PSM Connectivity box

User Manual

VERSION 1

ENGLISH

PSM Connectivity box

REF 6014

Connectivity box for connecting MedStorm's PainSensor to Masimo monitors.

Read all instructions, warnings and precautions prior to use.

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1. Introduction

This user manual covers the operation of PSM connectivity box REF 6014 for connecting MedStorm's PainSensor to Masimo monitors.

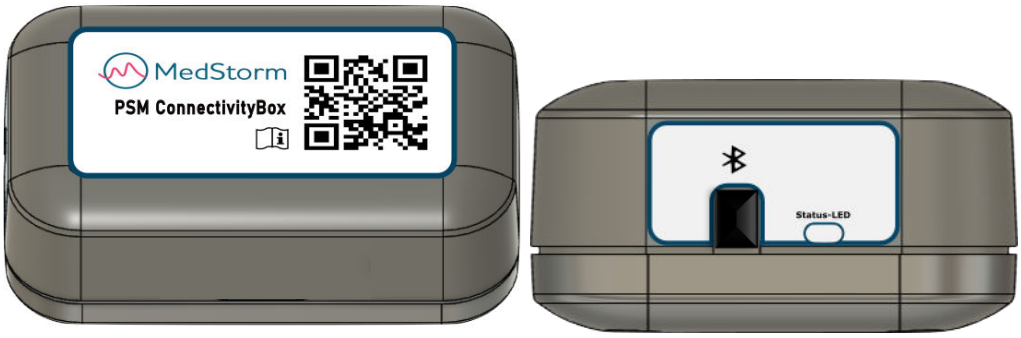
The purpose of the PSM connectivity box is to receive data from the PainSensor and forward it to medical monitors. The data is transferred from the PainSensor to the PSM connectivity box using Bluetooth Low Energy, BLE. No data is stored in the PSM connectivity box.

2. Warnings and precautions

- *The PSM Connectivity Box shall not be placed in the patient zone, meaning it should be placed minimum 1,5 m from the patient.*
- *For any issues related to the external products / monitors used with the PainSensor that are not delivered by MedStorm Innovation AS, contact the manufacturer for that respective product.*
- *Modification of the PSM Connectivity Box is not permitted.*

3. System overview

The connectivity box with the power supply is delivered by MedStorm Innovation (it is not battery operated).



The PSM connectivity box has one button and one LED. The functionality of the Button and the LED is described in the table below.

Button press	Action/State	LED
N/A	When the connectivity box is connected to the monitor and ready to be connected to a **new** sensor	Steady green (ready to use with a new sensor)
Short press	Connect sensor to patient monitor	Blue (while connecting)
N/A	Ongoing connection	Cyan (successfully connected)

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Long press	Reset – remove connection to the sensor. Then a new PainSensor can be connected.	Changing back to steady green when reset is successful.
N/A	Sensor disconnected, searching for remembered sensor (the last one that was connected)	White
N/A	Communication error with the monitor	Violet

4. Operating instructions

4.1 Installation and setup for Masimo Monitors

For Connecting to Masimo Monitors, you will need:

- Masimo Root Monitor
- Cable compatible for Masimo monitors with a micro usb outlet.
- PainSensor REF1002 from MedStorm Innovation AS

