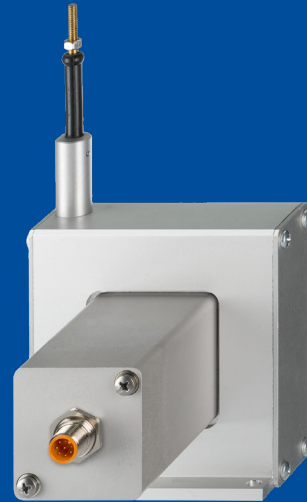




## WS17KT

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



Analog output, SSI output

Ω

V / mA

ADSI



**WS17KT - Cable Extension Position Sensor**  
**Version with Analog output, SSI output**

**Specifications**

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

**Order code**

WS17KT – **1** – **2** – **3** – **4** – **5**

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

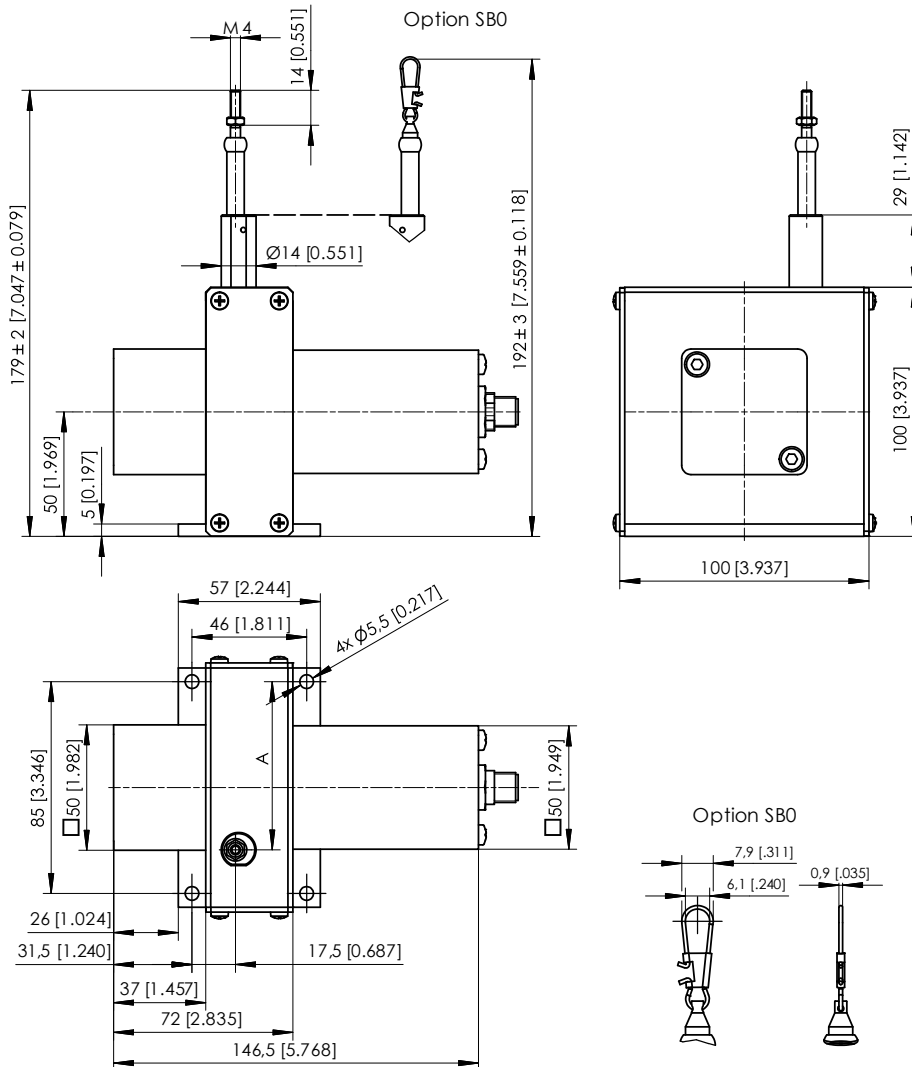
**Accessories:**

**Connector cable (see page 15)**

<b>Cable forces</b> typical at = 20 °C	<b>Measurement range [mm]</b>	<b>Weight approx. [kg]</b>	<b>Maximum pull-out force [N]</b>	<b>Minimum pull-in force [N]</b>
	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



