

# Operation Manual



## Wireless magnet mount strain sensors QE1008-W

Magnet-extensometer with press on strain gauge and wireless transmission



 **SWISS MADE QUALITY**



## Preface



Dear Customer

Sensormate AG would like to thank you most sincerely for choosing a sensor system from the QE1008-W product series.

This operation manual is intended for sales partners, customers and skilled service personnel.

We seek to ensure that the product works to your full satisfaction. Adherence to this operation manual ensures optimum function and service life of the QE1008-W sensor system.

The graphics and photos in this operation manual are purely schematic examples. Your product may look different to what is illustrated.

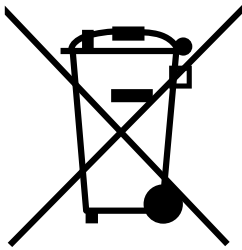
We are continually improving our products. If you should have any questions concerning your product or this operation manual, please contact our Customer Service department or visit our homepage.

Original language: German



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DE

**„Umsetzung der Richtlinie 2012/19/EU über Elektro- und Elektronik-Altgeräte (EEA)“**

Das Symbol der durchgekreuzten Mülltonne auf dem Gerät oder der Geräteverpackung weist darauf hin, dass Sie das Produkt am Ende seines Lebenszyklus separat entsorgen müssen.

Die Getrennsammlung dieses Geräts an seinem Lebenszyklusende wird vom Hersteller organisiert und besorgt.

Der Nutzer, der das Gerät entsorgen möchte, muss sich daher an den Hersteller wenden, um Auskunft über seine Vorgehensweise zur Getrennsammlung des Geräts an dessen Lebenszyklusende zu erhalten.

Die entsprechende Getrennsammlung für die anschließende Zuführung des Altgeräts zum Recycling, zur Wiederaufbereitung und zur umweltverträglichen Entsorgung trägt dazu bei, negative Auswirkungen auf die Umwelt und die Gesundheit zu unterbinden und begünstigt die Wiederverwendung und/oder das Recycling von Werkstoffen, aus denen das Gerät besteht.

EN

**“Implementation of Directive 2012/19/EU on waste electrical and electronic equipment (WEEE)”**

The symbol showing a crossed-out wheeled bin on equipment or its packaging indicates that the product must be collected separately from other waste at the end of its useful life.

The manufacturer is responsible for organising and managing the separate collection of this piece of equipment at the end of its useful life.

Users wishing to dispose of the equipment must therefore contact the manufacturer to obtain instructions from the same on how to have the equipment collected separately at the end of its useful life.

By collecting the disused equipment separately, it can be recycled, treated or disposed of in an environmentally friendly manner, thus helping to prevent the environment and public health from being affected negatively and enabling reuse and/or recycling of the materials forming the same equipment.

FR

**“Transposition de la Directive 2012/19/UE relative aux déchets d’équipements électriques et électroniques (RAEE)”**

Le pictogramme de la poubelle barrée, figurant sur l’équipement ou sur son emballage, indique que le produit en fin de vie doit être traité séparément des autres déchets.

Le ramassage sélectif de cet équipement en fin de vie est organisé et géré par le constructeur.

Tout utilisateur qui souhaiterait se débarrasser de l’équipement devra donc contacter le constructeur pour obtenir des informations concernant la méthode adoptée pour permettre le ramassage sélectif de l’équipement en fin de vie.

Un ramassage sélectif correct, en vue de l’acheminement de l’équipement vers des opérations de recyclage, de traitement et de mise au rebut respectueuses de l’environnement, contribue à réduire les impacts potentiellement néfastes sur l’environnement et la santé, outre à favoriser la réutilisation des matériaux/composants dont l’équipement est constitué.

IT

**“Attuazione della direttiva 2012/19/UE sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE)”**

Il simbolo del cassonetto barrato riportato sull'apparecchiatura o sulla sua confezione indica che il prodotto alla fine della propria vita utile deve essere raccolto separatamente dagli altri rifiuti. La raccolta differenziata della presente apparecchiatura giunta a fine vita è organizzata e gestita dal produttore.

L'utente che desidera disfarsi dell'apparecchiatura dovrà quindi contattare il produttore per ricevere indicazioni sul sistema da quest'ultimo adottato per consentire la raccolta separata dell'apparecchiatura giunta a fine vita.

L'adeguata raccolta differenziata per l'avvio successivo dell'apparecchiatura dismessa al riciclaggio, al trattamento e allo smaltimento ambientalmente compatibile contribuisce ad evitare possibili effetti negativi sull'ambiente e sulla salute e favorisce il reimpiego e/o riciclo dei materiali di cui è composta l'apparecchiatura.

**Inhalt**

<b>1.</b>	<b>Intended use</b>	<b>6</b>
<b>2.</b>	<b>Basic safety regulations</b>	<b>7</b>
2.1.	Explanation of symbols	7
2.2.	Basic safety regulations	7
2.3.	Organisational measures	7
<b>3.</b>	<b>Liability and warranty</b>	<b>8</b>
3.1.	Area of application	8
3.2.	Exclusion of liability and warranty	8
<b>4.</b>	<b>Product description</b>	<b>9</b>
4.1.	Introduction	9
4.2.	Scope of delivery	10
4.3.	Technology	11
<b>5.</b>	<b>Technical data</b>	<b>12</b>
<b>6.</b>	<b>Terminology</b>	<b>15</b>
<b>7.</b>	<b>Mounting and installation</b>	<b>16</b>
7.1.	Mounting for bending compensated tie bar strain measurement	16
<b>8.</b>	<b>Operation and control</b>	<b>20</b>
8.1.	Sensor QE1008-W	20
8.2.	Wireless receiver QE1008-W-G	21
8.3.	Activating the system	22
8.4.	QE Booster	23
8.5.	Application software	24
8.6.	Measuring the tie bar strain distribution	25
8.7.	Measuring the tie bar bending (tie bar crack detection)	26
8.8.	Assigning a QE1008-W sensor	27
8.9.	New assignment of all QE1008-W sensors	29
<b>9.</b>	<b>Troubleshooting</b>	<b>31</b>
<b>10.</b>	<b>Maintenance of QE1008-W sensors</b>	<b>32</b>
10.1.	Inspection	32
10.2.	Servicing	33
<b>11.</b>	<b>Accessories and spare parts</b>	<b>34</b>
<b>12.</b>	<b>Technical support</b>	<b>34</b>
<b>13.</b>	<b>Service and repairs (RMA)</b>	<b>35</b>
<b>14.</b>	<b>Notes</b>	<b>37</b>

### 1. Intended use

This product has been built according to the latest technology and certified safety regulations.

