NEW Hand-Held Conductivity & Magnetic Susceptibility Meter GDD MPP-EM2S+ Probe

Use the MPP-EM2S+ to:

- Relate DDH Core to EM/MAG Surveys
- Select Appropriate Geophysical Surveys
- Measure and Record Magnetic Susceptibility & Conductivity
- Dump Data to PC
- Draw profiles with software provided

- Continuous and Punctual Sampling
- New Real Time Graphic Mode
- Calibrated: MHOS/M & 10-3 SI

3 Convenient Modes:

- Manual
- Automatic
- Graphic

GDD Instrumentation GDD inc.

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GDD

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WARNINGS: Measure Stability and Battery Discharge

Measure Stability

The MPP-EM2S+ is an accurate geophysical instrument. To obtain the stability of the base values (which should be around 0) and in order to avoid a drift of the signal, **it is highly recommended to leave the probe and the DELL™ «ON» during one hour before taking the first measures**. After the one hour's delay, re-initialize the probe: you are now ready to take measures. To minimize the drift once you've started to take measurements, initialize the probe every 1-5-10 or 15 minutes to raise the reliability, depending of the accuracy that is wished. By default, the 1 minute is activated.

If you want to take measurements right away after turning on the probe, we suggest to initialize the probe every minute or, for best results, before each reading for the first 30 to 60 minutes.

This preventive procedure decreases the risk to take erroneous values that would be caused by weather variations or by other external causes and lead to a drift of the instrument. It is therefore very important to often re-initialize in order to maintain the «0» base value used in the calculation of the displayed values.

Please take note that values are more stable after 20 minutes and are completely stable after 50 to 60 minutes.

Battery Discharge

It is recommended to put the DELL™ Axim on charge when not in use to avoid discharge of the batteries and potential loss of the GDD software. For example, if the DELL has been turned off, it will take 1 to 2 weeks for the battery to discharge, depending if you use the small or the big battery. If the batteries become discharge and you loose the use of the MPP GDD software, check the instructions in section 10 of this manual: How to restore the GDD software. To replace the backup battery, please refer to the Dell instruction manual.

Introduction

Thank you for choosing the MPP-EM2S+ Multi Parameter Probe developed by Instrumentation GDD inc. to help you to optimize your prospecting efforts. This probe will help you to better determine the nature, the exact position as well as the intensity of magnetic/conductive horizons along your cores and samples. The simplicity of the measurement process and the automatic recording will allow to easily obtain conductivity and magnetic susceptibility profiles corresponding to the core.

Here are the key benefits of the new MPP-EM2S+ probe:

- It provides you the ability to measure at all time the magnetic susceptibility with or without the presence of a conductor such as pyrrhotite.
- It has improved software to measure in continuous mode using a time base with specific lengths of your choice.
- It is equipped with new software to present quickly a profile from the measurements taken in continuous mode.

Because the probe's response towards a conductor is similar to a conventional electromagnetic (EM) survey's response, it will provide you more significant information than an ohm meter or a visual interpretation would do. To give an example, if the conductive zones of your core are evaluated by an ohm meter, the occurrence of chalcopyrite will induce a reading corresponding to a conductive zone. In fact, chalcopyrite, even if it seems massive, often, will not produce an anomaly detectable by a EM survey. Along the core, the MPP-EM2S+ probe will have a similar response as the EM response and will only indicates the conductors detectable by this type of survey. The use of the MPP-EM2S+ probe could, therefore, avoid you to begin an EM survey campaign for a type of ore that would not respond to this approach.
In the previous example, the phenomena allowing to explain the absence of conductivity is probably related to the chalcopyrite ore distribution in the sample. If the chalcopyrite grains are not touching each other but are linked only by very thin filaments, the ohm meter will detect the conductor presence because of those tiny filaments connecting them. However the grains, being linked only by those filaments, will not form a sufficient surface to be detected by the probe.

For an equivalent content of conductive material, the probe response will be higher in function of the conductor's surface. You could try the following experience. Take an aluminium paper foil (a few cm square), put the probe on the sheet and note the intensity of the anomaly. Roll the sheet in a small ball, put the probe on the ball and take the reading again. You will see that the intensity of the anomaly is higher for a larger contact surface even if the substance conductivity and quality are the same.

Mineral Conductivity - General Rules

Pyrrhotite often occurs in thin but continuous veins. It causes multiple and very high EM anomalies.

