

the **sensor** people

318 Series





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318 Series

Overview and advantages



Flush fitting and short:
The universal series in metrical M18 construction



Operating principles:

- Throughbeam photoelectric sensors
- Laser throughbeam photoelectric sensors
- Protective throughbeam photoelectric sensors
- Retro-reflective photoelectric sensors with and without polarisation filter
- Retro-reflective photoelectric sensors for detection of clear glass
- Laser retro-reflective photoelectric sensors
- Energetic scanners for various operating ranges
- Energetic scanners with V-optics for background suppression
- Energetic laser scanners
- Scanners with background blanking



- High switching frequency for detection of fast events
- Short construction for easy integration even with limited mounting space
- Simple mounting using slim 90° angular optics



- Mounting nuts included in delivery contents
- Protection class IP 67



- Connection via M12 connector or 2m cable



- 10 ... 30VDC with PNP, NPN, or push-pull outputs



- Complementary switching outputs for light/dark switching or as a control function

Special features of Series 318

The powerful multifunctional series in the widely used M18 construction

- Housings in stainless steel or plastic versions
- Universal mounting using axial or 90° angular optics
- Fast adjustment using large 270° potentiometer
- All operating principles with numerous models in a single construction



Throughbeam photoelectric sensors

- ✓ **Advantage 1:** Various operating ranges, each with a high performance reserves
- ✓ **Advantage 2:** 2 Activation inputs
- ✓ **Advantage 3:** Sensors with integrated diaphragms for precise positioning
- ✓ **Advantage 4:** Laser photoelectric sensors for the detection of small parts and positioning



Protective throughbeam photoelectric sensors

- ✓ **Advantage 1:** Economical type 2 protective photoelectric sensors
- ✓ **Advantage 2:** Simplified alignment through visible red light



Retro-reflective photoelectric sensors

- ✓ **Advantage 1:** Manipulation protection through invisible infrared light



Retro-reflective photoelectric sensors with polarisation filter

- ✓ **Advantage 1:** Fast alignment with visible red light
- ✓ **Advantage 2:** Variants for the detection of transparent media
- ✓ **Advantage 3:** Laser photoelectric sensors for the detection of small parts and positioning



*short construction, fast mounting,
universal use*

**Diffuse reflection light scanner**

- ✓ **Advantage 1:** Versions with various scanning ranges
- ✓ **Advantage 2:** Versions with V-optics for background suppression
- ✓ **Advantage 3:** Laser photoelectric sensors for the detection of small parts and positioning

**Diffuse reflection light scanners with background blanking**

- ✓ **Advantage 1:** Precisely adjustable background blanking with small black/white error
- ✓ **Advantage 2:** Reliable detection, even of objects with coloured structure
- ✓ **Advantage 3:** Fast alignment through *brightVision*®



Operating principle	Designation	Typ. oper. range limit/ typ. scan. range limit	Housing				Light source				Output			Switching frequency
			Plastic	Stainless steel	Axial optics	90° optics	LED red light	Laser, red light	LED infrared	Wavelength	2x PNP transistor, complementary	2x NPN transistor, complementary	2 x push-pull	
	LS 318M/P	0 ... 20m		•	•				•	880nm	•			1000Hz
	LS 318M/P-70	0 ... 45m		•	•				•	880nm	•			1000Hz
	LS 318K/P	0 ... 20m	•		•				•	880nm	•			1000Hz
	LS 318K/P-70	0 ... 45m	•		•				•	880nm	•			1000Hz
	LS 318M/P-S12	0 ... 20m		•	•				•	880nm	•			1000Hz
	LS 318M/P-72-S12	0 ... 45m		•	•				•	880nm	•			1000Hz
	LS 318M/P-70-S12	0 ... 45m		•	•				•	880nm	•			1000Hz
	LS 318K/P-S12	0 ... 20m	•		•				•	880nm	•			1000Hz
	LS 318K/P-70-S12	0 ... 45m	•		•				•	880nm	•			1000Hz
	LS 318K/N	0 ... 20m	•		•				•	880nm		•		1000Hz
	LS 318K/N-70	0 ... 45m	•		•				•	880nm		•		1000Hz
	LS 318M/N-S12	0 ... 20m		•	•				•	880nm		•		1000Hz
	LS 318M/N-70-S12	0 ... 45m		•	•				•	880nm		•		1000Hz
	LS 318K/N-S12	0 ... 20m	•		•				•	880nm		•		1000Hz
	LS 318K/N-70-S12	0 ... 45m	•		•				•	880nm		•		1000Hz
	LS 318WM/N	0 ... 13m		•		•			•	880nm		•		1000Hz
	LS 318WK/N-S12	0 ... 13m	•			•			•	880nm		•		1000Hz
	LS 318WM/P	0 ... 13m		•		•			•	880nm	•			1000Hz
	LS 318WM/P-S12	0 ... 13m		•		•			•	880nm	•			1000Hz
	LS 318WK/P-S12	0 ... 13m	•			•			•	880nm	•			1000Hz
	LSL 318K/N	0 ... 120m	•		•			•	650nm		•		5000Hz	
	LSL 318M/P-B5	0 ... 18m		•	•			•	650nm	•			5000Hz	
	LSL 318M/P	0 ... 120m		•	•			•	650nm	•			5000Hz	
	LSL 318K/P-B5	0 ... 18m	•		•			•	650nm	•			5000Hz	
	LSL 318K/P	0 ... 120m	•		•			•	650nm	•			5000Hz	
	LSL 318M/P-B5-S12	0 ... 18m		•	•			•	650nm	•			5000Hz	
	LSL 318M/P-S12	0 ... 120m		•	•			•	650nm	•			5000Hz	
	LSL 318K/P-B5-S12	0 ... 18m	•		•			•	650nm	•			5000Hz	
	LSL 318K/P-S12	0 ... 120m	•		•			•	650nm	•			5000Hz	
	SLS 318M/P	0 ... 12m		•	•			•	660nm	•			1000Hz	
	SLS 318K/P	0 ... 12m	•		•			•	660nm	•			1000Hz	
	SLS 318M/P-S12	0 ... 12m		•	•			•	660nm	•			1000Hz	
	SLS 318K/P-S12	0 ... 12m	•		•			•	660nm	•			1000Hz	



Switching			Connection		Options								Page
Light/dark	Light	Dark	M12 connector	Cable	Glass-protected optical system	Sensitivity adjustment with 270° potentiometer	Scanning range adjustment with 270° potentiometer	Background blanking	Background suppression	1xActivation input	2xActivation input	Diaphragm for the detection of small parts	
•				•		•					•		11
•				•		•					•		11
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•			•			•					•		11
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•			•			•				•			19
•			•			•				•			19



Operating principle	Designation	Typ. oper. range limit/ typ. scan. range limit	Housing				Light source				Output			Switching frequency
			Plastic	Stainless steel	Axial optics	90° optics	LED red light	Laser, red light	LED infrared	Wavelength	2x PNP transistor, complementary	2x NPN transistor, complementary	2 x push-pull	
	RK 318M/N	0.02 ... 6m		•	•				•	950nm		•		1000Hz
	RK 318M/N-S12	0.02 ... 6m		•	•				•	950nm		•		1000Hz
	RK 318K/N	0.02 ... 6m	•		•				•	950nm		•		1000Hz
	RK 318K/N-S12	0.02 ... 6m	•		•				•	950nm		•		1000Hz
	RK 318M/P	0.02 ... 6m		•	•				•	950nm	•			1000Hz
	RK 318M/P-S12	0.02 ... 6m		•	•				•	950nm	•			1000Hz
	RK 318K/P	0.02 ... 6m	•		•				•	950nm	•			1000Hz
	RK 318K/P-S12	0.02 ... 6m	•		•				•	950nm	•			1000Hz
	RK 318WK/N	0.03 ... 4.8m		•		•			•	950nm		•		1000Hz
	RK 318WK/N-S12	0.03 ... 4.8m		•		•			•	950nm		•		1000Hz
	RK 318WK/P	0.03 ... 4.8m	•			•			•	950nm	•			1000Hz
	RK 318WK/P-S12	0.03 ... 4.8m	•			•			•	950nm	•			1000Hz
	PRK 318M/N	0.02 ... 6m		•	•			•		660nm		•		1000Hz
	PRK 318M/N-S12	0.02 ... 6m		•	•			•		660nm		•		1000Hz
	PRK 318K/N	0.02 ... 6m	•		•			•		660nm		•		1000Hz
	PRK 318K/N-S12	0.02 ... 6m	•		•			•		660nm		•		1000Hz
	PRK 318M/P	0.02 ... 6m		•	•			•		660nm	•			1000Hz
	PRK 318M/P-S12	0.02 ... 6m		•	•			•		660nm	•			1000Hz
	PRK 318K/P	0.02 ... 6m	•		•			•		660nm	•			1000Hz
	PRK 318K/P-S12	0.02 ... 6m	•		•			•		660nm	•			1000Hz
	PRK 318WM/P	0.03 ... 4.5m		•		•	•			660nm	•			1000Hz
	PRK 318WM/P-S12	0.03 ... 4.5m		•		•	•			660nm	•			1000Hz
	PRK 318WK/P	0.03 ... 4.5m	•			•	•			660nm	•			1000Hz
	PRK 318WK/P-S12	0.03 ... 4.5m	•			•	•			660nm	•			1000Hz
	PRK 318K/N-40-S12	0.1 ... 3.4m	•		•			•		660nm		•		1000Hz
	PRK 318M/P-40	0.1 ... 3.4m		•	•			•		660nm	•			1000Hz
	PRK 318M/P-40-S12	0.1 ... 3.4m		•	•			•		660nm	•			1000Hz
	PRK 318K/P-40	0.1 ... 3.4m	•		•			•		660nm	•			1000Hz
	PRK 318K/P-40-S12	0.1 ... 3.4m	•		•			•		660nm	•			1000Hz
		PRKL 318M/P	0.1 ... 15m		•	•			•		650nm	•		
PRKL 318M/P-S12		0.1 ... 15m		•	•			•		650nm	•			5000Hz
PRKL 318K/P		0.1 ... 15m	•		•			•		650nm	•			5000Hz
PRKL 318K/P-S12		0.1 ... 15m	•		•			•		650nm	•			5000Hz
	RT 318M/N-100-S12.11	0 ... 0.12m		•	•				•	880nm		•		1000Hz
	RT 318M/P-50-S12.11	0 ... 0.05m		•	•				•	880nm	•			1000Hz
	RT 318K/P-100-S12.11	0 ... 0.12m	•		•				•	880nm	•			1000Hz
	RT 318K/P-50-S12.11	0 ... 0.05m	•		•				•	880nm	•			1000Hz



Switching			Connection		Options								Page
Light/dark	Light	Dark	M 12 connector	Cable	Polarisation filter	Sensitivity adjustment with 270° potentiometer	Scanning range adjustment with 270° potentiometer	Background blanking	Background suppression	1 x Activation input	2 x Activation input	Detection of transparent objects	
•				•		•							21
•			•	•		•							21
•				•		•							21
•			•			•							21
•				•		•							21
•			•	•		•							21
•				•		•							21
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Operating principle	Designation	Typ. oper. range limit/ typ. scan. range limit	Housing				Light source				Output			Switching frequency
			Plastic	Stainless steel	Axial optics	90° optics	LED red light	Laser, red light	LED infrared	Wavelength	2x PNP transistor, complementary	2x NPN transistor, complementary	2 x push-pull	
	RT 318K/N-200	0 ... 0.25m	•		•				•	880nm		•		1000Hz
	RT 318K/N-100	0 ... 0.13m	•		•				•	880nm		•		1000Hz
	RT 318M/N-200-S12	0 ... 0.25m		•	•				•	880nm		•		1000Hz
	RT 318K/N-200-S12	0 ... 0.25m	•		•				•	880nm		•		1000Hz
	RT 318K/N-100-S12	0 ... 0.13m	•		•				•	880nm		•		1000Hz
	RT 318M/P-200	0 ... 0.25m		•	•				•	880nm	•			1000Hz
	RT 318M/P-100	0 ... 0.13m		•	•				•	880nm	•			1000Hz
	RT 318K/P-200	0 ... 0.25m	•		•				•	880nm	•			1000Hz
	RT 318K/P-100	0 ... 0.13m	•		•				•	880nm	•			1000Hz
	RT 318M/P-200-S12	0 ... 0.25m		•	•				•	880nm	•			1000Hz
	RT 318M/P-100-S12	0 ... 0.13m		•	•				•	880nm	•			1000Hz
	RT 318K/P-200-S12	0 ... 0.25m	•		•				•	880nm	•			1000Hz
	RT 318K/P-100-S12	0 ... 0.13m	•		•				•	880nm	•			1000Hz
	RT 318M/N-400	0 ... 0.5m		•	•				•	880nm		•		1000Hz
	RT 318K/N-400	0 ... 0.5m	•		•				•	880nm		•		1000Hz
	RT 318M/N-400-S12	0 ... 0.5m		•	•				•	880nm		•		1000Hz
	RT 318K/N-400-S12	0 ... 0.5m	•		•				•	880nm		•		1000Hz
	RT 318K/N-550-S12	0 ... 0.7m	•		•				•	880nm		•		1000Hz
	RT 318M/P-400	0 ... 0.5m		•	•				•	880nm	•			1000Hz
	RT 318M/P-550	0 ... 0.7m		•	•				•	880nm	•			1000Hz
	RT 318K/P-400	0 ... 0.5m	•		•				•	880nm	•			1000Hz
	RT 318K/P-550	0 ... 0.7m	•		•				•	880nm	•			1000Hz
	RT 318M/P-400-S12	0 ... 0.5m		•	•				•	880nm	•			1000Hz
	RT 318M/P-550-S12	0 ... 0.7m		•	•				•	880nm	•			1000Hz
	RT 318K/P-400-S12	0 ... 0.5m	•		•				•	880nm	•			1000Hz
	RT 318K/P-550-S12	0 ... 0.7m	•		•				•	880nm	•			1000Hz
	RT 318WK/N-100-S12	0 ... 0.13m	•			•			•	880nm		•		1000Hz
	RT 318WM/P-100-S12	0 ... 0.13m		•		•			•	880nm	•			1000Hz
	RT 318WK/P-100	0 ... 0.13m	•			•			•	880nm	•			1000Hz
	RT 318WK/P-400	0 ... 0.5m	•			•			•	880nm	•			1000Hz
	RT 318WK/P-100-S12	0 ... 0.13m	•			•			•	880nm	•			1000Hz
	RT 318WK/P-400-S12	0 ... 0.5m	•			•			•	880nm	•			1000Hz
	RTL 318K/P-300	0 ... 0.35m	•		•			•	650nm	•			5000Hz	
	RTL 318M/P-300-S12	0 ... 0.35m		•	•			•	650nm	•			5000Hz	
	RTL 318K/P-300-S12	0 ... 0.35m	•		•			•	650nm	•			5000Hz	
	HRTR 318M/66-120	0.001 ... 0.14m		•	•			•	625nm			•	1000Hz	
	HRTR 318K/66-120	0.001 ... 0.14m	•		•			•	625nm			•	1000Hz	
	HRTR 318M/66-120-S12	0.001 ... 0.14m		•	•			•	625nm			•	1000Hz	
	HRTR 318K/66-120-S12	0.001 ... 0.14m	•		•			•	625nm			•	1000Hz	



Switching			Connection		Options								Page
Light/dark	Light	Dark	M 12 connector	Cable	polarisation filter	Sensitivity adjustment with 270° potentiometer	Scanning range adjustment with 270° potentiometer	Background blanking	Background suppression	1 x Activation input	2 x Activation input	Detection of transparent objects	
•				•		•							35
•				•		•							35
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•			•			•		•					43



LS 318

Throughbeam photoelectric sensors



0 ... 20m
0 ... 45m



- Throughbeam photoelectric sensors with long operating range in infrared light and straight optics
- Robust cylindrical stainless steel or plastic housing M18x1, protection class IP 67 for industrial application
- Activation input for testing and interlinking
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces



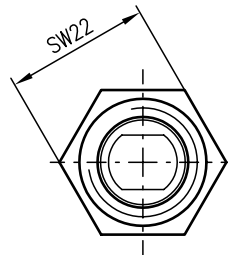
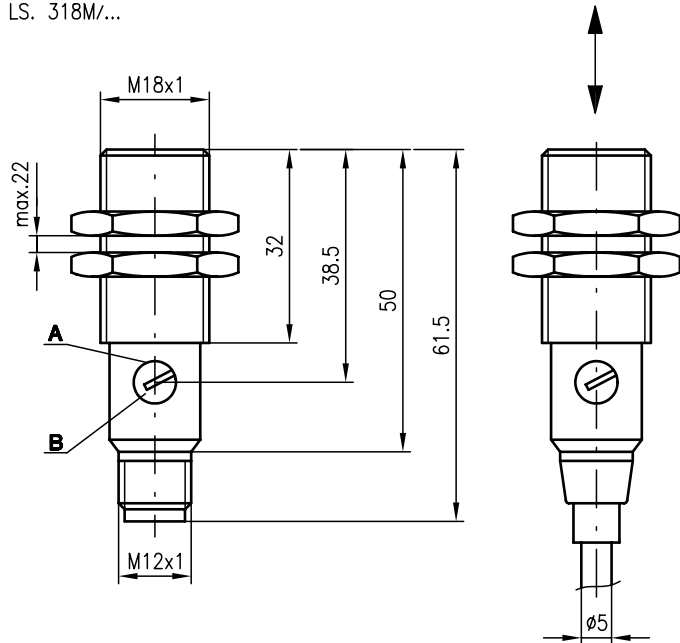
Accessories:

(available separately • see page 44)

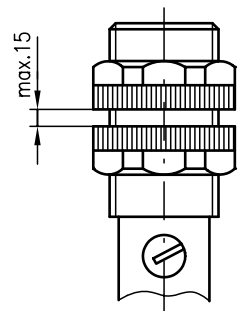
- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)

Dimensioned drawing

LS. 318M/...

