

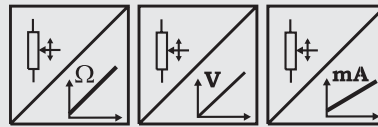
# AWS

## 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)

PMUV/PMUI = Programmable signal conditioner 0 .. 10 V or 4 ... 20 mA

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

**WS-EXZENTER**

Order Code Mating Connector (see accessories page 82)

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

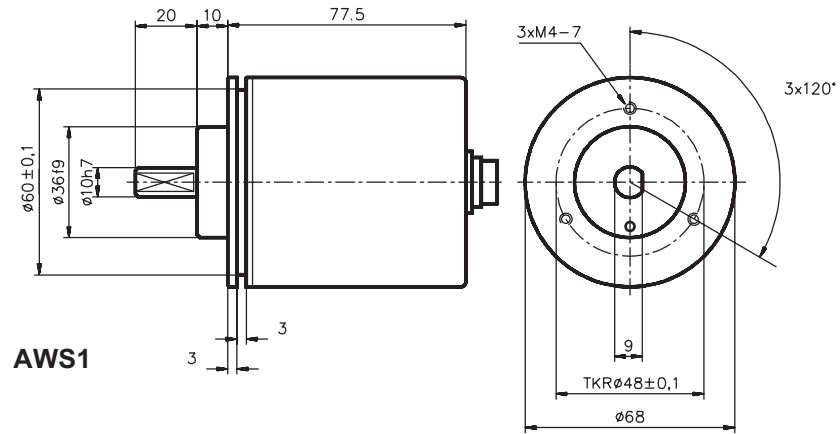
**Order Example: AWS1 - 345 - 420T**

# AWS

## Angle sensor with analog output

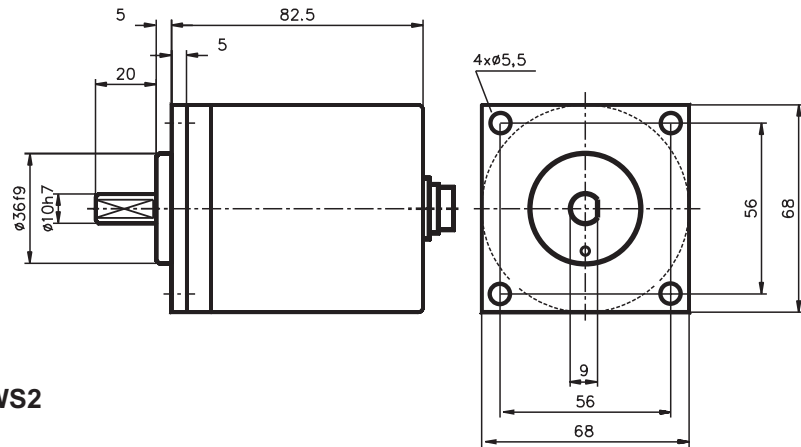


### Outline drawing



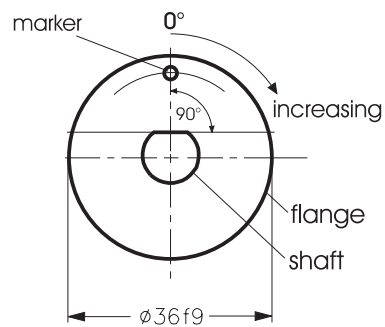
**AWS1**

Dimensions informative only.  
For guaranteed dimensions consult factory.



**AWS2**

### Zero position



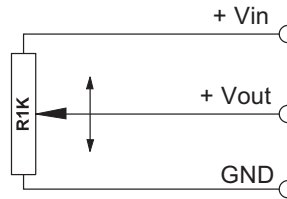
# Output Specifications

## R1K and 10V for WS position sensors

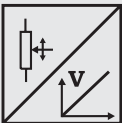


<b>Voltage divider R1K</b> Potentiometer 	Excitation Voltage	32 VDC max. at 1 k $\Omega$ (input power 1 W max.)
	Potentiometer Impedance	1 k $\Omega$ $\pm$ 10%
	Thermal coefficient	$\pm$ 25 x 10 <sup>-6</sup> / °C full scale
	Sensitivity	Depends on measurement range, individual sensitivity of sensor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

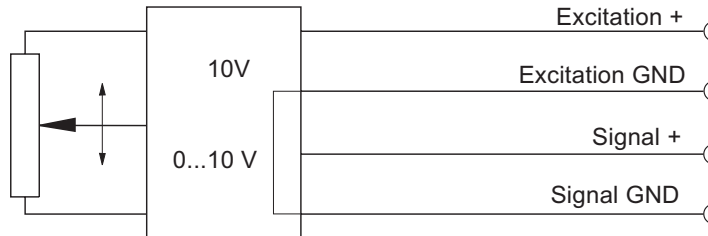
### Signal diagram



Note: The potentiometer must be connected as a voltage divider. The input impedance of the following processing circuit should be 10 M $\Omega$  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 k $\Omega$
	Stability (Temperature)	$\pm$ 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

