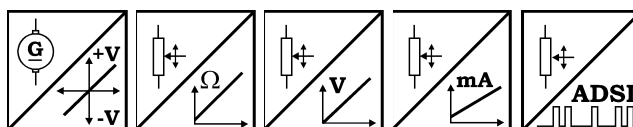


(W)GS2 Velocity Sensor with Analog or A/D converted synchronous serial output



Velocity Sensor with Position Option

- Protection Class IP50
- Measurement Range:
0 ... 1500 mm to 0 ... 2500 mm
0 ... 59.06 in to 0 ... 98.43 in
- With Analog Output or
A/D converted synchronous serial output



Specifications	Outputs	Scaled / unscaled DC Tachometer 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 12 Bit RS-485
	Resolution	Essentially infinite / ADSI: 12 Bit Full Scale
	Material	Aluminium and Stainless steel. Cable: Stainless Steel. Housing: Anticorrosive Sheet Steel
	Sensing Device	Precision Potentiometer
	Connector	Male Socket 8 pin DIN 45326
	Position Linearity	Up to ± 0.05 % Full Scale
	Velocity Linearity	Up to ± 0.25 % Full Scale
	Protection Class (IEC 529)	IP50

Order Code (W)GS2

Model Name	(W)GS	-		-		-		-		-	D8
Measurement Range (in mm)	1500 / 2000 / 2500										
Position outputs	R1K = Potentiometer 1 k Ω (other Values on Request e.g. 500 Ω) 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 12 Bit / RS-485										
Velocity outputs	TA = 10 V/m/s; 0.423 V/100in/min approx. (unscaled DC Tachometer Output) T5 = 5 V/m/s; 0.212 V/100in/min (scaled DC Tachometer Output) Scaled Signal Conditioner: V2 = ± 2 mm/s = ± 10 VDC V10 = ± 10 mm/s = ± 10 VDC V25 = ± 25 mm/s = ± 10 VDC V50 = ± 50 mm/s = ± 10 VDC V100 = ± 100 mm/s = ± 10 VDC V250 = ± 250 mm/s = ± 10 VDC										
Linearity (Position)	L10 = ± 0.10 % (L05 on request) L25 = ± 0.25 %										
DIN Connector	D8 = Connector 8 pin DIN 45326										

Order Code Mating Connector (see accessories page 105)

WS-CONN-D8

Order Example: WGS2 - 2500 - 10V - V10 - L10 - D8

Cable Forces typical at 20 °C	Range		Maximum Pull-out Force	Minimum Pull-in Force
	[mm]	[in]	[N]	[N]
	1500	59.06	10.2	6.7
	2000	78.74	8.4	5.4
	2500	98.43	7.2	4.8

Front View Dimensions:

- Total height: 169 ± 3 [6.65 ± 0.12]
- Height from base to center of mounting aid: 111.5 [4.39]
- Height from base to center of lens: 32 [1.26]
- Base thickness: 6 [0.24]
- Width: 151 [5.94]
- Mounting aid: $\varnothing 18$ [dia. 0.71] removable

Top View Dimensions:

- Total width: 200 [7.87]
- Total depth: 130 [5.12]
- Distance from left edge to center of lens: 100 [3.94]
- Distance from bottom edge to center of lens: 53 [2.09]
- Lens diameter: $4 \times \varnothing 6.5$ [$4 \times \varnothing 0.26$]
- Distance from right edge to center of lens: 95 [3.74]
- Distance from front edge to center of lens: 149.5 [5.89]
- Overall distance from front edge to center of lens: 180 [7.09]

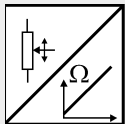
51

WS Position Sensors

Output Specifications R1K and 10V

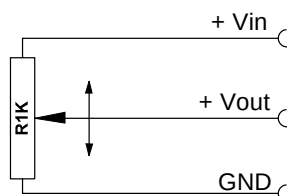


Voltage divider R1K Potentiometer



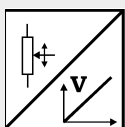
Excitation Voltage	32 VDC max. at 1 k Ω (Input Power 1 W max.)
Potentiometer Impedance	1 k Ω $\pm$ 10%
Thermal coefficient	$\pm$ 0.0025% / K Full Scale
Sensitivity	Depends on measurement range, individual sensitivity of sensor specified on label
Voltage Divider Utilization Range	Approx. 3% ... 97% of Full Range
Operating Temperature	-20 ... +85 °C