Chalcopyrite is hardly detectable for two reasons.

1 it is 20 times less conductive than pyrrhotite.

2 it occurs, the more often, in disseminated grains or clusters rather than in continuous beds, as the pyrrhotite or graphite for which we can see continuous horizons of hundreds of meters.

Pyrite and galena are not conductive when it responds to a EM survey even within a single crystal. However, we have observed some very conductive samples of silver-bearing galena (Kamouraska) and of rich in gold pyrite. (Balmorals and Wrightbar mines).

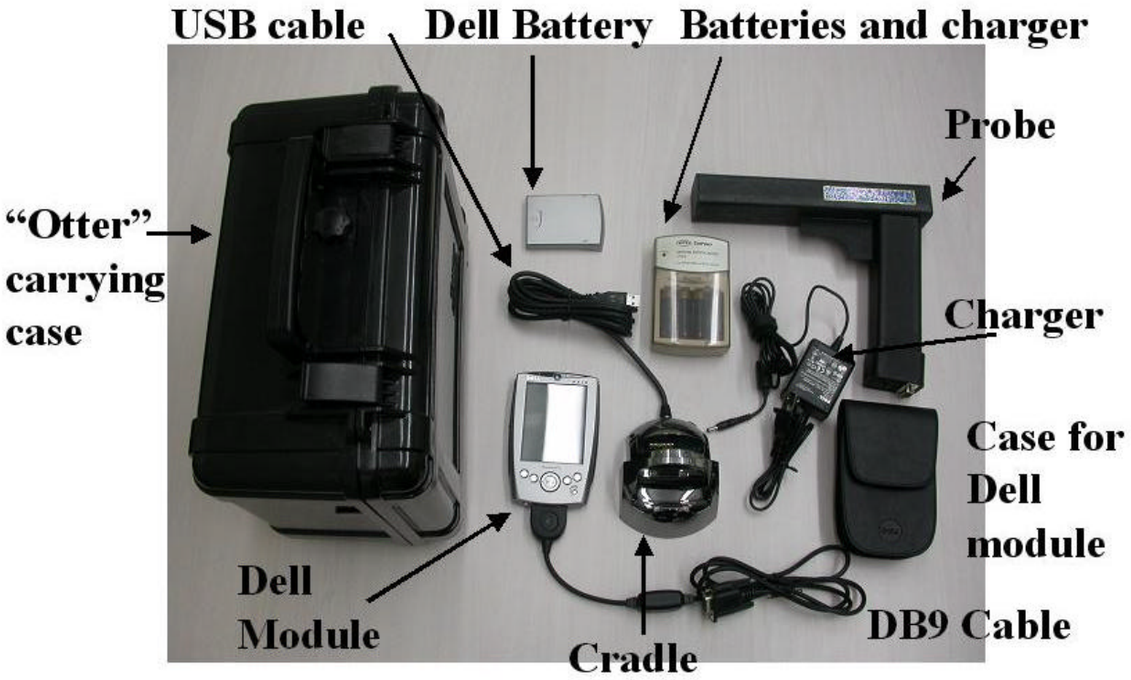
Sphalerite, arsenopyrite and stibnite are never conductive and are not detectable with EM and IP surveys.

Rich graphite beds can be more conductive than pyrrhotite. Occasionally it is not conductive at all. Graphite can also show all intermediary conductivity values.

It is important to note that, with or without the presence of a conductor such as pyrrhotite, the MPP-EM2S+ probe will measure the magnetic susceptibility value.

At all times, the MPP-EM2S+ provides an estimated conductivity value.

Equipment List



Optional: NULL-modem cable (used to connect the probe directly to a computer)

Assembling Instructions

1. Remove the black cap under the gun-shaped probe and insert 3 AA batteries. Put the cap back in place.
2. Plug one end of the DB9 cable in the gun-shaped probe.
3. Plug the other end of the DB9 cable in the DELL™ Axim X5 pocket computer.
4. Turn the DELL™ Axim X5 pocket computer ON by pressing the little round button in the upper part of the computer. It is possible to choose different options by touching the screen with the pen located in the upper right corner of the pocket computer.
5. Turn the probe switch ON.