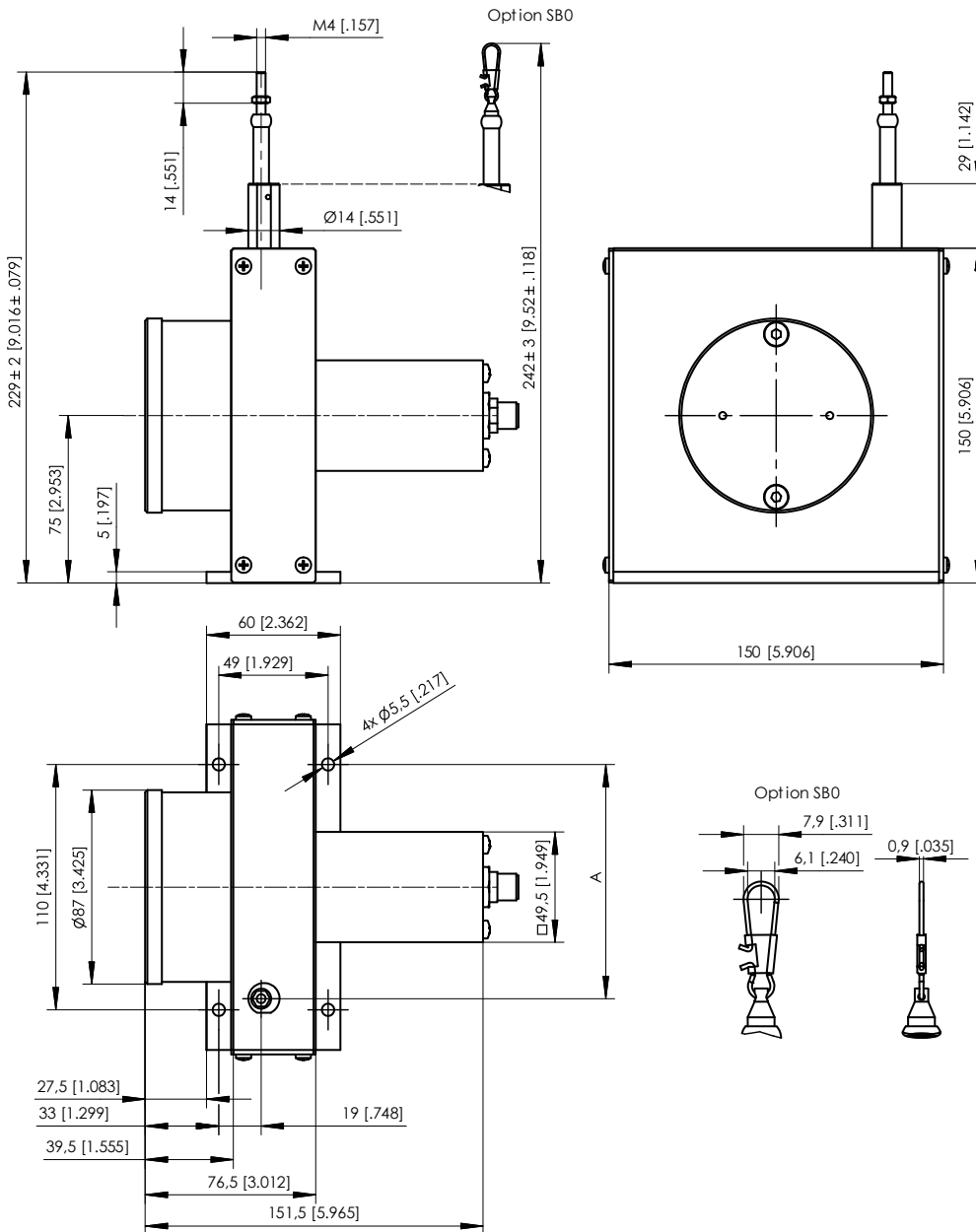
Dimensions in mm	Measurement range	A
	1500	67.5
	2000	75.5
	2500	82.5

Dimensions in mm [inch]

Dimensions informative only.

