

## MW10015x

Devices for operating voltage 24V diagnostic coverage for scanning a magnetic strip without reference point

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### 1. Warranty information

Read this document carefully before mounting and start-up. For your own safety and operational reliability, observe all warnings and notes.

Your product has left our factory in certified and ready for operation status. The specifications given and the information on the type plate apply as a condition for operation.

Warranty claims only apply to products of ipf electronic gmbh. When used in conjunction with third-party products, there is no warranty claim for the entire system.

Repairs may only be carried out at the factory. If you have any further questions, please do not hesitate to contact ipf electronic gmbh.

### 2. Identification

**Magnetic strip:** Magnetic strip is available in 10mm (part number AM000085) and 20mm (part number AM000119) widths.

**Magnetic sensor:** The label shows the device type with part number that uniquely identifies the device.

**3. Mechanical assembly**

The installation may only be carried out in accordance with the specified IP protection class. If necessary, the system must be additionally protected against harmful environmental influences, e.g. splash water, solvents, dust, impacts, vibrations, strong temperature fluctuations.

**3.1 Mounting the magnetic Strip**

The mounting must be flat to the mounting surface or the distance to be measured. Waviness always reduces the measuring accuracy.

For technical reasons, the length must be at least 137mm longer than the measuring section.

Wherever no suitable mounting of the magnetic Strip is possible due to insufficient mounting options, the magnetic strip AM000085 (10mm width) can be mounted in a section rail (AM000050) available as an **accessory**. This creates a compact magnetic strip unit.

**Attention!** To achieve **optimum bonding**, all anti-adhesive foreign substances (oil, grease, dust, etc.) must be removed by cleaning agents which evaporate as far as possible without leaving any residue. Suitable cleaning agents include ketones (acetone) or alcohols, which are offered as quick cleaners by the companies Loctite and 3M, among others. The surfaces to be bonded must be dry and the highest possible contact pressure must be applied. The optimal bonding temperature is between 20°C and 30°C in dry rooms.



**Tip:** When bonding long tapes, the protective film of the adhesive tape should be removed via a short section to fix the tape. The tape is then aligned. Now the protective film can be pulled out sideways via the remaining length while simultaneously applying pressure to the tape. (A wallpaper pressure roller can be used as an aid).

**Assembly steps**

- Clean the mounting surface (1) carefully.
- Remove the protective film (2) of the adhesive tape (3) from the magnetic strip.
- Stick on the magnetic strip (4).
- Clean the magnetic strip surface carefully.
- Remove the protective film (6) of the adhesive tape from the cover strip (5).
- Stick on the cover strip (let it overlap slightly at both ends).
- Secure the overlapping ends of the cover strip against detachment.

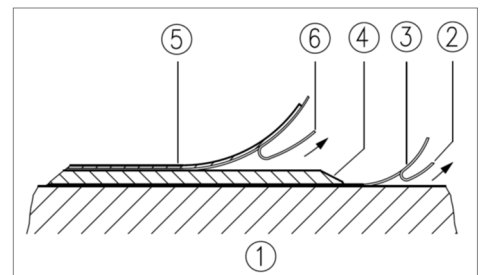


Fig. 1: Mounting the magnetic strip

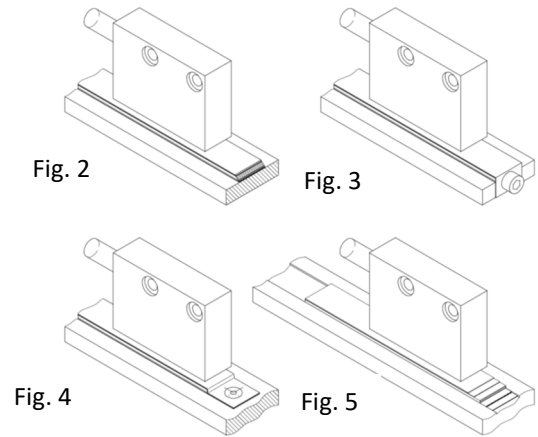
**Attention!** Avoid interference from magnetic fields. In particular, no magnetic fields (e.g. holding magnets or other permanent magnets) may come into direct contact with the magnetic strip. In de-energized status, movements or adjustments of the magnetic sensor are not recognized and detected by the subsequent electronics.



**Mounting examples**

The simple mounting method, using a beveled protective tape (Fig. 2), is only recommended in a very protected environment. In unprotected environments, there is a risk of peeling. In such cases, mounting methods as shown in Figs. 3 and 4 are more suitable.