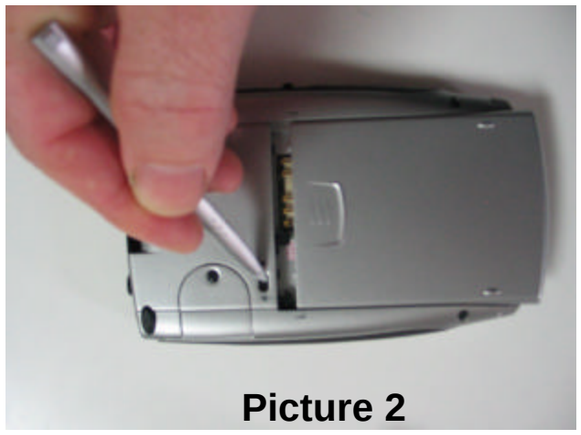
Recharging the AA Batteries

Simply put the AA batteries in the charger and plug it in the wall using the 120 V plug located at the back of the charger or the 220 V adapter.

Recharging the Li-on Batteries

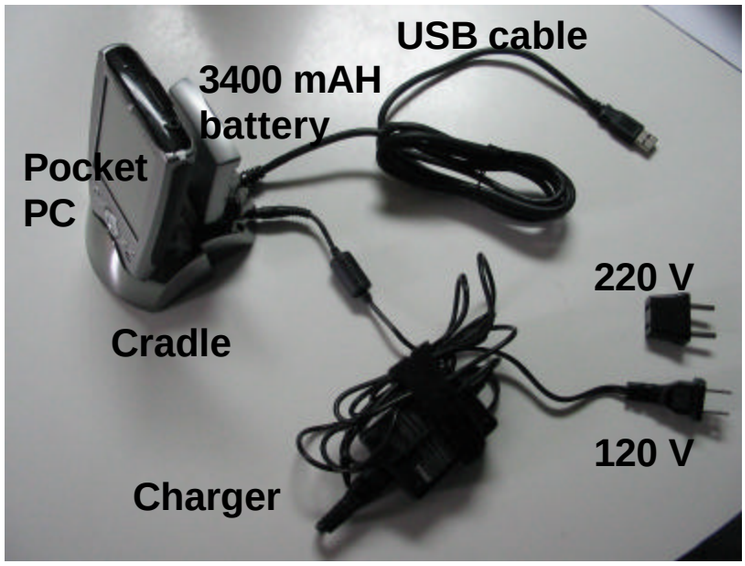
The Li-on battery can be recharged with the charger plugged directly in the pocket computer (picture 1). The picture 2 illustrates how to change the Li-on battery located at the back of the computer. Use the pen to drag the black button to the left and then remove the Li-on battery.

Picture 1



Picture 2

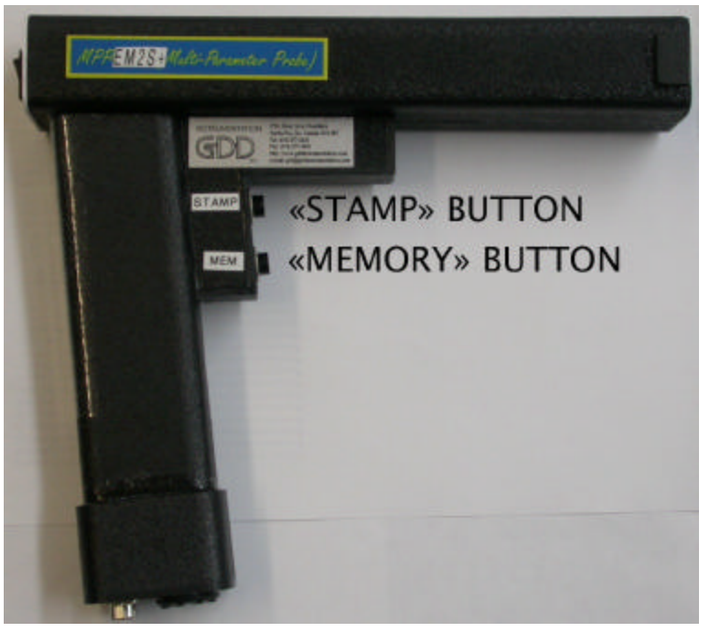
The cradle can also be used to recharge both Li-on batteries (3400 mAH and 1440 mAH) at the same time. Put the 3400 mAH battery into the back slide of the cradle and the 1440 mAH battery into the DELL™ computer. Put the DELL™ computer in the front slide of the cradle.



As you will see, the charger can be plugged to a 120 V or a 220 V outlet thanks to the adapter. You can also use it to download data to your own personal computer. To do so, use the USB cable.

