

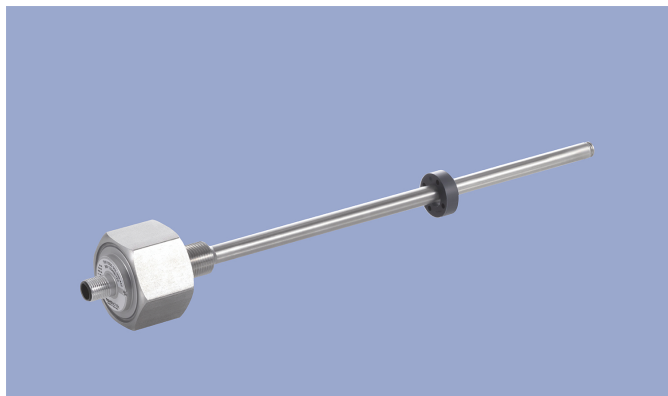
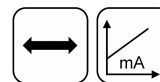
**NOVOSTRICTIVE
Transducer
Touchless**

TM1

Screw flange

4 ... 20 mA

Industrial



Special Features

- Compact design for tight spaces
- Touchless magnetostrictive measurement technology
- Operating pressure up to 350 bar, peaks up to 450 bar
- Non-contacting position detection with ring-shaped position marker
- Unlimited mechanical life
- No velocity limit for position marker
- Absolute output
- Outstanding accuracy performance up to 0.04 %
- Wide range of supply voltage
- Optimized for use in industrial applications
- Other configurations see separate data sheets

Applications

- Manufacturing Engineering
- Level measurement
- Actuators

The absolute linear transducer TM1 enables a compact and cost-effective position measurement. It consists of a stainless steel flange welded to a pressure-resistant rod and can therefore be used under harsh environmental conditions. The magnetostrictive measuring technology offers excellent accuracy for measuring lengths up to 2000 mm. The passive ring-shaped position marker allows a mechanically decoupled measurement.

Description

Material	Flange: SS 1.4307 / AISI 304L
	Flange cover: AlSiMgBi
	Rod: SS 1.4571 / AISI 316Ti
	Sealing: O-ring NBR 90 SH A
Mounting	Screwed via thread M18x1.5
Electrical connection	Connector M12x1, A-coded

Mechanical Data

Dimensions	See dimension drawing
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Ordering Specifications

Ordering Specifications

Preferred types printed in bold

T

M

1

-

0

5

0

0

-

3

0

6

-

8

B

1

-

1

0

4

Series

Electrical measuring range

Standard lengths 0050 up to 2000 mm in 25 mm-steps

Other lengths on request

Mechanical version

306: Screw flange M18x1.5

308: Screw flange M18x1.5 with internal thread M4x6 at rod end, additional length 7.5 mm

