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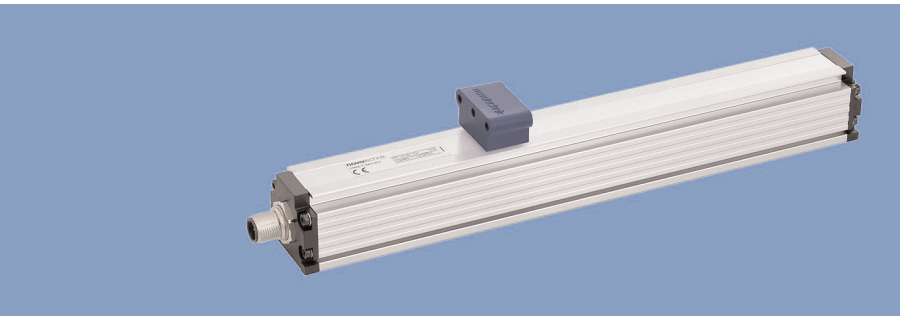
NOVOSTRICTIVE Transducer up to 4500 mm Touchless Absolute

Series TP1 with Start-Stop-, SSI-, DyMoS Interface



Special features

- Absolute transducer in robust profile design
- NOVOSTRICTIVE, touch-less magnetostrictive measuring process
- Position detection without contact
- Wear-free, unlimited mechanical life
- Start-Stop pulse interface with normal speed of operation to 2800 m/s
- Synchronous serial interface (SSI)
- DyMoS - interface with data transfer monitoring
- Excellent linearity to 10 µm
- Resolution to 0.001 mm regardless of stroke length
- Low temperature coefficient <15 ppm/K
- Insensitive to shock and vibration
- Cable or connector version available
- Protection class IP67/IP68

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 a standardized output signal.

The pulse interface also allows precise processing of both edges of the Start/Stop signal. As an option, the transducer can also be operated with up to three position markers.

Synchronous serial interface provides 24, 25 or 26 bit output. Additionally, a 48-bit serial interface called DyMoS is offered and features data transfer monitoring.

The advantages of conventional interfaces and bus interfaces have been combined in Novotechnik's DyMoS interface. In addition to the position value, the DyMoS interface also allows the transmission of the actual traverse velocity.

Additional interfaces are available - see separate data sheets.

Description	
Housing	Aluminium, anodized, metal end flanges
Mounting	Adjustable clamps
Position marker	Floating position marker plastic guided position marker, ball coupling
Measurement principle	NOVOSTRICTIVE touchless magnetostrictive
Electr. connections	8-pin round connector, shielded, M12 x 1 8-pin round connector, shielded, IEC130-9 6-pin round connector, schielded, 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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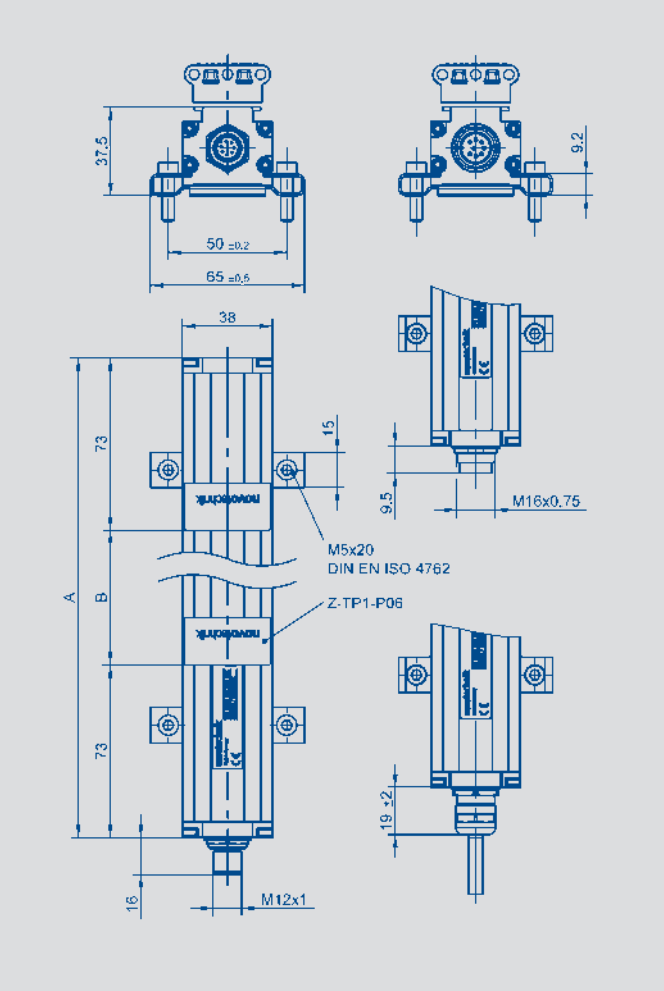

