

## SENSORS FOR POTENTIALLY EXPLOSIVE AREAS

Part description Part No.:	Device category	Operating range [m]	<input type="checkbox"/> Operating voltage	Light source	Output
<b>Throughbeam sensors</b>		▶ = Transmitter ◀ = Receiver			
▶ LS 92 / 3 SE - L Ex 500 80722 ◀ LS 92 / 3 E - L Ex 500 80721	2G, 2D intrinsically safe	<input type="checkbox"/> 0 12	5.5 ... 13VDC	Infrared light	NAMUR
<b>Retro-reflective sensors with polarisation filter</b>					
PRK 92 / 3 L Ex 500 80723	2G, 2D intrinsically safe	<input type="checkbox"/> 0.2 ... 5	5.5 ... 13VDC	Red light	NAMUR
<b>Diffuse reflection scanners with background suppression</b>					
FRK 92 / 3 - 300 L Ex 500 80724	2G, 2D intrinsically safe	<input type="checkbox"/> 0.03 ... 0.3	5.5 ... 13VDC	Infrared light	NAMUR
<b>Isolated switching amplifier</b>					
VS 403/N 500 40825	2G, intrinsically safe NAMUR input		18 ... 31.2VDC		NPN
VS 403/R 500 40826	2G, intrinsically safe NAMUR input		18 ... 31.2VDC		Relay
VS 403/R-AC 500 40824	2G, intrinsically safe NAMUR input		120 ... 230VAC		Relay



Dimensioned drawing 92 Series at [www.leuze.com](http://www.leuze.com).

### Accessories / connection cables

More accessories can be found from **page 364** onwards

Part No.	Designation	Features
a 500 37784	BK7 KB - 092 - 5000 - 4 Ex	Connection cable 5000mm for intrinsically safe circuits, blue, M12 angular, 4-pin
b 500 37783	BK7 KB - 092 - 5000 - 4A Ex	Connection cable 5000mm for intrinsically safe circuits, blue, M12 axial, 4-pin

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**Zone 1**  
Page 350

**Zone 1**  
Page 352

**Zone 2**  
Page 354

**Zone 2**  
Page 356

**Zone 2**  
Page 358

**Ex Sensors**

Zone 1, Zone 21



Standard Sensors

Measuring Sensors

Ultrasonic Sensors

Forked Sensors

Special Sensors

Fibre Optic Sensors

Light Curtains

Protective Sensors

Ex Sensors

AS-interface Sensors

Switching	Connection	Option	Accessories
Light	M12 connector	1, 2	a, b
Light	M12 connector	1, 2	a, b
Light	M12 connector	1, 2	a, b
Light/dark reversible	Terminals	3, 4	
Light/dark reversible	Terminals	3, 4	
Light/dark reversible	Terminals	3, 4	

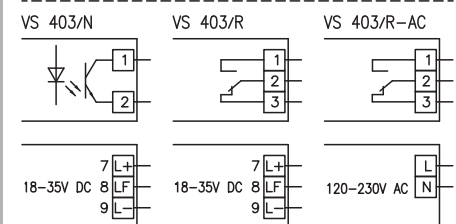
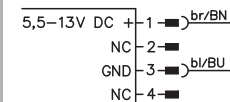


**Optical Sensor ABCs**

- Sensors for potentially explosive areas Page 419
- Connection types Page 414
- Outputs Page 414

**Electrical connection**

LS 92/3 SE-L Ex  
 LS 92/3 E-L Ex  
 PRK 92/3 L Ex  
 FRK 92/3-300 L Ex



**Options**

- 1 Operation in combination with isolated switching amplifier VS 403
- 2 Light/dark switching at isolated switching amplifier
- 3 Line fault detection
- 4 Warning output for line fault/auxiliary power failure

[www.leuze.de](http://www.leuze.de)

## SENSORS FOR POTENTIALLY EXPLOSIVE AREAS

Part description Part No.:	Device category	Meas. range <sup>1)</sup> [mm] <input type="checkbox"/>	Operating voltage	Light source Light spot <sup>2)</sup>	Output
<b>Optical laser distance sensors</b>					
<b>ODSL 96B M/C6 - 2000 Ex d</b> 501 06735	2G, 2D, flameproof enclosure	<input type="checkbox"/> 200 2000	18 ... 30VDC	Red light laser, class 2 2x6 mm <sup>2</sup>	Analog/mA Push-pull/DC
<b>ODS 96 M/V 5510 - 420 Ex d</b> 500 41126	2G, 2D, flameproof enclosure	<input type="checkbox"/> 200 <input type="checkbox"/> 5000	18 ... 30VDC	Red light laser, class 2 3x8 mm <sup>2</sup>	Analog/mA PNP

