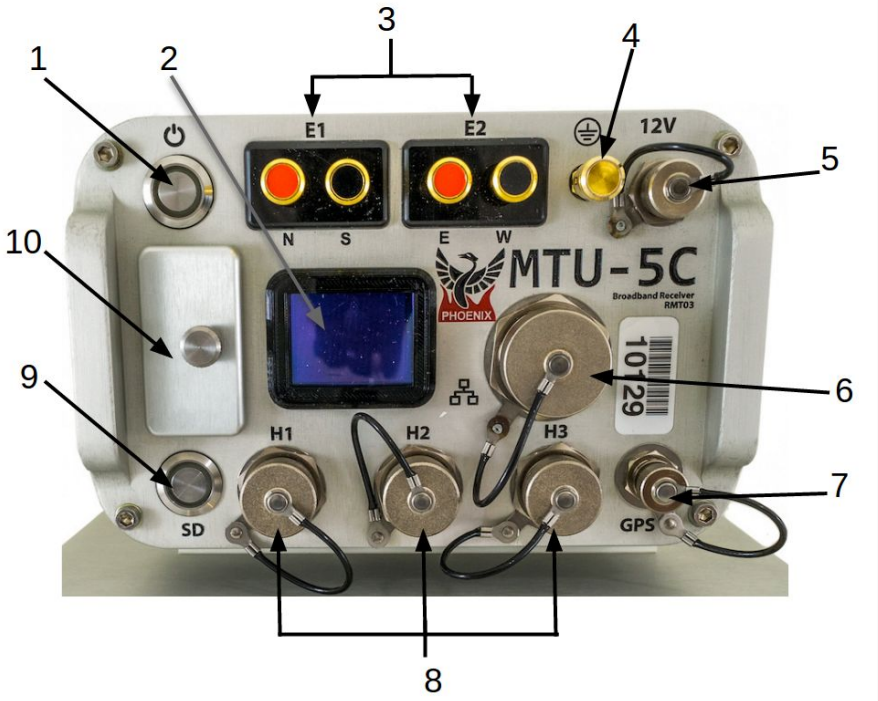
# MTU-5C Quick Start Guide for MT

PHOENIX GEOPHYSICS



Version: 220914 ID: DAA19




| Components | |
|---|---|
| **1** | Power/Record button and indicator |
| **2** | Display |
| **3** | E1 (Ex) electrode connectors<br>E2 (Ey) electrode connectors |
| **4** | Ground electrode connector |
| **5** | 12VDC power input |
| **6** | LAN connector |
| **7** | GPS antenna connector |
| **8** | H1 (Hx) magnetic sensor connector<br>H2 (Hy) magnetic sensor connector<br>H3 (Hz) magnetic sensor connector |
| **9** | SD card button and indicator |
| **10** | SD card slot and cover |

# Creating a MT - Configuration File

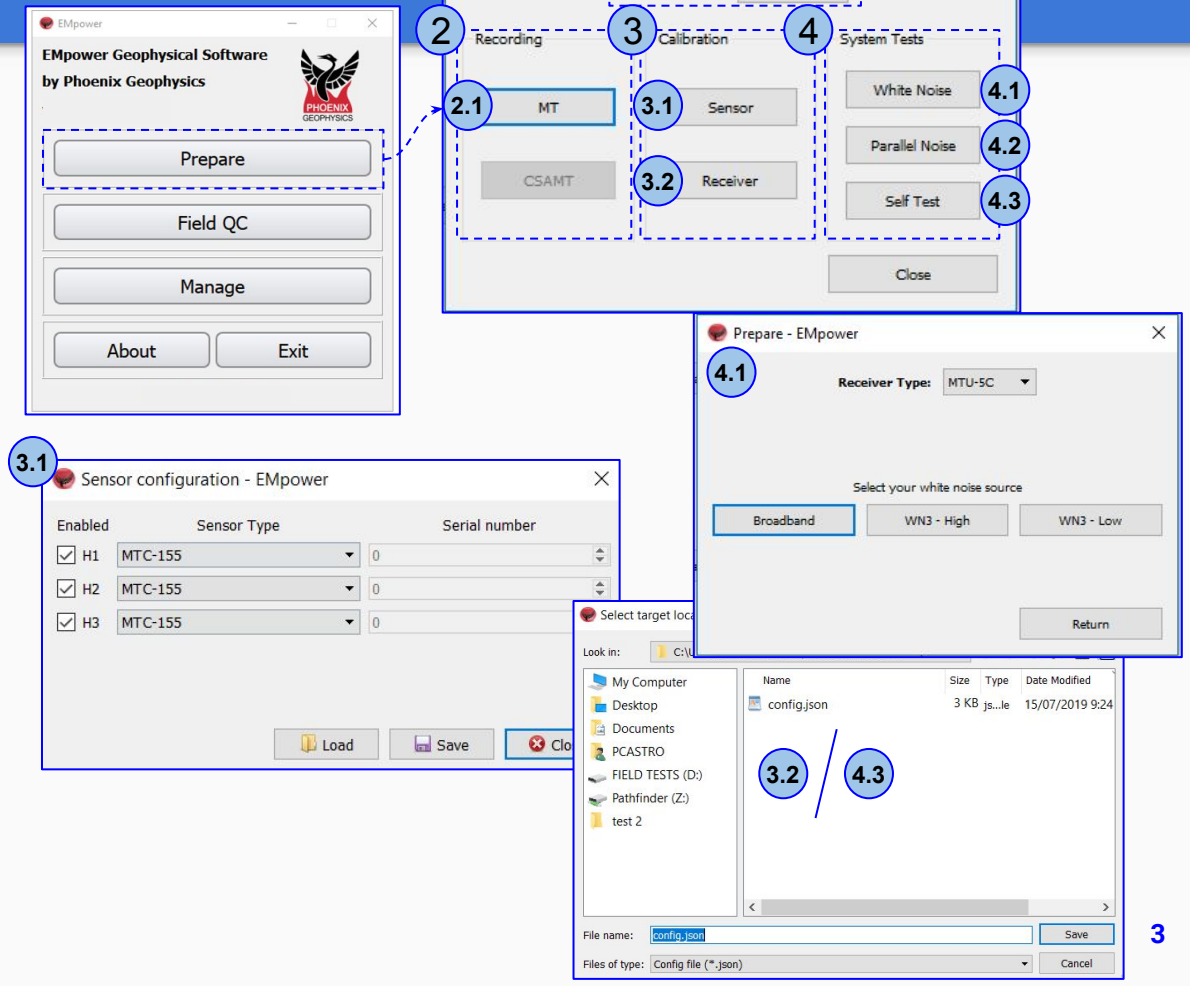
Open **EMpower,** click the **Prepare** button and complete the required information