Supply voltage Ub

8: Ub = 24 VDC

Output signal

B: 4 ... 20 mA

Output characteristic

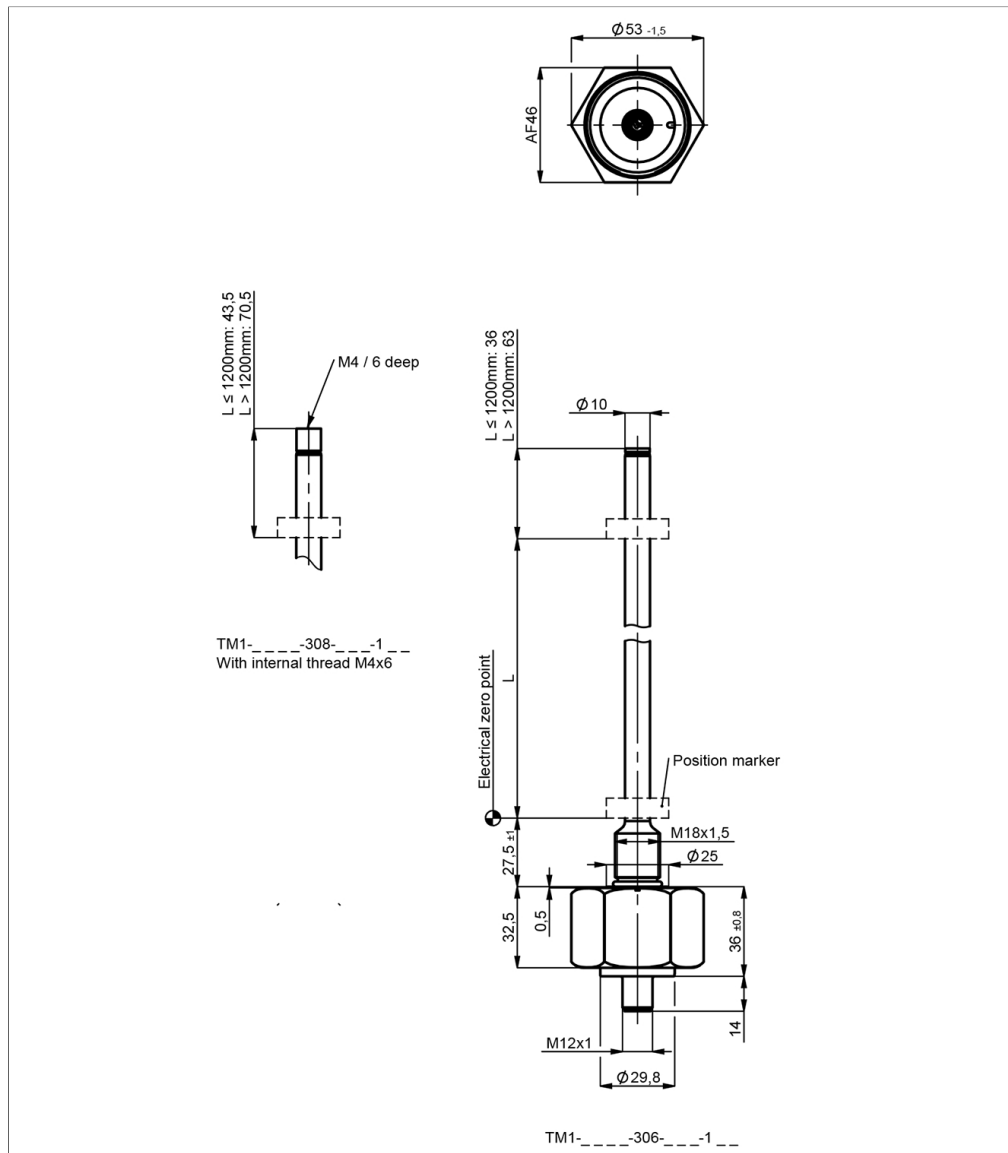
1: Rising output characteristic, seen from flange