For guaranteed dimensions consult factory.

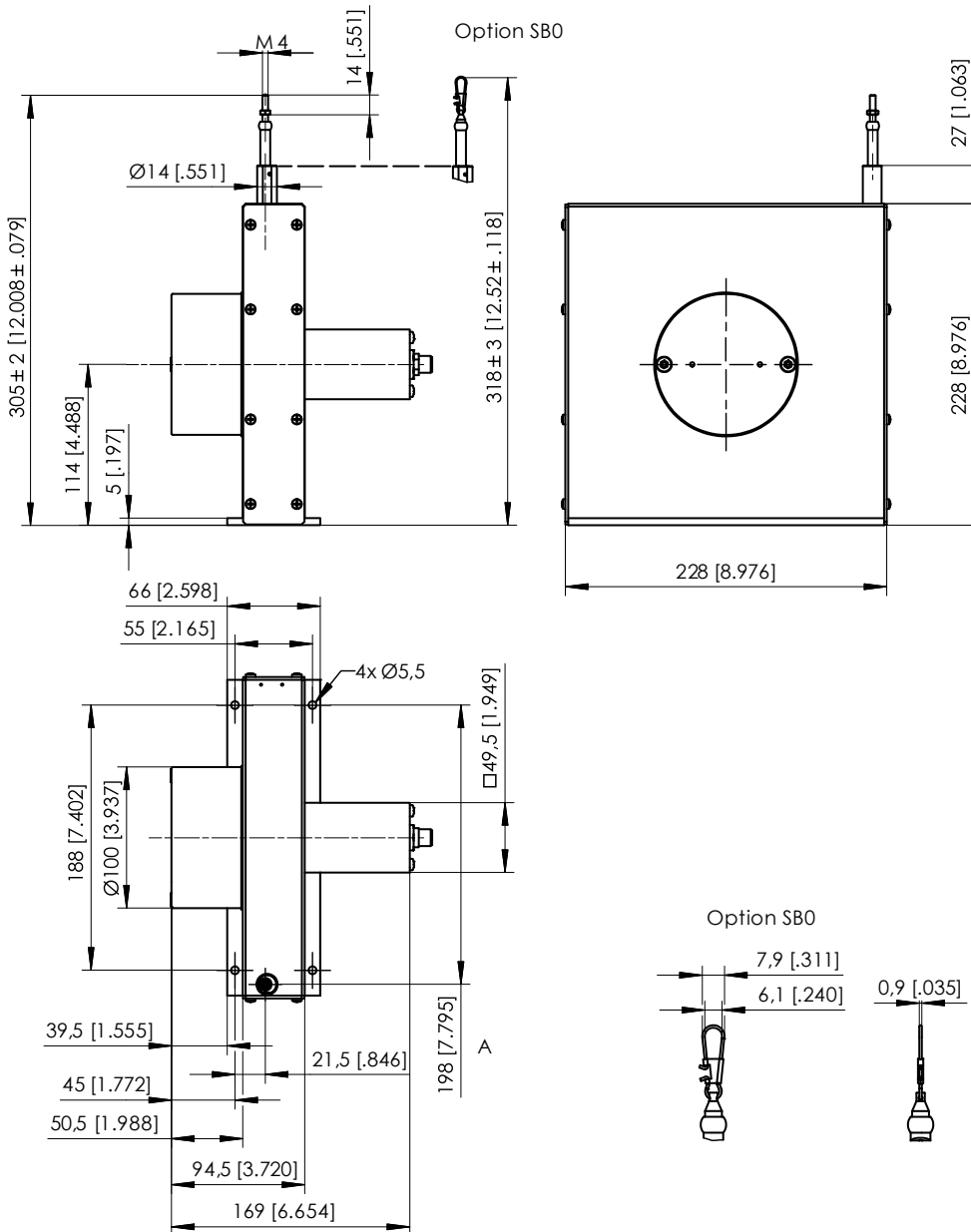
Measurement range 3000 ... 4000 mm



Dimensions in mm	Measurement range	A
	3000	105
	4000	120

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

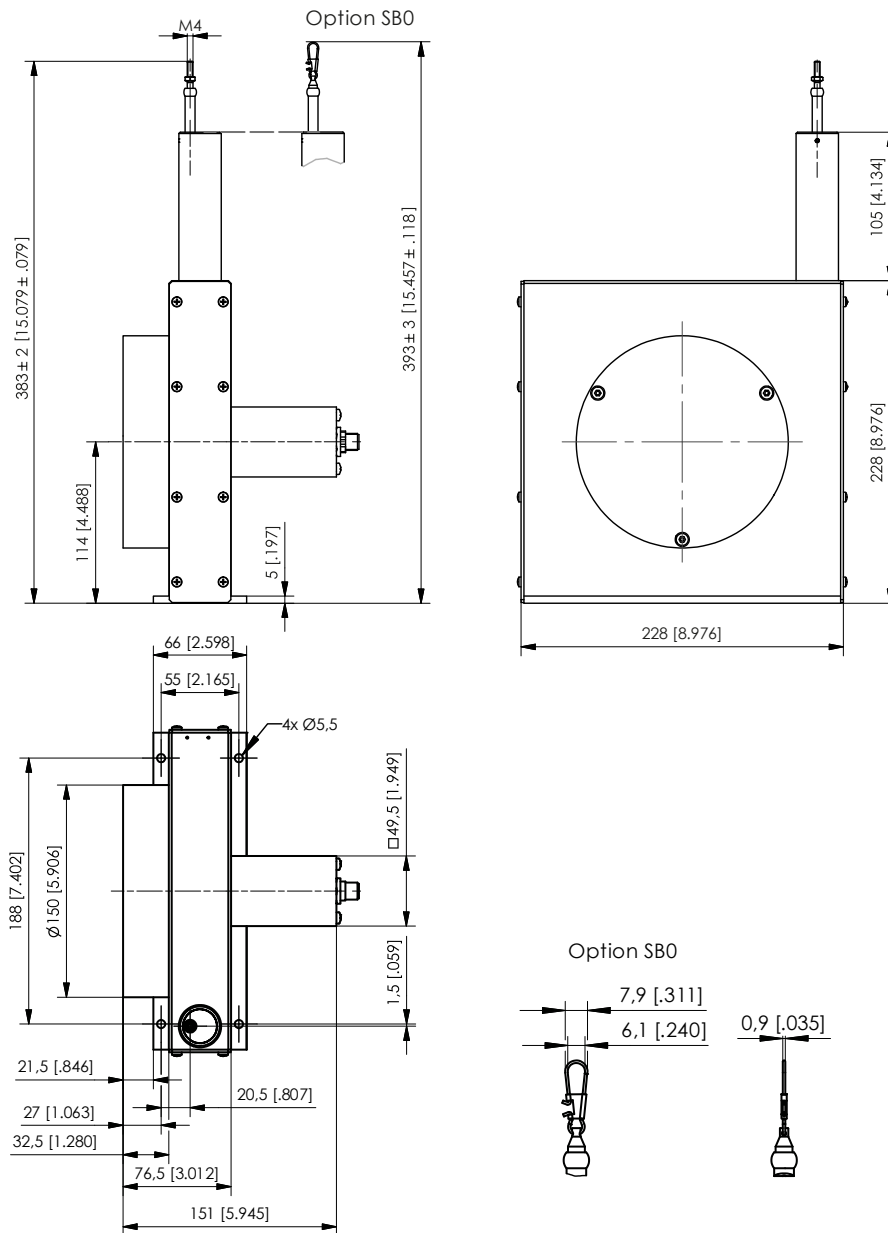
Measurement range 5000 ... 6250 mm



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

<b>R1K</b> Potentiometer 	Excitation voltage	32 V DC max. at 1 kΩ (max. power 1 W)
	Potentiometer impedance	1 kΩ ±10 %
	Thermal coefficient	±25 x 10 <sup>-6</sup> / °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

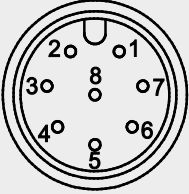
Additional information:

[https://www.asm-sensor.com/en/downloads.html?file=files/asmTheme/pdf/ws\\_poti\\_technote\\_en.pdf](https://www.asm-sensor.com/en/downloads.html?file=files/asmTheme/pdf/ws_poti_technote_en.pdf)


Signal wiring	Signal	Connector pin no.	Cable color
<b>Connector M12, 8 pin</b>  View to the sensor connector	Poti +	1	white
