

Operating instructions

Original operating instructions
MYUB-20667-2-en-EN

Wireless sensor
MYUB

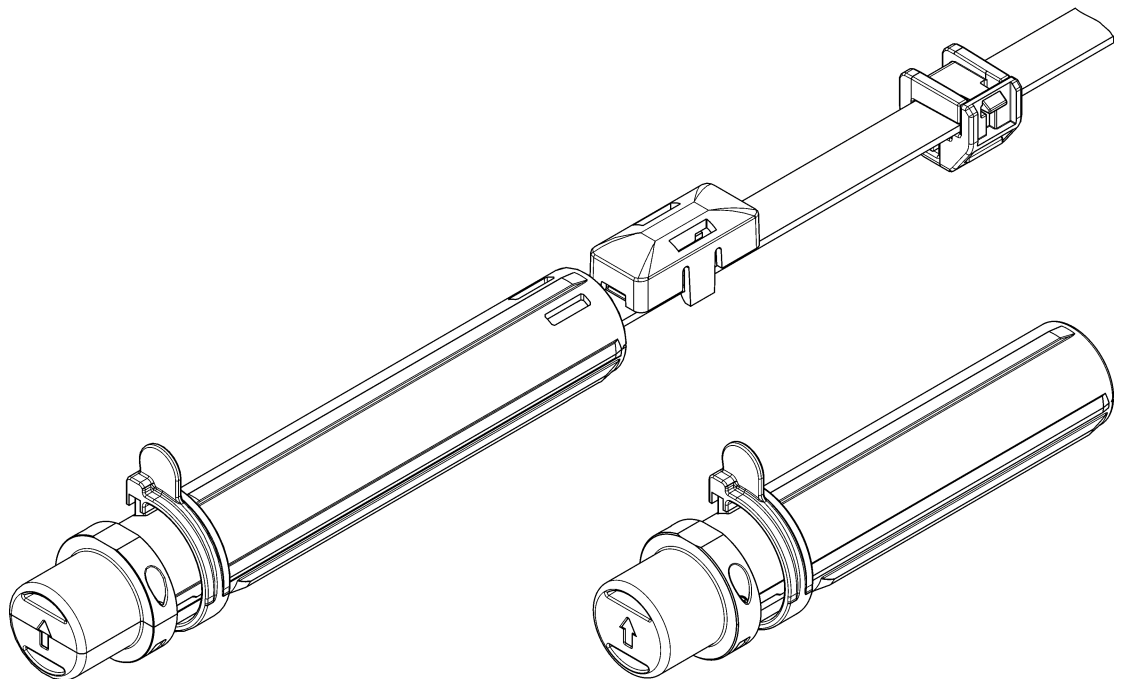


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1 Important information

1.1 Availability of the instructions

These instructions constitute part of the product.

- ▶ Retain the instructions and other applicable documents over the entire lifetime of the product and keep them at hand for reference.
- ▶ Pass on the instructions and other applicable documents to the next owner or operator of the product.

1.2 Scope of validity

Type	Designation
MYUB-PLUG	Wireless sensor, short design version. Installation in rollers or other intended machine parts.
MYUB-ROLL/1000 MYUB-ROLL/1250 MYUB-ROLL/1500	Wireless sensor, long design version. Installation in rollers or other intended machine parts.

1.3 Contact

- ▶ If you have any questions, please contact the responsible branch of the Bühler Group. See www.buhlergroup.com.
- ▶ Keep the instructions handy.
- ▶ Keep the machine number handy.

1.3.1 Response to these instructions

Requests and suggestions relevant to these instructions
technical.documentation@buhlergroup.com.

1.4 Personnel qualification

1.4.1 Mechanics

Personnel who work on mechanical devices must be technically qualified or have completed the training by the Bühler Group.

1.4.2 Electrician

Personnel who work on electrical devices must be technically qualified or have completed the training by the Bühler Group.

1.4.3 Bühler service personnel

The manufacturer's personnel who guide and carry out assembly and commissioning work as well as complex maintenance and repair work.

1.4.4

Service personnel of the operating company

Individuals who carry out maintenance and repair work must be technically qualified or have completed the manufacturer's training.

1.5

Presentation conventions

1.5.1

Explanation of the warning messages

DANGER
Type and source of the danger. The danger will result in death or severe injuries. ► Measures to guard against the danger.
WARNING
Type and source of the danger. The danger may result in death or severe injury. ► Measures to guard against the danger.
CAUTION
Type and source of the danger. The danger may result in injuries. ► Measures to guard against the danger.
CAUTION
Type and source of the danger. The danger may result in property damage. ► Measures to guard against property damage.

1.6

Abbreviations

Abbreviation	Meaning
BLE	Bluetooth Low Energy
RED	Radio Equipment Directive

1.7

Glossary

Term	Meaning
Product	Raw material or input product that runs through the machine.
Sensor	MYUB wireless sensor for measuring temperature and acceleration.

