

OPERATING INSTRUCTIONS

WPM PRESSURE SENSOR

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In the language of a country of use, this document is a translation of the original version and labelled with the national flag of the country of use.

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2480.00.91.10.01

WPM Pressure Sensor

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The instructions are intended only for the operator of the described Component only and must therefore not be made available to uninvolved third parties - in particular to competitors.

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1 INTRODUCTION

Read through these instructions carefully before use and store them.

These instructions contain the following important information on the product:

- Proper use
- Safety
- Mounting
- Use
- Maintenance
- Disposal

Proper use also involves

- Reading these instructions
- Complying with the safety information they contain
- Complying with the applicable documents
- Complying with the maintenance requirements

Give these instructions to the user after mounting is complete, and give them to the new owner if the product is sold.

1.1 Intended use

- This product is intended only for industrial use in the territory of the European Union and in countries that have been recognised by standards and certificates of the European Union.



Country-specific restrictions may exist concerning communication via Bluetooth outside of the European Union.

- The WPM system is intended only for industrial use in machinery and plant technology.
- The product is a telecommunications product.
- The product may be used only in a technically flawless state, for its intended use, in compliance with the relevant provisions and with safety and potential dangers kept in mind.
- Detected disruptions, especially those which could impair safety, must be redressed immediately.

All forms of usage deviating from the one described in the section on proper use and in the relevant documentation is not proper and is thus prohibited.

- The distributing companies and manufacturers assume no liability for damage in the event of improper use.
- The manufacturer assumes no liability for equipment, its usage and consequences.
- The operator shall be the sole bearer of all risks associated with improper use.

1.2 Foreseeable misuse

Any use that does not comply with the intended use, is considered misuse of the product and is prohibited.

The product must not be stressed beyond its load limits.

The following instances, among others, are considered misuse:

- It is used for applications which the manufacturer has not explicitly approved. The statements contained in the safety notes in the relevant documentation must be observed!
- Construction changes that destroy the original state.
- Improper system programming or configuration. The operator bears sole responsibility and risks for using, programming and configuring the system.
- Usage in explosive atmospheres.
- Usage in explosive areas.
- Usage in medical areas.
- Usage in residential areas.
- Usage in applications that are relevant to security.
- Private use.

1.3 Due diligence of the operator

This Component is designed and manufactured by FIBRO GMBH according to the state of the art. The requirements for ensuring safety and protection of health have been fulfilled.

However, this safety can be achieved in operational practice only when all required applicable measures have been taken. The operator of the Component must plan these measures and control their implementation.

The operator is responsible for the safe operation of the Component.

The operator must make sure that

- the Component is used only as intended.
- the Component must be operated only in a fully functional state with all mechanical and electrical safety devices in place.
- a copy of these instructions and of all other applicable documents is always available in a complete and legible condition at the operation site of the Component. All persons required to work with the Component must be able to consult these instructions at any time.
- only personnel in accordance with 1.10 "Qualifications of personnel" is used at the Component.
- personnel are familiar with these instructions, in particular with the safety information contained therein.
- the responsibilities of this personnel are clearly defined and observed.
- personnel are regularly instructed in all applicable issues related to occupational health and safety and environmental protection.
- all danger signs fitted to the Component have not been removed and remain legible.
- operating instructions related to the work safety and accident prevention are enacted.
- national accident prevention regulations and company regulations are complied with.
- personal protective clothing is available where required.

1.4 Scope of application

These instructions apply to the product with the description "WPM Pressure Sensor" manufactured by FIBRO GMBH DE 74855 Hassmersheim.

If you do not have the proper instructions for your product, contact FIBRO GMBH DE 74855 Hassmersheim.

1.5 Disclaimer of liability

FIBRO GMBH guarantees the described function of the product as stated in advertising and product information.

Further product properties are not confirmed. FIBRO GMBH assumes no liability for efficiency and flawless functioning if the product is used for a purpose other than the one addressed in the chapter "Proper use". Compensation for damage is generally precluded.