1. Select the **Receiver Type**
2. **Recording**
   2.1. MT - **Configuration Creator**

**Use the Calibration and System Test options as needed**

3. **Calibration**
   3.1. Sensor Calibration
   3.2. Receiver Calibration *(No additional configuration needed)*

4. **System tests**
   4.1. White Noise
   4.2. Parallel Noise - Configuration Creator
   4.3. Self Test *(No additional configuration needed)*



# Configuration Creator

**1.** Check that the **Receiver type** is **MTU-5C**

**2.** Select the **Schedule**

2.1. **Manual** or **Automatic Start**

2.2. Or for a specific schedule use, **Single Shot, Daily** or **Weekly** and click **Add Schedule** to define the time and date

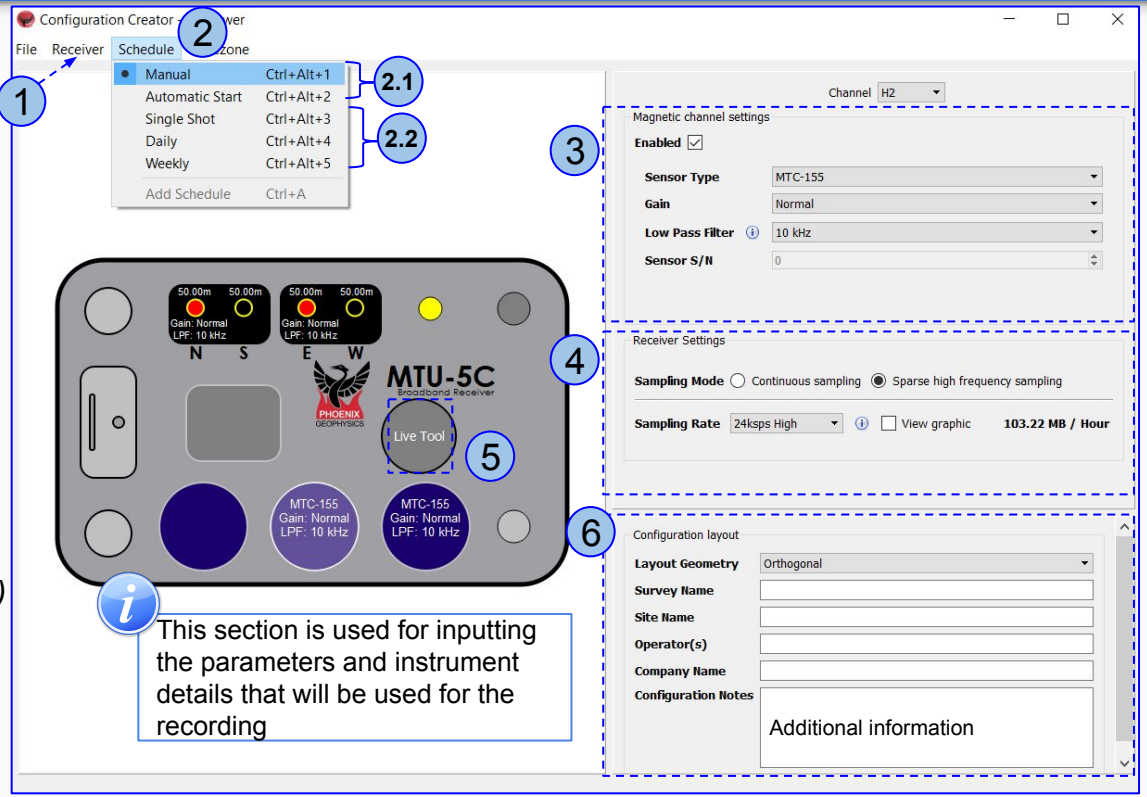
**3. Channels Settings**

**4.** Define the Receiver Settings

- Sampling Mode
- Sampling Rate

**5. Live tool** *(see the Networking Settings manual)*

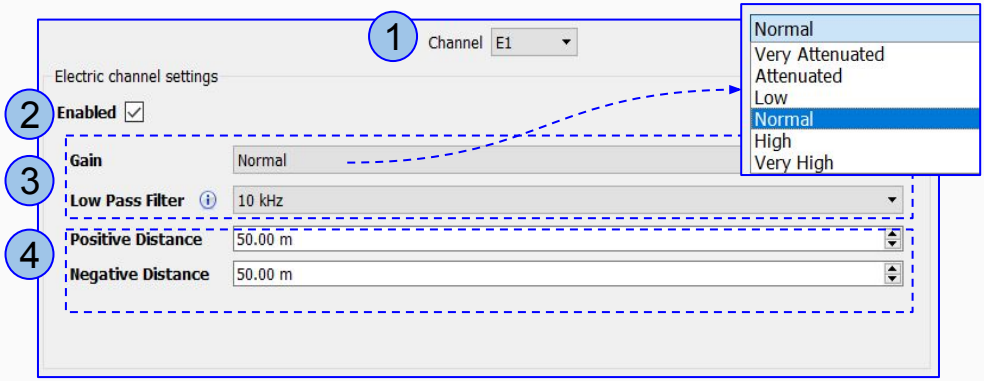
