posiwire®
Cable Extension Position Sensors

WS17KT

Displacement sensor with measurement length up to 15,000 mm

- **Protection class up to IP64/IP66**
- **Aluminum housing**
- **With precision potentiometer**
- **Optional with integrated brake**

Product versions

Ω | V / mA | ADSI **Analog output, SSI output**

V / mA

WS17KT - Cable Extension Position Sensor

Version with analog output, SSI output

Specifications

			Order options
Measurement range	1500 / 2000 / 2500 / 3000 / 4000 / 5000 / 6250 / 10000 / 12500 / 15000 mm	1	**1500 / 2000 / 2500 / 3000 / 4000 / 5000 / 6250 / 10000 / 12500 / 15000**
Resolution	Analog: quasi infinite		
Output	Potentiometer 1 kΩ Voltage 0 ... 10 V Current 4 ... 20 mA, 2 wire Current 4 ... 20 mA, 3 wire Current output, programmable Voltage output, programmable Signal conditioner SSI 12 bit Signal conditioner SSI 14 bit Signal conditioner SSI 16 bit	2	**R1K** **10V** **420A** **420T** **PMUI** **PMUV** **ADSI** **ADSI14** **ADSI16**
Linearity	±0.10% f.s. (standard) ±0.05% f.s. (optional)	3	**L10** **L05**
Sensing device	Precision potentiometer		
Material	Aluminum measuring cable: stainless steel		
Protection class	IP64 (optional IP66)		
Cable fixing	M4 cable fixing Cable clip	4	**M4** **SB0**
Connection	Connector M12, 8 pin	5	**M12**
Temperature range	-20 ... +85 °C		
Weight	see table "Cable forces"		
EMC	DIN EN 61326-1:2013		

Order code

WS17KT – 1 – 2 – 3 – 4 – 5 – 6

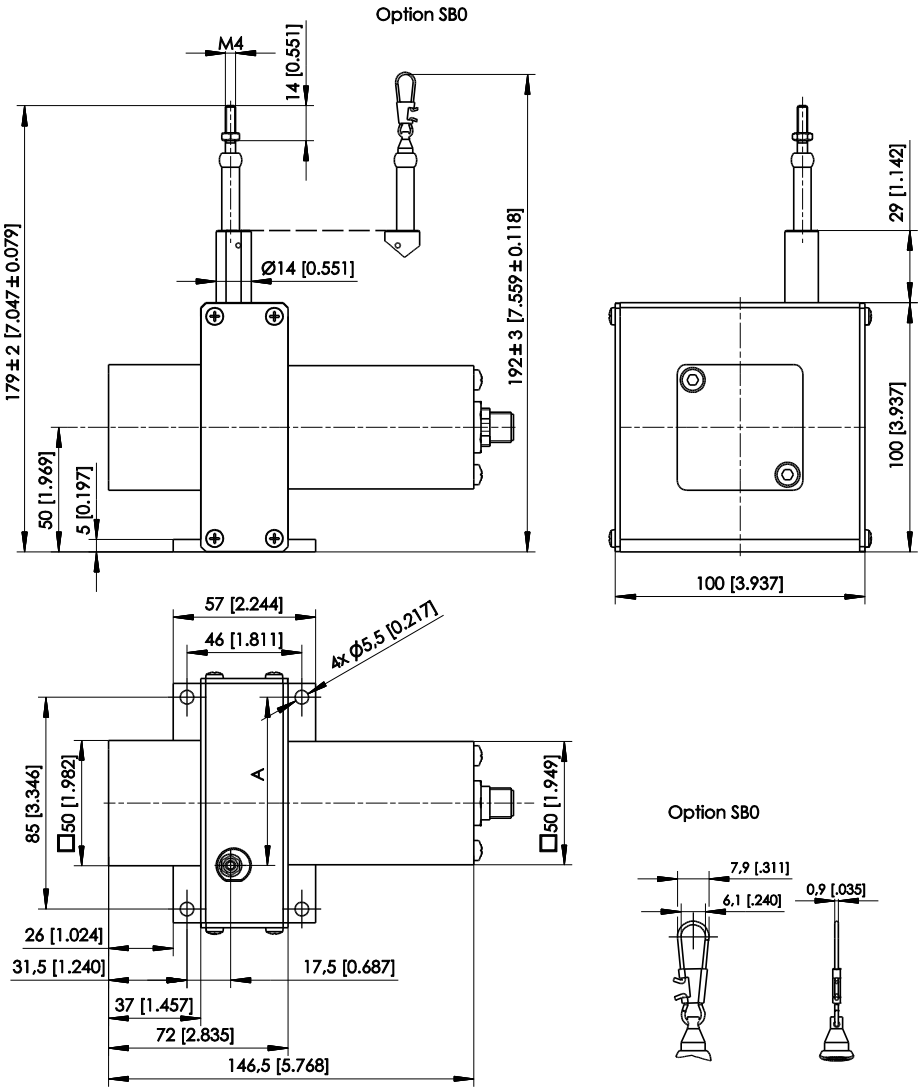
Order example: WS17KT – 2500 – 10V – L10 – M4 – M12

