SERIES MIX

MAGNETIC LENGTH MEASURING SYSTEM

- Ideal for hostile environments
- Non-contacting measurement
- Resolution from 1,0 to 0,005 mm
- Marker Reference signal available
- Square wave "Encoder" output signal at TTL or 10-30 V
- Suitable for position indication and control

Only functional with an ELGO MB20-50-10-1-R magnetic tape!

General Description

The MIX Series is a more advanced and accurate version of the well known Elgo MIX system. It comprises a tape of magnetised rubber material in a steel sandwich, a sensor and a translator. The sensor and translator can be supplied as an integrated unit and offers an advantage where space is not a problem.

Construction of tape type **MB20-50-10-1-R**
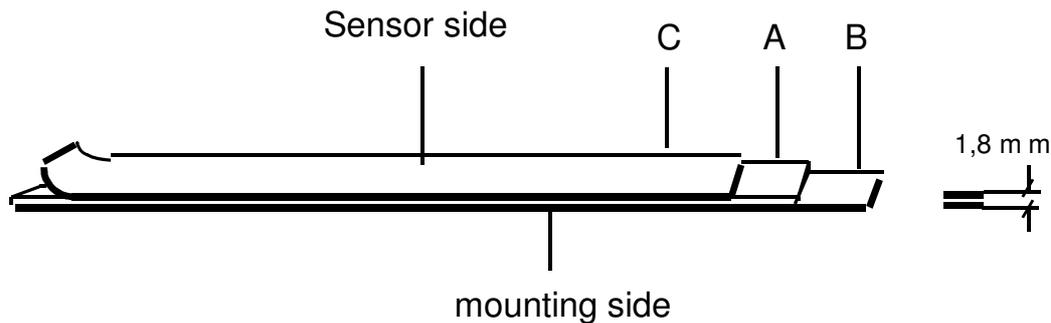
The highly flexible magnetised rubber tape A, is supplied bonded to the ferrous backing steel strip B. The protective covering stainless steel tape C is fitted on site by means of double sided sticky tape. This allows flexibility for shipping.

The Tape can be supplied in any length up to 32 m. It is simple to cut to any desired length.