	Poti GND	2	brown
	Poti slider	3	green
	-	4	yellow
	-	5	grey
	-	6	pink
	-	7	blue
	-	8	red

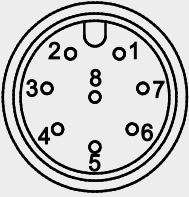



<b>10V</b> Voltage output 	Excitation voltage	18 ... 27 V DC non stabilized
	Excitation current	20 mA max.
	Output voltage	0 ... 10 V DC
	Output current	2 mA max.
	Output load	> 5 kΩ
	Stability (temperature)	±50 x 10 <sup>-6</sup> / °C f.s.
	Protection	Reverse polarity, short circuit
	Output noise	0.5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

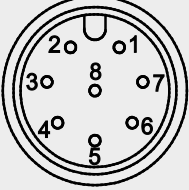
Signal wiring	Output signals	Connector pin no.	Cable color
<b>Connector M12, 8 pin</b>  View to the soldering side of mating connector	Excitation +	1	white
	Excitation GND*	2	brown
	Signal +	3	green
	Signal GND*	4	yellow
	Not connected	5	grey
	Not connected	6	pink
	Not connected	7	blue
	Not connected	8	red

\*: internally connected


<b>420A</b> 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)	$\pm 100 \times 10^{-6}$ / °C f.s.
	Protection	Reversed polarity, short circuit
	Output noise	0.5 mV <sub>eff</sub>
	Operating temperature	Refer to output specification
	EMC	DIN EN 61326-1:2013

Signal wiring	Output signals	Connector pin no.	Cable color
<b>Connector M12, 8 pin</b>  View to the sensor connector	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

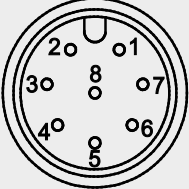
<b>420T</b> Current output (3 wire) 	Excitation voltage	18 ... 27 V DC non stabilized
	Excitation current	40 mA max.
	Load resistor	350 Ω max.
	Output current	4 ... 20 mA equivalent for 0 ... 100 % range
	Stability (temperature)	±50 x 10 <sup>-6</sup> / °C f.s.
	Protection	Reverse polarity, short circuit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

Signal wiring	Output signals	Connector pin no.	Cable color
<b>Connector M12, 8 pin</b>  View to soldering side of mating connector	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

