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User Manual

PM50

PM50D

PM50D20

**Personal Protection
Equipment (PPE)**

Updated to Software Version:
PM50 Manager V1.14

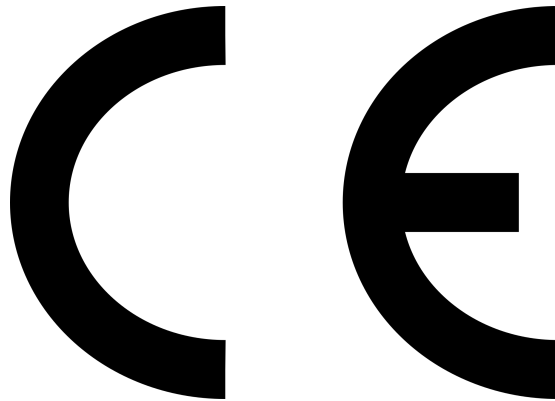
Updated to Firmware Version:
PM50 V1.10

SAFETY NOTES

Read carefully before using the product

MPB works to provide to its customers the best safety conditions available complying with the current safety standards. The instrumentation described in this manual has been produced, tested and left the factory in conditions that fully comply the European standards. To maintain it in safe conditions and ensure the correct use, these general instructions must be fully understood and applied before using the product. This product is designed for industrial environment and laboratories and should be used by skilled staff only. MPB disclaims responsibility for a different use of the device.

Declaration of Conformity



(in accordance with the Directives: EMC 89/336/EEC and Low Voltage 73/23/EEC)

This is to certify that the product: PM50 e PM50D
(Personal protection equipment)

complies with the following European Standards:
Safety: CEI EN 61010-1 (2001)
EMC: EN 61326-1 (2007)

This product complies with the requirements of the Low Voltage Directive
2006/95/CE, and with the EMC Directive 2004/108/CE.

MPB S.r.l.

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Chapter 1

General information

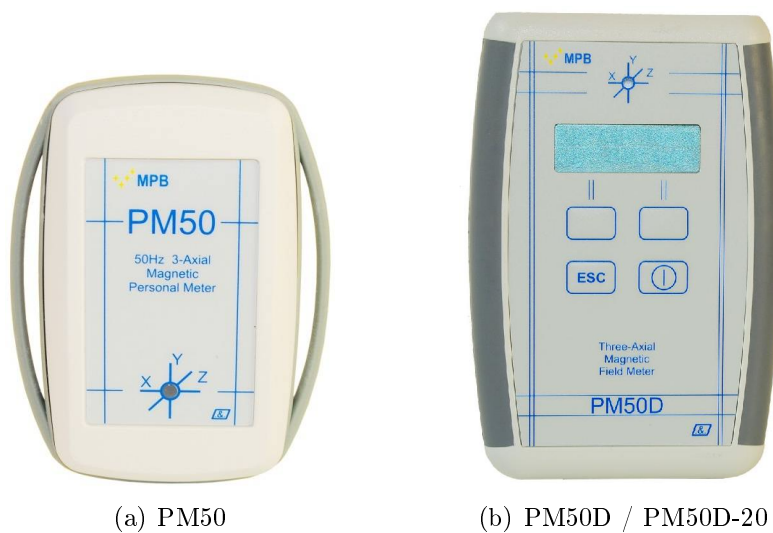


Figure 1.1: PM50 Series

1.1 Introduction

PM50 and PM50D have been conceived to meet the growing needs to monitor the level of the magnetic fields at mains frequency (50Hz) in work environments. These measuring instruments are used to determine accurately the value of the magnetic field at 50Hz storing it in an internal memory (data logger) and then make it available on a PC.

1.2 Description

PM50 (Figure 1.1(a)) is a small instrument for personal measurement that can be tied around the neck or wrist with the appropriate accessories. The “PM50D” and “PM50D-20” (Figure 1.1(b)) version is slightly larger and has a display and a keyboard

1.3 Composition

Both devices come with a USB cable and a PC Software “PM50 Manager”

1.4 Optional Kit

Anchor Kit, and only for PM50D & PM50D-20 rechargeable batteries with charger.

1.5 Front PM50

In Figure 1.2 is represented the front panel of PM50:

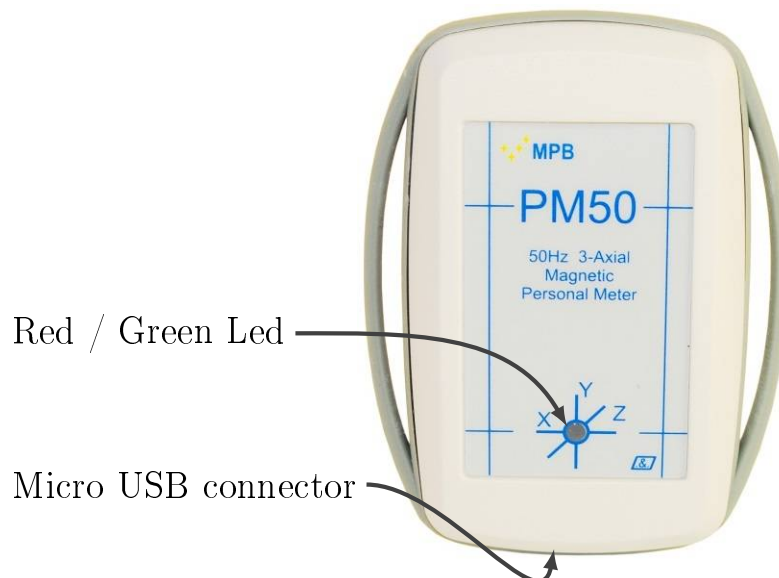


Figure 1.2: PM50 front

1.6 PM50D / PM50D-20 Front

In Figure 1.3 is represented the front panel of PM50-D and PM50-D-20 with the displaying interface (display) and the control part (keyboard).

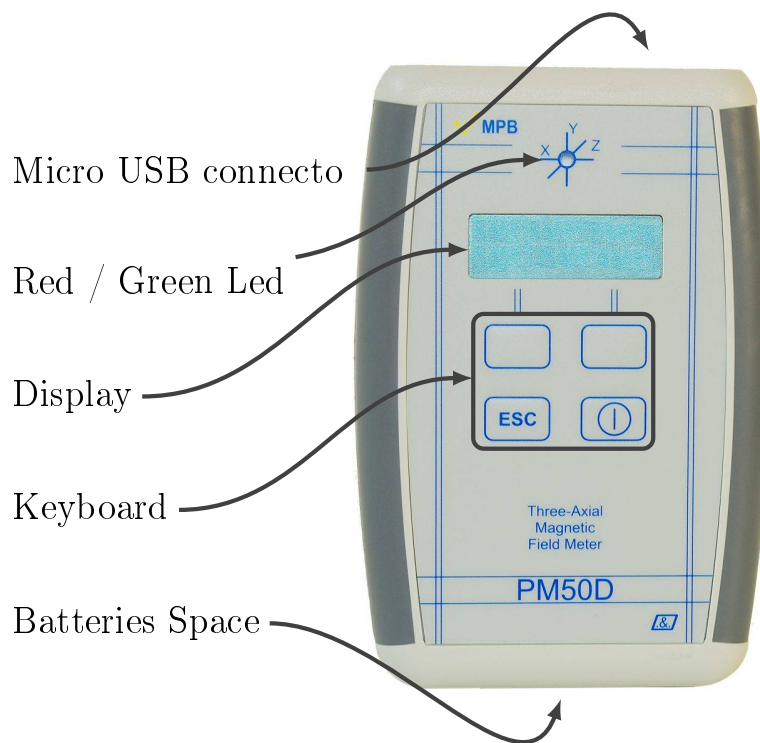


Figure 1.3: PM50D / PM50D-20 front

1.7 Technical Specifications

Specifications are subject to change without notice.

	PM50	PM50D	PM50D20
Type of sensor	Triaxial magneto-resistive*	Triaxial magneto-resistive*	Triaxial windings
Frequency range	@Full band	@Full band	@Fullband
Within 1dB	38Hz -> 10kHz	38Hz -> 10kHz	48Hz -> 500kHz
Within 3dB	25Hz -> 30kHz	25Hz -> 30kHz	35Hz -> 5kHz
Level Range	300 nT to 1 mT	300 nT to 1 mT	10 μ T to 20 mT
Resolution	10 nT	10 nT	10 μ T
Overload	2 mT	2 mT	22 mT
Dynamic	70 dB	70 dB	66 dB
Error of measurement	40 – 1000 Hz / 1 – 300 μ T	40 – 1000 Hz / 1 – 300 μ T	45 – 500 Hz / 0,1 – 20 mT
Linearity	1.2 dB	1.2 dB	1.2 dB
Absolute error	1.6 dB	1.6 dB	1.6 dB
Unit of measurement	μ T; A/m	μ T; A/m;	mT; kA/m;
User defined measurement mode	Selective at 50Hz; 50Hz + harmonics; wide band	Selective at 50Hz; 50Hz + harmonics; Selective at 60Hz; 60Hz + harmonics; Notch at 50Hz and 60Hz; wide band	Selective at 50Hz; 50Hz + harmonics; Selective at 60Hz; 60Hz + harmonics; Notch at 50Hz and 60Hz; wide band
Data logger			
Max recording time	24 h	168 h	168 h
Acquisition time	5...60 sec	5...30sec (24h) 30sec (168h)	5...60 sec
Display	n.a.	LCD 2 lines x 16 characters backlit	LCD 2 lines x 16 characters backlit
Multifunction led	Green led – status of the measure Red led – alarm threshold exceeded	Green led – status of the measure Red led – alarm threshold exceeded	Green led – status of the measure Red led – alarm threshold exceeded
I/O Interface	USB	USB	USB
Acoustic alarm	Programmable threshold by SW PC	Preset thresholds from 1 μ T to 500 μ T, step 1 μ T	Preset thresholds from 0.1mT to 20.0mT, step 0.1mT
Auto Shutdown	n.a.	20min; 60min; deactivated	20min; 60min; deactivated
Date and Watch	Adjustable via PC SW	Adjustable by the operator	Adjustable by the operator
Reference standards	2013/35/EC Directive	2013/35/EC Directive	2013/35/EC Directive
Operating temperature	-10°C to 40°C	-10°C to 40°C	-10°C to 40°C
Sensor position	Showed on the case	Showed on the case	Showed on the case
Power	rechargeable Li-Ion (USB powered)	2 Alkaline AA or 2 rechargeable Ni-MH	2 Alkaline AA or 2 rechargeable Ni-MH
Battery life	48 h @ Cadence > 30sec	Alkaline > 80h; Ni-MH 1900mA/h > 168h	Alkaline > 80h; Ni-MH 1900mA/h > 168h
Dimensions	76 x 44 x 18 mm	118 x 79 x 25 mm	118 x 79 x 25 mm
Weight	26 gr	125 gr	125 gr

* Operation ensured in presence of static magnetic fields below 100 μ T

Table 1.1: Technical specifications PM50-Series

1.8 Accessories

Accessories	USB interface cable PC software for data download and programming
Calibration certificate	Standard
Anchor Kit	Upper limbs, trunk and waist Waist and table / tripod

Table 1.2: PM50 Series Accessories

Chapter 2

Principle of operation

2.1 PM50

The block diagram below in Figure 2.1 depicts the personal protection device PM50:

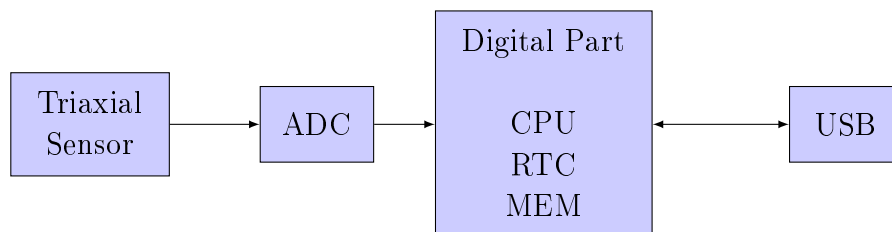


Figure 2.1: block diagram PM50

The triaxial sensor measures the magnetic field then ,after an appropriate amplification, it sends the value to the analog-digital convertor (ADC) that makes it available to the CPU. This signal is then stored in the MEM with the timing given by the RTC. The USB port s used to download data to a PC.

2.2 PM50D / PM50D-20

PM50D operating principle is very similar to the PM50's, following block diagram in Figure 2.2. In addition to the components of PM50 the big brother

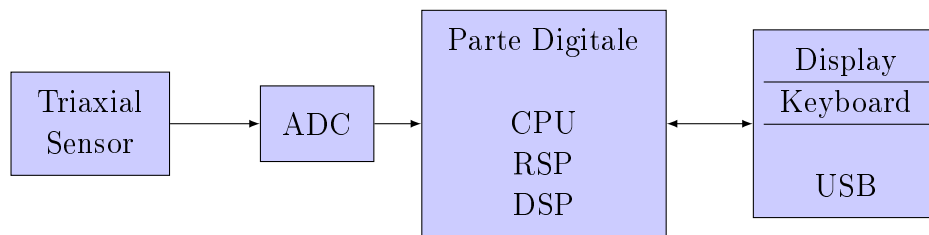


Figure 2.2: block diagram PM50-D e PM50-D-20

is enriched by a display, which allows the visualization of the field values, and a keyboard used to program it.

Chapter 3

Use and Operations on PM50D / PM50D-20

3.1 Turning On

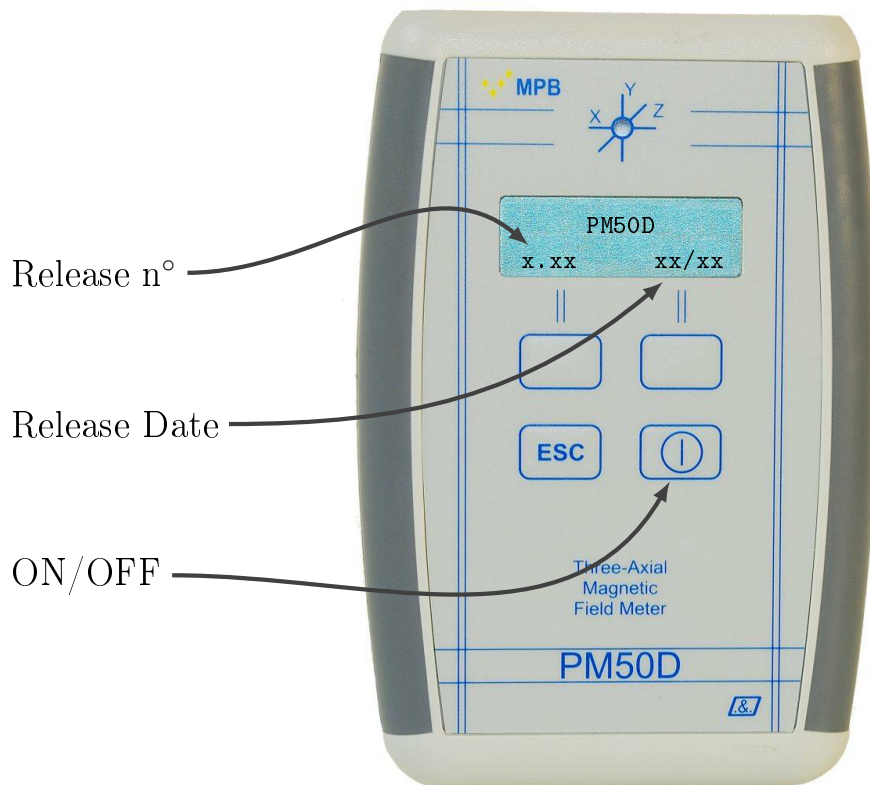


Figure 3.1: turned on PM50D / PM50D-20

The PM50D / PM50D-20 doesn't need external power; It works with 2 batteries AA of 1,5V stocked on the devices back.

