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| Code ST08 | Project A40-B | Release A | TECHNICAL DATASHEET |
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MAGNETIC SENSOR MTV H

GENERAL CHARACTERISTICS

- Magnetic sensor for linear and angular reading.
- Resolutions up to 1 μm .
- 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 5+5 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 MP500.



MECHANICAL AND ELECTRICAL CHARACTERISTICS

| MECHANICAL <ul style="list-style-type: none"> • Magnetic sensor with die-cast body. • Possibility to fix the magnetic sensor with M4 screws or with through M3 screws. • Wide alignment tolerances. ELECTRICAL <ul style="list-style-type: none"> • Very flexible power cable. • Reading through positioning sensor based on magneto resistance, with AMR effect (Magnetic Anisotropy). • High signal stability. • Electrical protection against inversion of power supply polarity and short circuits on output port. • For applications where the maximum speed exceeds 1 m/s, it is necessary to use a cable suited for continuous movements. <p>• CABLE: As a standard, the sensor is supplied with the following cable:</p> <ul style="list-style-type: none"> - 8-wire shielded cable $\varnothing = 6.1$ mm, PVC external sheath, with low friction coefficient, oil resistant; - Conductors section: power supply 0.35 mm²; signals 0.14 mm². <p>PUR cable or cable with reduced section on request.</p> <p>The cable's bending radius should not be lower than 60 mm.</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>SIGNALS</th> <th>CONDUCTOR COLOR</th> </tr> </thead> <tbody> <tr><td>A</td><td>Green</td></tr> <tr><td>\bar{A}</td><td>Orange</td></tr> <tr><td>B</td><td>White</td></tr> <tr><td>\bar{B}</td><td>Light-blue</td></tr> <tr><td>I₀</td><td>Brown</td></tr> <tr><td>\bar{I}_0</td><td>Yellow</td></tr> <tr><td>+ V</td><td>Red</td></tr> <tr><td>0 V</td><td>Blue</td></tr> <tr><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_{max} = 10 m sensor cable L_{max} = 100 m 2 m sensor cable + cable extension *</p> | SIGNALS | CONDUCTOR COLOR | A | Green | \bar{A} | Orange | B | White | \bar{B} | Light-blue | I ₀ | Brown | \bar{I}_0 | Yellow | + V | Red | 0 V | Blue | SCH | Shield | Cod. MTV | H |
|---|--|--|---|-------|-----------|--------|---|-------|-----------|------------|----------------|-------|-------------|--------|-----|-----|-----|------|-----|--------|-----------------|----------|
| | SIGNALS | CONDUCTOR COLOR | | | | | | | | | | | | | | | | | | | | |
| A | Green | | | | | | | | | | | | | | | | | | | | | |
| \bar{A} | Orange | | | | | | | | | | | | | | | | | | | | | |
| B | White | | | | | | | | | | | | | | | | | | | | | |
| \bar{B} | Light-blue | | | | | | | | | | | | | | | | | | | | | |
| I ₀ | Brown | | | | | | | | | | | | | | | | | | | | | |
| \bar{I}_0 | Yellow | | | | | | | | | | | | | | | | | | | | | |
| + V | Red | | | | | | | | | | | | | | | | | | | | | |
| 0 V | Blue | | | | | | | | | | | | | | | | | | | | | |
| SCH | Shield | | | | | | | | | | | | | | | | | | | | | |
| | Pole pitch | 5+5 mm | | | | | | | | | | | | | | | | | | | | |
| | Reference indexes | C = constant step (every 5 mm) E = external | | | | | | | | | | | | | | | | | | | | |
| | Resolution | up to 1 μm ** | | | | | | | | | | | | | | | | | | | | |
| | Accuracy | ± 30 μm *** | | | | | | | | | | | | | | | | | | | | |
| | Max. traversing speed | 12 m/s | | | | | | | | | | | | | | | | | | | | |
| | Max. frequency | 2.4 kHz | | | | | | | | | | | | | | | | | | | | |
| | Repeatability | ± 1 increment | | | | | | | | | | | | | | | | | | | | |
| | A, B and I₀ output signals | sine wave 1 V _{pp} | | | | | | | | | | | | | | | | | | | | |
| | Vibration resistance (EN 60068-2-6) | 300 m/s ² [55 ÷ 2,000 Hz] | | | | | | | | | | | | | | | | | | | | |
| | Shock resistance (EN 60068-2-27) | 1,000 m/s ² (11 ms) | | | | | | | | | | | | | | | | | | | | |
| | Protection class (EN 60529) | IP 67 | | | | | | | | | | | | | | | | | | | | |
| | Operating temperature | 0 °C ÷ 50 °C | | | | | | | | | | | | | | | | | | | | |
| | Storage temperature | -20 °C ÷ 80 °C | | | | | | | | | | | | | | | | | | | | |
| | Relative humidity | 100% | | | | | | | | | | | | | | | | | | | | |
| | Power supply | 5 ÷ 28 Vdc $\pm 5\%$ | | | | | | | | | | | | | | | | | | | | |
| | Current consumption without load | 90 mA _{MAX} | | | | | | | | | | | | | | | | | | | | |
| | Current consumption with load | 110 mA _{MAX} (with 5 V and R = 120 Ω) 70 mA _{MAX} (with 28 V and R = 1.2 k Ω) | | | | | | | | | | | | | | | | | | | | |
| | Electrical connections | see related table | | | | | | | | | | | | | | | | | | | | |
| | Electrical protections | inversion of polarity and short circuits | | | | | | | | | | | | | | | | | | | | |
| | Weight | 40 g | | | | | | | | | | | | | | | | | | | | |

