

SERIE MSA

ABSOLUTE LINEAR MEASURING MAGNETIC SENSOR



SENSOR SPECIFICATIONS

Absolute resolution	10 μm
Accuracy	$\pm 15 \mu\text{m}$
Repeatability	± 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 ² (55...2000 Hz)
Weight	80g
Axial connection	2 meter cable (other cable length or radial output available, upon request)

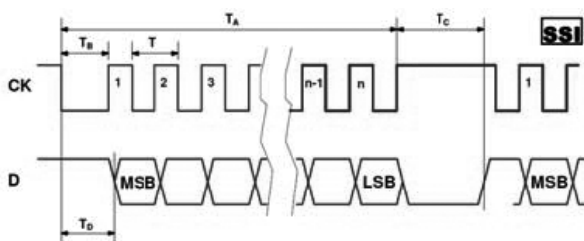
OUTPUT SIGNALS



Interface	SSI Gray
Clock frequency	0,1...1,2 MHz
n	Position bit* = 24 bit
T _c	12...45 μs
Power supply	5...28 VDC $\pm 5\%$
Current consumption	150 mA MAX (Z=120 Ω)
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.

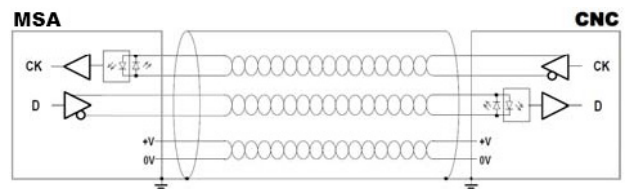


CONNECTION



	Cable 2x2x0,25+2x0,25 mm ²
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

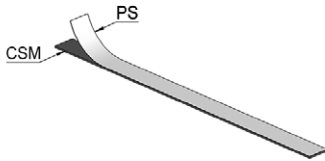


BAND SPECIFICATIONS

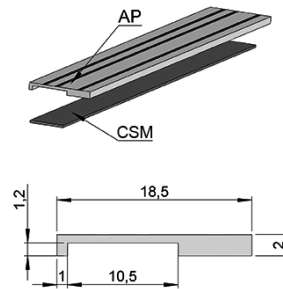
Pole pitch	Incremental track 2+2 mm + absolute track
Accuracy at 20°C	±20 µm/m (high accuracy) ±80 µm/m (low accuracy)
Width band	10 mm
Thickness band "S" (see previous table)	1,3 mm
Maximum length	30 m
Thermal expansion	$10,5 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$ Tref: 20°C ± 0,1°C
Bending radius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

ACCESSORIES

PS: Cover for band protection



AP: Aluminium support



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



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.




SERIE MSH

LINEAR MEASURING MAGNETIC SENSOR


- Magnetic detection without contact
- Easy assembly
- Resolution 5 μm
- Accuracy $\pm 6 \mu\text{m}$
- Pole pitch 1+1
- Protection class IP67
- Metallic cover
- Connection by cable (other cable length available)




Linear measurement system



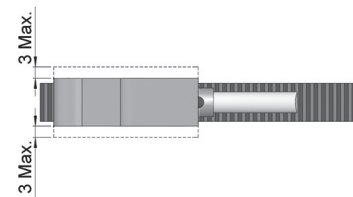
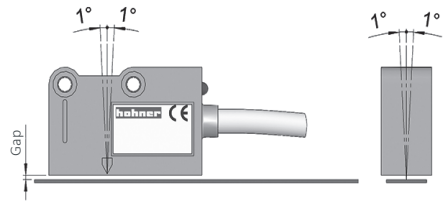
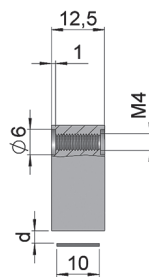
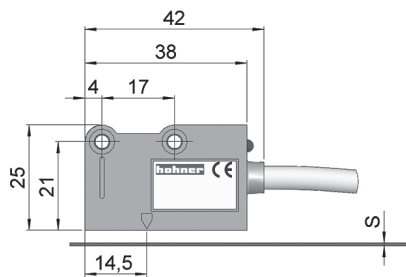
Magnetic



