

# Quick Start Guide

For

MagEx Portable Magnetometer

**P/N 900-00420-01**

Volume 1- Rev. 1

January 2024

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**GEOMETRICS**

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This guide is meant to be a quick reference for starting out with your MagEx. More details can be found on Geometrics website.

## 1.0 What's in the box?

1. MagEx
2. Shoulder Strap
3. Customized Tablet (ultra-low magnetic signature)
4. Battery (Optional)
5. MagEx Battery Charger (Optional)
6. Tablet Charger
7. Sensor orientation tool and USB with Survey Manager software inside

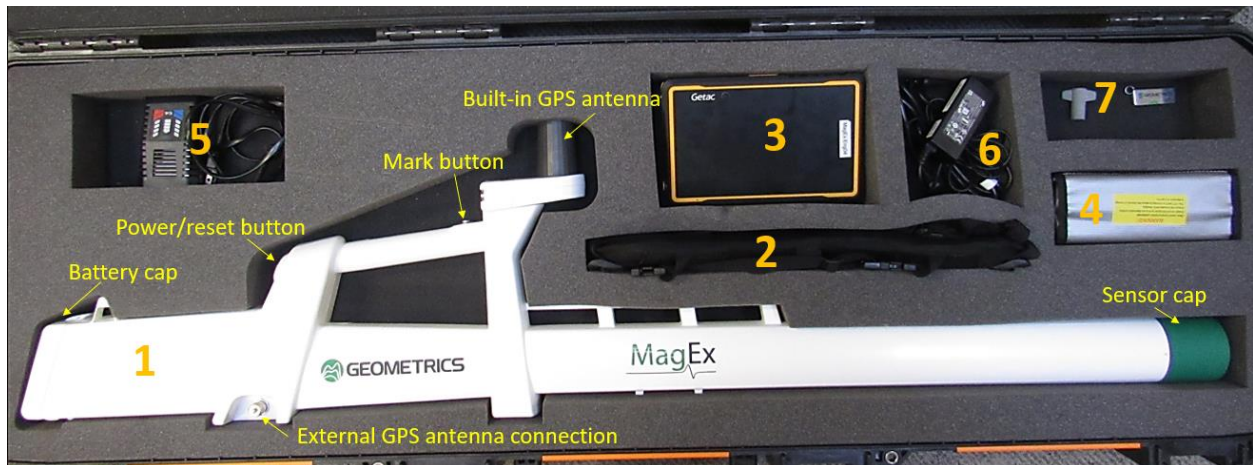


Figure 1-1 – Typical MagEx system in the box. The power button is located behind the handle (hold for 3s to power down). It can also be used to reset the device (push and release) without a power-cycle. The Mark button is used to mark pre-set locations in Marked (non-GPS) surveys. The built-in GPS antenna cannot be detached but can be orientated 90° off the default direction for backpack surveys. If customers need a different GPS antenna location, an external antenna (not provided) can be used. Once an external antenna is connected, the GPS signal is automatically switched to the external antenna.

## 2.0 Battery

We recommend using 2x 6000 mAh LiPo batteries, each providing approximately 6 hours of battery life between charges. It is recommended users install both batteries prior to the surveys.

The battery compartment is located on the rear portion of the instrument. To install or change the batteries, access the battery compartment by removing the battery cap. After the cap is removed, gently pull the two pairs of red and black battery cables out of the compartment to access their ends.

Slide the first battery into the battery compartment and connect the battery to the unit with the orange battery connector. The white connector is for the voltage monitor. Attach the corresponding voltage monitor to the battery.

After connecting the first battery, repeat the process with the second battery. Carefully tuck the wires back into the compartment and make sure that wires will not get stuck between the walls of the main body and

the cap (Otherwise, the gasket inside the cover may get damaged!). Align the cap and push it against the main body until it is latched on both top and bottom.

