

Inductive transducers

11

Product group

A WE X

Application

The inductive transducer is a linear stroke measuring system. It can both be flange-mounted at a solenoid and at other measuring objects. The core which can be moved inside the coils has to be connected to the measuring object via a threaded rod. The MSM transducers are characterized by high resolution, good linearity and long service life.

If the sensor is coupled to a control electronic system and a proportional solenoid, a complete stroke control system is created. Fastening is made with central thread. For applications under pressurisation the sealing between the pressure-tight tube and the solenoid or valve is made through an o-ring.



Fig. 1: Type A WE X 020 A01

Function

The function of the inductive transducer bases on the principle of the differential transformer. The electronics integrated in the device supply the primary coil, evaluate the voltage induced in the secondary coils and provide a defined output signal.

Construction characteristics

- Suitable for dry and pressure-tight applications
- Pressure-tight tube, designed for 350 bar static pressure
- Central fastening by means of hexagon flange with thread
- Transducer housing made of glass fibre reinforced plastic, encapsulated with casting resin
- Electrical connection and protection class when properly installed:
 - Connection via surface-mounted plug Messrs. Binder M12 x 1 series 713
 - Protection class according to DIN VDE 0470/ DIN EN 60529 – IP 54
- (Mechanical) Zero adjustment via knurled nut
- Threaded rod for fastening the core with the measuring object
- EMC directive
- Version according to ATEX on request

Technical data

A WE X 020 A01	
Measurement path	± 20 mm
Supply voltage U_B	18 V ... 36 V, ripple < 10 %
Current consumption	< 50 mA
Sensitivity	175 mV/mm, ± 1 % in the range of ± 8 mm
Tolerance of the output voltage at stroke of + 8, - 8 and 0 mm: $Abw. = \frac{ \text{Target value} - \text{actual value} }{U_{\text{Voltage stroke}}} \cdot 100\%$	± 1 % ± 0,028 V ($\vartheta_{11} = 20^\circ \text{C}$, $U_N = 36 \text{V}$, 100 kΩ load)
Ambient temperature	- 20°C ... + 55°C
Temperature drift of output voltage	< + 0,05 % / K
Output voltage U_A	2,5 V ... 9,5 V
Max. output load: Ohmic load Inductive load Capacitive load	Short-circuit proof 10 mH 100 nF
Declaration of conformity (EMC)	DC 009406

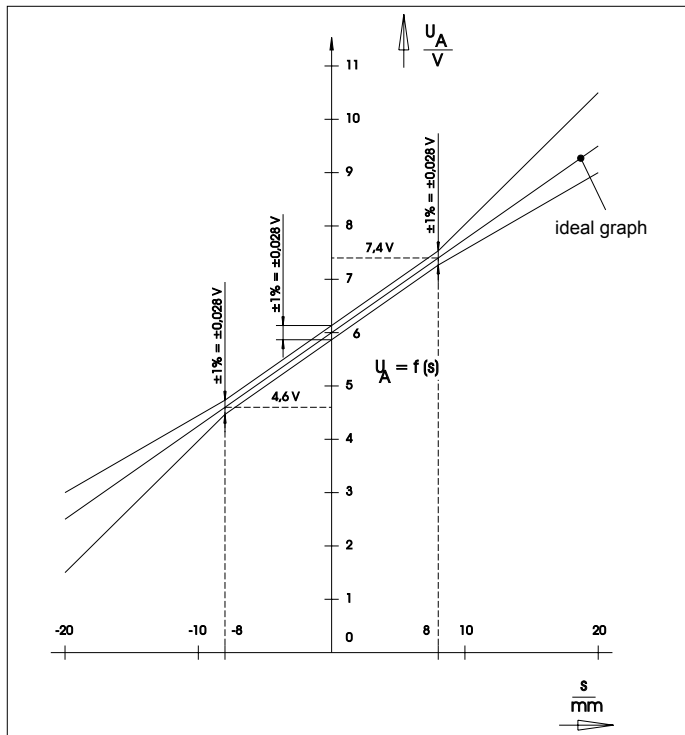


Fig. 2: characteristic A WE X 020 A01

Sensitivity

The sensitivity is the change of the output voltage ΔU , referring to the change of the measurement path Δs .

$$\text{Sensitivity} = \frac{\Delta U}{\Delta s} = \frac{U_{A1} - U_{A2}}{s_1 - s_2}$$

Tolerance of the output voltage

The tolerance of the output voltage indicates the deviation in per cent of the output signal of the ideal straight line.

$$\text{Deviation}_{\text{Lin}} = \frac{|U_{\text{actual}} - U_{\text{nominal}}|}{U_{\text{voltage stroke}}} \times 100 \%$$

Temperature drift

The temperature drift indicates the deviation in per cent of the output signal per degree of temperature change (indicated in % / K)

$$\text{Deviation}_{\text{Temp.}} = \frac{|U_{\text{Temp}} - U_{20^\circ \text{C}}|}{U_{\text{voltage stroke}} \times |\Delta T|} \times 100 \%$$

High voltage test: Short-circuited connector pins (1, 2, 3, 4) against the housing (Pin 5) according to DIN VDE 0580

