

Magnetic length and  
angle measuring system

**elesa<sup>®</sup>**

# MPI-15

## Magnetic length and angle measuring system



### • Features and applications

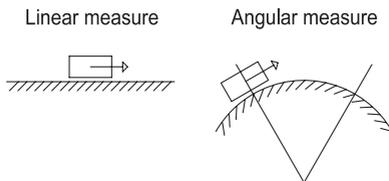
MPI-15 measuring system, made of a LCD multifunction display with integrated magnetic position sensor, combined with the magnetic band M-BAND (to be ordered separately), is a complete system for the measurement of linear and angular displacement. Characterised by an extremely easy assembly, it allows precise alignment and positioning, reducing time and machining procedures to the minimum.

- Multifunction LCD with 5 function keys.
- Absolute/ incremental mode.
- Programmable offset function.
- External battery power supply 1.5 VDC.
- Buffered memory during battery substitution.
- Accidental polarity inversion protection.
- Magnetic sensor envelope material: anodized aluminium.

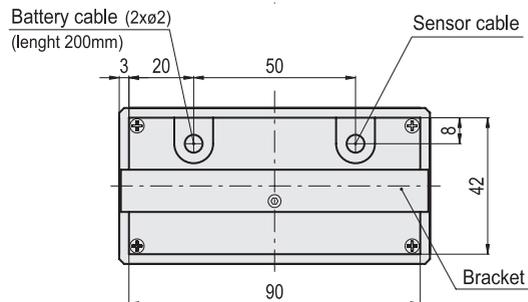
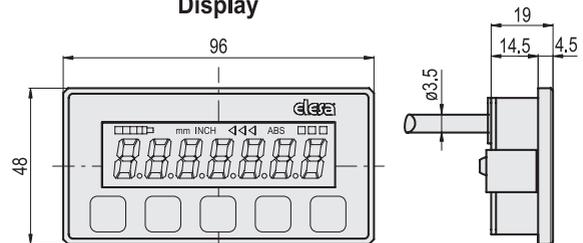
### Special executions on request

The special plate display may be supplied with customised graphic symbols, marks or writings.

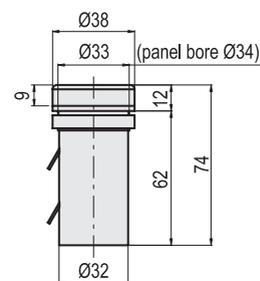
Magnetic sensor with cable length different from the standard executions shown in the table, up to 20 m maximum.



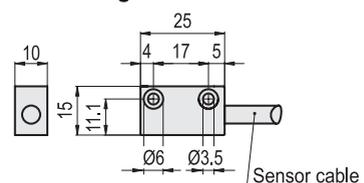
Display



Battery case



Magnetic sensor



MPI-15 Technical data	
Battery life	1.5 years (C-type battery)
Resolution (1)	0.1 mm - 0.01 in - 0.01°
Precision (2)	0.1 mm
Repeat accuracy (3)	0.01 mm
Operating speed	max 5 m/s
Self-diagnostic	battery check, sensor check, magnetic tape check
Programmable measuring unit	millimetres, inches, degrees (angles)
Working temperature	from 0°C to 50°C
Storage temperature	from -20°C to 70°C
Humidity	max 95% at 25°C without condensation
Protection level	IP40 whole device IP54 front side according to IEC 529 IP67 magnetic sensor
Interference protection	class 3 according to IEC 801

- (1) Resolution: the smallest change in length that the system is capable of displaying.
- (2) Precision: the maximum deviation of the value measured by the system from the actual one.
- (3) Repeat accuracy: the degree of closeness between a series of measures of the same sample, when the single measurements are carried out leaving the measurement conditions unchanged.

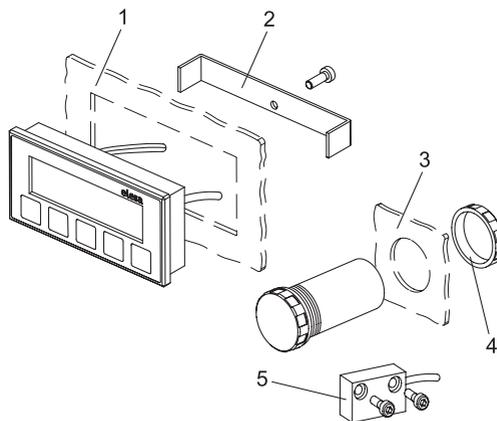
Elesa-Clayton		Weight of display
Code	Description	g
CE.99901-*	MPI-15-*	180

\* Complete by specifying the sensor cable length in decimetres (10=1 meter).  
Minimum length 0.2 m, maximum length 2.0 m.  
Example: CE.99901-06 MPI-15-06 display with sensor cable length 0.6 m.



