

# VIBCONNECT® RF

## Installation and Operation



## Legal notes

### Compliance Statement acc. to Sect. 15.19:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

### User Information acc. to Sect.15.21:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### Class B Statement Sect. 15.105 –)

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device,



pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### Statement acc. to RSS-Gen 7.1.2

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada.



To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication

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No liability may be claimed against the publisher regarding the product described in this manual. The author assumes no liability for accuracy of the manual contents. The author shall not be liable for any direct or indirect damage of any kind resulting from use of the product or the manual, even if the

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# VIBCONNECT® RF

## Wireless Online Condition Monitoring

### Installation and Operation

#### Modules:

VIB 7.220, VIB 7.225  
VIB 7.200, VIB 7.205  
VIB 7.205-2.9EX

VIBCONNECT RF Bridge  
VIBCONNECT RF Sensor unit  
VIBCONNECT RF sensor

Firmware: 2.1x



Edition: May 2014

Order no.: LIT 72.200.EN

Translation of the german manual

## **Foreword**

Thank you for purchasing our VIBCONNECT RF online condition monitoring system. VIBCONNECT RF offers maximum flexibility at minimum costs for installation and operation. It caters for the continuous condition monitoring of machines for which wired systems would not be economically viable.

### **System properties**

- Easy and quick installation without cabling
- Low purchasing, installation and operating costs
- Ideal to cover distant or difficult to reach locations
- Free OMNITREND PC software for visualization, analysis and configuration
- Up to 50 Sensor Units communicate with each Bridge
- Each Sensor Unit connects to two 3-in-1 sensors for vibration, roller bearing condition and temperature
- Separation of radio module and sensors for optimized signal reception
- Measures time waveform and temperature simultaneously
- FFT spectrum and envelope spectrum (bearing condition)
- Overall and narrow-band characteristic values
- 3 power options: Long-life batteries, 24 VDC or Harvester
- Battery life approx. 4 years thanks to energy-efficient sensor technology and intelligent power management
- Battery load monitoring
- Radio frequency is ideal for applications without a permanent radio communication
- Maximum radio range: 300 meters
- Upgradable with additional sensor units at any time

If you require more information, you might wish to attend a PRÜFTECHNIK seminar, which focuses on practical issues and has been found very useful by participants. Attending our seminars has proven to be a valuable investment for machine operators. To find out more, please contact us for seminar dates or visit our website at

**<http://www.pruftechnik.com>**

Ismanning, May 2014  
PRÜFTECHNIK Condition Monitoring

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## Chapter 1: Introduction

### 1.1 First steps

#### Checking delivery

Please check the delivered goods without delay for defects or missing parts. If your delivery is incomplete or you detect defective parts, mark the respective components on the freight dockets and contact the shipping company or local PRÜFTECHNIK sales partner.

#### Responsibilities

The operator of the machine must ensure that:

- All applicable statutory regulations, including safety, accident prevention and environmental protection regulations, and the recognized technical safety rules are strictly adhered to
- All tasks for the proper installation of the system components are performed
- The system is installed by a qualified specialist technician
- All components and tools required for the installation are available on site (see also chapter "Installation")
- Electric power and a data network connection that conforms to the specifications are available on site
- A potential equalization connection is available on site

### 1.2 Service addresses

If you have any queries, contact us:

Hotline: +49 89 99616-0

E-mail: [info@pruftechnik.com](mailto:info@pruftechnik.com)

Fax: +49 89 99616-300

PRÜFTECHNIK Condition Monitoring GmbH  
Oskar-Messterstr. 19–21,  
857373 Ismaning, Germany

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#### Note

*When calling our hotline, please have the serial number of the respective component at hand.*

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### 1.3 About this manual

This manual forms part of the product delivery and must be kept for the entire service life of the product. It might be necessary to update this document from time to time. If the product is handed on to another user, you must also hand over this manual.

### Disclaimer

The information and data in this manual are provided for information purposes only. Although great care has been taken in the compilation of this document, PRÜFTECHNIK Condition Monitoring GmbH accepts no liability for the accuracy in terms of error or omission.

PRÜFTECHNIK Condition Monitoring GmbH shall not be liable for direct or indirect damage resulting from errors, omissions or inaccuracies in this document.

PRÜFTECHNIK Condition Monitoring GmbH accepts no liability for damage arising from non-compliance with the instructions in this manual.

### Document structure

This manual contains important information for the proper installation, commissioning, troubleshooting maintenance, dismantling and disposal of the VIBCONNECT RF system components.

It has been complied in line with the requirements laid down in DIN EN 62079:2001.

### Document layout

The text in this manual is formatted according to its purpose or function:

Explanatory text: No indent

Instructions, lists: List with • (bulleted)

General notes: Text delimited with lines at the top and bottom, preceded by signal word Note

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### Note

*For safety symbols and signs, refer to chapter 2 "Safety".*

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### Definitions

The following short designations are used in this manual:

• VIBCONNECT RF bridge	= bridge
• VIBCONNECT RF sensor unit	= sensor unit
• VIBCONNECT RF sensor	= sensor
• VIBCONNECT RF	
Condition Monitoring System	= VIBCONNECT RF or system

## Chapter 2: Safety

VIBCONNECT RF has been designed according to the harmonized standards and technical specifications listed below. It therefore conforms to the latest state of technology and provides best possible safety.

During installation and operation, there are, however, some residual risks that cannot be eliminated by technical measures.

Please always comply with the general safety instructions in this chapter, and with the safety instructions in the other chapters of this manual. The safety instructions tell you what you need to do to protect yourself and other persons as well as property and equipment from harm.

Please note that the system operator shall be responsible for any damage to persons or property resulting from non-compliance with the instructions in this manual.

### 2.1 Safety symbols

#### ▲ Caution

***Instructions for the prevention of injury.***

*Non-compliance might result in minor or moderate injury.*

#### Note

##### **General notes**

*for the prevention of damage to property.*

### 2.2 Information for the system operator

#### Duties of the system operator

During operation, maximum safety can only be achieved, if all necessary measures are taken. It is the duty of the operator to ensure that these measures are properly planned and implemented.

In particular, you must ensure that

- the system is only be used for its intended purpose
- the system is only operated when it is in proper working condition
- The system is installed and operated only by suitably qualified and authorized personnel

- All operating personnel have been instructed in the relevant occupational safety and environmental protection issues in relation to the system, and in the use of this manual, with particular reference to the safety instructions
- The responsibilities for installation, commissioning and operation have been assigned

### **Compliance with operating manual**

You must ensure that

- This manual has been read and fully understood by all operating personnel, and that all instructions are strictly adhered to
- A copy of the manual is filed near the system and accessible at all times to the operating personnel
- The manual is handed over to any future owner of the system

### **Training**

You must instruct the operating personnel on a regular basis on the application of all safety instructions. It is your duty to ensure that all safety instructions are strictly adhered to.

You must also instruct your personnel to comply with all statutory and other binding safety and accident prevention regulations and ensure that all warnings are observed.

As the system operator, you must ensure that all personnel work with due regard to safety.

## **2.3 Information for operating personnel**

### **Qualification**

The system must be commissioned and operated by properly instructed and authorized personnel. Installation and dismantling must be performed by a qualified electrician. All operating personnel must have read and fully understood the operating manual and must follow all instructions in the manual.

### **Personal protective equipment**

All personnel involved in the installation and dismantling of the system must wear hard hats and protective goggles. No personal protective equipment is required for the operation of the system.

### **Rules for normal operation**

The operating status of the bridge is indicated by the LED at the power supply. During normal operation, the LED is lit in green; if there is a power failure, the LED is off.

Regularly check for the following:

- Is there visible damage to the system components?
- Are any of the sensor or network cables squeezed or damaged?
- If you detect any defects, notify your supervisor and/or repair them. The system must only be operated when in proper working order!
- In the event of malfunction of the bridge or the sensor unit, disconnect the affected device from the power supply and secure it against switching on.

Please note that a failure of the system does not affect the machine operation. The machine can thus be operated as normal while the system is temporarily shut down.

## **2.4 Intended use**

VIBCONNECT RF is a stationary, wireless system for condition monitoring of machines with roller bearings. It monitors machines by measuring the following parameters:

- Characteristic broad and narrow band vibration values
- Time signals
- Spectra
- Temperature

The system works more or less continuously. Measurements at the measurement locations are performed at regular preset intervals. The system is most suitable for machines where damage tends to occur slowly and gradually over time, which is the case with most standard machines (e.g. pumps, fans, compressors, etc.).

Sensor units that are powered through an energy harvester must only be installed in machines that operate at a constant speed in a frequency range that is adjusted for the harvester.

The system must only be operated within the limits specified in this manual.

### **Foreseeable misuse**

The system must not be used for the monitoring of machines that are prone to damage developing over a short time (e.g. turbines).

PRÜFTECHNIK shall not be liable for any damage caused by incorrect use of the system.

## 2.5 Residual risks and safety measures

If installed and operated according to the instructions VIBCONNECT RF is a safe system. In the event of incorrect operation or use, the following damage might occur:

- Personal injury
- Damage to the system components or to the machine
- Impaired radio communication (poor reception/transmission)

### CAUTION

#### ***Risk of injury from falling parts!***

*When installing a bridge at great height, there is a risk that the bridge or a tool might fall to the ground, causing injury.*

- » *Cordon off the area immediately below the installation site to prevent access to the danger area.*
- » *Use fall-arresting equipment.*

### CAUTION

#### ***Risk of injury from electric shock!***

*When connecting the bridge to the power supply without taking the necessary safety precautions, there is a risk of energy from high voltage (220 V).*

- » *The electrical connection must be established by a qualified electrician.*
- » *The mains voltage must conform to the IEC guidelines.*
- » *An external interface (fuse or switch) must be provided in order to disconnect the power supply securely.*
- » *Before carrying out any installation, repair or maintenance work on the bridge, disconnect it from the power supply.*

### CAUTION

#### ***Risk of injury from rotating machine parts!***

*When installing the sensor unit and the sensors while the machine is running, there is a risk of serious injury caused by exposed, moving machine parts.*

- » *Do not remove any guards on the machine.*
- » *Always adhere to the safety instructions for work on running machinery.*

**Note*****Risk of damage to equipment while housing is open!***

*Touching the electronic components on the mother board can lead to electrostatic discharge, which can damage system components.*

- » *If contact with such components cannot be excluded, wear an earthing wristband.*

**Note*****EMC***

*High-frequency radiation and electrostatic discharge (ESC) near the sensors can lead to incorrect measurements.*

- » *Do not install sensor cables in high-voltage cable ducts.*

**Note*****Radio approval***

*The antennas on the system components are installed at the factory and must not be removed.*

- » *Contact PRÜFTECHNIK, if you want to use a different type of antenna or if you need to extend the original antenna from an enclosure with an antenna cable.*

# CERTIFICATE

## Declaration of Conformity

according to EN ISO/IEC 17050-1



**PRÜFTECHNIK Condition Monitoring GmbH**

Oskar-Messter Str. 19–21, 85737 Ismaning, Germany  
herewith declares that product

Designation: **VIBCONNECT RF Sensor Unit / Bridge / Sensor**

Product nos.: **VIB 7.200, VIB 7.205 / VIB 7.220, VIB 7.225 / VIB 7.205-2.9EX**

Description: **Wireless Condition Monitoring System**

conforms to the applicable European Directives and standards. The product fully complies with the relevant safety requirements laid down in the directives.

### Directive

**EMC directive** 2004/108/EC

**Low voltage directive** 2006/95/EC

**RTTE directive** 1999/5/EC

### Standards applied

Electromagnetic compatibility

**EN 55022, EN 61000-3-2, EN 61000-3-3, EN 61000-3-11, EN 61000-3-12, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11, EN 61000-6-2, EN 61000-6-4, EN 301 489-1, EN 301 489-3, CISPR 22**

Safety of IT equipment:

**IEC 60950-1**

EMC and Radio spectrum matters (Short range device SRD):

**ETSI EN 300 220-1**

**ETSI EN 300 220-2**, as EN 300 220-1, harmonized EN

Human exposure to electromagnetic fields:

**EN 62311**

The CE mark was applied in 2012.