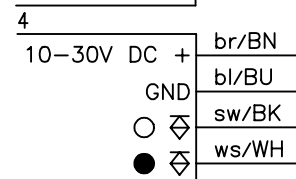
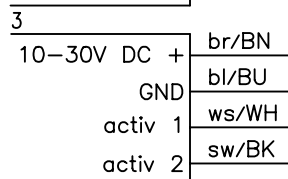
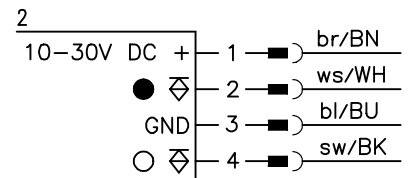
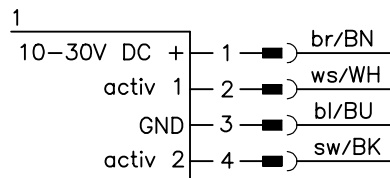


LS. 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_a01e.fm

Specifications

Optical data

Typ. operating range limit ¹⁾	0 ... 20m, 0 ... 45m
Operating range ²⁾	0 ... 15m, 0 ... 35m
Light source	LED (modulated light)
Wavelength	880nm

Timing

Switching frequency	1000Hz
Response time	0.5ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 25mA
Switching output	2 PNP transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	≥ ($U_B - 1.6V$) ≤ 1.6V
Output current	max. 100mA
Sensitivity	adjustable

Indicators

LED red	light path free
LED red flashing	light path free, no performance reserve

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	polyamide 12
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +65°C/-40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

Options

Activation input activ 1	
Transmitter active/not active	≥ 8V or not connected/≤ 1.5V
Activation input activ 2	
Transmitter active/not active	≤ 1.5V or not connected/≥ 8V

- 1) Typ. operating range limit: max. attainable range without performance reserve
- 2) Operating range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Order guide

Selection table		LS 318K/P-70-S12 Part No. 500 82195 (Tr) Part No. 500 81336 (Re)	LS 318K/P-S12 Part No. 500 81335 (Tr) Part No. 500 81336 (Re)	LS 318M/P-70-S12 Part No. 500 82177 (Tr) Part No. 500 81340 (Re)	LS 318M/P-72-S12 Part No. 500 83160 (Tr) Part No. 500 83161 (Re)	LS 318M/P-S12 Part No. 500 81339 (Tr) Part No. 500 81340 (Re)	LS 318K/P-70 Part No. 500 82176 (Tr) Part No. 500 81338 (Re)	LS 318K/P Part No. 500 81337 (Tr) Part No. 500 81338 (Re)	LS 318M/P-70 Part No. 500 82188 (Tr) Part No. 500 81342 (Re)	LS 318M/P Part No. 500 81341 (Tr) Part No. 500 81342 (Re)
Equipment ↓	Order code →									
Housing	plastic	●	●				●	●		
	stainless steel			●	●	●			●	●
Connection	M12 connector	●	●	●	●	●				
	cable						●	●	●	●
Switching output	PNP	●	●	●	●	●	●	●	●	●
	NPN									
Operating range	15m		●			●		●		●
	35m	●		●	●		●		●	
Glass-protected optical system					●					
Connection diagram	Transmitter	1	1	1	1	1	3	3	3	3
	Receiver	2	2	2	2	2	4	4	4	4

Tables

LS 318...-70-...

0	35	45
---	----	----

LS 318...

0	15	20
---	----	----

<input type="checkbox"/>	Operating range [m]
<input type="checkbox"/>	Typ. operating range limit [m]

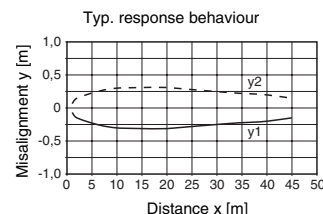
Model with integrated pin or slit diaphragm for detection of small parts or precise positioning tasks on request.

Slit diaphragm	Operating range
0.5mmx9mm	2.4m
1.0mmx9mm	4.0m
2mmx9mm	6.5m

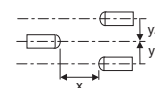
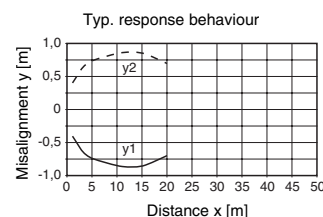
Pin diaphragm	Operating range
Ø 1.0mm	0.45m
Ø 1.5mm	1.05m
Ø 2.0mm	2.15m

Diagrams

LS 318...-70...



LS 318...



Remarks

- For versions with NPN transistor output see separate data sheet.



LS 318

Throughbeam photoelectric sensors



0 ... 20m
0 ... 45m



- Throughbeam photoelectric sensors with long operating range in infrared light and straight optics
- Robust cylindrical stainless steel or plastic housing M18x1, protection class IP 67 for industrial application
- Activation input for testing and interlinking
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces



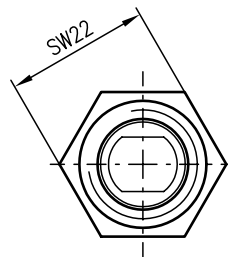
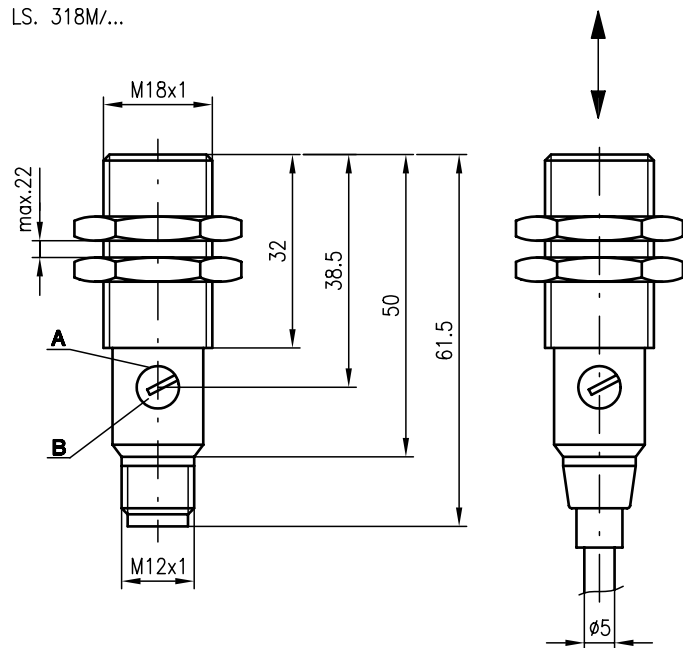
Accessories:

(available separately • see page 44)

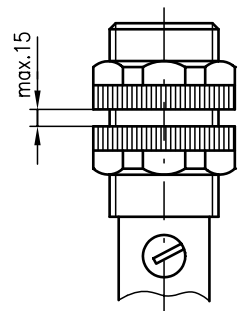
- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)

Dimensioned drawing

LS. 318M/...

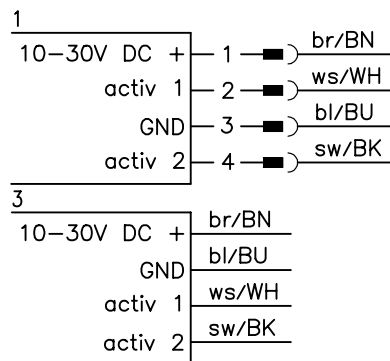


LS. 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_a06e.fm

Specifications

Optical data

Typ. operating range limit ¹⁾	0 ... 20m, 0 ... 45m
Operating range ²⁾	0 ... 15m, 0 ... 35m
Light source	LED (modulated light)
Wavelength	880nm

Timing

Switching frequency	1000Hz
Response time	0.5ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 25mA
Switching output	2 NPN transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	≥ ($U_B - 1.6V$) ≤ 1.6V
Output current	max. 100mA
Sensitivity	adjustable

Indicators

LED red	light path free
LED red flashing	light path free, no performance reserve

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	polyamide 12
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +65°C/-40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

Options

Activation input activ 1	
Transmitter active/not active	≥ 8V or not connected/≤ 1.5V
Activation input activ 2	
Transmitter active/not active	≤ 1.5V or not connected/≥ 8V

- 1) Typ. operating range limit: max. attainable range without performance reserve
- 2) Operating range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Order guide

Selection table		Order code →						
		LS 318K/N-70-S12 Part No. 500 82195 (Tr) Part No. 500 82140 (Re)	LS 318K/N-S12 Part No. 500 81335 (Tr) Part No. 500 82140 (Re)	LS 318M/N-70-S12 Part No. 500 82177 (Tr) Part No. 500 82141 (Re)	LS 318M/N-S12 Part No. 500 81339 (Tr) Part No. 500 82141 (Re)	LS 318K/N-70 Part No. 500 82176 (Tr) Part No. 500 83111 (Re)	LS 318K/N Part No. 500 81337 (Tr) Part No. 500 83111 (Re)	
Equipment ↓	Housing	plastic	plastic	plastic	plastic	plastic	plastic	
		stainless steel	stainless steel	stainless steel	stainless steel	stainless steel	stainless steel	
Connection	M12 connector	●	●	●	●	●	●	
	cable					●	●	
Switching output	PNP							
	NPN	●	●	●	●	●	●	
Operating range	15m		●		●		●	
	35m	●		●		●		
Connection diagram	Transmitter	1	1	1	1	3	3	
	Receiver	2	2	2	2	4	4	

Tables

LS 318...-70-...

0	35	45
---	----	----

LS 318...

0	15	20
---	----	----

<input type="checkbox"/>	Operating range [m]
<input type="checkbox"/>	Typ. operating range limit [m]

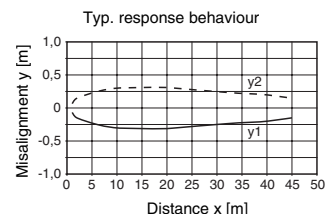
Model with integrated pin or slit diaphragm for detection of small parts or precise positioning tasks on request.

Slit diaphragm	Operating range
0.5mmx9mm	2.4m
1.0mmx9mm	4.0m
2mmx9mm	6.5m

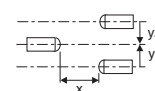
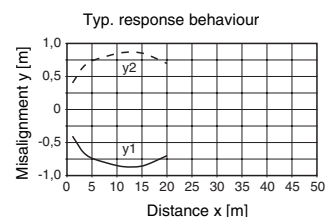
Pin diaphragm	Operating range
Ø 1.0mm	0.45m
Ø 1.5mm	1.05m
Ø 2.0mm	2.15m

Diagrams

LS 318...-70...



LS 318...



Remarks

- For versions with PNP transistor output see separate data sheet.



LS 318 W

Throughbeam photoelectric sensors



0 ... 13m



- Throughbeam photoelectric sensors with long operating range in infrared light and angle optics
- Robust cylindrical stainless steel or plastic housing M18x1, protection class IP 67 for industrial application
- Activation input for testing and interlinking
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces



We reserve the right to make changes • 318_a02e.fm

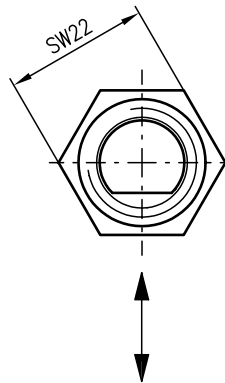
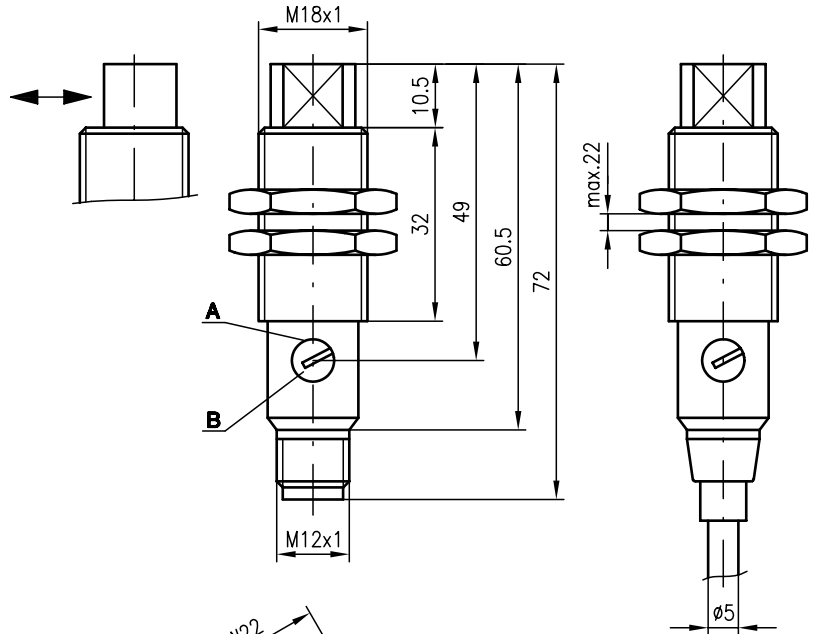
Accessories:

(available separately • see page 44)

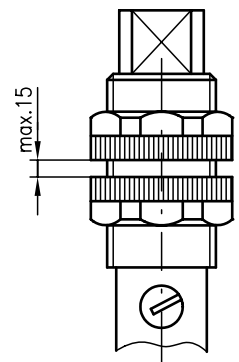
- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)

Dimensioned drawing

LS 318WM/...