2 Safety

2.1 Intended use

The sensor is intended for installation in rollers or other rotating parts of a machine. The sensor must be installed in a defined metallic borehole or in a housing with a minimum wall thickness of 5 mm.

The borehole or the housing must be sealed dust-tight after mounting the sensor using the certified ATEX guard cap supplied.

The area inside the sealed borehole or the housing is ATEX zone-free. Any ignition sources that develop in the borehole cannot become effective in an outward direction.

Parts such as a roller may be used in zone 21 and zone 22 with a fitted sensor.

Since the sensor switches off at 95 °C at the measuring point "T0" (edge measurement point) as self-protection, measures must be adopted beforehand to keep the temperature below 95 °C, for example, adapting the machine settings or switching off the machine.

The sensor switches on again automatically after cooling at measurement point "T0". If the sensor does not send any data, or the entire monitoring system is not working properly, the machine must not be operated.

The max. permissible acceleration at the sensor location is 100 G. The unbalance introduced by the borehole and the sensor must be observed during fitting and removal, and compensated if necessary.

- ▶ If the sensor does not send any data, do not operate the machine.
- ▶ Use the sensor only for its intended purpose.
- ▶ Operate the sensor only with input products that are within the specified limit values.
- ▶ Operate the sensor only in accordance with these operating instructions.
- ▶ Use the sensor only as a monitoring element.
- ▶ Protect the ATEX guard cap from sunlight.

2.1.1 Environmental conditions of the sensor

Designation	Value	Unit
Ignition temperature of the products, min.	200	°C
Smoldering temperature of the products, min.	225	°C
Temperature of machine part/housing in the area of the ATEX guard cap (edge temperature measurement point "T0"), max.	95	°C
Temperature of machine part/housing outside the ATEX guard cap, max.	125	°C
Acceleration, max.	100	G

2.1.2

Sensor without ATEX marking

The sensor is used in an area without an explosive atmosphere (zone-free area). It is for that reason that the sensor does not fall under the ATEX Directive 2014/34/EU. An ATEX marking is therefore not required on the sensor.

- ▶ Note the nameplate.
- ▶ Keep the borehole of the sensor closed with the certified ATEX guard cap provided.
- ▶ Do not operate the machine with the borehole open.

2.2

Incorrect use

Incorrect use of the sensor can cause product contamination.

- ▶ Ensure that the sensor housing meets the specifications for installation in an ATEX zone.
- ▶ Ensure that the sensor housing is not damaged.
- ▶ Do not use the sensor unprotected in the product contact area.
- ▶ Do not operate the sensor with a damaged or modified ATEX guard cap.
- ▶ Protect the ATEX guard cap from direct sunlight.
- ▶ Do not use the sensor in an installation environment of zone 20 or higher.
- ▶ Do not use the sensor in an environment with flammable or explosive gases.

2.3

Technical state

Safety, functionality and availability are adversely affected if the sensor is operated in a defective state.

- ▶ Operate the sensor only if it is in a proper technical condition.
- ▶ Operate the machine with the sensor installed only if the sensor is working properly.
- ▶ Use only original spare parts.
- ▶ If the operating behavior of the sensor changes, check the sensor for faults.
- ▶ Rectify any faults immediately.
- ▶ The sensor housing must not be opened. The battery must not be replaced.
- ▶ Do not make unauthorized conversions or modifications to the sensor.

2.4

Personnel qualification

Unqualified personnel cannot recognize risks and are thus exposed to greater danger.

- ▶ Allow only technically qualified personnel to perform the activities described in these operating instructions.
- ▶ Ensure that the personnel complies with the local laws and regulations on safe and hazard-conscious work.
- ▶ Define and communicate work responsibilities.

2.5

Protecting against unexpected start-up

If the machine starts up unexpectedly, individuals working on the sensor could suffer severe injuries.

- ▶ Set the safety switch to "0" and lock it.
- ▶ Remove the key and keep it with you.

2.6 Protective devices

People are endangered when protective devices do not function effectively.

- ▶ Ensure that all the protective devices function effectively before operating the machine.

2.6.1 ATEX guard cap

The sensor may be operated only in combination with the certified ATEX guard cap supplied. The sensor must be installed and operated in zone 22 or zone 21, closed in the drill hole defined in chapter 3.4 with the certified ATEX guard cap supplied.

Damage to the ATEX guard cap results in loss of ATEX suitability, degree of protection and thread protection.

- ▶ Replace the guard cap with the provided tool.
- ▶ Maintain the tightening torque of the guard cap.
- ▶ Do not reuse the guard cap after removal.
- ▶ Replace a defective guard cap immediately.

2.7 Safety signs

Personnel are endangered if safety signs are not noticeable.

- ▶ Replace safety signs which are not noticeable.
- ▶ Do not remove or cover up the safety signs.

2.8 Sensor environment

Oil, dust or metal chips in the environment will cause the sensor to malfunction.

- ▶ Remove oil, dust and metal chips from the sensor environment and the thread prior to the installation of the sensor.