Vibration and shock resistant



IP 67



Magnetic band CSH

	CSH	CSH + PS*	CSH + AP*
S (mm)	1.3	1.6	2.1
d (mm)	0.1 \div 0.4	-	-

Drawing MSH sensor dimensions

Sensor alignment tolerances

SENSOR REFERENCE

Reference example: MSH-5528

Serie	Resolution	Power supply	Special customer
MSH -	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
Pole pitch 1+1	5.5 μm (*)	528. 5...28 VDC	

(*) Resolution between edges (1 Pulse = 4 edges). Other resolutions available, upon request (0.5, 1, 10 μm).

BAND REFERENCE

Serie

CSH

Band length: mm



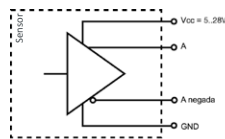
SERIE MSH

LINEAR MEASURING MAGNETIC SENSOR

SENSOR SPECIFICATIONS

Resolution	5 µm
Accuracy	±6 µm
Repeatability	±1 increment
GAP, distance sensor/band (d) see previous table	0,1 to 0,4 mm
Speed	6 m/s (10 µm)
Housing	Metallic
Protection class (EN 60529)	IP67
Operating temperature range	0°C to +50°C
Storage temperature range	-20°C to +80°C
Humidity	100% not condensed
Vibration (EN 60068-2-6)	300 m/s ² (55...2000 Hz)
Shock (EN 60068-2-27)	1000 m/s ² (11ms)
Weight	40g
Connection	2 meter cable

OUTPUT SIGNALS



OUTPUT CIRCUIT	Line Driver
Power supply	5...28 VDC ±5%
Load without charge	Max: 60 mA
Load with charge	140 mA MAX (VDC=5V and Z= 120Ω) 90 mA MAX (VDC=28V and Z= 1,2kΩ)
Frequency	300 kHz
Short circuit protection	Yes
Protection polarity inversion	Yes

Channel A leads 90° electrically channel B

CONNECTION



	Cable
	3x2x0,14+2x0,35 mm ²
GND	Blue
VCC	Red
A	Green
B	White
Ã	Orange
Ã	Sky blue
0 (reference)	Brown
0	Yellow

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

BAND SPECIFICATIONS

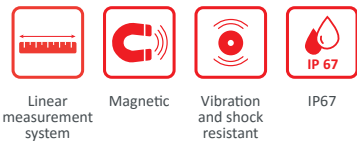
Pole pitch	1+1 mm
Accuracy at 20°C	±30 µm/meter
Width band	10 mm
Thickness band "S" (see previous table)	1,3 mm
Maximum length	50 m
Thermal expansion	10,5 x 10 ⁻⁶ °C ⁻¹ Tref: 20°C ± 0,1°C
Bending radius	≥ 130 mm
Operating temperature range	0°C to +70°C
Storage temperature range	-20°C to +80°C



SERIE MSL

LINEAR MEASURING MAGNETIC SENSOR

- Magnetic detection without contact
- Easy assembly
- Resolution 100 µm
- Accuracy ±50 µm
- Polar pitch 5+5
- Protection class IP67
- Metallic cover
- External or integrated reference signal
- Connection by cable (other cable length available)



