

# NFA 30M

**3D LF Magnetic  
Field Analyzer  
with Data Logger**



# NFAsoft

**Analysis and  
Configuration  
Software**



# Operating Manual

Version 8.6

# Thank you!

We thank you for the confidence you have shown by buying this product. It allows for a professional analysis of AC electric and AC magnetic fields according to internationally recognized guidelines and the recommendations of the building biology.

In addition to this manual you can watch the tutorial videos on our channel “gigavideos” on youtube.com concerning the use of this meter. However, binding in details and most up-to-date is this manual.

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***Do not leave in the hot car,  
protect from humidity and also from con-  
densing and humanity.***

This manual is based on firmware version 86 and NFAssoft version 172.

The firmware and software of the NFA will be continuously improved and made available via download from our homepage.

# 1 Quick Start Guide

After switching on, the CPU boots, performs some self-tests and then automatically starts measuring. After switching off, please do not turn it back on while the status LED is red to allow the processor to shut down properly.

“**Signal**” -> default setting is tRMS

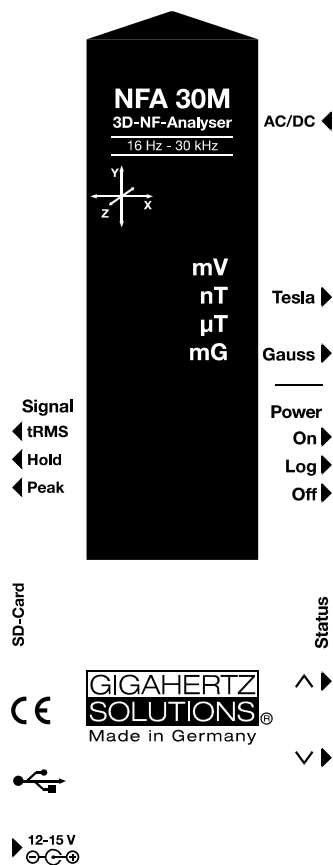
“**On**” = Measurement

“**Log**” = Long term recording

Double-click **NFAsoft** and follow your intuition for an evaluation of the data recorded on the SD-card.

**Should the meter not do what you expect**, please have a look the chapter on **FAQ** (frequently asked questions) at the end of this manual (Chapter 9).

# 2 Overview: Front Cover



Technical data and specifications are to be found on our website.

## 3 Display / LEDs

When switched to “On”, the NFA will briefly show “bAtt” and the remaining battery life. When switched to “Log”, the remaining battery life is shown cyclically with the elapsed log time and name of the log file. After some self-tests the measurement starts automatically.

Time indications are set up as follows:

„Xd.XX“: X days and XX hours or

„XX.XX“: XX hours and XX minutes.

„XX.XX“: (with blinking dot): XX minutes und XX seconds.

Two days is the specified minimum logging time (“2d00”). The real capacity can be higher, in particular with new batteries.

### Status LED

The “Status” LED indicates the current mode of operation

“Red” indicates special operating conditions. **Do not switch off** while the Status LED is red!

“Yellow” means “measurement in progress, NO recording”.

“Green” means “measurement in progress WITH recording”,

Note: with the switch set to “Log.”, the “Status”-LED is switched off after a short while, in order to extend battery life.

### Special LCD Display Messages

“Low Batt“: Please recharge the battery a.s.a.p.

„----“: Autocalibration in progress, processor busy, or the value is too small to be measured reliably.

„CHAR“: Instrument is being charged.

„FULL“ means: battery fully loaded or SD memory card is full.

„nbAt“: The processor cannot recognize the battery (see chapter 9)

OR the 15 V AC adapter should be disconnected (the batteries have reached their maximum possible capacity. Storage at this capacity level is not advised)

„Sd-L“: short for SD memory card is **L**ocked.

„Sd-F“: short for SD memory card **f**ailure“. Try re-starting the NFA or re-formatting the memory card according to chapter 9, first paragraph. If necessary, replace SD memory card (max. 16 GB).

## 4 Switches / Push-Buttons / Connector

### 4.1 On / Off switch (“Power“)

“On” = Standard Measurement Setting

Allow some seconds for self-testing until measurement starts automatically. LEDs are activated for full information during manual measurements. They remain activated when you start logging by shortly switching to “Log” until the Status-LED is lit green and then back to “On”.

