

AP 09



Absolute Electronic Indicator AP09 is used for applications requiring automatic data transmission of machine parameters via interface to a PC or control. Position and target values are indicated in the easily read LED-display. Easy mounting via hollow shaft plus the battery-backed-up display allow a fast and safe machine set up.

Features

- LED display
- Absolute, battery-backed-up
- BUS-interface (RS485)
- Programmable parameters: pitch, calibration value, counting direction, target / position value display
- Multifunction key which is programmable as reset, incremental measurement or target value

Accessories

- Programming software for PC
- Gateways for different BUS-systems (eg. CAN-BUS, Interbus-S, Profibus)
- BUS-terminating plug (BAS09).

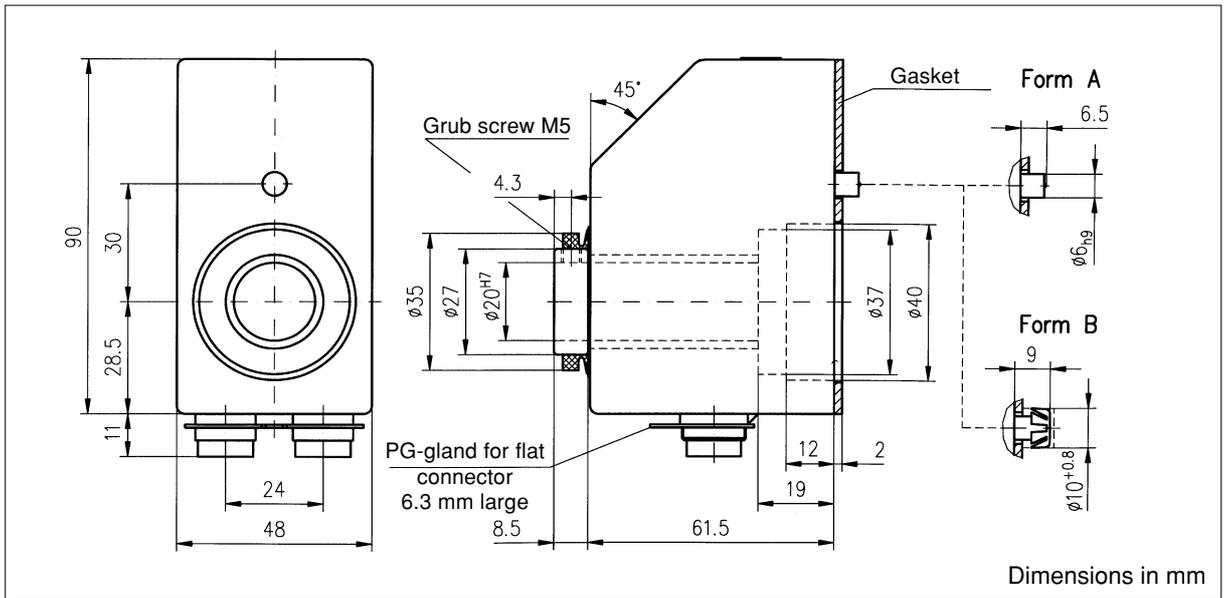
Technical data

Housing:	composite material, with reduced interference susceptibility
Colour of housing:	black
Weight:	approx. 250 g
Hollow shaft [ø mm]:	20 ^{H7} friction bearing
Speed (on shaft):	
(mains supply)	≤ 500 rpm
(battery-powered)	≤ 300 rpm
Working temperature:	0 to + 50 ° C
Storage temperature:	-20 to + 80 ° C.
Humidity:	0 to 95%, condensation not permitted
Vibration allowed:	10 g (5 to 150 Hz) accord. to DIN IEC 68-2-6 20 g (100 to 2000 Hz)
Shock allowed:	30 g (15 ms) accord. to DIN IEC 68-2-27
Protection:	IP50 (option IP54)

Electrical data

Supply voltage:	24 V d.c. +/-20 %, with built-in polarity protection
Power consumption:	< 0.5 W
Display:	5 x 7-segment-LED, 8 mm
Max. counting range:	± 6900 revolutions
Max. display range:	- 19999 to + 99999
Interface:	RS485; 115.2 kBaud
Connection:	2 circular connector
Key functions:	address / zero point / incremental measurement / target value
Parameters:	programmable via interface
Battery:	Lithium 3 V battery type CR 17335, battery life approx. 6 years
Noise immunity:	noise immunity class 3, accord. to IEC 801-3
Test mark:	CE-sign
Resolution:	≤ 600 steps/revolution

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Display	Version / mounting position	Reducing sleeve	Axial seal
	02 04	 $\phi d^{H7} = 8, 10, 12, 14, 16, 18$	 See mounting instructions!