Linear measurement system

Magnetic

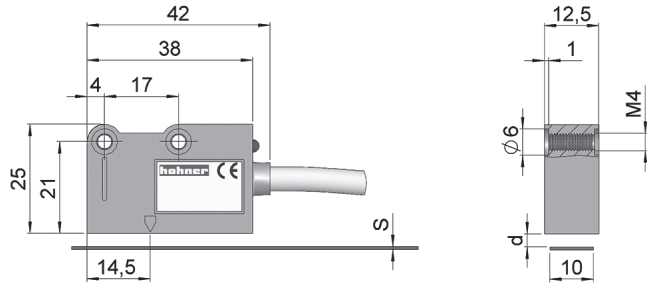
Vibration and shock resistant

IP67

Magnetic band CSL

	CSL	CSL + PS*	CSL + AP*
S (mm)	1.3	1.6	2.1
d (mm)	0.3 + 4	3.7 MAX	3.2 MAX

(*) PS and AP see accessories section



SENSOR REFERENCE

Reference example: MSL-100E528

Serie	Resolution	Zero	Power supply	Special customer
MSL -	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Pole pitch 5+5	100. 100 µm (*)	E. External (**)	528. 5...28 VDC	

(*) Resolution between edges (1 Pulse = 4 edges). Other resolutions available, upon request (5, 10, 25, 50 µm).

(**) Integrated zero available, upon request.

BAND REFERENCE

Serie

CSL

Band length: mm

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).

Integrated zero available, upon request.



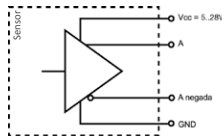
SERIE MSL

LINEAR MEASURING MAGNETIC SENSOR

SENSOR SPECIFICATIONS

Resolution	100 µm
Accuracy	±50 µm
Repeatability	±1 increment
GAP, distance sensor/band (d) see previous table	0,3 to 4 mm
Speed	30 m/s (25 µm)
Housing	Metallic
Protection class (EN 60529)	IP67
Operating temperature range	0°C to +50°C
Storage temperature range	-20°C to +80°C
Humidity	100% not condensed
Vibration (EN 60068-2-6)	300 m/s ² (55...2000 Hz)
Shock (EN 60068-2-27)	1000 m/s ² (11ms)
Weight	40g
Connection	2 meter cable

OUTPUT SIGNALS



OUTPUT CIRCUIT	Line Driver
Power supply	5..28 VDC ±5%
Load without charge	Max: 60 mA
Load with charge	140 mA MAX (Vdc=5v and Z= 120Ω) 90 mA MAX (Vdc=28v and Z= 1,2kΩ)
Frequency	300kHz
Short circuit protection	Yes
Protection polarity inversion	Yes

Channel A leads 90° electrics channel B

CONNECTION



	Cable
	3x2x0,14+2x0,35 mm ²
GND	Blue
VCC	Red
A	Green
B	White
Ã	Orange
Ã	Sky blue
0 (reference)	Brown
0	Yellow

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

BAND SPECIFICATIONS

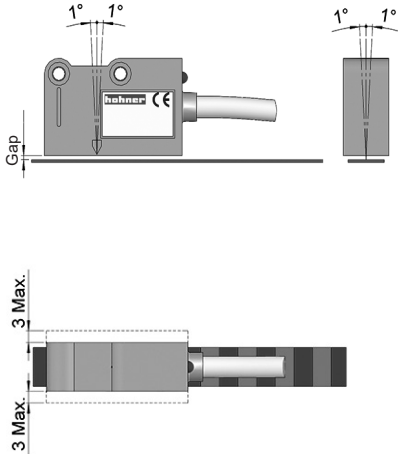
Pole pitch	5+5 mm
Accuracy at 20°C	±30 µm/meter
Width band	10 mm
Thickness band "S" (see previous table)	1,3 mm
Maximum length	25 m
Thermal expansion	10,5 x 10 ⁻⁶ °C ⁻¹ Tref: 20°C ± 0,1°C
Bending radius	≥ 130 mm
Operating temperature range	0°C to +70°C
Storage temperature range	-20°C to +80°C