Accessories:
Connector cable (see page 15)

Cable forces typical at = 20 °C	Measurement range [mm]	Weight approx. [kg]	Maximum pull-out force [N]	Minimum pull-in force [N]
	1500	1.4	11.0	6.2
	2000	1.4	8.5	4.8
	2500	1.5	5.5	3.5
	3000	2.9	14.5	10.3
	4000	2.9	12.7	9.1
	5000	5.3	13.0	9.3
	6250	5.5	10.2	7.3
	10000	6.0	16.5	9.1
	12500	6.0	16.5	9.1
	15000	6.0	16.5	9.1

Dimensions

Measurement range 1500 … 2000 … 2500 mm



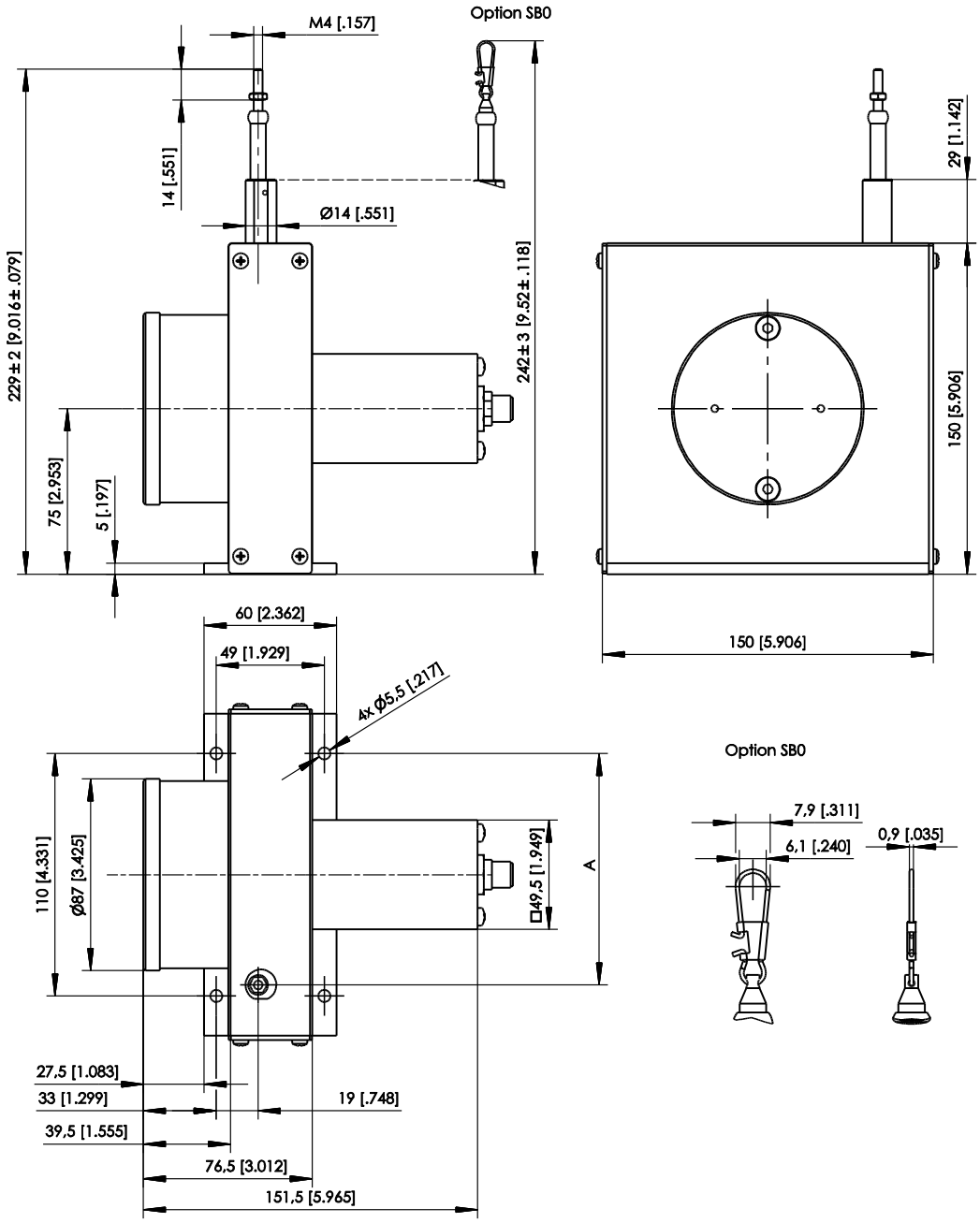
Dimensions in mm	Measurement range	A
	1500	67.5
	2000	75.5
	2500	82.5