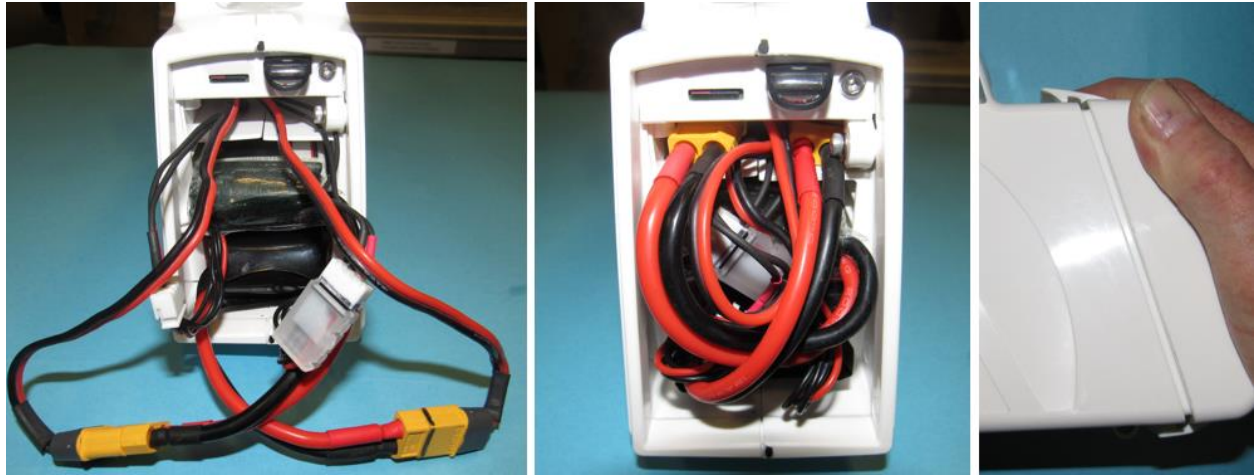


Figure 2-1 – Battery connectors, USB and SD card locations, battery end cap. The battery connector and voltage monitor come in pairs. To get the most accurate battery monitoring, make sure that you match wires so that each battery is plugged into the voltage monitor that corresponds to its matched battery connector.

### 3.0 Powering On/Off

The power button is located on the end of the handle section.

**On** - depress and release power switch.

**Reset** - Depress and release power switch once while the unit is on.

**Off** - Press and hold power button for 3 seconds. The LED's will go out once the unit is completely powered down.

Power Switch LED	Meaning
Solid Green	Battery > 30%
Solid Blue	30% > Battery > 20%
Solid Red	20% > Battery > 5%
Flashing Red	Charge Immediately

Table 1 - LED Light Patterns (Reference purpose only. A brand new 6000mAh battery can typically last 6 hours at room temperature, but only 3 hours at -20°C. The battery lifetime will also vary depending on the condition of the batteries. To avoid data loss, customers are encouraged to change the batteries before reaching 20% level.)

## 4.0 Orienting the Sensor

The MagEx has sensors that can be adjusted by 90°, depending on your location on the Earth's Magnetic Field Inclination map. They are located at the front of the unit under the green cap. To adjust them, remove the green sensor cap from the front of the unit and the sensor plug, use the sensor orientation tool or a 10mm hex socket wrench to rotate the sensor holder.

