

- **Contactless, robust sensor system**
- **Infinite resolution, no hysteresis**
- **Definite repeatability**
- **ID 36/90 : For operation with a separate oscillator / demodulator / amplifier module**
- **ID 36/90K : With integral electronic circuit providing a calibrated voltage output signal.**



### Construction and operating principle

The angle transducer operates according to the principle of the differential choke ( inductive half bridge ). It consists of two coils and a disc shaped rotor formed from two metals of different permeability. The coils are excited with a 10 kHz carrier frequency voltage. When turning the rotor opposing changes of inductance and, consequently, of voltage occur in the coils.

The transducers are supplied either for use with external electronic modules providing the carrier frequency and the demodulation of the signal (ID 36/90) or with integral electronic circuit providing a calibrated DC-output signal (ID 36/90K).

Both versions have a linear measuring range of  $\pm 45^\circ$  with an especially close linearity tolerance in the range  $\pm 10^\circ$ .

All materials used are non-rusting and moisture proof. The shaft runs in precision ball bearings without any stops. The diameters for mounting and centering conform to synchro size 15.

The ID 36 Transducer can also be supplied upon request with an especially low frictional torque of  $\leq 1$  cNcm. In this case ball bearings without protection against dust are used.

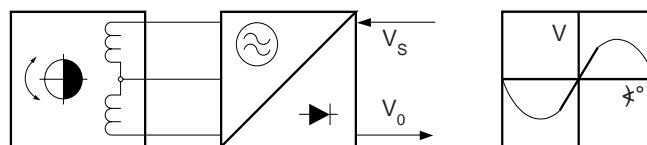
### Technical Data of ID 36/90

for operation with external module

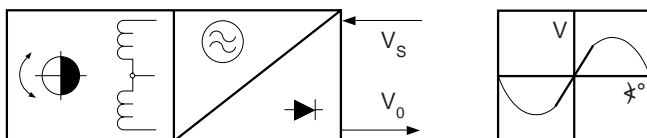
- Independent linearity : \*
  - in the range of  $\pm 10^\circ$  :  $\pm 0.5\%$
  - in the range of  $\pm 30^\circ$  :  $\pm 1\%$
  - in the range of  $\pm 45^\circ$  :  $\pm 2\%$
- Sensitivity : \*                    55 mV/°  $\nabla$
- Operating temperature range :    -20° to +85°C
- Mass :                                85 g
- Protection Class :                IP 51
- Frictional torque :                 $\leq 5$  cNcm
- Moment of inertia :                2.5 gcm<sup>2</sup>
- Resistance to shock :            20g SRS at 20 to 2000 Hz
- Resistance to vibration :        3g rms at 20 to 2000 Hz

\* Sensitivity and linearity when using the OD 15 module (without additional amplification). The percentage figures for linearity refer to the relevant full range, e.g.  $\pm 0.5\%$  of  $\pm 10^\circ \hat{=} \pm 0.5\%$  of  $20^\circ \hat{=} \pm 0.1^\circ$ .

### Basic block diagram of ID 36/90



### Basic block diagram of ID 36/90K



### Technical Data of ID 36/90 K

with integral electronic circuit

- Supply voltage  $V_s$  :                 $\pm 11.5 \dots \pm 16$  VDC (sym.)  
(rev. polarity protected)
- Supply current  $I_s$  :                30 mA
- Output voltage  $V_o$  :                60 mV/°  $\nabla$  ( calibrated )  
Special calibration within the measuring range upon request.
- Overall tolerances on sensitivity and linearity :
  - in the range of  $\pm 10^\circ$  :  $\pm 0.5\%$   $\hat{=} \pm 6$  mV
  - in the range of  $\pm 30^\circ$  :  $\pm 1\%$   $\hat{=} \pm 36$  mV
  - in the range of  $\pm 45^\circ$  :  $\pm 1.5\%$   $\hat{=} \pm 81$  mV
- Ripple :                                5 mV<sub>P-P</sub>
- Permissible load  $R_L$  :            2 k  $\Omega$
- Temperature drift of  $V_o$  :        0.01%/°C
- Stability :                              < 0.1% in 24 hours
- Dependence of  $V_o$  on  $V_s$  :         $\leq 0.05\%$  at  $\Delta V_s = 1$  V
- Operating temperature range :    -10°C to +80°C
- Mass :                                 105 g

Frictional torque, moment of inertia, shock and vibration resistance as for ID 36/90.

**Note:** Unless otherwise stated, all values are valid at +20°C ambient temperature and  $\pm 15$  VDC supply voltage, starting 10 minutes after switch-on.

