



# KSB Guard

with Transmission and Battery Unit  
European Union

## Installation/Operating Manual



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Installation/Operating Manual KSB Guard

Original operating manual

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## 1 General

### 1.1 Principles

This operating manual is valid for the type series and variants indicated on the front cover.

The operating manual describes the proper and safe use of this equipment in all phases of operation.

The name plate indicates the type series, the main operating data and the serial number. The serial number uniquely describes the product and is used as identification in all further business processes.

In the event of damage, immediately contact your nearest KSB service facility to maintain the right to claim under warranty.

### 1.2 Target group

This operating manual is aimed at the target group of trained and qualified specialist technical personnel.

### 1.3 Other applicable documents

**Table 1:** Overview of other applicable documents

Document	Contents
Operating manual of the pump (set)	Description/operation of the pump (set)

For accessories and/or integrated machinery components, observe the relevant manufacturer's product literature.

### 1.4 Symbols

**Table 2:** Symbols used in this manual

Symbol	Description
✓	Conditions which need to be fulfilled before proceeding with the step-by-step instructions
▷	Safety instructions
⇒	Result of an action
⇔	Cross-references
1. 2.	Step-by-step instructions
	Note Recommendations and important information on how to handle the product

### 1.5 Key to safety symbols/markings

**Table 3:** Definition of safety symbols/markings

Symbol	Description
 <b>DANGER</b>	<b>DANGER</b> This signal word indicates a high-risk hazard which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	<b>WARNING</b> This signal word indicates a medium-risk hazard which, if not avoided, could result in death or serious injury.
<b>CAUTION</b>	<b>CAUTION</b> This signal word indicates a hazard which, if not avoided, could result in damage to the machine and its functions.

Symbol	Description
	<p><b>General hazard</b> In conjunction with one of the signal words this symbol indicates a hazard which will or could result in death or serious injury.</p>
	<p><b>Electrical hazard</b> In conjunction with one of the signal words this symbol indicates a hazard involving electrical voltage and identifies information about protection against electrical voltage.</p>
	<p><b>Machine damage</b> In conjunction with the signal word CAUTION this symbol indicates a hazard for the machine and its functions.</p>



## 2 Safety

All the information contained in this section refers to hazardous situations.

In addition to the present general safety information the action-related safety information given in the other sections must be observed.

### 2.1 General

- This operating manual contains general installation, operating and maintenance instructions that must be observed to ensure safe operation of the system and prevent personal injury and damage to property.
- Comply with all the safety instructions given in the individual sections of this operating manual.
- The operating manual must be read and understood by the responsible specialist personnel/operators prior to installation and commissioning.
- The contents of this operating manual must be available to the specialist personnel at the site at all times.
- Information and markings attached directly to the product must always be complied with and kept in a perfectly legible condition at all times. This applies to, for example:
  - Markings for connections
  - Name plate
- The operator is responsible for ensuring compliance with all local regulations not taken into account.

### 2.2 Intended use

- The values specified in the technical product literature for the mains voltage and ambient temperature must not be exceeded. The device must only be operated in accordance with the instructions provided in the operating manual and other applicable documents.

### 2.3 Personnel qualification and personnel training

All personnel involved must be fully qualified to install, operate, maintain and inspect the equipment this manual refers to. The responsibilities, competence and supervision of all personnel involved in transport, installation, operation, maintenance and inspection must be clearly defined by the operator.

Deficits in knowledge must be rectified by means of training and instruction provided by sufficiently trained specialist personnel. If required, the operator can commission the manufacturer/supplier to train the personnel.

Training on the device must always be supervised by specialist technical personnel.

### 2.4 Consequences and risks caused by non-compliance with this operating manual

- Non-compliance with this operating manual will lead to forfeiture of warranty cover and of any and all rights to claims for damages.
- Non-compliance can, for example, have the following consequences:
  - Hazards to persons due to electrical, thermal, mechanical and chemical effects and explosions
  - Failure of important product functions
  - Failure of prescribed maintenance and servicing practices

### **2.5 Safety awareness**

In addition to the safety information contained in this operating manual and the intended use, the following safety regulations shall be complied with:

- Accident prevention, health regulations and safety regulations
- Safety regulations for handling hazardous substances
- Applicable standards, directives and laws

### **2.6 Safety information for the user/operator**

- Make sure KSB Guard Gateway cannot be accessed by unauthorised persons (e.g. children).
- The device is not suitable for use in places where children may be present.

### **2.7 Software changes**

The software has been specially created for this product and thoroughly tested.

Making changes or additions to the software or parts of the software is prohibited.

