Temposonics®

Magnetostrictive Position Sensors

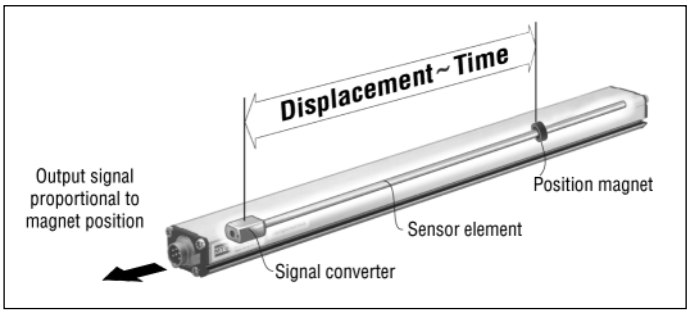
MTS SENSORS

E-Series
Digital (Start/Stop-Pulse)

Temposonics EP2
Measuring range 100 - 1500 mm

Multi-Position Measurement

- **Linear, Absolute Measurement**
- **Contactless Sensing with Highest Durability**
- **Linearity better 0,02 %**
- **Repeatability 0,001 %**
- **Digital Position Output: Start/Stop-pulse**
- **Simple Sensor-Parameter Upload**
- **Simultaneous Multi-Position Measurement**
- **Measuring range 100 - 1500 mm**



Magnetostriction

The absolute **Temposonics®** linear position sensors are based on the MTS developed magnetostrictive measurement principle. That combines various magneto-mechanical effects and uses the physical height precise speed-measurement of an ultrasonic wave (torsion pulse in its sensor element) for position detecting. Sensor integrated signal processing transforms the measurements directly into market standard outputs. The contactless principle - an external movable magnet marks the position - eliminates the wear, noise and erroneous signal problems and guarantees the best durability without any recalibration.

Form factor

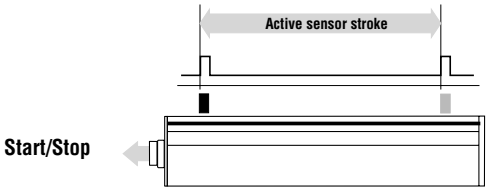
Temposonics® are extremely robust sensors, ideal for continuous operation under harshest industrial conditions. The sensor is completely modular in mechanics and electronics design.
- A profile **sensor housing** protects the sensor element in which gives rise to the measurement signal.
- The **sensor head**, a solid diecast aluminum housing, accommodates the complete modular electronic interface with active signal conditioning. Double encapsulation ensures high operating safety and optimum EMC protection.
- The external **position transmitter** is a permanent magnet. It is fitted at the mobile machine part, taken over the sensing

CE ISO 9001 CERTIFIED

EP2
Start/Stop Interface

Digital Temposonics-**EP2** is equipped with a start/stop output. The sensor requires a start signal from an external indicator in the control system and returns a signal corresponding to the magnet position. The time elapsed between the two signals is proportional to the magnet position, i.e. to the displacement. Time measurement is by the indicator and used for calculating the position value. Data transfer will done by

2 Start-Signal leads from control unit to sensor
2 Stop-Signal leads from sensor to control unit

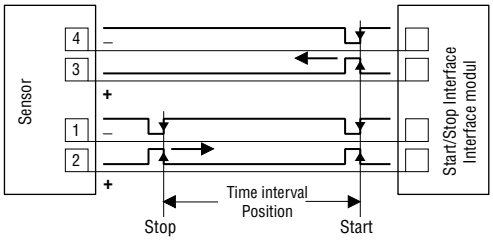


Sensor parameters upload
For easy adaption to users control systems, following sensor parameters

- **Measuring range**
- **Offset**
- **Gradient (Ultrasonic speed of sensing pulse)**
- **Status**
- **Manufacturer number etc**.

can be read-in and stored via a Communication-mode into the controller unit, without additional wiring.

Logic diagram Start/Stop



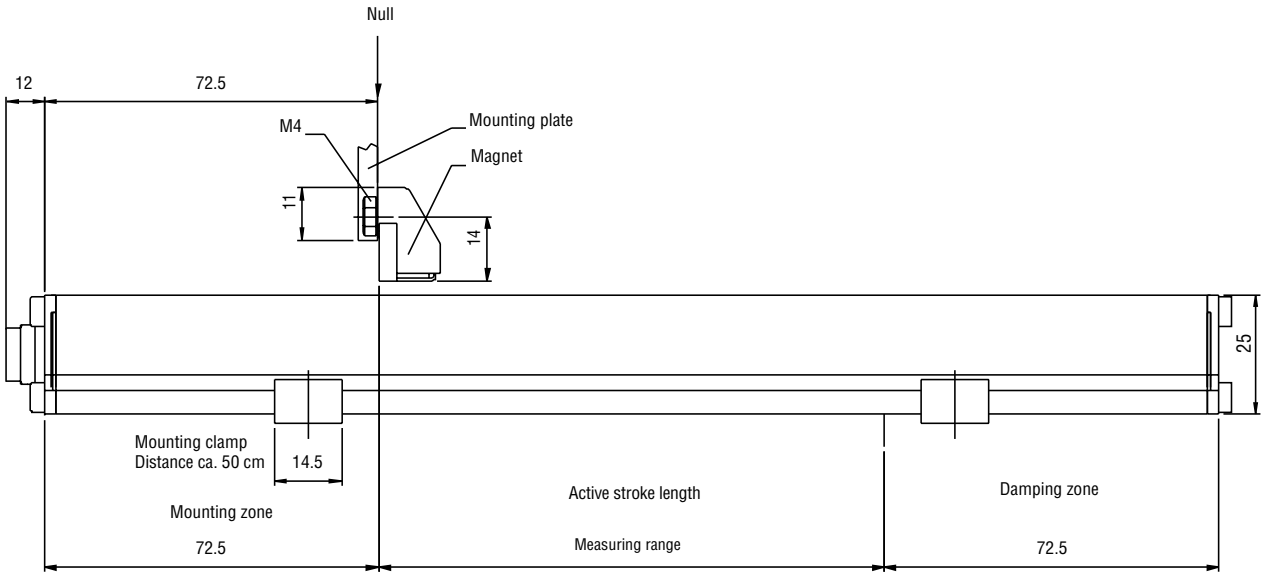
Advantage against the standard Start/Stop-Sensor
Users can receive - central from the control unit - sensor data at any time. They can update the device after start-up, sensor exchange, service or maintenance works, without a manual data upload.

