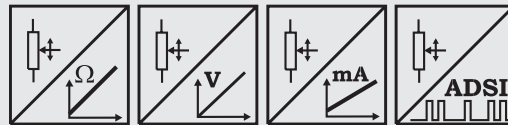


Model WS17KT with analog or SSI output



Compact sensor for medium ranges

- Protection class IP64
- Measurement ranges:
0 ... 1500 mm to 0 ... 15000 mm
- Analog output 0 ... 10 V, 4 ... 20 mA, potentiometer or A/D converted synchronous serial output (SSI)



Specifications	Outputs	Potentiometer: 1 k Ω
		Voltage: 0...10 V
		Current: 4...20 mA, 2 or 3 wire
		Voltage and current output, adjustable
		A/D converted synchronous serial max. 16 bit (SSI)
	Resolution	Essentially infinite / ADSI16: max. 16 bit full scale
	Material	Aluminium and stainless steel Cable: stainless steel
	Sensing Device	Precision potentiometer
	Connector	Male socket 8 pin (M12 or DIN 45326)
	Linearity	Up to ± 0.05 % full scale
	Protection class	IP64
	Weight	See table next page
	Environmental	
	EMC	Refer to output specification
	Temperature	Refer to output specification

Order Code WS17KT Analog or SSI

Model Name

Measurement Range (in mm)

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

Outputs (see pages 57 ff.)

R1K = Potentiometer 1 k Ω (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)

PMU = with 0...10 V/4 ... 20 mA signal conditioner, adjustable

ADSI = with A/D converted synchronous serial output 16 bit (option: 12, 14 bit)

Linearity

L10 = ± 0.10 % option: L05 = ± 0.05 % L25 = ± 0.25 %

Cable fixing

M4 = M4 cable fixing

SB0 = Cable clip

Connection

M12 = 8 pin socket M12

D8 = 8 pin socket DIN 45326

WS17KT - [] - [] - [] - [] - []

Order Code Mating Connector (see accessories p. 82) D8: **CONN-DIN-8F-W** M12: **CONN-M12-8F-G**