SERIE MSL

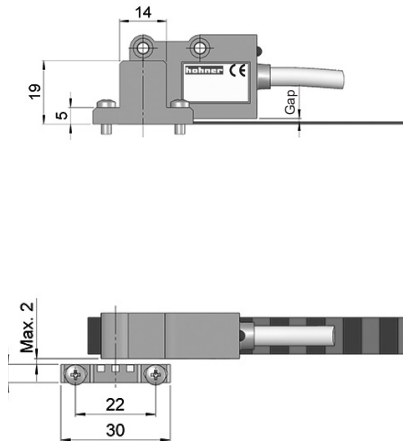
LINEAR MEASURING MAGNETIC SENSOR

ALIGNMENT AND SENSOR MOUNTING

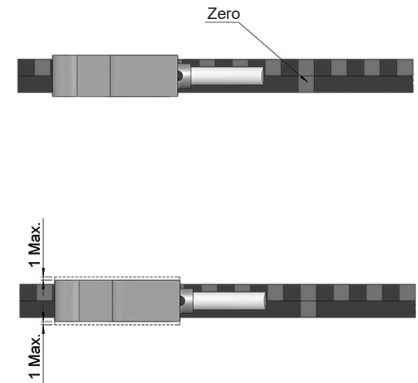
Sensor - Band



Sensor with external zero - Band

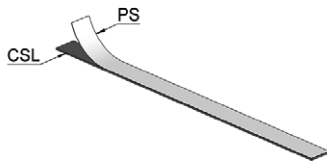


Sensor with integrated zero

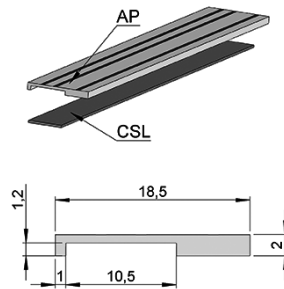


ACCESSORIES

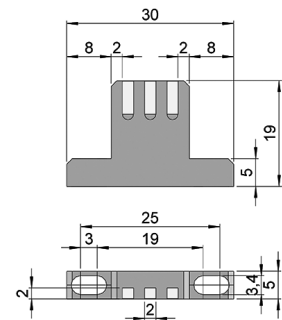
PS: Cover for band protection



AP: Aluminium support



EC: External zero



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



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

INSTALLATION AND HANDLING

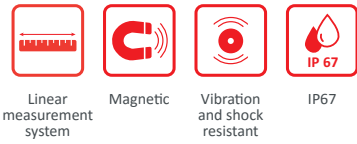
1. Degrease the surface you want to place the magnetic band by using alcohol and dry it carefully.
2. Place the band and keep it aligned with the reader head ensuring the magnetic part is just next to the sensor.
3. Place the cover PS or the support AP, if provided.
4. The max. adhesion will be achieved 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.



SERIE MSM

LINEAR MEASURING MAGNETIC SENSOR

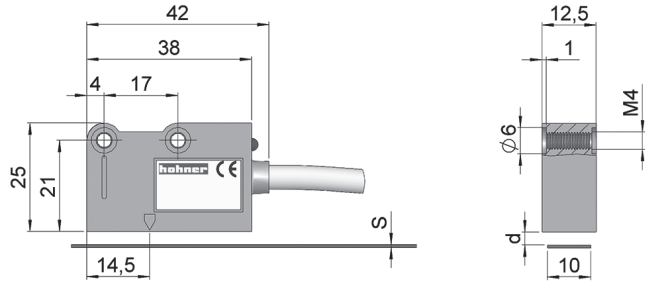
- Magnetic detection without contact
- Easy assembly
- Resolution 10 µm
- Accuracy ±8 µm
- Polar pitch 2+2
- Protection class IP67
- Metallic cover
- External or integrated reference signal
- Connection by cable (other cable length available)



Magnetic band CSM

	CSM	CSM + PS*	CSM + AP*
S (mm)	1.3	1.6	2.1
d (mm)	0.2 ÷ 1.4	1.1 MAX	0.6 MAX

(* PS and AP see accessories section)



SENSOR REFERENCE

Reference example: MSM-10E528

Serie	Resolution	Zero	Power supply	Special customer
MSM -	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
Pole pitch 2+2	10. 10 µm (*)	E. External (**)	528. 5...28 VDC	

(*) Resolution between edges (1 Pulse = 4 edges). Other resolutions available, upon request (1, 5, 25, 50, 100, 500, 1000 µm).

