switching mode	Light switching										
	Dark switching										
Output current I_A max.	50 mA										
Switching frequency ⁵⁾	200 Hz										
Connection type	M8 plug, 4-pin										
	M12 plug, 4-pin										
VDE protection class ⁶⁾	⊖										
Circuit protection ⁷⁾	A, D										
Enclosure rating	IP 67										
Ambient temperature	Operation -25 ... +50 °C										
	Storage -40 ... +70 °C										
Housing material	ABS, fibreglass reinforced										
Included with delivery	Mounting nut M18										

¹⁾ Average service life 100,000 h, at $T_A = +25$ °C

²⁾ Limit values

³⁾ Must be within V_S tolerances

⁴⁾ Without load

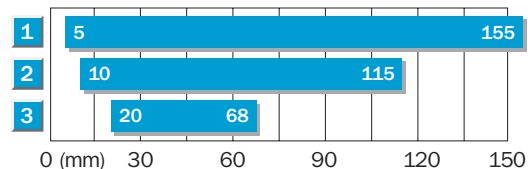
⁵⁾ With light/dark ratio 1:1

⁶⁾ Reference voltage 50 V DC

⁷⁾ A = V_S connections reverse-polarity protected

D = Outputs overcurrent and short-circuit protected


Scanning distance



- 1 Scanning distance on white, 90 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on black, 6 % remission

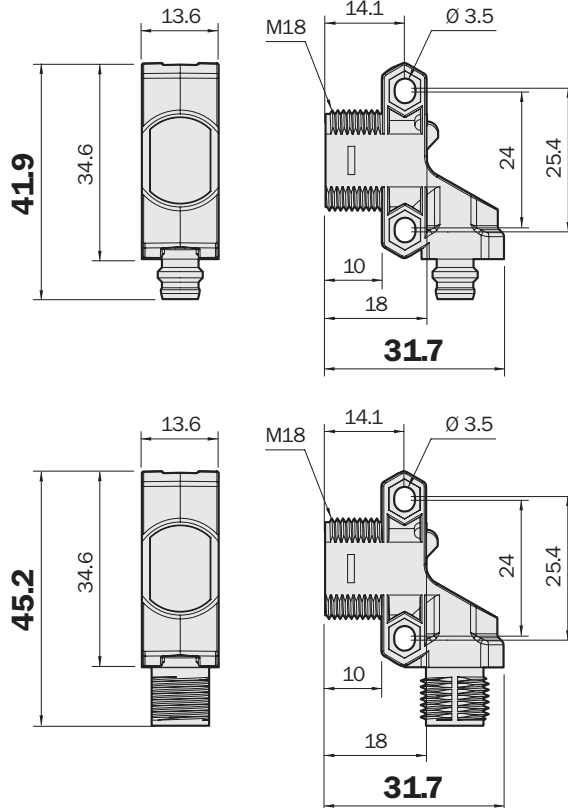
Order information

Type	Order no.
ZT2-N5238	1045484
ZT2-E5238	1045487
ZT2-N5228	1045468
ZT2-E5228	1045471


Scanning distance 155 mm
 Photoelectric proximity switch

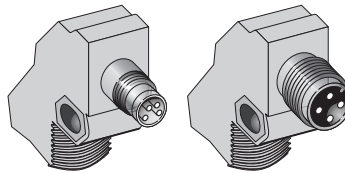
- Energetic type with V-optic
- Infrared light
- Clear housing for perfect indicator LED visibility
- 18 mm front and flange mounting possibility
- Power and output indicator

Dimensional drawing



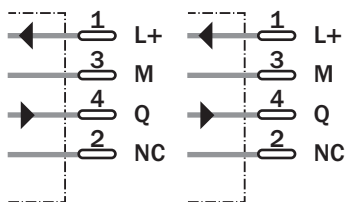
Connection types

ZT2-P5238	ZT2-P5228
ZT2-F5238	ZT2-F5228



M8, 4-pin

M12, 4-pin



Accessories

Reflectors
Mounting systems



Technical data		ZT2-	P5238	F5238	P5228	F5228						
Scanning distance typ.	5 ... 155 mm											
Light source ⁴⁾ , light type	LED, infrared light, 880 nm											
Light spot diameter	Approx. 31 mm at 150 mm											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	200 Hz											
Connection type	M8 plug, 4-pin											
	M12 plug, 4-pin											
VDE protection class ⁶⁾	⊠											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C

2) Limit values

3) Must be within V_S tolerances

4) Without load

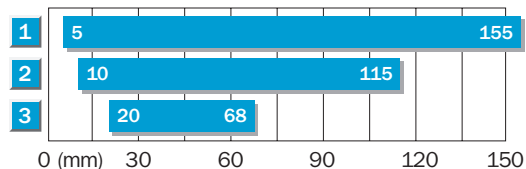
5) With light/dark ratio 1:1

6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected

D = Outputs overcurrent and short-circuit protected


Scanning distance



- 1 Scanning distance on white, 90 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on black, 6 % remission

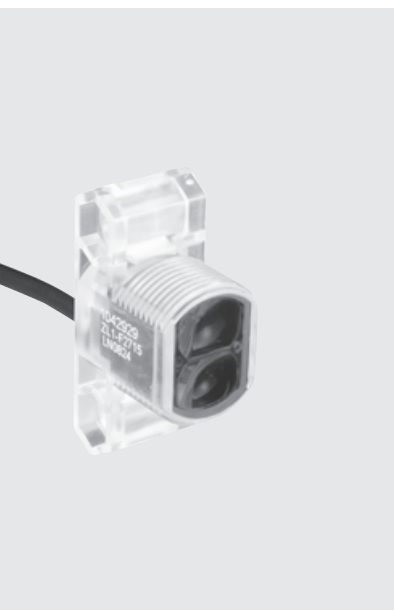
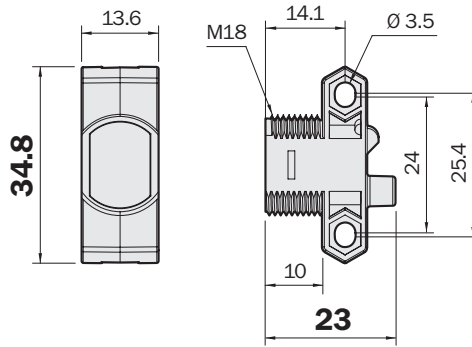
Order information

Type	Order no.
ZT2-P5238	1045485
ZT2-F5238	1045486
ZT2-P5228	1045469
ZT2-F5228	1045470