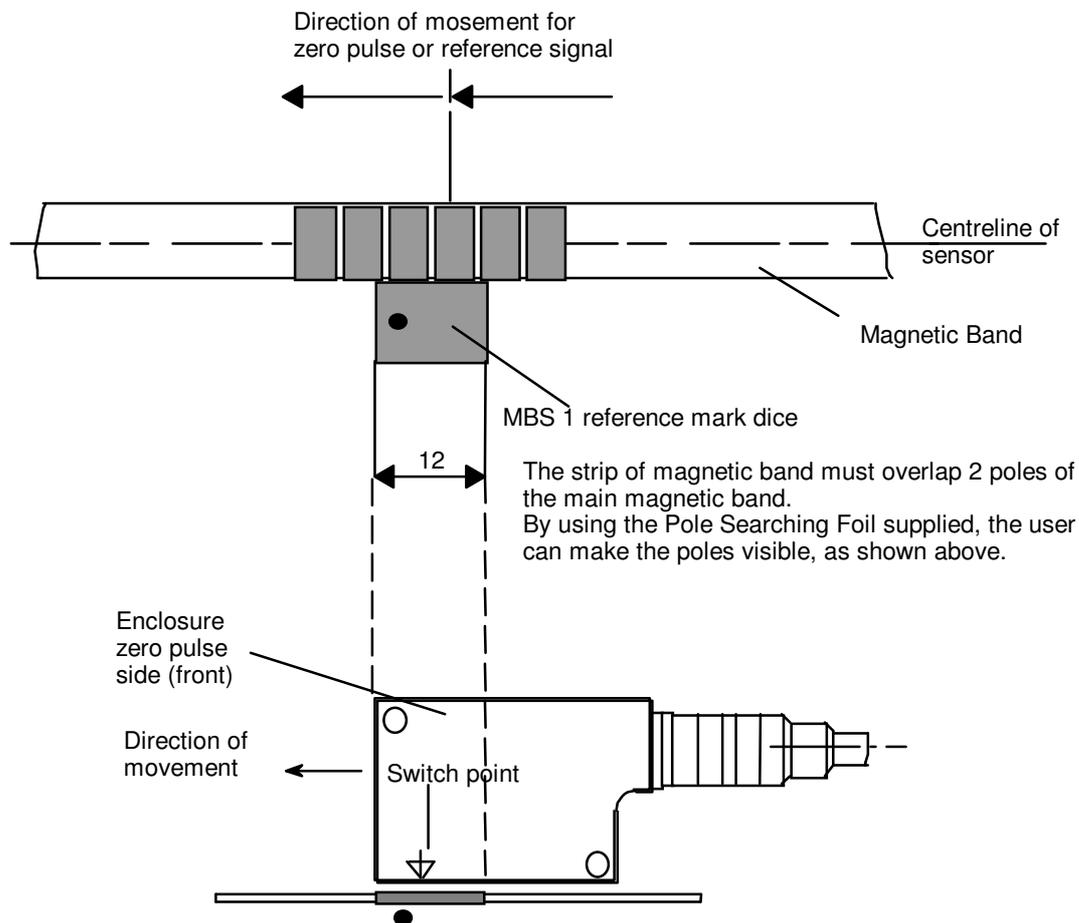**Specification of tape MB20-50-10-1-R**

Operating temperature: -10… +70 °C

Accuracy (µm) at 20°C: $\pm\ (25 + 20 \times L)$
Where L is effective length in m

Temperature coefficiente: 16×10^{-6} /°C
Protection class: IP67

Reference Mark

The reference mark is generated from a short length (3mm) of tape, stuck by the side of the main measuring Tape. A separate sensor is used and the signal gated with main signal to give a unique accurate reference point.

Direction of mosement for
zero pulse or reference signal

Centreline of
sensor

Magnetic Band

MBS 1 reference mark dice

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The strip of magnetic band must overlap 2 poles of the main magnetic band.
By using the Pole Searching Foil supplied, the user can make the poles visible, as shown above.

Enclosure
zero pulse
side (front)

Direction of
movement

Switch point

Remark:

MIX4 and MIX5 SN033: The reference mark dice can be mounted inside the real operation range.
MIX5: The reference mark dice **must be mounted outside** the real operation range.

Sensing Systems

Three forms of Sensor are available.

- MIX1: Small Sensor with separates Translator

- MIX3: Translator and Sensor integrated in one unit

- MIX4: As MIX3 but with additional Sensor for Reference mark (one time)

- MIX5: As MIX4 but with additional Sensor for a permanent Reference mark

- MIX5 SN033: Includes an additional input for enabling the reference process

The Translator for the small MIX1 Head has the same physical construction as the integrated Translator/Sensor.

