Actiwatch Pre-Issue and Battery Management Guide

Actiwatches should not be worn in the shower/bath or Jacuzzi. This is the same for any watch - please google for numerous articles detailing the reasons why that you shouldn't wear your watch in the shower however waterproof it is! Actiwatches are built to IP6 standards at new which is submersion for 30min at 1m. However, this is a cold water test, a 40deg shower heats the seals and device making them prone to leaking in the long term. Shampoo, soap and saltwater is highly corrosive. **Therefore the safest recommendation is to tell your subjects to take off the device before and bath/Shower/swimming and if possible not to get it wet.**

Actiwatch 2:

- Battery needs to achieve 3.0 Volts prior to issuing (leave to charge if not)
- Charging from a wall socket is recommended as computer USB's often stop charging due to computer hibernation.
- If battery does not reach 3.0 volts it is either not charged or may be failing which indicates end of life for the watch. An Actiwatch 2 battery cannot be changed.
- All battery powered devices including Actiwatches should be stored fully charged. Storing battery powered devices with no charge damages the battery and ends its life early. The battery on an Actiwatch 2 cannot be changed.
- Battery Reset does not mean loss of data (simply the device turned off and then back on during data collection. This can occur with a high impact or static)
- If data is lost form a Battery Reset is usually another issue causing the data loss

Spectrum Plus/Pro:

- 20 mins charge will allow ~2 weeks data collection.
- 2 hours charge is fully charged. The battery should reach ~4.1volts which allows 60 days collection with the Spectrum Plus and 50 Days with the Spectrum Pro.
- **All battery powered devices, including Actiwatches, should be stored fully charged. The Actiwatch Spectrum Pro and Plus should be fully charged after each use and every 10 months if in storage.** For safety reasons modern high-performance batteries, as used in the Actiwatch Spectrum, cannot be recharged if totally flattened and Locked out. This is to prevent issues, as seen with the Samsung Galaxy Note 8 fires and the Boeing Dreamliner Fire and subsequent launch delay.
- Battery Lockout is *not* covered under warranty. Devices with Battery Lockout need to be Sent back to the USA to have a new battery fitted. This costs around $150 plus shipping
- You can still download data from a device that has a Battery Lockout if connected to USB cable via a computer, however it will not charge

PO Box 1338
Fortitude Valley
Qld. 4006
Telephone   1300 76 72 79 (Australia only)
              +61 2 8002 8284 (International)
Facsimile   +61 7 3036 6180
Web   www.bmedical.com.au
Email   sales@bmedical.com.au
Postal Address

- Older Firmware can cause battery Lockout to occur at a higher voltage. This has been corrected in later versions, therefore please always ensure your Actiwatch devices are on the latest firmware.

Spectrum Pro additional features:

- Can vibrate (which is picked up as activity)
- Actiware will exclude device vibration (Grey data exclusion)
- Watch Vibrates every 5 minutes, 6 times, to warn patient they are not wearing the watch or the watch is being worn too loose.

Actiwatch 2 Troubleshooting Guide

Decode Messages:

- Decode 3: Extremely Low Battery
  Resolution: Charge battery or have the battery changed.

- Decode 9: Usually is associated with a message that indicates no data was lost but the device must be reconfigured before next use.

  Resolution: If no data was lost then reconfigure. If data is missing please send database file to BMed for evaluation.

- Decode 10: We have seen a few instances of this. If this error is encountered please provide details to BMed for evaluation. (will likely need replacing)

- Decode 13: has not been seen with current version of software

- Decode 15: Can present in two ways.
     Option 1: The device begins downloading and stops and presents this error within 1-2 seconds.
        Resolution: There is no data to recover on the device and we would recommend reconfiguring and testing the device.
     Option 2: The device appears to download many bytes of data before presenting this error.
        Resolution: The data can likely be recovered if sent for service. An evaluation will need to be performed to determine if the device is failing.

![BMedical logo]

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To Test an Actiwatch 2 device:

Always check you are on the latest version of firmware as upgrades have resolved many early issues. Click the arrows in circled in blue to open the system menu, the current version is 01.01.00.10

Fully charge for 14 hours using a wall charger (not a computer as they tend to hibernate and stop charging). Click the arrows in circled in blue to open the system menu. The Battery Needs to achieve 3.0 Volts or more. If a battery doesn't achieve this after 14 hours of charging it is reaching the end of the battery life, which is also end of life for the device. This is a good check to do prior to using a device.
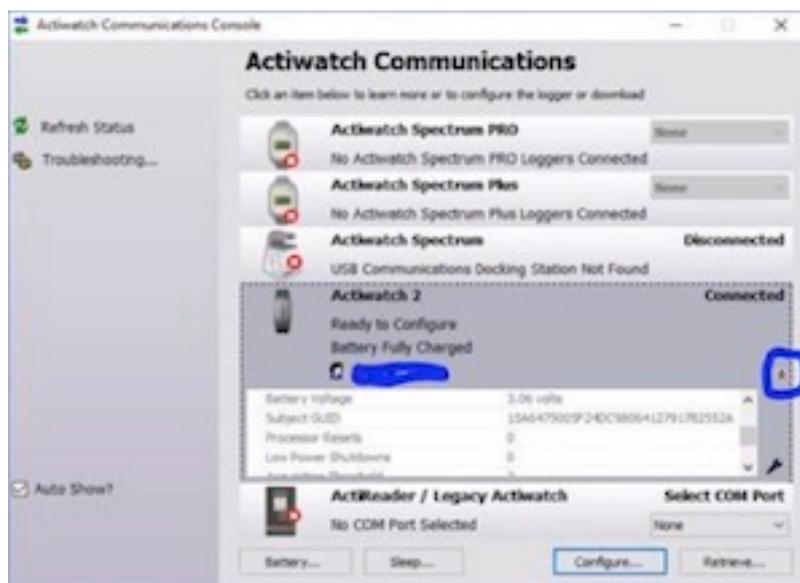
Configure the watch and wear it for one hour and leave overnight in a still and what is, or will be, a dark place. Download the data in the morning and check you are seeing normal movement and light from the time you were wearing it. Be sure to check the activity and light went to zero overnight. *This zero test is important as an indicator that both the accelerometer and light sensor are working* correctly.

Other useful data shown in this section Is:

If the device had a low power shut down software tells you if data collection ended due low power. A processor reset could indicate that the device had a battery reset from high impact or static etc. Normally this doesn't cause data loss IE the device just reboots.