	Scanning range 0.1 ... 4.8 m
Photoelectric reflex switch	

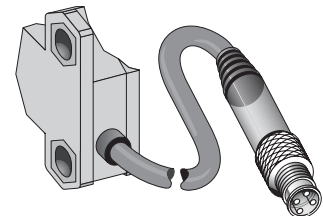
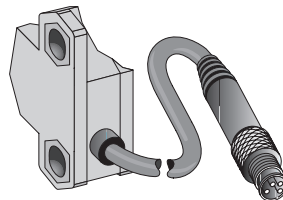
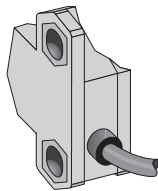
- Visible red light
- With polarization filter
- Cross talk immunity
- 18 mm front and flange mounting possibility
- Power and output indicator
- Clear housing for perfect indicator LED visibility

Dimensional drawing



Connection types

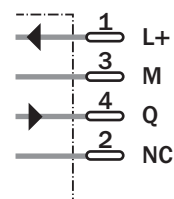
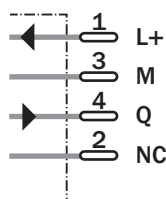
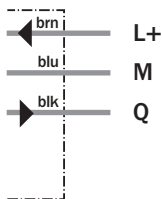
ZL1-N2415	ZL1-N2431	ZL1-N2421
ZL1-E2415	ZL1-E2431	ZL1-E2421



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



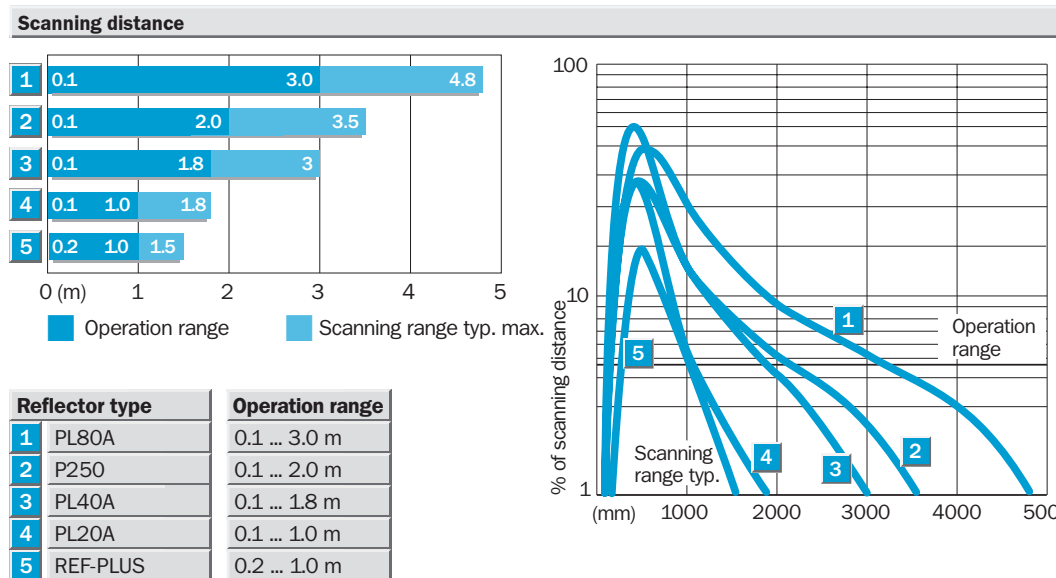
Accessories
Reflectors
Mounting systems

Technical data		ZL1-	N2415	E2415	N2421	E2421	N2431	E2431				
Scanning range typ. max.	0.1 ... 4.8 m (on PL80A)											
Operating range, recommended	0.1 ... 3 m (on PL80A)											
Light source ¹⁾, light type	LED, red light, 660 nm											
Light spot diameter	Approx. 125 mm at 1 m											
Polarization filter	✓											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: NPN											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	400 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⏏											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected



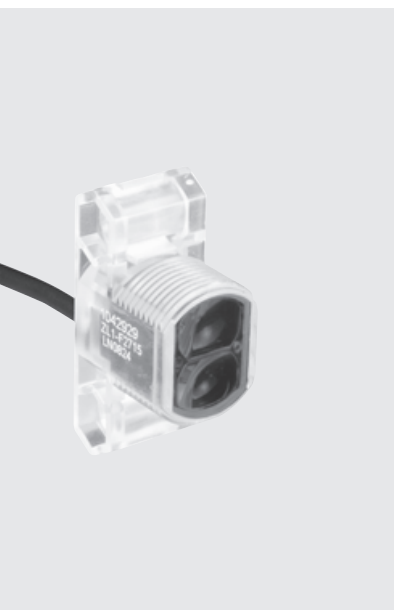
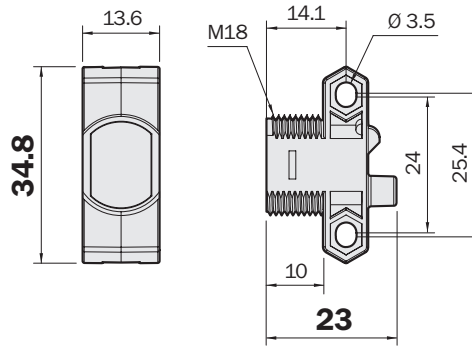
Order information

Type	Order no.
ZL1-N2415	1045496
ZL1-E2415	1045499
ZL1-N2421	1045500
ZL1-E2421	1045503
ZL1-N2431	1045504
ZL1-E2431	1045507

	Scanning range 0.1 ... 4.8 m
Photoelectric reflex switch	

- Visible red light
- With polarization filter
- Cross talk immunity
- 18 mm front and flange mounting possibility
- Power and output indicator
- Clear housing for perfect indicator LED visibility

Dimensional drawing



Connection types

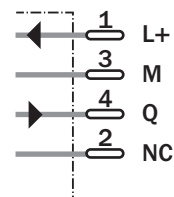
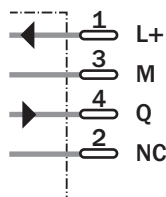
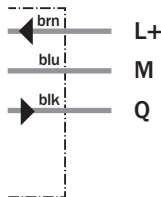
ZL1-P2415	ZL1-P2431	ZL1-P2421
ZL1-F2415	ZL1-F2431	ZL1-F2421