2.9 Battery

2.9.1 Lithium thionyl chloride battery

The sensor contains a lithium thionyl chloride battery. There is a risk of the battery exploding at temperatures above 150 °C.

- ▶ Replace the complete sensor if the battery is empty.
- ▶ Arrange for the disposal of the sensor and battery by the Bühler Group.

2.9.2 Maintenance

The battery lifetime depends on the operating temperature and the intervals set.

A warning is issued several weeks before the battery fails.

- ▶ If the warning is received, plan to replace the sensor.
- ▶ Do not operate the machine when the sensor is inactive.

2.10

Transportation

The sensor contains a lithium thionyl chloride battery. Lithium batteries are classified as hazardous materials and must be marked at the time of shipment.

- ▶ Do not forward the sensor by air freight when activated.
- ▶ Declare the shipment of the sensor in compliance with the international regulations applicable to lithium batteries.

2.11

Radio license

2.11.1

EU: Radio Equipment Directive RED 2014/53/EU

The sensor is certified under the Radio Equipment Directive RED 2014/53EU:

Bühler hereby declares that the radio equipment 'MYUB wireless sensor' complies with Directive 2014/53/EU. The full text of the EU declaration of conformity is delivered on paper with the equipment.

2.11.2

USA: Federal Communications Commission FCC part 15

The sensor is certified in accordance with FCC (Part 15, class A device):

Wireless sensor MYUB FCC ID: 2AQME-MYUB-PLUG

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications made to this equipment not expressly approved by Bühler may void the FCC authorization to operate this equipment.

2.11.3

Canada: Industry Canada RSS standard

Wireless sensor MYUB IC: 24130-MYUBPLUG

ISED (English):

This device complies with Part 15 of the FCC Rules and with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

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

ISED (French):

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'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

2.11.4

Other countries

- ▶ The wireless license depends on the installation site (country).
- ▶ Clear the wireless license with the Bühler Group.

3 Technical data

3.1 Environmental conditions

Designation	Value	Unit
Temperature range in storage	-20 ... +75	°C
Temperature range of machine part/housing in the area of the ATEX guard cap (edge temperature measurement point T0)	0 ... 95	°C
Temperature range of machine part/housing outside the ATEX guard cap	0 ... 125	°C
Radial acceleration (incl. vibration load)	0 ... 100	G
Relative humidity	10 ... 95	%
Air pressure	794 ... 1,050	hPa

3.2 Features

3.2.1 Temperature measurement

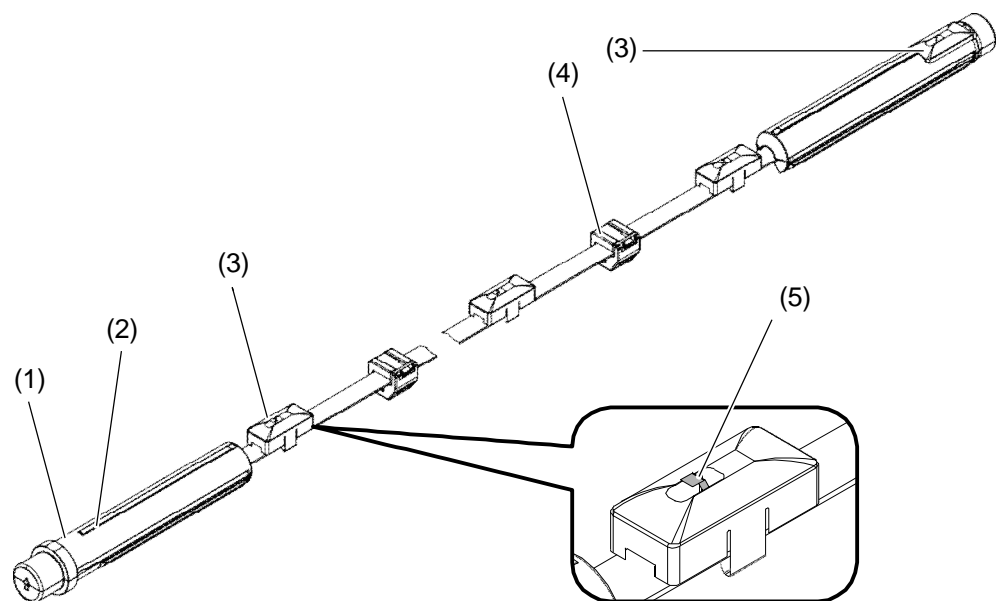


Fig. 3.1 Overview of MYUB-ROLL wireless sensor

- (1) Acceleration measurement point
- (2) Edge temperature measurement point "T0"
- (3) Temperature measurement points "T1 ... T12"
- (4) Stabilization element

Designation	Value	Unit
Measuring range, edge temperature measurement point "T0"	0 ... +95	°C
Measuring range, temperature measurement point "T1 ... T12"	0 ... +125	°C
Measurement accuracy 0 ... +100 °C	±1	°C
Measurement accuracy +101 ... +125 °C	±2	°C
Temperature range, acceleration measurement	0 ... +85	°C
Sensor switch-off, edge measurement point	> +95	°C

