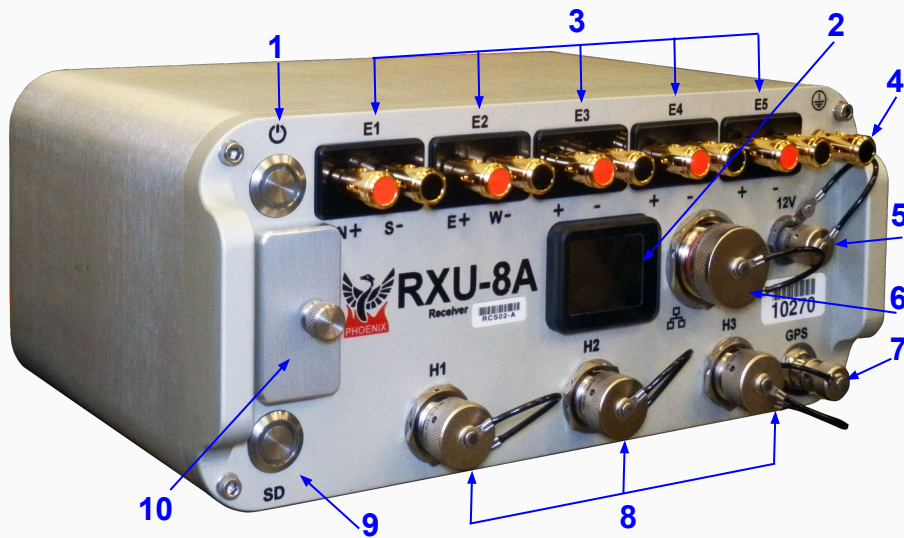


# RXU-8A

## Quick Start Guide for MT



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## Components

|    |   |
|----|---|
| 1  | Power/Record button and indicator   |
| 2  | Display   |
| 3  | E1 (Ex) electrode connectors<br>E2 (Ey) electrode connectors<br>E3 electrode connectors<br>E4 electrode connectors<br>E5 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  |

# RXU-8A

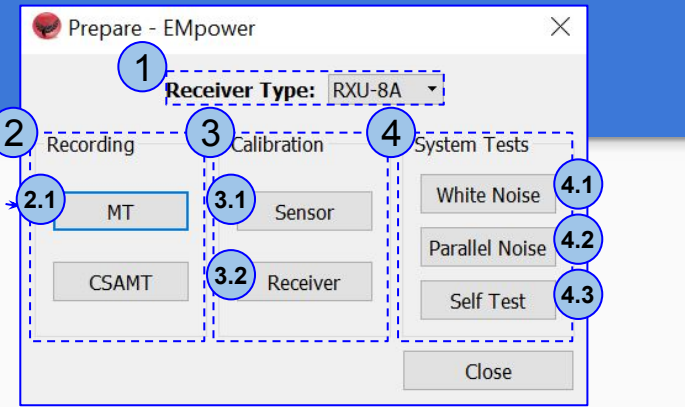
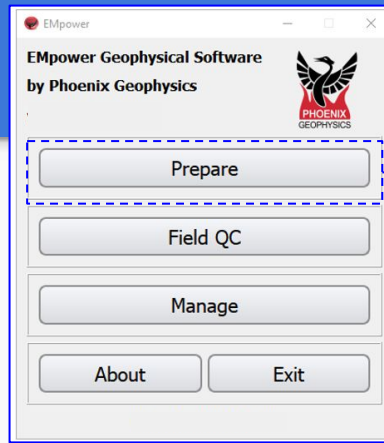


Designed with flexibility in mind, the RXU-8A can be used as a regular MT receiver, where the extra electric channels can be used to acquire a redundant recording on the same site or to acquire an adjacent site.

Excellent choice for controlled source acquisitions that require a large density of electric channels. The RXU-8A can also work for special applications where extra electric inputs might be needed.