“Log” = Logging / long term recording.

### 4.2 Tesla/Gauss Switch

This switch allows to select the display unit for the magnetic field – the selection is indicated by the LEDs.

The isotropic point of the magnetic field measurement is underneath the “Y” of the coordinate system printed on the meter faceplate. Value recordings will be axis specific.



### 4.3 AC/DC-input

#### AC/DC = Combined AC/DC-Input

The moment you connect an external sensor, its signal will automatically be displayed in mV and logged if required. (“Mode” switch is set to “Auto”. Protected against overvoltage).

- **AC:** A displayed value of 2000 corresponds to an AC signal of “1V<sub>RMS</sub>”.
- **DC:** It can linearly display and log signals from +/- 0.1 to +/- 1500mV, i.e. with an HF59B connected and set to coarse (adjust to 1V), the values recorded will be between 1µW/m<sup>2</sup> and approx. 30,000 µW/m<sup>2</sup>. The value will be displayed in mV<sup>1</sup>.

For logging RF please make sure to remember the settings of the connected HF-Analyser, as they will not be registered by the NFA. You may use the audio note feature for that.

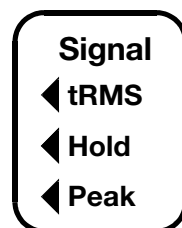
<sup>1</sup> For all measurement ranges, even when using an attenuator or amplifier, NFAsoft offers a comfortable conversion tool. The random noise will make it impossible to properly display or record measurement values below 0.1µW/m<sup>2</sup>, though.

## Available options for the AC/DC Socket

**Connecting cable for an HF-Analyser** for data logging high-frequency (KAB0053). Potentially falsifying LF- or RF-inductions can reliably be suppressed by means of our suppression kit (EDY).

An AC signal being connected to the AC/DC socket will by default be displayed as total RMS signal in CH4. For the **analysis and mitigation of dirty power** it is useful to have the signal of a current sensor (“current clamp”) to be split into the frequency ranges of the NFA (FA1). An example for an adequate current sensor is the MiniFlex MA 200 from Chauvin Arnoux.

## 4.4 Evaluation of Signal

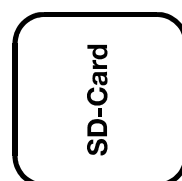


**tRMS** = “true Root Mean Square”. The values displayed and recorded can be compared directly to classifications recommended by building biologists. This is the correct standard setting of the NFA, even for logging the peak values of a connected HF-Analyser.

**Peak** = Real peak value measurement: With this setting the meter measures the highest culminating point of the wave<sup>2</sup>. A new, still **experimental** measurement feature for building biologists which allows for a more detailed analysis of the LF world in a way which has long since been considered essential in the analysis of high frequencies. This option supplies important information for the evaluation of “Dirty Power”.

**Hold** = Hold maximum value (“Max hold”). Retains “tRMS” or “Peak” of the signal, depending on the switch position from which “Hold” was chosen. When setting the signal switch to “Hold”, the reading on the display will be held, but the value recorded on the SD-card will still be the real time value.

## 4.5 SD Memory Card



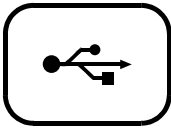
This is the slot for the SD memory card. To prevent the card from accidentally being ejected, slide it in beyond the external surface of the casing until it snaps (use fingernail, if necessary). To extract it press to undo the snap mechanism.

Your PC will recognize the SD card as an external device when the NFA is connected by USB cable or when it is slid into a card reading device.

Use SANDISK’s standard SDHC-cards for best performance.

<sup>2</sup> The resolution of the frequencies during the analysis of the (actually by their nature broad banded) peak values does not take into account phase information, so it’s practically a worst-case consideration. Tolerances are much higher than when using the tRMS analysis.

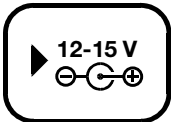
## 4.6 USB Socket



Computer interface connection: Used for meter configuration with NFAssoft. (USB 1.0) Please connect and disconnect the USB-cable only while the NFA is switched off!

Please note: for the time being the USB connection works for windows and Linux only!