New Assets: «STAMP» and «MEMORY» Buttons

There are now two buttons on the handle of the MPP–EMS2+ probe. These buttons have the same utility as the «STAMP» and «MEMORY» keys in the DELL™ Pocket PC and were designed to facilitate handling. The buttons are especially useful when using the PC software linking the MPP-EMS2+ probe directly to a computer as the user cannot tap on the Pocket PC screen.



Quick User's Guide

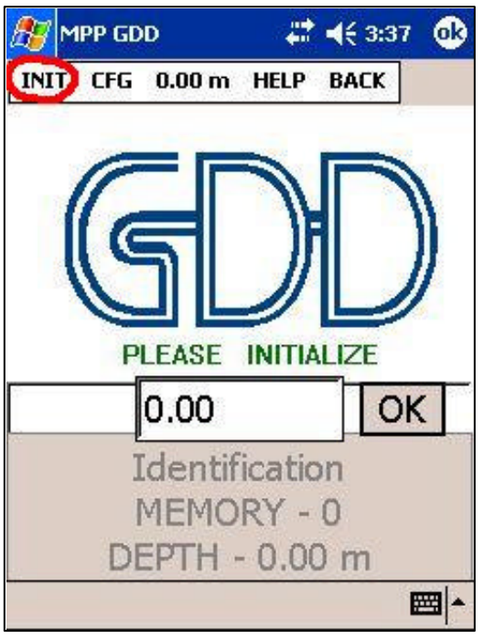
1. Charge and install AA batteries in the probe and the DELL™ module (these batteries are rechargeable)
2. Start both instruments
3. Start the «**MPP_en**» program
4. Initialize the probe
5. Configure parameters, i.e. fine name, spacing, mode, etc.
6. Take the measures by pressing «**MEMORY**» space and increment the position by pressing the «**STAMP**» key on the DELL™ module or on the probe.
7. Create a file to save the readings
8. Transfer the file to your computer using the cradle. As shown on the picture, put the DELL™ Axim X5 pocket computer into the cradle. Plug the USB cable of the cradle in a USB port of your own computer.

Detailed User's Guide

1. Starting Point

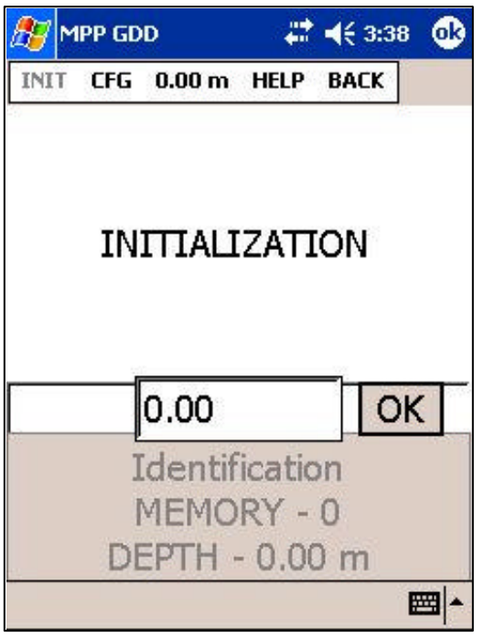
1.1 Unscrew the cap of the batteries space and insert charged batteries into the probe. Use rechargeable batteries given with the probe or use standard AA alkaline batteries. Make sure that the module's rectangular battery is charged and in place. Check if the probe is well connected to the DELL™ module using the RS/232 cable.

1.2 Turn on the module. To start up the MPP program, find the «**MPP_en**» icon in the «**Start**» menu. Click on the icon with the grey pen incorporated into the DELL™ module or with your finger.



1.3 Put the switch of the probe to «**ON**» position. Move away the probe from any conductive or magnetic material (point it in the air) and click on the «**INIT**» command or in the GDD logo space to initialize.