This product is intended exclusively for the defined purpose (→ see Chapter 4) and services (→ see Chapter 5).

Any other use or usage beyond this scope is not regarded as the intended use.

Use for the intended purpose includes reading, understanding and adhering to the operation manual.

## 2. Basic safety regulations

The details given here do NOT replace the regulations of the machine manufacturer. They are a minimum requirement for the safe use of the system.

### 2.1. Explanation of symbols

#### 2.1.1. Notes



Information for the optimum operation and service life of the product.



***Non-observance can lead to malfunctions and damage to the product or accessories.***

### 2.2. Basic safety regulations

- Basically, the general accident prevention regulations and safety-related legislations of the relevant country/region must be observed.
- Use this product only if it is in a perfect technical condition. Use it correctly while keeping in mind the safety aspects and hazards detailed in the operation manual. In particular, malfunctions which can affect safety, must be eliminated immediately.

The manufacturer shall not be responsible for any damages that may result thereby. The user shall bear full responsibility.

- Work to be carried out must be completed in accordance with local legislation and supplementary provisions. If instructions in this operation manual differ from the statutory requirements, please follow the more restrictive option. If these provisions contradict each other, please contact your sales partner or Customer Services at Sensormate AG before starting work.

### 2.3. Organisational measures

The operation manual must always be readily available with the product.

## 3. Liability and warranty

### 3.1. Area of application

The area of application of the QE1008-W sensors is described in Chapter 1 (Intended use) and Chapter 5 (Technical data).

### 3.2. Exclusion of liability and warranty

Exclusion of liability and warranty arises:

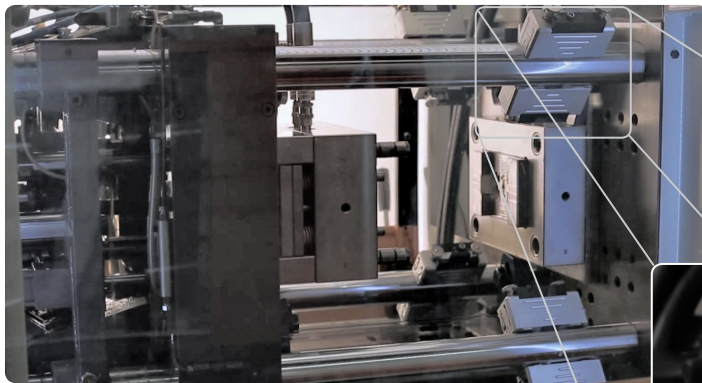
- If the QE1008-W is used outside of the specified area of application (see Chapter 1).
- If the notes and instructions in this manual are not observed.
- If the QE1008-W and its associated equipment are not operated correctly.
- If the QE1008-W is not serviced or is serviced incorrectly, including the use of non-prescribed spare parts.
- If unapproved accessories and components are used without written approval from Sensormate AG, which could directly or indirectly affect the QE1008-W sensors and associated accessories.
- If any kind of modification is made to the products supplied by Sensormate AG.
- Sensormate AG shall not be liable for any consequential damage caused by the incorrect handling of its products.

### 4. Product description

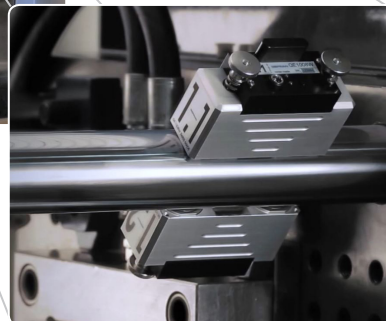
#### 4.1. Introduction

The double magnet strain measurement sensors QE1008-W are used **for accurate force and strain measurements** on ferromagnetic surfaces. The use of two QE1008-W sensors enables the system to take exact measurements of bending compensated tie bar strains. The compact design and simple installation also offer a wide variety of different applications.

Each sensor has a strain gauge signal amplifier. Data is transmitted wirelessly to the wireless receiver which is connected to the PC. The supplied software shows the received measurement data in real-time. The data can be saved and opened using an Excel program.



Machine

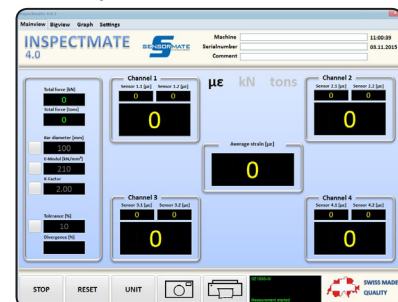


Sensor (transmitter)

Receiver with computer



Display software



### 4.2. Scope of delivery

**Example with 8 + 1 sensors** (order code: QE1008-W-09)



- 01 USB stick includes:
  - Instructions
  - Software
  - Brochures
- 02 8 sensors incl. rechargeable batteries
- 03 Charger with 2x connection cables for the charge bars
- 04 1x replacement sensor (optional)
- 05 Wireless receiver (Host)
- 06 Repair kit
- 07 2 x charge bars
- 08 Operation manual under the foam insert

### 4.3. Technology

Two strong magnets press the strain gauge of the patented sensor QE1008-W onto the material to be measured.

The strain gauge is located under the foil between the two magnets. The magnets press the strain gauge that strongly onto the surface that transmission through friction occurs. The surface strains are hereby transmitted directly onto the strain gauge which creates the same effect of an applied strain gauge (bonding).

The individual sensors can be used for applications such as strain measurements on tie bars with different diameters to stress analyses on flat surfaces.

The press-on technology of the QE1008-W enables the high-precision measurement of strains with quick and reliable mounting, thus reducing the idle time of the machine to a minimum.

#### Examples of applications

- Bending compensated tie bar strain measurement
- Tie bar strain distribution on presses (acc. to EUROMAP #7)
- Clamping force measurement on columns
- Measurement on flat surfaces
- Replacement of bonded strain gauges

#### The advantages of this system

- Very high accuracy: <0.5% absolute (like a bonded strain gauge)
- Used for tie bar diameters 45... >1000mm
- Bending compensated measurement
- Reliable and accurate also on flat surfaces
- Supplied display software with option to save in CSV file format
- Digital and direct tie bar-related display of force in kN, tons, US-tons or  $\mu\epsilon$
- No cables
- Easy to mount and remove
- Very compact design (suitable for skilled service personnel)
- Minimum space requirements and protected as all accessories are stored in a practical carrying case.
- No more dirty cables in the machine bed