Dimensions in mm [inch]

Dimensions informative only.

For guaranteed dimensions consult factory.

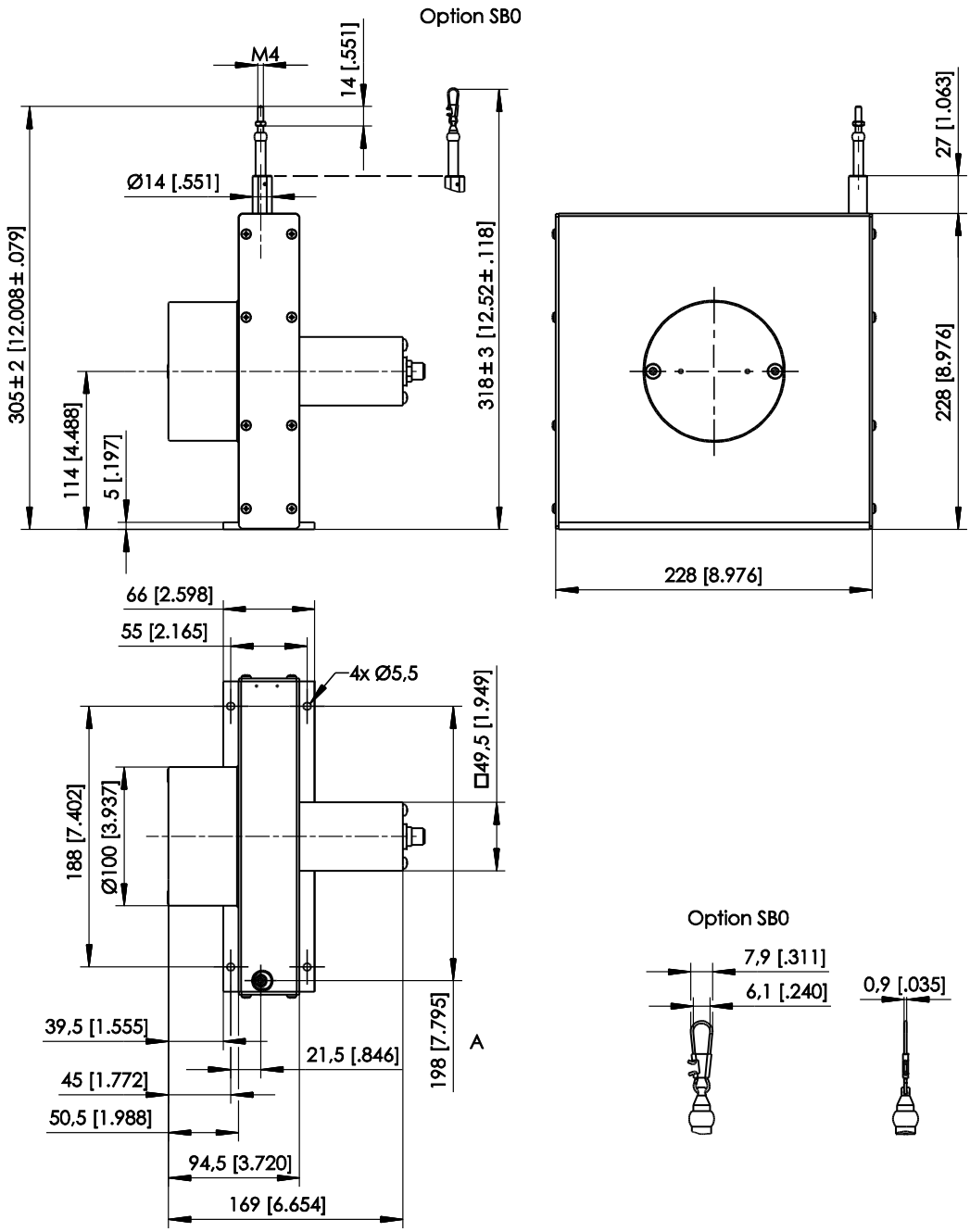
Measurement range 3000 ... 4000 mm



Dimensions in mm	Measurement range	A
	3000	105
	4000	120

Dimensions in mm [inch]
Dimensions informative only.
For guaranteed dimensions consult factory.