Order Example: WS17KT - 2500 - 10V - L10 - M4 - M12

Model WS17KT

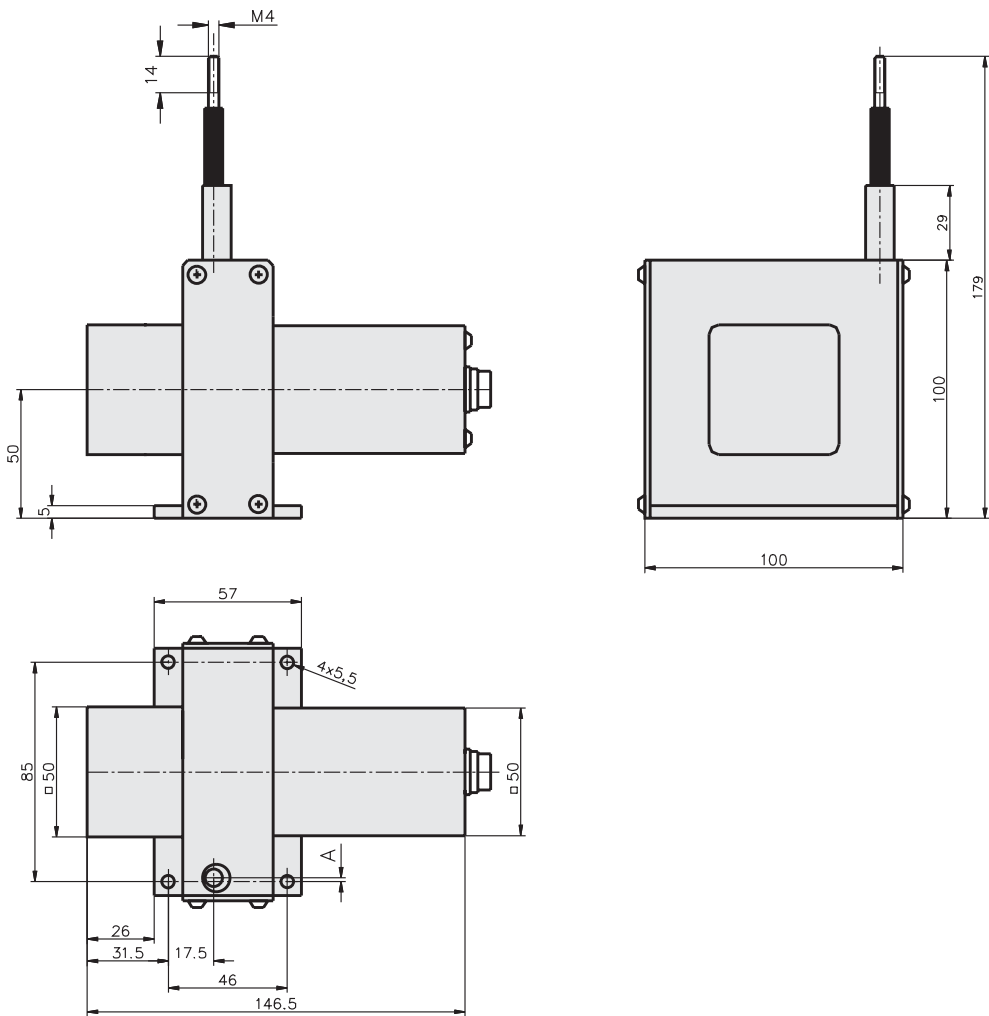
with analog or SSI output



Cable Forces and Weights typical at 20 °C	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

Outline drawing

WS17KT-1500 / 2000 / 2500



Dimensions informative only.

