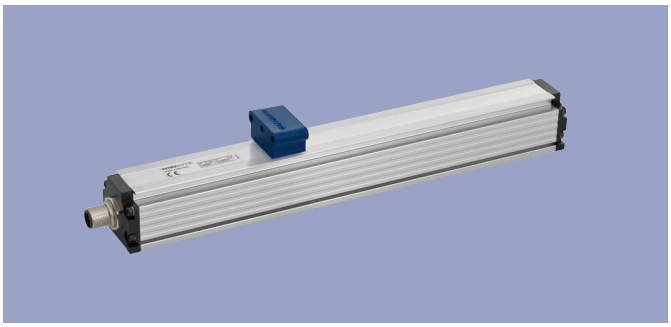
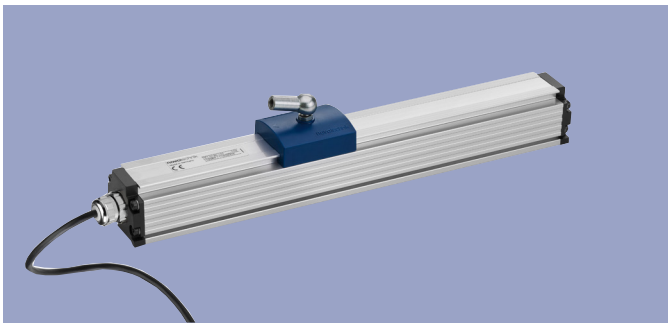
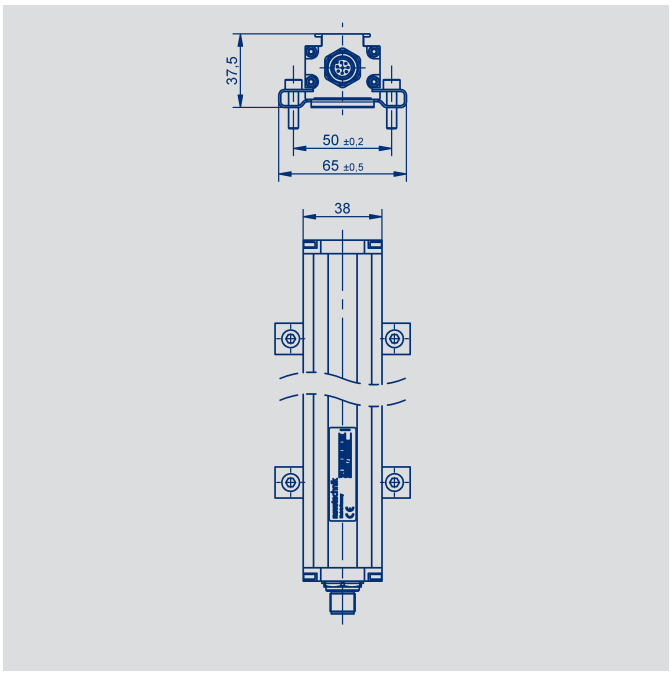
novotechnik
Siedle Group

NOVOSTRICTIVE Transducer up to 4250 mm touchless

Series TP1







Special features

- Non-contacting magnetostrictive measurement technology
- Touchless position detection
- Wear-free, unlimited mechanical life
- Resolution up to 1 µm, independently of length
- Low temperature coefficient <15 ppm/K
- Insensitive to shock and vibration
- Protection class IP67 / IP68
- Position-Teach-In
- Optionally galvanic isolated
- Interfaces: Analog, SSI, Impulse, Incremental, CANopen

Applications

- Manufacturing Engineering
  Plastic injection molding
  Textile
  Packaging
  Sheet metal working
  Woodwork
- Automation Technology

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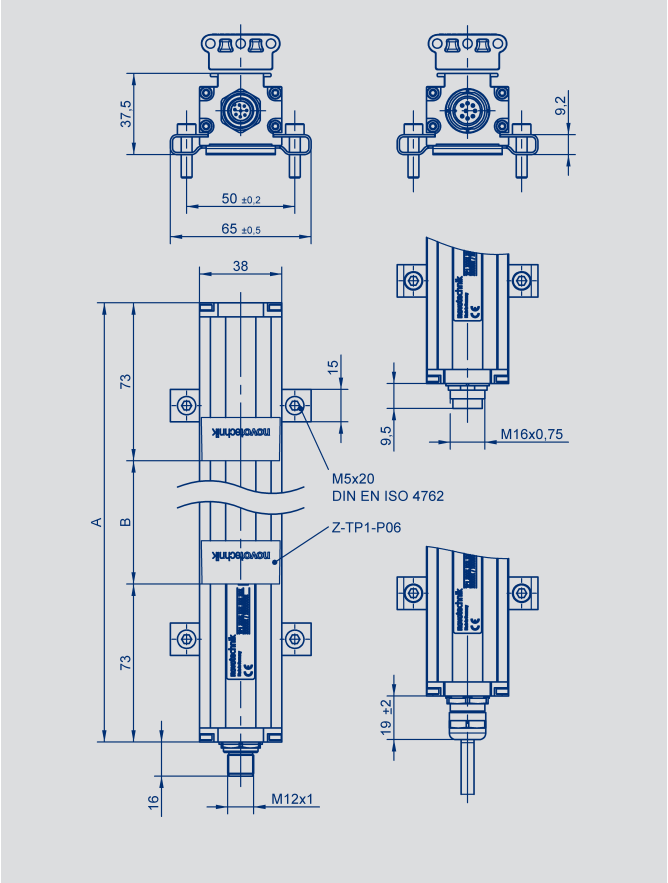
Contents

Mechanical Data



Description	
Housing	Aluminium, anodized, metal end flanges
Mounting	Adjustable clamps
Position marker	Floating position marker, plastic Guided position marker, plastic, ball coupling
Electrical connections	Connector M12x1, 5-pin / 8-pin, shielded Connector M16x0,75 (IEC 130-9), 6-pin / 8-pin, shielded PUR-cable, 8 x 0,25 mm², shielded: 1 m, 3 m oder 5 m length
Electronic	SMD with ASIC, integrated Connector casing (shield) is connected to the sensor housing. Housing is capacitively decoupled to the electronics

