

POSIWIRE[®]

Cable Extension Position Sensors

WS17KT
Position Sensor

Datasheet



Copyright

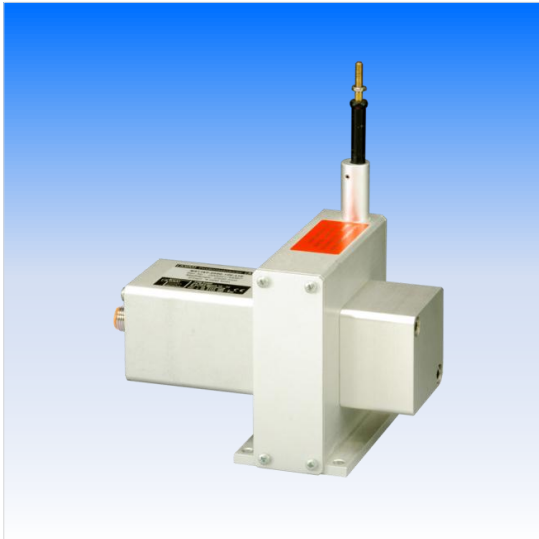
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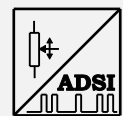
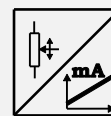
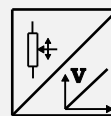
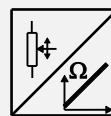
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Analog output, SSI output



Sensor features

- Measurement range up to 15000 mm
- Protection class IP64 (optional IP66)
- Analog output, SSI output



Specifications

Output	R1K = Potentiometer 1 kΩ 10V = Voltage 0 ... 10 V 420A = Current 4 ... 20 mA, 2 wire 420T = Current 4 ... 20 mA, 3 wire PMUI = Current output, programmable PMUV = Voltage output, programmable ADSI = Signal conditioner SSI 12 bit, replaced by MSS12 ADSI14 = Signal conditioner SSI 14 bit, replaced by MSS14 ADSI16 = Signal conditioner SSI 16 bit, replaced by MSS16
Resolution	Analog: quasi infinite
Linearity	±0.10% f.s. (standard) ±0.05% f.s. (optional)
Sensing device	Precision potentiometer
Housing material	Aluminium, stainless steel and plastic measuring cable: stainless steel
Protection class	IP64 (optional IP66)
Connection	Connector M12, 8 pin
Temperature range	-20 ... +85 °C
Weight	see table "Cable forces"
EMC	DIN EN 61326-1:2013

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

Order code

WS17KT - 1 - 2 - 3 - 4 - 5

1 Measurement range (in mm)

1500 / 2000 / 2500 / 3000 / 4000 / 5000 / 6250 / 10000 / 12500 / 15000

2 Output

- R1K** = Potentiometer 1 kΩ
- 10V** = Voltage 0 ... 10 V
- 420A** = Current 4 ... 20 mA, 2 wire
- 420T** = Current 4 ... 20 mA, 3 wire
- PMUI** = Current output, programmable
- PMUV** = Voltage output, programmable

- ADSI** = Signal conditioner SSI 12 bit, replaced by MSS12
- ADSI14** = Signal conditioner SSI 14 bit, replaced by MSS14
- ADSI16** = Signal conditioner SSI 16 bit, replaced by MSS16

3 Linearity

- L10** = ±0.10% f.s. (standard)
- L05** = ±0.05% f.s. (optional)

