

## Industrial-Grade Potentiometers

### Series AWS360 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 -  $50 \times 10^6$  movements
- robust industrial version with 10 mm shaft
- protection class IP 65

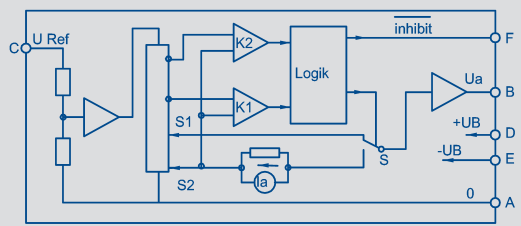
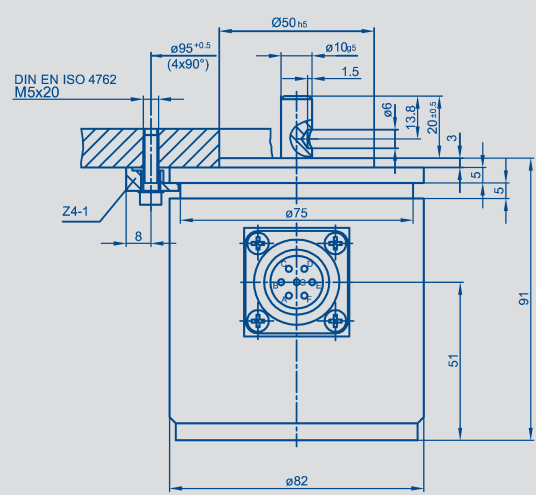
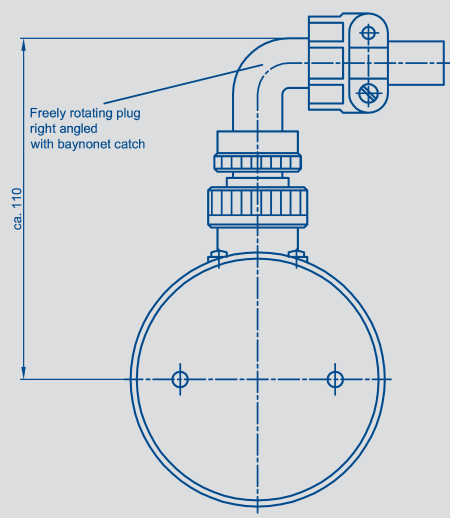
This „heavy-duty“ version of the 360° potentiometer AW 360 ZE is particularly suited for applications where rough conditions prevail.

Its robust design is especially suited to for industrial plants and heavy engineering industry. 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.

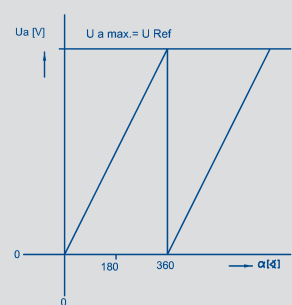
Contrary to the limitations encountered with other potentiometers, which have a dead band of some degrees which cannot be used, due to its two wipers and its hybrid circuit the AWS 360 ZE can be used over all 360° of rotation. The reset voltage at the beginning and end of the saw tooth are well defined, 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.

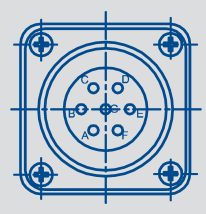
The transducer delivers a logical signal quite separately from the analogue output which can be used to inhibit the A/D conversion during the reset period, in order to avoid measuring errors.



Connection diagram



Output signal (only cw!)



Connector pin assignment

| Description          |  |
|----------------------|--|
| Case                 | aluminium, varnished,<br>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          | 7pin connector; all-metal round plug, freely rotatable,<br>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<br>(axial and radial)<br>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                          | °                 |
| Absolute linearity   | ±0.07                        | %                 |
| Repeatability  | 0.002 (Δ 0.007°)             | %                 |
| Effective temperature coefficient<br>of resistance                       | typical 100                  | ppm/K             |
| Supply volt. UB of the electronic circuitry                              | ±15 (±1)                     | V                 |
| Potentiometer supply voltage U <sub>Ref</sub>                            | ≤ +10                        | V                 |
| Inhibit signal from<br>+ 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<br>(250 VDC, 1 bar, 2 s)                           | ≥ 10                         | MΩ                |
| Dielectric strength<br>(50 Hz, 2 s, 1 bar, 250 VAC)                      | ≤ 100                        | μA                |

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**Environmental Data**

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

**Included in delivery**

4 mounting clamps Z4-1,  
Right-angled plug  
Cannon No.: CA 08 COM-  
E16S-1S-B,  
1 anti-kink sleeve

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**Order designations**

| Type          | Art.no. |
|---------------|---------|
| AWS 360 ZE-10 | 011061  |

**Recommended accessories**

Spring operated backlash free  
coupling Z110 G10,  
Process-controlled indicators  
MAP... with display,  
Signal conditioner MUP.../  
MUK ... for standardized out-  
put signals