System MIX1

This comprises Sensor MS20.60 Translator MIC1 MS20.60

Sensor bold MS 20.60

gap max. 2,0 mm
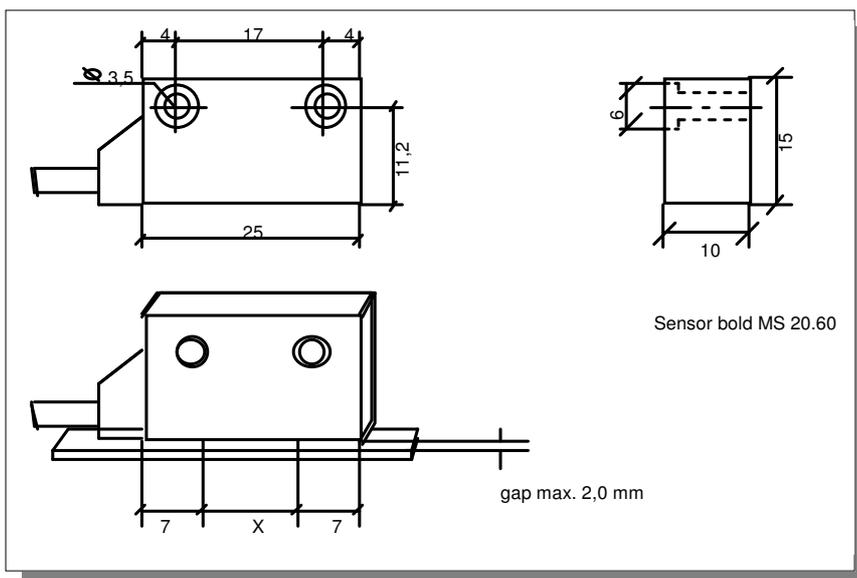
Technical Specifications MIX1

Sensor/Translator cable length: 1,3,5,10,15,20 m (other lengths on request)

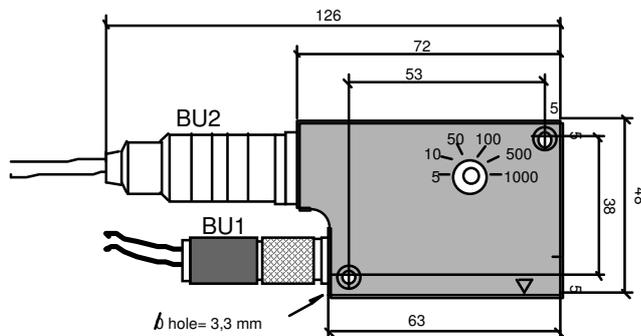Protection class: IP66 (head) IP40 (translator)

Enclosure: zinc cast

Operating temperature: 0 to +50°C

Minimum cable bending radius: 60mm

The Sensor connects to the Translator by means of special calibrated highly flexible cable with 8 pin connector.

Translator MIX1

 BU2: Rectangular wave output cable to controller

    (This screened cable is to be supplied by customer)
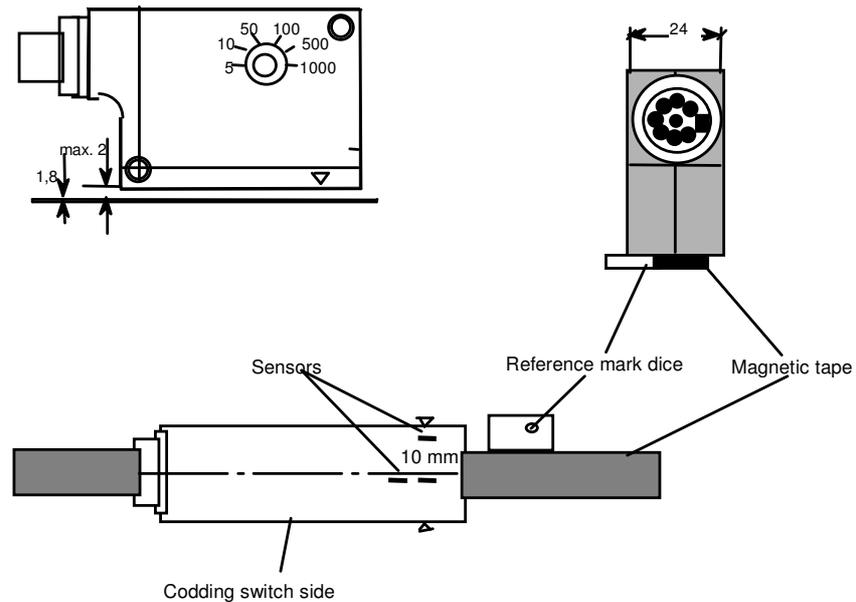
    Connector mate provided

 BU1: Special cable to Sensor Head, complete with connector mate.

System MIX3/MIX4/MIX5

These are integrated Sensor and Translator systems.