This manual is intended for MT operations. The RXU-8A can also be used for CSAMT recordings. For more information on CSAMT consult the [\*CSAMT Operation manual\*](#) (DAA31).

# Creating a Configuration File



Open **EMpower** and click the **Prepare** button

## 1. Select the **Receiver Type**

## 2. **Recording**

### 2.1. **MT - Configuration Creator**

Use the Calibration and System Test options needed

## 3. **Calibration**

### 3.1. **Sensor Calibration**

### 3.2. **Receiver Calibration**

*\*No additional configuration needed*

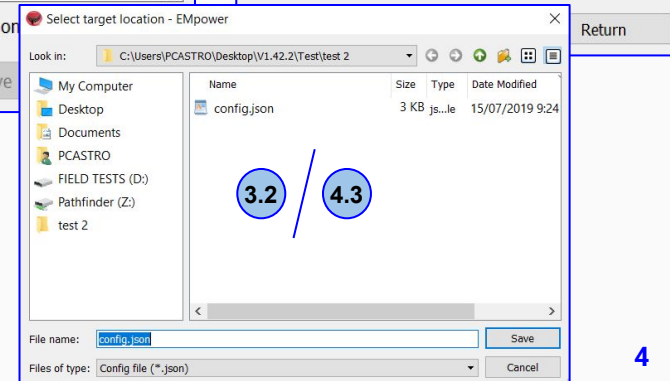
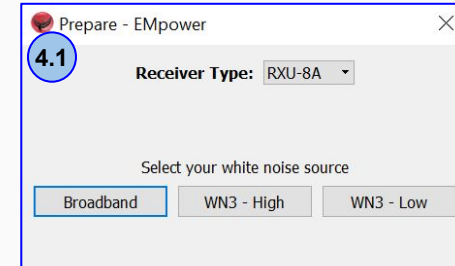
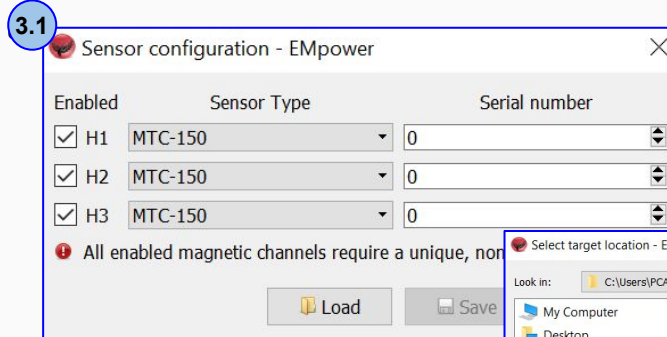
## 4. **System tests**

### 4.1. **White Noise**

### 4.2. **Parallel Noise - Configuration Creator**

### 4.3. **Self Test**

*\*No additional configuration needed*



# Creating a Configuration file - MT acquisition

1. Check that the **Receiver type is RXU-8A**

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. **Ethernet port** (see the [Networking Settings manual](#))

4. **Channels Settings**

5. Define the Receiver Settings

- **Sampling Mode**
- **Sampling Rate**

6. **Configuration Layout**

**1** File

**2** Receiver

**3** Schedule

**4** Electric channel settings

**5** Receiver Settings

**6** Configuration layout

**2.1** Manual Ctrl+Alt+1

**2.2** Automatic Start Ctrl+Alt+2

Single Shot Ctrl+Alt+3

Daily Ctrl+Alt+4

Weekly Ctrl+Alt+5

Add Schedule Ctrl+A

Channel: E1

Electric channel settings

Enabled

Gain: Normal

Low Pass Filter: 10 kHz

Positive Distance: 50.00 m

Negative Distance: 50.00 m

Receiver Settings

Sampling Mode:  Continuous sampling  Sparse high frequency sampling

Sampling Rate: 24kps High  View graphic **0.20 GB / Hour**

Enhanced Sensor Stabilization  Enable

Configuration layout

Layout Geometry: Orthogonal

Survey Name

Site Name

Operator(s)

