

# Industrial-Grade Potentiometers

## Series AWS 360 ZE



### Special features

- gap-free output over all 360°
- very high absolute linearity
- interchangeable without electrical adjustment
- guaranteed 12 bit resolution and repeatability
- long life -  $50 \times 10^6$  revolutions
- robust industrial version with 10 mm shaft
- protection class IP 65

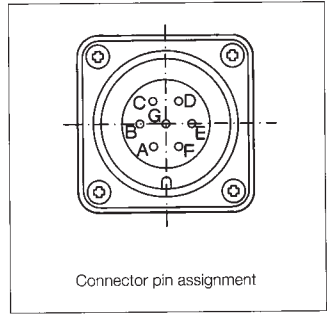
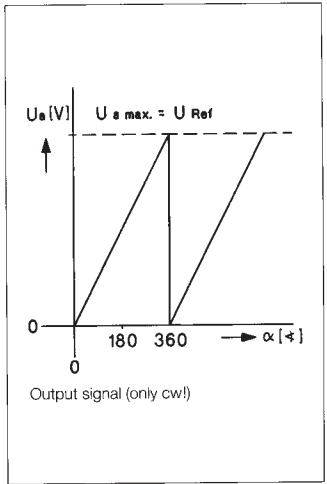
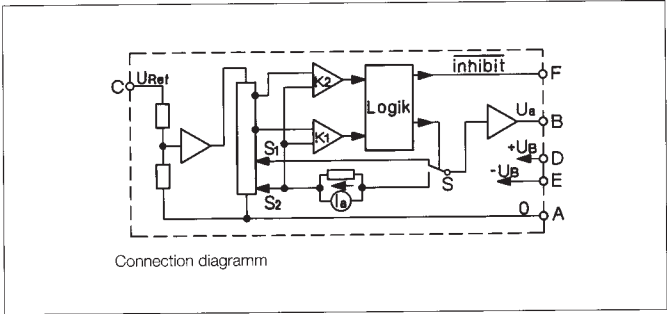
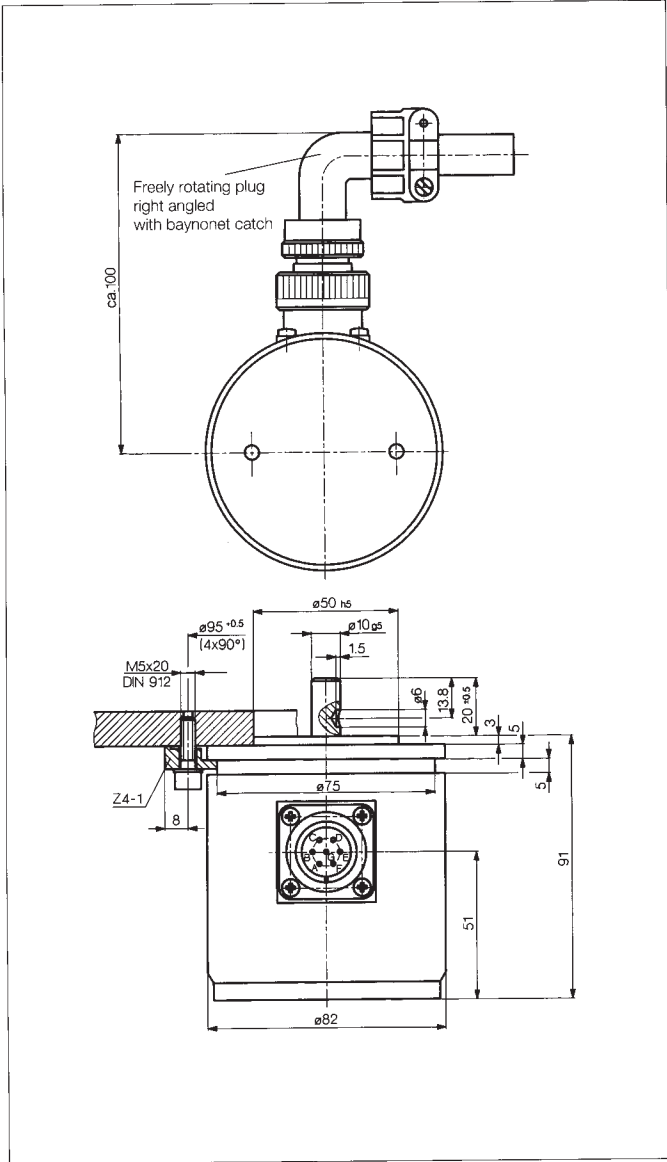
This "heavy-duty" version of the 360° potentiometer AW 360 ZE is particularly suited for applications where tough conditions prevail.