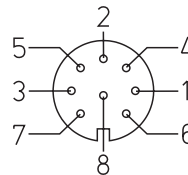


Signal Wiring	Output signals		Cable color	Connector pin no.
	R1K	10V		
+ Vin		Excitation +	White	1
GND		Excitation GND	Brown	2
+ Vout		Signal +	Green	3
		Signal GND	Yellow	4

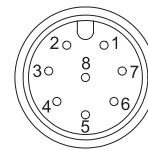
### Connection

#### Mating Connector

View to solder terminals



CONN-DIN-8F-W

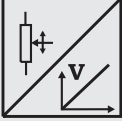


CONN-M12-8F-G

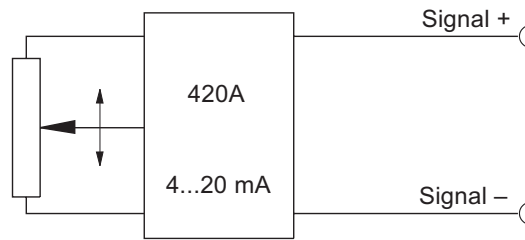
# Output Specifications

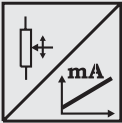
## 420A and 420T for WS position sensors



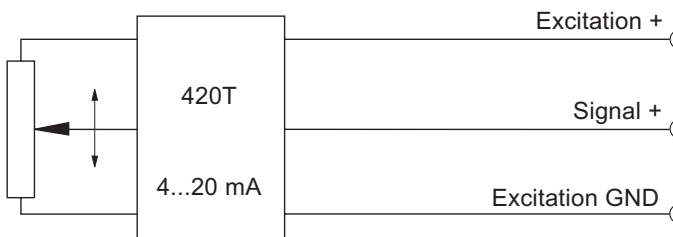
<b>Signal conditioner</b> <b>420A</b> Current output (2 wire) 	Excitation Voltage	+12 ... 27 VDC non stabilized, measured at the sensor terminals
	Excitation Current	35 mA max.
	Output Current	4 ... 20 mA equivalent to 0 ... 100% range
	Stability (Temperature)	$\pm 100 \times 10^{-6} / ^\circ\text{C}$ 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

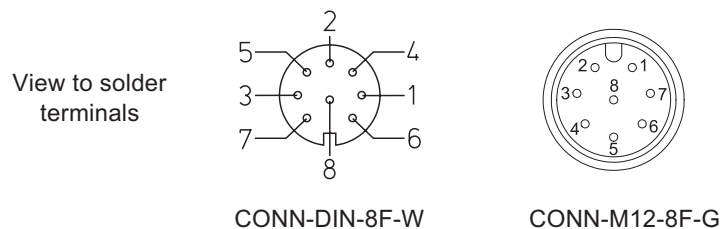
### Signal diagram



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

### Connection

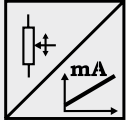
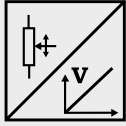
Mating Connector



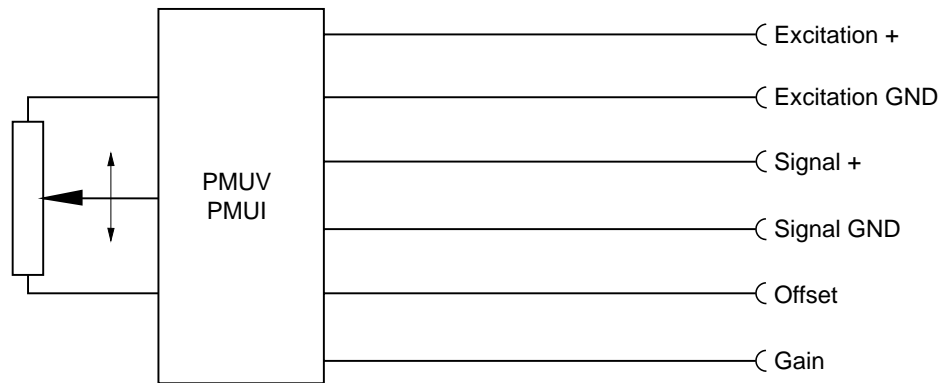
# POSIWIRE® PMUV / PMUI Programmable Analog Output



<b>Signal conditioner PMUV / PMUI</b> Voltage or current output (3 wire)	Excitation voltage	18 ... 27 V DC
	Excitation current	50 mA max.
	Voltage output <b>PMUV</b>	0 ... 10 V
	Output current	10 mA max.
	Output load	1 kΩ min.
	Current output <b>PMUI</b>	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 <sup>-6</sup> / °C f.s.
Operating temperature	-20 ... +85 °C	
Protection	Reversed polarity, short circuit	
EMC	According to EN 61326:2006	



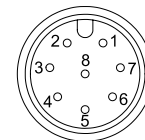
## Output signals



Signal name	Connector pin no.
Excitation +	1
Excitation GND	2
Signal +	3
Signal GND	4
Not used	5
Not used	6
Offset	7
Gain	8

## Connection

View to sensor  
connector



CONN-M12-8F

Signal name	Connector pin no.
Excitation +	1
Excitation GND	2
Not used	3
Not used	4
Signal +	5
Signal GND	6
Offset	7
Gain	8