

Operating Manual

SERIE RMIX2

Magnetic length- and angle measuring system with 0.025 mm resolution



- Direct contact-free measurement
- The distance between sensor and magnetic tape/magnetic ring can be between 0.1 and 0.6 mm
- Measuring length theoretically unlimited
- 0.025 mm at 4 edge triggering
- Standard ring diameter 72 mm, 38 mm and 19.75 mm available (other on request)

Publisher ELGO Electronic GmbH & Co. KG
Carl-Benz-Str. 1
D-78239 Rielasingen-Worblingen

Technical Support  +49 (0) 7731 9339 – 0
 +49 (0) 7731 2 13 11
 info@elgo.de

Document- No. 799000559

Document- Name RMIX2-000-MA-E_11-16

Document- Revision Rev. 1

Issue Date 2015-07-15

Copyright © 2016, ELGO Electronic GmbH & Co. KG

1 Contents

| | | |
|----------|--|-----------|
| 1 | Contents | 3 |
| 2 | General, Safety, Transport and Storage | 4 |
| 2.1 | Information Operating Manual | 4 |
| 2.2 | Explanation of Symbols | 4 |
| 2.3 | Statement of Warranties | 5 |
| 2.4 | Demounting and Disposal | 5 |
| 2.5 | General Causes of Risk..... | 5 |
| 2.6 | Personal Protective Equipment..... | 5 |
| 2.7 | Conventional Use | 6 |
| 2.8 | Safety Instructions for Transport, Unpacking and Loading | 6 |
| 2.9 | Handling of Packaging Material | 6 |
| 2.10 | Inspection of Transport | 6 |
| 2.11 | Storage | 6 |
| 3 | Product Features | 7 |
| 3.1 | Functional principle..... | 7 |
| 4 | Technical Data | 8 |
| 4.1 | Identification | 8 |
| 4.2 | Dimensions Sensor..... | 8 |
| 4.3 | Technical Data Sensor | 9 |
| 4.4 | Technical Data Magnetic Tape..... | 10 |
| 5 | Installation and First Start-Up..... | 11 |
| 5.1 | Operating Area | 11 |
| 5.2 | Description installation / Mounting of the Magnetic Tape | 12 |
| 5.3 | Description installation / Mounting of the Sensor..... | 16 |
| 6 | Connections and Interfaces | 17 |
| 6.1 | Pin Assignment | 17 |
| 7 | Disturbances, Maintenance, Cleaning..... | 18 |
| 7.1 | Fault Clearance..... | 18 |
| 7.2 | Re-start after Fault Clearance..... | 18 |
| 7.3 | Maintenance..... | 19 |
| 7.4 | Cleaning | 19 |
| 8 | Type designation | 20 |
| 8.1 | Type designation | 20 |
| 8.2 | Accessories | 20 |
| 9 | Index | 23 |

2 General, Safety, Transport and Storage

2.1 Information Operating Manual

This manual contains important information regarding the handling of the device. For your own safety and operational safety, please observe all safety warnings and instructions.




Precondition for safe operation is the compliance with the specified safety and handling instructions. Moreover, the existing local accident prevention regulations and the general safety rules at the site of operation have to be observed.

Please read the operating manual carefully before starting to work with the device! It is part of the product and should be kept close to the device and accessible for the staff at any time. The illustrations in the manual are for better demonstration of the facts. They are not necessarily to scale and can slightly differ from the actual design.


2.2 Explanation of Symbols

Special notes in this manual are characterized by symbols. The notes are introduced by signal words which express the magnitude of danger. Please follow this advice and act carefully in order to avoid accidents, damage, and injuries.


Warning notes:

| | |
|---|--|
|  | DANGER! This symbol in connection with the signal word "Danger" indicates an immediate danger for the life and health of persons. Failure to heed these instructions can result in serious damage to health and even fatal injury. |
|  | WARNING! This symbol in connection with the word „Warning“ means a possibly impending danger for the life and health of persons. Failure to heed these instructions can result in serious damage to health and even fatal injury. |
|  | CAUTION! This symbol in connection with the signal word "Caution" indicates a possibly dangerous situation. Failure to heed these instructions can lead to minor injuries or damage of property. |

Special safety instructions:

| | |
|---|---|
|  | DANGER! This symbol in connection with the signal word "Danger" indicates an immediate danger for the life and health of persons due to voltage. Failure to heed these instructions can result in serious damage to health and even fatal injury. The operations may only be carried out by a professional electrician. |
|---|---|

Tips and recommendations:

| | |
|---|---|
|  | NOTE! ...points out useful tips and recommendations as well as information for an efficient and trouble-free operation. |
|---|---|

Reference marks:



Marks a reference to another chapter of this manual.



Marks a reference to another chapter of another document.

2.3 Statement of Warranties

The producer guarantees the functional capability of the process engineering and the selected parameters.

2.4 Demounting and Disposal

Unless acceptance and disposal of returned goods are agreed upon, demount the device considering the safety instructions of this manual and dispose it with respect to the environment.

Before demounting: Disconnect the power supply and secure against re-start. Then disconnect the supply lines physically and discharge remaining energy. Remove operational supplies and other material.

