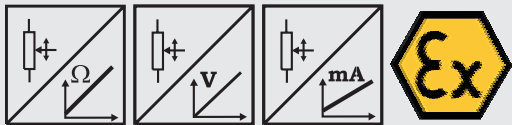


Model WS12EX
with analog output
Dust explosion-proof



Sensor for hostile environments

- Protection class IP67
- Measurement ranges:
0 ... 100 mm to 0 ... 3000 mm
- Analog output
- Dust ex proof, category 3, zone 22
- II 3D EEx T95°C IP67



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 (approx.)	≤1500 mm: 1 kg; ≥2000 mm: 1.5 kg
	Operation 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, IP67
	Shock	DIN EN 60068-2-27:1993, 50 g 11 ms, 100 shocks
	Vibration	DIN EN 60068-2-6:1995, 20 g, 10 Hz ... 2 kHz, 10 cycles

Order Code WS12EX
Analog

WS12EX

Model Name

Measurement Range (in mm)

Outputs (see pages 57 and 58)

Linearity

Connection

Cable fixing

100 / 125 / 500 / 1000 / 1250 / 1500 / 2000 / 2500 / 3000

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)

L10 = ±0.10 % option: L05 = ±0,05 % L25 = ±0.25 %

KAB1,5M = Cable output, standard length 1.5 m

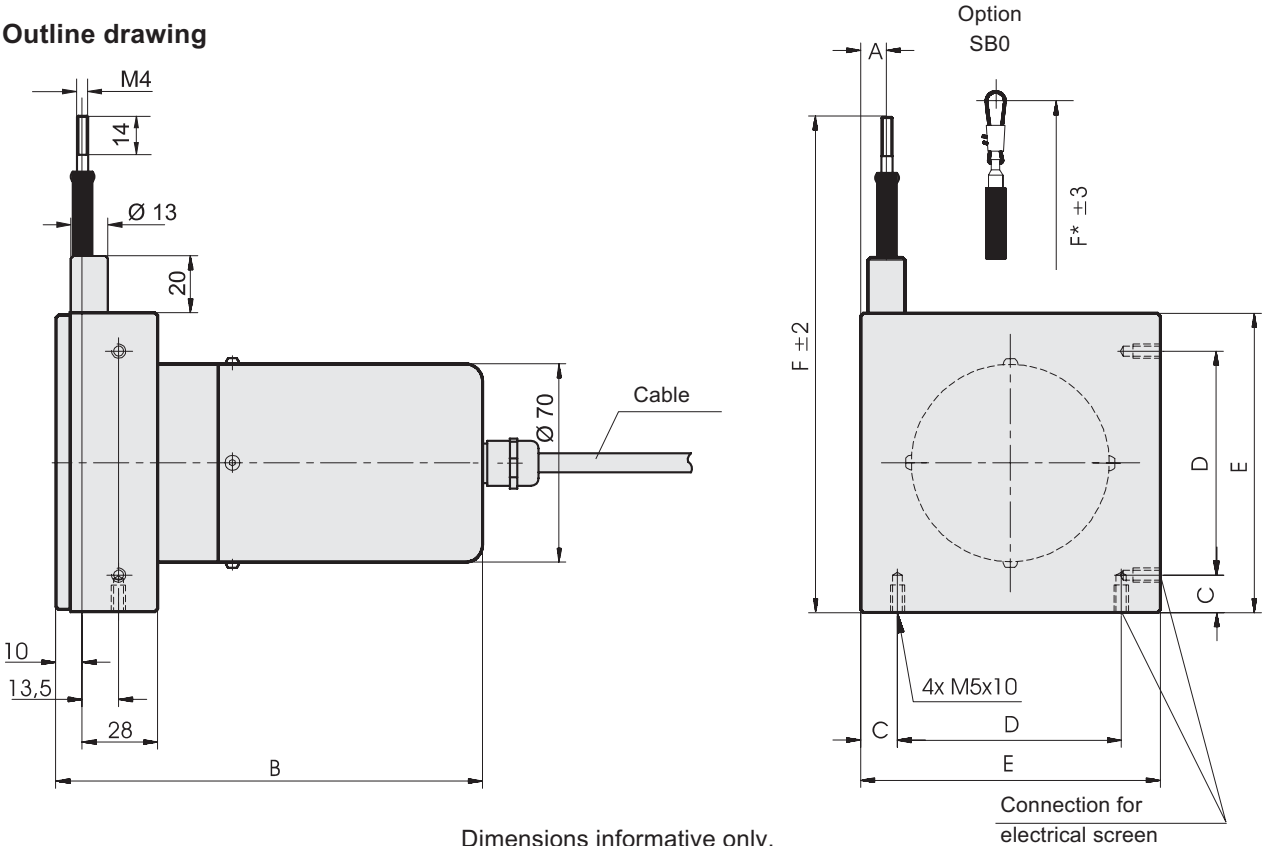
M4 = M4 cable fixing
SB0 = Cable clip

Order Example: WS12EX - 2500 - 420T - L10 - KAB1,5M - M4

Model WS12EX
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	5.2	2.8
	125	4.6	2.5
	500	5.9	2.6
	1000	5.5	2.4
	1250	4.8	2.1
	1500	10.4	6.4
	2000	8.1	5.0
	2500	6.7	4.0
	3000	6.2	3.0

Outline drawing



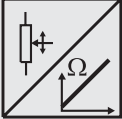
Dimensions informative only.
 For guaranteed dimensions consult factory