Company Name

Configuration Notes

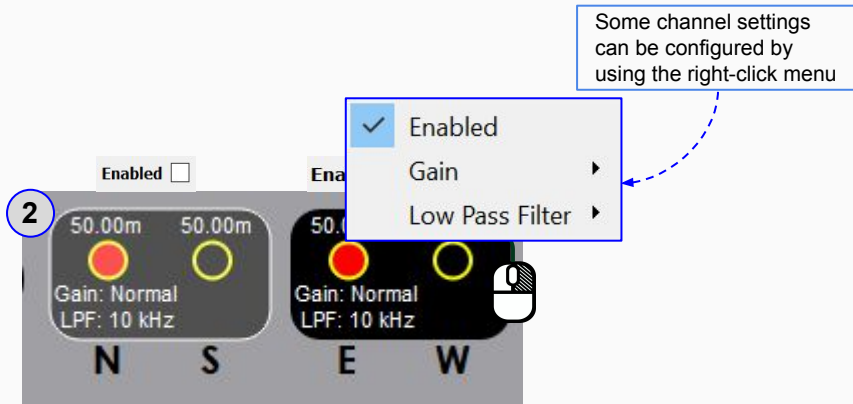
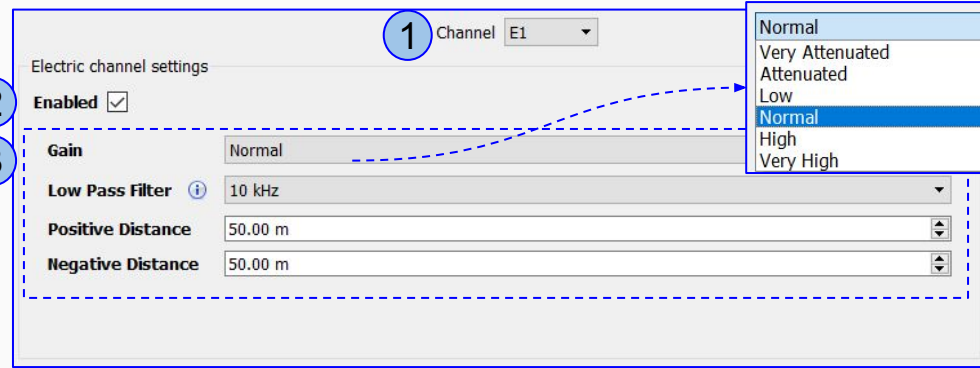
Additional information

**i** This section is used for inputting the parameters and instrument details that will be used for the recording

**!** 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

# Creating a Configuration File - Electric Channel Settings

1. Select the **Electric** channel
2. **Enable** or **Disable** the channel(s)
  - Disable the channel(s) if you do not plan to use them during the recording (*This will save space on the SD card*)
3. Complete the information in the **Electric channel settings**