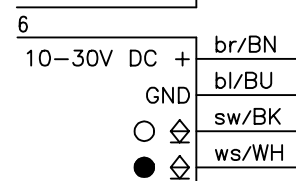
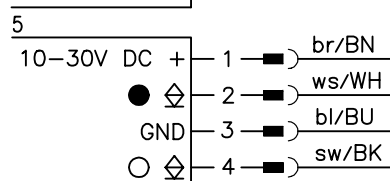
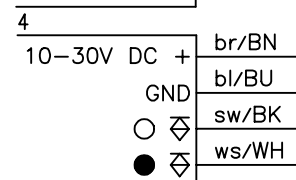
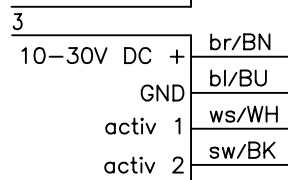
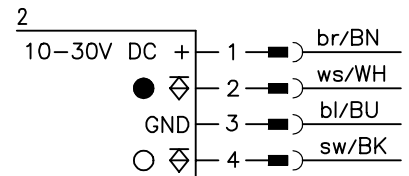
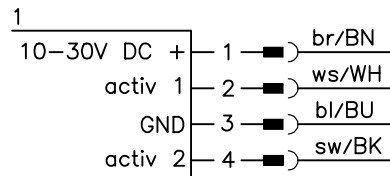


LS 318WK/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection





Specifications

Optical data

Typ. operating range limit ¹⁾	0 ... 13m
Operating range ²⁾	0 ... 10m
Light source	LED (modulated light)
Wavelength	880nm

Timing

Switching frequency	1000Hz
Response time	0.5ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 25mA
Switching output	2 transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	≥ ($U_B - 1.6V$) / ≤ 1.6V
Output current	max. 100mA
Sensitivity	adjustable

Indicators

LED red	light path free
LED red flashing	light path free, no performance reserve

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	polyamide 12
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +65°C / -40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

Options

Activation input activ 1	
Transmitter active/not active	≥ 8V or not connected / ≤ 1.5V
Activation input activ 2	
Transmitter active/not active	≤ 1.5V or not connected / ≥ 8V

- 1) Typ. operating range limit: max. attainable range without performance reserve
- 2) Operating range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Tables

0	10	13
---	----	----

- Operating range [m]
- Typ. operating range limit [m]

Diagrams

Order guide

Selection table		Order code →						
Equipment ↓		LS 318WK/P-S12 Part No. 500 82153 (Tr) Part No. 500 82157 (Re)	LS 318WM/P-S12 Part No. 500 82154 (Tr) Part No. 500 82158 (Re)	LS 318WM/P Part No. 500 82152 (Tr) Part No. 500 82156 (Re)	LS 318WK/N-S12 Part No. 500 82153 (Tr) Part No. 500 83232 (Re)	LS 318WM/N Part No. 500 82152 (Tr) Part No. 500 83246 (Re)		
Housing	plastic	●				●		
	stainless steel		●	●		●		
Connection	M12 connector	●	●		●	●		
	cable			●		●		
Switching output	PNP	●	●	●				
	NPN				●	●		
Connection diagram	Transmitter	1	1	3	1	3		
	Receiver	2	2	4	5	6		

Remarks



LSL 318

Laser throughbeam photoelectric sensors



0 ... 18m
0 ... 120m



- Throughbeam photoelectric sensors with long operating range in red laser light and straight optics
- Robust cylindrical stainless steel or plastic housing M18x1, protection class IP 67 for industrial application
- Fixed beam geometry, convergent
- High switching frequency
- Activation input for testing and interlinking
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces



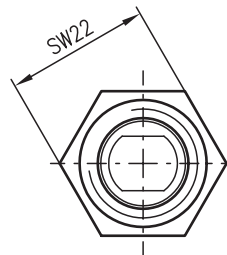
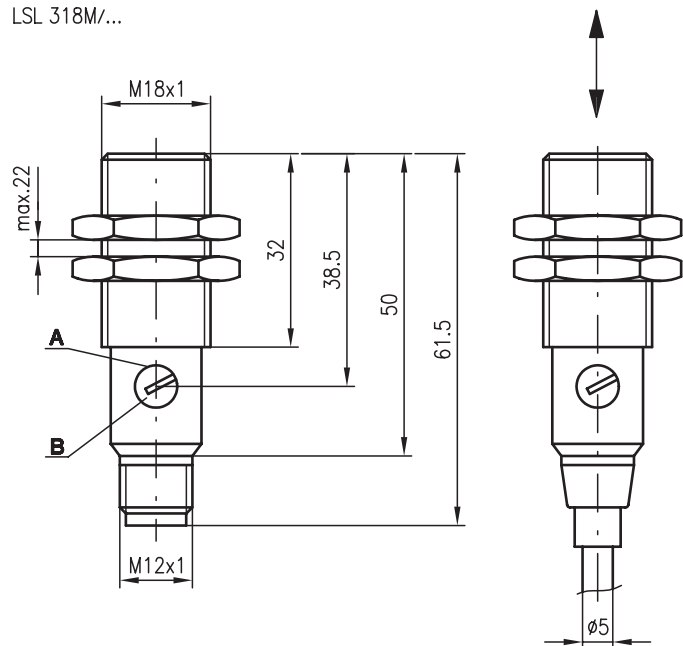
Accessories:

(available separately • see page 44)

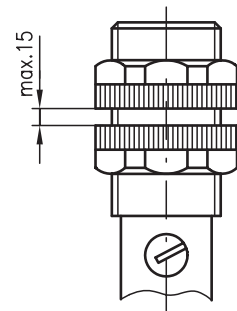
- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)

Dimensioned drawing

LSL 318M/...

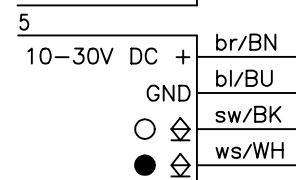
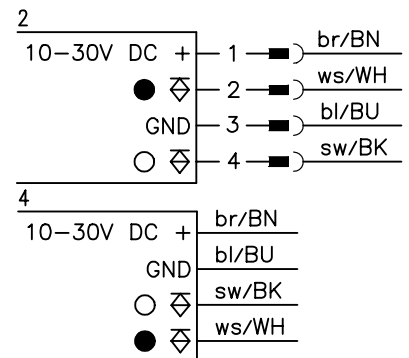
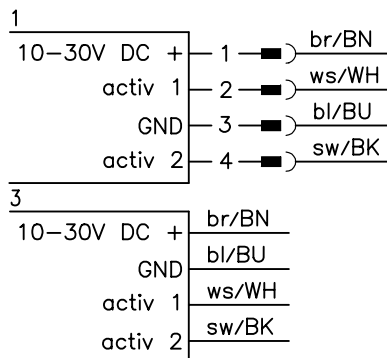


LSL 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_a05e.fm



Specifications

Optical data

Typ. operating range limit ¹⁾	0 ... 18m, 0 ... 120m
Operating range ²⁾	0 ... 15m, 0 ... 100m
Light spot diameter	see diagrams
Light source	laser
Wavelength	650nm (visible red light)

Timing

Switching frequency	5000Hz
Response time	0.1ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 30mA
Switching output	2 transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	≥ ($U_B - 1.6V$) / ≤ 1.6V
Output current	max. 100mA
Sensitivity	adjustable (transmitter)

Indicators

LED red	light path free
LED red flashing	light path free, no performance reserve

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	polyamide 12
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +60°C / -40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
Laser class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

Options

Activation input activ 1	
Transmitter active/not active	≥ 8V or not connected / ≤ 1.5V
Activation input activ 2	
Transmitter active/not active	≤ 1.5V or not connected / ≥ 8V

- 1) Typ. operating range limit: max. attainable range without performance reserve
- 2) Operating range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Tables

LSL 318...		
0	100	120

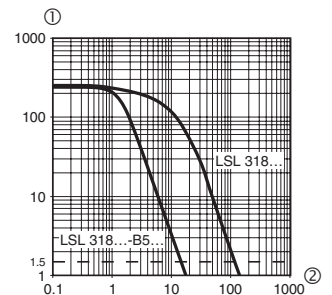
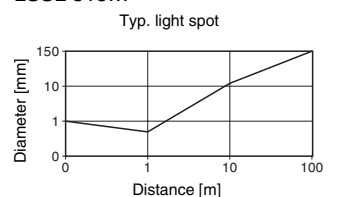
LSL 318...-B5...		
0	15	18

Operating range [m]
 Typ. operating range limit [m]

Versions LSL 318...-B5... :
 with integrated optical pin diaphragm Ø 1.0mm for the detection of small parts or precise positioning tasks.

Diagrams

LSSL 318...



Typical behaviour operating range / relative intensity of received light

- ① Relative intensity of received light
- ② Operating range in [m]

Order guide

Selection table		Order code →									
		LSL 318K/P-S12 Part No. 500 83170 (Tr) Part No. 500 83174 (Re)	LSL 318K/P-B5-S12 Part No. 500 83170 (Tr) Part No. 500 83178 (Re)	LSL 318M/P-S12 Part No. 500 83172 (Tr) Part No. 500 83176 (Re)	LSL 318M/P-B5-S12 Part No. 500 83172 (Tr) Part No. 500 83180 (Re)	LSL 318K/P Part No. 500 83169 (Tr) Part No. 500 83173 (Re)	LSL 318K/P-B5 Part No. 500 83169 (Tr) Part No. 500 83177 (Re)	LSL 318M/P Part No. 500 83171 (Tr) Part No. 500 83175 (Re)	LSL 318M/P-B5 Part No. 500 83171 (Tr) Part No. 500 83179 (Re)	LSL 318K/N Part No. 500 83169 (Tr) Part No. 500 83247 (Re)	
Equipment ↓	Housing	●	●	●	●	●	●	●	●	●	●
	Connection	●	●	●	●	●	●	●	●	●	●
Switching output	PNP	●	●	●	●	●	●	●	●	●	●
	NPN										●
Operating range	15m		●		●		●		●		
	100m	●		●		●		●		●	
Connection diagram	Transmitter	1	1	1	1	3	3	3	3	3	3
	Receiver	2	2	2	2	4	4	4	4	5	5

Remarks

- Further versions with NPN transistor output on request.

LASER LIGHT DO NOT STARE INTO BEAM	
Maximum Output:	0.3mW
Pulse duration:	2µs
Wavelength:	650nm
LASER CLASS 1 DIN EN60825-1:2003-10 Complies with 21 CFR 1040.10 except for deviations acc. to laser notice No. 50, July 2001	



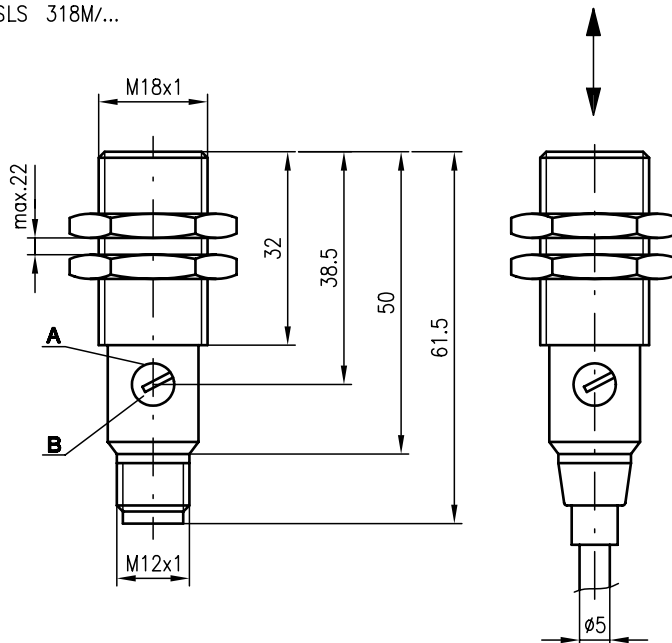
SLS 318

Protective throughbeam photoelectric sensors

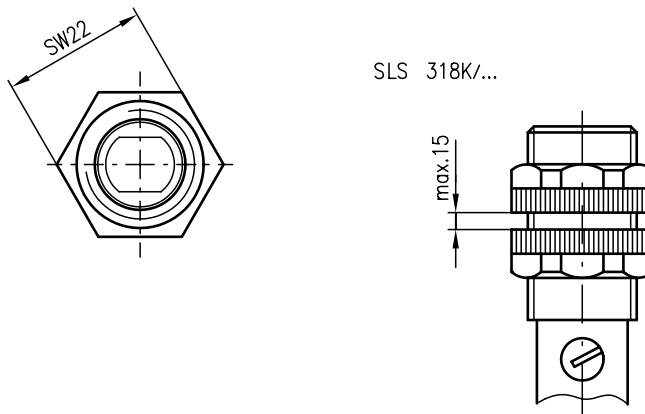


Dimensioned drawing

SLS 318M/...

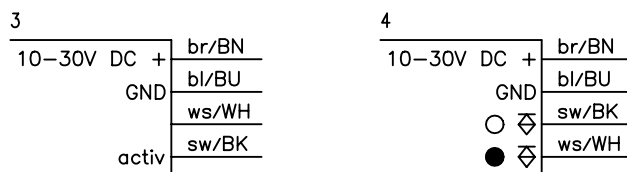
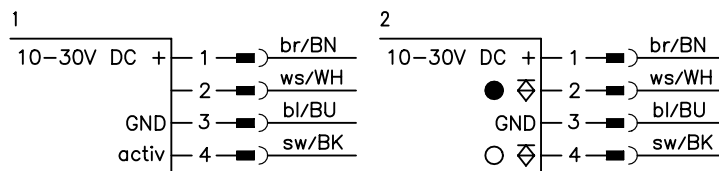


SLS 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



0 ... 12m



- Protective throughbeam photoelectric sensors with high performance reserve in visible red light and straight optics
- Robust cylindrical stainless steel or plastic housing M18x1, protection class IP 67 for industrial application
- Activation input for testing and interlinking
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces
- LED indicator in transmitter and receiver



Accessories:

(available separately • see page 44)

- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Test-monitoring unit: - available only from Leuze lumiflex

We reserve the right to make changes • 318_a03e.fm



Specifications

Optical data

Typ. operating range limit ¹⁾	0 ... 12m
Operating range ²⁾	0 ... 10m
Light source	LED (modulated light)
Wavelength	660nm

Timing

Switching frequency (sensor)	1000Hz
Response time (sensor)	0.5ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 25mA
Switching output	2 transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	≥ ($U_B - 1.6V$) / ≤ 1.6V
Output current	max. 100mA
Sensitivity	adjustable

Indicators

Receiver

LED red	light path free
LED red flashing	light path free, no performance reserve

Transmitter

LED red	transmitter ON
---------	----------------

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	polyamide 12
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +65°C / -40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

Options

Activation input activ	
Transmitter active/not active	≥ 8V / ≤ 1.5V or not connected

1) Typ. operating range limit: max. range without performance reserve

2) Operating range: recommended range with performance reserve

3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking

4) Rating voltage 250VAC

Order guide

Selection table		Order code →			
Equipment ↓		SLS 318K/P-S12 Part No. 500 83116 (Tr) Part No. 500 83117 (Re)	SLS 318M/P-S12 Part No. 500 82199 (Tr) Part No. 500 82200 (Re)	SLS 318K/P Part No. 500 83132 (Tr) Part No. 500 83133 (Re)	SLS 318M/P Part No. 500 83135 (Tr) Part No. 500 83136 (Re)
Housing	plastic	●		●	
	stainless steel		●		●
Connection	M12 connector	●	●		
	cable			●	●
Switching output	PNP	●	●	●	●
	NPN				
Connection diagram	Transmitter	1	1	3	3
	Receiver	2	2	4	4

Tables

SLS 318...

0	10	12
---	----	----

<input type="checkbox"/>	Operating range [m]
<input type="checkbox"/>	Typ. operating range limit [m]

Diagrams

Remarks

- The protective through-beam photoelectric sensor is a contactless active protective device only in connection with a safety-relevant control system, in which the cyclical testing of transmitter and receiver is carried out according to EN 61496-1, category 2 (testing).
- The power supply unit used to operate the photoelectric sensor has to be able to compensate for changes and interruptions of the supply voltage acc. to EN 61496-1. Minimum blackening object: Ø 13mm.



RK 318

Retro-reflective photoelectric sensors



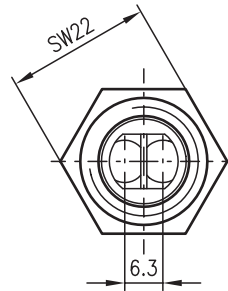
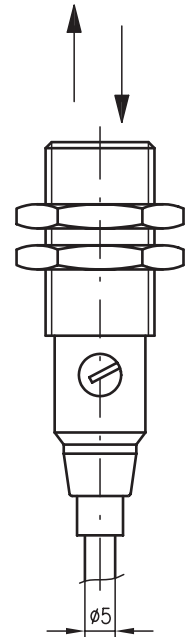
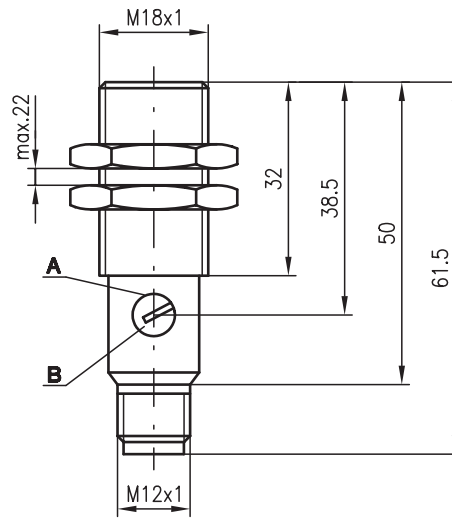
0.02 ... 6.0m



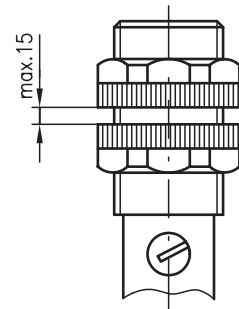
- Retro-reflective photoelectric sensors with straight optics using infrared light
- Robust cylindrical stainless steel or plastic housing M18x1, protection class IP 67 for industrial application
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces

Dimensioned drawing

RK 318M/...

