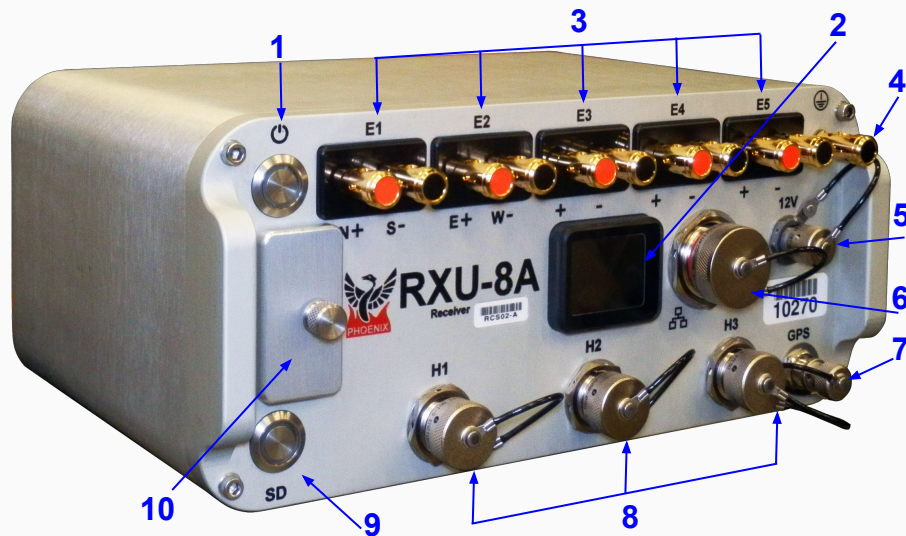


# RXU-8A Quick Start Guide



2. RXU-8A (components)
3. Product description
4. Creating a Configuration File
5. Configuration Creator - CSAMT acquisition
6. Configuration Creator - MT acquisition
7. Electric Channel Settings - MT acquisition
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## Components

1	Power/Record button and indicator
2	Display
3	E1 (Ex) electrode connectors E2 (Ey) electrode connectors E3 electrode connectors E4 electrode connectors E5 electrode connectors
4	Ground electrode connector
5	12VDC power input
6	LAN connector
7	GPS antenna connector
8	H1 (Hx) magnetic sensor connector H2 (Hy) magnetic sensor connector 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.

# Creating a Configuration File

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

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

## 2. **Recording**

2.1. **MT - Configuration Creator**

2.2. **CSAMT - Configuration Creator**  
(see next page)

## 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*

The image displays a series of screenshots from the EMpower software interface, illustrating the steps for creating a configuration file. The main window shows the 'Prepare - EMpower' dialog with steps 1-4. Step 1 shows the 'Receiver Type' dropdown set to 'RXU-8A'. Step 2 shows the 'Recording' section with 'MT' selected. Step 3 shows the 'Sensor configuration - EMpower' dialog with three channels (H1, H2, H3) selected, each with 'MTC-150' sensor type and '0' serial number. Step 4 shows the 'System Tests' section with 'White Noise', 'Parallel Noise', and 'Self Test' options. A file explorer window shows the 'config.json' file being saved in the 'test 2' folder.

# Configuration Creator - CSAMT acquisition

1. Select the **CSAMT** recording type
2. **CSAMT Setup Wizard**
  - Type the Project name
  - Select the Local power line frequency
  - Choose the Local time zone and click Next
3. **Frequency Schedule**
  - Define the lowest and highest frequency
  - Select the Frequency per octave and click Next
4. **Transmitter Setup**
  - Select the Transmitter (Tx) type
  - Type the sensor/ Tx serial and click Next
5. **Starting Coordinates**
  - Enter the base coordinates of the grid (latitude and longitude)
  - The Station Separation within a same line
  - Separation between lines
  - The Line orientation
6. **Click Accept**

**1** Prepare - EMpower

Receiver Type: RXU-8A

Recording: MT, CSAMT

Calibration: Sensor, Receiver

System T: White, Parallel, Self

**2** Prepare CSAMT - EMpower

CSAMT Setup Wizard

Project name: Test

Local power line frequency: 60 Hz

Local time zone: Dublin (GMT+01:00)