**6. Configuration Layout**

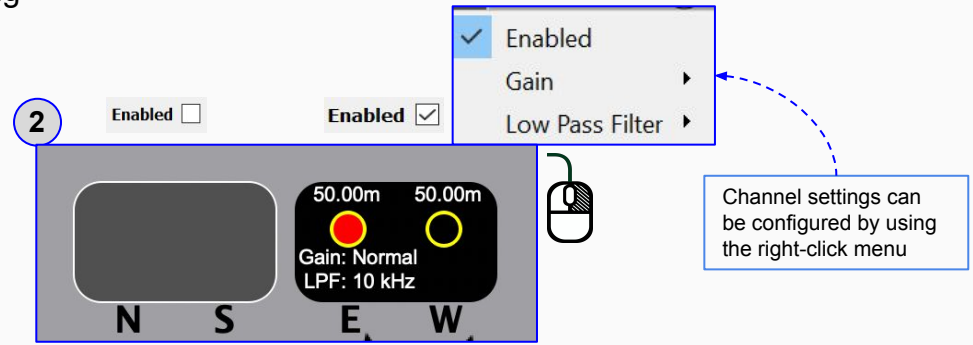



To use the magnetic sensor data from a different recording or use a remote reference, all recordings **must** have a matching Sampling Mode and Sampling Rates. Otherwise, EMpower will not allow to process data using borrowed channels or remote reference

# Electric Channel Settings

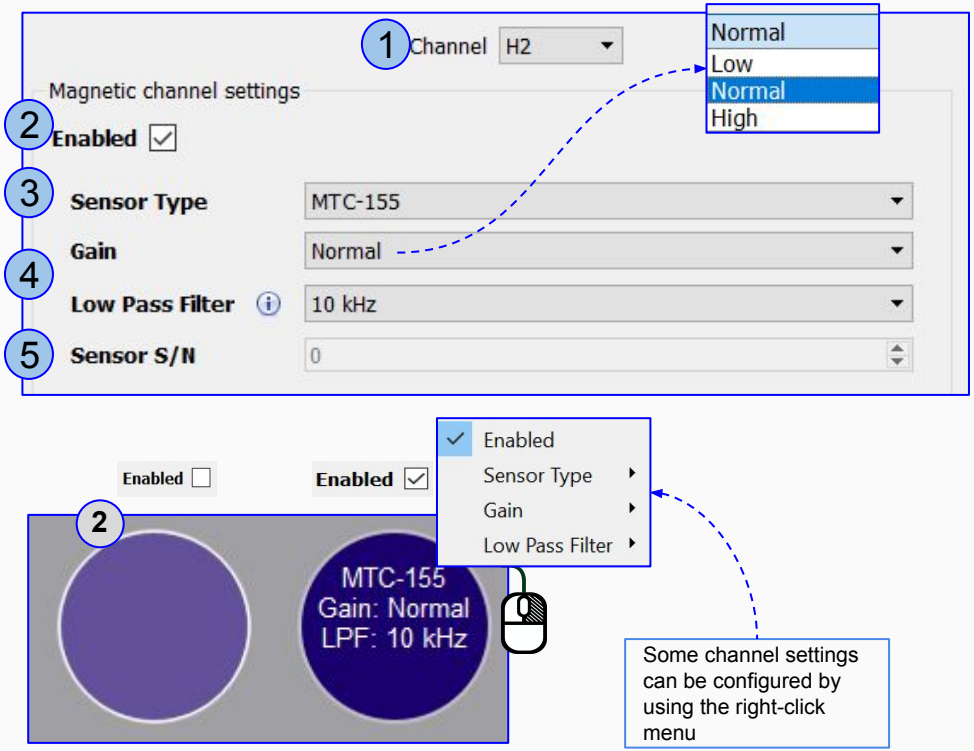
1. Select the **Electric** channel
2. **Enable or Disable** channel(s)
   - Disable channels that you do not plan to use during the recording. This will save space on the SD card.
3. Select the desired **Gain** and **Low Pass Filter**
   - For most applications, Normal Gain and 10 kHz LPF are best
4. Type **distances to the electrodes** of this channel if known
   - if not, they will need to be corrected later before data processing