1) Luminosity coefficient 6 ... 90 %, over complete temperature range, measurement object ≥ 50x50mm<sup>2</sup>

2) At 2000mm (ODSL 96B M/C6 - 2000...) or 1200mm (ODS 96 M/V 5510...), respectively



Dimensioned drawings at [www.leuze.com](http://www.leuze.com).

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Accessories / connection cables			More accessories can be found from <b>page 364</b> onwards
Part No.	Designation	Features	
a 500 37784	BK7 KB - 092 - 5000 - 4 Ex	Connection cable 5000mm for intrinsically safe circuits, blue, M12 angular, 4-pin	
b 500 37783	BK7 KB - 092 - 5000 - 4A Ex	Connection cable 5000mm for intrinsically safe circuits, blue, M12 axial, 4-pin	

<b>Zone 1</b> Page 350	<b>Zone 1</b> Page 352	<b>Zone 2</b> Page 354	<b>Zone 2</b> Page 356	<b>Zone 2</b> Page 358

**Ex Sensors**

Zone 1, Zone 21



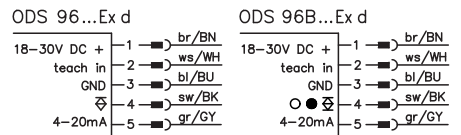
Switching	Connection	Option	Accessories
Configurable	Cable, 5m	1, 2, 3, 4	
Configurable	Cable, 5m	1, 4	



**Optical Sensor ABCs**

- Sensors for potentially explosive areas Page 419
- Connection types Page 414
- Outputs Page 414

**Electrical connection**



**Options**

- 1 Measurement range and measurement mode configurable via software
- 2 OLED display and key pad for configuration
- 3 Teach-in of switching output and analogue output
- 4 Teach-in of the switching points via teach input

## SENSORS FOR POTENTIALLY EXPLOSIVE AREAS

Part description Part No.:	Device category	Operating range [m] <input type="checkbox"/>	Operating voltage	Light source	Output	
<b>Throughbeam sensors</b>		▶ = Transmitter ◀ = Receiver				
▶LSS 96 M - 1070 - 23 Ex n 500 41191 ◀LSE 96 M/P - 3010 - 21 Ex n 500 41192	3G, 3D Protection type nA	<input type="text" value="0"/> <input type="text" value="120"/>	10 ... 30VDC	Infrared light	PNP	
▶LSS 96 M - 180W - 73 Ex n 500 40903 ◀LSE 96 M/A - 182W - 73 Ex n 500 40904	3G, 3D Protection type nA	<input type="text" value="0"/> <input type="text" value="30"/>	26.5 ... 31.6VDC	Red light	AS-interface	
▶SLSS 96 M 1080 - T2 - 24 Ex n 500 41443 ◀SLSE 96 M/P 1070 - T2 - 21 Ex n 500 41444	3G, 3D Protection type nA	<input type="text" value="0"/> <input type="text" value="50"/>	10 ... 30VDC	Infrared light	PNP	
<b>Diffuse reflection scanners with background suppression</b>						
HRT 96 M / P - 1630 - 800 - 21 Ex n 500 42094	3G, 3D Protection type nA	<input type="text" value="100"/> <input type="text" value="800"/>	10 ... 30VDC	Red light	PNP	
HRT 96 M / P - 1640 - 800 - 21 Ex n 501 02369	3G, 3D Protection type nA	<input type="text" value="100"/> <input type="text" value="800"/>	10 ... 30VDC	Red light	PNP	



Dimensioned drawing 96 Series see standard sensors on page 124 or at [www.leuze.com](http://www.leuze.com).