Mechanical Data		
Dimensions	see dimension drawing	
Length of housing (dimension A)	Dimension B + 146	mm
Electrical measuring range (dimension B)	0050 up to 0500 mm in 25 mm steps, 500 up to 1000 mm in 50 mm steps, 1000 up to 2000 mm in 100 mm steps, 2000 up to 4250 mm in 250 mm steps Other lengths on request.	
Max. operational speed with valid output signal	10	ms^{-1}
Max. operational acceleration with valid output signal	200	ms^{-2}
Shock (IEC 60068-2-27)	100 (11 ms) (single hit)	g
Vibration (IEC 60068-2-6)	20 (5...2000 Hz, Amax = 0,75 mm)	g
Protection class (DIN EN 60529)	IP67 with fastened connector IP68 with cable connection	
Life	Mechanically unlimited (with floating position marker)	
Operating temperature range	-40 ... +85	°C
Storage temperature range	-40 ... +105	°C
Operating humidity range	0 ... 95 (no condensation)	% R.H.

Technical Data
Analog Versions

Type designations	TP1- _ _ _ _-101 - 41 _ - _ _ _ Voltage	TP1- _ _ _ _-101 - 42 _ - _ _ _ Current	
Electrical Data			
Electrical measuring range (dimension B)	0050 up to 4250		mm
Output signal	0,1 ... 10 V (load ≥ 5 kΩ) -10 ... 10 V (load ≥ 5 kΩ)	0,1 ... 20 mA (burden ≤ 500 Ω) 4 ... 20 mA (burden ≤ 500 Ω)	
Number of channels	2	1	
Update rate *	≤ 16		kHz
Resolution	16		bit
Absolute linearity	≤ ± 0,02 (min. ± 50 µm) **		% FS
Tolerance of electr. zero point	± 0,5 (min. 2 x reproducibility)		mm
Reproducibility	≤ 0,03		% FS
Hysteresis	≤ 0,01		% FS
Temperature error	≤ 30 (min. 0,01 mm/K)		ppm/K
Supply voltage	24 (19 ... 30)		VDC
Supply voltage with galvanic isolation	24 (18 ... 36)		VDC
Supply voltage ripple	≤ 10		% Vss
Current consumption	≤ 100		mA
Overvoltage protection	40 (temporary / 1 min.)		VDC
Polarity protection	Yes, up to supply voltage Ub max		VDC
Short circuit protection	Yes (outputs vs.GND and supply voltage Ub max.)		
Insulation resistance (500 VDC)	≥ 10		MΩ
Environmental Data			
MTTF (DIN EN ISO 13849-1 parts count method, w/o load, wc)	23		Years
Functional safety	If you need assistance in using our products in safety-related systems, please contact us		
EMC compatibility CE	EN 61000-4-2 Electrostatic discharges (ESD) 4 kV, 8 kV EN 61000-4-3 Electromagnetic fields 10 V/m EN 61000-4-4 Electrical fast transients (burst) 2 kV EN 61000-4-6 Conducted disturbances, induced by RF-fields 10 V eff. EN 55011 Radiated disturbances class B		

*) Data are extrapolated, internal measuring rate depends on length.
**) Valid for channel 1; channel 2 with additional offset and gradient tolerances (inverted signal from channel 1).
Measured with position marker Z-TP1-P06.

Pin assignment

Output connector code 101, 102	Cable code 20_	Connector with cable (Accessories)	Analog voltage	Analog current
PIN 1	YE	WH	do not connect	0(4)...20 mA
PIN 2	GY	BN	Signal GND	Signal GND
PIN 3	PK	GN	+10...0 (-10) V	do not connect
PIN 4	RD	YE	DIAG *	DIAG *
PIN 5	GN	GY	0 (-10)...+10 V	do not connect
PIN 6	BU	PK	GND	GND
PIN 7	BN	BU	Supply voltage Ub	Supply voltage Ub
PIN 8	WH	RD	PROG *	PROG *

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

Output connector Code 103	Analog voltage	Analog current
PIN 1	0 (-10)...+10 V	0 (4)...20 mA
PIN 2	Signal GND	Signal GND
PIN 3	+10...0 (-10) V	do not connect
PIN 4	GND	GND
PIN 5	Supply voltage Ub	Supply voltage Ub
PIN 6	GND	GND

Ordering Specifications Analog Versions - Voltage - Current

Ordering specifications

Preferred types printed in bold

Mechanical version
101: Profile design

Electrical interface
4: Analog interface

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

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

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

*) With Teach-In-function

Electrical connection
101: Connector M16x0,75 (IEC 130-9), 8-pin
102: Connector M12x1, 8-pin
103: Connector M16x0,75 (IEC 130-9), 6-pin
201: Cable, 8-pole, shielded, 1 m
203: Cable, 8-pole, shielded, 3 m
205: Cable, 8-pole, shielded, 5 m

T	P	1	–	0	8	0	0	–	1	0	1	–	4	1	1	–	1	0	2

Series

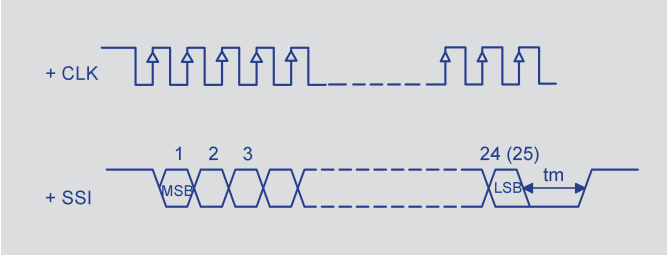
Electrical measuring range
Standard lengths 0050 up to 4250 mm
0050 up to 0500 mm in 25 mm-steps, 0500 up to 1000 mm in 50 mm-steps,
1000 up to 2000 mm in 100 mm-steps, 2000 up to 4250 mm in 250 mm-steps.
Other lengths on request

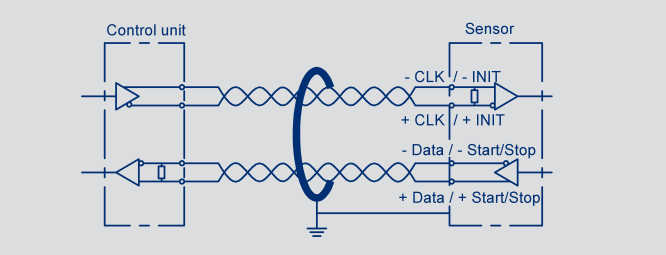
Important: Avoid equalizing currents in the cable shield caused by potential differences.
Twisted pair cable (STP) is recommended.