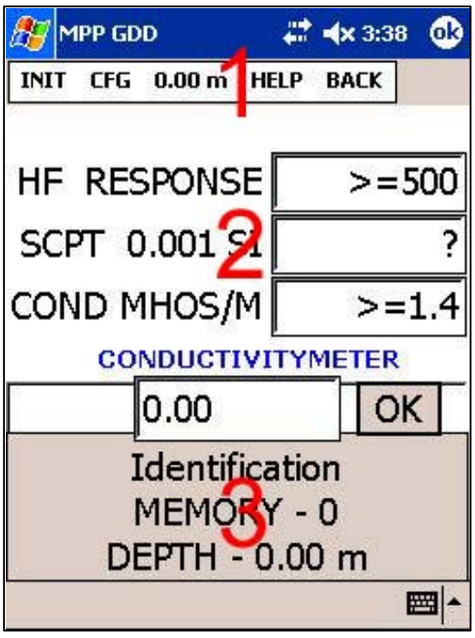
1.4 The «**INITIALIZATION**» message will flash a few times and then, it will disappear. It is recommended to wait until values become stable and to initialize again. It is important to obtain the stability of the base values - which should be around 0 - in order to avoid a drift of the signal. This could lead to take erroneous measures. The probe is ready to begin measurements.



1.5 If the «**INITIALIZATION**» message doesn't show off, check the connection between the probe and the module and the probe's supply.

1.6 If the sequence is not well followed the message «**CONNECT TO**» could appear. Simply choose «**CANCEL**» option to remove it.

2. Display



The main screen is composed with three sections: The menu bar (1), the displayed measurements (2) and the memory space (3). At any time, you can go back to the previous screen by clicking on the «**OK**» icon in the top section of the screen, in the right side.

Several times per seconds, the probe measures and display three physical properties which are:

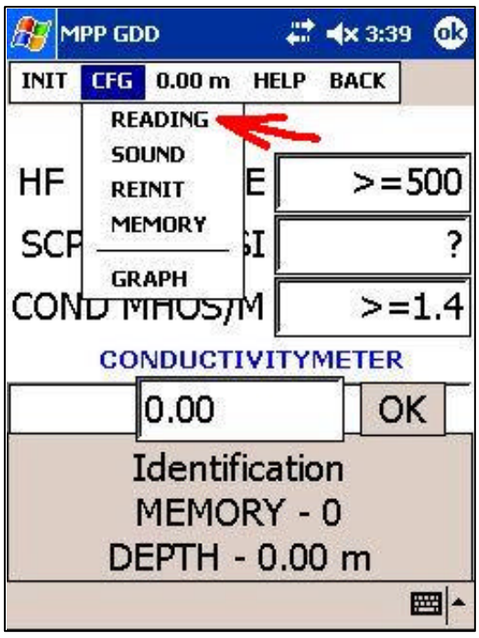
«**HF RESPONSE**»: Conductor response measured in Hertz (Hz). It measures low frequencies variation. Its value increases with the quantity of conductive material in the sample. It decreases with the distance between the probe and the sample.

«**SCPT 0.001 SI**»: Magnetic susceptibility measured in 10^{-3} SI. Its value increases with the quantity of magnetite in the sample and decreases with the distance between the probe and the sample. It is important to note that, with or without the presence of a conductor, the MPP-EM2S+ probe will measure the magnetic susceptibility value at all times.

«**COND MHOS/M**»: Conductivity measured in MHOS/M. It is independent of the quantity of conductive material in the sample (HF Response) and independent of the distance between the probe and the sample.

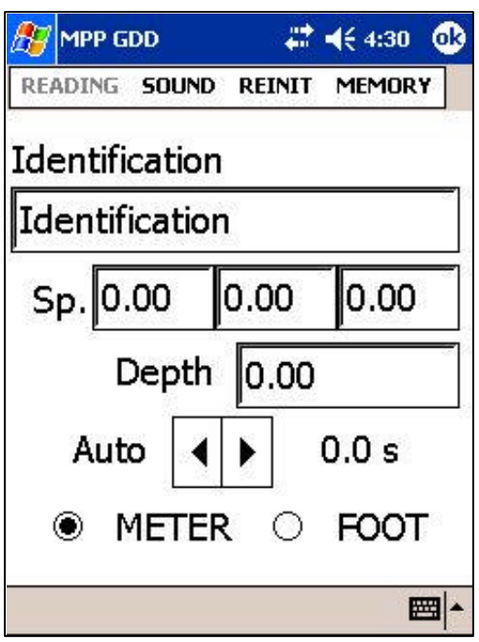
Under the measures space you can find a space reserved to the sample or core identification. The memory space indicates how many readings have been taken and the depth value (position along the core) of the measure to come.

3. Configuration



The «**CFG**» command on the main menu gives access to four configuration pages: READING, SOUND, REINIT and MEMORY. This menu gives you also access to the **graph** mode.