By briefly pressing the power button on the PM50D keyboard you will start the machine, for the shutdown hold the same button for 4 seconds. As soon as the instrument is turned on, the display will show the following screen representing the release of the FW and the date of issue, as in Figure 3.1.

After a few seconds will appear a screen (Figure 3.2) showing the measure in the same format used before the last shutdown. The state led starts to flash the green light, to point that the device is ready for measuring. On the device display will be showed the measurement of the magnetic field, for the PM50D in μT or $\frac{A}{m}$, for the PM50D-20 in mT or $\frac{kA}{m}$, depends on device settings. In detail, the first row shows the measured isotropic field, while the second row is user selectable, as showed in Chapter 3.2.3.

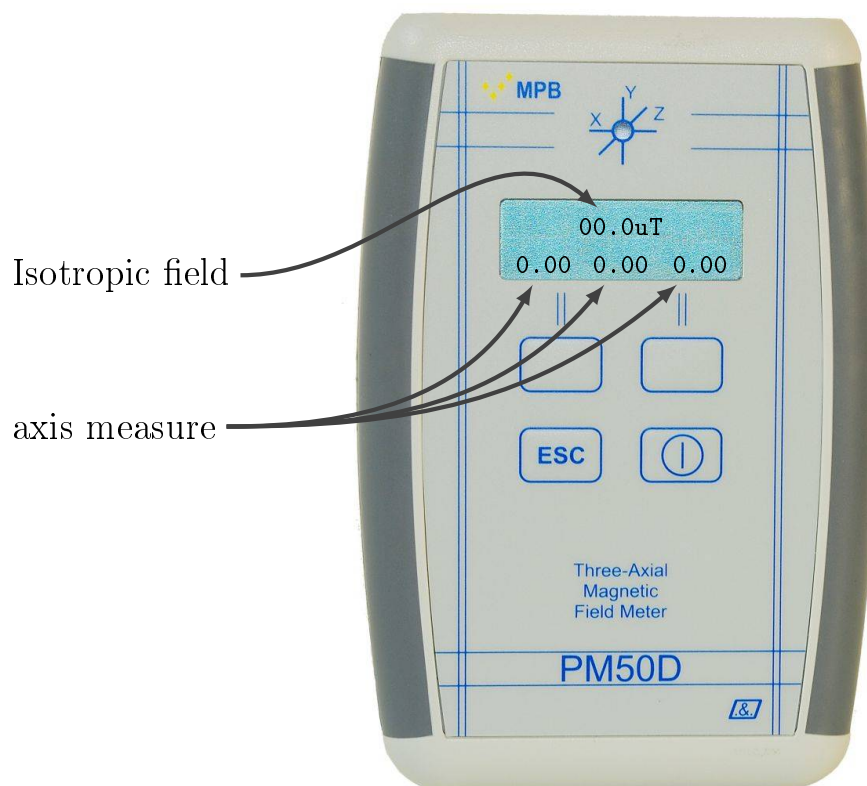


Figure 3.2: measuring display

3.2 Menu in PM50D / PM50D-20

By pressing one of the action key the menu will be opened, as in Figure 3.3.

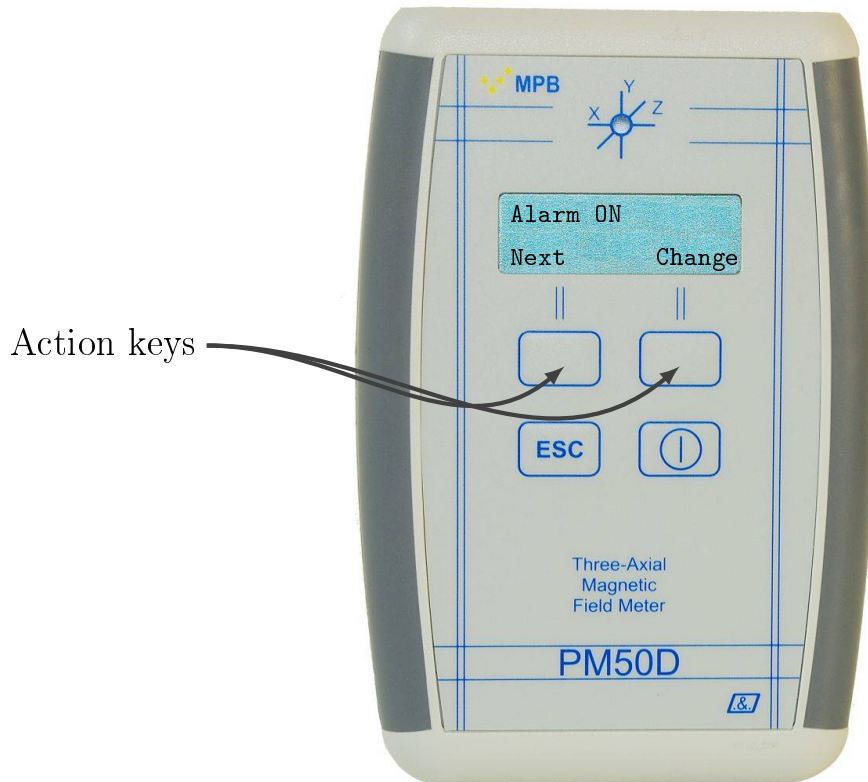


Figure 3.3: “alarm” menu

All the settable option are listed below.

3.2.1 Alarm

The device is equipped with an internal alarm that is activated whenever it detects a magnetic field which is greater than the preset alarm threshold, by turning the color of the status LED into solid red and activating the buzzer of which the device is equipped. The LED and the audible alarm will remain enabled as long as the detected level remains higher than the set warning threshold. By pressing one of the action keys the device will show the menu, giving the action keys a new behavior, as showed in Figure 3.3. The first sub-menu is the

Alarm Menu. This page shows the actual state of the acoustic alarm, which can be changed by pressing the “Change” key, as showed in Figure 3.4

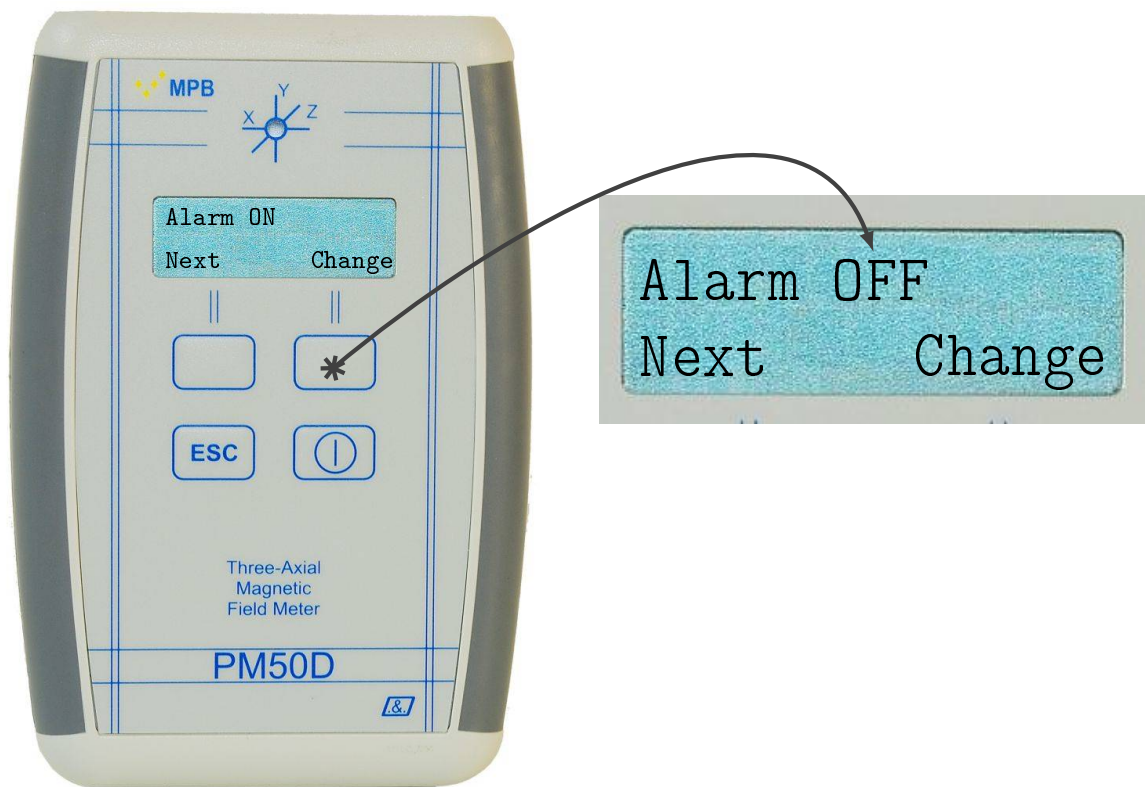


Figure 3.4: “alarm” selection

3.2.2 Threshold

The threshold page is where users can choose the value that marks the Alarm start point. By pressing the action keys for entering the menu, and then the “Next” key, the Threshold sub-menu will be showed, as in Figure 3.5. To modify the last setted value press the “Change” key. Action keys have now a new behavior: one for “Up” and one for “Down”.

It’s now possible to change the threshold value (Figure 3.6).

Steps on PM50D are $1\mu\text{T}$, meanwhile on PM50D-20 steps are 0.1mT ; every time the “Up” and “Down” keys are pressed the value will be raised or decreased by one step. Lowest values are $1\mu\text{T}$ for

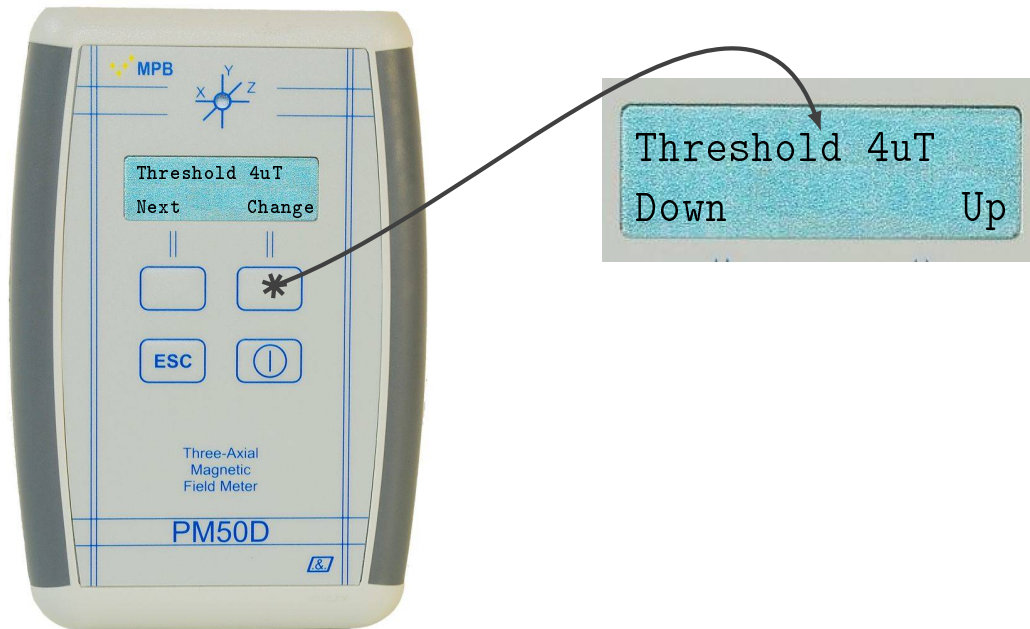


Figure 3.5: Menu “Threshold”

PM50D and 0.1mT for PM50D-20, but is not recommended to set the alarm limit so low, otherwise the alarm will be always active, consuming batteries life. The upper limits are of 500 μ T for PM50D and 20.0mT for PM50D-20. Once the wanted value is selected, just press the “ESC” key for saving changes. Or just hold a few seconds without pressing anything, and the device will automatically save the changes and exit from menu.

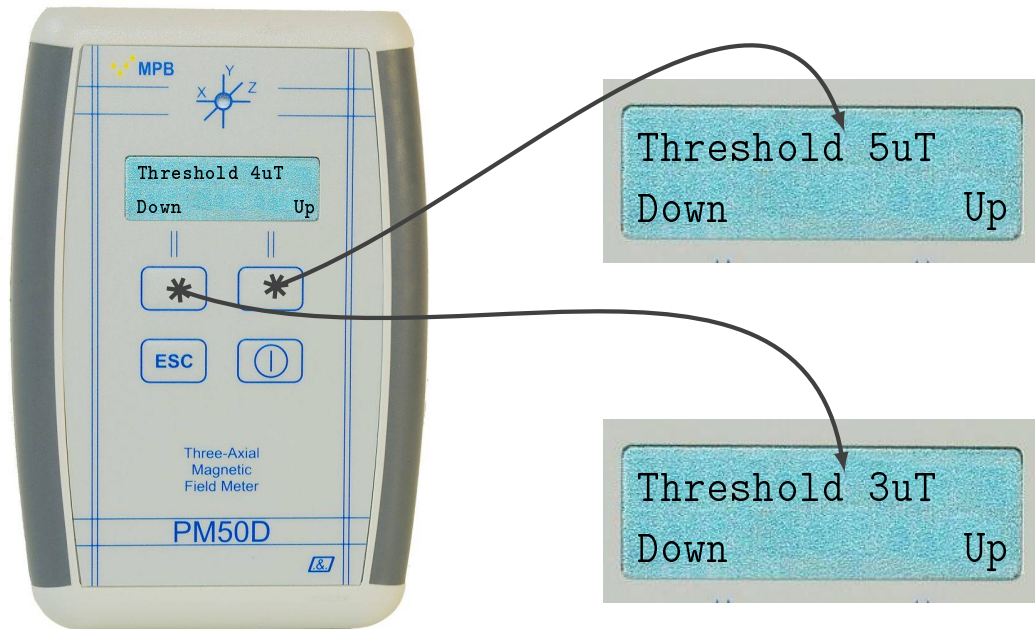


Figure 3.6: Configuring “Threshold”

3.2.3 Line2

The second line of the display in working mode is customizable, and depends on user preference: by pressing action keys will be showed the main menu (Figure 3.3), then press the “Next” key till the *Line2* sub-menu is visible, like in Figure 3.7. It’s now possible to change display modality:

X,Y,Z: shows the detected magnetic field along x , y and z axes (Figure 3.7(a)).