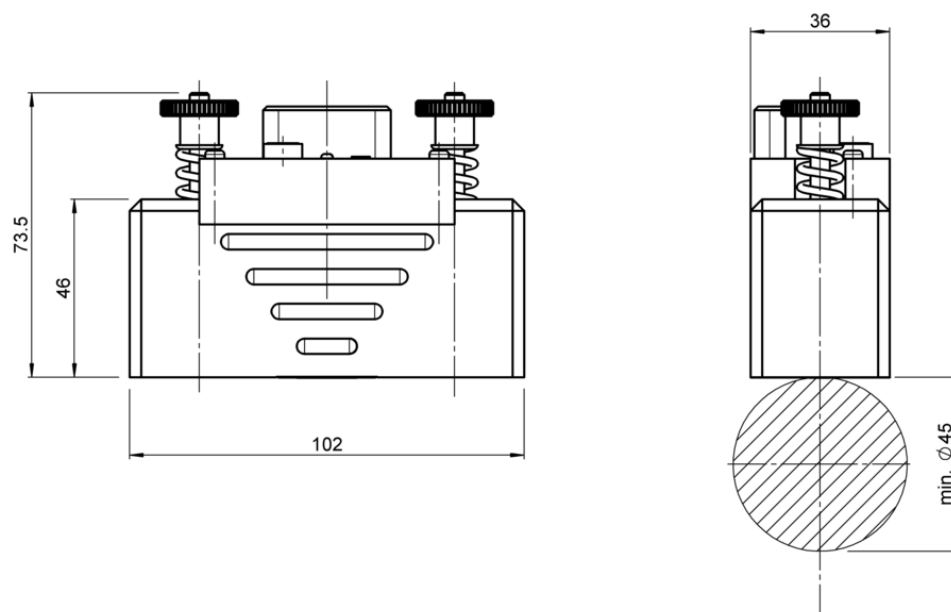
## 5. Technical data



### QE1008-W (Sensor)

Strain gauge type	Foil (GF = 2.0)
Bridge resistance	350Ω
Measuring range	± 800μϵ
Output signal for radio transmission	IEEE 802.15.4™
Signal range	30...100m
Sensitivity tolerance	± 0.2%
Transverse sensitivity	0.9 ± 0.2 %
Accuracy	< ± 0.5% FS
Linearity	< ± 0.5% FS
Hysteresis	< ± 0.5% FS
Repeatability	< 0.2% FS
Supply voltage when charging	6.2VDC (max. 6.5VDC)
Power consumption when charging	325mA
Ambient temperature	5...65°C
Storage temperature	0...65°C
Overload capability	unlimited
Type of protection	IP40
Material: Housing	Aluminium
Material: Cover	Plastic
Weight	530g

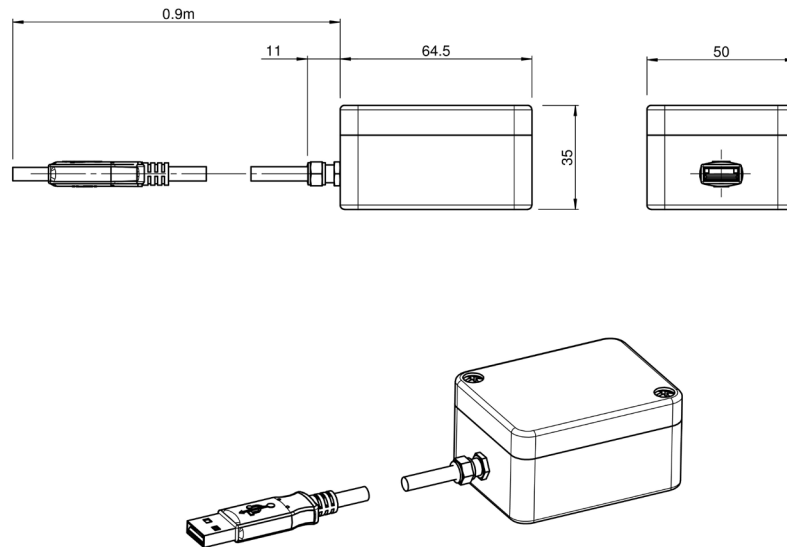
Dimensions of QE1008-W



Dimensions in [mm]

### QE1008-W-USB-G (receiver)

#### Dimensions



Dimensions in [mm]

#### Transmission module

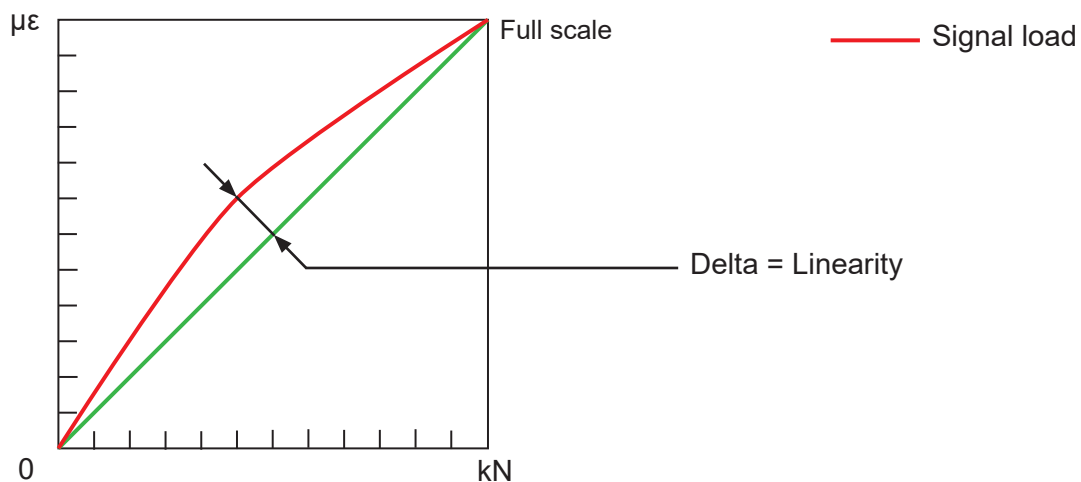
Frequency	2.405-2.480 GHz (ISM band)
Safety record standard	IEEE 802.15.4™
TX performance	0dBm / 1 mW (max.)
Range	30...100m (dependent on operational environment)
Main functions:	<ul style="list-style-type: none"><li>– Hardware CSMA-CA</li><li>– Hardware safety-related (AES-128)</li></ul>

The transmission module is FCC (USA), IC (Canada), ETSI (Europe) and TELEC (Japan) certified. The MAC address is always unique and burnt into the hardware.

