Translation of the original operating manual 99988033 Rev. 2.1

Article no.: 99988033EN

Rev. 2.0/ 07.2021

Intelligent magnetic field sensor

STI Magsensor-Namur

Year of construction: 2022

ATEX CE Ex II 2G Ex ib IIC T4 Gb

ATEX CE Ex II 2D Ex ib IIIC T135°C Db

We reserve the right to make technical changes relative to the presentations and information in this manual, that are necessary for improvement of the product characteristics.

Contents

1 Translation EU Declaration of Conformity

DESIGN: Intelligent magnetic field sensor

Type: 53507437

ATEX marking: CE Ex II 2G Ex ib IIC T4 Gb

II 2D Ex ib IIIC T135°C Db

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

Directive 2011/65/EU EU Gazette L157/108 of 01 June 2011

Directive 2014/30/EU EU Gazette L96/79 of 29 March 2014

Directive 2014/34/EU EU Gazette L96/309 of 26 February 2014

under the sole responsibility of (manufacturer):

Timmer GmbH

Dieselstrasse 37

D-48485 Neuenkirchen, Germany

www.timmer.de

The following harmonised standards have been applied:

EN IEC 60079-0:2018	Explosive areas - Part 0
EN 60079-11:2012	Explosive areas - Part 11
EN 61326-1:2013	Electrical measurement, control, and laboratory devices– EMC Requirements -Part 1
EN 60947-5-6:2000-12	Low-voltage switchgear - Part 5-6
EN 60947-5-2:2007+A1:2012	Low-voltage switchgear - Part 5-2

The notified body Dekra EXAM GmbH (No.: 0158) has carried out the EU type examination and issued the following certificate:

EU type examination certificate BVS 17 ATEX E 071 X

The notified body TÜV NORD CERT GmbH (No.: 0044) has carried out the quality system assessment and issued the following certificate:

TÜV 18 ATEX 217074 Q

Person authorised to compile the documentation: Timmer GmbH

Address: See Manufacturer

Neuenkirchen, 07.2021

City, date

Klaus Gehrmann (Managing Director)

2 About this manual

2.1 Use and safekeeping:

- The sensor can only be appropriately and safely placed in service, operated and maintained with the aid of this operating manual.
- This operating manual refers only to the product that is specified on the cover sheet.
- This operating manual is a component of the scope of delivery.
- Consequently, always keep this operating manual in legible condition, on hand for the operator in the vicinity of the sensor. Leave this document with the pump if the sensor is resold or loaned out.
- This operating manual is intended only for instructed and authorised specialists.
- The section on safety provides an overview of all important safety aspects for optimal protection of personnel, and for safe and trouble-free operation of the sensor.
- The manufacturer is not liable for damage resulting from failure to comply with the instructions in this operating manual.
- Reprints, translations and duplications in any from, including excerpts, requires the written consent of the publisher.
- The copyright remains with the manufacturer.

2.2 Manufacturer information

Timmer GmbH
Dieselstrasse 37
D-48485 Neuenkirchen, Germany

Tel.: +49 5973 9493-0
Fax: +49 5973 9493-90
info@timmer.de

www.timmer.de

2.3 Areas of applicability

This product complies with the directives of the European Union.
In this regard, please note:

- This EU Declaration of Conformity
- The intended use
- The improper use

3 Safety

3.1 Compliance with the instructions in the operating manual

Every person who is assigned to perform tasks on and with the magnetic field sensor must have read and under this operating manual, particularly the "Safety" chapter.

Knowledge of and compliance with the content of this manual is the prerequisite for protecting personnel from danger and avoiding error.

Therefore, all safety instructions must be followed. Compliance is for your safety.

The operating manual is a component of the sensor and must always be available in the vicinity of the product. The instructions in the operating manual must be complied with. If content of this operating manual is not clear or not understandable, contact the manufacturer without delay, see the paragraph "Manufacturer information".

In addition to the safety instructions in this operating manual the following guidelines and regulations must also be complied with:

- The intended use
- The applicable accident prevention regulations (UVV)
- Occupational medical health guidelines
- Generally accepted rules for safety
- Country-specific regulations

Moreover, these directives and regulations can be supplemented with work instructions that take into account plant-internal regulations or operational particularities.

In supplementation to this operating manual, company-internal instruction of the appropriate persons must be provided with due consideration of the technical qualifications.

3.2 Intended use

The sensor is only intended to condition monitoring of manufacturer approved products.