(**) Integrated zero available, upon request.

BAND REFERENCE

Serie

CSM

Band length: mm

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).

Integrated zero available, upon request.



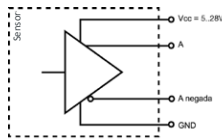
SERIE MSM

LINEAR MEASURING MAGNETIC SENSOR

SENSOR SPECIFICATIONS

Resolution	10 µm
Accuracy	±8 µm
Repeatability	±1 increment
GAP, distance sensor/band (d) see previous table	0,2 to 1,4 mm
Speed	12 m/s (10 µm)
Housing	Metallic
Protection class (EN 60529)	IP67
Operating temperature range	0°C to +50°C
Storage temperature range	-20°C to +80°C
Humidity	100% not condensed
Vibration (EN 60068-2-6)	300 m/s ² (55...2000 Hz)
Shock (EN 60068-2-27)	1000 m/s ² (11ms)
Weight	40g
Connection	2 meter cable

OUTPUT SIGNALS



OUTPUT CIRCUIT	Line Driver
Power supply	5...28 VDC ±5%
Load without charge	Max: 60 mA
Load with charge	140 mA MAX (VDC=5V and Z= 120Ω) 90 mA MAX (VDC=28V and Z= 1,2kΩ)
Frequency	300 kHz
Short circuit protection	Yes
Protection polarity inversion	Yes

Channel A leads 90° electrics channel B

CONNECTION



	Cable
	3x2x0,14+2x0,35 mm ²
GND	Blue
VCC	Red
A	Green
B	White
~A	Orange
~B	Sky blue
0 (reference)	Brown
~0	Yellow

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

BAND SPECIFICATIONS

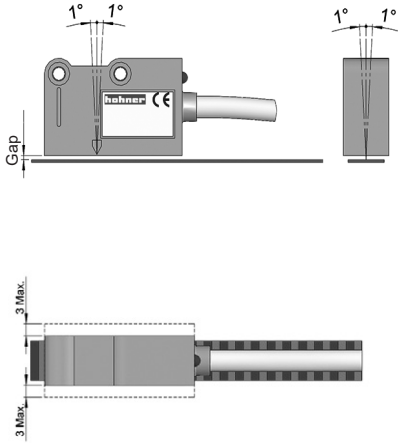
Pole pitch	2+2 mm
Accuracy at 20°C	±30 µm/meter
Width band	10 mm
Thickness band "S" (see previous table)	1,3 mm
Maximum length	50 m
Thermal expansion	10,5 x 10 ⁻⁶ °C ⁻¹ Tref: 20°C ± 0,1°C
Bending radius	≥ 130 mm
Operating temperature range	0°C to +70°C
Storage temperature range	-20°C to +80°C