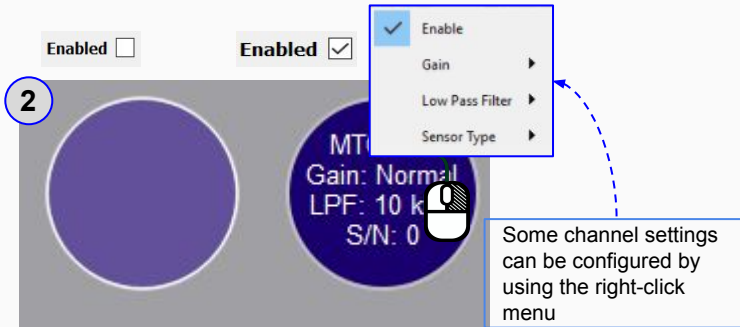
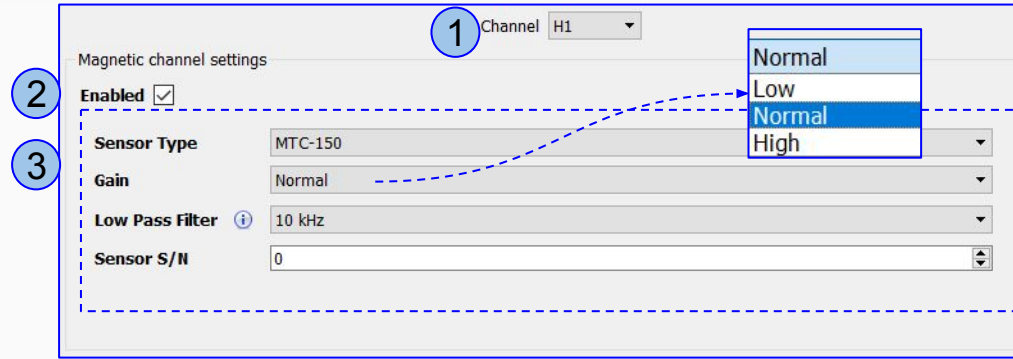
# Creating a Configuration File - Magnetic Channel Settings

1. Select the **Magnetic** channel

2. **Enable** or **Disable** the channel(s)

- Disable the channel(s) if you do not plan to use them during the recording (*This will save space on the SD card*)

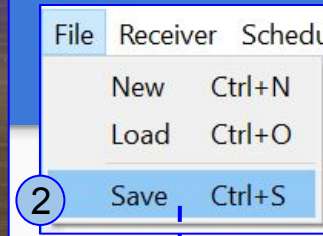
3. Fill in the required information on the **Magnetic channel settings**



# Saving a MT Configuration File

## 1. Insert the SD Card

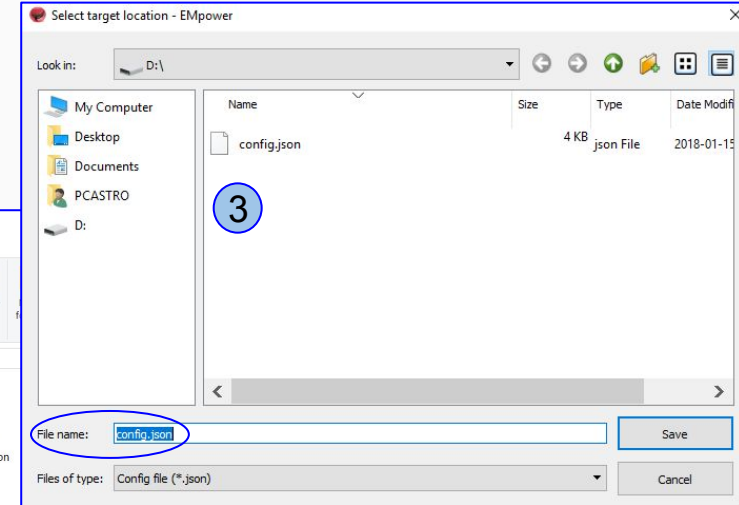
- The computer must be equipped with an SD card slot or use a USB card reader



## 2. Click the **File** menu

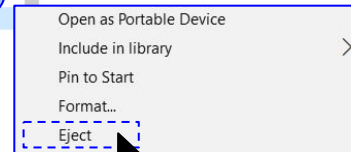
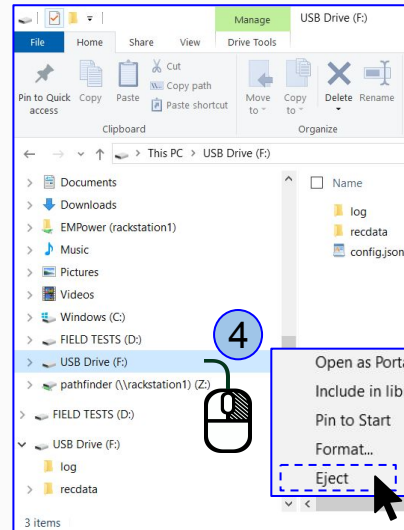
- **Save or Ctrl+S**
- **Select the SD card**
- **EMpower** will automatically create the file **“config.json”**

