

## Rotation detection system

### RT02R / MDS10P

- Input for MDS10 proximity probe
- 1 isolated output TTL/CMOS
- voltage output from the sensor working gap
- binary output of sensor circuit proper operation
- operation of the system in a wide range of the sensor working gap from 0.5 to 4 mm
- housing for mounting on TS35 rail

### Application

Non-contact rotation detection system MDS10 probe - RT02R transmitter is a device for detecting the rotational movement of the shaft of a rotating machine. It is developed to work in on-line rotational speed and/or phase marker measuring systems.

### Description

The system processes a step change in the size of the gap in front of the sensor face to a series of voltage pulses in TTL (0-5V) or CMOS (0-10V) format. When a single pulse source is used on the shaft (one groove or, for example, a screw head), the voltage pulse train then represents the phase marker signal (1 pulse / revolution). The buffered pulse train is available at the device terminals.

On the front side there are two green LEDs to signal the operation of the transmitter. The upper diode "OK" indicates that the power supply to the transmitter is supplied and the sensor circuit operation is proper. The lower diode, marked with square pulse symbol, signals the rotational movement of the shaft of the measured machine (the diode is pulsing).

Additional functional features of the transmitter:

- voltage analog output (terminals on the housing) representing the sensor working gap setting. This function helps especially in a situation when the measuring sensor tip is not visible / accessible when setting the working gap of the sensor.
- binary output (0V / 5V, terminals on the housing) from the proper operation of the sensor circuit, controlling the correctness of the sensor gap and a short circuit / open circuit of the sensor,
- a jumper on the housing terminals, optimizing the cooperation of the system with the source of pulses on the shaft (groove or tenon),
- selection of the size of the output pulses (5V or 10V) in the transmitter code when ordering.



### Performances

#### METROLOGICAL

##### Input signal:

- MDS10 probe (alternating voltage on the sensor coil depends on the goodness of the coil)
- pulse frequency: max. 3kHz
- probe working gap: 0,5 to 4 mm
- total length of the probe cable from 2m to 18m

##### Output signal:

- rectangular pulse train  $0 \div 5V$  or  $0 \div 10V$ ,  $R_{load} > 10k\Omega$
- voltage output from 2,5V to 8,0V representing the working gap
- binary output 0V/5V of sensor circuit proper operation

#### ELECTRICAL

**Power supply:** 21,6 to 26,4VDC,

**Power consumption:** (at 24VDC) < 40mA

#### ENVIRONMENTAL

**Ambient temperature range:**

RT02R: -30 to +70°C

MDS10: -35 to +180°C

**Relative humidity:** 95% without condensation

#### MECHANICAL

**Weight:** RT02R: 100g

MDS10 with 1m cable, without armour: 50g

Cable: 32g/m, armour: 50g/m

#### Casing material:

RT02R - ABS,

MDS10 - AISI304, sensor cable with PTFE insulation and stainless steel protective armour

#### Dimensions:

RT02R: 12,8 x 99 x 114mm

MDS10: different according to drawings as below

#### IP protection rating

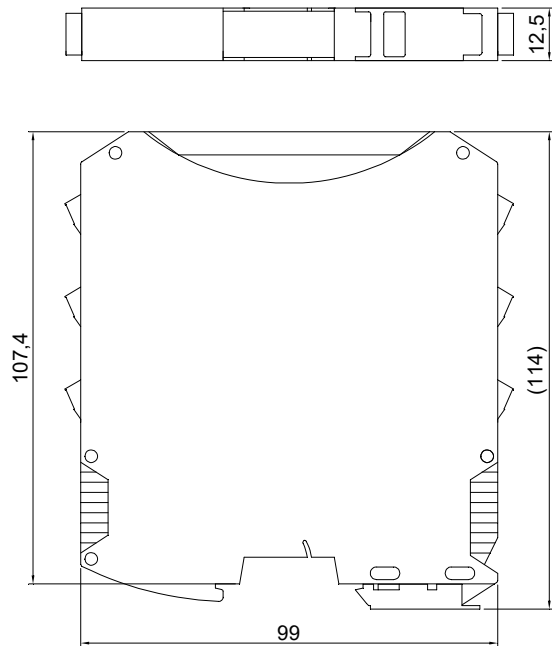
RT02R: IP20; MDS10: IP66, resistant to oil splashes

**Transmitter ordering information**
**A B**
**RT02R -  -** 
**A  Source of pulses on the shaft**

- 1** groove, hole, gear
- 2** tenon (e.g. screw head)

