

Series **BMAX**

Magnetic, battery-backed Quasi-Absolute Encoder



- Quasi-absolute length and position determination
- Movements are also detected when switched off
- Proven magnetically based measuring technology
- Wear-free, contactless measurement principle
- Analog output interface (voltage or current)
CANopen (DS406) interface on request
- High shock and vibration resistance
- Robust against dust, dirt, smoke and water

BMAX - Magnetic, battery-backed Quasi-Absolute Encoder

General:

The ELGO measuring system **BMAX** is based on the physical principle of length and position measurement by using magneto-sensitive components. It is used for a high-precision determination of the position, the moved path and/or the speed.

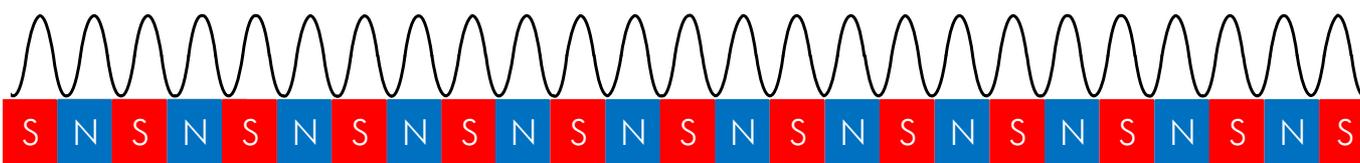


Based on this wear-free and contactless single-track measuring system, ELGO offers these "quasi absolute" version.

Principle of Scanning:

The basis of the magnetic incremental linear encoder consists of a scanning technology, which scans the north and south poles on the single-track coded **MB20-160** magnetic tape and produces a single sine/cosine wave for each pole. The pole pitch of the magnetic tape is 16 mm.

The complete sine/cosine signal process is interpolated electronically. Depending on refinement of the interpolation, to-



gether with the pole pitch of the magnetic tape, the resolution of the measuring system is determined.

Depending on the ordered interface option, the sampled signal information is converted by the internal evaluation electronics into one of the following output signals:

Available Output Interfaces:

- Interface option **I20** → Analog 12 bit output signal (0 ... 20 mA) , proportional to the measured value
- Interface option **I24** → Analog 12 bit output signal (4 ... 20 mA) , proportional to the measured value
- Interface option **V04** → Analog 12 bit output signal (0.5 ... 4.5 V), proportional to the measured value
- Interface option **V10** → Analog 12 bit output signal (0 ... 10 V), proportional to the measured value
- Interface option **CA0** → (on request!) CANopen standard interface according to the DS406 encoder profile

The quasi-absolute Measuring Principle:

A rechargeable battery line integrated in the sensor housing transforms the incremental measuring system into a quasi-absolute measuring system, as the current position is - even in the de-energized state - permanently detected and further processed internally. Under optimal charging and ambient conditions, the operating time of the batteries is up to 6 months after disconnection of the supply voltage.

Connections and Pin Assignment:

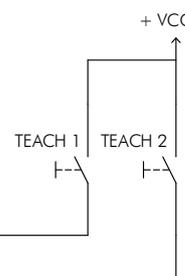
The connections are made via the open cable ends of the signal cable. See table on the right for the pin assignment:

Calibration in Teach Mode:

To define the minimum and maximum position, a calibration procedure must be performed during commissioning. For this purpose the inputs **TEACH 1** and **TEACH 2** are required.

First, these two inputs should (temporarily) be connected to a switch or push-button against +VCC (see circuit diagram beside the table above).

Color	Function	Description
black	0 V	GND
brown	10 ... 30 VDC	VCC
red	TEACH 1	Input
orange	TEACH 2	Input
green	Analog OUT	Output
yellow	Analog GND	AGND



Then perform the following steps in order:

- Move the sensor to the desired lower (MIN) position on the magnetic tape.
- Activate the "Teach Mode" by pressing **TEACH 1** and **TEACH 2** simultaneously. Keep them pressed for at least 3 seconds, then release.
- Save the defined MIN position by pressing **TEACH 1** briefly.
- Move the sensor to the desired upper (MAX) position on the magnetic tape.
- Briefly press **TEACH 2** to save the MAX position.
- This concludes the teach process and the calibration is complete.

If at any point you remove the sensor from the magnetic tape, you will have to teach the system once more.

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