In irregular intervals updates will be made to KSB Guard Gateway and to the Transmission and battery units. These updates will run automatically in the background and serve to enhance the product performance.

### 3 Transport/Storage/Disposal

#### 3.1 Checking the condition upon delivery

1. On transfer of goods, check each packaging unit for damage.
2. In the event of in-transit damage, assess the exact damage, document it and notify KSB or the supplying dealer and the insurer about the damage in writing immediately.

#### 3.2 Transport

	<b>CAUTION</b>
	<p><b>Improper transport</b></p> <p>Damage to the product!</p> <ul style="list-style-type: none"> <li>▸ Always transport the product properly and in its original packaging.</li> <li>▸ For transport, observe the transport instructions on the original packaging.</li> <li>▸ Do not throw the product.</li> </ul>

1. Transport the product properly and in its original packaging (if possible) to the place of installation.
2. Carefully set down the product at the place of installation.
3. Dispose of packaging material in accordance with local regulations.

#### 3.3 Storage

If the ambient conditions for storage are met, the function of the device will be ensured even after a prolonged period of storage.

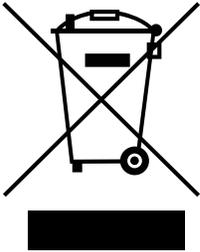
	<b>CAUTION</b>
	<p><b>Damage during storage due to humidity, dirt or vermin</b></p> <p>Corrosion/contamination of the device!</p> <ul style="list-style-type: none"> <li>▸ For outdoor storage cover the (packed or unpacked) device and accessories with water-proof material.</li> </ul>

**Table 4:** Ambient conditions for storage

Ambient condition	Value
Relative humidity	85 % max. (non-condensing)
Ambient temperature	-30 °C to +60 °C

1. Store the device in dry conditions and in its original packaging.
2. Store the device in a dry room in which the atmospheric humidity is maintained at a constant level (as far as this is possible).
3. Prevent excessive fluctuations in atmospheric humidity.

### 3.4 Disposal



Electrical or electronic equipment marked with the adjacent symbol must not be disposed of in household waste at the end of its service life.

Contact your local waste disposal partner for returns.

If the used electrical or electronic equipment contains personal data, the operator is responsible for deleting it before the equipment is returned.



#### NOTE

Due to certain components it contains, the device is classified as special waste and meets RoHs 2011/65/EC requirements.

Once decommissioned, the device must be properly disposed of in accordance with local regulations.

## 4 Description

### 4.1 General description

Monitoring device for monitoring vibrations and temperatures of pump sets.

### 4.2 Product information

#### 4.2.1 Product information as per Regulation No. 1907/2006 (REACH)

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

### 4.3 Name plates



Fig. 1: Name plate of sensor unit (example)

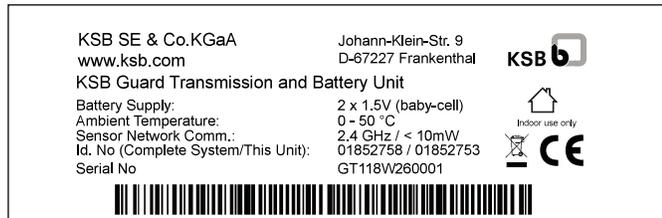


Fig. 2: Name plate of transmission and battery unit (example)

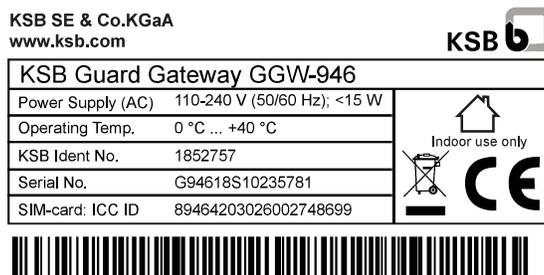


Fig. 3: Name plate of gateway (example)

### 4.4 Technical data

Sensor unit **Table 5:** Technical data of sensor unit

Characteristic	Value
Material	Aluminium
Dimensions (L×W×H) [mm]	50 x 45 x 30
Enclosure	IP65
Cable type	1.5 m, PUR, 6-core

Characteristic	Value
Permissible surface temperature of the pump (process temperature)	0 to 90 °C <sup>1)</sup>
Ambient temperature	0 to +70 °C

