PRODUCT INFORMATION

GR18

RELIABLE. ECONOMICAL. VERSATILE.

Cylindrical photoelectric sensor

SICK
Sensor Intelligence.

THE GR18 PRODUCT FAMILY: RELIABLE AND EXTREMELY VERSATILE

Thanks to their versatility, the cylindrical photoelectric sensors from the GR18 product family cover a very wide range of applications. With their seven different housing types, they are ideally suited for both space-saving and flexible mounting solutions.

One product family for all applications

GR18 cylindrical photoelectric sensors in the cylindrical M18 housing are outstanding in both the short length version (GR18S) and the standard length version (GR18), and offer an optimal price-performance ratio.

These sensors can be used universally in many applications thanks to the seven different housing designs:

- Photoelectric proximity sensors
- Photoelectric retro-reflective sensors
- Through-beam photoelectric sensors
- Photoelectric retro-reflective sensors for transparent objects

THE GR18 PRODUCT FAMILY

GR18S (SHORT HOUSING)

GR18 (LONG HOUSING) NEW

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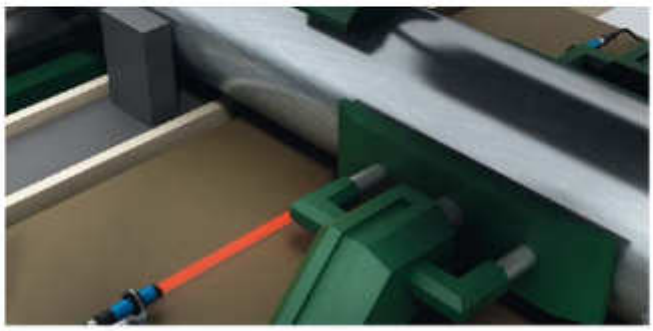
At a glance

- Cylindrical M18 sensor with greater cost-effectivity
- Seven different housing designs
- Plastic or metal versions with straight or right angle optics
- Very bright and highly visible PinPoint LED
- Highly visible status indicator
- Rugged and reliable due to proven SICK technology
- Enclosure rating IP 67
- Special "fully flush" metal variant (GR18S)

Ideal for a broad range of applications

SICK's reliable photoelectric sensors are perfectly suited for numerous applications in the field of logistics: From mechanical engineering, through the automotive and electronics industries, right up to the packaging and shipping of goods of all varieties. This is because in any area in which material flows are automated or where sorting and warehousing processes are to be optimized, photoelectric sensors from SICK can guarantee maximum reliability and efficiency. Thanks to the simple hole mounting system of the standard M18 housing, the sensors can be flexibly integrated into automated environments.



THE GR18 CYLINDRICAL PHOTOELECTRIC SENSOR: OPTIMALLY DESIGNED DOWN TO THE SMALLEST DETAIL

Housing material for every application

The housing for the GR18 cylindrical photoelectric sensors is available in plastic and metal variants. This allows you to choose the right variant for every application and cost situation.

Metal and plastic housing

Optimal installation, even where space is limited

The GR18S housing is very short and therefore requires little installation space. Additional space can be saved through the use of housing versions with an angled radial design. These are ideal conditions for applications where there is very little space available for installation.

Straight and right angle optics (GR18S only)

For smooth processes

The front is flush with the installation area:
In this way the flush mounting kits of the GR18S cylindrical photoelectric sensors provide superior solutions for all challenges in which it is essential that the objects to be captured can pass without a hindrance.

Special "fully flush" designs

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Rugged design

Photoelectric sensors from the GR18 product family run absolutely flawlessly, and are not sensitive to ambient light, dirt, moisture, or electrical interference. This makes these photoelectric sensors the ideal solution for every application.

Sensor technology from SICK

Maximum detection reliability

PinPoint technology from SICK, with its highly visible light spot, will facilitate commissioning, and increase the sensing range within the red emitted light area, without the need for any protective measures against lasers.

PinPoint technology from SICK

Comfortable: status indicator visible from any direction

Each GR18 cylindrical photoelectric sensor is equipped with a very bright LED status indicator. The current operational status can be recognized at a glance even from great distances. As a result, sensor commissioning and maintenance times are significantly reduced.

Highly visible status indicator

Sensing range: Quick and easy to adjust

The sensing range of the GR18 cylindrical photoelectric sensors can be quickly and easily adjusted using a standard Phillips-head screwdriver. No special tools are required.

