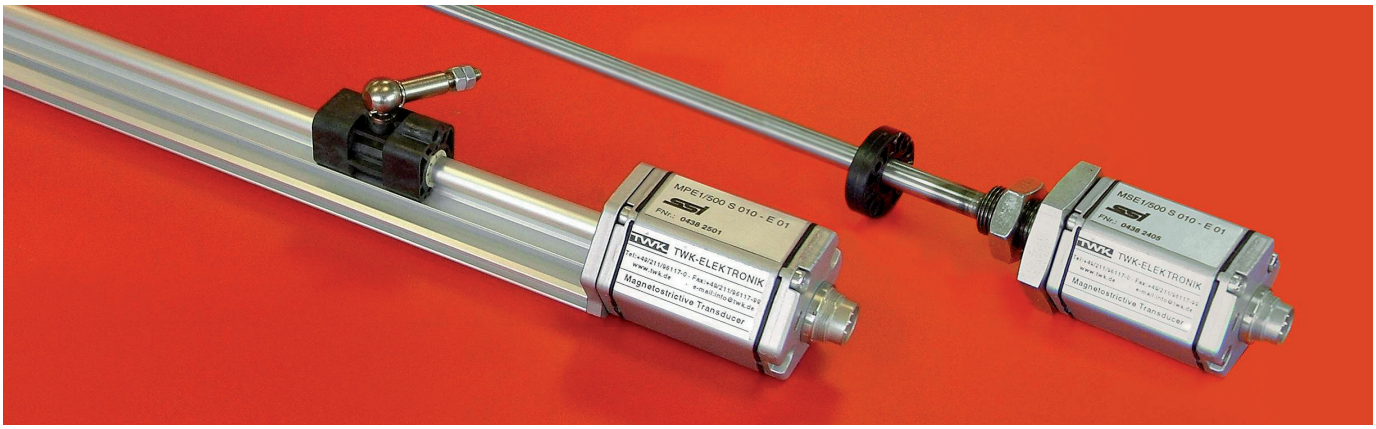
- **Model MPE: Profile version**
- **Model MSE: Rod version**
- **Measuring strokes from 25 to 7600 mm**
- **Contactless, robust system**
- **Resolution up to 1 µm**
- **Linearity < 0.01%**
- **Protection types up to IP 68**
- **Operating temperature range -40°C ... +75°C**
- **Rod version pressure stability up to 350 bar**



Structure and operation

The displacement transducers operate according to the principle of run time measurement between two points of a magnetostrictive waveguide. One point is determined by a moveable position magnet, whose distance from the null point corresponds to the section to be measured. The run time of an emitted impulse is directly proportionate to this section. Conversion to a digital measuring signal takes place in the downstream electronics.

The waveguide is housed in a pressure-resistant stainless steel tube or extruded profile. To the rear of this is a die-cast aluminium housing containing the electronics in SMD technology. Electrical connection is implemented via a circular connector.

In the rod version, the position magnet is located in a ring, which is guided over the rod without contact. In the profile version, it is located either in a slider, which is linked to the moving part of the machine via a ball joint, or it moves as a liftable position magnet, without wear, over the profile.

Standard measuring strokes:

- ☐ Up to 1000 mm in 50 mm steps
- ☐ Up to 5000 mm in 250 mm steps (profile version: MPE)
- ☐ Up to 7600 mm in 250 mm steps (rod version: MSE)

Programming ex work

The displacement transducer is set to its ordered variables in the factory, as follows:

- ☐ Data length
- ☐ Data format
- ☐ Resolution (ref. to order code format)
- ☐ Measuring direction (ref. to order code format)
- ☐ Position value for start of measurement
- ☐ Alarm value for error (magnet removed)
- ☐ Differential measurement
- ☐ Speed value instead of position

Diagnose

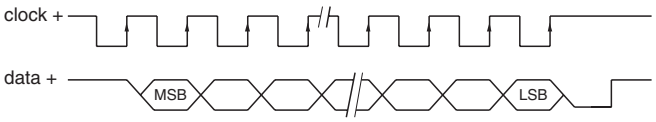
The LEDs (green/red) in the sensor head are used for adjustment and additionally provide information on the sensor status.