Ismaning, June 6th, 2012

Place, date

  
Johann Lösl – Managing Director



PRÜFTECHNIK



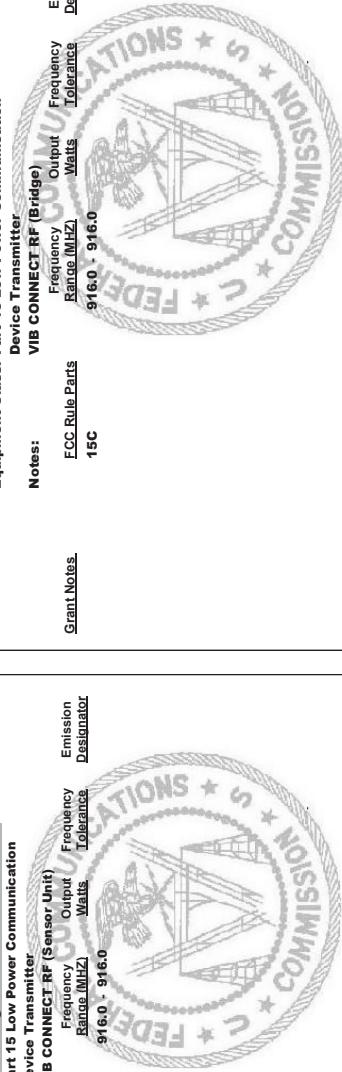
Quality management system certified  
according to EN ISO 9001: 2008

**TCB****GRANT OF EQUIPMENT  
AUTHORIZATION**

Certification

Issued Under the Authority of the  
Federal Communications Commission  
By:ACB, Inc.  
6731 Whittier Avenue Suite C110  
McLean, VA 22101  
Date of Grant: 06/06/2012  
Application Dated: 06/06/2012**PRÜFTECHNIK Condition Monitoring GmbH**  
Oskar-Messter-Str. 19-21  
Ismaning, 85737  
Germany**Attention: Horst Göhlich , Dr.****NOT TRANSFERABLE**EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE,  
and is VALID ONLY for the equipment identified hereon for use under the  
Commission's Rules and Regulations listed below.FCC IDENTIFIER: CHO-VCRFBR  
Name of Grantee: PRÜFTECHNIK Condition  
Monitoring GmbHEquipment Class: Part 15 Low Power Communication  
Device Transmitter  
**VIB CONNECT RF (Bridge)**

Notes:	FCC Rule Parts	Frequency Range (MHz)	Output Power	Frequency Tolerance	Frequency Range (MHz)	Output Power	Frequency Tolerance	Emission
Grant Notes:	15C	916.0 - 916.0	Watts	Watts	916.0 - 916.0	Watts	Watts	Destinator

**TCB****GRANT OF EQUIPMENT  
AUTHORIZATION**

Certification

Issued Under the Authority of the  
Federal Communications Commission  
By:ACB, Inc.  
6731 Whittier Avenue Suite C110  
McLean, VA 22101  
Date of Grant: 06/06/2012  
Application Dated: 06/06/2012**PRÜFTECHNIK Condition Monitoring GmbH**Oskar-Messter-Str. 19-21  
Ismaning, 85737  
Germany**Attention: Horst Göhlich , Dr.****NOT TRANSFERABLE**EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE,  
and is VALID ONLY for the equipment identified hereon for use under the  
Commission's Rules and Regulations listed below.FCC IDENTIFIER: CHO-VCRFSL  
Name of Grantee: PRÜFTECHNIK Condition  
Monitoring GmbHEquipment Class: Part 15 Low Power Communication  
Device Transmitter  
**VIB CONNECT RF (Sensor Unit)**

Notes:	FCC Rule Parts	Frequency Range (MHz)	Output Power	Frequency Tolerance	Frequency Range (MHz)	Output Power	Frequency Tolerance	Emission
Grant Notes:	15C	916.0 - 916.0	Watts	Watts	916.0 - 916.0	Watts	Watts	Destinator

**TCB**



American Certification Body Inc.  
6731 Whittier Ave, McLean, VA 22101

REF No. ▶ ATCB012267

## TECHNICAL ACCEPTANCE CERTIFICATE

### CERTIFICATION No. ▶ 10238A-YCRFBR (Single)

NO. DE CERTIFICATION ▶  
ISSUED TO ▶  
DELIVRÉ À ▶  
Prüftechnik Condition Monitoring GmbH  
Oskar-Messter-Str. 19-21  
85737 Ismaning  
Germany

### TYPE OF EQUIPMENT ▶ TYPE DE MATERIEL ▶

TRADE NAME AND MODEL ▶  
MARQUE ET MODÈLE ▶  
FREQUENCY RANGE ▶  
BANDE DE FREQUENCES ▶  
EMISSION DESIGNATION ▶  
DÉSIGNATION D'ÉMISSION ▶

RF. POWER RATING ▶  
PUISSEANCE NOMINALE H.F. ▶  
ANTENNA ▶  
ANTENNE ▶

TEST LABORATORY ▶  
LABORATOIRE D'ESSAI ▶  
94342 Straßkirchen  
Germany

### CERTIFIED TO ▶ CERTIFIÉ SELON LE ▶

RSS-210

### SPECIFICATION ▶ CAHIER DES CHARGES ▶

ISSUE 8  
EDITION

SITE NUMBER ▶  
NUMÉRO DE SITE ▶  
3009A-1

SITE NUMBER ▶  
NUMÉRO DE SITE ▶  
3009A-1

ISSUE 8  
EDITION

La certification du matériel signifie seulement que le matériel a satisfait aux exigences de la norme indiquée ci-dessus. Les demandes de licences nécessaires pour l'utilisation du matériel certifié sont faites au conceritance par le bureau de dépôt de l'entity radio environnement, service et location de l'entity Canada, et sont dépendantes de l'environnement d'exploitation.

Certificat est émis en condition que le tableau suivant et toutes les conditions de l'entity Canada sont respectées. Le certificat est émis pour l'entity Canada et est utilisable pour l'entity Canada. Tous les équipements qui sont certifiés par l'entity Canada doivent être vendus ou distribués, tout en vente ou vendu à moins qu'il ne conforme aux procédures et aux spécifications applicables publiées par l'entity Canada.

Il résulte par la présente que le matériel a satisfait aux exigences de la norme indiquée ci-dessus.

Certification of equipment means only that the equipment has met the requirements of the above noted specification. License applications, where applicable to a certificated equipment, are based on, according to the Industry Canada issuing office, and will depend on the entity radio environment, service and location of the entity Canada, and are dependent on the environment of operation.

This certificate is issued on condition that the holder complies and will continue to comply with the requirements of the radio standards, specifications and procedures issued by Industry Canada. The equipment for which this certificate is issued shall not be sold or distributed, unless it is sold or distributed to another entity, and the equipment complies with the applicable technical specifications and procedures issued by Industry Canada.

It is hereby stated that the subject equipment was tested and found in compliance with the above noted specification.

ORIGINAL DATE OF ISSUE: 21 June 2012

REVISED DATE OF ISSUE: N/A



American Certification Body Inc.  
6731 Whittier Ave, McLean, VA 22101

REF No. ▶ ATCB012266

## TECHNICAL ACCEPTANCE CERTIFICATE

### CERTIFICATION No. ▶ 10238A-YCRFSU (Single)

NO. DE CERTIFICATION ▶  
ISSUED TO ▶  
DELIVRÉ À ▶  
Prüftechnik Condition Monitoring GmbH  
Oskar-Messter-Str. 19-21  
85737 Ismaning  
Germany

### TYPE OF EQUIPMENT ▶ TYPE DE MATERIEL ▶

TRADE NAME AND MODEL ▶  
MARQUE ET MODÈLE ▶  
FREQUENCY RANGE ▶  
BANDE DE FREQUENCES ▶  
EMISSION DESIGNATION ▶  
DÉSIGNATION D'ÉMISSION ▶

RF. POWER RATING ▶  
PUISSEANCE NOMINALE H.F. ▶  
ANTENNA ▶  
ANTENNE ▶

### CERTIFIED TO ▶ CERTIFIÉ SELON LE ▶

RSS-210

### SPECIFICATION ▶ CAHIER DES CHARGES ▶

ISSUE 8  
EDITION

SITE NUMBER ▶  
NUMÉRO DE SITE ▶  
3009A-1

SITE NUMBER ▶  
NUMÉRO DE SITE ▶  
3009A-1

ISSUE 8  
EDITION

REF No. ▶ ATCB012266

## CERTIFICAT D'ACCEPTABILITÉ TECHNIQUE

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This certificate is issued on condition that the holder complies and will continue to comply with the requirements of the radio standards, specifications and procedures issued by Industry Canada. The equipment for which this certificate is issued shall not be sold or distributed, unless it is sold or distributed to another entity, and the equipment complies with the applicable technical specifications and procedures issued by Industry Canada.

It is hereby stated that the subject equipment was tested and found in compliance with the above noted specification.

ORIGINAL DATE OF ISSUE: 21 June 2012

REVISED DATE OF ISSUE: N/A

Michael F. Violette  
Director

Michael F. Violette  
Director





## Chapter 3: Technical data

### VIBCONNECT RF Bridge – VIB 7.220, VIB 7.225

#### Radio transmission frequency band

868 MHz (Europe, VIB 7.220)  
916 MHz (America, VIB 7.220)  
2435 MHz (Worldwide, VIB 7.225)

#### Ethernet

Baud rate: 10 / 100 Mbit/s

#### Memory

256 MB

#### Capacity

up to 50 sensor units

#### Power supply

100 ... 240 VAC / 50-60 Hz

#### Operating temperature

–25 °C ... +60 °C

#### Relative humidity

< 95 %, non-condensing

#### Housing

Steel sheet, powder-coated

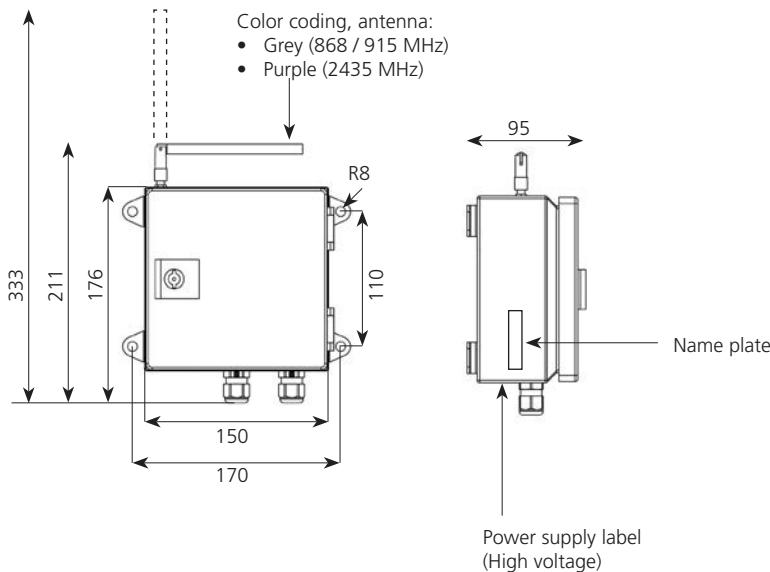
#### Protection class

IP 66, NEMA 4

#### Weight

approx. 1.8 kg

#### Dimensions (in mm) and labeling





## VIBCONNECT RF sensor unit – VIB 7.200, VIB 7.205

### Radio transmission frequency band

- 868 MHz (Europe, VIB 7.200)
- 916 MHz (America, VIB 7.200)
- 2435 MHz (Worldwide, VIB 7.205)

### Measuring channels

Two synchronized channels. Each channel allows for the simultaneous measurement of vibration and temperature by the VIBCONNECT RF sensor.