Dimensional drawing

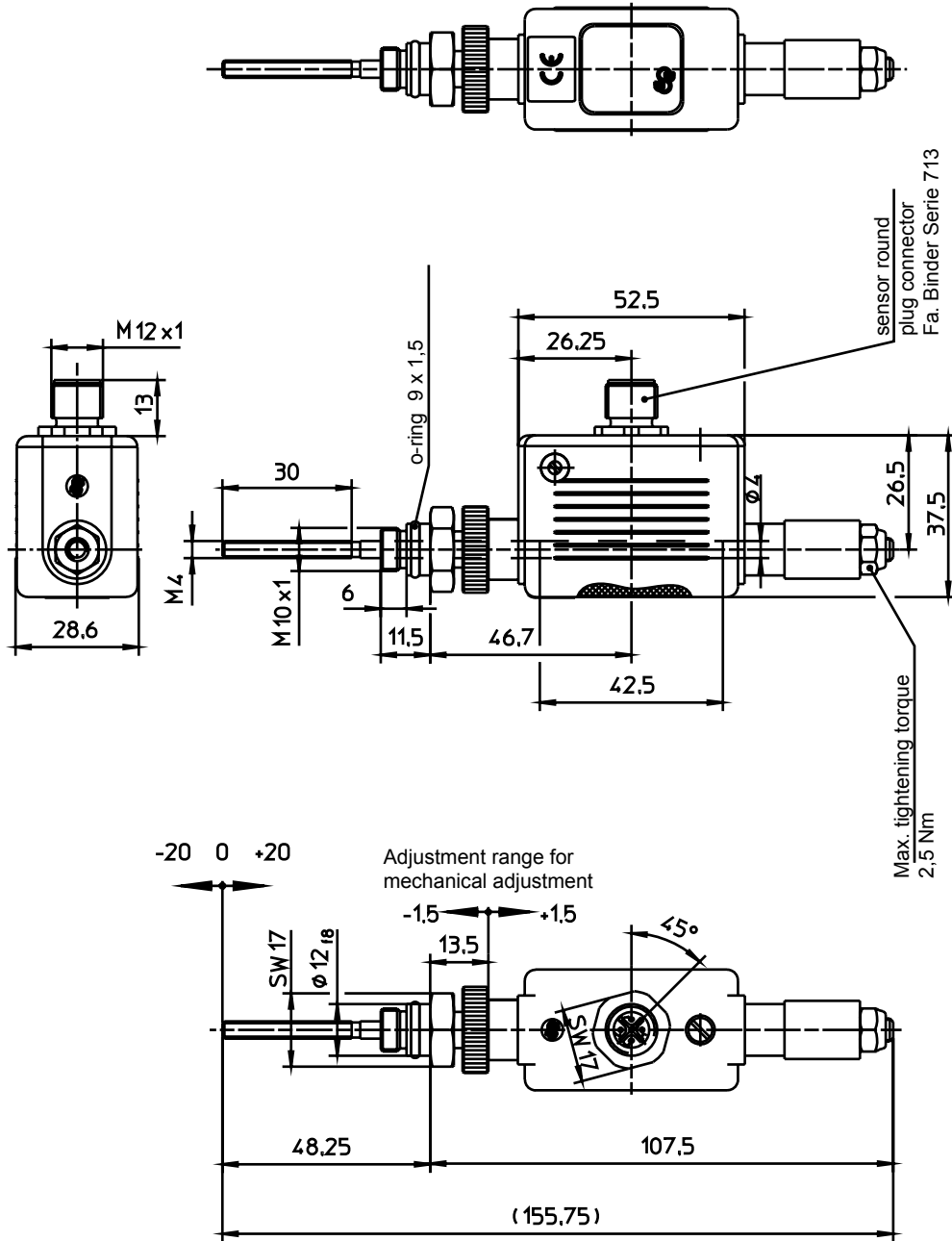


Fig. 3: Type A WE X 020 A01

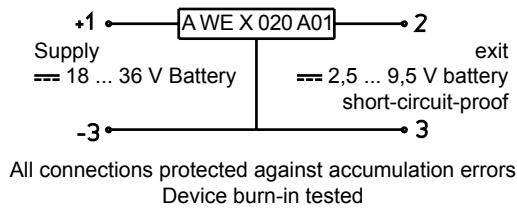



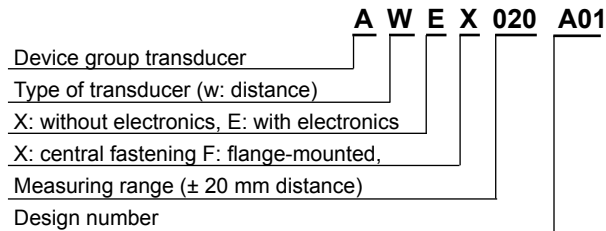
Fig. 4: block diagram A WE X 020 A01

Information and remarks concerning European directives can be taken from the correspondent information sheet which is available under *Produktinfo.Magnet-Schultz.com*.

Please make sure that the described devices are suitable for your application. Our offers for these devices are based on the assumption of maximal 8 in an FMEA severity table, i. e. in case of malfunction of the device model as offered, there is, amongst others, no jeopardy of life or limb. Supplementary information concerning its proper installation can be taken also from the  -Technical Explanation, the effective DIN VDE0580 as well as the relevant specifications.

This part list is a document for technically qualified personnel. The present publication is for informational purposes only and shall not be construed as mandatory illustration of the products unless otherwise confirmed expressively.


Type code



Order example

Type A WE X 020 A01

Specials designs

Please do not hesitate to ask for our assistance with the solution of your application-oriented task. In order to find rapidly a reliable solution we need complete details about your application conditions. The details should be specified as precisely as possible in accordance with the relevant  -Technical Explanations.

If necessary, please request the support of our corresponding technical office.