For guaranteed dimensions consult factory

Dimensions (mm)	Range	A
	1500	17.5
	2000	9.5
	2500	2.5

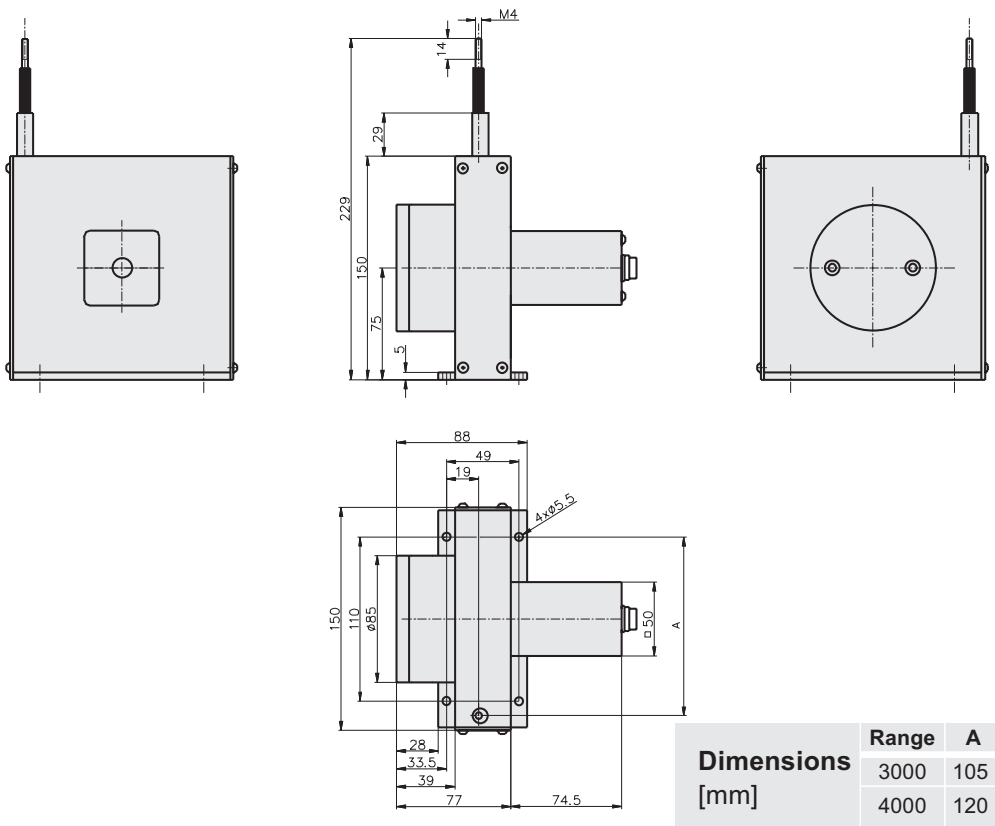
Model WS17KT

with analog or SSI output



Outline drawing

WS17KT-3000 / 4000

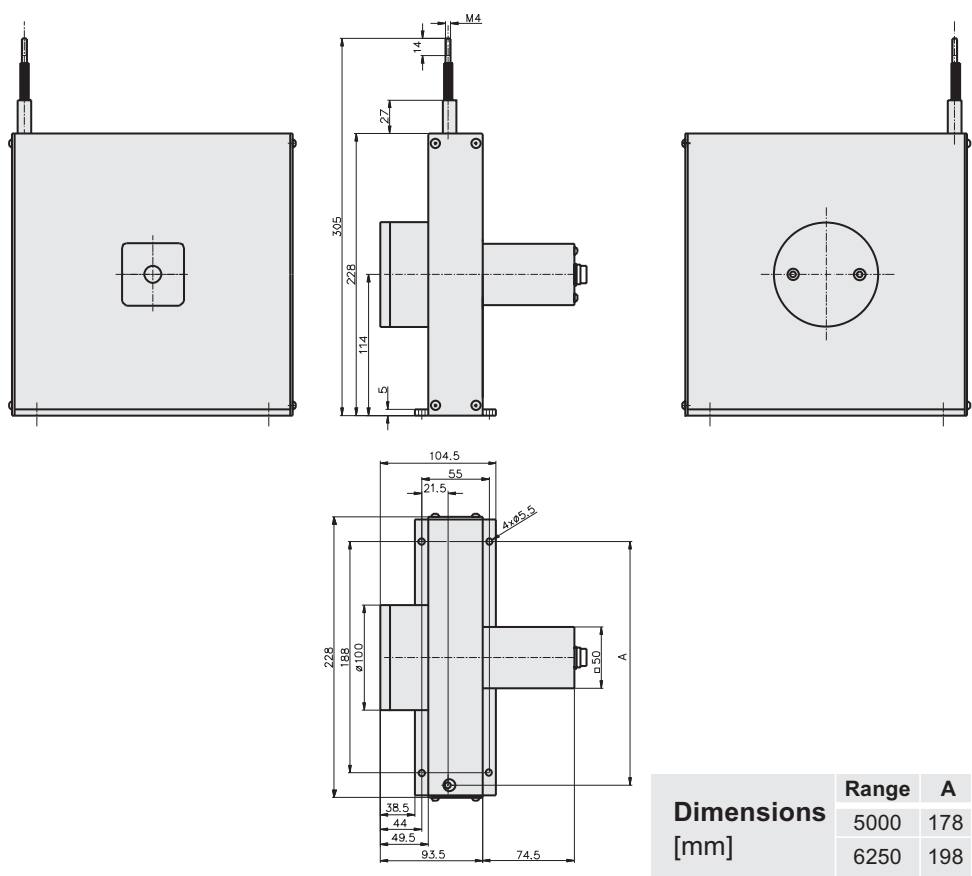


Dimensions informative only.

