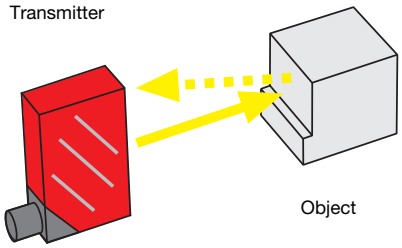
SELECTION GUIDE

Optical distance sensors

Measurement principle



The diffuse light reflected by the object is analysed using various measurement techniques. The results are used to determine the distance from the object to the sensor.

Products and typ. measurement ranges [mm]

Selection table ODS(L) on **page 204**

ODS 25 from **page 212** onwards
25 200

ODSL 8 from **page 206** onwards
20 500

ODS 96(B) from **page 220** onwards
60 5000

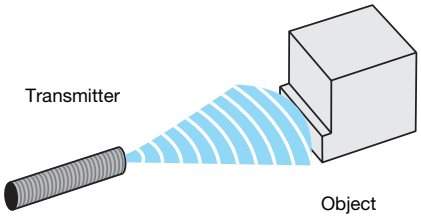
ODSL 30 from **page 216** onwards
200 30000

Features

- To a large extent, the measurement technique is independent of the colour and structure of the object
- Measurement of small object in the entire measurement range
- Up to 400 measurements per second
- Two different measurement techniques:
  1. Triangulation technique for measurement ranges between 20mm and 5000mm
  2. Phase measurement principle for measurement ranges up to 30,000mm

Ultrasonic distance sensors

Measurement principle



Ultrasonic distance sensors measure the propagation time of the ultrasonic waves which are reflected back to the sensor. The distance to the object is then calculated using this propagation time.

Products and typ. measurement ranges [mm]

HRTU 418 from **page 232** onwards
50 1000

VRTU 430 from **page 236** onwards
60 6000

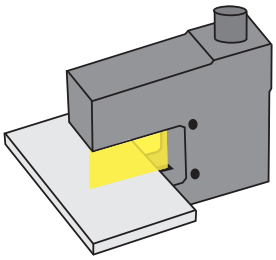
Features

- Detection of diffuse, transparent and shiny as well as solid, liquid or powdered objects
- Detection of objects with overhanging material
- Can be used at low measurement rates (typically 10 measurements per second)
- Not affected by dust, fog and smoke

We reserve the right to make changes • Abgrenzung_MessendeSensoren_GB.fm

Measuring forked sensors

Measurement principle



The transmitted light is spread into a parallel light band by means of a lens and received by the opposing CCD line. Interrupting this light band allows, for example, the edge of an object to be determined or the width of an object to be measured.

Products and typ. measurement ranges [mm]

GS 754

0 25

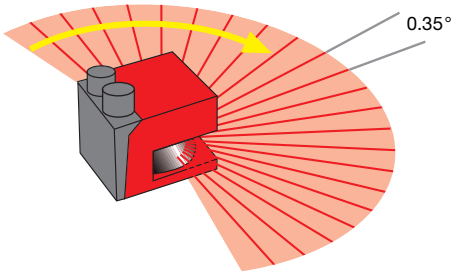
from **page 240** onwards

Features

- Edge and object detection of up to 3 objects in 25mm wide light band
- Minimum object diameter 0.5mm
- Resolution 14µm
- Analogue, digital and switching outputs
- Typical applications
  - Edge detection and height verification
  - Gap measurement with and without projecting edge
  - Position determination of punched holes
  - Detection of broken objects

Optical surface distance sensors

Measurement principle



The surface distance sensor scans its surroundings within a 190° arc by transmitting 529 laser beams per cycle.
The distances to the objects located in the scanning range are determined using the pulse propagation time technique.

Products and typ. measurement ranges [mm]

ROD 4 / ROD 4plus

0 50000

from **page 244** onwards

Features

- To a large extent, the measurement technique is independent of the colour and structure of the object
- Scanning angle 190°
- Scanning rate 25 scans per second
- Measurement value resolution 5mm
- Typical applications
  - Collision prevention on driverless transportation systems
  - Projection monitoring
  - Fill-level monitoring of bulk materials

SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material: Plastic	Housing material: Metal	Typ. measurement range [mm]: 200	500	5000	30000
ODS 25	15 x 36 x 27	●		25 – 200			
ODSL 8	15 x 48 x 38		●	20 – 500			
ODS 96(B)	30 x 90 x 70	●	●	60 – 5000			
ODSL 30	79 x 70 x 150		●	200 – 30000			

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OPTICAL DISTANCE SENSORS

	Operating voltage		Light source			Switching output								Connection		
	10 ... 30VDC	18 ... 30VDC	Infrared light	Red light	Laser	Analog / Current	Analog / Voltage	Serial / RS 232	Serial / RS 485	PNP switching outputs	NPN switching outputs	Push-pull switching outputs	Warning outp. PNP / NPN	M12 connector	Terminals	Page
		●		●			●							●		212
	●	●			●	●	●	●	●	●		●		●		206
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	220
	●	●			●	●	●	●	●	●	●			●		216

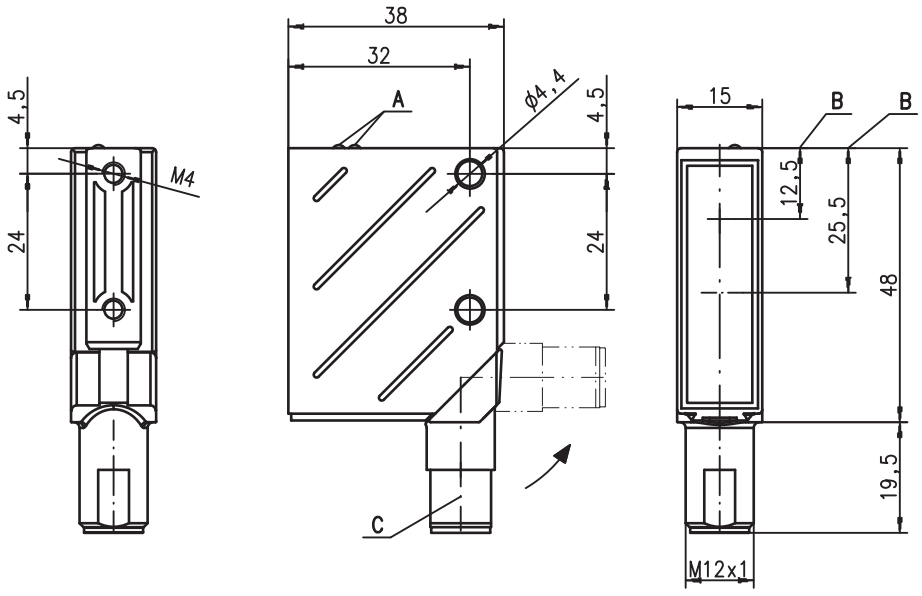
OVERVIEW OF OPTICAL DISTANCE SENSORS

Stack positioning

Diameter determination

Orientation position inspection

Dimensioned drawing



Further details can be found in the respective data sheet.

A Green, yellow indicator diode
B Optical axis
C 90° turning connector

ODSL 8 Page 206

ODS 25 Page 212

ODSL 30 Page 216

ODS 96(B) Page 220

HRTU 418 Page 232

VRTU 430 Page 236

GS 754 Page 240

ROD 4 Page 244

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ODSL 8

Optical distance sensors	Measurement range	Page
Optical distance sensors ODSL 8	20 … 500mm	208

Other 8 Series products:

Throughbeam sensors	LSR 8, LSRL 8	42
Retro-reflective sensors	PRK 8. PRKL 8	44
Diffuse reflection scanners	RTR 8, VRTR 8, HRTR 8,	46
Ultrasonic sensors	LSU 8, RKU 8, HRTU 8	250
Contrast scanners	KRT 8	290
Luminescence scanners	LRT 8	308
Protective sensors	SLSR 8	342

Common technical data

Electrical data	Operating voltage U_B	10 … 30/18 … 30VDC
	Residual ripple	≤ 15% of U_B
	Open-circuit current	≤ 50mA
	Signal voltage high/low	≥ (U_B-2V)/≤ 2V
Indicators	Green LED	Ready to operate
	Yellow LED	Obj. detected, teach-in
Mechanical data	Housing	Metal
	Optics cover	Glass
	Weight (plug/cable)	70g
Environmental data	Ambient temperature (operation)	-20°C … +50°C
	VDE safety class	II, all-insulated
	Protection class	IP 67, IP 69K
	Laser class	2 acc. to EN 60825-1
	Standards applied	IEC 60947-5-2, UL 508

Mounting systems for this series can be found from **page 364** onwards

Features

- **Measurement range 20 … 500mm**
- **Resolution up to 0.01mm**
- **High measurement accuracy**
- **PC configuration provides high flexibility**

Optical Sensor ABCs

- Optical distance sensors Page 411

OPTICAL DISTANCE SENSORS

Part description Part No.:	Meas. range [mm]	Operating voltage	Light source Light spot [1]	Output	Connection	Meas. time [ms]
Optical laser distance sensors						
ODSL 8 / V4 - 45 - S12 501 01883	25 … 45 [2]	18 … 30 VDC	Red light laser, class 2 1 x 6 mm²	Analog/mA/V PNP	M12 connector	≤ 10
ODSL 8 / C66 - 45 - S12 501 08364	25 … 45 [3]	18 … 30 VDC	Red light laser, class 2 Ø 1 mm	Analog/mA 2 x push-pull	M12 connector	≤ 7
ODSL 8 / V66 - 45 - S12 501 08363	25 … 45 [3]	18 … 30 VDC	Red light laser, class 2 Ø 1 mm	Analog/V 2 x push-pull	M12 connector	≤ 7
ODSL 8 / D4 - 45 - S12 501 01884	25 … 45 [2]	10 … 30 VDC	Red light laser, class 2 1 x 6 mm²	Serial/ RS 232/RS 485 PNP	M12 connector	≤ 10
ODSL 8 / C66 - 200 - S12 501 08362	20 200 [4]	18 … 30 VDC	Red light laser, class 2 1 x 6 mm²	Analog/mA 2 x push-pull	M12 connector	≤ 7
ODSL 8 / V66 - 200 - S12 501 05761	20 200 [4]	18 … 30 VDC	Red light laser, class 2 1 x 6 mm²	Analog/V 2 x push-pull	M12 connector	≤ 7

1) At the measurement range end value
2) Luminosity coefficient 6 … 90 %, over complete temperature range, measurement object ≥ 50 x 50 mm²
3) Luminosity coefficient 6 … 90 %, at 20 °C, measurement object ≥ 20 x 20 mm²
4) Luminosity coefficient 6 … 90 %, at 20 °C, measurement object ≥ 50 x 50 mm²

Accessories / connection cables

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

	Part No.	Designation	Features
a	501 04558	K - D M12W - 5P - 5m - PVC	Connection cable 5000 mm, M12 angular, 5-pin, PVC
b	501 04557	K - D M12A - 5P - 5m - PVC	Connection cable 5000 mm, M12 axial, 5-pin, PVC
c	501 04591	K - D M12A - 8P - 2m - PUR	Connection cable 2000 mm, M12 axial, 8-pin, PUR
d	501 04590	K - D M12A - 8P - 5m - PUR	Connection cable 5000 mm, M12 axial, 8-pin, PUR
e	500 39627	UPG 5	Configuration adaptor

ODSL 8 Page 206

ODS 25 Page 212

ODSL 30 Page 216

ODS 96(B) Page 220

HRTU 418 Page 232

VRTU 430 Page 236

GS 754 Page 240

ROD 4 Page 244

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ODSL 8

Optical distance sensors

	Abs. meas. accuracy	Repeatability [5]	Resolution [mm]	Option	Accessories
	± 0.5 % [2]	± 0.1 %	0.01	2, 3, 4	c, d, e
	± 1.5 % [3]	± 0.2 %	0.03	1, 4	a, b
	± 1.5 % [3]	± 0.2 %	0.03	1, 4	a, b
	± 0.5 % [2]	± 0.1 %	0.01	2, 3, 4	c, d, e
	± 2 % [4]	± 1 %	0.1 … 0.2 [6]	1, 4	a, b
	± 2 % [4]	± 1 %	0.1 … 0.2 [6]	1, 4	a, b

5) Same object, identical environmental conditions, measurement object ≥ 50x50 mm²
6) Minimum and maximum value depend on measurement distance

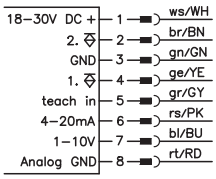
Configuration software - free download at *www.leuze.com*.