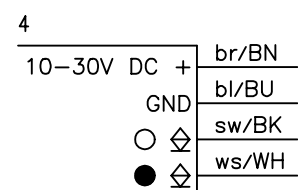
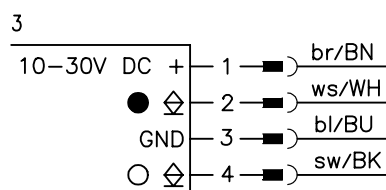
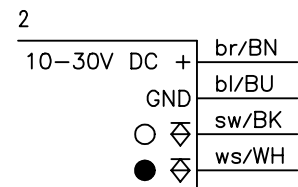
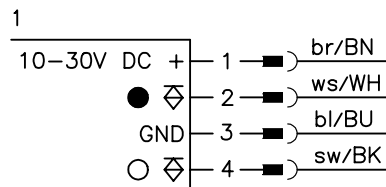


RK 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



Accessories:

(available separately • see page 44)

- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Reflectors
- Reflective tape

We reserve the right to make changes • 318_b03e.fm

Specifications

Optical data

Typ. operating range limit (TK(S) 100x100) ¹⁾	0.02 ... 6.0m
Operating range ²⁾	see tables
Light source	LED (modulated light)
Wavelength	950nm

Timing

Switching frequency	1000Hz
Response time	0.5ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 15mA
Switching output	2 transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	≥ ($U_B - 1.6V$) / ≤ 1.6V
Output current	max. 100mA
Sensitivity	adjustable

Indicators

LED red	light path free
LED red flashing	light path free, no performance reserve

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	polyamide 12
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +65°C / -40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

- 1) Typ. operating range limit: max. attainable range without performance reserve
 2) Operating range: recommended range with performance reserve
 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
 4) Rating voltage 250VAC

Order guide

Selection table		Order code →							
Equipment ↓		RK 318K/P-S12 Part No. 500 81343	RK 318K/P Part No. 500 81344	RK 318M/P-S12 Part No. 500 81345	RK 318M/P Part No. 500 81346	RK 318K/N-S12 Part No. 500 82142	RK 318K/N Part No. 500 83162	RK 318M/N-S12 Part No. 500 82143	RK 318M/N Part No. 500 83234
Housing	plastic	●	●			●	●		
	stainless steel			●	●			●	●
Connection	M12 connector	●		●		●		●	
	cable		●		●		●		●
Switching output	PNP	●	●	●	●			●	●
	NPN					●	●	●	●
Connection diagram		1	2	1	2	3	4	3	4

Tables

Reflectors			Operating range	
1	TK(S)	100x100	0.03 ... 4.6m	
2	MTK(S)	50x50	0.02 ... 4.0m	
3	TK(S)	30x50	0.03 ... 2.2m	
4	TK(S)	20x40	0.06 ... 1.9m	
5	Tape 2	100x100	0.15 ... 2.5m	

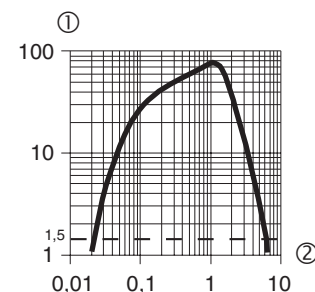
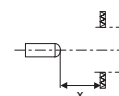
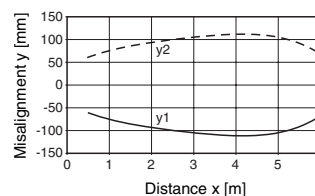
1	0,03		4,6	6,0
2	0,02		4,0	5,4
3	0,03	2,2	3,2	
4	0,06	1,9	2,9	
5	0,15	2,5	3,5	

- Operating range [m]
 ▒ Typ. operating range limit [m]

- TK ... = adhesive
 TKS ... = screw type
 Tape 2 = adhesive

Diagrams

Typ. response behaviour (TK 100x100)



Typical behaviour reflector distance / relative intensity of received light (with reflector TK(S) 100x100)

- ① Relative intensity of received light
 ② Reflector distance in [m]

Remarks



RK 318 W

Retro-reflective photoelectric sensors

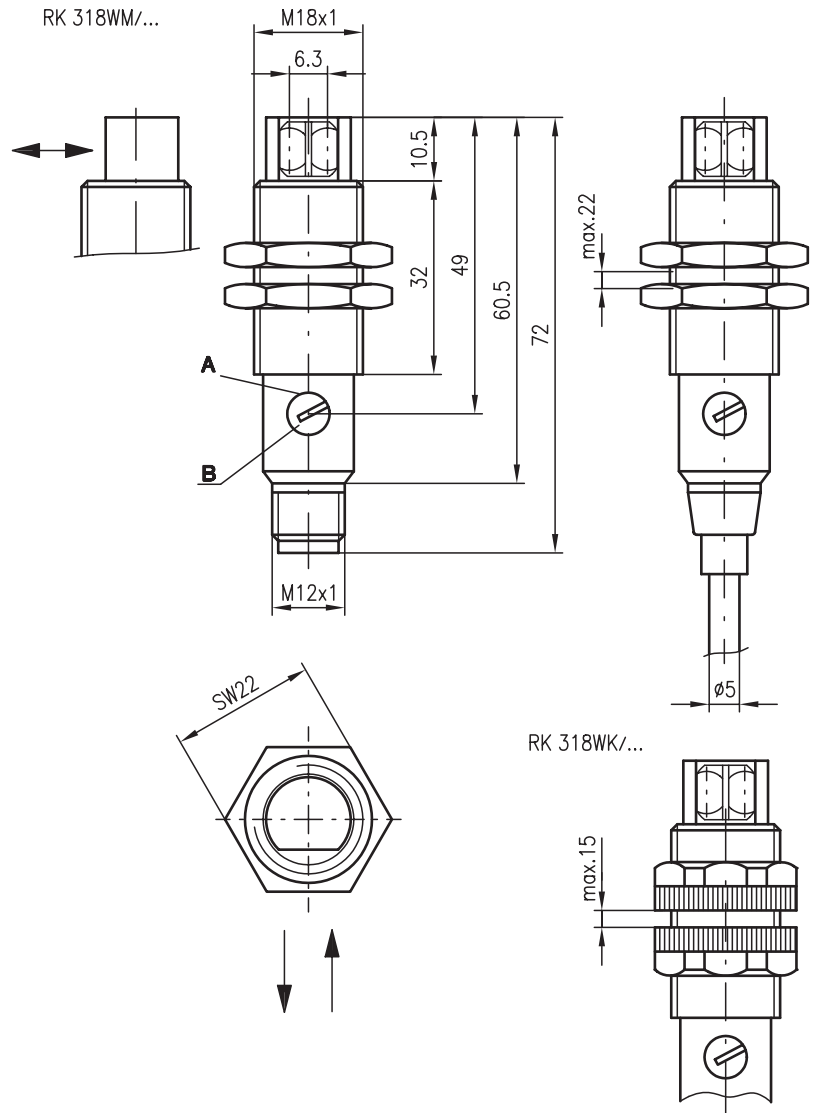


0.03 ... 4.8m



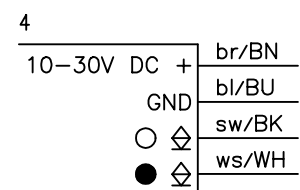
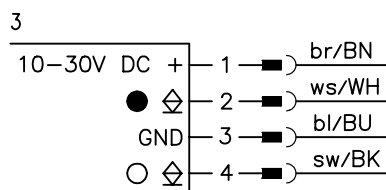
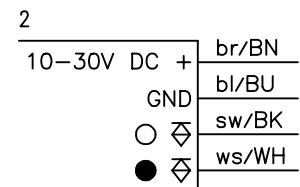
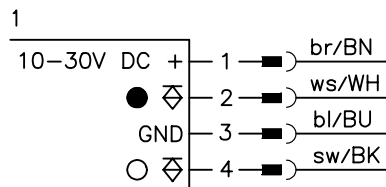
- Retro-reflective photoelectric sensors with angle optics using infrared light
- Robust cylindrical stainless steel or plastic housing M18x1, protection class IP 67 for industrial application
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces

Dimensioned drawing



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_b04e.fm



Accessories:

(available separately • see page 44)

- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Reflectors
- Reflective tape



Specifications

Optical data

Typ. operating range limit (TK(S) 100x100) ¹⁾ 0.03 ... 4.8m
 Operating range ²⁾ see tables
 Light source LED (modulated light)
 Wavelength 950nm

Timing

Switching frequency 1000Hz
 Response time 0.5ms
 Delay before start-up ≤ 30ms

Electrical data

Operating voltage U_B 10 ... 30VDC
 Residual ripple ≤ 10% of U_B
 Bias current ≤ 15mA
 Switching output 2 transistor outputs, complementary
 Function characteristics light/dark switching
 Signal voltage high/low ≥ (U_B-1.6V)/≤ 1.6V
 Output current max. 100mA
 Sensitivity adjustable

Indicators

LED red light path free
 LED red flashing light path free, no performance reserve

Mechanical data

Housing polyamide 12 or stainless steel
 Optics cover polyamide 12
 Weight 90g (cable), 20g (M12)
 Connection type M12 connector, 4-pin
 cable 2m, 4x0.25mm²

Environmental data

Ambient temp. (operation/storage) -25°C ... +65°C/-40°C ... +70°C
 Protective circuit ³⁾ 1, 2, 3, 4
 VDE safety class ⁴⁾ II, all-insulated
 Protection class IP 67
 LED class 1 (acc. to EN 60825-1)
 Standards applied IEC 60947-5-2

- 1) Typ. operating range limit: max. attainable range without performance reserve
- 2) Operating range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Tables

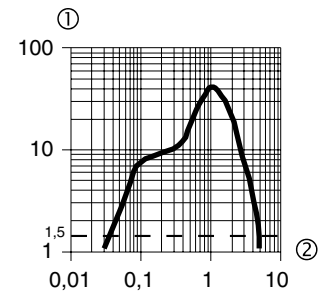
Reflectors			Operating range
1	TK(S)	100x100	0.05 ... 3.7m
2	MTK(S)	50x50	0.05 ... 3.2m
3	TK(S)	30x50	0.05 ... 1.8m
4	TK(S)	20x40	0.24 ... 1.5m
5	Tape 2	100x100	0.36 ... 2.0m

1	0,05		3,7	4,8
2	0,05		3,2	4,3
3	0,05	1,8	2,6	
4	0,24	1,5	2,3	
5	0,36	2,0	2,8	

- Operating range [m]
- Typ. operating range limit [m]

- TK ... = adhesive
- TKS ... = screw type
- Tape 2 = adhesive

Diagrams



Typical behaviour reflector distance / relative intensity of received light
 (with reflector TK(S) 100x100)

- ① Relative intensity of received light
- ② Reflector distance in [m]

Order guide

Selection table		Order code →							
Equipment ↓		RK 318WK/P-S12 Part No. 500 82161	RK 318WK/P Part No. 500 82159	RK 318WK/N-S12 Part No. 500 82185	RK 318WK/N Part No. 500 82186				
Housing	plastic	●	●	●	●				
	stainless steel								
Connection	M12 connector	●		●					
	cable		●		●				
Switching output	PNP	●	●						
	NPN			●	●				
Connection diagram		1	2	3	4				

Remarks



PRK 318

Retro-reflective photoelectric sensors with polarisation filter



0.02 ... 6.0m



- Polarised retro-reflective photoelectric sensors with straight optics using visible red light
- Robust cylindrical stainless steel or plastic housing M18x1, protection class IP 67 for industrial application
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces



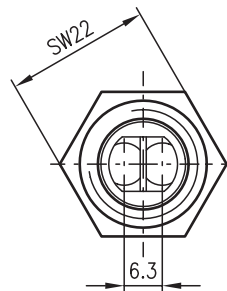
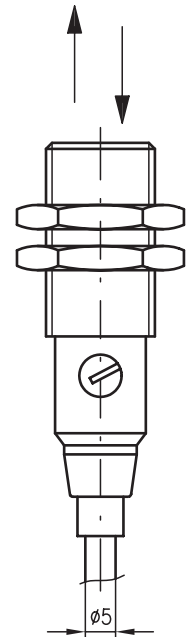
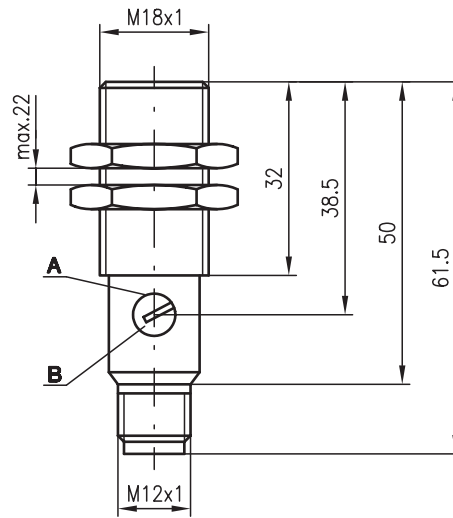
Accessories:

(available separately • see page 44)

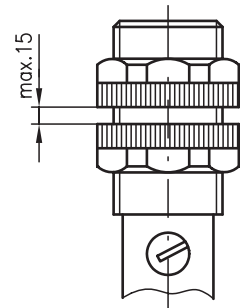
- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Reflectors
- Reflective tape

Dimensioned drawing

PRK 318M/...

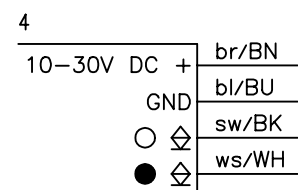
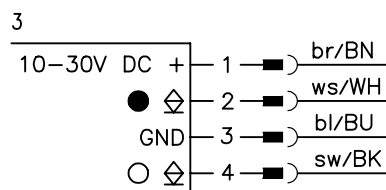
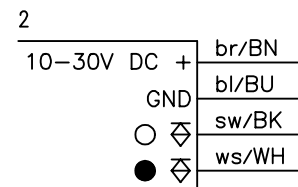
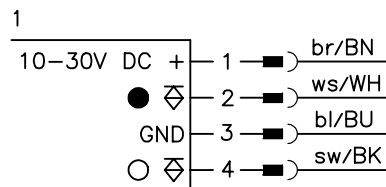


PRK 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_b01e.fm

Specifications

Optical data

Typ. operating range limit (TK(S) 100x100) ¹⁾	0.02 ... 6.0m
Operating range ²⁾	see tables
Light source	LED (modulated light)
Wavelength	660nm (visible red light, polarised)

Timing

Switching frequency	1000Hz
Response time	0.5ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 15mA
Switching output	2 transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	≥ ($U_B - 1.6V$) / ≤ 1.6V
Output current	max. 100mA
Sensitivity	adjustable

Indicators

LED red	light path free
LED red flashing	light path free, no performance reserve

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	acrylic
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +65°C / -40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

- 1) Typ. operating range limit: max. attainable range without performance reserve
- 2) Operating range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Order guide

Selection table		Order code →							
Equipment ↓		PRK 318K/P-S12 Part No. 500 81347	PRK 318K/P Part No. 500 81348	PRK 318M/P-S12 Part No. 500 81349	PRK 318M/P Part No. 500 81350	PRK 318N/S12 Part No. 500 83151	PRK 318K/N Part No. 500 82187	PRK 318M/N-S12 Part No. 500 82145	PRK 318M/N Part No. 500 83140
Housing	plastic	●	●			●	●		
	stainless steel			●	●			●	●
Connection	M12 connector	●		●		●		●	
	cable		●		●		●		●
Switching output	PNP	●	●	●	●			●	●
	NPN					●	●	●	●
Connection diagram		1	2	1	2	3	4	3	4

Tables

Reflectors	Operating range
1 TK(S) 100x100	0.03 ... 4.6m
2 MTK(S) 50x50	0.02 ... 3.2m
3 TK(S) 30x50	0.03 ... 2.2m
4 TK(S) 20x40	0.06 ... 1.9m
5 Tape 2 100x100	0.24 ... 2.0m

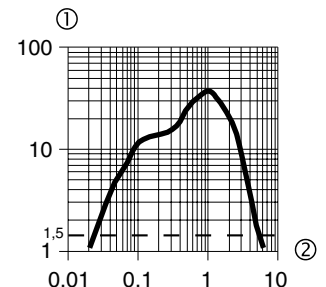
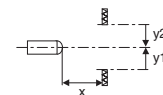
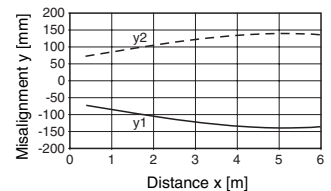
1	0,03		4,6	6,0
2	0,02		3,2	4,6
3	0,03	2,2	3,2	
4	0,06	1,9	2,9	
5	0,24	2,0	3,1	