3.1 Reading



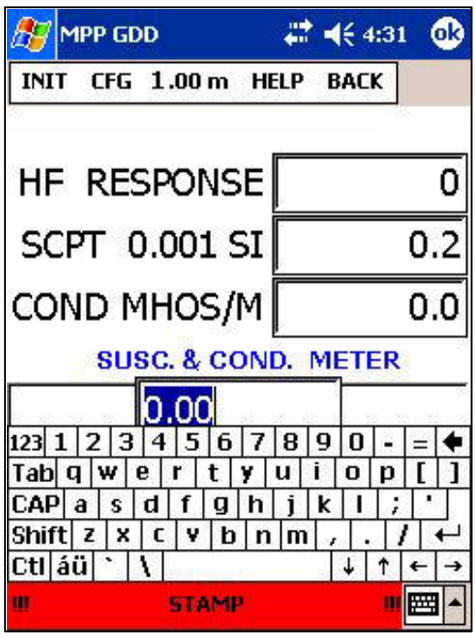
The «**READING**» page allows to identify the core or sample's name.

It is recommended to give different names for each set of measurements to facilitate data interpretation. To enter a name or numbers, click on the keyboard icon situated at the bottom in the right corner. A keyboard will show. Click again to remove it.

You can determine the initial depth value at which you will begin to take measurements. You can also determine the spacing for which the depth (position along the core) is incremented every time you take a measurement. The user has the unity choice: «**meters**» or «**feet**».

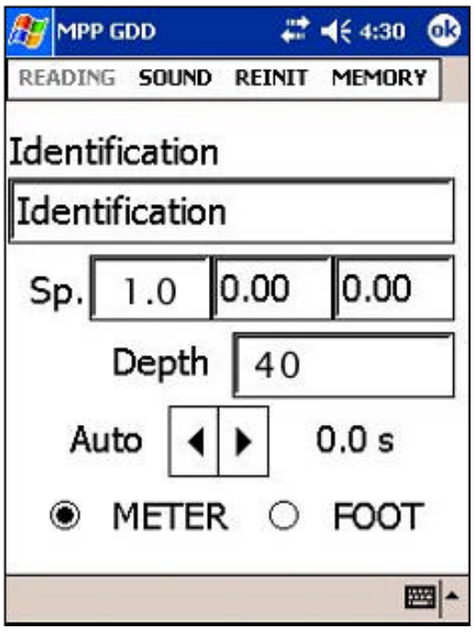
In the READING page, the two arrows will serve to increase or decrease the recording frequency for a continuous measurement process. You must keep it to «**0 s**» to record manually the data. For continuous measurements, you can choose the recording frequency from 0.1 to 60 seconds. As soon as the frequency value will differ from 0, the probe will operate in automatic mode. Write «**0**» values in the spacing if you choose the automatic mode.

Manual Recording Mode



Three spacing values can be chosen to give more flexibility to the measurement process. The position along the core will be incremented for every recorded measurement, according to the chosen core spacing.

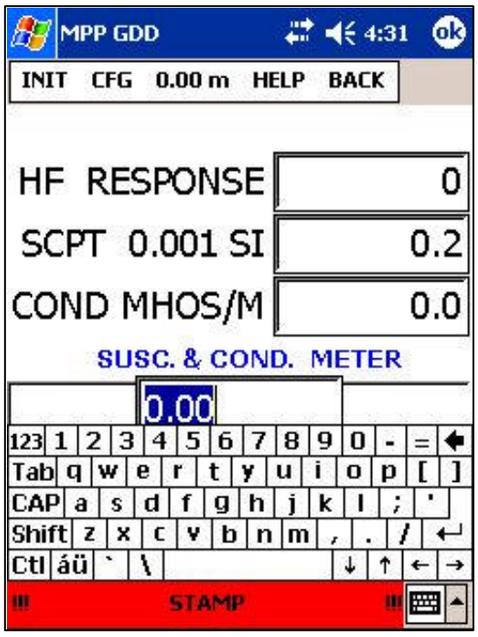
It is possible to switch from one spacing to the other by clicking on the spacing in the menu bar. See section 4.1 for the manual measurement process.