# Magnetic Channel Settings

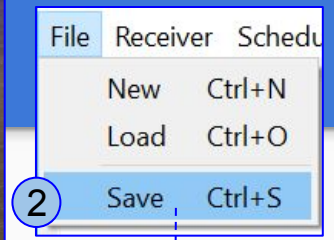
1. Select a **Magnetic** channel
2. **Enable or Disable** channel(s)
   - Disable channels that you do not plan to use during the recording. This will save space on the SD card.
3. Select the correct **Sensor Type**
   - If the sensor type is incorrect in the configuration file, the receiver will display a warning message. However, the recording will not be interrupted
4. Select the desired **Gain** and **LPF**
   - For most broadband applications with MTC-100 series sensors, Normal Gain and 10 kHz LPF are best
5. Type the **Serial Number** of the sensor if required
   - There is no need to type serial number for sensors MTC-155/MTC-185, since it will be automatically detected by the receiver.
   - For older sensors, type the serial number of each sensor. If you don't know this information in advance, keep field notes to add this information later, after the recording is imported into EMpower

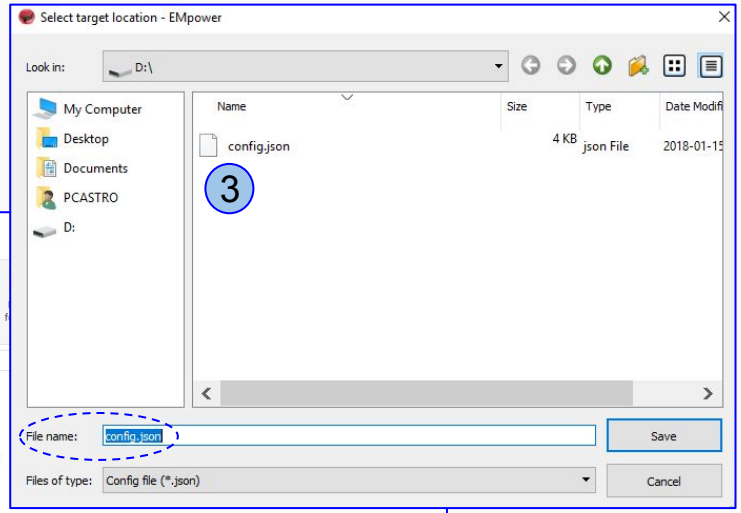


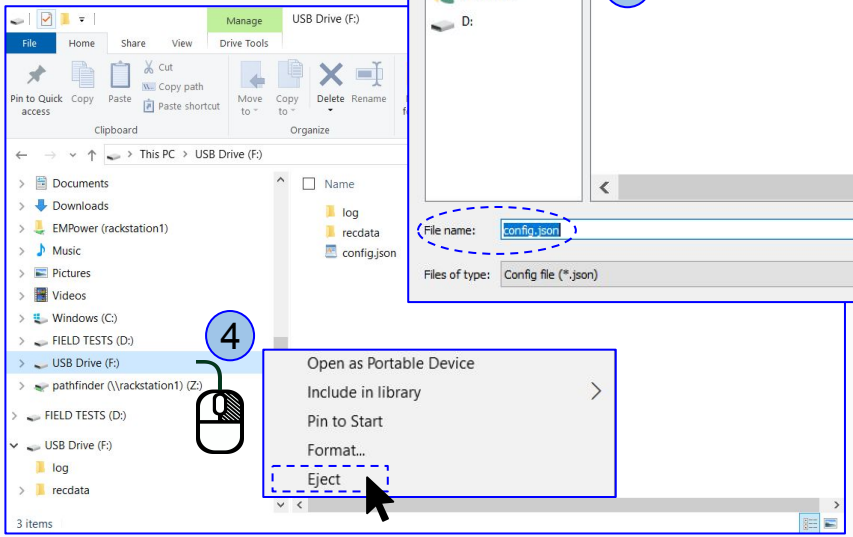
# Saving a Configuration File

1. Insert the SD Card
   - The computer must be equipped with an SD card slot or use a USB card reader
2. Click the **File** menu
   - Save or **Ctrl+S**
   - Select the SD card
   - **EMpower** will automatically create the file **“config.json”**
3. Save the configuration file ***(config.json)*** in the root folder of the **SD card**
4. Open the file explorer
   - Right click **SD card** drive
   - **Select Eject option**
   - **Pull out the SD Card**

