

# Product Information

## Stroke Measuring System

Part of the OTT-JAKOB-Position Monitoring System

95.100.282.B.E / 2005-03

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symbol explanation:



keep attention -  
malfunction

# 1 Safety notes



**Important**

Consider always the following points:

- Follow the operating instructions
- Avoid vibrations and other physical damage to the sensor electronics
- Do not change the potentiometer setting of the sensor electronics
- The system has to be connected following the safety directions for electrical equipment
- Protect sensor cables against damage
- The sensor cable is not highly flexible, i.e. it is not suited for constant movements; install the electronics accordingly
- Check the correct wiring on all connections before starting the system
- Power supply may not exceed indicated values
- Allow 30 minutes for the system to warm up before operating

## 1.1 Intended Use

This sensor technology is designed for industrial use only.

The measuring system may be operated only within the values given in the technical data.

The measuring system must be programmed in such a way that during malfunction or total failure of the measuring system, no persons are harmed or machines are damaged.

Additional precautions should be taken to guarantee safety and prevent damage for applications with increased safety requirements.

## 2 Product Description

### 2.1 Application

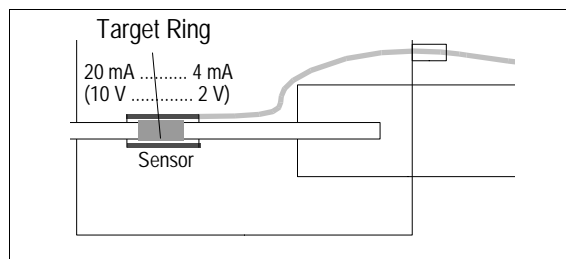
With the help of the OTT-JAKOB position monitoring system the following tool positions can be monitored:

- Tool released
- Tool clamped
- Clamped without tool

### 2.2 Components of the Monitoring System

#### 2.2.1 Sensor

The unclamp unit contains a cylindrical, inductive analog sensor.



The drawbar connection moves axially through the analog sensor. A target ring on the drawbar connection triggers the output signal. The signal increases the further the target ring enters the sensor (view from the cable exit).

The signal is also available during rotation.

#### 2.2.2 Sensor Electronics

The sensor electronics converts the sensor signal to an analog output (4 -20 mA or 2 – 10 V).

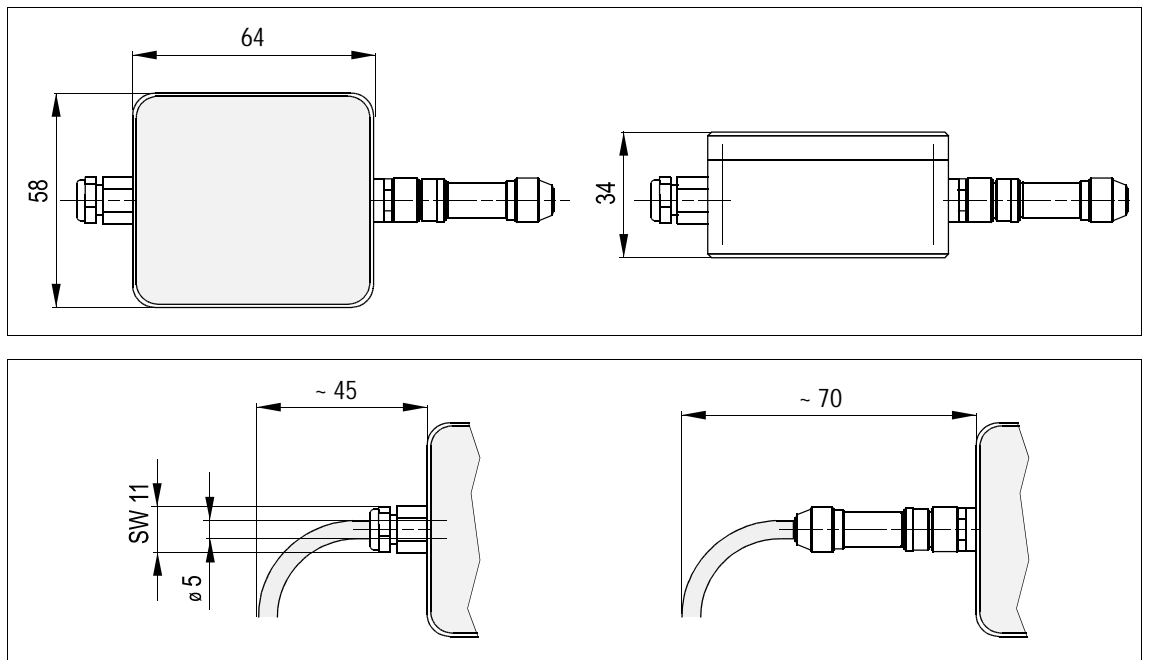
The 4-20 mA output signal can be monitored with our **Position-Controller** in digital format.