Easy adjustment

A RANGE OF OPTIONS:
THE RIGHT SENSOR FOR EVERY SITUATION

Cylindrical photoelectric sensors			Housing					Optics/Technology			
			Material		Enclosure rating	Housing design		Type of light/Light sender			
		M18									
		Example installation	Plastic	Metal	IP 67	Cylindrical, axial	Cylindrical, radial	LED, infrared light	LED, red light	PinPoint LED, red light	
GR18	NEW			■	■	■		■	■	■	
	NEW		■		■	■		■	■	■	
GR18S				■	■	■		■	■	■	
				■	■		■	■	■	■	
				■	■	■		■	■	■	
			■		■	■		■	■	■	
			■		■		■	■	■	■	

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	Sensor principle			Special applications	
	Maximum sensing range				
					
	Photoelectric proximity sensors (energetic)	Photoelectric retro-reflective sensor (dual lens)	Through-beam photoelectric sensors	Detecting transparent objects	Detecting small objects
	3 mm ... 115 mm 5 mm ... 550 mm 5 mm ... 1000 mm	0.03 m ... 7.2 m	0 m ... 15 m		
	Side				
	10	12	13	■	
	11	12	13	■	
	23	26	32	■	■
	24	27	32	■	■
	24	27	33	■	■
	25	28	33	■	■
	26	29	34	■	■

ROUND, ECONOMICAL STANDARD

Product description

The GR18 photoelectric sensor family in a cylindrical M18-housing offers an optimal price/performance ratio. It can be used universally in many applications thanks to its standard M18 housing size.

PinPoint LEDs, plastic and metal housing versions as well as status indicators that are easily visible from all angles complete the sensor's features.

At a glance

- Standard length M18 low-cost cylindrical sensor
- Two different housing styles
- Variety of plastic and metal housing styles, with straight optics
- Bright and highly visible PinPoint-LED
- Highly visible signal indicator LED
- IP 67 rating

Your benefits

- Flexible mounting options due to versatile housing styles
- Easy installation and precise detection due to PinPoint LED
- Reduced maintenance costs due to easy M18 hole mounting option so no special bracket is needed
- Rugged and reliable with proven SICK technology
- Highly visible signal indicator LED saves maintenance and commissioning time

Additional information

→ www.mysick.com/en/GR18

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

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Detailed technical data

Features

	GRTE18	GRL18	GRSE18
Sensor principle	Photoelectric proximity sensor	Photoelectric retro-reflective sensor	Through-beam photoelectric sensor
Detection principle	Energetic	Standard optics	–
Housing design (light emission)	Cylindrical, straight		
Sensing range max.	3 mm ... 115 mm [1] 5 mm ... 550 mm [1] 5 mm ... 1.000 mm [1] (typabhängig)	0.03 m ... 7.2 m [2]	0 m ... 15 m
Sensing range	5 mm 100 mm [1] 10 mm 400 mm [1] 10 mm 800 mm [1] (typabhängig)	0.06 m ... 6 m [2]	0 m ... 10 m
Type of light	Visible red light		Visible red light / Infrared light (depending on type)
Light source	PinPoint LED [3] LED [3] (depending on type)	PinPoint LED [3]	PinPoint LED [3] LED [3] (depending on type)
Light spot size (distance)	Ø 8 mm (100 mm) Ø 9 mm (400 mm) Ø 45 mm (800 mm) (depending on type)	Ø 175 mm (7 m)	Ø 250 mm (10 m) Ø 420 mm (10 m) (depending on type)
Adjustment	Potentiometer, 270 °		

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

[2] PL80A.

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

Mechanics/electronics

	GRTE18	GRL18	GRSE18
Supply voltage [1]	10 V DC ... 30 V DC		
Ripple [2]	± 5 V_{pp}		
Power consumption	≤ 30 mA		
Output type	NPN / PNP (depending on type)		
Output function	Complementary		
Switching mode	Light/dark switching		
Signal voltage PNP HIGH/LOW NPN HIGH/LOW	 V_S - (≤ 3 V) / approx. 0 V Approx. V_S / ≤ 3 V		
Output current $I_{max.}$ [3]	100 mA		
Response time [4]	< 1,000 µs	< 500 µs	
Switching frequency [5]	500 Hz	1,000 Hz	
Connection type	Cable, 2 m [6] Male connector, M12 (depending on type)		
Circuit protection	A [7] B [8] D [9]		
Protection class	III		
Polarisation filter	–	✔	–
Enclosure rating	IP 67		
Items supplied	Fastening nuts (2 x)		Fastening nuts (4 x)

	GRTE18	GRL18	GRSE18
EMC	EN 60947-5-2		
Test input	–		Sender OFF at “Test” 0 V
Ambient operating temperature [10]	–25 °C ... +55 °C		
Ambient storage temperature	–40 °C ... +70 °C		

[1] Limit values, operation in short-circuit protected network max. 8 A.
[2] May not exceed or fall short of V_S tolerances.
[3] At Vs > 24 V or ambient temperature > 49 °C, I_A max = 50 mA.
[4] Signal transit time with resistive load.
[5] With light/dark ratio 1:1.
[6] Do not bend below 0 °C.
[7] A = V_S connections reverse-polarity protected.
[8] B = inputs and output reverse-polarity protected.
[9] D = outputs overcurrent and short-circuit protected.
[10] At U_v <=24V and I_A<50mA.