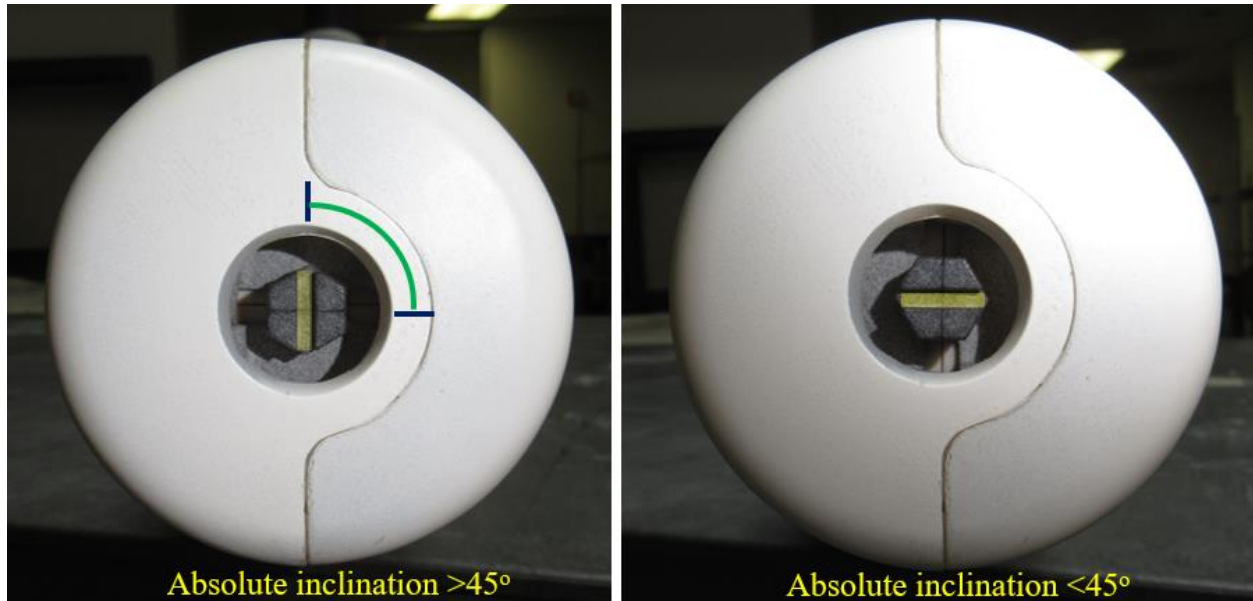


Figure 4-1 - Sensor Dead-zone Adjustment. Note that the sensor only turns 90°. Do not force it beyond this point.

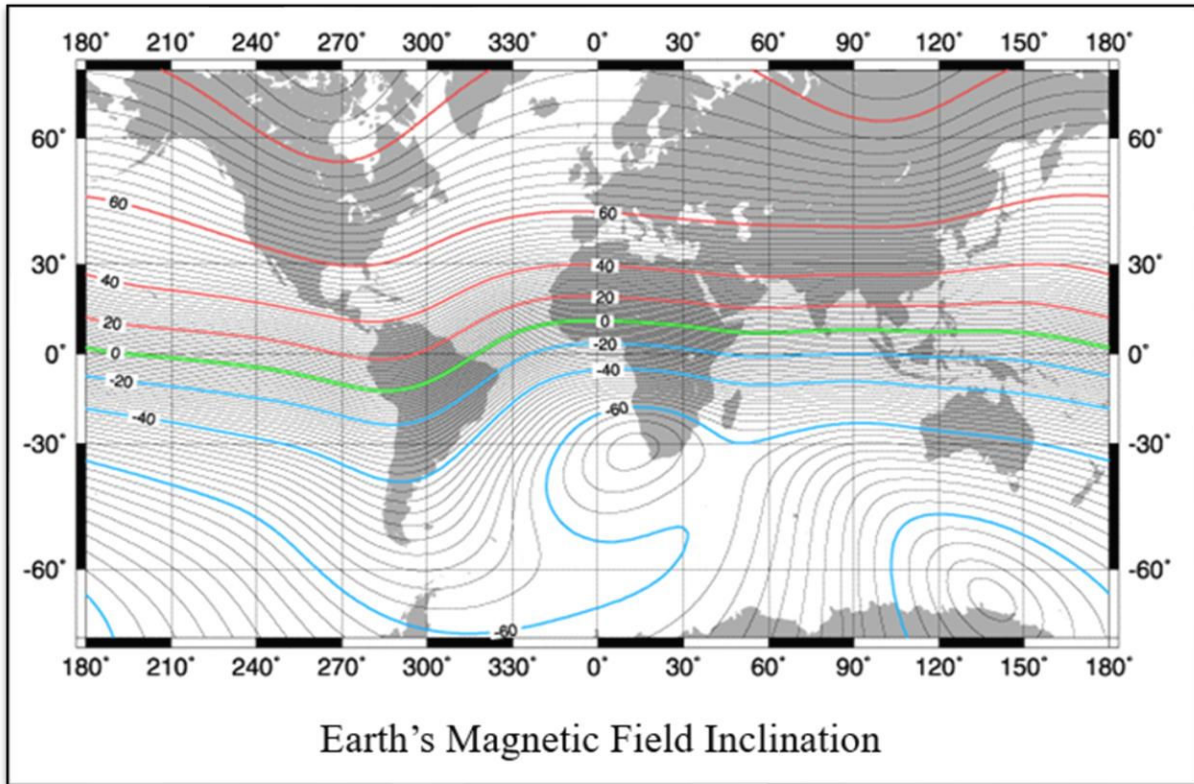


Figure 4-2 – Earth’s Magnetic Field Inclination

## 5.0 LED Displays

The 4-light LED display indicates the status of the unit and will blink in the patterns shown below.