Signal diagram



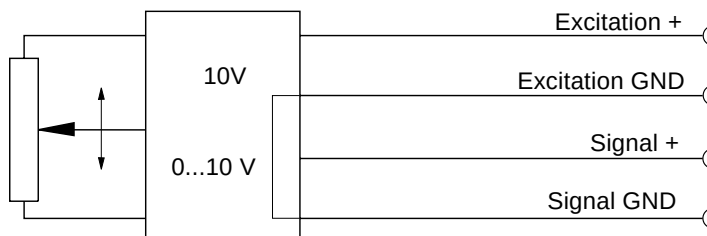
Note: The potentiometer must be connected as a voltage divider. The input impedance of the following processing circuit should be 10 M Ω min.

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)	$\pm$ 0.005% / K Full Scale
Protection	Reverse Polarity, Permanent Short Circuit
Output Noise	0,5 mV _{RMS}
Operating Temperature	-20 ... +85 °C
Immunity to interference (EMC)	According to EN 61326: 1998

Signal diagram

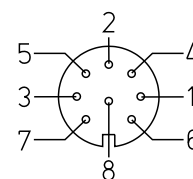


Signal Wiring

Output Signals	10V	Connector WS-CONN-D8
R1K		
+ Vin	Excitation +	1
GND	Excitation GND	2
+ Vout	Signal +	3
	Signal GND	4
		5
		6
		7
		8

Connection Mating Connector

View to solder
terminals

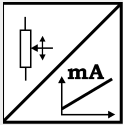


WS-CONN-D8

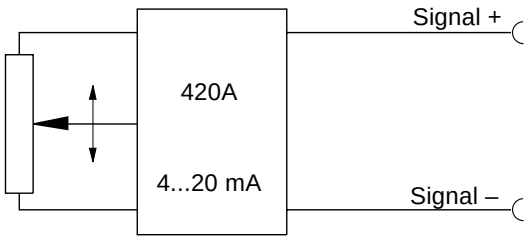
WS Position Sensors

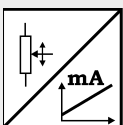
Output Specifications 420A and 420T



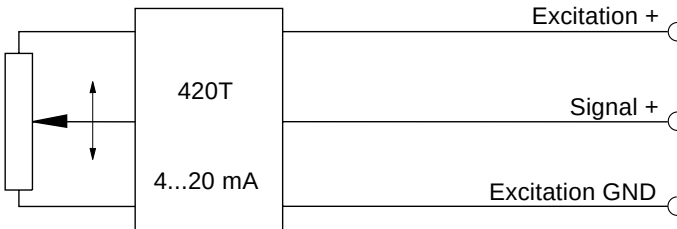
Signal conditioner 420A Current output (2 wire) 	Excitation Voltage	+12 ... 27 VDC non stabilized, measured at the sensor terminals
	Excitation Current	35 mA max.
	Output Current	4 ... 20 mA equivalent to 0 ... 100% Range
	Stability(Temperature)	±0.01% / K Full Scale
	Protection	Reverse Polarity, Permanent Short Circuit
	Output Noise	0.5 mV _{RMS}
	Operating Temperature	-20 ... +85 °C
	Immunity to Interference (EMC)	According to EN 61326: 1998

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)	±0.005% / K Full Scale
	Protection	Reverse Polarity, Permanent Short Circuit
	Output Noise	0.5 mV _{RMS}
	Operating Temperature	-20 ... +85 °C
	Immunity to Interference	According to EN 61326: 1998

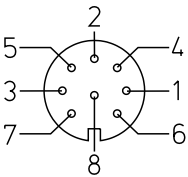
Signal diagram



Signal Wiring	Output Signals		Connector	WS-CONN-D8
	420A	420T		
	Signal +	Excitation +		1
	Signal -	Excitation GND		2
		Signal +		3
				4
				5
				6
				7
				8