**Transmission and battery unit** **Table 6:** Technical data of transmission and battery unit

Characteristic	Value
Material	Plastic
Dimensions (L×W×H) [mm]	120 x 75 x 65
Enclosure	IP65
Permissible surface temperature	0 to 50 °C
Power supply	<ul style="list-style-type: none"> <li>▪ <b>Transmission and battery unit with pressure balancing element:</b> two 1.5 V standard alkaline batteries (LR20 / mono cells / size D)</li> <li>▪ <b>Transmission and battery unit without pressure balancing element:</b> two 1.5 V standard alkaline batteries (R14 / baby cells / size C)</li> </ul>
Wireless module	ISM band, 2.4 GHz
Connection	M8, 6-pin

**KSB Guard Gateway** **Table 7:** Technical data of KSB Guard Gateway

Characteristic	Value
Mains voltage	110 - 240 V, AC voltage
Mains frequency	50/60 Hz
Power input	< 15 W
In-service ambient temperature	0 to 40 °C <sup>2)</sup>
Weight	< 400 g
Dimensions	158 × 95 × 45
SMA-RP socket (antenna sensor network)	Antenna for 2.4 GHz (WLAN / Bluetooth)
SMA socket (LTE antenna)	Antenna for 2G/3G/4G mobile data, included in standard accessories with approx. 5 m cable
Internal SIM card <sup>3)</sup>	Pre-configured

#### 4.5 Function

**Sensor unit** The sensor unit is preferably installed at the pump's bearing bracket or drive lantern, where it measures the pump's vibrations and temperature trends using built-in sensors. This data is sent to the transmission and battery unit.

**Transmission and battery unit** The sensor unit is connected to the transmission and battery unit with a connecting cable. The transmission and battery unit sends the measured data to KSB Guard Gateway via a radio signal.

<sup>1)</sup> Higher temperatures than indicated are possible. Contact KSB Support before installation. Contact: +49 6233 86-6400 or ksbguard-support@ksb.com.  
<sup>2)</sup> Higher temperatures than indicated are possible. Contact KSB Support before installation. Contact: +49 6233 86-6400 or ksbguard-support@ksb.com.  
<sup>3)</sup> The SIM card is pre-installed and cannot be replaced.

**KSB Guard Gateway** KSB Guard Gateway collects the data of the sensor unit and transfers it to the KSB Cloud in encrypted format. The data can be accessed via the KSB Guard app or the ksbguard.net web portal.

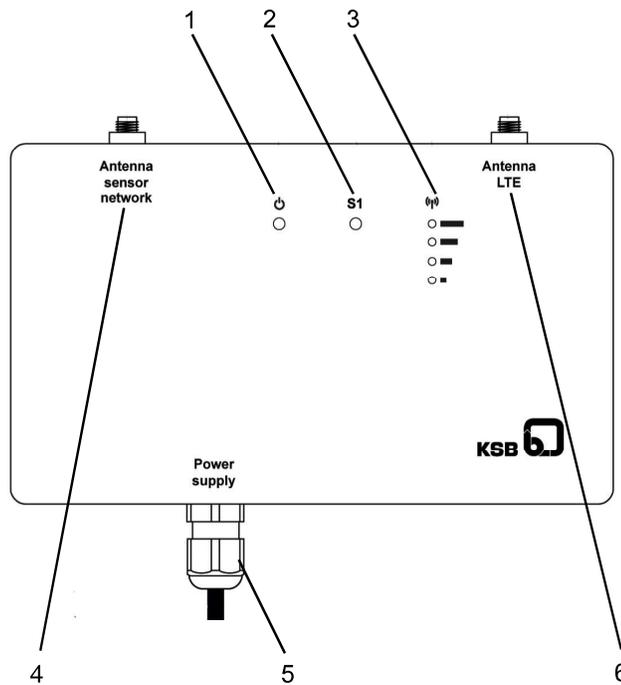
One gateway can process the data of up to 20 Transmission and battery units, if they send data every hour. This number is reduced with more frequent data transmission.

**4.6 Measured values**

**Temperature** The temperature is measured inside the sensor unit. The values can therefore differ from the actual surface temperature of the pump set.

**Vibrations** The vibration values are measured in three axes and usually output as RMS values.

**4.7 KSB Guard Gateway**



**Fig. 4:** KSB Guard Gateway

1	Status LED for supply voltage	2	Status LED S1 for connection status
3	Level LEDs for mobile network signal strength	4	Antenna connection (data transmission of Transmission and battery unit)
5	Power supply connection	6	Antenna connection for mobile data (LTE)

**Table 8:** Description of LED indicators

No.	LED	Status	Description
1	Supply voltage	OFF	Device is out of operation or in the initialisation phase.
		Green	Device is in operation. No faults present.
		Red or flashing red	Device is in operation. Faults are present.
2	Connection status S1	OFF	Device waiting for mobile data connection
		Flashing yellow (approx. 3 min after switch-on)	Problems with Internet connection
		Green	Mobile network and Internet accessible
		Green, flashing rapidly	New firmware found. Internal firmware update started.
3	Mobile network signal strength	4th LED green	Signal strength > -75 dBm
		3rd LED green	Signal strength > -85 dBm