Connection type / cable length (in m)		Pin connection		
E3/L Cable length L, distance from connector to cable end 44 mm, distance from connector to cable end 40 mm.	E4/L Cable length L, distance from connector to cable end 65 mm.	PIN	Signal	Colour
		1	screen (PE)	-
		2	screen (PE)	-
		3	0 V	grey
		4	+UB	brown
		5	DÜ-A	green
		6	DÜ-B	yellow
		7	screen (PE)	-

Ordering code **AP 09 - 0 - E / - R H - - -**

Type AP09

Version / mounting position

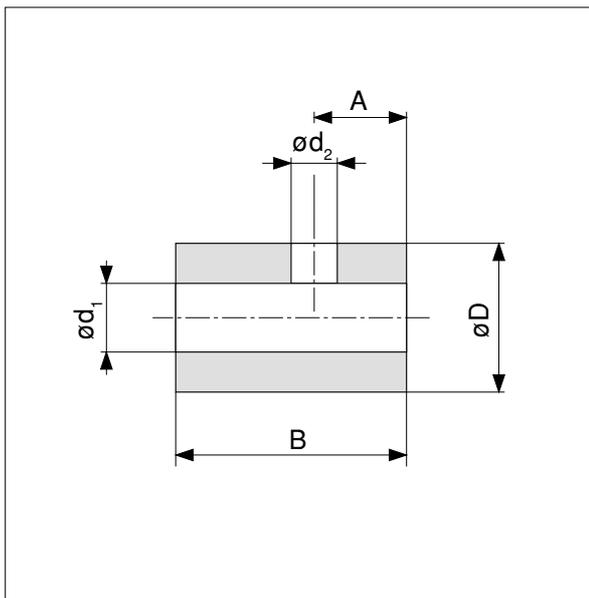
Connection

Hollow shaft diameter
 20^{H7} (standard); for diam. < 20 use reducing sleeve RH... (see table on page 24)

Torque pin
 A = form A (standard) or form B

Protection
 50 = IP50 (standard), 54 = IP54

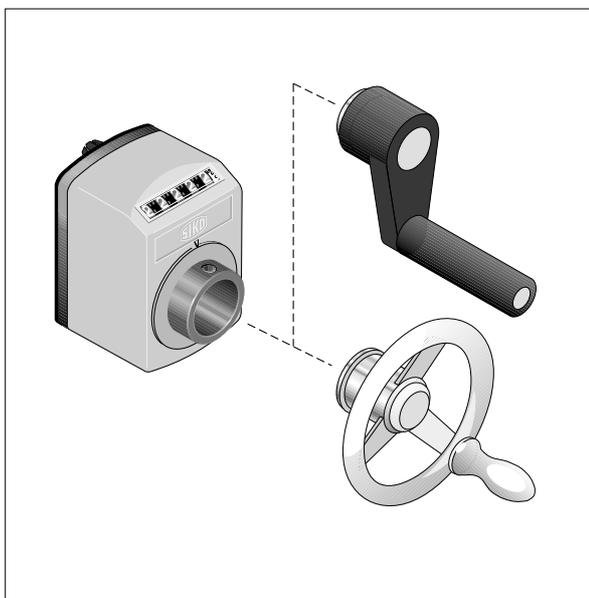
Accessories / Option



Reducing sleeves

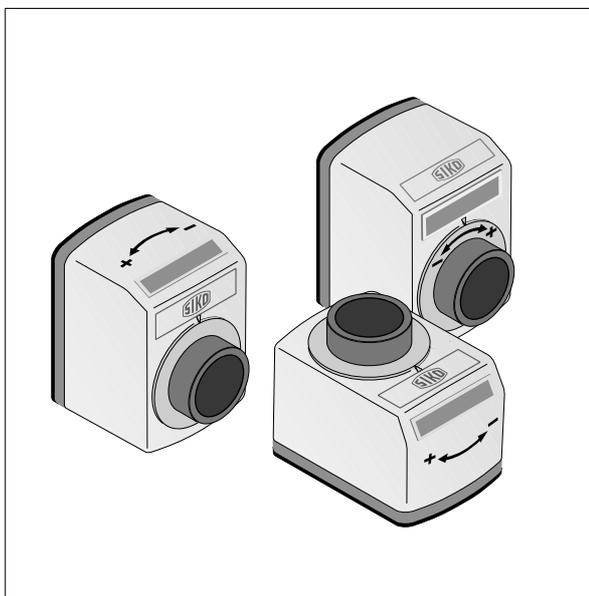
These are used to adapt the diameters of driving shaft and position indicator. For ordering reducing sleeves separately, please refer to the table below. If you order complete position indicators, the necessary reducing sleeve will be automatically supplied with the indicator according to the hollow shaft bore diameter specified.