Connection
 Mating Connector

View to solder
 terminals



WS-CONN-D8

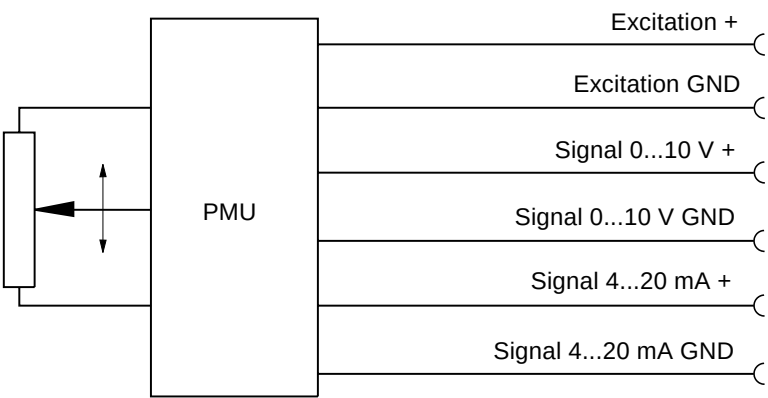
WS Position Sensors

Output Specification PMU



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 ppm/°C full scale
	Protection	Reverse polarity, short circuit
	Output noise	1 mV _{eff}
	Operating temperature	-20 ... +85 °C
	EMC	
	Immunity to interference	EN 61000-4-2, -4, -5, -6
	Influence according to EN 61000-4-6	1 % max. at testing strength 4
	Emmission of interference	CISPR 11

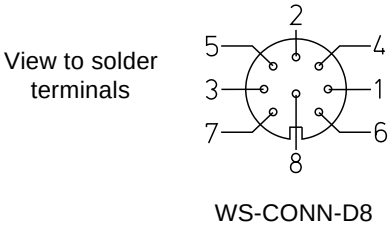
Signal diagram



Signal wiring	Output signals PMU	Connector WS-CONN-D8
	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

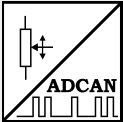


WS Position Sensors

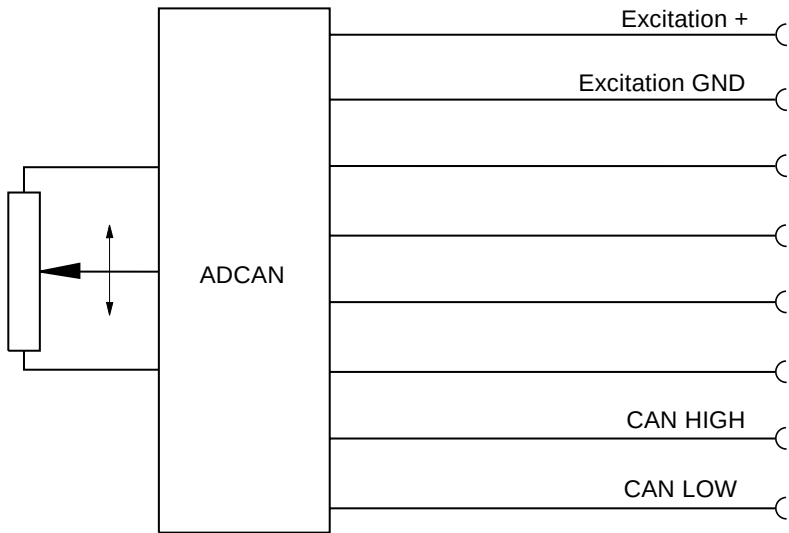
Output Specification ADCAN



Description Signal conditioner with CANopen interface for WS Position Sensors and AWS Angle Sensors. The sensing device of the ADCAN is a precision potentiometer. Start, stop, synchronization of the position data transmission and parameter programming will be supported according to the CANopen standard DS301. Two process data objects (PDO) will be transmitted to transfer the position value and cam events.