Ordering information

Other models ➜ www.mysick.com/en/GR18

GRTE18, Metal

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** energetic
- **Housing design:** axial
- **Type of light:** visible red light
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer, 270 °

Sensing range max. [1]	Sensing range [1]	Light spot size (distance)	Light source	Output type	Connection	Connection diagram	Model name	Part no.
3 mm ... 115 mm	5 mm 100 mm	Ø 8 mm (100 mm)	PinPoint LED	NPN	Cable, 4-wire, 2 m, PVC	Cd-094	GRTE18-N1112	1066541
				PNP	Cable, 4-wire, 2 m, PVC	Cd-094	GRTE18-P1112	1066542
				NPN	Connector M12, 4-pin	Cd-084	GRTE18-N2412	1067972
				PNP	Connector M12, 4-pin	Cd-084	GRTE18-P2412	1066543
5 mm ... 550 mm	10 mm 400 mm	Ø 9 mm (400 mm)	PinPoint LED	NPN	Cable, 4-wire, 2 m, PVC	Cd-094	GRTE18-N1142	1066547
				PNP	Cable, 4-wire, 2 m, PVC	Cd-094	GRTE18-P1142	1066548
				NPN	Connector M12, 4-pin	Cd-084	GRTE18-N2442	1064243
				PNP	Connector M12, 4-pin	Cd-084	GRTE18-P2442	1066549
5 mm ... 1,000 mm	10 mm 800 mm	Ø 45 mm (800 mm)	LED	NPN	Cable, 4-wire, 2 m, PVC	Cd-094	GRTE18-N1162	1066551
				PNP	Cable, 4-wire, 2 m, PVC	Cd-094	GRTE18-P1162	1067976
				NPN	Connector M12, 4-pin	Cd-084	GRTE18-N2462	1067978
				PNP	Connector M12, 4-pin	Cd-084	GRTE18-P2462	1066552

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

GRTE18, Plastic

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** energetic
- **Housing design:** axial
- **Type of light:** visible red light
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer, 270 °

Sensing range max. [1]	Sensing range [1]	Light spot size (distance)	Light source	Output type	Connection	Connection diagram	Model name	Part no.
3 mm ... 115 mm	5 mm 100 mm	Ø 8 mm (100 mm)	PinPoint LED	NPN	Cable, 4-wire, 2 m, PVC	Cd-094	GRTE18-N1117	1066539
				PNP	Cable, 4-wire, 2 m, PVC	Cd-094	GRTE18-P1117	1066540
				NPN	Connector M12, 4-pin	Cd-084	GRTE18-N2417	1067971
				PNP	Connector M12, 4-pin	Cd-084	GRTE18-P2417	1064923
5 mm ... 550 mm	10 mm 400 mm	Ø 9 mm (400 mm)	PinPoint LED	NPN	Cable, 4-wire, 2 m, PVC	Cd-094	GRTE18-N1147	1066544
				PNP	Cable, 4-wire, 2 m, PVC	Cd-094	GRTE18-P1147	1066545
				NPN	Connector M12, 4-pin	Cd-084	GRTE18-N2447	1067973
				PNP	Connector M12, 4-pin	Cd-084	GRTE18-P2447	1066546
5 mm ... 1,000 mm	10 mm 800 mm	Ø 45 mm (800 mm)	LED	NPN	Cable, 4-wire, 2 m, PVC	Cd-094	GRTE18-N1167	1064925
				PNP	Cable, 4-wire, 2 m, PVC	Cd-094	GRTE18-P1167	1067974
				NPN	Connector M12, 4-pin	Cd-084	GRTE18-N2467	1067975
				PNP	Connector M12, 4-pin	Cd-084	GRTE18-P2467	1066550

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

GRL18, Metal

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Standard optics
- **Housing design:** axial
- **Sensing range:** 0.06 m 6 m (PL80A.)
- **Type of light:** visible red light
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Light source:** PinPoint LED
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer, 270 °

Sensing range max. [1]	Output type	Connection	Connection diagram	Model name	Part no.
0.03 m ... 7.2 m	NPN	Cable, 4-wire, 2 m, PVC	Cd-094	GRL18-N1132	1067980
	PNP	Cable, 4-wire, 2 m, PVC	Cd-094	GRL18-P1132	1066556
	NPN	Connector M12, 4-pin	Cd-084	GRL18-N2432	1067981
	PNP	Connector M12, 4-pin	Cd-084	GRL18-P2432	1066557

[1] PL80A.

GRL18, Plastic

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Standard optics
- **Housing design:** axial
- **Sensing range:** 0.06 m 6 m (PL80A.)
- **Type of light:** visible red light
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Light source:** PinPoint LED
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer, 270 °

Sensing range max. [1]	Output type	Connection	Connection diagram	Model name	Part no.
0.03 m ... 7.2 m	NPN	Cable, 4-wire, 2 m, PVC	Cd-094	GRL18-N1137	1066553
	PNP	Cable, 4-wire, 2 m, PVC	Cd-094	GRL18-P1137	1066554
	NPN	Connector M12, 4-pin	Cd-084	GRL18-N2437	1067979
	PNP	Connector M12, 4-pin	Cd-084	GRL18-P2437	1066555

[1] PL80A.

