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Version

This user manual applies to firmware v3.0.0 and higher.

This firmware requires MNemoLink 1.5.0 / Ariane 25.1.1 or higher.

> the latest firmware is available here and the upgrade procedure is explained here

If you wish to contribute to this user manual, it can be done on its public repository on GitHub.

The documentation is written in Markdown language.

Change Log Firmware

v3.0.0

- **Multilingual UI**: on-device menus and messages are now available in English, Spanish, French, German, Simplified Chinese and Traditional Chinese. Language can be changed at any time in OPTIONS > SETTINGS > DEVICE SETTINGS > LANGUAGE.
- **3D map view**: when viewing a survey map (from History or BASIC mode shortcut), press the select button to cycle between 2D map, 3D perspective view and statistics. In 3D mode the device orientation controls the camera angle.
- **WiFi at Start**: new option (OPTIONS > WIFI > WIFI ON AT START) to automatically start the device's WiFi access point on every power-on. The access point turns off automatically after 30 seconds if unused.
- **Web interface network management**: WiFi networks can now be added and removed directly from the device's built-in web page, without MNemoLink.
- **Menu reorganisation**: Settings is now split into *Device Settings* (display, units, language) and *System* (update, reset). The Extras menu is renamed to Tools and WiFi has its own dedicated submenu under Options.
- **Button auto-calibration**: performing 4 consecutive clicks on either side of the slider automatically calibrates the button press-force threshold.

v2.6.9

- Added check to avoid memory overflow in history build on startup
- Avg and Max depth display values were swapped
- Fixed marker counter initialisation bug
- Added button threshold auto-calibration (4 consecutive clicks on either side)
- Settings are now saved when modified from the web interface

v2.6.8

- Fixed bug that had date reset on each startup since 1/1/25

v2.6.7

- Display the angle difference in imprecision warning
- In Basic mode when LRUD is activated in settings, it will be displayed at the end of each station
- The section name in Verbose mode is checked for uniqueness
- Change distance display format when distance >100ft or m
- Using MNemo given name instead of fixed SSID for Wifi(AP) name
- Text display optimization
- Fixed bug in Map display mode that could lead to device lock.

v2.6.5

- Completed settings available on the webpage of the MNemo. Date/Time can now be synchronized through a web browser.
- Units get displayed for depth length and azimuth readings
- Added moving arrow progress indicator option instead of blinking background. Option available in Setting menu.
- Improvement of UI display, flickering and dirty pixels removed.
- Optional address parameter for command "getdata" allowing to read MNemos memory after reset.
- LRUD for survey OUT is now recorded at WHITE phase of station IN

v2.6.2

- Added icon  to signal the depth variation is bigger than length of line.

v2.6.1

- Support for MNemoLink network scan

v2.6.0

- Added 2 new click sequences, active during "Stand By", to set survey direction in BASIC mode. LEFT-LEFT-LEFT-LEFT for IN survey and RIGHT-RIGHT-RIGHT-RIGHT for OUT survey.
- During the ***Stand By*** screen a index of the click combination is displayed.
- In basic mode Naming of section is now incremental (B01,B02 etc), counter gets reset when memory is.
- The name of the section as well as the direction get displayed beneath the shot counter

v2.5.4

- Add a marker with a unique ID to a station in basic mode by using a combination of clicks: LEFT-LEFT-LEFT-RIGHT
- Marker number gets displayed on live and history map
- Live survey map can be displayed in BASIC mode using a combination of clicks: LEFT-RIGHT-LEFT-RIGHT
- You can access the LRUD entry mode in BASIC mode using a combination of clicks: RIGHT-RIGHT-RIGHT-LEFT
- Added statistics page in history section after displaying the map
- In settings there's a new option to use Icons instead of text for BASIC survey indications
- In settings there's a new option to adjust the contrast of the display.
- Menu simplified for water type, unit and survey mode settings. All testing and debugging mode are now regrouped in Test Mode.
- Bold font used in BASIC mode to increase readability.
- BASIC mode input progress bar optimized to show smoother progress.
- Bug Fix: the device would enter sleep mode in Verbose survey, this could lead to DMP corruption (*no data loss*)
- Bug Fix: Update was missing from Menu

v2.4.12

- Battery voltage display has been replaced by a percentage of charge available.
- On the main menu voltage gets displayed in red when < 20% (+/- 40 min of survey left)
- During survey an icon is displayed in BASIC and VERBOSE survey mode indicating low battery (< 20%)

- When battery reaches 0% the device is safely shutdown avoiding memory corruption that could occur if this happened during the survey phase.
- Improvement in the Extra>Test mode, more data displayed and possibility to adjust parameter live with CLI in this mode.

v2.4.9

Feature update:

- Changed doze and sleep time to 5 min and 20 min
- Double Tap sensitivity can now be adjusted
- Support for HW variant with RV-3028-C7 RTC
- Improved accuracy of slider button
- Randomize position of screen saver image

Bug Fixes:

- Fix issue where double tap light threshold was reset
- Pressure sensor change gets now saved after change
- Fixed display pixelization on startup
- When last shot is erased in Verbose mode it gets now also erased from current map
- Allow lower values of click threshold than 20
- Progress bar no longer erases shot number in verbose mode

v2.4.0

- Added interface to save values for LRUD (Left-Right-Up-Down) profile measured or estimated values. This feature is available in Verbose survey mode only for the moment.
- Fixed issue in Double Tap activated map display.
- When in and out azimuth difference is bigger than 5deg an icon will indicate it.
- Added display of Wi-Fi connection quality on main screen. Wi-Fi auto turn off after 5 min of inactivity.
- Added Setting page to webserver allowing to adjust most MNemo settings through the Wi-Fi interface.
- Text display uses now anti antialiased fonts.

v2.3.0

- Added Warning icon on display when magnetic interference detected
- Record temperature and time at each station.
- Increased size of font in the menu of the Verbose survey mode
- Added CSV file download to the webserver
- Added individual Section CSV download link on the main webpage
- Check for valid date at start
- When wheel mode (WM) is different than 0, reverse direction functionality is disabled
- Fixed bug in display when depth >100

v2.2.18

- Added MN logo to flash screen instead of white background
- Added reset default settings to menu.
- When compass calibration is finished progress bar turns from red to yellow
- Added command to adjust pic switch on threshold. New firmware for PIC

v2.2.16

- Replaced blinking led in Doze mode by blinking screen
- Changed OLED refresh rate

v2.2.14

- Added white blinking led in Doze Mode
- Fixed bug with surface pressure setting getting corrupted

v2.2.13

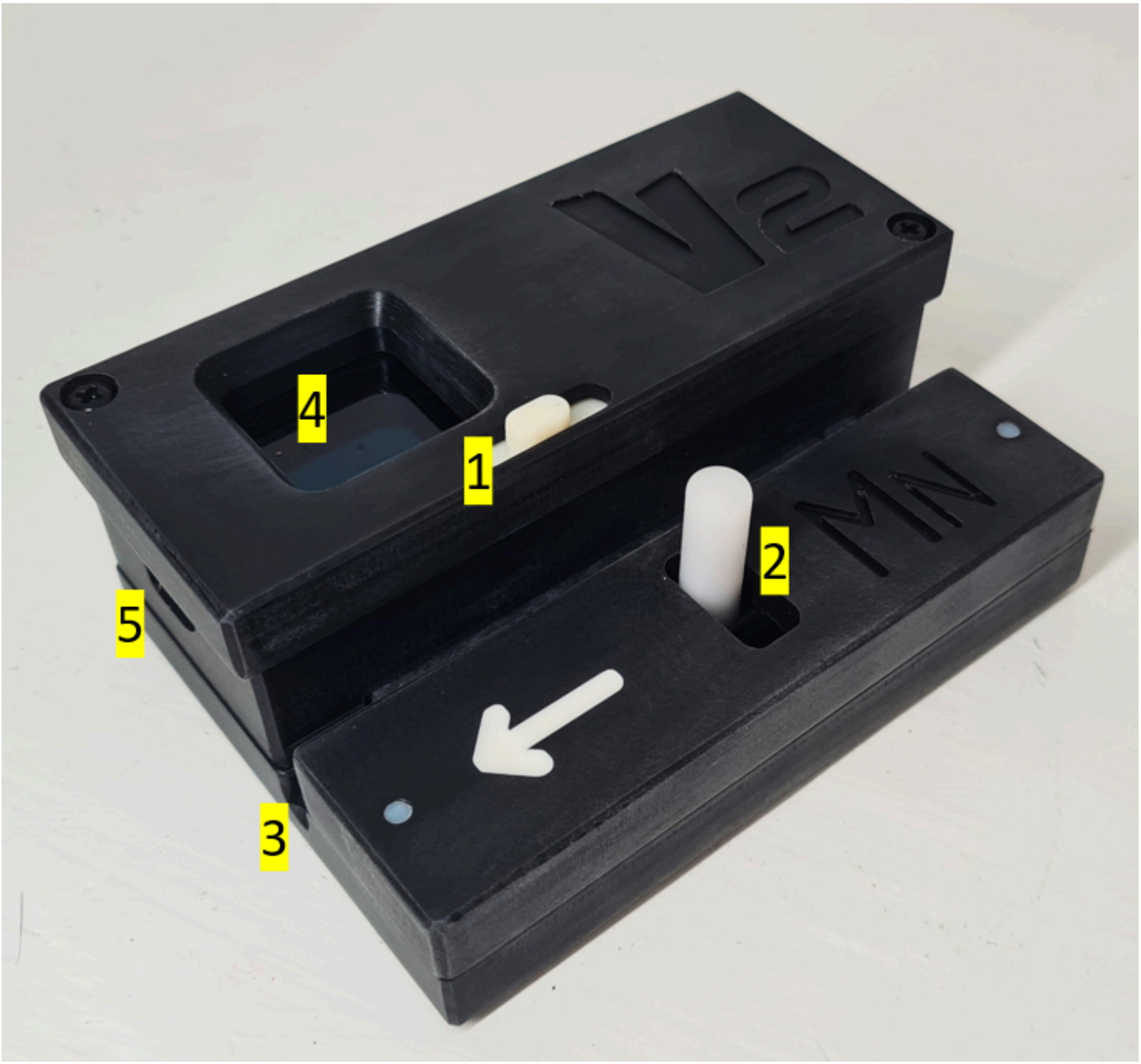
- Added CLI command to activate/deactivate the requirement to move the cursor right to turn on the MNemo: activatesafeon / deactivatesafeon
- Added message indicating that parameters have been updated with the firmware

v2.2.12

- Changed BASIC mode display, added display of station number and color change on whole screen.
- Added setting to deactivate double tap map display. Accessible through CLI: activatedoubletap/deactivatedoubletap
- Added setting to control length of click in BASIC mode. Accessible through CLI: setBMclickfactor factor (factor between 20% and 150%).
- Support for BNO085 as secondary compass.
- Fixed bug when SSID or wifi password contain whitespace character.
- Fixed bug in month settings

Device description

Thank you for your interest in the MNemo! We will start with a short description of the components of the device



1 - Slider Control

It's through this slider that you're gonna interact with the MNemo.

