

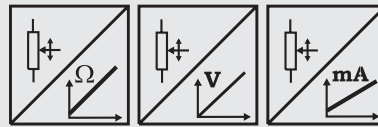
# AWS

## Angle sensor with analog output



### Analog Angle Sensor

- Protection class IP67
- Measurement ranges:  
345° / 180° / 90°, continuous rotation
- Sensing device: precision potentiometer
- Analog output 0 ... 10 V, 4 ... 20 mA, potentiometer



Specifications	Outputs	Potentiometer: 1 kΩ Voltage: 0 ... 10 V Current: 4 ... 20 mA, 2 or 3 wire Voltage and current output, adjustable
	Resolution	Essentially infinite
	Material	Aluminium and Stainless Steel
	Sensing Device	Precision Potentiometer
	Connector	Male Socket 8 pin DIN 45326
	Linearity	±0.10 %; ±0.20 % for 90°
	Repeatability	±0.0020 % (equivalent to 0.008°)
	Rotating Direction	Clockwise (for increasing output signal)
	Revolutions	10000 r.p.m. max.
	Torque	1 Ncm
	Life Time	100 x 10 <sup>6</sup> Revolutions (≤1500 r.p.m.)
	Protection Class (DIN 40050)	IP67 (only when the electrical plug is correctly assembled and connected)
	Weight	450 g approx.
Environmental		
EMC	Refer to output specification	
Temperature	Refer to output specification	

### Order Code AWSX

**AWSX** - [ ] - [ ]

#### Model Name

AWS1 = Angle sensor with servo flange  
AWS2 = Angle sensor with square flange

#### Measurement Range

345° / 180° / 90°

#### Outputs

R1K = Potentiometer 1 kΩ (only for 345° range)  
10V = 0 ... 10 V signal conditioner  
420A = 4 ... 20 mA signal conditioner (2 wire)  
420T = 4 ... 20 mA signal conditioner (3 wire)  
PMU = 0 ... 10 V/4 ... 20 mA signal conditioner, 345° range, adjustable to 45°

Order Code Mounting Clamps (set of 3 pieces, for AWS1)

**WS-EXZENTER**

Order Code Mating Connector (see accessories page 82)

**CONN-DIN-8F-W**

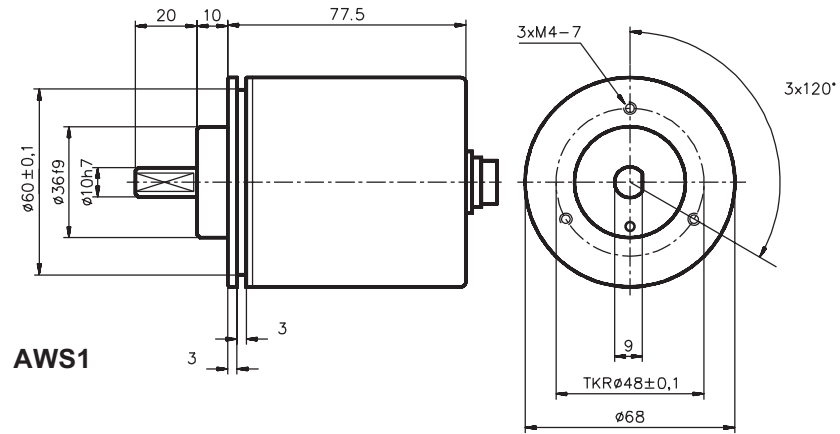
**Order Example: AWS1 - 345 - 420T**

# AWS

## Angle sensor with analog output

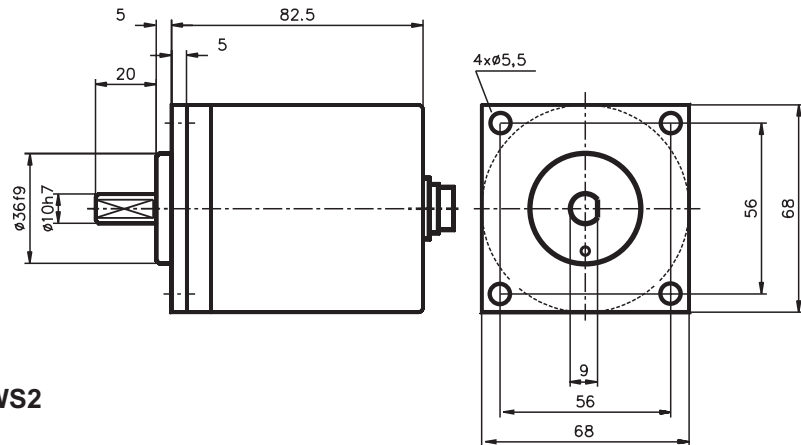


### Outline drawing



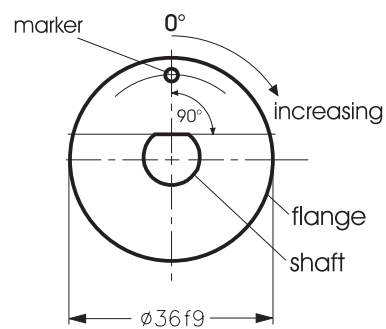
**AWS1**

Dimensions informative only.  
For guaranteed dimensions consult factory.