## 4.7 Charging Socket



**15 V = charge**

**12 V = measure / log**

Over the DC cables that connect the instrument with the AC adapter, in certain situations the measurements can be falsified through stray LF signals or RF overcoupling. There are two options to avoid these falsifications:

- the use of ferrites (of which we offer a low-cost do-it-yourself solution (“EDY”).
- the use of a 12 V external battery (motorcycle gel battery (no lithium!<sup>3</sup>), we have configured a universal connecting cable for you (“BAK-U”).

## 4.8 “^” and “v” buttons

If the AC/DC input is in use, you can toggle between this and the magnetic field measurement with these buttons.

<sup>3</sup> extensive testing with classical power banks and lithium polymer batteries for flight models showed disappointing results.

## 5 How to Measure and Data-Log

### 5.1 “Live”-Measurement

You have the choice of two basic measurement modes: You can either apply the conventional method which involves simply switching the unit on and reading the display.

Or you prefer to have the measurement values of all four channels (those of the three field axis plus one further measured variable) logged onto the SD-card. To activate this function, please switch the Power-button to “Log” for a short time until the status-LED turns green. Then switch it back to “On”.

### 5.2 Long Term Data Logging

The interval for recording data is set to 10 full data sets/sec.

#### Initiating Long Term Logging of the Meter

For a long-term recording of several hours or days, set the “Power” switch to “Log”. The status LED will turn green and long-term recording will start off after a few seconds. In this mode the LEDs are turned off to extend the battery life, after a while also the green status LED. Even if you only want to document a short measurement, please wait for the green status-LED to go out before turning off the NFA, because only then you can be sure that data has been recorded.

The display will show the logfile number (“L...”), the elapsed time of recording as well as the remaining time of use in an infinite loop until the battery is empty or the SD-card full. For information on the display format please see chapter 3.1. When switching back to “On”, recording will be continued without interruption.

If an HF-Analyser is connected to the AC/DC socket, it will automatically record the output of this external device in addition the magnetic field.

#### “Locking” of the Instrument

“Locking” ensures that the instrument exclusively executes the predefined tasks when left at the customer’s place for long-term recordings. To lock, remove and lock the SD memory card while the desired settings are active and reinsert it. The data will still be recorded.

**IMPORTANT: Don't forget to “unlock” the SD memory card after finishing a “locked” long term recording!**



## 6 Power Supply

### 6.1 Internal Rechargeable Battery

The instrument features high performance Lithium Ion rechargeable batteries (2 x 3.7 V). When fully charged, they will last for at least two days of data logging<sup>4</sup>.

A vital factor for the durability of Lithium Ion rechargeable batteries is to absolutely avoid a deep discharge and also avoid storage when charged to a maximum. Ideal would be a loading state of around 75%. The NFA setting will prevent a deep discharge in operation, however, in view of the inevitable self-discharge, the meter should never be kept with “almost empty” batteries.

Shelf life without deep discharge with initially  $\frac{3}{4}$ -full batteries:

- 3 to >9 Months (the big variations are caused by the varying “off-line” power consumption of SD memory cards)
- >3 years with disconnected SD memory card
- For longer storage the batteries should be disconnected from the instrument.

### 6.2 Charging

To charge the batteries use the **15 V** AC adaptor. If the device is switched off while charging, the display will show “CHAR” and the estimated running time in the log mode with the current capacity status. Measurements or recordings during the charging process are technically possible, but this is no specified status and thus not recommendable.

When fully loaded, a maximum of two days, 8 hours running time will be displayed (“2d08”). Mostly, longer times can be achieved, but this should be considered as “hidden reserve”. Due to the large variation in the Lithium Ion batteries supplied by their manufacturer, the maximum capacity as well as the charging time are subject to fluctuations.

The specified battery life is already reached after a charging period of approx. 8 hours. A (significantly) longer charging period may considerably extend the battery running time.

The battery saving maximum capacity will be reached after roughly 15 hours and is indicated by a “FULL” on the display.

“nbAt” on the display indicates that the 15 V AC adapter should be disconnected in order to save battery life.

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<sup>4</sup> Please note that Li-Ion batteries, even when treated with care, will lose some of their original capacity within one or two years, and their typical life expectancy is 250-500 complete charge cycles. In this case always replace both batteries.