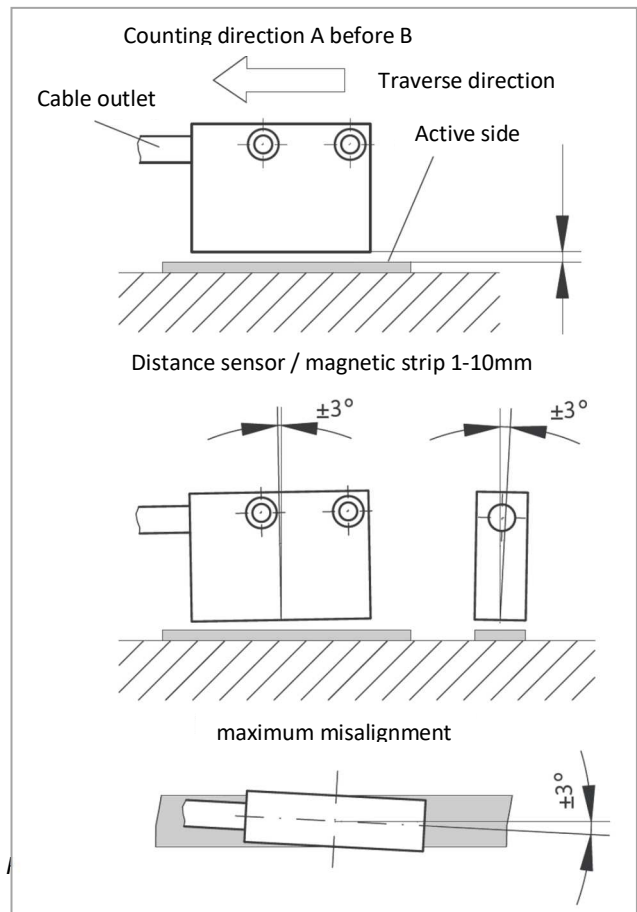
Optimum protection is provided by mounting in a groove (Fig. 5), which should be deep enough to allow the magnetic strip to be fully embedded in it.



**3.2 Mounting the magnetic sensor**

The magnetic sensor can be mounted by using 2 M3 screws via the  $\varnothing 3.5\text{mm}$  through holes. It is recommended to use the enclosed fixing screws and spring washers. The maximum tightening torque is 0.25Nm!

- Cables must be laid in such a way that there is no risk of damage from drafts or other machine parts. If necessary, use a drag chain or sheath and provide strain relief.
- Ensure correct alignment on the direction of counting (Fig. 6). This is irrelevant if the direction of counting can be reversed in the electronic evaluation.
- Observe the distance dimensions between sensor and magnetic strip as well as the angle tolerances, these must be complied with via the entire measuring distance! (Fig. 6)
- Maximum traverse speed < 25m/s.
- The maximum lateral offset depends on the magnetic strip width:
  - AM000085 (10mm wide): 2mm
  - AM000119 (20mm wide): 5mm



#### 4. Electrical connection

- Wiring work may only be carried out disconnected!
- Before switching on, check all line connections and plug connections.
- Tinned strands must not be used in conjunction with screw terminal connections.

#### Notes on interference immunity

All contactors are protected against external disturbing influences. However, the place of installation must be selected in such a way that inductive or capacitive interference cannot affect the sensor or its connection cable! Disturbing influences (e.g. from switching power supplies, motors, pulsed controllers or contactors) can be reduced by suitable cable routing and wiring.

#### Required Action:

- Only use shielded cable. Apply the cable shield on both sides. Wire cross-section of the lines min. 0.14mm<sup>2</sup>, max. 0.5mm<sup>2</sup>.
- The shielding and ground (0V) must be wired in a star configuration and over a large area. The connection of the shielding to the equipotential bonding must be made over a large area (low impedance).
- The system must be installed at as great a distance as possible from lines that are subject to interference; if necessary, provide for this. Avoid routing cables parallel to power lines.
- Contactor coils must be wired with spark suppressors.

#### Power supply

The voltage values depend on the sensor version and can be found in the delivery documents and on the type plate. (e.g.:  $U_B = 24V DC \pm 20\%$ )

#### 5. Maintenance

Clean the surface of the magnetic strip from time to time with a soft cloth if it is heavily soiled by dust, chips, moisture, etc.

#### 6. Error handling

Typical errors that occur during installation and operation:

- The magnetic strip was mounted incorrectly /active side down (chap. 3.1).
- The supplied cover strip was not used to protect the magnetic strip. The cover strip must be non-magnetizable.
- The sensor is not or not correctly connected (wiring diagram, chap. 7).
- The distance tolerance between sensor and magnetic strip was not complied with via the entire measuring distance, the sensor grazes on the magnetic strip (Fig. 6).
- Cable interruption / disconnection due to sharp edges / crushing.
- The sensor is mounted with the active side facing away from the belt (Fig. 6). The active side is additionally marked with the "Tape side" sticker.
- The sensor has not been aligned according to Fig. 6