3.3 Non-intended use

A use other than the use described in the section, "Intended use" and in this operating manual, and any use that extends beyond the specified intended use, is considered non-intended use. The manufacturer shall not be liable for damage resulting from non-intended use. This risk is borne solely by the user / owner.

The use of the sensor in products not approved by the manufacturer.

The use of the sensor in safety-relevant systems (e.g. level monitoring).

3.4 Safety Instruction

Danger

Risk of explosion from improper installation and operation!

- Static charges can generate sparks. As a result, there is a danger to life in the potentially explosive atmospheres. It must therefore be ensured that the aforementioned assembly and installation instructions are observed.
- Connection of the sensor to circuits outside the specified performance data may cause sparks. As a result, there is a danger to life in the potentially explosive atmospheres. It must therefore be ensured that the aforementioned intended use, as well as the instructions for installation and commissioning are complied with. The instructions in chapter 8 "Notes on safe use" and the intended uses mentioned must be observed

Disregarding will result in serious injury or death!

! Attention

Malfunction of the equipment due to improper integration into the control system!

- Active data transmission can lead to faults/mismeasurements in the system control, e.g. incorrect stroke counting/conveying frequency etc. The system control must be modified respectively.

Non-observance can lead to damage or malfunctions of the machine.

4 Transport

Transport the sensor only in its original packaging as far as possible to prevent transport damage.

4.1 Check scope of delivery

1. Remove the transport packaging of the sensor.
2. Dispose of the packaging material correctly.
2. Inspect the sensor for shipping damage.
   - Immediately notify the transport company and the manufacturer of transport damage in writing.
   - Protect sensor from further damage.
3. Use the packing slip to verify the completeness of the delivery.

5 Name plate

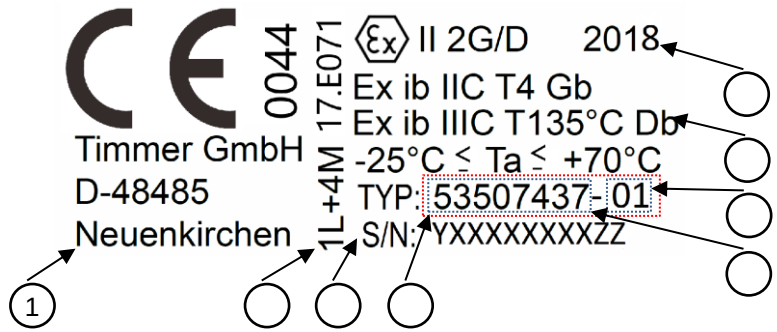


Fig. 1: Name plate

1	Manufacture address	5	Model type
2	Namur marking + Type examination certificate number	6	Software version
3	Serial number	7	ATEX-Marking regarding RL 2014/34/EU
4	Item number	8	Date

6 Product description

The sensor is an intrinsically safe electrical equipment in accordance with the NAMUR standard EN 60947-5-6, which may be operated on isolating switching amplifiers with an Ex conformity certificate.

The sensor is intended to use to determine binary changes in state (e.g. pump strokes) in Timmer GmbH products by measuring magnetic fields changes. The change in status of the sensor is transmitted in accordance with the NAMUR standard EN 60947-5-6.
In addition, depending on the software version / configuration, the sensor transmits additional product information (e.g. serial number). In combination with the tim®IOT, it can be used to determine extended information for preventive maintenance and process optimization.

The time and duration of the data transmission can be found in Table 1, overview of data transmission. The data transmission interrupts immediately when the pump starts up and the sensor changes to the operating mode for transmitting the stroke signals / speed signals.

Table 1 Overview of data transmission

Software-version	used in	Data transmission**		
		Information	Transmission active	Delivery status
53507437*	Diaphragm Pump	Stroke numbers and serial number	For a short period after switching on and permanently after 36 sec. standstill time	active
53507437-01	Diaphragm Pump	Stroke numbers, frequency histogram and serial number	For a short periode after switching on and permanently after 48 sec. standstill time	deactivate
53507437-02	Piston pump	Stroke numbers and serial number	For a short periode after switching on and permanently after 48 sec. standstill time	active

* OEM version, not for free sale

**Special USB adapter available, to deactivate the data transmission or to read out the additional data via a PC. This must be done outside the potentially explosive area, e.g. in the workshop.

