

Industrial-Grade Potentiometers

Series AW 360 ZE



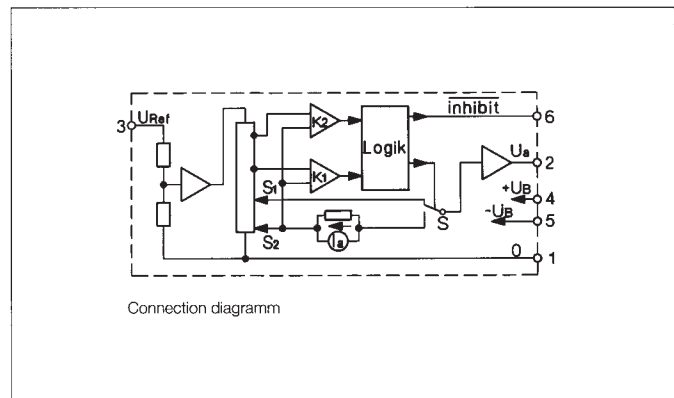
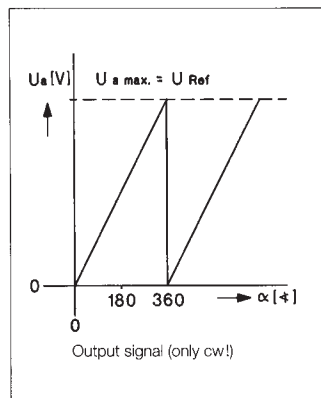
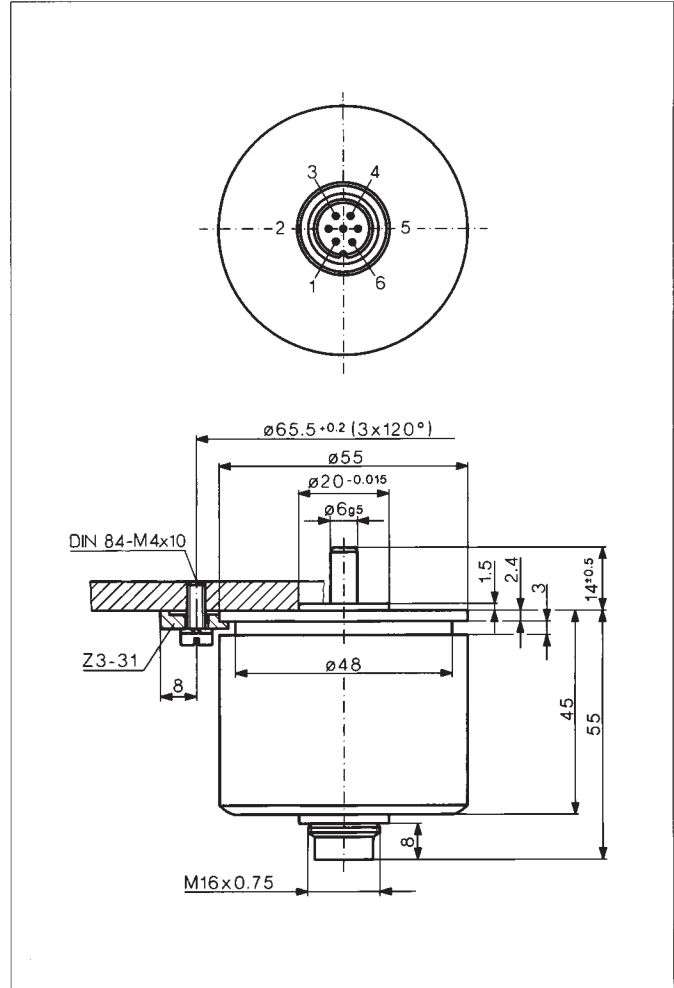
Special features

- gap-free output over all 360°
- very high absolute linearity
- interchangeable without electrical adjustment
- guaranteed 12 bit resolution and repeatability
- long life - 50×10^6 revolutions
- 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 associa-

ted with potentiometers. These features together with the fact that the maximum output voltage is determined by the applied voltage means that units may be interchanged 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.



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 ⁻¹
Weight	170	g

Electrical Data

Actual electrical travel	360	°
Nominal resistance	typical 10	k Ω
Resistance tolerance	± 10	%
Absolute linearity AW 360ZE-10	± 0.07	%
AW 360ZE-11	± 0.035	%
Repeatability	0.002 (Δ 0.007%)	%
Effective temperature coefficient of resistance	100	ppm/°C
Supply volt. UB of the electronic circuitry	± 15 (± 1)	V
Potentiometer supply voltage U_{Ref}	$\leq +10$	V
Inhibit signal from + UB to zero	approx. 50	μ s
Zero offset	<2	mV
Max. difference of supply voltage U_{Ref}	± 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	M Ω

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 x 10 ⁶	rev.
Protection class	IP 65 (DIN 400 50 / IEC 529) (with connector EEM 33-78)	

Included in delivery

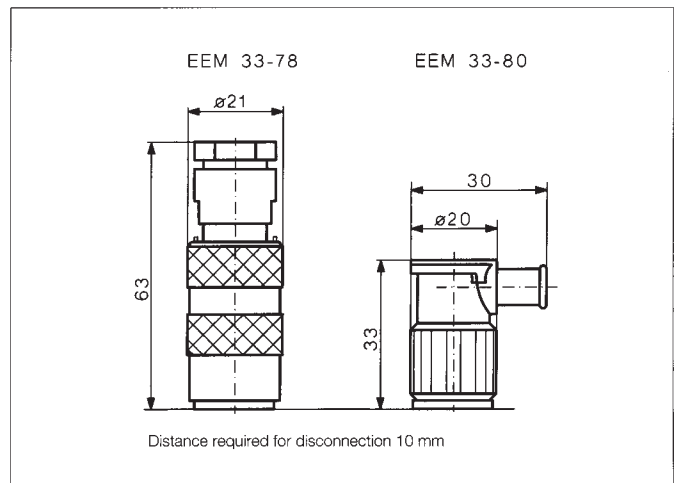
3 mounting clamps Z 3-31

Recommended accessories

Mating plug EEM 33-78
protection class IP 65,
Right-angled plug EEM 33-80
protection class IP 63,
Fork couplings Z104g6
(backlash free),
Fork couplings Z105g6
(backlash free),
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, life-time, 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).



Order designations

Type	Art.no.
AW 360 ZE-10	001121
AW 360 ZE-11	001122