Green	Red	Meaning
On	Off	Normal function
On	On	Magnet not detected
On	Flashing	Sensor not synchronous *
Flashing	On	Setting mode

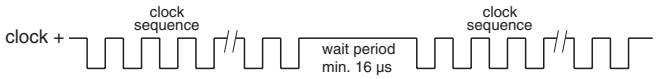
* Synchronous measurement only

SSI-profile

■ **Impuls diagram**



■ **Clock sequence**



Technical data

- Supply voltage range V_S: 24VDC (+20 / -15%) (polarity reversal protection)
- Supply current I_S: 100 mA typical
- Resolution: Max. 1 µm
- Linearity: < ± 0.01% (min. ± 40 µm) with internal linearitation optionally up to 6 µm
- Repeatability: < ± 0.001% (min. ± 2.5 µm)
- Hysteresis: < 4 µm
- Measuring frequency: 500 to 3700 Hz depending on measuring length
- Temperature drift: < 15 ppm / °C
- Operating temperature range: - 40 °C to + 75 °C
- Dew point, humidity: 90 % rd. humidity, no condensation
- Shock test: 100 g to IEC Standard 68-2-27
- Vibration test: 15 g / 10 to 2000 Hz to IEC Standard 68-2-6
- Operating pressure for rod: 350 bar (optional 800 bar)
- Protection type:
  - ☐ Profile: IP 65
  - ☐ Rod: IP 67, IP 68 for cable outlet
- EMC test: EN 50081-1, EN 50081-2, EN 61000-4-2/3/4/6

■ **SSI output**

- Output: Differential signal to RS422/485
- Data length: 25-bit (others on request)
- Coding: Binary (others on request)
- Monoflop time: Max. 16 µs
- Baudrate: Max. 1.0 MBaud

Cable	< 3 m	< 50 m	< 100 m	< 200 m	< 400 m
Baud rate	1,0 MBd	<400 kBd	<300 kBd	<200 kBd	<100 kBd

■ **Mating connector:**

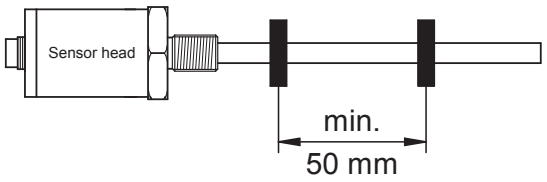
- Connection type: 7-pin connector M16
- Housing: Die-cast zinc, nickel-plated (straight or angled 90°)
- Contacts: Socket, Ag
- Cable strain relief: Pg 7
- Max. cable diameter: 6 mm
- Protection type: IP 67

■ **Cable outlet:**

- Cable type: PUR cable 7 x 0.14 mm² with screen
- Bending radius: Min. 50 mm if routed firmly

Differentiation measurement

As an option the MPE / MSE transducer can give the difference of two positions. Thereby it has to be taken in consideration that the minimum distance between the two positions is 50 mm. In the range of a distance of 50 - 75 mm the linearity is double.



Electrical connections

Soldered connection side of connector

Pin	Wire	Signal
1	grey	Daten -
2	pink	Daten +
3	yellow	Clock +
4	green	Clock -
5	brown	+ VS (+ 24 VDC)
6	white	- VS (0 VDC)
7	Do not connect	

Order code format

■ Displacement transducer

MPE 1 / 1000 S 010 - 1 E 01

- Electrical and mechanical variants*
- Interface: E = SSI
- No. of magnets (SSI: max.1)
- Resolution in µm: 1, 2, 5, 10, 20, 50 or 100
- Signal curve: S = Positively ascending on movement from the flange towards rod end N = Descending on movement from the flange towards rod end
- Measuring stroke in mm
- **Design**

MSE (rod):

1 = With threaded connection M 18 x 1.5
2 = With threaded connection 16 UNF ¾ “

MPE (profile):

1 = Position slider central ball joint
2 = Position slider front ball joint
3 = Liftable position magnet

- Model: MPE = Profile version MSE = Rod version

Cable outlet on request

* The basic versions according to the data sheet bear the number 01. Deviations are identified with a variant number and are documented in the factory.

