

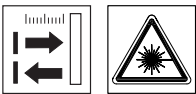
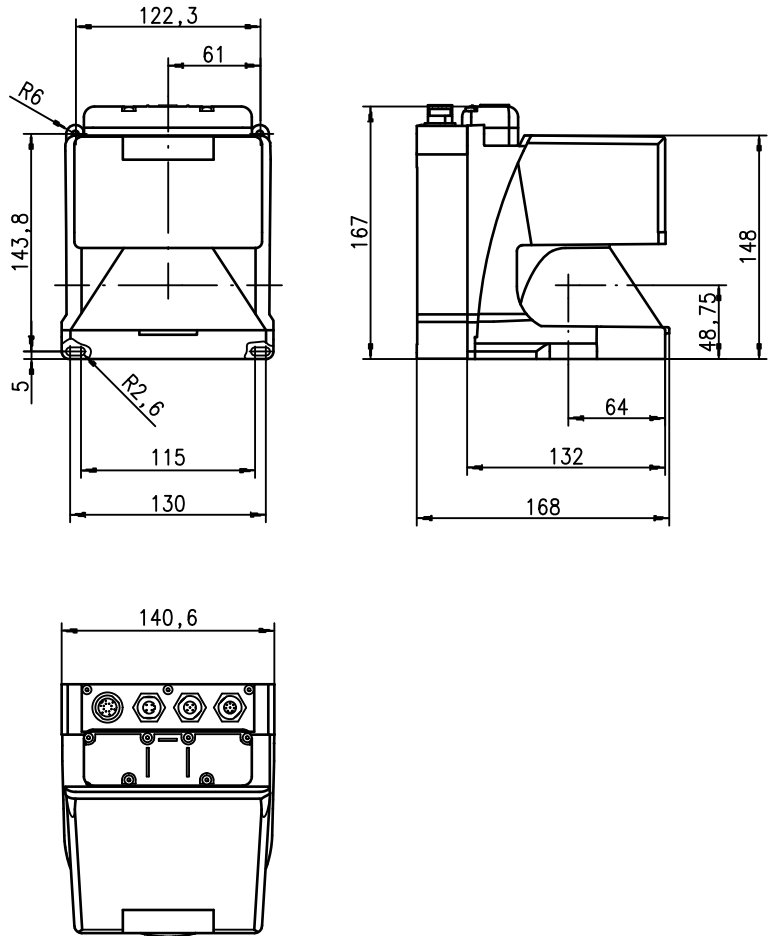
rotoScan ROD 4plus

Optical Distance Sensors

Art. Nr. 501 08253



Dimensioned drawing

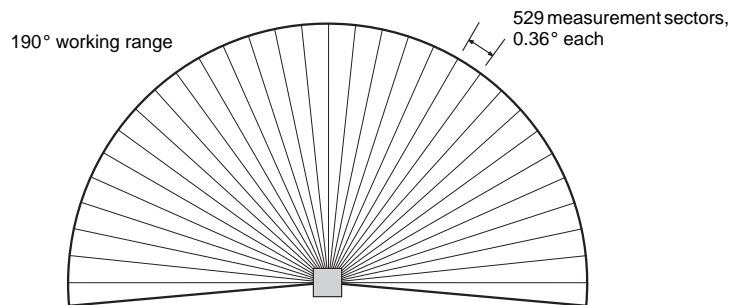


0 ... 65m

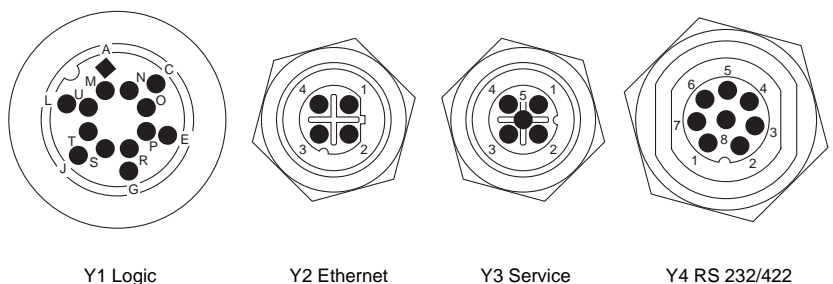


- Measurement data transmission via Fast Ethernet 100MBit/s
- Measurement data transmission via RS 232/422 serial interface
- Measurement data reduction, measurement data processing and measurement data filtering in the interface box
- Service interface for configuring measurement applications and detection fields.
- With the ROD 4plus, it is possible to save and switch between 4 detection fields for object detection.
- ROD 4-08plus with heating, dust-insensitive version.
- RODplussoft software for configuring measurement applications
- RODsoft software for configuring detection fields