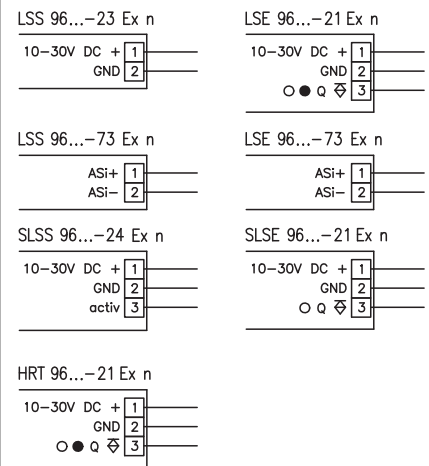
Switching	Connection	Option	Accessories
Light/dark reversible	Terminals	1	
Light/dark reversible	Terminals	4	
Light	Terminals	3, 5	
Light/dark reversible	Terminals	1	
Light/dark reversible	Terminals	1, 2	



**Optical Sensor ABCs**

- Sensors for potentially explosive areas Page 419
- Connection types Page 414
- Outputs Page 414

**Electrical connection**



**Options**

- 1 Sensitivity adjustment via potentiometer
- 2 Switching delay
- 3 Activation input
- 4 Receiver with AS-interface
- 5 Protective throughbeam sensor category 2 (testing)

## SENSORS FOR POTENTIALLY EXPLOSIVE AREAS

Part description Part No.:	Device category	Operating range [mm] <input type="checkbox"/>	Operating voltage	Light source	Output
<b>Retro-reflective photoelectric sensors with polarisation filter acc. to EN 60079-15:2005 and EN 61241-1:2004</b>					
<b>PRK 46B / 66, 200 - S12 S - Ex n</b> 501 08591	3G, 3D Protection type nA	<input type="checkbox"/> 0.05 ... 15	10 ... 30VDC	Red light	2xPush-pull/DC
<b>PRK 46B / 66, 200 - S12 W - Ex n</b> 501 08592	3G, 3D Protection type nA	<input type="checkbox"/> 0.05 ... 15	10 ... 30VDC	Red light	2xPush-pull/DC
<b>PRK 96 M / P - 3360 - 21 Ex n</b> 501 01940	3G, 3D Protection type nA	<input type="checkbox"/> 0.3 ... 15	10 ... 30VDC	Red light	PNP
<b>PRK 96 M / P - 2838 - 28 Ex n</b> 501 09523	3G, 3D Protection type nA	<input type="checkbox"/> 0 ... 7	10 ... 30VDC	Red light	2x PNP
<b>Diffuse reflection light scanners with background suppression acc. to EN 60079-15:2005 and EN 61241-1:2004</b>					
<b>HRTR 46B / 66, 200 - S12 S - Ex n</b> 501 08589	3G, 3D Protection type nA	<input type="checkbox"/> 20 800	10 ... 30VDC	Red light	2xPush-pull/DC
<b>HRTR 46B / 66, 200 - S12 W - Ex n</b> 501 08590	3G, 3D Protection type nA	<input type="checkbox"/> 20 800	10 ... 30VDC	Red light	2xPush-pull/DC
<b>HRT 46B / 66, 200 - S12 S - Ex n</b> 501 08587	3G, 3D Protection type nA	<input type="checkbox"/> 10 1200	10 ... 30VDC	Infrared light	2xPush-pull/DC
<b>HRT 46B / 66, 200 - S12 W - Ex n</b> 501 08588	3G, 3D Protection type nA	<input type="checkbox"/> 10 1200	10 ... 30VDC	Infrared light	2xPush-pull/DC
<b>HRT 96 M / P - 3360 - 2500 - 21 Ex n</b> 501 08464	3G, 3D Protection type nA	<input type="checkbox"/> 80 2200	10 ... 30VDC	Red light	Analog/V 2xpush-pull/DC



Dimensioned drawings at [www.leuze.com](http://www.leuze.com).