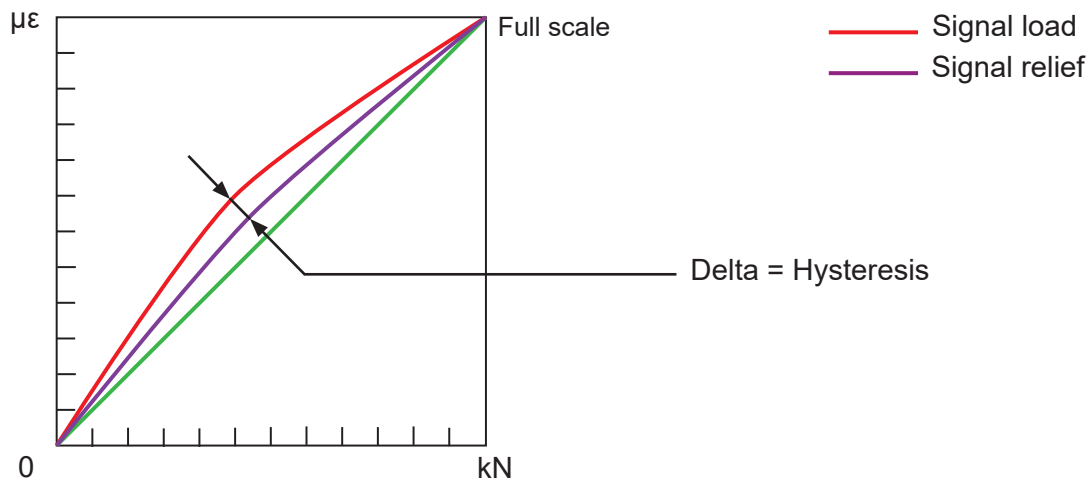
## 6. Terminology

Terms	Explanation
DMS	Strain gauge
FS = Full Scale	Calibrated measuring range
Accuracy	Combined errors for linearity and hysteresis
Linearity	Delta of signal curve to straight line "zero point - FS"
Hysteresis	Delta of signal curve "load/relief"
Repeatability	Dispersion of signal for multiple measurements
Tons	Metric ton: 1t = 9.81kN
US-tons	American ton: 1 US-tons = 1.1023t
$\mu\epsilon$ = micro strain	1 $\mu\epsilon$ = strain of $1\mu\text{m}/\text{m}$

### Linearity



### Hysteresis



## 7. Mounting and installation



These sensors are precision instruments with a resolution of 0.001mm. The devices must therefore be handled with great care. This instruction manual must be read and observed by every user.

### 7.1. Mounting for bending compensated tie bar strain measurement

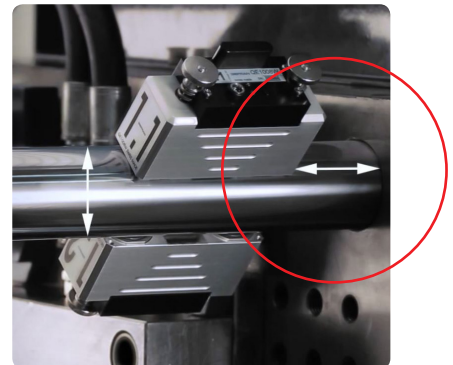
#### 7.1.1. Preparation

The sensors must always be placed in pairs onto a tie bar (1.1&1.2), (2.1&2.2) etc.



##### Position

The distance between the sensor and clamping plate must be at least once the diameter of the tie bar so that the deformation of the tie bar can be measured evenly and correctly.



##### Surface

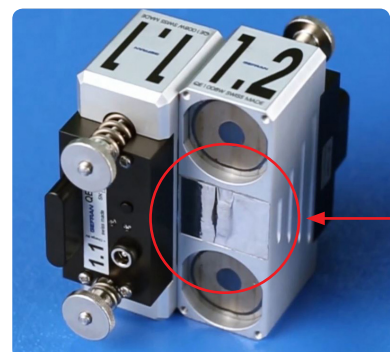
Oil and other surface contamination, or paint which has been applied, must be removed at the site of installation.



##### Sensor

Check the charge of the current batteries (see Chapter 8 „Operation and control“).

Check the foil on the sensor for signs of damage.



## 7.1.2. Positioning the sensor

1. Turn both knurled nuts so that they are flush with the end of the threaded rod.



2. The long edge of the sensor must be placed onto the surface to be measured and then tilted. The magnets pull the sensor onto the tie bar.

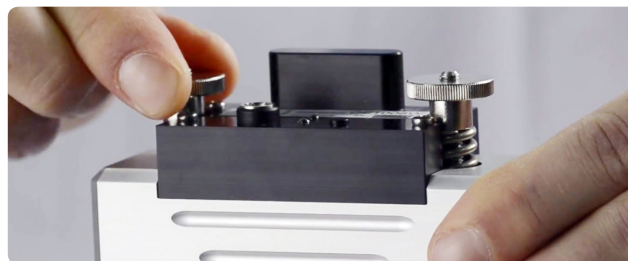


3. If the magnets do not automatically jump onto the measuring surface, press down the knurled nuts one after the other. The magnets should now jump onto the tie bar. The attraction force of the magnets is now optimal.



- ***The sensor on the tie bar may only be moved fractionally.***
- ***The magnets have ground guides. Make sure that both sides of the guide rest on the tie bar!***

4. The contact force can be increased by tightening the knurled nut. (usually not necessary.)

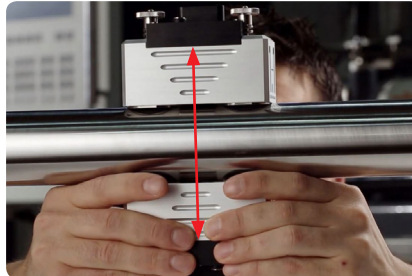


If a magnet jumps back, the knurled nut has been tightened too much, thereby making the spring tension too big. Loosen the knurled nut to relieve the tension of the spring.

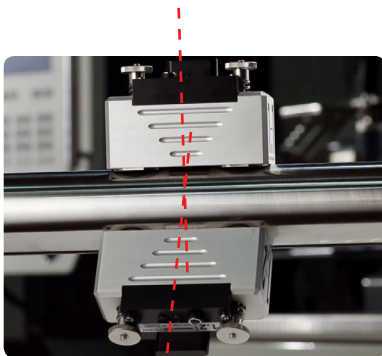


- ***The sensor must make proper contact and be stable.***
- ***The sensor must not move when shaken slightly.***

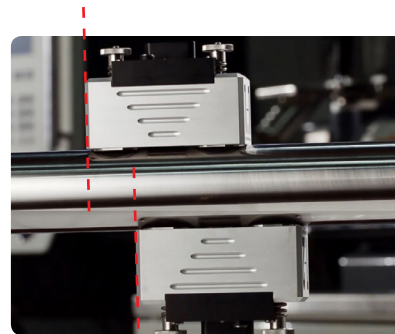
5. Remove the 2nd sensor from the carrying case and complete steps 1 to 4.



