

User Manual

Trackbar - Magnetbar HW4

FCC ID: 2BL5E-MAGNETBARHW4

Purpose of the Product:

The Magnetbar by SKAIN GmbH (Trackbar) is a fitness equipment sensor. This device is designed to capture and transmit positional data measured on fitness equipment to an end device. This sensor is compatible with various pin-loaded fitness equipment, often referred to as selectorized strength machines.

Features:

Positional Data Transmission:

The sensor is designed to estimate the position of the magnet within the pin used to select the weight for training. By measuring the magnetic field along the trajectory of the pin with a variety of sensors, the estimated position of the pin is calculated. This estimation allows for the transmission of the selected weight and current trajectory (movement) to an end device.

Usage:

The sensor data can be used for workout analysis and live feedback, allowing users to track their progress over time and identify areas for improvement. By analyzing trends in the amount of weight lifted and identifying areas where the user may be experiencing difficulty or plateauing in their progress, the sensor data provides valuable insights that help users refine their training programs and achieve their fitness goals.

Compatibility & Requirements:

The Fitness Equipment Sensor is compatible with a wide range of selectorized strength equipment and can be integrated into these machines. It works best with machines that have a front cover, also known as a shroud.

Requirements for Machines with a Front Cover (Shroud):

1. The selector pin of the machine must contain a magnet with a holding strength of at least 2 kg and no more than 10 kg.
2. The sensor must be positioned within 3 to 8 cm of the vertical trajectory of the pin.
3. The sensor must be installed on the rear side of the shroud, inside the machine.
4. After installation, the minimum distance between the sensor and the weight stack must be 1 cm at all times.

Requirements for Machines without a Front Cover (Shroud):

1. An extra magnet with a holding strength of at least 2 kg and no more than 10 kg must be applied to the top weight plate.
2. The sensor must be positioned within 3 to 8 cm of the vertical trajectory of the extra magnet.
3. After installation, the minimum distance between the sensor and the weight stack must be 1 cm at all times.

Installation:

The fitness equipment sensor must be installed by a Trackbar-qualified technician. To install the sensor, follow the process below:

1. **Placement:** Position the sensor vertically along the trajectory of the pin. Ensure the position meets the requirements stated above.
2. **Attachment:** Fix the sensor to the machine using the glue pads on the back of the sensor. The installer must ensure the glue pads provide sufficient strength to hold the sensor in position. If the installer cannot ensure this, additional support must be added to secure the sensor, or the installation must be aborted.
3. **Power Connection:** Attach the power source to the sensor.
4. **Cable Management:** Secure all cables to ensure a good connection. Cables should not be under tension, especially at the connectors.
5. **Positioning:** Ensure the sensor does not protrude beyond any shrouds or structures of the machine, which could cause harm to the user.
6. **Interference:** Ensure the sensor is positioned so that it does not interfere with the user or the function of the machine in any way.
7. **Safety:** Ensure that all edges, corners, cables, connectors, and other parts of the device are positioned so that they do not present any hazard at any time.

Data Transmission:

The sensor can be paired with a peripheral device, such as a computer, smartphone, or tablet, to transmit positional data.

Two types of communication are available:

- **UART via USB Cable**
- **Wireless via Bluetooth Low Energy**

Access to both data transmission options is available through SDKs (Software Development Kits), which can be requested from Trackbar. Terms and conditions apply.

Technical Data:

<u>Variants</u>	
Weight	310 g
Color Options	Aluminum Nature
Customizable Options	Custom Length
Dimension (WxHxD)	20 x 10 x (800-1600 mm)
Materials	Housing: • Aluminium Anodized • PLA (Polylactic Acid)
Power Consumption	0,2 Ah
Power Supply	Input Voltage: 3.7-5.5 V Source: Trackbar Power Bank or USB
Connectivity Options	USB-C or Bluetooth Low Energy
Sensor Technology	Multidimensional Array
Temperature Range	-10°C to 60°C
Measuring Frequency	up to 200 Hz
Bluetooth Range (if applicable)	up to 5m, depending on the application of the sensor
Bluetooth Version (if applicable)	up to Bluetooth 5.0
Bluetooth Mode	Bluetooth Low Energy
Measuring Range	120 mm to (Sensor Length (max. 1600mm) - 120 mm)
Measuring Accuracy	±4 mm
MCU	NRF52840
Operating Frequency	64 MHZ, 32kHz

User Manual Warnings

Class B Warnings

Class B

The FCC Wants You to Know

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

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

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception.

FCC Warning (Modification statement)

SKAIN GmbH has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

RF Exposure Warnings

RF Exposure - This device has been tested for compliance with FCC RF exposure limits in a portable configuration. This device must not be used with any other antenna or transmitter that has not been approved to operate in conjunction with this device.

FCC Regulatory notices

Interference statement (if it is not placed in the device)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Wireless notice

This device complies with FCC/ISED radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines (RF) Exposure rules. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.