Technical Data
SSI-Interface

Type designations	TP1 - _ _ _ _ - 101 - 2_ _ - _ _ _ Synchronous-serial interface (SSI)	
Electrical Data		
Electrical measuring range (dimension B)	0050 up to 4250	mm
Protocol	SSI 24 und 25 bit (26 bit on request)	
Inputs	RS422	
Monoflop time (tm)	30	µs
Encoding	Gray, Binary	
Update rate *	16	kHz
Resolution	1, 5 or 10 see ordering specifications (other resolutions on request)	µm
Absolute linearity	≤ ±10 µm up to 1000 mm, ≤ ±25 µm up to 2500 mm, ≤ ±40 µm up to 4250 mm **	
Tolerance of electr. zero point	± 0.5	mm
Reproducibility	≤ 6	µm
Hysteresis	≤ 4	µm
Temperature error	≤ 15 (min. 0.01 mm/K)	ppm/K
Supply voltage Ub	24 (13 ... 34)	VDC
Supply voltage ripple	≤ 10	% Vss
Overvoltage protection	40 (permanent)	VDC
Current consumption	≤ 100	mA
Polarity protection	Yes, up to supply voltage Ub max.	
Short circuit protection	Yes (outputs vs. GND and supply voltage Ub up to 7 V)	
Ohmic load at outputs	> 120	Ω
Max. clock rate	2	MHz
Insulation resistance (500 VDC)	≥ 10	MΩ
Environmental Data		
MTTF (DIN EN ISO 13849-1, parts count method, w/o load, wc)	27	Years
Functional safety	If you need assistance in using our products in safety-related systems, please contact us	
EMC compatibility CE	EN 61000-4-2 Electrostatic discharges (ESD) 4 kV, 8 kV EN 61000-4-3 Electromagnetic fields 10 V/m EN 61000-4-4 Electrical fast transients (burst) 2 kV EN 61000-4-6 Conducted disturbances, induced by RF-fields 10 V eff. EN 55011 Radiated disturbances class B	

*) Data are extrapolated, internal measuring rate depends on length.
**) Measured with resolution 1 µm.
At higher resolution, the permissible linearity error is increased by the resolution.





Pin assignment

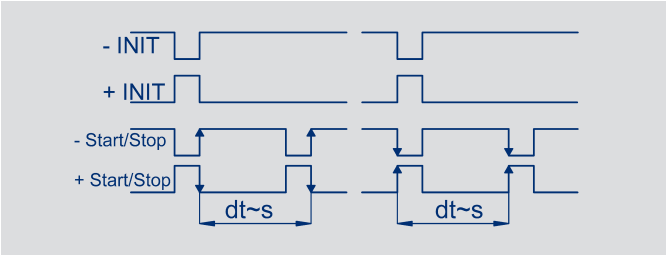
Output connector code 101, 102	Cable code 20 _	Connector with cable (Accessories)	SSI-Interface
PIN 1	YE	WH	Clk +
PIN 2	GY	BN	Data +
PIN 3	PK	GN	Clk -
PIN 4	RD	YE	do not connect
PIN 5	GN	GY	Data -
PIN 6	BU	PK	GND
PIN 7	BN	BU	Supply voltage Ub
PIN 8	WH	RD	do not connect

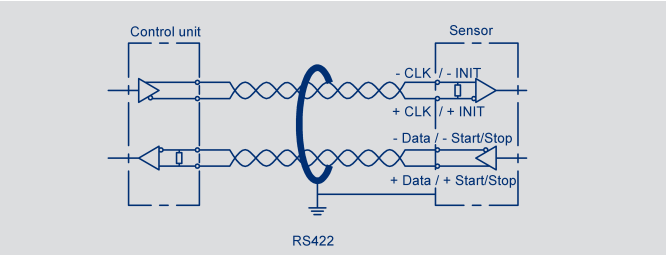
Output connector code 103	SSI-Interface
Pin 1	Data -
Pin 2	Data +
Pin 3	Clk +
Pin 4	Clk -
Pin 5	Supply voltage Ub
Pin 6	GND

Technical Data
Impulse-Interface

Type designations	TP1- _ _ _ _ - 101 - 11 _ - _ _ _ Start-Stop-Impulse-Interface	
Electrical Data		
Electrical measuring range (dimension B)	0050 up to 4250	mm
Protocol	Impulse	
Inputs	RS422	
Update rate *	0.25 ... 1	kHz
Resolution	Depending on interpretation, normalized to 2800 ms^{-1}	
Absolute linearity	≤ ± 50	µm
Tolerance of electr. zero point	± 0.5	mm
Reproducibility	≤ 6	µm
Hysteresis	≤ 4	µm
Temperature error	≤ 15 (min. 0,01 mm/K)	ppm/K
Supply voltage Ub	24 (13 ... 34)	VDC
Supply voltage ripple	≤ 10	% Vss
Overvoltage protection	40 (permanent)	VDC
Current consumption	≤ 100	mA
Polarity protection	Yes, up to supply voltage Ub max.	
Short circuit protection	Yes (outputs vs. GND and supply voltage Ub up to 7 V)	
Insulation resistance (500 VDC)	≥ 10	MΩ
Environmental Data		
MTTF (DIN EN ISO 13849-1, parts count method, w/o load, wc)	27	Years
Functional safety	If you need assistance in using our products in safety-related systems, please contact us	
EMC compatibility CE	EN 61000-4-2 Electrostatic discharges (ESD) 4 kV, 8 kV EN 61000-4-3 Electromagnetic fields 10 V/m EN 61000-4-4 Electrical fast transients (burst) 2 kV EN 61000-4-6 Conducted disturbances, induced by RF-fields 10 V eff. EN 55011 Radiated disturbances class B	

*) Data are extrapolated, internal measuring rate depends on length.