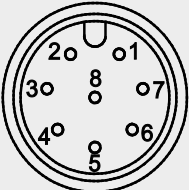
<b>PMUV</b> Voltage output programmable <b>PMUI</b> Current output programmable 	Excitation voltage	18 ... 27 V DC
	Excitation current	50 mA max.
	Voltage output <b>PMUV</b>	0 ... 10 V
	Output current	10 mA max.
	Output load	1 kΩ min.
	Current output <b>PMUI</b>	4 ... 20 mA (3 wire)
	Working resistance	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 <sup>-6</sup> / °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	Output signals	Connector pin no.	Cable color
 <p>View to soldering side of mating connector</p>	Excitation +	1	white
	Excitation GND*	2	brown
	Signal +		3
	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	Output signals	Connector pin no.	Cable color
 <p>View to soldering side of mating connector</p>	Excitation +	1	white
	Excitation GND*	2	brown
	Not connected		3
	Not connected	4	yellow
	Signal +	5	grey
	Signal GND*	6	pink
	ZERO	7	blue
	END	8	red

\*: internally connected


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## Outputs .../PMUV, PMUI, PMUI2

### Programming of the start and end value by the customer

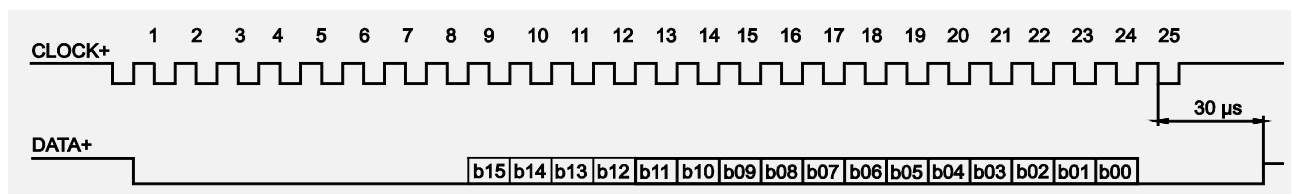
Teach-In of start and end value for the outputs PMUV, PMUV and PMUI2 is provided by two binary signals ZERO and END. At the start position connect signal ZERO for a short period to GND via push button. At the end position connect signal END for a short period to GND. The scaling range will be stored 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

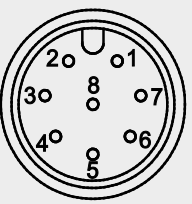
<b>ADSI</b> A/D converted synchronous serial 	Excitation voltage	11 ... 27 V DC
	Excitation current	200 mA max.
	Interface	EIA RS422, RS485, short-circuit proof
	Clock frequency	70 ... 500 kHz
	Code	Gray-Code, continuous progression
	Delay between pulse trains	30 µs min.
	Resolution	ADSI16: 16 bit (65536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

### Data format

(train of 26 pulses)



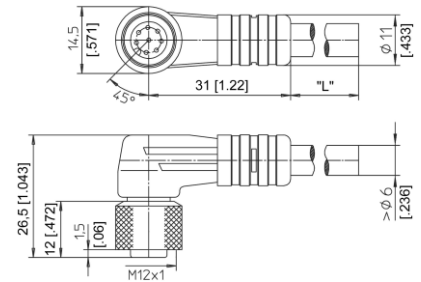
Transmission rate	Cable length	Baud rate	Note:
	< 50 m	< 300 kHz	Extension of the cable length will reduce the maximum transmission rate.
	< 100 m	< 100 kHz	

Signal wiring	Output signals	Connector pin no.	Cable color
<b>Connector M12, 8 pin</b>  View to soldering side of mating connector	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 mm<sup>2</sup>  
Cable diameter: 6.3 ±0.2 mm



**Order code**

**KAB - xM - M12/8F/W - LITZE**

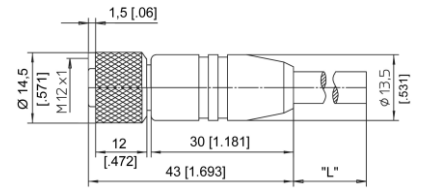
IP69: **KAB - xM - M12/8F/W/69K - LITZE**

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 mm<sup>2</sup>  
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