SERIE MSM

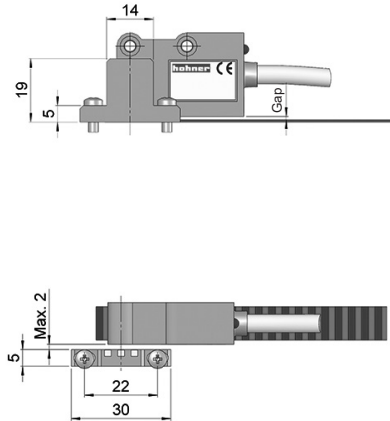
LINEAR MEASURING MAGNETIC SENSOR

ALIGNMENT AND SENSOR MOUNTING

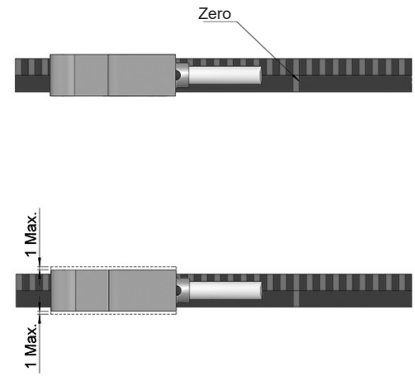
Sensor - Band



Sensor with external zero - Band

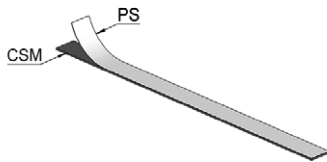


Sensor with integrated zero



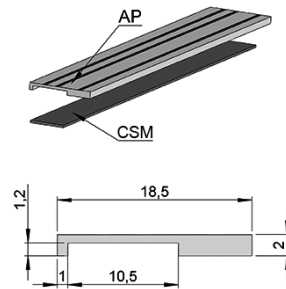
ACCESSORIES

PS: Cover for band protection



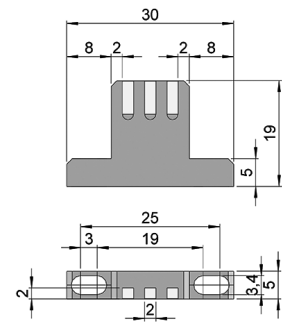
Stainless steel cover for protection. To be placed in the magnetic band (10 mm width - 0.3 mm thickness).

AP: Aluminium support



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

EC: External zero



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.

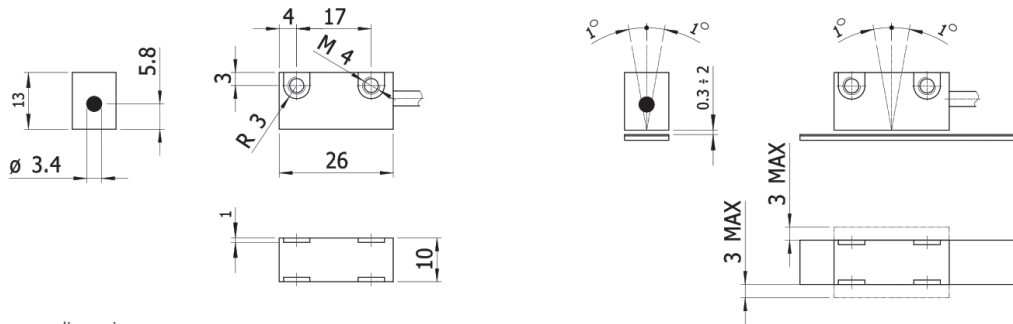


SERIE VIMS

DIGITAL READOUT WITH MAGNETIC SENSOR

- Magnetic detection without contact
- Easy assembly
- One axis Digital Readout with 6 ½ digit LCD and negative sign
- Programmable resolution
- Accuracy $\pm 20 \mu\text{m}$
- Polar pitch 2+2
- Wide alignment tolerances
- Magnetic Sensor of small overall dimensions
- Connection by cable (other cable length available)

Linear measurement system	Magnetic	Vibration and shock resistant	Sensor IP 67	Digital Readout IP 43	Express Delivery



Drawing VIMS sensor dimensions

REFERENCE

Reference example: VIMS-2BM02

Serie	Pole pitch	Power supply	Connection	Special customer
VIMS -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
	2. 2+2 mm	B. Batteries E. External power supply (1,5...5 V)	M02. 2 meter cable	

Configurable settings instructions in VIMS reference manual, section 9.