For guaranteed dimensions consult factory

Outline drawing

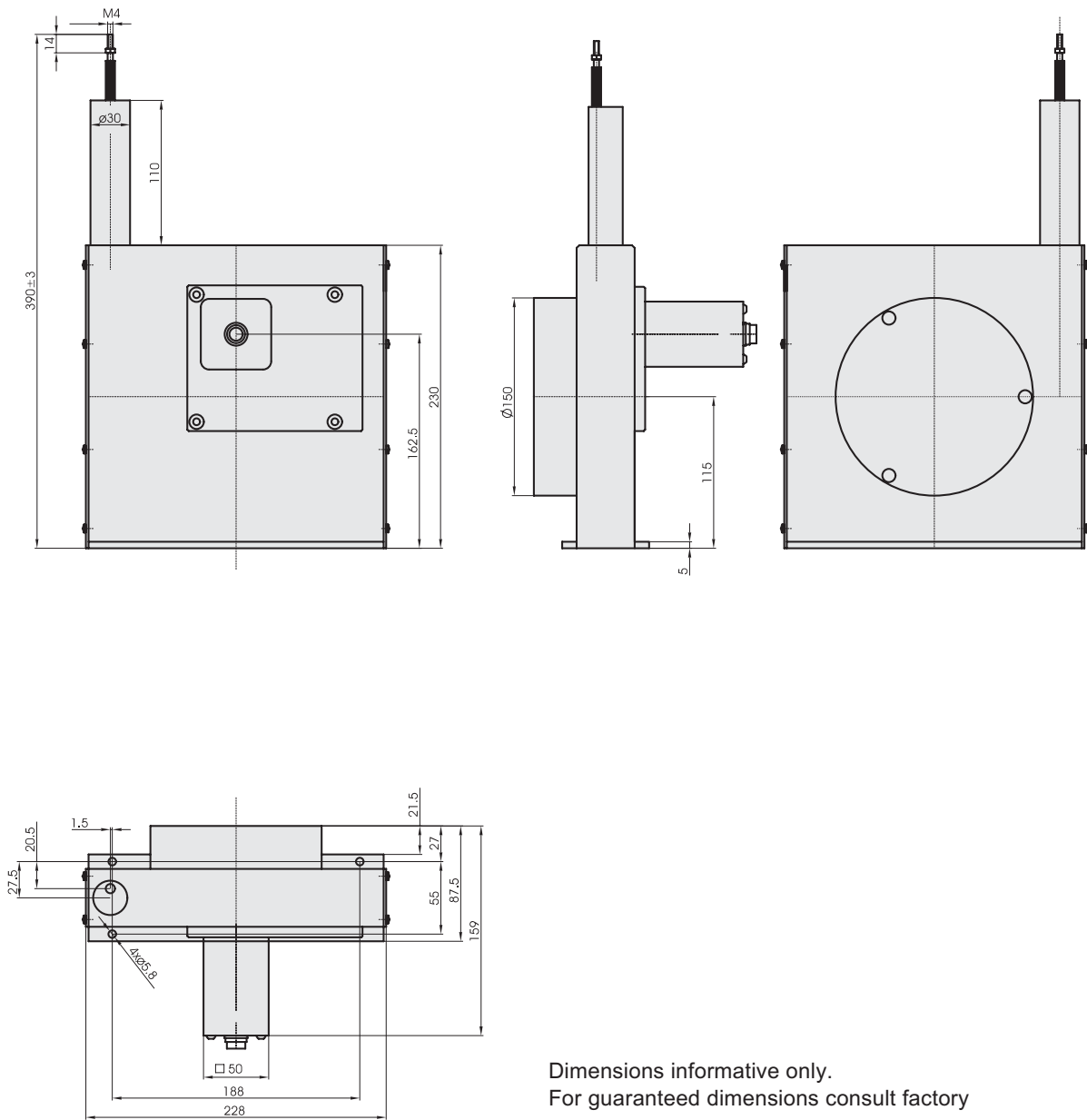
WS17KT-5000 / 6250



Model WS17KT
with analog or SSI output



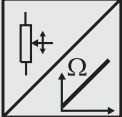
Outline drawing
WS17KT-10000 /
12500 / 15000



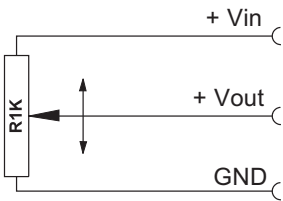
Output Specifications

R1K and 10V for WS position sensors

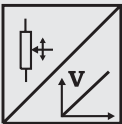


Voltage divider R1K Potentiometer 	Excitation Voltage	32 VDC max. at 1 kΩ (input power 1 W max.)
	Potentiometer Impedance	1 kΩ ±10%
	Thermal coefficient	±25 x 10 ⁻⁶ / °C full scale
	Sensitivity	Depends on measurement range, individual sensitivity of sensor specified on label
	Voltage Divider Utilization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

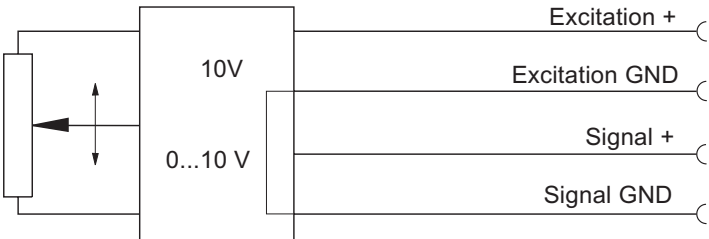
Signal diagram



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

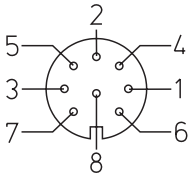


Signal Wiring	Output signals		Cable color	Connector pin no.
	R1K	10V		
	+ Vin	Excitation +		
	GND	Excitation GND		
	+ Vout	Signal +		
		Signal GND	Yellow	4