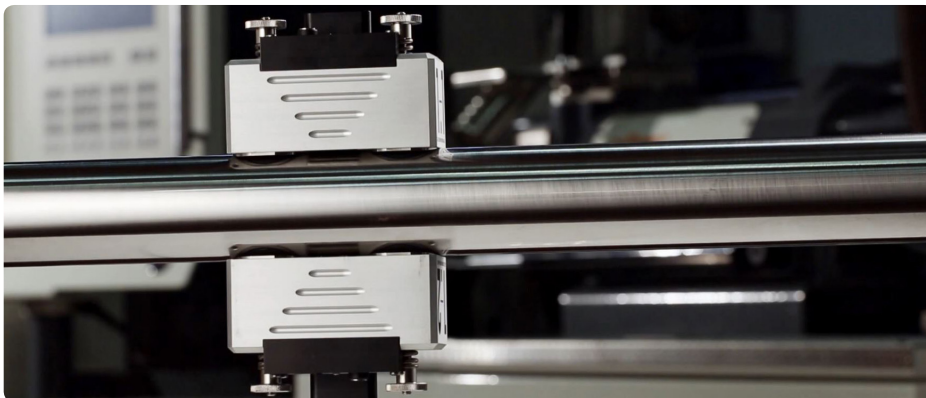
- *The sensor must be positioned parallel to the tie bar!*
- *The 2nd sensor pair must be placed exactly opposite (180°) and parallel to the 1st sensor at the same position!*



Incorrect!  
Not 180° opposite



Incorrect!  
Not at same position



Correct!

## 8. Operation and control

### 8.1. Sensor QE1008-W



- |                         |   |
|-------------------------|---|
| 01 Knurled nut          | 05 LEDs red and green (status displays) |
| 02 Steel spring         | 06 Button                               |
| 03 Charging socket 6VDC | 07 Aerial                               |
| 04 Slot number          |   |



Using the sensors in a new environment a new assignment as described in chapter 8.7 should be done.

#### LED status

Normal operation:

LED green: on	LED red: off	→ Receiver search
LED green: flashing	LED red: off	→ Ready (connected to receiver)
LED red: on	LED green: on or flashing	→ Rechargeable battery virtually empty
LED red: flashing	LED green: on or flashing	→ Strain gauge damaged

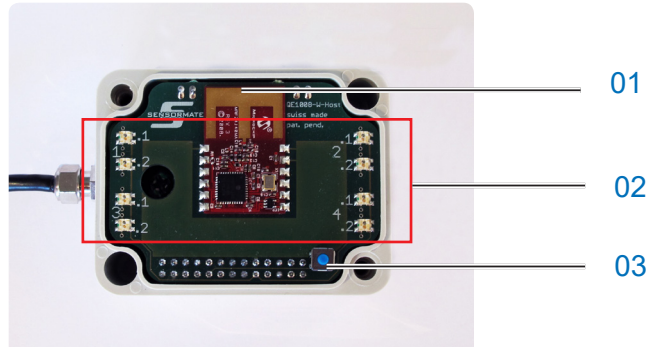
Special displays:

Both LEDs flash alternately		→ Sensor is in logon mode for assignment
LED green: off	LED red: flashing	→ Sensor not assigned to receiver → reassign

#### Button function

Switching on QE1008-W sensor	Press button for ~1 second
Switching off QE1008-W sensor	Press button for ~1 second
Logon mode for assignment	Press button for ~5 seconds until the LEDs flash alternately
Deleting assignment	Press button for ~10 seconds until red LED flashes

## 8.2. Wireless receiver QE1008-W-G



- 01 Aerial
- 02 8 dual LEDs represent 8 assignment slots  
(1.1) (1.2) (2.1) (2.2) (3.1) (3.2) (4.1) (4.2)
- 03 Blue function key

### LED status

LED green: flashing	LED red: off	→ Ready (normal operation)
LED green: flashing	LED red: on	→ Rechargeable battery virtually empty
LED green: flashing	LED red: flashing	→ Strain gauge on sensor is defective
LED red: on	LED green: off	→ Sensor not found
Both LEDs flash alternately		→ Selected assignment slot is in logon mode
All LEDs light up red for 1 second		→ All assignments have been deleted

### Button function

Press button briefly (select assignment slot by pressing button several times)	→ Assignment slot is automatically in logon mode
Press button for ~10 seconds	→ Deletes all assignments



The receiver button is primarily used to assign a QE1008-W sensor.

### 8.3. Activating the system

#### First use of sensors

Before using the QE1008-W sensors for the first time, make sure that the supplied display software is installed on the computer.

(→ see Chapter 9: "Display software Inspectmate 4.0")



#### 8.3.1. Activating the system

1. Switch on all sensor pairs.
  - Press the button on the housing for 1 second.
  - The LED flash green.



2. Connect the wireless receiver to the USB port of the PC.



→ The wireless receiver automatically connects to all activated QE1008-W sensors.

3. Start the display software on the PC.



→ If the wireless receiver is recognised by the software, this is confirmed by "QE1008-W" in the information display.

4. Set the software to the respective requirements. → The system is activated.

### 8.4. QE Booster

The QE Booster can only be used together with a tablet or mobile phone with Android OS. Download the free „Sensormate“ app from the Google Play Store and install. (Use with Windows PCs and Apple devices (macOS & iOS) is planned for the 2nd quarter of 2020).

#### 8.4.1. 8.4.1 Operation/Control

##### QE Booster Switch on

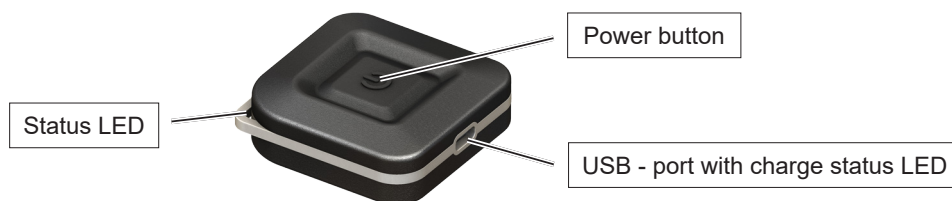
- Press and hold the power button for one second. (The QE Booster flashes, this means that the QE Booster is ready to connect)

##### Switch off QE Booster:

- Press and hold the power button for three seconds.

##### QE Booster Charging

- The QE Booster can be charged via the USB-C port.