If this product is used in environments for which it is not suitable or which do not fulfil the technical standards, FIBRO GMBH shall not be held responsible for the consequences.

FIBRO GMBH assumes no liability for damage to facilities and systems near the product caused by a defect in the product or an error in these instructions.

FIBRO GMBH is not responsible for the violation of patents and/or the rights of third parties outside of the Federal Republic of Germany.

FIBRO GMBH is not responsible for damage caused by improper operation and failure to follow the instructions provided in this document.

FIBRO GMBH is not liable for lost profit and subsequent damage resulting from failure to comply with safety and warning notes.

The products from FIBRO GMBH are state of the art in science and technology.

FIBRO GMBH continually conducts studies of the products and the market in order to continually improve and further develop its products.

1.6 Purpose of the document

These instructions describe the operation of the product and contain important information on correct use.



Read these instructions before working on or with the product. The instructions contain important information for your personal safety. All persons who work on or with the product at some phase in the product's life must read and understand the instructions.

The instructions must be available at the location where the product is used and throughout its entire lifespan. They must be given to the new owner if the product is sold.

The safety notes in the individual chapters must be observed.

These instructions and the other applicable documents are not subject to an automatic change service.

We reserve the right to make changes to the data and figures mentioned in these instructions due to technical developments. FIBRO GMBH can supply the current issue.

1.7 Definitions

The following table lists terms and gives a short explanation for getting started. Some terms are described in detail in the “Product description” chapter.

| Term | Definition of terms |
|-----------|-----------------------------------------------------------------------------------------------------------------|
| Users | Users are people who have been created in the system. |
| Operator | Person or organisation which uses the product or system responsibly. |
| Minimess® | Word mark of Hydrotechnik Registered under 002808855 in the DPMA Register Designation for connection technology |

Tab. 1-1 Definition of terms

1.8 Target group

These instructions are oriented towards persons who commission, configure, operate and maintain the product WPM Pressure Sensor.

1.9 Autor's rights

The product WPM Pressure Sensor and these instructions are protected by copyright. Reproduction without approval shall be prosecuted in court.

We reserve all rights to these instructions, including reproduction and/or copying in all imaginable forms, e.g. by photocopying, printing, copying to any data media whatsoever and in translated form.

These instructions may be reprinted only with written approval from FIBRO GMBH.

The technical state at the time of the delivery of the product WPM Pressure Sensor and the associated instructions shall be decisive if no other information is provided.

We reserve the right to make technical changes without giving special notice. Earlier instructions shall lose their validity. The general sales and delivery conditions of FIBRO GMBH apply.

The products, names and logos mentioned serve informational purposes only and may be trademarks of the respective owner. This shall require no special indication.

1.10 Qualifications of personnel

Special qualifications are required for personnel performing specific tasks.

Among other things, knowledge of first aid measures and local rescue facilities is required.

| | |
|-----------------------------|-------------------------------------------------------------------------------------|
| Electrical equipment | Qualified experts from the electrical trade (as defined for specialists in IEC 364) |
| Transport | Trained personnel |
| Assembly work | Trained personnel |
| Commissioning | Trained personnel |
| Inspections | Instructed personnel |
| Cleaning | Instructed personnel |
| Maintenance | Trained personnel |
| Repair | Qualified expert |
| Decommissioning | Qualified expert |
| Disassembly | Qualified expert |
| | |
| Operation | Instructed personnel |
| Troubleshooting | Trained personnel |
| Changing control parameters | Qualified experts |

Tab. 1-2 Qualifications of personnel

Qualified experts are persons who, due to their education, experience, training, and knowledge of relevant standards, provision, accident prevention regulations, and operating conditions, are authorised to perform the required tasks whilst recognising and preventing possible dangers.

Trained personnel are persons who have been trained by the manufacturer or the operating company for a specific set of tasks or activities. Trained personnel are authorised to perform the tasks or activities which correspond to the level of knowledge achieved from the training. Trained personnel have been informed about possible dangers and can recognise and avoid/prevent these.

Instructed personnel are persons who have been authorised by the manufacturer or the operating company to perform a specific set of tasks or activities independently.