WIFI		GPS		Magnetometer		Recording	
	Meaning		Meaning		Meaning		Meaning
Solid Blue	Connected	Solid Yellow	Valid location + PPS phase locked	Solid Green	Working	9/10 On 1/10 Off	Recording
Blinking (1/sec)	On – not Connected	Blinking (1/sec)	GPS received but not locked	Blinking (1/sec)	Startup	Off	Not Recording
-----	-----	Off	No Data	Blinking (10/sec)	No Mag Reading	10 Blinks	Error

Table 2 - LED Status Display



## 6.0 How to Use the Shoulder Strap

The MagEx comes with a shoulder strap designed to support the instrument safely and to be comfortable to wear. Clip the shoulder strap to the instrument as shown in the below figures. Once the shoulder strap is attached to the instrument, you will place the padded portion on your shoulder as shown in the photo. Adjust the strap so it fits comfortably and then take the narrow strap attached to the back shoulder and wrap it around your body and under the opposite arm. Attach it to the front of the shoulder strap with the plastic locking clip. Both the shoulder strap and chest strap are adjustable. Adjust each of these so that the instrument feels secure, and the strap is comfortable. To adjust the level of the magnetometer, you can adjust the length of the front and back leveling strap supporting the MagEx.




Figure 6-1 – Fitting the Shoulder Strap (A) Front View (B) Back View and (C) View showing the correct adjustment of the leveling strap.

## 7.0 Using the Getac Tablet

Please note that this is a customized tablet to be very low magnetic signature, NOT an off-the-shelf Getac tablet. Power On both the Getac tablet and the MagEx. Once the tablet is on, swipe down to access the WiFi connection (default password: password) and connect to the MagEx. Once the tablet is connected to the MagEx (blue LED becomes solid), return to the tablet's home screen. The Getac table acts as your data logger.

## 8.0 MagNav App

You will see the MagNav Icon  on your tablet's home screen. Double click and open the MagNav app. Click the Mag Data tab, magnetometer readings will be displayed. Use two fingers to zoom in or out and double tapping for auto-zoom. You can adjust the speaker volume by clicking the setting button.

Click a project name (or **Create New Project**) to open it and inside the Surveys page click **Create New Survey**. In the pop-up window, set up your survey parameters and click OK. The Swath Radius (in unit of meter) controls the displayed GPS route linewidth on the Navigation screen (section 9.0). The new survey will appear on your Surveys page. Click the survey name to enter the survey data collection.

Click the **Back** button (little triangle) on the bottom of the portrait screen (or on the right if in landscape mode) to navigate back.

## 9.0 Starting Your GPS Survey

To begin your survey, walk to your starting point. Go to the Navigation screen. Notice that the top and bottom margins are red. This means that the unit is not in a recording mode. Click **START**, the margins become green. The recording LED starts blinking as well.

Walk around with the MagEx, the route will be displayed. The linewidth of the displayed route is controlled by the swath radius. After covering the survey site, click **STOP**.

Navigate to the **Heat Map** page and click **REFRESH** to display the heat map of the collected data.

## 10.0 Marked Survey

GPS navigations are the most convenient data acquisition modes. However, you may not have reliable GPS signals at some survey sites, or the required positioning accuracy is beyond what is achievable using the GPS. Marked navigation provides a solution in such cases. Marked Survey can only be set up from the Survey Manager. Please go to Geometrics's website and navigate to the Support Forum for details. The button on the handle is used for the Marked surveys.

## 11.0 Downloading Your Data

After completing your data collection, you will need to copy your data from the tablet to a USB drive.

To do this, first insert your flash drive (do NOT use the USB drive inside the battery compartment) into the tablet.



Navigate to the home page by clicking the back button on the bottom or on the side.

Hold on to the project you want to export until the options appear on the top of the home page.

Click **EXPORT PROJECT** and then select the external USB drive.

Click **Use This Folder** on the bottom to copy the data (in dbt format) to the USB drive.

Transfer your data to your computer and use Survey Manager to convert dbt data to CSV or GDB files.

Note that the MagNav app will NOT over-write an existing dbt file. You will need to delete the existing dbt file on the USB drive before exporting.

## 12.0 Ejecting Your Flash Drive

It is very important for you to safely eject your flash drive. Failure to do this may result in corrupted data files! To properly eject your flash drive, swipe down from the top of the tablet's screen and select **General USB Drive** (or from the tablet **Setting**).

## 13.0 Exporting your Data

Survey Manager gives you 2 options for exporting your data – either as a CSV file or as a GDB file (compatible with the Geosoft processing suite).

To export, **open Survey Manager and click on MagEx**. On the screen that pops up, click on **Open Existing MagEx Project**.

**Select** and **open** your dbt file.

On the project screen you will see the export options. To export your file as a CSV, click on the survey you want to export and then press **Export to CSV**. A window will open asking which records you want to export.

For users with licenses for GeoSoft software, you may export the data as a GDB file.

If you find your file is smaller than expected or have fewer records than expected, then you may have lost your GPS signal during the survey. To check, export your file and include records without GPS.