2: Falling output characteristic, seen from flange

Electrical connection

104: Connector M12x1, 4-pole

Drawing



CAD data see
www.novotechnik.de/en/download/cad-data/

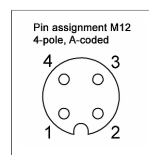
Technical Data

Type	TM1- - - - -306-8B_-104
Output signal	4 ... 20 mA
Burden	@Ub 24 V: ≤ 500 Ω, @Ub 12 V: ≤ 250 Ω
Sampling rate / Update rate	0.5 kHz
Electrical measuring range (dim. L)	0 ... 50 mm up to 0 ... 2000 mm
Absolute linearity	≤ ±0.04 %FS (min. 300 µm)
Tolerance of electr. zero point	±1 mm
Resolution	≤ 0.1 mm
Repeatability	≤ ±0.1 mm
Hysteresis	≤ ±0.1 mm
Temperature error	typ. 50 ppm/K (min. 0.01 mm/K)
Supply voltage Ub	12/24 VDC (8 ... 32 VDC)
Supply voltage ripple	≤ 10% Ub
Power drain w/o load	< 1 W
Overvoltage protection	36 VDC (permanent)
Polarity protection	yes (-36 VDC)
Short circuit protection	yes (output vs GND and supply voltage up to 36 VDC)
Insulation resistance (500 VDC)	≥ 10 MΩ
Environmental Data	
Max. operational speed	Mechanically unlimited
Vibration IEC 60068-2-6	20 g, 10 ... 2000 Hz, Amax = 0.75 mm
Shock IEC 60068-2-27	100 g, 11 ms (single hit)
Protection class DIN EN 60529	IP67
Operating temperature	-40 ... +105°C
Operating humidity	0 ... 95 % R.H. (no condensation)
Working pressure	≤ 350 bar
Pressure peaks	≤ 450 bar
Burst pressure	> 700 bar
Life	Mechanically unlimited
Functional safety	If you need assistance in using our products in safety-related systems, please contact us
MTTF (IEC 60050)	355 years
EMC Compatibility	
EN 61000-4-2 ESD (contact/air discharge)	4 kV, 8 kV
EN 61000-4-3 Electromagnetic fields (RFI)	10 V/m
EN 61000-4-4 Fast transients (burst)	1 kV
EN 61000-4-6 Cond. disturbances (HF fields)	10 V eff.
EN 55016-2-3 Radiated disturbances	Industrial and residential area

FS = Full scale: Signal span according to electrical measuring range

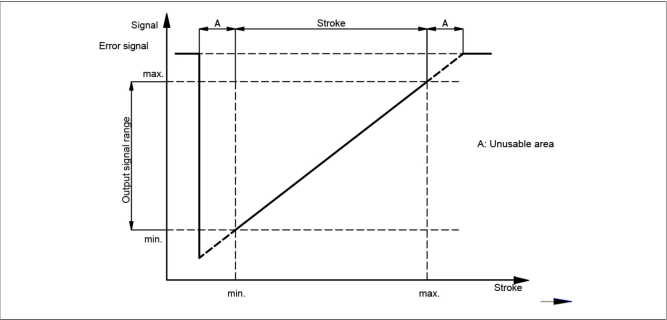
Connection Assignment

Signal	Connector code 1_ _
Supply voltage Ub	Pin 1
GND	Pin 3
Signal output	Pin 2
Do not connect	Pin 4
Connect cable shielding to protection earth	

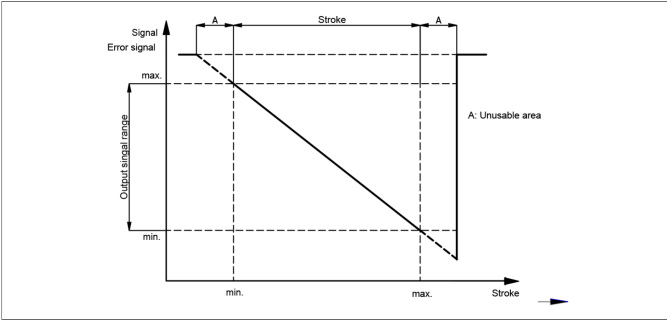


Technical Data
Output
Characteristics

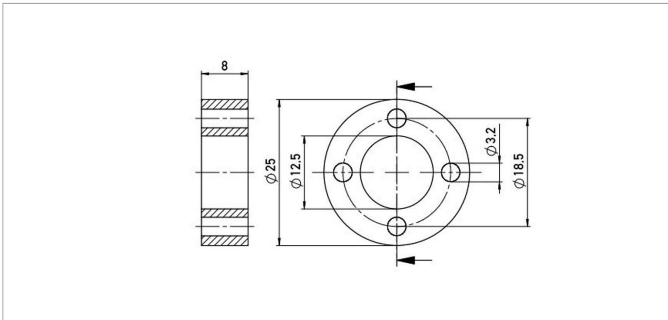
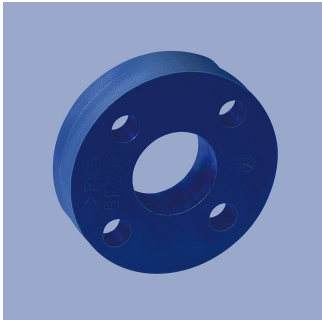
Output characteristic