Automatic Recording Mode (regular spacing)

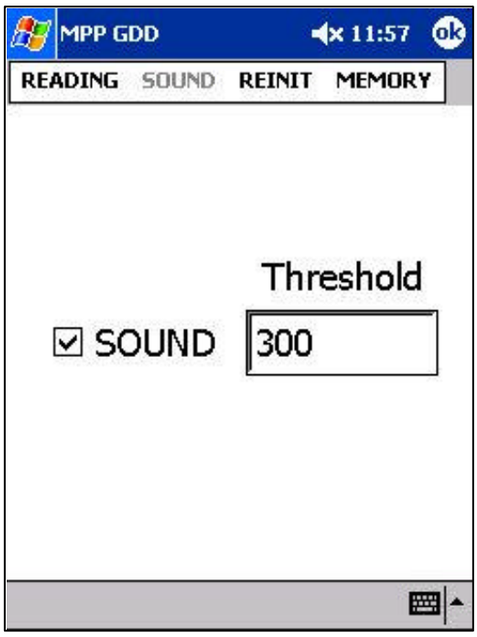
For an automatic measurement process, the chosen spacing should simply correspond to the distance that you want to cover by the continuous scanning along the core, before you interrupt the recording by pressing «**MEMORY**». In the continuous mode, even if the readings are recorded continuously, the position will not increment for every automatic reading. It will increment every time you will press the «**STAMP**» command appearing at the bottom of the screen. See section 4.2 for the continuous measurement process.

At any time, one can go back to the previous screen to start the survey by clicking «**OK**» in the upper part of the screen.



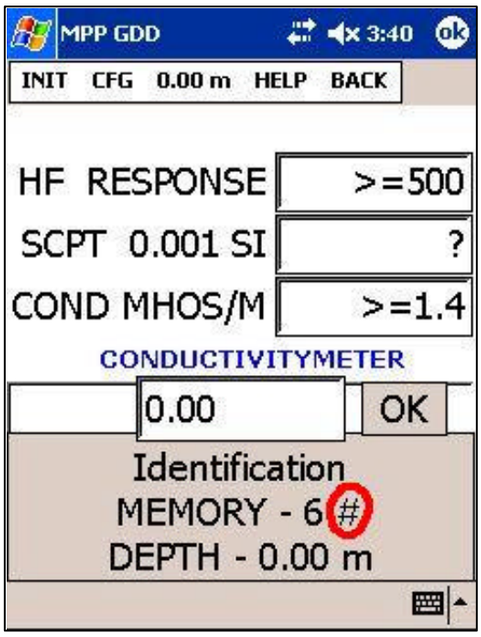
Automatic Recording Mode (irregular spacing)

First, put «**0**» values in all 3 spacing fields. Go back to the main menu by clicking «**OK**». Click on the window under «**SUSC. & COND. METER**» to enter the distance at which you want to start your survey, using the keyboard. Then press «**STAMP**» at the bottom to confirm and close the keyboard. You are now ready to start the survey, as explained in section 4.2.

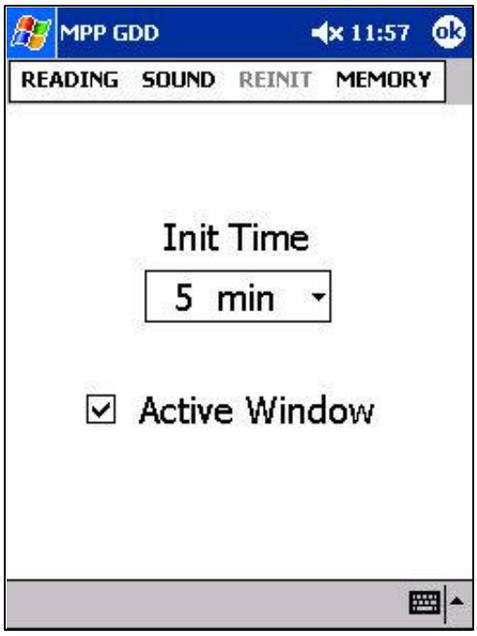


3.2 Sound

The «**SOUND**» page allows the user to activate or deactivate the conductor detection sound signal. You can determine threshold detection value for the «**HF RESPONSE**». For values higher than threshold value, the instrument will advise of the presence of conductive material by a sound signal.



If the sound signal is deactivated, a «**#**» character is added beside the «**MEMORY**» key.