Optical Sensor ABCs

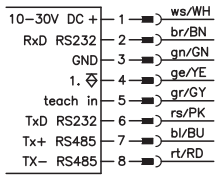
- Optical distance sensors Page 411
- Connection types Page 414
- Outputs Page 414

Electrical connection

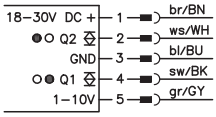
ODSL 8/V4-45-S12



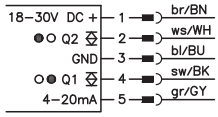
ODSL 8/D4-45-S12



ODSL 8/V 66-45-S12
ODSL 8/V 66-200-S12



ODSL 8/C 66-45-S12
ODSL 8/C 66-200-S12



Options

1	Teach-in via rotary switch
2	Teach-in via teach input
3	Adjustable measurement range and measurement mode
4	UL approval

OPTICAL DISTANCE SENSORS

Part description Part No.:	Meas. range [mm]	Operating voltage	Light source Light spot [1]	Output	Connection	Meas. time [ms]
Optical laser distance sensors						
ODSL 8 / V4 - 400 - S12 500 39614	20 … 400 [2]	18 … 30 VDC	Red light laser, class 2 1 x 6 mm²	Analog/mA/V PNP	M12 connector	≤ 10
ODSL 8 / D4 - 400 - S12 500 39615	20 … 400 [2]	10 … 30 VDC	Red light laser, class 2 1 x 6 mm²	Serial/ RS 232/RS 485 PNP	M12 connector	≤ 10
ODSL 8 / C66 - 500 - S12 501 08361	20 … 500 [3]	18 … 30 VDC	Red light laser, class 2 1 x 6 mm²	Analog/mA 2x push-pull	M12 connector	≤ 7
ODSL 8 / V66 - 500 - S12 501 01879	20 … 500 [3]	18 … 30 VDC	Red light laser, class 2 1 x 6 mm²	Analog/V 2x push-pull	M12 connector	≤ 7
ODSL 8 / 66 - 500 - S12 501 01880	20 … 500 [3]	18 … 30 VDC	Red light laser, class 2 1 x 6 mm²	2 x push-pull	M12 connector	≤ 7

1) At the measurement range end value
2) Luminosity coefficient 6 … 90 %, over complete temperature range, measurement object ≥ 50 x 50 mm²
3) Luminosity coefficient 6 … 90 %, at 20 °C, measurement object ≥ 50 x 50 mm²

Accessories / connection cables

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

	Part No.	Designation	Features
a	501 04558	K - D M12W - 5P - 5m - PVC	Connection cable 5000 mm, M12 angular, 5-pin, PVC
b	501 04557	K - D M12A - 5P - 5m - PVC	Connection cable 5000 mm, M12 axial, 5-pin, PVC
c	501 04591	K - D M12A - 8P - 2m - PUR	Connection cable 2000 mm, M12 axial, 8-pin, PUR
d	501 04590	K - D M12A - 8P - 5m - PUR	Connection cable 5000 mm, M12 axial, 8-pin, PUR
e	500 39627	UPG 5	Configuration adaptor

ODSL 8 Page 206

ODS 25 Page 212

ODSL 30 Page 216

ODS 96(B) Page 220

HRTU 418 Page 232

VRTU 430 Page 236

GS 754 Page 240

ROD 4 Page 244

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ODSL 8

Optical distance sensors

	Abs. meas. accuracy	Repeatability [4]	Resolution [mm]	Option	Accessories	
	± 1 … ± 2% [2]	± 0.25 … ± 1%	0.1	2, 3, 4	c, d, e	
	± 1 … ± 2% [2]	± 0.25 … ± 1%	0.1	2, 3, 4	c, d, e	
	± 2 … ± 4% [3]	± 1 … ± 3%	0.1 … 0.5 [5]	1, 4	a, b	
	± 2 … ± 4% [3]	± 1 … ± 3%	0.1 … 0.5 [5]	1, 4	a, b	
	± 2 … ± 4% [3]	± 1 … ± 3%	0.1 … 0.5 [5]	1, 2, 4	a, b	

4) Same object, identical environmental conditions, measurement object ≥ 50x50 mm²
5) Minimum and maximum value depend on measurement distance

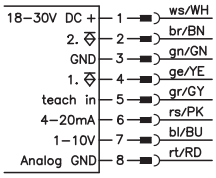
Configuration software - free download at *www.leuze.com*.

Optical Sensor ABCs

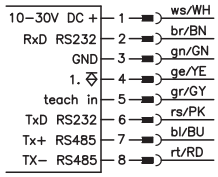
- Optical distance sensors Page 411
- Connection types Page 414
- Outputs Page 414

Electrical connection

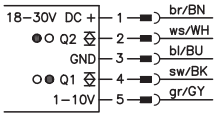
ODSL 8/V4-400-S12



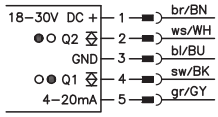
ODSL 8/D4-400-S12



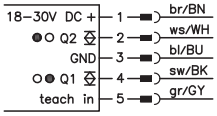
ODSL 8/V 66-500-S12



ODSL 8/C 66-500-S12



ODSL 8/66-500-S12

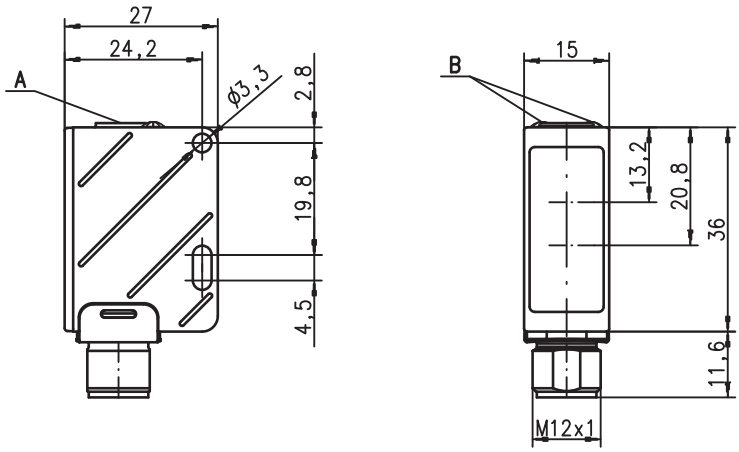


Options

1	Teach-in via rotary switch
2	Teach-in via teach input
3	Adjustable measurement range and measurement mode
4	UL approval

OVERVIEW OF OPTICAL DISTANCE SENSORS

Dimensioned drawing



Further details can be found in the respective data sheet.

A Teach button
B Indicator diode

We reserve the right to make changes • ODS25_Overview_GB.fm

ODSL 8
Page 206

ODS 25
Page 212

ODSL 30
Page 216

ODS 96(B)
Page 220

HRTU 418
Page 232

VRTU 430
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GS 754
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ROD 4
Page 244

ODS 25

Optical distance sensors	Measurement range	Page
Optical distance sensors ODS 25	25 … 200mm	214

Other 25 Series products:

Throughbeam sensors	LSR 25, ILSR 25	60
Retro-reflective sensors	PRK 25	62
Diffuse reflection scanners	RTR 25, HRT 25, HRTR 25	72

Common technical data

Electrical data	Operating voltage U_B	18 … 30VDC
	Residual ripple	≤ 15% of U_B
	Open-circuit current	≤ 25mA
	Voltage output	1 … 10V
Indicators	Green LED	Ready to operate
	Yellow LED	Obj. detected, teach-in
Mechanical data	Housing	Plastic
	Optics cover	Plastic
	Weight (plug/cable)	15g
Environmental data	Ambient temperature (operation)	-20°C … +40°C
	VDE safety class	II, all-insulated
	Protection class	IP 67, IP 69K
	Standards applied	IEC 60947-5-2, UL 508

Mounting systems for this series can be found from **page 368** onwards

Features

- **Compact construction**
- **Measurement range 25 … 200mm**
- **Resolution 1mm**
- **Simple operation with teach-in on sensor or via control line**

Optical Sensor ABCs

- Optical distance sensors Page 411

OPTICAL DISTANCE SENSORS

Part description Part No.:	Meas. range [1] [mm] ☐	Operating voltage	Light source Light spot [2]	Output	Connection	Meas. time [ms]
Optical laser distance sensors						
ODS 25 / V - 200 - S12 501 02824	25 200	18 … 30VDC	Red light 8x8mm²	Analog/V	M12 connector	≤ 10

1) Absolute value measurement, luminosity coefficient 6 … 90%, 20°C, measurement object ≥ 50x50mm²
2) At a distance of 200mm
3) Same object, identical environmental conditions, measurement object ≥ 50x50mm²

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
e	501 04547	K - D M12W - 4P - 10m - PVC	Connection cable 10000mm, M12 angular, 4-pin, PVC
f	501 04546	K - D M12A - 4P - 10m - PVC	Connection cable 10000mm, M12 axial, 4-pin, PVC

ODSL 8
Page 206

ODS 25
Page 212

ODSL 30
Page 216

ODS 96(B)
Page 220

HRTU 418
Page 232

VRTU 430
Page 236

GS 754
Page 240

ROD 4
Page 244

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ODS 25

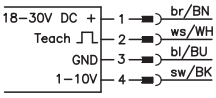
Optical distance sensors

	Linearity [1]	Repeatability [3]	Resolution [mm]	Option	Accessories	
	± 2.5% [3]	± 2%	1	1, 2, 3	a, b, c, d, e, f	