GRSE18, Metal

- **Sensor principle:** Through-beam photoelectric sensor
- **Housing design:** axial
- **Sensing range:** 0 m 10 m
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer, 270 °

Sensing range max.	Type of light	Light spot size (distance)	Light source	Output type	Connection	Connection diagram	Model name	Part no.
0 m ... 15 m	Visible red light	Ø 250 mm (10 m)	PinPoint LED	NPN	Cable, 4-wire, 2 m, PVC	Cd-088	GRSE18-N1142	1066572
				PNP	Cable, 4-wire, 2 m, PVC	Cd-088	GRSE18-P1142	1067984
				NPN	Connector M12, 4-pin	Cd-072	GRSE18-N2442	1067985
				PNP	Connector M12, 4-pin	Cd-072	GRSE18-P2442	1066573
	Infrared light	Ø 420 mm (10 m)	LED	NPN	Cable, 4-wire, 2 m, PVC	Cd-088	GRSE18-N1122	1068334
				PNP	Cable, 4-wire, 2 m, PVC	Cd-088	GRSE18-P1122	1068333
				NPN	Connector M12, 4-pin	Cd-072	GRSE18-N2422	1068335
				PNP	Connector M12, 4-pin	Cd-072	GRSE18-P2422	1068336

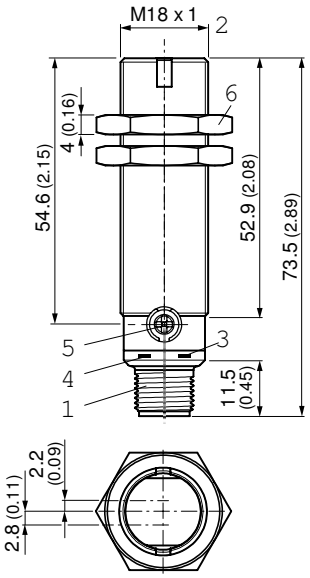
GRSE18, Plastic

- **Sensor principle:** Through-beam photoelectric sensor
- **Housing design:** axial
- **Sensing range:** 0 m 10 m
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer, 270 °

Sensing range max.	Type of light	Light spot size (distance)	Light source	Output type	Connection	Connection diagram	Model name	Part no.
0 m ... 15 m	Visible red light	Ø 250 mm (10 m)	PinPoint LED	NPN	Cable, 4-wire, 2 m, PVC	Cd-088	GRSE18-N1147	1066558
				PNP	Cable, 4-wire, 2 m, PVC	Cd-088	GRSE18-P1147	1067982
				NPN	Connector M12, 4-pin	Cd-072	GRSE18-N2447	1067983
				PNP	Connector M12, 4-pin	Cd-072	GRSE18-P2447	1064921
	Infrared light	Ø 420 mm (10 m)	LED	NPN	Cable, 4-wire, 2 m, PVC	Cd-088	GRSE18-N1127	1068331
				PNP	Cable, 4-wire, 2 m, PVC	Cd-088	GRSE18-P1127	1068329
				NPN	Connector M12, 4-pin	Cd-072	GRSE18-N2427	1068332
				PNP	Connector M12, 4-pin	Cd-072	GRSE18-P2427	1064922

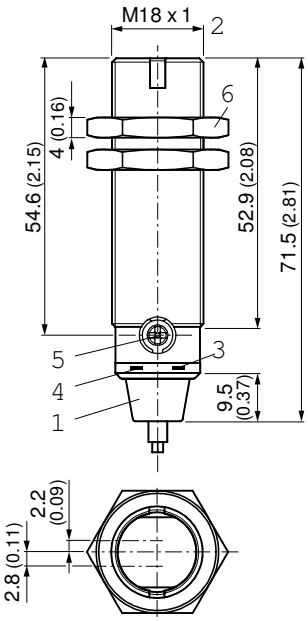
Dimensional drawings (Dimensions in mm (inch))

GR18 metal, connector, axial



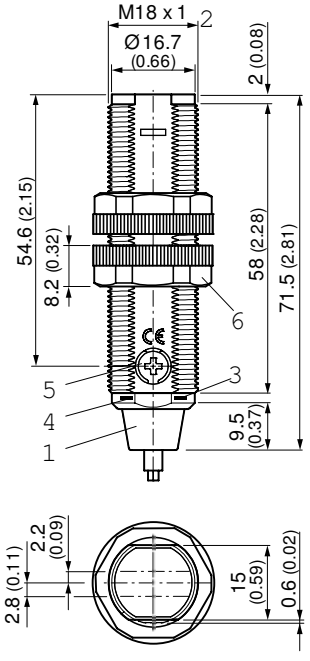
① Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ Fastening nuts (2 x); 24 mm hex, metal

GR18 metal, cable, axial



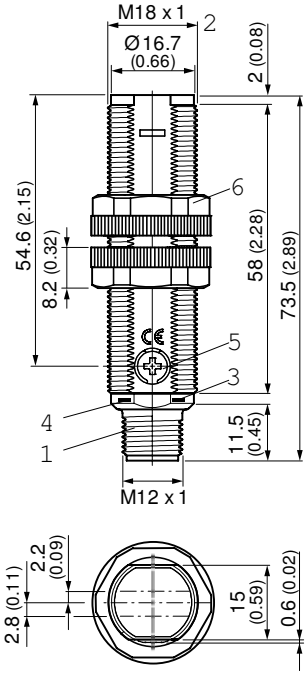
① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ Fastening nuts (2 x); 24 mm hex, metal

