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

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

Distance between sensor and magnetic band to ensure a correct reading of the displacement: 2.5 mm max.
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.

**Features and applications**

**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.

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**MPI-15 Technical data**

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

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(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.

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**Elesa-Clayton Weight of display**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE.99901-*</td>
<td>MPI-15-*</td>
<td>180</td>
</tr>
</tbody>
</table>

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* 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 $\pm 0.2/\pm 0.5$ mm x 90 $\pm 0.2/\pm 0.5$ 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 $\pm 0.2/\pm 0.5$ 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.

### M-BAND-10 Technical data

<table>
<thead>
<tr>
<th>Accuracy class</th>
<th>± 40 $\mu$m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>magnetic tape: nitrile rubber</td>
</tr>
<tr>
<td></td>
<td>carrier strip: stainless steel</td>
</tr>
<tr>
<td></td>
<td>cover strip: stainless steel</td>
</tr>
<tr>
<td></td>
<td>acrylic adhesive tape</td>
</tr>
<tr>
<td>Width</td>
<td>magnetic band: 10 mm ± 0.20 mm</td>
</tr>
<tr>
<td></td>
<td>cover strip: 10 mm ± 0.20 mm</td>
</tr>
<tr>
<td>Thickness</td>
<td>magnetic band: 1.43 ± 0.15 mm</td>
</tr>
<tr>
<td></td>
<td>cover strip: 0.23 mm</td>
</tr>
<tr>
<td>Magnetic pole pitch</td>
<td>5 mm</td>
</tr>
<tr>
<td>Operating and storage temperature</td>
<td>min -40°C, max +100°C</td>
</tr>
<tr>
<td>Linear thermal expansion factor</td>
<td>17 x 10⁻⁶/K</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elesa-Clayton Band width Band nominal thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
</tr>
<tr>
<td>CE.99903-10-15 M-BAND-10-15 magnetic band length 1.5 m.</td>
</tr>
</tbody>
</table>

* 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.

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