

# SERIE MSA

## ABSOLUTE LINEAR MEASURING MAGNETIC SENSOR



- Linear magnetic sensor, with direct reading of the absolute position
- Magnetic detection without contact
- High speed serial interface
- Easy assembly; Wide alignment tolerances
- Resolution 10  $\mu\text{m}$
- Accuracy  $\pm 15 \mu\text{m}$
- Pole pitch 2+2
- Protection class IP67
- Warning indication through LED
- Connection by cable (other cable length available)



Linear measurement system



Magnetic



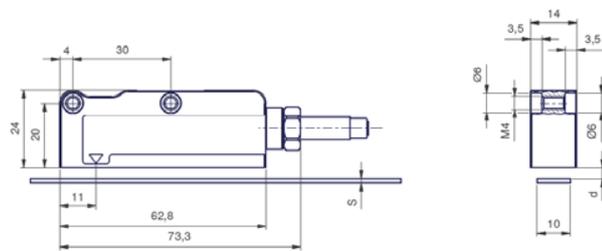
Absolute



Vibration and shock resistant



IP67

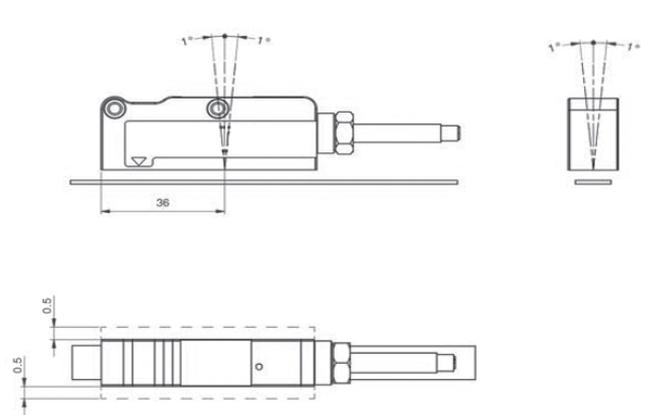


Magnetic band CSMA

	CSMA	CSM + PS*	CSM + AP*
S (mm)	1.3	1.6	2.1
d (mm)	0.3 $\div$ 1	0.7 MAX	0.2 MAX

(\* PS and AP see accessories section)

Drawing MSA sensor dimensions



Sensor alignment tolerances

### SENSOR REFERENCE

Reference example: MSA-M10528S7M02

Serie	Pole pitch	Resolution	Power supply	Interface	Connection	Special Customer
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	M. 2+2 mm	10. 10 $\mu\text{m}$ (* )	528. 5...28 VDC	S7. SSI Gray	M02. 2 meters cable	

(\* ) Resolution between edges (1 Pulse = 4 edges). Other resolutions available, upon request (1, 100  $\mu\text{m}$ ).

### BAND REFERENCE

Serie

CSMA

Band length:  ,  m (\* )

(\* ) 1 unit = 1 meter.

For a better protection of magnetic band from shavings, liquid sprinklings, powder, etc. we suggest to always use the stainless steel cover PS, already equipped with a double-sided adhesive tape, or the aluminium support AP (see accessories).



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### SENSOR SPECIFICATIONS

Absolute resolution	10 $\mu\text{m}$
Accuracy	$\pm 15 \mu\text{m}$
Repeatability	$\pm 1$ increment
Signal period	2 mm
GAP, distance sensor/band (d) see previous table	0,3 to 1 mm
Measuring length	up to 30 m
Max. traversing speed	300 m/min
Protection class (EN 60529)	IP67
Operating temperature range	0°C to +50°C
Storage temperature range	-20°C to +70°C
Humidity	100% not condensed
Vibration (EN 60068-2-6)	200 m/s <sup>2</sup> (55...2000 Hz)
Weight	80g
Axial connection	2 meters cable (other cable length or radial output available, upon request)