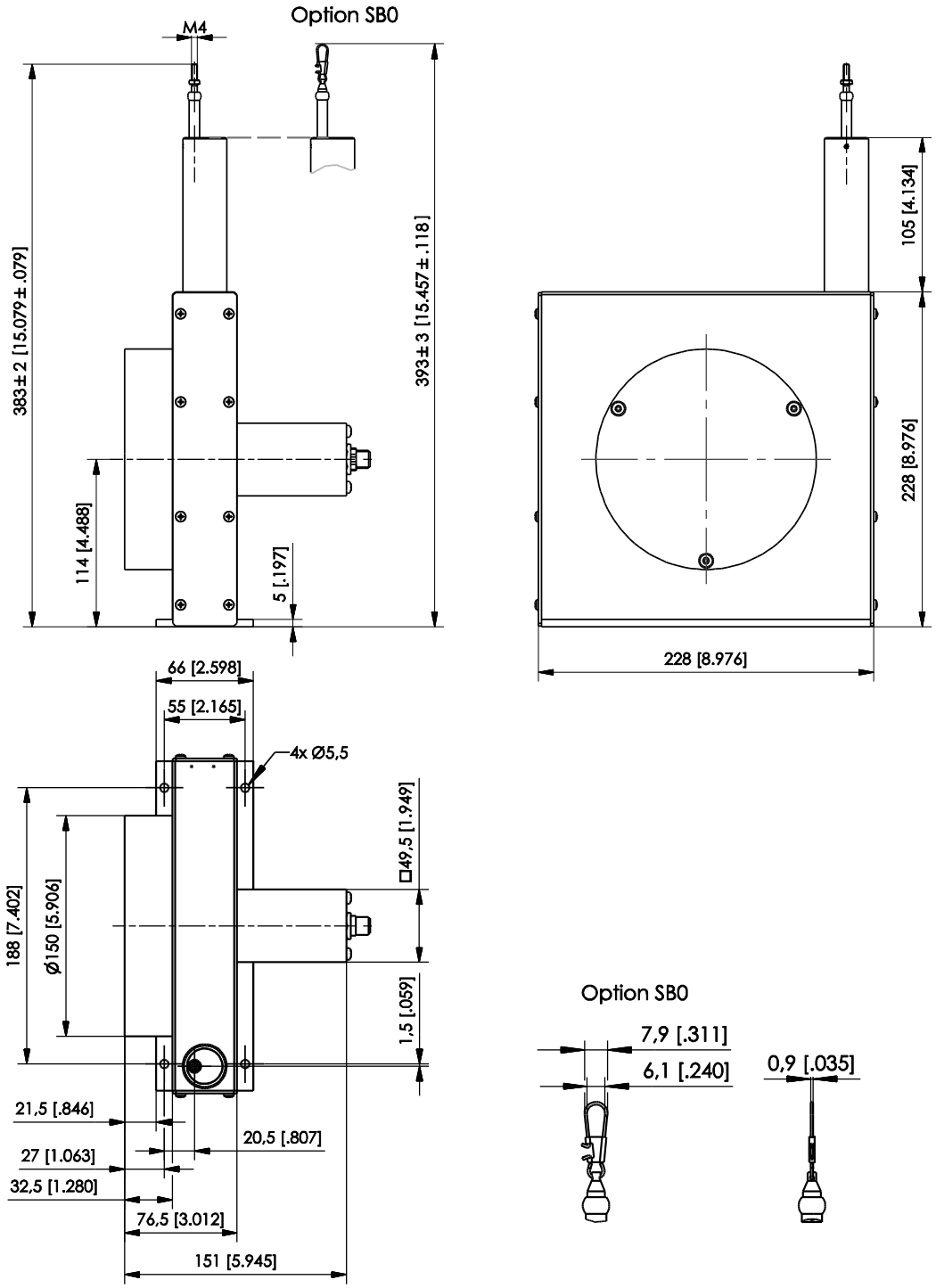
Measurement range 5000 … 6250 mm



Dimensions in mm	Measurement range	A
	5000	178
	6250	198

Dimensions in mm [inch]
Dimensions informative only.
For guaranteed dimensions consult factory.

Measurement range 10000 … 12500 … 15000 mm



Dimensions in mm [inch]
Dimensions informative only.
For guaranteed dimensions consult factory.

Output specifications
Analog outputs
Voltage divider

R1K Potentiometer 	Excitation voltage	32 V DC max. at 1 kΩ (max. power 1 W)
	Potentiometer impedance	1 kΩ ±10 %
	Thermal coefficient	±25 x 10^{-6} / °C f.s.
	Sensitivity	Depends on the measuring range, individual sensitivity of the sensor is specified on the label
	Voltage divider utilization range	approx. 3 % … approx. 97 %
	Operating temperature	Refer to output specification
	EMC	DIN EN 61326-1:2013

NOTICE

The potentiometer must be connected as a voltage divider!

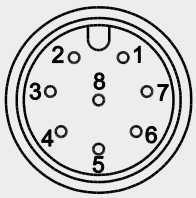
The following processing circuit has to be implemented according to the circuit scheme in the Appendix (see „Output information“)!

Electrical current flow impact on the wiper causes linearity errors and shortens the lifetime of the potentiometer

