Code	Project	Release	
ST10	**A25-C**	**A**	**TECHNICAL DATASHEET**

MAGNETIC SENSOR MTS M

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 2+2 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 MP200 or MP200Z (with reference indexes positioned upon request).

MECHANICAL AND ELECTRICAL CHARACTERISTICS

MECHANICAL
- Magnetic sensor with die-cast body.
- Possibility to fix the magnetic sensor with M4 screws or with through M3 screws.
- Wide alignment tolerances.

ELECTRICAL
- 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 **suitable for continuous movements**.

- CABLE:

  As a standard, the sensor is supplied with the following cable:
  - 8-wire shielded cable $\varnothing$ = 6.1 mm, PVC external sheath, with low friction coefficient, oil resistant;
  - Conductors section: power supply 0.35 mm^2; signals 0.14 mm^2.

PUR cable or cable with reduced section on request.

The cable's bending radius should not be lower than 60 mm.

LINE DRIVER	PUSH-PULL	CONDUCTOR COLOR
A	A	Green
$\overline{A}$		Orange
B	B	White
$\overline{B}$		Light-blue
I_0	I_0	Brown
$\overline{I_0}$		Yellow
+ V	+ V	Red
0 V	0 V	Blue
SCH	SCH	Shield

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 *

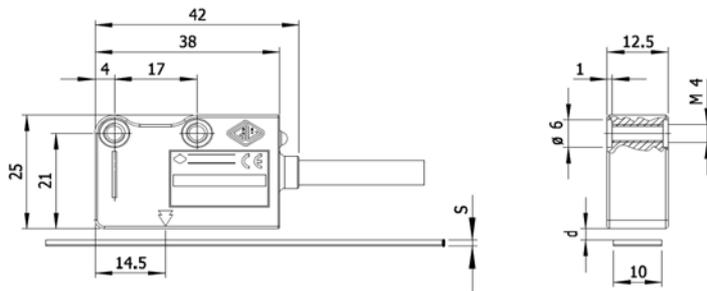| Cod. MTS	M							
Pole pitch	2+2 mm							
Reference indexes	**C** = constant step (every 2 mm) ** **E** = external **Z** = positioned on the magnetic band							
Resolution (µm)	1,000	500	100	50	25	10	5	1
Accuracy (µm) ***	$\pm$ 15		$\pm$ 10	$\pm$ 8				
Max. traversing speed *****	1.2 m/s (**res. 1 µm**) 12 m/s (**res. 10 µm**)							
Max. frequency	300 kHz (up to 500 kHz on request)							
Repeatability	$\pm$ 1 increment							
A, B and I_0 output signals	LINE DRIVER / PUSH-PULL							
Vibration resistance (EN 60068-2-6)	300 m/s^2 [55 $\div$ 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 $\div$ 50° C							
Storage temperature	-20 °C $\div$ 80° C							
Relative humidity	100%							
Power supply	5 $\div$ 28 Vdc $\pm$ 5%							
Current consumption without load	60 mA$_{MAX}$							
Current consumption with load	140 mA$_{MAX}$ (with 5 V and R = 120 Ω) 90 mA$_{MAX}$ (with 28 V and R = 1.2 kΩ)							
Electrical connections	see related table							
Electrical protections	inversion of polarity and short circuits							
Weight	40 g							

*   Cable extensions need to have a 0.5 mm^2 section for power supply conductors.
**   With 1,000 µm resolution, the constant step is 4 mm.
*** 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.
**** The indicated speeds are referred to a maximum frequency of 300 kHz.