Status: shows the setted filter, the current measuring axis and the charge batteries level (Figure 3.7(b)).

Clock: shows the current time (hh.mm.ss) and date (DD.MM) as in Figure 3.7(c).

Notch: shows the contribution of the field of the whole band except for components due to modality through the “Mode” menu. The

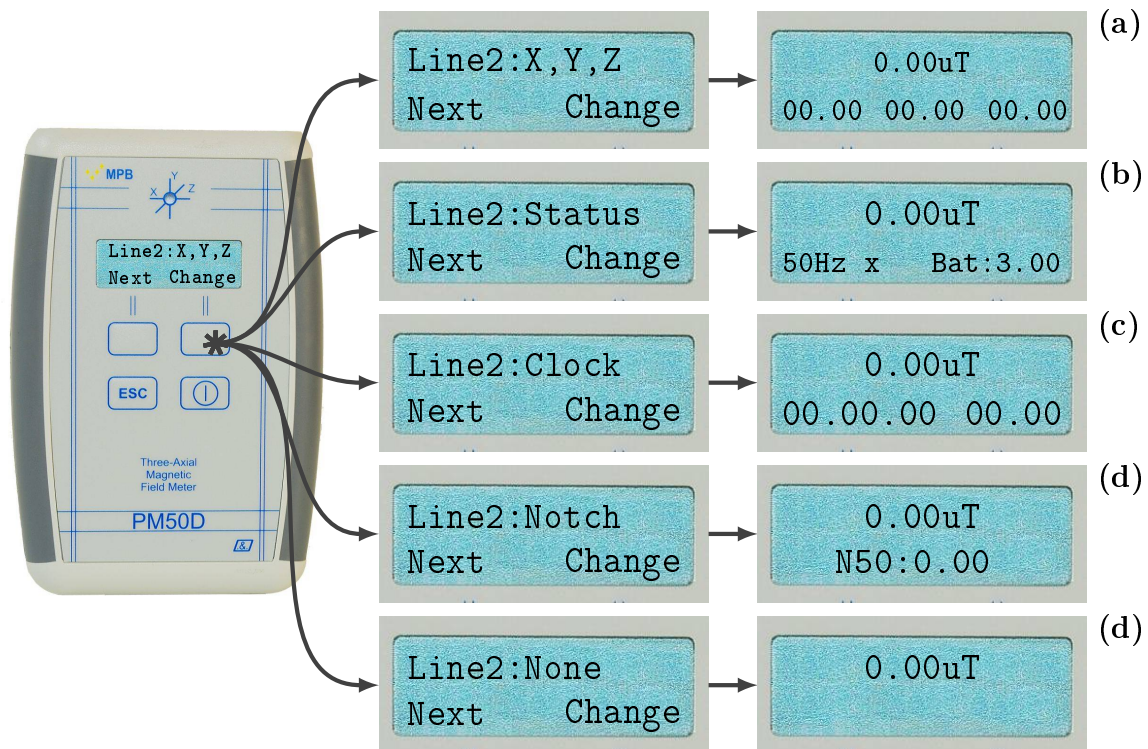


Figure 3.7: Configuring “Line 2”

“Notch” mode is not compatible with the “full” broadband measurement mode. In case the “Full” mode and “Notch” mode are selected at the same time, the second line of the display will show “_”.

None: shows the second line empty (Figure 3.7(d)).

To save the selected option press “ESC” or hold a few seconds without pressing any keys.

3.2.4 Unit

Showed measure can be expressed differently, depending on device model. For PM50D users can choose to display the measure in μT or alternatively in $\frac{A}{m}$. Instead on PM50D-20, mT or $\frac{kA}{m}$ mode can be selected. From normal screen just press one of the action keys (Figure 3.3), then press the “Next” key till is showed the *Unit* sub-menu, like in Figure 3.8. Measuring unit can now be changed by

pressing “Change” key. As usual to save all changes just press “ESC” or hold a while without pressing anything.

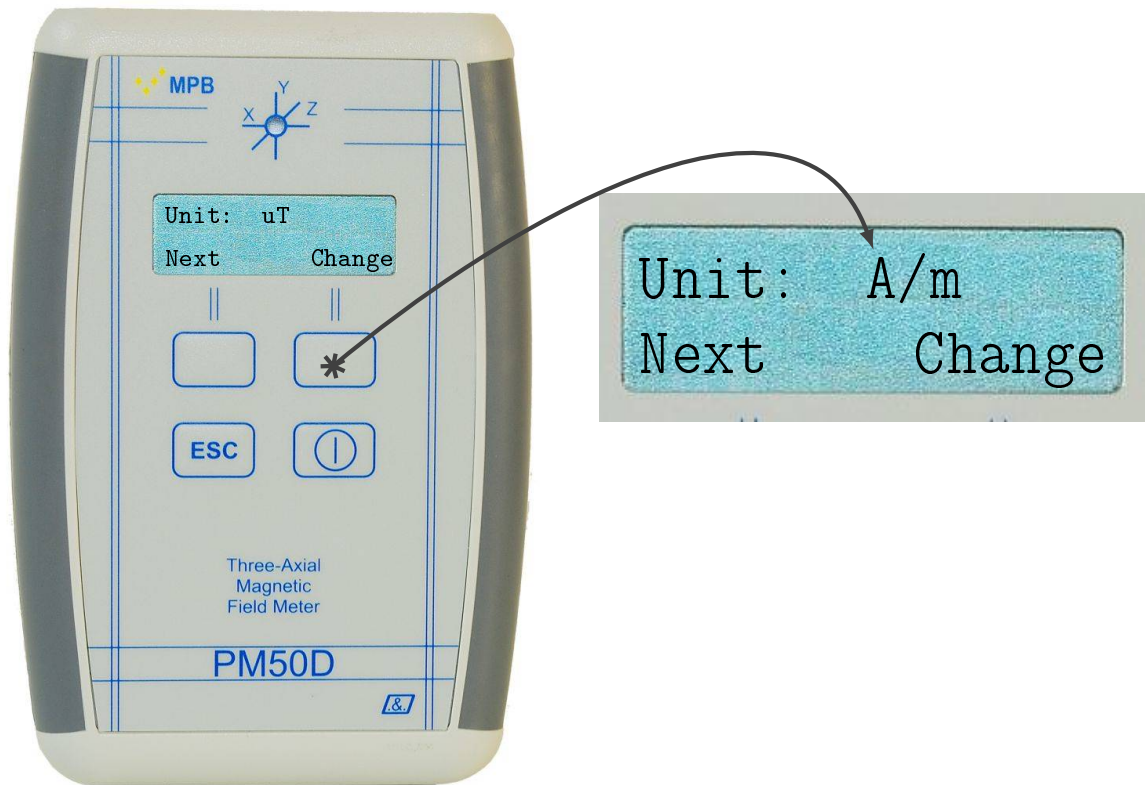


Figure 3.8: Sub-Menu “Unit”

3.2.5 AutoOFF

It's possible to choose if the device has to turn off automatically after two fixed time period: 20 minutes or 60 minutes. Otherwise user can choose no auto shut down at all. From normal screen just press one of the action keys (Figure 3.3), then press the “Next” key till is showed the *AutoOFF* sub-menu, like in Figure 3.9. By pressing the “Change” key are selectable:

Disabled: Auto shutdown is disabled, and the device can be turned off only by the operator (Figure 3.9).

20 min: The device will be in working mode for just 20 minutes, then it will automatically turned off (Figure 3.9(a)).

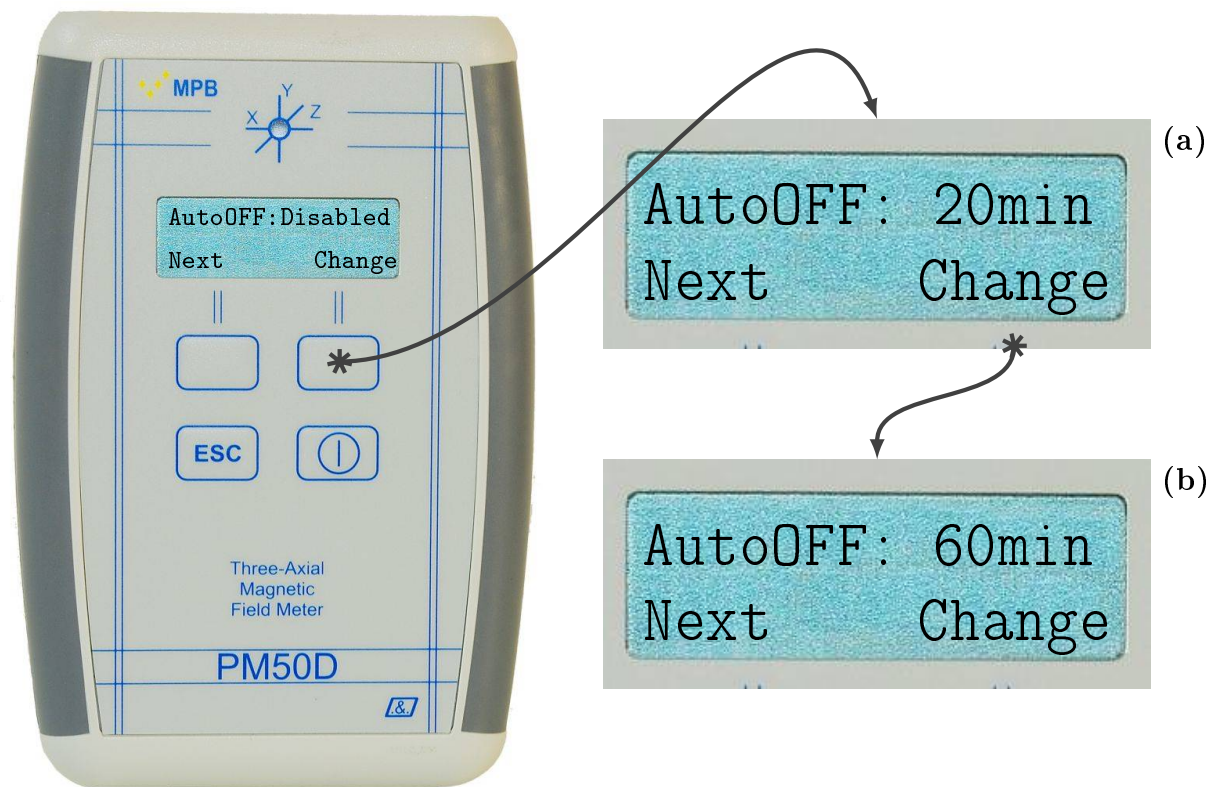


Figure 3.9: Sub-Menu “AutoOff”

60 min: The device will be in working mode for just 60 minutes, then it will automatically turned off (Figure 3.9(b)).

For saving the selected option press “ESC” or hold a few seconds without pressing any keys.

3.2.6 Mode

Device gives the possibilities to choose the filter modality among a 50Hz filter, 50Hz plus Harmonic frequencies and a Full Band filter. From normal screen just press one of the action keys (Figure 3.3), then press the “Next” key till is showed the *Mode* sub-menu, like in Figure 3.10. Now by pressing the “Change” key there will be these possibilities:

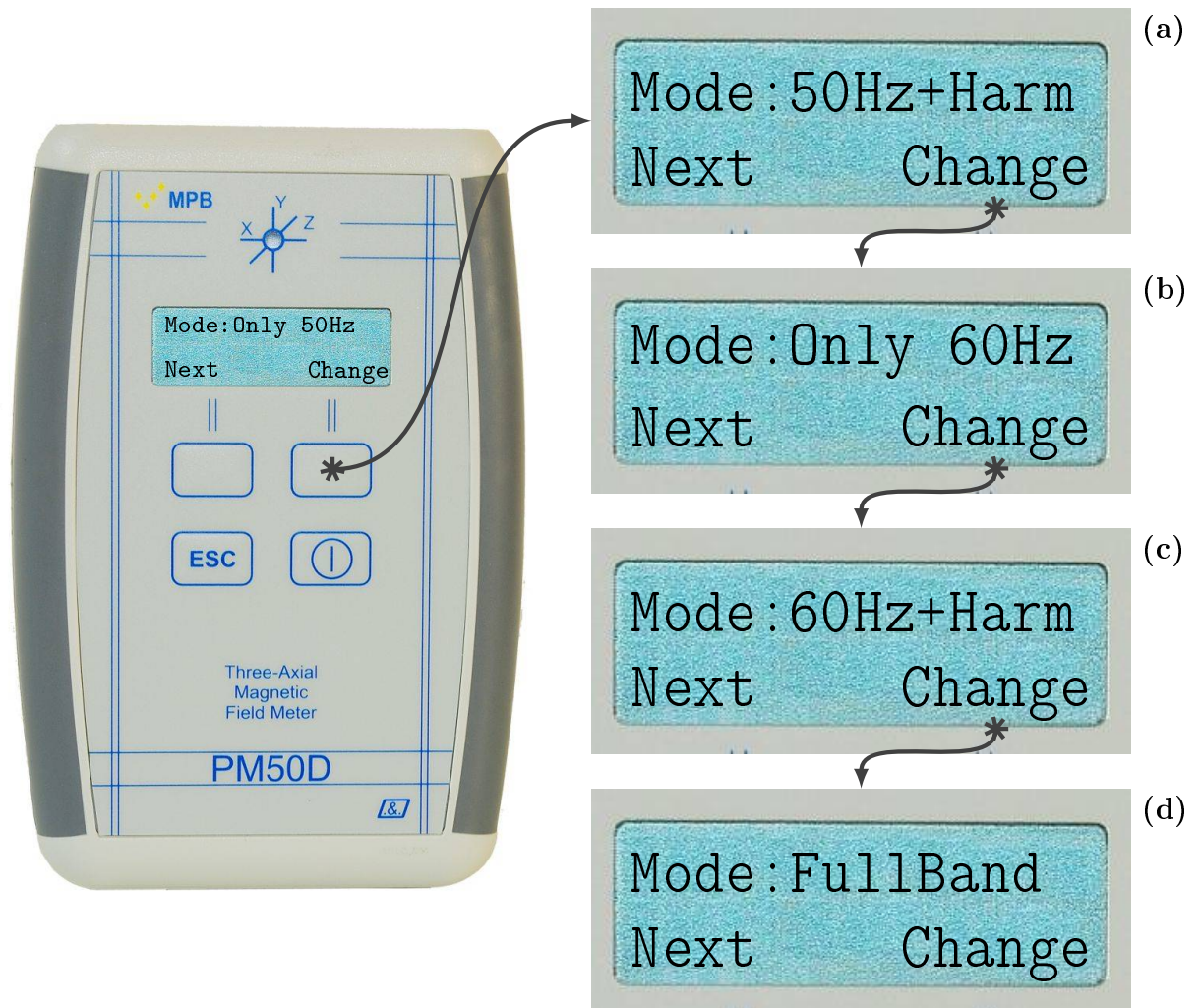


Figure 3.10: Sub-Menu "Mode"

Only 50Hz: the returned measurement depends only on 50Hz frequency component (Figure 3.10).