- The metal wiper of the potentiometer must be protected against current load

Additional information:
https://www.asm-sensor.com/en/downloads.html?file=files/asmTheme/pdf/ws_poti_technote_en.pdf

Signal wiring
Connector M12, 8 pin

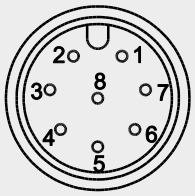


View to the sensor connector

Signal	Connector pin no.	Cable color
Poti +	1	white
Poti GND	2	brown
Poti slider	3	green
-	4	yellow
-	5	grey
-	6	pink
-	7	blue
-	8	red

10V Voltage output 	Excitation voltage	18 ... 27 V DC non stabilized
	Excitation current	20 mA max.
	Output voltage	0 ... 10 V DC
	Output current	2 mA max.
	Output load	> 5 kΩ
	Stability (temperature)	±50 x 10^{-6} / °C f.s.
	Protection	Reverse polarity, short circuit
	Output noise	0.5 mV_{RMS}
	Operating temperature	Refer to output specification
	EMC	DIN EN 61326-1:2013

Signal wiring
Connector M12, 8 pin



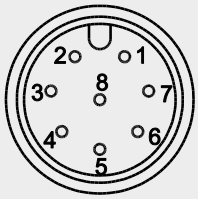
View to the soldering side of mating connector

Output signals	Connector pin no.	Cable color
Excitation +	1	white
Excitation GND*	2	brown
Signal +	3	green
Signal GND*	4	yellow
Not connected	5	grey
Not connected	6	pink
Not connected	7	blue
Not connected	8	red