### Dynamik range

24 bit ADC

### Radio range

up to 300 meters (open field)

### Power supply

- a) 3.6 V lithium batteries, size C, 2 pcs.
- b) 24 VDC
- c) Energy harvester

(optimized for 50 Hz, 60 Hz, 100 Hz or 120 Hz vibration frequency)

### Battery service life

4 years, at 1 measuring sequence\* per 2 hours at 20 °C

\* 2x vibration + 2x temperature

### Standby mode

Yes

### Operating temperature

-25 °C ... +80 °C

### Relative humidity

< 95 %, non-condensing

### Housing

ABS plastics, shatter-proof

### Weight

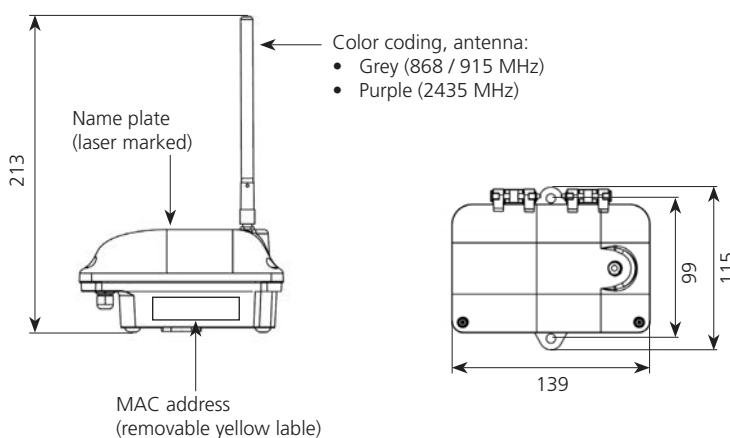
450 g (including batteries)

360 g (with supply via 24 VDC/energy harvester)

### Protection class

IP 65

### Dimensions (in mm) and labeling



## VIBCONNECT RF Sensor – VIB 7.205-2,9EX

### Sensor type

Vibration acceleration sensor with integrated temperature sensor

### Transmission factor

3.5 mV / ms<sup>2</sup> (± 10 %)

### Max. measurement range

500 ms<sup>2</sup> r.m.s. (± 10 %)

### Frequency range

5 Hz ... 10 kHz (± 3 dB)

### Temperature measuring range

-40°C ... +85°C (± 3°C)

### Cable type

4-wire cable incl. shield

### Cable length

2.9 m

### Relative humidity

< 95 %, non-condensing

### Case material

Stainless steel VA 1.4305 /  
Grivory HTV (resistant amongst others to diesel, crude oil, hydraulic and  
engine oil, lubricants, tar, turpentine)

### Chemical resistance of cable

Acids, alkalines, oils, fuels: very high resistance

### Protection class

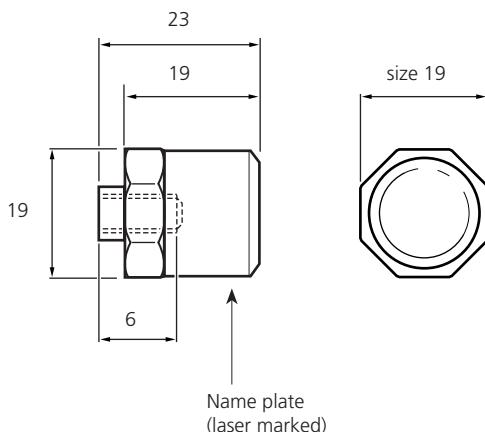
IP 65

### Fixture to machine

Mounting adapter with UNF 1/4" thread



### Original size, dimensions in mm



**Measuring tasks**

(configurable through OMNITREND PC software)

**Maximum number of measuring tasks per measurement location**

4x vibration, 1x temperature (min. 1x vibration per measurement location)

**Time signals**

Vibration acceleration up to 10 kHz, Duration: 3 s

Vibration acceleration up to 1 kHz, Duration: 800 ms

Vibration acceleration up to 5 kHz, Duration: 200 ms

Vibration acceleration up to 10 kHz, Duration: 100 ms

**Amplitude spectra**

Vibration acceleration up to 1 / 5 / 10 kHz, 3200 lines

Vibration acceleration up to 12.2 kHz, 25600 lines

Vibration velocity up to 1 / 1.5 / 5 / 10 kHz, 3200 lines

Vibration velocity up to 6.1 kHz, 12800 lines

**Envelope spectra**

Vibration acceleration up to 1 / 3.2 kHz

## Chapter 4: System description

VIBCONNECT RF is a stationary, wireless online condition monitoring system designed for easy installation and operation. The system consists of the following components:

1. VIBCONNECT RF bridge
2. VIBCONNECT RF sensor unit
3. VIBCONNECT RF sensor for vibration and temperature



### 4.1 VIBCONNECT RF bridge

The bridge is the central reception and transmission unit in a wireless network (star topology) that can include up to 50 sensor units (see also '4.2.4 Topology of radio cell', page 26). It receives the measurements from the sensor unit(s), processes them and transfers them to the OMNITREND software for evaluation and archiving. The bridge is supplied by the OMNITREND software with the measuring configurations\* for each measurement location and forwards this information via radio signal to the respective sensor units.

### Detailed description of function

OMNITREND loads the measuring configurations to the bridge, which is connected through a patch cable to the local network. The bridge then transmits this information via radio signal to the respective sensor units. This happens as soon as these sensor units signal to the bridge that they are active. The data transfer is bidirectional, i.e. the bridge can only communicate with one sensor unit at any one time.

\* **Meas. configuration =**  
measuring task +  
trigger settings +  
band analysis  
(if required)

For vibration measurements, the sensor unit only records the related time signal. The further processing and analysis of the time signal (characteristic value, FFT spectrum, envelopes) are performed on the bridge.

The bridge stores the actual measuring configurations and the measurements that have not yet been transferred to the OMNITREND software. Measurements that have been uploaded to OMNITREND are automatically deleted from the bridge memory.

### Note

*The measurement import must be started manually in the OMNITREND software. Alternatively, the import can also be automated through a Windows task. For details, see the Technical Release # 21, available for free on the PRÜFTECHNIK homepage. Ensure that the data is regularly written to OMNITREND. Otherwise, the memory capacity of the bridge might be exceeded so the oldest measurements are automatically overwritten with the latest ones.*

For optimum reception, install the bridge in an exposed location, preferably within sight contact of all connected sensor units. The transmission range in the open field is maximum 300 m (optimum conditions). For larger machine parks, you might need to install several bridges operating separate wireless networks.

The bridge is powered by mains power.

Large industrial sites can be serviced by installing several bridges, whereby the number of bridges is not limited.



## 4.2 VIBCONNECT RF sensor unit

The sensor unit is the transmitter and receiver unit attached to the machine. Each sensor unit comes with one or two connected sensors for the simultaneous measurement of vibration and temperature. By separating the sensors from the radio unit, it is possible to position the components in the most suitable locations on the machine:

- For sensors, these are the points with the highest signal level.
- For the transmitter/receiver, it is the point of best radio reception.

The sensor unit requests the measuring tasks from the bridge and performs them by means of the connected sensors. For vibration measurements, only the related time signal is recorded. For each measurement location, up to four vibration measurements and one temperature measurement can be configured.

The sensor unit can be powered from three different sources:

- Battery
- 24 VDC
- Energy harvester



Sensor unit with two sensors, for vibration and temperature measurement respectively.

### 4.2.1 Power options

#### Battery

The sensor unit is powered by two lithium batteries. The battery charge level is automatically signalled to the bridge at each measurement transfer and displayed in OMNITREND. If a battery needs to be changed, a warning is displayed when the software is started.

The batteries are not included in the scope of delivery and must be purchased separately.

- Battery type: 3.6 V lithium, size C
- Manufacturer: e.g. Tadian, type: SL-2770

## 24 VDC

For this type of sensor unit, the system operator must provide a 24 VDC power connection at the location of installation.

## Energy harvester

\*xxx = 50, 60, 100, 120  
(frequency range in Hz)

For this type of sensor unit, the operator must install an energy harvester (VIB 7.210-xxx\*) that converts the vibration energy of the machine into electric power. This can only be done, if the machine speed is constant and within the useful frequency range of the energy harvester.

### 4.2.2 Operating cycle: measuring, sending, idling

The sensor unit performs the measuring tasks at preset intervals, sends the data and then returns to idle to save energy.

#### Measuring time, transmission time, idle time

Each measuring sequence takes about 3 seconds, while the sending of the data might take up to 30 seconds. The duration of the idle phase is set in OMNITREND for each sensor unit to a time between 30 minutes and 1 week.

To explain the function of a sensor unit in a radio cell, a number of typical scenarios are described below in the form of questions and answers.

### 4.2.3 How does the bridge detect a sensor unit?

Each sensor unit is assigned a unique code, known as the MAC address. This code is pre-programmed in the radio module and cannot be altered. A sensor unit is assigned to a bridge in the OMNITREND software, using its MAC address.

---

#### Note

*The MAC address of a sensor unit is engraved in its cover. In addition, each sensor unit is equipped with an adhesive label bearing the MAC address that is used for the configuration of the measurement location database (see also '5.4.3 Mounting sensor unit', page 44).*

---

## What happens, if ...

... a sensor unit "wakes up" from its idle time?

- The sensor unit performs the measurements, using the current measuring configuration, and transfers the data via radio signal to the bridge. The bridge confirms receipt of the data and sends a new measuring configuration to the sensor unit, if this is required. Subsequently, the sensor unit returns to idle mode.

... the radio channel is used by another sensor unit?

- The sensor unit waits for 2 seconds and then checks again whether the radio channel is available.

... the power supply to the sensor unit has been temporarily interrupted?

- When the sensor unit is switched off, the measuring configuration data is lost. When the unit is switched on again, it automatically requests a new configuration from the bridge. After this configuration has been received, the required measurements are performed and the data is sent to the bridge.

... a sensor unit is within the radio range of two bridges?

- Each sensor unit is assigned to one bridge in the OMNITREND software. All requests sent by the sensor unit are only replied to by this bridge.

... a sensor unit is installed in an existing radio cell?

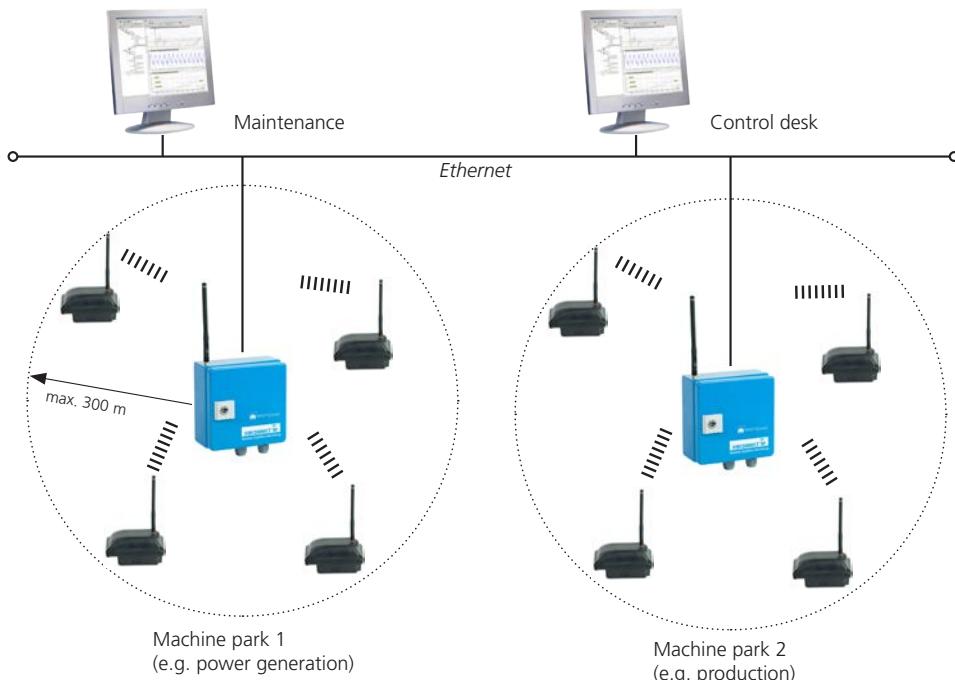
- Before installing the sensor unit, you must locate the point with the best radio reception. To do this, set the sensor unit to commissioning mode to measure the reception field strength at various possible locations of installation. Then install the sensors on the machine, connect them to the sensor unit and start the system. In a further step, configure the respective measurement locations in OMNITREND. The relevant measuring configuration is then transmitted to the bridge with the best radio reception field strength (see also '5.7 Installing additional sensor unit', page 63).

#### 4.2.4 Topology of radio cell

The radio network is of a star formation, and each sensor unit communicates with the bridge through bidirectional communication. The individual sensor units cannot communicate with each other.

This ensures that additional sensor units can be added to a cell at any time without affecting the existing components. The failure or switching off of a sensor unit does not in any way affect the rest of the network.