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



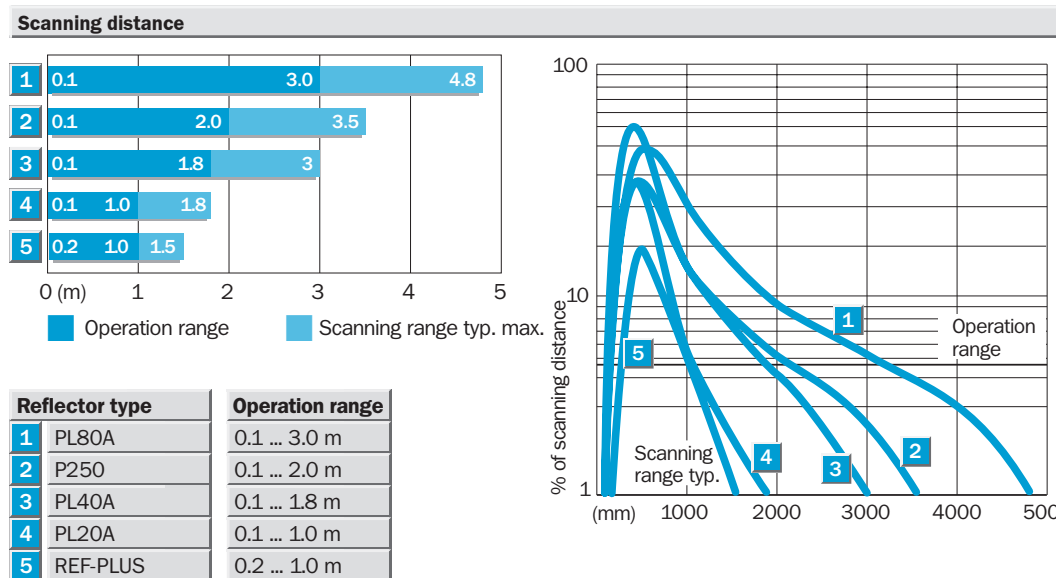
Accessories
Reflectors
Mounting systems

Technical data		ZL1-	P2415	F2415	P2421	F2421	P2431	F2431				
Scanning range typ. max.	0.1 ... 4.8 m (on PL80A)											
Operating range, recommended	0.1 ... 3 m (on PL80A)											
Light source ¹⁾, light type	LED, red light, 660 nm											
Light spot diameter	Approx. 125 mm at 1 m											
Polarization filter	✓											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	400 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected



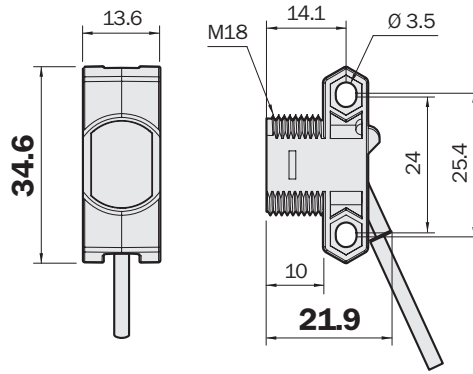
Order information

Type	Order no.
ZL1-P2415	1045497
ZL1-F2415	1045498
ZL1-P2421	1045501
ZL1-F2421	1045502
ZL1-P2431	1045505
ZL1-F2431	1045506

	Scanning range 0.1 ... 4.8 m
Photoelectric reflex switch	

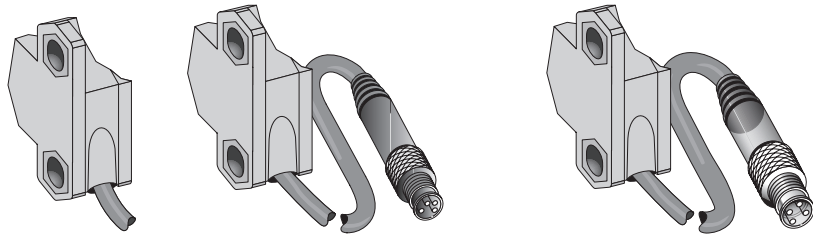
- Visible red light
- With polarization filter
- Cross talk immunity
- 18 mm front and flange mounting possibility
- Power and output indicator
- Clear housing for perfect indicator LED visibility

Dimensional drawing



Connection types

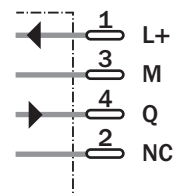
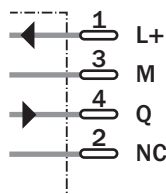
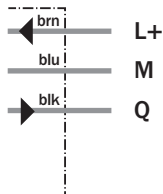
ZL2-N2415	ZL2-N2431	ZL2-N2421
ZL2-E2415	ZL2-E2431	ZL2-E2421



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



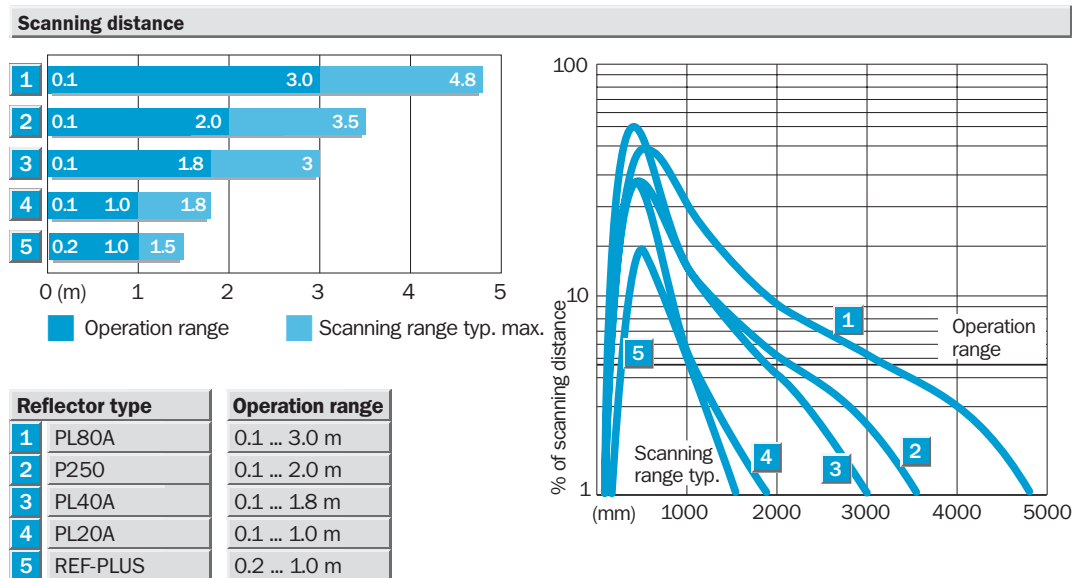
Accessories
Reflectors
Mounting systems

Technical data		ZL2-	N2415	E2415	N2421	E2421	N2431	E2431				
Scanning range typ. max.	0.1 ... 4.8 m (on PL80A)											
Operating range, recommended	0.1 ... 3 m (on PL80A)											
Light source ⁴⁾, light type	LED, red light, 660 nm											
Light spot diameter	Approx. 125 mm at 1 m											
Polarization filter	✓											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: NPN											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	400 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	M8 plug, 4-pin											
	M12 plug, 4-pin											
VDE protection class ⁶⁾	ⓘ											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected



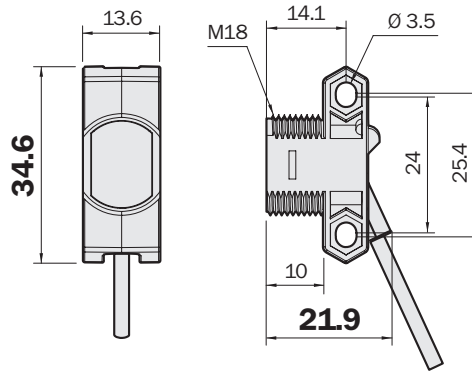
Order information

Type	Order no.
ZL2-N2415	1045387
ZL2-E2415	1045390
ZL2-N2421	1045391
ZL2-E2421	1045394
ZL2-N2431	1045395
ZL2-E2431	1045398