## 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**







# RXU-8A

## Connection - Single site MT

Start by connecting:

1. Ground electrode
2. Electrodes to channel **E1**(Ex) (N+, S-) and channel **E2**(Ey) (E+, W-)
  - Channels E3, E4, E5 are normally not required in a conventional Single site MT survey
3. Magnetic sensors to channels **H1**(Hx), **H2**(Hy) and **H3**(Hz)
4. GPS antenna
5. 12V DC Power Source
6. Network connector

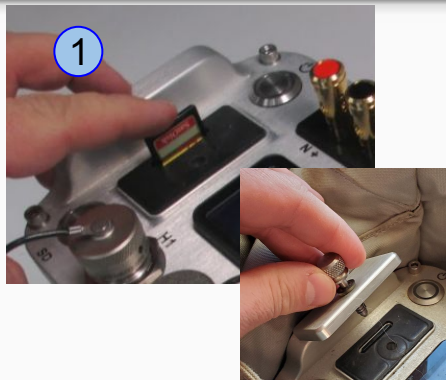


In the field, it is often most efficient to connect the components to the receiver following the order on the right

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



*\*For any problem with the SD Card, check the Troubleshooting manual*

- 2 Press the power button briefly and release

|       | Starting | Acquiring GPS | Ready |
|-------|----------|---------------|-------|
| Power |          |               |       |
| SD    |          |               |       |

- 2.1 **Automatic Start**  
*The recording starts automatically according to the schedule*

|       | Recording |
|-------|-----------|
| Power |           |
| SD    |           |

Press the power button briefly and release

- 3

|       | Ready | Channels Detection | Recording |
|-------|-------|--------------------|-----------|
| Power |       |                    |           |
| SD    |       |                    |           |