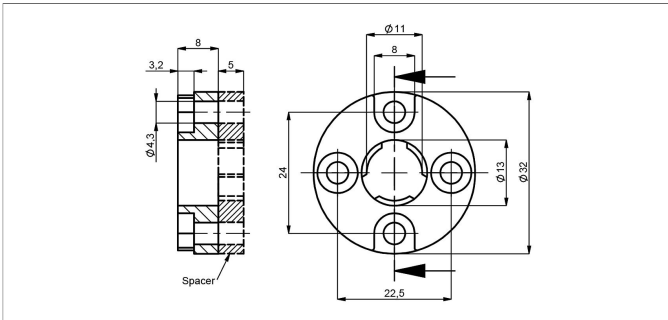
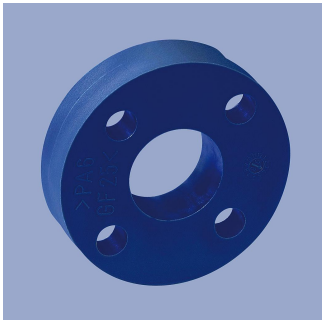
Output characteristic



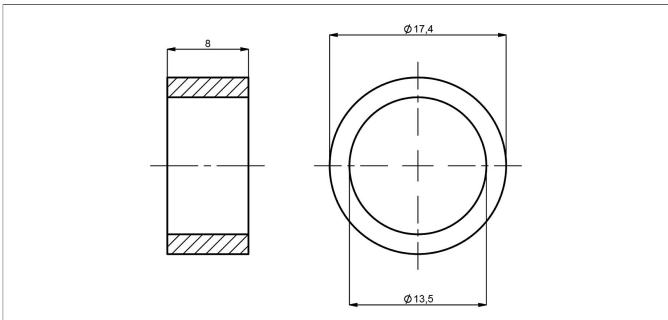
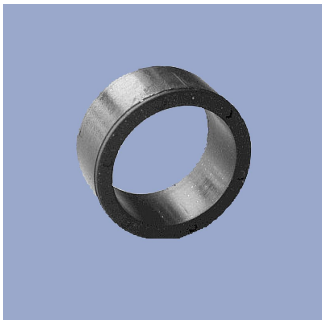
Position Markers



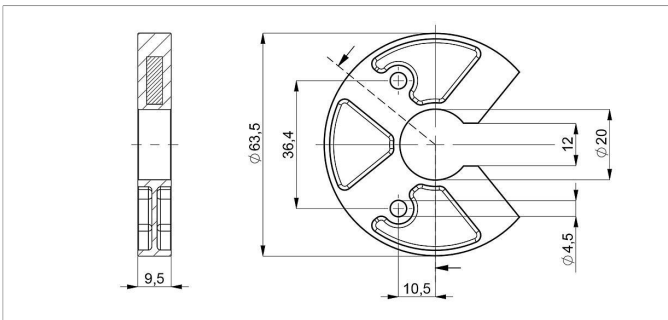
Z-TH1-P18	
Ring position marker for fixation with screws M3	
Material	PA6-GF
Weight	approx. 12 g
Operating temp.	-40 ... +100°C
Surface pressure	max. 40 N/mm²
Fastening torque of mounting	max. 100 Ncm
P/N	Pack. unit [pcs]
400005697	1



Z-TH1-P19		
Z-TH1-PD19 With spacer		
Ring position marker for fixation with screws M4, optionally with or without spacer		
Material	PA6-GF, Spacer: POM-GF	
Weight	approx. 14 g	
Operating temp.	-40 ... +100°C	
Surface pressure	max. 40 N/mm²	
Fastening torque	max. 100 Ncm	
P/N	Spacer	Pack. unit [pcs]
400005698	-	1
400107117	incl.	1