Disposal: Recycle the decomposed elements: Metal components in scrap metal, Electronic components in electronic scrap, Recycle plastic components, Dispose the remaining components according to their material consistence



CAUTION!

Wrong disposal causes environmental damages!

Electronic scrap, electronic components, lubricants and other auxiliary materials are subject to special refuse and can only be disposed by authorized specialists!

Local authorities and waste management facilities provide information about environmentally sound disposal.

Safety



CAUTION!

Please read the operating manual carefully, before using the device! Observe the installation instructions! Only start up the device if you have understood the operating manual. The operating company is obliged to take appropriate safety measure.

The initial operation may only be performed by qualified and trained staff.

Selection and installation of the devices as well as their embedding into the controlling system require qualified knowledge of the applicable laws and normative requirements on the part of the machine manufacturer.

2.5 General Causes of Risk

This chapter gives an overview of all important safety aspects to guarantee an optimal protection of employees and a safe and trouble-free operation.

Non-observance of the instructions mentioned in this operating manual can result in hazardous situations.

2.6 Personal Protective Equipment

Employees have to wear protective clothing during the installation of the device to minimize danger of health.

Therefore:

Change into protective clothing before performing the works and wear them throughout the process.

Additionally observe the labels regarding protective clothing in the operating area.

Protective clothing:

| | |
|--|---|
| | <p>PROTECTIVE CLOTHING ... is close-fitting working clothing with light tear strength, tight sleeves and without distant parts. It serves preliminarily for protection against being gripped by flexible machine parts. Do not wear rings, necklaces or other jewellery.</p> |
| | <p>PROTECTIVE GLOVES ...for protecting the hands against abrasion, wear and other injury of the skin.</p> |
| | <p>PROTECTIVE HELMET ...for protection against injuries of the head.</p> |

2.7 Conventional Use

The product described in this manual was developed to execute safety-related functions as a part of an entire assembly or machine. It is the responsibility of the manufacturer of a machine or installation to ensure the proper functioning of the system. The ELGO-device is only conceived for the conventional use described in this manual.

The RMX2 - ELGO- length measuring system only serves to measure lengths.



CAUTION!

Danger through non conventional use!

Non-intended use and non-observance of this operating manual can lead to dangerous situations.

Therefore:

- Only use the device as described
- Strictly follow the instructions of this manual
Avoid in particular:
- Remodelling, refitting or changing of the construction or single components with the intention to alter the functionality or scope of the device.

Claims resulting from damages due to non-conventional use are not possible.
Only the operator is liable for damages caused by non-conventional use.

2.8 Safety Instructions for Transport, Unpacking and Loading



CAUTION!

Transport the package (box, palette etc.) professionally.

Do not throw, hit or fold it.

2.9 Handling of Packaging Material

Notes for proper disposal: ↗2.4

2.10 Inspection of Transport

Check the delivery immediately after the receipt for completeness and transport damage.

In case of externally recognizable transport damages:

- Do not accept the delivery or only accept under reserve.
- Note the extent of damages on the transportation documents or delivery note.
- File complaint immediately.



NOTE!

Claim any damage immediately after recognizing it. The claims for damage must be filed in the lawful reclaim periods.

2.11 Storage

Store the device only under the following conditions:

- Do not store outside
- Keep dry and dust-free
- Do not expose to aggressive media
- Protect from direct sun light
- Avoid mechanical shocks
- Storage temperature (↗4) needs to be observed
- Relative humidity (↗4) must not be exceeded
- Inspect packages regularly if stored for an extensive period of time (>3 months)

3 Product Features



Figure 1: RMX2 on magnetic ring



Figure 2: RMX2 on magnetic tape

- For length- and angle measuring
- Direct contactless measurement
- Excellent price / performance ratio
- High resolution of 0.025 mm at 4 edge triggering, (0.1 mm at 1 edge triggering)
- Repeat accuracy +/- 0.1 mm
- High protection class IP67
- The distance between sensor and magnetic tape/magnetic ring can vary between 0.1 ... 0.6 mm
- Measuring lengths theoretically unlimited
- Very robust against pollution
- Magnetic rings 72 mm, 38 mm und 19,75 mm available (other on request)
- Index pulse 4 mm –periodical
- Integration of Hall sensors and interpolation as single-chip

3.1 Functional principle

The basis of the magnetic incremental encoders consists of a scanning technology, which scans the north and south poles on the coded magnetic tape and produces a single sine/cosine wave for each pole.

The complete sine/cosine signal process is interpolated electronically. Depending on refinement of the interpolation, together with the pole distance of the magnetic tape, the resolution of the measuring system is determined. The magnetic tape MB20.20 has a pole pitch of 2 mm.

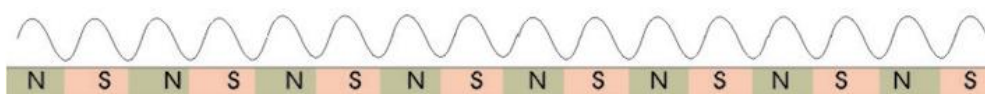


Figure 3: Magnetic Tape

4 Technical Data

4.1 Identification

The type label serves for the identification of the unit. It is located on the housing of the sensor and gives the exact type designation (=order reference, see type designation) with the corresponding part number. Furthermore, the type label contains a unique, traceable device number. When corresponding with ELGO always indicate this data.