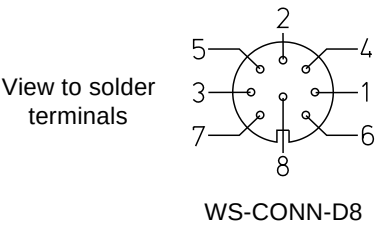
Signal Conditioner ADCAN (CANopen) 	CANopen interface	
	Excitation Voltage	+24 V
	Specifications	Communication Profile DS301 Encoder Profile DS406
	One Service Data Object (SDO)	Parameter setting
	Two Process Data Objects (PDO)	Position value, cam
	Transmission Rate	125 kBd, variable by SDO
	Node ID	Default 01, variable by SDO
	Resolution	16 Bit
Transmission mode		Synchronous, asynchronous cyclic or dependant on event

Output signals



Signal wiring	Signals ADCAN	Connector WS-CONN-D8
	Excitation +24 V	1
	Excitation GND	2
	CAN LOW	7
	CAN HIGH	8

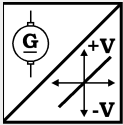
Connection
Mating connector



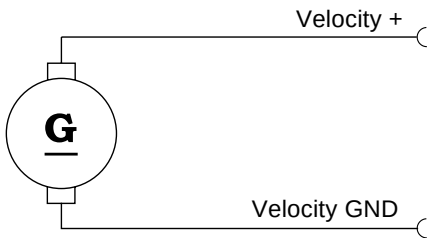
WS Position Sensors

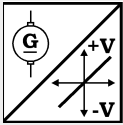
Output Specifications TA and T5



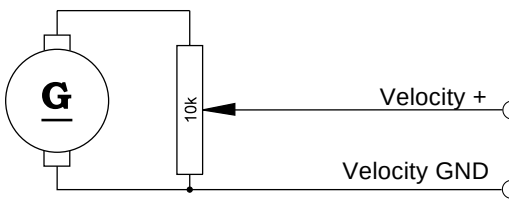
Tacho TA Unscaled DC Tachometer 	Output Voltage	100 VDC maximum permissible (self-generating)
	Output Load	> 100 kΩ
	Stability (Temperature)	±0.02% / K Full Scale
	Output Impedance	500 Ω approx.
	Sensitivity	10 V/m/s approx., depends on the tachometer design: Individual measured sensitivity specified on label.
	Linearity	±1%
	Operation Temperature	-20 ... +85 °C
	Immunity to Interference (EMC)	According to EN 61326: 1998

Signal Diagram



Tacho T5 Scaled DC Tachometer 	Output voltage	50 VDC maximum permissible (self-generating)
	Output Load	> 100 kΩ
	Stability (Temperature)	±0.02% / K Full Scale
	Output Impedance	500 Ω approx.
	Sensitivity	5 V/m/s
	Linearity	±1%
	Operation Temperature	-20 ... +85 °C
	Immunity to Interference (EMC)	According to EN 61326: 1998

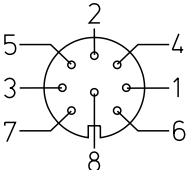
Signal Diagram



Signal Wiring	Output Signals		Connector
	TA	T5	
			1
			2
			3
			4
	Velocity +	Velocity +	5
	Velocity GND	Velocity GND	6
			7
			8