Optical Sensor ABCs

- Optical distance sensors Page 411
- Connection types Page 414
- Outputs Page 414

Electrical connection

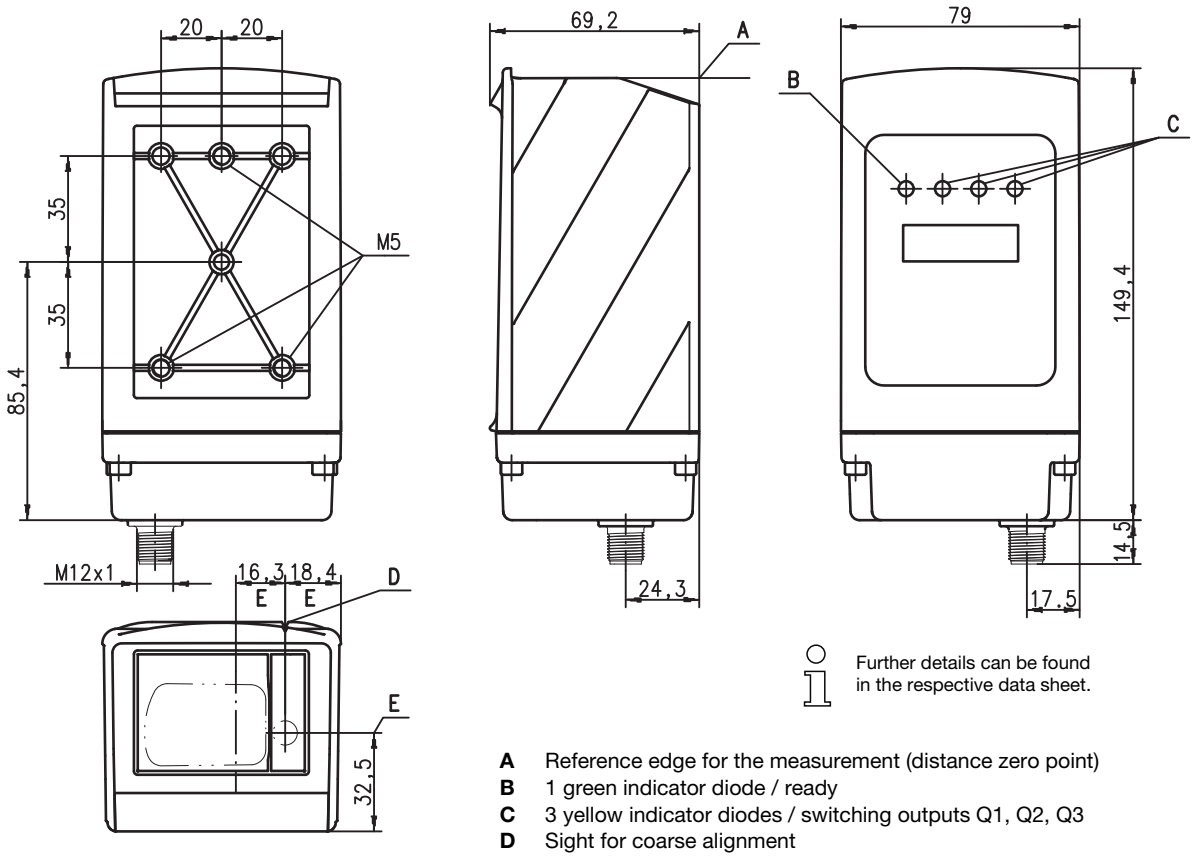


Options

1	Teach-in via teach button
2	Teach-in via teach input
3	UL approval

OVERVIEW OF OPTICAL DISTANCE SENSORS

Dimensioned drawing



Further details can be found in the respective data sheet.

A Reference edge for the measurement (distance zero point)
B 1 green indicator diode / ready
C 3 yellow indicator diodes / switching outputs Q1, Q2, Q3
D Sight for coarse alignment
E Optical axes

ODSL 8
Page 206

ODS 25
Page 212

ODSL 30
Page 216

ODS 96(B)
Page 220

HRTU 418
Page 232

VRTU 430
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GS 754
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ROD 4
Page 244

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ODSL 30

Optical distance sensors	Measurement range	Page
Optical distance sensors ODSL 30	0.2 … 30m	218

Common technical data

Electrical data	Operating voltage U_B	10 … 30/18 … 30VDC
	Residual ripple	≤ 15% of U_B
	Power consumption	≤ 4W
	Signal voltage high/low	≥ (U_B-2V)/≤ 2V
Indicators	Green LED	Ready to operate
	Yellow LEDs	Switching outputs
Mechanical data	Housing	Metal
	Optics cover	Glass
	Weight	650g
Environmental data	Ambient temperature (operation)	0°C … +45°C
	VDE safety class	II, all-insulated
	Protection class	IP 65
	Standards applied	IEC 60947-5-2, UL 508

Mounting bracket BT 30 included in delivery contents

Features

- **Measurement range up to 30m**
- **Resolution 1mm**
- **High measurement accuracy through internal referencing**
- **LCD display and key pad for configuration and measurement value display**

Optical Sensor ABCs

- Optical distance sensors Page 411

OPTICAL DISTANCE SENSORS

Part description Part No.:	Meas. range [m]	Operating voltage	Light source Light spot [1]	Output	Connection	Meas. time [ms]
Optical laser distance sensors						
ODSL 30 / V - 30M - S12 500 39447	0.2 … 30 [2]	18 … 30 VDC	Red light laser, class 2 Ø 6 mm	Analog/mA/V 1 PNP/NPN	M12 connector	≤ 100
ODSL 30 / D 232 - 30M - S12 500 41203	0.2 … 30 [2] [4]	10 … 30 VDC	Red light laser, class 2 Ø 6 mm	Serial/RS 232 2 PNP/NPN	M12 connector	≤ 100
ODSL 30 / D 485 - 30M - S12 500 41204	0.2 … 30 [2] [4]	10 … 30 VDC	Red light laser, class 2 Ø 6 mm	Serial/RS 485 2 PNP/NPN	M12 connector	≤ 100
ODSL 30 / 24 - 30M - S12 500 40720	0.2 … 30 [2]	10 … 30 VDC	Red light laser, class 2 Ø 6 mm	3 PNP/NPN	M12 connector	≤ 100

1) At a distance of 10 mm
2) Luminosity coefficient 6 … 90 %, temperature range 0 °C … +45 °C, measurement object ≥ 50 x 50 mm², with referencing
3) Same object, identical environmental conditions
4) ODSL 30 / D… up to 65 m, luminosity coefficient 50 … 90 %
5) Display and output resolution 0.1 mm configurable

Accessories / connection cables

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

	Part No.	Designation	Features
a	501 04591	K - D M12A - 8P - 2m - PUR	Connection cable 2000 mm, M12 axial, 8-pin, PUR
b	501 04590	K - D M12A - 8P - 5m - PUR	Connection cable 5000 mm, M12 axial, 8-pin, PUR
c	501 04599	CTS 100 x 100	Cooperative target, 100 mm x 100 mm, screw type

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ODSL 30

Optical distance sensors

	Abs. meas. accuracy [2]	Repeatability [3]	Resolution [mm] [5]	Option	Accessories	
	± 1 %	± 0.5 %	0.1 / 1	1, 2, 3, 4	a, b, c	
	± 2 mm	± 2 mm	0.1 / 1	1, 2, 3, 4	a, b, c	
	± 2 mm	± 2 mm	0.1 / 1	1, 2, 3, 4	a, b, c	
	± 2 mm	± 2 mm	0.1 / 1	1, 2, 3, 4	a, b, c	

Optical Sensor ABCs

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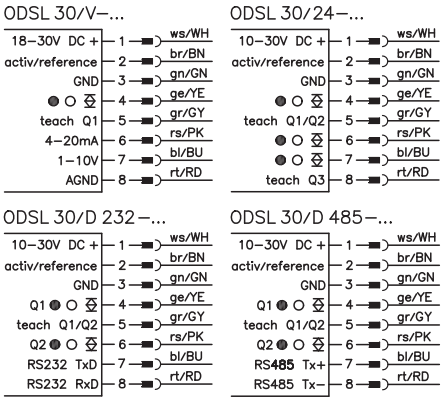
- Connection types Page 414
- Outputs Page 414

Electrical connection



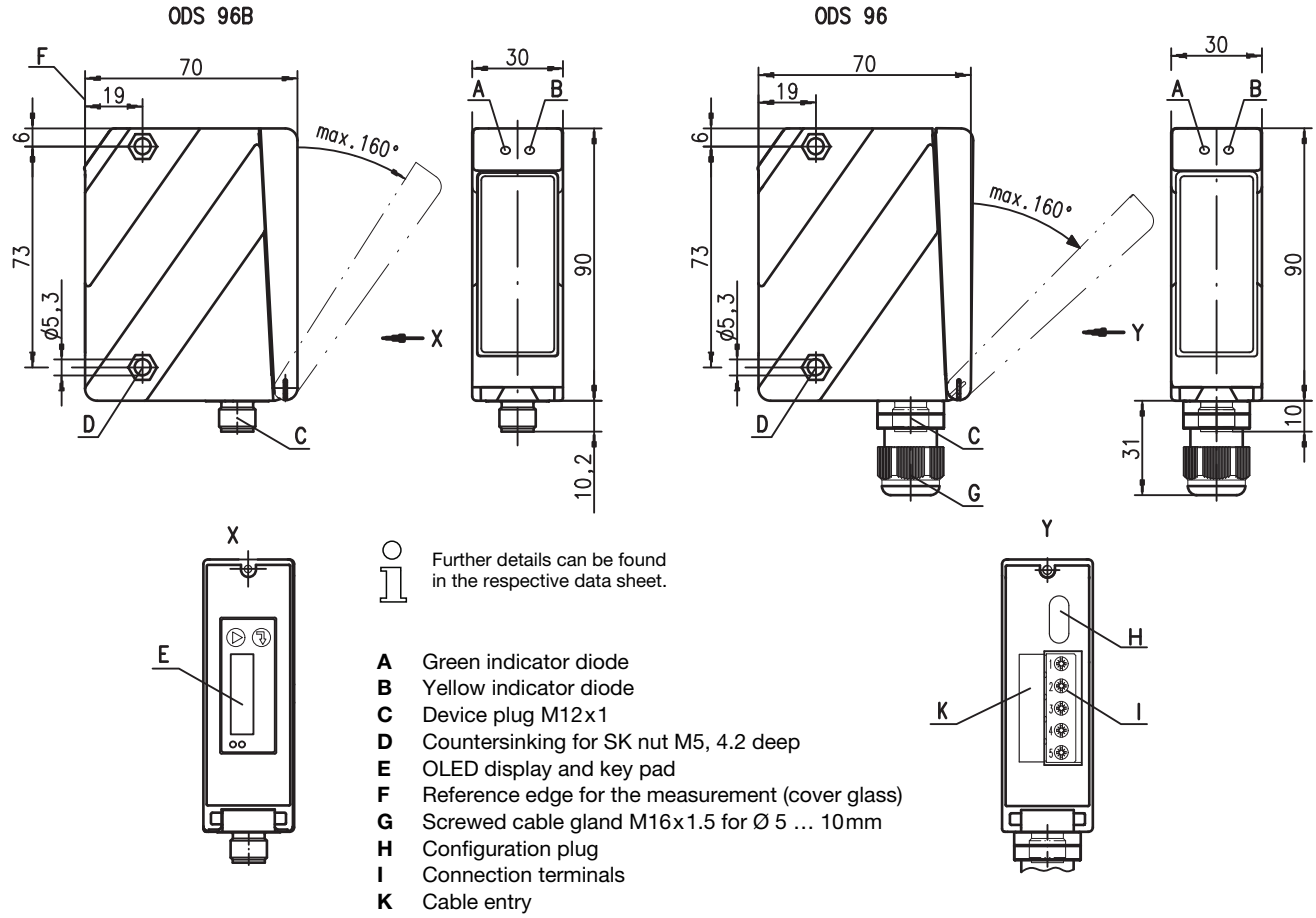
Options

1	Teach-in of the switching points via teach input or keyboard entry
2	Configurable activation/referencing input
3	Menu-driven configuration via LC display and key pad
4	UL approval

OVERVIEW OF OPTICAL DISTANCE SENSORS

Pallet detection

Dimensioned drawing



Further details can be found in the respective data sheet.