## 2.3 Technical Data

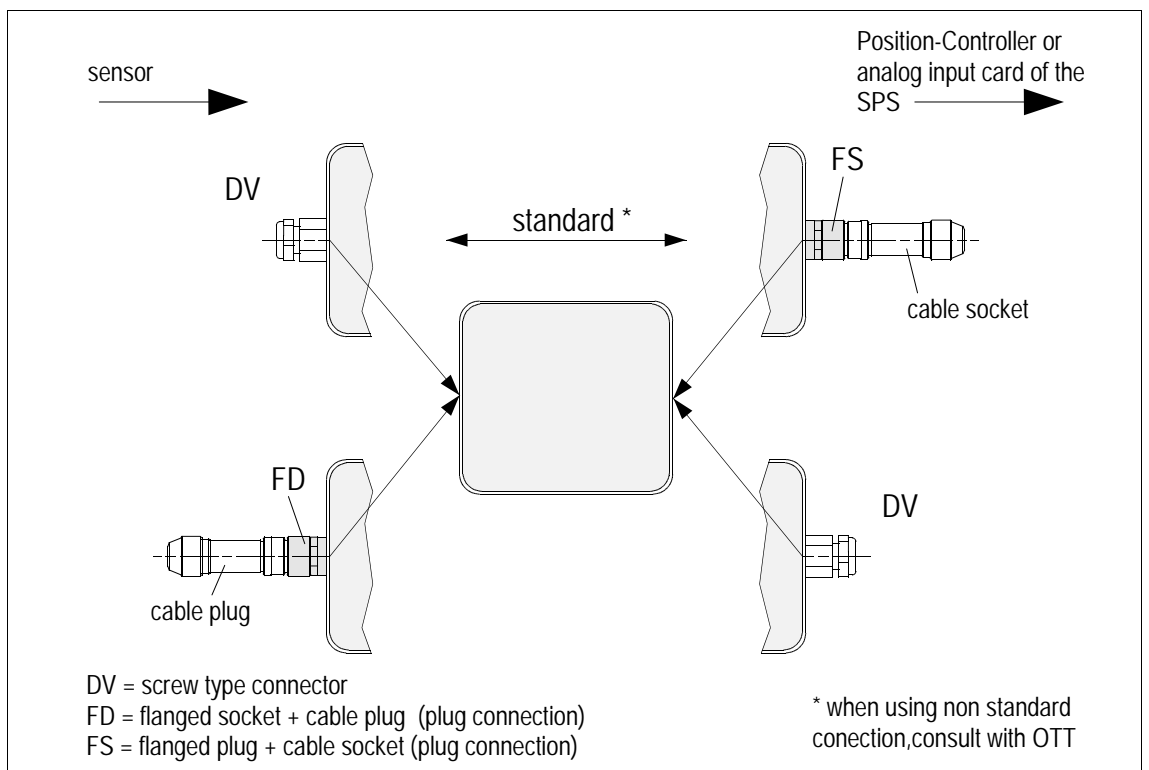
Operating Voltage depending on $R_B$	15 - 18 V DC	18 - 30 V DC
Load resistance $R_B$	$\leq 250 \ \Omega$	$\leq 500 \ \Omega$
Power consumption max.	70 mA	
Measuring range at target ring diameter 8 / 10 at target ring diameter 5	0 - 25 mm 0 - 15 mm	
Linearity	+/- 2 % d. M.	
Temperature stability	< 0,01 % / °C	
Protection from excess voltage, polarity, short-circuit, no-load operation	yes	
Max. cut-off frequency	$f_g = 800 \text{ Hz}$	
Operating temperature	0 - 80 °C	
Safety standard	IP 67	
EMV according to	EN 50 081 - 2 interference emission EN 50 082 - 2 interference immunity	
Vibration / shock	EN 60068.2	
Outputs:		
Current Ripple Depending on $R_L$	4 - 20 mA < 0,005 mA <sub>ss</sub> < 0,001 % at $R_L = 100 \text{ Ohm}$	
Voltage Ripple Permitted load $R_L$	2 - 10 V < 5 mV <sub>ss</sub> > 1 k $\Omega$	

Products with CE certification fulfill the requirements of the European Union guideline EU 89/336/EWG "Elektromagnetic compatibility" and the harmonized European standards (EN), specified there.