50Hz+Harm: the returned measurement depends on 50Hz frequency and all the relative Harmonics components, so that the value is the result of quadratic sum of signals (Figure 3.10(a)).

Only 60Hz: the returned measurement depends only on 60Hz frequency component (Figure 3.10(b)).

60Hz+Harm: the returned measurement depends on 60Hz frequency and all the relative Harmonics components, so that the value is

the result of quadratic sum of signals(Figure 3.10(c)).

Full Band: the returned measurement depends on all existing harmonics presents inside the device range of work (Figure 3.10(b)).

For save the selected option press “ESC” or hold a few seconds without pressing any keys.

3.2.7 Logger

This device series, besides showing real-time measure, is able to record on its memory all captured values separated by a fixed time interval, that can be choose. From normal screen just press one of the action keys (Figure 3.3), then press the “Next” key till is showed the *Logger* sub-menu, like in Figure 3.11. By pressing the “Change” key are selectable:

5 s: the time interval from a log value to another is fixed to 5 seconds (Figure 3.11). **By pressing “ESC” the device will ask if user want to Start recording a new LOG**

10 s: the time interval from a log value to another is fixed to 10 seconds (Figure 3.11(a)). **By pressing “ESC” the device will ask if user want to Start recording a new LOG**

30 s: the time interval from a log value to another is fixed to 30 seconds (Figure 3.11(b)). **By pressing “ESC” the device will ask if user want to Start recording a new LOG**

Off: selecting this option the device will work only for shows real time values (Figure 3.11(c)). By pressing “ESC” the option will be saved.

3.2.8 LOG Time

Users can select the time duration of Logger modality. From normal screen just press one of the action keys (Figure 3.3), then press the “Next” key till is showed the *Logger* sub-menu, like in Figure 3.12. By pressing the “Change” key are selectable:

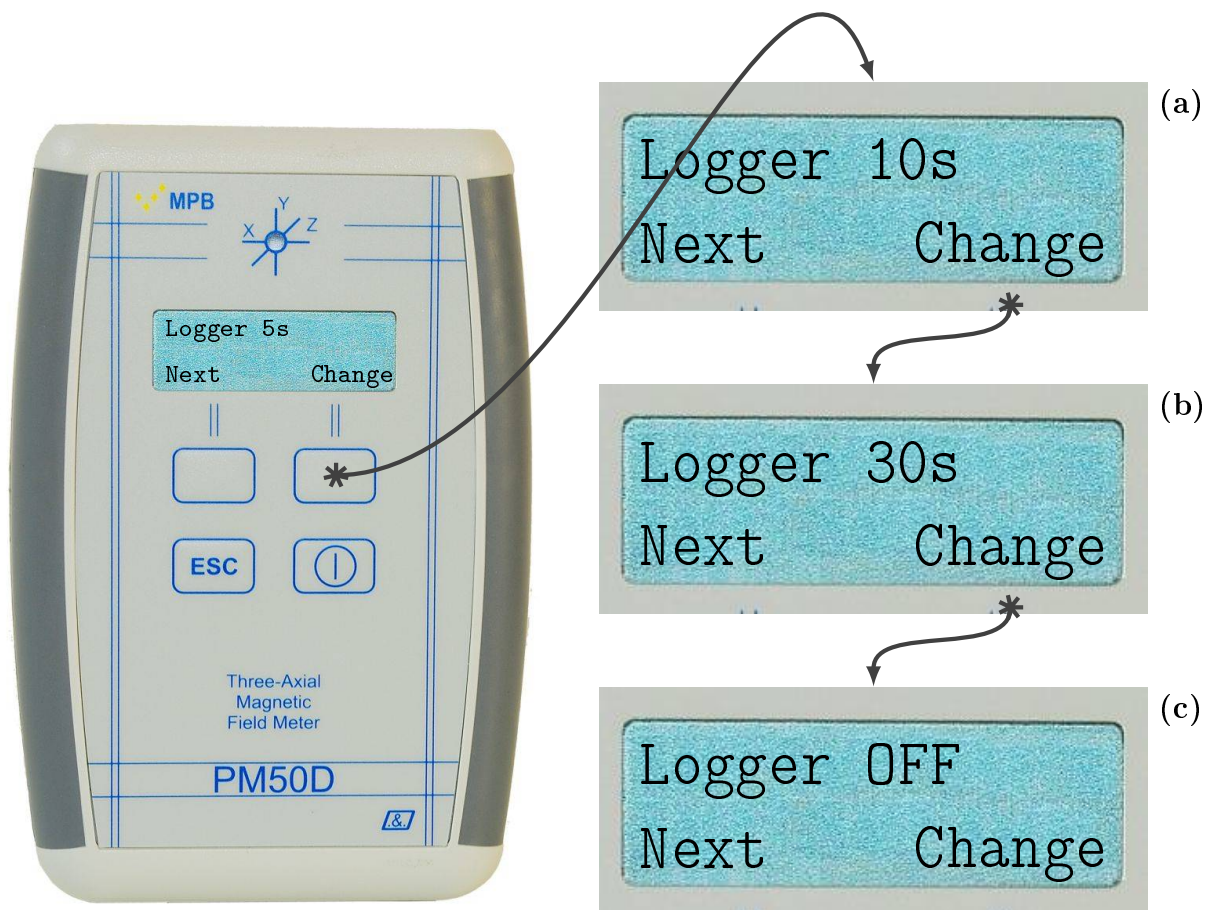


Figure 3.11: Sub-Menu “Logger”

8hours: Once the Logger is started the device will automatically stops and turns off after 8 hours (Figure 3.12).

12hours: the duration of the Logger is 12 hours (Figure 3.12(a)).

24hours: the duration of the Logger is 12 hours (Figure 3.12(b)).

7days: this modality is present only in PM50D and PM50D-20 models and set the duration fo the Logger at 7 days (Figure 3.12(c)).

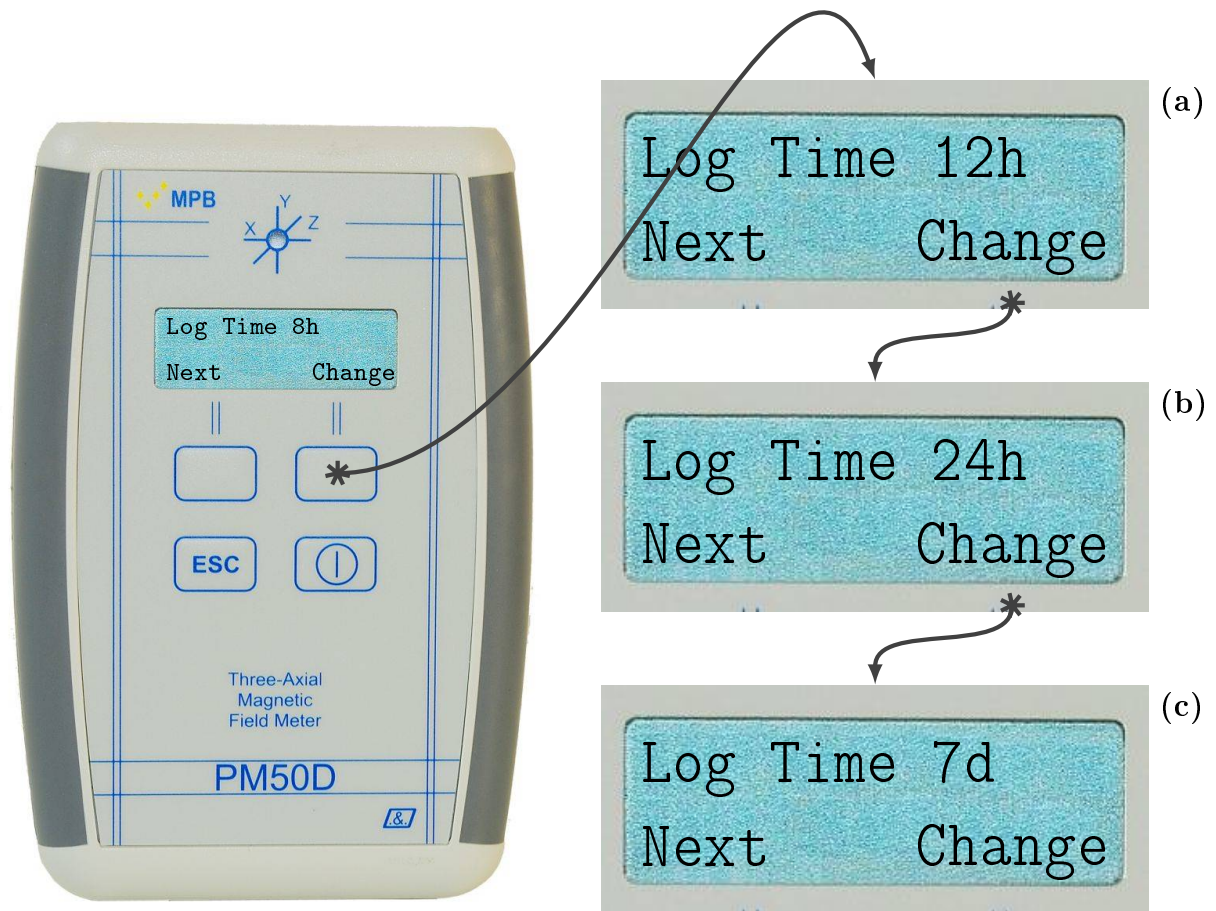


Figure 3.12: Sub-Menu “Log Time”

By pressing “ESC” the device will ask if user want to Start recording a new LOG

3.2.9 Contrast

Another selectable option is the display contrast. From normal screen just press one of the action keys (Figure 3.3), then press the “Next” key till is showed the *Logger* sub-menu, like in Figure 3.13. By pressing the “Change” key, the action keys behavior became “Up” and “Down”, so: Contrast goes from level 1 to level 7, as showed in Figure 3.13.

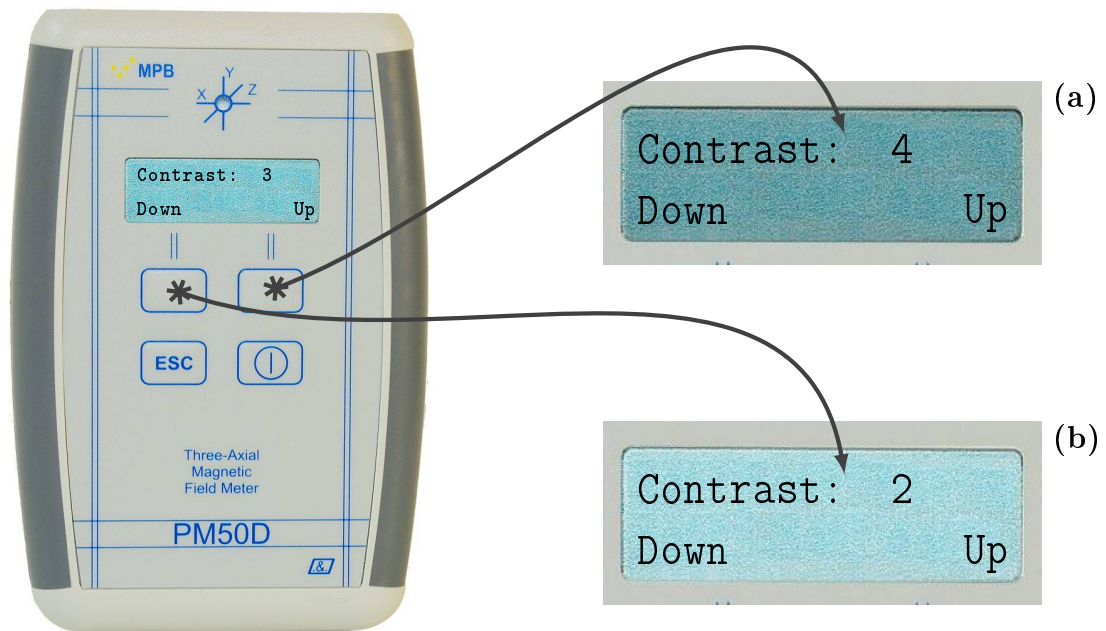


Figure 3.13: Configuring “Contrast”

3.2.10 Date & Time

Note that the Log recorded by PM50 Series are time marked, so it's important to set the correct time and date. From normal screen just press one of the action keys (Figure 3.3), then press the “Next” key till is showed the *Date & Time* sub-menu, like in Figure 3.14. By pressing the “ESC” key the display will show (Figure 3.14(a)). By pressing the “Change” key, the counter will increase one value per time.

Hours: this value can be setted from 00 to 23. Time format is 24 hours.

Minutes: this value can be setted from 00 to 59.

Year: this value can be setted from 00 to 20.

Month: this value can be setted from 01 to 12.

Day: this value can be setted from 01 to 31.

