

# LMAX/FLMAX - Magnetic Absolute Measuring System

## General

The series of LMAX respective FLMAX was developed, in order to be able to use the advantages of the absolute measurement principle even for larger distances (e.g. high bay racking). With LMAX and FLMAX now measuring lengths up to 1000 meters can be processed. For further processing, the measured absolute position are transmitted by interface to a super ordinate system (like PC or PLC).

### More facts of LMAX/FLMAX:

- Resolution 1 mm
- In standard with CANopen interface (optional RS-232, RS-422, Parallel\* or SSI\*)
- Power supply 10... 30 VDC
- Absolute measurements up to 1000 Meters
- With completely guided sensor head (FLMAX only)
- With two balance guidance's and guide carriages (option)
- Magnetic tape can be tensed in loose suspension vertically or laid horizontally
- Abrasion resistant and contactless measuring principle
- After initiation are no further referencing-procedures necessary

\* (on request)

## Technical specifications

|                        |                                    |
|------------------------|------------------------------------|
| Power supply           | 10... 30 VDC                       |
| Consumption            | max. 0.2 A                         |
| Signal levels          | 5 VTTL (CAN Specification)         |
| Repeating accuracy     | +/- 1 mm                           |
| Resolution             | 1 mm                               |
| Operation speed        | max. 16 m/sec.                     |
| Data transmission CAN  | Adjustable Bit rate up to 1 MBit/s |
| Measuring length       | max. 1000 m                        |
| Distance sensor / tape | max. 1.5 mm                        |
| Operation temperature  | 0 - 50 °C                          |
| Store temperature      | - 40 °C ... + 70 °C                |
| Humidity               | not condensing, max. 80 %          |
| Protection             | IP 50 (Standard)<br>IP 67 (Option) |

|                       |  |
|-----------------------|--|
| Magnetic tape EMAB    |  |
| Expansion coefficient | $\alpha = 16 \times 10^{-6} K^{-1}$                  |
| Linear extension      | $\Delta L = L \times \alpha \times \Delta \vartheta$ |
| Dimensions (W x H)    | 20 mm x approx 1.8 mm                                |
| min. bending radius   | 150 mm   |

|                |                          |
|----------------|--------------------------|
| Sensor Housing | Aluminium (Al/Mg/Si 0.5) |
| Dimensions     | see drawing below        |

|                      |  |
|----------------------|--|
| Cable                |  |
| Max. Length of cable | Depending on Bit rate,<br>125 KBit/s corresponding 400 m |
| min. bending radius  | 60 mm  |

### Interface/log:

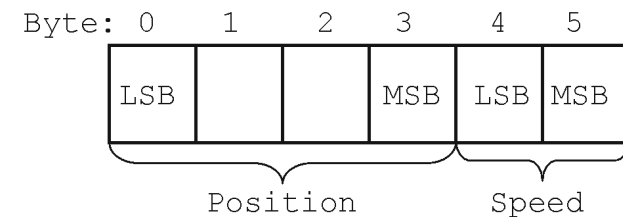
In standard the measuring system is equipped with a CANopen standard interface.

The following identifier is given:

**CAN - Identifier** (6 Byte telegram)

1D5 (sedecimal)

first 4 Bytes = position in mm (resolution 1 mm)  
second 2 Bytes = speed in mm/s, Bit rate 250 KB/s



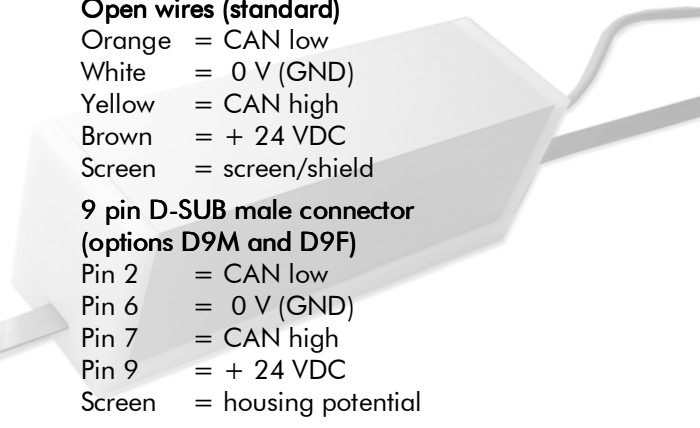
**Connections** (with CANopen interface):

#### Open wires (standard)

- Orange = CAN low
- White = 0 V (GND)
- Yellow = CAN high
- Brown = + 24 VDC
- Screen = screen/shield

#### 9 pin D-SUB male connector (options D9M and D9F)

- Pin 2 = CAN low
- Pin 6 = 0 V (GND)
- Pin 7 = CAN high
- Pin 9 = + 24 VDC
- Screen = housing potential



## ELGO- Absolute Measuring Systems

Changes of position are also recognized in power down status. No more referencing is necessary. The maximum of safety is guaranteed.