### Accessories / connection cables

More accessories can be found from **page 364** onwards

Part No.	Designation	Features
a 501 04543	K - D M12W - 4P - 2m - PVC	Connection cable 2000mm, M12 angular, 4-pin, PVC
b 501 04542	K - D M12A - 4P - 2m - PVC	Connection cable 2000mm, M12 axial, 4-pin, PVC
c 501 04545	K - D M12W - 4P - 5m - PVC	Connection cable 5000mm, M12 angular, 4-pin, PVC
d 501 04544	K - D M12A - 4P - 5m - PVC	Connection cable 5000mm, M12 axial, 4-pin, PVC



**Zone 1**  
Page 350



**Zone 1**  
Page 352



**Zone 2**  
Page 354



**Zone 2**  
Page 356



**Zone 2**  
Page 358



Switching	Connection	Option	Accessories
Light/dark antivalent	Cable 0.2m with M12 connector		a, b, c, d
Light/dark antivalent	Cable 0.2m with M12 connector		a, b, c, d
Light/dark reversible	Terminals	1	
Light/dark antivalent	Terminals	1, 3, 6	
Light/dark antivalent	Cable 0.2m with M12 connector	1, 4	a, b, c, d
Light/dark antivalent	Cable 0.2m with M12 connector	1, 4	a, b, c, d
Light/dark antivalent	Cable 0.2m with M12 connector	1, 4, 5	a, b, c, d
Light/dark antivalent	Cable 0.2m with M12 connector	1, 4, 5	a, b, c, d
Light/dark antivalent	Terminals	2, 5	

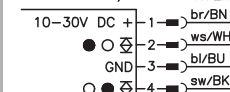


**Optical Sensor ABCs**

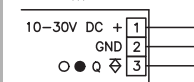
- Sensors for potentially explosive areas Page 419
- Connection types Page 414
- Outputs Page 414

**Electrical connection**

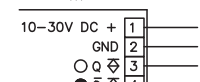
PRK 46B/66, 200-S12 ... Ex n  
HRT 46B/66, 200-S12 ... Ex n  
HRT 46B/66, 200-S12 ... Ex n



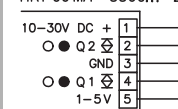
PRK 96...-21 Ex n



PRK 96...-28 Ex n



HRT 96 M/P-3360...-21 Ex n



**Options**

- 1 Sensitivity adjustment via potentiometer
- 2 Adjustment of the switching points via teach buttons
- 3 Autocollimation principle
- 4 Low-temperature version with optics heating
- 5 Shining surfaces
- 6 Transparent media

Standard Sensors

Measuring Sensors

Ultrasonic Sensors

Forked Sensors

Special Sensors

Fibre Optic Sensors

Light Curtains

Protective Sensors

Ex Sensors

AS-interface Sensors



## SENSORS FOR POTENTIALLY EXPLOSIVE AREAS

Part description Part No.:	Device category	Beam spacing A [mm]	Meas. field length B [mm] <sup>1)</sup>	No. of beams	Op. range [m]	Light source
<b>KONTURflex Ex measuring light curtains</b>						
▶ = Transmitter ◀ = Receiver						
▶KT 10-320 ex ◀KR 10-320 ex	673 033 672 033	3G, 3D Protection type nA	10	320	32	0 ... 4 Infrared light 880nm
▶KT 20-320 ex ◀KR 20-320 ex	675 033 674 033	3G, 3D Protection type nA	20	320	16	0 ... 4 Infrared light 880nm
▶KT 40-320 ex ◀KR 40-320 ex	677 033 676 033	3G, 3D Protection type nA	40	320	8	0 ... 4 Infrared light 880nm
<b>QUATTRO control devices for KONTURflex measuring light curtains</b>						
<b>QUATTRO - RSX</b> 670 001	Control device for up to 4 KONTURflex light curtains, system interface: <b>RS 485</b> , connection via 5-pin built-in plug					
<b>QUATTRO - RSX / M12</b> 670 003	Control device for up to 4 KONTURflex light curtains, system interface: <b>RS 485</b> , connection via 5-/8-pin M12 plug					
<b>QUATTRO - DP</b> 670 002	Control device for up to 4 KONTURflex light curtains, system interface: <b>PROFIBUS DP</b> , connection via 5-pin built-in plug					
<b>QUATTRO - DP / KV</b> 670 005	Control device for up to 4 KONTURflex light curtains, system interface: <b>RS 485/PROFIBUS DP</b> , connection via 5-pin built-in plug with screwed cable gland					
<b>QUATTRO - CANopen</b> 670 004	Control device for up to 4 KONTURflex light curtains, system interface: <b>CANopen</b> , connection via 5-pin built-in plug					

