

Model WS10EX

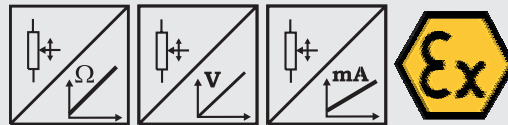
with analog output

Dust explosion-proof



Compact sensor for dust explosive areas

- Protection class IP65
- Measurement ranges:
0 ... 100 mm to 0 ... 1250 mm
- Analog output 0 ... 10 V, 4 ... 20 mA
- Dust ex proof, category 3, zone 22
- II 3D EEx T95°C IP65



Specifications	Outputs	Potentiometer: 1 kΩ Voltage: 0...10 V Current: 4...20 mA, 2 or 3 wire
	Material	Aluminium and stainless steel. Cable: stainless steel
Resolution	Essentially infinite	
Sensing Device	Precision potentiometer	
Connection	Cable output, standard length 1.5 m	
Linearity	Up to ±0.05 % full scale	
Weight	800 g max.	
Temperature	-20 to +70°C	
Conformity of standards		
	Explosion-proof	DIN EN 50281:1999, category 3, zone 22
	EMC	DIN EN 61326:2004
	Protection class of housing	DIN EN 60529:2000, IP65
	Shock	DIN EN 60068-2-27:1993, 50 g 11 ms, 100 shocks
	Vibration	DIN-EN 60068-2-6:1996, 20 g, 10 Hz ... 2 kHz, 10 cycles

Order Code WS10EX	Model Name
Analogue	WS10EX - [] - [] - [] - [] - []
	Measurement Range (in mm) 100 / 125 / 375 / 500 / 750 / 1000 / 1250
	Outputs (see pages 57 and 58) R1K = Potentiometer 1 kΩ (other values on request) 10V = with 0 ... 10 V signal conditioner 420A = with 4 ... 20 mA signal conditioner (2 wire) 420T = with 4 ... 20 mA signal conditioner (3 wire)
	Linearity L10 = ±0.10 % option: L05 = ±0,05 % L25 = ±0.25 %
	Connection KAB1,5M = Cable output, standard length 1.5 m
	Cable fixing M4 = M4 cable fixing SB0 = Cable clip

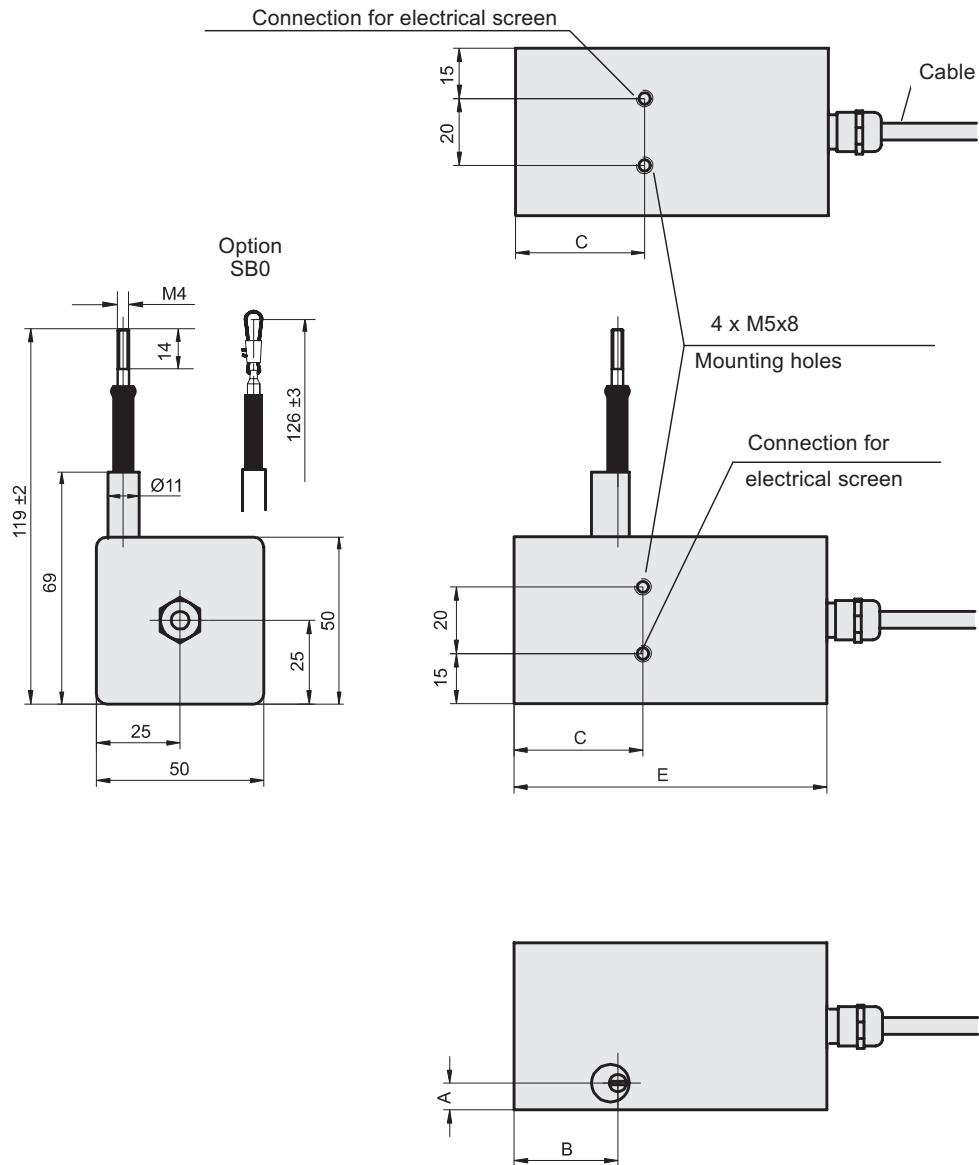
Order Example: WS10EX - 1250 - 10V - L10 - KAB1,5M - M4