GR18, plastic, cable, axial



① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ Fastening nuts (2 x); width across 22, plastic

GR18, plastic, connector, axial



① Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ Fastening nuts (2 x); width across 22, plastic

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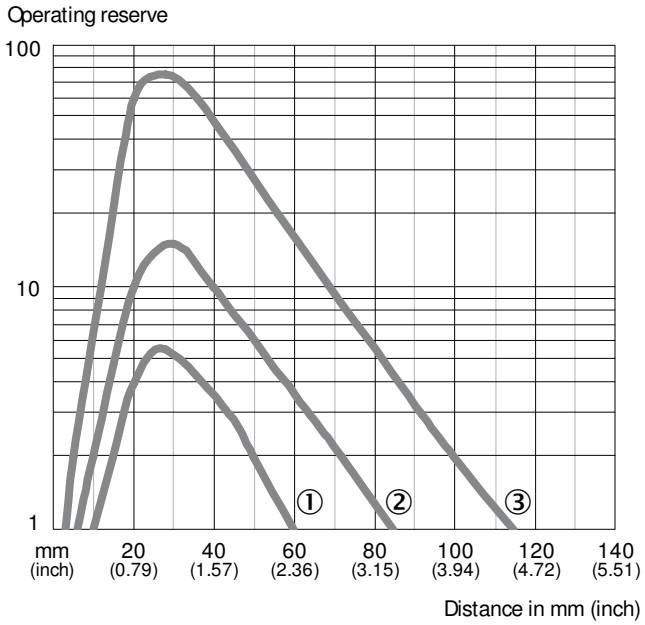
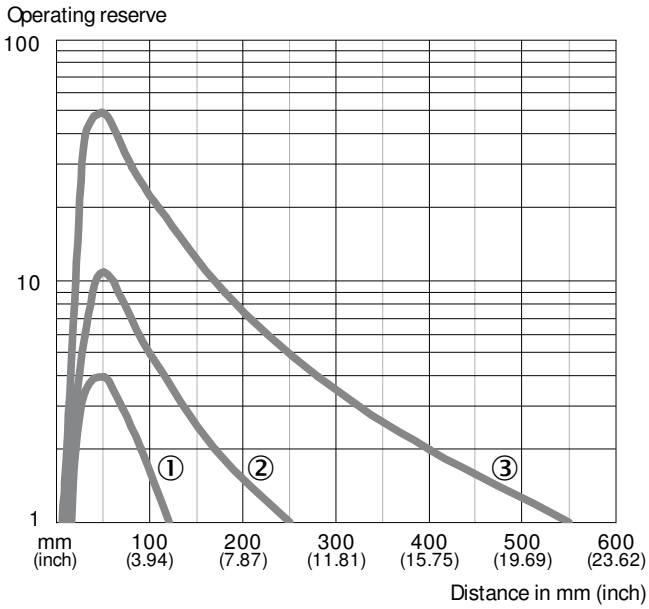
Characteristic curve

GRTE18, 115 mm



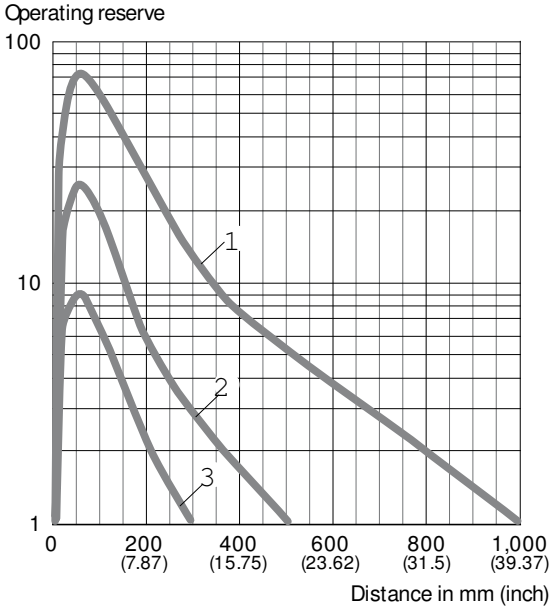
① Sensing range on black, 6 % remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90 % remission

GRTE18, 550 mm



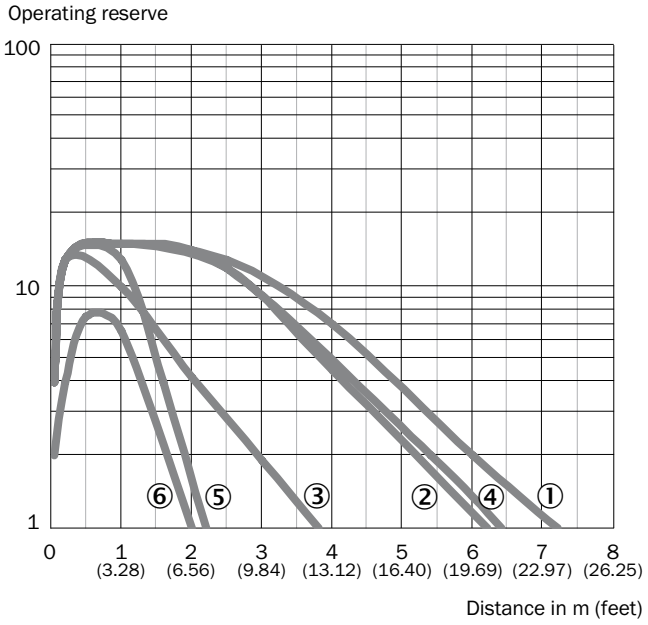
① Sensing range on black, 6 % remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90 % remission