- Moving the slider **Left** is the equivalent of an *Enter* or *Select* order.
- Moving the slider **Right** is the equivalent of a *Next* or *Scroll* order.

2 - Pressure Plate lever

This is the part you will have to pull back to open the device an lock the cave line in it.

> Tip: When pulling the plate back apply the pressure at the bottom of the lever

3 - Line Slot

This is where the cave line will slide though the device after opening and releasing the pressure plate lever.

> The device will fit line up to 6mm diameter

4 - Display

The device has an OLED graphical color display. The text, icon and background colors will guide you through the survey process.

5 - USB Port

This is the port used to connect your device to your computer to adjust settings or download data

> The recommended way to download data is through wifi either by connecting your device to the local network or activating it as Wifi Access Point

It is also the port used for charging the device. Any 5V USB charger or computer USB port can be used to recharge the MNemo.

Switching Mnemo ON

There's no **ON/OFF** switch on the device. You'll switch the device ON using the slider control described in the previous section.

- Move the slider control to the **left** and hold it there until a led turns on, on the right side of the screen. At that moment move the slider to the right and the device will turn on displaying info about the firmware and the serial number of the device.

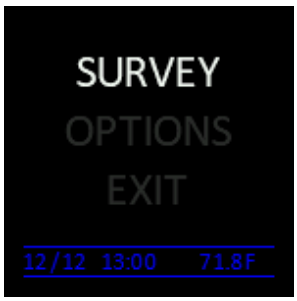
> Tip: If you can’t see the led just count to 6 before moving the slider to the right.

- When this appears, it means MNemo has booted properly, and all the sensors are working. Move again the slider to the left and you’ll be in the main menu.

> Tip: You can deactivate the requirement to move the cursor to the right with the *SwitchONSafety* setting.

Menu Navigation

Each menu will have an active or selected item that will be surrounded by **>...<** or **highlighted**.



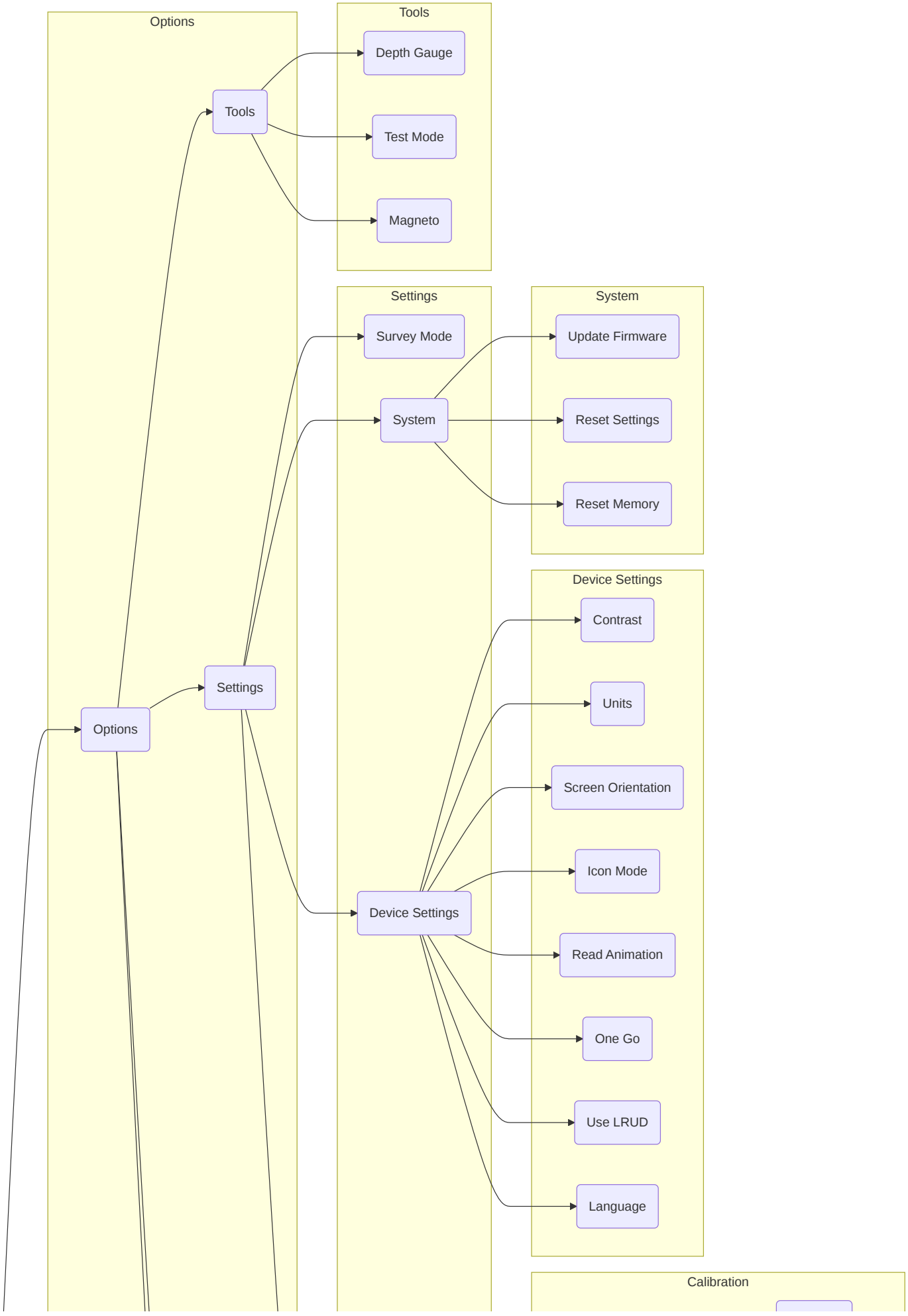
Moving the slider to the **right** is shifting the selected item to the next one (Either on the right or beneath).

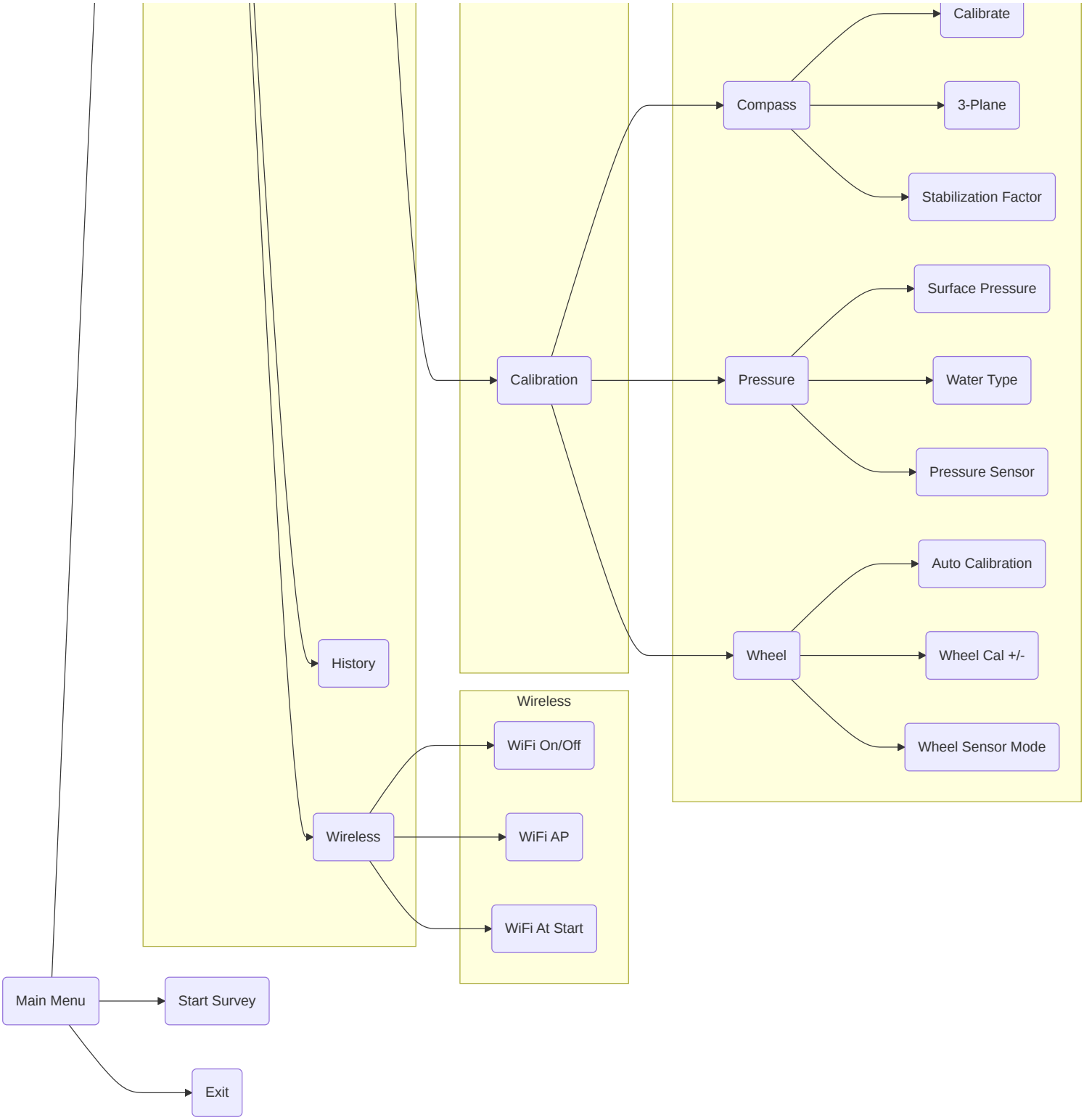
Moving the slider to the **left** is equivalent to the “Enter” key of your keyboard. It selects the current item or starts the action highlighted or selected.