2 SAFETY

2.1 Safety instructions

These instructions contain safety notices intended to draw attention to possible dangers that should be observed to prevent injury.

The pertinent text describes

- the type of danger
- the source of danger
- the options for preventing injuries
- the consequences in case of non-observance of the warning notices

The safety instructions are emphasised by a colour signal bar with warning triangle and signal word.

The signal bars have the following meaning:



DANGER!

A safety notice on a red signal bar with the signal word DANGER designates a hazard with a high risk level which, if not avoided, will result in death or severe injury.



WARNING!

A safety notice on an orange signal bar with the signal word WARNING designates a hazard with a medium risk level which, if not avoided, might result in death or severe injury.



CAUTION!

A safety notice on a yellow signal bar with the signal word CAUTION designates a hazard with a low risk level which, if not avoided, could result in minor or moderate injury.

2.2 General instructions

In addition to the safety notices, these instructions contain information that must be observed to prevent property damage.

The pertinent text describes

- the possible reason for property damage
- the possibilities for preventing property damage

Notices of possible property damage are emphasised by a blue signal bar and the signal word *ATTENTION*.

NOTICE

Notices for the prevention of property damage are not related to possible injuries.



Furthermore, these instructions contain general information on use.

General information on use and tips for certain applications are emphasised with a blue information symbol.

3 PRODUCT DESCRIPTION

3.1 Components and properties

The product WPM Pressure Sensor is a Component in the scope of delivery from FIBRO GMBH.

The product is a pressure monitoring component which was specially developed to monitor FIBRO gas springs inside or outside of the pressing tool.

The WPM Pressure Sensor transmits measured data and status information using the Bluetooth LE 4.0 standard in the FIBRO payload protocol.

In addition, the WPM data holder, the WPM Gateway to be included in the local PLC, and the WPM configuration software, the WPM App, as well as additional programmes with the WPM Pressure Sensors used only in the plant of FIBRO GMBH work together.

3.2 Accessories

No additional accessories are planned for the WPM Pressure Sensor.

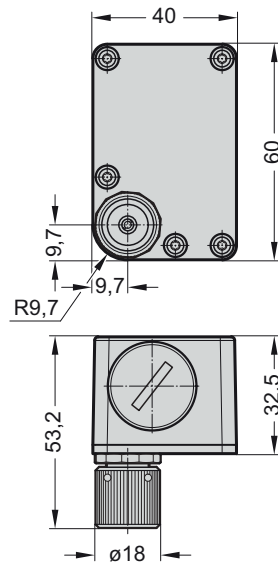
A lithium metal battery from FIBRO is needed for operation. In keeping with the evaluation of the measured data and statuses of the WPM Pressure Sensor, it must be replaced on a regular basis to ensure proper functioning.

3.3 Technical data

| | |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum pressure range: | 600 bar |
| Maximum pressure measurement range: | 500 bar |
| Voltage supply: | 3.6 V FIBRO lithium metal battery |
| Temperature range: | -10°C to +80°C |
| Protection class: | IP65, glued and screwed together |
| Size: | 41 mm x 61 mm x 54 mm |
| Weight: | 0.2 kg |
| Pressure connection: | Minimess® |
| Pressure medium: | Nitrogen |
| Plastic housing: | PA6 30% glass beads |
| Flange plate: | Aluminium |
| Pressure joint: | Stainless steel |
| Monitoring areas: | Can be configured with WPM configuration software |
| Radio technology: | Bluetooth LE 4.0 2.4 GHz |
| Permitted countries: | The territory of the European Union and countries which have been recognised by standards and certificates of the European Union USA and Canada |

The battery contains the hazardous material lithium thionyl chloride

3.3.1 Technical drawing



3.3.2 Type plate

Device identification EU



Device identification EU USA Canada



4 ASSEMBLY

The FIBRO gas spring must be filled to nominal pressure prior to mounting.

The WPM Pressure Sensor is mounted on FIBRO gas springs with Minimess[®] connections.

The WPM Pressure Sensor may be aligned vertically or horizontally when mounted.