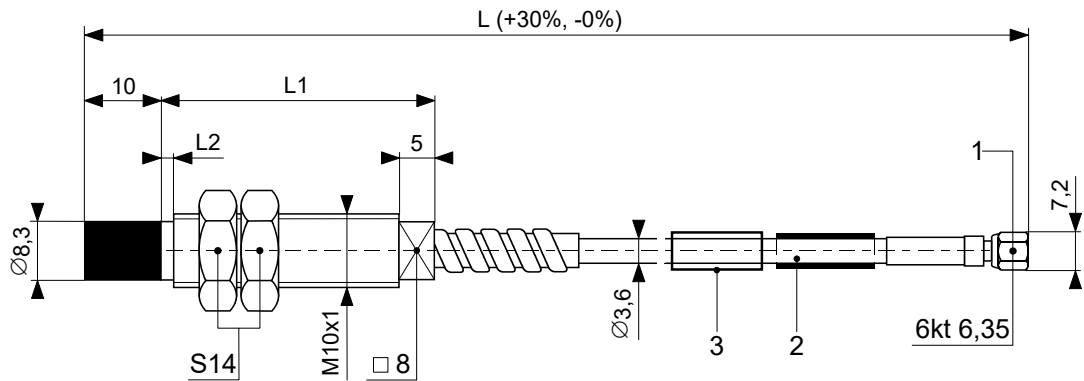
**B  Analog output**

- 1** 0 – 5V
- 2** 0 – 10V


**Fig.1 RT02R – Dimensions**

The MDS10 proximity probe cooperating with the RT02R monitor may have several different versions, as shown below. The coding method is shown for each version when ordering. The individual versions of the probe differ basically in the shape of the housing and its length. In addition, the probe cable may have a length from 2m to 18m, the cable may be in one section or divided into two (integral cable and extension cable) using a micro-connector with a rubber cover.

All sensor versions are presented below, then the data of the extension cable and the data of the rubber cover (silicone rubber), which can be ordered separately. When purchasing a sensor with 2-piece cable (integral cable plus extension cable), the rubber cover protection for the micro-connector is provided with the sensor. If the sensor with an integral cable of the required length is selected without an extension cable, the rubber cover is not needed.



- 1 – Miniature female coaxial connector
- 2 – Part number and serial number
- 3 – Heat shrinkable jacket for user’s designation

- Cable diameter 3,6mm, FEP isolation
- Stainless steel armor, outer diameter 7.0mm
- Stainless steel armor diameter with additional PVDF outer jacket: 7.5mm

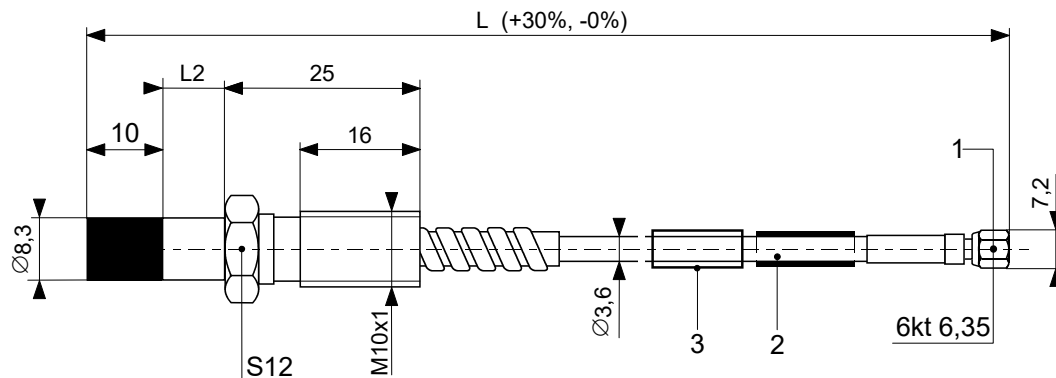
**Fig. 2 MDS10P - sensor in basic shape**