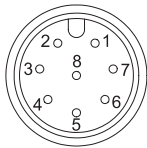
Connection

Mating Connector

View to solder terminals



CONN-DIN-8F-W

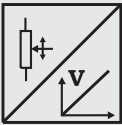


CONN-M12-8F-G

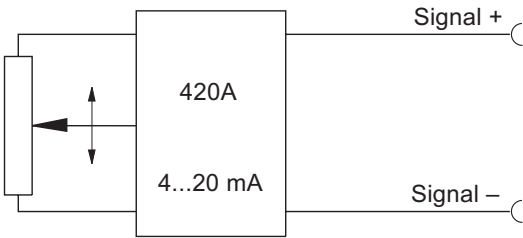
Output Specifications

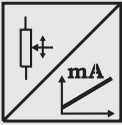
420A and 420T for WS position sensors



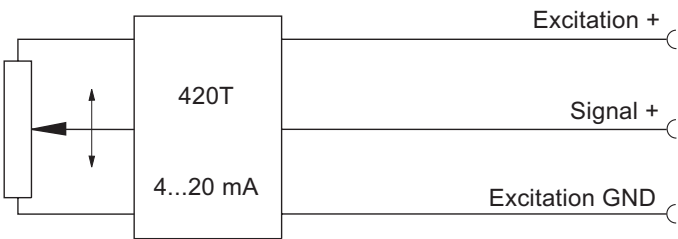
Signal conditioner 420A Current output (2 wire) 	Excitation Voltage	+12 ... 27 VDC non stabilized, measured at the sensor terminals
	Excitation Current	35 mA max.
	Output Current	4 ... 20 mA equivalent to 0 ... 100% range
	Stability (Temperature)	$\pm 100 \times 10^{-6} / ^\circ\text{C}$ full scale
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

Signal Diagram



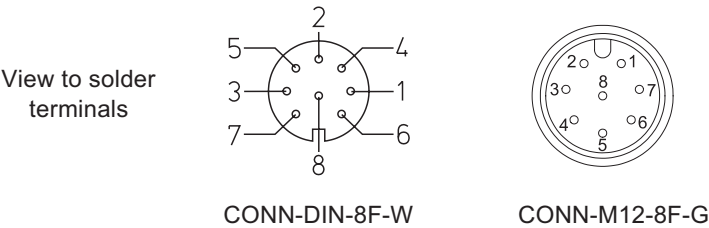
Signal Conditioner 420T Current output (3 wire) 	Excitation Voltage	+18...+27 V DC non stabilized
	Excitation Current	40 mA max.
	Load Resistor	350 Ω max.
	Output Current	4 ... 20 mA equivalent to 0 ... 100% range
	Stability (Temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ full scale
	Protection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

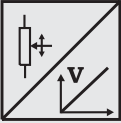
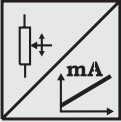
Connection
Mating Connector