	Scanning range 0.1 ... 4.8 m
Photoelectric reflex switch	

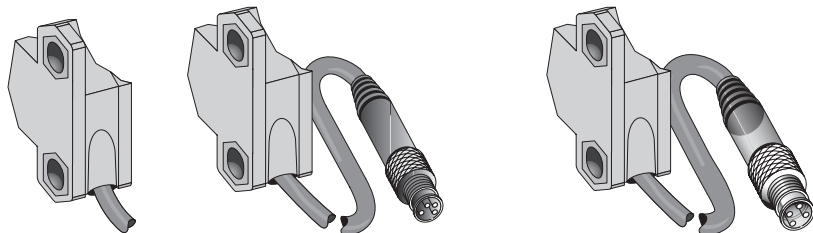
- Visible red light
- With polarization filter
- Cross talk immunity
- 18 mm front and flange mounting possibility
- Power and output indicator
- Clear housing for perfect indicator LED visibility

Dimensional drawing



Connection types

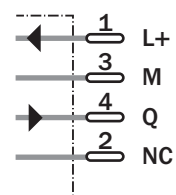
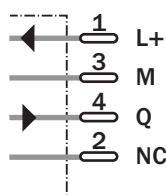
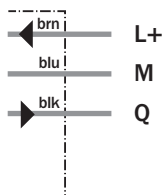
ZL2-P2415	ZL2-P2431	ZL2-P2421
ZL2-F2415	ZL2-F2431	ZL2-F2421



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



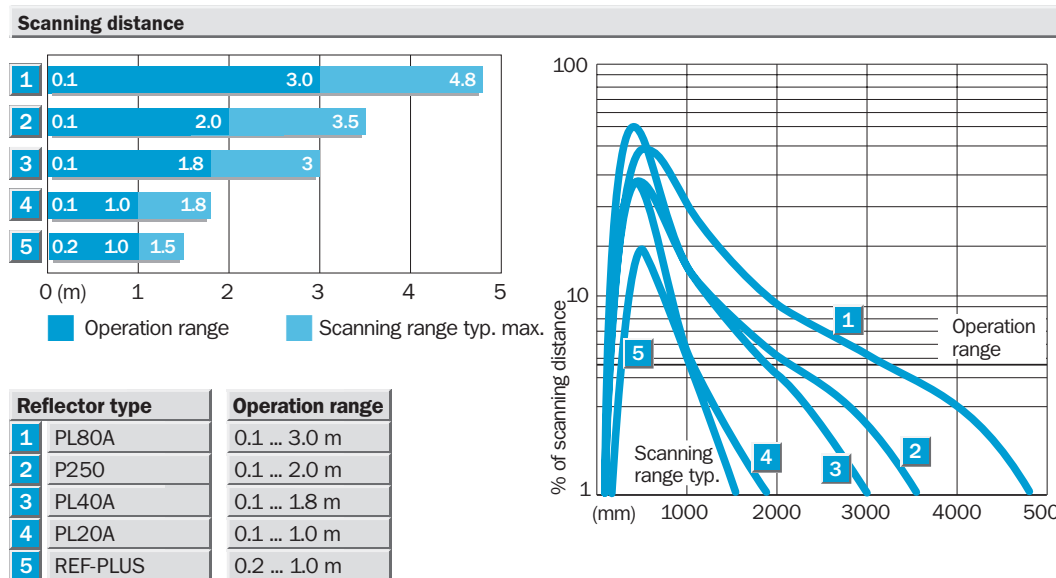
Accessories
Reflectors
Mounting systems

Technical data		ZL2-	P2415	F2415	P2421	F2421	P2431	F2431				
Scanning range typ. max.	0.1 ... 4.8 m (on PL80A)											
Operating range, recommended	0.1 ... 3 m (on PL80A)											
Light source ⁴⁾, light type	LED, red light, 660 nm											
Light spot diameter	Approx. 125 mm at 1 m											
Polarization filter	✓											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	400 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	M8 plug, 4-pin											
	M12 plug, 4-pin											
VDE protection class ⁶⁾	⊕											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected



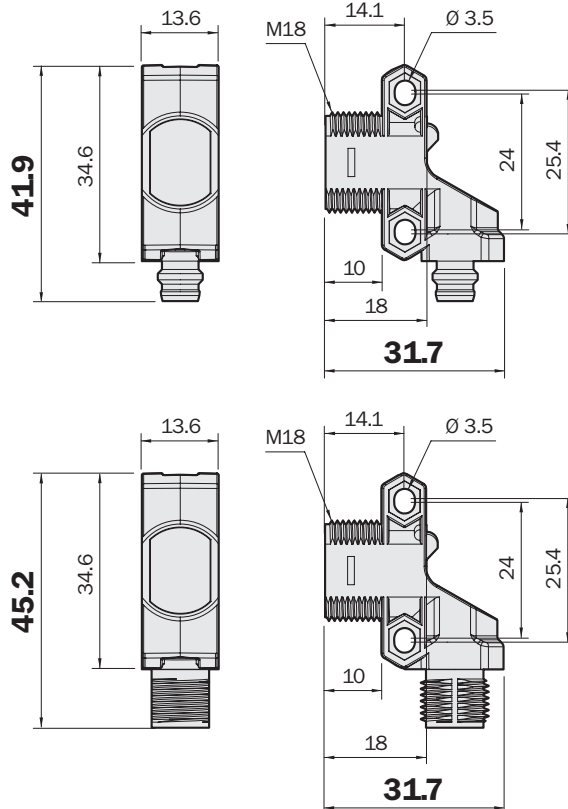
Order information

Type	Order no.
ZL2-P2415	1045388
ZL2-F2415	1045389
ZL2-P2421	1045392
ZL2-F2421	1045393
ZL2-P2431	1045396
ZL2-F2431	1045397

	Scanning range 0.1 ... 4.8 m
Photoelectric reflex switch	

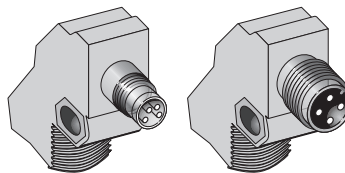
- Visible red light
- With polarization filter
- Cross talk immunity
- 18 mm front and flange mounting possibility
- Power and output indicator
- Clear housing for perfect indicator LED visibility