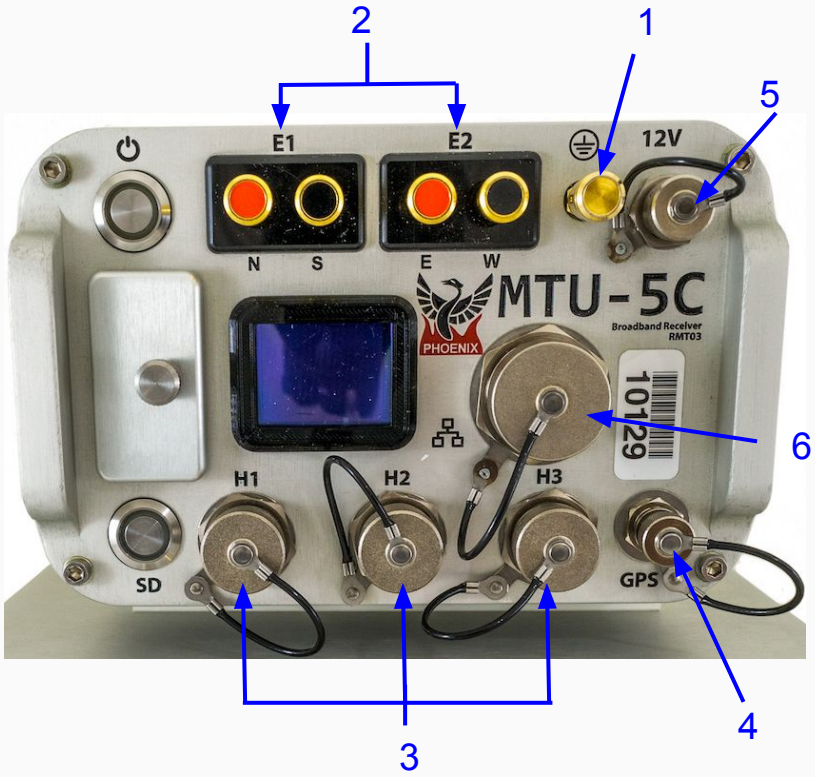




# MTU-5C Connections




**Start by connecting:**

1. Ground electrode
2. Electrodes to channel **E1**(Ex) (N+, S-) and channel **E2**(Ey) (E+, W-)
3. Magnetic sensors to channels **H1**(Hx), **H2**(Hy) and **H3**(Hz)
4. GPS antenna
5. 12V DC Power Source
6. Network connector

In the field, it is often most efficient to connect the components to the receiver following the order on the right

# SD Card - Recording Data

## Recording

1. Insert the **SD card** and close the cap
2. To turn on the receiver, press the **Power** button briefly, wait until both **LEDs** are solid blue

**2.1. LED** pattern for **Automatic Start** recording

3. If the schedule type was configured as **Manual,** press the **Power** button briefly and release to start recording

The receiver auto-detects serial and model for magnetic sensors of the new generation (MTC-155/185). The information about the sensor is updated on the receiver screen only at power on and right after each recording starts.

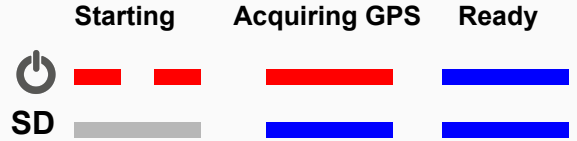
1

**For any problems with the SD Card, check the Troubleshooting manual*

### Indicators

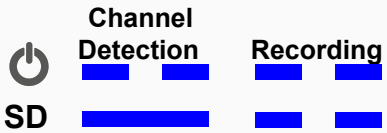
*Rapid, equal pulses*
*Solid color / Off*

2 Briefly press and release the power button




2.1 ***Automatic Start***

*The recording starts automatically according to the schedule*




3 Briefly press and release the power button

# Stopping a recording

1. Press the **Power** button briefly and release to stop recording
   - Wait until both **LEDs** are steady blue
2. Turn off the receiver by pressing the **Power** button for a few seconds, until the **LEDs** will flash red
   - Wait until both **LEDs** turn off
3. Eject the **SD card**
   - Press the **SD card** and release, pull the **SD card**