Cancel Previous Next

**3** Prepare CSAMT - EMpower

Frequency Schedule

Lowest: 1.00 Hz

Highest: 9600.00 Hz

Density: 4

Frequencies per octave: 4

Note: This transmission table cycles every 1400 seconds

Cancel Previous Next

**4** Prepare CSAMT - EMpower

Transmitter Setup

Tx type: TXU-30

Sensor type: CMU-1

Sensor/Tx Serial: 12345

Cancel Previous Next

**5** Prepare CSAMT - EMpower

Starting Coordinates

Note: coordinates must be in decimal degrees

Latitude: 0.0000000 °

Longitude: 0.0000000 °

Station separation: 0.00 m

Line separation: 0.00 m

Line orientation: 0 °

Cancel Previous Accept

**6**

# Configuration Creator - 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** (see pages 7-8)
5. Define the **Sampling Mode** and/or **Sampling Rate**
6. **Configuration Layout**

Configuration Creator - Empower

File Receiver Schedule Timezone

- Manual Ctrl+Alt+1
- Automatic Start Ctrl+Alt+2
- Single Shot Ctrl+Alt+3
- Daily Ctrl+Alt+4
- Weekly Ctrl+Alt+5
- Add Schedule Ctrl+A

50.00m 50.00m Gain: Normal LPF: 10 kHz N S

50.00m 50.00m Gain: Normal LPF: 10 kHz E W

50.00m 50.00m Gain: Normal LPF: 10 kHz

50.00m 50.00m Gain: Normal LPF: 10 kHz

50.00m 50.00m Gain: Normal LPF: 10 kHz

Live Tool

PHOENIX GEOPHYSICS RXU-8A Geophysical Receiver

MTC-150 Gain: Normal LPF: 10 kHz S/N: 0

MTC-150 Gain: Normal LPF: 10 kHz S/N: 0

MTC-150 Gain: Normal LPF: 10 kHz S/N: 0

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

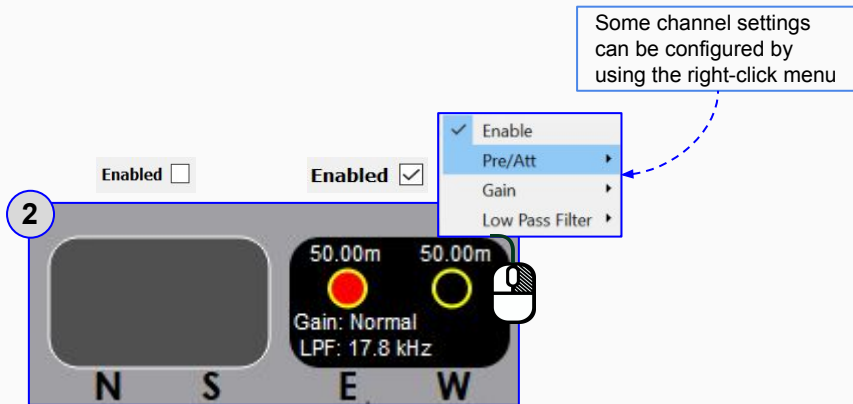
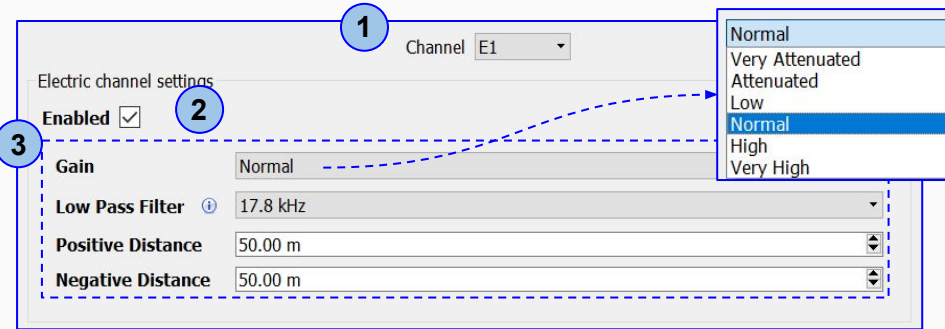
Configuration Notes