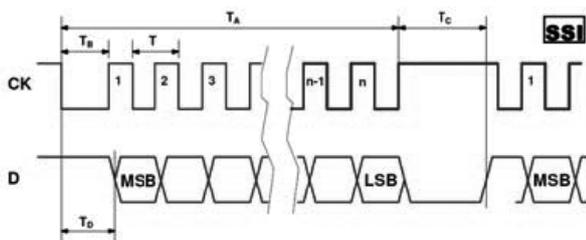
### OUTPUT SIGNALS



Interface	SSI Gray
Clock frequency	0,1...1,2 MHz
n	Position bit* = 24 bit
T <sub>c</sub>	12...45 $\mu\text{s}$
Power supply	5...28 VDC $\pm 5\%$
Current consumption	150 mA max (Z=120 $\Omega$ )
Length of cable allowed	20 m
Short circuit protection	Yes
Protection polarity inversion	Yes

Reading through positioning sensor based on magneto resistance, with AMR effect (Magnetic Anisotropy).

(\*) The number of bit transmitted is different for other resolutions. See values table in MSA reference manual, section 8.

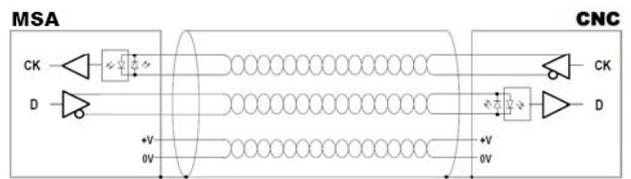


### CONNECTION



	<b>Cable</b> 2x2x0,25+2x0,25 mm <sup>2</sup>
GND	White
VCC	Brown
D+	Pink
D-	Grey
CK+	Green
CK-	Yellow
Shield	Shield

The cable is suitable for continuous movements.  
The cable's bending radius should not be lower than 70 mm.



- In case of cable extension, it is necessary to guarantee
- > The electrical connection between the body of the connectors and the cables shield.
  - > Ensuring a minimum power supply of 5 V to the sensor, the maximum cable length can be extended to 50 m.

# SERIE MSA

## ABSOLUTE LINEAR MEASURING MAGNETIC SENSOR

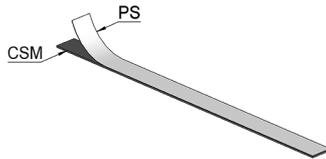


### BAND SPECIFICATIONS

Pole pitch	Incremental track 2+2 mm + absolute track
Accuracy at 20°C	±20 µm/m (high accuracy) ±80 µm/m (low accuracy)
Width band	10 mm
Thickness band "S" (see previous table)	1,3 mm
Maximum length	30 m
Thermal expansion	$10,5 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$ Tref: 20°C ± 0,1°C
Bending radius	≥ 130 mm
Operating temperature range	0°C to +70°C
Storage temperature range	-20°C to +80°C

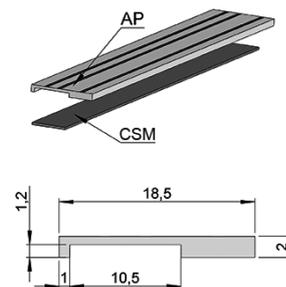
### ACCESSORIES

**PS:** Cover for band protection



Stainless steel cover for protection.  
To be placed in the magnetic band. (10 mm width - 0.3 mm thickness).

**AP:** Aluminium support



It is not possible to use the support AP if the magnetic band is already covered by PS band protection.

### INSTALLATION AND HANDLING

1. Degrease the surface you want to place the magnetic band by using alcohol and dry it carefully.
2. Place the band and keep it aligned with the reader head ensuring the magnetic part is just next to the sensor.
3. Place the cover PS or the support AP, if provided.
4. The max. adhesion will be achieved after 48 hours from sticking.
5. Keep other magnetic parts clear from the tape.
6. Store and roll up the tape keeping the magnetic strip on the outside, in order to avoid tensions.