Menus Overview

This document provides a visual representation of the MNemo menu structure.

Main Menu Structure


Options
Tools
Depth Gauge
Tools
Test Mode
Magneto
Settings
System
Survey Mode
Update Firmware
System
Reset Settings
Reset Memory
Device Settings
Contrast
Settings
Units
Options
Screen Orientation
Icon Mode
Device Settings
Read Animation
One Go
Use LRUD
Language
Calibration


Calibrate
Compass
3-Plane
Stabilization Factor
Surface Pressure
Calibration
Pressure
Water Type
Pressure Sensor
Auto Calibration
History
Wheel
Wheel Cal +/-
Wireless
Wheel Sensor Mode
WiFi On/Off
Wireless
WiFi AP
WiFi At Start
Main Menu
Start Survey
Exit

Main Menu

You will notice that the bottom line of the menu is displaying a stream of information:

Display	Description
26/03 11:26 27.6ºC	*Day/Month Hour:Minute Water Temperature*
84% (FW)(m) M:0%	*Battery Charge % - Type of water - Unit - Memory usage*

The date and time format can be adjusted in MNemoLink, the software used to interface the Mnemo with your computer. It is synchronized automatically with the date/time of your computer each time you connect it and download the data within the software.

> Tip: If the date is not set or set incorrectly it will se adjusted to a default date. You’ll get a message indicating this when you turn the Mnemo on.

Calibrating the unit

Before starting a survey MNemo’s sensors need to be calibrated and certain parameters need to be adjusted

- Setting the units used by MNemo (Meter or feet)
- Selecting the type of water you are diving in (Fresh or Salt)
- Adjusting the surface pressure
- Adjusting the line measurement factor
- Calibrating the Compass

> **All the settings and calibration are kept in memory when you turn MNemo off.**
> *This is a major difference with Mnemo v1 that required calibration of the compass for each session.*

Setting the Unit System

You can select either the metric system (using meter and ºC) or the imperial system (using feet and ºF) to be displayed on the MNemo. In the menu navigate to :

OPTIONS > SETTINGS > DEVICE SETTINGS > UNITS *(m or ft)* to select the active unit system.

> The unit system used on the device can be different from the one used in your mapping software

Calibrating the distance measurement

Manual Calibration

In the menu navigate to :

OPTIONS > SETTINGS > SENSORS > DISTANCE

and adjust the factor by small changes using the + and - menu entries. After each change take a length measurement of a line with a known length and compare the result. If the measurement is too short increase the factor otherwise decrease it.

> This is not the recommended way to calibrate the length. The Auto mode described below is recommended.

Automatic Calibration

- Put in place a line with markers separated by 5m precisely if the unit is set to METER, or 15 ft if set to IMPERIAL.
- Select **OPTIONS > SETTINGS > SENSORS > DISTANCE > AUTO**
- Take a measure between those two markers as if they were two stations(tie-offs) in a cave.
  > The Standard survey process is explained here
- Once done you'll get a message Adjustment : X , X being the adjustment factor *(How much the factor needs to be changed to have a good measure)*.
- Repeat that operation until you get an adjustment factor of **0** or **1**.

> Tip: If at any point during a survey dive you realize that the line measurement is not working anymore, change the parameter WM to the value 1 or 2 instead of 0. Try both setting to find the one that is still working.

Calibrating the compass

This is by far the most important calibration of the MNemo.

- To have a precise and correct calibration it is CRUCIAL to be far away from any magnetic or electromagnetic disturbance, in particular : Scooters, steel tanks, compasses, dive computers, dive light canisters.
- Avoid also: Electric line, cars, any electric motor, metallic structure, reinforced concrete walls etc ...

From the main menu select

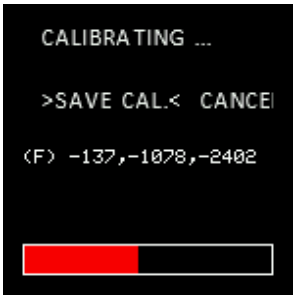
OPTIONS > SETTINGS > SENSORS > COMPASS

This opens the compass calibration menu with two calibration methods: **CALIBRATE** and **3-PLANE**, as well as the stabilization factor setting.

Fast Calibration

Select **CALIBRATE** from the compass menu.

You must rotate slowly (as in one full rotation per 4s) randomly the Mnemo on all of its 3 axis in order to perform the calibration.



The display will show a red progress bar indicating the advance or the calibration process.

Once the calibration gets close to completion it will turn green and you'll have more information displayed on the screen.

3-Plane Calibration

The 3-Plane calibration is an **optional** advanced method that collects measurements on three specific tilt planes: **horizontal (0°)**, **30° nose-up**, and **30° nose-down**. It is **not required** — the standard calibration described above is sufficient for most users and conditions.

The 3-Plane calibration can be beneficial when:

- You are surveying passages with consistent upward or downward slopes (around 30°) and want the best possible accuracy at those tilt angles.
- You want to ensure that the calibration is specifically optimized for the range of orientations typically encountered during cave surveying.

Because it concentrates measurements on the tilt angles you actually use in the field, the 3-Plane calibration minimizes heading inaccuracy in those orientations. However, if your standard calibration already shows a low ERR% and you are satisfied with the survey accuracy, there is no need to perform a 3-Plane calibration.

> **Prerequisite:** A valid Fast Calibration must have been performed and saved before using the 3-Plane method. If no prior calibration exists, the screen will display "CALIBRATE FIRST" and return to the menu.

Select **3-PLANE** from the compass menu.

How it works

The calibration proceeds through 3 planes in sequence. For each plane:

1. An instruction screen appears showing the current plane number (1/3, 2/3, 3/3) and the required tilt angle.

2. The live calibration screen displays:

    - **Tilt indicator**: Your current tilt angle and the target. The text turns **green** when you are within ±5° of the target, **yellow** within ±20°, and **red** otherwise. A horizontal bar also shows your tilt position relative to the target.
    - **Azimuth coverage**: A row of 12 blocks representing 30° sectors of a full 360° rotation. Each block turns **green** when that compass direction has been covered. A white marker shows your current heading.
    - **Calibration data**: Magnetometer readings, hard-iron offset (HI-OFF), geomagnetic field strength (GEOF), and fit error percentage (ERR%) appear as enough data is collected.
    - **Progress bar**: At the bottom, three segments show the overall progress across all three planes.

3. **Data is only recorded when your tilt is within ±5° of the target angle.** If you are outside this tolerance, measurements are paused and the azimuth sectors will not fill.

4. Once all 12 azimuth sectors are filled (a full 360° rotation at the correct tilt), the device **automatically advances** to the next plane.

Plane sequence

Plane	Target tilt	Instruction
1/3	0° (horizontal)	HOLD HORIZONTAL
2/3	+30° (nose up)	TILT 30 UP
3/3	-30° (nose down)	TILT 30 DOWN

Completion

After the third plane is complete, the calibration is **automatically saved** and a summary screen is displayed for 5 seconds showing:

- HI-OFF (hard-iron offset vector)
- GEOF (geomagnetic field strength)
- ERR% (fit error percentage)
- Total number of measurements collected

The device then returns to the main menu.

Understanding the calibration results

The relevant information is the amount after ERR% which indicates how close the calibration brought the compass to the theoretical model (uniform magnetic field in any orientation). This value should be smaller than 1%.

GEOF is the approximation of the magnetic field at that location. The compass of the Mnemo is not calibrated to give precise absolute magnetic measurements, nevertheless that gives you an indication of the strength of the magnetic field at your location and should be close to the theorical value (NCEI Geomagnetic Calculators)

> After a firmware update is generally recommended do redo a calibration of the compass but it is important to turn the device completely off before doing the calibration or you'll get incoherent measurements

> **Important:** A precise and correct compass calibration is essential for obtaining accurate survey data. The average calibration time is around 1 minute for the Fast Calibration. The 3-Plane calibration typically takes 2-3 minutes. If the calibration is not finished after 10min, turn MNemo off and on again and restart the calibration.