*: internally connected

420A Current output (2 wire) 	Excitation voltage	18 ... 27 V DC non stabilized, measured at the sensor terminals
	Excitation current	35 mA max.
	Output current	4 ... 20 mA equivalent for 0 ... 100 % range
	Stability (temperature)	±100 x 10^{-6} / °C f.s.
	Protection	Reversed polarity, short circuit
	Output noise	0.5 mV_{eff}
	Operating temperature	Refer to output specification
	EMC	DIN EN 61326-1:2013

Signal wiring
Connector M12, 8 pin

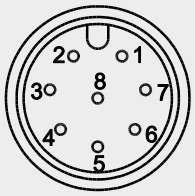


View to the sensor connector

Output signals	Connector pin no.	Cable color
Signal +	1	white
Signal -	2	brown
Not connected	3	green
Not connected	4	yellow
Not connected	5	grey
Not connected	6	pink
Not connected	7	blue
Not connected	8	red

420T Current output (3 wire)  	Excitation voltage	18 ... 27 V DC non stabilized
	Excitation current	40 mA max.
	Load resistor	350 Ω max.
	Output current	4 ... 20 mA equivalent for 0 ... 100 % range
	Stability (temperature)	±50 x 10^{-6} / °C f.s.
	Protection	Reverse polarity, short circuit
	Output noise	0.5 mV_{RMS}
	Operating temperature	Refer to output specification
	EMC	DIN EN 61326-1:2013

Signal wiring
Connector M12, 8 pin



View to soldering side of mating connector

Output signals	Connector pin no.	Cable color
Excitation +	1	white
Excitation GND*	2	brown
Signal +	3	green
Signal GND*	4	yellow
Not connected	5	grey
Not connected	6	pink
Not connected	7	blue
Not connected	8	red

*: internally connected

PMUV
Voltage output programmable

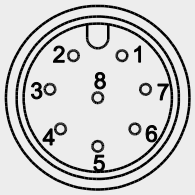
PMUI
Current output programmable

V / mA

Excitation voltage		18 … 27 V DC
Excitation current		50 mA max.
Voltage output **PMUV**		0 … 10 V
Output current		10 mA max.
Output load		1 kΩ min.
Current output **PMUI**		4 … 20 mA (3 wire)
Working resistance		500 Ω max.
Scaling		
	Activation of offset and gain adjust	Connect with excitation GND (0 V)
	Scalable range	90 % max. f.s.
Stability (temperature)		±50 x 10^{-6} / °C f.s.
Operating temperature		Refer to output specification
Protection		Reversed polarity, short circuit
EMC		DIN EN 61326-1:2013

PMUV / PMUI

Signal wiring Connector M12, 8 pin



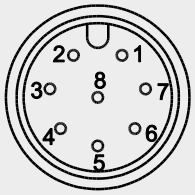
View to soldering side of mating connector

Output signals	Connector pin no.	Cable color
Excitation +	1	white
Excitation GND*	2	brown
Signal +	3	green
Signal GND*	4	yellow
Not connected	5	grey
Not connected	6	pink
ZERO	7	blue
END	8	red

*: internally connected

PMUI2

Signal wiring Connector M12, 8 pin



View to soldering side of mating connector

Output signals	Connector pin no.	Cable color
Excitation +	1	white
Excitation GND*	2	brown
Not connected	3	green
Not connected	4	yellow
Signal +	5	grey
Signal GND*	6	pink
ZERO	7	blue
END	8	red

*: internally connected

Outputs .../PMUV, PMUI, PMUI2

Programming of the start and end value by the customer

Teach-In of start and end value for the outputs PMUV, PMUV and PMUI2 is provided by two binary signals ZERO and END. At the start position connect signal ZERO for a short period to GND via push button. At the end position connect signal END for a short period to GND. The scaling range will be stored non-volatile. To reset the sensor to factory default both signals ZERO and END must be connected to ground while powering up the sensor.