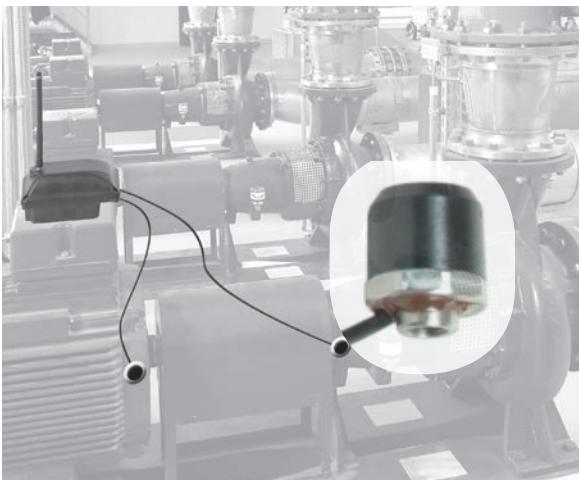
VIBCONNECT RF radio cells are of a star formation.



#### 4.3 VIBCONNECT RF sensor

The sensor simultaneously measures the vibration acceleration and the temperature. It is equipped with a 2.9 m cable and is extremely compact, requiring only minimum space. It can thus be positioned at the best possible measurement location on the machine and connected to the sensor unit that is within the radio range of the bridge. Due to its very low power consumption, the sensor conserves valuable energy resources in the Battery and Harvester version.

The sensor is mounted with a M8 threaded bolt to the machine. For special requirements, we supply adhesive and magnetic adapters (optional accessories).



## Chapter 5: Installation & commissioning

### 5.1 Quick guide

#### 5.1.1 Initial installation of system / radio cell

##### *In OMNITREND at PC workstation*

- Register device driver
- Set up measurement location database
- Print measurement location report
- Adjust IP address at the bridge

##### *On site*

- Install and start bridge
- Install sensor unit
- Install sensors and connect them to the sensor unit
- Enter the following data in the measurement location report: MAC address of sensor unit, measuring channel, measurement location
- Start sensor unit
- For additional sensor units, perform steps 6 to 9

##### *In OMNITREND*

- Register bridge in OMNITREND
- Register sensor units in OMNITREND
- Assign measurement locations to the bridge and the sensor unit (see measurement location report)
- Configure measuring channels (see measurement location report)
- Create measuring configuration for each measuring channel
- Load measuring configurations to the bridge
- Import first measurement data in OMNITREND

#### 5.1.2 Subsequent installation of additional sensor unit

##### *In OMNITREND*

- Add new measurement locations to the measurement location database
- Print measurement location report for the respective machine section

##### *On site*

- Install sensor unit
- Install sensors and connect them to the sensor unit
- Enter the following data in the measurement location report: measuring channel, measurement location, MAC address of sensor unit
- Start sensor unit

##### *In OMNITREND*

- Register sensor unit in OMNITREND
- Assign measurement locations to the bridge and the sensor unit (see measurement location report)
- Configure measuring channels (see measurement location report)
- Create measuring configuration for each measuring channel
- Load measuring configurations to the bridge
- Import first measurement data in OMNITREND

As the system is based on wireless communication, the installation of the components is very simple. All you need to do is installing and connecting the bridge, the sensor unit(s) and the sensors. The few cable connections required for the system are normally short and easy to establish:

- Bridge: Power cable and network connection
- Sensor: Connection of sensor cable to sensor unit
- Sensor unit: 24 V or energy harvester power cable

Before installing the system in the machine park, configure the OMNITREND software and change the IP address of the bridge if required.

## 5.2 Configuration in OMNITREND

### Note

These instructions assume that the operator is familiar with the OMNITREND software and its features. The instructions below are therefore kept brief.

### 5.2.1 Installing and registering device drivers

- Start OMNITREND.
- In the main menu, click <Options>/<Registration/Configuration>.
- In the 'Registration' window, click the <Add new (Demo) Version> button.
- Open the OMNITREND installation directory and select the 'VIBCONNECT\_RF.OMT' device driver file.
- Click <Open>. The device driver is now being installed and registered (no password required).
- Click the <Close> button to close the 'Registration' dialog.
- In the device driver list, select 'VIBCONNECT RF'.



Activate VIBCONNECT RF device driver in OMNITREND.

**Online**

Measurement location type for VIBCONNECT RF

### 5.2.2 Setting up the database

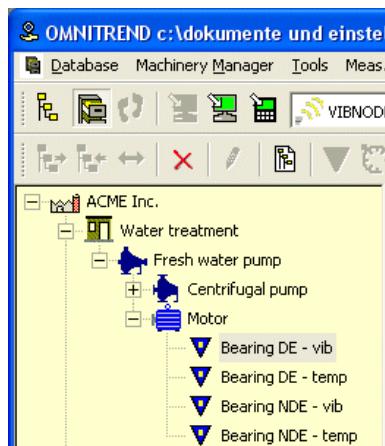
- In the OMNITREND Machinery Manager, set up the tree structure for the machine park to be monitored, including a measurement location hierarchy.
- Select measurement location type 'Online'.

#### Note

If a sensor is to measure both vibration and temperature, you must set up two separate measurement locations for this sensor. The term "measurement location" actually refers to the measuring channel of a sensor.

To facilitate the assignment of the measuring channels, we suggest that you include the type of measurement in the name of the measurement location (see screenshot). For more information on how to create a measurement location database, please refer to the OMNITREND online help.

Typical machine tree with four measurement locations at the motor for one sensor unit (2x vibration, 2x temperature).



### 5.2.3 Creating and printing measurement location report

During installation, you add the following information to the printed report:

- Machine on which the sensor unit is installed
- Measuring channel for each measurement location in the OMNITREND database

This information is required for the measuring configuration in OMNITREND. The report can be created to include all entries in the database or only a selection of records.

- To choose the records to be included in the report, open the Machinery Manager, and select the entry in the database tree for which you wish to create a report.
- Click <Tools>, <Reports> and <Selector>.
- Activate option 'Database Report' and click the <Next> button.
- In the subsequently displayed window, select option <Tree> and click the <Next> button.
- In the next window, select options <Meas. Location info>/<Meas. location>.
- To generate the report, click the <Finish> button.
- A list showing the measurement locations and the respective machines is generated. To locate the points in the machine park, follow the path in the database.
- Print a copy of the report.

Pruftechnik Condition Monitoring Oskar-Messter-Str. 19 - 21 85737 Ismaning Germany SW only for demonstration purposes	Measurement location report for a machine train consisting of a pump and a motor.
Date/Time	18.11.2011 14:46:01
Comments	
ACME Inc.\Water treatment\Fresh water pump\	
Centrifugal pump	
1. Bearing DE - vib	
2. Bearing NDE - vib	
Motor	
3. Bearing DE - vib	
4. Bearing DE - temp	
5. Bearing NDE - vib	
6. Bearing NDE - temp	

## 5.3 Installation & commissioning of bridge

The bridge is contacted by OMNITREND through the network (Ethernet). The bridge is addressed through the IP address of the bridge. The factory-set address is:

**192.168.1.178**

If the address range of your network differs from the standard range (e.g. 172. ... or 10. ...), adjust the IP address of the bridge accordingly before you install the bridge in the machine park.

### 5.3.1 Changing IP address of bridge

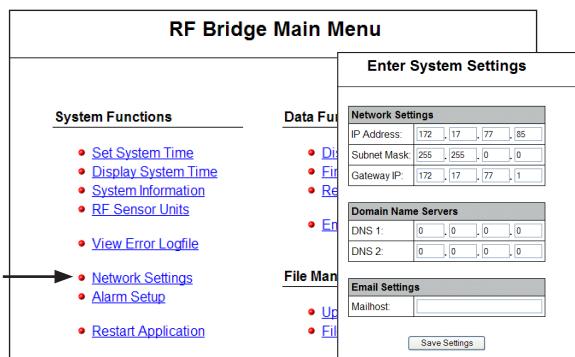
#### Note

The following steps must be carried out at a PC workstation that features a free network port and is located near a power socket. You also need an electric power cable to power the bridge. One end of the cable must be equipped with a suitable plug, while the other end must be prepared for connection to the bridge (see also '5.3.4 Connecting bridge', page 36).

- At first connection assign a temporary IP address to the PC that is within the address space 192.168.1.xx with network mask 255.255.255.0.
- Connect the bridge to the network and then to the power source.
- Enter the IP address of the bridge in the browser (see above). If no connection is established, change the connection settings of your browser (proxy server, firewall, etc.).
- In the login dialog, enter the following:

User name: **user3**  
Password: **user3**

The main menu of the bridge is displayed.



Change the IP address in the 'Network Settings' menu

- Click <Network Settings> and enter the new IP address for the bridge. If required, change the address of the Subnet Mask and Gateway, and then click the <Save Settings> button.

### Note

*Note down the new IP address of the bridge as it might be needed for maintenance or repairs. If you are unsure about the correct addressing procedure within your network, contact the network administrator.*

- Repeat the above steps for all other bridges.
- Then reset the IP address of the PC to the initial one.

Preparations are now complete, whereupon the following requirements for installation on site have been created:

- Creation of measurement location report to document locations of installation
- Configuration of the bridge for proper integration into the company network

Proceed with installing the system components in the machine park. This must be done in the following sequence:

1. Installation of bridge
2. Installation of sensor unit
3. Installation of sensors

### 5.3.2 Installation preparations

For proper installation of the equipment on site, the operator must ensure that the following requirements are met:

#### PERSONNEL QUALIFICATION

The devices must be installed by a qualified electrician.

#### LOCATION OF INSTALLATION

The bridge must be installed at an exposed position to ensure optimum radio reception from all machines in the radio cell. Ensure that there is sufficient space available for the installation of the bridge, so that it does not in any way interfere with the operation of the existing machine components.

#### PERMISSIBLE AMBIENT CONDITIONS

Temperature:  $-25^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$

Relative air humidity: max. 95 %, non-condensing

The bridge must not be installed in a location that is near a strong electromagnetic field (e.g. generator, high-voltage cable, electric drive unit, etc.).

#### REQUIRED CONNECTIONS

Power supply: 100–240 V AC, 50/60 Hz  
0.19–0.33 A

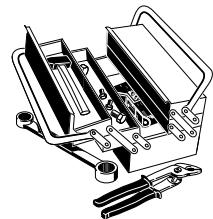
Network: Ethernet with TCP/IP, baud rate: 10/100 Mbit/s

The bridge must be installed at an exposed location that is within sight of the machines.



## TOOLS AND MATERIALS

- Power drill, drill bit and thread cutter for M7 bolts
- M7 bolts and matching washers for fixture of bridge (4 bolts per bridge)
- Open-end spanner of suitable size
- Open-end spanner (size 22) for M16 cable glands
- 3-wire electric cable of appropriate length for power supply line
- Ferrules for connection of power supply line
- Industrial Ethernet cable (CAT 5) for data of appropriate length
- Standard tools for electrical installation (wire cutter, cable stripper, screwdriver)
- Suitable strain relief devices for cables
- If required: WLAN antenna extension cable (SMA, 50 ohm)



## ⚠ CAUTION

### ***Risk of injury from falling parts!***

*When installing a bridge at great height, there is a risk that the bridge or a tool might fall to the ground, causing injury.*

- » Cordon off the area immediately below the installation site to prevent access to the danger area.
- » Use fall-arresting equipment.

### **5.3.3 Mounting bridge**

- Drill four holes at a suitable location of installation. For the drill pattern, refer to the fixing tabs on the housing in the dimensional drawing in chapter 3 "Technical data".
- Secure the bridge with four bolts to the machine.
- Adjust the antenna roughly.

## Note

### **Radio approval**

*The antenna on the bridge is installed at the factory and must not be removed.*

- » Contact PRÜFTECHNIK, if you want to use a different type of antenna or if you need to extend the original antenna from an enclosure with an antenna cable.

### 5.3.4 Connecting bridge

#### CAUTION

##### ***Risk of injury from electric shock!***

*When connecting the bridge to the power supply without taking the necessary safety precautions, there is a risk of energy from high voltage (220 V).*

- » *The electrical connection must be established by a qualified electrician.*
- » *The mains voltage must conform to the IEC guidelines.*
- » *An external interface (fuse or switch) must be provided in order to disconnect the power supply securely.*
- » *Before carrying out any installation, repair or maintenance work on the bridge, disconnect it from the power supply.*

---

#### **Note**

##### ***Risk of damage to equipment while housing is open!***

*Touching the electronic components on the mother board can lead to electrostatic discharge, which can damage system components.*

- » *If contact with such components cannot be excluded, wear an earthing wristband.*

---

- Remove the dummy plugs from the cable entries.