4.2 Dimensions Sensor

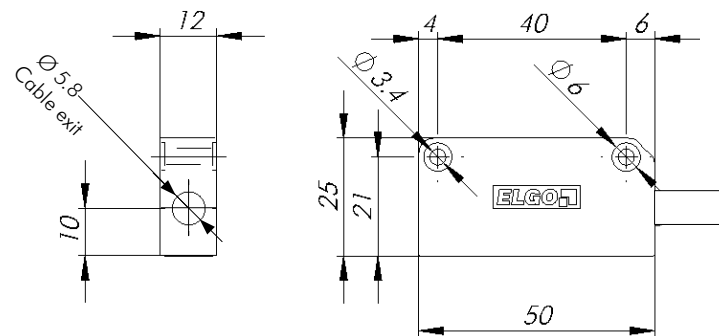


Figure 4: Dimensions Sensor

4.3 Technical Data Sensor

RMIX2 (Standard version)

Mechanical Data

| | |
|---------------------------------------|--|
| Measuring principle | incremental |
| Repeat accuracy | +/- 0.1 mm |
| System accuracy at 20°C | +/- (25 + 20 x L) L = measuring length in meters |
| Distance from sensor to magnetic tape | Max. 0.6 mm |
| Basic pole pitch | 2 mm |
| Sensor housing material | ABS plastic material |
| Sensor housing dimensions | L x W x H = 50 x 12 x 25 mm |
| Necessary magnetic tape | MB20-20-10-1-R |
| Maximum measuring length | theoretically unlimited |
| Connection | open cable ends |
| Sensor cable | 1.5 m standard cable length (others on request) drag chain suitable |
| Weight | ca. 40 g without cable |

Electrical Data

| | |
|-----------------------------------|---|
| Supply voltage | 10 - 30 VDC / 5 VDC |
| Residual ripple | 10 - 30 V < 10 % +/- (5 V +/- 25 mV) |
| Power input | 10 - 30 VDC: max. 150 mA 5 VDC: max. 200 mA |
| Output signals | A, A', B, B', Z, Z' |
| Output level | 5 V TTL Line Driver / 10... 30 V HTL |
| Resolution | 0.1 mm, 0.025 mm 4 edge triggering |
| Index pulse | 4 mm periodical |
| Max. output frequency per channel | 200 kHz / channel A or B |
| Max. movement speed | 20 m/s linear 300.000 rpm / amount of terminal pairs |

Environmental Conditions

| | |
|-----------------------|---|
| Storage temperature | -25 °C ... +85 °C |
| Operation temperature | -10 °C ... +70 °C (-25 °C ... +85 °C upon request) |
| Protection class | IP67 |

4.4 Technical Data Magnetic Tape


The magnetic tape consists of two components:

- The actual magnetic tape which carries the position information
- A mechanical stainless steel back iron


Magnetic tape MB20-20-10-1-R







| | |
|---------------------------------|--|
| Encoding | Incremental, one-track system |
| Pole pitch | 2 mm |
| Operation temperature processed | -20 °C ... +65 °C (-20 °C ... +80 °C when using the tape without adhesive tape, option „B“ or „D“) |
| Storage temperature unprocessed | Short-term: -10 °C ... +60 °C Medium-term: 0 °C ... +40 °C Long-term: +18 °C (-20 °C ... +80 °C when using the tape without adhesive tape, option „B“ or „D“) |
| Gluing temperature | +18 °C ... +30 °C |
| Relative humidity | max. 95 %, non-condensing |
| Accuracy at 20°C in mm | +/- (0.025 + 0,02 x L[m]) (L = measuring length in meters) |
| Material carrier tape | Precision strip 1.4310 / X10CrNi 18-8 (EN 10088-3) |
| Double-faced adhesive tape | 3M-9088 (observe processing notes), others on request |
| Dimensions | → without adhesive tape: 10 mm (+/- 0.1) x 1.35 mm (+/- 0.11) → with adhesive tape (excl. carrier): 10 mm (+/- 0.1) x 1.56 mm (+/- 0.13) → with adhesive tape (incl. carrier): 10 mm (+/- 0.1) x 1.63 mm (+/- 0.14) |
| Length expansion coefficient | $\alpha \approx 16 \times 10^{-6} \text{ 1/K}$ |
| Thermal length expansion | $\Delta L[\text{m}] = L[\text{m}] \times \alpha[1/\text{K}] \times \Delta \vartheta[\text{K}]$ (L = tape length in meters, $\Delta \vartheta$ = relative temperature change) |
| Bending radius | min. 150 mm (min. 50 mm when using the tape without adhesive tape, option „B“ or „D“) |
| Available lengths | 32 m (up to 70 m on request) |
| Weight magnetic tape | ca. 62 g/m (including magnetic tape + cover foil) |
| Imprint on tape | ELGO standard, printing color black, character height $\geq 5 \text{ mm}$ |
| Influence of other magnets | Other magnetic fields must not exceed 64 mT (640 Oe; 52 kA/m) at the surface of the magnetic tape, as this could damage or destroy the encoding of the magnetic tape. |
| Protection class | Carrier tape stainless steel |