3.2.2

Acceleration measurement

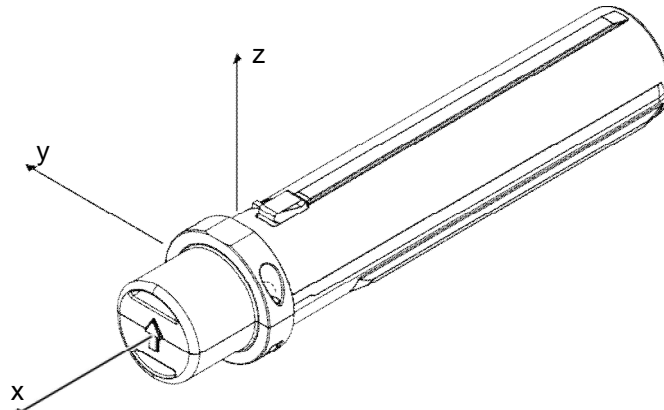


Fig. 3.2 Axis definition of acceleration measurement

Designation	Value	Unit
Measuring range, acceleration in the x, y and z axes	-100 ... +100	G
Transfer of mean value in acceleration in the x, y and z axes	-100 ... +100	G
Transfer of acceleration variance in the x, y and z axes	0 ... 10,000	G ²
Working hour counter	0 ... 4.3	bn min.

3.2.3

Data transfer

Designation	Value	Unit
Standard interval for data transfer	5	min.
Interval for data transfer at a higher temperature (threshold 1 reached)	2	min.
Interval for data transfer at a higher temperature (threshold 2 reached)	30	sec.
Battery life	2 ... 5	years

3.3

Weights

Designation	Value	Unit
MYUB-PLUG incl. ATEX guard cap	40 ± 3	g
MYUB-ROLL/1000 incl. ATEX guard cap	154 ± 5	g
MYUB-ROLL/1250 incl. ATEX guard cap	180 ± 5	g
MYUB-ROLL/1500 incl. ATEX guard cap	200 ± 5	g

3.4

Dimensions

3.4.1

Dimensions of MYUB-PLUG

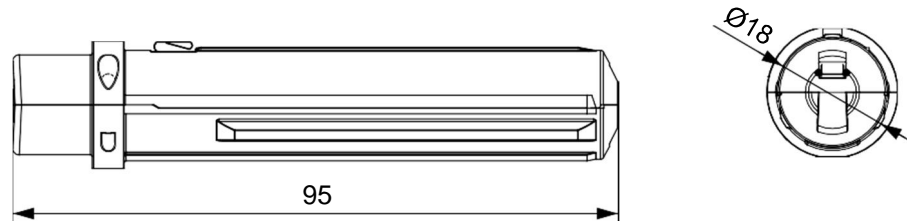


Fig. 3.3 Dimensions of MYUB-PLUG

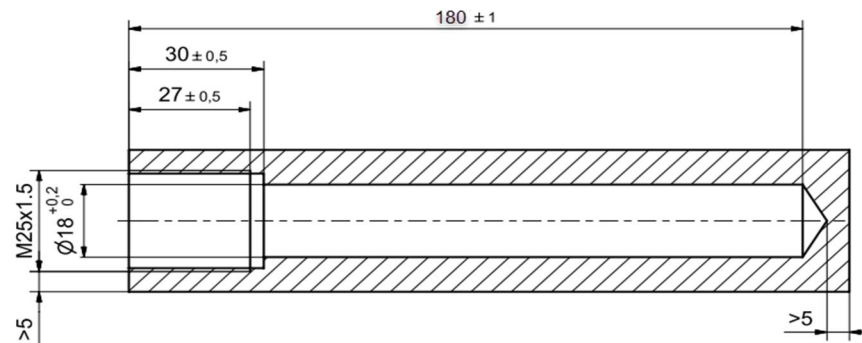


Fig. 3.4 Dimensions of MYUB-PLUG drill hole

The dimensions and tolerances of the drill hole must be adhered to in order to ensure ATEX conformity and operational safety.

3.4.2

Dimensions of MYUB-ROLL

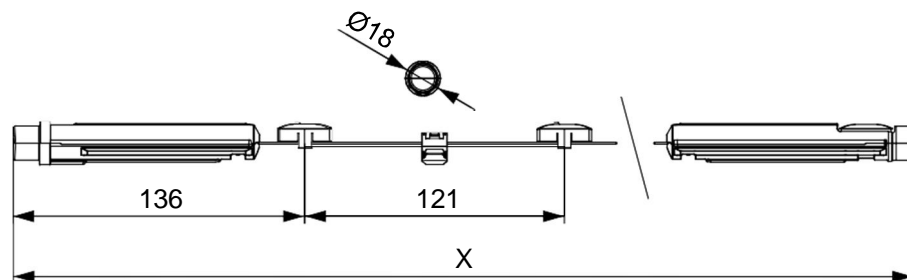


Fig. 3.5 Dimensions of i-Roll

Designation	Value	Unit
MYUB-ROLL/1000, length X =	975	mm
MYUB-ROLL/1250, length X =	1,225	mm
MYUB-ROLL/1500, length X =	1,475	mm