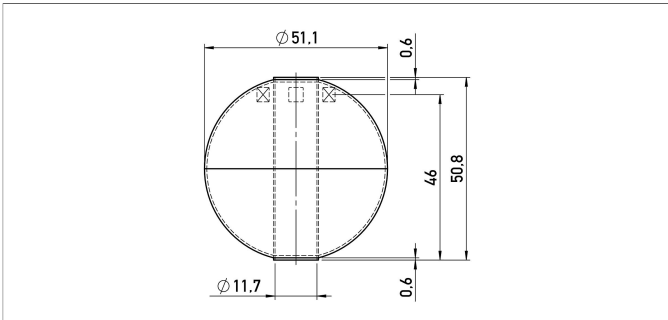


Z-TH1-P30	
Ring position marker for mounting via lock washer and retaining ring	
Material	NdFeB bonded (EP)
Weight	approx. 5 g
Operating temp.	-40 ... +100°C
Surface pressure	max. 10 N/mm²
P/N	Pack. unit [pcs]
400106139	1

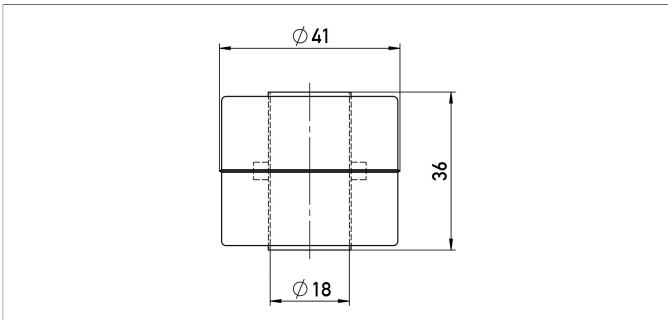
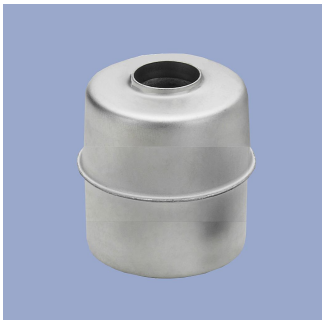


Z-TH1-P25	
U-shaped position marker for fixation with M4 screws	
Caution: for dimension of electrical zero point please follow the user manual!	
Material	PA6-GF
Operating temp.	-40 ... +105°C
Surface pressure	max. 40 N/mm²
Fastening torque of mounting	max. 100 Ncm
P/N	Pack. unit [pcs]
400105076	1

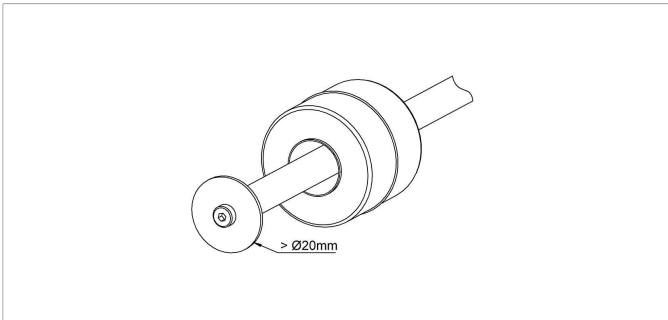
Position Markers



Z-TH1-P32	
Ball-type floating position marker	
Material	SS 1.4571 / AISI 316Ti
Weight	approx. 42 g
Operating temp.	-40 ... +100°C
Compression strength	≤ 40 bar
Density	720 kg/m³
Immersion depth in water	36.7 mm
P/N	Pack. unit [pcs]
400105703	1



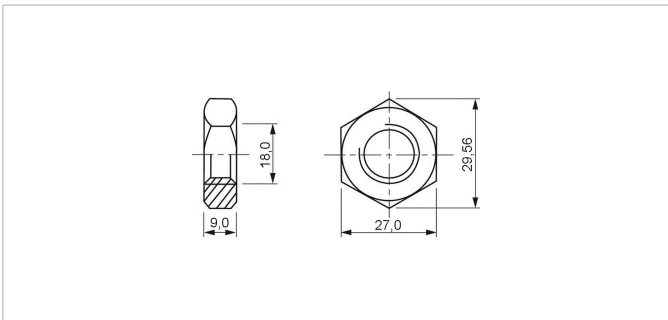
Z-TH1-P21	
Cylinder floating position marker	
Material	SS 1.4404 / AISI 316L
Weight	approx. 20 g
Operating temp.	-40 ... +100°C
Compression strength	≤ 8 bar
Density	740 kg/m³
Immersion depth in water	approx. 26.6 mm
P/N	Pack. unit [pcs]
400056044	1