4 Cable fixing

- M4** = M4 cable fixing
- SB0** = cable clip

5 Connection

- M12** = Connector M12, 8 pin

Order example

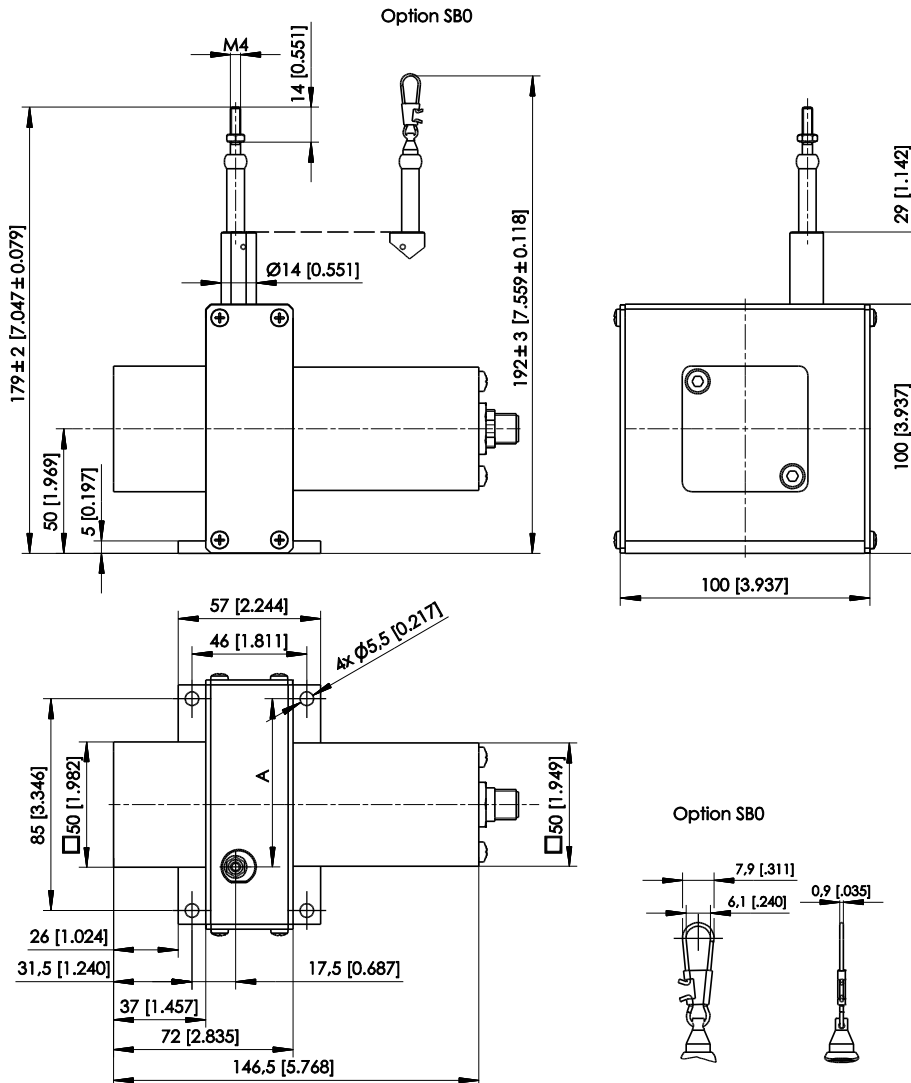
WS17KT - 2500 - 10V - L10 - M4 - M12

Accessories:

Connector cable (see page 19)