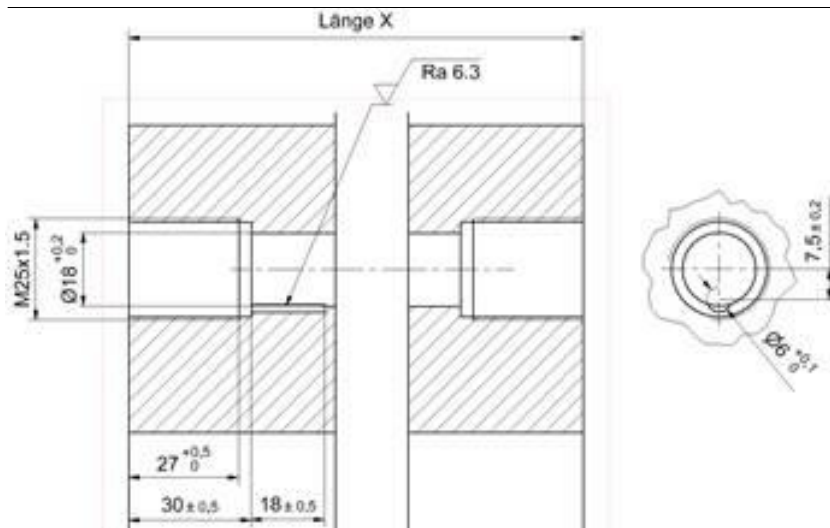


Fig. 3.6 Dimensions of MYUB-ROLL drill hole

The dimensions and tolerances of the drill hole must be adhered to in order to ensure ATEX conformity and operational safety.

3.4.3

Dimensions of ATEX guard cap

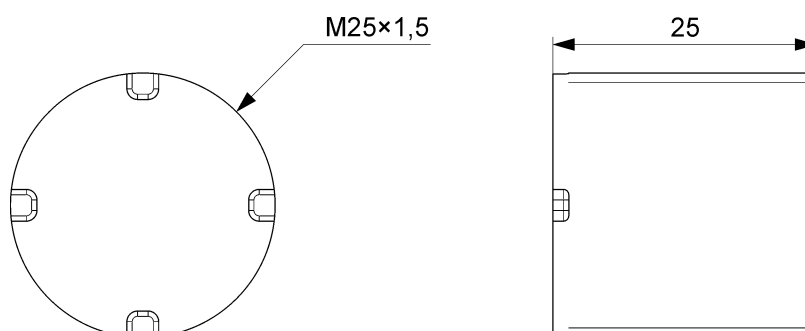


Fig. 3.7 Dimensions of ATEX guard cap

3.4.4

Dimensions of spacer ring

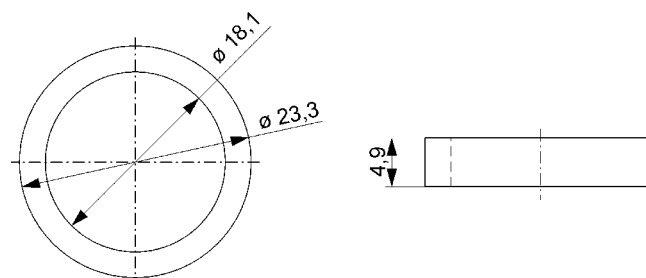


Fig. 3.8 Dimensions of spacer ring

3.5

Electrical data

Designation	Value	Unit
Power supply, lithium thionyl chloride battery, nominal voltage	3.6	V
Data interface, Bluetooth Low Energy (BLE), version	4.2	
Degree of protection when uninstalled	IP20	

4 Description

4.1 Identification

4.1.1 Nameplate of MYUB-PLUG

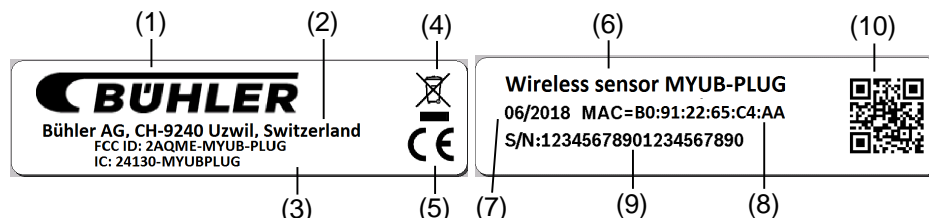


Fig. 4.1 Nameplate of MYUB-PLUG

- | | |
|----------------------------|-------------------------|
| (1) Manufacturer | (6) Product name/type |
| (2) Manufacturer's address | (7) Date of manufacture |
| (3) FCC/IC notice | (8) MAC address |
| (4) Disposal instructions | (9) Serial number |
| (5) CE mark | (10) QR code |