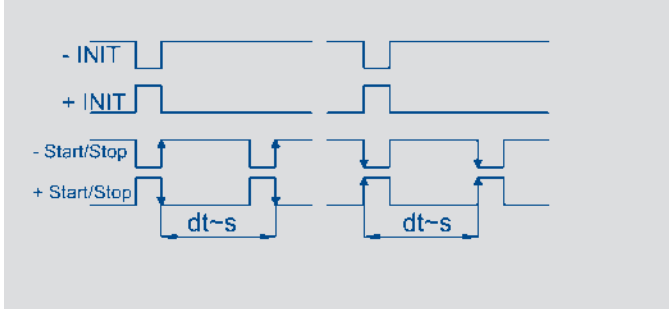

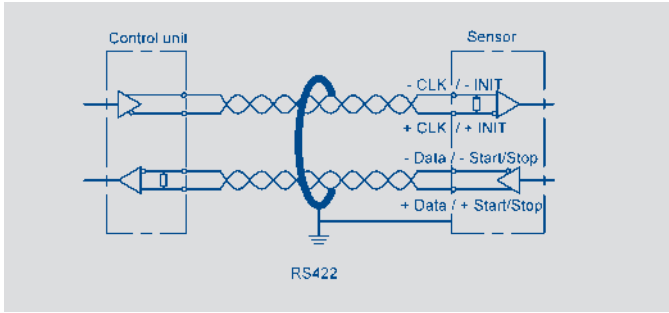

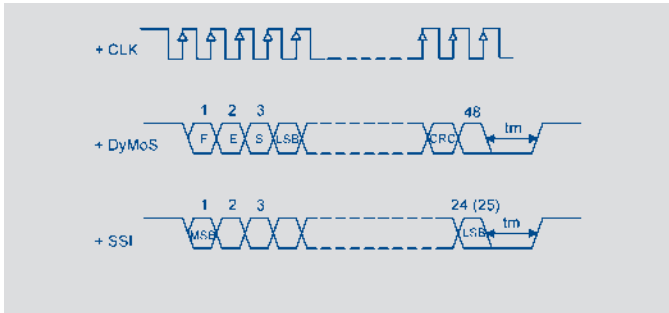

Output connector Code 101, 102	Cable Code 201, 203, 205	Connector with cable EEM33-86, EEM33-87	Start/Stop-Impuls interface	Synchronous-Serial interface	DyMoS® interface
PIN 1	YE	WH	+ INIT	+ Clk	+ Clk
PIN 2	GY	BN	+ Start/Stop	+ Data	+ Data 1
PIN 3	PK	GN	- INIT	- Clk	- Clk
PIN 4	RD	YE	do not connect	do not connect	- Data 2
PIN 5	GN	GY	- Start/Stop	- Data	- Data 1
PIN 6	BU	PK	supply GND	supply GND	supply GND
PIN 7	BN	BU	+24 VDC	+24 VDC	+24 VDC
PIN 8	WH	RD	do not connect	do not connect	+ Data 2

Output connector Code 103	SSI interface	Start-Stop- Impulse interface
PIN 1	- DATA	- Start/Stop
PIN 2	+ DATA	+ Start/Stop
PIN 3	+ CLK	+ INIT
PIN 4	- CLK	- INIT
PIN 5	+24 VDC	+ 24 VDC
PIN 6	supply GND	supply GND