GRTE18, 800 mm



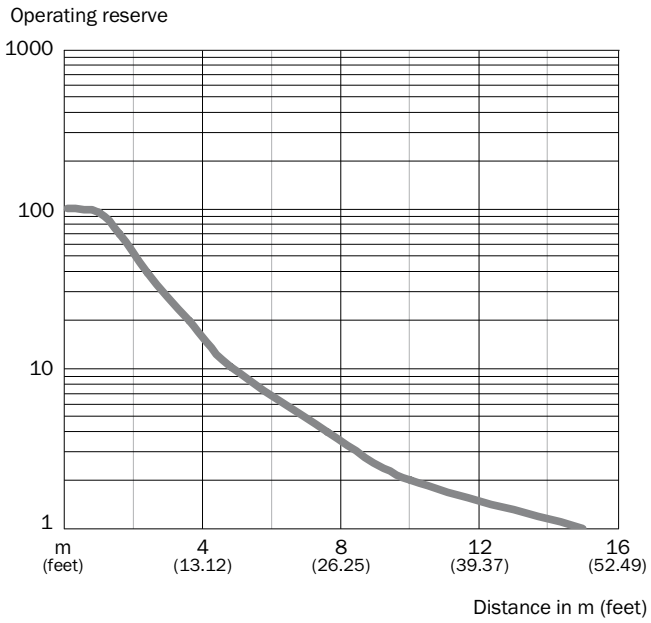
① Sensing range on black, 6 % remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90 % remission

GRL18



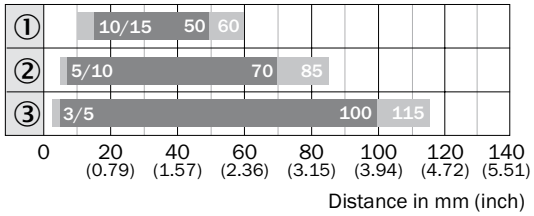
① Reflector type PL80A
② Reflector type PL40A
③ Reflector type PL20A
④ Reflector type P205
⑤ Reflector type PL22-2
⑥ Reflective tape REF-Plus 3436

GRSE18



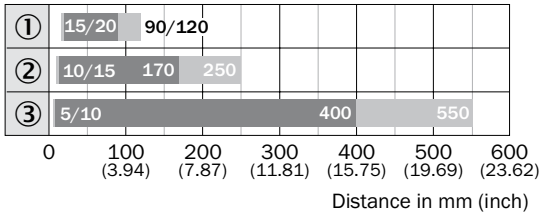
Sensing range

GRTE18, 115 mm



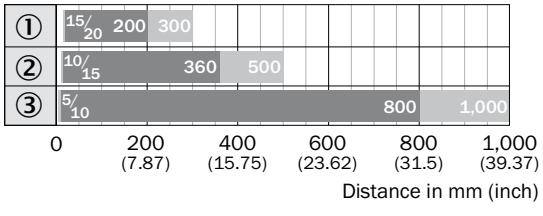
① Sensing range on black, 6 % remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90 % remission

GRTE18, 550 mm



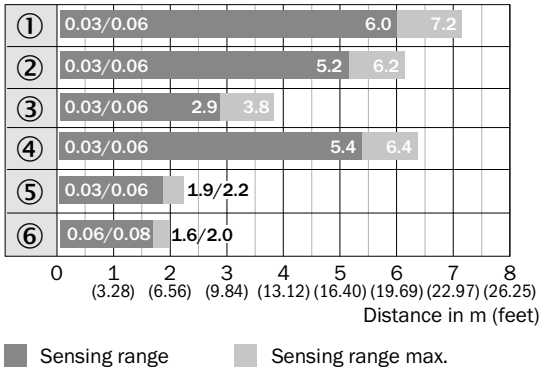
① Sensing range on black, 6 % remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90 % remission

GRTE18, 800 mm



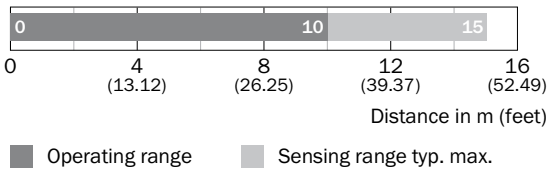
① Sensing range on black, 6 % remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90 % remission

GRL18



① Reflector type PL80A
② Reflector type PL40A
③ Reflector type PL20A
④ Reflector type P205
⑤ Reflector type PL22-2
⑥ Reflective tape REF-Plus 3436