4.1.2 Nameplate of MYUB-ROLL

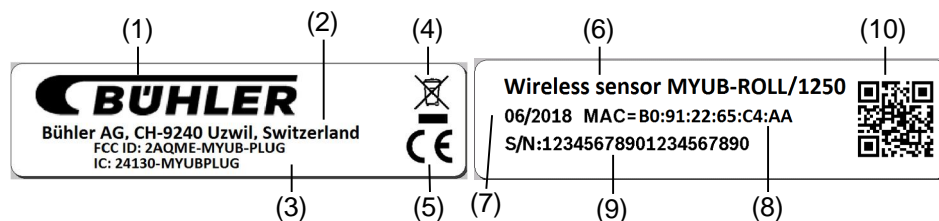


Fig. 4.2 Nameplate of MYUB-ROLL

- | | |
|----------------------------|-------------------------|
| (1) Manufacturer | (6) Product name/type |
| (2) Manufacturer's address | (7) Date of manufacture |
| (3) FCC/IC notice | (8) MAC address |
| (4) Disposal instructions | (9) Serial number |
| (5) CE mark | (10) QR code |

4.1.3 Type code

Product name/type	Wireless sensor MYUB-PLUG	Wireless sensor MYUB-ROLL/1000	Wireless sensor MYUB-ROLL/1250	Wireless sensor MYUB-ROLL/1500
Number of temperature measurement points	1	9	11	13
BLE device name	MYUB-PLUG	MYUB-ROLL/1000	MYUB-ROLL/1250	MYUB-ROLL/1500

4.1.4 ATEX marking, sensor

The sensor does not have any ATEX marking and may not be used in a hazardous area without a compliant machine part/housing (see chapter 3.4) and an ATEX guard cap.

4.1.5

ATEX marking, ATEX guard cap, for use in zone 21/22

The ATEX marking indicates the conditions under which the machine may be used in or connected to a hazardous area.

Due to space limitations, the full ATEX marking is not entered in the ATEX guard cap.

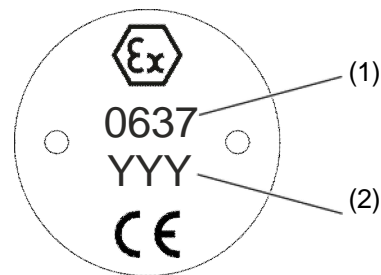



Fig. 4.3 ATEX guard cap


- (1) Inspection body number
- (2) Production batch number

Scope of validity	ATEX marking
ATEX	II 2D T125 °C 0 °C ≤ TA ≤ 100 °C
Standard EN 60079-0	Ex tb IIIC T125 °C Db 0 °C ≤ TA ≤ +100 °C

 II 2D T125 °C 0 °C ≤ TA ≤ 100 °C

Marking	Meaning
 ATEX symbol	
II	Equipment group: Installation site above ground
2D	Equipment category: for zone 21 (dust atmosphere)
T	Maximum expected surface temperature in °C depending on the temperature of the machine part/housing.
T _a	Environmental temperature range in °C

 Ex tb IIIC T125 °C Db 0 °C ≤ TA ≤ +100 °C

Marking	Meaning
 ATEX symbol	
tb	Degree of dust ignition protection by housing
IIIC	Group: Conductive dust
T	Maximum expected surface temperature in °C depending on the temperature of the machine part/housing.
Db	Equipment protection level (EPL): Equipment with a “high” protection level for use in flammable dust atmospheres in which there is no risk of ignition in normal mode or in the event of foreseeable faults/malfunctions.
T _a	Environmental temperature range in °C

4.2

Overview of sensor

4.2.1

Overview of MYUB-PLUG sensor

The sensor has 1 edge temperature measurement point "T0".

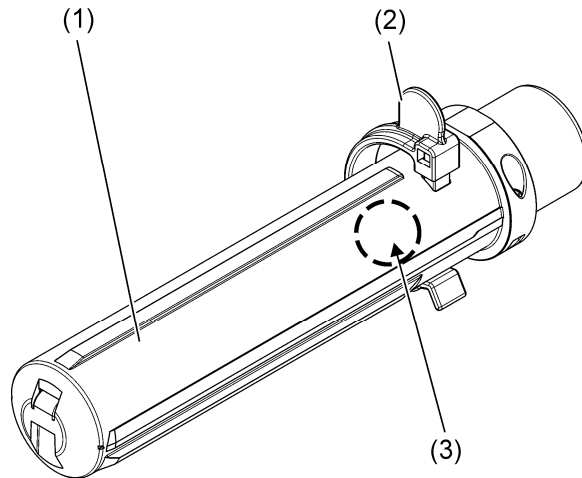


Fig. 4.4 Overview of the MYUB-PLUG sensor

- (1) Housing
- (2) Magnet clip
- (3) Edge temperature measurement point "T0"

4.2.2

Overview of the MYUB-ROLL sensor

Depending on its length, MYUB-ROLL has a corresponding number of temperature measurement points (table, pg 14).

