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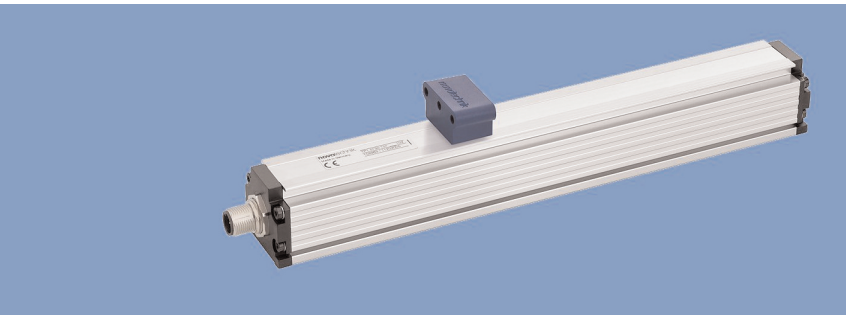
NOVOSTRICTIVE Transducer up to 4500 mm touchless, absolute

Series TP1 with Analog Interface



Special features

- Absolute transducer in robust profile design
- NOVOSTRICTIVE, touch-less magnetostrictive measuring process
- Position detection without contact
- Wear-free, unlimited mechanical life
- Analog output signals: current or voltage
- Start/end positions Teach-In via programming input
- Optional galvanically isolated output
- Excellent linearity to 50 µm
- Resolution to 0.001 mm regardless of stroke length
- Low temperature coefficient <30 ppm/K
- Insensitive to shock and vibration
- Cable or connector version available
- Protection class IP67/IP68

TP1 Transducers employ the NOVOSTRICTIVE touchless magnetostrictive measuring process for direct, precise and absolute measurement of linear position in motion control, positioning and measurement display applications.

This measurement principle uses position markers (magnets) as mechanical input devices. The position markers are available in free-floating or rail-guided versions.

Clamps allow easy and flexible mounting as well as precise adjustment of the installation position.

The transducer is mechanically very robust, and due to the the magnetostrictive measurement technology resistant to high shock and vibration.

The active sensing element is encased in an aluminum housing rated to IP 68. This makes for excellent ingression protection from dust, moisture and oils.

A sophisticated ASIC in the transducer provides an absolute and proportional current- or voltage output signal. A galvanically isolated DC/DC converter output version is available.

Additional interfaces are available - see separate data sheets.

Description	
Housing	Aluminum , anodized, metal end flanges
Mounting	adjustable clamps
Position marker	floating position marker, plastic guided position marker, ball coupling
Measurement principle	NOVOSTRICTIVE touchless magnetostrictive
Electrical connections	8-pin round connector, shielded, M12 x 1 8-pin round connector, shielded, IEC130-9 6-pin round connector, shielded, IEC IEC130-9 8-wire PUR / PVC-cable, 8 x 0.25 mm², shielded: 2 m, 5 m or 10 m length
Electronic	SMD with integrated ASIC Connector casing (shield) is connected with the sensor housing, housing is capacitively decoupled from the electronics

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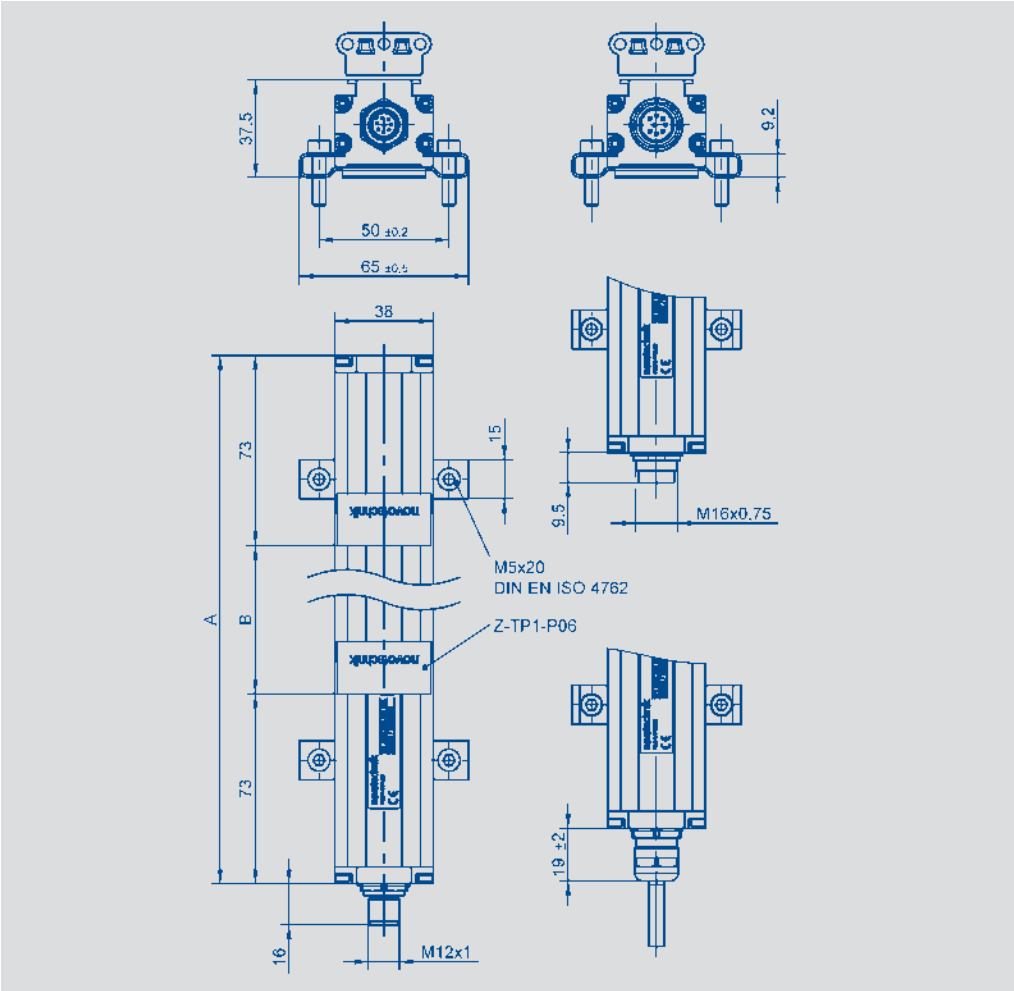

