

## Industrial-Grade Potentiometers

### AW360 ZE Series



#### 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 x 10<sup>6</sup> movements
- protection class IP 65

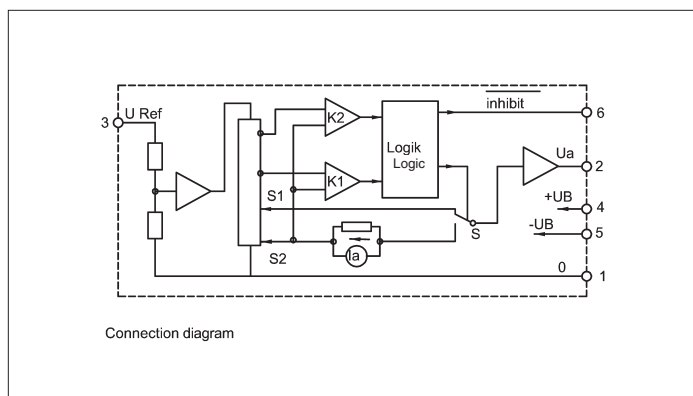
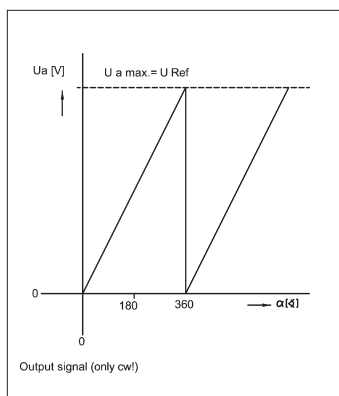
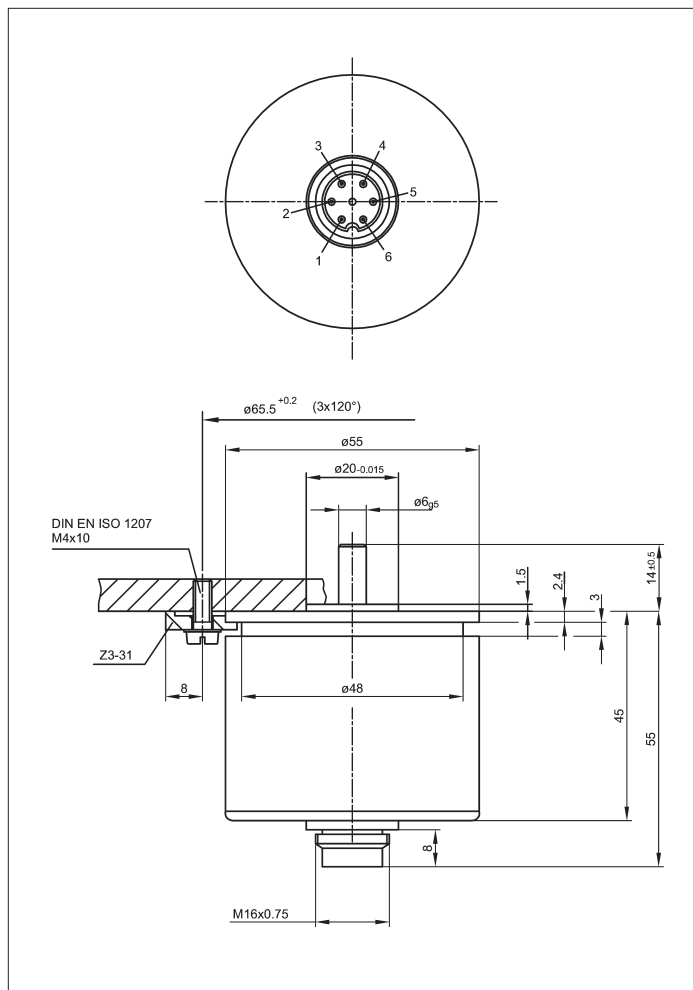
The AW360 ZE provides absolute 360° angle encoding in heavy-duty industrial environments.

Unlike single-wiper potentiometers that have a dead band, the AW360 ZE has two wipers and hybrid circuitry to provide a full 360° measurement range. The reset voltages at the beginning and end of the saw tooth are well defined and the function-angle tolerance normally associated with potentiometers is eliminated.

The transducer delivers a logical signal separately from analog output. This signal can then be used to inhibit A/D conversion during the reset period to avoid measuring errors. These features together with the fact that the maximum output voltage is determined by the applied voltage means that the units may be interchanged or replaced without the need for electrical adjustment or trimming.

In addition to direct analog applications, the AW360 ZE can be used in conjunction with an external A/D converter. In these applications, the AW360 ZE operates as an angle transducer with 12-bit resolution and 10- or 11-bit absolute accuracy depending on model selected. Only six connections are required and these are made via a 6-pole, waterproof plug and socket.