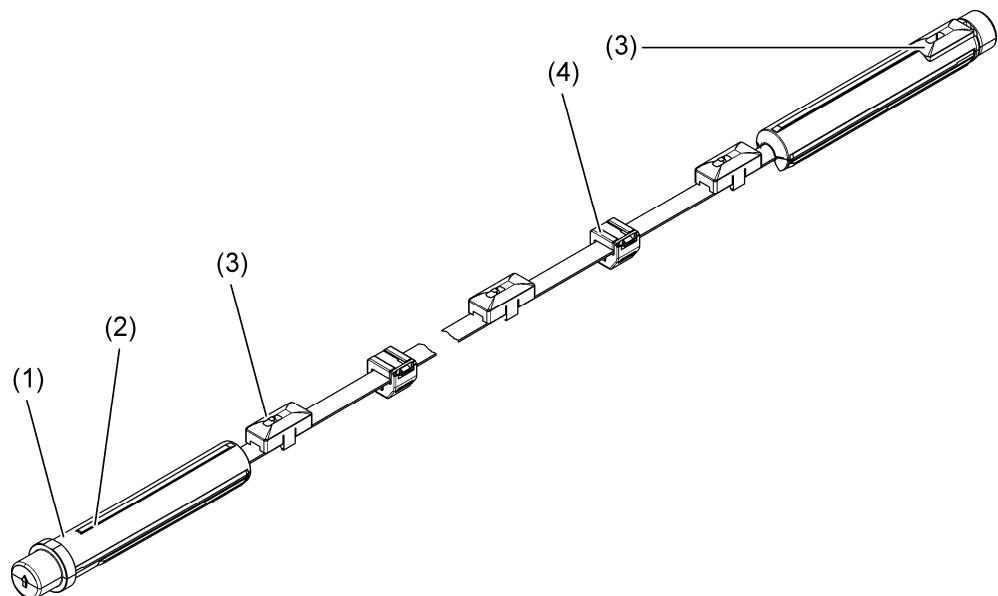


Fig. 4.5 Overview of the MYUB-ROLL sensor

- (1) Acceleration measurement point
- (2) Edge temperature measurement point "T0"
- (3) Temperature measurement points "T1 ... T12"
- (4) Stabilization element

4.3

Protective devices

The protective devices protect against dangers associated with operating the machine.