1 Press the **Power** button briefly and release


2 Keep pressing the power button 3 sec and release

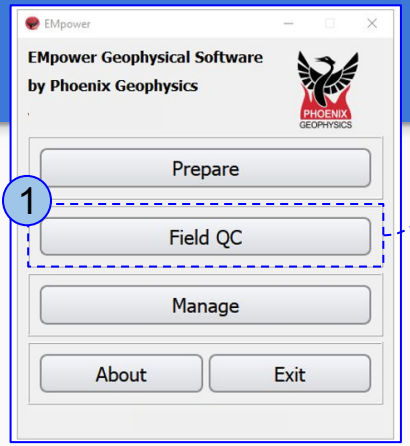


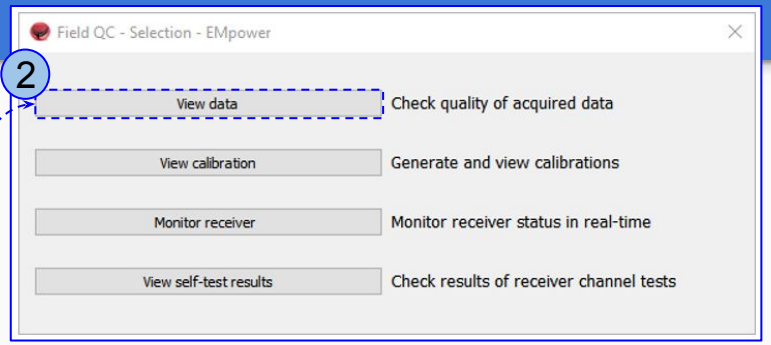
**Indicators**

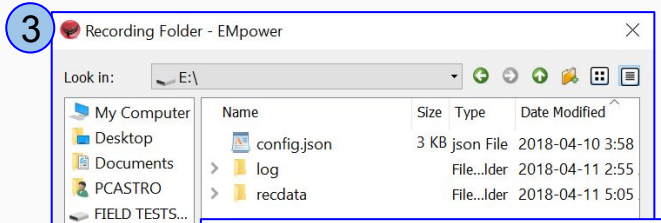
▬▬▬▬▬ *Rapid, equal pulses*
▬▬▬▬▬ *Solid color / Off*

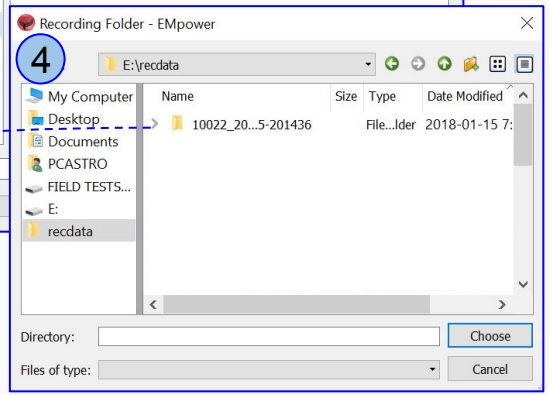
# Importing and Field QC

1. Click the **Field QC** button
2. Select **View data**
3. Select the **SD card**
   - The recording creates two folders, log and recdata
4. Open the **recdata** folder
   - Select the recording file
   - Click **Choose**