Survey Operations

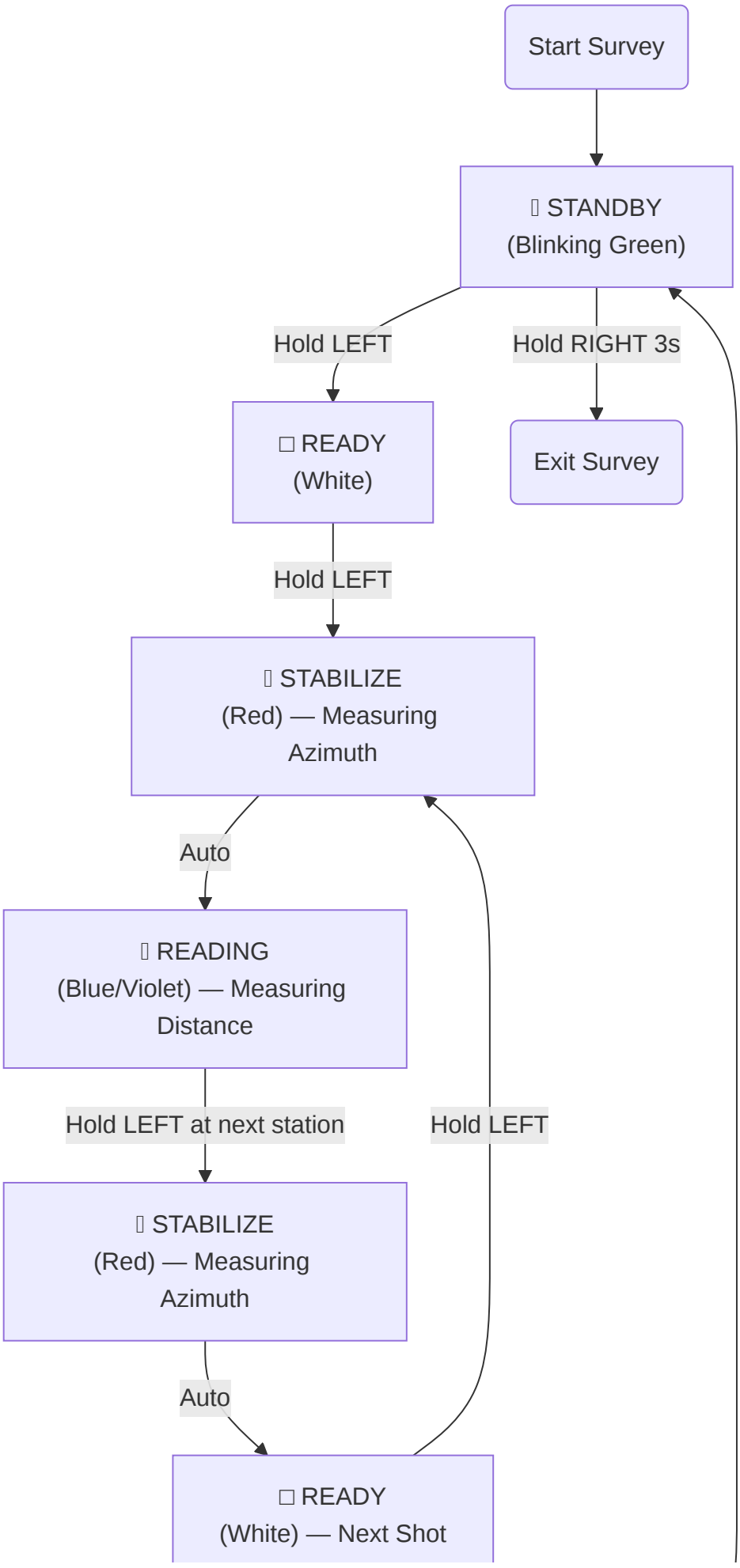
The Mnemo has two survey mode, you can select which one you preferably want to use in

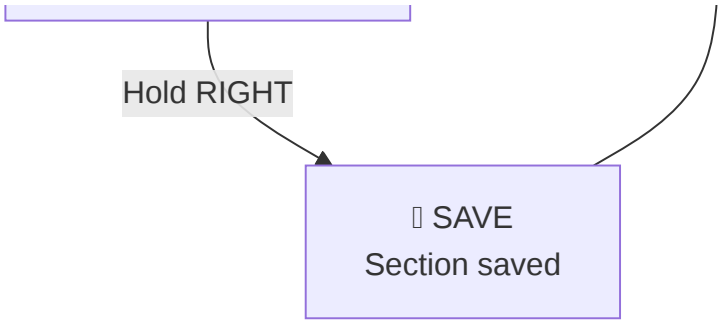
OPTIONS > SETTINGS > SURVEY (BASIC *or* Verbose)

- **BASIC** : This is the recommended survey mode. It does not require from you to read the display, just recognise the background color.
- **Verbose** *(legacy - it will be removed in future versions of the firmware)* This one is easier to start with and offers some options not available in BASIC mode. It requires to have the ability to read the text on the LCD.

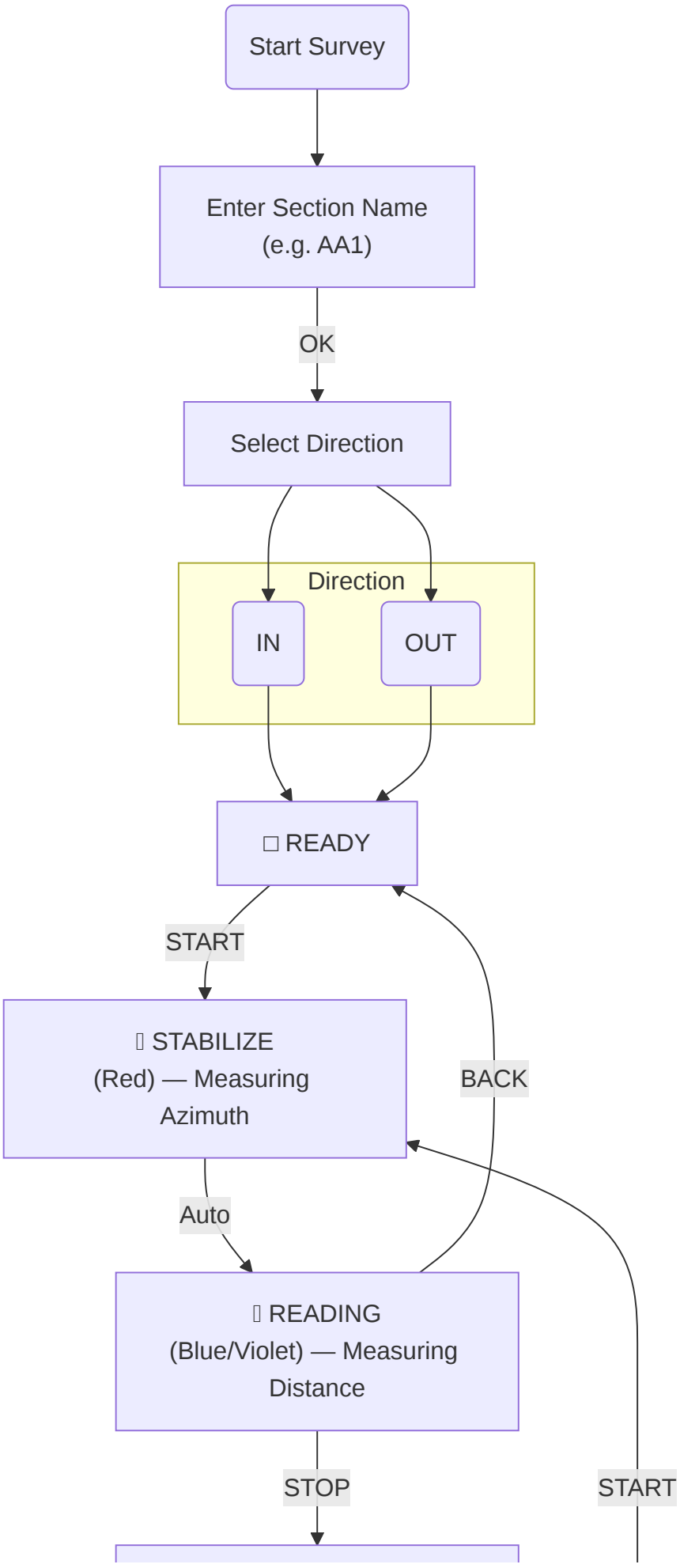
Survey Flow

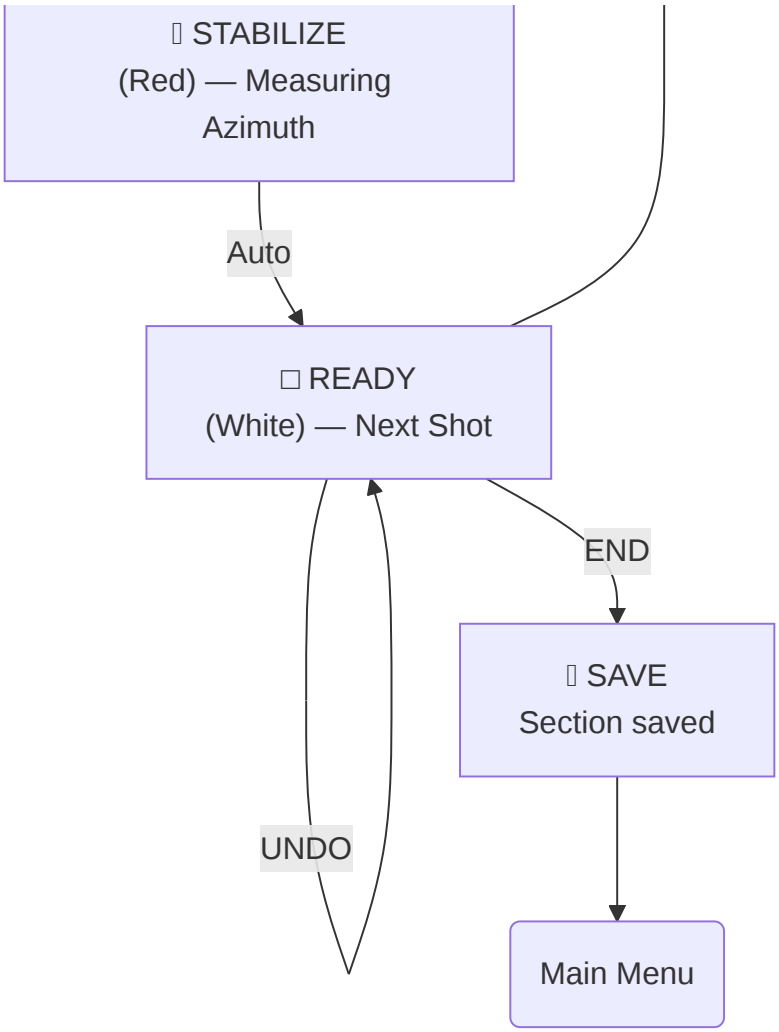
BASIC Mode


Start Survey
 STANDBY
(Blinking Green)
Hold LEFT
Hold RIGHT 3s
□ READY
(White)
Exit Survey
Hold LEFT
 STABILIZE
(Red) — Measuring
Azimuth
Auto
 READING
(Blue/Violet) — Measuring
Distance
Hold LEFT at next station
Hold LEFT
 STABILIZE
(Red) — Measuring
Azimuth
Auto
□ READY
(White) — Next Shot