## 6.3 Data Logging with External Power Supply

You can perform this task with the supplied **12 V AC adapter**. However, unfavourable conditions may cause falsifications of the measurement through noise, dirty power or RF over coupling. In order to be on the safe side there are two options:

**Ring ferrites** attached to both ends of the respective cables avoid these falsifications (available from us as a low-cost do-it-yourself solution “EDY”).

Another solution for avoiding these falsifications is the use of an **external 12 V battery** for off-grid long-term recordings. Most suitable for this purpose are standard gel or AGM (motorcycle) batteries (no lithium!<sup>5</sup>). We have configured a universal adapter cable for you (“BAK\_U”).

The maximum size of a log file that can be opened with NFAssoft (1GB) is reached after 16 days of continuous recording. The longer the logging time exceeds the specified 36 hours, the higher the risk of an unwanted shutdown – mainly caused by the internal electronics of the SD memory card. Longer logging times can therefore not be guaranteed.

## 6.4 Battery Change

For safety reasons, please only use original battery packs classified by us (integrated protection circuit. The two battery cells fit tightly, but can easily be removed for the purpose of battery change. In no case un-tighten the screws of the meter! Putting the meter together is very complicated, and therefore subject to a fee if it needs to be done by one of our technicians.

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<sup>5</sup> extensive testing with classical power banks and lithium polymer batteries for flight models showed disappointing results.

## 7 “NFAsoft”

### The provided software allows ...

- for the analysis of the data logged by the NFA
- for the configuration of the NFA according to your preferences and habits.



A double-click on the program-icon  opens the window shown on the left. Here you can choose between the tool for the analysis of the data  and the tool for the user-specific configuration of your NFA .

The software is subject to continuous upgrade. The most current revision can always be found for download on our homepage.

### System requirements

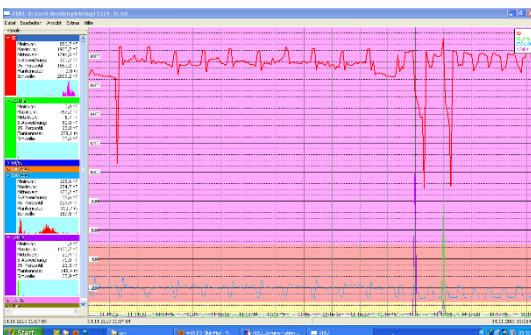
NFAsoft is made for Windows (98 upwards). Linux and Mac versions are provided “as is”. **NFAsoft requires no installation** – just double-click and start!

**In some cases, it might be necessary to temporarily disable your anti-virus software.** Anti-virus software may interpret NFAsoft as a threat and hence might disable or even erase it. Avoid this by placing NFAsoft on your “white list”. You may have to repeat this with every upgrade version of NFAsoft. NFAsoft can be loaded and executed directly from the SD memory card through a card reader or through the USB interface cable. The NFA is supplied with a “Class 6 SDHC”-SD memory card (appropriate readers have been available since 2008, adapters are available for older computers).



### 7.1 Data Analysis

Double click the appropriate log file for analysis and the following window will open:



The far left column labelled “Channels” shows statistic evaluations of the different frequencies or frequency ranges.

The large area on the right shows the plot of the collected data over the time.

The values on the left are always the real-time values of

the timeline selected in the plot.

## Plotted Data Window

Units of measurement appear on the corresponding channel window on the left and are not indicated on the y-axis. The different plots are colour coded. This allows for different channels to be shown simultaneously.

The x-axis indicates the time span. The figures at the left and the right end of the grey status line show the times of start and end of the logging period.



If the status line is mouse clicked, the window on the right will appear. Here one can enter a preferred time span to view. The time span can also be selected in the “View” menu.

The colouring scheme of the plot corresponds to the standards for building biology measurements (SBM2015):

- Green for “no concern”.
- Yellow for “slight concern”.
- Red for “severe concern”.
- Purple for “extreme concern”.

If you select two channels with different units, the SBM colour scheme of the plot’s background will be the one corresponding to the unit of the selected (= bold) channel. It will be bold for the one and regular for the other, equalling the markings in the “Statistics/Channels” window.