Recording Start Time
*(GPS timezone)*


Receiver Serial Number

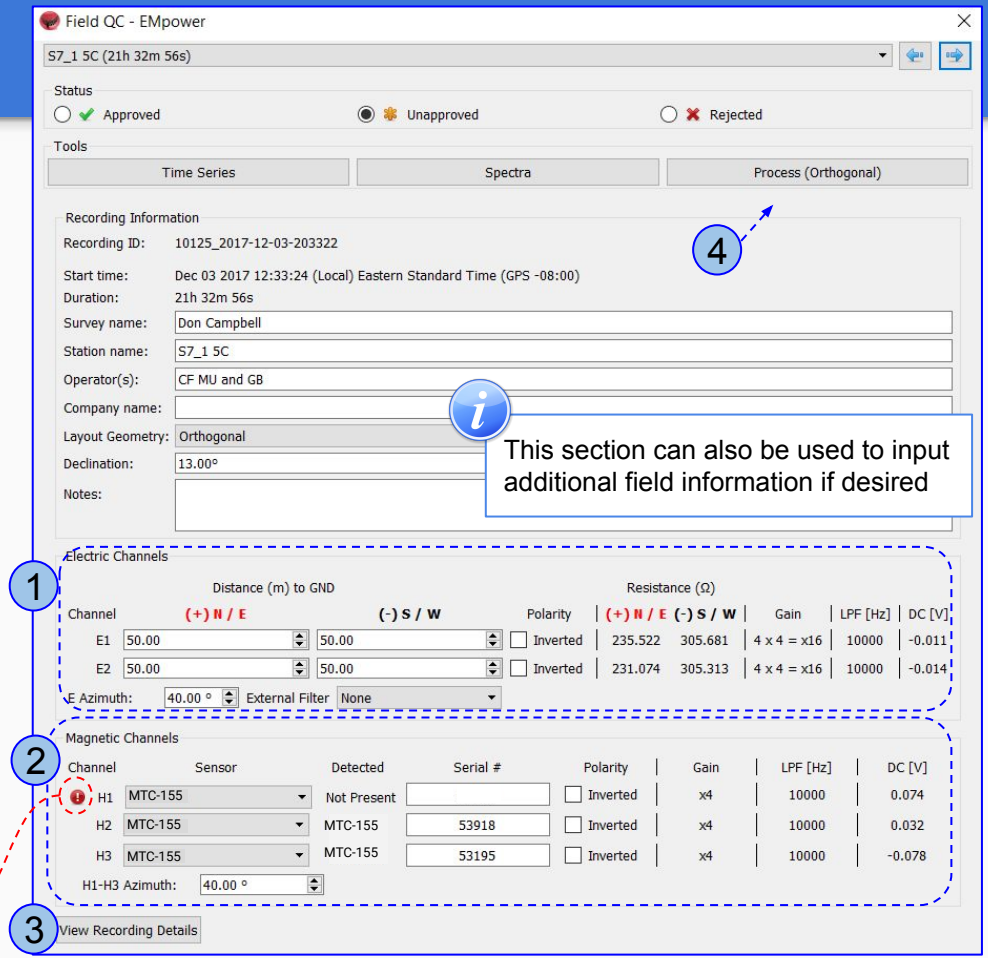
Recording Date

# Field QC

## Review and Process the recorded information

1. Review the Electrode **Resistance** values and make the necessary corrections
   - Electrode **Distance (m) to GND**
   - **E-Azimuth**
   - **External Filter**
2. Ensure that the magnetic sensors were detected correctly and make the necessary corrections
   - **Serial #**
   - **Polarity**
   - **H1-H3 Azimuth**
3. **View Recording Details** *(see page 14)*
4. After reviewing the information, **Process** the data *(see next page)*

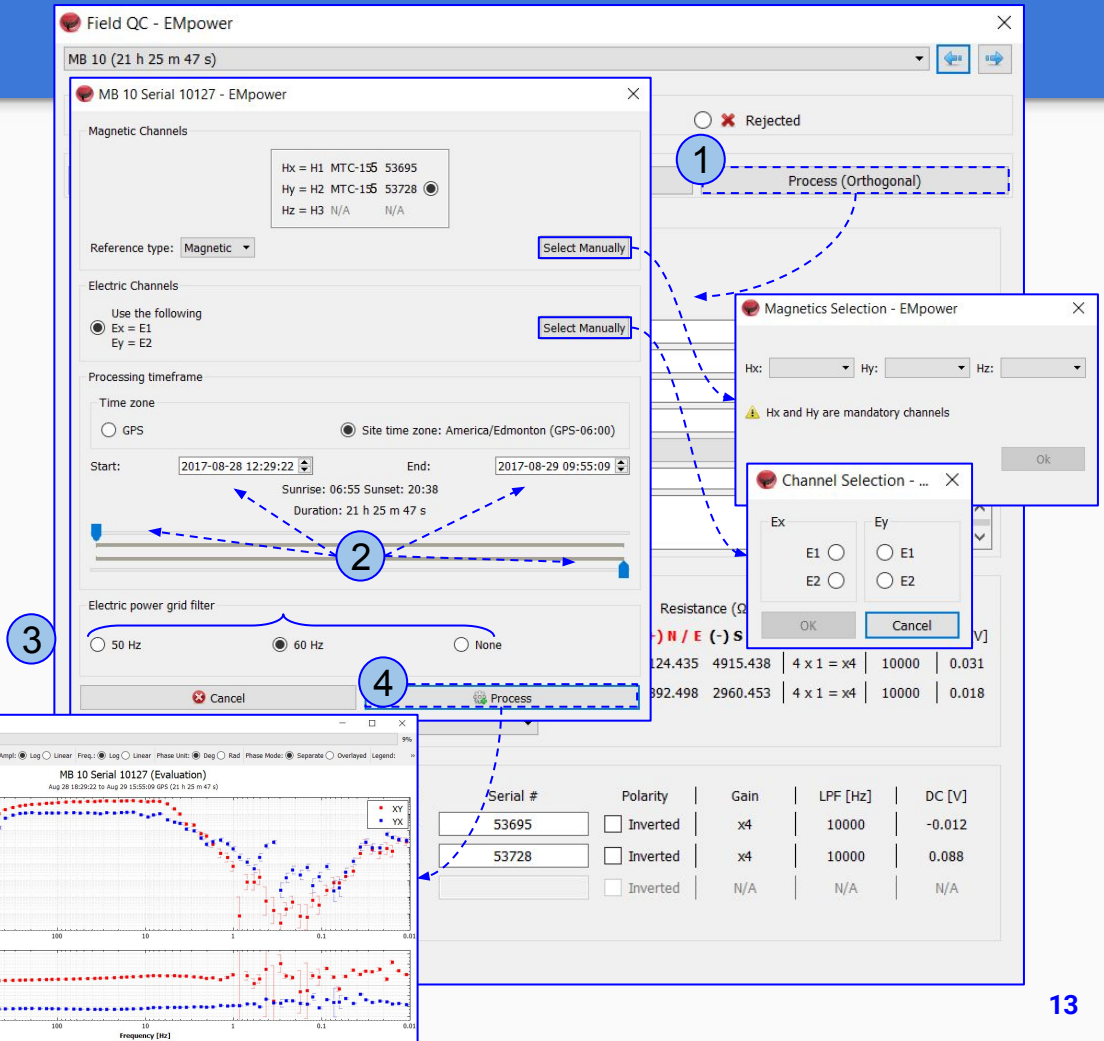
*The warning icon indicates that something might be wrong with the recording, review the recording information and make necessary changes if needed. Hover mouse pointer over the warning icon for more information.*