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No.	LED	Status	Description
3	Mobile network signal strength	2nd LED green	Signal strength > -95 dBm
		1st LED green	Signal strength < -95 dBm

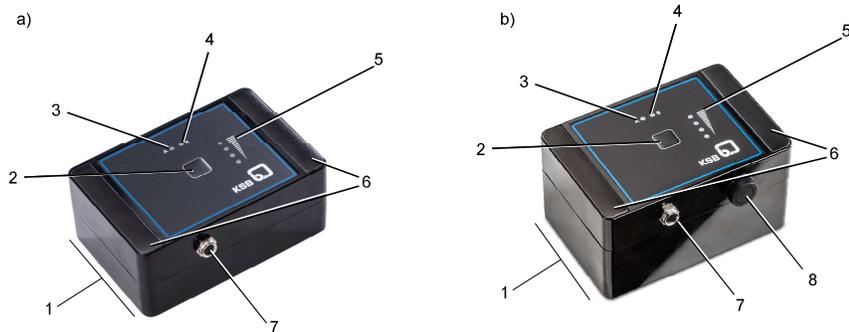
**4.8 Sensor unit**



**Fig. 5:** Sensor unit with coordinate system

1	Coordinate system	2	QR code
3	Connecting cable to transmission and battery unit		

**4.9 Transmission and battery unit**



**Fig. 6:** a) Transmission and battery unit without pressure balancing element, b) Transmission and battery unit with pressure balancing element

1	Position of internal antenna	2	Pushbutton
3	Status LED A	4	Status LED B
5	Level LEDs for indicating the signal strength of the gateway connection	6	Cover for housing screws
7	Connection for connecting cable to sensor unit	8	Pressure balancing element

**Table 9:** Description / function of control elements and LED indicators

Control element / LED indicator	Description
Pushbutton	Commissioning, status check, manual measurement
Status LED A	Status LEDs for indicating the operating status and for coded output of fault messages
Status LED B	
Level LEDs	Signal strength of the gateway connection

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## 5 Installation / Commissioning

### 5.1 Setting up access to the KSB Guard system

Send the following information to this e-mail address:

- **E-mail:** ksbguard-support@ksb.com

**Table 10:** Required data

Required data	Notes
Organisation's name (e.g. company name, such as <i>XY Industrial Estate, Exampleville Waterworks.</i> )	
Company's post / zip code	
Company's city	
Company's country	
Company's customer number (at KSB if applicable)	
Administrator's name (the first company employee who is to have access to / use the KSB Guard. This person can then add further users.)	
Administrator's e-mail address	

A customer account will be created with this data.

A system-generated welcome e-mail will be sent to the e-mail address entered. This e-mail will also contain a prompt to change the initial password.

### 5.2 Installation

	<b>NOTE</b>
	For all queries relating to the actual installation (e.g. positioning of components, reception quality, etc.) KSB Guard Support will be available. (⇒ Section 9, Page 32)

#### 5.2.1 Fitting KSB Guard Gateway

	<b>⚠ DANGER</b>
	<p><b>Risk of falling when working at a great height</b></p> <p>Danger to life by falling from a great height!</p> <ul style="list-style-type: none"> <li>▸ Do not step onto the pump (set) during installation work or dismantling work.</li> <li>▸ Pay attention to safety equipment, such as railings, covers, barriers, etc.</li> <li>▸ Observe the applicable local health and occupational safety regulations and accident prevention regulations.</li> </ul>

	<b>⚠ WARNING</b>
	<p><b>Work in the immediate vicinity of rotating parts</b></p> <p>Risk of hand injury!</p> <ul style="list-style-type: none"> <li>▸ Always have this work performed by trained personnel.</li> <li>▸ Take particular caution when performing this work.</li> </ul>

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	<b>CAUTION</b>
	<p><b>Incorrect installation</b></p> <p>No data transmission!</p> <ul style="list-style-type: none"> <li>▸ Never connect more than 40 transmission and battery units to a KSB Guard Gateway.</li> </ul>

One KSB Guard Gateway can process the data of up to 40 transmission and battery units, if they send data once an hour. If data transmission is more frequent, the number of units per gateway is reduced.

