

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

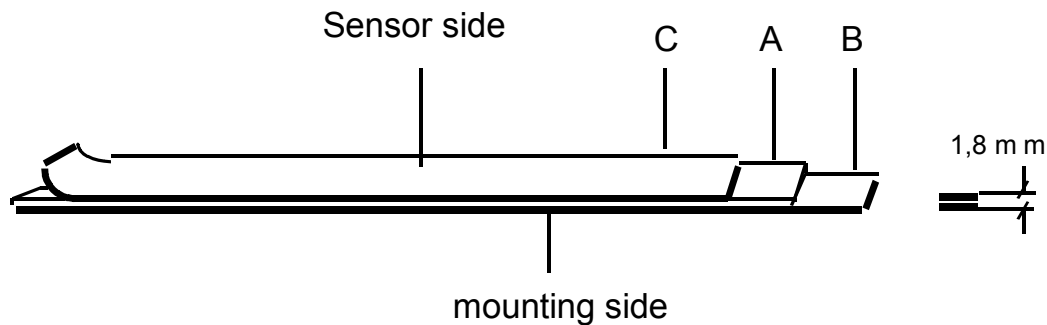


Only functional with an ELGO MB20-50-10-1-R magnetic tape!

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**

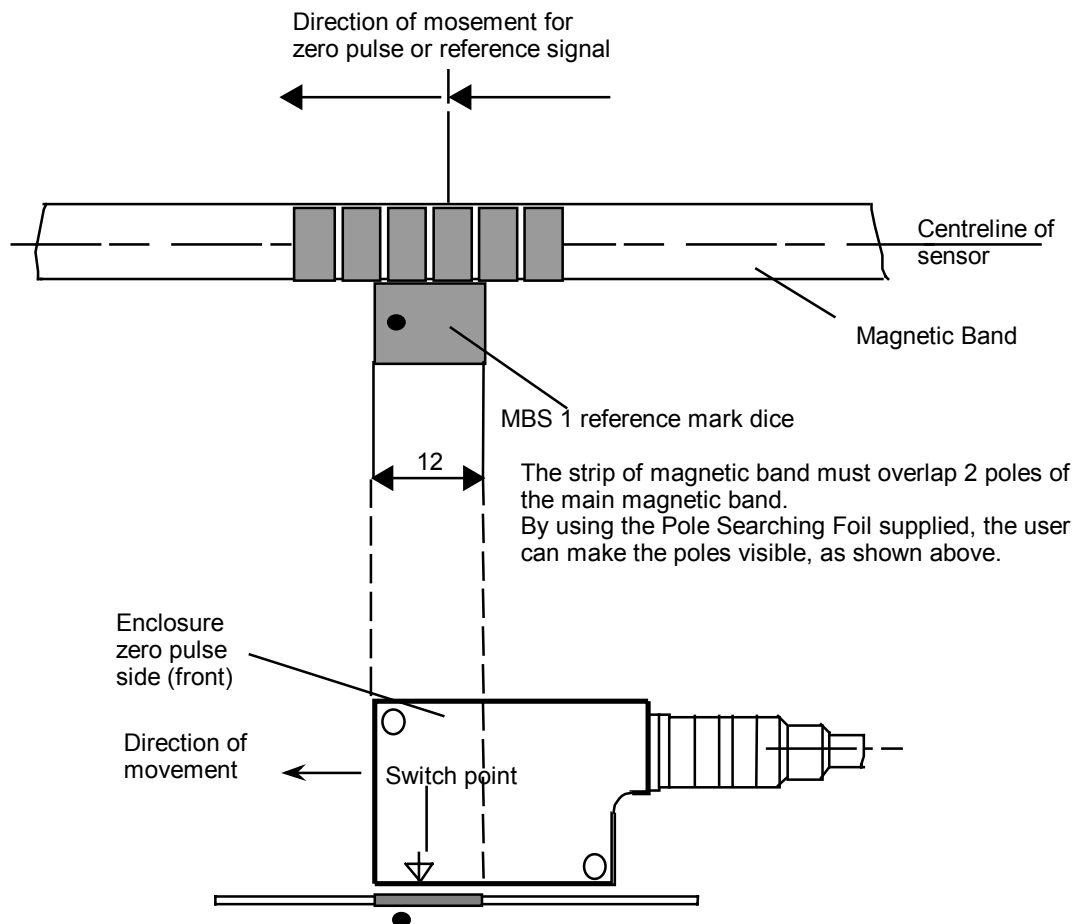
Operating temperature: 0° to 70°c
(Adhesive only suitable up to 40°C)

Accuracy (mm) at 20°C: $\pm (0.025+0.02 \times L)$
Where L is effective length in m

Temperature coefficient: $16 \times 10^{-6} / ^\circ\text{C}$
Protection class: IP66

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.