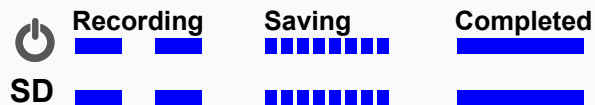
## Indicators

- Rapid, equal pulses
- Solid color / Off

# 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

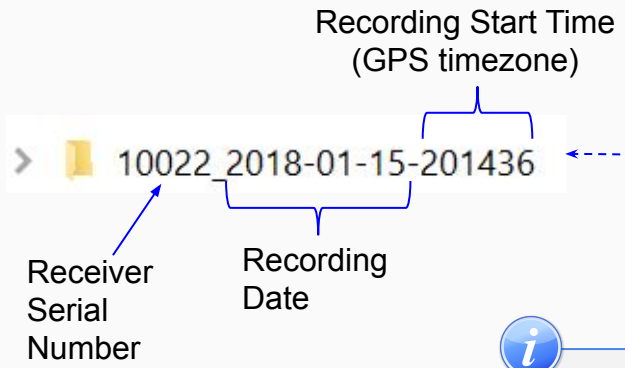
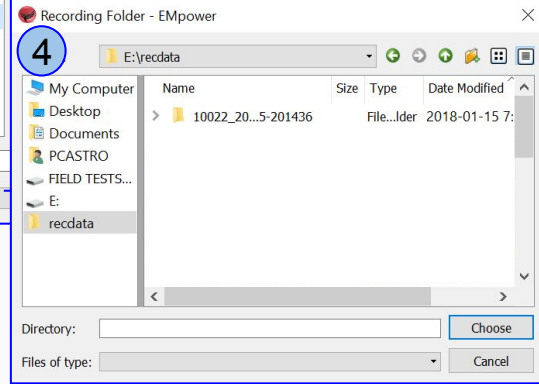
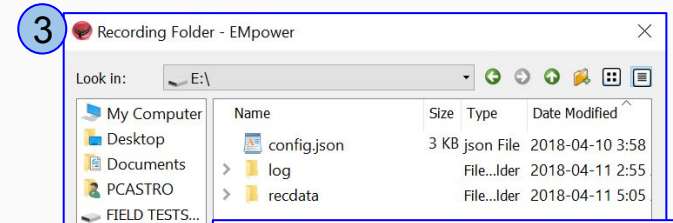
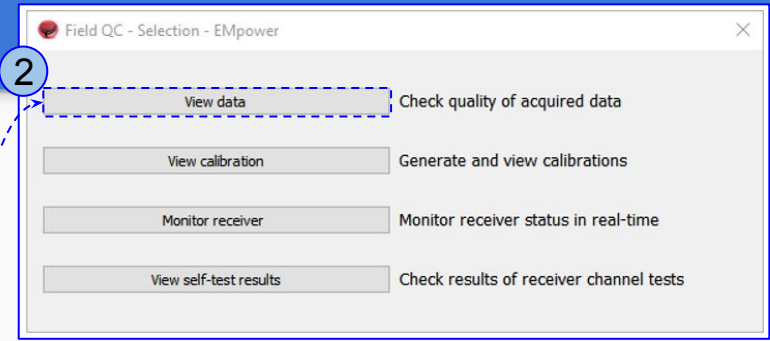
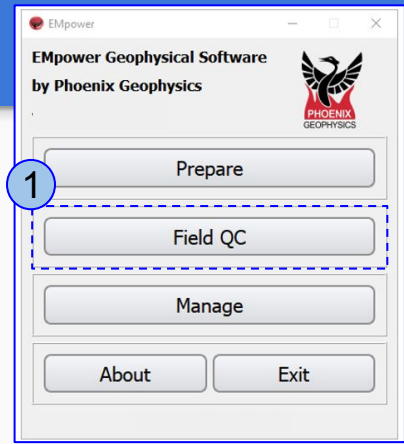


## Indicators

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

# Importing - 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**



**i** To manage data the "Manage" section can be consulted.

## Review and Process the recording information

1. Review the Electrode **Resistance** values and make the necessary corrections
  - Electrode **Distance (m) to GND**
  - **Polarity**
  - **E-Azimuth**
  - **External Filter**
2. Ensure that the magnetic sensors were detected and make the necessary corrections
  - **Serial #**
  - **Polarity**
  - **H1-H3**
  - **Azimuth**
3. **View Recording Details** (see page 16)
4. After reviewing the information, **Process** the data (see next page)



**!** The warning icon indicates that something might be wrong with the sensor or the coil lead, review the [Troubleshooting manual](#) for more details

**Field QC - EMpower**

Status:  Approved  Unapproved  Rejected

Tools: Time Series | Spectra | **Process (Orthogonal)**

Recording Information

Recording ID: 10426\_2021-09-22-000400

Start time: Sep 21 2021 20:04:01 (Local) Eastern Daylight Time (GPS -04:00)

Duration: 43 m 49 s

Survey name: Bootloader 16 Test

Station name:

Operator(s):

Company name: Phoenix

Layout Geometry: Orthogonal

Declination: 0.00°

Notes:

**1** Electric Channels

| Channel | Distance (m) to GND |           | Polarity                          | Resistance (Ω) |           | Gain | LPF [Hz] | DC [V] |
|---------|---------------------|-----------|-----------------------------------|----------------|-----------|------|----------|--------|
|         | (+) N / E           | (-) S / W |                                   | (+) N / E      | (-) S / W |      |          |        |
| E1      | 0.00                | 0.00      | <input type="checkbox"/> Inverted | N/A            | N/A       | N/A  | N/A      | N/A    |
| E2      | 0.00                | 0.00      | <input type="checkbox"/> Inverted | N/A            | N/A       | N/A  | N/A      | N/A    |
| E3      | 0.00                | 0.00      | <input type="checkbox"/> Inverted | N/A            | N/A       | N/A  | N/A      | N/A    |
| E4      | 0.00                | 0.00      | <input type="checkbox"/> Inverted | N/A            | N/A       | N/A  | N/A      | N/A    |
| E5      | 0.00                | 0.00      | <input type="checkbox"/> Inverted | N/A            | N/A       | N/A  | N/A      | N/A    |