5 Installation and First Start-Up

| | |
|---|--|
|  | <p>CAUTION Please read the operating manual carefully before using the device! Strictly observe the Installation instructions! In case of damage caused by failure to observe this operating manual, the warranty expires.</p> <p>ELGO is not liable for any secondary damage and for damage to persons, property or assets.</p> <p>Der Betreiber ist dazu verpflichtet, geeignete sicherheitsrelevante Maßnahmen zu ergreifen und durchzuführen.</p> <p>The operator is obliged to take appropriate safety measures. The first start-up may only be performed by staff that has been trained and authorized by the operator.</p> |
|---|--|

5.1 Operating Area

| | |
|---|---|
|  | <p>WARNING! Do not use the device in explosive or corrosive environments! The device must not be installed close to sources of strong inductive or capacitive interference or strong electrostatic fields!</p> |
|---|---|

| | |
|---|---|
|  | <p>CAUTION! The electrical connections must be made by suitably qualified personnel in accordance with local regulations.</p> |
|  | <p>The device may be designed for switchboard mounting. During work on the switchboard, all components must be de-energized if there is a danger of touching the energized parts! (protection against contacts)</p> |
|  | <p>Wiring works may only be performed in the de-energized state!</p> |
|  | <p>Thin cable strands have to be equipped with end sleeves!</p> |
|  | <p>Before switching on the device, connections and plug connectors have to be checked!</p> |
|  | <p>The device must be mounted in a way that it is protected against harmful environmental influences such as splashing water, solvents, vibration, shock and severe pollution and the operating temperature must not be exceeded.</p> |

5.2 Description installation / Mounting of the Magnetic Tape

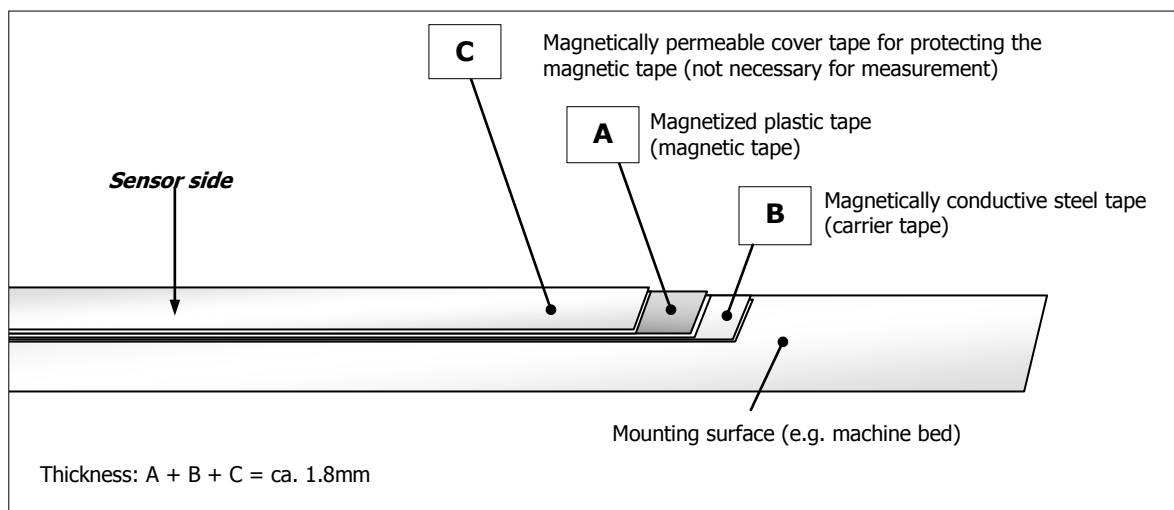


NOTE External Magnetic Fields

The magnetic tape must not be influenced by external magnetic fields! The magnetic tape must not come into direct contact with other magnetic fields (e.g. permanent magnets, magnetic clamps, electromagnets, magnetic stands)! This may cause irreparable damage, which will compromise the measuring accuracy or even the functioning.

5.2.1 The Magnetic Tape MB20-20-10-1-R

The magnetic tape is delivered as described here. It is installed by gluing it to the mounting surface.



Available length (☞ 4.4)

Figure 5: Structure Magnetic Tape

The standard ELGO magnetic tape consists of 3 components:

- A) The magnetized, highly flexible plastic tape, connected on the bottom side with...
- B) ... the carrier tape, a magnetically conductive, flexible steel tape. This steel tape protects the plastic tape from mechanical damage and at the same time provides a magnetic short circuit. This significantly increases the functional reliability in case of extreme magnetic influence. **A** and **B** are usually already bonded at the factory (a different tape structure is possible in special cases, see type designation).
- C) In order to preserve flexibility during transport and mounting, a magnetically permeable steel tape already fitted with adhesive tape is delivered separately. It serves to protect the plastic tape from mechanical damage and should be glued onto the plastic tape after installation.

The tape consists of 3 components, a magnetized, flexible plastic tape (Item 3), which is connected with a steel tape (Item 5) and a cover tape (item 1), which is for protection of the plastic tape. The cover tape is needed for the mechanical protection of the magnetic tape. In addition, it protects the magnetic tape from extreme external magnetic influences. For the complete bonding between the different materials a special sticky tape is used (item 2, item 4, and item 6).