**Multi-gateway operation**

If more than 40 transmission and battery units are to be connected to a KSB Guard Gateway, multi-gateway operation is recommended. For this purpose, a second KSB Guard Gateway has to be fitted within 50 m of the first KSB Guard Gateway. Multi-gateway operation is also recommended in the case of poor wireless connection of individual transmission and battery units.

In general, several KSB Guard Gateways can be installed in one area.

Data can be transmitted by Modbus transmission units and by transmission and battery units in the same network (i.e. to the same KSB Guard Gateway).

**5.2.1.1 Checking the installation location of the gateway**

The installation location of the gateway must meet the following requirements:

- Temperature 0 - 40 °C<sup>4)</sup> (⇒ Section 4.4, Page 11)
- Only install and operate the gateway in closed rooms.
- No direct sunlight
- Sufficient clearance for dismantling
- Easily accessible socket
- Flood-proof
- The IP enclosure and the temperature range at the place of installation match the data on the name plate.
- Fit the gateway at a height of ≤ 2 m.
- Maximum distance between gateway and Transmission and battery unit: 30 m
- Area between gateway and Transmission and battery unit with as few obstacles as possible (e.g. walls).  
If possible: Install with direct line of sight between the Modbus transmission unit and the gateway

<sup>4</sup> Higher temperatures than indicated are possible. Contact KSB Support for more information.

5.2.1.2 Fitting the KSB Guard Gateway antennas

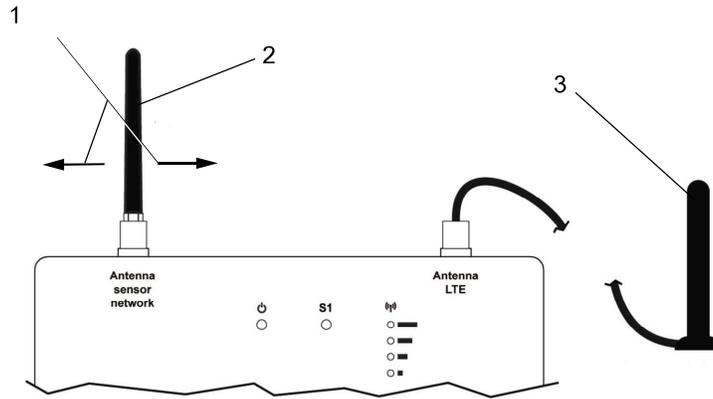


Fig. 7: Installing antennas

1	Optimum direction for reception	2	Rod antenna
3	Magnetic base antenna		

The antenna cable should not exceed 20 m in length.

1. Screw the supplied rod antenna onto the left connection (Antenna sensor network).
2. Screw the magnetic base antenna onto the right connection (Antenna LTE).
3. Place the magnetic base antenna in a location that has sufficiently high mobile network signal strength. (⇒ Section 5.2.1.4, Page 17)

5.2.1.3 Connecting KSB Guard Gateway to the power supply

	<p><b>⚠ DANGER</b></p>
	<p><b>Improper work on electrical connection</b> Electric shock!</p> <ul style="list-style-type: none"> <li>▸ Never open the KSB Guard Gateway.</li> <li>▸ Never make any changes to the inside of the KSB Guard Gateway.</li> <li>▸ Always have electrical work performed by an electrically qualified person.</li> </ul>

1. Plug the existing power cable into the socket.
  2. Check the status LED.  
Make sure that at least 2 LEDs are lit. This indicates that the connection to the mobile network is sufficiently strong.
- ⇒ If applicable, an automatic firmware update for the device will be carried out first. Depending on the reception quality of the accessible mobile network this process can take 5 - 10 minutes. When both status LEDs are permanently lit in green and the level LEDs indicate sufficient signal strength, the device is ready for use.

5.2.1.4 Checking the signal strength of KSB Guard Gateway

The signal strength of the mobile data connection can be changed by positioning the magnetic base antenna. The current signal strength is indicated by the corresponding level LEDs (see Table: Description of LED indicators). (⇒ Section 4.7, Page 13)

- Minimum sufficient signal strength is indicated by 2 level LEDs lighting up.
- Good signal strength is indicated by 3 level LEDs lighting up.
- Maximum signal strength is indicated by 4 level LEDs lighting up.

It is recommended that you position the magnetic base antenna such that 3 or 4 level LEDs are lit during installation. (⇒ Section 4.7, Page 13)

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1. Place the magnetic base antenna in a location that has sufficiently high mobile network signal strength.
2. Check the level LEDs for mobile network signal strength.
3. If necessary, change the position of the magnetic base antenna and check again.

If this condition cannot be met, check whether a more powerful LTE antenna can be installed, possibly also with a longer cable.

The antenna cable should not exceed 20 m in length.