[mm]	RH01	RH02	RH03	RH04	RH07
$\varnothing d_1^{H7}$	8, 10, 12 14, 16, 18	16, 20, 22 24, 25, 26	20, 22	6, 8, 10, 12	6, 8
$\varnothing d_2$	5,5	5,5	5,5	4,2	3,2
$\varnothing D_{f7}$	20	30	25	14	10
A	4,5	4,5	4,5	3,5	2,5
B	20	30	30	17	14
Indicator	DA 05/1 DA 08 DA 09 DE 09 AP 09	DA 10 (shaft WK)	DA 10 (shaft WL)	DA 03 DA 04	DA 02



Crank handles and handwheels

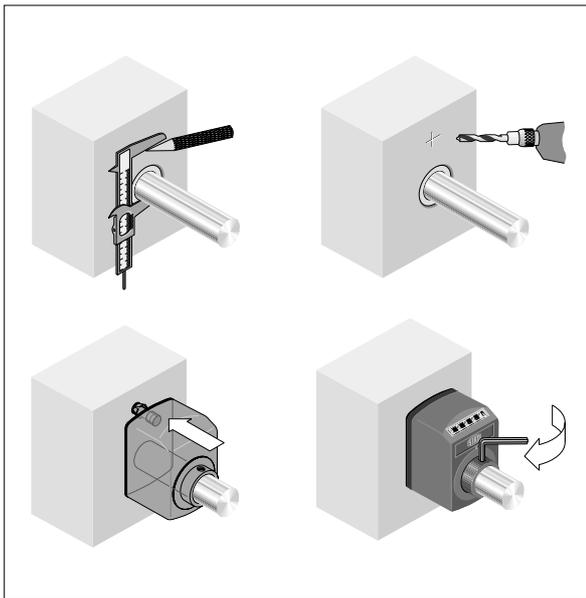
Auxiliaries such as handwheels or crank handles may be used for spindle adjustment. Please inquire!



Arrow symbols

For extra indication of the counting direction, DA04 and DA09 indicators are available with the option 'direction arrow'. Please ask for detailed technical information

Mounting instructions

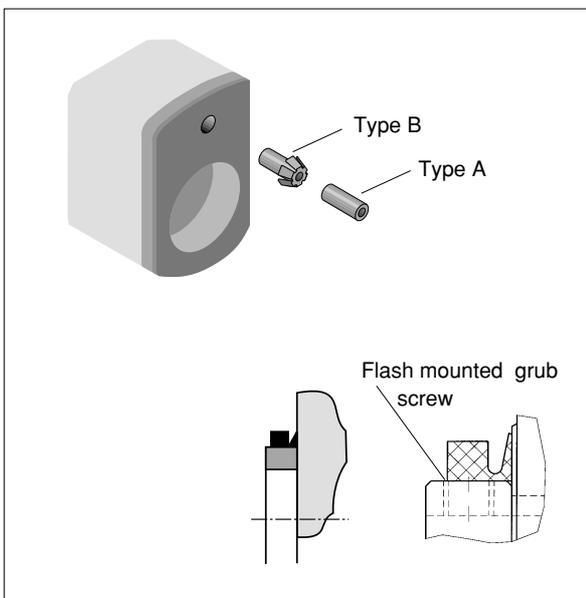


Torque pin mounting

The radius of the hollow shaft is to be added to the distance between hollow shaft axis and torque pin axis. Use caliper gauge and scribe to draw this dimension onto the mounting surface, then center and bore (for bore diameter and depth refer to technical drawing).

After careful preboring the Position Indicators can be mounted without strain.

Screw in / tighten grub screw to fix the shaft. If an axial seal is used, grub screw has to be screwed in flush (if necessary, provide for a recess in the shaft).

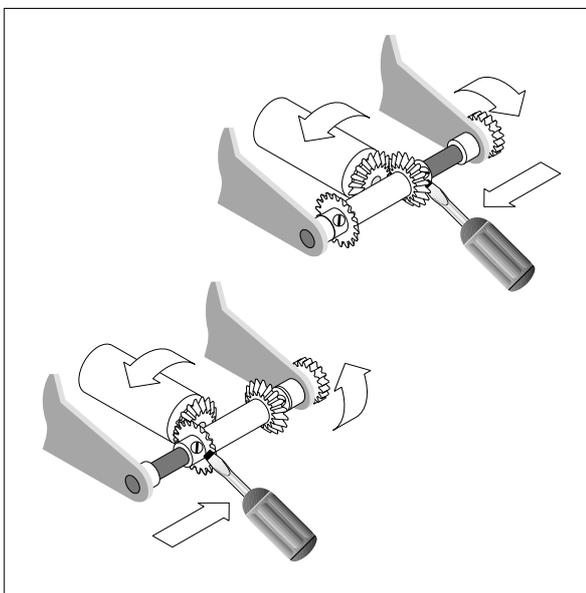


Torque pins

Some Position Indicators are available with two different torque pin types. Umbrella-shaped torque pin type B is especially suitable for compensating mounting tolerances.

Axial seal

When using an axial seal, the grub screw has to be screwed in flush. If necessary, provide for a recess in the shaft.



Change of counting direction

Position Indicators type DA 05/1 and DA 08 offer the possibility to modify the counting direction subsequently. First of all remove the housing. Then unscrew the locking screws and shift the bevel gears on the axis. Retighten locking screws. Ensure that bevel gears are correctly engaged and move smoothly.

For clockwise increasing values the left bevel gear must be engaged (viewed from device's rear).