

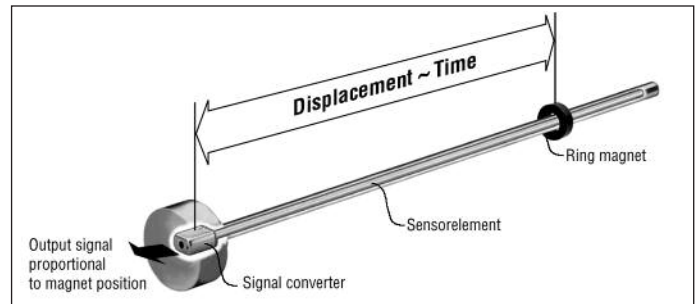
G-Series Analogue

Temposonics GB
Measuring length 50 - 2000 mm



For Standard Hydraulic Cylinders

- Linear, Absolute Measurement in Hydraulic Cylinders
- Contactless Sensing with Highest Durability
- Rugged Industrial Sensor, EMC shielded and CE certified
- Superior Accuracy: Linearity Tolerance better 0,02 %
- Repeatability 0,001 %
- Direct Analogue Displacement Output (V/mA)
- Measuring Range 50 bis 2000 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

These compact stainless steel position sensors are designed for installation into standard hydrocylinders, specifically for use with clevis head or any space limited cylinder applications.

Simple mechanics

- The sensor head accommodates the electronics with active signal conditioning
- The pressure-proof sensor pipe with fitting flange protects the internal sensor element. It fits into the bored piston rod.
- The position magnet - fixed at the piston bottom - drives wearfree over the sensor's stroke and starts the measurement signal through sensor rod wall.

Temposonics-GB

Analogue

Temposonics-GB High Pressure Rod Measuring Range 50 - 2000 mm

These compact stainless steel position sensors are designed for installation into hydraulic cylinders, specifically for use with clevis head cylinders or any space limited cylinder applications. The GB-version sensors are ideal choices for a wide range of standard hydraulic cylinders. Magnetostrictive displacement sensors, high quality cylinders and precise control valves form ideal drive systems for technically demanding machine industries.

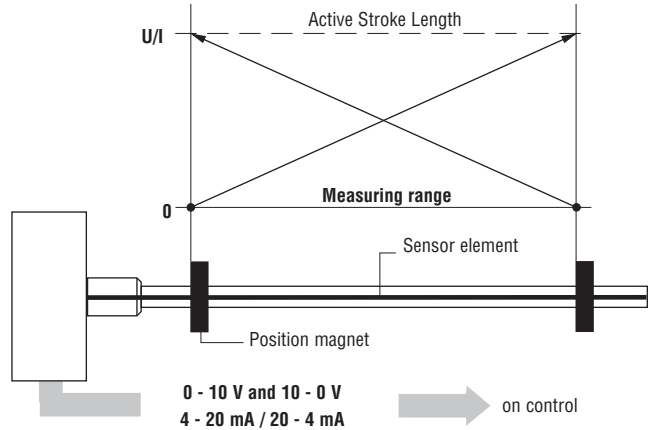
Temposonics-GB sensors provide analogue output of Voltage and Current, forward/reverse acting. The analogue output signal is proportional to the magnet position along the active measuring stroke of the sensor. The measuring range is factory

set and does not need recalibration. Since the outputs are direct, no signal-conditioning electronics are needed when interfacing with controllers or meters.

Simple mechanics

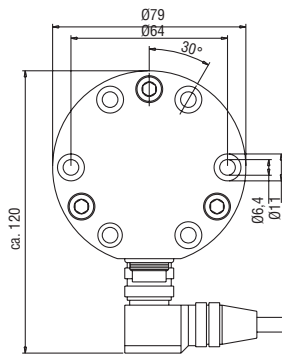
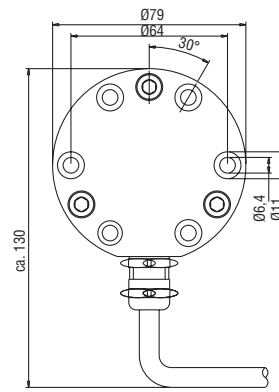
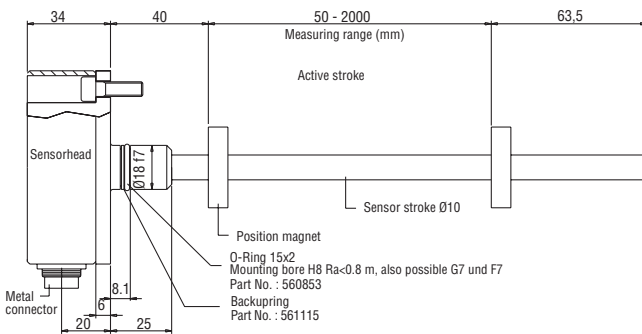
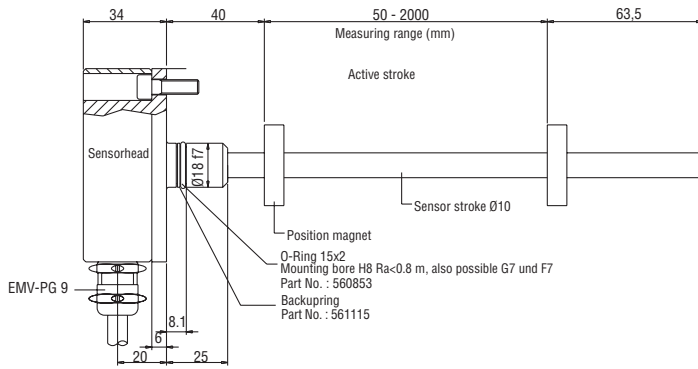
The extremely rugged sensor consists of 3 parts