# LMAX/FLMAX - Magnetic Absolute Measuring System

## Type designation

**XXMAX - XXX - XX.X - X - XXX - X - XXX**

### Type/Guidance

- L = LMAX no guidance
- FL = FLMAX magnetic tape-guided LMAX

### Version

- 000 = standard
- 001 = fist special version etc.

### Length of signal cable in XX,X Meters

- 01.5 = standard length is 1,5 m  
(further are 1, 3, 5, 8 and 10 m's available)

### Resolution

- 0 = 1 mm

### Interface

- CAO = standard CANopen (encoder profile)
- 232 = RS-232
- 422 = RS-422
- SSI = SSI-Interface (in preparation)
- PAB = parallel interface, binary (in preparation)

### Options

- V = sealed version IP67
- D9M = 9 pin D-SUB male-connector (instead open wires) incl. counterpart
- D9F = 9 pin D-SUB female-connector (instead open wires) incl. counterpart

### Accessories

- AGF = 2 balance guidance's (length each 110 mm's)

## Magnetic tape (accessories)

Magnetic tape, absolute coded, single-track  
Please indicate desired length up to 1000 meters (001 = 1 m up to 000 = 1000 meters)

**LMAB - XXX**

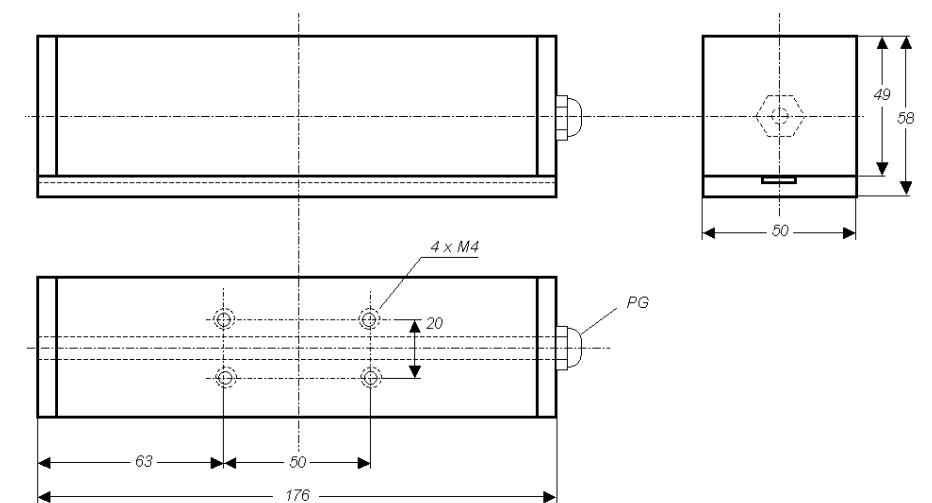


FLMAX with mounted balance guidance's



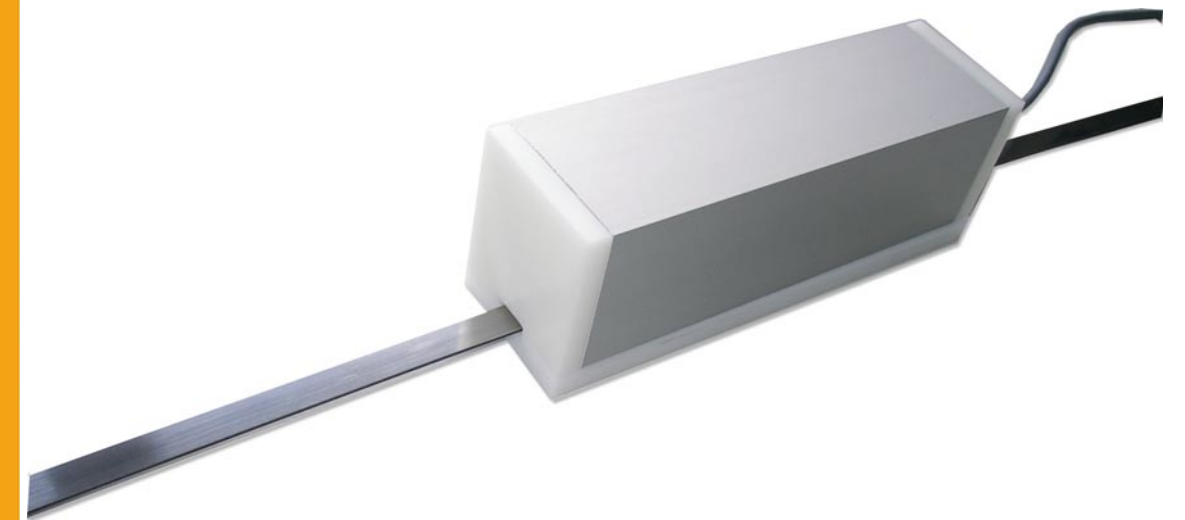
Accessories : two 110 mm long balance guidance's

## Dimensions





**ELGO**  
**ELECTRIC**



## **LMAX** resp. **FLMAX** **series**

Magnetic, absolute  
Length-Measuring-System  
up to 1000 Meters

**ELGO**  
**ELECTRIC**

Positioning- und  
Length measuring systems  
ELGO Electric GmbH