A Green indicator diode
B Yellow indicator diode
C Device plug M12x1
D Countersinking for SK nut M5, 4.2 deep
E OLED display and key pad
F Reference edge for the measurement (cover glass)
G Screwed cable gland M16x1.5 for Ø 5 … 10mm
H Configuration plug
I Connection terminals
K Cable entry

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ODS 96(B)

Optical distance sensors	Measurement range	Page
Optical distance sensors ODS(L) 96	60 … 5000mm	222

Other 96 Series products:

Throughbeam sensors	LS 96	126
Retro-reflective sensors	RK 96, PRK 96	130
Diffuse reflection scanners	RT 96, HRT 96	136
Protective sensors	SLS 96	344
Ex sensors	LS 96, SLS 96, PRK 96, HRT 96, ODS 96	354
AS-interface sensors	LS 96, PRK 96, HRT 96	360

Common technical data

Electrical data	Operating voltage U_B	10 … 30/18 … 30VDC
	Residual ripple	≤ 15% of U_B
	Open-circuit current	≤ 150mA
	Signal voltage high/low	≥ (U_B-2V)/≤ 2V
Indicators	Green LED	Ready to operate
	Yellow LED	Obj. detected, teach-in
Mechanical data	Housing	Metal or plastic
	Optics cover	Glass or plastic
	Weight (metal/plastic)	380g/140g
Environmental data	Ambient temperature (operation)	-20°C … +50°C
		ODSL 96 K…:
		-20°C … +40°C
	VDE safety class	II, all-insulated
	Protection class	IP 67, IP 69K [1]
	Standards applied	IEC 60947-5-2, UL 508

1) IP 69K only with metal housing

Mounting systems for this series can be found from **page 371** onwards

Features

- **Measurement range 60 … 5000mm**
- **Resolution > 0.1mm**
- **High measurement accuracy**
- **OLED display and key pad for configuration (ODS 96B)**
- **PC configuration provides high flexibility**

Optical Sensor ABCs

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OPTICAL DISTANCE SENSORS

Part description Part No.:	Meas. range [mm]	Operating voltage	Light source Light spot [1]	Output	Connection	Meas. time [ms]
Optical distance sensors with visible red light in metal housing						
ODSR 96B M/C6 - 600 - S12 501 06730	100 600 [2]	18 … 30VDC	Red light 15 x 15mm²	Analog/mA 1 x push-pull	M12 connector	1 … 5 [2]
ODSR 96B M/V6 - 600 - S12 501 06731	100 600 [2]	18 … 30VDC	Red light 15 x 15mm²	Analog/V 1 x push-pull	M12 connector	1 … 5 [2]

1) At measurement distance of 600mm
2) Reflectivity 6 … 90%, complete measurement range, at 20°C, medium range U_B, measurement object ≥ 50x50mm². With serial interface: depending on the measurement transmission mode and the baud rate

Accessories / connection cables

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

	Part No.	Designation	Features
a	501 04556	K - D M12W - 5P - 2m - PVC	Connection cable 2000mm, M12 angular, 5-pin, PVC
b	501 04555	K - D M12A - 5P - 2m - PVC	Connection cable 2000mm, M12 axial, 5-pin, PVC
c	501 04558	K - D M12W - 5P - 5m - PVC	Connection cable 5000mm, M12 angular, 5-pin, PVC
d	501 04557	K - D M12A - 5P - 5m - PVC	Connection cable 5000mm, M12 axial, 5-pin, PVC
e	501 04560	K - D M12W - 5P - 10m - PVC	Connection cable 10000mm, M12 angular, 5-pin, PVC
f	501 07223	UPG 10	Configuration adaptor for ODS 96B

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We reserve the right to make changes • ODS96B_1_GB.fm

ODS 96B

Optical distance sensors

	Abs. meas. accuracy	Repeatability	Resolution [mm]	Option	Accessories	
	± 1.5% 2)	± 0.5% 3)	0.1 … 0.5 4)	1, 3, 6, 7	a, b, c, d, e, f	
	± 1.5% 2)	± 0.5% 3)	0.1 … 0.5 4)	1, 3, 6, 7	a, b, c, d, e, f	

3) Same object, identical environmental conditions, measurement object ≥ 50x50mm²
4) Minimum and maximum value depend on measurement distance

Configuration software - free download at *www.leuze.com*.

Optical Sensor ABCs

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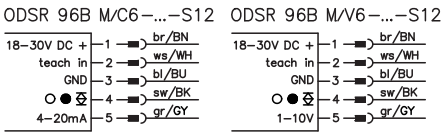
- Connection types Page 414
- Outputs Page 414

Electrical connection



Options

1	Teach-in of the outputs via teach input or keyboard entry
2	Teach-in of the outputs via keyboard entry
3	Adjustable measurement range and measurement mode
4	Adjustable measurement value transmission and measurement mode
5	2 warning outputs (for signalling 4 different device states)
6	PC/OLED display and key pad for configuration
7	UL approval (class 2 acc. to NEC)

OPTICAL DISTANCE SENSORS

Part description Part No.:	Meas. range [mm] ☐	Operating voltage	Light source Light spot [1]	Output	Connection	Meas. time [ms]
Optical distance sensors with invisible infrared light in metal housing						
ODS 96B M/C6 - 600 - S12 501 06720	100 600 [2]	18 … 30VDC	Infrared light 15 x 15mm²	Analog/mA 1 x push-pull	M12 connector	1 … 5 [2]
ODS 96B M/V6 - 600 - S12 501 06721	100 600 [2]	18 … 30VDC	Infrared light 15 x 15mm²	Analog/V 1 x push-pull	M12 connector	1 … 5 [2]
ODS 96B M/D26 - 600 - S12 501 06722	100 600 [2]	10 … 30VDC	Infrared light 15 x 15mm²	Serial/RS 232 1 push-pull	M12 connector	1 … 5 [2]
ODS 96B M/D36 - 600 - S12 501 06723	100 600 [2]	10 … 30VDC	Infrared light 15 x 15mm²	Serial/RS 485 1 push-pull	M12 connector	1 … 5 [2]
ODS 96B M/66 - 600 - S12 501 06724	100 600 [2]	10 … 30VDC	Infrared light 15 x 15mm²	2 push-pull	M12 connector	1 … 5 [2]
ODS 96B M/C66.01 - 1400 - S12 501 06727	120 1400 [2]	18 … 30VDC	Infrared light 15 x 15mm²	Analog/mA 2 x push-pull	M12 connector	1 … 5 [2]
ODS 96B M/V6 - 1400 - S12 501 10231	120 1400 [2]	18 … 30VDC	Infrared light 15 x 15mm²	Analog/V 1 x push-pull	M12 connector	1 … 5 [2]

1) At measurement distance of 600mm
2) Reflectivity 6 … 90%, complete measurement range, at 20°C, medium range U_B, measurement object ≥ 50x50mm². With serial interface: depending on the measurement transmission mode and the baud rate

Accessories / connection cables

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

	Part No.	Designation	Features
a	501 04556	K - D M12W - 5P - 2m - PVC	Connection cable 2000mm, M12 angular, 5-pin, PVC
b	501 04555	K - D M12A - 5P - 2m - PVC	Connection cable 2000mm, M12 axial, 5-pin, PVC
c	501 04558	K - D M12W - 5P - 5m - PVC	Connection cable 5000mm, M12 angular, 5-pin, PVC
d	501 04557	K - D M12A - 5P - 5m - PVC	Connection cable 5000mm, M12 axial, 5-pin, PVC
e	501 04560	K - D M12W - 5P - 10m - PVC	Connection cable 10000mm, M12 angular, 5-pin, PVC
f	501 07223	UPG 10	Configuration adaptor for ODS 96B

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We reserve the right to make changes • ODS96B_4_GB.fm

ODS 96B

Optical distance sensors

	Abs. meas. accuracy	Repeatability	Resolution [mm]	Option	Accessories	
	± 1.5% 2)	± 0.5% 3)	0.1 … 0.5 4)	1, 3, 6, 7	a, b, c, d, e, f	
	± 1.5% 2)	± 0.5% 3)	0.1 … 0.5 4)	1, 3, 6, 7	a, b, c, d, e, f	
	± 1.5% 2)	± 0.5% 3)	0.1 … 0.5 4)	2, 4, 6, 7	a, b, c, d, e, f	
	± 1.5% 2)	± 0.5% 3)	0.1 … 0.5 4)	2, 4, 6, 7	a, b, c, d, e, f	
	± 1.5% 2)	± 0.5% 3)	0.1 … 0.5 4)	1, 3, 6, 7	a, b, c, d, e, f	
	± 2% 2)	± 1% 3)	0.1 … 0.5 4)	2, 3, 5, 6, 7	a, b, c, d, e, f	
	± 2% 2)	± 1% 3)	0.1 … 0.5 4)	1, 3, 6, 7	a, b, c, d, e, f	

3) Same object, identical environmental conditions, measurement object ≥ 50x50mm²
4) Minimum and maximum value depend on measurement distance

Configuration software - free download at *www.leuze.com*.