Measurement principle



Electrical connection



Accessories:

- (available separately)
- Mounting system
 - Configuration software
 - Various connection cables

We reserve the right to make changes • ROD4_plus_01gb.fm

Specifications

Optical data

| | |
|--------------------|---|
| Measurement range | 0 ... 65m (ROD 4-08plus ... 25m) |
| Angular range | max. 190° |
| Angular resolution | 0.36° |
| Scanning rate | 25scans/s or 40ms/scan |
| Transmitter | infrared laser diode, laser class 1 (EN 60815-1), wavelength = 905nm, P _{max} = 15W, pulse duration: 3ns, average output power: 12µW |

Detection fields

| | |
|---|--|
| Reflectivity | from min. 1.8% (matte black), ROD 4-08plus from 6% (dark grey) |
| Object size | > 20mm at distance of 4m, > 100mm at distance of 15m |
| Response time | at least 40ms (corresponds to 1 scan) |
| Number of detection field pairs | 4 (selectable via switching inputs) |
| Switching inputs | 4x +24VDC (FPS1 ... 4 at Y1 for switching between detection fields) additional restart input at Y1 and interface box |
| Switching outputs | 4x PNP transistor output 24V/250mA |
| Measurement value resolution per sector | 5mm |
| Repeatability | 10 ... 90% diffuse refl. at op. range of 4m: ±15mm / ±20mm |

Electrical data

| | |
|------------------------|--|
| Voltage supply | +24VDC +20% / -30% |
| Overcurrent protection | via fuse 2.5A semi-time-lag in the switching cabinet |
| Current consumption | approx. 1A (use power supply with 1.5A), approx. 2.5A with heating |
| Power consumption | < 75W at 24V including the outputs |
| Overvoltage protection | overvoltage protection with protected limit stop |

Mechanical data

| | |
|-----------------|--|
| Housing | diecast aluminium, plastic |
| Weight | 2.3kg |
| Connection type | 4 connectors (can be plugged from above) |

Environmental data

| | |
|-----------------------------------|--|
| Ambient temp. (operation/storage) | -0°C ... +50°C/-20°C ... +50°C -20°C ... +50°C/-20°C ... +50°C (ROD 4-08plus) |
| VDE safety class | II, all-insulated |
| Protection class | IP 65 |
| Laser class | 1 (acc. to EN 60825-1) |
| Standards applied | IEC 60947-5-2 |

Interface assignments

| Y1 Logic | |
|----------|-------------------|
| PIN | Function |
| A | +U _B |
| C | GND_IN |
| E | FPS1 |
| G | FPS2 |
| J | FPS3 |
| L | FPS4 |
| M | Restart_IN |
| N | Near field 1 |
| O | Near field 2 |
| P | Alarm |
| R | Warn |
| S | Din |
| T | D _{out1} |
| U | D _{out2} |

| Y2 Ethernet | |
|-------------|----------|
| PIN | Function |
| 1 | Tx+ |
| 2 | Rx+ |
| 3 | Tx- |
| 4 | Rx- |

| Y3 Service | |
|------------|----------|
| PIN | Function |
| 1 | NC |
| 2 | TxD |
| 3 | GND |
| 4 | RxD |
| 5 | NC |

| Y4 RS 232/422 | |
|---------------|------------------|
| PIN | Function |
| 1 | TX+ / TxD |
| 2 | Tx- |
| 3 | Rx- |
| 4 | Rx+ / RxD |
| 5 | GND/shield |
| 6 | RS 422 detection |
| 7 | NC |
| 8 | NC |

Order guide

| | Designation | Part No. |
|-------------------------------|--------------|-----------|
| With heating/dust-insensitive | ROD 4plus | 501 06481 |
| | ROD 4-08plus | 501 06480 |

Tables

Remarks

"RODplussoft" Configuration Software

The configuration software runs under Windows 2000/XP and offers the following features:

- Interface configuration of the ROD 4plus...
- Measurement data visualisation
- Configuration of measurement segments
- Filtering data output
- Start of RODsoft for definition of detection fields

There are a variety of options available for defining detection fields. These include e.g.:

- "Teach-In" function
- Numeric and graphical input of the detection fields
- "Edit" function



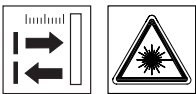
A Near detection field
B Far detection field
C Current measurement values

- **Approved purpose:**
The ROD 4 distance sensors are optical electronic sensors for the optical, contactless measurement of distance to objects.



rotoScan ROD-4

Optical distance sensors

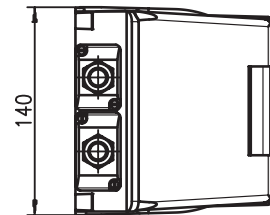
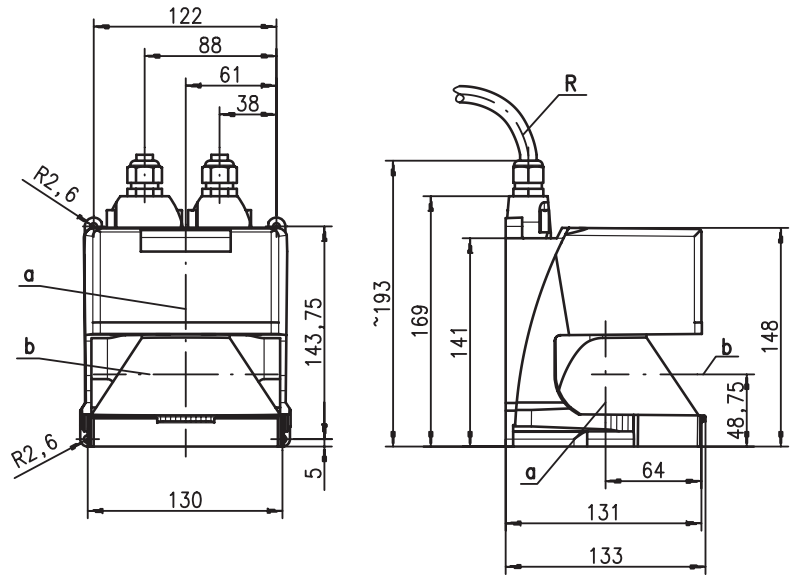


0 ... 50m



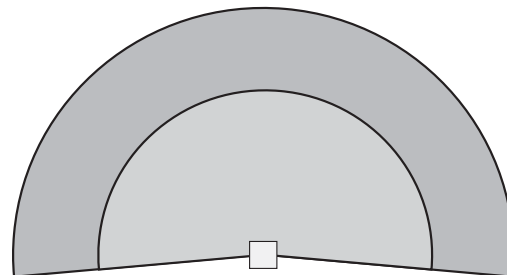
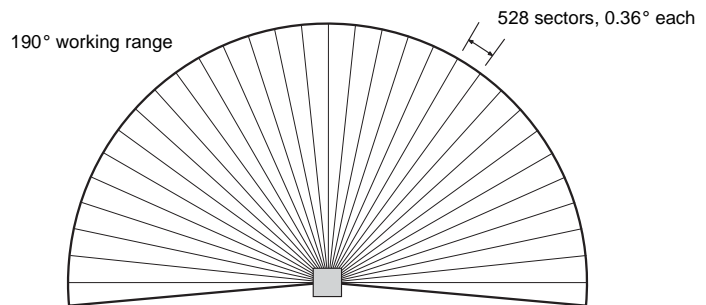
- The rotoScan ROD-4 is an area scanning distance sensor for the detection of objects. The light beam is reflected by a rotating mirror and directed over a semicircular area (190°) with a radius of max. 50m.
- The area is divided into two detection areas, each with a radius of 50m. The size of the area to be evaluated can be freely defined in each detection area.
- It is possible to store 4 detection area pairs in the ROD-4 and to switch between these pairs, for example, to define various heights or allowed overhangings.
- ROD-4 with U_L approval
- ROD-4-06 with heating and ROD-4-08 with heating, dust-insensitive version.
- Plug-in dll file for measurement processing on the PC