Dimensions	Range	A	B	C...E	F (F*)
	[mm]				
	100; 500; 1000	18.5	112	C=14, D=43, E=71	141 (149)
	125; 1250	15.0	112		
	1500	11.0	127		
	2000	22.0	127	C=15, D=79, E=109	179 (187)
	2500	13.5	127		
	3000	9.5	127		

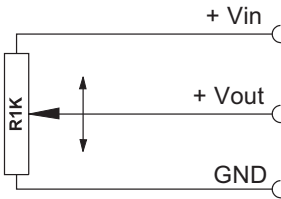
Output Specifications

R1K and 10V for WS position sensors

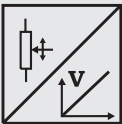


Voltage divider R1K Potentiometer 	Excitation Voltage	32 VDC max. at 1 kΩ (input power 1 W max.)
	Potentiometer Impedance	1 kΩ ±10%
	Thermal coefficient	±25 x 10 ⁻⁶ / °C full scale
	Sensitivity	Depends on measurement range, individual sensitivity of sensor specified on label
	Voltage Divider Utilization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

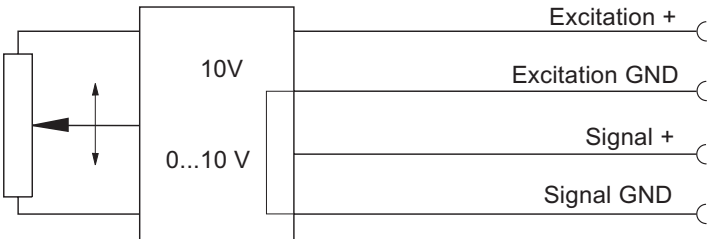
Signal diagram



Note: The potentiometer must be connected as a voltage divider. The input impedance of the following processing circuit should be 10 MΩ 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 kΩ
	Stability (Temperature)	±50 x 10 ⁻⁶ / °C full scale
	Protection	Reverse polarity, short circuit
	Output Noise	0,5 mVRMS
	Operating Temperature	-20 ... +85 °C
	EMC	According to EN 61326:2004

Signal diagram

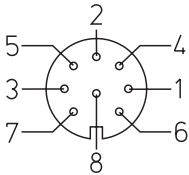


Signal Wiring	Output signals		Cable color	Connector pin no.
	R1K	10V		
	+ Vin	Excitation +		
	GND	Excitation GND		
	+ Vout	Signal +		
		Signal GND	Yellow	4