Model WS10EX with analog output Dust explosion-proof



Cable Forces typical at 20 °C	Range	Maximum pull-out Force	Minimum pull-in Force
	mm	[N]	[N]
	100	4.7	3.0
	125	4.6	2.4
	375	7.4	3.9
	500	5.5	2.8
	750	7.6	3.8
	1000	5.3	2.9
	1250	4.6	2.4

Outline drawing



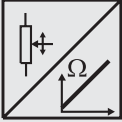
Dimensions informative only.
For guaranteed dimensions consult factory

Dimensions	Range	A	B, C	E
	[mm]			
	375, 750	12,5	B=31; C=38,5	120,5
	100, 125, 500	8,0		
	1000, 1250	8,0		

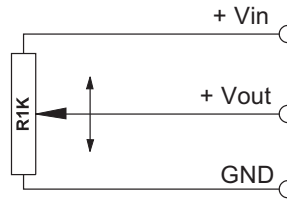
Output Specifications

R1K and 10V for WS position sensors

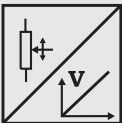


Voltage divider R1K Potentiometer 	Excitation Voltage	32 VDC max. at 1 k Ω (input power 1 W max.)
	Potentiometer Impedance	1 k Ω \pm 10%
	Thermal coefficient	\pm 25 x 10 ⁻⁶ / °C full scale
	Sensitivity	Depends on measurement range, individual sensitivity of sensor specified on label
	Voltage Divider Utilization Range	Approx. 3% ... 97% of full range
	Operating Temperature	-20 ... +85 °C

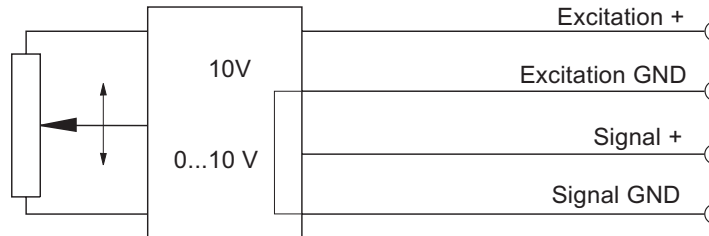
Signal diagram



Note: The potentiometer must be connected as a voltage divider. The input impedance of the following processing circuit should be 10 M Ω min.

Signal conditioner 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 k Ω
	Stability (Temperature)	\pm 50 x 10 ⁻⁶ / °C full scale
	Protection	Reverse polarity, short circuit
	Output Noise	0,5 mV _{RMS}
	Operating Temperature	-20 ... +85 °C
	EMC	According to EN 61326:2004

Signal diagram

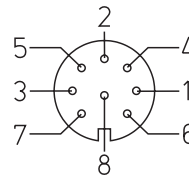


Signal Wiring	Output signals		Cable color	Connector pin no.
	R1K	10V		
	+ Vin	Excitation +	White	1
	GND	Excitation GND	Brown	2
	+ Vout	Signal +	Green	3
		Signal GND	Yellow	4

