

# DX5.0

## Installation & User Manual

Manufacturer	Humotion GmbH Heerdestraße 23 D – 48149 Münster Germany <a href="http://www.humotion.net">www.humotion.net</a>
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Model Number	DX5.0
SmarTracks Diagnostics Version	v.3.17
Smart Run Version	v.3.5.9
Manual Version	v.2.1
FCC ID	2AO4RDX5036SP

Made in Germany

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## 1. DX5.0 General Information and Specifications

The DX5.0 is a movement monitoring device about the size of a Flash drive. It is capable of recording a vast range of data. The recorded data can be easily exported into a useable format for independent analysis. Control of and interaction with the DX5.0 (data recording, data transfer, battery charging) is enabled through usage of the SmarTracks Diagnostics software as well as the through the Smart Run mobile application.

### Dimensions [LxWxH mm]

- Size: 64x22x13mm
- Weight: < 15g

### Battery

- Lithium-Polymer

### Battery Capacity [mAh]

- 240

### Charging [via USB standard (< 500mA)]

- full charge < 3hrs
- 80% charge from empty < 2hrs

### Measurement Time

- > 11 hrs @500Hz Sample Rate

### Memory Storage

- 512Mbyte flash
- > 57 hrs @500Hz Sample Rate (lossless compressed)

### Storage Format

- Proprietary lossless compression format (DCM). Allows bit accurate unpack.
- Data Rate: <9.0 Mbyte / hrs. @500Hz (lossless compressed)

### External Connections

- USB (for data transfer and charging)
- Bluetooth LE (for data transfer):
  - Frequency range: 2402-2480MHz
  - Transmit power: +8dBm

### Sensors

- Accelerometer: 3D acceleration (+/- 16g with 16bit resolution)
- Gyroscope: 3D gyroscope (+/- 2000deg/sec with 16bit resolution)
- Magnetometer: 3D magnetic (+/- 1.5 milli Tesla with 16bit resolution)
- System temperature in deg C

### **Housing**

- 3D printing ABS housing
- Water resistant IP44

### **SmarTracks Diagnostics**

- Version: v.3.17
- Required Disk space: 23 MB
- System requirements:
  - Operating system: Windows 10 32bit / 64bit or higher
  - Microsoft .NET Framework v4.5 or higher

### **Smart Run**

- Version: v.3.5.9
- Mobile device requirements:
  - iOS 8.0 or newer
  - Minimum Android 5, recommended Android 7.1+
  - GPS, Compass, Accelerometer and Gyroscope required
  - Bluetooth 4+

### **USB Cable**

- Length: 200cm

## 2. Safety Instructions

Non-compliance with this safety information may lead to fire, electric shocks or other injuries, or may lead to damage of system components.

Do not drop the DX5.0 and do not dismantle, open, break, bend, deform, drill through, crush, burn or paint it. Do not heat in a microwave and do not insert foreign objects into the device.

When connecting the DX5.0 to your computer, we recommend using the supplied USB cable to protect your computer from humidity and dirt. If you need to attach the sensor directly make sure there is no moisture or dirt on the sensor! Do not try to dry the measuring equipment with an external heat source such as a microwave or a hot air blower.

Never try to repair the measuring device yourself.

## 3. Information on Disposal and Recycling

You must dispose of the DX5.0 properly according to the legally valid environmental directives and legislation. Since the DX5.0 contains electronic components and a battery, the device may not be disposed of as normal domestic waste. If you want to dispose of your measuring device, you can consult your local authority regarding disposal and recycling options.

## 4. Installation of SmarTracks Diagnostics

The Humotion SmarTracks Diagnostics software is either supplied on an USB stick, or you will be given access details for the Humotion download server. Its intended use is on a PC with a Microsoft Windows operating system Windows 8.1 or Windows 10.

To install SmarTracks Diagnostics when the software is supplied on a USB stick:

1. Connect the supplied USB stick.
2. Open the "SetupSmarTracks.msi" file.
3. Select "Next" and follow the rest of the instructions.

To install SmarTracks Diagnostics when the software is downloaded:

1. Download the setup file.
2. Depending on your operating system, you can get a notification screen about running an unrecognized app.
3. Click "More info".
4. Click "Run anyway" and follow the rest of the instructions.

**NOTE:** The software depends on Microsoft .NET Framework version 4.5 or higher. Please make sure that an up-to-date Microsoft .NET Framework has been installed on your computer before starting with the installation of SmarTracks Diagnostics. Further information can be found here: <https://www.microsoft.com/en-us/download/details.aspx?id=55170>

## 5. Usage of Humotion DX5.0

### 5.1. With SmarTracks Diagnostics

#### Data Recording

To record data a measurement has to be started and/or stopped on the Humotion DX5.0. To start and stop a measurement:

1. Plug the USB cable into your computer's USB port. Plug your Humotion DX5.0 USB connector into the other end of the USB cable.
2. SmarTracks Diagnostics will automatically recognize and display information about the connected Humotion DX5.0.
3. Press 'Start Measurement' and fill out the required fields. Press 'OK'.
4. Unplug your Humotion DX5.0 from the USB cable
5. A measurement has been started and data is recorded on the Humotion DX5.0.
6. To stop the measurement, plug the USB cable into the USB port of the Humotion DX5.0.

**NOTE:** The Humotion DX5.0 requires a minimum battery voltage of 3.8 V for recording measurement data. Do not start any measurement when the battery voltage is lower than 3.8 V. Charge status of the battery is shown in the bottom left of the SmarTracks Diagnostics software.

## Data Transfer

Each time a measurement is stopped by connecting the Humotion DX5.0 with your computer's USB port recorded data is transferred automatically to your computer.

Progress of current data transfer is shown in the SmarTracks Diagnostics software.

**NOTE:** Do not unplug the USB cable from the Humotion DX5.0 before data has been transferred completely. Unplugging during an active data transfer may lead to permanent loss of recorded data on the Humotion DX5.0.

## 5.2. With Smart Run

The Smart Run App is available both on Apple App store and Google Play store for use on according smartphones. Requirements for the smartphone are listed under section 1.

### Data Recording

To record data a measurement has to be started and/or stopped on the Humotion DX5.0. To start and stop a measurement:

1. Start the Smart Run app on your mobile device.
2. Link up the DX5.0 in the measurement device selection screen.
3. Press the central Start button in the app. Follow the instructions.
4. A measurement has been started and data is recorded on the Humotion DX5.0.
5. To stop the measurement, press the Stop button in the app.

### Data Transfer

Depending on the settings data might be already transferred to the smartphone during a measurement. Data is transferred automatically to your mobile device when a measurement is stopped by pressing the Stop button in the app.

**NOTE:** Starting and stopping a measurement as well as data transfer requires an active Bluetooth connection between the Humotion DX5.0 and the mobile device. If the Bluetooth connection is broken, the DX5.0 will automatically try to reconnect.



### 5.3. Battery Charging

The Humotion DX5.0 can be charged with any USB port with a minimum output of 500 mA (nominal voltage of 5V). Each time the Humotion DX5.0 is connected with your computer's USB port (e. g. to start or stop a measurement) the battery of the Humotion DX5.0 is charged automatically as required.

**NOTE:** To charge the Humotion DX5.0 always use the supplied USB cable.

## 6. Regulatory Notices

### 6.1. USA: Federal Communications Commission (FCC) Statement

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 encouraged 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.

Any changes or modifications made to this device not expressly approved by the party responsible for compliance may void the authorization to operate the equipment.