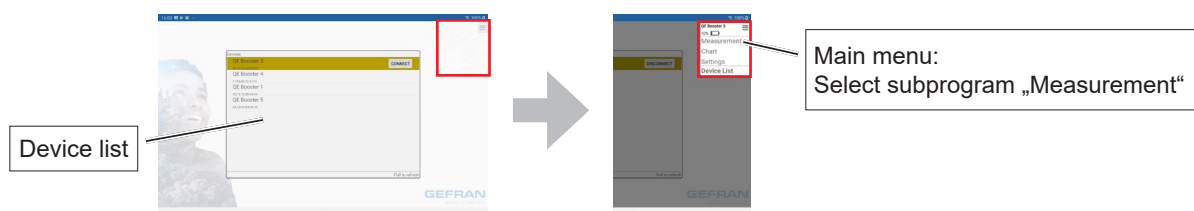


##### Connect QE Booster to tablet or mobile phone

- Switch on the QE Booster.
  - Start the Sensormate app on your mobile device.
  - Select your QE Booster from the list on the start display.
- (Switched on QE1008-W sensors are automatically connected, if assigned)

##### Assign QE1008-W sensor to QE Booster

- The QE Booster should be connected to your tablet or mobile phone as described above.
  - Select „Measurement“ in the main menu.
  - Double touch the desired sensor display area and tab „Map“.
  - Follow the instructions on the screen to assign a sensor.
- (The status LED lights yellow, indicating that the QE Booster is in Assignment status).
- Assign each sensor this way.
- (The QE Booster connects up to eight sensors).



## 8.5. Application software

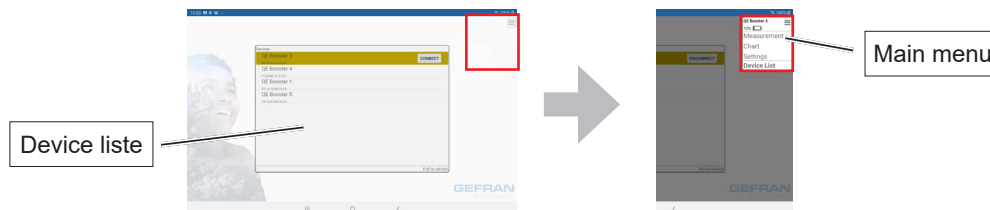
### 8.5.1. Installation of the application software:

- Download the Sensormate App from the Google Play Store and install it on your mobile device.

### 8.5.2. Operation

#### Device list / Main menu

- When the Sensormate app is started, the device list appears as start display. A list of available QE Boosters that are switched on is displayed.
- In the upper right corner you can open the main menu by tapping on it, which leads to the subprograms.



#### Measurement

- To monitor a measurement, select the menu item „Measurement“.  
→ A live display is shown.
- The following symbols are shown in the measured value display:
  - The sensor is not connected
  - Battery condition is low
  - The sensor is defective
- With „Save“ a snapshot of the measured data is saved in a CSV file.

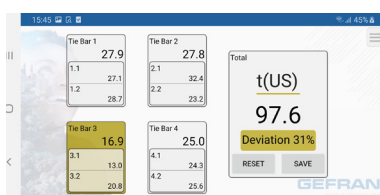
#### Chart

- The force or strain measurements are plotted. The display is easily customizable by hiding unneeded values.
- Tab Start to start recording; with Stop the recording is stopped.
- Tab Save to save the data in a CSV file.

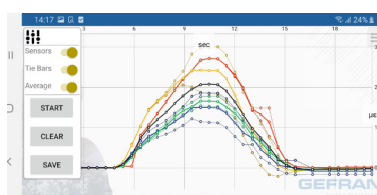
#### Settings

- Machine related data can be entered in the settings.  
(Machine name, bar diameter, tolerance, Young's Modulus)
- As well as the name of the Technician.

Measurement



Chart



Settings

## 8.6. Measuring the tie bar strain distribution



***During the tie bar strain measurement, the machine must not be operated or closed at high speed as vibrations can affect the measurement.***

### 8.6.1. Preparation

The sensor system must be activated in accordance with Chapter 8.3.1.

Before measuring, make sure that the sensors or the strain gauge are stretched and compressed (settle). This is done by activating the closing mechanism of the machine 2 to 4 times (closing and opening). Before any operation, press "RESET" in the display software.

As soon as the offset amounts to a maximum of 1 digit when the machine is open, the sensor system is ready to be used for measurements.

### 8.6.2. Measuring

The values displayed are bending compensated since two sensors facing each other are guided and averaged on the same measurement input. The values displayed in [ $\mu\epsilon$ ] correspond to the effective strain of the tie bar.

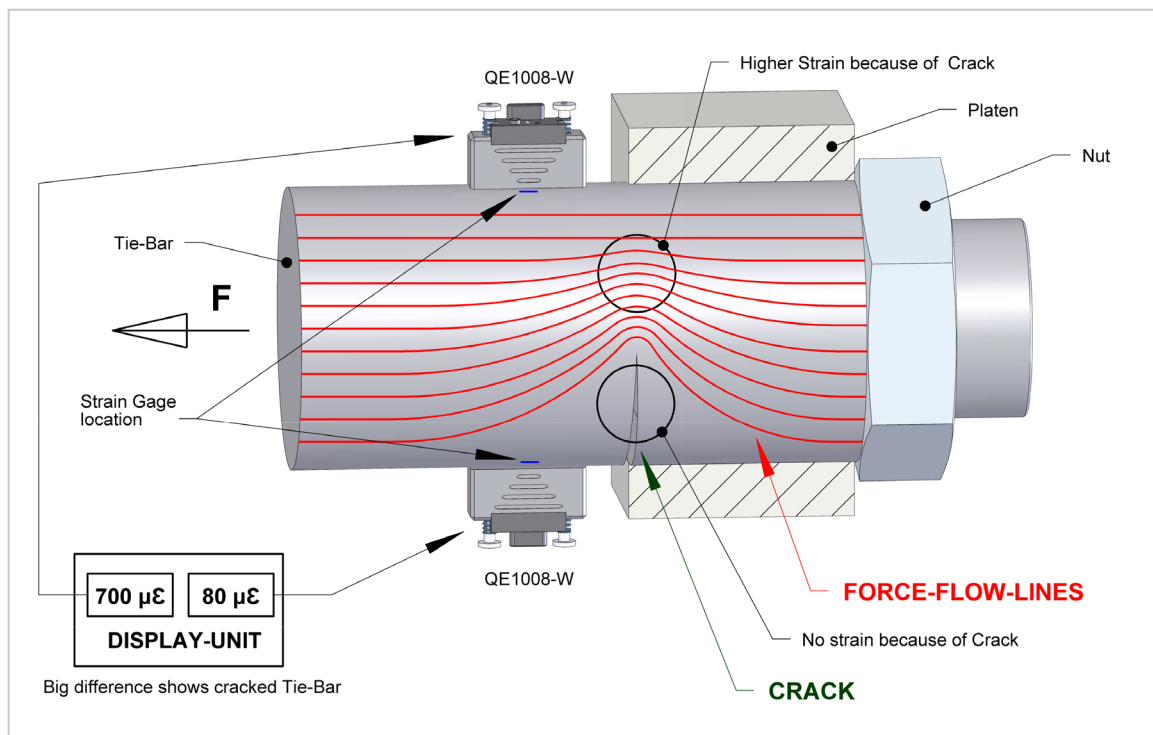
Example: Display software Inspectmate "355[ $\mu\epsilon$ ]" = 0.355mm length variation per meter tie bar