MIX4/MIX5 incorporates Sensor for Reference mark.

All Translators (and Translator/Sensors) have the following features.

The output resolution is selectable by means of a rotary coding switch mounted on the side of the Head.
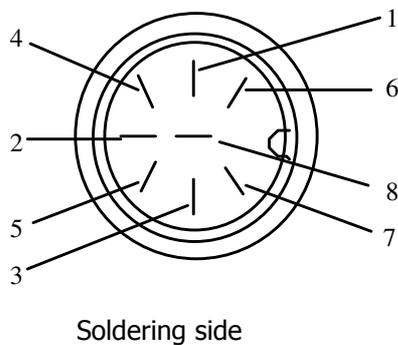
Dial setting   Resolution (only when using 4 edge trigger mode)

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1000 = 1 mm
 500 = 0,5 mm
 100 = 0,1 mm
  50 = 0,05 mm
  10 = 0,01 mm
   5 = 0,005 mm
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Pinbelegung Buchse BU1 Sensorkabel

| Pin	Function	Sensor cable
1	+	Black
2	0 V	Brown
3	Sin +	Red
4	Sin -	Orange
5	Cos -	Green
6	Cos +	Yellow
7	Shield	

Output Connector assignment

Soldering side

Pin assignment BU2 Signal cable

Pin	Function	Colour SKA cable grey	Colour SKB cable black
Pin 1	0V	blue	white
Pin 2	+ 5 V/10-30 V	red	brown
Pin 3	A channel	green	green
Pin 4	B channel	yellow	yellow
Pin 5	Z marker pulse	brown	Black (only MIX4/5)
Pin 6	A' channel	pink	violet
Pin 7	B' channel	white	orange
Pin 8	Z' marker pulse	grey	Grey (only MIX4/5)

Plug connector only **MIX5 SN033**
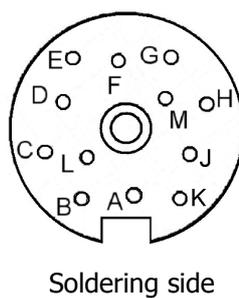
Pin assignment BU2 (only MIX5 SN033)

Soldering side

Pin	Function	cable
M	- GND	white
L	+ Supply	brown
J	A	green
K	A	violet
C	B	yellow
E	B	pink
G	Z	black
A	Z	grey
H	Enable	red/blue

Technical specifications MIX 1 - 5

Power supply: 10-30 VDC +/- 10 or 5 VDC (ripple < 2%)
Housing: zinc cast
Protection class: MIX1 IP67 (sensor head), IP40 (translator)
                                     MIX3/4/5 IP40 standard (IP63 option-V)
Operating temperature: -10 … +70 ºC
Output current: 20 mA/Channel
Output: HTL push/pull, short circuit protected, rectangular waves or TTL line driver
Reference pulse (MIX4/5):   approx. 0.2 msec
Operating speed for Reference pulse: 0.1m/sec max (= 6m/min)
Operating frequency for main tape (at chosen resolution)
                                     HTL: 60kHz
                                     TTL: 400kHz
The Translator can be delivered in three different formats

Input voltage/load current	**Output signal**
10-30 VDC /150mA	10-30 VDC HTL
5VDC*/200mA	5V TTL with complements
10-30 VDC /150mA	5V TTL with complements

*Use 0.14 mm^2 cable minimum. Max. length 10 m.