Additional information

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

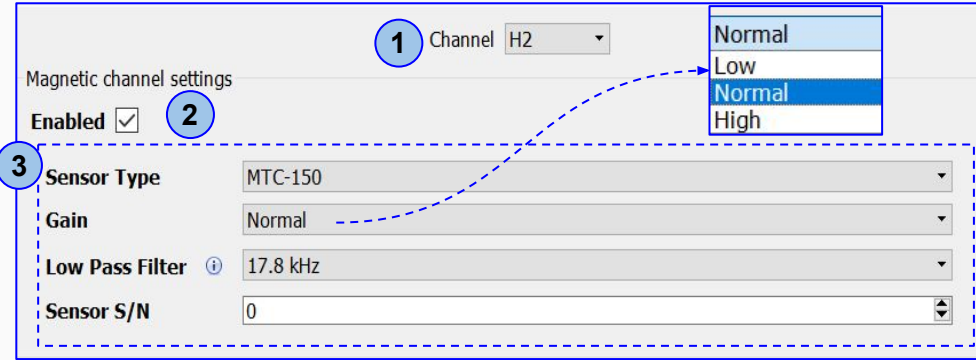
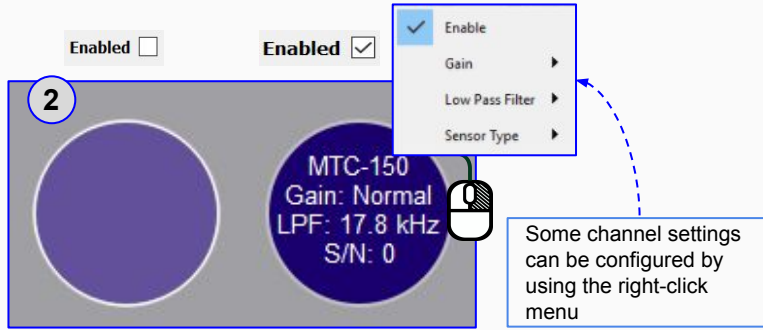
# Electric Channel Settings - MT acquisition

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**



# 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**



**i** Channel settings can be configured by using the right-click menu or by using the Magnetic channel settings section



# Using Remote Control Client

1. Use **Remote Control Client** from Tools menu
2. Provide a valid **hostname**, **username** and **password**
3. Then click on **Connect** button to establish a connection
4. **Choose Receiver Type**
5. **Enter the instrument ID**
6. Configure **Electric and Magnetic channels** as needed
7. Click on the **Send Configuration** button

## Note :

Once the receiver has received the new configuration and started the new recording, screen will be inactive for at least 3 minutes.