7 ATEX marking

II 2G Ex ib IIC T4 Gb

II 2D Ex ib IIIC T135°C Db

Symbol	Meaning
CE	CE mark.
	Label for preventing explosions according to ATEX.
II	ATEX equipment of the Equipment Group II for intended use in potentially-explosive areas except for mines.
2 G/D	ATEX device of equipment category 2 (avoidance of effective sources of ignition in case of anticipated faults). The assembly may be used as intended in explosive gas and dust atmospheres of Zones 1 and 2. Using the device in Zone 0 is not permitted.
ib	In the protection principle “i”, the explosion protection is achieved by limiting the spark energy and temperature.
IIC	The use as intended in explosive gas atmospheres with gases and vapours of the explosion groups IIA, IIB and IIC is permitted.
IIIC	The use as intended in explosive dust atmospheres with fluff and dust of explosion group IIIC is permitted.
T4 T135°C	The surface temperature is maximum of 135°C.
Gb	Equipment with "high" protection level to be used in potentially explosive atmospheres, in which no risk of ignition exists under normal operating conditions or in case of foreseeable faults/malfunctions.
Db	Equipment with "high" protection level to be used in flammable dust atmospheres, in which no risk of ignition exists under normal operating conditions or in case of foreseeable faults/malfunctions.

8 Instructions for safe use in potentially explosive atmospheres

8.1 Intended use

- Use in potentially explosive atmospheres according to classification **II 2G** (group II, category 2G, equipment for gas atmosphere). The requirements of the standards EN 60079-0:2012+A11:2013 and DIN EN 60079-11:2012 are complied with.
- Use in potentially explosive atmospheres according to classification **II 2D** (group II, category 2D, equipment for dust atmosphere). The requirements of the standards EN 60079-0:2012+A11:2013 and DIN EN 60079-11:2012 are complied with.

EU-type examination certificate **BVS 17 ATEX E 071 X**

- Identification

  Legal identification: Ex II 2G/D

  Technical identification: Ex ib IIC T4 Gb

  Ex ib IIIC T135°C Db
- Permissible ambient temperature

  -25 °C ≤ Ta ≤ +70 °C
- Protection class

  IP 67

8.2 Installation and commissioning

The device may only be installed, connected and commissioned by qualified personnel. The qualified personnel must be familiar with the types of protection, provisions and regulations for equipment in potentially explosive areas.

Check whether the classification (see page 3 “Identification” and identification on the device) is suitable for the application.

- Connection of the sensor

  Only to intrinsically safe, certified circuits or evaluation amplifiers which do not exceed the following maximum valuesof the device.

  Ui = 16 V, Ii = 30 mA, Pi = 100 mW

  This applies both to the operation of the sensor in the EX-environment and outside the EX-environment.

  For data exchange, the sensor may only be used temporarily outside the EX-environment with the aid of the corresponding USB adapter (P/N: 53507661).

- Pin assignment M12 flange plug

  Operation in intrinsically safe circuit:

  Pin 1 = L+, Pin 2 = not used, Pin 3 = not used, Pin 4 = M

  Operation with USB adapter:

  Pin1 = L+ (Um = 16 V), Pin 2 = Tx (Um = 16 V), Pin 3 = Rx, Pin 4 = M

- Maximum effective internal inductance (Li) and capacitance (Ci)

  Internal inductance (Li): negligible

  Internal capacity (Ci): negligible

8.3 Installation instructions / Assembly

- Observe the respective national regulations and provisions.
- The relevant installation regulations (e.g. EN 60079-14) must be observed.
- Metallic and conductive parts (flange connectors, fasteners, housings) must be included in the equipotential bonding to avoid electrostatic charging.
- When using the sensor in potentially explosive atmospheres according to classification **II 2D** (group II, category 2D, equipment for dust atmosphere), the connection cable between the flange connector and the sensor must be mounted so as not to expose them to friction effects and electrostatic charge due to the passage of dust. Precautions must be taken to prevent the static charge on cables and wiring surfaces.
- Protect the device effectively against damage.

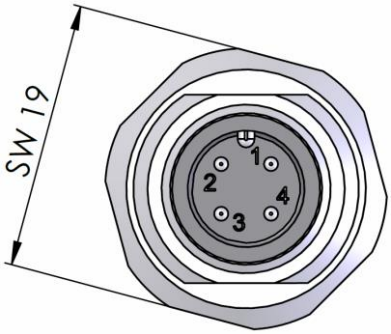
8.4 Maintenance / servicing

- The device must not be changed; repairs are not possible. In case of an error, please contact the manufacturer.