Pin assignment

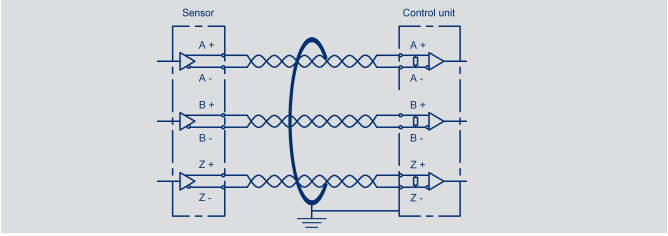
Output connector code 101, 102	Cable code 20 _	Connector with cable (Accessories)	Start/Stop-Impulse-Interface
PIN 1	YE	WH	INIT +
PIN 2	GY	BN	Start/Stop +
PIN 3	PK	GN	INIT -
PIN 4	RD	YE	do not connect
PIN 5	GN	GY	Start/Stop -
PIN 6	BU	PK	GND
PIN 7	BN	BU	Supply voltage Ub
PIN 8	WH	RD	do not connect

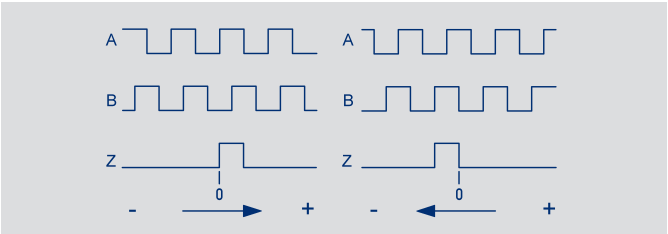
Output connector code 103	Start/Stop-Impulse-Interface
Pin 1	Start/Stop -
Pin 2	Start/Stop +
Pin 3	INIT +
Pin 4	INIT -
Pin 5	Supply voltage Ub
Pin 6	GND

Technical Data Incremental-Interface

Type designations	TP1- _ _ _ _ - 101 - 8 _ _ - _ _ _ Incremental-Interface		
Electrical Data			
Electrical measuring range (dimension B)	0050 up to 4250		mm
Outputs	A+ / A- / B+ / B- / Z+ / Z-		
Level	RS422 differential		
Update rate*	16		kHz
Resolution (with 4-fold interpretation)	1 or 5		µm
Max. pulse frequency at power-on (initialising)	156 high speed mode 78 low speed mode		kHz kHz
Frequency A/B-signal	Variable, depending on operational speed, max. 148		kHz
Missing increments when exceeding the max. operational speed	none		
Length Z-pulse	Distance between 2 edges A / B		
Absolute linearity	≤ ±10 µm up to 1000 mm, ≤ ±25 µm up to 2500 mm, ≤ ±40 µm up to 4250 mm **		
Tolerance of electr. zero point	±0.5		mm
Reproducibility	≤ 6		µm
Hysteresis	≤ 4		µm
Temperature error	≤ 15 (min. 0.01 mm/K)		ppm/K
Supply voltage	24 (13 ... 34)		VDC
Supply voltage ripple	≤ 10		% Ub
Current consumption	≤ 100		mA
Overvoltage protection	40 (permanent)		VDC
Polarity protection	Yes, up to supply voltage Ub max.		
Short circuit protection	Yes (outputs vs. GND and supply voltage Ub up to 7 V)		
Ohmic load at outputs	≥ 120		Ω
Insulation resistance (500 VDC)	≥ 10		MΩ
Environmental Data			
Max. operating speed *** High speed mode Low speed mode	Resolution 1 µm 0.45 0.22	Resolution 5 µm 2.2 1.1	 ms^{-1} ms^{-1}
MTTF (DIN EN ISO 13849-1, parts count method, w/o load, wc)	27		Years
Functional safety	If you need assistance in using our products in safety-related systems, please contact us		
EMC compatibility CE	EN 61000-4-2 Electrostatic discharges (ESD) 4 kV, 8 kV EN 61000-4-3 Electromagnetic fields 10 V/m EN 61000-4-4 Electrical fast transients (burst) 2 kV EN 61000-4-6 Conducted disturbances, induced by RF-fields 10 V eff. EN 55011 Radiated disturbances class B		

*) Data are extrapolated, internal measuring rate depends on length.
**) Measured with resolution 1 µm.
At higher resolution, the permissible linearity error is increased by the resolution.
***) With valid output signal, when using a floating position marker.





Pin assignment

Output connector code 102	Cable code 20 _	Connector with cable (Accessories)	Signal
PIN 1	YE	WH	A+
PIN 2	GY	BN	B+
PIN 3	GN	GN	B-
PIN 4	WH	YE	Z+
PIN 5	RD	GY	Z-
PIN 6	BU	PK	GND
PIN 7	BN	BU	Supply voltage Ub
PIN 8	PK	RD	A-

Ordering Specifications Digital Versions - SSI - Start-Stop-Impulse - Incremental

Ordering specifications

Preferred types printed in bold

Mechanical version
101: Profile design

Electrical Interface
1: Impulse-Interface
2: SSI-Interface
8: Incremental-Interface (A / B / Z)

Output signal Impulse-Interface 1 _ _
1: Impulse-Interface Start-Stop Signal

Output signal SSI-Interface 2 _ _
1: SSI 24 bit
2: SSI 25 bit
7: SSI 26 bit (25 = alarm, 26 = parity even) on request

Output signal Incremental-Interface 8 _ _
4: Resolution 5 µm, high speed mode, power-on burst
6: Resolution 1 µm, high speed mode, power-on burst
7: Resolution 5 µm, low speed mode, power-on burst
9: Resolution 1 µm, low speed mode, power-on burst