Options

1	Teach-in of the outputs via teach input or keyboard entry
2	Teach-in of the outputs via keyboard entry
3	Adjustable measurement range and measurement mode
4	Adjustable measurement value transmission and measurement mode
5	2 warning outputs (for signalling 4 different device states)
6	PC/OLED display and key pad for configuration
7	UL approval (class 2 acc. to NEC)

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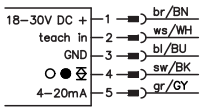
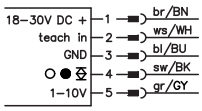
Electrical connection

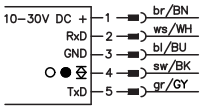
ODS 96B M/C6-...-S12



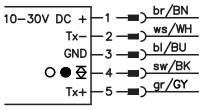
ODS 96B M/V6-...-S12



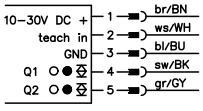
ODS 96B M/D26-...-S12



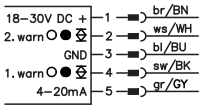
ODS 96B M/D36-...-S12



ODS 96B M/66-...-S12



ODS 96B M/C66.01-...-S12



OPTICAL DISTANCE SENSORS

Part description Part No.:	Meas. range [mm]	Operating voltage	Light source Light spot [1]	Output	Connection	Meas. time [ms]
Optical laser distance sensors with visible red light in metal housing						
ODSL 96B M/C6 - 800 - S12 501 06728	150 800 [2]	18 … 30VDC	Red light laser class 2 1 x 1mm²	Analog/mA 1 x push-pull	M12 connector	1 … 5 [2]
ODSL 96B M/V6 - 800 - S12 501 06729	150 800 [2]	18 … 30VDC	Red light laser class 2 1 x 1mm²	Analog/V 1 x push-pull	M12 connector	1 … 5 [2]
ODSL 96B M/C6-1200-XL-S12 501 06736	150 1200 [2]	18 … 30VDC	Red light laser class 2 15 x 4mm²	Analog/mA 1 x push-pull	M12 connector	1 … 5 [2]
ODSL 96B M/V6-1200-XL-S12 501 06737	150 1200 [2]	18 … 30VDC	Red light laser class 2 15 x 4mm²	Analog/V 1 x push-pull	M12 connector	1 … 5 [2]

1) At measurement distance of 800mm
2) Luminosity coefficient 6% … 90%, complete measurement range, at 20°C, medium range of U_B, measurement object ≥ 50x50mm²

Configuration software - free download at *www.leuze.com*.

Accessories / connection cables

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

	Part No.	Designation	Features
a	501 04556	K - D M12W - 5P - 2m - PVC	Connection cable 2000mm, M12 angular, 5-pin, PVC
b	501 04555	K - D M12A - 5P - 2m - PVC	Connection cable 2000mm, M12 axial, 5-pin, PVC
c	501 04558	K - D M12W - 5P - 5m - PVC	Connection cable 5000mm, M12 angular, 5-pin, PVC
d	501 04557	K - D M12A - 5P - 5m - PVC	Connection cable 5000mm, M12 axial, 5-pin, PVC
e	501 04560	K - D M12W - 5P - 10m - PVC	Connection cable 10000mm, M12 angular, 5-pin, PVC
f	501 07223	UPG 10	Configuration adaptor for ODS 96B

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We reserve the right to make changes • ODS96B_2_GB.fm

ODS 96B

Optical distance sensors

	Abs. meas. accuracy	Repeatability	Resolution [mm]	Option	Accessories	
	± 1.5% [2]	± 0.5% [3]	0.1 … 0.8 [4]	1, 2, 3, 4	a, b, c, d, e, f	
	± 1.5% [2]	± 0.5% [3]	0.1 … 0.8 [4]	1, 2, 3, 4	a, b, c, d, e, f	
	± 1.5% [2]	± 0.5% [3]	0.1 … 1.5 [4]	1, 2, 3, 4	a, b, c, d, e, f	
	± 1.5% [2]	± 0.5% [3]	0.1 … 1.5 [4]	1, 2, 3, 4	a, b, c, d, e, f	

3) Same object, identical environmental conditions, measurement object ≥ 50x50 mm²
4) Minimum and maximum value depend on measurement distance

Optical Sensor ABCs

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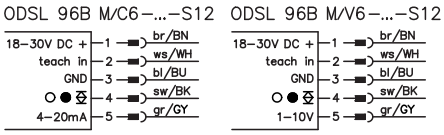
Electrical connection



Options

1	Teach-in of the outputs via teach input or keyboard entry
2	Adjustable measurement range and measurement mode
3	PC/OLED display and key pad for configuration
4	UL approval (class 2 acc. to NEC)

OPTICAL DISTANCE SENSORS

Part description Part No.:	Meas. range [mm]	Operating voltage	Light source Light spot [1]	Output	Connection	Meas. time [ms]
Optical laser distance sensors with visible red light in metal housing						
ODSL 96B M/C6 - 2000 - S12 501 06593	150 2000 [2]	18 … 30VDC	Red light laser class 2 2 x 6mm²	Analog/mA 1 x push-pull	M12 connector	1 … 5 [2]
ODSL 96B M/V6 - 2000 - S12 501 06594	150 2000 [2]	18 … 30VDC	Red light laser class 2 2 x 6mm²	Analog/V 1 x push-pull	M12 connector	1 … 5 [2]
ODSL 96B M/D26 - 2000 - S12 501 06597	150 2000 [2]	10 … 30VDC	Red light laser class 2 2 x 6mm²	Serial/RS 232 1 push-pull	M12 connector	1 … 5 [2]
ODSL 96B M/D36 - 2000 - S12 501 06598	150 2000 [2]	10 … 30VDC	Red light laser class 2 2 x 6mm²	Serial/RS 485 1 push-pull	M12 connector	1 … 5 [2]
ODSL 96B M/66 - 2000 - S12 501 06599	150 2000 [2]	10 … 30VDC	Red light laser class 2 2 x 6mm²	2 push-pull	M12 connector	1 … 5 [2]
ODSLR 96B M/C6 - 2000 - S12 501 06732	60 2000 [2]	18 … 30VDC	Red light, LED+ laser class 2 2 x 6mm²	Analog/mA 1 x push-pull	M12 connector	1 … 5 [2]
ODSLR 96B M/V6 - 2000 - S12 501 06733	60 2000 [2]	18 … 30VDC	Red light, LED+ laser class 2 2 x 6mm²	Analog/V 1 x push-pull	M12 connector	1 … 5 [2]

1) At measurement distance of 2000mm
2) Reflectivity 6 … 90%, complete measurement range, at 20°C, medium range U_B, measurement object ≥ 50x50mm². With serial interface: depending on the measurement transmission mode and the baud rate

Configuration software - free download at *www.leuze.com*.

Accessories / connection cables

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

	Part No.	Designation	Features
a	501 04556	K - D M12W - 5P - 2m - PVC	Connection cable 2000mm, M12 angular, 5-pin, PVC
b	501 04555	K - D M12A - 5P - 2m - PVC	Connection cable 2000mm, M12 axial, 5-pin, PVC
c	501 04558	K - D M12W - 5P - 5m - PVC	Connection cable 5000mm, M12 angular, 5-pin, PVC
d	501 04557	K - D M12A - 5P - 5m - PVC	Connection cable 5000mm, M12 axial, 5-pin, PVC
e	501 04560	K - D M12W - 5P - 10m - PVC	Connection cable 10000mm, M12 angular, 5-pin, PVC
f	501 07223	UPG 10	Configuration adaptor for ODS 96B

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We reserve the right to make changes • ODS96B_3_GB.fm

ODS 96B

Optical distance sensors

	Abs. meas. accuracy	Repeatability	Resolution [mm]	Option	Accessories	
	± 1.5% 2)	± 0.5% 3)	1 … 3 4)	1, 3, 5, 6	a, b, c, d, e, f	
	± 1.5% 2)	± 0.5% 3)	1 … 3 4)	1, 3, 5, 6	a, b, c, d, e, f	
	± 1.5% 2)	± 0.5% 3)	1 … 3 4)	2, 4, 5, 6	a, b, c, d, e, f	
	± 1.5% 2)	± 0.5% 3)	1 … 3 4)	2, 4, 5, 6	a, b, c, d, e, f	
	± 1.5% 2)	± 0.5% 3)	1 … 3 4)	1, 3, 5, 6	a, b, c, d, e, f	
	± 1.5% 2)	± 0.5% 3)	1 … 3 4)	1, 3, 5, 6	a, b, c, d, e, f	
	± 1.5% 2)	± 0.5% 3)	1 … 3 4)	1, 3, 5, 6	a, b, c, d, e, f	

3) Same object, identical environmental conditions, measurement object ≥ 50x50mm²
4) Minimum and maximum value depend on measurement distance

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Electrical connection

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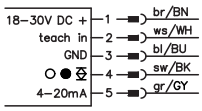
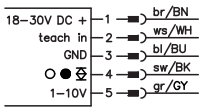
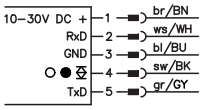
ODSLR 96B M/C6–...–S12



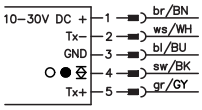
ODSL 96B M/V6–...–S12
ODSLR 96B M/V6–...–S12



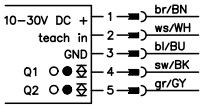
ODSL 96B M/D26–...–S12



ODSL 96B M/D36–...–S12



ODSL 96B M/66–...–S12



Options

1	Teach-in of the outputs via teach input or keyboard entry
2	Teach-in of the outputs via keyboard entry
3	Adjustable measurement range and measurement mode
4	Adjustable measurement value transmission and measurement mode
5	PC/OLED display and key pad for configuration
6	UL approval (class 2 acc. to NEC)

OPTICAL DISTANCE SENSORS

Part description Part No.:	Meas. range [mm] ☐	Operating voltage	Light source Light spot [1]	Output	Connection	Meas. time [ms]
Optical laser distance sensors in metal housing						
ODS 96 M/V - 5510 - 420 500 35216	250 5000 [2]	18 … 30VDC	Red light laser, class 2 3x12mm²	Analog/mA PNP	M12 connector	10 … 100
ODS 96 M/V - 5480 - 421 500 36255	250 5000 [2]	18 … 30VDC	Red light laser, class 2 3x12mm²	Analog/V PNP	M12 connector	10 … 100
ODS 96 M/V - 5520 - 426 500 37963	250 5000 [2]	18 … 30VDC	Red light laser, class 2 3x12mm²	Analog/mA 2xPNP	M12 connector	10 … 100
Optical laser distance sensors in plastic housing						
ODSL 96 K/V66 - 2300 - S12 501 01881	150 2300 [3]	18 … 30VDC	Red light laser, class 2 3x8mm²	Analog/V Push-pull	M12 connector	≤ 7
ODSL 96 K/66 - 2300 - S12 501 01882	150 2300 [3]	18 … 30VDC	Red light laser, class 2 3x8mm²	Push-pull	M12 connector	≤ 7

1) At 2000mm or 2300mm, respectively (ODSL 96…)
2) Luminosity coefficient 6 … 90%, temperature range -20°C … +40°C
3) Luminosity coefficient 6 … 90%, at 20°C, measurement object ≥ 50x50mm²

Accessories / connection cables

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

	Part No.	Designation	Features
a	501 04556	K - D M12W - 5P - 2m - PVC	Connection cable 2000mm, M12 angular, 5-pin, PVC
b	501 04555	K - D M12A - 5P - 2m - PVC	Connection cable 2000mm, M12 axial, 5-pin, PVC
c	501 04558	K - D M12W - 5P - 5m - PVC	Connection cable 5000mm, M12 angular, 5-pin, PVC
d	501 04557	K - D M12A - 5P - 5m - PVC	Connection cable 5000mm, M12 axial, 5-pin, PVC
e	501 04560	K - D M12W - 5P - 10m - PVC	Connection cable 10000mm, M12 angular, 5-pin, PVC
f	501 04559	K - D M12A - 5P - 10m - PVC	Connection cable 10000mm, M12 axial, 5-pin, PVC

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ODS 96

Optical distance sensors

Abs. meas. accuracy	Repeatability 3)	Resolution [mm]	Option	Accessories
± 5% 2)	± 3%	1 … 20 4)	1, 2, 4, 5	a, b, c, d, e, f
± 5% 2)	± 3%	1 … 20 4)	1, 2, 4, 5	a, b, c, d, e, f
± 5% 2)	± 3%	1 … 20 4)	1, 4, 5	a, b, c, d, e, f
± 3% 2)	± 2%	1 … 5 4)	3, 5	a, b, c, d, e, f
± 3% 2)	± 2%	1 … 5 4)	2, 3, 5	a, b, c, d, e, f

3) Same object, identical environmental conditions, measurement object ≥ 50x50mm²
4) Minimum and maximum value depend on meas. distance/configuration of the analog output

Configuration software - free download at *www.leuze.com*.