#### **Network Cable**

- Feed the network cable through the left gland.
- Drag one of the enclosed ferrite sleeves over the cable end.
- Connect the bridge to the data network (see also '5.3.6 Overview of connections and interfaces', page 38).

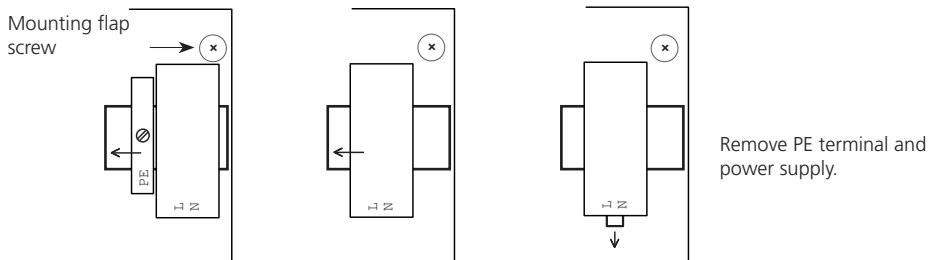
## Power cable

In order to connect the power cable conveniently, you need to remove the PE terminal and the power supply as follows:

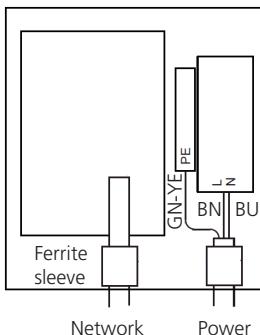
- Loosen the center screw on the PE terminal, and pull it gently to the left of the DIN rail.
- Slide the power supply to the left so that it is not stuck in the mounting flap screw when lifting it out.
- Release the lock on the power supply with a suitable screwdriver: Slide the screwdriver into the flap at the bottom of the power supply and pull it down to release the lock. During this carefully lift the power supply out of the DIN rail.

### Note

*The power supply is hardwired to the lower board. Do not tear or damage the cables.*



- Feed the power cable through the right gland.
- Drag one of the enclosed ferrite sleeves over the cable end.
- Connect the power cable to the power supply and the PE terminal (see also '5.3.6 Overview of connections and interfaces', page 38).
- Reinstall the power supply and the PE terminal on the DIN rail.
- Tighten the cable glands.

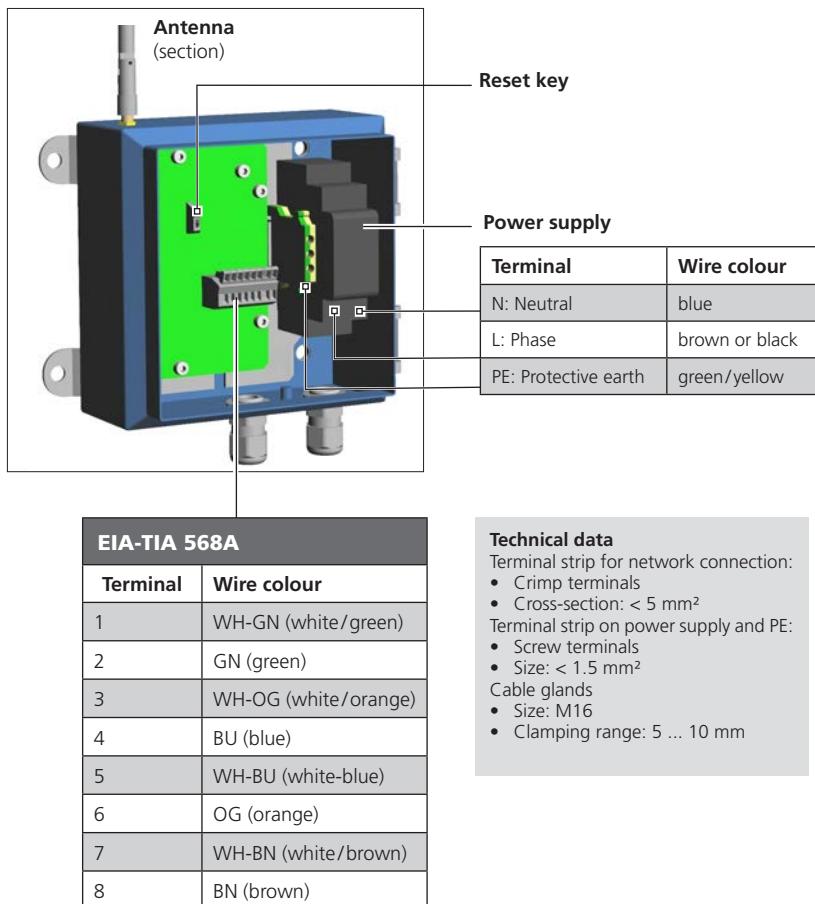


### 5.3.5 Commissioning bridge

- Before commissioning the bridge, check whether all cable connections and fixtures of the bridge are correctly executed.
- Switch on the power supply of the bridge.

The green LED on the power supply is on. After the operating software has fully booted (approx. 1 minute), the bridge is ready for operation.

### 5.3.6 Overview of connections and interfaces



## 5.4 Installation & commissioning of sensor unit

The operator of the system must ensure that the following conditions are met and all necessary preparations are completed.

### LOCATION OF INSTALLATION

- The sensor unit must be mounted on or near the machine. Choose a suitable position on the machine that is only exposed to low vibration. Alternatively, provide a suitable holder for the sensor unit.
- Ensure that the location of installation has good radio reception. Measure the reception field strength at several, potentially suitable installation points (see "Measuring reception field strength at location of installation", page 38).
- The distance between the measurement location and the sensor unit can be bridged with the 2.9 m sensor cable; before mounting the sensor unit and the sensors, ensure that they are not more than 2.9 m apart.

### PERMISSIBLE AMBIENT CONDITIONS

Temperature range for sensor unit:  $-25^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$

Relative air humidity: max. 95 %, non-condensing

The sensor unit must not be installed in a location that is near a strong electromagnetic field (e.g. generator, high-voltage cable, electric drive unit, etc.).

### REQUIRED CONNECTIONS / BATTERIES:

- 24 V DC for sensor units with permanent power supply
- 3.6 V lithium batteries, size C; Two batteries per sensor unit

### TOOLS AND MATERIALS

- Power drill, drill bit and thread cutter for M5 bolts
- M5 bolts and matching washers for fixture of sensor unit (2 bolts per sensor unit)
- Open-end spanner of suitable size
- Ferrules for connection of sensor line
- Standard tools for electrical installation (wire cutter, cable stripper, screwdriver)
- Suitable strain relief devices for cables
- If required: WLAN antenna extension cable (SMA)

For 24V sensor unit:

- 3-wire electric power cable for power supply line
- Ferrules for connection of power supply line

### 5.4.1 Overview of connections and interfaces

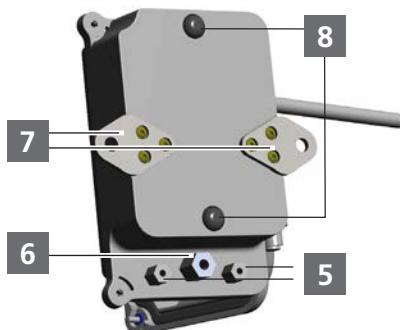
#### Battery-powered sensor unit



1. Antenna  
2. Cover fixtures (Allen screws)

3. Lithium batteries  
4. Terminal strip\*

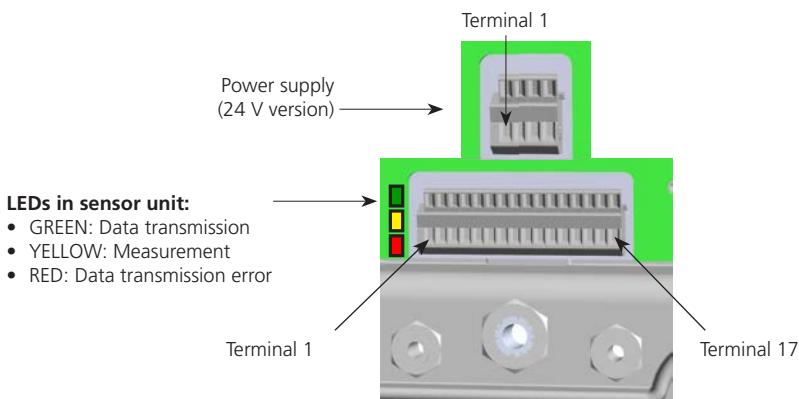
\* the 24 V version is equipped with a second terminal strip for power supply



5. Cable gland for sensor line  
6. Cable gland for 24V power cable/energy harvester cable

7. Mounting flaps for sensor unit  
8. Vibration dampers

## Terminal strips and LEDs in sensor unit



Terminal strip: sensor/power supply		Additional terminal strip, 24V version	
Terminal	Function	Terminal	Function
Sensor 1	1	5 VDC power supply (red wire)	
	2	Vibration signal (white wire)	1
	3	Temperature signal (black wire)	2 24 V
	4	Shield earthing line, GND	3 GND
	5	Short-circuit bridge (commissioning)	4 -
	6	Short-circuit bridge (commissioning)	
	7	+8 V (energy harvester)	
	8	GND (energy harvester)	
	9	7–9 V (external power supply)	
	10	GND (external power supply)	
	11	Reception field strength (0..1.25 V)	
	12	Reception field strength (0..1.25 V)	
Energy harvester/commissioning	13	5 VDC power supply (red wire)	
	14	Vibration signal (white wire)	
	15	Temperature signal (black wire)	
	16	Shield earthing line, GND	
	17	Blind terminal, no function	

## Technical data

## Terminal strip:

- Crimp terminals
- Cross-section: < 0.5 mm<sup>2</sup>
- Cable glands
- Size: M6 (sensor line)
- Clamping range: 2 ... 3.2 mm
- Size: M8 (24 V/harvester)
- Clamping range: 3 ... 5 mm

## 5.4.2 Measuring reception field strength at location of installation

### Note

#### **Radio approval**

*The antenna on the sensor unit is installed at the factory and must not be removed.*

» Contact PRÜFTECHNIK, if you want to use a different type of antenna or if you need to extend the original antenna from an enclosure with an antenna cable.

### Note

#### ***Risk of damage to equipment while housing is open!***

*Touching the electronic components on the mother board can lead to electrostatic discharge, which can damage the sensor unit.*

» If contact with such components cannot be excluded, wear an earthing wristband.

- Adjust the antenna roughly.
- Open the sensor unit housing by loosening the two screws of the cover (size 2.5 Allen screws).
- Insert the batteries or connect the sensor unit to the 24 V power source respectively (see also '5.4.4 Connecting sensor unit', page 45).
- Connect a voltmeter to terminals 11 and 12.
- Short-circuit terminals 5 and 6 with a wire bridge.

### Note

*The sensor unit now sends repeat requests for a measuring configuration to the bridge. If the bridge is within the transmission range of the sensor unit, it responds by sending a measuring configuration or a test log without data content. By short-circuiting terminals 5 and 6, the bridge and the sensor unit remain in permanent communication, and the reception field strength at terminals 11 and 12 is indicated in the form of a voltage level.*

- Check the voltage at the eligible locations of installation. Wait for approx. 3–4 seconds until the reception/voltage has stabilized.

U > 0.1 V: Reception OK

U<sub>max.</sub> = 1.25 V

- After completion of the field strength measurement, remove the short-circuit bridges and the voltmeter.
- If you do not intend to commission the sensor unit at that point in time, remove one of the batteries to save energy.

**Note****Maintaining battery charge**

*Until the sensor unit has received a valid measuring configuration from the bridge, it continuously sends out requests, using battery power.*

- » *If you wish to program the measuring configuration at a later stage, switch off battery-powered sensor units by removing one battery.*

**Note****IC (Industry Canada)**

*Under Industry Canada regulations, the sensor unit may only operate using an antenna of a type and maximum (or lesser) gain approved for the sensor unit by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.*

### 5.4.3 Mounting sensor unit

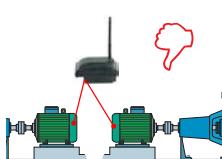
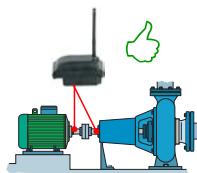
#### ⚠ CAUTION

##### ***Risk of injury from rotating machine parts!***

When installing the sensor unit while the machine is running, there is a risk of serious injury caused by exposed, moving machine parts.