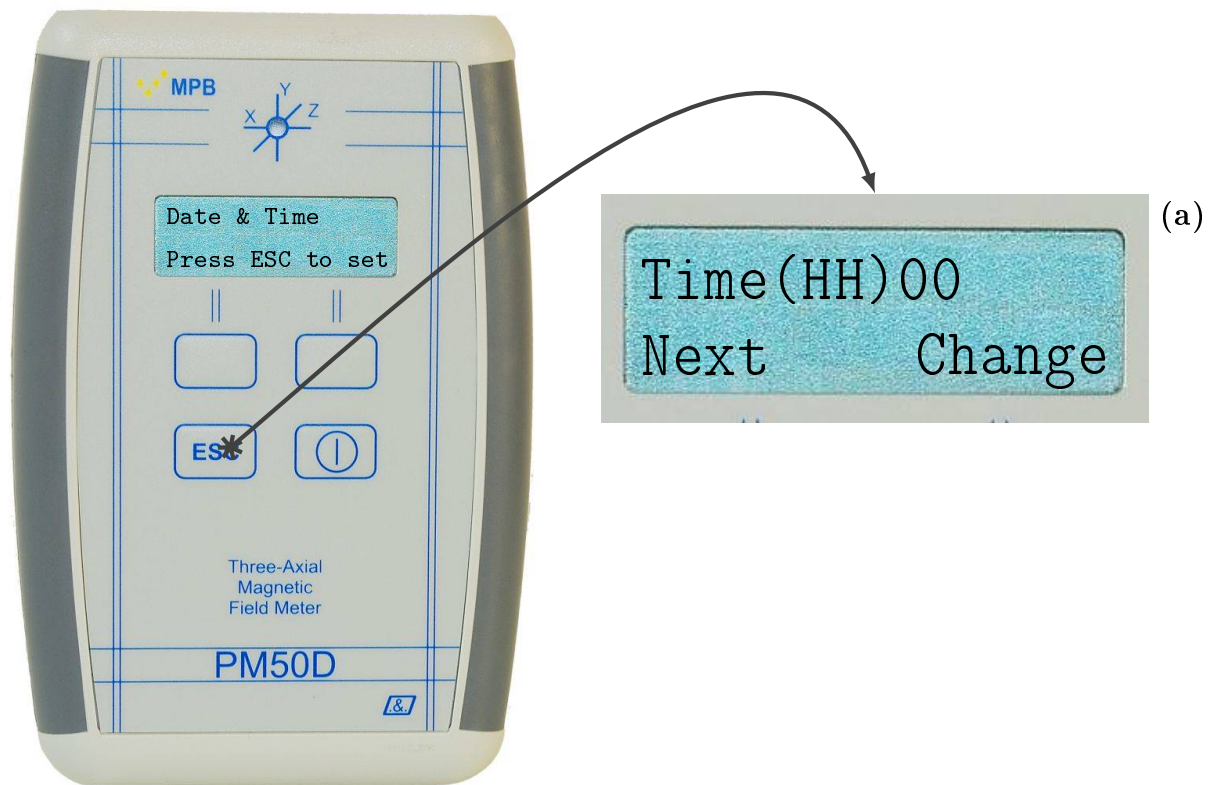


Figure 3.14: Sub-Menu “Date & Time”

All the possible combinations are showed in Figure 3.15.

- Every time the user press the action keys the menu will be showed, if no other actions were done the device will automatically put back the measuring screen.
- If some setting were changed, it can be saved through the “ESC” key or waiting without pushing any key for the screen to go back in the measuring screen.
- If settings were saved by pressing “ESC” the device menu will start from the beginning (as in Figure 3.3). Otherwise, if user doesn’t press “ESC” (or any other key) the device save the values anyway, and later, action keys will get back the last Sub-Menu selected.

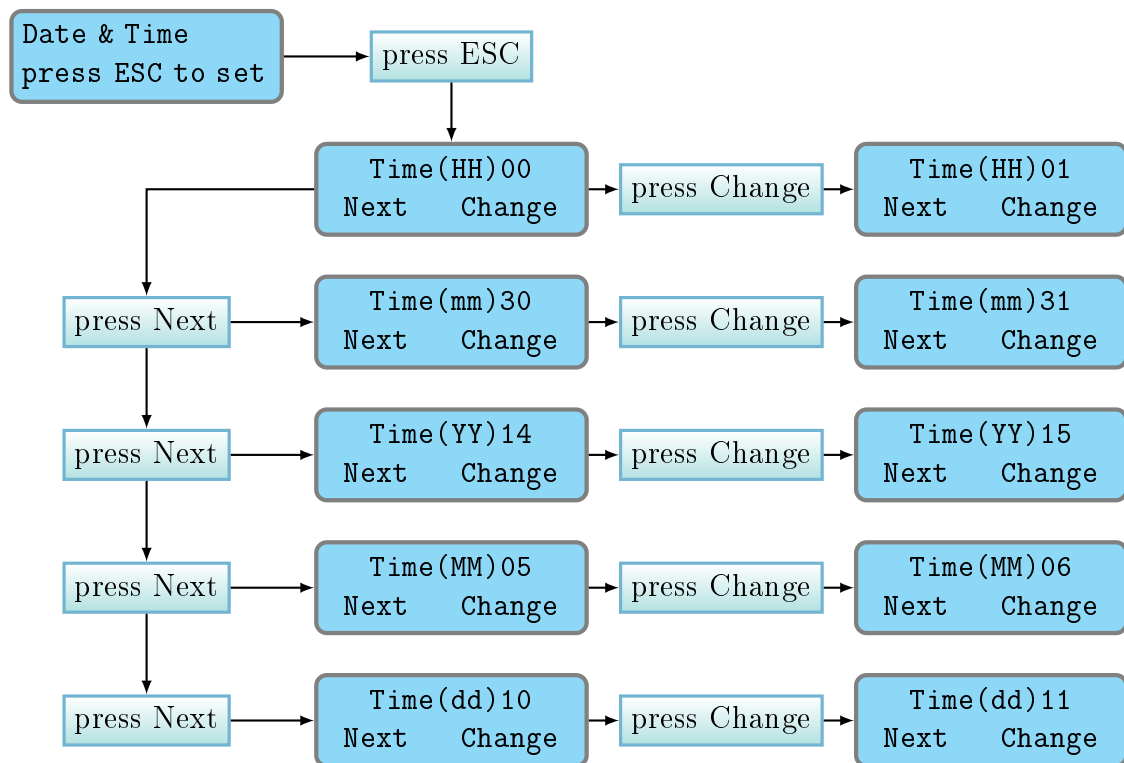


Figure 3.15: “Date & Time” schema

3.3 DATA LOGGER modality

As described in 3.4 the device is able to measure magnetic field in real-time, or used for recording magnetic field values for a long period of time, at some fixed interval selected by users as described in 3.2.7 and in 3.2.8. User can start Logging by pressing the “ESC” key from the *Logger* sub-menu(3.11) or the *LogTime* sub-menu(3.12).

Once the *Logger* and *LogTime* parameters are setted just press “ESC” key. The screen will look like Figure 3.16, then press “Start” key for begin to Log. The device will display on the second line a message to confirm that the Logger has started. After that no other action, beside turn off the device, will be possible. The state Led will flash three times per measure every user fixed interval of time(5, 10 or 30 seconds). During the data acquisition the second line will show the words “Logger Running” (Figure 3.17(a)) for the 5 seconds log interval, or “Time to Next XX” (Figure 3.17(b)) for 10 or 30 seconds

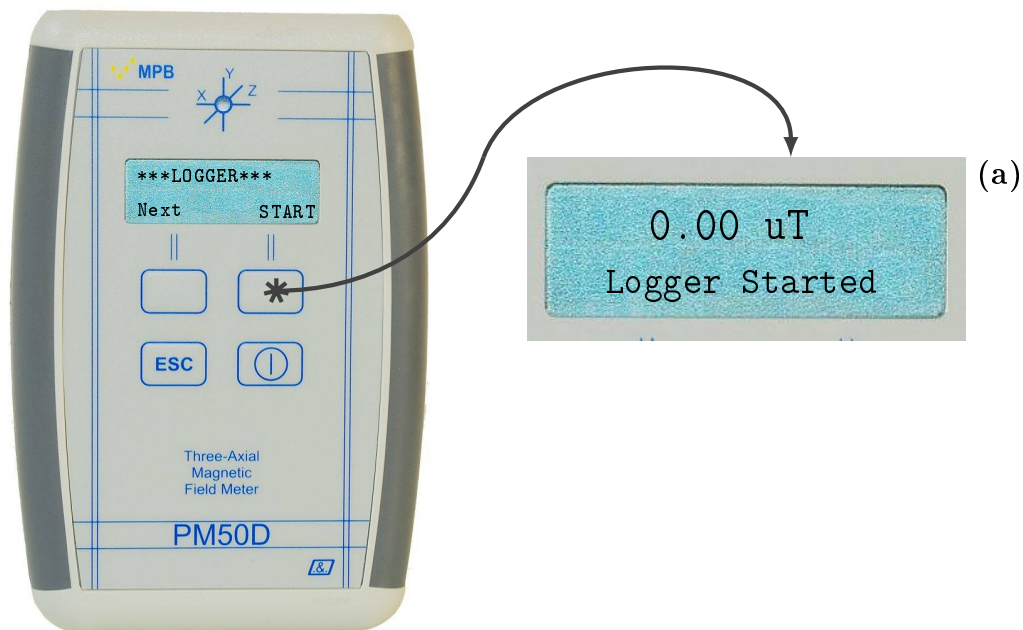


Figure 3.16: “*LOGGER*” Screen

interval.

To stop the data acquisition it's necessary turn off the device. To visualize acquired data it's necessary the PC software PM50 Manager described in Chapter 5 and Chapter 5.7.

3.4 REAL TIME modality

As the device is turned on, the display shows the real time measured magnetic field value. The first row shows the isotropic value of the field in μT or $\frac{\text{A}}{\text{m}}$ for the PM50D and in mT or $\frac{\text{kA}}{\text{m}}$ for the PM50D-20 (it's possible to choose witch mode users wants as described in 3.2.4). Meanwhile the second line will show what option user has selected in the “Line2” sub menu (Chapter 3.2.3). In Live acquisition the led flashes every second.

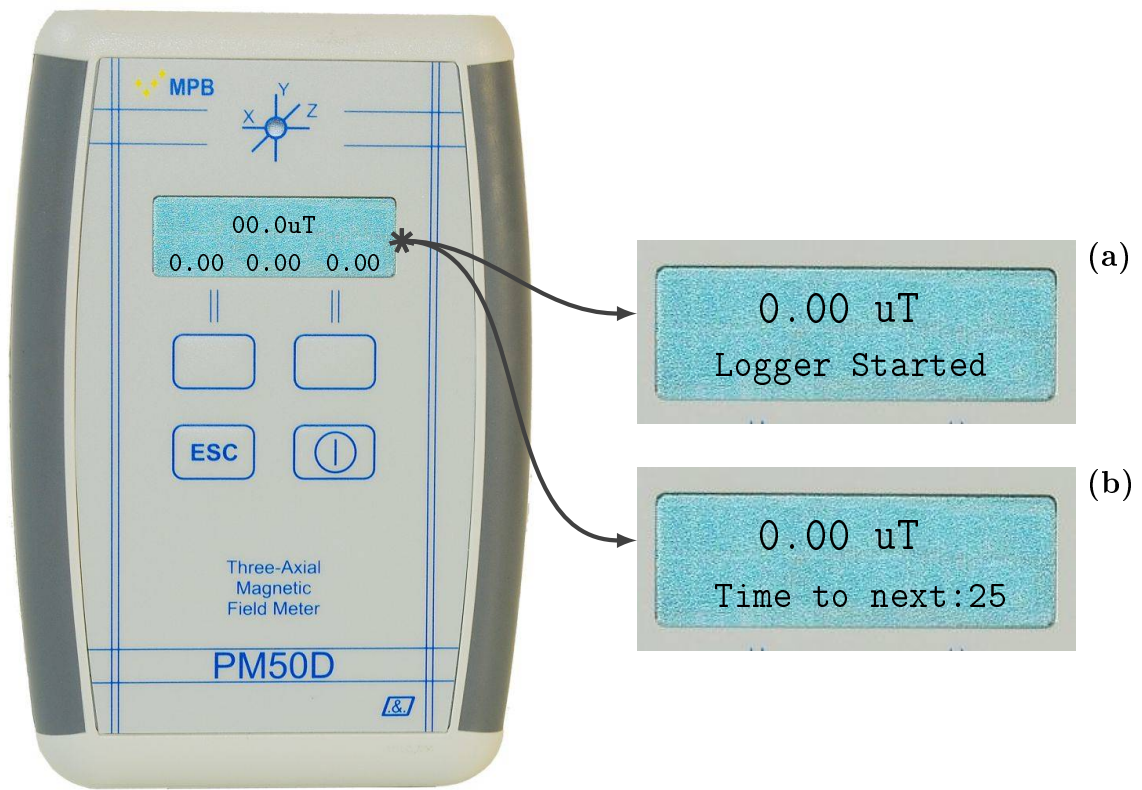


Figure 3.17: “*LOGGER*” Screen

Chapter 4

Use and Operations on PM50

Like all the series, PM50 doesn't need of an external source of power. PM50 has a rechargeable lithium battery who can be plugged even to a PC for recharges. An entire charge cycle has a duration of 6 hours. This model of personal protection equipment doesn't have a display, so it can't shows measures in real-time mode, but it can only acquire data as a DATA LOGGER setted up from the PC software PM50 Manager (see Chapter 5 for reference).

- Before start a Logger acquisition we suggest to complete a recharge cycle of at least 6 hours.

Chapter 5

PC Software PM50 Manager

All the PM50 Series can be managed by the *PM50 Manager*. Through this software user can:

- Set up all the Logger customization.
- Download and store acquisitions file recorded in Data Logger mode.

5.1 Installation

If users don't own the MPB USB mass storage provided with every model of PM50 Series, the executable of PM50 Manager can be found on our website <http://www.gruppompb.com/>, in the download section. Search for PM50 Series in the MPB products list and select the item in the *software* column. This will open a dialog window for credential info. Once all fields are complete the software download will start.

To install the PC software choose the appropriate executable between `PM50Manager_setup_32bit.exe` or `PM50Manager_setup_64bit.exe`, depending on user's OS architecture, and launch it. The first displayed screen will look like Figure 5.1. By click on "Next" the software will ask user's credential (Figure 5.3(a)).

Follow the installer instruction and go ahead to the path selection (Figure 5.3(b)). In the next page user can choose a custom link path from desktop and/or from the *Windows* "Start" menu, as showed in

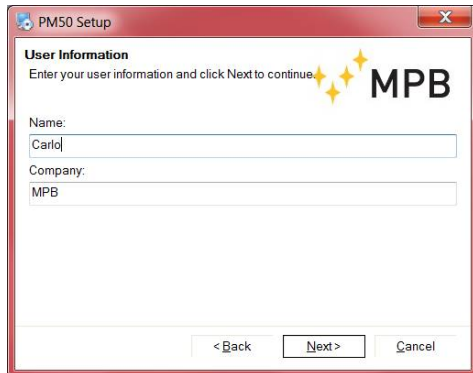


Figure 5.1: Installer PM50 Manager

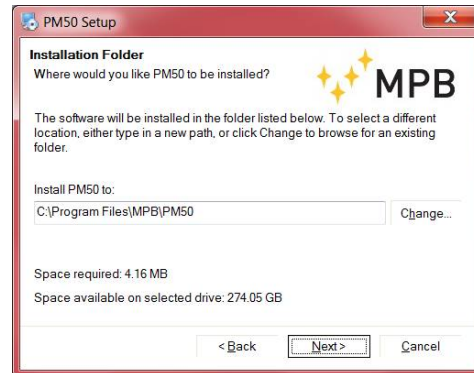
Figure 5.3(c). Now the software has enough infos, and the installation will begin (Figure 5.3(d) & Figure 5.3(e)). When all data are correctly installed the last screen (Figure 5.3(f)) will show a report and the PM50 Manager will be ready to go.