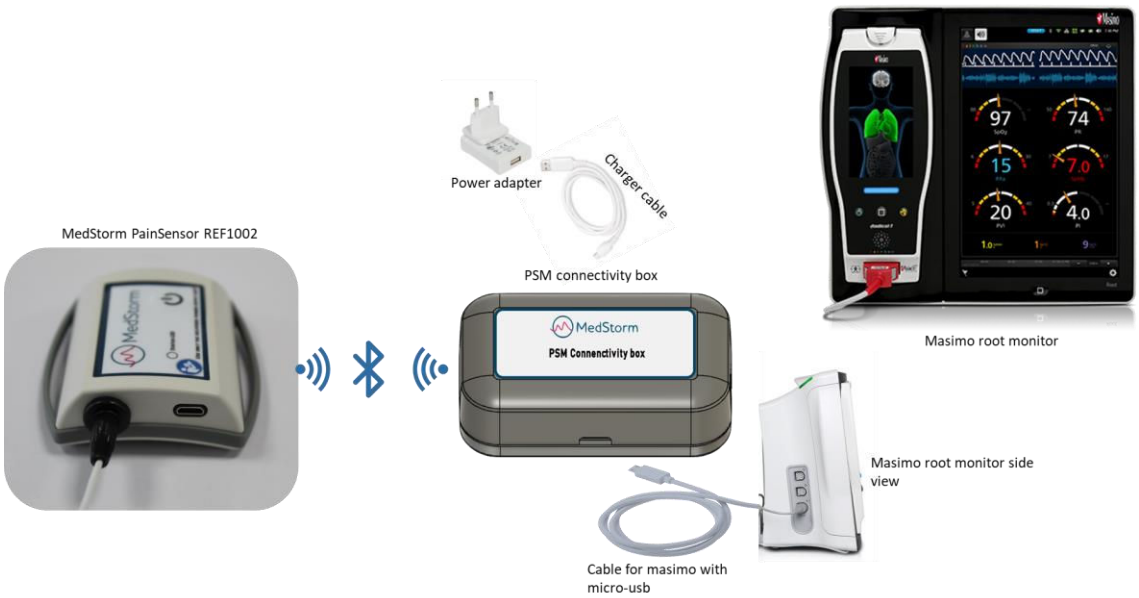

Figure 1: Masimo monitor connected to the PSM Connectivity Box

Follow these steps to connect the PSM Connectivity Box to the Masimo root monitor:

1. Connect to a Masimo root monitor

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2. Ensure the Masimo monitor is switched on. Connect the PSM connectivity box with the micro USB cable to the Masimo monitor. This also powers the PSM connectivity box.
3. When the connectivity box is powered and in search mode, a green light is shown on the LED.

After connecting the PSM connectivity box to the Masimo monitor, the PainSensor can be connected as described in section 4.1.

4.2 Connecting a PainSensor to the Connectivity box

1. Ensure that the Connectivity box is connected to the monitor and ready to connect to a sensor (steady green light)
2. Press the button on the connectivity box and on the PainSensor to establish connection. The Bluetooth LED will first be blue for a few seconds, before switching to a steady cyan light when connection is successful.
    - Once a PainSensor is connected to a connectivity box, this connection is remembered until reset. How to reset the connectivity is described in the next section
3. When connection is successful, data will be displayed on the monitor. Note that data will only be visible when electrodes are attached to the sensor and to the patient.
4. The connectivity box can be connected during the whole time the patient monitor is connected. If it is necessary to switch off the connectivity box, this can be done by unplugging the power cable, and the LEDs will switch off.

Note: Compared to the PainSensor Application on a tablet, it is expected a delay of approximately 5 seconds before the values from the PainSensor are displayed on the patient monitor.

4.3 Removing a connection to a device / switch to a different PainSensor

The connection between a PainSensor and a connectivity box is remembered after the first pairing which occurred during the first connection. If the connectivity box is not switched off in between, and you want to use a different PainSensor, hold the button for approximately 3 seconds to reset the connectivity. Once this is successful, the light will switch back to a steady green light, indicating that the device is ready to connect to a new PainSensor.

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4.4 Error conditions / troubleshooting

4.4.1 PainSensor does not connect to the PSM connectivity box

If you experience that PainSensor does not connect to the PSM connectivity box, do the following steps:.

1. Ensure that the PSM connection box has not been disconnected from power.
2. Check if the Bluetooth LED is flashing.
3. If the Bluetooth LED does not flash, press the pairing button and verify that the Bluetooth LED starts flashing. Then turn on the PainSensor for connection.
4. If the Bluetooth LED flashes and you cannot connect to PainSensor. Hold down the pairing button on the connectivity box for about 10 seconds or until the Bluetooth LED stops flashing. Then, start the pairing process again by turning on the PainSensor and pressing the pairing button on the connectivity box.

5. Indices and values shown on the Masimo Monitor

Once the connection between the sensor and connectivity box is settled the monitor shows a Pain index (0-10), the awakening index (0-40-100), the nerve block index (0-10) and the Bad Signal value (0-1). The label text for the bad signal value is “--” and equals a Bad signal. If no dotted lines show up, the sensor is sending an accurate signal. If the connectivity box loses its connection by unplugging the cable the Masimo alarm will sound, but indices remain on screen. To remove this: *Settings - Trend Settings - [Clear].*

6. Care and maintenance

The Connectivity box can be cleaned by using a cloth/paper humidified with water or disinfectant but should never be dropped in liquid. When the connectivity box is not in use, remove the power and store it in the original box.

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