Technical Data
• Interface: RS 485 / 422
• Dataformat: Serial, 4800 Baud, 8 Bit Data

Multi-Position Measurement
Additional to standard sensing, only one sensor can be used for a simultaneous multiple magnets measurement.
- magnet number: stroke lenght dependent
- Magnet distance: min. 75 mm
Adjustment and operation are via the on-site control-system.

Technical Data

Input	
Measured variable	Displacement, Simoultaneous Multi-Positions
Measuring range	50 - 1500 mm
Output	
Start/Stop	RS-422 differential signal (Serial upload of measuring range, offset, gradient, status)
Accuracy	
Resolution	0,1 / 0,01 / 0,005 mm (Controller dependent)
Linearity, uncorrected	< ± 0,02 % F.S. (Minimum ± 60 µm)
Repeatability	< ± 0,001 % F.S.
Update frequency	Controller dependent
Ripple	Controller dependent
Operating condition	
Mounting postion	Any
Magnet speed	Any
Operating temperature	40° C ... +75° C
Dew point, humidity	90 % rel. humidity, no condensation
Ingress protection	IP67
Shock rating	50 g (Single hit) / IEC-Standard 68-2-27
Vibration test	5 g / 10 - 2000 Hz / IEC-Standard 68-2-6
EMV-Test	Electromagnetic emmision EN 50081-1 Electromagnetic immunity EN 50082-2 EN 61000-4-2/3/4/6, Criteria A / **CE qualified**
Form factor / Material	
Sensor	Aluminum
Position magnet	Block magnet
Installation	
Mounting type	Adjustable mouting clamps
Electrical conection	
Connection type	6 pin DIN connector M16
Input voltage	24 VDC (+20 % / -15 %)
Current consumption	50 - 100 mA, stroke length dependent
Ripple	< 1 % S-S
Electric strength	500 V (0 V ground to machine ground)
Polarity protection	up to -30 VDC
Overvoltage protection	up to 36 VDC

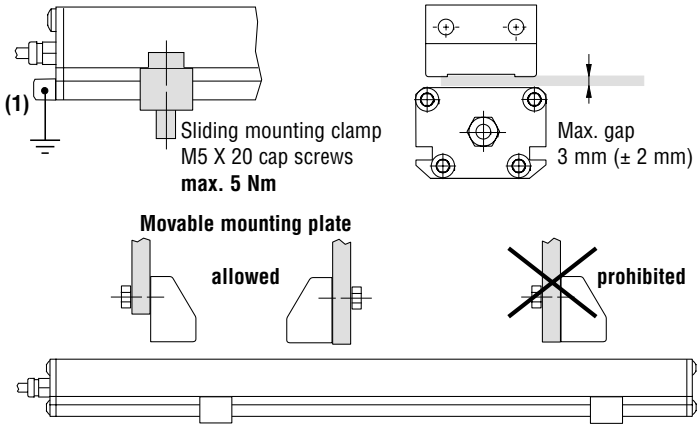


Mounting

Sensor is fixed on a straight surface of the machine with the movable mounting clamp. We recommend cap crews M5 X 20 (DIN 6912) for the attachement with a torque of max. **5 Nm** to be tightened.

ATTENTION!
Due to the anodized profile, the sensor is isolated from the machine ground. It is necessary that you apply ground to the housing via he flat pin terminal **(1)**.

Position transmitter
Block magnet **(2)** can be fixed with the standard material and screws as shown right.



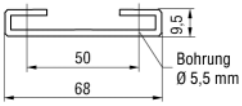
Connection
6 pin DIN male receptacle M16

Front face of sensor plug
or rear of cable connector

Connector wiring

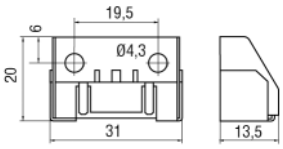
Pin	Function
1	Stop (-)
2	Stop (+)
3	Start (+)
4	Start (-)
5	+24 VDC (+20%/-15%)
6	DC Ground (0V)

Accessories (Order separately)



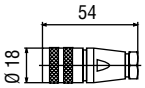
Mounting clamp (Stainless steel)
Part No. 400 802

Mounting recommending:
2 pcs. up 1000 mm stroke
3 pcs. for 1000 mm strokes



Position magnet
Block magnet L
Part No. 252 887

Bracket: CuSn6 Zinc coated
Magnet: Hard ferrite
Weigth: ca. 20g
Operating temperature: -40 ... +75°C



6 pin female connector M16, PG7
Part No. ST CO 9131 D

Housing: Zinc, nickel plated
Termination: Solder
Contact insert: Silver plated
Cable clamp: PG 7
Cable-Ø: max. 6 mm

Ordering informations

Sensor with digital output Start/Stop, connector outlet
Position sensor Temposonics EP2-xxxxM - D

Measuring range (mm)
0100 / 0200 / 0300 / 0400 / 0500 / 0600 / 0700 / 0800 / 0900 / 1000 / 1250 / 1500

Accessories: see above

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