Connection
Mating Connector

View to solder
terminals

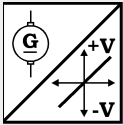


WS-CONN-D8

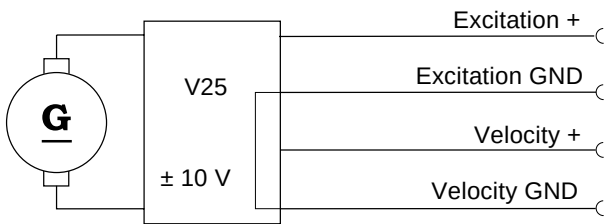
WS Position Sensor

Output Specification VXXX



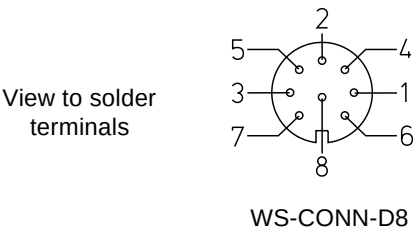
Signal Conditioner VXXX Scaled DC Tachometer 	Excitation Voltage	+14 ... +27 VDC non stabilized
	Excitation Current	20 mA max.
	Output Voltage	-10 ... +10 VDC
	Output Current	1 mA max.
	Output Load	> 10 kΩ
	Stability (Temperature)	±0.01% / K Full Scale
	Protection	Reverse Polarity, Permanent Short Circuit
	Output Noise	0.5 mV _{RMS}
	Velocity Ranges	2 / 10 / 25 / 50 / 100 / 250 mm/s
	Linearity	±0.25% Full Scale, <100 mm/s: 1 % Full Scale
	Operating Temperature	-20 ... +85 °C
	Immunity to interference (EMC)	According to EN 61326: 1998

Signal Diagram



Signal Wiring	Output Signals VXXX	Connector WS-CONN-D8
	Excitation +	1
	Excitation GND	2
		3
		4
	Velocity +	5
	Velocity GND	6
		7
		8

Connection
Mating Connector



WS Position Sensors

Output Specification ADSI



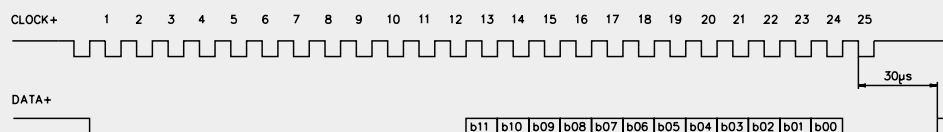
- Resolution 12 Bit, Data Transmission synchronous serial
- No Loss of Data at Power-down
- Easy to Connect to PLC's with SSI Input Circuit

Description

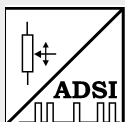
The sensing device of the ADSI is a precision potentiometer. The position information is given by an analog/digital converter output serialized as a data word. Data transmission takes place by means of the signals CLOCK and DATA. The processing unit (PLC, Micro-computer) sends pulse sequences which clock 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)

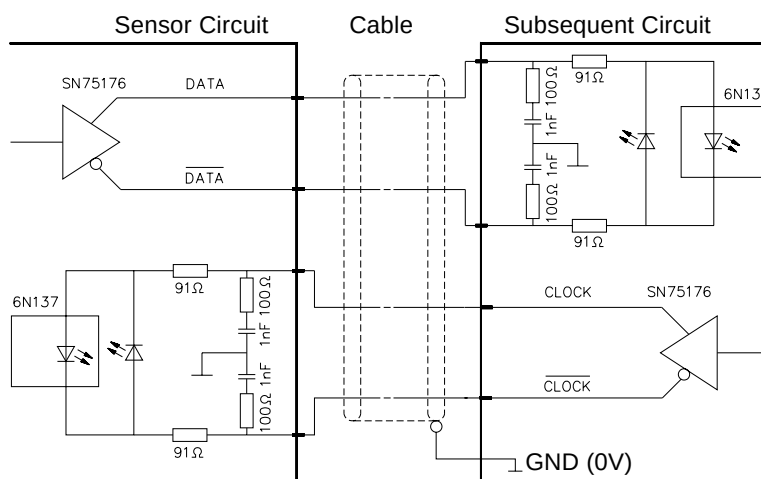


Signal Conditioner ADSI A/D converted synchronous serial



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	12 Bit (4096 Counts) Full Scale
Stability (Temperature)	±0.005% / K Full Scale
Operation Temperature	-20 ... +85 °C
Immunity to Interference (EMC)	According to EN 61326: 1998

Recommended Processing Input Circuit



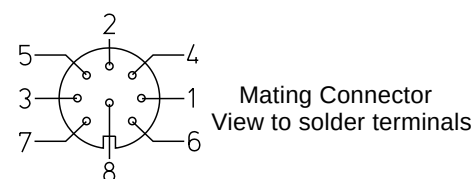
Cable Length	Baud Rate
50 m	300 kHz
200 m	100 kHz

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 / Connection

Signal name	Connector Pin
Excitation +	1
Excitation GND (0V)	2
CLOCK	3
CLOCK	4
DATA	5
DATA	6
Screen	not connected



WS-CONN-D8