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

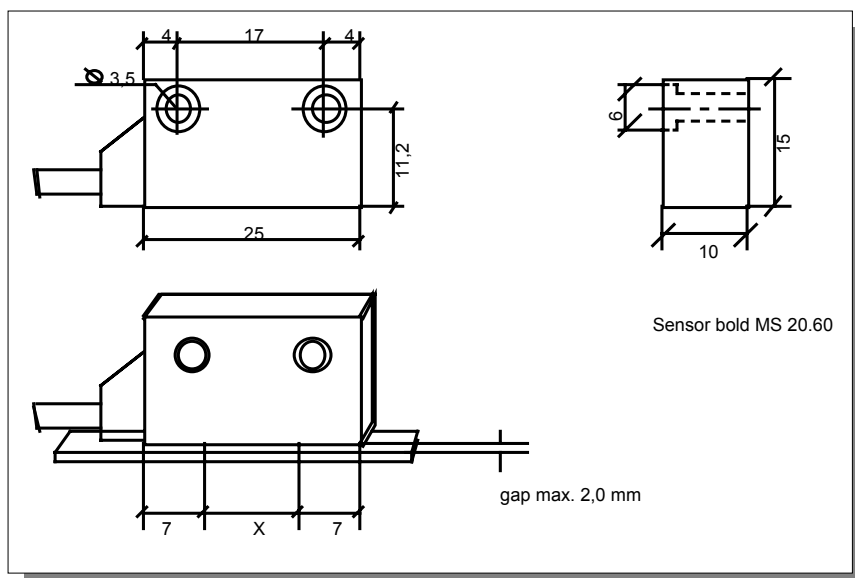
Three forms of Sensor are available.

- 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



Technical Specifications MIX1

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

Protection class: IP66 (head) IP40 (translator)

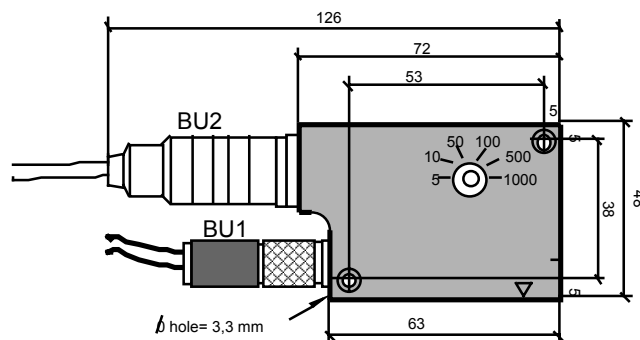
Enclosure: zinc cast

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

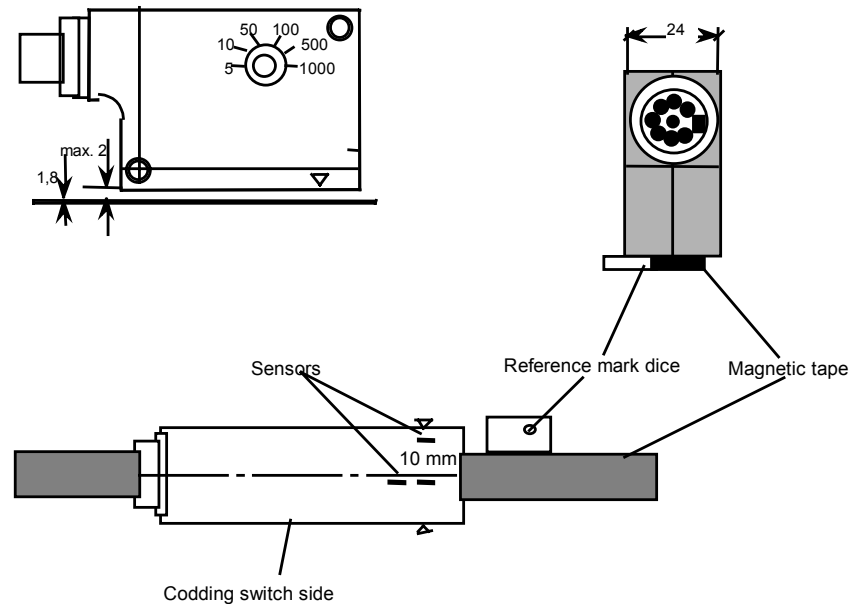
BU1: Special cable to Sensor Head, complete with connector mate.