Dimensions

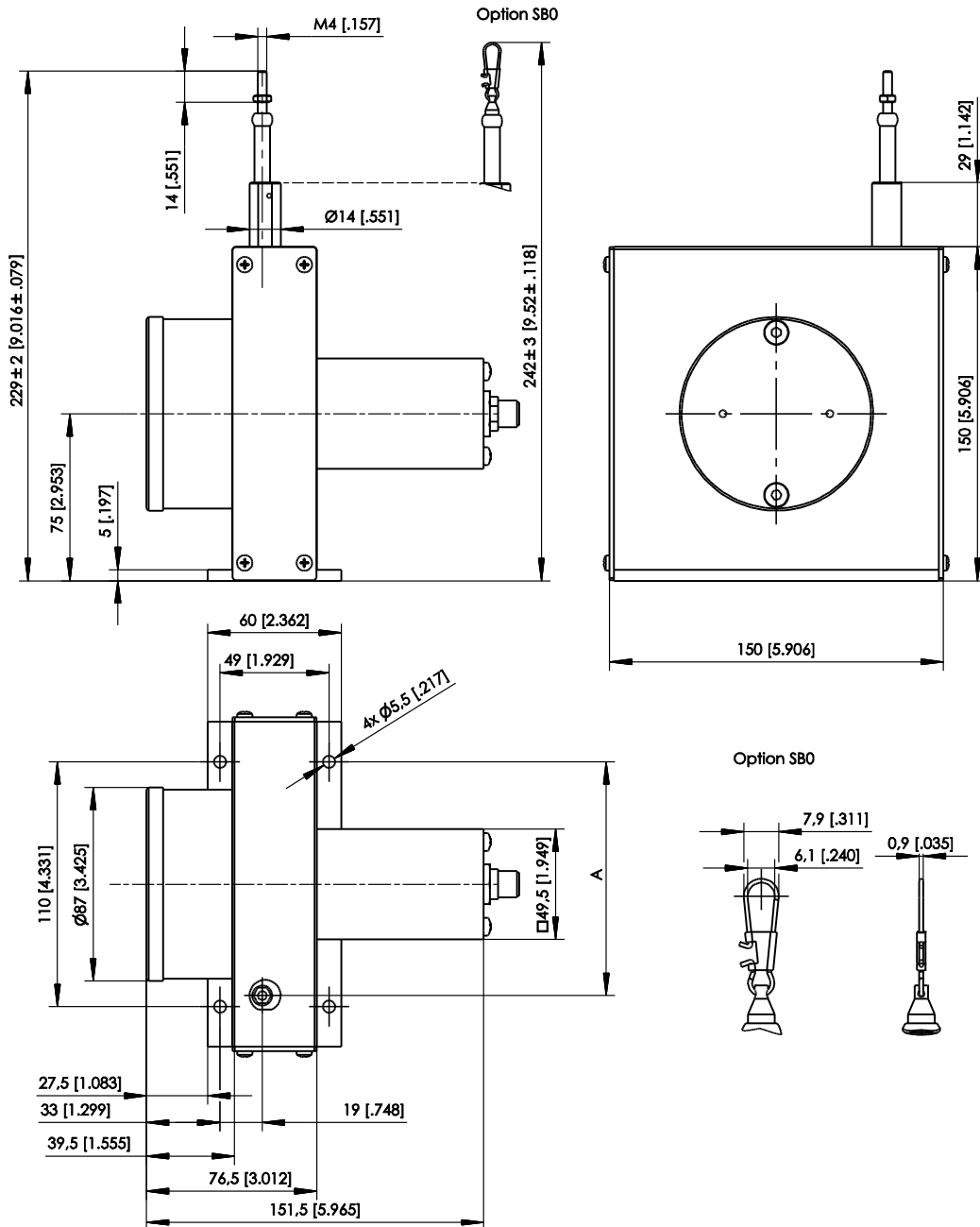
Measurement range 1500 ... 2000 ... 2500 mm, analog output, SSI output



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.