Options

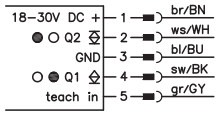
1	Measurement range and measurement mode configurable via software
2	Teach-in of the switching points via teach input
3	Teach-in of the switching points via teach button
4	Switching points configurable via software
5	UL approval

Optical Sensor ABCs

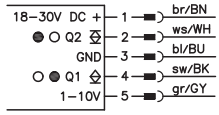
- Optical distance sensors Page 411
- Connection types Page 414
- Outputs Page 414

Electrical connection

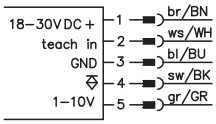
ODSL 96K/66–...



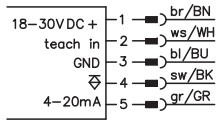
ODSL 96K/V66–...



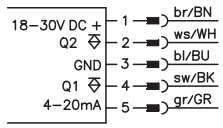
ODS 96...– 421



ODS 96...– 420

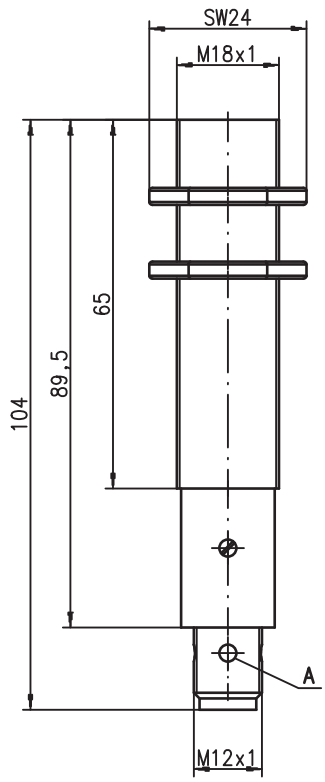


ODS 96...– 426



OVERVIEW OF ULTRASONIC DISTANCE SENSORS

Dimensioned drawing



Further details can be found in the respective data sheet.

A Indicator diode Q1

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HRTU 418

Ultrasonic distance sensors	Measurement range	Page
Ultrasonic distance sensors HRTU 418	50 … 1000mm	234

Other 418 Series products:

Switching ultrasonic sensors	HRTU 418	254

Common technical data

Electrical data	Operating voltage U_B	20 … 30VDC
	Residual ripple	≤ 10% of U_B
	Open-circuit current	≤ 60mA
	Characteristic output	Ascending
Indicators	Yellow LED	Object detected
Mechanical data	Housing	Metal (CuZn)
	Weight	50g
Environmental data	Ambient temperature (operation)	-25°C … +70°C
	VDE safety class	III
	Protection class	IP 67
	Standards applied	IEC 60947-5-2, UL 508

Features

- **Sensors in M18 cylindrical housing**
- **Measurement range up to 1000mm**
- **Configuration with PC software and programming terminal**
- **Temperature compensation**

Optical Sensor ABCs

- Ultrasonic distance sensors Page 411

ULTRASONIC DISTANCE SENSORS

Part description Part No.:	Meas. range [1] [mm]	Ultrasonic frequency	Opening angle	Output	Connection
Ultrasonic distance sensors					
HRTU 418 M/V - 5010 - 300 - S12 500 36259	50 300	400 kHz	6°	Analog/mA	M12 connector
HRTU 418 M/V - 5310 - 300 - S12 500 40616	50 300	400 kHz	6°	Analog/V	M12 connector
HRTU 418 M/V - 3010 - 1000 - S12 500 36260	150 1000	200 kHz	6°	Analog/mA	M12 connector
HRTU 418 M/V - 3310 - 1000 - S12 500 40618	150 1000	200 kHz	6°	Analog/V	M12 connector

1) Over complete temperature range, measurement object ≥ 10x10 mm²
2) Of the measurement range end value

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 2000 mm, M12 angular, 4-pin, PVC
b	501 04542	K - D M12A - 4P - 2m - PVC	Connection cable 2000 mm, M12 axial, 4-pin, PVC
c	501 04545	K - D M12W - 4P - 5m - PVC	Connection cable 5000 mm, M12 angular, 4-pin, PVC
d	501 04544	K - D M12A - 4P - 5m - PVC	Connection cable 5000 mm, M12 axial, 4-pin, PVC
e	500 36559	PGU 01	Programming unit incl. software

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HRTU 418

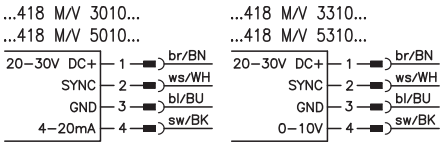
Ultrasonic sensors

	Abs. meas. accuracy [2]	Repeatability	Resolution [mm]	Option	Accessories	
	± 2.5%	± 1mm	1	1, 2, 3, 4	a, b, c, d, e	
	± 2.5%	± 1mm	1	1, 2, 3, 4	a, b, c, d, e	
	± 2.5%	± 2mm	1	1, 2, 3, 4	a, b, c, d, e	
	± 2.5%	± 2mm	1	1, 2, 3, 4	a, b, c, d, e	

Optical Sensor ABCs

- Ultrasonic distance sensors Page 411
- Connection types Page 414
- Outputs Page 414

Electrical connection



Options

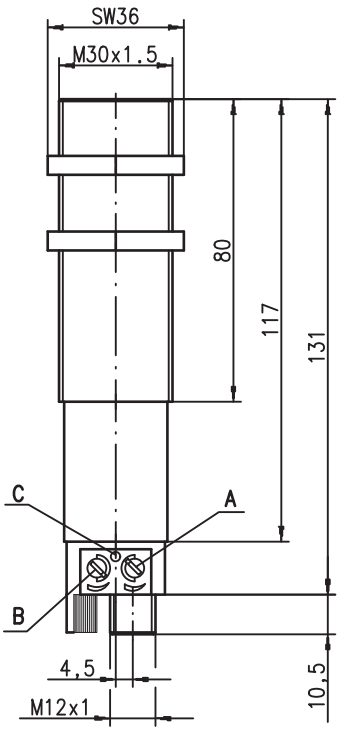
1	Configurable via programming unit and software
2	Sensor synchronisation via SYNC input
3	Configurable multiplex operation
4	UL approval

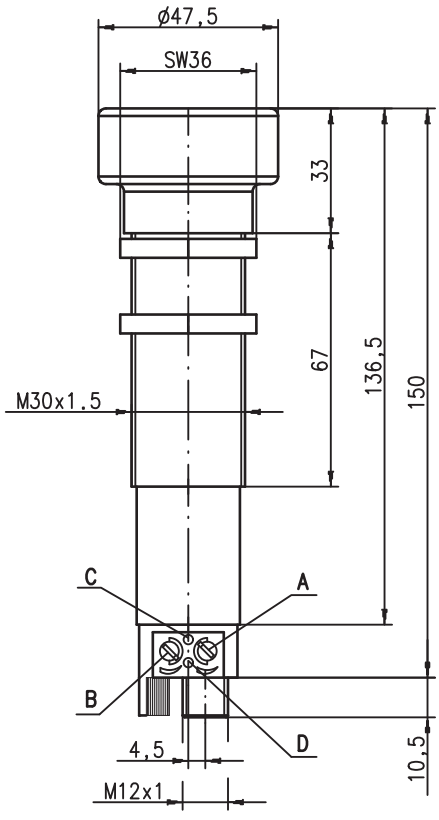
OVERVIEW OF ULTRASONIC DISTANCE SENSORS

Dimensioned drawing

A Adjustment of end of switching range
B Adjustment of start of switching range
C Indicator diode Q1
D Indicator diode Q2 (…430 M/P… only)

Further details can be found in the respective data sheet.





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VRTU 430

Ultrasonic distance sensors	Measurement range	Page
Ultrasonic distance sensors VRTU 430	60 … 6000mm	238

Other 430 Series products:

Switching ultrasonic sensors	VRTU 430	260

Common technical data

Electrical data	Operating voltage U_B	20 … 30VDC
	Residual ripple	≤ 10% of U_B
	Open-circuit current	≤ 60mA
	Characteristic output	Ascending
Indicators	Yellow LED	Switching output
	Flashing yellow LED	Programming error
Mechanical data	Housing	Metal (CuZn)
	Weight	210g … 380g
Environmental data	Ambient temperature (operation)	-25°C … +70°C
	VDE safety class	III
	Protection class	IP 65
	Standards applied	IEC 60947-5-2, UL 508

Features

- **Sensors in M30 cylindrical housing**
- **Measurement range up to 6000mm**
- **Configuration with PC software and programming terminal**
- **Temperature compensation**

Optical Sensor ABCs

- Ultrasonic distance sensors Page 411

ULTRASONIC DISTANCE SENSORS

Part description Part No.:	Meas. range [mm]	Ultrasonic frequency	Opening angle	Output	Connection
Ultrasonic distance sensors					
VRTU 430 M/V - 5710 - 300 - S12 500 36266	60 … 300 [1]	400 kHz	6°	Analog/mA PNP	M12 connector
VRTU 430 M/V - 5510 - 300 - S12 500 40771	60 … 300 [1]	400 kHz	6°	Analog/V PNP	M12 connector
VRTU 430 M/V - 3710 - 1300 - S12 500 36267	200 … 1300 [1]	200 kHz	6°	Analog/mA PNP	M12 connector
VRTU 430 M/V - 3510 - 1300 - S12 500 40772	200 … 1300 [1]	200 kHz	6°	Analog/V PNP	M12 connector
VRTU 430 M/V - 2710 - 3000 - S12 500 36268	400 3000 [2]	120 kHz	6°	Analog/mA PNP	M12 connector
VRTU 430 M/V - 2510 - 3000 - S12 501 07096	400 3000 [2]	120 kHz	6°	Analog/V PNP	M12 connector
VRTU 430 M/V - 1710 - 6000 - S12 500 36269	600 6000 [3]	80 kHz	6°	Analog/mA PNP	M12 connector