**7. Technical data**

**7.1 Sensors**

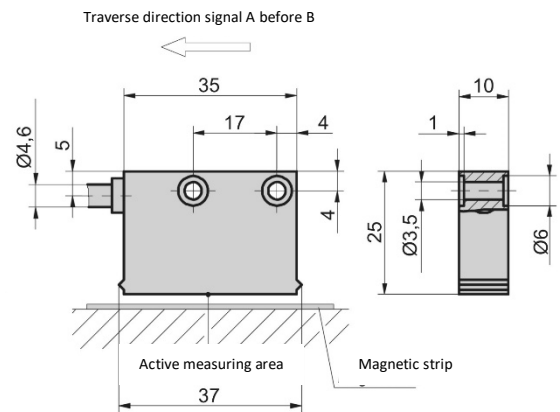
Article number	MW100150	MW100155
Operating voltage	10 ... 30V DC	
Current consumption (without load)	< 50mA	< 25mA
Output circuit	Push/Pull	RS422 / Linedriver
Output signals	A, B	A, /A, B, /B
Output current (max. load)	2 x 20mA	
Max. Traverse speed	< 25m/s	
Resolution (with 4-fold evaluation)	0,25mm	
System accuracy*	$\pm (0.1+0.03*L)$ mm	
Repeatability	$\pm 1$ increment, max. $\pm 0.25$ mm	
Distance of the sensor to the belt	1 ... 10mm	
Temperature (operation)	-10 ... +70°C	
Temperature (bearing)	-30 ... +80°C	
Humidity	100% rH, condensation permissible	
Protection class (according to EN 60529)	IP 67	
Vibration resistance	100 m/s <sup>2</sup> , 5 ... 150 Hz	
Shock resistance	500 m/s <sup>2</sup> , 11 ms	
Housing material	Plastic	
Connection	Cable PUR, 4-core	Cable PUR, 6-core
Mounting accessories	2x M3x14 hexagon socket	

\* L = Magnetic strip length in m

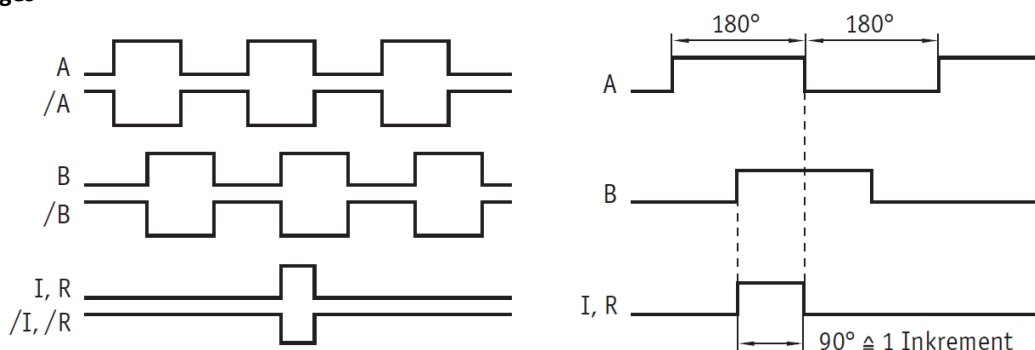
**Terminal assignment**

Color	MW100150	MW100155
brown	+UB	+UB
black	GND	GND
red	A	A
orange	B	B
yellow	-	/A
green	-	/B

**Dimensional sketch**

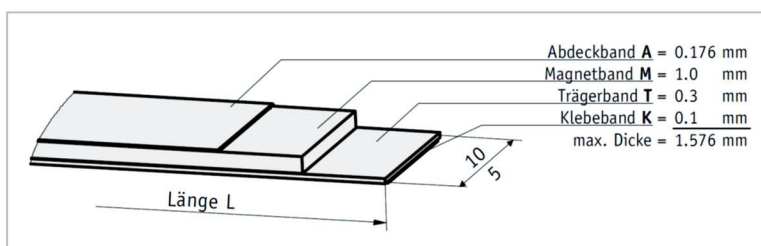


**Signal images**



**7.2 Magnetic strips**

Article number	AM000085	AM000119
Pole length	20mm	
Belt length	max. 90m	max. 100m
Bandwidth	10mm	20mm
Thickness	1.4mm without cover strip	
Working temperature	-20 ... +70°C	
Storage temperature	-40 ... +70°C	
Temperature coefficient	Spring steel: $(11\pm 1)\times 10^{-6} / K$ Stainless steel: $(16\pm 1)\times 10^{-6} / K$	
Humidity	100 % rH, condensation permissible	
Mounting type	Adhesive joint, pre-assembled double-sided adhesive tape	
Material cover strip	Stainless steel	



**A** = cover strip  
**M** = magnetic strip  
**T** = carrier strip  
**K** = adhesive tape  
 Max thickness  
  
**L**= length

**Safety note:** In case of direct impact on personal safety, the application of these products is prohibited.