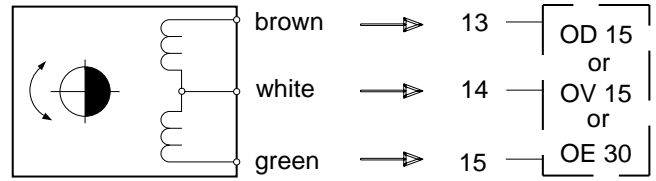
## Excitation and signal processing for ID 36/90

The following modules can be supplied for the excitation of the ID 36/90 Transducer and for the processing of the measuring signal (DC in/DC out) :

- OD 15 : Oscillator/demodulator.
- OV 15 : Oscillator/demodulator/amplifier with zero-point and sensitivity adjustment up to  $\pm 10$  VDC.
- OE 30 : Oscillator/demodulator with current output 0...20 mA or 4...20 mA and for span adjustment.
- OA: Oscillator/demodulator: Various modules for excitation frequencies from 2.5 to 15kHz. Adjustable to various inductive transducers and for different output signals.
- DE 52 : Module with two demodulators. A number of DE 52 modules can be combined with one OA10 into a multi-channel measuring system.
- OUK: Multi-channel measuring system with OA10 and DE-52 on one Eurocard for a maximum of 7 transducers, for voltage output 0-5 VDC, 0-10 VDC, or  $\pm 10$  VDC.
- OIK: Multi-channel measuring system similar to OUK, but with current output signals 0...20 mA or 4...20 mA.
- UN 15 : Power supply for 230 V 50 / 60 Hz or 110 V 50 / 60 Hz input and  $\pm 15$  VDC output.

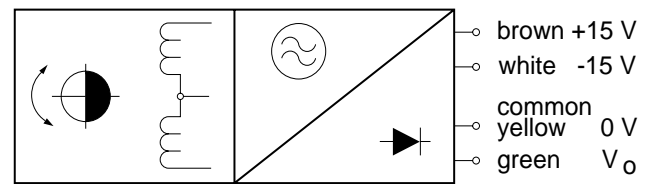
## Electrical connections

### ID 36/90

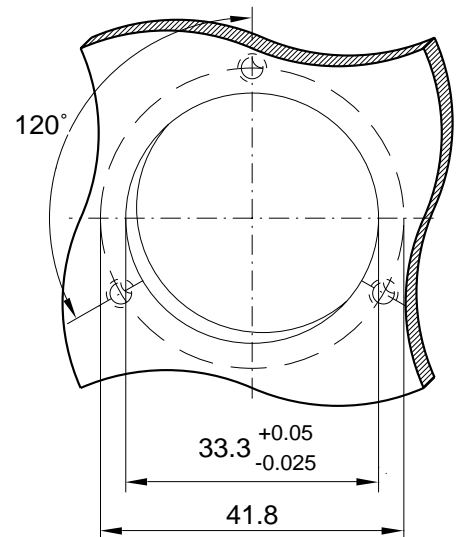
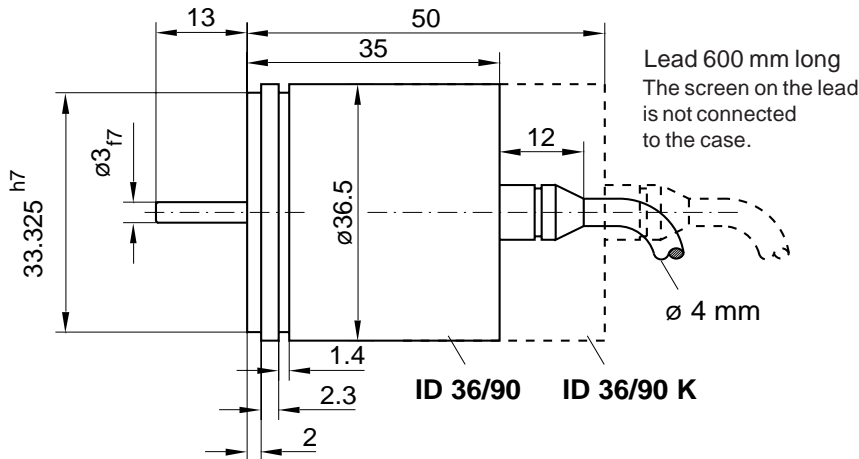


Using these connections a positively increasing voltage is obtained at the output of the module for shaft rotation in the clockwise direction. The linearity tolerance is tested with this voltage characteristic.

### ID 36/90 K



## Dimensions in mm



## Fixing clamp RW 07

(to be ordered separately)