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OUTPUT SIGNALS

LINE DRIVER	PUSH-PULL
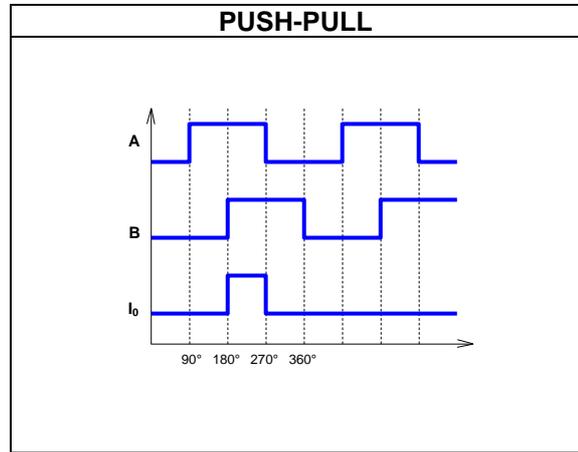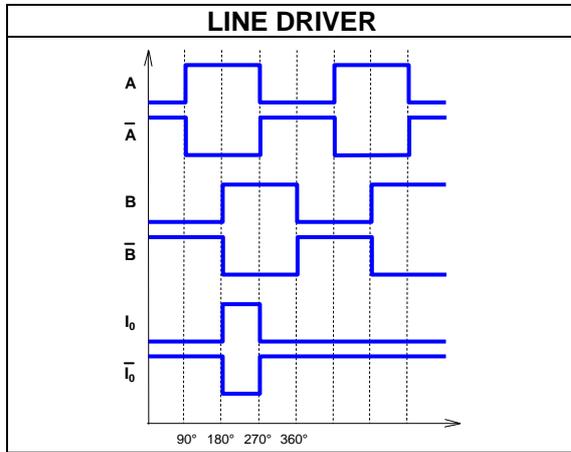
SENSOR DIMENSIONS

values in mm	MP200	MP200 + CV103	MP200 + SP202	MP200 + GVS 100
s	1.3	1.6	2.1	7.6
d	0.2 ÷ 1.4	1.1$_{MAX}$	0.6$_{MAX}$	0.3 ÷ 1

values in mm	MP200Z	MP200Z + CV103	MP200Z + SP202
s	1.3	1.6	2.1
d	0.3 ÷ 0.8	0.5$_{MAX}$	N.A.

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

SENSOR ALIGNMENT TOLERANCES
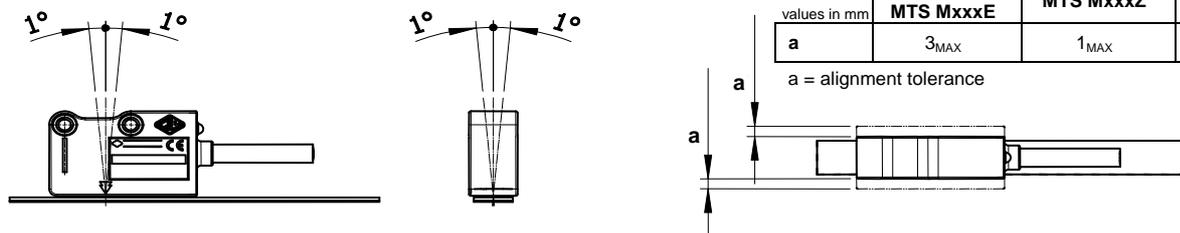
values in mm	MTS MxxxC MTS MxxxE	MTS MxxxZ	MTS M for GVS 100
a	3$_{MAX}$	1$_{MAX}$	1$_{MAX}$

a = alignment tolerance

ORDERING CODE

MODEL	POLE PITCH	RESOLUTION	REFERENCE INDEXES	POWER SUPPLY	OUTPUT SIGNALS	CABLE	CONNECTION	PROGRAMMING	SPECIAL
MTS	**M**	**1**	**C**	**528V**	**L**	**M02 / N**	**SC**	**F**	

| | M = 2+2 mm | 1K = 1,000 µm
100 = 100 µm
1 = 1 µm | C = constant step
E = external
Z = positioned on magnetic band | 528V = 5÷28 Vdc
5285 = 5÷28 Vdc with 5 V output | L = LINE DRIVER
Q = PUSH-PULL | M01/N = 1 m
M02/N = 2 m
M03/N = 3 m | SC = without connector
Cnn = progressive | F = fixed
V = variable
G = for GVS 100 | No cod = standard
SPnn = special nn |

Example ☞ **MAGNETIC SENSOR   MTS M 1 C 528V L M02 / N SC F**