1. The sensor head, a robust housing with built-in electronics.
2. The pressure-proof sensor pipe (up to 530 bar) with fitting/flange protects the internal sensing element, the waveguide system. It fits into the bored piston rod.
3. The position magnet, the only moving part is mounted on the piston bottom. This permanent magnet travels wearfree and contactless along the stationary sensor tube. Its magnetic field starts the measurement signal through sensor's rod wall.



Technical Data

Input	
Measuring range	Displacement
Measuring range	50 - 2000 mm
Output	
Voltage	0 - 10 VDC and 10 - 0 VDC (minimum load: > 5 kOhm)
Strom	4 - 20 mA or 20 - 4 mA (min. load: 0 Ohm / max. load: 500 Ohm)
Accuracy	
Resolution	Infinite
Linearity, uncorrected	< ± 0,02 % F.S. (Minimum ± 60 µm)
Repeatability	< ± 0,001 % F.S.
Update Frequency	> 1,5 kHz
Ripple	< 0,01% F.S.
Operating conditions	
Magnet speed	any
Operating Temperature	-40° C ... +75° C
pressure Rating	350 bar, 700 bar peak
Protection	IP 67 (only if the mating cable connector is correctly fitted)
Shock Test	100 g (single hit) / IEC-Standard 68-2-27
Vibration Test	10 g / 10-150 Hz, IEC-Standard 68-2-6 Option: high vibration resistant 15 g / 20-2000 Hz
EMC Test	Electromagnetic emission EN 61000-6-3 Electromagnetic immunity EN 61000-6-2 (EN 61326/A1) EN 61000-4-2/3/4/6, Criteria A CE-certified
Form factor / Material	
Sensor head	Stainless steel 1.4305 / AISI 303
Rod with flange	Stainless steel 1.4301 / AISI 304
Position magnet	Ring magnet
Installation	
Mounting position	any
Mounting	Flange Ø18h 6, 6 bores, machine screws (ISO 4762)
Electrical connection	
Connection type	6 pin connector or integral cable output (PUR-cable 3 x 2 x 0,25 mm ² , Ø 7,9 mm)
Input voltage	24 VDC (+20 % / -15 %)
Current drain	50 - 140 mA, stroke length dependent
Ripple	< 1% peak to peak
Electric strength	500VDC (DC ground to machine ground)



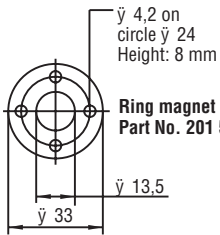
Any fitting position Simple mounting Small installation dimensions

The sensor's high-pressure, stainless steel tube with fitting flange will be fixed via 6 machine screws M6 x 16 x A2-70 (ISO 4762) through the bores in the sensor head. The hydraulic sealing requires the use of a supplied O-Ring 15 x 2. Using ferromagnetic supports, note that the magnet must be mounted with non-ferrous spacer and screws.

Position magnet

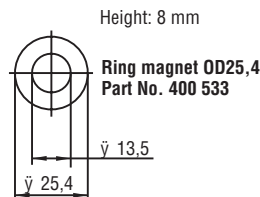
For accurate position measurements mount the magnet with non-ferrous fastening material (screws, supports ect.). Using ferromagnetic supports, note that the magnet must be mounted with non-ferrous spacer of 5 mm minimum and screws. Note the minimum mounting dimensions as illustrated right.

Position magnets



Ring magnet OD33
Part No. 201 542-2

Composite PA-Ferrite-GF20
Weight ca. 14g
Operating temperature:
-40 ... +100 C
Surface pressure max. 40 N/mm²
Fastening Torque for M4 screws max. 1 Nm

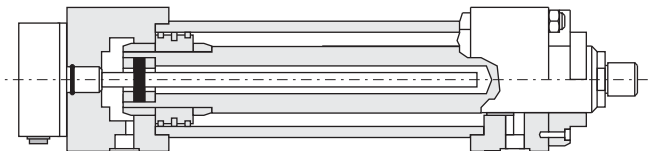


Ring magnet OD25.4
Part No. 400 533

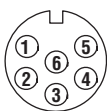
Composite PA-Ferrite
Weight ca. 10g
Operating temperature:
-40 ... +100 C
Surface pressure max. 40 N/mm²

Cylinder installation

Use a rod bush (e. g. teflon) to prevent wear on the magnet and the sensor pipe. The bore in the piston rod is dependent on hydraulic pressure and piston velocity ect. The minimum drilling must be 13 mm. Do not exceed the 700 bar peak pressure.