Verbose Mode


Start Survey
Enter Section Name
(e.g. AA1)
OK
Select Direction
Direction
IN
OUT
□ READY
START
 STABILIZE
(Red) — Measuring
Azimuth
BACK
Auto
 READING
(Blue/Violet) — Measuring
Distance
STOP
START



Color Reference

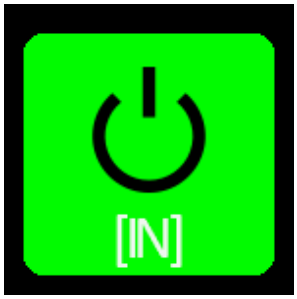
Color	Phase	Description
Green (blinking)	Standby	Waiting to start a section
White	Ready	Ready to begin a shot
Red	Stabilize	Compass is measuring the azimuth — keep the device still
Blue / Violet	Reading	Wheel is measuring the distance — move along the line

BASIC Mode (Recommended)

From the main menu select **SURVEY**

> NOTE: The KNOT mode of Mnemo v1 has been removed

You'll notice a flashing ***green*** screen displaying STANDBY or an icon as well as the direction selected for the survey (IN is default but it can be changed using a click command)



> You can select in **OPTIONS > SETTINGS > UI(ICON or TEXT)** if you wish to have the text or the icon displayed in each phase of the survey

From now on you don´t need to be able to read what's displayed on the screen. The color alone will give you information on which phase of the survey you are in.

> In BASIC mode the slider button doesn't work by impulses, you'll have to hold the slider during a certain amount of time (more or less 2s) to give and validate a SELECT or NEXT command. A red progress bar on the top screen will show the progress, the command only gets validated once the progress bar is complete.
>
> 

> You can adjust the amount of time required to validate a command in the Setting section of MnemoLink

- From STANDBY mode, to start a section hold the slider left the screen turns WHITE, this indicates READY mode.

> By default, in any BASIC survey mode all surveys are recorded IN and are named “BAS”. You can then later sort out the data on your favorite survey software.

- Clip the device on the line at the beginning of the first shot.
- Hold the slider left the background turns RED, you are in STABILIZE mode (same as in Verbose survey mode).

- Once stabilized, the device goes in READING mode, you can now move along the line, you’ll recognize the flickering BLUE/VIOLET square you already had in Verbose survey mode indicating the wheel is measuring the line

- Once you reach the end of the shot hold the slider left again, the background turns RED, you are in STABILIZE mode.

- Once stabilized the background becomes white again, you are back in READY mode.

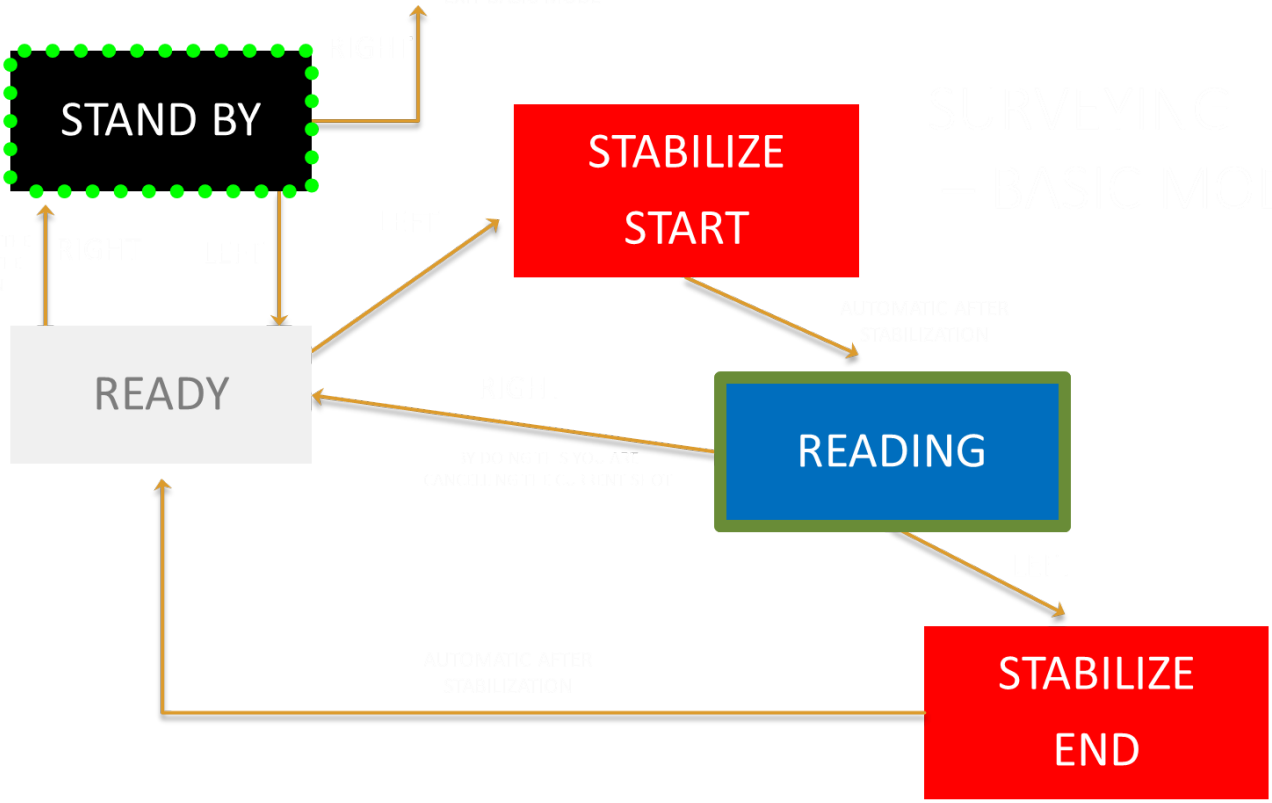
- You can repeat the operation for the following shots.

> 
>
> The curve icon you can see in the last picture indicates that the measurement of the azimuth at the start and the end of the shot has a difference of more than 5 degrees. The exact difference is displayed over the curve (In the example we have 7deg of difference)
>
> 
>
> You might also find this icon which signals the change in depth is bigger than the length of the line. This usually happens on very steep shots.

Once you have finished the section, when you are in READY mode, to save the section move the cursor to the right. This will save the data and put the device back in STANDBY mode (Blinking GREEN).

To exit BASIC survey mode, from the STANDBY mode, hold the cursor to the right during 3s.

BASIC Mode Overview


STAND BY
STABILIZE START
READY
READING
STABILIZE END

BASIC Mode Click Commands

This is a new feature introduced in v2.5.4

Whereas the BASIC mode uses long clicks to validate the main commands you can use shorter click combinations for auxiliary actions in BASIC mode:

- You can **add a marker** 📍 with a unique ID to a station:

  LEFT-LEFT-LEFT-RIGHT

  > Markers will appear on the live map with their unique ID

- You can display the live **survey map**:

  LEFT-RIGHT-LEFT-RIGHT

- You can access the **LRUD** entry mode:

  RIGHT-RIGHT-RIGHT-LEFT

- You can select the *survey direction* as **IN** :

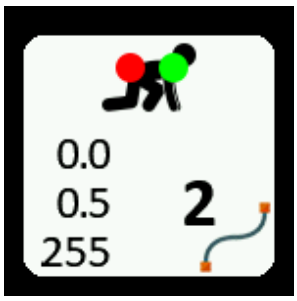
  LEFT-LEFT-LEFT-LEFT

- You can select the *survey direction* as **OUT** :

  RIGHT-RIGHT-RIGHT-RIGHT

> Changing the survey direction can only be done while in Stand By (Green) mode

> In Basic mode when you do short clicks you'll notice dots appearing at the top of the screen, RED for left clicks and GREEN for right, they are here to help you enter click commands



Verbose Mode (legacy)

Starting a survey

From the main menu select **SURVEY** The screen will display options similar to:

In this menu you can choose the name of the section you are surveying.

Section in this case means the section of the survey which can differ from the section of the cave you are working in.

In our example the section is called AA1. You can navigate from one letter to the other moving the slider to the *right* and change the current letter by moving the slider to the *left*. Once done select OK.

The menu will give you the choice of the direction you are surveying, IN or OUT.

- **IN** means you are going from already surveyed stations to new ones
- **OUT** means you are coming from new stations going towards already known ones.

> NOTE : The reference shot that you had in Mnemo v1 are no longer used in v2

Surveying a shot

To survey a shot:

- pull the pressure plate lever
- insert the line into the slot
- release the lever
- make sure the line is not trapped
- slide the device to the beginning of the shot (Entry Station)

Select **START**

The display will show a *RED* square:

At that point the device is waiting to be stabilized to measure the azimuth.