The force in the tie bar can be calculated from the effective strain [ $\mu\epsilon$ ]. The software Inspectmate displays 'kN', 'tons' or US-tons directly on the computer screen. The data can be saved in CSV file format and imported for example in a spreadsheet program for further use (see Chapter "Instructions for Inspectmate 4.0").

### 8.7. Measuring the tie bar bending (tie bar crack detection)

The software can display each sensor separately and thus measure the bending per tie bar simultaneously and without additional device.

If the inner bending is less than the outer one by factors (e.g.: 80 to 400 $\mu\epsilon$ ), this is an indication that the tie bar (the column) is cracked on the inside and no longer carries locally.



### 8.8. Assigning a QE1008-W sensor

The wireless receiver communicates with all sensors on the same channel. Each sensor is logged on to the corresponding assignment slot with a slot number.

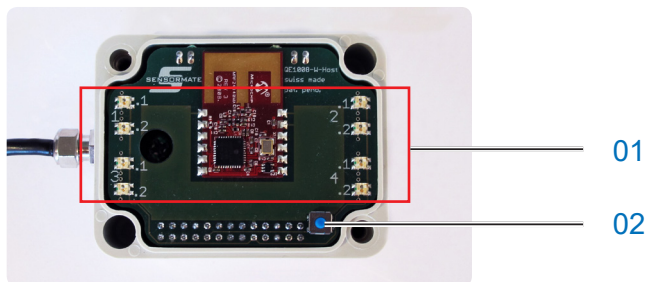
If a QE1008-W sensor can no longer be used, a new sensor must be reassigned in its place (e.g.: Sensor 1.1 → assignment slot number 1.1 at the wireless receiver). Adhesive labels for labelling the replacement sensor are enclosed.



A QE1008-W sensor can only be assigned to one assignment slot.

#### Sequence step 1

1. The wireless receiver must be connected to the computer. (the wireless receiver is automatically in operation mode)
2. Unscrew the cover of the wireless receiver.
3. Press the blue button<sup>02</sup> briefly once. The first assignment slot (1.1) is selected. Press the button several times in succession to select the respective assignment slots (apparent from the dual LEDs<sup>01</sup> which come on). Each dual LED (red/green) represents one assignment slot with the corresponding slot number. (e.g.: For assignment at 3.1 → press the blue button five times)

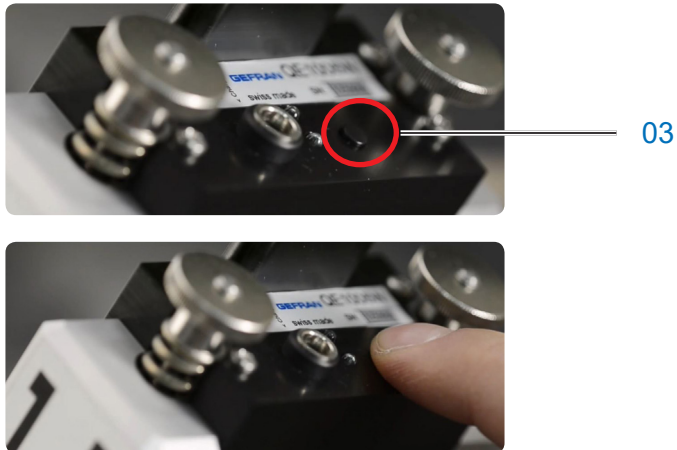


**01** 8 dual LEDs represent 8 assignment slots  
(1.1) (1.2) (2.1) (2.2) (3.1) (3.2) (4.1) (4.2)

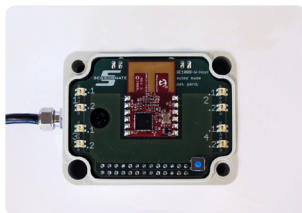
**02** Blue function key

4. The selected assignment slot is ready for a new assignment. The wireless receiver now searches for a sensor.

5. Remove the replacement sensor from the carrying case and place it carefully within range of the receiver.
6. Press and hold the button<sup>03</sup> on the sensor (~4 seconds) until the LEDs flash alternately red/green.



7. Release the button → the receiver automatically locates the QE1008-W sensor and assigns it to the previously selected address.



Receiver



Sensor

8. The sensor and receiver then switch back to operation mode.  
(→ the sensor and receiver both flash green)  
The sensor has been assigned to the receiver.

### 8.9. New assignment of all QE1008-W sensors

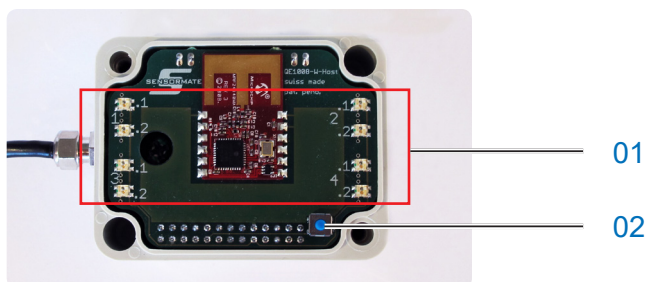
For a new assignment of all QE1008-W sensors, all current (saved) assignments of the wireless receiver can be deleted at the same time.



You cannot delete just one saved assignment on the receiver.

#### Sequence step 1

1. The wireless receiver must be connected to the computer. (the wireless receiver is automatically in operation mode)
2. Unscrew the cover of the wireless receiver.
3. Press and hold the blue button<sup>02</sup> ~10 seconds until all LEDs come on once.  
→ All assignments are deleted.
4. Press the blue button<sup>02</sup> briefly once. The first assignment slot (1.1) is selected. Press the button several times in succession to select the respective assignment slots (apparent from the dual LEDs<sup>01</sup> which come on). Each dual LED (red/green) represents one assignment slot with the corresponding slot number.