GRSE18



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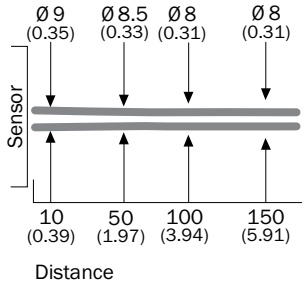
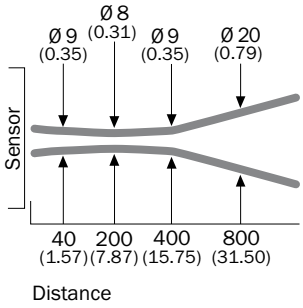
Light spot diameter

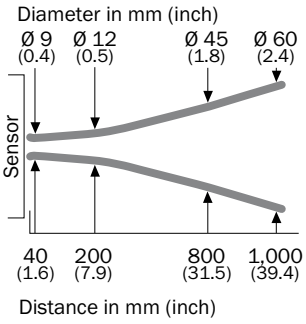
GRTE18, 115 mm



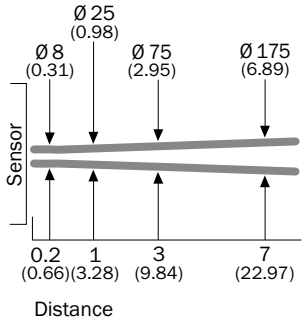
GRTE18, 550 mm



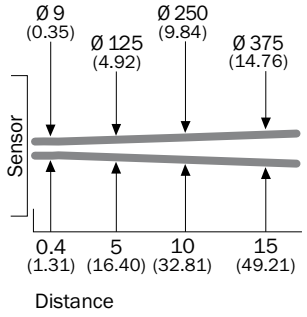
GRTE18, 800 mm



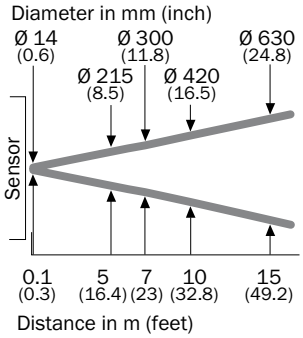
GRL18



GRSE18, visible red light

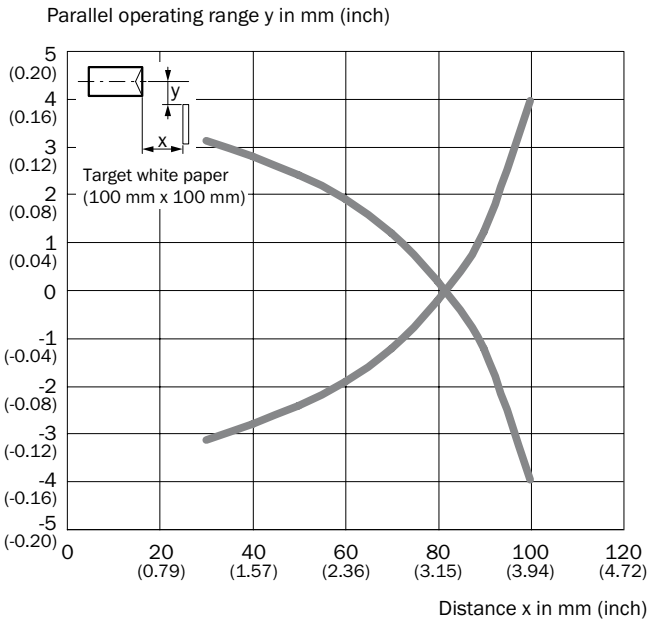


GRSE18, infrared light



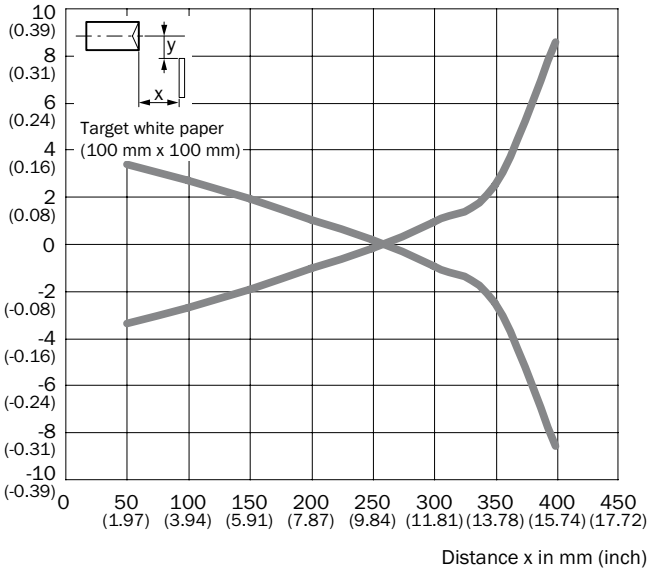
Response curve

GRTE18, 115 mm



GRTE18, 550 mm

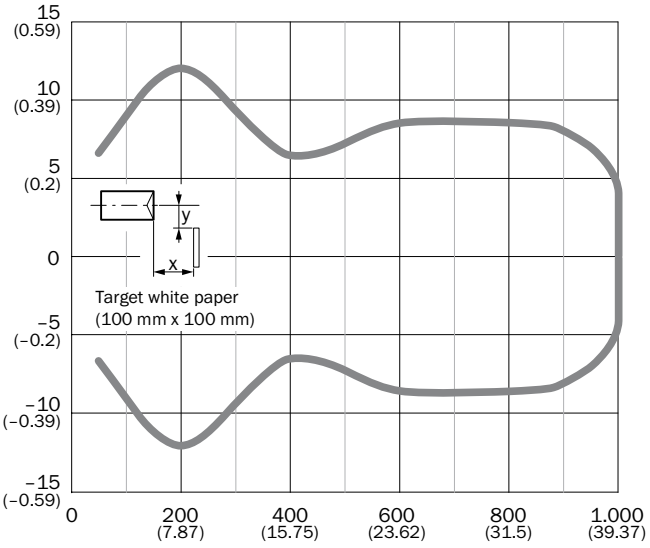
Parallel operating range y in mm (inch)



Distance x in mm (inch)

GRTE18, 800 mm