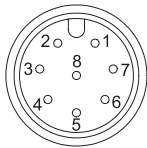
Connection

Mating Connector

View to solder terminals



CONN-DIN-8F-W

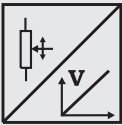


CONN-M12-8F-G

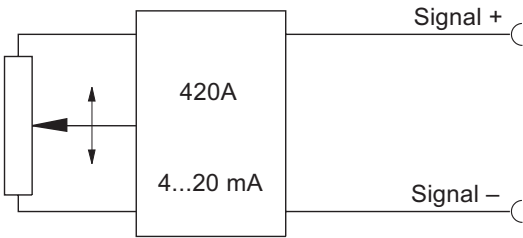
Output Specifications

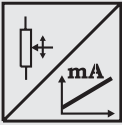
420A and 420T for WS position sensors



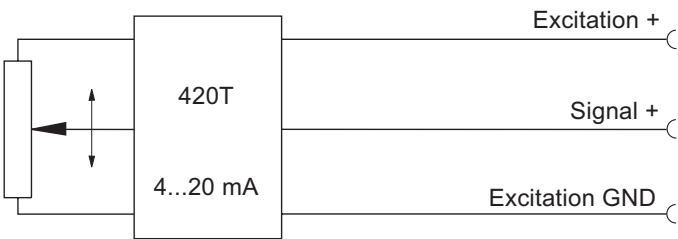
Signal conditioner 420A Current output (2 wire) 	Excitation Voltage	+12 ... 27 VDC non stabilized, measured at the sensor terminals
	Excitation Current	35 mA max.
	Output Current	4 ... 20 mA equivalent to 0 ... 100% range
	Stability (Temperature)	$\pm 100 \times 10^{-6} / ^\circ\text{C}$ full scale
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

Signal Diagram



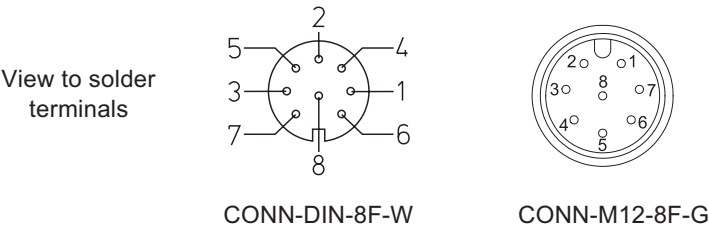
Signal Conditioner 420T Current output (3 wire) 	Excitation Voltage	+18...+27 V DC non stabilized
	Excitation Current	40 mA max.
	Load Resistor	350 Ω max.
	Output Current	4 ... 20 mA equivalent to 0 ... 100% range
	Stability (Temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ full scale
	Protection	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

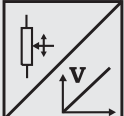
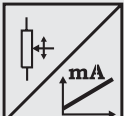
Connection
Mating Connector



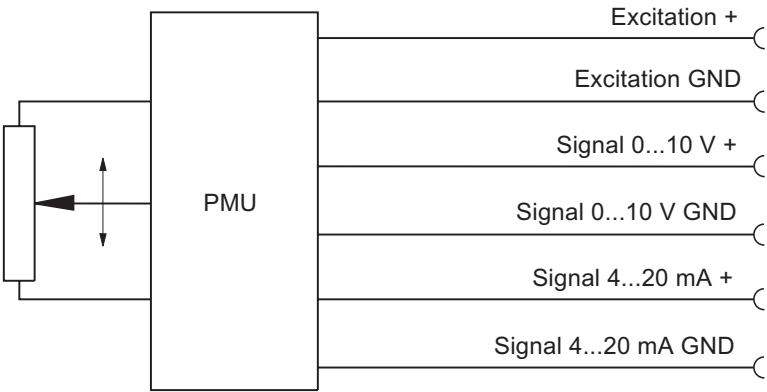
Output Specification

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)	±50 x 10 ⁻⁶ / °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