**Ordering information of the probe in the basic version**

**A    B    C    D    E**  
**MDS10P -□□□-□□□-□□□-□□-□□**

**Options description**

- A** □□□ Overall case length L1 in mm, range from 030 to 200 with 10mm step
- B** □□□ Unthreaded length L2 in mm, range from 000, 010 and further to 160 with 10mm step
- C** □□□ Probe integral cable length L
  - 0 0 5** cable length 0.5m (requires the application of extension cable with a minimum length of 1.5m)
  - 0 1 0** cable length 1.0m (requires the application of extension cable with a minimum length of 1.0m)
  - 0 2 0** cable length 2.0m
  - 0 3 0** cable length 3.0m
  - and further to 18.0m with 1m step
  - 1 8 0** cable length 18.0m
- D** □□ Probe cable stainless steel armour protection
  - 0 0** without armour
  - 0 1** with armour
  - 0 2** with armour having additional PVDF outer jacket
- E** □□ Probe cable with a miniature connector to connect with an extension cable
  - 0 0** without connector (cable wire and screen ended with kneaded sleeves)
  - 0 1** with connector (applies when using an extension cable)



- 1 – Miniature female coaxial connector
- 2 – Part number and serial number
- 3 – Heat shrinkable jacket for user's design

- Cable diameter 3,6mm, FEP isolation
- Stainless steel armor, outer diameter 7.0mm
- Stainless steel armor diameter with additional PVDF outer jacket: 7.5mm

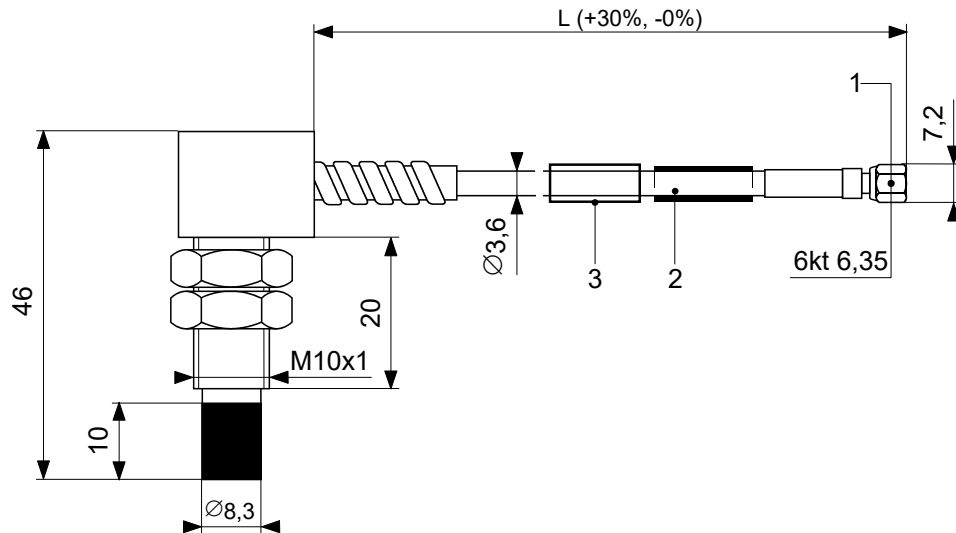
**Fig. 3 MDS10PO – sensor shape for reverse mount.**

**Ordering information for sensor of reverse mount shape**

**A B C D**  
**MDS10PO - □□-□□□-□□-□□**

**Options description**

- A □□** Unthreaded length L2 in mm, selected from among the values: 05, 10, 15 or 20mm
- B □□□** Probe integral cable length L
  - 0 0 5** cable length 0.5m (requires the application of extension cable with a minimum length of 1.5m)
  - 0 1 0** cable length 1.0m (requires the application of extension cable with a minimum length of 1.0m)
  - 0 2 0** cable length 2.0m
  - 0 3 0** cable length 3.0m
  - and further to 18.0m with 1m step
  - 1 8 0** cable length 18.0m
- C □□** Probe cable with a protective stainless steel armour protection
  - 0 0** without armour
  - 0 1** with armour
  - 0 2** with armour having additional PVDF outer jacket
- D □□** Probe cable with a miniature connector to connect with an extension cable
  - 0 0** without connector (cable wire and screen ended with kneaded sleeves)
  - 0 1** with connector (applies when using an extension cable)



- 1 – Miniature female coaxial connector  
 2 – Part number and serial number  
 3 – Heat shrinkable jacket for user's designation

- Cable diameter 3,6mm, FEP isolation
- Stainless steel armor, outer diameter 7.0mm
- Stainless steel armor diameter with additional PVDF outer jacket: 7.5mm