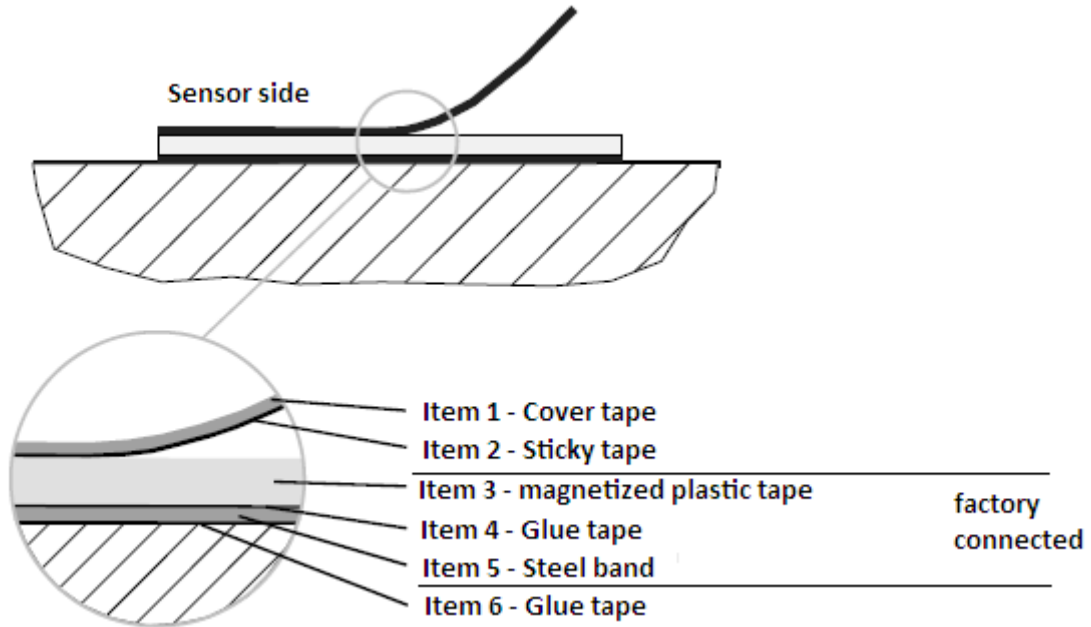


Figure 6: Parts of a magnetic tape

5.2.2 Handling

In order to avoid tension in the tape, it must not be stretched, compressed or twisted. It should be stored with the magnetized plastic tape to the outside (see Figure 7: Handling

), the minimum bending radius must be noted here

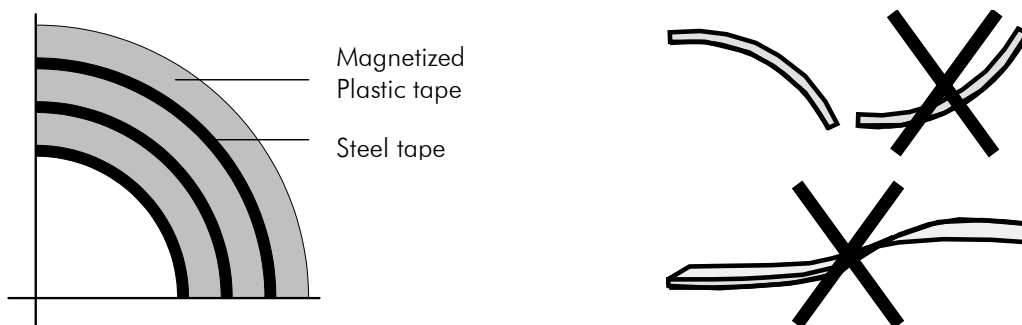


Figure 7: Handling

5.2.3 Processing hint for the gluing of magnetic tapes

Surface-Preparation: In order to guarantee optimal adhesion, all antiadhesive contamination (e.g. oil, grease, dust, separating agents) has to be removed using solvents with residue-free evaporation.

Suitable agents are ketones or alcohols. Typical solvents for cleaning the surface are a 50/50 isopropyl alcohol/water mixture or heptanes. Those agents are offered by Loctite and 3M among others as surface cleaners. When using solvents, always observe the manufacturer instructions! If the surface is copper, brass etc, it should be sealed to avoid oxidation.

Contact-Pressure: The strength of the adhesion is directly dependent on the contact the adhesive can form with the surface. Therefore it is important to use as much pressure as possible when gluing the tape, possibly by using aids such as draw rolls. The optimum contact pressure is 4 ... 5 kg/cm².

Gluing temperature: The optimal gluing temperature is between + 18° C and 30° C. Avoid colder sticking surfaces than + 10°C, because in this case the adhesive becomes too hard and perhaps a sufficient immediate adhesion is hardly to achieve. After proper sticking the stability of the connection is ensured also when the temperature is below zero. The final tackiness of a sticking is from experience reached after approximately 72 hours (at + 21° C). For gluing use only the supplied adhesive tape.

5.2.4 Cutting and Gluing

Before starting the gluing process, both the magnetic and the cover tape have to be cut to the required length

Length cover tape = measuring length + sensor length + 50mm (end caps)



NOTE!