Connector Frontview



1. Output: Voltage (V)

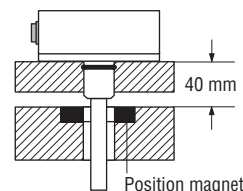
Pin	Cable	Function
1	Grey	0...10 V
2	Pink	DC Ground
3	Yellow	10...0 V
4	Green	DC Ground
5	Brown	+24 VDC
6	White	0 V (GND)
-	Connect cable shield to housing	

2. Output: Current (mA)

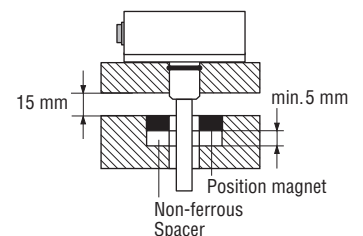
Pin	Cable	Function
1	Grey	4 - 20 mA*
2	Pink	DC Ground
3	Yellow	20 - 4 mA*
4	Green	DC Ground
5	Brown	+24 VDC
6	White	0 V (GND)
-	connect cable shield to housing	

*ordered output dependent

Non-magnetizable material



magnetizable material

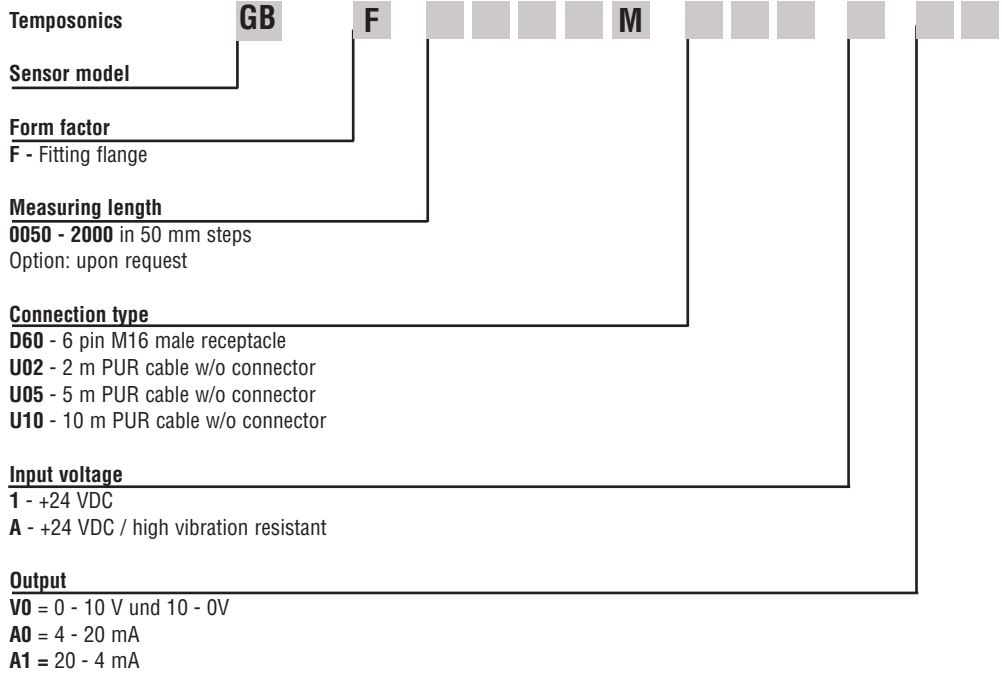


Note:

Application that can damage the integral cable, please take connector output version. Sensor electronics and integral cable are encapsulated completely. Repairing electronic module is impossible.

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Analogue

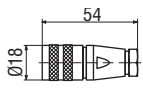


Scope of delivery
 Sensor
 Magnet (below) must be ordered separately

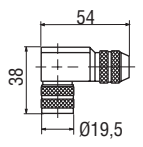
Accessories (selected)	Part No.
Position magnet OD33	201 542-2
Position magnet OD25,4	400 533
6 pin female cable connector M16, PG9	370 623
6 pin 90°-female cable connector M16	560 778
PUR-Cable 3 x 2 x 0,25 mm ²	530 115
O-Ring 15 x 2 Fluorelastomer FPM 75	560 853
Backup ring	561 115

Stroke length Standard	
Stroke	Ordering steps
< 500 mm	5 mm
500 - 750	10 mm
750 - 1000	25 mm
1000 - 2500	50 mm
> 2500	100 mm

Cable connector
 (recommended, not on delivery)



6 pin female connector M16
Part No. 370 623



6 pin 90° female connector M16
Part No. 560 778

Housing: Zinc, nickle plated
 Termination: Solder
 Contact Insert: Silver plated
 Cable clamp: PG9, M16
 Cable-Ø: 8 mm

Document Part Number: 25052012 (EN)

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