Its robust construction is especially suited to for industrial plant and heavy machinery construction. The case is waterproof, and the shaft passage is sealed by a gland. Electrical connection is effected on the side by means of a plug. Apart from direct analogue use, it can be used in conjunction with an external A/D converter. In this case, the unit operates as an angle transducer with 12 bit resolution and offering 10 bit absolute accuracy. Contrary to the limitations encountered with other potentiometers, which have a dead band of some degrees which cannot be used, due to its two wipers and its hybrid circuit the AWS 360 ZE can be used over all 360° of rotation. The reset voltage at the beginning and end of the saw tooth are well defined, and there is no function angle tolerance as is normally associated with potentiometers.

These features together with output voltage is determined by the applied voltage means that units may be interchanged or replaced without the need to adjust or trim.

When turning the axle in cw (view on shaft end) the signal increases. Other output signals on request.

The transducer delivers a logical signal quite separately from the analogue output which can be used to inhibit the A/D conversion during the reset period, in order to avoid measuring errors.



Description	
Case	aluminium, varnished, shaft passage sealed
Shaft	stainless steel
Bearings	stainless steel ball bearings
Resistance element	conductive plastic
Wiper assembly	precious metal multi-finger wiper
Mounting position	any optional position
Connections	7 pin connector; all-metal round plug, freely rotatable, 90° right angled, protection class IP 65, bayonet catch
Electrical circuitry	hybrid circuit built into potentiometer housing

Mechanical Data		
Dimensions	see drawing	
Mounting	with 4 mounting clamps Z 4-1	
Mechanical travel	360, continuous	°
Permitted shaft loading (axial and radial) static or dynamic force	300	N
Starting torque	<10	Ncm
Maximum operational speed	2000	min <sup>-1</sup>
Weight approx	ca. 1 200	g
Electrical Data		
Actual electrical travel	360	°
Nominal resistance	10	kΩ
Resistance tolerance	±10	%
Absolute linearity	±0.07	%
Repeatability	0.002 (± 0.007%)	%
Effective temperature coefficient of resistance	typical 100	ppm/°C
Supply volt. UB of the electronic circuitry	±15 (±1)	V
Potentiometer supply voltage U <sub>Ref</sub>	≤+10	V
Inhibit signal from + UB to zero approx.	50	μs
Zero offset	<2	mV
Max. difference of supply voltage U <sub>Ref</sub>	±2	mV
Output current	5, short-circuit protected	mA
Output resistance	<0.1	Ω
Quiescent current of electronic circuitry	10	mA
Insulation resistance (250 VDC, 1 bar, 2 s)	≥10	MΩ

Environmental Data		
Temperature range	0... +70	°C
Vibration	10...2000 $A_{max} = 0.76$ $a_{max} = 20$	Hz mm g
Shock	50 11	g ms
Life	$50 \times 10^6$	rev.
Protection class	IP 65 (DIN 400 50 / IEC 529)	

#### Included in delivery

4 mounting clamps Z 4-1,  
Right-angled plug Cannon Nr.:  
CA 08 COM-E16S-1S-B,  
1 anti-kink sleeve

#### Order designations

Type	Art.no.
AWS 360 ZE-10	001161

#### Recommended accessories

Spring operated backlash free  
coupling Z110g10,  
Process-controlled indicators  
MAP... with display,  
Signal conditioner MUP.../  
MUK ... for standardized  
output signals

#### Important

All the values given in this data sheet for linearity, lifetime, micro-linearity, resistance to external disturbances and temperature coefficient in the voltage dividing mode are quoted for the device operating with the wiper voltage driving on operational amplifier working as a voltage follower, where virtually no load is applied to the wiper ( $I_e \leq 1 \mu A$ ).