When sticking the magnetic tape pay attention to the markings on the tape and the Sensor. Improper installation does not provide the correct values. A already glued magnetic tape is destroyed after the removal, and cannot be used again. Note also the direction of counting of the measuring system

Preferably the magnetic tape should be glued close to an edge or into a groove, which should be deep enough to embed the magnetic tape and the cover tape.

When unprotected, the cover tape may peel off!

Therefore:

Use tape end caps (see chapter 9.2) or let the cover tape overlap* the end of the magnetic tape and fix it with a screw.

The tape must be glued smoothly on the surface. The measuring accuracy decreases if the tape is not even!

Before gluing the magnetic tape and the cover tape onto the surface, they should be left lying on the mounting surface for ca. 30 minutes so that the temperature matches. This prevents strain in the tape due to thermal expansion.

Mounting steps:

1. Thoroughly clean surface (see chapter 5.2.3)
2. Let magnetic tape and cover tape adjust their temperature
3. Remove protection foil of adhesive tape on magnetic tape
4. Glue magnetic tape using great pressure
5. Thoroughly clean surface of magnetic tape
6. Remove protection foil of adhesive tape on cover tape
7. Glue cover tape using great pressure
8. Safeguard the ends of the cover tape against peeling off (using end caps 8.2)

5.2.5 Resistance against Chemical Influence

Table 1 Chemical Influences

| Show no or little effect in constant contact after 2-5 years: | | | |
|--|-----------------------------|-------------------------------|-------------------|
| formic acid | glycerol 93°C | linseed oil | soy beans oil |
| cotton seed oil | N-hexane | lactic acid | |
| formaldehyde 40% | Iso octane | petroleum | |
| Show weak to moderate effects in constant contact after approximately 1 year: | | | |
| acetone | gasoline | acetic acid 30% | Olein acid |
| acetylene | steam | acetic acid, pure acetic acid | sea water |
| ammonia | acetic acid 20% | isopropyl ether | stearic acid 70°C |
| anhydrous | kerosene | | |
| Have strong effects when contacting permanently after 1-5 months: | | | |
| benzene | nitric acid 70% | nitrobenzene | lacquer solvent |
| turpentine | nitric acid, red, vitriolic | carbon tetrachloride | |
| tetrahydrofuran | xylene | hydrochloric acid 37%, 93°C | |

5.3 Description installation / Mounting of the Sensor

Please use 2 x M3 screws to install the sensor. Tolerances for distance and angle must be observed.

Table 2: Tolerances

| Tolerances | |
|-------------------|---|
| Magnetic tape | MB20-20-10-1-R |
| Ride height | 0.1 mm - 0.6 mm |
| Pitch | Max. ride height of 0.6 mm must not be exceeded at any position |
| Yaw | +/- 0.5 ° |
| Roll | Max. ride height of 0.6 mm must not be exceeded at any position |
| Lateral offset | +/- 0.5 mm |