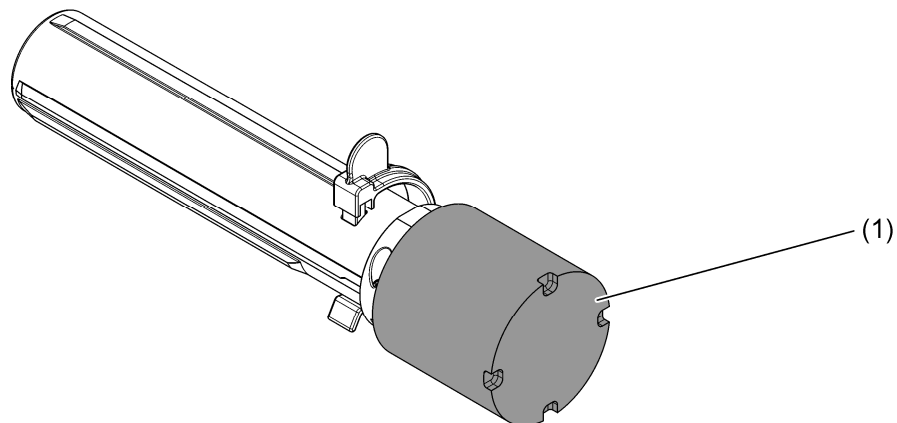


Fig. 4.6 Protective device, valid for MYUB-PLUG

(1) ATEX guard cap

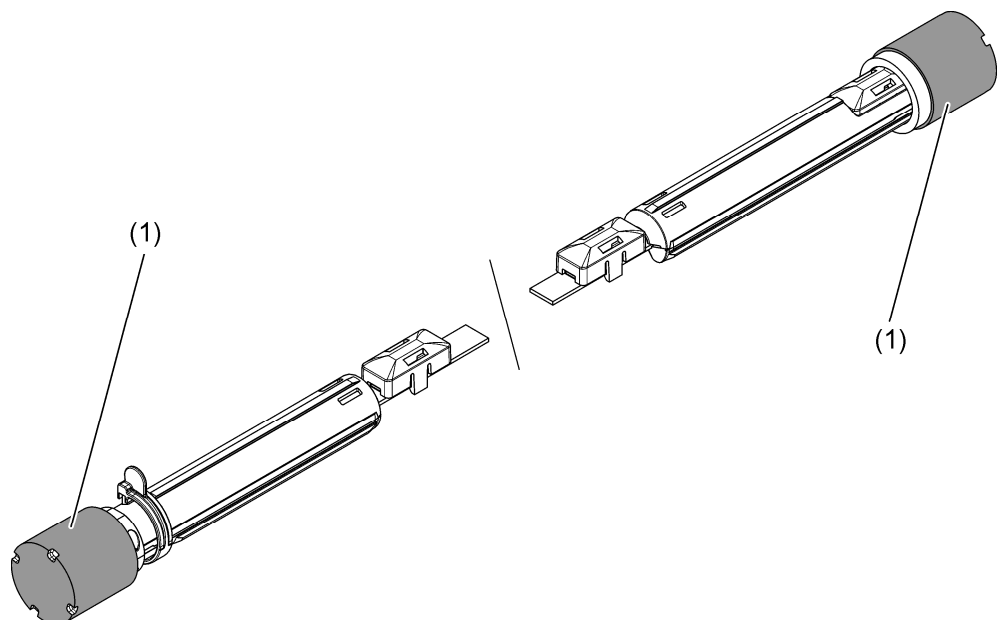


Fig. 4.6 Protective devices, valid for MYUB-ROLL

(1) ATEX guard cap

(2) Spacer ring

5 Transportation

5.1 Packaging symbols

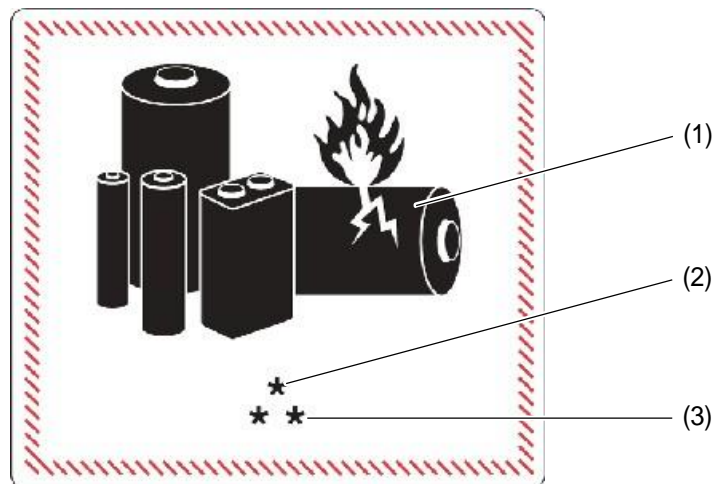


Fig. 5.1 Packaging symbol, lithium battery

- (1) Lithium battery
- (2) UN number
- (3) Additional information

5.2 Checking the delivery

- Check that the delivery is complete in accordance with the shipping note.
- Report any missing parts or transportation damage.
See Page 4, Chapter “Contact”.

5.3 Putting into intermediate storage

Important

High temperature fluctuations can cause condensation in the sensor.
High temperatures reduce the battery lifetime.

- Avoid temperature fluctuations and high storage temperatures.

- Note the packaging symbols.
- Leave the sensor and sensor parts in their original packaging until installation.
- Do not store the device outdoors.
- Protect the sensor against the effects of the weather.

5.4 Transporting the sensor

Comply with the international regulations on transporting sensors by air freight:

https://tadiranbatteries.de/pdf/IATA_Lithium_Battery_Guidance_2018.pdf

- Transport the uninstalled sensor in its original packaging.

6 Mounting



WARNING

Product contamination.

Parts of the sensor can enter the product.

- ▶ Arrange for the sensor to be mounted by the Bühler Group.
- ▶ Arrange for the sensor to be mounted by the Bühler Group.

7 Commissioning

7.1 Activating the sensor

1. Start the machine.
2. Check the data supplied by the sensor for accuracy and plausibility.

7.2 Checking the commissioning

No.	Check	✓
1	The sensor was commissioned and checked by authorized and technically qualified personnel.	
2	There are no foreign objects in the machine.	
3	The sensor data is received and is plausible.	

8 Operation

8.1 Checks during operation

Prerequisites:

- Machine is running.
- ▶ Check the sensor for correct function. Check if the measured data is transmitted.
 - No data is transmitted. Stop the machine and replace the sensor immediately.
 - The sensor or the ATEX guard cap is defective. Stop the machine and replace the sensor or the ATEX guard cap immediately.
- ▶ Allow only the Bühler Group to perform pending software updates.

9 Decommissioning

9.1 Dismounting the sensor

- ▶ Remove the sensor.



WARNING

Explosion of the battery.
Thermal or mechanical damage to the battery.

- ▶ Do not drill the ATEX guard cap.
- ▶ Do not heat the ATEX guard cap to release it.

- ▶ Compensate unbalance generated by removing the sensor using an equivalent weight. See chapter 3.3.

9.2 Storing the sensor

- ▶ Store the sensor only in its original packaging.
- ▶ Store only unused sensors.
- ▶ Ensure that the ring magnet of the sensor is not removed.
- ▶ Do not expose the sensor and the ATEX guard cap to direct sunlight.

9.3 Disposing of the sensor

- ▶ Return the sensor to the Bühler Group.