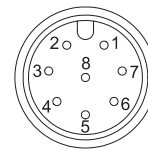
Connection

Mating Connector

View to solder terminals



CONN-DIN-8F-W

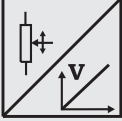


CONN-M12-8F-G

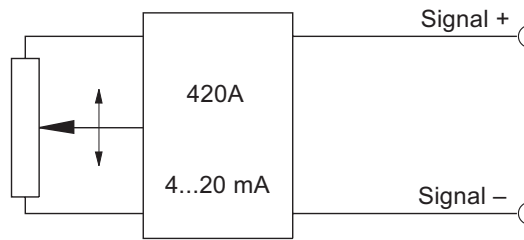
Output Specifications

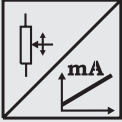
420A and 420T for WS position sensors



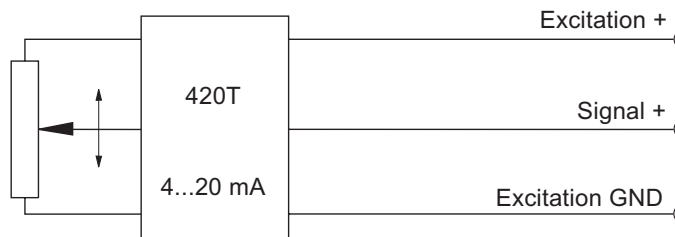
Signal conditioner 420A Current output (2 wire) 	Excitation Voltage	+12 ... 27 VDC non stabilized, measured at the sensor terminals
	Excitation Current	35 mA max.
	Output Current	4 ... 20 mA equivalent to 0 ... 100% range
	Stability (Temperature)	$\pm 100 \times 10^{-6} / ^\circ\text{C}$ full scale
	Protection	Reverse polarity, short circuit
	Output Noise	0.5 mV _{RMS}
	Operating Temperature	-20 ... +85 °C
	EMC	According to EN 61326:2004

Signal Diagram



Signal Conditioner 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 to 0 ... 100% range
	Stability (Temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ full scale
	Protection	Reverse polarity, short circuit
	Output Noise	0.5 mV _{RMS}
	Operating Temperature	-20 ... +85 °C
	EMC	According to EN 61326:2004

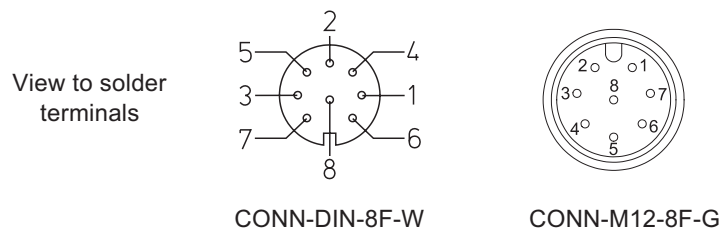
Signal diagram



Signal Wiring	Output signals		Cable color	Connector pin no.
	420A	420T		
Signal +		Excitation +	White	1
Signal -		Excitation GND	Brown	2
		Signal +	Green	3

Connection

Mating Connector

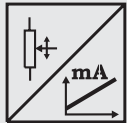
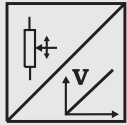


Output Specification

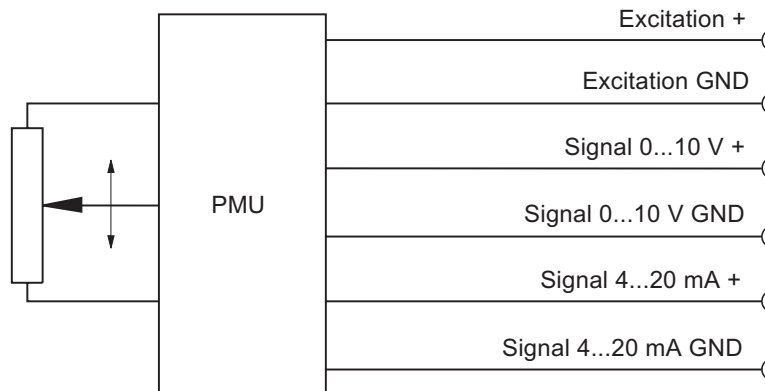
PMU for WS position sensors



Signal Conditioner PMU, adjustable Voltage output and current output (3 wire)	Excitation voltage	+18 ... 27 V DC
	Excitation current	50 mA max.
	Voltage output	0 ... 10 V
	Output current	10 mA max.
	Output load	1 kΩ min.
	Current output	4 ... 20 mA (3 wire)
	Load resistor	500 Ω max.
	Adjustment	
	Activation of offset and gain adjust	Connect with excitation GND (0 V)
	Scalable range	90 % max. full scale
	Stability (Temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ full scale
	Protection	Reverse polarity, short circuit
	Output noise	1 mV _{eff}
Operating temperature	-20 ... +85 °C	
EMC	According to EN 61326:2004	



Signal diagram



Signal wiring	Output signals	Connector pin no.
	Excitation +	1
	Excitation GND	2
	Signal 0...10 V +	3
	Signal 0...10 V GND	4
	Signal 4...20 mA +	5
	Signal 4...20 mA GND	6
	Offset	7
	Gain	8

Connection

Mating Connector