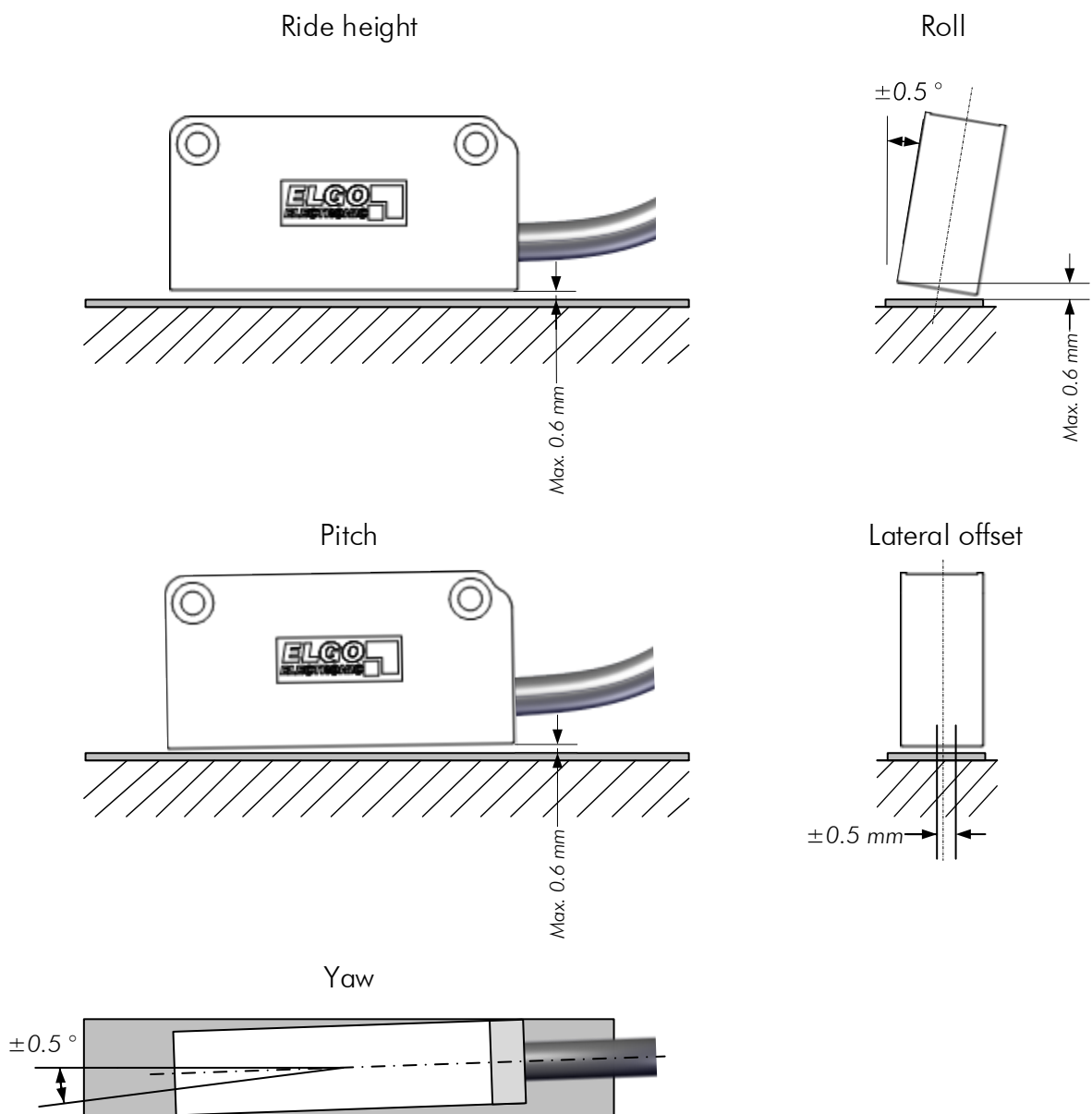


Figure 8: Tolerances

6 Connections and Interfaces

6.1 Pin Assignment

Table 3: Pin assignment RMIX2

| Open wired Standard | |
|------------------------|--------|
| Function | Color |
| 0 V (GND) | White |
| 5 VDC/10 ... 30 VDC in | Brown |
| Channel A | Green |
| Channel B | Grey |
| Channel Z | Blue |
| Channel A inv. | Yellow |
| Channel B inv. | Pink |
| Channel Z inv. | Red |
| Schild | PE |

7 Disturbances, Maintenance, Cleaning

This chapter describes possible causes for disturbances and measures for their removal. In case of increased disturbances, please follow the measures for fault clearance in chapter 7.1.

In case of disturbances that cannot be eliminated by following the advice and the fault clearance measures given here, please contact the manufacturer (see second page).

7.1 Fault Clearance



CAUTION!

The device, the connection line and the signal cable must not be installed next to sources of interference that emit strong inductive or capacitive interference or strong electrostatic fields.

External perturbations can be avoided through suitable cable routing.



The screen of the signal output cable should only be connected to the following circuit on one side. The screens should not be grounded on both sides. Signal cables always have to be routed separately from the load power line. A safety distance of at least 0,5 m has to be kept from inductive and capacitive sources of interference such as contactors, relays, motors, switching power supplies, clocked controllers etc.!

If interferences occur in spite of all the items stated above being observed, please proceed as follows:

1. Installation of RC-circuits via contactor coils of AC-contactors (e.g. 0,1 μ F / 100 Ω)
2. Installation of recovery diodes via DC-inductors
3. Installation of RC-circuits via the different motor phases (in the terminal box of the motor)
4. Do not connect protective earth and ground
5. Connect a mains filter ahead of the external power pack

7.2 Re-start after Fault Clearance

After the fault clearance:

1. Reset the emergency stop mechanism if necessary
2. Reset the error report at the super-ordinate system if necessary.
3. Ensure that there are no persons in the danger area.
4. Follow the instructions from chapter 5.



WARNING!

Danger of injury through non-conventional fault clearance!

Non-conventional fault clearance can lead to severe injuries and damage of property.

Therefore:

- Any work to clear the faults may only be performed by sufficiently qualified staff
- Arrange enough space before starting the works
- Make sure that the mounting area is clean and tidy. Loose components and tools are sources of accidents.

If components need to be replaced:

- Pay attention to a correct installation of the spare parts.
- Reinstall all the fixing elements properly
- Before turning on the device, ensure that all covers and safety equipment is installed correctly and functions properly

7.3 Maintenance

The device is maintenance-free.



WARNING!

Danger through non-conventional maintenance!

Non-conventional maintenance can lead to severe injuries and damage of property.

Therefore:

Maintenance works may only be completed by staff that has been authorized and trained by the operator.

7.4 Cleaning



WARNING!

The device can only be cleaned with a damp cloth, do not use aggressive cleanser!