**Fig. 4 MDS10K – sensor shape with side exit cable**

#### Ordering information for sensor with side exit cable

**MDS10K - □□□-□□-□□**

Options description

**A** □□□ Probe integral cable length L

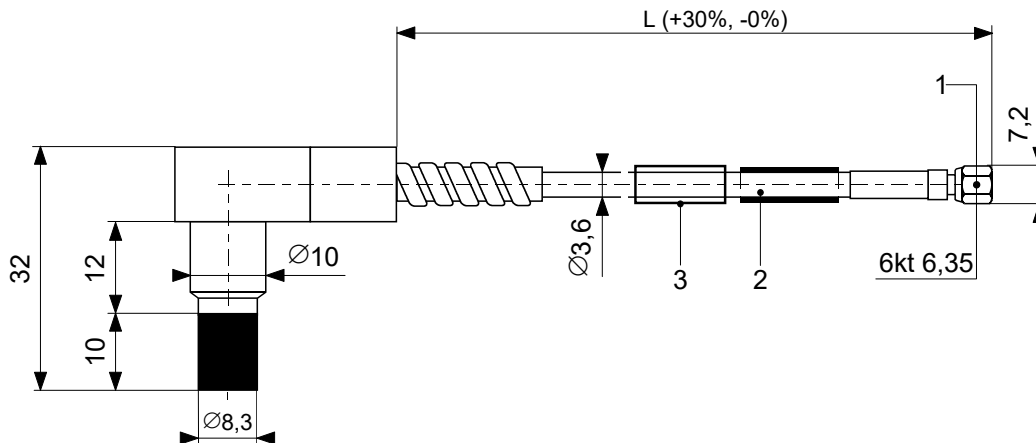
- 0 0 5** cable length 0.5m (requires the application of extension cable with a minimum length of 1.5m)
- 0 1 0** cable length 1.0m (requires the application of extension cable with a minimum length of 1.0m)
- 0 2 0** cable length 2.0m
- 0 3 0** cable length 3.0m  
and further to 18.0m with 1m step
- 1 8 0** cable length 18.0m

**B** □□ Probe cable with a protective stainless steel armour protection

- 0 0** without armour
- 0 1** with armour
- 0 2** with armour having additional PVDF outer jacket

**C** □□ Probe cable with a miniature connector to connect with an extension cable

- 0 0** without connector (cable wire and screen ended with kneaded sleeves)
- 0 1** with connector (applies when using an extension cable)



- 1 – Miniature female coaxial connector  
 2 – Part number and serial number  
 3 – Heat shrinkable jacket for user's designation

- Cable diameter 3,6mm, FEP isolation
- Stainless steel armor, outer diameter 7.0mm
- Stainless steel armor diameter with additional PVDF outer jacket: 7.5mm

**Fig. 5 MDS10KG – sensor shape with side exit cable and smooth casing**

**Ordering information for probe with side exit cable, smooth casing**

A   B   C

**MDS10KG - □□□-□□-□□**

Options description

**A** □□□ Probe integral cable length L

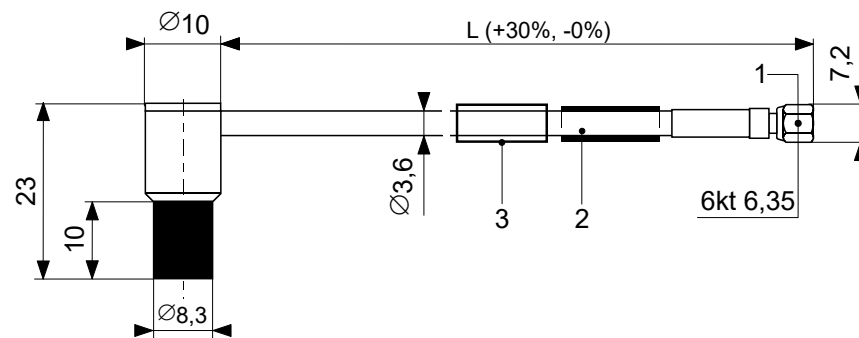
- 0 0 5** cable length 0.5m (requires the application of extension cable with a minimum length of 1.5m)
- 0 1 0** cable length 1.0m (requires the application of extension cable with a minimum length of 1.0m)
- 0 2 0** cable length 2.0m
- 0 3 0** cable length 3.0m  
and further to 18.0m with 1m step
- 1 8 0** cable length 18.0m

**B** □□ Probe cable with a protective stainless steel armour protection

- 0 0** without armor
- 0 1** with armour
- 0 2** with armour having additional PVDF outer jacket

**C** □□ Probe cable with a miniature connector to connect with an extension cable

- 0 0** without connector (cable wire and screen ended with kneaded sleeves)
- 0 1** with connector (applies when using an extension cable)