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

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
7: Binary code; resolution 10 µm
8: Gray code; resolution 10 µm

Incremental-Interface 8 _ _
1: RS422 differential (A / B / Z)

Electrical connection
101: Connector M16x0,75 (IEC 130-9), 8-pin *
102: Connector M12x1, 8-pin
103: Connector M16x0,75 (IEC 130-9), 6-pin *
201: Cable, 8-pole, shielded, 1 m
203: Cable, 8-pole, shielded, 3 m
205: Cable, 8-pole, shielded, 5 m
*) not for incremental interface

T	P	1	–	0	8	0	0	–	1	0	1	–	2	1	1	–	1	0	2

Series

Electrical measuring range
Standard lengths 0050 up to 4250 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 4250 mm in 250 mm-steps.
Other lengths on request

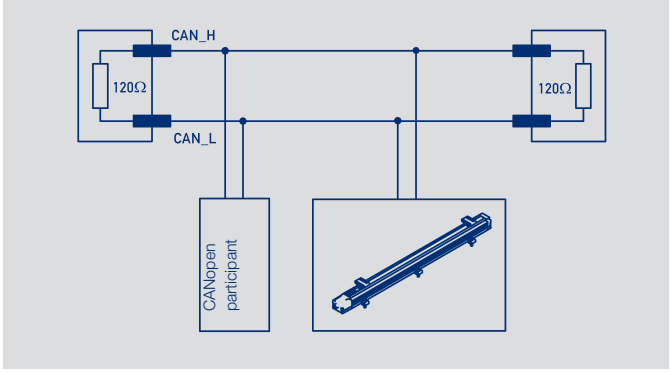
Important: Avoid equalizing currents in the cable shield caused by potential differences.
Twisted pair cable (STP) is recommended.

Technical Data

CANopen®

Type designations	TP1 - _ _ _ _ -101- 6 _ _ - _ _ _ CANopen-Interface	
Electrical Data		
Measured variables	Position and speed	
Electrical measuring range (dimension B)	0050 up to 4250	mm
Measuring range speed	0 ... 10	ms^{-1}
Number of position marker	1 / 2 see ordering specifications	
Output signal / protocol	CANopen protocol to CiA DS-301 V4.2.0, Device profile DS-406 V3.2 Encoder class C2, LSS services to CiA DS-305 V1.1.2	
Programmable parameter	Position, speed, cams, working areas, temperature, node-ID, baud rate	
Node-ID	0 ... 127 (default 127)	
Baud rate	10 ... 1000 see ordering specifications	kBaud
Resolution position	1 or 5 see ordering specifications	µm
Resolution speed	Resolution 1 µm Resolution 5 µm 0.1 0.5	mms^{-1}
Update rate *	≤ 16	kHz
Absolute linearity	≤ ±10 µm up to 1000 mm, ≤ ±25 µm up to 2500 mm, ≤ ±40 µm up to 4250 mm **	
Tolerance of electr. zero point	0.5	±mm
Reproducibility	≤ 6	µm
Hysteresis	≤ 4	µm
Temperature error	≤ 15 (min. 0.01 mm/K)	ppm/K
Supply voltage	24 (13 ... 34)	VDC
Supply voltage ripple	≤ 10	% Vss
Current consumption	≤ 100	mA
Overvoltage protection	40 (permanent)	VDC
Polarity protection	Yes, up to supply voltage Ub max.	
Short circuit protection	Yes (outputs vs. GND and supply voltage Ub max.)	
Insulation resistance (500 VDC)	≥ 10	MΩ
Bus termination internal	no	
Environmental Data		
MTTF (DIN EN ISO 13849-1 parts count method, w/o load, wc)	25	Years
Functional safety	If you need assistance in using our products in safety-related systems, please contact us	
EMC compatibility CE	EN 61000-4-2 Electrostatic discharges (ESD) 4 kV, 8 kV EN 61000-4-3 Electromagnetic fields 10 V/m EN 61000-4-4 Electrical fast transients (burst) 1 kV EN 61000-4-6 Conducted disturbances, induced by RF-fields 10 V eff. EN 55016-2-3 Noise radiation class B	

*) Data are extrapolated, internal measuring rate depends on length.
**) Measured with resolution 1 µm.
At higher resolution, the permissible linearity error is increased by the resolution.



Pin assignment

PIN	Output connector code 105	Output connector code 106
PIN 1	CAN_L	CAN_SHLD *
PIN 2	CAN_H	Supply voltage Ub
PIN 3	CAN_SHLD	GND
PIN 4	do not connect	CAN_H
PIN 5	Supply voltage Ub	CAN_L
PIN 6	GND	n/a

*) CAN_SHLD: CAN-shield, internally connected to housing

Ordering Specifications

CANopen®

Ordering specifications

Preferred types printed in bold

Mechanical version
101: Profile design

Electrical Interface
6: CANopen-Interface

Output signal
1: 1 x position resolution 5 µm and 1 x speed resolution 0.5 mms^{-1} (1 position marker fix)
3: 1 x position resolution 1 µm and 1 x speed resolution 0.1 mms^{-1} (1 position marker fix)
5: 2 x position resolution 5 µm and 2 x speed resolution 0.5 mms^{-1} (2 position marker fix)
6: 2 x position resolution 1 µm and 2 x speed resolution 0.1 mms^{-1} (2 position marker fix)

Baudrate
1: Baud rate 1000 kBaud
2: Baud rate 800 kBaud
3: Baud rate 500 kBaud
4: Baud rate 250 kBaud
5: Baud rate 125 kBaud
7: Baud rate 50 kBaud
8: Baud rate 20 kBaud
9: Baud rate 10 kBaud

Electrical Connection
105: Connector M16x0,75 (IEC130-9), 6-pin
106: Connector M12x1, 5-pin