	<b>NOTE</b>
<p>To improve data transmission between the KSB Guard Gateway and the Transmission and battery unit, you can rotate and tilt the KSB Guard Gateway antenna (data transmission of Transmission and battery unit). The KSB Guard Gateway antenna acts in the plane perpendicular to the antenna's axis. The Transmission and battery unit should be in this plane. (⇒ Section 5.2.1.2, Page 17)</p>	

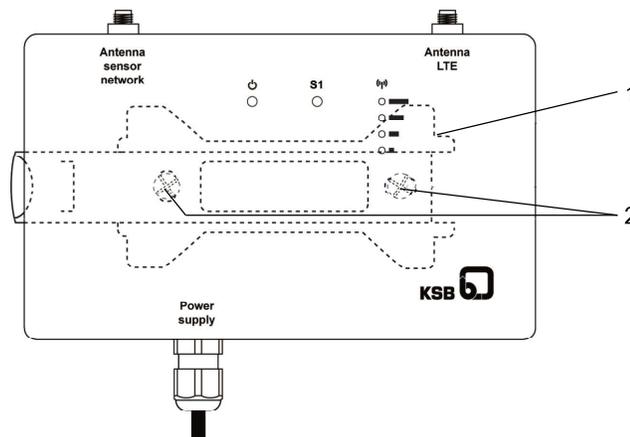
### 5.2.1.5 Commissioning KSB Guard Gateway

The device is delivered fully configured and is ready for operation after the power supply has been connected. The current operating status is indicated by the LED for the supply voltage. (⇒ Section 4.7, Page 13)

After KSB Guard Gateway has been energised, observe the LED S1 at KSB Guard Gateway. The following operating statuses may occur:

- LED S1 green, flashing evenly  
Firmware update running automatically, duration approx. 10 to 15 min.
- LED S1 green, permanently lit  
Device ready for operation.

### 5.2.1.6 Fastening KSB Guard Gateway



**Fig. 8:** Fastening the wall bracket

1	Wall bracket	2	Bolts/screws
---	--------------	---	--------------

- ✓ The gateway antennas have been fitted.
- ✓ The gateway is connected to the power supply.
- ✓ The signal strength at the installation location has been checked and is sufficient.
  1. Attach the wall mounting bracket supplied to a suitable wall using 2 screws.
  2. Connect the rear adapter of the gateway to the wall bracket.

### 5.2.2 Positioning the transmission and battery unit

**Set-up mode** The Set-up mode helps find a suitable position for the Transmission and battery unit.

The Set-up mode can be repeated any number of times.

- ✓ KSB Guard Gateway has been fitted and the indicated signal strength for mobile reception at KSB Guard Gateway is sufficient.
- 1. Press the pushbutton (1) at the Transmission and battery unit for 2 - 3 seconds. Release the pushbutton as soon as the status LEDs A and B of the Transmission and battery unit light up simultaneously.
- 2. Watch the signal strength of the KSB Guard Gateway connection (see level LEDs) in order to find a suitable position near the pump set.
  - ⇒ After the Set-up mode has been activated, it remains active for 10 minutes and then stops automatically. The Set-up mode can be stopped at any time by briefly pressing the pushbutton (<1 s).

When a sensor unit is connected, the device changes to the *Automatic Measuring Operation* operating mode. (⇒ Section 6.1, Page 26)

If no sensor unit has been connected, the device reverts to its as-supplied condition. (⇒ Section 6.1, Page 26)

**5.2.3 Establishing a connection between the sensor unit and the transmission and battery unit**

1. Connect the connecting cable of the sensor unit to the transmission and battery unit.

If the wireless connection between the transmission and battery unit and KSB Guard Gateway is poor, check the position of the transmission and battery unit. Change its position if necessary. If required, use an extension cable.

**5.2.4 Installing the sensor unit**

	<p><b>⚠ DANGER</b></p> <p><b>Strong magnetic field</b>                  Danger of death for persons with pacemaker!                  Interference with magnetic data carriers, electronic devices, components and instruments!                  Uncontrolled magnetic attraction forces between magnet-equipped components, tools or similar!</p> <ul style="list-style-type: none"> <li>▸ Keep a safety distance of at least 0.3 m.</li> </ul>
	<p><b>⚠ WARNING</b></p> <p><b>Hot surfaces of pump set</b>                  Risk of burns!</p> <ul style="list-style-type: none"> <li>▸ Observe the manufacturer's safety instructions for fastening the sensor unit and using the adhesive.</li> </ul>
	<p><b>⚠ WARNING</b></p> <p><b>Sensor unit takes on temperature of bearing bracket or drive lantern</b>                  Risk of burns!</p> <ul style="list-style-type: none"> <li>▸ Observe the operating manual of the pump set.</li> <li>▸ When the pump set is being operated, only touch the sensor unit using suitable protective gloves.</li> </ul>