The radio's transmission direction is always indicated symbolically on the upper side (with the label "FIBRO") of the WPM Pressure Sensor.

The Minimess[®] screw connection must be connected according to FIBRO's regulations!

The screw connection must be tightened at least until it is hand-tight, but heavy tools absolutely must not be used.

The actual sensor absolutely must not be used as a lever (tool replacement) to screw the connection on or off (loosening the Minimess[®] connection).

4.1 Constructive requirements

10mm of space must be kept free around the sensor. An exception is around the bottom of the FIBRO gas spring.

The area of the WPM Pressure Sensor labelled with a radio symbol must not come into direct contact with metallic surfaces.

For operation with radio technology, there must be sufficient slots and channels everywhere in the pressing tool.

In the pressing tool, there must be sufficiently long and wide slots everywhere necessary according to the principle of slot and waveguide antennas.

Fluids that wet the sensor may reduce the radio transmission

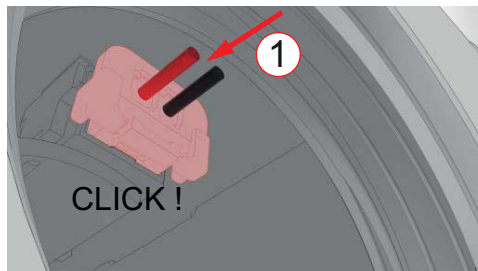
5 COMMISSIONING

The FIBRO gas spring must be filled to nominal pressure before mounting.
The lithium metal battery must be connected and inserted into the WPM pressure sensor.
So that this can happen, the metal locking screw is opened using a suitable tool.



1 Removing the plug

The plug connector for the battery is inserted into the connection socket inside the WPM pressure sensor, where it clicks into place audibly.



1 Inserting and clicking into place

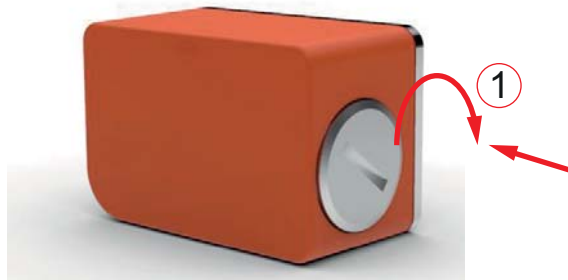
The battery is then inserted into the battery chamber with the shorter part of the battery facing forward towards the litz wire outlet.



1 Inserting and securing the line

It is necessary to make sure that the litz wire is located entirely inside the chamber. It must not be located above the battery.

After the battery is inserted, the metal locking screw needs to be screwed again and sealed tightly.



1 Sealing tightly

When the battery is inserted, the sensor is ready for operation and switches to energy-saving mode after an hour.

The sensor needs to be screwed onto the Minimes[®] screw connection (see the chapter 4 "Assembly").

6 OPERATION

6.1 Configuration operation

The WPM Pressure Sensor and WPM data holder are configured for PCs using WPM configuration software.

The WPM configuration software has its own set of instructions.

A WPM Pressure Sensor must be assigned to a tool and configured using the WPM configuration software.



It is not possible to operate WPM monitoring without configuration.

The sensor has the following basic settings when not configured:

| | |
|-----------------------------------|--------------------------------------|
| Measurement cycle: | 10 seconds |
| Measurement cycle in sleep mode: | 10 minutes (cannot be configured) |
| BT LE transmission cycle: | 10 seconds |
| Transmission cycle in sleep mode: | 10 seconds (cannot be configured) |
| Sleep mode: | After 2 hours |
| From active mode to sleep mode: | After 2 hours |
| Pressure warning: | Under 150 bar |
| Pressure alarm: | Under 25 bar |
| Temperature warning: | Greater than 50°C sensor temperature |
| Temperature alarm: | Greater than 80°C sensor temperature |

NOTICE

No data during parameterisation

During programming, the data holder does not transmit any current data

► Monitoring interrupted

6.2 Normal operation

The WPM Pressure Sensor has two normal operating modes in addition to configuration operating mode.