1) Optional meas. field lengths for beam spacing 10mm: 480mm (48 beams) / 640mm (64 beams) / 960mm (96 beams) ... 2560mm (256 beams)  
 beam spacing 20mm: 480mm (24 beams) / 640mm (32 beams) / 960mm (48 beams) ... 3200mm (160 beams)  
 beam spacing 40mm: 640mm (16 beams) / 960mm (24 beams) / 1280mm (32 beams) ... 3200mm (80 beams)

2) Cycle time = (total no. of beams + 3) x 50µs

3) The factory-set configuration can be changed at a later time using the KONTURflexsoft configuration software



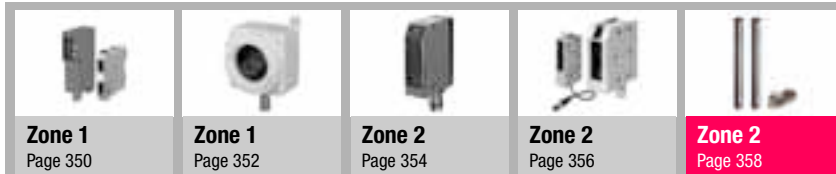
Configuration software KONTURflexsoft at [www.leuze.com](http://www.leuze.com).

### Accessories / connection cables

More accessories can be found from **page 364** onwards

Part No.	Designation	Features
a 678 035	CB - M12 - 5000S - 5GF/GM	QUATTRO-KT/KR connection cable, length 5m, shielded
b 501 04557	K - D M12A - 5P - 5m - PVC	QUATTRO-RSX/M12 RS 232 connection cable 5m, M12 axial
c 501 04590	K - D M12A - 8P - 5m - PUR	QUATTRO-RSX/M12 RS 485/U <sub>B</sub> -connection cable 5m, M12 axial
d 678 100	K - CB - SUBP - 3000	QUATTRO-PC diagnosis cable, 3m

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**Zone 1**  
Page 350

**Zone 1**  
Page 352

**Zone 2**  
Page 354

**Zone 2**  
Page 356

**Zone 2**  
Page 358



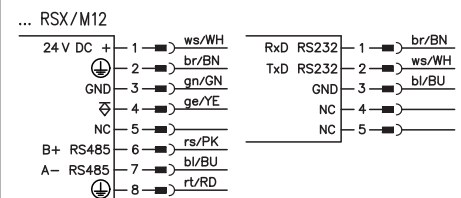
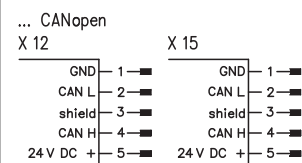
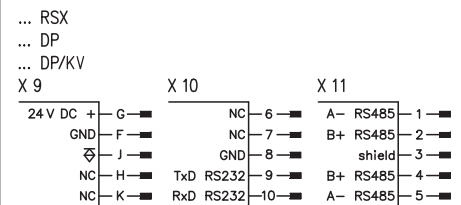
Cycle time <sup>2)</sup> [µs]	Output <sup>3)</sup>	Connection	Option	Accessories
1750	QUATTRO control device	M12 connector		a, b
950	QUATTRO control device	M12 connector		a, b
550	QUATTRO control device	M12 connector		a, b
	1 x PNP, configurable	Built-in plug	1, 2, 3, 5	
	1 x PNP, configurable	M12 connector	1, 2, 3, 5	c, d, e, f
	1 x PNP, configurable	Built-in plug	1, 2, 4, 5	
	1 x PNP, configurable	Built-in plug with screwed cable gland	1, 2, 4, 5	
	1 x PNP, configurable	Built-in plug	1, 2, 4	



**Optical Sensor ABCs**

- Sensors for potentially explosive areas Page 419
- Light curtain Page 409
- Connection types/Outputs Page 414

**Electrical connection**



A QUATTRO control device is absolutely necessary for operating the KONTURflex light curtains. Please include with your order. **The QUATTRO control device must not be installed in potentially expl. areas!**



**Dimensioned drawings KONTURflex and QUATTRO see light curtains on page 336.** Accessories / connection cables: additional cable lengths available!

**Options**

- 1 Configuration with KONTURflexsoft PC software
- 2 Integrated functions such as web-centre monitoring, hole recognition, etc.
- 3 Data transmission and configuration via MODBUS RTU protocol
- 4 Data transmission and configuration via PROFIBUS DP or CANopen
- 5 Integrated, connectable bus terminator