The analog interfaces provide by default a Teach-In function via the electrical connection.

Output connector Code 101, 102	Cable Code 201, 203, 205	Connector with cable EEM33-86, EEM33-87	Analog current	Analog voltage
PIN 1	YE	WH	0(4)...20 mA	do not connect
PIN 2	GY	BN	signal GND	signal GND
PIN 3	PK	GN	do not connect	+10...0(-10) VDC
PIN 4	RD	YE	DIAG *	DIAG *
PIN 5	GN	GY	do not connect	0(-10)...+10 VDC
PIN 6	BU	PK	supply GND	suppply GND
PIN 7	BN	BU	+24 VDC	+24 VDC
PIN 8	WH	RD	PROG *	PROG *

*connect only for Teach-In function (see manual).

Output connector Code 103	Analog current	Analog voltage
PIN 1	0...10 VDC	0 (4)...20 mA
PIN 2	signal GND	signal GND
PIN 3	10...0 VDC	do not connect
PIN 4	supply GND	supply GND
PIN 5	+24 VDC	+ 24 VDC
PIN 6	supply GND	supply GND

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Type designations	TP1 - _ _ _ _ - 101 - 41 _ - _ _ _ Analog voltage	TP1 - _ _ _ _ - 101 - 42 _ - _ _ _ Analog current	
Electrical Data			
Electrical measuring range (dimension B)	0050 up to 4500	0050 up to 4500	mm
Absolute linearity	≤ ± 0.02 % F.S. (min. ± 50 µm)	≤ ± 0.02 % F.S. (min. ± 50 µm)	
Tolerance of electr. zero point	± 0.5	± 0.5	mm
Output signal	Voltage 0.1 ... 10 VDC (load ≥ 5 kΩ) -10 ... 10 VDC (load ≥ 5 kΩ)	Current 0.1 ... 20 mA (burden ≤ 500 Ω) 4 ... 20 mA (burden ≤ 500 Ω)	
Resolution	16	16	Bit
Repeatability	≤ 0.03	≤ 0.03	% F.S.
Hysteresis	≤ 0.01	≤ 0.01	% F.S.
Supply voltage	24 (19...30)	24 (19...30)	VDC
Supply voltage by galvanic isolation	24 (18...36) see ordering specifications		VDC
Supply voltage ripple	≤ 10	≤ 10	% Vss
Current consumption	≤ 100	≤ 100	mA
Output update rate max. *	16	16	kHz
Temperature coefficient	≤ 30	≤ 30	ppm/K
Overvoltage protection	40 (temporary / 1 min.)	40 (temporary / 1 min.)	VDC
Polarity protection	up to Umax	up to Umax	VDC
Signal output protection	up to Umax	up to Umax	VDC
Insulation resistance (500 VDC)	≥ 10	≥ 10	MΩ
Mechanical Data			
Dimensions	see drawing	see drawing	
Body length (dimension A)	Dimension B + 146	Dimension B + 146	± 2 mm
Environmental Data			
Operating temperature range	-40...+85	-40...+85	°C
Storage temperature range	-40...+105	-40...+105	°C
Operating humidity range	0...95 (no condensation)	0...95 (no condensation)	%R.H.
Shock per DIN IEC68T2-27	100 (11 ms) (single hit)	100 (11 ms) (single hit)	g
Vibration per DIN IEC 68T2-6	20 (5...2000 Hz, A_{max}=0.75 mm) g	20 (5...2000 Hz, A_{max}=0.75 mm)	g
Protection class per DIN EN 60529	IP67 with fastened connector IP68 with cable connection	IP67 with fastened connector IP68 with cable connection	
Mechanical data when used with floating position marker			
Max. traverse speed with valid output signal	10		ms^{-1}
Max. traverse acceleration with valid output signal	200		ms^{-2}
Life	unlimited (mechanical)		movements
Standard defined measuring range (dimension B)	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2250, 2500, 2750, 3000, 3250, 3500, 3750, 4000, 4250, 4500 Other lengths on request.		mm
CE-Conformity			
Emission	RF noise field strength EN 55011, class B		
Noise immunity	ESD EN 61000-4-2 Radiated immunity EN 61000-4-3 Burst EN 61000-4-4 Conducted disturbances induced by RF fields EN 61000-4-6		