> **THE ONE THING TO REMEMBER FROM THIS USER MANUAL:** Don’t hold the device in your hand, rather support it from beneath so it can use the tension in the line to self align and take the most accurate measurement possible.

The display shows a *BLUE* or *PURPLE* square with a dot in it when the compass has measured the first azimuth.

You can now move the device along the line all the way to the next station. The display will be flickering that BLUE/PURPLE square indicating that the wheel is spinning and measuring the length of the line. The device measures the line in both direction allowing you to compensate for big diameter tie-offs. *If the line is too loose the length reading will be incorrect.*

> You can use Mnemo v2 in reverse direction of the engraved arrow, the device will automatically reverse the azimuth
>
> If the device is flickering BLUE/RED that means it has been dragged along the line before the stabilization phase was over, you should start the survey of that shot again.

When you reach the next station, select **STOP**

The display turns red waiting to stabilize and measure the second azimuth.

Repeat the operation …

Once you reached the last shot of your section select **END**

This will save the section. You are back to the main menu ready to survey the next section !

Cancelling / Retaking a measure

If you want to retake a measure, there are two possibilities:

- Either you are still in reading mode (BLUE/PURPLE background), in this case just select BACK and you can retake the measure you were taking.
- You finished the measure (WHITE background waiting for next measure), in this case you can select UNDO to erase the last saved measure and take it again.

Recording the surface pressure

The device calculates the depth by measuring the variation of pressure between the surface and where it is located under water. Therefore it needs to have a reference measurement of the surface pressure. This can be done by navigating to :

OPTIONS > SENSORS > DEPTH > SURFACE

Once you get the *CALIBRATED* message on the screen that means the device recorded the current atmospheric pressure as reference.

> This needs to be recalibrated mainly when diving at altitude or diving during extreme weather conditions

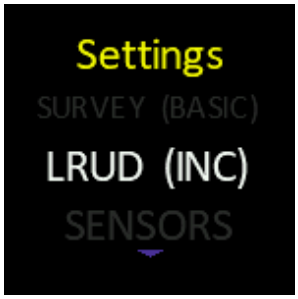
> Obviously ... ***DO NOT ADJUST SURFACE PRESSURE IN THE WATER***

LRUD (Cave Profile description)

You can enter LRUD (Left-Right-Up-Down) measurement (or estimation) values to describe the corridor section of the cave at each station.

- This is done by going to

  OPTIONS > SETTINGS > LRUD(LIST or INC)

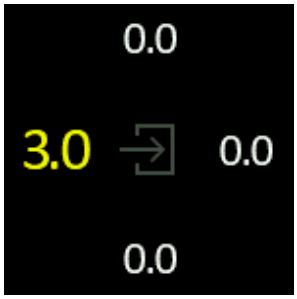
  

  - ***INC*** : In this mode the numerical value will increase gradually. It is the slowest of the two modes but allows to enter precise values
  - ***LIST*** : In this mode the numerical value will increase according to a predetermined set of lengths. It's the fastest mode and typically the one used when value are estimated rather than measured.

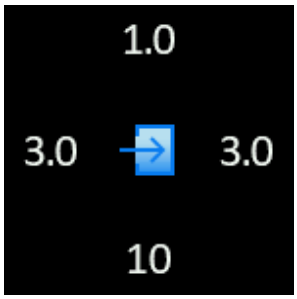
- In BASIC Mode, you can also enter the LRUD menu for chosen stations when you are on the READY screen (the one with WHITE background) with a click combination:

  RIGHT-RIGHT-RIGHT-LEFT

Once you are on the LRUD entry screen you increase the value moving the cursor left and go to the next value moving it right.



Finally you exit the screen by selecting the button in the middle :



Interference Marker

During your survey, if you see an icon of a magnet flashing on your screen, that means the device has detected a magnetic interference.

That flashing will only last for 5s, when it stops it doesn’t mean the problem is gone, just that you were warned. In such a case make sure that no part of your equipment has magnets or other elements that could strongly interfere with the compass.

About Stabilization

In which ever survey mode you use the Mnemo the **stabilization** phase is indicated by **RED background color**.

If during stabilization the red background starts flashing, that means the device is not flat enough (ie. rolling too much on one side or the other). In this case rotate the device around the line until the blinking stops, then stay stable and the measure will be taken.

The rotation tolerance is quite large (about 30º on each side of the line) so this should not be a major issue.

Surveying - The big picture -

An important thing to remember is that once you are using MNemo it is not necessary to read the display for each operation. The color will indicate the operational phase. Familiarity with MNemo allows your focus to be on the safety of your dive and a global cave/environment awareness. BASIC mode makes it even easier, we recommend that mode for all your surveys.

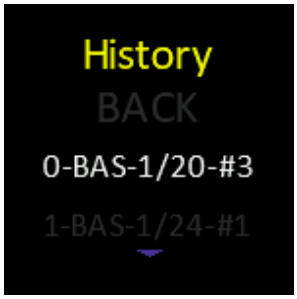
With a bit of practice you can survey at the same speed you’d normally swim in a cave (15-20m/min).

Survey History and Direct View

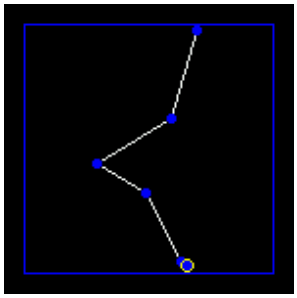
You can access the history of your surveys on the device in the Menu at:

OPTIONS > HISTORY

It will display a list of all the surveys on your device. By selecting one of those surveys you'll get access to a map of that survey as well as some basic statistics.



At any time, you can access the latest survey — or the survey currently being done — by double tapping the back of your Mnemo. It will display a map that orientates according to the orientation of the device if you are in survey mode, otherwise oriented north.



Give an impulse left to the slider button and you will have a screen displaying info on the current survey.

One more slide and you are back where you started from. This feature can be deactivated and its sensitivity adjusted with the "Double Tap" setting in MNemoLink.

> In BASIC mode, you can also access the current survey map and info by using clicks (details here)

2D / 3D Map View

When a map is displayed — whether from History or from the BASIC mode shortcut — pressing the **select button** cycles through three views:

```
2D Map  →  3D Map  →  Statistics  →  exit
         [select]    [select]       [select]
```

3D Map

The 3D view renders the survey in perspective with depth-based colour (bright at the start, darker towards the end of the survey). Three reference axes are shown at the origin:

- **Yellow** arrow — vertical (UP)
- **Red** arrow — North
- **Blue** arrow — East

The camera angle is controlled by the **IMU** — simply tilt and rotate the device to change the viewing direction. The camera framing adjusts automatically to fit the entire survey in view.

Memory management

Mnemo can save around 5000 measures. You can see the amount of memory used on the bottom bar in the main menu.

You can erase the memory by going to: **OPTIONS > SETTINGS > SYSTEM > RESET MEMORY**

> We recommend downloading the data from the MNemo after each survey session, backing up the data as DMP and erasing the data from the device in order to start next session with an empty memory.

Setting the water type

You have the choice between fresh and salt water and you can access the option by navigating in the menu to :

OPTIONS > SENSORS > DEPTH > WATER *(fresh or salt)*

Device Settings

Display and device preferences are grouped under:

OPTIONS > SETTINGS > DEVICE SETTINGS

Screen Orientation

Navigate to **OPTIONS > SETTINGS > DEVICE SETTINGS > LCD ORIENT.(X)**

Each time you click on the menu entry the screen rotates 90 degrees.

Display Contrast

Navigate to **OPTIONS > SETTINGS > DEVICE SETTINGS > CONTRAST**

The contrast value goes from 2 to 16, with 16 being the brightest.

Language

Navigate to **OPTIONS > SETTINGS > DEVICE SETTINGS > LANGUAGE**

The on-device interface is available in six languages:

- **ENGLISH**
- **ESPANOL**
- **FRANCAIS**
- **DEUTSCH**
- **ZH (SIMP)** — Simplified Chinese (Mainland)
- **ZH (TRAD)** — Traditional Chinese (Taiwan)

The currently active language is marked with a `<-` arrow next to it. Select a different entry to switch languages immediately. The setting is saved to device memory and persists across power cycles.

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- **ZH (TRAD)** — Traditional Chinese (Taiwan)

The currently active language is marked with a `<-` arrow. Select a different entry to switch immediately — all on-device menus, prompts and feedback messages update at once.

The language setting is saved to device memory and persists across power cycles. It is independent of the unit system or any other setting.

Battery

- The Mnemo contains a 2S - 450 mAh sealed lipo battery.
- The Mnemo can be recharged using either the USB port of your computer or a dedicated charger. It requires no more than 150mA charging current.
- The red LED indicates that the charge is in progress. It will turn off when the charge is complete.

It is recommended to have the Mnemo turned OFF before connecting for a charge.

> Note that if the device is ON and connected to a charger, it will not turn off when you select EXIT in the main menu but simply go into Energy Saver mode (Blinking Battery on the screen)

Tools

Navigate to: **OPTIONS > TOOLS**

You'll find a list of diagnostic and analysis tools:

- **Depth Gauge**: A depth gauge indicating depth and absolute pressure
- **Test Mode**: A mode to test the reading of all sensors — pressure, magnetometer, inclinometer, etc.
- **ONE-GO(OFF)**: *NOT DOCUMENTED, leave on OFF*
- **MAGNETO**: Magnetic analysis tool

> WiFi Access Point mode has moved to **OPTIONS > WIFI > WIFI AP**. See Wireless Data Transfer for details.

Magneto

You can use the Magneto feature to analyse how strongly your dive equipment affects magnetic readings.

> The earth magnetic field ranges from 25 µT to 65 µT depending on your location.