- » Do not remove any guards on the machine.
- » Always adhere to the safety instructions for work on running machinery.

- Install the sensor unit at the location with the best possible radio reception.
- Drill two mounting holes. For the drill pattern, refer to the fixing tabs on the housing in the dimensional drawing in chapter 3 "Technical data".
- Secure the sensor unit with two bolts to the machine.



##### **Note**

It is also possible to use one sensor unit to monitor two separate machines of a machine train, for example in cases where only the bearing at the coupling side of the motor and the pump are to be monitored. It is, however, not possible to monitor two separate machine trains with a single sensor unit.

- Document the location of installation of the sensor unit in the measurement location report: Each sensor unit is supplied with an adhesive label on which the MAC address of the sensor unit is printed. Remove this label and stick it to the measurement location report beside the name of the respective machine or machine train.

Adhere the MAC address of the sensor unit on the measurement location report.

<b>ACME Inc.\Water treatment\Fresh water pump\</b> <b>Centrifugal pump</b> <b>1. Bearing DE - vib</b> <b>2. Bearing NDE - vib</b> <b>Motor</b> <b>3. Bearing DE - vib</b> <b>4. Bearing DE - temp</b> <b>5. Bearing NDE - vib</b> <b>6. Bearing NDE - temp</b>	<b>1B-8F-DC-4C-00-38</b>  <b>1B-8F-DC-4C-00-36</b>
--	--

## 5.4.4 Connecting sensor unit

### Note

The sensor cables must only be connected to the sensor unit after the sensors have been installed, so that you have the option to extend or shorten the cables if required (see also '5.5 Installation of sensors', page 47).

- Open the sensor unit and feed the sensor cable through the cable gland provided.
- Connect the four tinned cable strands to the respective terminals for sensor 1 and sensor 2 (see also '5.4.1 Overview of connections and interfaces', page 40).

### Note

Each sensor can measure two channels. The assignment of the channels to the terminals is pre-configured as shown in the diagram below.



Sensor 1 (left) is assigned to channels 1 and 3.  
 Sensor 2 (right) is assigned to channels 2 and 4.

Terminal		CHANNEL	Function
Sensor 1	1	--	Power supply
	2	<b>1</b>	Vibration
	3	<b>3</b>	Temperature
	4	--	GND
Sensor 2	13	--	Power supply
	14	<b>2</b>	Vibration
	15	<b>4</b>	Temperature
	16	--	GND

- In the measurement location report, document the channel assignment of the measurement locations.

ACME Inc.\Water treatment\Fresh water pump\	
Centrifugal pump	
1. Bearing DE - vib	1B-8F-DC-4C-00-38
2. Bearing NDE - vib	
Motor	
3. Bearing DE - vib	Channel 1
4. Bearing DE - temp	Channel 3
5. Bearing NDE - vib	Channel 2
6. Bearing NDE - temp	Channel 4

Sensor unit with external 24 V power supply:

- Connect the power supply cable to the second, 4-pin terminal strip (see also '5.4.1 Overview of connections and interfaces', page 40).
- Tighten the cable glands at the sensor unit and close the housing.

#### 5.4.5 Commissioning sensor unit

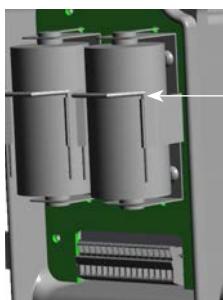
- Switch on the power supply of the sensor unit by inserting the batteries or switching on 24 V power supply respectively.
- Secure the batteries where appropriate with the included clamp bars

##### Note

###### Maintaining battery charge

Until the sensor unit has received a valid measuring configuration from the bridge, it continuously sends out requests, using battery power.

» If you wish to program the measuring configuration at a later stage, switch off battery-powered sensor units by removing one battery.



Clamp bar for battery

## 5.5 Installation of sensors

For proper installation of the sensors on site, the operator must ensure that the following requirements are met:

### LOCATION OF INSTALLATION

- The sensors are secured to the machine with the supplied M8 threaded bolt or with a suitable mounting adapter.
- Observe the rules for the choice of measurement locations for vibration measurements.

### PERMISSIBLE AMBIENT CONDITIONS

Temperature: -40 °C to +125 °C

Relative air humidity: max. 95 %, non-condensing

The sensors must not be installed in a location that is near a strong electromagnetic field (e.g. generator, high-voltage cable, electric drive unit, etc.).

### TOOLS AND MATERIALS

- Mounting adapter: Screw adapter (VIB 3.480\*), adhesive adapter (VIB 3.418), magnetic adapter (VIB 3.423). For special tools and auxiliary materials required for the attachment of the various adapters, see chapter for adapter installation.
- Standard tools for electrical installation (wire cutter, cable stripper, screwdriver).
- Suitable strain relief devices for cables.

\* included in scope of delivery

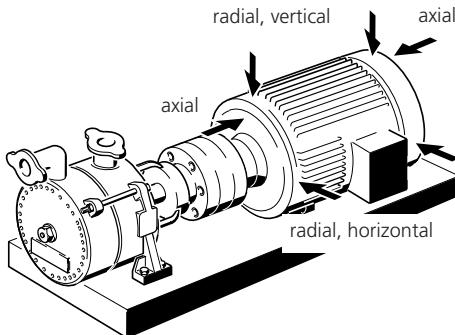
### 5.5.1 Choosing the measurement locations

When choosing a location of installation for a sensor observe the following rules to ensure optimum signal transmission:

- Mount sensor in radial measuring direction (i.e. perpendicular to shaft, in vertical or horizontal position).
- Axial measurement locations are recommended to monitor the machine for the following defects or faults: Misalignment, damaged geared wheels, loose fixtures, bent shafts, etc.
- Machines mounted on rigid foundations show high horizontal vibration. Fixed anchoring suppresses vertical vibration.
- Machines mounted on vibration-damped foundations show vibration that is equally strong in horizontal and vertical direction.
- The frequency behavior and dynamic range of the sensor can be significantly influenced by the way the sensor is attached. Weak coupling to the measurement location results in attenuated signals and limits the frequency range. The sensor must be secured to the measurement location in a rigid, friction-locked

way and free of contact resonance. This is particularly important for measurements at high frequency.

Suitable measurement locations on the machine



### 5.5.2 Mounting sensor

#### **⚠ CAUTION**

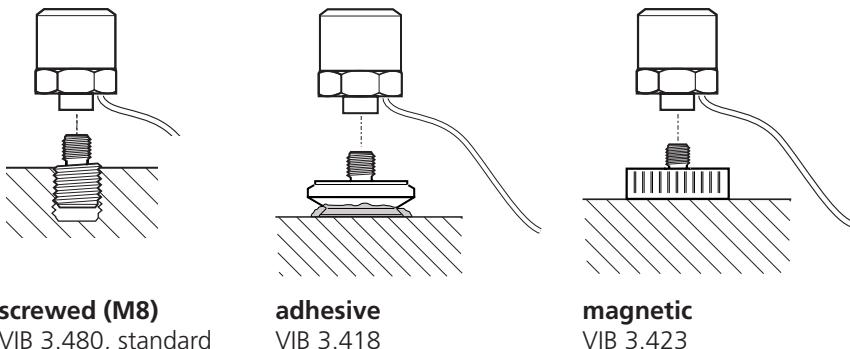
##### ***Risk of injury from rotating machine parts!***

*When installing the sensors while the machine is running, there is a risk of serious injury caused by exposed, moving machine parts.*

- » *Do not remove any guards on the machine.*
- » *Always adhere to the safety instructions for work on running machinery.*

Thanks to the compact design and cabling, the sensor can be installed in locations where limited space is available, using a suitable adapter.

Screwing the sensor to the machine is, however, the most secure and stable option (VIB 3.480 adapter, included). The adapter with adhesive base (VIB 3.418) has been designed for attachment to measurement locations where it is not possible to drill holes, for example because the housing wall is not thick enough. For attachment by magnetic force, use the VIB 3.423 magnetic adapter. Both adapters are available as accessories.



## Mounting sensor with screw adapter

### TOOLS AND AUXILIARY EQUIPMENT

- Power drill with two drill bits (3.5/6.8 mm) and depth gauge
- Spot facer
- M8 bottoming tap
- Size 19 torque spanner
- Compressed air to clean mounting point

### INSTALLATION

Select drilling point:

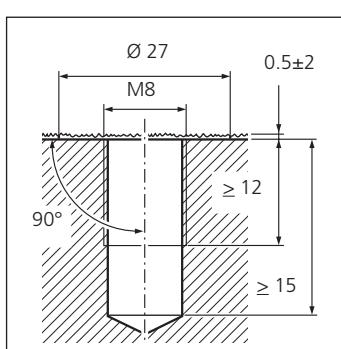
- The minimum distance between the drill hole and the protruding edges of the sensor housing is 35 mm. Ensure that there is sufficient space for the socket wrench used to tighten the adapter.

Drill hole:

- Using the 3.5 mm drill bit with depth gauge, pre-drill a hole of  $\geq 15$  mm.
- Drill out hole with 6.8 mm drill bit.
- Face the drill hole with the spot facer (depth: approx. 1 mm).
- Cut the thread (M8), thread length:  $\geq 12$  mm.

### Note

Ensure that it is permissible to drill a hole at the selected location. For instructions, contact the machine manufacturer or refer to the machine documentation.



Drilling and facing hole,  
cutting thread

- Clean the drill hole and the area around it with compressed air; roughen the surface around the drill hole with sandpaper (grade 220).
- Clean the contact faces at the adapter and the machine with solvent.
- Allow the contact faces to dry, apply a thin layer of screw locking agent (LOCTITE 243) to improve signal propagation.
- Screw the threaded bolt into the sensor and tighten it with a size 4 Allen key.
- Screw the sensor into the mounting hole and tighten it with a size 19 socket wrench. Tightening torque: 10–20 Nm!
- Check the sensor for proper fixture (sensor must not rock).

### Notes

*Do not apply an excessive torque as this could damage the machine part or the thread at the sensor. If the tightening torque is too low, there might be insufficient contact between the sensor and the measurement location. Incorrect tightening torques result in incorrect measurements!*

*When installing sensors to machine parts that are not earthed (e.g. belt-driven fans), connect the sensors to an earthing conductor to prevent static charging.*

## Mounting sensor with adhesive adapter

### TOOLS AND AUXILIARY EQUIPMENT

Hand drill and drill bit (3.5 mm) with depth gauge

Compressed air to clean mounting point

Two-component adhesive (e.g. WEICON HB 300)

File and size 19 torque wrench

### Note

*Before mounting the adapter, shut down the machine. Do not restart the machine for a period of 24 hours to prevent mechanical vibration while the adhesive is curing.*

*If the machine is restarted before the adhesive has properly cured, the adapter might become loose. This can cause damage to the sensor and/or to the machine. Incorrectly installed adhesive adapters can result in poor signal propagation to the sensor and measuring errors.*

## INSTALLATION

Select mounting point:

- In order to have sufficient space to apply the adhesive with a wooden spatula, keep a distance of minimum 35 mm between the adapter and the edges of the housing.

Level and roughen surface:

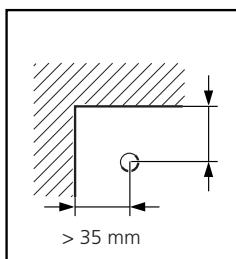
- Remove all paint from the mounting surface so that the adapter can be glued to bare metal (diameter of area  $> 30$  mm). If necessary, level the mounting area.
- To ensure proper adhesion, roughen the surface with a file and produce a diamond pattern of grooves.

*Optional:*

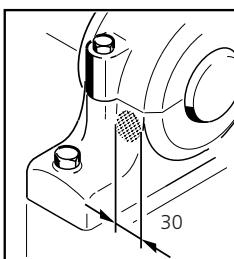
Drill hole for securing pin.