## 2.4 Dimensions



## 2.5 Connection Options



## 3 Start-up

### 3.1 Assembly

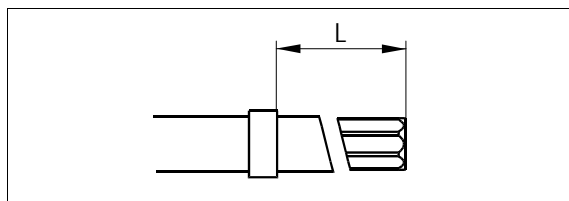


Factory settings of the 0-point and the amplification require the sensor and sensorelectronics to be exchanged **ONLY** as a unit together!

#### 3.1.1 Sensor

The sensor is already pre-mounted in the unclamp unit and connected with the sensor electronics.

The target ring is in most cases pre-mounted on the drawbar connection; if this is not the case, the following steps are to be taken:



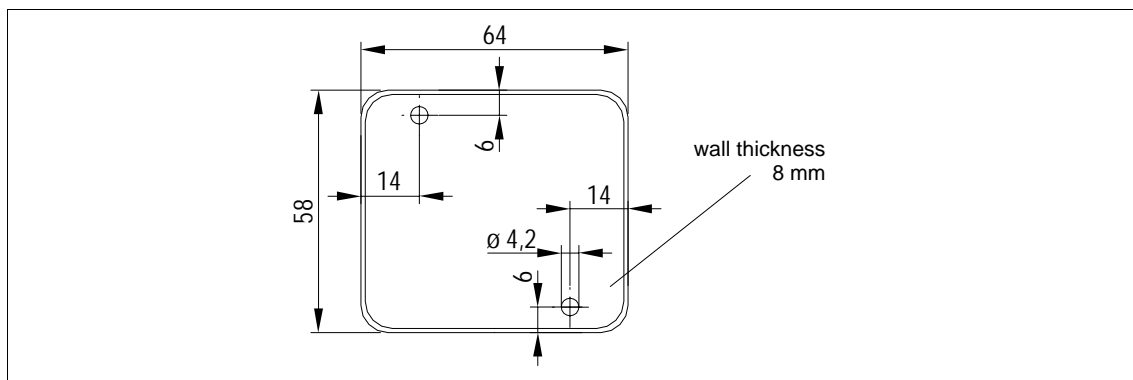
- Apply *Loctite 638* on the drawbar connection (Follow the Loctite manual!)
- Push the target ring over the drawbar connection and position it according to the illustration (Follow the instructions regarding the drying time in the Loctite manual!)
- Remove excessive adhesive

#### 3.1.2 Sensor Electronics



The sensor cable is not highly flexible, i.e. it is not suited for constant movements; install the electronics accordingly.

- Fasten the housings with two screws (see illustration for the drill hole-pattern)



### 3.2 Wiring

The sensor is pre-assembled in the unclamp unit and connected with the sensor electronics.