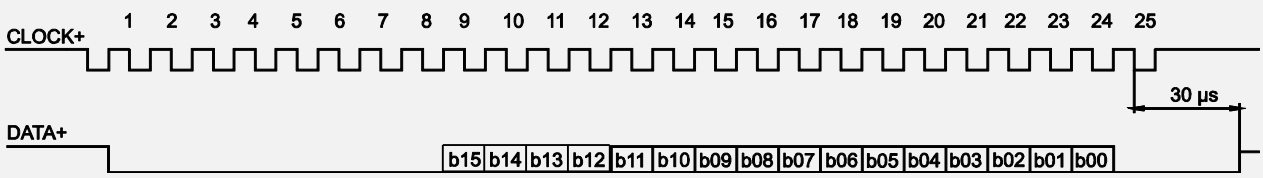
Digital Interfaces

ADSI
A/D converted synchronous serial

Excitation volatge	11 ... 27 V DC
Excitation current	200 mA max.
Interface	EIA RS422, RS485, short-circuit proof
Clock frequency	70 ... 500 kHz
Code	Gray-Code, continuous progression
Delay between pulse trains	30 µs min.
Resolution	ADSI16: 16 bit (65536 counts) f.s. ADSI14: 14 bit (16384 counts) f.s. ADSI: 12 bit (4096 counts) f.s.
Stability (temperature)	±50 x 10^{-6} / °C f.s.
Operating temperature	-20 ... +85 °C
EMC	DIN EN 61326-1:2013

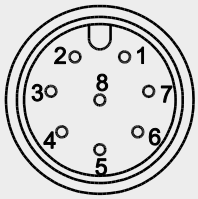
Data format

(train of 26 pulses)



Transmission rate	Cable length	Baud rate	Note:
	< 50 m	< 300 kHz	Extension of the cable length will reduce the maximum transmission rate.
	< 100 m	< 100 kHz	

Signal wiring
Connector M12, 8 pin



View to soldering side of mating connector

Output signals	Connector pin no.	Cable color
Excitation +	1	white
Excitation GND (0 V)	2	brown
CLOCK	3	green
$\overline{\text{CLOCK}}$	4	yellow
DATA	5	grey
$\overline{\text{DATA}}$	6	pink
Not connected	7	blue
Not connected	8	red

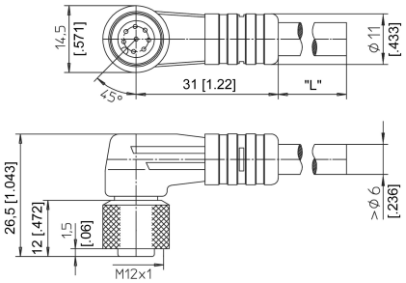
Accessories
Connector cable M12, 8 pin
(angular coupling)

shielded connector

The 8-lead shielded cable is supplied with a mating 8-pin 90° M12 connector at one end and 8 wires at the other end. Available lengths are 2 m, 5 m and 10 m.

Wire: cross sectional area 0.25 mm²

Cable diameter: 6.3 ±0.2 mm



Order code

	KAB - xM - M12/8F/W - LITZE
IP69:	**KAB - xM - M12/8F/W/69K - LITZE**

xM = length in m

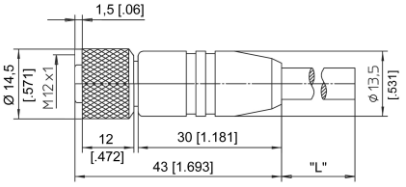
Connector cable M12, 8 pin
(straight coupling)

shielded connector

The 8-lead shielded cable is supplied with a mating 8-pin M12 connector at one end and 8 wires at the other end. Available lengths are 2 m, 5 m and 10 m.

Wire: cross sectional area 0.25 mm²

Cable diameter: 6.3 ±0.2 mm



Order code

	KAB - xM - M12/8F/G - LITZE
IP69:	**KAB - xM - M12/8F/G/69K - LITZE**

xM = length in m

Signal wiring M12, 8 pin	**Plug connection / cable color**							
	1	2	3	4	5	6	7	8
	white	brown	green	yellow	grey	pink	blue	red

Plug-in connectors
Plug-in connector M12, 8 pin (straight coupling)

Order code: **CONN-M12-8F-G**

Cable diameter
max. 6 … 8 mm