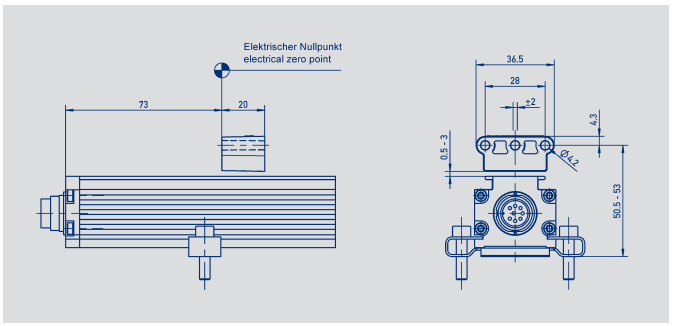
T	P	1	–	0	8	0	0	–	1	0	1	–	6	1	3	–	1	0	6

Series

Electrical measuring range
Standard lengths von 0050 up to 4250 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 4250 mm in 250 mm-steps.
Other lengths on request

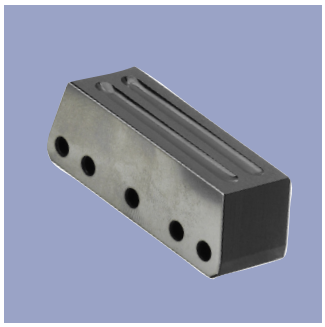
Important: Avoid equalizing currents in the cable shield caused by potential differences.
Twisted pair cable (STP) is recommended.

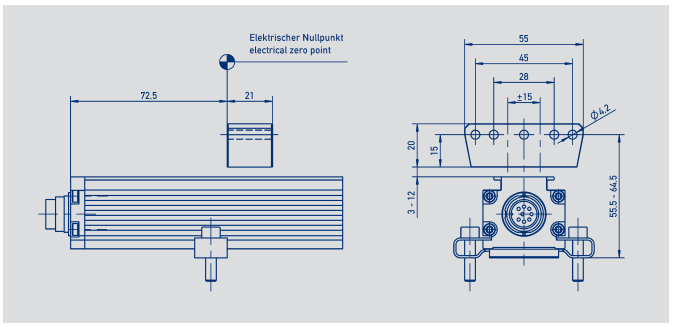
Position Marker



Floating positon marker

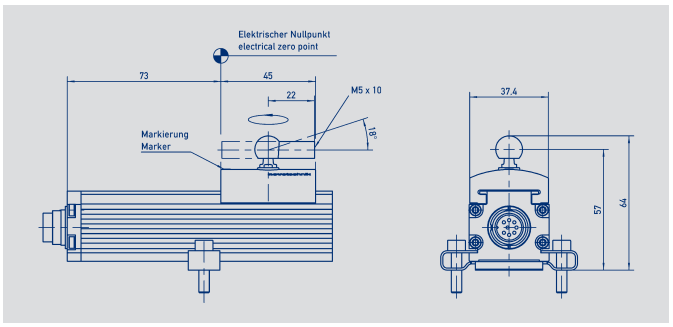
Working distance	0,5 ... 3 mm
Weight	approx. 10 g
P/N 005693, Z-TP1-P06	





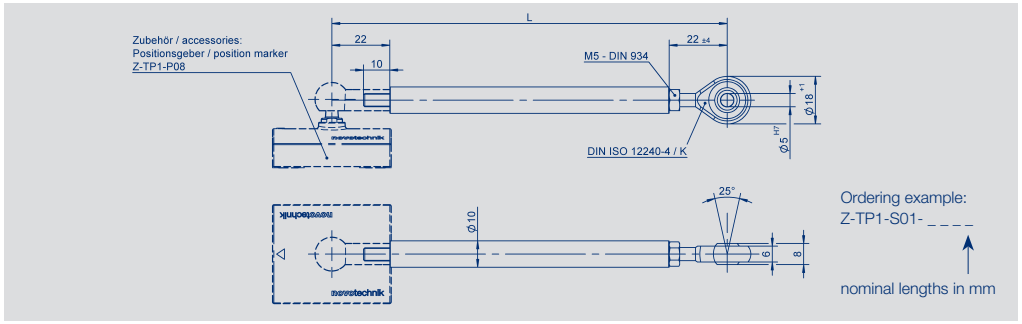
Floating positon marker for large distances

Working distance	3 ... 12 mm
Weight	approx. 40 g
P/N 005694, Z-TP1-P07	



Guided position marker

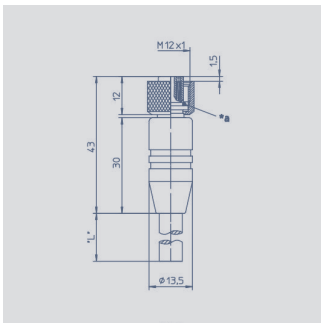
Weight	approx. 30 g
P/N 005695, Z-TP1-P08	



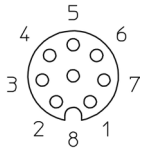
Actuating rod for guided position marker Z-TP1-P08

Material	Aluminum
Weight	approx. 150 g
Standard-nominal lengths (mm)	0075, 0100, 0125, 0150, 0200, 0250, 0300, 0350, 0400, 0450, 0500, 0600, 0800, 1000, 1500, 2000
Z-TP1-S01-_ _ _ _	

Connector System M12



Pin assignment



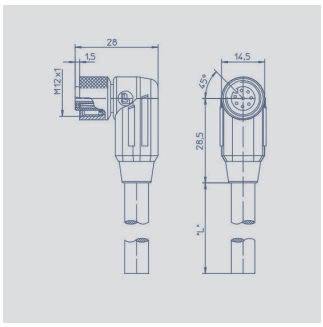
1 = white
2 = brown
3 = green
4 = yellow
5 = grey
6 = pink
7 = blue
8 = red

IP67 UL

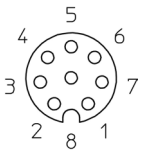
M12x1 Mating female connector 8-pin., straight, A-coded, with molded cable, unshielded, IP67, open ended

Connector housing	Plastic PA
Cable sheath	PUR; Ø = max. 8 mm -25 °C...+80 °C (moved) -50 °C...+80 °C (fixed)
Wires	PP, 0.25 mm²