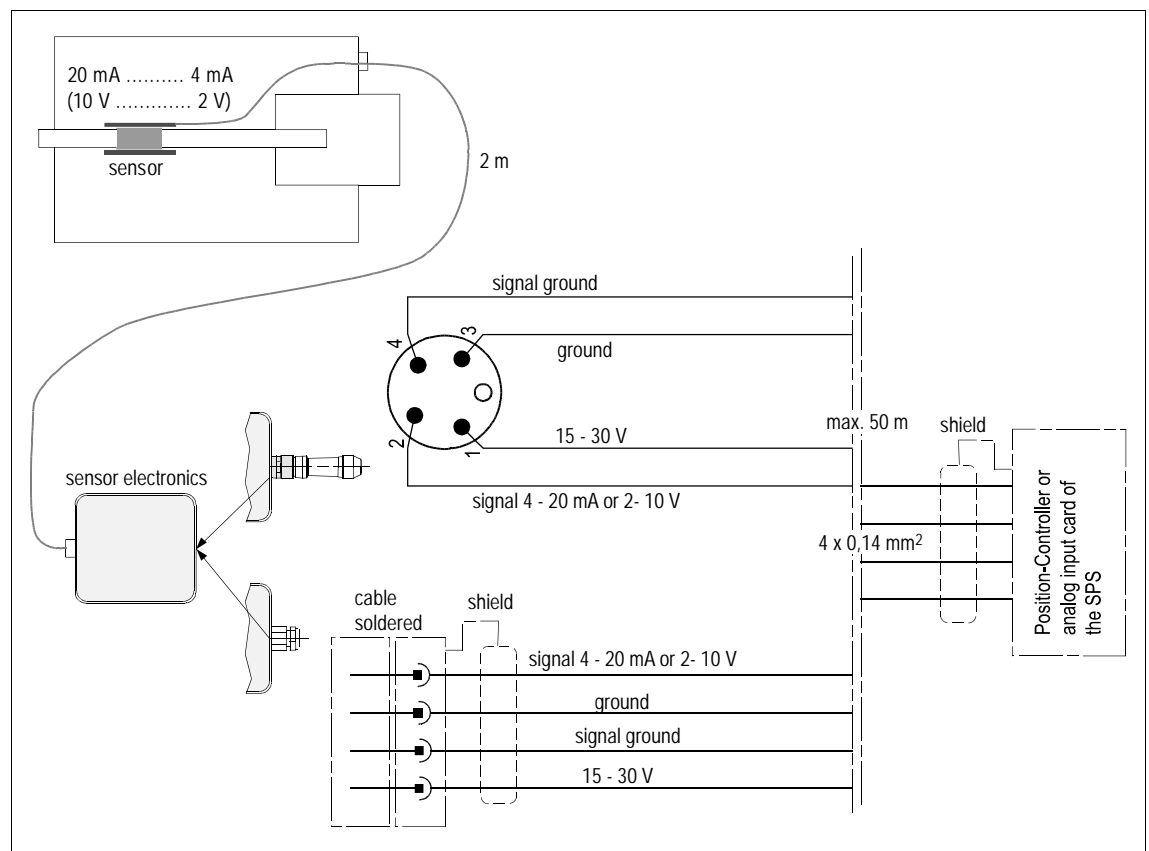
Important

Do not shorten the sensor cable, since the measuring system was calibrated with this cable length!

Don't kink cable!

A connector is supplied at the output of the sensor electronics unit. The cable (not included) must have the following characteristic:

- outside diameter max.: 5 mm
- 4 x 0,14 mm<sup>2</sup>
- with shield
- highly flexible: suitable for cable carriers
- max. length appropriate interference elimination: 50 m

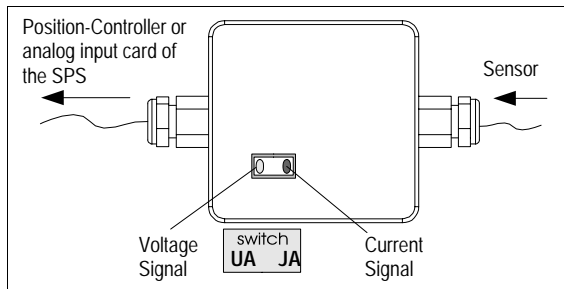




### 3.3 Signals

Two output signals are provided.

4 – 20 mA or 2 – 10 V



Inside the box is a switch to set the desired output signal. No change in wiring is necessary.

#### **Current-signal** 4 - 20 mA (Factory setting)

For the following reasons, a current signal is recommended:

- The 4 - 20 mA current-signal compared to a voltage-signal is less sensitive to electromagnetism (e.g. Linear drives, motors, power cable, HF-technology ...)
- the analog current-signal can be transferred over longer distances (up to 50 m cable length)
- the Ott-Jakob Position Controller can only be read with 4 – 20 mA Input!

#### **Voltage-signal** 2 – 10 V

The voltage signal depends upon the total resistance. If the spindle manufacturer gives certain values for adjustment, the following factors must be considered

- cable resistance
- inner resistance of the measuring devices and the controls

Electrical noise can influence the accuracy of the voltage (2V – 10V) output resulting in incorrect readings unless digital filtering is used.

### 3.4 Operating voltage

15 -30 V DC (see also *Technical Data*)



**Important**

Before starting the system, check for proper connections and supply polarity (see also *Signals*)

Allow 30 minutes for the system to warm up before operating.

### 3.5 Scale

length	current	voltage
0 mm	4 mA	2 V
25 mm (at target ring diameter 8 / 10) 15 mm (at target ring diameter 5)	20 mA	10 V