- Operating range [m]
- Typ. operating range limit [m]

TK ... = adhesive
TKS ... = screw type
Tape 2 = adhesive

Diagrams

Typ. response behaviour (TK 100x100)



Typical behaviour reflector distance / relative intensity of received light (with reflector TK(S) 100x100)

- ① Relative intensity of received light
- ② Reflector distance in [m]

Remarks



PRK 318 W

Retro-reflective photoelectric sensors with polarisation filter



0.03 ... 4.5 m



- Polarised retro-reflective photoelectric sensors with angle optics using visible red light
- Robust cylindrical stainless steel or plastic housing M18x1, protection class IP 67 for industrial application
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces

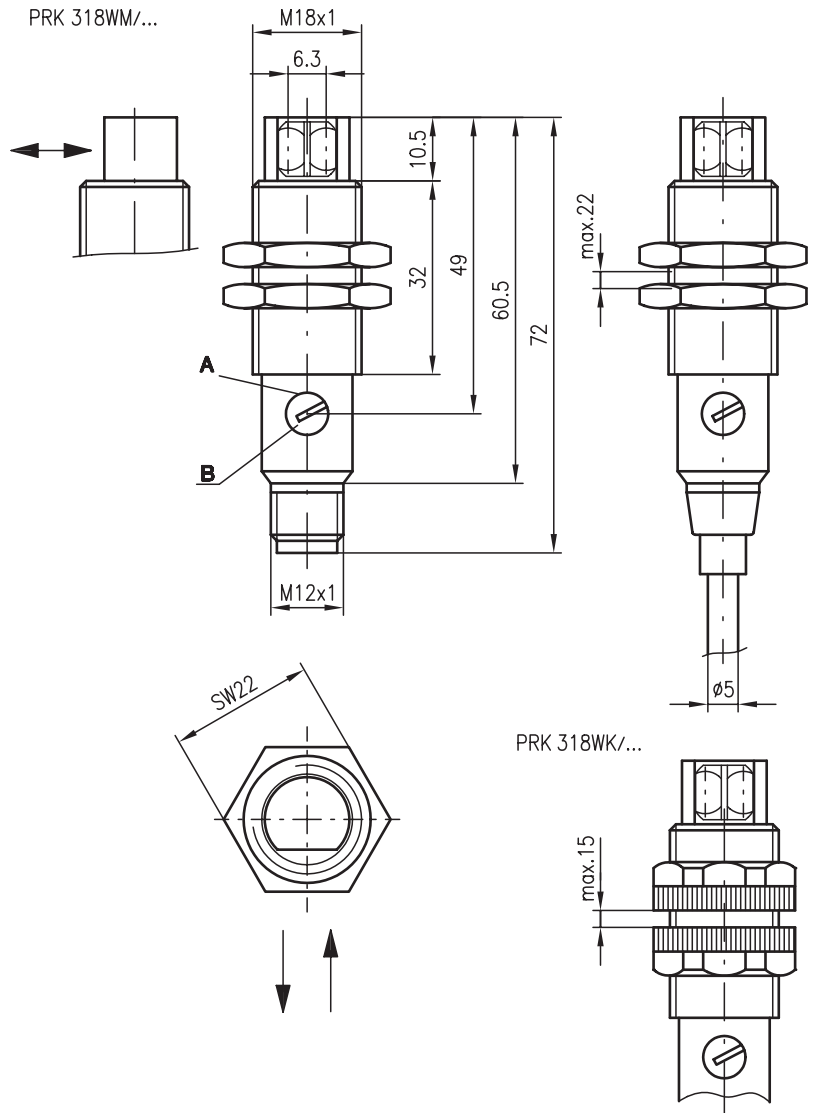


Accessories:

(available separately • see page 44)

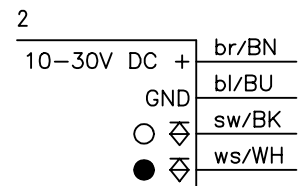
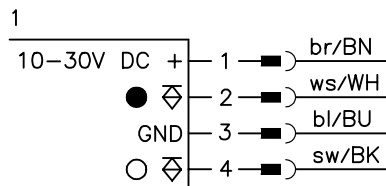
- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Reflectors
- Reflective tape

Dimensioned drawing



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_b02e.fm



Specifications

Optical data

Typ. operating range limit (TK(S) 100x100) ¹⁾ 0.03 ... 4.5m
 Operating range ²⁾ see tables
 Light source LED (modulated light)
 Wavelength 660nm (visible red light, polarised)

Timing

Switching frequency 1000Hz
 Response time 0.5ms
 Delay before start-up ≤ 30ms

Electrical data

Operating voltage U_B 10 ... 30VDC
 Residual ripple ≤ 10% of U_B
 Bias current ≤ 15mA
 Switching output 2 transistor outputs, complementary
 Function characteristics light/dark switching
 Signal voltage high/low ≥ (U_B - 1.6V) / ≤ 1.6V
 Output current max. 100mA
 Sensitivity adjustable

Indicators

LED red light path free
 LED red flashing light path free, no performance reserve

Mechanical data

Housing polyamide 12 or stainless steel
 Optics cover glass
 Weight 95g (cable), 25g (M12)
 Connection type M12 connector, 4-pin
 cable 2m, 4x0.25mm²

Environmental data

Ambient temp. (operation/storage) -25°C ... +65°C / -40°C ... +70°C
 Protective circuit ³⁾ 1, 2, 3, 4
 VDE safety class ⁴⁾ II, all-insulated
 Protection class IP 67
 LED class 1 (acc. to EN 60825-1)
 Standards applied IEC 60947-5-2

- 1) Typ. operating range limit: max. attainable range without performance reserve
- 2) Operating range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Tables

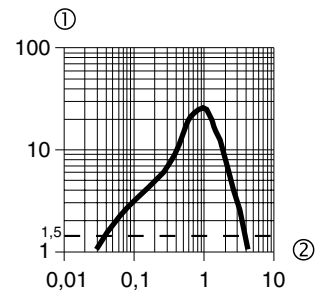
Reflectors			Operating range
1	TK(S)	100x100	0.05 ... 3.5m
2	MTK(S)	50x50	0.05 ... 2.5m
3	TK(S)	30x50	0.05 ... 1.6m
4	TK(S)	20x40	0.20 ... 1.4m
5	Tape 2	100x100	0.30 ... 1.7m

1	0,05		3,5	4,5
2	0,05		2,5	3,5
3	0,05	1,6	2,2	
4	0,20	1,4	2,0	
5	0,30	1,7	2,4	

□ Operating range [m]
 □ Typ. operating range limit [m]

TK ... = adhesive
 TKS ... = screw type
 Tape 2 = adhesive

Diagrams



Typical behaviour reflector distance / relative intensity of received light (with reflector TK(S) 100x100)

- ① Relative intensity of received light
- ② Reflector distance in [m]

Order guide

Selection table		Order code →							
Equipment ↓		PRK 318WK/P-S12 Part No. 500 82165	PRK 318WK/P Part No. 500 82163	PRK 318WMP/S12 Part No. 500 82166	PRK 318WMP Part No. 500 82164				
Housing	plastic	●	●						
	stainless steel			●	●				
Connection	M12 connector	●		●					
	cable		●		●				
Switching output	PNP	●	●	●	●				
	NPN								
Connection diagram		1	2	1	2				

Remarks

- Models with NPN transistor output on request.



PRK 318

Retro-reflective photoelectric sensors with polarisation filter



0.1 ... 3.4m

10 - 30 V
DC

- Polarised retro-reflective photoelectric sensors for reliable detection of transparent objects (e.g. glass, PE, foil). The sensor uses visible red light and comes with straight optics
- Robust cylindrical stainless steel or plastic housing M18x1, protection class IP 67 for industrial application
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces



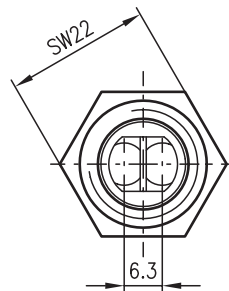
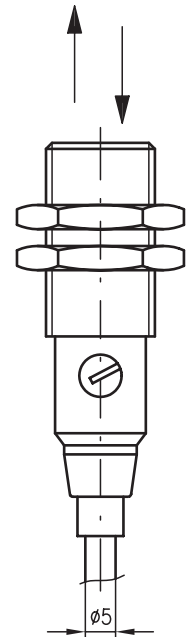
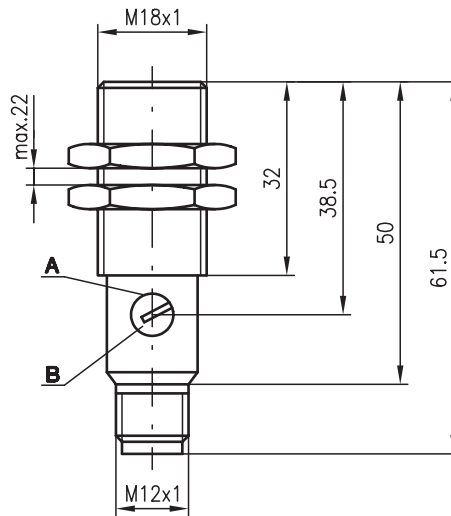
Accessories:

(available separately • see page 44)

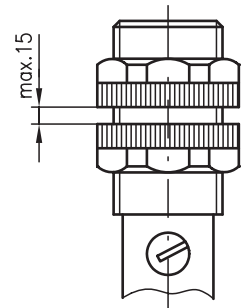
- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Reflectors
- Reflective tape

Dimensioned drawing

PRK 318M/...

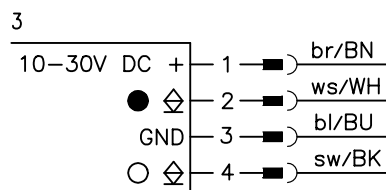
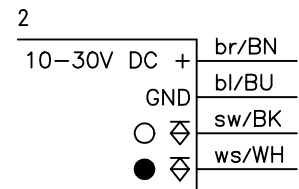
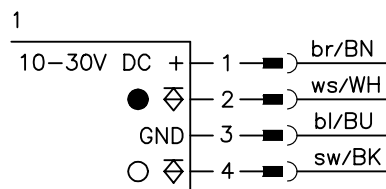


PRK 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_b05e.fm

Specifications

Optical data

Typ. operating range limit (TK(S) 100x100) ¹⁾	0.1 ... 3.4m
Operating range ²⁾	see tables
Light source	LED (modulated light)
Wavelength	660nm (visible red light, polarised)

Timing

Switching frequency	1000Hz
Response time	0.5ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 15mA
Switching output	2 transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	≥ ($U_B - 1.6V$) / ≤ 1.6V
Output current	max. 100mA
Sensitivity	adjustable

Indicators

LED red	light path free
LED red flashing	light path free for detection of transparent objects

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	acrylic
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +65°C / -40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

- 1) Typ. operating range limit: max. attainable range without performance reserve
 2) Operating range: recommended range with performance reserve
 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
 4) Rating voltage 250VAC

Tables

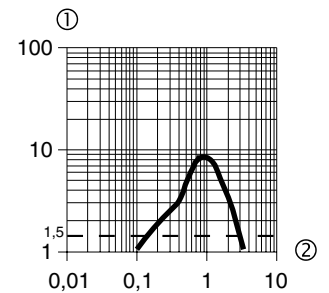
Reflectors			Operating range
1	TK(S)	100x100	0.15 ... 2.8m
2	MTK(S)	50x50	0.10 ... 1.6m
3	TK(S)	30x50	0.10 ... 1.2m
4	TK(S)	20x40	0.10 ... 1.0m
5	Tape 2	100x100	0.20 ... 1.2m

1	0,15		2,8	3,4
2	0,10		1,6	2,3
3	0,10	1,2	1,5	
4	0,10	1,0	1,3	
5	0,20	1,2	1,6	

- Operating range [m]
 Typ. operating range limit [m]

- TK ... = adhesive
 TKS ... = screw type
 Tape 2 = adhesive

Diagrams



Typical behaviour reflector distance / relative intensity of received light
 (with reflector TK(S) 100x100)

- ① Relative intensity of received light
 ② Reflector distance in [m]

Order guide

Selection table		Order code →							
Equipment ↓		PRK 318K/P-40-S12 Part No. 500 82191	PRK 318K/P-40 Part No. 500 82192	PRK 318M/P-40-S12 Part No. 500 82193	PRK 318M/P-40 Part No. 500 82194	PRK 318K/N-40-S12 Part No. 500 83121			
Housing	plastic	●	●						
	stainless steel			●	●				
Connection	M12 connector	●		●		●			
	cable		●		●				
Switching output	PNP	●	●	●	●				
	NPN					●			
Connection diagram		1	2	1	2	3			

Remarks

- Further versions with NPN transistor output on request.
- Reducing the sensitivity setting to the point where the LED starts flashing provides for the most reliable detection of transparent objects. In this operating state, the sensor reliably detects window glass brought into the light beam.



PRKL 318 Laser retro-reflective photoelectric sensors with polarisation filter



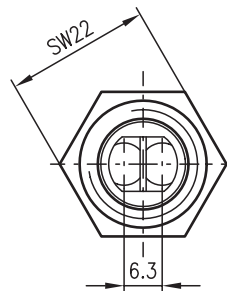
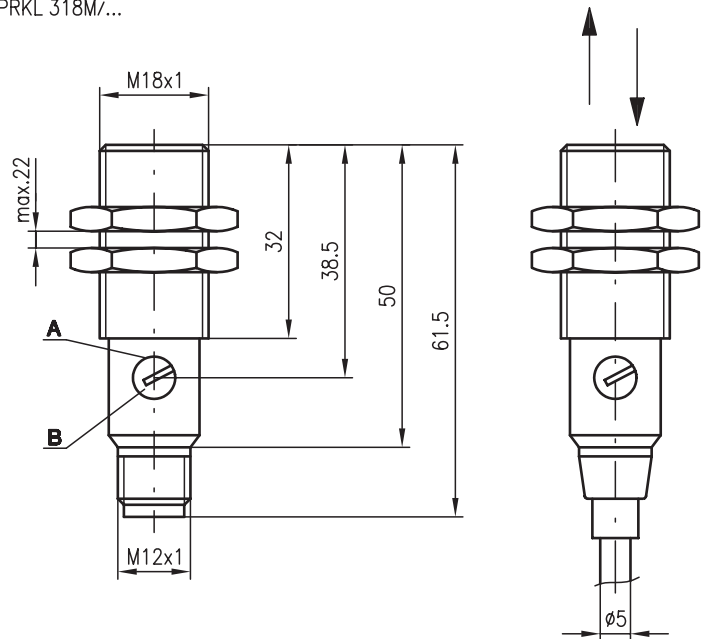
0.10 ... 15m



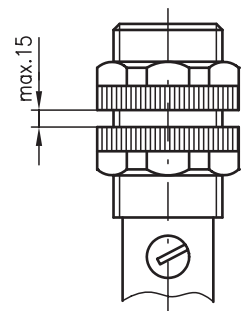
- Polarised retro-reflective photoelectric sensors with red laser light and straight optics
- Robust cylindrical stainless steel or plastic housing M18x1, protection class IP 67 for industrial application
- Fixed beam geometry, convergent
- High switching frequency
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces

Dimensioned drawing

PRKL 318M/...