E Azimuth: 0.00° External Filter: None

**2** Magnetic Channels

| Channel | Sensor  | Detected    | Serial # | Polarity                          | Gain | LPF [Hz] | DC [V]   |
|---------|---------|-------------|----------|-----------------------------------|------|----------|----------|
| • H1    | MTC-150 | Not Present | 1        | <input type="checkbox"/> Inverted | x4   | 10000    | -0.00061 |
| • H2    | MTC-150 | Not Present | 2        | <input type="checkbox"/> Inverted | x4   | 10000    | 0.00076  |
| • H3    | MTC-150 | Not Present | 3        | <input type="checkbox"/> Inverted | x4   | 10000    | 0.00031  |

H1-H3 Azimuth: 0.00°

**3** View Recording Details

**4** This section can also be used to input additional field information if desired

**13**

# Processing MT Data

## 1. Click the **Process** button

- Verify that the channels and references selected are the desired ones

## 2. Define the segment of time series to be processed

- Select
- Or by period

## 3. Enable that carried region

## 4. Click t

## 5. A live appearance

The screenshot displays the EMpower software interface for processing MT data. The main window is titled "Field QC - EMpower" and shows the "Process (Orthogonal)" button circled in blue with a "1". Below it, the "Recording Information" section shows details for "10065 Site 2 (2 h 23 m 50 s)". The "Magnetic Channels" section shows "Hy = H2 MTC-100 0" selected. The "Electric Channels" section shows "Ex = E1" and "Ey = E2" selected. The "Processing timeframe" section shows the "Site time zone" selected. The "Electric power grid filter" section shows "60 Hz" selected. The "Channel Selection" dialog box is open, showing "Ex" and "Ey" channels selected. The "Magnetic Channels" table shows "MTC-150-?" selected. The "Processing Queue" window shows the progress of "Magnetic Remote Processing" with a progress bar at 75% and a graph of "Amplitude (mV)" vs "Frequency (Hz)".

1. Click the **Process** button

2. Define the segment of time series to be processed

3. Enable that carried region

4. Click t

5. A live appearance

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

# Viewing 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 Levels for each channel

The screenshot shows the EMpower recording details interface. It includes recording metadata, instrument information, and a table of channel details. Five callouts are present:

- 1. Battery Voltage:** A line graph showing voltage (V) over time, starting at approximately 12.8V and decreasing to about 12.4V.
- 2. Internal Temperature:** A line graph showing temperature (°C) over time, fluctuating between approximately 17.4°C and 20.4°C.
- 3. Number of Satellites:** A bar chart showing the number of satellites over time, with values ranging from 6 to 15.
- 4. Saturated Frames - E1:** A bar chart showing the number of saturated frames over time, with values ranging from 0 to 3.
- 5. Time Series Level - E1:** A scatter plot showing signal levels (V) over time, with maximum values (red dots) around 1.8V and minimum values (blue dots) around -1.2V.

| Tag | Board S/N | Model   | Firmware | Sat           | Signal Ranges |
|-----|-----------|---------|----------|---------------|---------------|
| 1   | 201070    | BCM01-I | 1001c    | ~0 % - View   | View Levels   |
| 2   | 201071    | BCM01-I | 1001c    | 0-99 % - View | View Levels   |
| 3   | H1        |         |          | 0 %           | View Levels   |
| 4   | H2        |         |          | 0 %           | View Levels   |



*Please check out the [FAQs](#)*

*<https://phoenixgeophysics.freshdesk.com/>*

*Or email us at: [support@phoenix-geophysics.com](mailto:support@phoenix-geophysics.com)*