**01** 8 dual LEDs represent 8 assignment slots  
(1.1) (1.2) (2.1) (2.2) (3.1) (3.2) (4.1) (4.2)

**02** Blue function key

5. The selected assignment slot is ready for a logon or new assignment. The wireless receiver now searches for a sensor.
6. Remove the QE1008-W sensor and corresponding slot number from the carrying case and place carefully within range of the receiver.

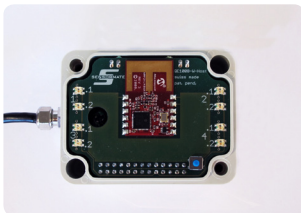
7. Press and hold the button<sup>03</sup> on the sensor (~4 seconds) until the LEDs flash alternately red/green.



03



8. Release the button → the receiver automatically locates the QE1008-W sensor and assigns it to the previously selected assignment slot with corresponding slot number.



Receiver



Sensor

9. The sensor and receiver then switch back to operation mode.  
(→ the sensor and receiver both flash green)
10. Assign the next sensor: Repeat the process of points 4 to 9 and select the corresponding slot number etc. until all QE1008-W sensors are assigned.

## 9. Troubleshooting

### Mounting

- The sensor is positioned too loosely
  - The sides of the magnets are not all seated evenly.
  - Tighten the knurled nut  $\frac{1}{2}$  turn.
  - The spiral spring may be too tight. → Loosen the knurled nut.

### Strain measurement

- The measurement does not produce a useful result

Bending compensated:	<ul style="list-style-type: none"><li>– Check if the correct sensors are fitted as pairs.</li><li>– Check if the sensor pair is placed exactly opposite each other (180°) and parallel to one another at the same position.</li></ul>
General:	<ul style="list-style-type: none"><li>– Has the correct unit been set in the display software?</li><li>– Are the sensors secure and do not wobble?</li><li>– Is the measurement site clean?</li><li>– Are the magnets clean?</li><li>– Is the foil or strain gauge damaged?</li></ul>

### Connection

- USB device

If the connection "Computer to USB device" does not work:  
→ Exit the display software → Reconnect the device → Restart the software.
- QE1008-W sensor

If the connection "Sensor to receiver" keeps disconnecting:  
→ Switch off the sensor, keep a distance of 1 meter to the receiver and switch it back on again. If the problem persists, the sensor must be reassigned whereby the correct slot number must be included.  
(→ see Chapter 8.6 Assigning a QE1008-W sensor)
- Why is the connection to the sensor not stable?

The receiver has determined and saved the best free frequency at the manufacturer's factory for the connection to the sensors. If the stored frequency is already being used by other devices in the vicinity of the customer, this can lead to an unstable connection.  
The reassignment of any QE1008-W sensor will resolve the problem.

### Display software

- Presentation

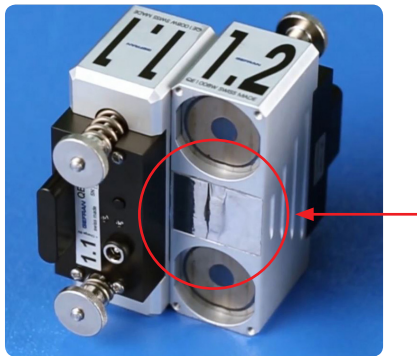
If the display software is not shown fully, the resolution of the screen is set too low.

## 10. Maintenance of QE1008-W sensors

### 10.1. Inspection

#### 10.1.1. Foil

To avoid damage on the foil, it should be checked always befor using the sensor. Immediately remove any impurities.



#### 10.1.2. Magnet

The surfaces of the magnets are ground and can rusting. They must therefore be protected by anti-corrosive. To ensure a long service life, we recommend to lubricate the magnetic surfaces after use with a paper towel soaked in anti-corrosive. First remove any impurities.

#### 10.1.3. Rechargeable Batteries



***Use only rechargeable batteries NiMH, size AAA!***

#### Charging the rechargeable batteries

1. Place the QE1008-W sensors carefully next to each other on a clean surface.  
(sensors in the supplied carrying case stowed are optimally positioned to recharge)
2. Connect the supplied charge bars to the sockets of the sensors
3. Connect the connection cables of the charger to the charge bars.
4. Connect the charger to the power supply (110 - 230VAC).  
→ The charging time is approx. 4 hours (the rechargeable batteries can be charged approx. 1000 times)

#### LED status display

Charging: → LED green flashes twice  
Fully charged: → LED green constantly on

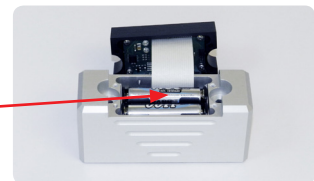
### Replacing the batteries

1. Switch off the sensor
2. Carefully remove the plastic cover.
3. Replace the rechargeable batteries
4. Close the cover using the four M2.5 x 20mm pan-head screws



Plastic cover

AAA  
rechargeable batteries  
NiMH



Normal AAA batteries can be used in an emergency. These may only be used temporarily and must be replaced as soon as possible with rechargeable batteries!

Normal AAA batteries must **NOT** be charged!

### 10.2. Servicing

The QE1008-W sensors should be calibrated every 12 months. In order to calibrate them, the sensors must be sent to Sensormate AG.

Trained and qualified staff of Sensormate AG can recalibrate the QE1008-W sensors.

## 11. Accessories and spare parts

### Accessories

Designation	Order code	Item number
Sensor (1 item)	QE1008-W	F065869
Wireless receiver	QE1008-W-USB-G	F061962
Charge bar	CB-4-QE1008-W	F062885
Software/ documentation	QE1008 software	F062884
Charger	POWER SUPPLY "EU" PLUG	F063165
Charger	POWER SUPPLY "UK" PLUG	F063166
Charger	POWER SUPPLY "AUST" PLUG	F063167
Charger	POWER SUPPLY "US/JP" PLUG	F063168

### Spare parts list

Designation	Order code	Item number
Rechargeable battery (1 item)	Battery, NiMH 1.2V AAA 1100mAh	TE-S-0014_00
Carrying case	Carrying case, HEAVY-4010 GR/B with insert	TE-S-0019_00
Magnet	Ground magnet foot	BG-M-0001_00
Knurled nut	Knurled nut M5	TE-M-0002_00
Plastic washer	Plastic washer M12	TE-M-0003_00
Compression spring	Standard compression spring	TE-M-0004_00
Screws for housing	M2.5x20 pan-head	TE-VE-0054_00

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