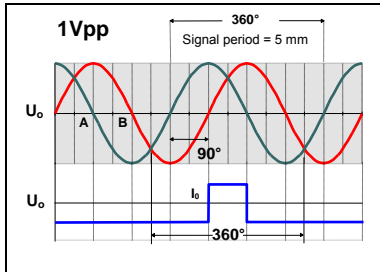
* Cable extensions need to have a 0.5 mm² section for power supply conductors.

** Depending on CNC division factor.

*** 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.

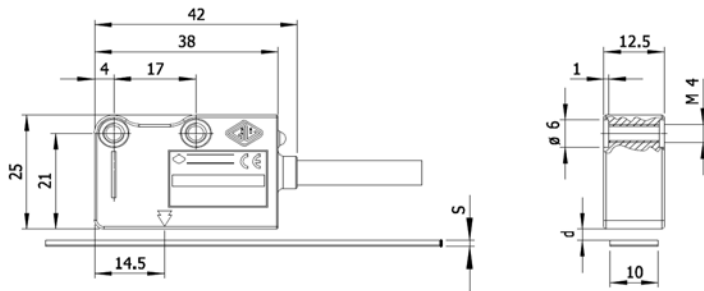
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OUTPUT SIGNALS



| | |
|---|------------------------------------|
| A and B amplitude | 0.6 Vpp ± 1.2 Vpp typical 1 Vpp |
| I ₀ amplitude | 0.25 V ± 0.6 V (usable component) |
| A and B phase displacement | 90° ± 10° electrical |
| Reference voltage U ₀ | ≈ 2.5 V |
| Signal amplitude is referred to a differential measurement made with 120 Ω impedance and a minimum power supply voltage of 5 V to the sensor. | |

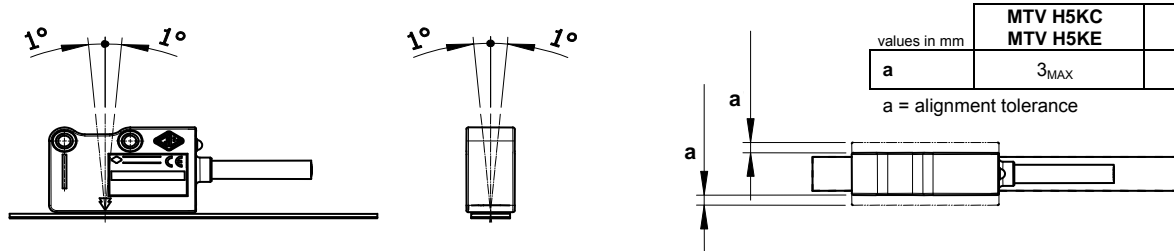
SENSOR DIMENSIONS



| values in mm | MP500 | MP500 + CV103 | MP500 + SP202 | MP500 + GVS 100 |
|--------------|---------|--------------------|--------------------|-----------------|
| s | 1.3 | 1.6 | 2.1 | 7.6 |
| d | 0.3 ÷ 3 | 2.7 _{MAX} | 2.2 _{MAX} | 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 | MTV H5KC MTV H5KE | MTV H for GVS 100 |
|--------------|----------------------|----------------------|
| a | 3 _{MAX} | 1 _{MAX} |

a = alignment tolerance

ORDERING CODE

| MODEL | POLE PITCH | PERIOD | REFERENCE INDEXES | POWER SUPPLY | OUTPUT SIGNALS | CABLE | CONNECTION | SPECIAL |
|------------|------------|-----------|-------------------|--------------|----------------|----------------|------------|---------|
| MTV | H | 5K | C | 528V | S | M02 / N | SC | |

H = 5+5 mm 5K = 5 mm C = constant step
E = external 528V = 5+28 Vdc S = sine wave M01/N = 1 m
M02/N = 2 m M03/N = 3 m SC = without connector Cnn = progressive
No cod = standard SPnn = special nn

Example  **MAGNETIC SENSOR MTV H 5K C 528V S M02 / N SC**