## Navigation within the Plotted Data

Navigation within the plotted data can easily be done with a mouse and its scroll wheel. Move the mouse pointer into the data plot. The scale of the x-axis will be

- zoomed in when scrolling up or by using the „Up Arrow“
- zoomed out when scrolling down or by using the „Down Arrow“
- centered around the clock time indicated by the position of the mouse

The data area can be repositioned on the x-axis by a left mouse click hold and drag left or right, alternatively by using the “right” and “left” arrows of the keyboard. Zooming of the time on the x-axis can also be achieved via the View Menu.

Scaling of the y-axis is done automatically by default but can also be adjusted manually through the View / Scale menu.

## Insert Comments directly into the Diagram

Areas of special interest can be commented directly in the plotted data. Simply position your mouse, right click and enter your comments in the comment window. Click Ok to have the comment embedded into the data, marking an event or section of interest.

## Program Window “Statistics Channels”

To display the data of a particular channel, click the triangle to the left of the channel.

If multiple channels are open, an additional click on the channel information will bold the channels plotted and statistical data.

The top five values are standard **statistical values**<sup>6</sup>. The numerical value “Edges per hour” is used to analyse the number of steeply rising edges, spikes, peaks, pulses, sharp bursts or high frequency transients of the field. The edge thresholds can be defined in the Channel menu under Set edge criteria. This is an experimental function.

PLEASE NOTE: If the 50 Hz high pass filter has been set with the help of the configuration part of NFAssoft (maybe even as pre-setting), this only applies to the channels “All3D”, “AllX”, “AllY”, and “AllZ”. Nevertheless, possible frequency components at 16.7 Hz will also be recorded in the correspondent channel. In this case the sum of the frequency specific channels may well be higher than that of “All3D”.

The light-blue field underneath the statistical channel data represents the frequency distribution of the measured intensities of the specific channel (“**Histogram**”). It is self-scaling and can be interpreted as follows:

- On the left side of the x-axis a formula calculates and plots how often the minimum value has occurred in a given time interval, and similarly on the right side for the maximum value.
- The largest bar marks the value most frequently measured. Very low bars indicate a specific value very seldom measured.

## Menu

This chapter explains NFAssoft specific functions. Standard software functions are omitted.

### Edit

#### “Copy all”

Copies the plotted data area as well as the drop-down of the “Statistics/Channels” section into the buffer – from here it can be inserted directly into your measurement protocol at any point of your choice. This is similar to a screen shot.

All other edit options are self explanatory.

### View

#### “Edge Display”

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<sup>6</sup> The 95th percentile is calculated heuristically. If the possible deviation exceeds 10%, it will be noted in parenthesis after the figure in absolute terms.

Select the menu option View/Edge Display to activate the edge display. The edge display option will help find important field strength fluctuations. Steep edges are marked in the diagram in the colour corresponding to each channel – the marked channel will be bolded, the others won't. This way you will always have an overview of what's going on in the other channels, even if your focal point is, for instance, the 3D-value. The threshold value for an edge display can be defined in the menu option "Channel/Set edge criteria".

**“Set Times”**

Choose the “Set Times” option to scale the graphic to a defined time segment.

**“Y-Scale”**

- Automatic – The y-axis will be scaled automatically to give the best display of the area selected for analysis.
- Manual – The y-axis scaling can be manually controlled in this mode. Allows for and will assist in analyzing small values (e.g. those over 2 kHz) overshadowed by other very strong field intensities.

**“All”**

zooms out the x-axis and displays the complete data set on the data plot. Alternatively, the keyboard “A” keys can be used.

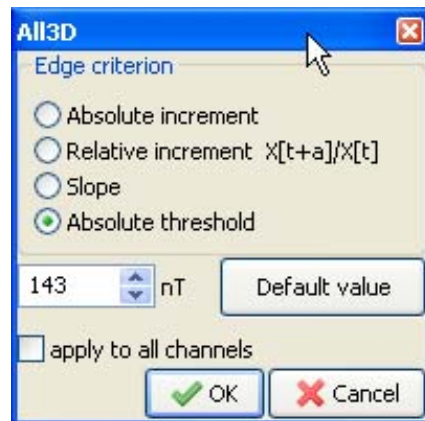
If you prefer, use the arrow-keys to take over the functions of the mouse.

**Channel**

**Set Edge Criteria (experimental!)**

This feature is new and its intention is to facilitate professionals the discussion and analysis of “dirty electricity” beyond today's definition. Activate “Edge Display” in the menu option “View” to use this function.