- The software doesn't need custom configuration.

Figure 5.2: PM50 Manager installer



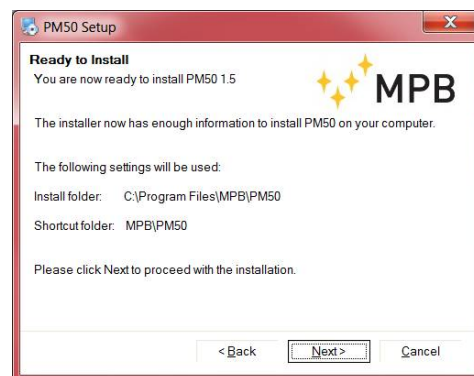
(a) credential



(b) path



(c) link



(d) report



(e) installation



(f) conclusion

5.2 Working with PM50, PM50D e PM50D-20

Through the PM50 Manager users can store all generated data and configure the PM50 series for new Logger runs. There is a difference depending on the owned model:

PM50: No operation is needed, just plug the device to the PC.

PM50D / PM50D-20: Device has to be turned on before connecting it with the USB cable.

This software is able to recognize witch model is connected to the PC, so there is no need to specify the model code.

If drivers are correctly installed, the PC will recognize the device immediately, otherwise follow the driver installation instruction (see Appendix A). Once the device is connected the software can be launched. On the first run you will see the window as in Figure 5.3. Confirmed the *welcome* page, the PM50 Manager will appear (Figure 5.4).

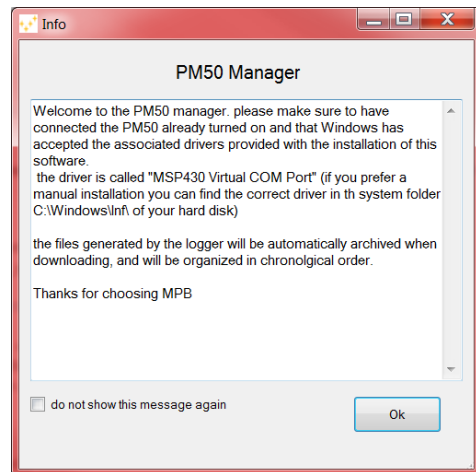


Figure 5.3: “Welcome” PM50 Manager

On the left part of main screen are displayed:

- the used COM Port (if configured).
- USB connection state.
- the Firmware version of the plugged device.
- the PM50xx internal clock.
- the PM50xx internal date.
- the batteries voltage level.
- the “Archive” button, witch point to the PM50 Manager archive folder.

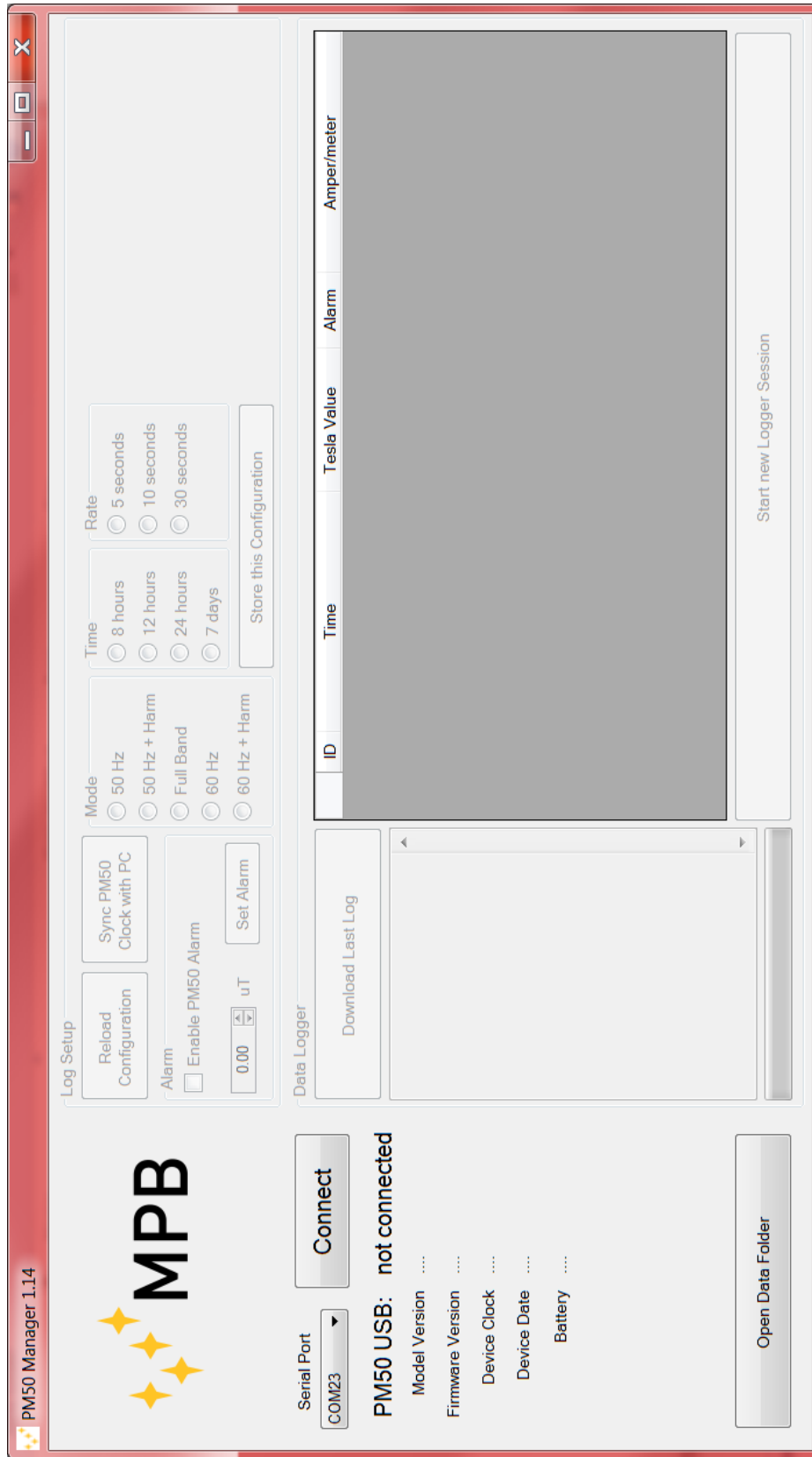


Figure 5.4: PM50 Manager: Main Screen

5.3 First Connection

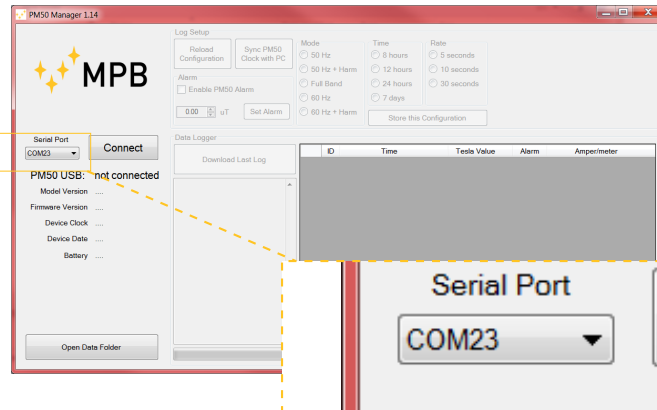


Figure 5.5: “Com Port” Button

Until the connection is not established, the device settings and download will be disabled. To connect the device for the first time, please select the correct port from the list called “Com Port” (Figure 5.5).

Now the PM50 Manager is ready for connection. Press the “Connect” button (Figure 5.6).

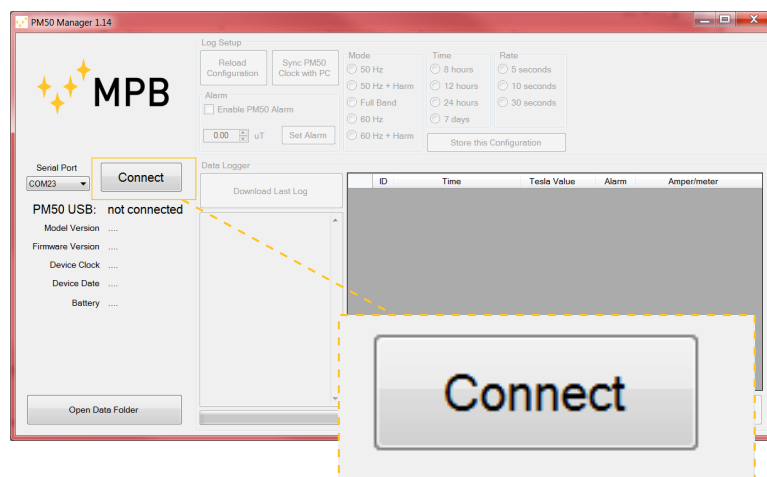


Figure 5.6: “Connect” button

All the labels on the left will be updated with the PM50xx device info. The system is now able to set up all the device configurations and to download acquired data.



Figure 5.7: PM50 Manager: PM50xx connected

When the PM50xx is connected the screen will look like Figure 5.7. The upper part involves: “Reload configuration” for a refresh of all the device configuration, “Clock Sync” for set the device clock, “Logger Setup” and “Alarm Setup”, with every relative value that is updated during the connection phase, according the device. If user change one of these value, he has to confirm by pressing the relative “Set” button.

5.4 Clock Sync

It’s important to relate the measure of the magnetic field with the time of that measure. To make sure that the device clock is updated, just re-sync it with the PC clock by pressing the “Clock Sync” button in Figure 5.8.

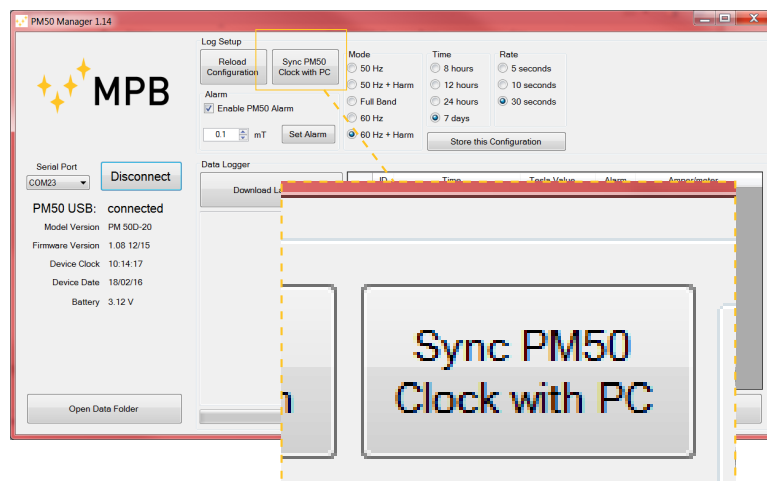


Figure 5.8: “Clock Sync” button

5.5 Logger Setup

Every model of the PM50 Series has different logging modality (already described in chapters 3.2.6, 3.2.7 e 3.2.8). The PM50 Manager shows the last configuration in use on device. For apply a new kind of configuration press the “Set Logger” button (Figure 5.9), that will be enabled after any change done. More precisely this part refers to the *Time*, *Mode* or *Rate* fields.

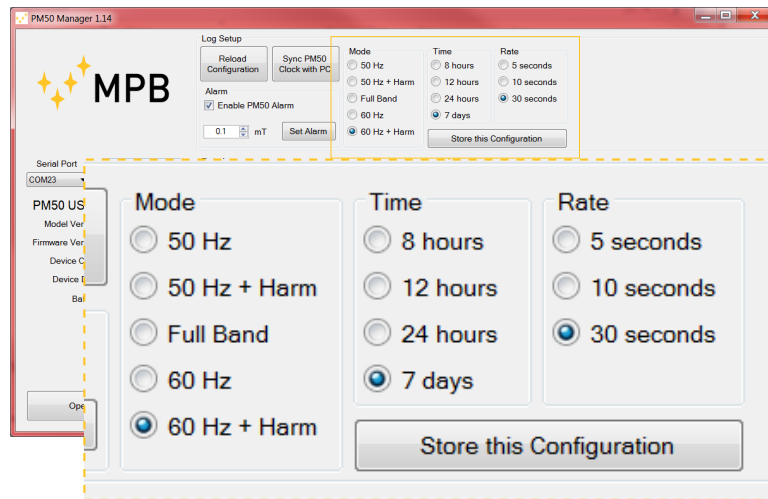


Figure 5.9: “Logger Setup” section

- With the *Time* field setted to 7 days it’s only possible a *Rate* of 30 seconds (the Software will block this combination automatically).

Once the “Store this Configuration” button is pressed, check the popup message to be sure that the configurations are set. In case of error please try again.

5.6 Alarm Setup

Even in this section, values are loaded right after the connection. The alarm boundary depends on the device model:

PM50: from 1 μT to 500 μT .

PM50D: from 1 μT to 500 μT .

PM50D-20: from 0.1 mT to 20.0 mT.

As in the *Logger Setup* panel, it will be sufficient to edit the values and press the “Set Alarm” button to commit the changes. Check the popup message to be sure that the configurations are set.

- The alarm value in this panel will be used for the data plot (Chapter 5.7).

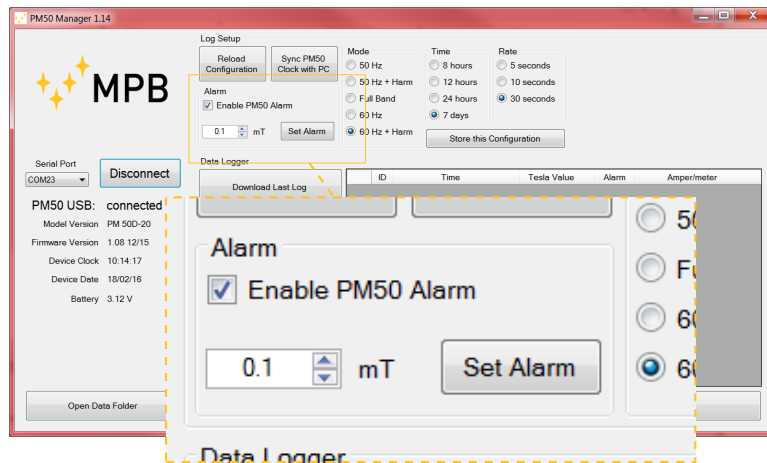


Figure 5.10: “Alarm Setup” section

5.7 Data Download

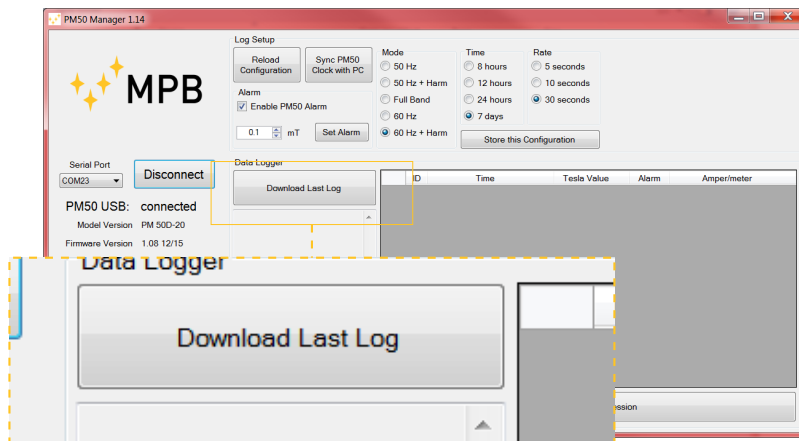


Figure 5.11: “Download Last Log” button

By pressing the “Download” button, showed in Figure 5.11, the data acquired on the device will be plotted in the bottom of the PM50 Manager screen.