9 Notes

9.1 Pin assignment of the flange connector

The pin assignment of the flange connector can be found in the following figure:



9.2 Output signal of the sensor

The sensor works according to the Namur standard EN 60947-5-6. Power supply and data transmission take place via the same connection line. By switching the internal sensor resistance between two defined states, the sensor's data transmission is digitally transmitted via the change in current.

A suitable isolating isolation unit convert this signal into an output signal, usable for the control system.

Attention:

During the data transmission period, malfunctions / incorrect measurements can occur in the system control if the data are incorrectly interpreted as stroke signals.

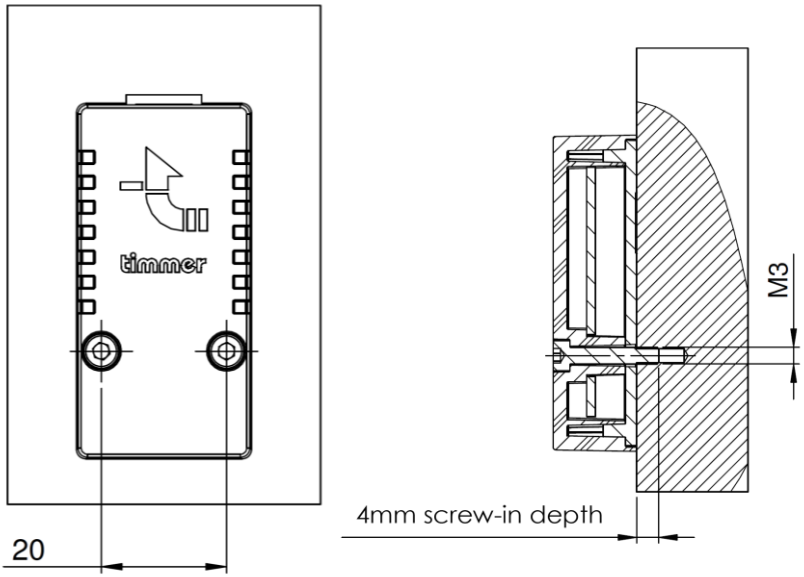
It is recommended to stop stroke monitoring, during the data transfer period.

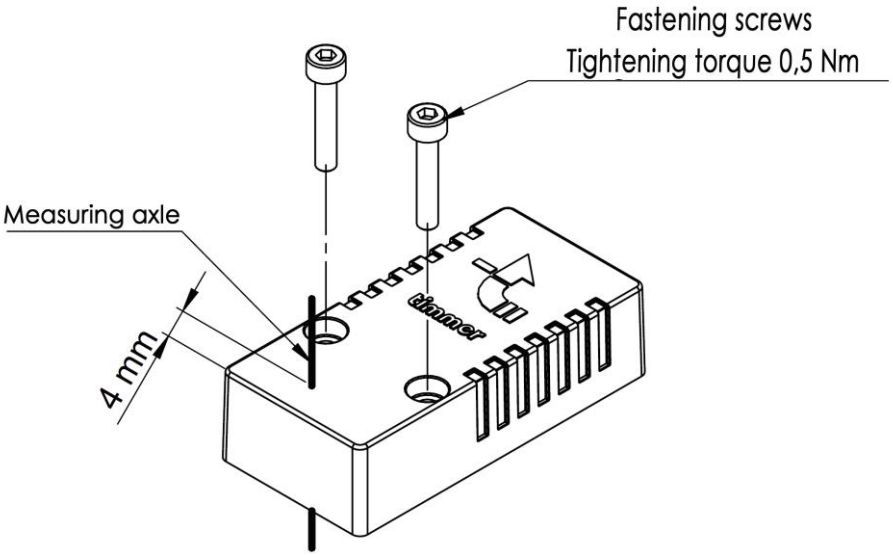
Contact the Timmer Service for more information

9.3 Maintenance

The sensor is maintenance-free. However, it is recommended to check the plug connectors and connections at regular intervals.

9.4 Assembly


timmer
M3
4mm screw-in depth
20


Fastening screws
Tightening torque 0,5 Nm
Measuring axle
4 mm
timmer

10 Disposal

10.1 Return shipment

Please send sensor to the following address:

Timmer GmbH
Dieselstrasse 37
D-48485 Neuenkirchen, Germany
Germany

▶ Note

- Please send sensor in the original packaging, to avoid transport damage.

Notes

Timmer GmbH
Dieselstrasse 37
D-48485 Neuenkirchen, Germany
Germany

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Fax: +49 5973 9493-90
info@timmer.de

www.timmer.de