Floating Position Marker - Installation Recommendation

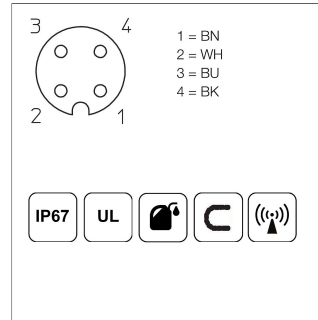
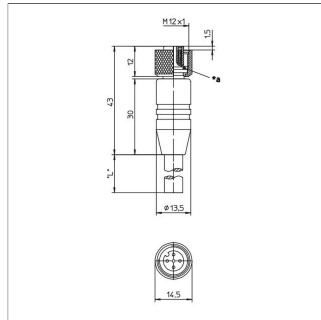
When using floating position markers, we recommend to secure the marker against loss with a washer at the rod end.

For this purpose, a sensor version with inner thread at the rod end is required (s. ordering code).



Z-TH1-M01	
Lock nut ISO 8675, M18x1.5-A2	
P/N	Pack. unit [pcs]
400056090	1

Connector System M12



EEM-33-32/62/97

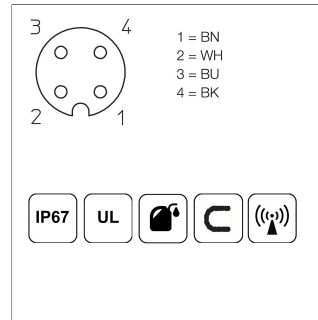
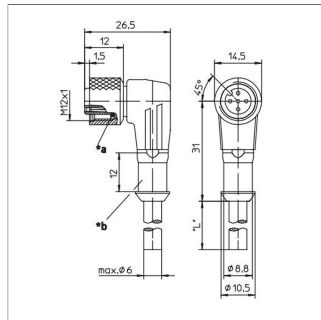
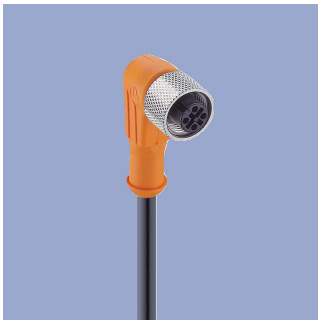
M12x1 Mating female connector, 4-pin, straight, A-coded, with molded cable, shielded, IP67, open ended

Plug housing	PA
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Cable sheath PUR, Ø = max. 6 mm,
-25 ... +80°C (moved)
-50 ... +80°C (fixed)

Lead wires PP, 0.34 mm²

P/N	Type	Length
400005600	EEM-33-32	2 m
400005609	EEM-33-62	5 m
400005650	EEM-33-97	10 m



EEM-33-33/63/99

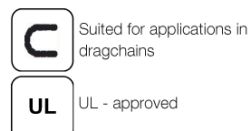
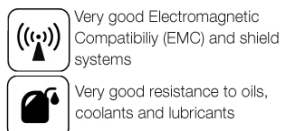
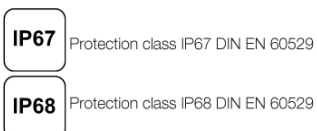
M12x1 Mating female connector, 4-pin, angled, A-coded, with molded cable, shielded, IP67, open ended

Plug housing	PA
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Cable sheath PUR, Ø = max. 6 mm,
-25 ... +80°C (moved)
-50 ... +80°C (fixed)

Lead wires PP, 0.34 mm²

P/N	Type	Length
400005601	EEM-33-33	2 m
400005610	EEM-33-63	5 m
400005696	EEM-33-99	10 m



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