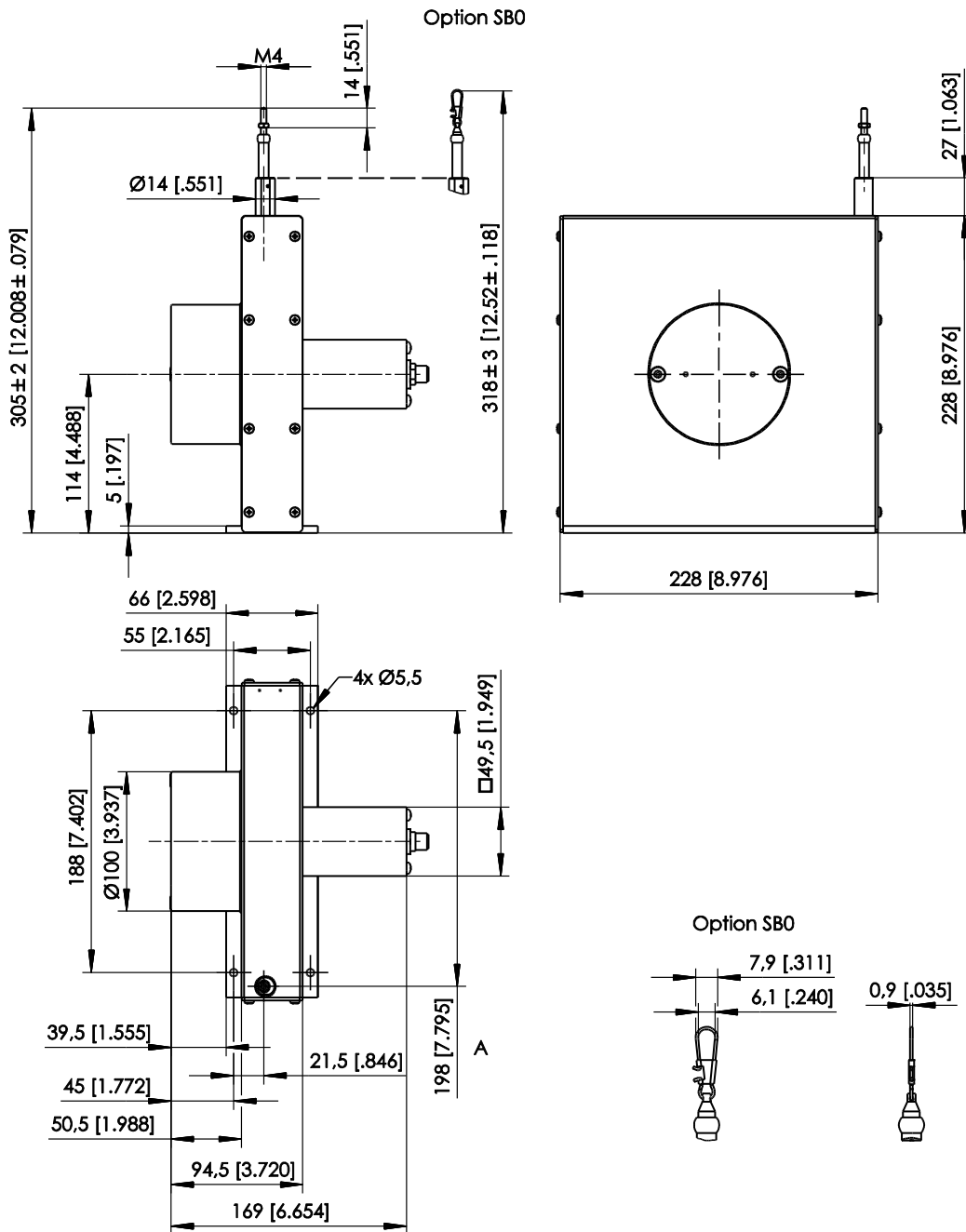
Measurement range 3000 ... 4000 mm, analog output, SSI output