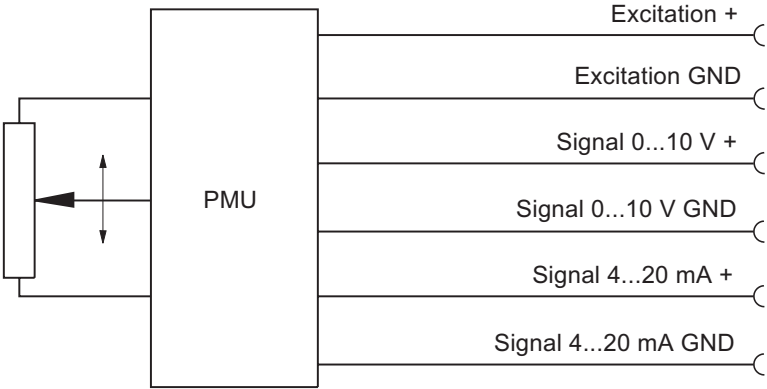
Output Specification

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

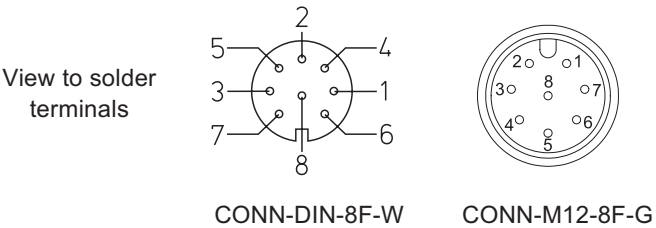
Signal diagram



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



Output Specification

ADSI16 for WS position sensors



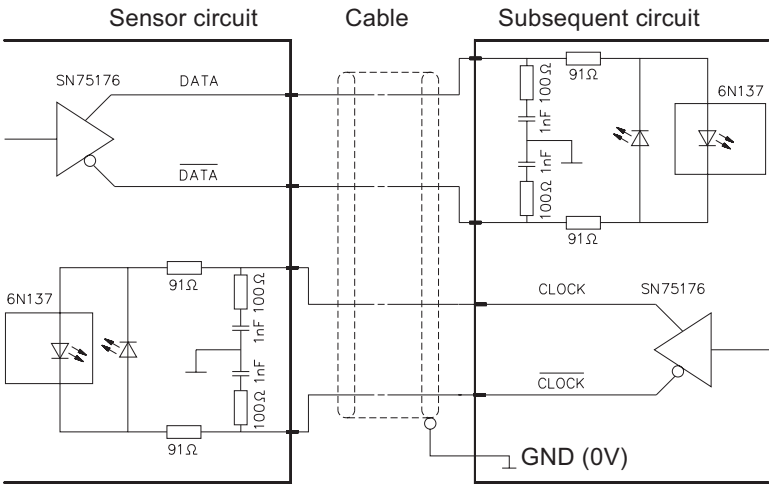
- Resolution 16 bit, data transmission synchronous serial/SSI
- Optional available with 12 bit (ADSI) or 14 bit (ADSI14) resolution
- No loss of data at power-down
- Easy to connect to PLC's with SSI input circuit

Description

The sensing device of the ADSI is a precision potentiometer. The position information is given by an analog/digital converter output serialized as a data word. Data transmission takes place by means of the signals CLOCK and DATA. The processing unit (PLC, Micro-computer) sends pulse sequences which clock the data transmission with the required transfer rate. With the first falling edge of a pulse sequence the position of the sensor is recorded and stored. The following rising edges control the bit-by-bit A/D conversion, encoding and output of the data word. After a delay time the next new position information will be transmitted.

Data Format (Train of 26 Pulses)	CLOCK+ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 DATA+ [b15 b14 b13 b12 b11 b10 b09 b08 b07 b06 b05 b04 b03 b02 b01 b00] 30 µs																									
Signal Conditioner ADSI A/D converted synchronous serial	Output	EIA RS-422, RS-485, short-circuit proof																								
	Excitation voltage	11 ... 27 VDC																								
	Excitation current	200 mA max.																								
	Clock frequency	70 ... 500 kHz																								
	Code	Gray code, continuous progression																								
	Delay between pulse trains	T=30 µs min.																								
	Resolution	16 bit (65536 counts) full scale; optional 12 bit or 14 bit																								
	Stability (temperature)	±50 x 10 ⁻⁶ / °C full scale																								
	Operation temperature	-20 ... +85 °C																								
	EMC	According to EN 61326:2004																								

Recommended Processing Input Circuit

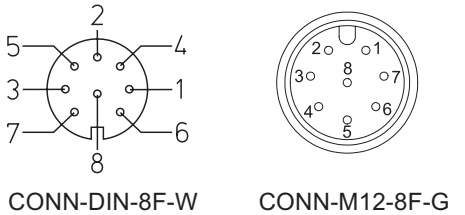


Transmission rate	Cable length	Baud rate
	< 50 m	< 300 kHz
	< 100 m	< 100 kHz

Note:
Extension of the cable length will reduce the maximum transmission rate. The signals CLOCK/CLOCK and DATA/DATA must be connected in a twisted pair cable, shielded per pair and common.

Signal Wiring	Signal names	Connector pin no.
	Excitation +	1
	Excitation GND (0V)	2
	CLOCK	3
	CLOCK	4
	DATA	5
	DATA	6
Screen		not connected

Mating connector: view to solder terminals





**Стандарт
Электрон
Связь**

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