The anodized aluminum housing is in compliance with protection class IP 65 with a conformable plug making the AW360 ZE particularly suited to the stringent requirements found in heavy manufacturing environments.



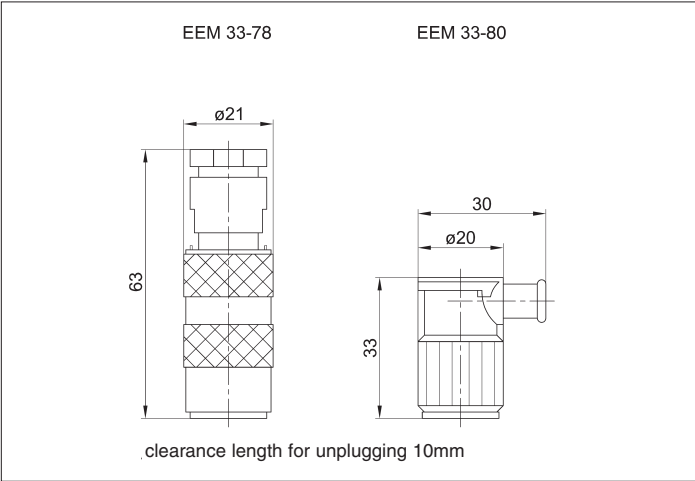
| Description                                                              |                                                               |               |
|--------------------------------------------------------------------------|---------------------------------------------------------------|---------------|
| Case                                                                     | aluminum anodized, sealed shaft                               |               |
| Shaft                                                                    | stainless steel                                               |               |
| Bearings                                                                 | stainless steel ball bearings                                 |               |
| Resistance element                                                       | conductive plastic                                            |               |
| Wiper assembly                                                           | precious metal multi-finger wiper                             |               |
| Electrical circuitry                                                     | hybrid circuit built into potentiometer housing               |               |
| Connections                                                              | 6-pin connector (see "Accessories")                           |               |
|                                                                          |                                                               |               |
| Mechanical Data                                                          |                                                               |               |
| Dimensions                                                               | see drawing                                                   |               |
| Mounting                                                                 | with 3 mounting clamps Z 3-31                                 |               |
| Mechanical travel                                                        | 360, continuous                                               | °             |
| Permitted shaft loading<br>(axial and radial)<br>static or dynamic force | 45                                                            | N             |
| Starting torque                                                          | < 1.5                                                         | Ncm           |
| Maximum operational speed                                                | 2,000                                                         | RPM           |
| Weight                                                                   | 170                                                           | g             |
|                                                                          |                                                               |               |
| Electrical Data                                                          |                                                               |               |
| Actual electrical travel                                                 | 360                                                           | °             |
| Absolute linearity<br>AW 360ZE-10<br>AW 360ZE-11                         | ±0.07<br>±0.035                                               | %<br>%        |
| Repeatability                                                            | 0.002 ( ±0.007°)                                              | %             |
| Effective temperature<br>coefficient of resistance                       | 100                                                           | ppm/K         |
| Supply volt. ± U <sub>B</sub> of the electronic circuitry                | ±15 (±1)                                                      | V             |
| Potentiometer supply voltage U <sub>Ref</sub>                            | ≤ +10                                                         | V             |
| Inhibit signal from ± U <sub>B</sub> to zero                             | approx. 50                                                    | µs            |
| Zero offset                                                              | < 2                                                           | mV            |
| Max. difference of supply voltage U <sub>Ref</sub>                       | ±2                                                            | mV            |
| Max. 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            |
|                                                                          |                                                               |               |
| Environmental Data                                                       |                                                               |               |
| Temperature range                                                        | 0...+70                                                       | °C            |
| Vibration                                                                | 10...2000<br>A <sub>max</sub> = 0.76<br>a <sub>max</sub> = 20 | Hz<br>mm<br>g |
| Shock                                                                    | 50<br>11                                                      | g<br>ms       |
| Life                                                                     | 50 x 10 <sup>6</sup>                                          | movem.        |
| Protection class                                                         | IP 65 (DIN 400 50 / IEC 529)<br>(with connector EEM 33-78)    |               |

Included in delivery

3 mounting clamps Z 3-31

Recommended accessories

Mating plug EEM 33-78  
protection class IP 67,  
Right-angled plug EEM 33-80  
protection class IP 40,  
Fork couplings Z 104 G 6  
(backlash-free),  
Fork couplings Z 105 G 6  
(backlash-free),  
MAP process-control indicators  
and display. MUP or MUK signal  
conditioner for standardized  
output signals.



Order designations

| Type        | Art. no. |
|-------------|----------|
| AW360 ZE-10 | 011021   |
| AW360 ZE-11 | 011022   |