

## Industrial-Grade Potentiometers

Series AW360 ZE



### Special features

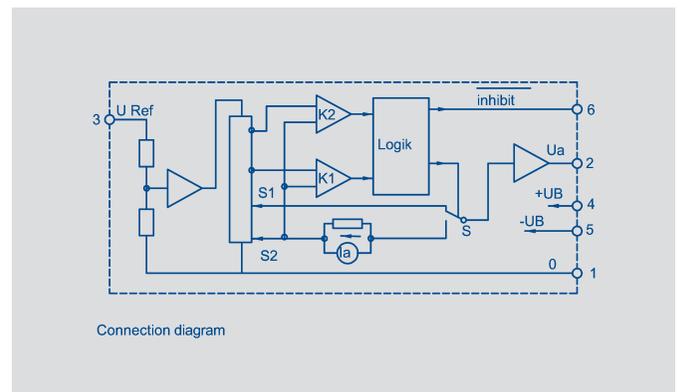
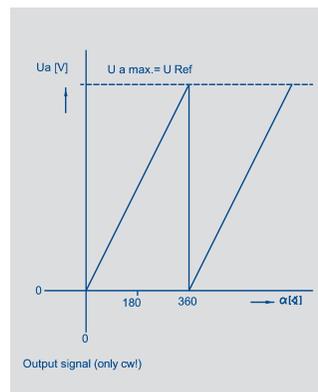
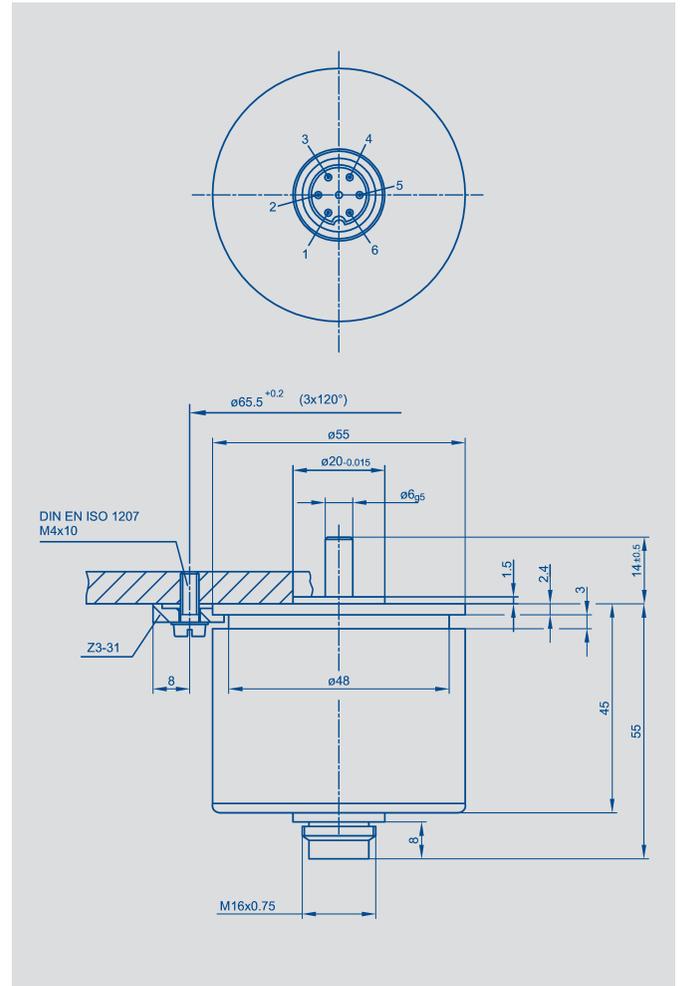
- gap-free output over all 360°
- very high absolute linearity
- interchangeable without electrical adjustment
- guaranteed 12 bit resolution and repeatability
- long life -  $50 \times 10^6$  movements
- protection class IP 65

This potentiometer has been designed for use as an absolute 360° angle encoder.

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 or 11 bit absolute accuracy. The transducer only requires 6 connections, and these are made via a 6 pole, waterproof plug and socket. 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 AW 360 ZE can be used over all 360° of rotation. The reset voltages at the beginning and end of the sawtooth are well defined, and there is no function angle tolerance as is normally asso-

ciated with potentiometers. These features together with the fact that the maximum output voltage is determined by the applied voltage means that units may be inter-changed or replaced without the need to electrical 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.

The housing is in compliance with protection class IP 65 with the conformable plug and is particularly suited to stringent requirements in the machine, plant and vehicle design sector.



Novotechnik  
Messwertaufnehmer OHG  
Postfach 4220  
73745 Ostfildern (Ruit)  
Horbstraße 12  
73760 Ostfildern (Ruit)  
Tel. +49 711 44 89-0  
Fax +49 711 44 89-150  
info@novotechnik.de  
www.novotechnik.de

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Description	
Case	aluminium 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	6pin connector (see „Accessories“)

Mechanical Data	
Dimensions	see drawing
Mounting	with 3 mounting clamps Z 3-31
Mechanical travel	360, continuous °
Permitted shaft loading (axial and radial) static or dynamic force	45 N
Starting torque	<1.5 Ncm
Maximum operational speed	2000 min <sup>-1</sup>
Weight	170 g

Electrical Data	
Actual electrical travel	360 °
Absolute linearity AW 360ZE-10 AW 360ZE-11	±0.07 ±0.035 %
Repeatability	0.002 (Δ 0.007°) %
Effective temperature 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 (250 VDC, 1 bar, 2 s)	≥ 10 MΩ
Dielectric strength (50 Hz, 2 s, 1 bar, 250 VAC)	≤ 100 μA

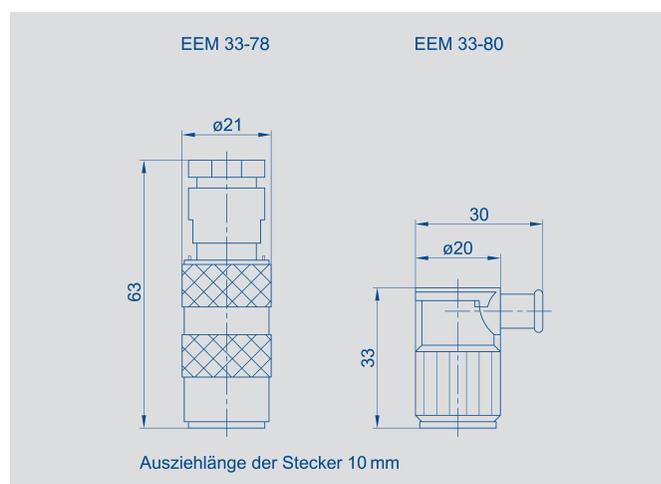
Environmental Data	
Temperature range	0... +70 °C
Vibration	10...2000 Hz A <sub>max</sub> = 0.76 mm a <sub>max</sub> = 20 g
Shock	50 g 11 ms
Life	50 x 10 <sup>6</sup> movem.
Protection class	IP 65 (DIN 400 50 / IEC 529) (with connector EEM 33-78)

#### 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 Z104 G 6  
(backlash free),  
Fork couplings Z105 G 6  
(backlash free),  
Process-controlled indicators  
MAP... with display, Signal  
conditioner MUP... / MUK ...  
for standardized output signals



#### Order designations

Type	Art.no.
AW 360 ZE-10	011021
AW 360 ZE-11	011022