*data are extrapolated, internal update rate depending on length

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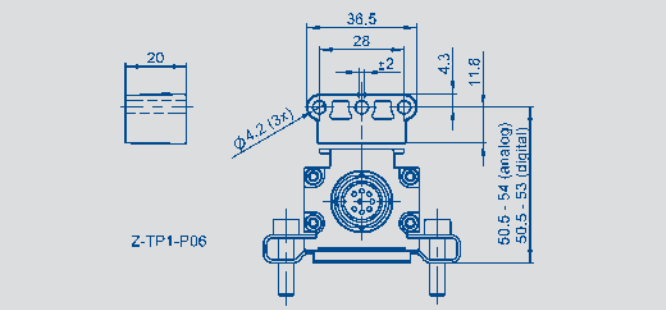
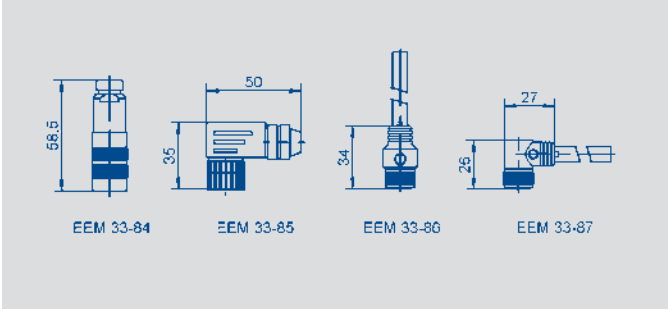
Art.-No.: 062 781
Subject to changes





Ordering specifications

Mech. version
101: Profile design

Electrical interface
4: Analog interfaces

Output signal analog interfaces 4 _ _
1: Voltage output
2: Current output

Analog interfaces voltage output 41_
1: 0 VDC...10 VDC und 10 VDC...0 VDC
4: 0 VDC...10 VDC galvanic isolated *
6: -10 VDC ... +10 VDC galvanic isolated *

Analog interfaces current output 42_
1: 0 mA... 20 mA
2: 20 mA... 0 mA
3: 4 mA... 20 mA
4: 20mA... 4 mA

Electrical connection
101: 8-pin round connector IEC130-9
102: 8-pin round connector M 12x1
103: 6-pin round connector IEC130-9
201: NT standard cable 1 m
203: NT standard cable 3 m
205: NT standard cable 5 m

T	P	1	-	0	8	0	0	-	1	0	1	-	4	1	1	-	1	0	2

Series

Electrical measuring range
Standard lengths 0050 up to 4500 mm
0050 up to 0500 mm in 25 mm-steps, 0500 up to1000 mm in 50 mm-steps,
1000 up to 2000 mm in 100 mm-steps, 2000 up to 4500 mm in 250 mm-steps.
Other lengths on request

* on request

Important
Avoid equalizing currents in the cable shield caused by potential differences. Twisted pair cable is recommended.

Included in delivery
Mounting clamps Z46 electr. isolating incl. cylinder screws.

Required accessories
Floating position marker
Z-TP1-P06, Art.No. 005693,
Z-TP1-P07, Art.No. 005694,
Guided position marker
Z-TP1-P08, Art.No. 005695.
Other position markers on request.

Recommended accessories
Straight connector IEC 130-9
8-pin, EEM 33-84,
6-pin, EEM 33-82.
Angled connector IEC 130-9
8-pin, EEM 33-85,
6-pin, EEM 33-94.
PUR-cable with 8-pin female connector M12 x 1,
8 x 0.25 mm^2, shielded:
2 m length, EEM 33-86,
5 m length, EEM 33-90,
10 m length, EEM 33-92;
PUR-cable with 8-pin female angled connector, M 12 x 1,
8 x 0.25 mm^2, shielded:
2 m length, EEM 33-87,
5 m length, EE 33-91,
10 m length, EEM 33-93.

Available on request
Standard cable 10 m
Specific connectors
Digital, incremental and fieldbus interfaces
(see separate data sheets).