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.



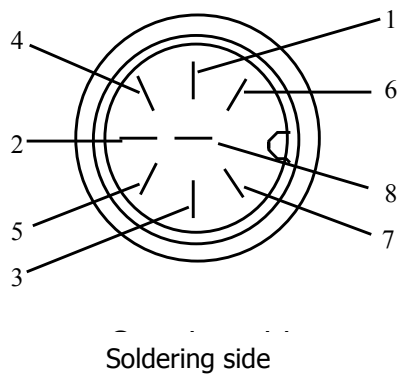
The output resolution is selectable by means of a rotary coding switch mounted on the side of the Head.

Dial setting

Resolution (only when using 4 edge trigger mode)

1000	1000 μm / pulse	(1mm)
500	500 μm / pulse	(0.5mm)
100	100 μm / pulse	(0.1mm)
50	50 μm / pulse	(0.05mm)
10	10 μm / pulse	(0.01mm)
5	5 μm / pulse	(0.005mm)

Output Connector assignment



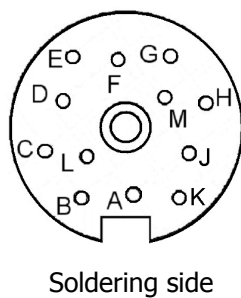
Pin	Function	Colour SKA cable grey	Colour SKB cable black
Pin 1	0V	blue	white
Pin 2	+ 5 V/10-30 V	red	brown
Pin 3	A channel	green	green
Pin 4	B channel	yellow	yellow
Pin 5	Z marker pulse	brown	black
Pin 6	A' channel	pink	violet
Pin 7	B' channel	white	orange
Pin 8	Z' marker pulse	grey	grey

Notes: Complementary signals A',B', & Z' are only used on 5V-TTL outputs.

Z (and Z') only used with MIX4/MIX5

Plug connector only **MIX5 SN033**

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



Pin	Function	cable
M	- GND	white
L	+ Supply	brown
J	A	green
K	\bar{A}	violet
C	B	yellow
E	\bar{B}	pink
G	Z	black
A	\bar{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:	0 ... + 50°C
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

10-30 VDC /150mA
5VDC*/200mA
10-30 VDC /150mA

Output signal

10-30 VDC HTL
5V TTL with complements
5V TTL with complements

*Use 0.14 mm² cable minimum. Max. length 10 m.

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

Consumption	: max. 150 mA		
Counting frequency	: 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

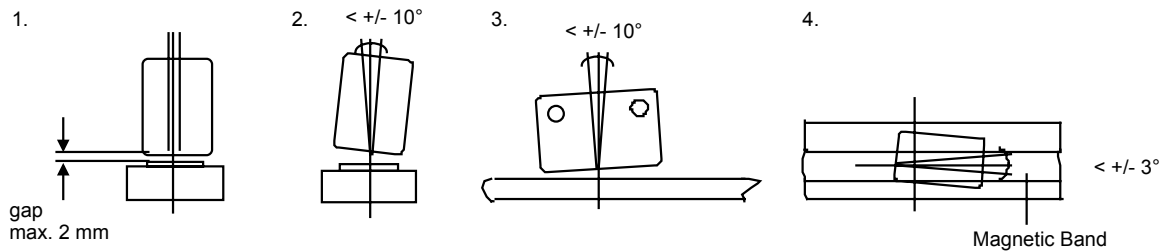
Consumption	: max. 200 mA		
Counting frequency	: max. 400 KHz		
Max. cable length	: 10 m		
Operation speed when resolution:	0,1 mm	3,0 m/s	180 m/min (4,0m/s, 240m/min SN009)
	0,01 mm	3,0 m/s	180 m/min (4,0m/s, 240m/min SN009)
	0,005 mm	1,5 m/s	90 m/min (2,0m/s, 120m/min SN009)

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

Consumption	:	max. 150 mA
Counting frequency	:	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

MIX3-000-03,0-1-00-XXXX

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

Accessories

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

Incremental Magnetic tape

Pole distance 5,0 mm

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

Screened signal cable SKA

SKA-0.XX.X

Signal cable twisted pair 8 line 0,02mm²

0 = cable only
 1 = connector of MIX fitted

Length of cable

Liability exclusion / Guarantee

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