Dimensioned drawing



- a Zero point for measurement
- b Scanning plane
- R Smallest bending radius = 50mm

Measurement principle



We reserve the right to make changes • ods_10e.fm



Accessories:

(available separately • see page 74)

- Mounting systems
- Configuration software
- Various connection cables
- Measurement-DLL for PC



Specifications

Optical data

Scanning range (per detection area) 0 ... 50m (ROD-4-08 ... 25m)
 Angular range max. 190°
 Angular resolution 0.36°
 Scanning rate 25 scans/s or 40ms/scan
 Transmitter infrared laser diode (eye safe),
 wavelength = 905nm
 beam divergence = 2mrad
 time base = 100s

Detection area 1 and 2

Reflectivity from at least 1.8% (matte black)
 ROD-4-08 from 6% (dark grey)
 Object size > 20mm at distance of 4m
 > 100mm at distance of 15m
 Response time at least 40ms (corresponds to 1 scan)
 Number of detection area pairs 4 (selectable via switching inputs)
 Output 3x PNP transistor output 24V/250mA
 Measurement value resolution per sector 5mm
 Repeatability 10 ... 90% diffuse reflection at 4m distance ± 15mm / ± 20mm

Electrical data

Voltage supply +24VDC +20%/-30%
 Overcurrent protection via fuse 2A semi time-lag in the switching cabinet
 Current consumption approx. 400mA (use 1A power supply),
 approx. 2A with heating
 Power consumption < 60W at 24V including the outputs
 Overvoltage protection overvoltage protection with protected limit stop

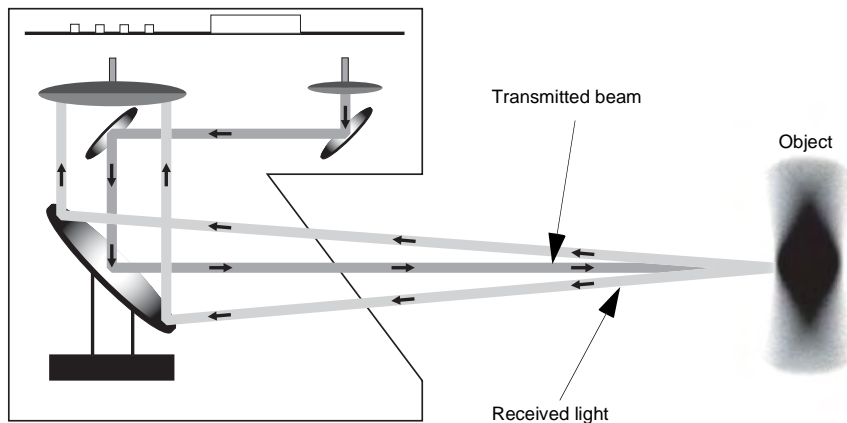
Mechanical data

Housing diecast aluminium, plastic
 Weight 2.0kg
 Connection type 2 connectors (can be plugged from above, solder connection)

Environmental data

Ambient temp. (operation/storage) -0°C ... +50°C/-20°C ... +50 C
 -20°C ... +50°C/-20°C ... +50 C (ROD-4-06, ROD-4-08)
 VDE safety class II, all-insulated
 Protection class IP 65
 Laser class 1 (acc. to EN 60825-1)
 Standards applied IEC 60947-5-2

Operating principle



Order guide

| | Designation | Part No. | UL |
|-------------------------------|-------------|-----------|----|
| With heating | ROD-4 | 500 36010 | ● |
| With heating/dust-insensitive | ROD-4-06 | 500 38614 | |
| | ROD-4-08 | 500 41423 | |

Tables

Remarks

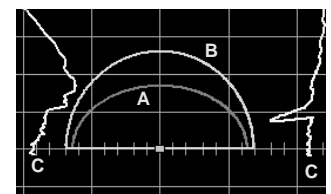
"RODsoft" configuration software

The configuration software "RODsoft" runs under Windows 95/98/NT/2000/XP and offers the following possibilities:

- Programming of the detection areas
- Parameterisation of other data
- Visualisation of the detection area with measurement values
- Error code display
- Support of various languages

There are various methods with which detection areas can be programmed, for example:

- "Teach-in" function
- Numerical and graphical entry of the detection areas
- "Edit" function



- A Detection area 1
- B Detection area 2
- C Current measurement values