1) Over complete temperature range, measurement object ≥ 10x10 mm²
2) Over complete temperature range, measurement object ≥ 50x50 mm²
3) Over complete temperature range, measurement object ≥ 100x100 mm²
4) Of the measurement range end value

Accessories / connection cables

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

	Part No.	Designation	Features
a	501 04556	K - D M12W - 5P - 2m - PVC	Connection cable 2000 mm, M12 angular, 5-pin, PVC
b	501 04555	K - D M12A - 5P - 2m - PVC	Connection cable 2000 mm, M12 axial, 5-pin, PVC
c	501 04558	K - D M12W - 5P - 5m - PVC	Connection cable 5000 mm, M12 angular, 5-pin, PVC
d	501 04557	K - D M12A - 5P - 5m - PVC	Connection cable 5000 mm, M12 axial, 5-pin, PVC
e	501 04559	K - D M12A - 5P - 10m - PVC	Connection cable 10000 mm, M12 axial, 5-pin, PVC
f	500 36559	PGU 01	Programming unit incl. software

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VRTU 430

Ultrasonic sensors

	Abs. meas. accuracy [4]	Repeatability	Resolution [mm]	Option	Accessories	
	± 1.5%	± 0.45mm	≤ 1	1, 2, 3, 4	a, b, c, d, e, f	
	± 1.5%	± 0.45mm	≤ 1	1, 2, 3, 4	a, b, c, d, e, f	
	± 1.5%	± 2mm	≥ 1	1, 2, 3, 4	a, b, c, d, e, f	
	± 1.5%	± 2mm	≥ 1	1, 2, 3, 4	a, b, c, d, e, f	
	± 1.5%	± 5mm	≥ 1	1, 2, 3, 4	a, b, c, d, e, f	
	± 1.5%	± 5mm	≥ 1	1, 2, 3, 4	a, b, c, d, e, f	
	± 1.5%	± 9mm	≥ 1	1, 2, 3, 4	a, b, c, d, e, f	

Optical Sensor ABCs

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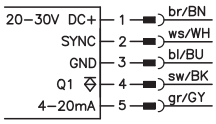
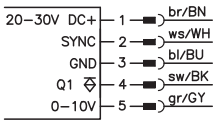
Electrical connection

...430 M/V 1710...
...430 M/V 2710...
...430 M/V 3710...
...430 M/V 5710...



...430 M/V 3510...
...430 M/V 5510...



Options

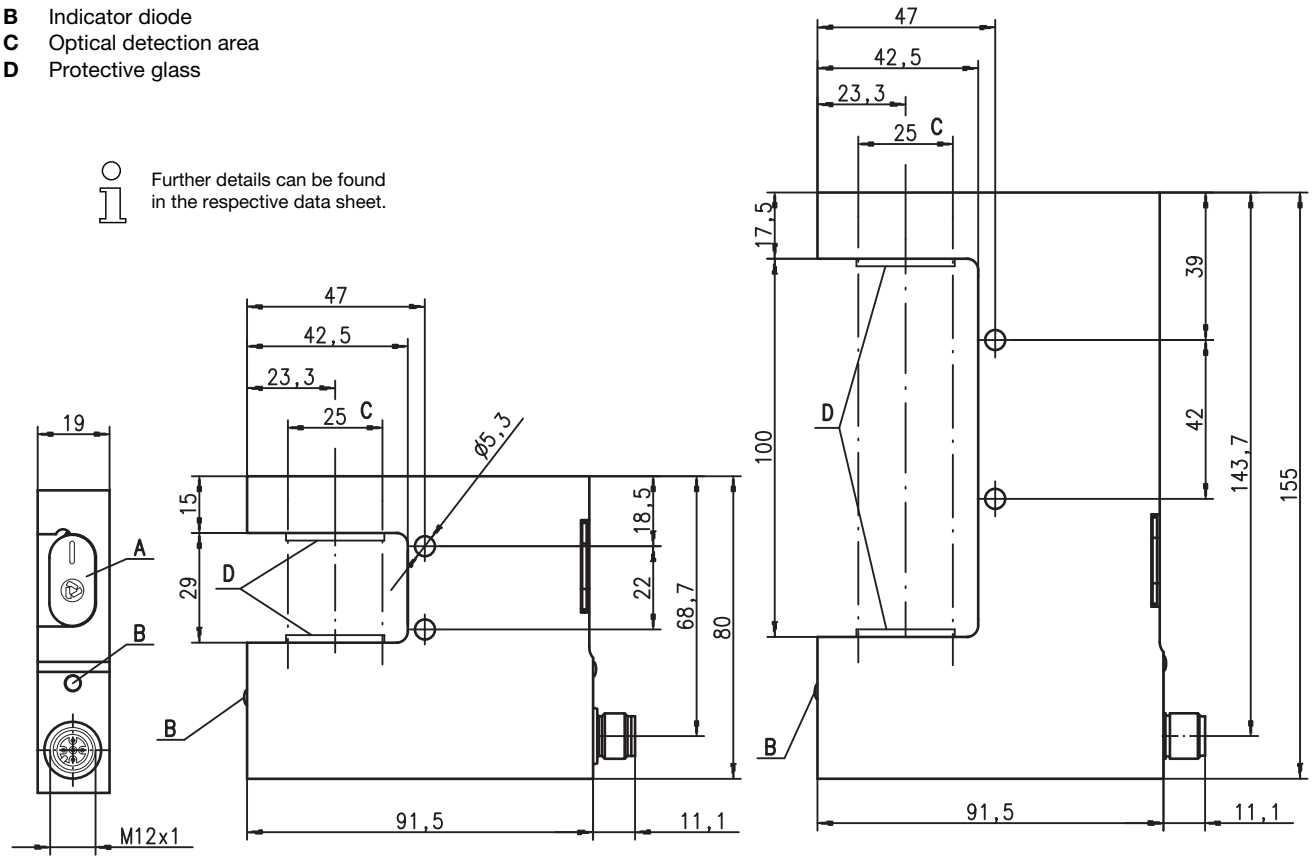
1	Configurable via programming unit and software
2	Sensor synchronisation via SYNC input
3	Configurable multiplex operation
4	UL approval

OVERVIEW OF MEASURING CCD FORKED SENSORS

Dimensioned drawing

A Interface
B Indicator diode
C Optical detection area
D Protective glass

Further details can be found in the respective data sheet.



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GS 754

Measuring CCD forked sensors	Mouth width	Page
Measuring CCD forked sensors GS 754	29 / 100 mm	242

Additional products - forked sensors:

Optical forked sensors	GS 04, GS 06, GS 21	264
Capacitive forked sensors	GK 14	276
Ultrasonic forked sensors	GSU 06, GSU 14	280

Common technical data

Electrical data	Operating voltage U_B	18 … 30 VDC
	Residual ripple	≤ 15 % of U_B
	Open-circuit current	≤ 150 mA
	Signal voltage high/low	≥ 8 V/≤ 2 V
Measurement data	Measurement field length	25 mm
	Measurement cycle	≥ 20 ms
	Maximum resolution	≥ 14 µm
Indicators	Green LED	Ready to operate
	Flashing green LED	Interference
Mechanical data	Housing	Aluminium, anodised
	Optics cover	Glass
	Weight	260 g
Environmental data	Ambient temperature (operation)	-20 °C … +50 °C
	VDE safety class	III
	Protection class	IP 54
	Standards applied	IEC 60947-5-2

Features

- **Edge and object detection of up to 3 objects in 25 mm wide light band**
- **Resolution 14 µm**
- **Adjustable measurement range and measurement mode**
- **Teach-in function and warning output**
- **Detection of multiple objects**
- **Calculation of arithmetic mean or single-value measurement**

CE

Optical Sensor ABCs

MEASURING CCD FORKED SENSORS

Part description Part No.:	Mouth width [mm]	Operating voltage	Light source	Output
Measuring CCD forked sensors				
GS 754 M/V - 100/42 - 604 - S12 501 03487	100	18 … 30VDC	Infrared light	2 x analog/mA PNP
GS 754 M/V - 100/42 - 504 - S12 501 03488	100	18 … 30VDC	Infrared light	2 x analog/V PNP
GS 754 M/D - 100/42 - 104 - S12 501 04283	100	18 … 30VDC	Infrared light	Serial/RS 232 PNP
GS 754 M/V - 29/42 - 604 - S12 501 02981	29	18 … 30VDC	Infrared light	Analog/mA PNP
GS 754 M/V - 29/42 - 504 - S12 501 03206	29	18 … 30VDC	Infrared light	Analog/V PNP
GS 754 M/D - 29/42 - 104 - S12 501 04280	29	18 … 30VDC	Infrared light	Serial/RS 232 PNP
GS 754 M/D - 29/42 - 204 - S12 501 04281	29	18 … 30VDC	Infrared light	Serial / RS 422

Accessories / connection cables

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

	Part No.	Designation	Features
a	501 04558	K - D M12W - 5P - 5m - PVC	Connection cable 5000mm, M12 angular, 5-pin, PVC
b	501 04557	K - D M12A - 5P - 5m - PVC	Connection cable 5000mm, M12 axial, 5-pin, PVC
c	501 04591	K - D M12A - 8P - 2m - PUR	Connection cable 2000mm, M12 axial, 8-pin, PUR
d	501 04590	K - D M12A - 8P - 5m - PUR	Connection cable 5000mm, M12 axial, 8-pin, PUR
e	500 82007	KB - ODS 96 - 1500	Configuration cable to PC, 1500mm
f	500 61428	KB - ODS 96 - 6000	Configuration cable to PC, 6000mm

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GS 754

CCD forked sensors

	Connection	Option	Accessories	
	M12 connector, 8-pin	1, 2, 3	c, d, e, f	
	M12 connector, 8-pin	1, 2, 3	c, d, e, f	
	M12 connector, 8-pin	1, 3	c, d, e, f	
	M12 connector, 5-pin	1	a, b, e, f	
	M12 connector, 5-pin	1	a, b, e, f	
	M12 connector, 5-pin	1	a, b, e, f	
	M12 connector, 5-pin	1	a, b, e, f	

Optical Sensor ABCs

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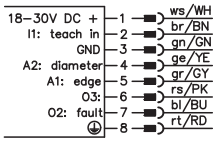
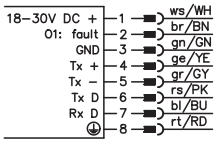
Electrical connection