This function allows you to define a threshold value with which a spike can be marked directly in the “Edge Display” of the plot. This threshold can be selected individually for every channel. Standard values have been pre-selected as defaults.



When clicking “Set edge criteria”, the window shown on the left opens. Description:

Absolute increment = Marks a rise of measured field intensity between adjacent points of time by a user defined absolute increment level in V/m, mG or nT

Relative increment = Marks a rise of measured field intensity between adjacent points in time by a user defined factor or multiple.

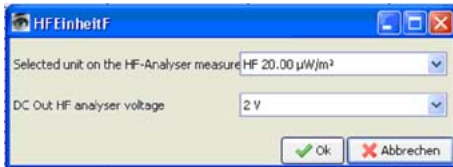
**Slope** = Marks a rise of measured field intensity between adjacent points in time by a user defined slope rate in V/m, mG or nT per second. This is independent of the measuring intervals. A hypothetical interval of 1 second would give that increment. This permits to compare results recorded with different recording intervals.

**Absolute threshold** = Marks a rise of measured field intensity between adjacent points in time by a user defined threshold level in V/m, mG or nT. Any rise beyond this absolute threshold value will be marked.

The selected edge criteria will be graphically displayed on the top of the plotted data section and will appear numerically in the field channel statistical data section under edges per hour for that particular time span. All edge markings displayed appear in real time and allow for a quick visual analysis.

When clicking the “Ok” button, the selected criteria and the set value will be transferred into the statistical values of the channel. When re-accessing the menu option “Set edge criteria”, the pre-set values will again be displayed (under construction).

### Select HF-Unit



This function will only be displayed when selecting “CH 4” in the “Channels” window and the data recorded in this channel are those of an external input device such as an HF-Analyser (and are

therefore recorded in mV). Upon selection of this point of the menu the window shown on the right will open up for a selection of the HF-Analyser settings during the recording period.

### nT <> mG

This function allows to subsequently convert a chosen channel’s data from milliGauss to nanoTesla and vice versa.

### Convert Units

This function can be used to display whichever values recorded via the AC/DC input port directly in its original unit. This way, an HF-recording can be shown either in  $\mu\text{W}/\text{m}^2$  or V/m. A new channel will automatically be generated, thus avoiding any potential loss of data.

### Rename or Delete Channel

Allows to rename or delete the marked channel.

### Summarise Channels

The plotted channels (selected on the left) will be added up (“square sum”) and added as a new channel. The sum of 100/120 Hz, 150/180 Hz, R<2 kHz and >2 kHz are considered to be the relevant parameter for the evaluation of “dirty electricity”.

## Extras

### Create KML-File

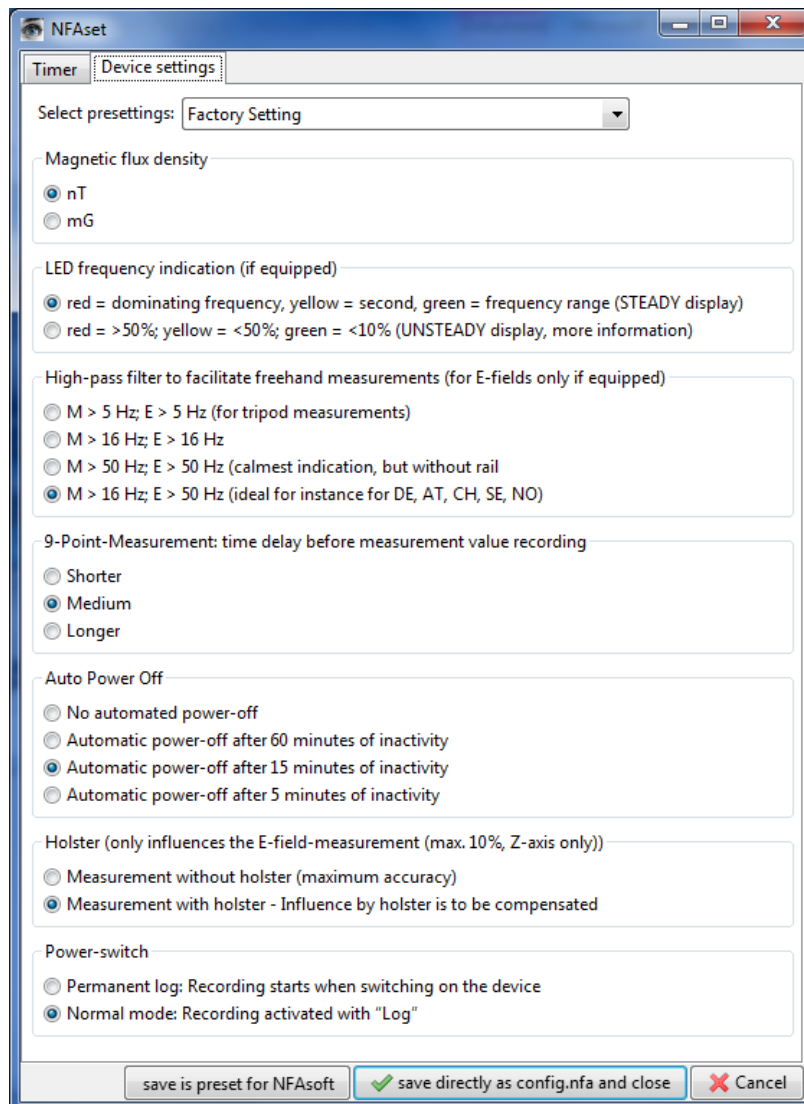
Required as a plugin for the connection of GPS-data, NFA logs and Google Earth (currently in beta level). Please ask for the current manual by e-mail.