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	 <b>WARNING</b>
	<p><b>Work in the immediate vicinity of rotating parts</b></p> <p>Risk of hand injury!</p> <ul style="list-style-type: none"> <li>▸ Always have this work performed by trained personnel.</li> <li>▸ Take particular caution when performing this work.</li> </ul>

**Positioning the sensor unit**

Observe the following information when positioning and fastening the sensor unit:

- Mount the sensor unit at a suitable location on the bearing bracket or drive lantern up to a maximum height of 2 m.  
Recommended mounting position (⇒ Section 10.1, Page 34)
- Preferably affix the sensor unit to magnetic material.
- The location on the bearing bracket or drive lantern where the sensor unit is mounted should be level. Use the adhesive to compensate for minor uneven spots or curvatures.
- The sensor unit must also be glued in addition to the magnetic holders. The adhesive surface should not be on top (with the unit upside down).
- The adhesive should be processed at room temperature (18 - 25 °C).
- ✓ The operating manual for the pump set is accessible and has been observed.
- ✓ All safety instructions for the adhesive have been read and observed.
  1. Remove any coarse dirt from the mounting area.
  2. Clean the back of the sensor unit using the supplied cleaning pad.
  3. Clean the mounting area using the supplied cleaning pad.
  4. Spread the supplied adhesive over the back of the sensor unit.
  5. Position the sensor unit on the cleaned area of the bearing bracket or drive lantern. The sensor unit is optimally aligned when the x-axis of the sensor unit is parallel to the shaft and the y-axis of the sensor unit is horizontal.
  6. Firmly press down the sensor unit.
  7. Allow the sensor unit to dry on the bearing bracket or drive lantern to ensure that the position of the sensor unit is not unintentionally changed during the following assembly steps. The adhesive bond must be able to withstand slight vibrations at the sensor unit. The waiting time strongly depends on ambient conditions.

	<b>NOTE</b>
	<p>At an ambient temperature between +25 °C and +30 °C, the supplied adhesive will have sufficiently cured after approximately 24 hours. After 3 days, the adhesive will have fully cured. Increased temperatures (e.g. +60 °C to +90 °C) accelerate the curing process.</p>

8. Check that the sensor unit is firmly positioned on the bearing bracket or drive lantern; re-glue the sensor unit if necessary.

**5.2.5 Installing the transmission and battery unit**

	 <b>WARNING</b>
	<p><b>Work in the immediate vicinity of rotating parts</b></p> <p>Risk of hand injury!</p> <ul style="list-style-type: none"> <li>▸ Always have this work performed by trained personnel.</li> <li>▸ Take particular caution when performing this work.</li> </ul>

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The area selected should have the following properties:

- Ambient temperature ≤ 50 °C
  - Position protected
  - Level
  - Maximum distance from the floor 2 m
  - ✓ The electrical connection between the sensor unit and the Transmission and battery unit has been established.
  - ✓ The batteries have been inserted (as-supplied condition).
  - ✓ The signal strength of the KSB Guard Gateway connection at the place of installation is sufficient.
  - ✓ Check the signal strength of the connection to the Transmission and battery unit in Set-up mode.
1. Preferably position the Transmission and battery unit in such a way that a line of sight is provided to KSB Guard Gateway. In the process, ensure that the connecting point of the connecting cable can be easily accessed.
  2. Clean the surface of the Transmission and battery unit and the surface of the place of installation using the supplied alcohol pads.
  3. Securely attach the Transmission and battery unit with the supplied fastening material.

**5.2.6 Routing the connecting cable**

	<p style="background-color: #f4a460; padding: 2px;"><b>⚠ WARNING</b></p> <p><b>Work in the immediate vicinity of rotating parts</b> Risk of hand injury!</p> <ul style="list-style-type: none"> <li>▸ Always have this work performed by trained personnel.</li> <li>▸ Take particular caution when performing this work.</li> </ul>
	<p style="background-color: #f4a460; padding: 2px;"><b>⚠ WARNING</b></p> <p><b>Hot surfaces (pump and piping take on the temperature of the fluid handled).</b> Risk of burns!</p> <ul style="list-style-type: none"> <li>▸ Do not touch hot surfaces.</li> <li>▸ Use appropriate personal protective equipment.</li> </ul>
	<p style="background-color: #fff9c4; padding: 2px;"><b>CAUTION</b></p> <p><b>Improper routing</b> Damage to the connecting cable!</p> <ul style="list-style-type: none"> <li>▸ Never kink or crush the connecting cable.</li> </ul>



**Fig. 9:** Routing the connecting cable

1. Secure the connecting cable between the sensor unit and the Transmission and battery unit in such a way that no hazard (tripping, entrapment) can arise from it.
2. Roll up excess length of connecting cable and fasten it using the supplied fastening material.