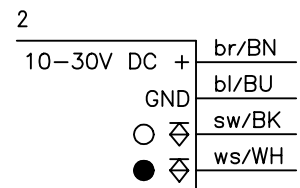
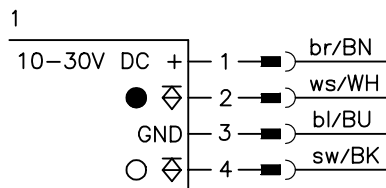


PRKL 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection

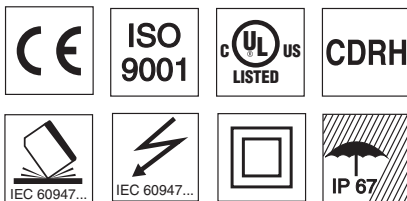


Accessories:

(available separately • see page 44)

- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Reflectors
- Reflective tape

We reserve the right to make changes • 318_b08gb.fm





Specifications

Optical data

Typ. operating range limit (MTK(S) 50x50) ¹⁾	0.10 ... 15.0m
Operating range ²⁾	see tables
Light spot diameter	see diagrams
Light source	laser
Wavelength	650nm (visible red light, polarised)

Timing

Switching frequency	5000Hz
Response time	0.1ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U _B	10 ... 30VDC
Residual ripple	≤ 10% of U _B
Bias current	≤ 20mA
Switching output	2 transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	≥ (U _B -1.6V)/≤ 1.6V
Output current	max. 100mA
Sensitivity	adjustable

Indicators

LED red	light path free
LED red flashing	light path free, no performance reserve

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	acrylic
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +60°C/-40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
Laser class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

- 1) Typ. operating range limit: max. attainable range without performance reserve
- 2) Operating range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Tables

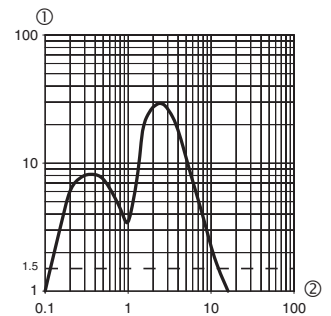
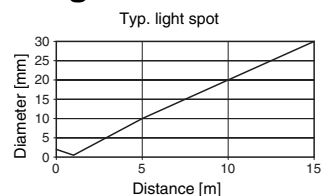
Reflectors			Operating range
1	TK(S) 100x100		0.15 ... 11.0m
2	MTK(S) 50x50		0.12 ... 12.0m
3	TK(S) 30x50		0.15 ... 5.0m
4	TK(S) 20x40		0.20 ... 7.0m
5	Tape 2 100x100		0.15 ... 1.5m

1	0.15		11.0	14.0
2	0.12		12.0	15.0
3	0.15	5.0	6.5	
4	0.20	7.0	8.5	
5	0.15	1.5	2.0	

- Operating range [m]
- Typ. operating range limit [m]

- TK ... = adhesive
- TKS ... = screw type
- Tape 2 = adhesive

Diagrams



Typical behaviour reflector distance / relative intensity of received light
(with reflector MTK(S) 50x50)

- ① Relative intensity of received light
- ② Reflector distance in [m]

Order guide

Selection table		Order code →							
Equipment ↓		PRKL 318K/P-S12 Part No. 500 83182	PRKL 318K/P Part No. 500 83181	PRKL 318M/P-S12 Part No. 500 83184	PRKL 318M/P Part No. 500 83183				
Housing	plastic	●	●						
	stainless steel			●	●				
Connection	M12 connector	●		●					
	cable		●		●				
Switching output	PNP	●	●	●	●				
	NPN								
Connection diagram		1	2	1	2				

Remarks

- Models with NPN transistor output on request.

LASER LIGHT
DO NOT STARE INTO BEAM

Maximum Output:	2.3mW
Pulse duration:	2µs
Wavelength:	650nm

LASER CLASS 1
DIN EN60825-1:2003-10
Complies with 21 CFR
1040.10 except for deviations
acc. to laser notice No. 50, July 2001



RT 318

Energetic diffuse reflection light scanners



0 ... 50mm
0 ... 120mm



- Energetic diffuse reflection light scanner with V-optics for background suppression
- Robust cylindrical metal or plastic housing M18x1, protection class IP 67 for industrial application
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces



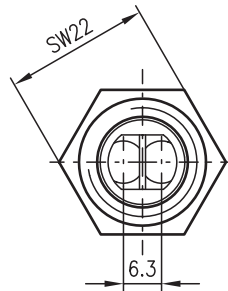
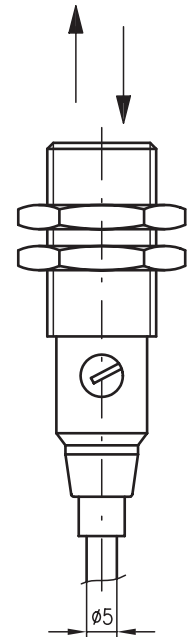
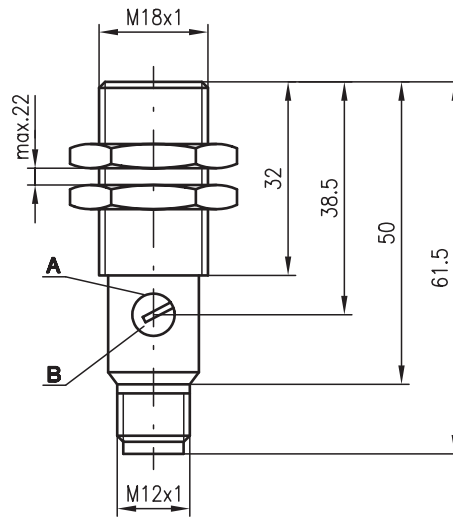
Accessories:

(available separately • see page 44)

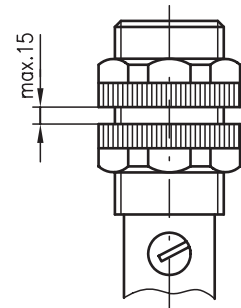
- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)

Dimensioned drawing

RT 318M/...

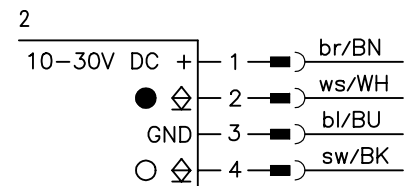
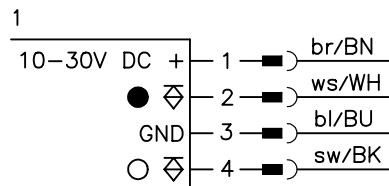


RT 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_c05e.fm

Specifications

Optical data

Typ. scanning range limit (white 90%) ¹⁾	0 ... 50mm, 0 ... 120mm
Scanning range ²⁾	see tables
Adjustment range	30 ... 50mm, 65 ... 120mm
Light source	LED (modulated light)
Wavelength	880nm

Timing

Switching frequency	1000Hz
Response time	0.5ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 15mA
Switching output	2 transistor outputs, complementary light/dark switching
Function characteristics	≥ ($U_B - 1.6V$) / ≤ 1.6V
Signal voltage high/low	max. 100mA
Output current	adjustable
Sensitivity	

Indicators

LED red	reflection
LED red flashing	reflection, no performance reserve

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	polyamide 12
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

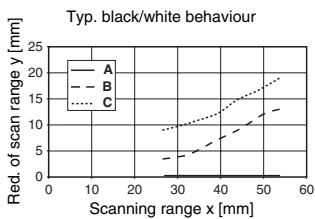
Environmental data

Ambient temp. (operation/storage)	-25°C ... +65°C / -40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

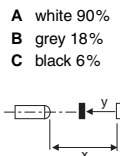
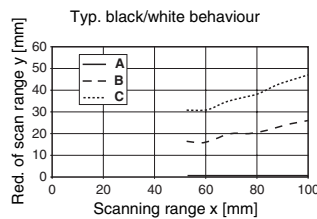
- 1) Typ. scanning range limit: max. attainable range without performance reserve
- 2) Scanning range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Diagrams

RT 318...-50-...



RT 318...-100-...



Order guide

Selection table		Order code →							
Equipment ↓		RT 318K/P-50-S12.11 Part No. 500 83243	RT 318K/P-100-S12.11 Part No. 500 83244	RT 318M/P-50-S12.11 Part No. 500 83248	RT 318M/N-100-S12.11 Part No. 500 83249				
Housing	plastic	●	●						
	stainless steel			●	●				
Scanning range	50mm	●		●					
	100mm		●		●				
Connection	M12 connector	●	●	●	●				
	cable								
Switching output	PNP	●	●	●					
	NPN				●				
Connection diagram		1	1	1	2				

RT 318 ...-50 ... - 01
RT 318 ...-100 ... - 01

Tables

RT 318...-50-...

1	0	45	50
2	2	30	35
3	5	25	30

RT 318...-100-...

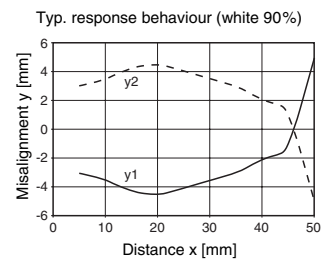
1	0	100	120
2	2	75	85
3	5	55	65

1	white 90%
2	grey 18%
3	black 6%

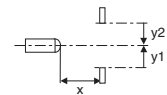
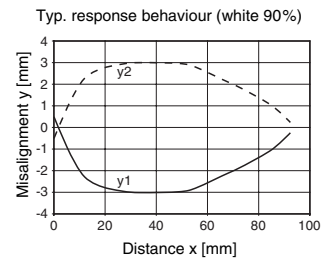
- Scanning range [mm]
- Typ. scanning range limit [mm]

Diagrams

RT 318...-50-...



RT 318...-100-...



Remarks

- With the set scanning range, a tolerance of the upper and lower scanning range limit is possible depending on the reflection properties of the material surface.



RT 318

Energetic diffuse reflection light scanners



0 ... 130mm
0 ... 250mm



- Energetic diffuse reflection light scanner with infrared light and straight optics
- Robust cylindrical metal or plastic housing M18x1, protection class IP 67 for industrial application
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces



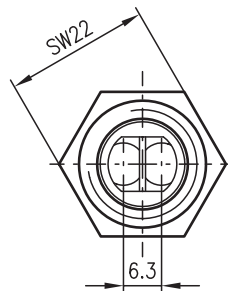
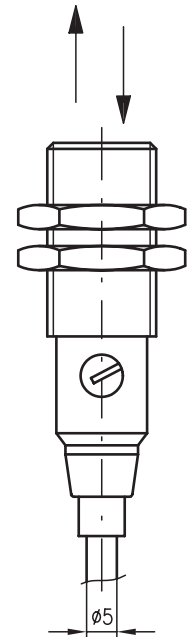
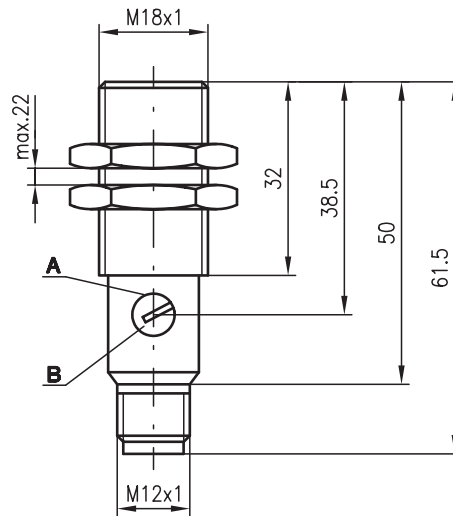
Accessories:

(available separately • see page 44)

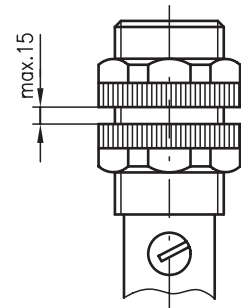
- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)

Dimensioned drawing

RT 318M/...

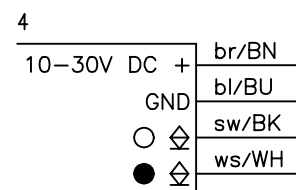
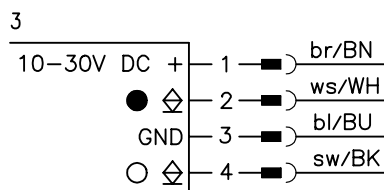
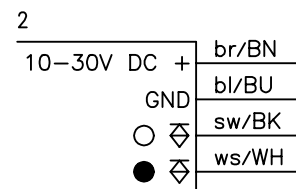
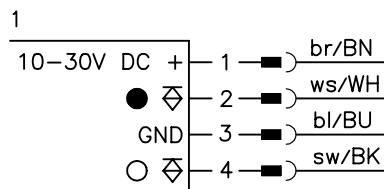


RT 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_c04e.fm

Specifications

Optical data

Typ. scanning range limit (white 90%) ¹⁾	0 ... 130mm, 0 ... 250mm
Scanning range ²⁾	see tables
Adjustment range	30 ... 130mm, 80 ... 250mm
Light source	LED (modulated light)
Wavelength	880nm

Timing

Switching frequency	1000Hz
Response time	0.5ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 15mA
Switching output	2 transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	≥ ($U_B - 1.6V$) / ≤ 1.6V
Output current	max. 100mA
Sensitivity	adjustable

Indicators

LED red	reflection
LED red flashing	reflection, no performance reserve

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	polyamide 12
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +65°C / -40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

- 1) Typ. scanning range limit: max. attainable range without performance reserve
- 2) Scanning range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Tables

RT 318...-100-...

1	0	100	130
2	2	50	65
3	3	30	40

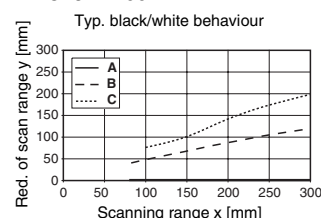
RT 318...-200-...

1	0	200	250
2	2	100	120
3	7	70	80

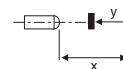
1	white 90%
2	grey 18%
3	black 6%

- Scanning range [mm]
- Typ. scanning range limit [mm]

Diagrams

RT 318...-200-...


- A** white 90%
- B** grey 18%
- C** black 6%



Order guide

Selection table		Order code →													
Equipment ↓		RT 318K/P-100-S12 Part No. 500 83239	RT 318K/P-200-S12 Part No. 500 81355	RT 318M/P-100-S12 Part No. 500 83240	RT 318M/P-200-S12 Part No. 500 81357	RT 318K/P-100 Part No. 500 83168	RT 318K/P-200 Part No. 500 81356	RT 318M/P-100 Part No. 500 83238	RT 318M/P-200 Part No. 500 81358	RT 318K/N-100-S12 Part No. 500 83237	RT 318K/N-200-S12 Part No. 500 82148	RT 318M/N-200-S12 Part No. 500 83102	RT 318K/N-100 Part No. 500 83236	RT 318K/N-200 Part No. 500 83163	
Housing	plastic	●	●			●	●			●	●		●	●	
	stainless steel			●	●			●	●			●			
Scanning range	100mm	●		●		●		●		●			●		
	200mm		●		●		●		●		●	●		●	
Connection	M12 connector	●	●	●	●					●	●	●			
	cable					●	●	●	●				●	●	
Switching output	PNP	●	●	●	●	●	●	●	●						
	NPN									●	●	●	●	●	
Connection diagram		1	1	1	1	2	2	2	2	3	3	3	4	4	

Remarks

- With the set scanning range, a tolerance of the upper and lower scanning range limit is possible depending on the reflection properties of the material surface.
- Models with NPN transistor output on request.



RT 318

Energetic diffuse reflection light scanners



0 ... 500mm
0 ... 700mm



- Energetic diffuse reflection light scanner with infrared light and straight optics
- Robust cylindrical metal or plastic housing M18x1, protection class IP 67 for industrial application
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces



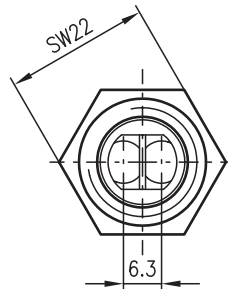
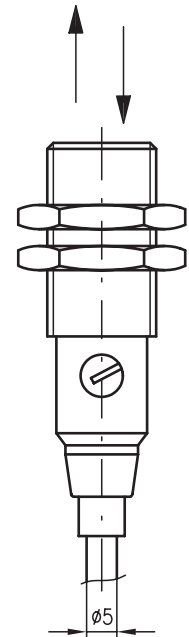
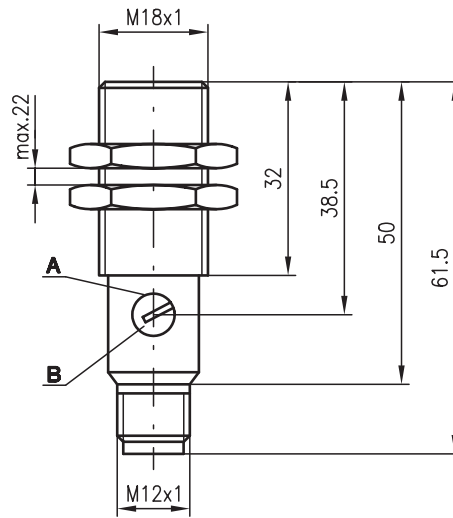
Accessories:

(available separately • see page 44)

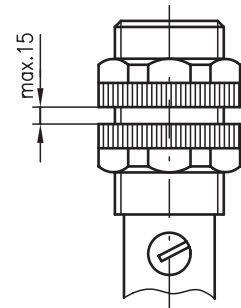
- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)

Dimensioned drawing

RT 318M/...