## 7.2 User-specific Configuration of the NFA

The selected settings can be saved on the SD card as „CONFIG.NFA“. The NFA will then automatically load them upon its restart. Please note that it is not possible to read the file in order to verify the selected settings of the NFA.

Several customized **pre-settings** for NFAsoft can be defined allowing a quick access. Simply select the settings as required and activate the button “save as pre-setting for NFAsoft”. All pre-settings are stored in the file “NFAsoft.ini” and are available for NFAsoft provided that this file is in the same folder.



Functions concerning E-fields are not available in thebNFA30M.

For a **synchronization of the time**, connect the NFA (with SD card!) to the computer with the USB cable. Synchronization happens automatically, as soon as “CONFIG.NFA” is saved to the SD card.

If the **high pass** is set at **50 Hz**, this only refers to the broad band reading or recording as it reduces the influence of movement induced field



components. For full information, the frequency components of sinusoidal waves at exactly 16.7 Hz are still recorded separately and can be shown with the help of the NFAsoft.

If the filter is set, it is therefore not unusual for the summary indication "All3D" to be smaller than the indication for 16.7 Hz, as the signal components at 16.7 Hz are not integrated in the total sum of "All3D".

Furthermore, the signals of the different frequencies are added up quadratically, which in turn means that the result of simply adding the individual signals will also differ from the sum of "All3D". (For more information on this matter see chapter 9).

## 8 Firmware-Update

The firmware is the meters operating system and stored in its CPU<sup>7</sup>. If you keep the "Mode"-key pressed while switching on the meter, you will be shown the currently active firmware revision number.

The most up-to-date revision can always be downloaded from our homepage (menu item "Downloads").

### Procedure for the Update:

Download the respective zip-file from our homepage. Unzip and copy the new "FIRMWARE.NFA"-file onto your SD memory card without changing the name. If need be, overwrite any old versions on the card, as only one "FIRMWARE.NFA"-file should be on the card. It should NOT be renamed. It can be deleted from the card after the update.

Lock your SD memory card with the small switch on the left side of the card. Insert SD card into your powered-off NFA. Switch on your NFA. The display will show "Code", the frequency LEDs will gradually change from green to red during the update process. Then all LEDs will turn off except for the status LED. As soon as the status LED turns green, the update process is completed (this will take a few seconds only).

**Do not use any switches and especially do not switch off the meter during the update process!**

**Don't forget to unlock the SD-card afterwards!**

<sup>7</sup>

Please differentiate: With „NFAsoft“ the firmware can be configured and the user settings stored in the file „CONFIG.NFA“. This has nothing to do with the firmware itself.