BAND REFERENCE

Serie

CSM

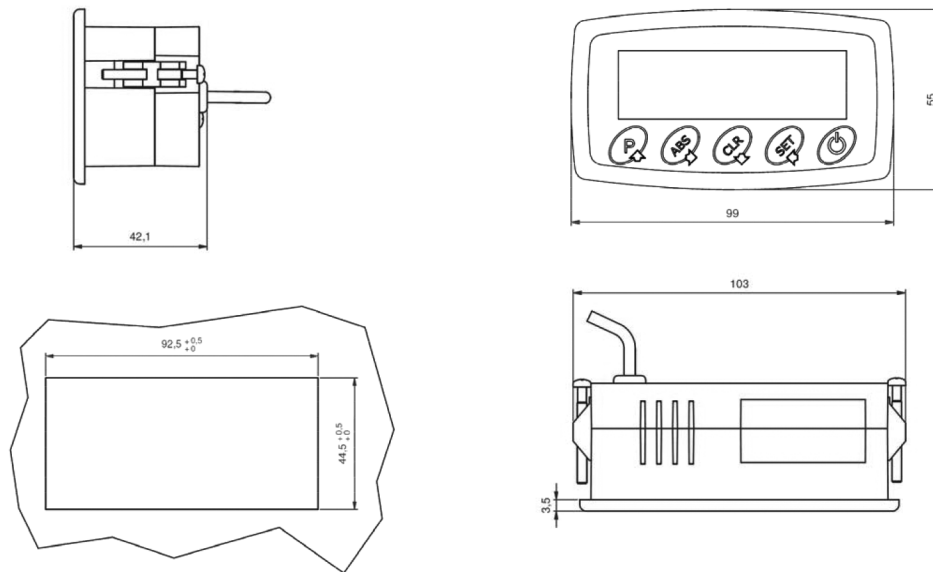
Band length: mm

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).



SERIE VIMS

DIGITAL READOUT WITH MAGNETIC SENSOR



Drawing VIMS digital readout dimensions

MECHANICAL AND ELECTRICAL SPECIFICATIONS

Display	6 ½ digits LCD h = 13 mm and negative sign
Programmable resolution	1.0 - 0.1 - 0.05 - 0.01 mm 0.01 - 0.001 - 1/16 - 1/32 - 1/64 inch 1° - 0.1° - 0.01° - 0.001° angular
Repeatability	± 1/2 digit
Power supply	Batteries x2 LR6 AA External (1,5...5 V)
Operating temperature range	0°C to +50°C
Storage temperature range	-20°C to +70°C
Humidity	95% (not condensed)

READOUT

Weight	100 g
Vibration (EN 60068-2-6)	25 m/s ² (55Hz...2000Hz)
Protection class (EN 60529)	IP 43

CABLE - 6 cores Ø 3,4 mm

Minimum bending radius	25 mm
Length	2 m

SENSOR SPECIFICATIONS

Maximum speed	4 m/s
Sensor - magnetic band gap	0,3...2 mm
Accuracy	± 20 µm
Magnetic band to be used with – pole pitch	CSM (2+2mm)
Vibration (EN 60068-2-6)	300 m/s ² (55Hz...2000Hz)
Shock (EN 60068-2-27)	1000 m/s ² (11 ms)
Protection class (EN 60529)	IP 67

SERIE VIMS

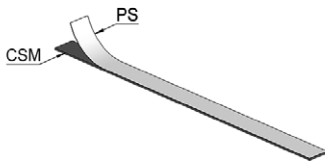
DIGITAL READOUT WITH MAGNETIC SENSOR

BAND SPECIFICATIONS

Pole pitch	2+2 mm
Accuracy at 20°C	±30 µm/m
Width band	10 mm
Thickness band	1,3 mm
Maximum length	50 m
Thermal expansion	$10,5 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$ T ref = 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

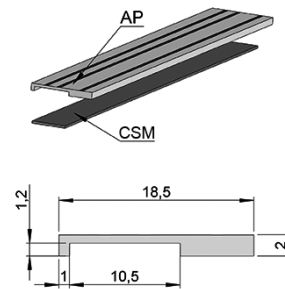
ACCESSORIES


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.

WARNING

WHAT TO AVOID

1. All mechanical reworks (Cutting, drilling, face milling a.s.o.).
2. All mishandling.
3. Impacts and external stress.
4. Avoid other magnetic fields.