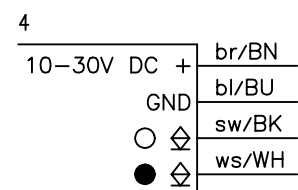
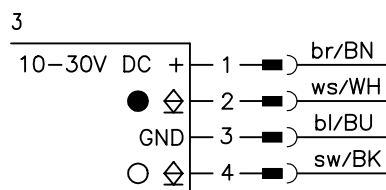
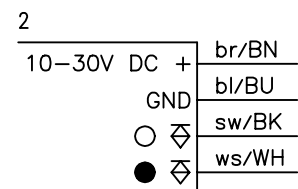
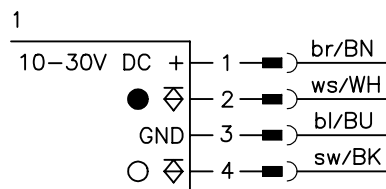


RT 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_c02e.fm

Specifications

Optical data

Typ. scanning range limit (white 90%) ¹⁾	0 ... 500mm, 0 ... 700mm
Scanning range ²⁾	see tables
Adjustment range	170 ... 500mm, 190 ... 700mm
Light source	LED (modulated light)
Wavelength	880nm

Timing

Switching frequency	1000Hz
Response time	0.5ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 15mA
Switching output	2 transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	≥ ($U_B - 1.6V$) / ≤ 1.6V
Output current	max. 100mA
Sensitivity	adjustable

Indicators

LED red	reflection
LED red flashing	reflection, no performance reserve

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	polyamide 12
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +65°C / -40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

- 1) Typ. scanning range limit: max. attainable range without performance reserve
- 2) Scanning range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Tables

RT 318...-400-...

1	0	400	500
2	4	200	240
3	10	125	150

RT 318...-550-...

1	0	550	700
2	7	260	310
3	15	165	190

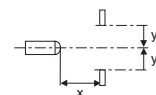
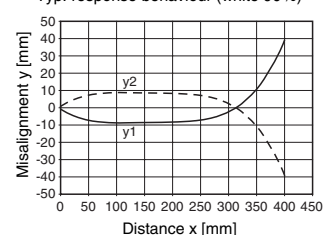
1	white 90%
2	grey 18%
3	black 6%

- Scanning range [mm]
- Typ. scanning range limit [mm]

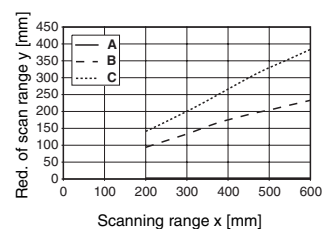
Diagrams

RT 318...-400-...

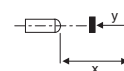
Typ. response behaviour (white 90%)



Typ. black/white behaviour



- A white 90%
- B grey 18%
- C black 6%



Remarks

- With the set scanning range, a tolerance of the upper and lower scanning range limit is possible depending on the reflection properties of the material surface.

Order guide

Selection table		Order code →													
Equipment ↓		RT 318K/P-550-S12 Part No. 500 82175	RT 318K/P-400-S12 Part No. 500 81351	RT 318M/P-550-S12 Part No. 500 82196	RT 318M/P-400-S12 Part No. 500 81353	RT 318K/P-550 Part No. 500 82197	RT 318K/P-400 Part No. 500 81352	RT 318M/P-550 Part No. 500 82198	RT 318M/P-400 Part No. 500 81354	RT 318K/N-550-S12 Part No. 500 83194	RT 318K/N-400-S12 Part No. 500 82146	RT 318M/N-400-S12 Part No. 500 82147	RT 318K/N-400 Part No. 500 83113	RT 318M/N-400 Part No. 500 83112	
Housing	plastic	●	●			●	●			●	●		●		
	stainless steel			●	●			●	●					●	
Scanning range	550mm	●		●		●		●		●					
	400mm		●		●				●		●	●	●	●	
Connection	M12 connector	●	●	●	●					●	●	●			
	cable					●	●	●	●				●	●	
Switching output	PNP	●	●	●	●	●	●	●	●						
	NPN									●	●	●	●	●	
Connection diagram		1	1	1	1	2	2	2	2	3	3	3	4	4	



RT 318 W

Energetic diffuse reflection light scanner

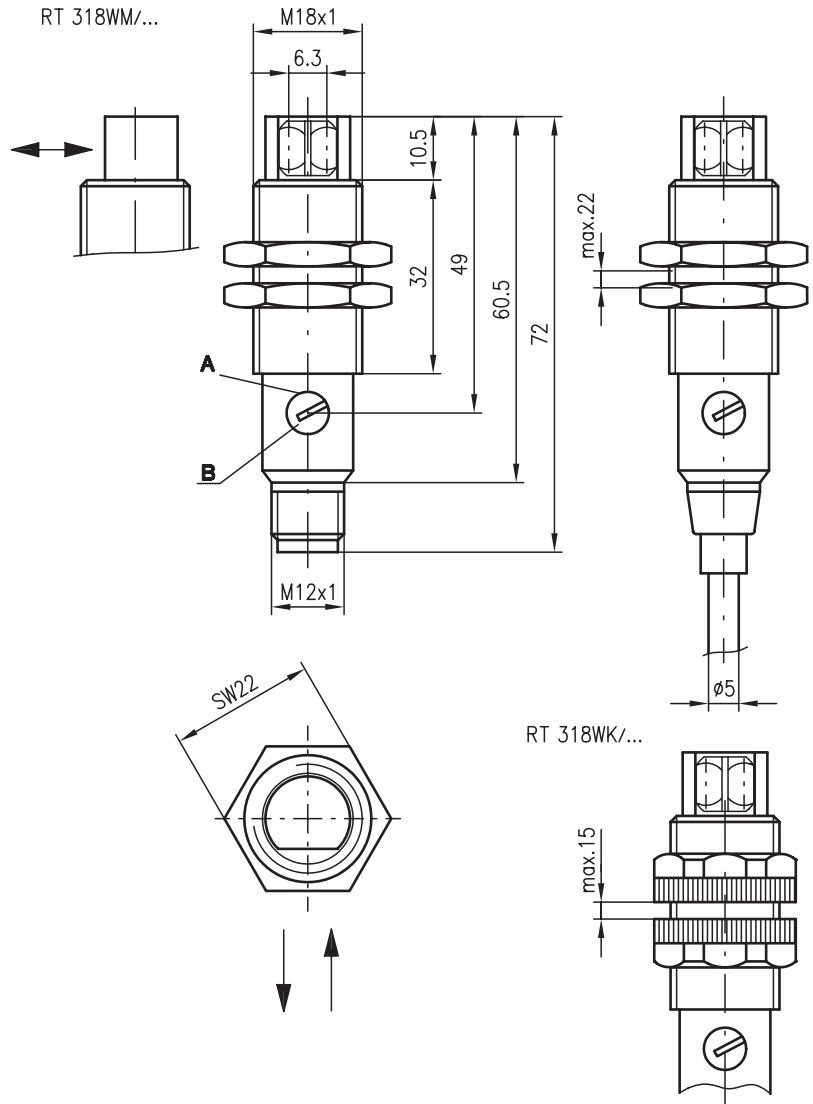


0 ... 130 mm
0 ... 500 mm



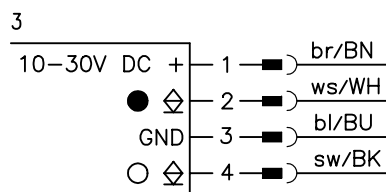
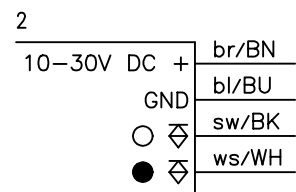
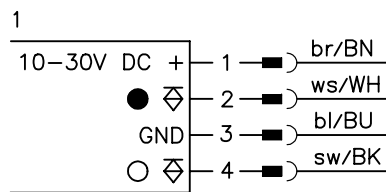
- Energetic diffuse reflection light scanner with infrared light and angle optics
- Robust cylindrical stainless steel or plastic housing M18x1, protection class IP 67 for industrial application
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces

Dimensioned drawing



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_c01e.fm



Accessories:

(available separately • see page 44)

- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)



Specifications

Optical data

Typ. scanning range limit (white 90%) ¹⁾	0 ... 130mm, 0 ... 500mm
Scanning range ²⁾	see tables
Adjustment range	20 ... 130mm, 90 ... 500mm
Light source	LED (modulated light)
Wavelength	880nm

Timing

Switching frequency	1000Hz
Response time	0.5ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 15mA
Switching output	2 transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	≥ ($U_B - 1.6V$)/≤ 1.6V
Output current	max. 100mA
Sensitivity	adjustable

Indicators

LED red	reflection
LED red flashing	reflection, no performance reserve

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	polyamide 12
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +65°C/-40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

- 1) Typ. scanning range limit: max. attainable range without performance reserve
- 2) Scanning range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Tables

RT 318W...-100-...

1	0	100	130
2	2	50	65
3	3	30	40

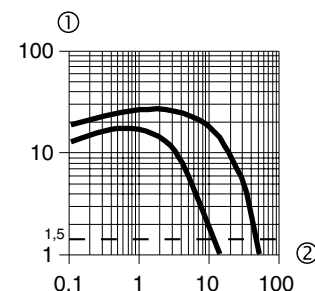
RT 318W...-400-...

1	0	400	500
2	4	200	240
3	6	130	150

1	white 90%
2	grey 18%
3	black 6%

- Scanning range [mm]
- Typ. scanning range limit [mm]

Diagrams



Typical behaviour object distance / relative intensity of received light (with white 90%, 10x10cm)

- ① Relative intensity of received light
- ② Object distance in [cm]

Order guide

Selection table		Order code →					
Equipment ↓		RT 318WK/P-400-S12 Part No. 500 82173	RT 318WK/P-100-S12 Part No. 500 82169	RT 318WK/P-400 Part No. 500 82171	RT 318WK/P-100 Part No. 500 82167	RT 318WM/P-100-S12 Part No. 500 82170	RT 318WK/N-100-S12 Part No. 500 83139
Housing	plastic	●	●	●	●		●
	stainless steel					●	
Scanning range	400mm	●		●		●	
	100mm		●		●	●	●
Connection	M12 connector	●	●			●	●
	cable			●	●		
Switching output	PNP	●	●	●	●	●	
	NPN						●
Connection diagram		1	1	2	2	1	3

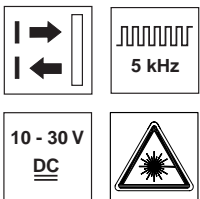
Remarks

- With the set scanning range, a tolerance of the upper and lower scanning range limit is possible depending on the reflection properties of the material surface.
- Further versions with NPN transistor output on request.



RTL 318

Energetic diffuse reflection laser scanner



0 ... 350mm

- Energetic diffuse reflection light scanner with red laser light and straight optics
- Robust cylindrical metal or plastic housing M18x1, protection class IP 67 for industrial application
- Fixed beam geometry, convergent
- High switching frequency
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces



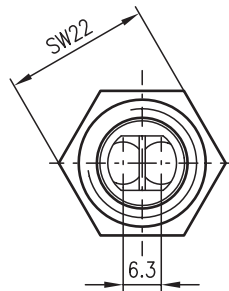
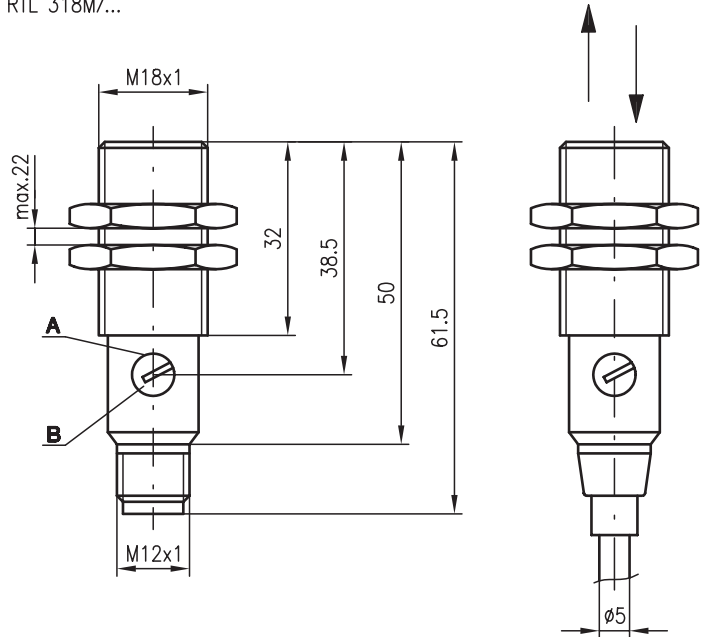
Accessories:

(available separately • see page 44)

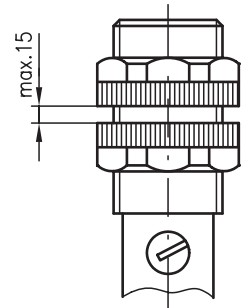
- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)

Dimensioned drawing

RTL 318M/...

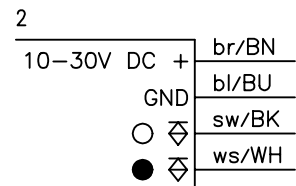
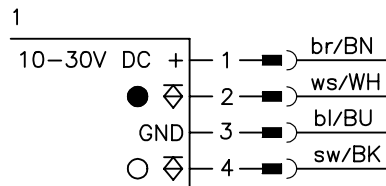


RTL 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_c03e.fm

Specifications

Optical data

Typ. scanning range limit (white 90%) ¹⁾	0 ... 350mm
Scanning range ²⁾	see tables
Adjustment range	120 ... 350mm
Light spot diameter	see diagrams
Light source	laser
Wavelength	650nm (visible red light)

Timing

Switching frequency	5000Hz
Response time	0.1ms
Delay before start-up	≤ 30ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 20mA
Switching output	2 transistor outputs, complementary
Function characteristics	light/dark switching
Signal voltage high/low	$\geq (U_B - 1.6V) \leq 1.6V$
Output current	max. 100mA
Sensitivity	adjustable

Indicators

LED red	reflection
LED red flashing	reflection, no performance reserve

Mechanical data

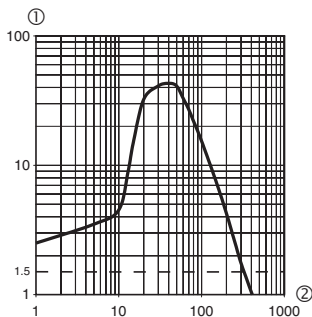
Housing	polyamide 12 or stainless steel
Optics cover	polyamide 12
Weight	90g (cable), 20g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +60°C/-40°C ... +70°C
Protective circuit ³⁾	1, 2, 3, 4
VDE safety class ⁴⁾	II, all-insulated
Protection class	IP 67
Laser class	2 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

- 1) Typ. scanning range limit: max. attainable range without performance reserve
- 2) Scanning range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs, 4=interference blanking
- 4) Rating voltage 250VAC

Diagrams



Typical behaviour object distance / relative intensity of received light (with white 90%, 10x10cm)

- ① Relative intensity of received light
- ② Object distance in [mm]

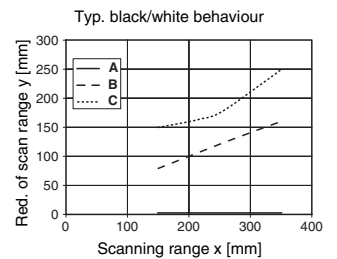
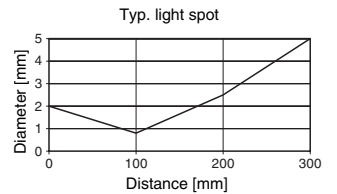
Tables

1	0	300	350
2	13	140	180
3	18	75	100

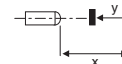
1	white 90%
2	grey 18%
3	black 6%

- Scanning range [mm]
- Typ. scanning range limit [mm]

Diagrams



- A white 90%
- B grey 18%
- C black 6%



Remarks

- With the set scanning range, a tolerance of the upper and lower scanning range limit is possible depending on the reflection properties of the material surface.
- Models with NPN transistor output on request.