**AWS2**

### Zero position



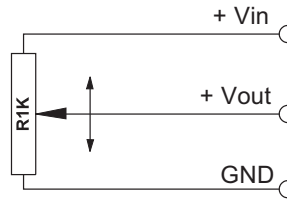
# Output Specifications

## R1K and 10V for WS position sensors

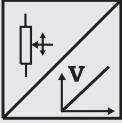


<b>Voltage divider R1K</b> Potentiometer 	Excitation Voltage	32 VDC max. at 1 kΩ (input power 1 W max.)
	Potentiometer Impedance	1 kΩ ±10%
	Thermal coefficient	±25 x 10 <sup>-6</sup> / °C full scale
	Sensitivity	Depends on measurement range, individual sensitivity of sensor specified on label
	Voltage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

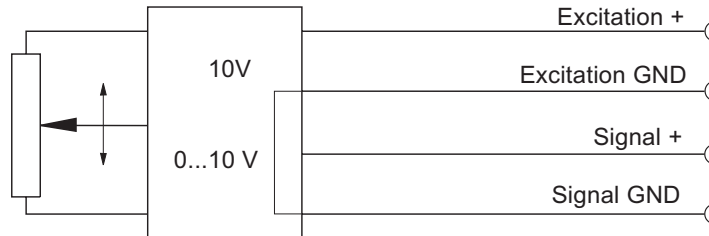
### Signal diagram



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

<b>Signal conditioner 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 full scale
	Protection	Reverse polarity, short circuit
	Output Noise	0,5 mV <sub>RMS</sub>
	Operating Temperature	-20 ... +85 °C
	EMC	According to EN 61326:2004

### Signal diagram

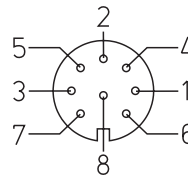


Signal Wiring	Output signals		Cable color	Connector pin no.
	R1K	10V		
	+ Vin	Excitation +	White	1
	GND	Excitation GND	Brown	2
	+ Vout	Signal +	Green	3
		Signal GND	Yellow	4

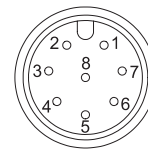
### Connection

#### Mating Connector

View to solder terminals



CONN-DIN-8F-W

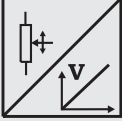


CONN-M12-8F-G

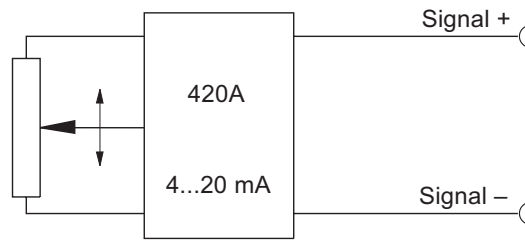
# Output Specifications

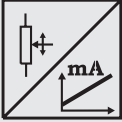
## 420A and 420T for WS position sensors



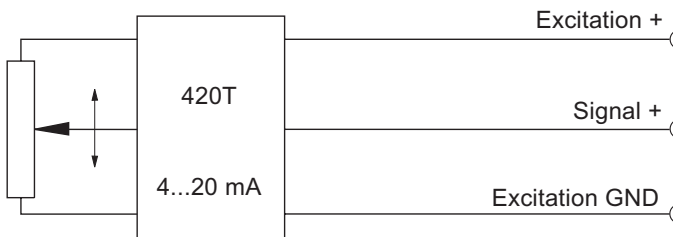
<b>Signal conditioner</b> <b>420A</b> Current output (2 wire) 	Excitation Voltage	+12 ... 27 VDC non stabilized, measured at the sensor terminals
	Excitation Current	35 mA max.
	Output Current	4 ... 20 mA equivalent to 0 ... 100% range
	Stability (Temperature)	$\pm 100 \times 10^{-6} / ^\circ\text{C}$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

### Signal Diagram



<b>Signal Conditioner</b> <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 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 <sub>RMS</sub>
	Operating Temperature	-20 ... +85 °C
	EMC	According to EN 61326:2004

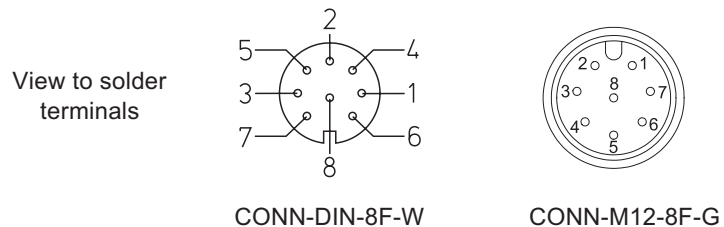
### Signal diagram



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

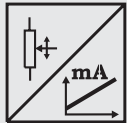
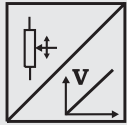


# Output Specification

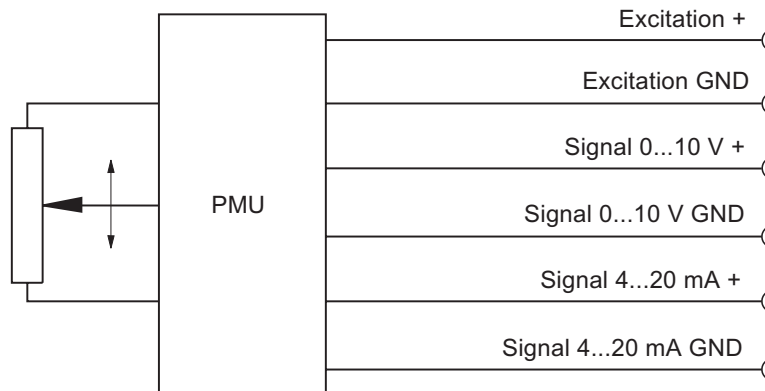
## PMU for WS position sensors



<b>Signal Conditioner PMU, adjustable</b> 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 <sub>eff</sub>
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