8 Type designation

8.1 Type designation

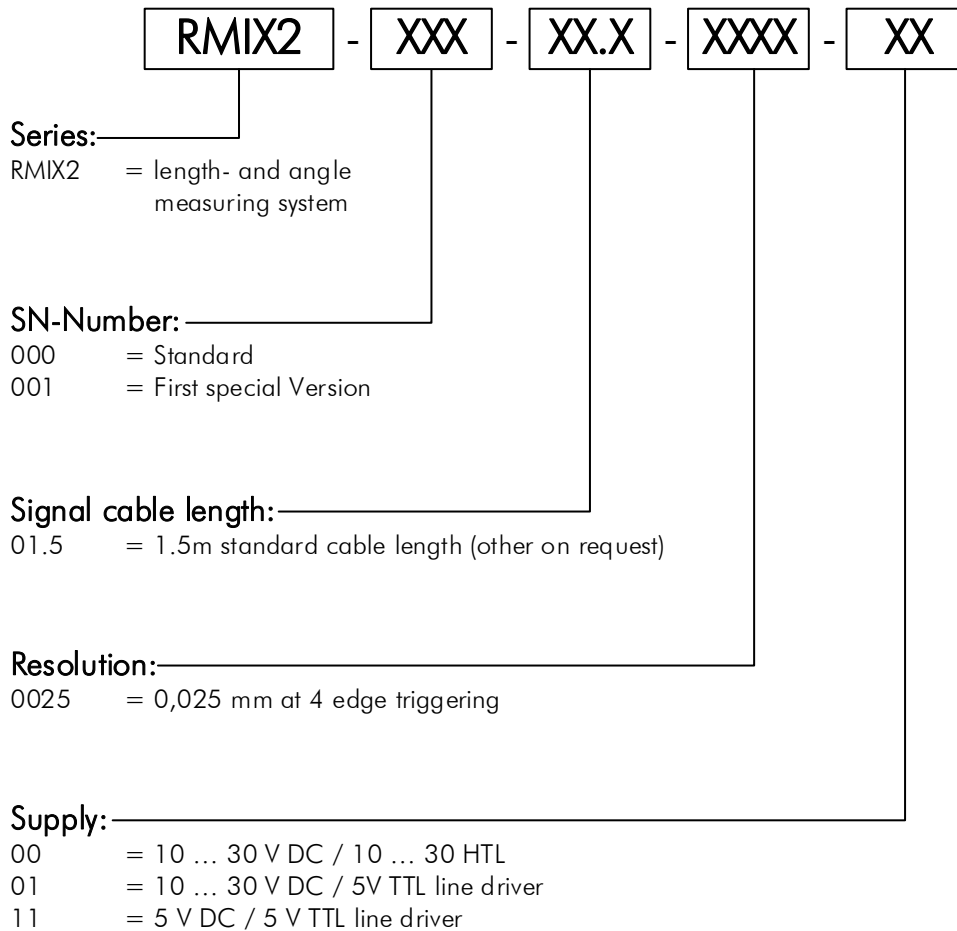


Figure 9: Type Designation

8.2 Accessories

Table 1 Accessories

| Order Designation | Description | Article No. |
|---------------------------|--|-------------|
| MB20-20-10-1-R | Magnetic Tapewith 2 mm pole pitch | |
| MR2030 | Magnetic Ring with 2 mm pole pitch Dimensions: Outer Ø 19.75 mm, Inside Ø 14.7 mm, Width 4.1 mm | |
| MR3860 | Magnetic Ring with 2 mm pole pitch Dimensions: Outer Ø 38 mm, Inside Ø 30 mm, Width 6.5 mm | |
| MR72114 | Magnetic Ring with 2 mm pole pitch Dimensions: Outer Ø 72 mm, Inside Ø 54 mm, Width 7 mm | |
| Magnetic tape end cap set | End cap set for fix the magnetic tape | |



NOTE

When ordering, please use the here described ordering code (Type Designation). Options that are not required are filled in with „-“.

Notes:

Notes:

9 Index

| | | | |
|--------------------------------------|--------|--|------|
| Accessories | 20 | Operational safety..... | 4 |
| Accident prevention regulations..... | 4 | Order reference | 8 |
| Causes of risk..... | 5 | Packaging material..... | 6 |
| Cleaning..... | 18, 19 | Pin Assignment..... | 17 |
| Connections | 17 | Product features | 7 |
| Conventional use..... | 6 | Protection against contact | 11 |
| Demounting | 5 | Protective equipment | 5 |
| Device number | 8 | Resistance against Chemical Influences | 15 |
| Dimensions Sensor..... | 8 | Safety | 4, 5 |
| Disposal..... | 5 | Safety instructions | 4 |
| Disturbances | 18 | Safety rules | 4 |
| Explanation of symbols..... | 4 | Sensor | |
| Fault clearance..... | 18 | Technical Data Sensor | 9 |
| First start-up | 11 | Start-up | 11 |
| Identification | 8 | Storage | 6 |
| Installation | 11 | Technical Data Magnetic Tape | 10 |
| Magnetic tape Structure..... | 10 | Transport..... | 6 |
| Maintenance | 18, 19 | Transport damage..... | 6 |
| Operating area | 11 | Type designation | 8 |

Document- No.: 799000559 / Rev. 1
Document- Name: RMIX2-000-MA-E_11-16
Subject to change - © 2016
ELGO Electronic GmbH & Co. KG

ELGO Electronic GmbH & Co. KG
Messen - Steuern - Positionieren
Carl - Benz - Straße 1, D-78239 Rielasingen
Tel.: +49 (7731) 9339-0, Fax: +49 (7731) 28803
Internet: www.elgo.de. Mail: info@elgo.de