In the white part labeled “Last Log Information” will be plotted general info about that log, like date of start, log mode, rate mode, etc. On the right of this label there is the grid view, where data is plotted ordered by time. The software will mark with asterisks the rows where the measured value exceeds the threshold. In addition the measured value is plotted in Tesla and $\frac{\text{Ampere}}{\text{metri}}$ units. Every download operation

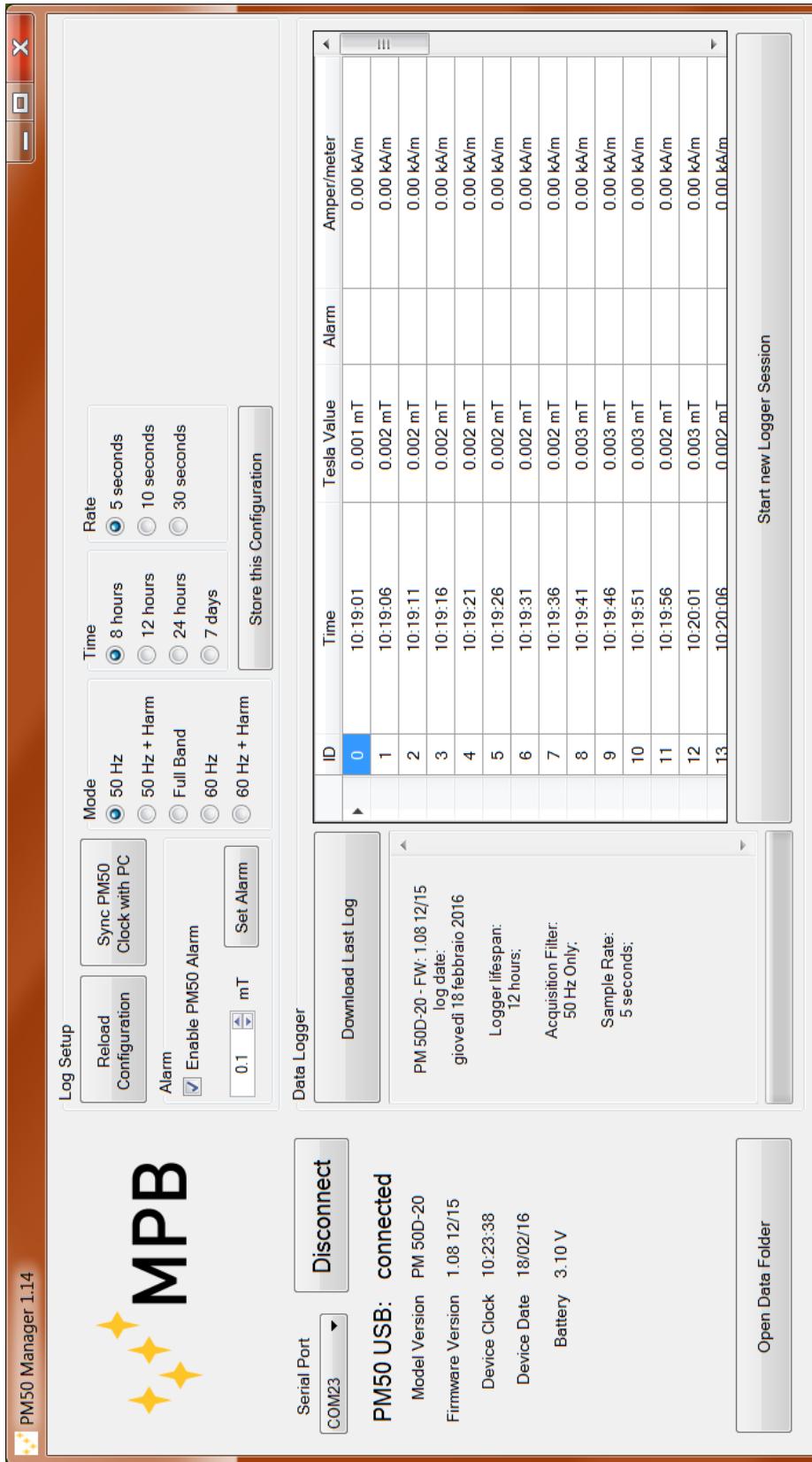


Figure 5.12: PM50 Manager: Data Download

will create a *.txt* file, that will be stored in the PM50 Manager archive.

5.8 Data Folder

For user comfort, the management of different Log files is based on chronological history. PM50 Manager creates folder named by year, then month, while the *.txt* is named with the date and time so they remain ordered.

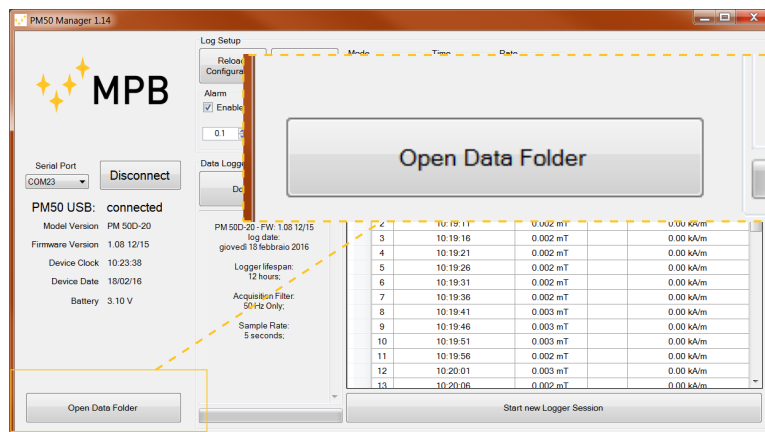


Figure 5.13: “Open Data Folder” button

By pressing the “Archive” button (Figure 5.13), the software will open a new explorer window on the PM50 Manager *AppData* folder.

Every *.txt* file contains the “last log information” as header, and then the grid contents, *tab* separated, so that’s **easy to import Log data in a MS Excel** sheet.

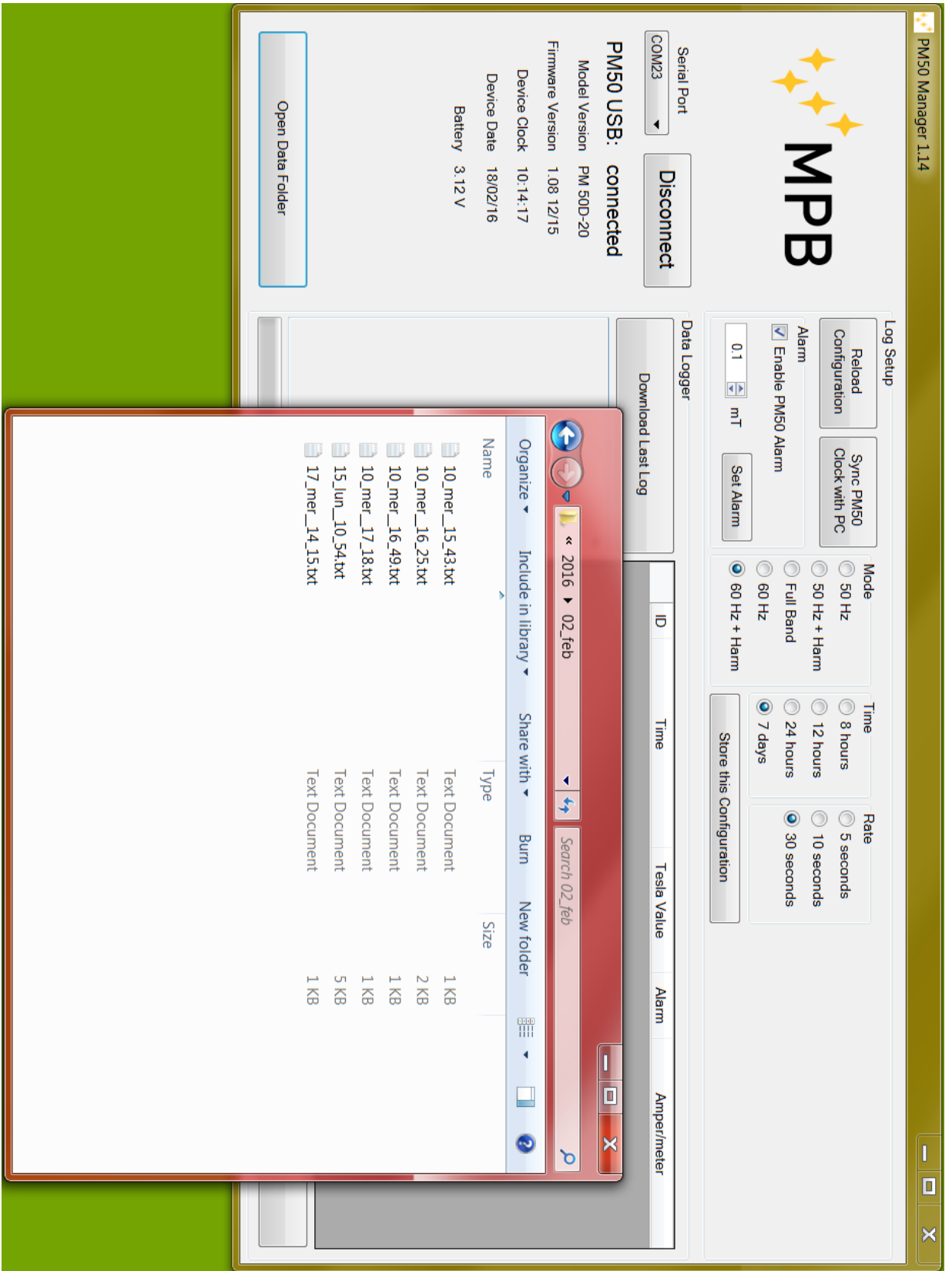


Figure 5.14: PM50 Manager: Archive

5.9 Start new Log

The “Start New Log” button, showed in Figure 5.15, is used to start a new acquisition right away. If on PM50D and PM50D-20 this operation can be done directly from devices, on the PM50 this is the only way to launch a new magnetic field Log acquisition.

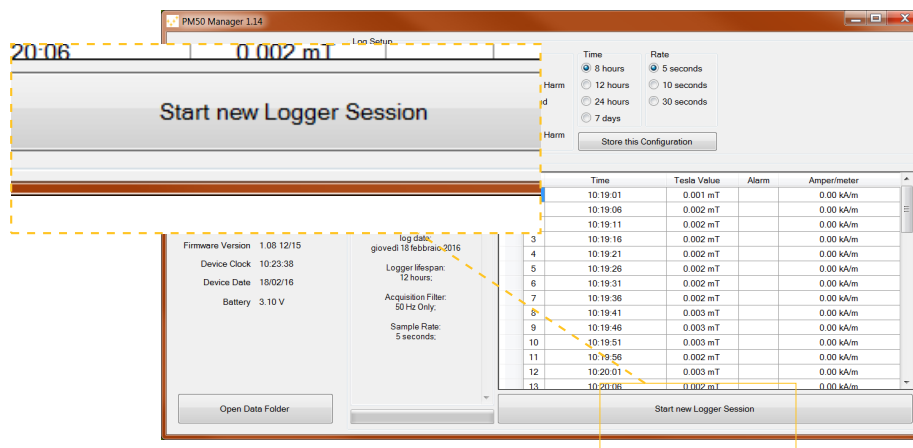


Figure 5.15: “Start New Log” button

The software will ask the user to confirm this command, because once the Logger is started the serial communication will be interrupted. For a new session with the PM50 Manager the Logger has to be stopped and reconnected as described in Chapter 5.3.

Chapter 6

Firmware PM50D / PM50D-20

The most updated version of PM50xx Firmware can be found on our website (www.gruppompb.com/download.asp). We advise to always use the higher version for a better experience.

6.1 Download and install the Updater

In the page cited above, search for MPB product, PM50 series at the Firmware column to download the updated Firmware compressed package. Use *Winrar* to extract all the files contained in the PM50D_106 folder as showed in Figure 6.1.

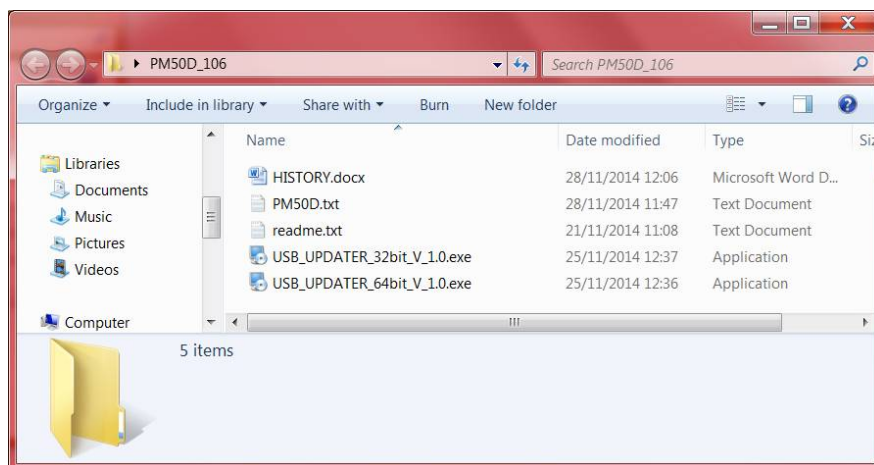


Figure 6.1: firmware package

Launch one of the executables, depending on your OS architecture, to install the device Updater (Figure 6.2).



Figure 6.2: install USB Updater

Follow the instruction and insert your credential like in Figure 6.3(a). Then select a path if you don't want to use the standard one (Figure 6.3(b)). Select the link option (or leave as is for standard) like in Figure 6.3(c). Go ahead to the report page (Figure 6.3(d)) until you reach the "installation complete" message. Now you have the USB Updater installed.