6.2.1 Sleep mode

The sensor is in energy-saving mode when it is installed but tool monitoring is not activated.

The measurement cycle and the transmission cycle are configured to use as little power as possible in this state.

The WPM Pressure Sensor reports a measured value that is two minutes old at most every 10 seconds.

This mode is intended for unused, stored pressing tools. Gradual loss of gas pressure and the energy state of the battery can be detected.

6.2.2 Online tool monitoring – active mode

If a tool (the WPM Pressure Sensor) is monitored online either by the WPM configuration software or the WPM Gateway, the pressure sensor is set to active mode.

The dynamic sensor settings which were previously configured with the WPM Configuration Software take effect in active mode.

After the sleep timer expires, the sensor goes back into idle mode.

The sleep timer is actively refreshed by the WPM Configurator or the WPM Gateway.

Should this prove to be impossible, e.g. because the Gateway or the WPM Configuration Software causes an interruption, the sensor automatically reverts to sleep mode:

- If the WPM Configuration Software interrupts the monitoring: After 2 hours
- If the Gateway interrupts the monitoring: After 2 hours

6.3 Operating mode battery empty

The WPM Pressure Sensor transmits a battery warning signal when the battery starts to get weak.

When the required continuous operating voltage is undercut, the transmission cycle switches to 10 seconds, and no pressure and no temperature is measured.

The battery warning signal remains static and cannot be reset. The WPM Pressure Sensor is in deep sleep mode.

The WPM Gateway can still monitor a WPM Pressure Sensor in this state and display the battery warning. Reactivating in active mode is not possible.

When exchanging the battery, the device must rest for 3 minutes without battery before a new battery is inserted.

7 MAINTENANCE

The actual sensor requires no maintenance.

The pressure joints and thread must be protected against soiling.

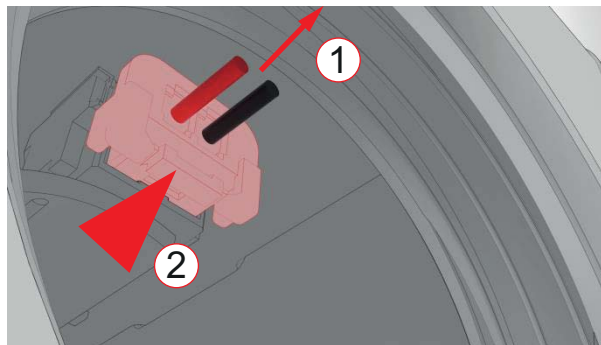
The battery must be replaced.

7.1 Changing the lithium metal battery

The battery must be changed depending on the self-diagnosis of the WPM device.

The values can be checked using the WPM configuration software and can be called up using status information in the Gateway.

To loosen the battery plug, the locking catch on the plug connector needs to be unlocked. This can be done using the tip of a pen, and the plug must be pulled at the same time.



- 1 Pull lightly on the strand
- 2 Loosen the snap-in latch by pressing on it

NOTICE

Maintenance with lithium metal battery

Lithium is a hazardous material. There is a risk of fire.

- ▶ Do not create a short circuit.
- ▶ Do not mechanically damage the battery.
- ▶ Do not recharge the battery.
- ▶ Let the WPM devices rest for 3 minutes without battery before a new battery is inserted.

8 DISPOSAL

The product is an industrial product and is reclaimed through the old industrial device disposal system.

8.1 Disposing of the battery

NOTICE

Dispose of the battery properly

The battery consists of lithium metal cells. Lithium is a valuable raw material and a hazardous material. Improper disposal may cause environmental damage and may be prosecuted.

- ▶ The battery must be removed from the device.
 - ▶ The battery must be disposed of according to the pertinent, customary national and regional laws and guidelines.
 - ▶ The local regulations on proper waste recovery or removal must be complied with.
-

9 INDEXES

9.1 Third-party products

The product contains no components from third-party companies.

9.2 Index of tables

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10 APPENDIX

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More information at

www.fibro.de/downloads-springs-gas-springs/



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