By moving the Mnemo closer to or further from your equipment you'll get a reading of the strength of the magnetic field created by that equipment.

- Here you can see that the magnetic field is between 32.92 and 33.44 when the device is left without any outside disturbance

- When we move a dive light around the Mnemo the magnetic field is this time fluctuating between 30.55 and 37.49 — a huge difference!


Magneto
>RESET< EXIT
Bc= -17.58,-17.50,-26.31
Gp= -0.02,0.00,-1.01
delGp= 0,1,-1
30.55<uT= 36.16<37.43
avg: 33.96 #:165
V2
MN

MnemoLink - Data Transfer

The Mnemo v2 is supported on Microsoft Windows(>7), Apple Mac OSX (>10.6) and Linux (Kernel >5.0.0)

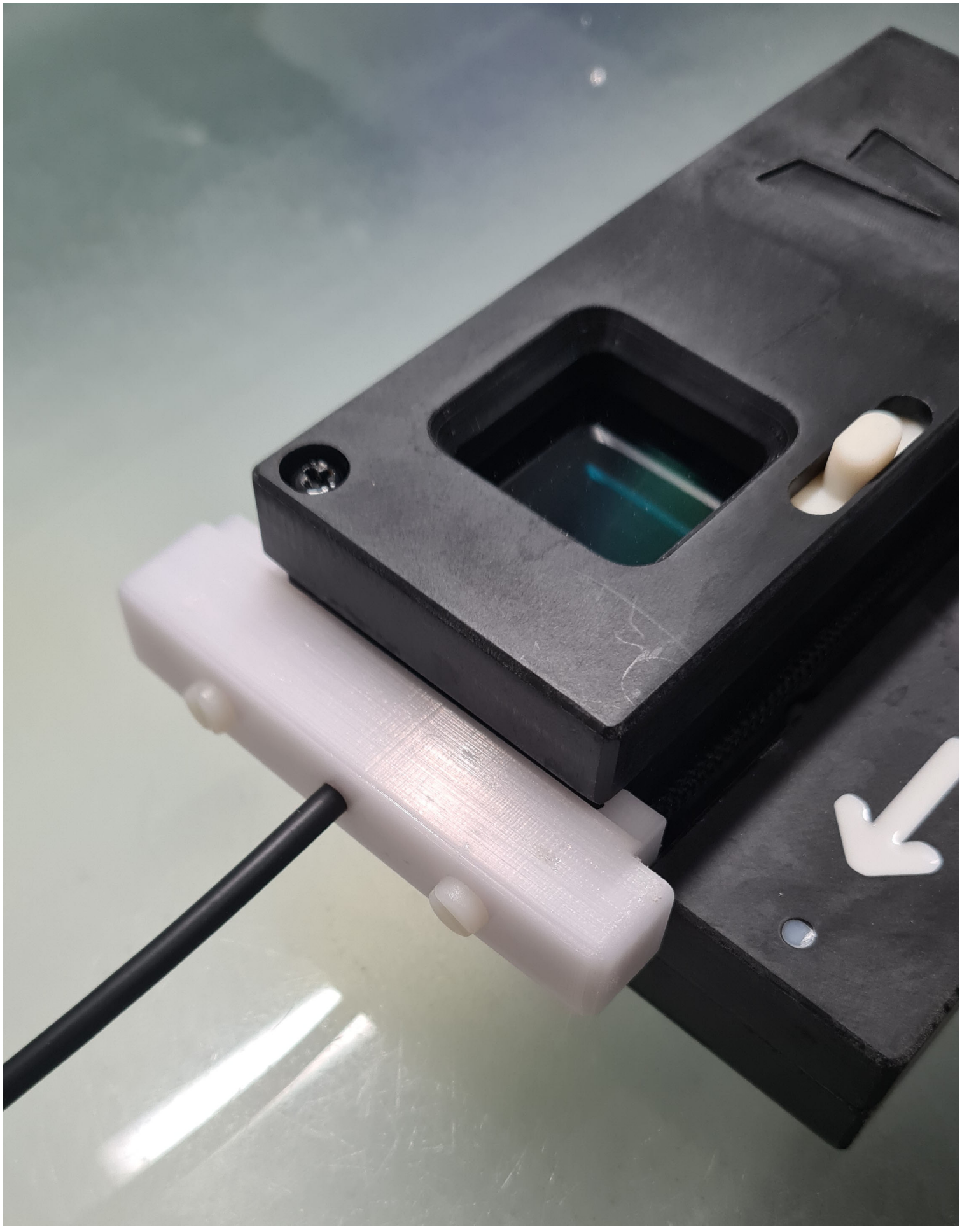
Currently there’s no driver installation required for the Mnemo v2 on any of the supported operating system.

MNemoLink is the software that interfaces your Mnemo v2 with your computer, allows the download of the data as well as the visualization of the survey. It also allows to adjust certain settings that are not available on the Mnemo menu.

You can download the software here

Connection

Connect the USB cable to the device as shown on the picture and then to your computer. The order is important.



The blue led indicates that the connection to the computer/charger was successful.

Turn on MNemo. At that point your computer should have recognized the device.

Launch MNemoLink

You can now launch MnemoLink application on your computer.

> If “Mnemo not detected” appears in the right corner, make sure the connector is properly placed on the Mnemo and the device is turned ON than press the refresh button in the middle of MNemoLink's window.

If the connection is successful, you should have the serial number of your device displayed in the upper right corner.

The **Data** tab will give you options to *download* and *save the survey data contained* on the MNemo as DMP and various other formats that you can use in your favorite survey software.

The **Setting** tab will give you access to different settings of the Mnemo that are not accessible through the settings Menu. Most of those are self explanatory. The ones locked are factory settings that should not be modified. MNemoLink will save the data on the device in an Excel sheet. You can then copy-paste it in your favorite mapping software.

The **CLI** tab is for advanced command line based interaction with the MNemo.

Wireless Data Transfer

WiFi settings are now grouped in their own submenu at **OPTIONS > WIFI**, which contains:

- **WIFI ON/OFF** – connect to a known network
- **WIFI AP** – start a local Access Point hosted by the device
- **WIFI ON AT START** – auto-connect on every power-on
- **Back**

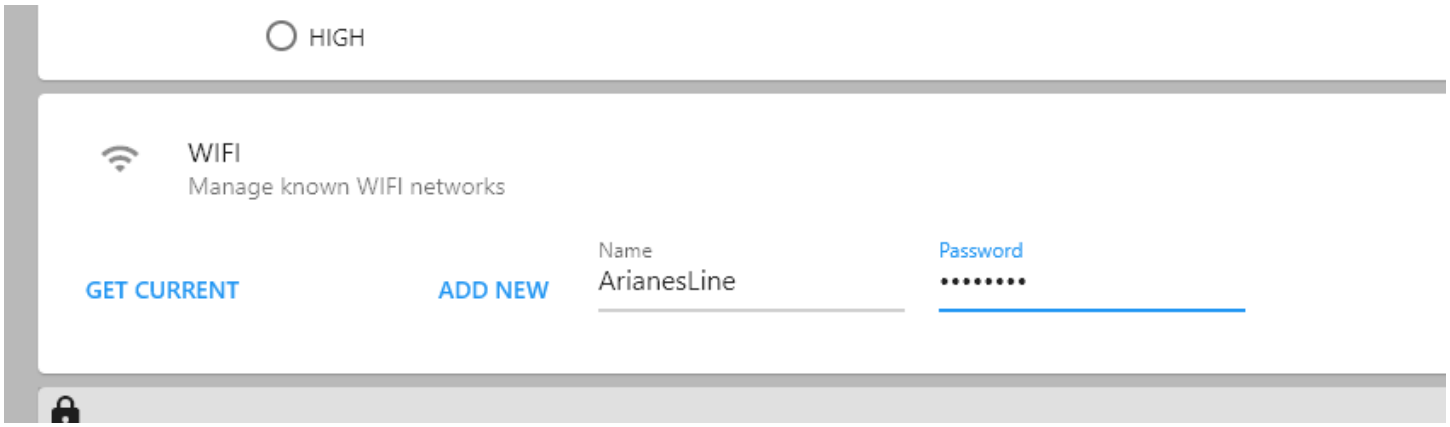
Local Network

Adding networks

Networks can be added in two ways:

Via MNemoLink:

- Connect your Mnemo to your computer and open MNemoLink.
- In the Settings Tab you can manage the known wireless networks.
- Click *Get Current* to retrieve the list of stored networks. (This list is empty when you buy the device.)
- Enter the network name and password, then press *Add New*.



Via the device's web page *(v3.0.0+)*:

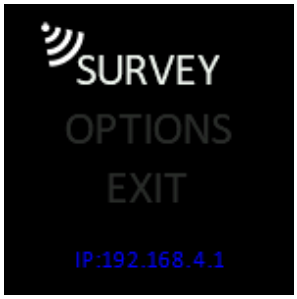
- Connect the Mnemo to WiFi (see below), then navigate to its IP address in a browser.
- Use the network management section of the web page to add or remove networks directly — no MNemoLink required.

> Network names and passwords must not contain spaces and the network must operate on 2.4 GHz.

Connecting

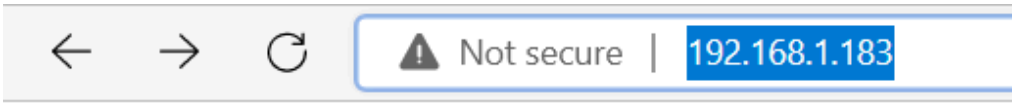
On your Mnemo navigate to **OPTIONS > WIFI > WIFI ON/OFF**:

The Mnemo will try to connect to its known networks. If successful it returns to the main menu and **displays the IP address of the device**.



> The icon in the top left corner indicates the strength of the wireless connection between the router and the MNemo.