Length	Type	P/N
2 m	EEM 33-86	005629
5 m	EEM 33-90	005635
10 m	EEM 33-92	005637



Pin assignment



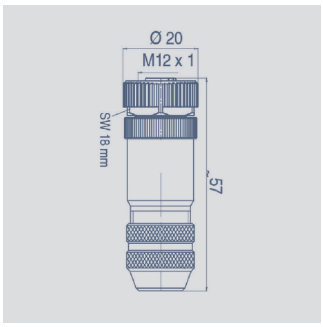
1 = white
2 = brown
3 = green
4 = yellow
5 = grey
6 = pink
7 = blue
8 = red

IP67 UL

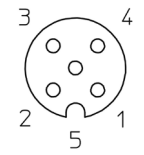
M12x1 Mating female connector 8-pin., angled, A-coded, with molded cable, shielded, IP67, open ended

Connector housing	Plastic PA
Cable sheath	PUR; Ø = max. 8 mm, -25 °C...+80 °C (moved) -50 °C...+80 °C (fixed)
Wires	PP, 0.25 mm²

Length	Type	P/N
2 m	EEM 33-87	005630
5 m	EEM 33-91	005636
10 m	EEM 33-93	005638



Pin assignment

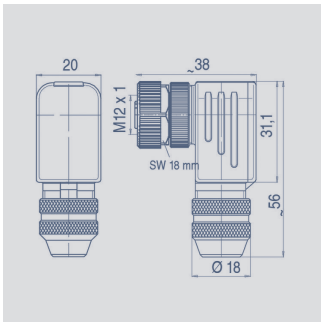


IP67 CANopen

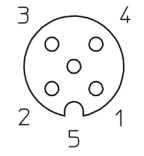
M12x1 Mating female connector 5-pin., straight, A-coded, with coupling nut, screw termination, IP67, shieldable, CAN-bus

Connector housing	Metal -40 °C...+85 °C
For wire gauge	6...8 mm, max. 0.75 mm²

Type EEM 33-73, P/N 005645



Pin assignment



IP67 CANopen

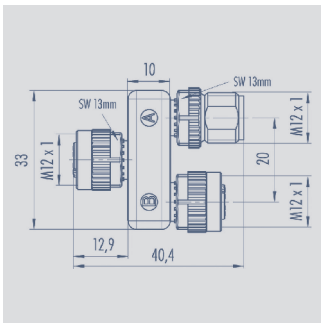
M12x1 Mating female connector 5-pin., angled, A-coded, with coupling nut, screw termination, IP67, shieldable, CAN-bus

Connector housing	Metal -40 °C...+85 °C
For wire gauge	6...8 mm, max. 0.75 mm²

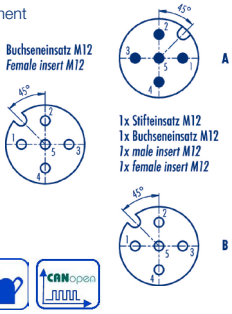
Type EEM 33-75, P/N 005646

It is possible to turn and fix the contact carrier in 90° positions.

Connector System M12



Pin assignment

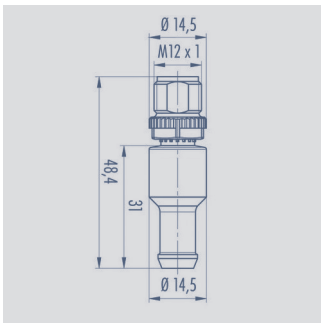


IP68 CANopen

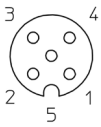
T-connector M12x1, 5-pin., A-coded, IP68, 1:1 connection, female - male - female, CAN-bus

Connector housing	PUR
Temperature range	-25 °C... +85 °C

Type EEM 33-45, P/N 056145



Pin assignment



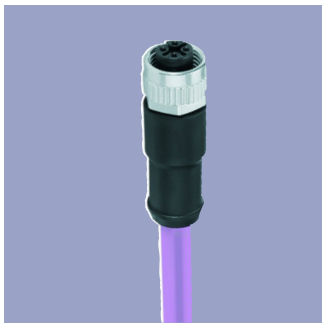
1 = n. c.
2 = n. c.
3 = n. c.
4 = Resistance
5 = 120 Ω

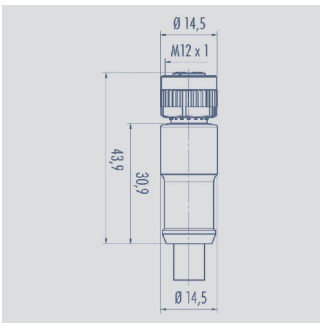
IP67 CANopen

Terminating resistor M12x1, 5-pin., A-coded, IP67, 120 Ω resistance, CAN-bus

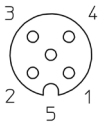
Connector housing	PUR
Temperature range	-25 °C... +85 °C

Type EEM 33-47, P/N 056147





Pin assignment



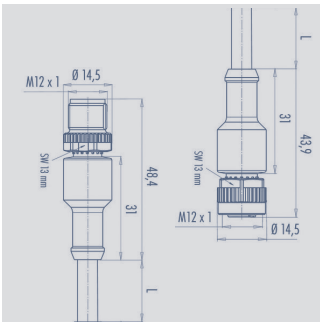
1 = Shield
2 = red (0.34 mm²)
3 = black (0.34 mm²)
4 = white (0.25 mm²)
5 = blue (0.25 mm²)

IP67 UL CANopen

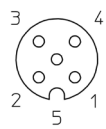
M12x1 Mating female connector 5-pin., straight, A-coded, with molded cable, IP67, shielded, open ended, CAN-bus

Connector housing	PUR
Cable sheath	PUR Ø = max. 7.2 mm, -25 °C...+85 °C (moved)
Wires	PP 2x 0.25 mm² + 2 x 0.34 mm²