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Type designations	TP1 - _ _ _ _ - 101 - 11 _ - _ _ _ TP1 - _ _ _ _ - 101 - 12 _ - _ _ _ Start-Stop-Impulse interface	TP1 - _ _ _ _ - 101- 2 _ _ - _ _ _ Synchronous-Serial interface	TP1 - _ _ _ _ - 101 - 13 _ - _ _ _ DyMoS® interface	
Electrical Data				
Electrical measuring range (dimension B)	0050 up to 4500	0050 up to 4500	0050 up to 4500	mm
Absolute Linearity	≤ ± 50 µm	≤ ± 10 µm up to 1000 mm ≤ ± 25 µm up to 2500 mm ≤ ± 40 µm up to 4500 mm	≤ ± 10 µm up to 1000 mm ≤ ± 25 µm up to 2500 mm ≤ ± 40 µm up to 4500 mm	
Tolerance of electr. zero point	± 0.5	± 0.5	± 0.5	mm
Output signal	RS422 Impulse	RS422 absolut 24, 25 or 26 bit	RS422 absolut 48 bit synchronous-serial	
Resolution	standardized up to 2800 m/s	1 or 5 µm	5 µm	
Repeatability	≤ 6	≤ 6	≤ 6	µm
Hysteresis	≤ 4	≤ 4	≤ 4	µm
Supply voltage	24 (13...34)	24 (13...34)	24 (13...34)	VDC
Supply voltage ripple	≤ 10	≤ 10	≤ 10	% Vss
Current consumption max.	≤ 100	≤ 100	≤ 100	mA
Output update rate max. *	0.25...1	16	16	kHz
Temperature coefficient	≤ 15	≤ 15	≤ 15	ppm/K
Overvoltage protection	40 (permanent)	40 (permanent)	40 (permanent)	VDC
Polarity protection	up to Umax.	up to Umax.	up to Umax.	VDC
Signal output protection	7 (permanent)	7 (permanent)	7 (permanent)	VDC
Insulation resistance (500 VDC)	≥ 10	≥ 10	≥ 10	MΩ
Mechanical Data				
Dimensions	see drawing	see drawing	see drawing	
Body length (dimension A)	dimension B + 146	dimension B + 146	dimension B + 146	± 2 mm
Environmental Data				
Operating temperature range	-40...+85	-40...+85	-40...+85	°C
Storage temperature range	-40...+105	-40...+105	-40...+105	°C
Operating humidity range	0...95 (no condensation)	0...95 (no condensation)	0...95 (no condensation)	%R.H.
Shock per DIN IEC68T2-27	100 (11 ms)	100 (11 ms)	100 (11 ms)	g
Vibration per DIN IEC68T2-6	20 (5...2000 Hz, A_{max}=0.75 mm)	20 (5...2000 Hz, A_{max}=0.75 mm)	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	IP67 with fastened connector IP68 with cable connection	
Mechanical data when used with floating position marker				
Max. traverse speed with valid output signal	10	10	10	ms^{-1}
Max. traverse acceleration with valid output signal	200	200	200	ms^{-2}
Life	unlimited (mechanical)			movements
Standard 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, Klasse 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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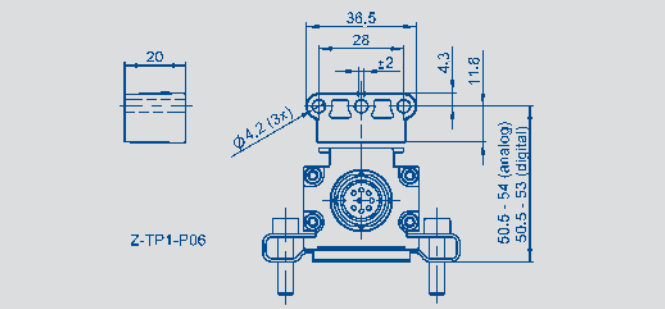

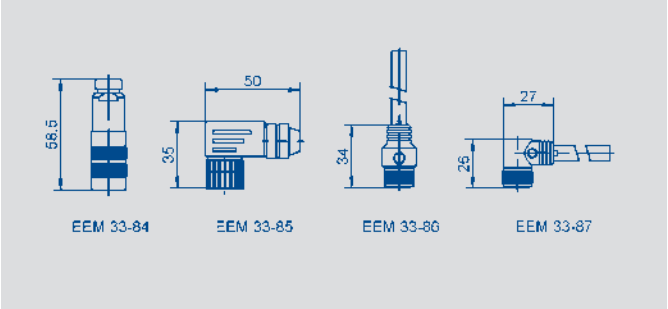

Ordering specifications

Mech. version
101: Profile design

Electrical interface
1: Other digital interface
2: Synchronous-Serial interface

Output signal other digital interface 1 _ _
1: Impulse interface Start Stop Signal (P) (M)
2: Impulse interface measuring time / pulse width
3: DyMoS interface 48 bit Synchronous-Serial

Output signal Synchronous-Serial interface 2 _ _
1: SSI 24 bit
2: SSI 25 bit
7: SSI 26 bit (25 = Alarm; 26 = Parity Even)

Impulse interface Start Stop Signal 11_
4: For 1 up to 3 position marker variable

Impulse interface measuring time / pulse width 12_
1: Standard

DyMoS®-interface 48 bit Synchronous-Serial 13_
1: Binary code, resolution 5 µm; (Pos. 1 + Vel.1)
2: Binary code; resolution 5 µm; (Pos. 1 + Pos.2)
3: Binary code; resolution 5 µm; (Pos. 1 + Vel. 1) and (Pos. 2 + Vel. 2) two channel

Synchronous-Serial interface 2 _ _
1: Binary code; resolution 5 µm
2: Gray code; resolution 5 µm
4: Binary code; resolution 1 µm
5: Gray code; resolution 1 µm

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	-	1	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 to 1000 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.

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 marker on request.

Recommended accessories
Straigth 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 mm², 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, M12 x 1,
8 x 0.25 mm², shielded:
2 m length, EEM 33-87,
5 m length, EEM 33-91,
10 m length, EEM 33-93

Available on request
Standard cable 10 m
Specific connectors
Other resolutions
SSI two channel,
Incremental, analog and fieldbus interfaces
(see separate data sheets).

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