# Process Data

1. Click the **Process** button
   - Verify that the channels and references selected are the desired ones
2. Define the time period by entering a start and end date/time
3. **Enable the electric power grid filter** that corresponds to the frequency carried by the power lines in the survey region *(50Hz, 60Hz or None)*
4. Click the **Process** button
5. A live display of the resistivity curve will appear after a few seconds

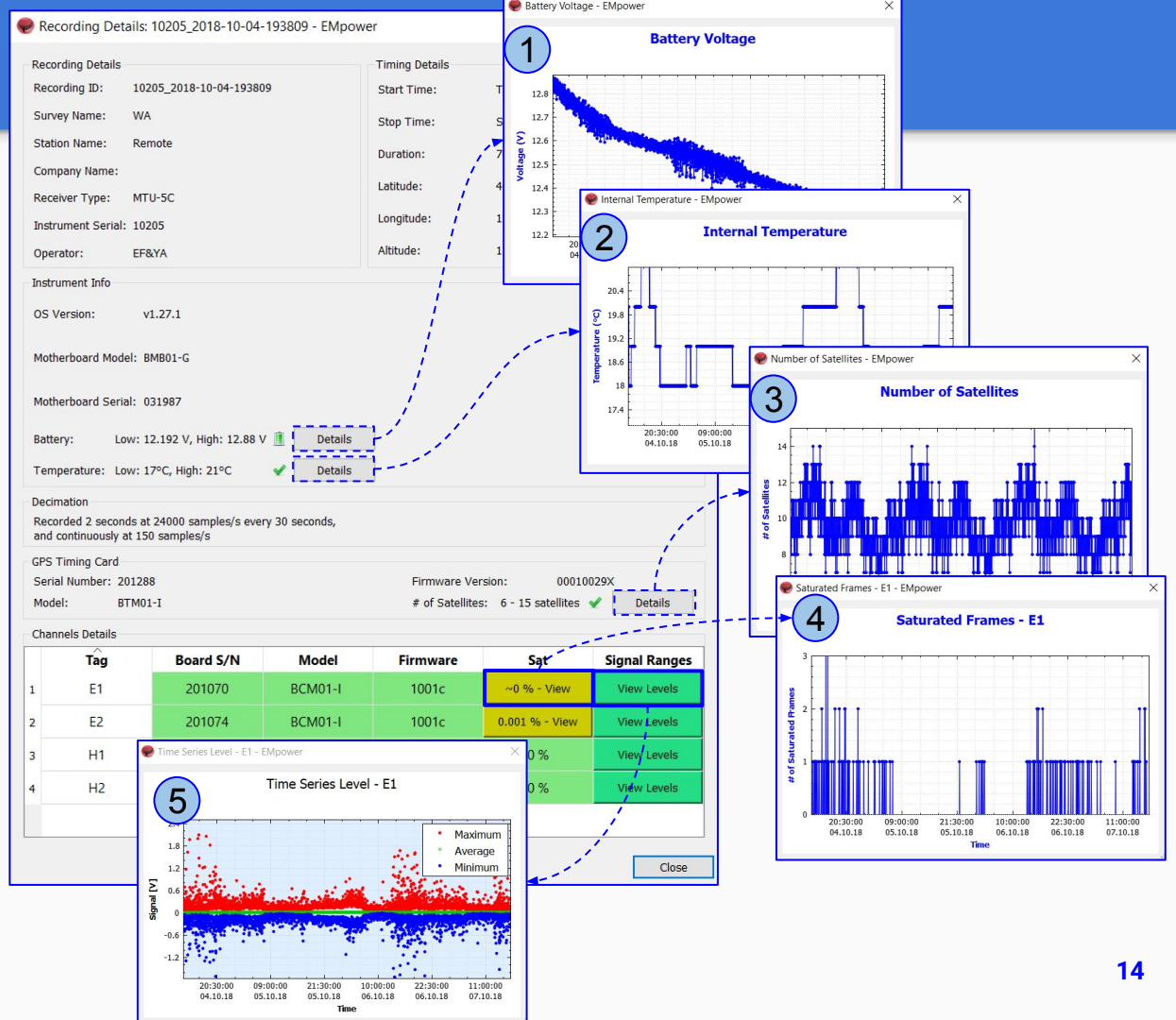
**This resistivity curve is not saved. It is purely for QC purposes*



# View Recording Details

**Review that the following levels are within valid limits for quality control:**

1. **Battery Voltage**
2. **Internal Temperature**
3. **Number of Satellites**
4. **Saturated Frames**
   - If saturation is not close to ~0%, review the channel configuration *(see pages 4 - 6)*, the channel gain might be too high and/or there is artificial noise on your site
5. **Time Series Level**



# Technical Support Contact

***Please check out the FAQs***
*https://phoenixgeophysics.freshdesk.com/*
***Or email us at:*** *support@phoenix-geophysics.com*