Power supply version 11 - 27 V / 10-30 V output level

Consumption		: max. 150 mA	
Counting frequenzy		: max. 64 KHz	
Operation speed when resolution:	0,1 mm	0,64 m/s	38,4 m/min
	0,01 mm	0,64 m/s	38,4 m/min
	0,005 mm	0,32 m/s	19,2 m/min

### Power supply version 5 V / 5 V TTL Line Driver out

Consumption		: max. 200 mA	
Counting frequenzy		: max. 400 KHz	
Max. cable length		: 10 m	
Operation speed when resolution:	0,1 mm	3,0 m/s 180 m/min	(4,0m/s, 240m/min SN009)
	0,01 mm	3,0 m/s 180 m/min	(4,0m/s, 240m/min SN009)
	0,005 mm	1,5 m/s 90 m/min	(2,0m/s, 120m/min SN009)

Power supply version 10-30 V / 5 V TTL Line Driver out

Consumption	:	max. 150 mA
Counting frequenzy	:	max. 400 KHz
Operation speed	:	siehe Pos. 5.2

Mounting of Sensor

The sensor must operate against the Tape in accordance with the following tolerances.
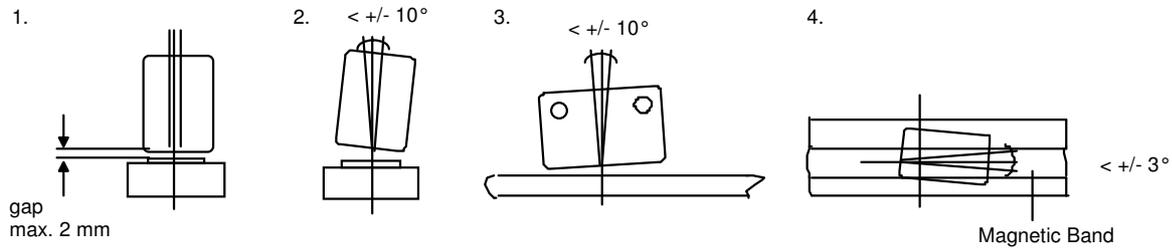
Ordering Codes

Magnetic Tape

> MB20.50 plus length (meter)

Sensor/Translator

> MIX1   Translator MIC1, plus
>
> Sensor MS20.60, plus
>
> Sensor cable length (meter)
>
> MIX3   Integrated Sensor/Translator
>
> without marker
>
> MIX4/5 Integrated Sensors/Translator
>
> with marker

Accessories

> MBS-1   Magnetic Tape for marker pulse
>
> (for use with MIX4/5)

Type designation of MIX

<div align="center">

MIX3-000-03.0-1-00-XXXX

</div>

Type description
MIX1: Small Sensor with separate Translator
MIX3: Translator and Sensor integrated in one unit
MIX4: additional Sensor for Reference mark one pulse after power on
MIX5: additional Sensor for Reference mark permanent signal

Construction
000 = standard
001 = 1st special version
033 = Only MIX5 (with enable input for reference)

Cable length in m for MIX1

Resolution
0 = 1 mm
1 = 1/10 mm
2 = 1/100 mm
3 = 5/1000 mm
4 = 5/10 mm
5 = 5/100 mm

Power Supply/ Output
00 =   10-30V 10-30V (MIX3 only)
01 =   10-30V 5V Line driver
11 =   5V/5V Line driver

Options
V = IP 67 version for MIX3/4/5
SG = with angle connector

<u>Accessories</u>

<div align="center">

MB 20-50-10-1-R XX.X

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Incremental Magnetic tape
Pole distance 5,0 mm

Length of tape (Please indicate in **XX.X** meters)

Screened signal cable SKA

<div align="center">

SKA-0.XX.X

</div>

Signal cable twisted pair 8 line 0,02mm²

0 = cable only
1 = connector of MIX fitted

Length of cable

Liability exclusion / Guarantee

We have checked the contents of this instruction manual carefully, to the best of our knowledge and belief for conformity with the described hardware and software. Nevertheless errors, mistakes or deviations can not be excluded, therefore we do not guarantee complete conformity. Necessary corrections will be included in the subsequent editions. We appreciate your ideas and improvement suggestions very much. Reprint, duplication and translation, even in extracts, are only allowed with a written authorization by the company ELGO Electric GmbH. We constantly strive for improving our products, therefore we keep all rights reserved for any technical modifications without any notice.

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