### MPI-15 assembly instructions

- 1) Make a drilling of  $42^{+0.2/+0.5}$  mm x  $90^{+0.2/+0.5}$  mm in the metal sheet for the installation of the display.
- 2) Fix the display to the panel by using the specific mounting bracket (the screw is included in the supply).
- 3) Make a drilling of diameter  $34^{+0.2/+0.5}$  mm in the metal sheet for the installation of the battery case.
- 4) Fix the battery case to the panel by using the specific nut.
- 5) Fix the magnetic sensor by using M3 screws (not included in the supply). Distance between sensor and magnetic band to ensure a correct reading of the displacement: max 2.5 mm.



### Accessories on request

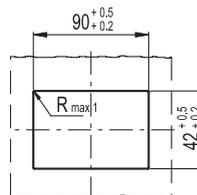
M-BAND-10: the magnetic band M-BAND-10 is made of two separate parts: the magnetic band and the cover strip. The magnetic band is made of a magnetic tape, a carrier strip and an adhesive tape (Fig.2). The cover strip is made of a protection strip and an adhesive tape (Fig.1).

### M-BAND-10 assembly instructions

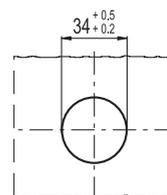
The cover strip must be installed over the magnetic band to protect it against possible mechanical damages.

- 1) Clean the mounting surface carefully.
- 2) Remove the protective foil from the adhesive tape of the magnetic band.
- 3) Stick the magnetic band on the mounting surface.
- 4) Clean the surface of magnetic band carefully.
- 5) Remove the protective foil from the adhesive tape of the cover strip.
- 6) Stick the cover strip on the magnetic band.
- 7) In the absence of a seat for the housing of M-BAND-10, secure the ends of the cover strip to prevent unintentional peeling.

Drilling template for display



Drilling template for battery case



(remove all drilling burrs before fitting the display / battery case)

M-BAND-10 Technical data	
Accuracy class	$\pm 40 \mu\text{m}$
Material	magnetic tape: nitrilic rubber
	carrier strip: stainless steel
	cover strip: stainless steel
	acrylic adhesive tape
Width	magnetic band: $10 \text{ mm} \pm 0.20 \text{ mm}$
	cover strip: $10 \text{ mm} \pm 0.20 \text{ mm}$
Thickness	magnetic band: $1.43 \pm 0.15 \text{ mm}$
	cover strip: $0.23 \text{ mm}$
Magnetic pole pitch	5 mm
Operating and storage temperature	min $-40^\circ\text{C}$ , max $+100^\circ\text{C}$
Linear thermic expansion factor	$17 \times 10^{-6}/\text{K}$

Fig.1

### Cover strip

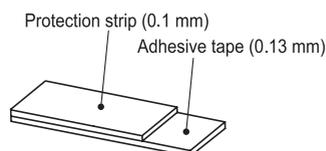


Fig.2

### Magnetic band

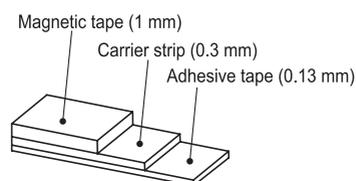
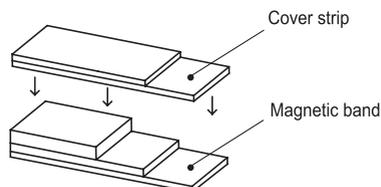


Fig.3

### Proper assembling



Elesa-Clayton		Band width	Band nominal thickness
Code	Description	[mm]	[mm]
CE.99903-*	M-BAND-10-*	10	1.66

\* Complete by specifying the length in decimetres (10=1 meter).  
Minimum length 0.5 m, maximum length 25 m.  
Example: CE.99903-15 M-BAND-10-15 magnetic band length 1.5 m.

# MPI-15

## Magnetic length and angle measuring system

The measuring system **MPI-15**, made of a multifunction display with integrated magnetic position sensor, combined with the magnetic band **M-BAND**, is a complete system for the measurement of linear and angular displacement. Characterised by an extremely easy assembly, it allows precise alignment and positioning, reducing time and machining procedures to the minimum.

### Magnetic measurement system: absence of contact between moving parts

- No wear: no need of maintenance
- Not affected by moisture, dust, oils and process residues
- Insensitive to vibrations

### Power supply

External battery 1.5 VDC.  
Buffered memory during battery substitution.

### Magnetic sensor

IP65 protection level  
Cable length up to 20 m.  
Operating speed up to 5m/s.  
Distance between sensor and magnetic band to ensure a correct reading of the displacement: 2.5 mm max.

### Display

Multifunction LCD with 5 function keys.  
Absolute/ incremental mode.  
Programmable measuring unit.  
Linear and angular measures.  
Programmable offset function.  
Resolution: 0.1 mm - 0.01 in - 0.01°  
Precision: 0.1 mm  
Repeat accuracy: 0.01 mm

### Magnetic band

Magnetic pole pitch 5 mm  
Easy assembly thanks to the adhesive tape  
Cover strip for protection against possible mechanical damages.