Length	Type	P/N
2 m	EEM 33-41	056141
5 m	EEM 33-42	056142
10 m	EEM 33-43	056143



Pin assignment



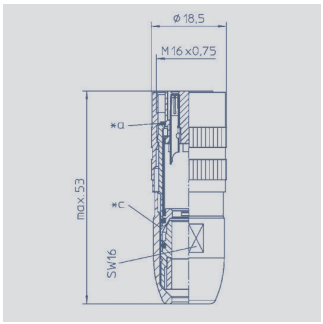
IP68 UL CANopen

M12x1 Mating female connector, 5-pin., straight, A-coded, with molded cable, IP68, shielded, CAN-bus

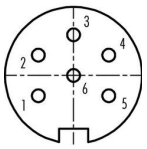
Connector housing	PUR
Cable sheath	PUR; Ø 7.2 mm -25 °C... +85 °C (fixed)

Length	Type	P/N
5 m	EEM 33-44	056144

Connector System M16



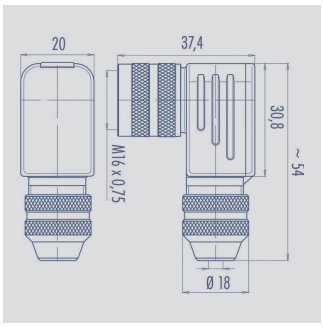
Pin assignment



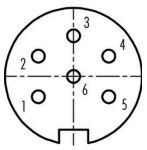
IP68

M16x0,75 Mating female connector 6-pin., straight, with coupling nut, solder terminal, IP68, shielded

Connector housing	CuZn (Brass, nickel plated) -40 °C... +85 °C
For wire gauge	4...8 mm, max. 0.75 mm²
Type EEM 33-82, P/N 005639	



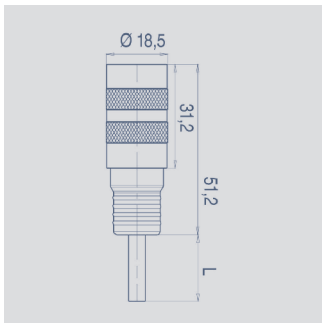
Pin assignment



IP67 UL

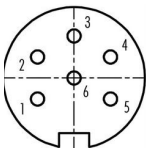
M16x0,75 Mating female connector 6-pin., angled, with coupling nut, solder terminal, IP67, shielded

Connector housing	CuZn (Brass, nickel plated) -40 °C... +95 °C
For wire gauge	6...8 mm, PG 9 max. 0.75 mm²
Type EEM 33-94, P/N 005648	



Pin assignment

1 = white
2 = brown
3 = blue
4 = black
5 = grey
6 = green

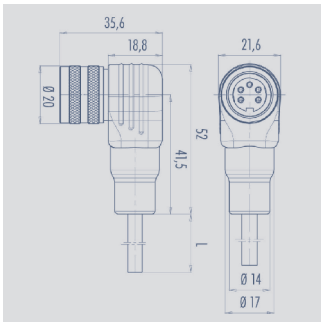


IP67

M16x0.75 Mating female connector, 6-pin, straight, with molded cable, 2 m length, shielded, IP67, open ended

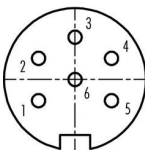
Connector housing	PUR
Cable sheath	PUR; Ø max. 6 mm, -5...+70 °C (moved) -20...+70 °C (fixed)
Wires	PVC, 6 x 0.25 mm²
Type EEM 33-26, P/N 056126	

This coupling can can be used in combination with 5-pin M16 connectors. Than „pin 6/ green“ is open.



Pin assignment

1 = white
2 = brown
3 = blue
4 = black
5 = grey
6 = green



IP67

M16x0.75 Mating female connector 6-pin, angled, with molded cable, 2 m length, shielded, IP67, open ended

Connector housing	PUR
Cable sheath	PUR; Ø max. 6 mm, -5...+70 °C (moved) -20...+70 °C (fixed)
Wires	PVC, 6 x 0.25 mm²
Type EEM 33-27, P/N 056127	

This coupling can can be used in combination with 5-pin M16 connectors. Than „pin 6 / green“ is open.

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Siedle Group

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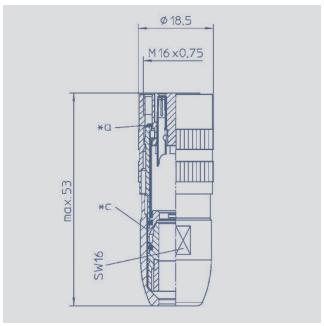
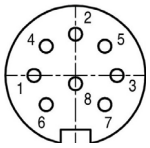


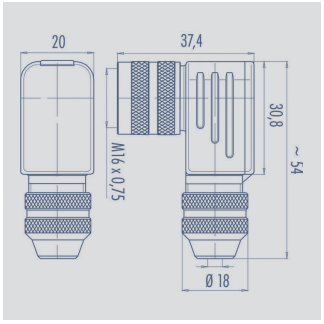
Pin assignment



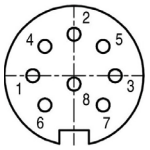
IP68

M16x0.75 Mating female connector, 8-pin, straight, with coupling nut, solder terminal, IP68, shielded

Connector housing	CuZn (Brass, nickel plated) -40 °C... +85 °C
For wire gauge	4...8 mm, max. 0.75 mm²
Type EEM 33-84, P/N 005627	



Pin assignment



IP67 UL

M16x0.75 Mating female connector, 8-pin, angled, with coupling nut, solder terminal, IP67, shielded

Connector housing	CuZn (Brass, nickel plated) -40 °C... +95 °C
For wire gauge	6...8 mm, PG 9 max. 0.75 mm²
Type EEM 33-85, P/N 005628	

IP67 Protection class IP67 to DIN EN 60529

IP68 Protection class IP68 to DIN EN 60529

CANopen CAN-bus

Very good Electromagnetic Compatibility (EMC) and shield systems

Very good resistance to oils, coolants und lubricants

UL UL - approved

Suited for applications in dragchains

Note: The protection class is valid only in locked position with its plugs.
The application of these products in harsh environments must be checked in particular cases.