Dimensions in mm	Measurement range	A
	3000	105
	4000	120

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

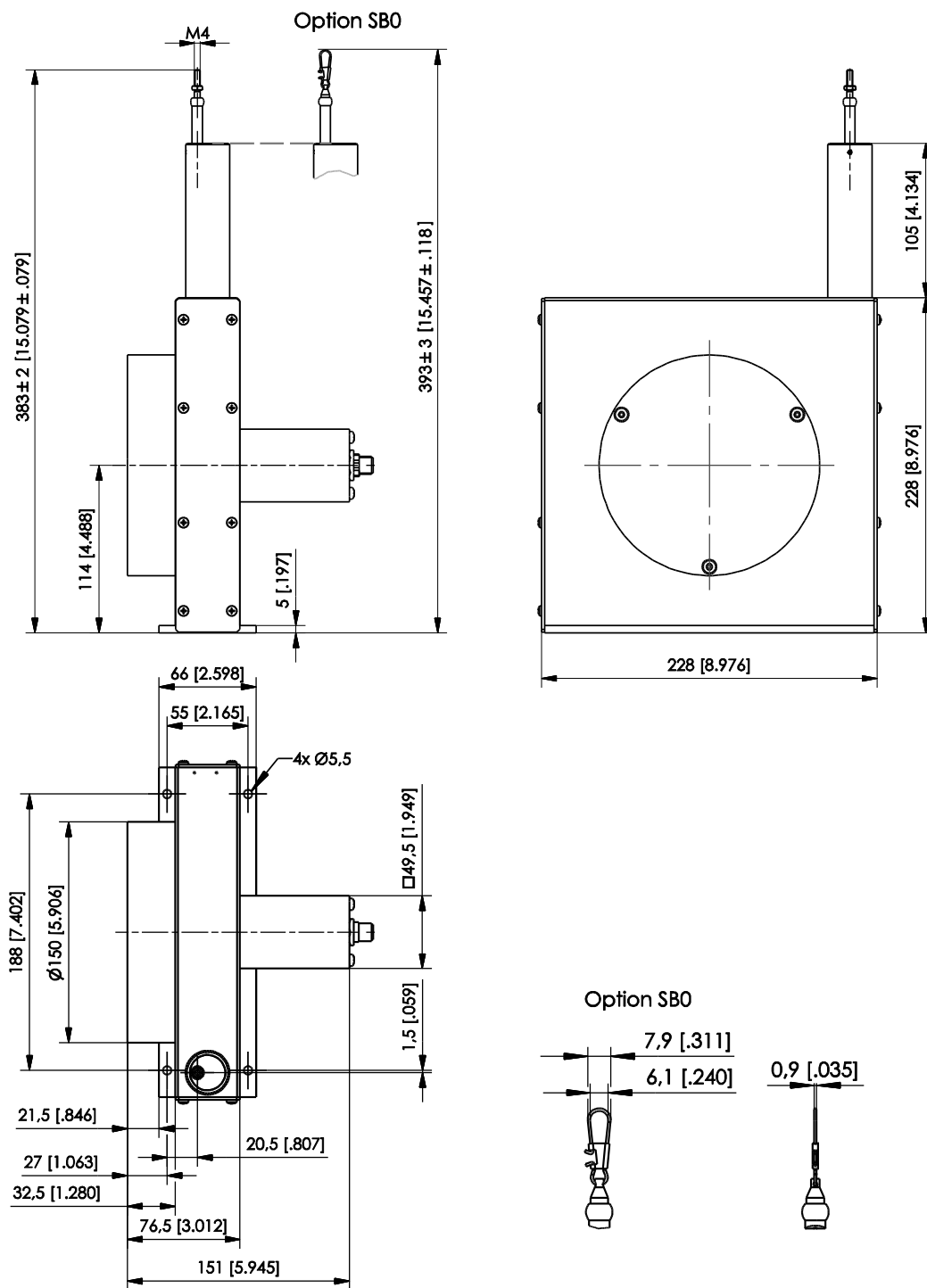
Measurement range 5000 ... 6250 mm, analog output, SSI output



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, analog output, SSI output

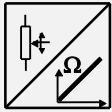


Dimensions in mm [inch]
 Dimensions informative only.
 For guaranteed dimensions consult factory.

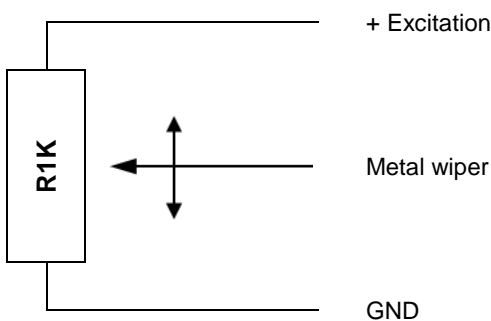
Output specifications

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 % ... 97 %
	Operating temperature	Refer to output specification
	EMC	DIN EN 61326-1:2013

Output signals



Note:

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

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

Additional information:

http://www.asm-sensor.com/asm/pdf/pro/ws_poti_technote_en.pdf

Signal wiring

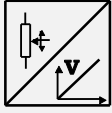
Signal	Connector pin no.	Cable color	Cable color
Poti +	1	white	brown
Poti GND	2	brown	white
Poti slider	3	green	blue
-	4	yellow	black
-	5	grey	-
-	6	pink	-
-	7	blue	-
-	8	red	-