Scope of delivery:

Rod: Sensor, nut (order position magnet separately)
Profile: Sensor, 1 position magnet, 2 mounting clamps up to 1250 mm + 1clamp for each additional 500 mm.

Accessories:

■ Position magnets for MSE

PR02	Standard position ring (ø 33 mm)
PR03	Liftable position magnet
PR04	Position ring up to 100 °C (ø 25.4 mm)

■ Position magnets for MPE

PS01	Position slider, central ball joint
PS02	Position slider, front ball joint
PR03	Liftable position magnet

■ Available position magnets data sheet 11469

■ Mating connector (order separately)

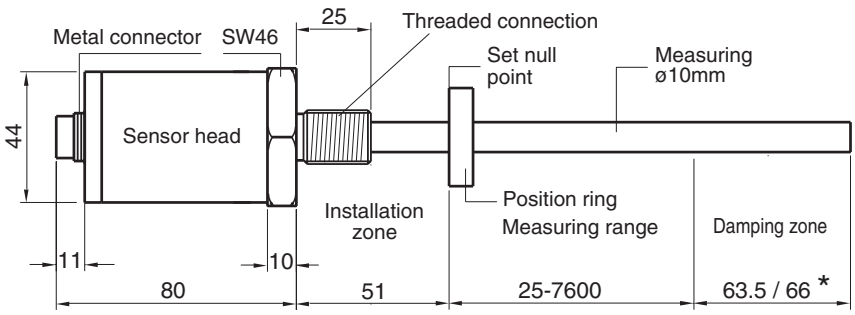
STK7GS45	Straight
STK7WS46	Angled 90°

■ Installation material

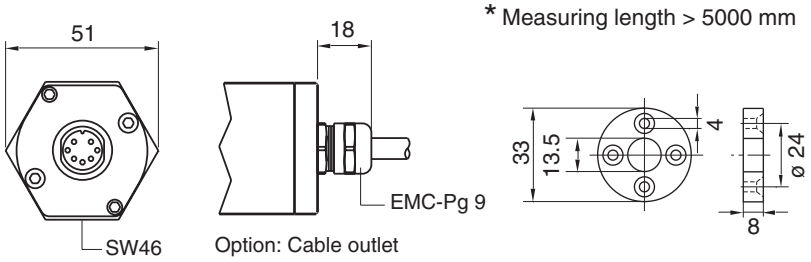
MB-MP-01	Mounting clamps for profile version
NT-MP-01	M5 sliding block for profile version

Dimensions in mm

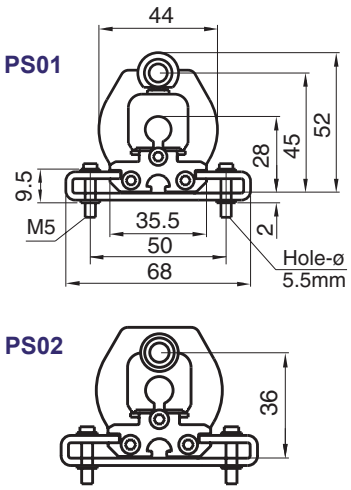
Model: MSE (rod version)



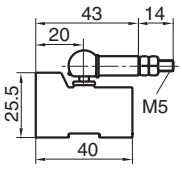
With measuring strokes of 1000 mm and over, mechanical rod support is recommended.
The sensor's fastening should be manufactured from non-magnetic materials (e.g.: brass, plastic). Note installation instruction **MWA10318** on installation in magnetisable materials.



