

Code <b>ST22</b>	Project <b>A25-C</b>	Release <b>A</b>	<b>TECHNICAL DATASHEET</b>
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## MAGNETIC SENSOR MTS I

### GENERAL CHARACTERISTICS

- Magnetic sensor for linear and angular reading.
- Resolutions up to 24,000 DPI.
- Contactless reading.
- Extremely easy and fast mounting of the entire measuring system, with wide alignment tolerances.
- Small size, to allow installation in narrow spaces.
- Magnetic band composed by a magnetized plastoferrite tape, with pole pitch 2.54+2.54 mm. The plastoferrite is supported by a stainless steel tape, already provided with the adhesive tape, for an easy application on the machine.
- To be used with magnetic band MP254.



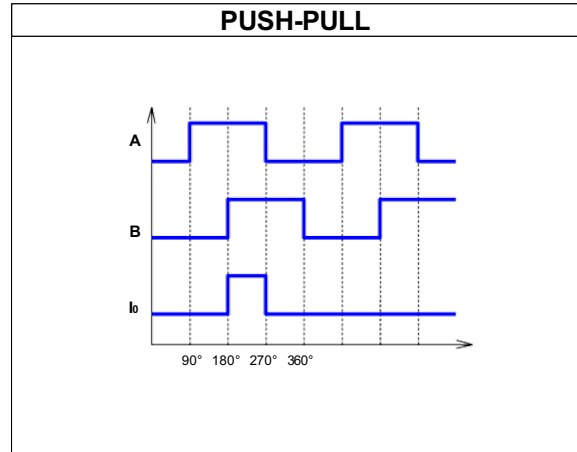
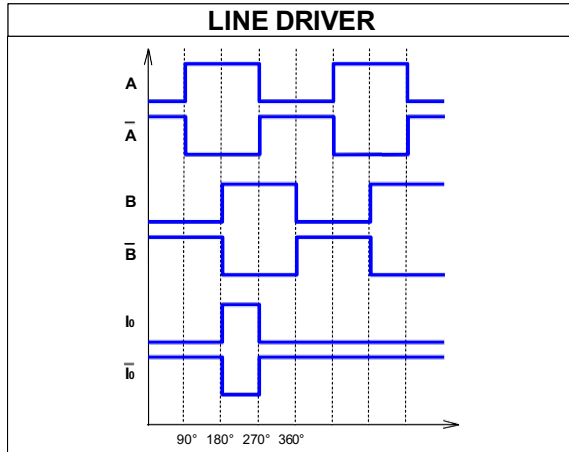
### MECHANICAL AND ELECTRICAL CHARACTERISTICS

<p><b>MECHANICAL</b></p> <ul style="list-style-type: none"> <li>• Magnetic sensor with die-cast body.</li> <li>• Possibility to fix the magnetic sensor with M4 screws or with through M3 screws.</li> <li>• Wide alignment tolerances.</li> </ul> <p><b>ELECTRICAL</b></p> <ul style="list-style-type: none"> <li>• Very flexible power cable.</li> <li>• Reading through positioning sensor based on magneto resistance, with AMR effect (Magnetic Anisotropy).</li> <li>• High signal stability.</li> <li>• Electrical protection against inversion of power supply polarity and short circuits on output port.</li> <li>• For applications where the maximum speed exceeds 1 m/s, it is necessary to use a cable <b>suitable for continuous movements</b>.</li> <li>• <b>CABLE:</b> As a standard, the sensor is supplied with the following cable:           <ul style="list-style-type: none"> <li>- 8-wire shielded cable <math>\varnothing = 6.1</math> mm, PVC external sheath, with low friction coefficient, oil resistant;</li> <li>- Conductors section: power supply 0.35 mm<sup>2</sup>; signals 0.14 mm<sup>2</sup>.</li> </ul>           PUR cable or cable with reduced section on request.  <b>The cable's bending radius should not be lower than 60 mm.</b> </li> </ul> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>LINE DRIVER</th> <th>PUSH-PULL</th> <th>CONDUCTOR COLOR</th> </tr> </thead> <tbody> <tr><td>A</td><td>A</td><td>Green</td></tr> <tr><td><math>\bar{A}</math></td><td></td><td>Orange</td></tr> <tr><td>B</td><td>B</td><td>White</td></tr> <tr><td><math>\bar{B}</math></td><td></td><td>Light-blue</td></tr> <tr><td>I<sub>0</sub></td><td>I<sub>0</sub></td><td>Brown</td></tr> <tr><td><math>\bar{I}_0</math></td><td></td><td>Yellow</td></tr> <tr><td>+ V</td><td>+ V</td><td>Red</td></tr> <tr><td>0 V</td><td>0 V</td><td>Blue</td></tr> <tr><td>SCH</td><td>SCH</td><td>Shield</td></tr> </tbody> </table> <p>As a standard, the sensor is supplied with a 2-m cable. Longer lengths are available, with the following limits:            L<sub>max</sub> = 10 m sensor cable            L<sub>max</sub> = 100 m 2 m sensor cable + cable extension *</p>	LINE DRIVER	PUSH-PULL	CONDUCTOR COLOR	A	A	Green	$\bar{A}$		Orange	B	B	White	$\bar{B}$		Light-blue	I <sub>0</sub>	I <sub>0</sub>	Brown	$\bar{I}_0$		Yellow	+ V	+ V	Red	0 V	0 V	Blue	SCH	SCH	Shield	<b>Cod. MTS</b>	<b>I</b>
	LINE DRIVER	PUSH-PULL	CONDUCTOR COLOR																													
	A	A	Green																													
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	+ V	+ V	Red																													
	0 V	0 V	Blue																													
	SCH	SCH	Shield																													
	<b>Pole pitch</b>	2.54+2.54 mm																														
	<b>Reference indexes</b>	<b>C</b> = constant step (every 2.54 mm)																														
	<b>Resolution</b>	600 - 1,200 - 2,400 - 3,000 - 4,800 - 6,000 - 9,600 - 12,000 - 24,000 DPI																														
	<b>Accuracy **</b>	± 10 µm																														
<b>Max. traversing speed ***</b>	1.2 m/s ( <b>24,000 DPI</b> )    14 m/s ( <b>1,200 DPI</b> )																															
<b>Max. frequency</b>	300 kHz (up to 500 kHz on request)																															
<b>Repeatability</b>	± 1 increment																															
<b>A, B and I<sub>0</sub> output signals</b>	LINE DRIVER / PUSH-PULL																															
<b>Vibration resistance (EN 60068-2-6)</b>	300 m/s <sup>2</sup> [55 ÷ 2,000 Hz]																															
<b>Shock resistance (EN 60068-2-27)</b>	1,000 m/s <sup>2</sup> (11 ms)																															
<b>Protection class (EN 60529)</b>	IP 67																															
<b>Operating temperature</b>	0 °C ÷ 50° C																															
<b>Storage temperature</b>	-20 °C ÷ 80° C																															
<b>Relative humidity</b>	100%																															
<b>Power supply</b>	5 ÷ 28 Vdc ± 5%																															
<b>Current consumption without load</b>	60 mA <sub>MAX</sub>																															
<b>Current consumption with load</b>	140 mA <sub>MAX</sub> (with 5 V and R = 120 Ω) 90 mA <sub>MAX</sub> (with 28 V and R = 1.2 kΩ)																															
<b>Electrical connections</b>	see related table																															
<b>Electrical protections</b>	inversion of polarity and short circuits																															
<b>Weight</b>	40 g																															