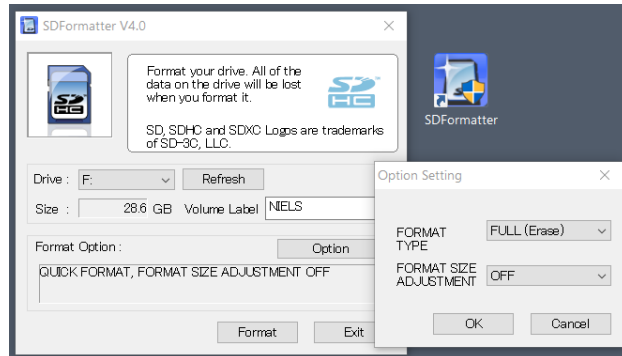
## 9 What if... (FAQ)

Answers to frequently asked questions regarding the NFA1000/NFA400

***Make sure to be using the most current firmware version<sup>8</sup>!***

***Reformatting the SD memory card is the most effective remedy in the case of malfunctioning of the NFA. Please save your data and use the original tool published by the SD Association: <https://www.sdcard.org/downloads/index.html>. Setting:***

*ting:*



*please note:  
take care to  
choose the  
correct drive!*

**The device does not react to switching or pressing a key**

*Unlock SD memory card! (micro switch on the left of the card)*

*Re-format the SD memory card*

*Restart: All switches up – switch off – wait some seconds – switch on again.*

***RESET: Switch off meter, disconnect the two battery plugs, reconnect the batteries after at least one minute (the longer the better) and switch the meter back on.***

**There is no recording possible** (status LED does not turn green)

*Insert or unlock SD memory card!*

*Re-format your SD memory card (see above).*

**Special Display Messages are explained in chapter 4.**

**The logfile has 0 kb and contains no data**

*Unfortunately nothing can be done about this retrospectively.*

*In order to avoid this in future...*

*... Re-format your SD memory card (see above),*

*... After switching off, wait until the red Status-LED goes out before switching it on again,*

*... Make no shorter logs than at least 10, better 30 seconds. .*

<sup>8</sup> The preliminary Firmware of NFA serial numbers below ...0282 cannot be updated (new bootloader).

### **The meter turns off after quarter of an hour**

*NFAsoft allows you to change the interval for the auto-power-off feature. (Auto-power-off is deactivated while recording!)*

### **The sum of the frequency specific channels is higher than the value of "All3D"**

*The signals of the different frequencies are added up as square root out of the sum of squares, which means that a simple addition of the individual signals will result in a higher value than the sum of "All3D". For example, if you take 500 nT at 16.7 Hz plus 1000 nT at 50 Hz, a simple addition will amount to 1500 nT, whereas the quadratic addition (= "All3D") will amount to 1118 nT.*

### **NFAsoft is showing measurement values at 16.7 Hz in spite of the 50 Hz high pass filter being set AND the sum of the 16.7 Hz channel and the other channels is higher than the value of "All3D"**

*If the 50 Hz high pass filter has been set with the help of the configuration part of NFAsoft (maybe even as pre-setting), this only applies to the channels "All3D", "AllX", "AllY", and "AllZ". Nevertheless, possible frequency components at 16.7 Hz will also be recorded in the correspondent channel. In this case the sum of the frequency specific channels may be higher than that of "All3D".*

### **The NFA was configured according to customer requirements with NFAsoft, but when restarting, NFAsoft shows the original settings**

*The "CONFIG.NFA" file on the SD-card transfers user-specific configurations to the NFA. NFAsoft can write this file, but not read it. Therefore you cannot use NFAsoft to check the configuration of the NFA, but only to install new ones.*

*You can save configurations as presets to a dropdown menu in NFsoft.*

### **What's the purpose of the file types and where are they saved?**

*"CONFIG.NFA" -> user configurations -> saved on the SD-card*

*"NFAsoft.ini" -> Presettings for NFAsoft -> saved in the same folder as NFAsoft*

*"FIRMWARE.NFA" -> operating system of the NFA -> in the processor of the NFA (only temporarily for updates it needs to be saved to the SD memory card)*

### **There are very many small TXT-files on the SD-card?**

*Solution 1: You have activated the function "permanent logging". This option will cause a new file to be started and saved each time the meter is switched it is toggled between modes.*

*Solution 2: There is a file system error on your SD-card. In this case, save the "good" files and re-format your SD-card.*

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