View to sensor connector

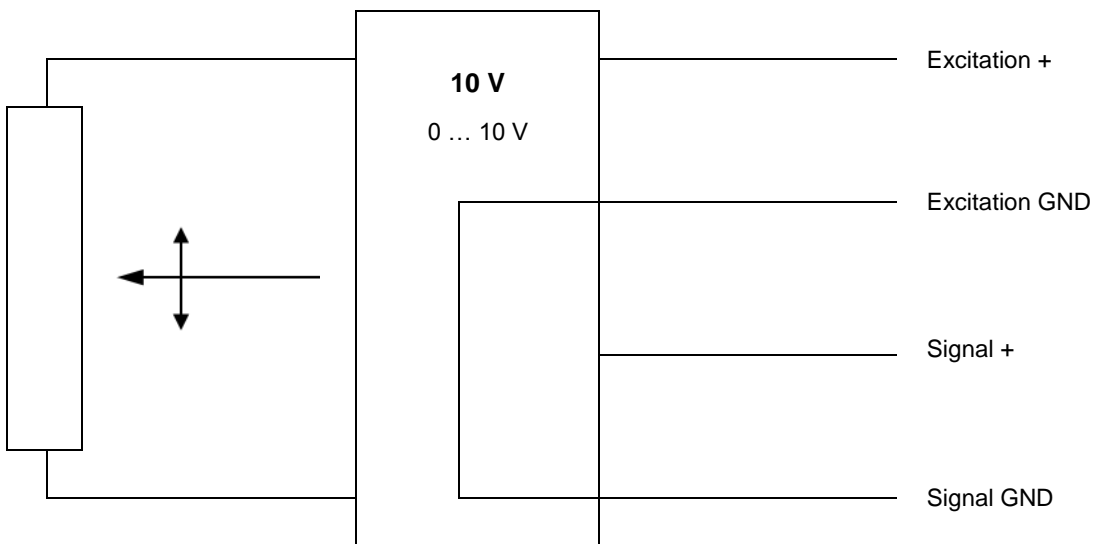


CONN-M12-8F

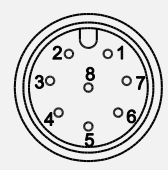
Signal conditioner 10V and 10V5

Voltage output 	Excitation voltage	18 ... 27 V DC non stabilized
	Excitation current	20 mA max.
	Output voltage	10V: 0 ... 10 V DC; 10V5: 0.5 ... 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

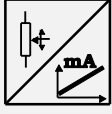
Output signals



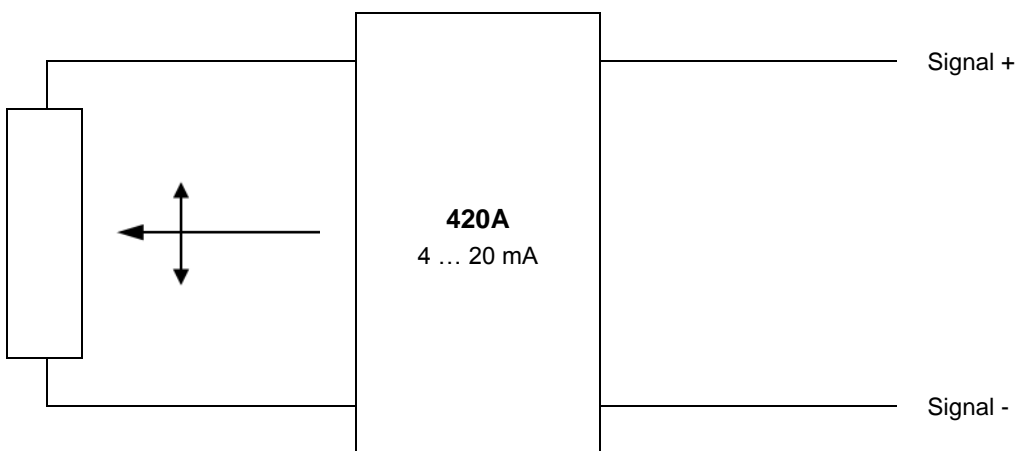
Signal wiring

Signal	Connector pin no.	Cable color	View to sensor connector
Excitation +	1	white	 CONN-M12-8F
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	

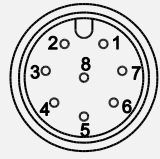
Signal conditioner 420A

Current output (2 wire) 	Excitation voltage	12 ... 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)	$\pm 100 \times 10^{-6} / ^\circ\text{C}$ 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