Dimensional drawing



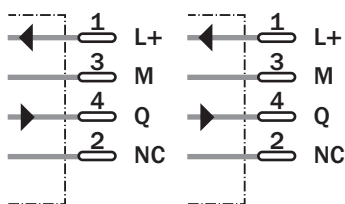
Connection types

ZL2-N2438	ZL2-N2428
ZL2-E2438	ZL2-E2428



M8, 4-pin

M12, 4-pin



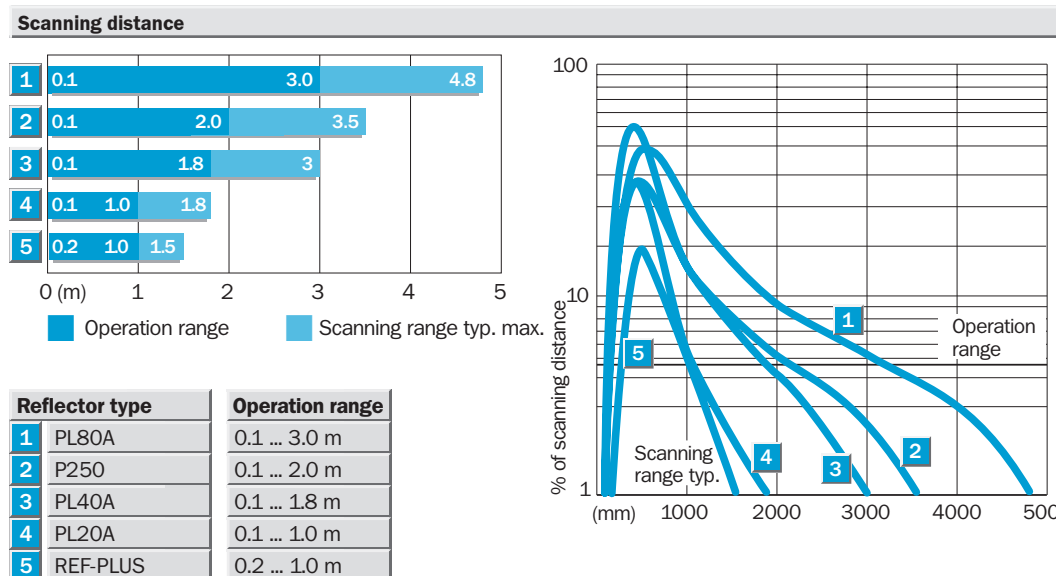
Accessories
Reflectors
Mounting systems

Technical data		ZL2-	N2438	E2438	N2428	E2428					
Scanning range typ. max.	0.1 ... 4.8 m (on PL80A)										
Operating range, recommended	0.1 ... 3 m (on PL80A)										
Light source ⁴⁾, light type	LED, red light, 660 nm										
Light spot diameter	Approx. 125 mm at 1 m										
Polarization filter	✓										
Supply voltage V_S ²⁾	10 ... 30 V DC										
Ripple ³⁾	< 5 V _{pp}										
Current consumption ⁴⁾	< 20 mA										
Switching outputs	Q: NPN										
Switching mode	Light switching										
	Dark switching										
Output current I_A max.	50 mA										
Switching frequency ⁵⁾	400 Hz										
Connection type	M8 plug, 4-pin										
	M12 plug, 4-pin										
VDE protection class ⁶⁾	ⓘ										
Circuit protection ⁷⁾	A, D										
Enclosure rating	IP 67										
Ambient temperature	Operation -25 ... +50 °C										
	Storage -40 ... +70 °C										
Housing material	ABS, fibreglass reinforced										
Included with delivery	Mounting nut M18										

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

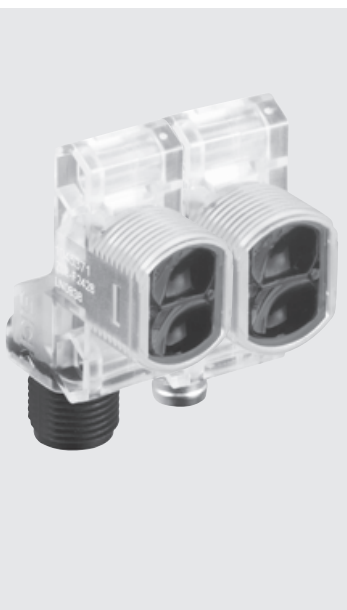
4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected

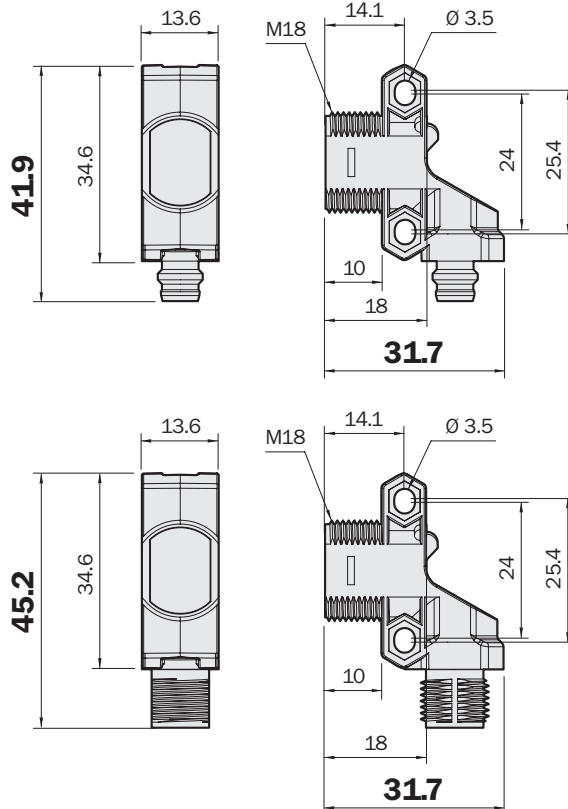


	Scanning range
	0.1 ... 4.8 m
Photoelectric reflex switch	

- Visible red light
- With polarization filter
- Cross talk immunity
- 18 mm front and flange mounting possibility
- Power and output indicator
- Clear housing for perfect indicator LED visibility

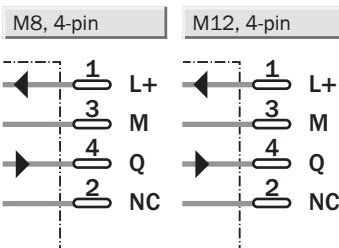
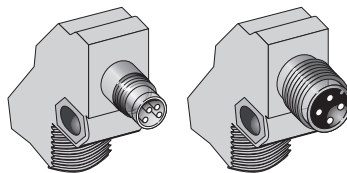