- 1 – Miniature female coaxial connector  
 2 – Part number and serial number  
 3 – Heat shrinkable jacket for user's designation

- cable diameter 3,6mm, FEP isolation
- MDS10M sensor is not offered with stainless steel armour

**Fig. 6 MDS10M – sensor shape with miniature size**

**Ordering information for probe with miniature size**

A    B

**MDS10M - □□□-□□**

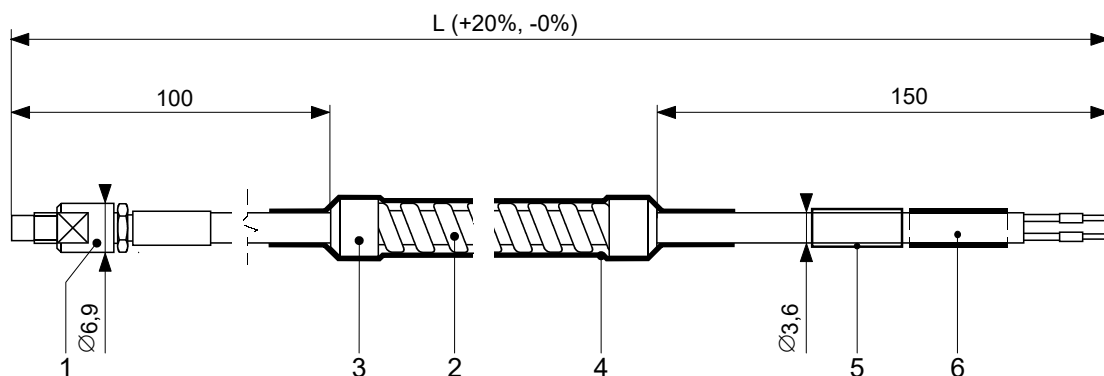
Options description

**A** □□□ Probe integral cable length L

- 0 0 5** cable length 0.5m (requires the application of extension cable with a minimum length of 1.5 m)
- 0 1 0** cable length 1.0m (requires the application of extension cable with a minimum length of 1.0m)
- 0 2 0** cable length 2.0m
- 0 3 0** cable length 3.0m  
and further to 18.0m with 1m step
- 1 8 0** cable length 18.0m

**B** □□ Prober cable with a miniature connector to connect with an extension cable

- 0 0** without connector (cable wire and screen ended with kneaded sleeves)
- 0 1** with connector (applies when using an extension cable)



- 1 – Miniature male coaxial connector
  - 2 – Stainless steel armor, outer diameter 7.0mm
  - 3 – Stainless steel ferrules, 8.0mm diameter
  - 4 – PVDF jacket, outer diameter 7.5mm and 8.5mm on the sleeves
  - 5 – Heat shrinkable jacket for user's designation
  - 6 – Part number and serial number
- armour length is app.300mm shorter than true extension cable length

**Fig. 7 MDS10C – Extension cable for MDS10... probes**

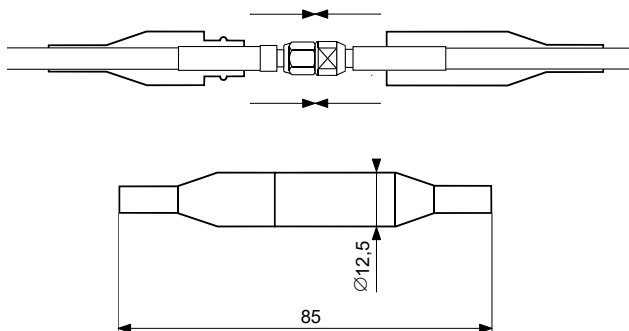
**Ordering information for extension cable**

A    B  
MDS10C- □□□-□□

**Note:** Please note that the total length of the integral sensor cable and extension cable must not be less than 2m and greater than 18m.

Options description

- A □□□ Extension cable length L
  - 0 1 0 cable length 1.0m
  - 0 1 5 cable length 1.5m  
and further to 17.5m with 0,5m step
  - 1 7 5 cable length 17.5m
- B □□ Extension Cable stainless steel armor protection
  - 0 0 without armour
  - 0 1 with armour
  - 0 2 with armour having additional PVDF outer jacket



**Fig. 8 Connector rubber cover on the sensor cable**

**Ordering information for Connector rubber cover**

CP – connector rubber cover

Note: The sensor and extension cable are supplied with a rubber cover on the purchase