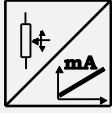
Output signals



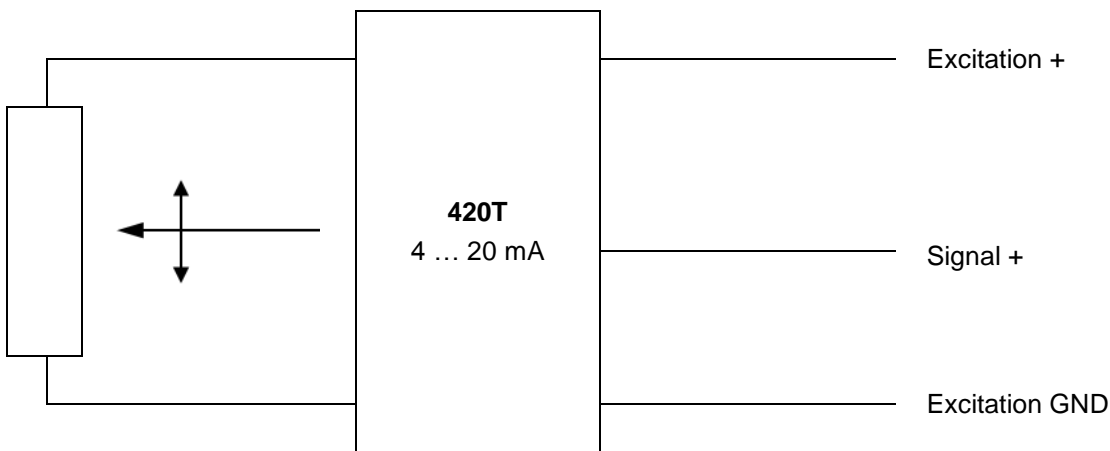
Signal wiring

Signal	Connector pin no.	Cable color	View to sensor connector
Signal +	1	white	 CONN-M12-8F
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	


Signal conditioner 420T

Current output (3 wire) 	Excitation voltage	18 ... 27 V DC non stabilized
	Excitation curren	40 mA max.
	Load resistor	350 Ω max.
	Output current	4 ... 20 mA equivalent for 0 ... 100 % range
	Stability (temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ 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

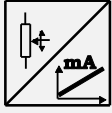
Output signals



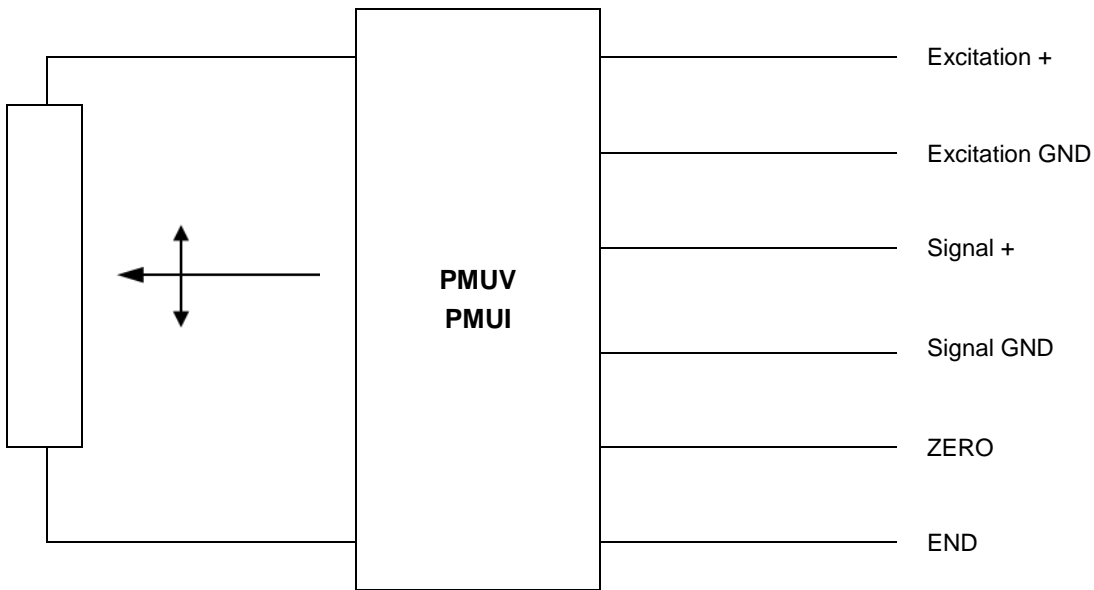
Signal wiring

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


Signal conditioner PMUI / PMUV

Voltage or current output (3 wire) 	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