Dimensional drawing



Connection types

ZL2-P2438	ZL2-P2428
ZL2-F2438	ZL2-F2428



Accessories
Reflectors
Mounting systems

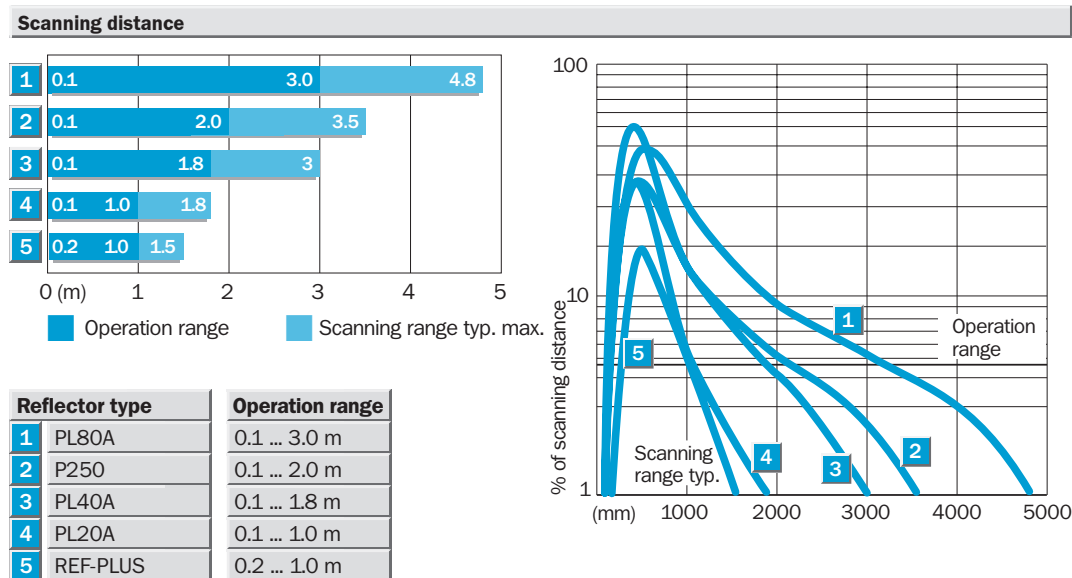


Technical data		ZL2-	P2438	F2438	P2428	F2428						
Scanning range typ. max.	0.1 ... 4.8 m (on PL80A)											
Operating range, recommended	0.1 ... 3 m (on PL80A)											
Light source ⁴⁾, light type	LED, red light, 660 nm											
Light spot diameter	Approx. 125 mm at 1 m											
Polarization filter	✓											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	400 Hz											
Connection type	M8 plug, 4-pin											
	M12 plug, 4-pin											
VDE protection class ⁶⁾	ⓘ											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											
Included with delivery	Mounting nut M18											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected



Order information

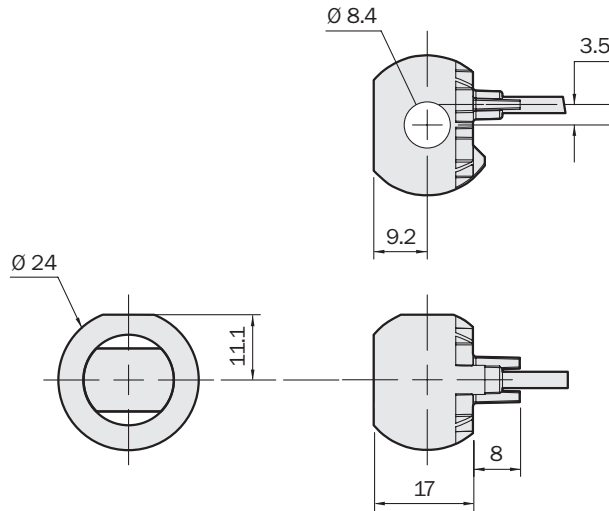
Type	Order no.
ZL2-P2438	1045384
ZL2-F2438	1045385
ZL2-P2428	1045370
ZL2-F2428	1045371

Scanning range
0.1 ... 4.8 m

Photoelectric reflex switch

- Visible red light
- With polarization filter
- Cross talk immunity
- Mounting with special bracket for infinite adjustability
- Power and output indicator
- Clear housing for perfect indicator LED visibility

Dimensional drawing



Connection types

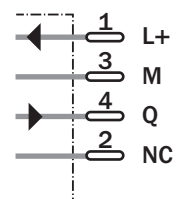
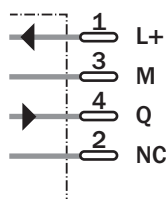
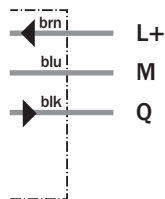
ZL3-N2415	ZL3-N2431	ZL3-N2421
ZL3-E2415	ZL3-E2431	ZL3-E2421



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



Accessories

- Reflectors
- Mounting systems

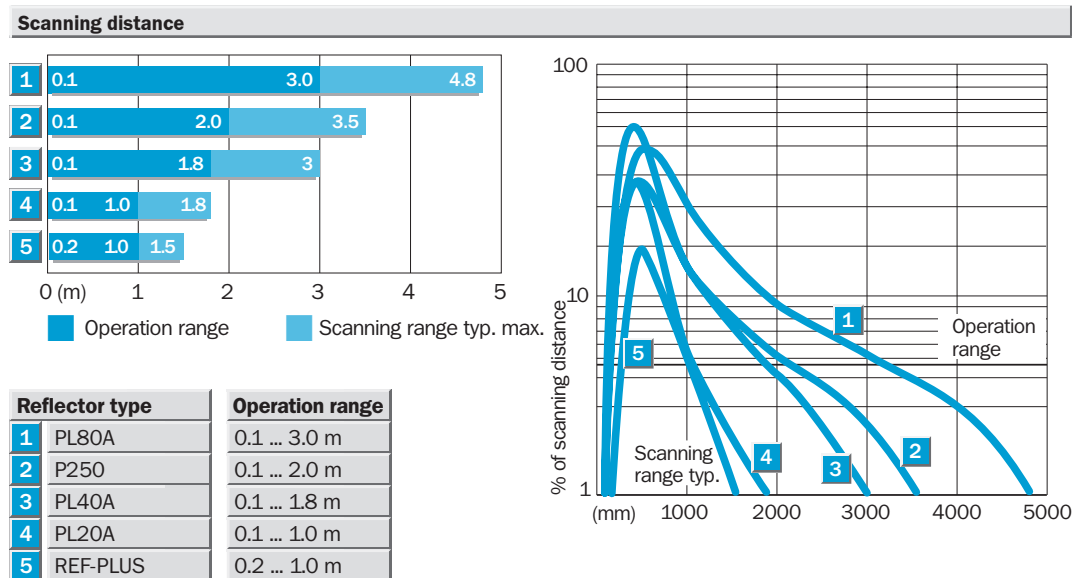


Technical data		ZL3-	N2415	E2415	N2421	E2421	N2431	E2431				
Scanning range typ. max.	0.1 ... 4.8 m (on PL80A)											
Operating range, recommended	0.1 ... 3 m (on PL80A)											
Light source ¹⁾, light type	LED, red light, 660 nm											
Light spot diameter	Approx. 125 mm at 1 m											
Polarization filter	✓											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: NPN											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	400 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊖											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											

1) Average service life 100,000 h, at $T_A = +25$ °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected



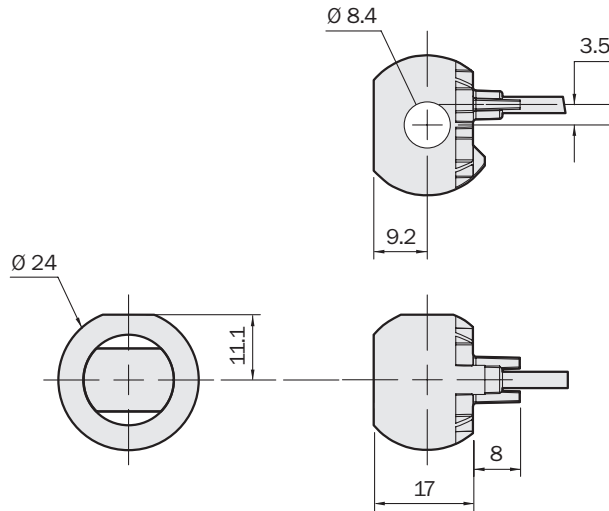
Order information

Type	Order no.
ZL3-N2415	1045529
ZL3-E2415	1045532
ZL3-N2421	1045533
ZL3-E2421	1045536
ZL3-N2431	1045537
ZL3-E2431	1045540

	Scanning range
	0.1 ... 4.8 m
Photoelectric reflex switch	

- Visible red light
- With polarization filter
- Cross talk immunity
- Mounting with special bracket for infinite adjustability
- Power and output indicator
- Clear housing for perfect indicator LED visibility

Dimensional drawing



Connection types

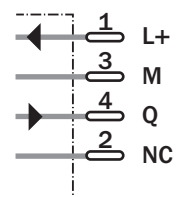
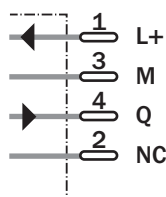
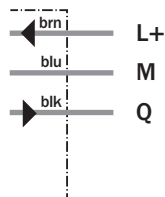
ZL3-P2415	ZL3-P2431	ZL3-P2421
ZL3-F2415	ZL3-F2431	ZL3-F2421



3 x 0.23 mm²

M8, 4-pin

M12, 4-pin



Accessories

- Reflectors
- Mounting systems

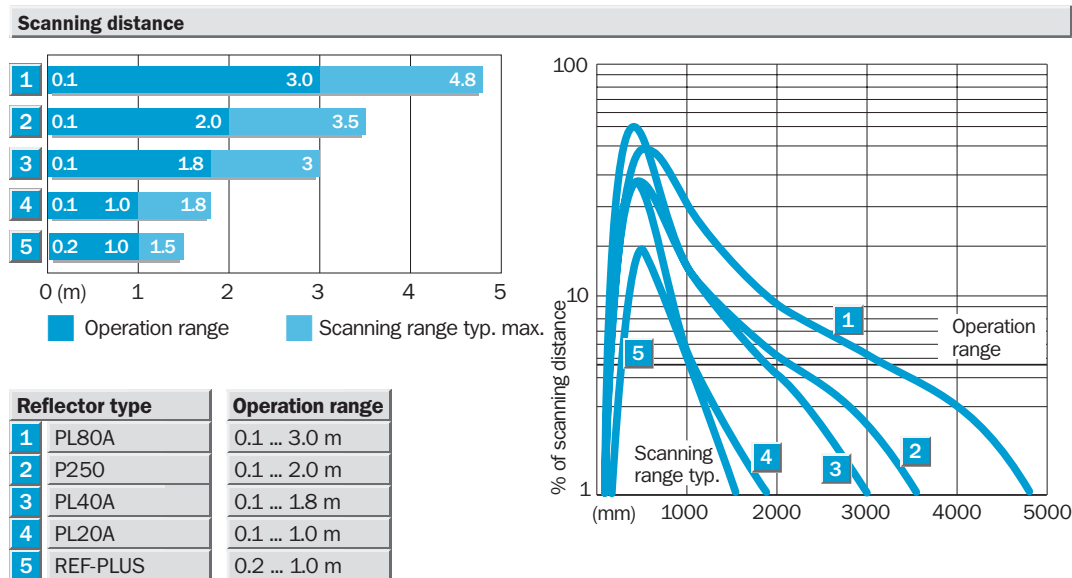


Technical data		ZL3-	P2415	F2415	P2421	F2421	P2431	F2431				
Scanning range typ. max.	0.1 ... 4.8 m (on PL80A)											
Operating range, recommended	0.1 ... 3 m (on PL80A)											
Light source ¹⁾, light type	LED, red light, 660 nm											
Light spot diameter	Approx. 125 mm at 1 m											
Polarization filter	✓											
Supply voltage V_S ²⁾	10 ... 30 V DC											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	< 20 mA											
Switching outputs	Q: PNP											
Switching mode	Light switching											
	Dark switching											
Output current I_A max.	50 mA											
Switching frequency ⁵⁾	400 Hz											
Connection type	Cable (PVC), 2 m, 3-wire											
	Cable with plug 150 mm, M8, 4-pin											
	Cable with plug 150 mm, M12, 4-pin											
VDE protection class ⁶⁾	⊖											
Circuit protection ⁷⁾	A, D											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 ... +50 °C											
	Storage -40 ... +70 °C											
Housing material	ABS, fibreglass reinforced											

1) Average service life 100,000 h, at T_A = +25 °C
 2) Limit values
 3) Must be within V_S tolerances

4) Without load
 5) With light/dark ratio 1:1
 6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected
 D = Outputs overcurrent and short-circuit protected



Order information

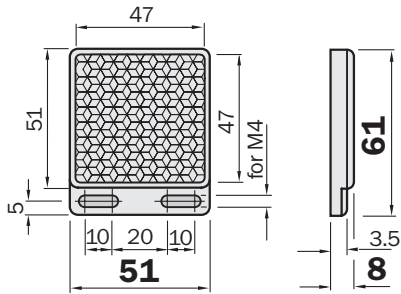
Type	Order no.
ZL3-P2415	1045530
ZL3-F2415	1045531
ZL3-P2421	1045534
ZL3-F2421	1045535
ZL3-P2431	1045538
ZL3-F2431	1045539