### 5.3 Assigning and setting up

	<b>NOTE</b>
	<p>The sensor unit must be initially assigned to a pump set. This assignment cannot be subsequently undone and remains valid for the service life of the sensor unit. Correct assignment is key to ensuring proper functionality of the device. Measurement data can only be saved after the assignment has been made. You can make the assignment on the KSB Guard web portal (<a href="http://www.ksbguard.net">www.ksbguard.net</a>) or in the KSB Guard app (available for iOS and Android).</p>

#### 5.3.1 Data required for adding a pump set

To add a pump, further pump set data is required. We recommend that you collect the data in advance so that it is readily available when you need it. The following data is required:

**Table 11:** Data required for adding a pump set

Required data	Example	Notes
Serial number of the sensor unit (⇒ Section 4.8, Page 14)	GS118W220071	
Designation of the pump set	Pump 123	
Location of the pump set	Hall 2	
Functional location of the pump set	B2411	
<b>Optional:</b> Photo of the pump (set)		
<b>Data from the pump name plate</b>		
Manufacturer	KSB	
Year of construction	2018	
Serial number <sup>5)</sup>	997123456700010000	
Type series	Etanorm	
Size	050-032-161	
Nominal head	25 m	
Nominal flow rate	50 m <sup>3</sup> /h	
Nominal speed	1450 rpm	
Number of stages	1	
Operating hours of the pump set to date (initial value for the operating hours counter)	1000 h	
<b>Data from the motor name plate</b>		
Nominal power	15 kW	
Nominal speed	1450 rpm	
Power factor (cos φ)	0,86	
<b>Other details</b>		
Variable speed system (yes or no)	No	
Application of the pump	Heat supply system	
Fluid temperature	+20 °C to +30 °C	
Density of the fluid handled	997 kg/m <sup>3</sup>	
Bearing type and, if applicable, operating hours since most recent bearing lubrication / bearing replacement	Grease, re-lubrication, 1000 h	

<sup>5)</sup> With a pump set from KSB, data on the pump can be accessed when necessary. To do so, enter the KSB serial number in the corresponding field of the app / web portal. If data is available, it will be displayed in the app or on the web portal and must be checked to ensure that it is accurate and up to date.

Required data	Example	Notes
<b>Optional:</b> Optimum flow rate	50 m <sup>3</sup> /h	
<b>Optional:</b> Specification of 7 reference points on the characteristic curve	25 kW, 25 m <sup>3</sup> /h, 25 m; 20 kW...	

### 5.3.2 Adding the pump

- ✓ Access to the KSB Guard system has been set up. (⇒ Section 5.1, Page 15)
- ✓ The data indicated in (⇒ Table 11) is available.
  1. Start the KSB Guard app or open the KSB Guard web portal ([www.ksbguard.net](http://www.ksbguard.net)).
  2. Select the *Add Pump* function in the app menu or on the web portal.
  3. Follow the instructions in the app dialogue or on the web portal and enter the requested information.
  4. Save the assignment.

	<p><b>NOTE</b></p> <p>The limit values for the pump set are set automatically. Default values can be checked and, if necessary, changed in the individual view screen of the pump.</p>
	<p><b>NOTE</b></p> <p>After the assignment, it takes three measuring cycles until the data transferred from the pump set can be viewed on the web portal or in the app. Initial data can be seen after approx. 15 minutes if the assignment took place within 120 minutes after commissioning. If this is not the case, it can take up to three hours from the time of assignment until the first data is displayed.</p>

### 5.4 Commissioning

**As-supplied condition** The Transmission and battery unit is supplied in *Deep Sleep* mode (⇒ Section 6.1, Page 26) . This operating mode remains active until commissioning has been completed successfully.

During commissioning, a sensor unit must be detected and a functioning KSB Guard Gateway found within wireless range.

If commissioning is not successful, the device remains in *Deep Sleep* mode until it is woken up by pressing and holding down the pushbutton.

In the first two hours following commissioning the device frequently (every five minutes) checks if a pump set has been assigned to the sensor unit in the KSB Cloud. After a successful assignment, five measurements are automatically conducted in shortened intervals.