

WearSense Hugger Sensor R5.x User Manual

1. Introduction

Thank you for choosing the WearSense Hugger Sensor.

This user manual provides instructions on how to effectively use and maintain the sensor.

The sensor is designed to be used in conjunction with the WearSense portal, where the data can be viewed and interacted with.

2. Getting Started

2.1. Sensor Attachment

Attach the sensor to the chute liner by either securing it to a fastener or directly screwing it into the asset.

Ensure a secure attachment for accurate measurements, as vibrations may cause it to loosen over time.

Do not over tighten the fastening to prevent damage to the sensor.

2.2. Commissioning

After installing the sensor into an asset part, record the serial number and location on the corresponding arrangement drawing.

Contact the WearSense support team with this information to reflect the commissioning into the WearSense portal.

3. Operation

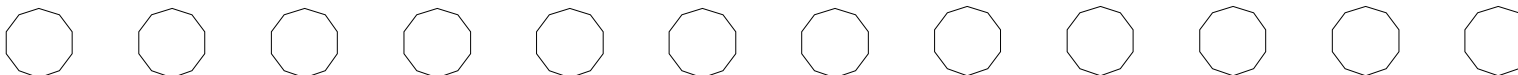
3.1. Normal Operation

Normal operation for the sensor involves waking up periodically, take one or more measurements (depending on settings), attempt to send this data back to a nearby gateway, and finally return to sleep.

Measurement	Default period
Wear depth	Every 6 hours
Vibration (3-axis)	Every 6 hours
Orientation	Every 6 hours

These defaults can be changed by contacting the WearSense support team.

These measurement intervals are individually tracked, meaning the sensor may wake up faster than expected since the last time it woke up.



3.2. Forced Wake Up

The sensor includes a magnetic switch that can be activated by swiping a magnet briefly over the body. Activating this switch will cause the sensor to wake up immediately and perform a measurement instantly (for each configured).

Be careful not to hold it over the switch for longer than a few seconds, as doing so will switch this functionality off and the WearSense support team will need to reset it.

This automatic magnetic switch disabling is provided for use in magnetic environments in order to prevent erratic measurement periods and reduction of battery life.

3.3. Status Indications

The sensor includes a transparent window in which a colored status indicator can be seen.

Upon wakeup, a short green pulse will always be shown.

Upon going back to sleep, a final status indication will be shown, summarized in the following table.

Status Indication Pattern	Meaning
Short green pulse	Measurement(s) were taken successfully, and communicated with gateway successfully.
Short red pulse	No gateway could not be communicated with. History storage will be used if available and measurement(s) were taken successfully.
2 short red pulses	Communications successful with gateway, however there was a problem performing the wear depth measurement.
3 short red pulses	Communications successful with gateway, however there was a problem performing a measurement other than the wear depth, for example, vibration measurement.

3.4. History Storage

The sensor includes a small history storage area, which can be used to store wear depth measurements.

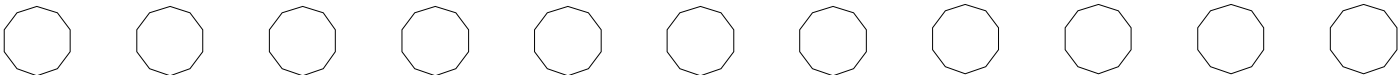
Approximately 100 measurements can be stored.

The history storage is used when the following conditions are met:

1. The gateway could not be communicated with.
2. The history storage interval has passed.
3. Optionally, only stored whenever the wear depth measurement has changed since the last one.
4. The history storage is not full, or optionally, an overwriting strategy is set (such as overwrite oldest).

Other measurement types are not currently supported.

Contact the WearSense support team for help with this feature.



4. Troubleshooting

Please contact the WearSense support team for help with issues listed below.

4.1. Communication failure with gateway

- While the gateway is communicating with another sensor, a temporary failure is expected. Try again later.
- Ensure the gateway is operating normally.
- Ensure there is sufficient wireless range. Try moving the sensor closer to the receiver antenna. Objects obstructing the line of sight, especially metallic ones, will reduce the effective range.
- The internal battery may be going flat.

4.2. Data for one or more measurements is not working or incorrect

- The sensor settings may be incorrect.
- The sensor may be faulty and needs replacing.

4.3. History storage not working

- The sensor settings may be incorrectly set.
- The history storage may be full and cannot store anymore data.

4.4. Magnetic switch not working

- The magnetic switch functionality has been disabled and needs to be switched back on.

5. Decomissioning & Disposal

When the asset part the sensor resides in is replaced, the sensor should be removed and decomissioned from the WearSense portal at the date of removal. Contact the WearSense support team for assistance with this.

As the sensor contains a lithium battery, please follow the appropriate regulations and guidelines set out by your local authorities or waste management facilities.

Do not dispose of the device or battery in regular household waste.

6. Safety

This product is only intended for use in restricted access areas and installed by trained personnel.

This product is only for use in locations where children are not likely to be present.

7. Technical Specifications

Specification	Value
Model number	MM1774190
Wake-up interval	5 mins to 24 hrs (programmable)
Wear depth measurement resolution	1mm
Operating temperature	-20oC to +60oC

Battery	ER14250H Lithium
Battery chemistry	Li-SOCl ₂
Battery life	>5 years (with default settings)
Battery replaceable	No
Wireless range	<50m (non-obstructed; air)
Wireless protocol	802.15.4
Wireless frequency band	2.4GHz (ISM band)
Wireless transmit power	+2dBm

8. Regulatory Information

8.1. FCC

FCC ID: 2BFPRMM1774190

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

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

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

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

Warning: Any changes or modifications not expressly approved by the grantee could void the user's authority to operate this equipment.

8.2. CE

CE ID: TBD

8.3. RCM

RCM ID: TBD

9. Technical Support & Contact Details

For technical support and further assistance, please contact our support team using the following email address. Our dedicated team will be available to address your queries and assist you.



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247 Berkshire Road
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