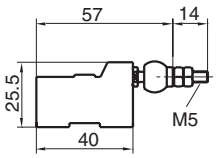
Model: MPE (profile version)

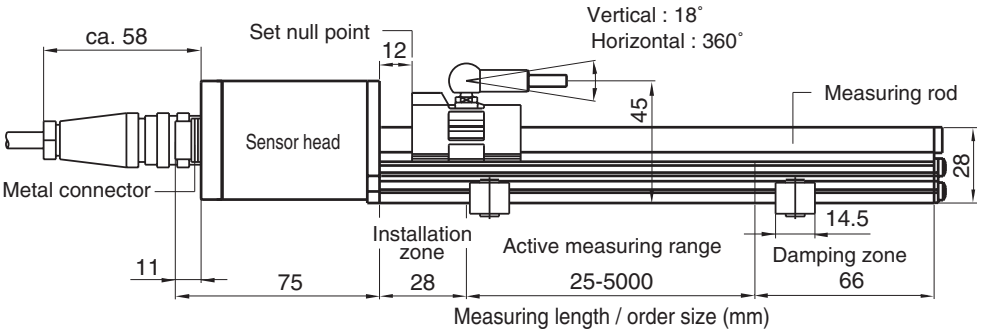


Central ball joint **PS01**

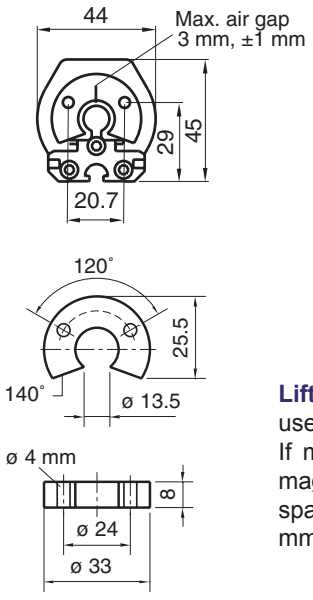


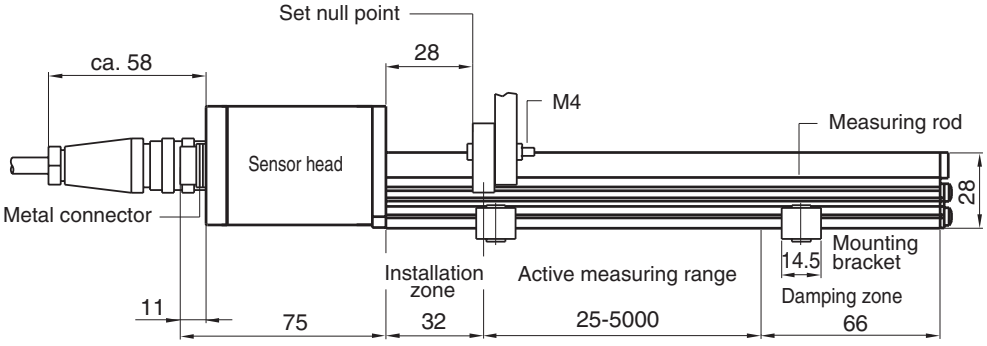
Front ball joint **PS02**



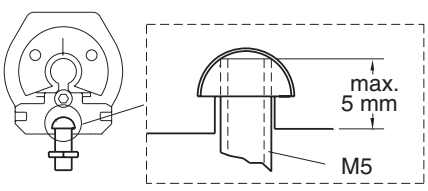


Liftable position magnet PR03





Liftable position magnet Wherever possible, use non-magnetisable material for fastening this. If magnetisable material is used, the position magnet must be mounted via a non-magnetisable spacer washer with a minimum thickness of 5 mm using non-magnetisable bolts.



Sliding block: Studded nut in T slot

Note: On installation of the MAGNOSENS, careful shielding from magnetic and electromagnetic fields must be ensured. The cable shield must be mounted on the connector and connected to ground at the evaluation electronics. All data sheets and manuals are also available in the Internet under **www.twk.de**.