- Depth: approx. 5 mm; diameter 3.6 mm.
- The securing pin is mounted on the base and features a self-cutting thread; it can be removed, if necessary.

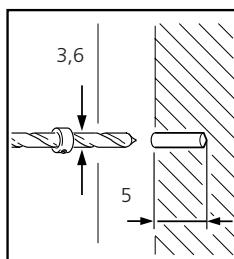
Dimensions in mm



Clearance



Level and roughen mounting surface



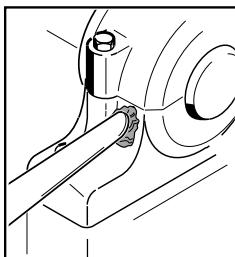
Optional: Drill hole for securing pin

Clean the measurement location and mix the adhesive:

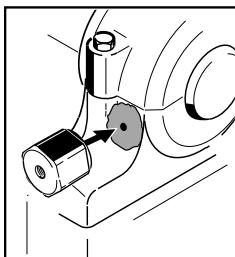
- Clean the roughened mounting area and the adhesive base with a clean cloth and a suitable cleaning agent, such as a brake or clutch cleaner (residue-free degreasing agent). Allows the metal surfaces to dry fully.
- Mix the two adhesive components at a ratio of 1:1. After mixing, the adhesive must be applied within 15 minutes!

Apply adhesive to the surfaces:

- Using a wooden spatula, apply a uniform layer of adhesive (approx. 1 mm thick) to the base and the mounting area on the machine.



Apply adhesive



Press down and turn adapter

Mount the adapter:

- Press the adapter with minimum force against the mounting area and turn it slightly to distribute the adhesive evenly.
- Do not remove adhesive escaping at the side of the adapter. For extra stability, also apply adhesive around the adapter edge.
- Allow the adhesive to cure (approx. 24 h at room temperature).

#### **Note**

*If required, secure the adapter during the first hour of the curing period with the magnetic gluing aid VIB 8.477 or adhesive tape.*

- Check the adapter for proper fixture (adapter must not rock).
- Screw the sensor onto the adapter and tighten it with a size 19 socket wrench. Permissible tightening torque: 10–20 Nm!

## Mounting sensor with magnetic adapter

#### **Note**

*The magnetic adapter is obviously only suitable for attachment to ferromagnetic parts with adequate iron content. This mounting option is only recommended if screw mounting or attachment with adhesive adapter is not possible.*

- Screw the magnetic adapter VIB 3.423 to the sensor and attach it to the measurement location.

### 5.5.3 Installing and connecting sensor line to sensor unit

The sensor cable is permanently attached to the sensor. The other end of the cable must be connected to the sensor unit.

- Before installing the cable, mark the cable end with the sensor number to which it belongs. This ensures that there is no confusion when connecting the cables to the sensor unit.
- Install the cables from the sensors to the sensor unit, using suitable equipment (cable ties, clips, ducts, etc.).

#### Note

*Steel conduits protect the line against mechanical damage and also reduce EMC interference.*

*Do not install the lines parallel to power supply lines. If parallel installation cannot be avoided, keep a minimum distance of 1 m between the power cable and the sensor data cable.*

- At the sensor unit, produce a cable loop (length approx. 30 cm). This prevents strain to the cable during maintenance, etc.
- Connect the sensor line to the sensor unit (see also '5.4.4 Connecting sensor unit', page 45).

## 5.6 Configuration in OMNITREND (continued)

After the system components have been installed and commissioned, continue configuring the system in OMNITREND (see also '5.2 Configuration in OMNITREND', page 29). The configuration consists mainly of the following steps:

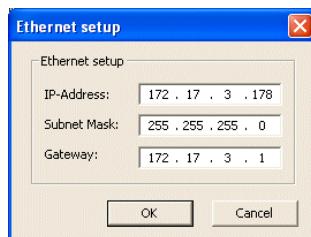
- Registration of bridge and sensor units
- Assignment of system components to the measurement locations in the database
- Creation of measuring configurations and loading to bridge
- Reading of measurement data from bridge
- Evaluation of measurement data in OMNITREND

### Note

*These instructions assume that the operator is familiar with the OMNITREND software and its features. The instructions below are therefore kept brief.*

### 5.6.1 Registering bridge in OMNITREND

- In the main menu, click <Options>/<Registration/Configuration>.
- In the 'Registration' window ('OMNITREND' tab), check whether 'VIBCONNECT RF' is the current OMNITREND version. If this is not the case, change the settings.
- Call up the 'Measurement Device' tab.
- Click the <Get ID> button.
- Enter the IP address of the bridge in the 'Ethernet Setup' window (see also '5.3 Installation & commissioning of bridge', page 32). If required, adjust the Subnet Mask and the Gateway address.



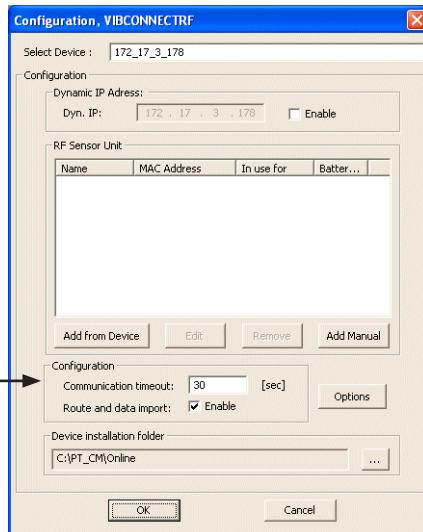
- Click the <OK> button.

- In the 'Configuration' window you must enter a name for the bridge and change the communication settings if required.
- Click the <OK> button.

Enter a name for the bridge.

Communication settings:  
Increase 'Timeout', if data transmission is poor.

Disable 'Route and data import' when bridge is shut down for maintenance.



OMNITREND establishes a connection to the bridge, reads its serial number and indicates it in the 'ID' field.

- Click the <Register Device> button. The bridge is now registered in OMNITREND and logged on.



You do not need a password to register the bridge.

## 5.6.2 Registering sensor units in OMNITREND

- In the main menu, click <Options>/<Registration/Configuration>.
- In the 'Registration' window ('OMNITREND' tab), check whether 'VIBCONNECT RF' is the current OMNITREND version. If this is not the case, change the settings.

OMNITREND for 'VIBCONNECT RF' must be active.



- Call up the 'Measurement Device' tab (see previous page).
- In the device list, select the bridge that is within the transmission range of the sensor unit(s).

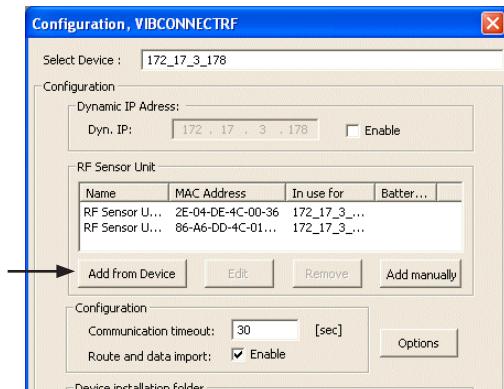
### Note

If there is more than one bridge in the system, you might need to check for every bridge whether the sensor unit is in its radio range and whether it has already established contact.

» To do this, select "RF Sensor Units" in the main menu of the bridge (see also '5.3.1 Changing IP address of bridge', page 32).

- Click the <Edit> button.

To register the sensor units in OMNITREND, click the <Add from device> button.



- In the 'Configuration' window, click the <Add from device> button. OMNITREND establishes a connection to the bridge and then lists all sensor units that are within the radio range of the bridge and have sent requests for measuring configurations.

Other buttons in the 'RF Sensor Unit' field:

<Edit>: Change the name of the sensor unit.

<Remove>: Delete sensor unit from the OMNITREND database. On the bridge, the relevant sensor unit is not deleted.

<Add manually>: Add a sensor unit to the bridge by entering a name and the individual MAC address. The sensor unit must be ready for operation and located in the reception area of the bridge.

#### Note

*Each sensor unit is clearly identified by its unique MAC address. Sensor units can thus be identified with reference to the completed measurement location report.*

- Click the <OK> button. The sensor units are now available in OMNITREND and can be assigned to the measurement locations.

### 5.6.3 Assigning measurement locations in the database to a sensor unit and bridge

The measurement location report contains all information regarding the assignment of channels to measurement locations. The respective sensor units are identified in OMNITREND by means of their MAC address.

In systems with several bridges, you can assign the sensor units to any available bridge. However, the following issues should be kept in mind for proper assignment:

- Select the bridge with the best reception: At every bridge select "RF Sensor Units" in the main menu, and check the receive level of the sensor unit you wish to assign (see also '5.3.1 Changing IP address of bridge', page 32).
- Maximum 50 sensor units can be assigned to each bridge.

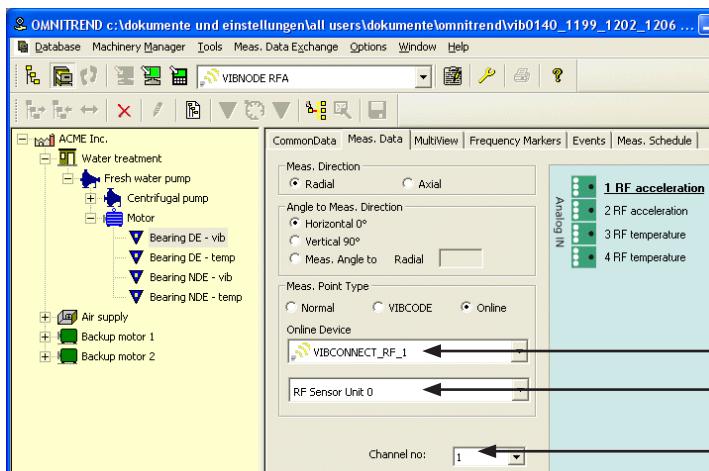
## Procedure

- In OMNITREND, open the *Machinery Manager*.
- Select one of the previously set up online measurement locations (see also '5.2.2 Setting up the database', page 30).
- Call up the 'Meas. Data' tab.
- In the 'Meas. Point Type' section, first select the bridge with the best reception in the 'Online Device' field.
- In the second field, select the sensor unit that is installed at the respective measurement location (refer to the measurement location report).

ACME Inc.\Water treatment\Fresh water pump\	
Centrifugal pump	
1. Bearing DE - vib	1B-8F-DC-4C-00-38
2. Bearing NDE - vib	
Motor	
3. Bearing DE - vib	Channel 1
4. Bearing DE - temp	Channel 3
5. Bearing NDE - vib	Channel 2
6. Bearing NDE - temp	Channel 4

Assignment of sensor unit, channel and measurement locations in the measurement location report

= "RF Sensor Unit 0"



Assignment of bridge, sensor unit and channel in the OMNITREND database

Bridge  
Sensor unit  
Channel

- In the 'Channel no.' field, enter the channel number as noted in the measurement location report for this sensor unit (see also '5.4.4 Connecting sensor unit', page 45).
- Repeat the above steps for all other measurement locations.

## 5.6.4 Creating measuring configuration

This chapter explains how to create a measuring configuration for a measurement location in the VIBCONNECT RF system, using the OMNITREND software. A measuring configuration contains information regarding

- the measuring tasks
- the time intervals at which measurements are to be performed
- the measurement location assigned to a sensor unit
- the associated bridge.

### Measuring tasks

- Select a measurement location.

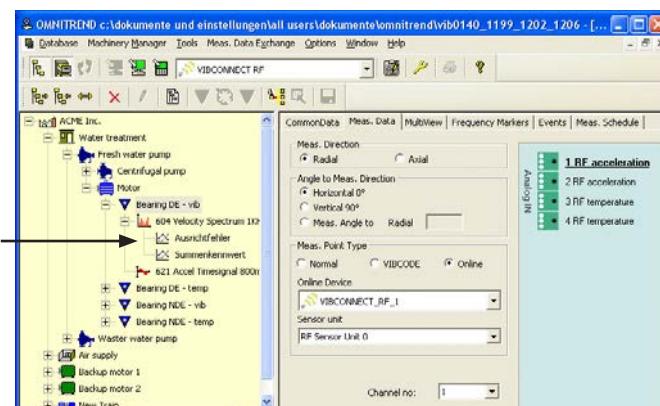
#### Note

*Always observe the channel assignment:*

*Channels 1 and 2 are reserved for vibration measurements; channels 3 and 4 are reserved for temperature measurements (see also '5.4.4 Connecting sensor unit', page 45).*

- In the main menu, select <Machinery Manager> / <Add> / <Measuring Task>.
- In the measuring task dialog, activate option <Select Setup Directly>.
- Select the applicable measuring task and click the <Next> button.
- In the next window, click the <Create> button.
- If you wish to set up another vibration measuring task, repeat the above steps (max. 4 tasks per measurement location).
- For the calculation of the characteristic vibration values, define the respective band analysis in the alarm wizard.