1

2

3

4

5

6

7

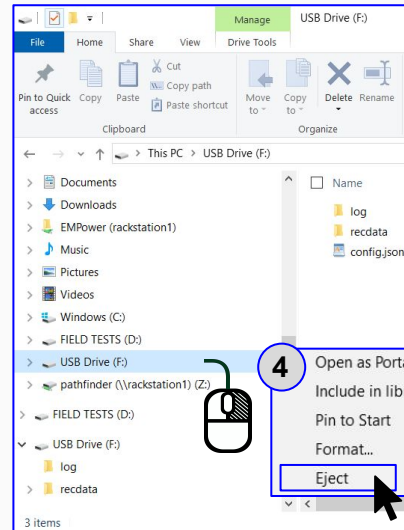
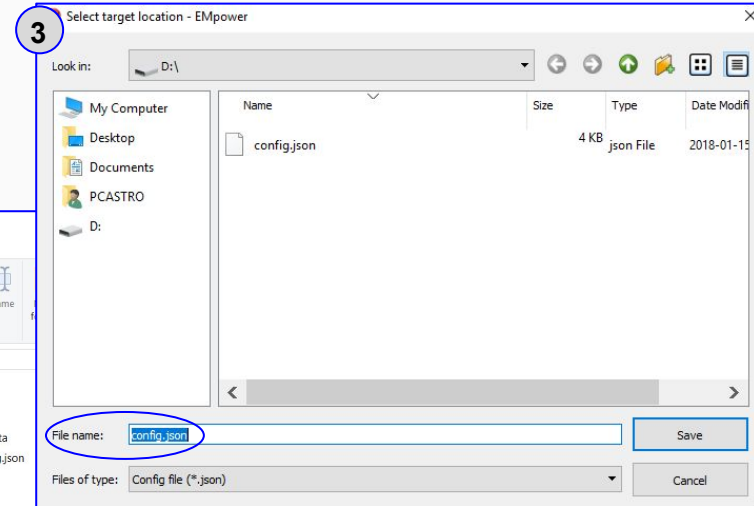
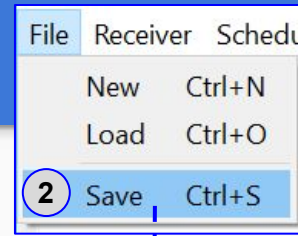
Attenuator turned on for one of electric channels.  
Receiver firmware v1.54.1 or later is required for attenuator support.

Success - Remote Control Client  
Configuration was successfully transmitted

Receiver with firmware newer than v1.54.1 will ignore the configuration about the Attenuator

# 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**




# 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

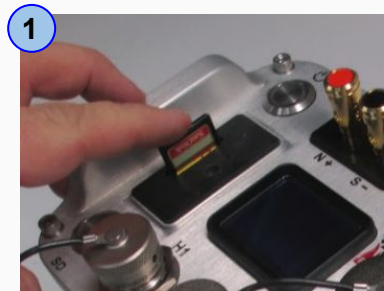


 In the field, it is often most efficient to connect the components to the receiver following the order on the right

# SD Card - Recording Data

## Recording

1. Insert the **SD card**
2. To turn on the receiver, press the **Power** button briefly
  - 2.1. Wait until both **LEDs** are solid blue
  - 2.2. **Automatic Start** recording  
*\*For any problem with the SD Card, check the Troubleshooting manual*
3. If the schedule type was configured as **Manual**, press the **Power** button to start recording



- 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*

- 2.2 

	Recording
Power	
SD	

- 3 Press the power button briefly and release

	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, pressing the **Power** button for a few seconds 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**



## Indicators

■■■■■■■■ Rapid, equal pulses

■■■■■■■■ Solid color / Off

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



- 2 Keep pressing the power button 3 sec and release



- 3



# Quick field Data Evaluation

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

Recording Start Time (GPS timezone)

> 10022\_2018-01-15-201436

Receiver Serial Number      Recording Date

**EMpower Geophysical Software by Phoenix Geophysics**

**1** Evaluate

**2** View data

**3** E:\

Name	Size	Type	Date Modified
config.json	3 KB	json File	2018-04-10 3:58
log		File...lder	2018-04-11 2:55
recdata		File...lder	2018-04-11 5:05

**4** 10022\_20...5-201436

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

## 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 and make the necessary corrections
  - **Serial #**
  - **Polarity**
  - **H1-H-3**
  - **Azimuth**
3. **View Recording Details** (see page 15)
4. **Process** the recorded data after the reviewed the information (see next page)