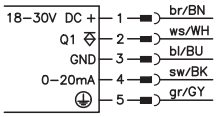
... M/V-100/42-504-S12
... M/V-100/42-604-S12



... M/D-100/42-104-S12



... M/V-29/42-604-S12



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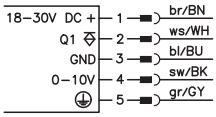

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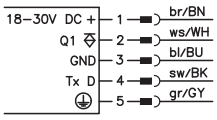
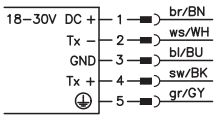


... M/D-29/42-204-S12



Options

1	Adjustable measurement range and measurement mode
2	Teach-in via teach input
3	Warning output

OVERVIEW OF SURFACE DISTANCE SENSORS

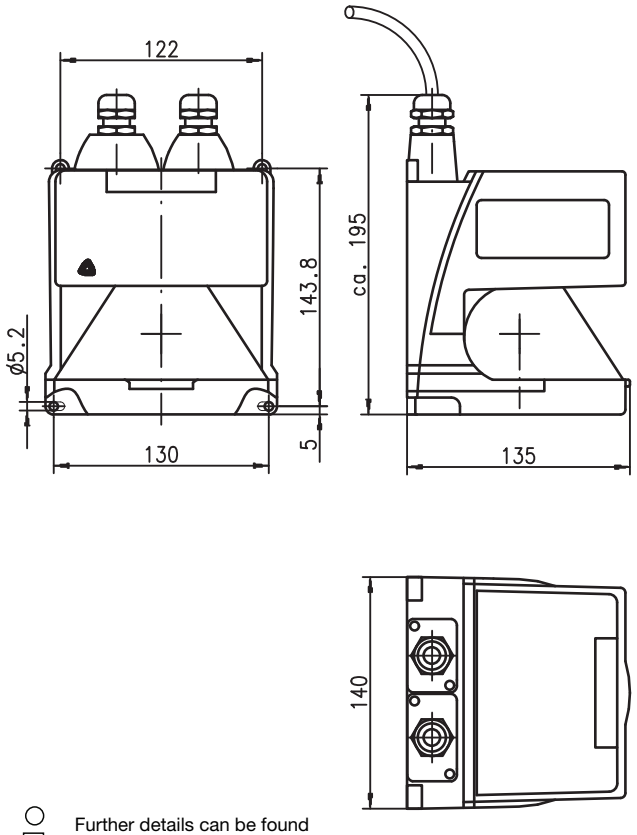
Compartment occupancy monitoring

Object measurement

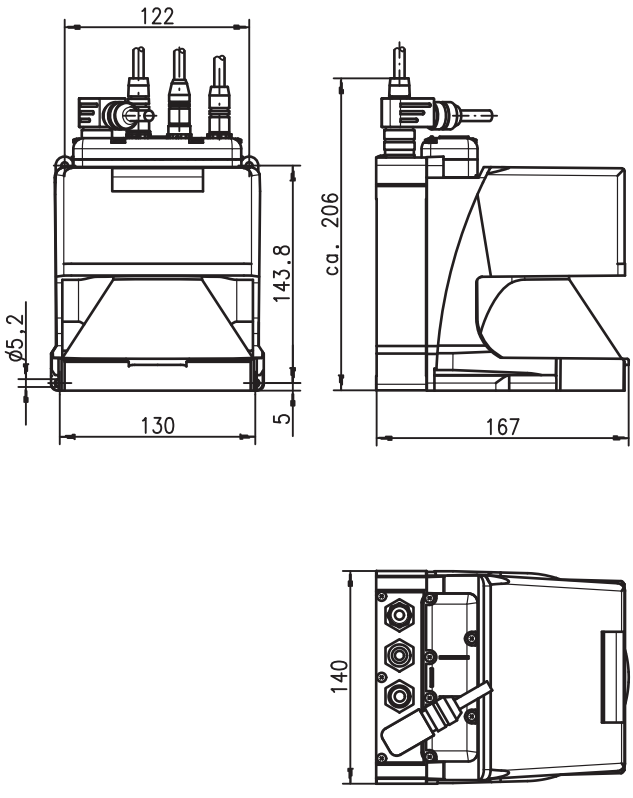
Position measurement

Dimensioned drawing

ROD 4 - 2...



ROD 4...plus



Further details can be found in the respective data sheet.

We reserve the right to make changes • ROD4_Overview_GB.fm

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ROD 4 / ROD 4 plus

Surface distance sensors	Measurement range	Page
Surface distance sensors ROD 4	0 … 65 m	246

Common technical data

Electrical data	Operating voltage U_B	+24 VDC +20 %/-30 %
	Current consumption	Approx. 400 mA
		Heating: approx. 2 A
Measurement data	Detection range	190°
	Angular resolution	0.36°
	Measurement time	40 ms/scan
Mechanical data	Housing	Aluminium/Plastic
	Optics cover	Plastic
	Weight	2000 g
Environmental data	Ambient temperature (operation)	0 °C … +50 °C
		Heating: -20 °C … +50 °C
	VDE safety class	III
	Protection class	IP 65
	Standards applied	IEC 60947-5-2, UL 508

Mounting systems for this series can be found from **page 374** onwards

Features

- **Area scanning distance sensor for object detection and object measurement**
- **Detection fields up to 50 m**
- **8 detection field pairs**
- **Config-Plug for device exchange without PC**
- **Fast Ethernet: ROD 4 plus**
- **Laser class 1**

Optical Sensor ABCs

- Optical distance sensors Page 411

OPTICAL SURFACE DISTANCE SENSORS

Part description Part No.:	Meas. range [m]	Operating voltage	Light source	Output
Optical surface distance sensors				
ROD 4 - 30 501 10238	0 65	24VDC	Infrared laser class 1	Serial/RS 232/RS 422 4 x PNP
ROD 4 - 36 501 10666	0 65	24VDC	Infrared laser class 1	Serial/RS 232/RS 422 4 x PNP
ROD 4 - 38 501 10667	0 25	24VDC	Infrared laser class 1	Serial/RS 232/RS 422 4 x PNP

Configuration software RODsoft, RODplussoft - free download at *www.leuze.com*.

Accessories / connection cables More accessories can be found from **page 364** onwards

	Part No.	Designation	Features
a	501 08138	KB - ROD 4 - CP - 5000	Connection cable 5000mm, with configuration memory
b	501 08139	KB - ROD 4 - CP - 10000	Connection cable 10000mm, with configuration memory
c	500 38069	KB - ROD 4 PC - 3000	Configuration cable to PC, 3000mm
d	500 38070	KB - ROD 4 PC - 10000	Configuration cable to PC, 10000mm
e	500 38066	BT ROD 4	Mounting system for ROD 4...

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ROD 4

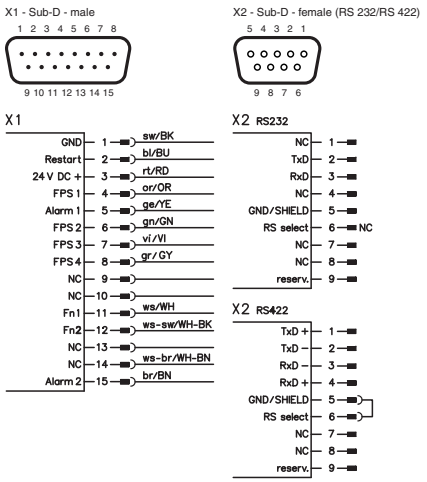
Optical distance sensors

	Connection	Option	Accessories	
	1 SUB-D, 15-pin 1 SUB-D, 9-pin	1, 2, 3, 6	a, b, c, d, e	
	1 SUB-D, 15-pin 1 SUB-D, 9-pin	1, 2, 3, 4, 6	a, b, c, d, e	
	1 SUB-D, 15-pin 1 SUB-D, 9-pin	1, 2, 3, 4, 5, 6	a, b, c, d, e	

Optical Sensor ABCs

- Optical distance sensors Page 411
- Connection types Page 414
- Outputs Page 414

Electrical connection



Options

1	8 detection field pairs
2	Warning and alarm output
3	Restart-disable
4	Internal heating
5	Dust-insensitive version
6	UL approval (class 2 acc. to NEC)

OPTICAL SURFACE DISTANCE SENSORS

Part description Part No.:	Meas. range [m]	Operating voltage	Light source	Output	
Optical surface distance sensors					
ROD 4 plus 501 06481	0 65	24VDC	Infrared laser class 1	Ethernet Serial/RS 232/RS 422 4 x PNP	
ROD 4 - 08 plus 501 06480	0 25	24VDC	Infrared laser class 1	Ethernet Serial/RS 232/RS 422 4 x PNP	

Configuration software RODsoft, RODplussoft - free download at *www.leuze.com*.

Accessories / connection cables More accessories can be found from **page 364** onwards

	Part No.	Designation	Features
a	501 06976	KB - 014S - 5000 - 14	Connection cable, single-sided M16 socket, 14-pin, angular, 5m
b	501 06740	KB - ET - 5000 - SA	Ethernet connection cable, single-sided M12 connector, 4-pin, axial, 5m
c	501 06881	KB - ROD 4plus - 5000	Configuration cable, M12 connector - 9 pin Sub-D socket, 5m
d	501 04590	K-D - M12A - 8P - 5m - PUR	RS 232/422 connection cable, single-sided M12 socket, 8-pin, axial, 5m
e	500 38066	BT ROD 4	Mounting system for ROD 4…

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ROD 4 plus

Optical distance sensors

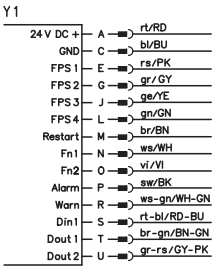
	Connection	Option	Accessories	
	1 M16, 14-pin 3 M12, 4/5/8-pin	1, 2, 3, 6	a, b, c, d, e	
	1 M16, 14-pin 3 M12, 4/5/8-pin	1, 2, 3, 4, 5, 6	a, b, c, d, e	

Optical Sensor ABCs

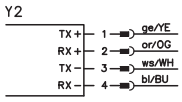
- Optical distance sensors Page 411
- Connection types Page 414
- Outputs Page 414

Electrical connection

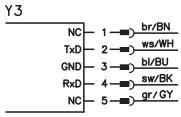
Y1 - M16 / 14-pol. / male (Logic)



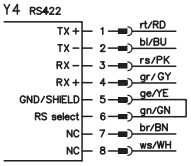
Y2 - M12 / 4-pol. / D-cod. / female (Ethernet)

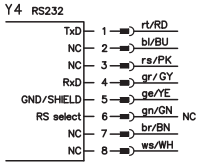


Y3 - M12 / 5-pol. / A-cod. / female (Service)



Y4 - M12 / 8-pol. / male (RS 232 / RS 422)





Options

1	8 detection field pairs
2	Warning and alarm output
3	Restart-disable
4	Internal heating
5	Dust-insensitive version
6	UL approval (class 2 acc. to NEC)