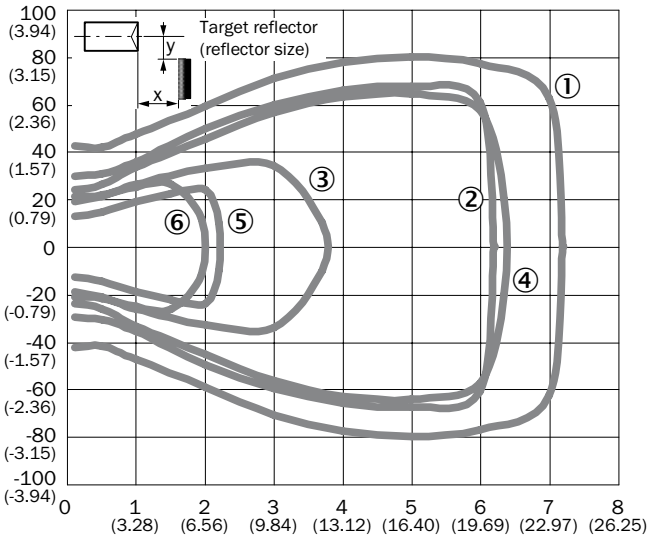
Parallel operating range y in mm (inch)



Distance x in mm (inch)

GRL18

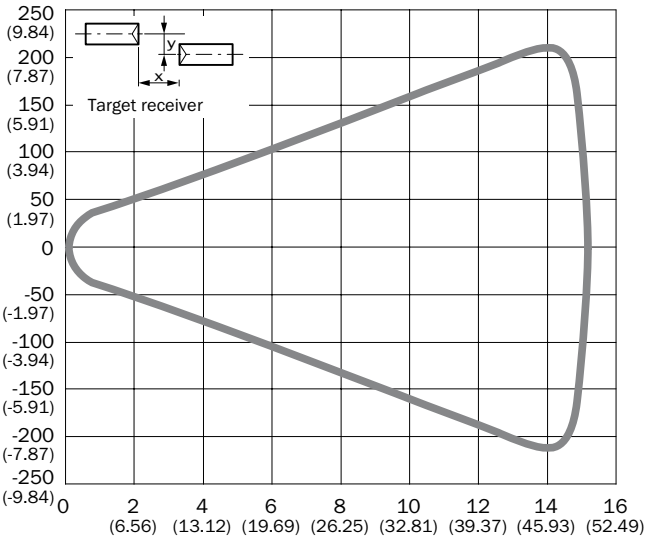
Parallel operating range y in mm (inch)



Distance x in m (feet)

GRSE18

Parallel operating range y in mm (inch)

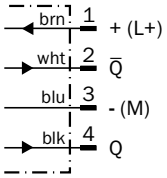


Distance x in m (feet)

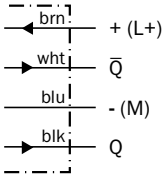
① Reflector type PL80A
② Reflector type PL40A
③ Reflector type PL20A
④ Reflector type P205
⑤ Reflector type PL22-2
⑥ Reflective tape REF-Plus 3436

Connection diagram

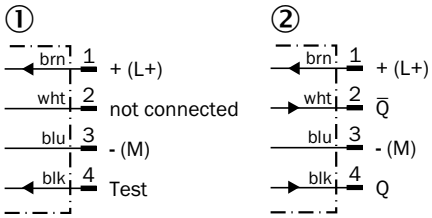
Cd-084



Cd-094

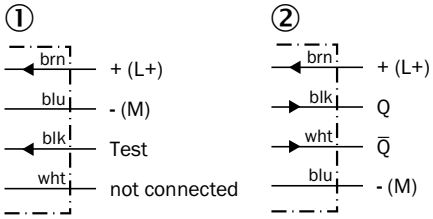


Cd-072



① Sender
② Receiver

Cd-088



① Sender
② Receiver