Dimensional drawings and order information

Reflectors, plastic design, for temperatures 65 °C

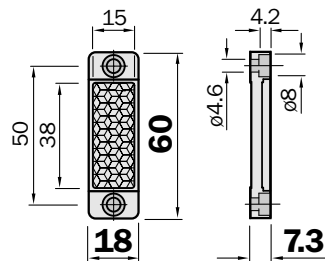
Reflector 47 x 47 mm, screwable

Type	Order no.
P250	5304812



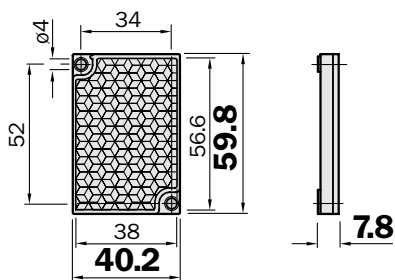
Reflector 20 x 40 mm, screwable

Type	Order no.
PL20A	1012719



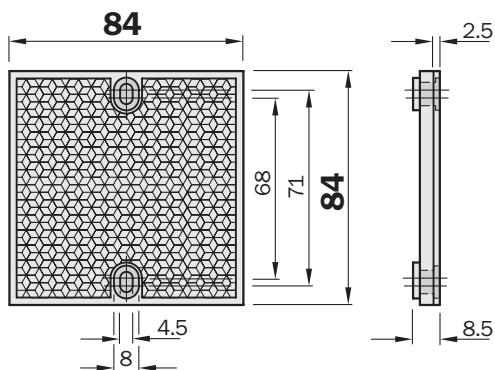
Reflector 40 x 60 mm, screwable

Type	Order no.
PL40A	1012720



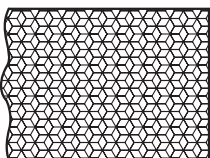
Reflector 80 x 80 mm, screwable

Type	Order no.
PL80A	1003865



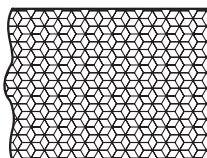
Reflective tape, self-adhesive, length of roll 22.8 m

Type	Order no.	Width
REF-PLUS-R25	5319929	25 mm
REF-PLUS-R50	5319981	50 mm



Reflective tape, self-adhesive, cut to size

Type	Order no.
REF-PLUS-R25-K	4051184
REF-PLUS-R50-K	4051185

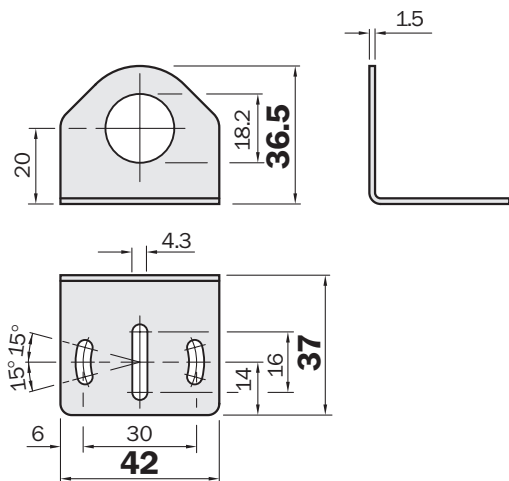


Dimensional drawings and order information

Mounting systems

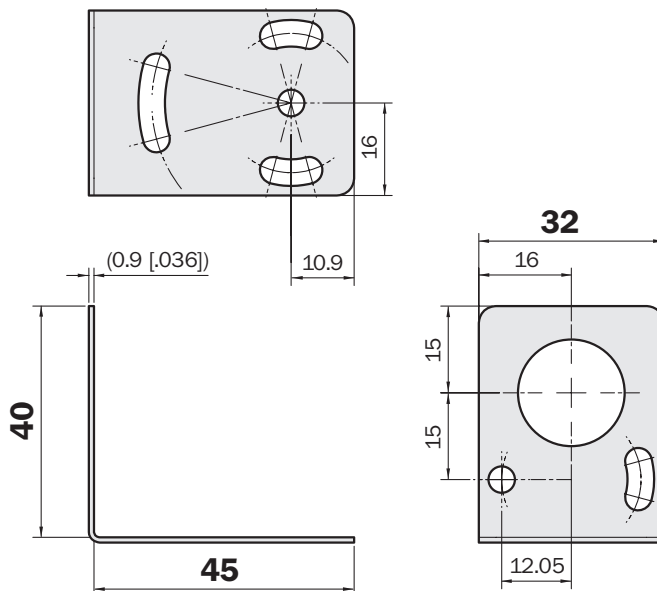
Mounting bracket for ZT1, ZT2, ZL1, ZL2

Type	Order no.
BEF-WN-M18	5308446



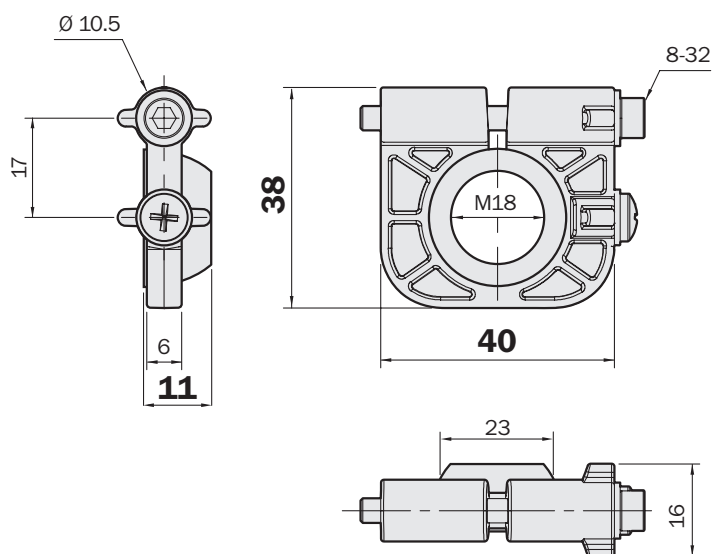
Mounting bracket for ZT1, ZT2, ZL1, ZL2

Type	Order no.
MB-W1000	7023800



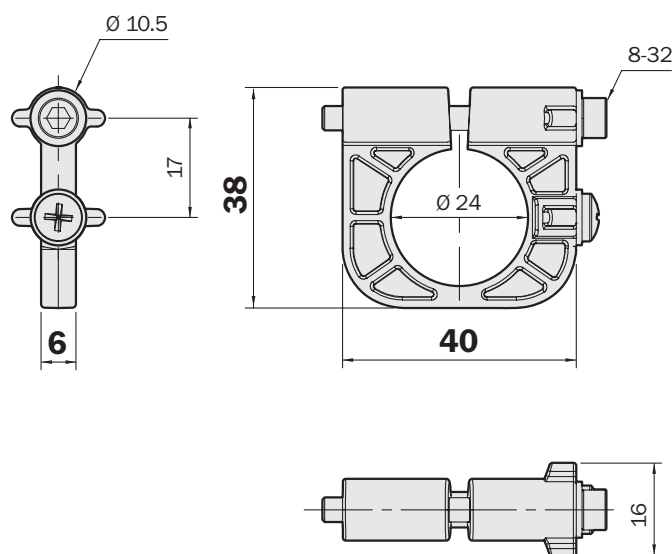
Mounting bracket with rotary insert, for ZT1, ZT2, ZL1, ZL2, ZL3

Type	Order no.
MB-BS18MM	7028403



Mounting bracket for ZL3

Type	Order no.
MB-BS18MMS01	7029350



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