Open a browser and navigate to the displayed IP address to preview surveys or download your data.



MNemo

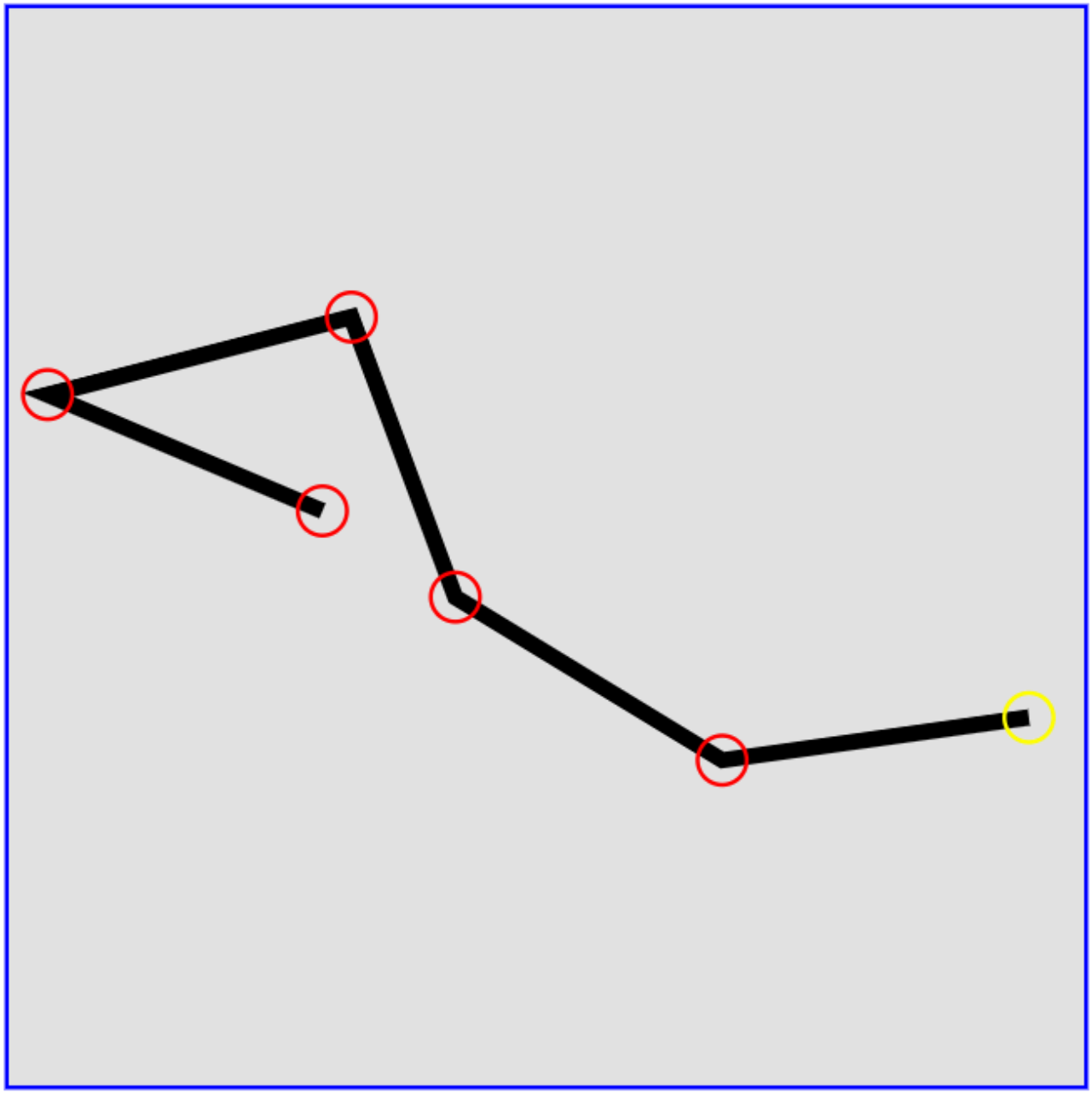
SN: 009315501C759D60

Download DMP
0-BAS-0/8-#2
1-BAS-0/8-#5

MNemo

SN: 009315501C759D60

1-BAS-0/8-#5



WiFi at Start

Navigate to **OPTIONS > WIFI > WIFI ON AT START** and toggle the option on.

When enabled, the device will automatically attempt to connect to a known network every time it powers on — no manual menu navigation needed.

The Mnemo as Wireless Access Point

If your local network is not accessible you can configure the MNemo as a Wireless Access Point.

Navigate to **OPTIONS > WIFI > WIFI AP** and select the entry.

You can then connect your computer (or phone) to the wireless network created *(SSID: **Mnemo**, Password: **password**)* and navigate to the displayed IP address as you would on a local network.

Network Scan and Data Download with MNemoLink

You can use MNemoLink to scan your network and find your MNemo.

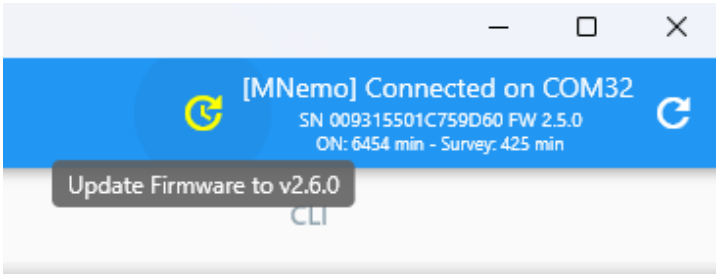
Once found, you can download the data through WiFi.


Download from the network
IP
192.168.1.35
Download from wifi connected device

Firmware Update

Automatic update

With the introduction of MNemoLink v1.4.0, the firmware process has been simplified. When you connect the device to the computer and open MNemoLink, the application will look if a new version of the firmware is available.



If so, it will allow you to update the firmware automatically to the latest version by pressing the yellow update button.

Manual update

- Download the latest firmware on Github (It’s a file with a .UF2 extension)
- Connect the device to your computer and go to:

OPTIONS > SETTINGS > SYSTEM > UPDATE

> The device should appear in your file explorer as a USB Memory stick would.

- Simply copy the firmware file you downloaded there. That should trigger a reboot of the Mnemo and install the new firmware.
- After updating the firmware, disconnect from the computer and turn off the MNemo.

> The next time you turn the Mnemo on the new firmware will be fully functional.

Maintenance

- Do not let the battery drain completely. Put it on charge (leave connected to your computer or other USB charger) once per month even if you don’t use the device.
- After each use thoroughly rinse MNemo with fresh water, do not use any other chemical product. Ideally have MNemo clipped on a piece of line and move it forward and backward so that the wheel gets cleaned everywhere as well. Also move the pressure plate lever while washing.
- If you have the feeling there still is sediment trapped in the base of the device or in the screen cover, you can unscrew both parts to clean them directly.

Tips and Tricks

- **Force Rebooting** : You can force the device to reboot by applying a small magnet on the back side of the device at the level of the display. This will turn the device off.

- **Wheel jamming** : This is of course always a possibility with old/dirty line and the main contributing factor will be the lack or little tension of that line. If you notice the wheel is not spinning first check if the line has enough tension and if possible, adding an extra wrap on a tie off to increase the tension often solves the problem. Otherwise, a way of unblocking the wheel is to hold the line in a hand, increase the tension and then swiftly roll back and forth the mnemo to clean the wheel, that should do the trick probably in 90% of the cases. Of course, after that you'll have to resurvey that shot.
- **Obstacles on the line** :It is important to know that the device measures distance whether you move it forward or backward. This is done intentionally. In case you have an obstacle on the line (thick knot, arrow etc ..) , roll the mnemo all the way to the obstacle, then back the length of the obstacle plus the size of the Mnemo. Unclip it from the line (do not stop the survey or add a station) and clip it on again after the obstacle. Resume rolling the device until you reached the next station.Like this there is no loss of time to rearrange the line.
- **Compensation for thick tie wraps**: You can compensate the loss in measurement of the round part of a large tie wrap by rolling back the device the estimated distance that is missing.
- **Display or not display** :We recommend all user of Mnemo to get familiar enough with the device to use only the colors of the screen and not read the menu at each station. This will increase the smoothness of the process and allows them to focus on stabilizing and clipping on and off the device.
- **Opening the pressure plate (gate)** : If you have difficulty manipulating the pressure plate, brute force won'T help, simply hold the lever between thumb and index, apply a rotational force forward and THEN pull backward.
- **Organizing work, multiple sections** : I personally call all my section AA1 or use BASIC mode. In most cases I can remember what I survey and in which order. In more complex

scenario you can either take the time to change the name of the section or write on a slate complementary information.

Report a Hardware or Software Issue

If your Mnemo is not behaving as expected — whether it is a hardware failure, a firmware bug, or an unexpected behaviour during a survey — please fill in the failure report form and send it to us.

The report helps us identify patterns, improve the device, and assist you as quickly as possible.

What to report

- Device not powering on or off correctly
- Screen issues (missing pixels, flickering, blank display)
- Compass errors or calibration failures
- Incorrect depth or distance readings
- Firmware crashes or unexpected resets
- Connectivity problems (Wi-Fi, USB)
- Waterproofing concerns or physical damage
- Any behaviour that differs from what the manual describes

How to submit

1. Open the report form using the button below
2. Print it or save it as a PDF (`Ctrl+P` → *Save as PDF*)
3. Fill it in — the more detail the better
4. Send it to sebastien@arianesline.com or open an issue on GitHub

Open Failure Report Form

Tips for a useful report

- Note your **firmware version** before submitting (visible in the main menu)
- Include the **dive number and conditions** when the issue occurred
- Attach a **photo or video** if the failure is visible
- If the device crashed, describe the **exact sequence of button presses** that led to it