LASER LIGHT
DO NOT STARE INTO BEAM

Maximum Output:	5mW
Pulse duration:	3µs
Wavelength:	650nm

LASER CLASS 2
DIN EN60825-1:2003-10
Complies with 21 CFR
1040.10 except for deviations
acc. to laser notice No. 50, July 2001

Order guide

Selection table		Order code →									
Equipment ↓		RTL 318K/P-300-S12 Part No. 500 83186	RTL 318M/P-300-S12 Part No. 500 83188	RTL 318K/P-300 Part No. 500 83185							
Housing	plastic	●		●							
	stainless steel		●								
Scanning range	300mm	●	●	●							
Connection	M12 connector	●	●								
	cable			●							
Switching output	PNP	●	●	●							
Connection diagram		1	1	2							



HRTR 318

Diffuse reflection light scanner with background blanking



1 ... 140mm



- Exact background blanking, electronically adjustable
- Nearly colour-independent object detection
- Clearly visible red light spot
- High switching frequency for detection of fast events
- A²LS - Active Ambient Light Suppression
- Very short, robust cylindrical stainless steel or plastic housing with straight optics



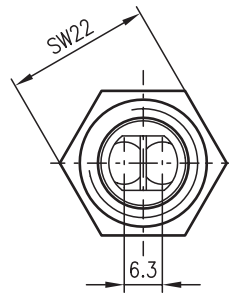
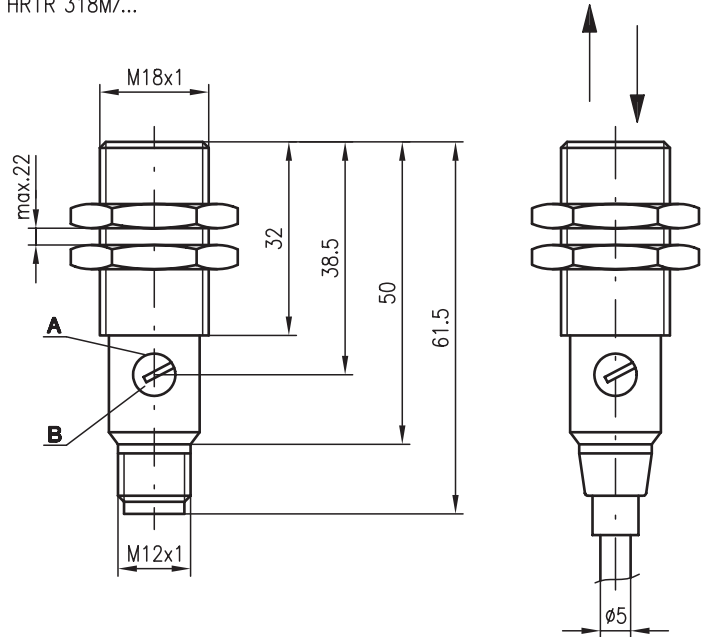
Accessories:

(available separately • see page 44)

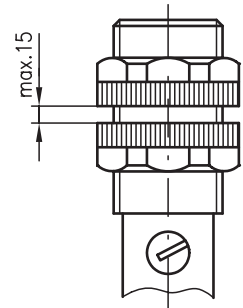
- Mounting systems (BT 318, BT 318-ARH)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)

Dimensioned drawing

HRTR 318M/...

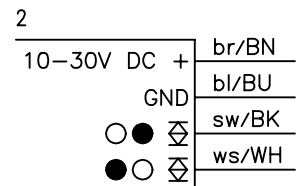
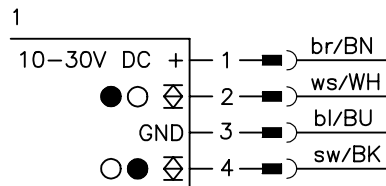


HRTR 318K/...



- A Indicator diode
- B Sensitivity adjustment

Electrical connection



We reserve the right to make changes • 318_d02GB.fm

Specifications

Optical data

Typ. scanning range limit (white 90%) ¹⁾	1 ... 140mm
Scanning range ²⁾	see tables
Adjustment range	40 ... 140mm
Light source	LED (modulated light)
Wavelength	625nm (visible red light)

Timing

Switching frequency	1000Hz
Response time	0.5ms
Delay before start-up	≤ 100ms

Electrical data

Operating voltage U_B	10 ... 30VDC
Residual ripple	≤ 10% of U_B
Bias current	≤ 15mA
Switching output	.../66. ... 2 push-pull switching outputs ³⁾ pin 2: PNP dark switching, NPN light switching pin 4: PNP light switching, NPN dark switching
Signal voltage high/low	≥ ($U_B - 2V$) / ≤ 2V
Output current	max. 100mA
Scanning range adjustment	potentiometer, 270°

Indicators

LED yellow	object detected
------------	-----------------

Mechanical data

Housing	polyamide 12 or stainless steel
Optics cover	polycarbonate
Weight	plastic housing: 85g (cable), 15g (M12) stainless steel housing: 105g (cable), 35g (M12)
Connection type	M12 connector, 4-pin cable 2m, 4x0.25mm ²

Environmental data

Ambient temp. (operation/storage)	-25°C ... +65°C / -40°C ... +70°C
Protective circuit ⁴⁾	2, 3
VDE safety class ⁵⁾	II, all-insulated
Protection class	IP 67
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

- 1) Typ. scanning range limit: max. attainable range without performance reserve
- 2) Scanning range: recommended range with performance reserve
- 3) The push-pull switching outputs must not be connected in parallel
- 4) 2=polarity reversal protection, 3=short-circuit protection for all outputs
- 5) Rating voltage 250VAC

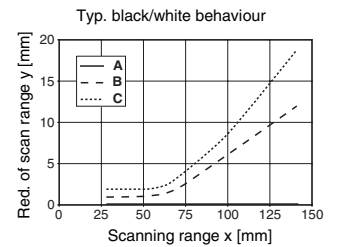
Tables

1	1	120	140
2	5	110	130
3	8	100	120

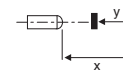
1	white 90%
2	grey 18%
3	black 6%

<input type="checkbox"/>	Scanning range [mm]
<input type="checkbox"/>	Typ. scanning range limit [mm]

Diagrams



- A white 90%
- B grey 18%
- C black 6%



Order guide

Selection table		Order code →							
Equipment ↓		HRTR 318K/66-120-S12 Part No. 501 06085	HRTR 318M/66-120-S12 Part No. 501 06086	HRTR 318K/66-120 Part No. 501 06089	HRTR 318M/66-120 Part No. 501 06090				
Housing	plastic	●		●					
	stainless steel		●		●				
Connection	M12 connector	●	●						
	cable			●	●				
Switching output	2 x push-pull	●	●	●	●				
Connection diagram		1	1	2	2				

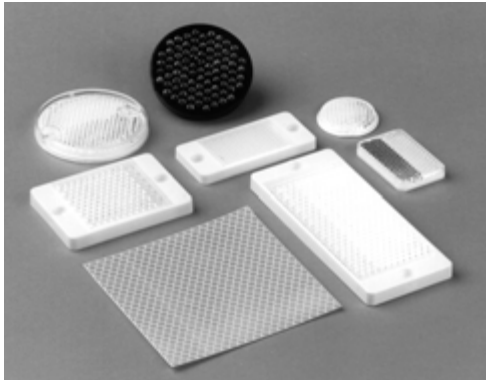
Remarks



318 Series

Accessories

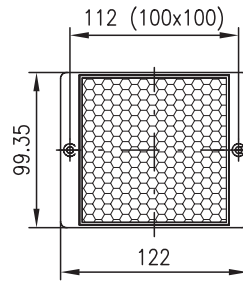
Reflectors



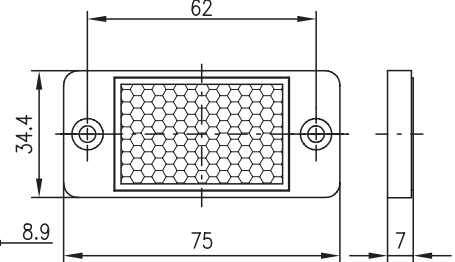
- Reflectors and reflective tapes are ideally suited for Leuze retro-reflective photoelectric sensors. The performance data refer to the use of Leuze reflectors and reflective tapes. The range of retro-reflective photoelectric sensors depends on the type and size of the reflector.
- Adhesive and screw type versions permit universal installation.
- Precise optical alignment is not required, as the reflector may be slightly inclined relative to the optical axis.
- For retro-reflective photoelectric sensors with polarisation filters, only triad-type reflectors made of plastic or reflective tape No. 2/4 may be used.

Dimensioned drawings

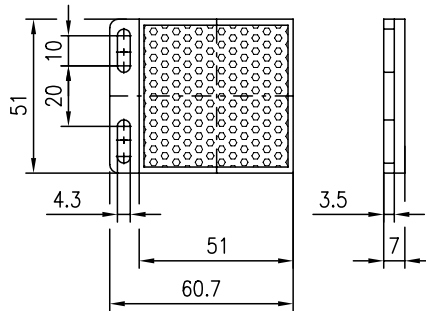
TKS 100 x 100



TKS 30 x 50

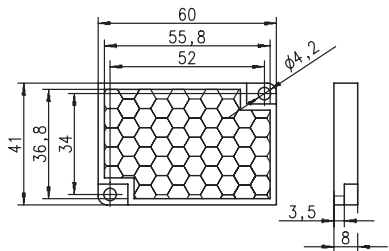
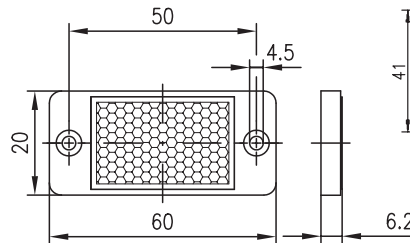


MTKS 50 x 50

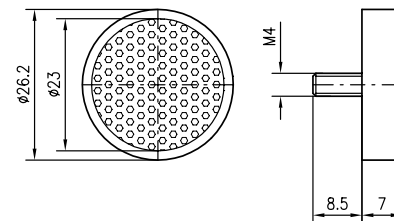


TKS 40 x 60

TKS 20 x 40



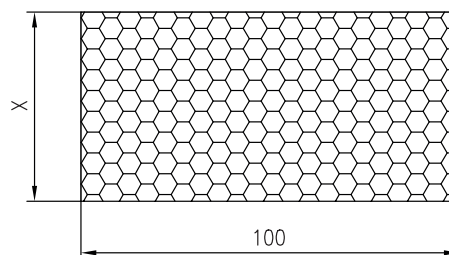
TKS 25



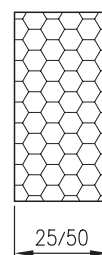
Order codes:

Designation	Part No.
TKS 100x100	500 22816
MTKS 50x50	500 36188
TKS 40x60	500 40820
TKS 30x50	500 23525
TKS 20x40	500 81283
TKS 25	500 27696
Reflective tape No.4 Xx100	501 04658
Reflective tape No.4	500 38062
Reflective tape No.4	501 06119
Reflective tape no.4 custom size	500 38062

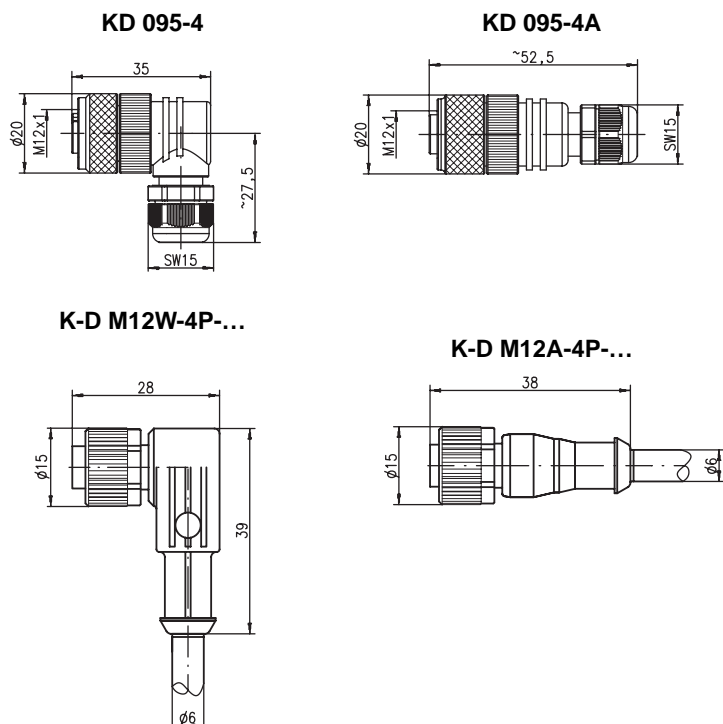
Reflective tape No. 4, Xx100



Reflective tape No.4



We reserve the right to make changes*318_zu_e.fm

Dimensioned drawings

Selection table

M12 connector, user-configurable		
Connection	Without cable, 4-pin	
Screw terminals	KD 095-4 Part No. 500 31324	KD 095-4A Part No. 500 31323

Connectors, cables

M12 connection cable with connector, single-sided		
Length	PVC cable sheath, 4-pin	
2m	K-D M12W-4P-2m-PVC Part No. 501 04543	K-D M12A-4P-2m-PVC Part No. 501 04542
5m	K-D M12W-4P-5m-PVC Part No. 501 04545	K-D M12A-4P-5m-PVC Part No. 501 04544
10m	K-D M12W-4P-10m-PVC Part No. 501 04547	K-D M12A-4P-10m-PVC Part No. 501 04546
20m	-	K-D M12A-4P-20m-PVC Part No. 501 04753
Length	PUR cable sheath, 4-pin	
2m	K-D M12W-4P-2m-PUR Part No. 501 04562	K-D M12A-4P-2m-PUR Part No. 501 04561
5m	K-D M12W-4P-5m-PUR Part No. 501 04564	K-D M12A-4P-5m-PUR Part No. 501 04563
10m	K-D M12W-4P-10m-PUR Part No. 501 04566	K-D M12A-4P-10m-PUR Part No. 501 04565

Connectors, cables


Leuze electronic offers connectors with ready-made cables in various lengths suited for the connector-type devices.

Select the appropriate cable for the device with the desired cable length from the following tables.

For devices with M12 connectors, there are available: connectors with ready-made 2m, 5m and 10m cable and 2 connectors with screw connection.

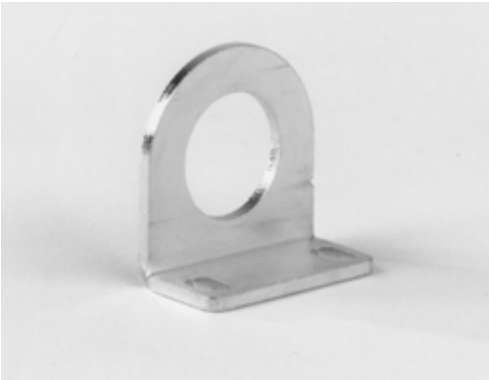
When ordering throughbeam photoelectric sensors, keep in mind that a connector is required both for the transmitter and receiver.



318 Series

Accessories

Mounting systems

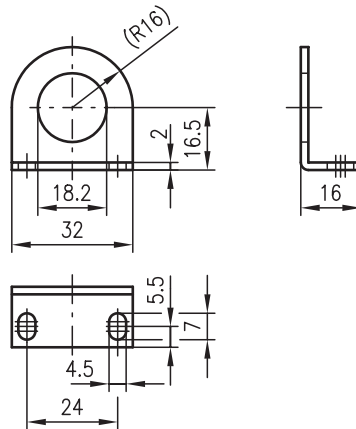


Mounting brackets:

Designation
BT 318

Part No.
500 33876

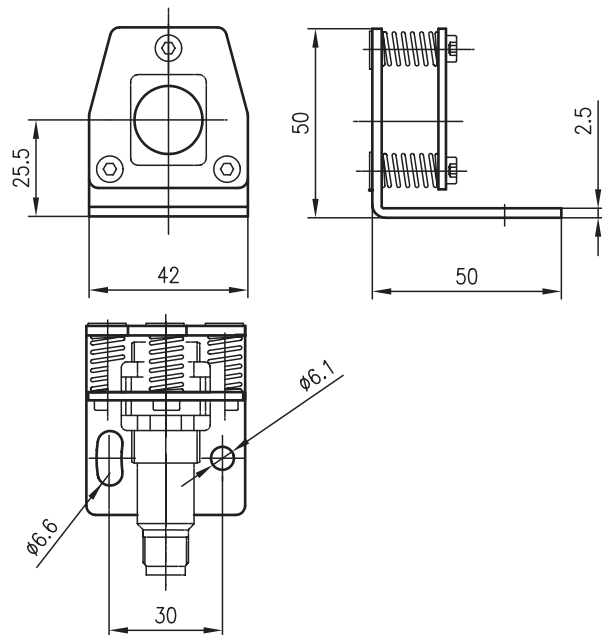
Dimensioned drawings



Fastening/alignment system with wobble plate for 318 Series

Designation
BT 318-ARH

Part No.
500 83189



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- Optical data transmission systems
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