Output signals



Signal wiring PMUV / PMUI

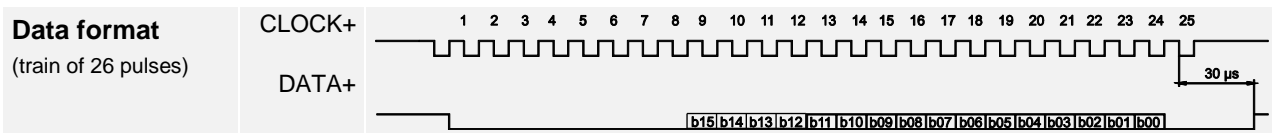
Signal	Connector pin no.	Cable color	View to sensor connector  CONN-M12-8F
Excitation +	1	white	
Excitation GND	2	brown	
Signal +	3	green	
Signal GND	4	yellow	
Not connected	5	grey	
Not connected	6	pink	
ZERO	7	blue	
END	8	red	

Signal wiring PMUI2

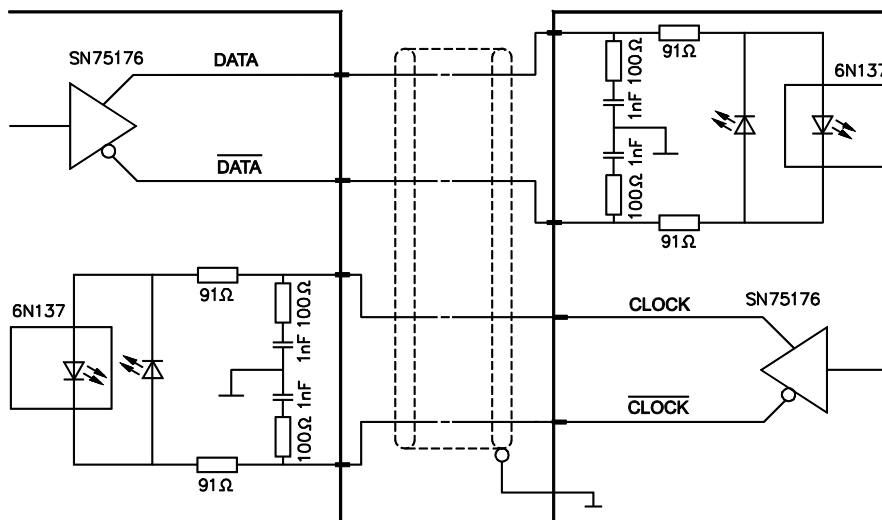
Signal	Connector pin no.	Cable color	View to sensor connector  CONN-M12-8F
Excitation +	1	white	
Excitation GND	2	brown	
Not connected	3	green	
Not connected	4	yellow	
Signal +	5	grey	
Signal GND	6	pink	
ZERO	7	blue	
END	8	red	

Signal conditioner ADSI

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 ⁻⁶ / °C f.s.
	Operating temperature	-20 ... +85 °C
	EMC	DIN EN 61326-1:2013



Recommended processing circuit




Transmission rate	Cable length	Baud rate
	< 50 m	< 300 kHz
	< 100 m	< 100 kHz

Note:

Extension of the cable length will reduce the maximum transmission rate.

Signal wiring

Signal	Connector pin no.	Cable color	View to sensor connector
Excitation +	1	white	
Excitation GND (0 V)	2	brown	
CLOCK	3	green	
<u>CLOCK</u>	4	yellow	
DATA	5	grey	
<u>DATA</u>	6	pink	
Shield, not connected	7	blue	
Not connected	8	red	

CONN-M12-8F

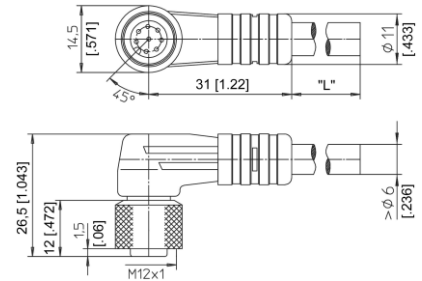
Accessories

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**

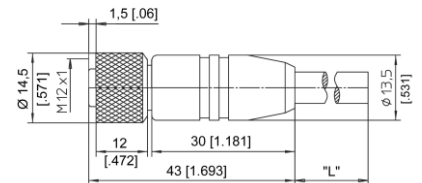
xM = length in m

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