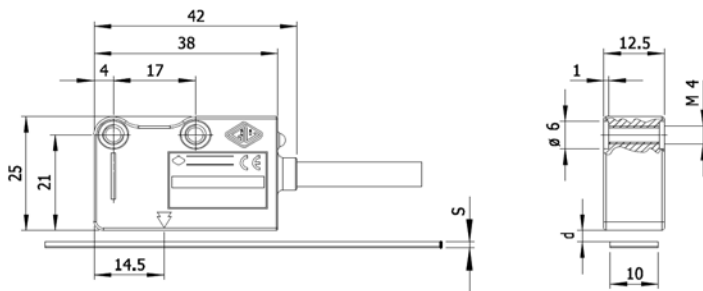
\* Cable extensions need to have a 0.5 mm<sup>2</sup> section for power supply conductors.  
 \*\* To obtain the declared accuracy values, it is necessary to respect the alignment tolerances prescribed by the Manufacturer. Better accuracy can be obtained by reducing the gap between the sensor and the magnetic band. With 600 DPI resolution, the accuracy is ± 14 µm.  
 \*\*\* The indicated speeds are referred to a maximum frequency of 300 kHz.

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**OUTPUT SIGNALS**



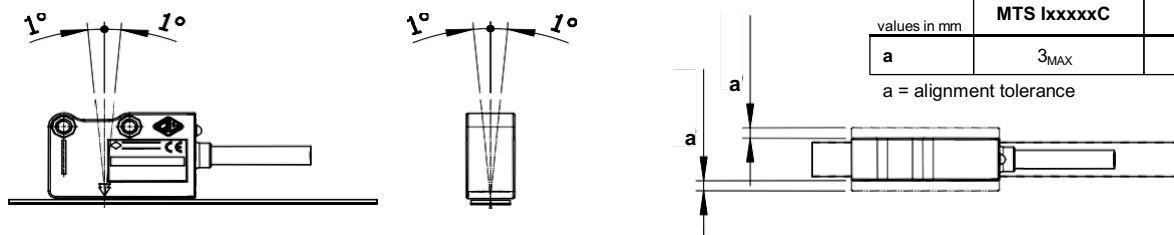
**SENSOR DIMENSIONS**



values in mm	MP254	MP254 + CV103	MP254 + SP202	MP254 + GVS 100
s	1.3	1.6	2.1	7.6
d	0.2 ÷ 1.4	1.1 <sub>MAX</sub>	0.6 <sub>MAX</sub>	0.3 ÷ 1

s = thickness  
 d = distance to be maintained between sensor and surface of the magnetic band (or eventual cover/support)

**SENSOR ALIGNMENT TOLERANCES**



values in mm	MTS IxxxxC	MTS I for GVS 100
a	3 <sub>MAX</sub>	1 <sub>MAX</sub>

a = alignment tolerance

**ORDERING CODE**

MODEL	POLE PITCH	RESOLUTION	REFERENCE INDEXES	POWER SUPPLY	OUTPUT SIGNALS	CABLE	CONNECTION	PROGRAMMING	SPECIAL
<b>MTS</b>	<b>I</b>	<b>600</b>	<b>C</b>	<b>528V</b>	<b>L</b>	<b>M02 / N</b>	<b>SC</b>	<b>F</b>	

I = 2.54+2.54 mm    24000 = 24,000 DPI    C = constant step    528V = 5+28 Vdc    L = LINE DRIVER    M01/N = 1 m    SC = without connector    F = fixed    No cod = standard  
 6000 = 6,000 DPI    1200 = 1,200 DPI    600 = 600 DPI    5285 = 5+28 Vdc with 5 V output    Q = PUSH-PULL    M02/N = 2 m    Cnn = progressive    V = variable    SPnn = special nn  
 G = for GVS 100

Example **MAGNETIC SENSOR MTS I 600 C 528V L M02 / N SC F**