Channel	Sensor	Detected
H1	MTC-50H	Not Present

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

The screenshot shows the 'Evaluate - EMpower' software interface. At the top, there's a status bar with a timer (18 h 26 m 13 s) and buttons for navigation. Below that, there are radio buttons for 'Approved', 'Unapproved', and 'Rejected'. The 'Tools' section has tabs for 'Time Series', 'Spectra', and 'Process (White Noise)'. A form for station information includes fields for 'Station name', 'Operator(s)', 'Company name', 'Layout Geometry' (set to 'White Noise'), 'Declination' (0.00°), and 'Notes'. A blue circle with the number '4' is around the 'Station name' field. A blue circle with an 'i' icon is around the 'Notes' field, with a callout box stating: 'This section can also be used to input additional field information if desired'. Below this is the 'Electric Channels' section, which contains a table with columns for 'Channel', 'Distance (m) to GND', 'Resistance (Ω)', 'Polarity', 'Gain', 'LPF [Hz]', and 'DC [V]'. The table lists channels E1 through E5. A blue circle with the number '1' is around the 'Distance (m) to GND' column header. Below the table is the 'Magnetic Channels' section, which contains a table with columns for 'Channel', 'Sensor', 'Detected', 'Serial #', 'Polarity', 'Gain', 'LPF [Hz]', and 'DC [V]'. The table lists channels H1 through H3. A blue circle with the number '2' is around the 'Detected' column header. At the bottom, there is a 'View Recording Details' button with a blue circle containing the number '3'.

# 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*

The screenshot displays the EMpower software interface with several key components and callouts:

- Evaluate - EMpower (Top Left):** Shows status options (Approved, Unapproved, Rejected) and a 'Process (White Noise)' button highlighted with a blue box.
- Magnetics Selection - EMpower (Top Right):** A dialog box with fields for Hx, Hy, and Hz, and a warning: "Hx and Hy are mandatory channels".
- Channel Selection - EMpower (Middle Right):** A dialog box with columns for Ex and Ey channels (E1-E5) and radio buttons for selection.
- Main Interface (Center):**
  - Reference type:** Set to 'Magnetic'.
  - Electric Channels:** Radio buttons for 'Use the following' (EX=E1, EY=E2) and 'Use the following' (EX=E3, EY=E4).
  - Processing timeframe:** Includes 'Time zone' (UTC or Site time zone: America/Toronto), 'Start' (2020-05-05 15:31:56), and 'End' (2020-05-06 09:58:09) fields. Sunrise and sunset times are also shown.
  - Electric power grid filter:** Radio buttons for 50 Hz, 60 Hz, and None.
  - Buttons:** 'Cancel' and 'Process' buttons at the bottom.

Numbered callouts (1-5) indicate the sequence of actions described in the text. Callout 1 points to the 'Process' button. Callout 2 points to the start and end time fields. Callout 3 points to the '50 Hz' filter option. Callout 4 points to the 'Process' button. Callout 5 points to the 'EMpower' window showing the resulting resistivity and phase curves.



# 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

**Recording Details: 10205\_2018-10-04-193809 - EMapower**

<b>Recording Details</b>		<b>Timing Details</b>			
Recording ID: 102_2018-10-04-193809	Survey Name: WA	Start Time: Thu Oct 4 19:38:10 2018	Stop Time: Sun Oct 7 23:52:14 2018		
Station Name: Remote	Company Name:	Duration: 76 h 14 m 4 s	Latitude: 46.1459°N		
Receiver Type: ###	Instrument Serial: 102	Longitude: 122.783°W	Altitude: 1136.11 m		
Operator: EF&YA	Instrument Info				
OS Version:					
Motherboard Model: BMB01-G					
Motherboard Serial: 031987					
Battery: Low: 12.192 V, High: 12.88 V	[Details]				
Temperature: Low: 17°C, High: 21°C	[Details]				
<b>Decimation</b> Recorded 2 seconds at 24000 samples/s every 30 seconds, and continuously at 150 samples/s					
<b>GPS Timing Card</b> Serial Number: 201288      Firmware Version: 00010029X Model: BTM01-1      # of Satellites: 6 - 15 satellites [Details]					
<b>Channels Details</b>					
Tag	Board S/N	Model	Firmware	Sat	Signal Ranges
1	201070	BCM01-I	1001c	~0% - View	View Levels
2	201074	BCM01-I	1001c	0.001% - View	View Levels
3				0%	View Levels
4				0%	View Levels

**1 Battery Voltage**

**2 Internal Temperature**

**3 Number of Satellites**

**4 Saturated Frames - E1**

**5 Time Series Level - E1**



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