After the installation you will find in the software path a folder that contains 5 files as showed in Figure 6.4.

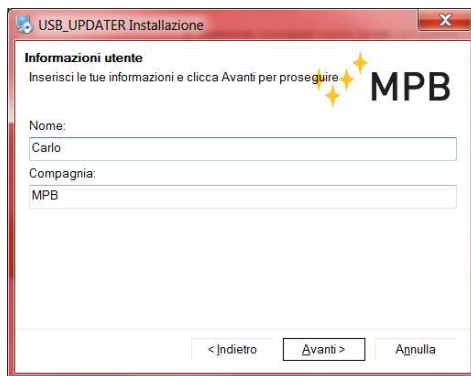
6.2 Firmware Update

To commit the firmware update launch the USB_UPDATER (Figure 6.4) and wait for the screen showing the window as in Figure 6.5.

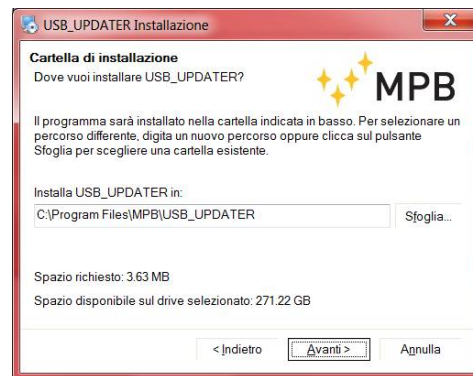
Press "Next" and you will see a form like in Figure 6.6 where you need to select the path of the Firmware file to install on the device.

Carefully follow this instruction below:

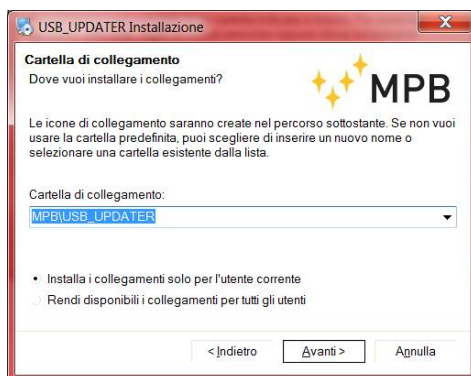
1. Plug the USB cable only on PC side.



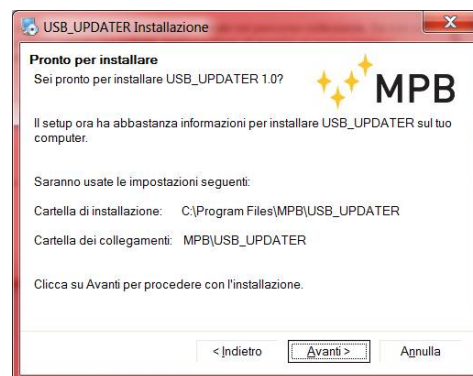
(a) user credential



(b) path



(c) link



(d) report

Figure 6.3: PM50 Series FW updater

2. With the device turned off, plug the cable and immediately press and hold the *Power* key for all the update operation.
3. Now the “Upgrade Firmware” button became enabled, press it and wait a few seconds for the *finish* message as in Figure 6.7(b).

Press “OK” and close the program, unplug the PM50xx from the PC.

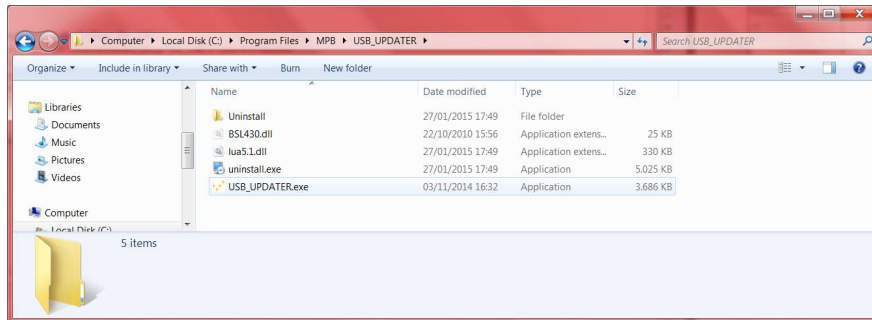


Figure 6.4: USB Updater folder



Figure 6.5: USB Updater for PM50D_106

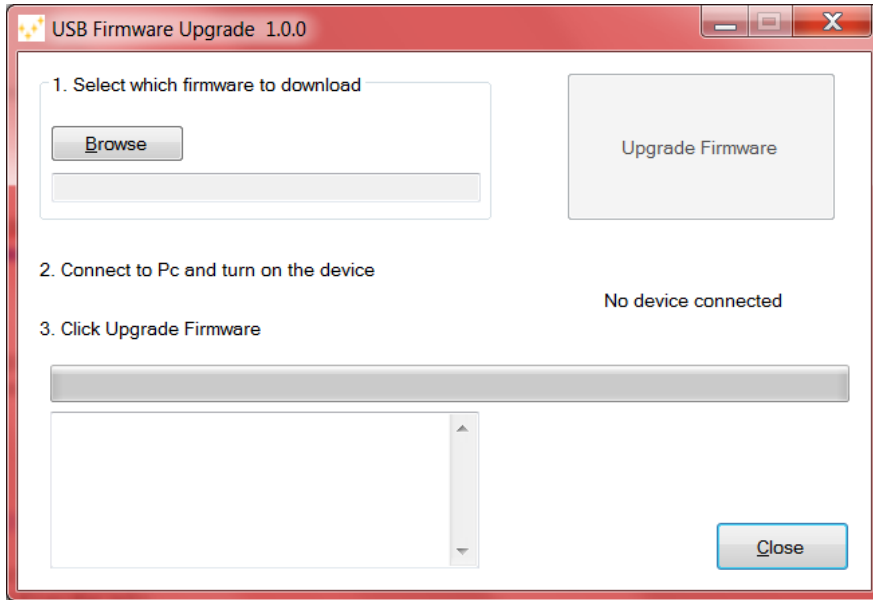
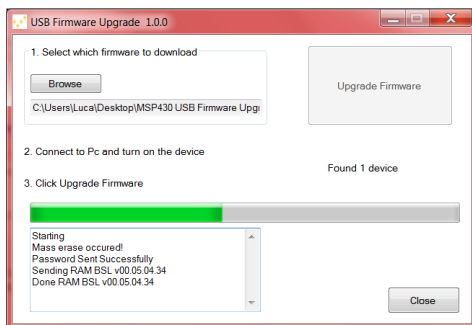
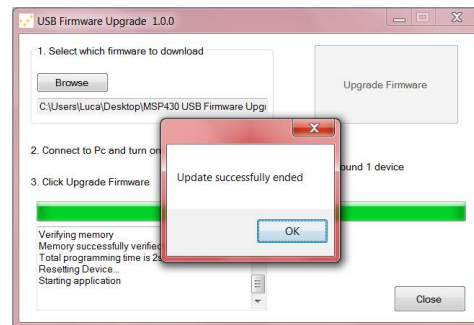


Figure 6.6: Firmware choice for PM50xx



(a) user credential



(b) path

Figure 6.7: PM50 Series FW updater

Appendix A

Technical Notes

The USB device may not be recognized properly if the driver installation procedure isn't followed in detail.

A.1 Troubleshooting in Driver installation

If the PC doesn't recognize the PM50xx it's necessary to follow this instructions:

1. Open the control panel of your PC
2. Select the *System* icon (if you don't find it in *Windows Vista* or *Windows 7* choose a different visualization of icons)
3. Click on *Device Manager* as in Figure A.1



Figure A.1: System

4. In the devices list of your PC will be marked with a warning, as in Figure A.2, because the PM50xx weren't recognized.

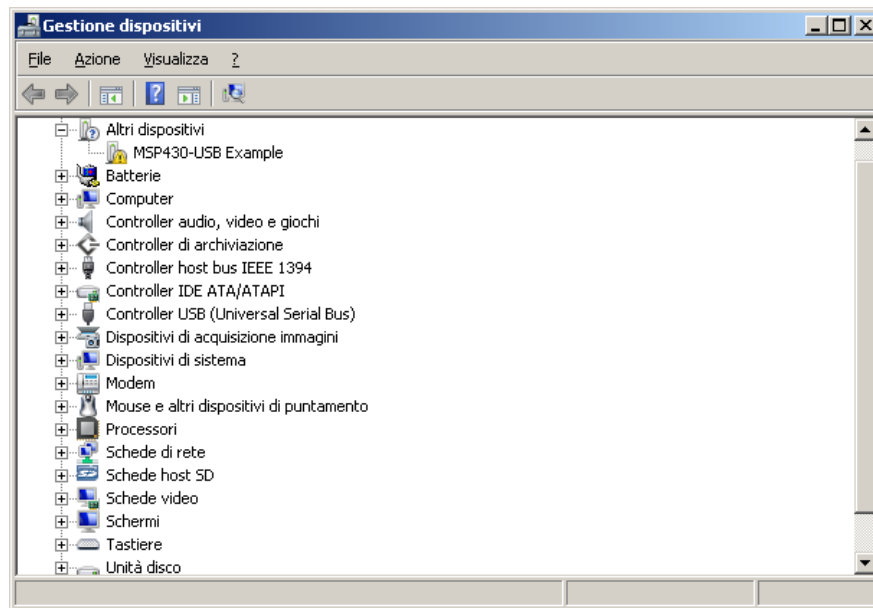


Figure A.2: Device Manager

5. Perform a right click on that device and select “Update driver”.
6. Click on “Find driver manually”.
7. Now browse for the folder *C:/Windows/inf* as showed in Figure A.3.
8. Press “Ok” and wait for the system find the correct one (named MSP430_CDC) as in Figure A.4.
9. At the end of this procedure you will notice that the device has been installed properly (Figure A.5) and has the correct driver name.
10. The device is now ready for a normal use. Refer to Chapter 5.
 - Figures could be different. It depends on your installed OS.

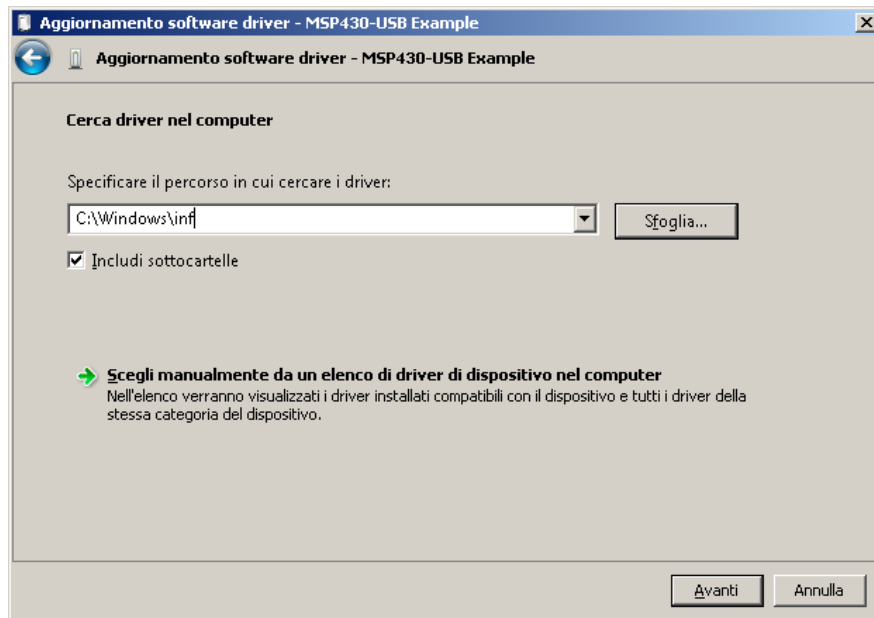
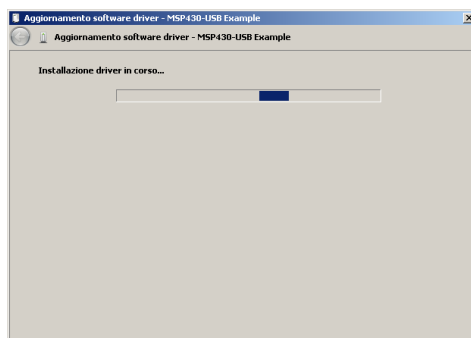
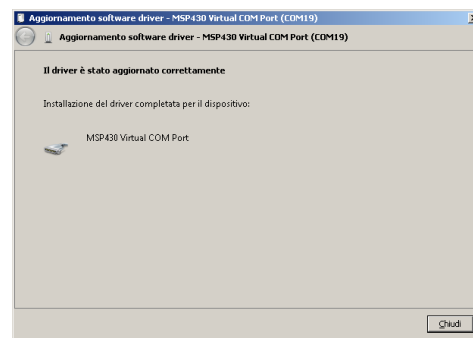


Figure A.3: Find Driver



(a) installing



(b) installed

Figure A.4: Driver setup

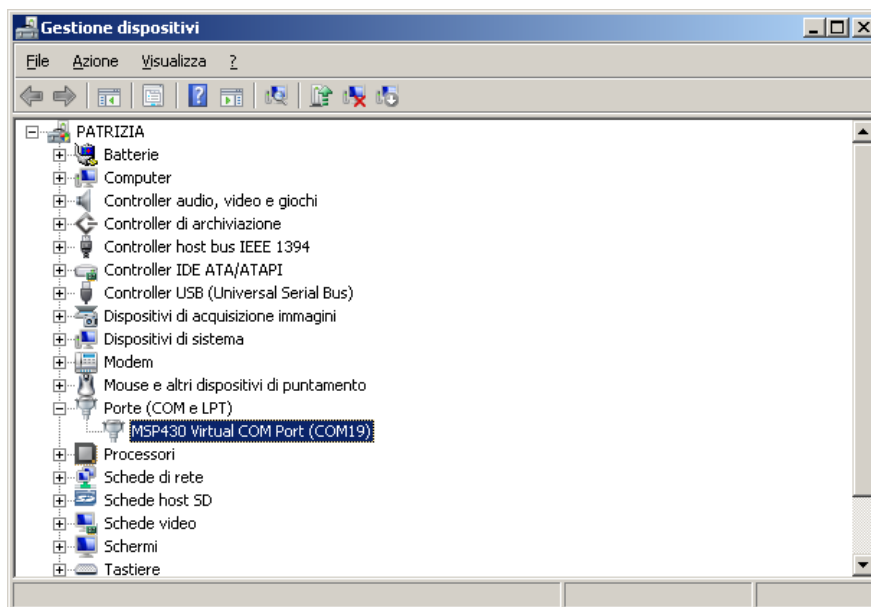


Figure A.5: Device Manager

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