The characteristic values are calculated from a spectrum by means of "band analyses"

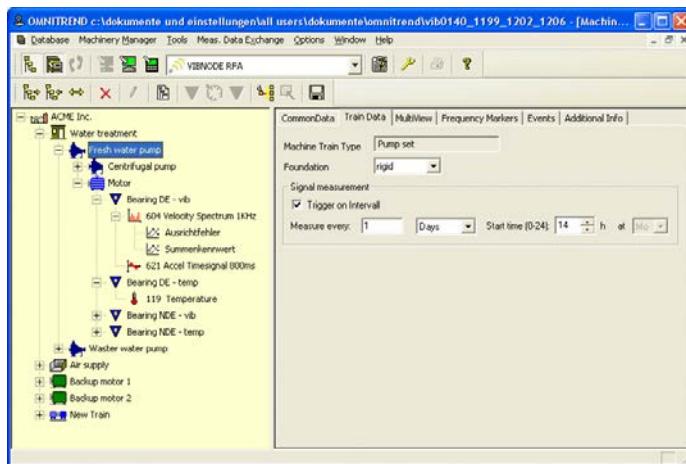


**Note**

VIBCONNECT RF calculates the characteristic vibration values from a spectrum, using frequency bands. These bands are preset in the alarm wizard and are then assigned as a subordinate measuring task 'Bank analysis (Trending Task)' to the respective spectrum. For more information, please refer to the OMNITREND online help.

**Time interval of idle phase**

- Select the machine train in which the sensor unit is installed.
- Call up the 'Train Data' tab.
- Adjust the time interval as required (30 minutes to 1 week). If ' $t \geq 1$  day' and ' $t = 1$  week', also enter the time and day of the week at which the measurement is to be started.



Time interval for idle phase of sensor unit

### 5.6.5 Loading measuring configurations to the bridge



- In the main menu, click (Download).
- The data transfer starts automatically. If there are several bridges registered in OMNITREND, they are invoked in sequence.

---

#### Notes

*To exclude a bridge from transmission, disable the 'Route and data import' option in the configuration window (see also '5.6.1 Registering bridge in OMNITREND', page 54).*

*The measuring configuration is only forwarded by the bridge to the sensor unit after it has "woken up" from its idle phase. To force instant transmission, switch the sensor unit off and on again.*

---

### 5.6.6 Importing measurement data in OMNITREND

**Note**

*The measurement import must be started manually in the OMNITREND software. Alternatively, the import can also be automated through a Windows task. For details, see the Technical Release # 21, available for free on the PRÜFTECHNIK homepage. Ensure that the data is regularly written to OMNITREND. Otherwise, the memory capacity of the bridge might be exceeded so the oldest measurements are automatically overwritten with the latest ones.*

---



- In the main menu, click (Upload).

The data import starts automatically. If there are several bridges registered in OMNITREND, they are accessed in sequence (see above).

## 5.7 Installing additional sensor unit

VIBCONNECT RF can be extended at any time, and sensor units and sensors can be added during operation of the system.

### Setting up measurement locations and printing reports

- Set up the required measurement locations in the OMNITREND database (see also '5.2.2 Setting up the database', page 30).
- Print the measurement location report of the respective machine train (see also '5.2.3 Creating and printing measurement location report', page 31).

### Installing sensor unit and sensors

- Identify a suitable location of installation for the sensor unit (see also '5.4.2 Measuring reception field strength at location of installation', page 42).
- Mount the sensor unit on the machine.
- Mount the sensors (see also '5.5.2 Mounting sensor', page 48).
- Establish the electrical connections and commission the sensor unit (see also '5.4.4 Connecting sensor unit', page 45).
- In the measurement location report, note down the machine on which the sensor unit is installed (see also '5.4.3 Mounting sensor unit', page 44). Also note down the channel to which the respective measurement locations are connected (see also '5.4.4 Connecting sensor unit', page 45).

### Configuring sensor unit in OMNITREND

- Register the sensor unit in OMNITREND.
- Assign the respective measurement locations set up in the machinery manager to the sensor unit and the bridge.
- Adjust the measuring channels according to the measurement location report.
- Set up a measuring configuration for each measurement location.

### Transferring configuration and loading data

- Load the measuring configuration to the bridge (see also '5.6.5 Loading measuring configurations to the bridge', page 62).
- Import the measurement data in OMNITREND.

## Chapter 6: Maintenance

VIBCONNECT RF is an electronic measuring system that must be handled with care.

### 6.1 Cleaning

If required, clean the housings of the bridges and the sensor units with a damp cloth so that the system component details (serial number, MAC address) remain clearly visible at all times. Replace damaged cables without delay.

### 6.2 System time correction

The system time on the bridge should be checked regularly about every 6 months and if necessary readjust. Connect to the Bridge and select 'Set System Time' in the main menu (see also '5.3.1 Changing IP address of bridge', page 32).

### 6.3 Installation report

The installation report contains a list of all measurement locations in the database that are monitored through the VIBCONNECT RF system. The report can be printed and contains the following information:

- Measurement location with path in machine tree
- Assigned sensor unit including MAC address
- Assigned bridge

This report facilitates the identification of system components on site, for example for maintenance work.

- In the main menu, select <Tools> / <Reports> / <VIBCONNECT RF Installation>.

Vibconnect RF installation list				
Bridge	Sensor unit	MAC ID	Location	
VIBCONNECT_RF_1	RF Sensor Unit 0	1B-8F-DC-4C-00-36	ACME Inc.\Water treatment\Fresh water pump\	
VIBCONNECT_RF_1	RF Sensor Unit 0	1B-8F-DC-4C-00-36	ACME Inc.\Water treatment\Fresh water pump\	
VIBCONNECT_RF_1	RF Sensor Unit 0	1B-8F-DC-4C-00-36	ACME Inc.\Water treatment\Fresh water pump\	
VIBCONNECT_RF_1	RF Sensor Unit 0	1B-8F-DC-4C-00-36	ACME Inc.\Water treatment\Fresh water pump\	

## 6.4 Battery-powered sensor unit

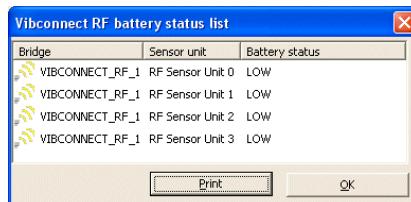
With normal operation, the lithium batteries of the sensor unit last for about 3 years. Normal operation means one measuring sequence\* per hour and interference-free data transmission, at an ambient temperature of 20 °C.

\* Measuring sequence =  
2x vibration +  
2x temperature

### 6.4.1 Battery status

The battery charge status is automatically transmitted by the sensor unit together with the measurement data and displayed in OMNITREND:

- **At program start:** If the battery charge at one of the sensor units is too low, a warning is displayed when the OMNITREND software is started. This warning is displayed at every program start until the respective battery has been replaced and a new measurement record has been read.
- **Battery status report:** In the main menu, select <Tools> / <Reports> / <VIBCONNECT RF Battery Status>.



- **Configuration of the bridge:** In the configuration window for the bridge, the battery charge status of each assigned sensor unit is displayed (see section 'Configuration', page 57).

## 6.4.2 Changing battery

### ⚠ CAUTION

**Danger of explosion if battery is incorrectly replaced.**

Replace only with same or equivalent type recommended by manufacturer.

### Note

**Risk of damage to equipment while housing is open!**

Touching the electronic components on the mother board can lead to electrostatic discharge, which can damage the sensor unit.

» If contact with such components cannot be excluded, wear an earthing wristband.

- Open the sensor unit housing by loosening the two screws of the cover (size 2.5 Allen screws).
- Remove the spent batteries and replace them with new ones (see also '4.2 VIBCONNECT RF sensor unit', page 23). Do not confuse the battery poles!
- Close the sensor unit housing.
- Dispose of the spent batteries according to the applicable waste disposal regulations (see also 'Disposal', page 70).



## 6.5 Update

To update the firmware for the system components, download the update file on the bridge. The sensor units are automatically updated during the subsequent data transmission.

- Contact the bridge through a browser (see also '5.3.1 Changing IP address of bridge', page 32).
- On the main menu, click 'Upload Configuration'.
- Click <Browse>, and select the update file (eg 'VIBCONNECT-RF\_FW\_1.00-301.ptz').
- Click <Upload File> to transfer the file. This process takes about a minute.
- Then scroll back to the main menu, and click 'Reboot device' to reboot the bridge. This process takes about three minutes.
- Click "System Information" to check the new firmware version.

## 6.6 Warranty

The warranty period for the VIBCONNECT RF is 1 year. Unauthorized service work on the system shall automatically void all warranty.

## 6.7 Spare parts and accessories

Use only original spare parts and accessories. For details, refer to the VIBCONNECT product catalog (LIT 72.700). The latest catalog edition can be downloaded from the PRÜFTECHNIK website ([www.pruftechnik.com](http://www.pruftechnik.com)).

## Chapter 7: Troubleshooting

**Symptom:** The red LED of the sensor unit is lit, indicating an error in the data transmission (see also '5.4.1 Overview of connections and interfaces', page 40).

**Possible cause(s):** System crash

**Remedy:**

- Switch off the power supply to the sensor unit and then switch it on again.
- Check the connection to the bridge in OMNITREND or by means of the web browser.

**Symptom:** The bridge cannot be contacted (from OMNITREND or via web browser).

**Possible cause(s):** Incorrect IP address set; power failure at bridge.

**Remedy:**

- To reboot the bridge, set the Reset switch on 'Reset' and then back on 'Run' (see also '5.3.6 Overview of connections and interfaces', page 38).
- If you have forgotten the IP address, contact the Bridge via <http://169.254.1.1>. In the main menu under 'Network Settings' you will find the current IP settings (see also '5.3.1 Changing IP address of bridge', page 32).

### Note

*This address is only for the case that the IP address set by the user is no longer available. It may not be used for data transmission. This IP address is fixed for all devices and can not be changed.*

- Check the bridge to ensure that the power LED at the power supply is on. Check the power source, cables and electrical connection. If necessary, re-establish the power connection.

**⚠ CAUTION*****Risk of injury from electric shock!***

*When carrying out installation, repair or maintenance work on the power supply system of the bridge, there is a risk of injury from electric shock (220 V voltage).*

- » *All work on the power supply system must be carried out by a qualified electrician.*
- » *Disconnect the bridge from the power supply.*

---

- If the firmware is damaged, the bridge will reboot after power interruption in the 'Rescue Mode'. It is then only accessible via the default IP address:

<http://192.168.1.178/>

In the main menu, you can only load a new firmware to the bridge. After successful transfer, click on <Install Firmware> to start the installation process and reboot the new bridge.

---

***Note***

*If a fault cannot be rectified by any of the above measures, please contact our technical support team (see also '1.2 Service addresses', page 5).*

---

## Chapter 8: After use

### Decommissioning

Disconnect the bridge and the externally powered sensor units from the power supply. Remove the batteries from the battery-powered sensor units.

### Disposal

Dispose of the system components and the spent batteries according to the applicable waste disposal regulations.

In EU member states where the *EU Directive 2002/96/EC "Waste Electrical and Electronic Equipment"* (WEEE) has been implemented in national law, the following rules apply:



PRÜFTECHNIK products that are covered by the WEEE Directive bear the waste bin label as shown below.

These devices can be returned to the manufacturer who is responsible for their proper disposal.

Consequences for end consumers:

- All electrical and electronic PRÜFTECHNIK products including electrical and electronic accessories (e.g. cables, sensors, etc.) must be disposed of through PRÜFTECHNIK or its waste disposal contractor. These products must not be disposed of as domestic waste.
- For information regarding the return of PRÜFTECHNIK products for disposal, please contact:
  - your local PRÜFTECHNIK sales office
  - your local PRÜFTECHNIK sales agent

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