3.3 Re-Initialization

The «**ReInit**» page allows to choose the lap time for which the user will be advised to re-initialize the probe. This preventive procedure decreases the risk to take erroneous values that would be caused by a signal drift. Weather variations or other external causes can lead to a drift of the instrument. It is therefore very important to often re-initialize in order to maintain the «0» base value used in the calculation of the displayed values.

The user can choose a lap time of 1, 5, 10 or 15 minutes. By default, the 1 minute lap time will be activated. During measurements, the message «**PLEASE INITIALIZE**» will regularly appear on the screen (according to the chosen lap time) to advise the user. Simultaneously

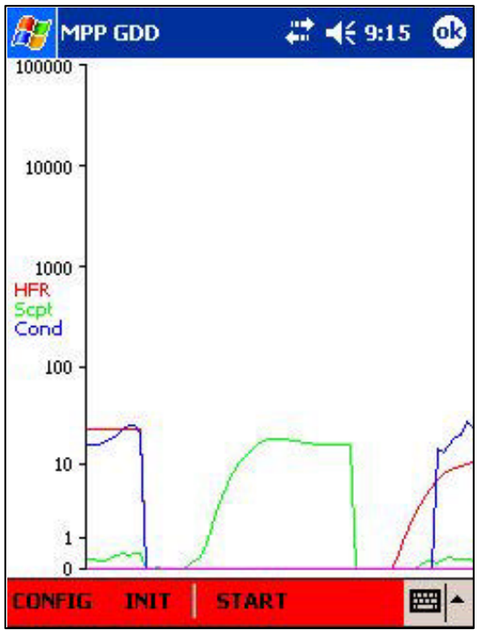
a sound signal will be heard. A 30 seconds delay will be given to the user after which it will be no longer possible to take measurements without initializing. Once initialized, the probe can be used to pick up next measurement.

3.4 Graph

The «**graph**» option operates with a continuous sampling mode. Il will allow to visualize graphically, in real time, the continuous values measured by the probe. The HF values, Magnetic Susceptibility values and conductivity values will be visualized simultaneously.

The Y axis is displayed in a logarithmic form (from 0 to 100 000). The Y axis unities are Hertz, 10^{-3} SI or MHOS/M depending on the observed graph.

The X axis corresponds to a time scale during the continuous measurement process. It could also be interpreted as a pseudo distance related to the probe displacement along the core or samples during the measurement process.



The color legend used for the graphs is as follows :

HF Response: Red (Hertz)

Magnetic susceptibility : Green (10^{-3} SI)

Conductivity : Blue (Mhos/m)

When you choose the graphical visualization option, two parameters could be configured: the sampling frequency and the X axis scale.

Sampling Frequency

You can choose the sampling frequency for the values tracing the graph. The sampling rate could vary from 0.1 s and 5 seconds. For example, every 0.1 second the value measured by the probe will be written to trace the graph.

X Scale

You can choose 5 different values to configure the X axis scale of the graph, corresponding to time. With a larger value (5 for example) the distance between each value written on the graph will be larger. It will give the effect of a graph crossing faster the screen.

For a slower display speed of the graph, choose a smaller value. A larger density of written values will cover the same horizontal interval on the screen. It will give the effect of a graph crossing slowly the screen. Note that the X axis scale choice will not modify the graph. It is simply a visualization option. The default value is 3.

3.5 Alarm

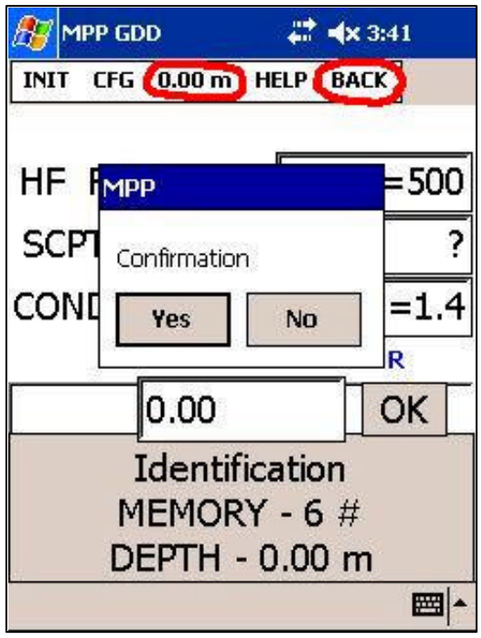
A red message «**LOW BAT**» will appear in the top of the screen when it will be necessary to change or charge batteries.

WARNING: When the batteries are low, the data recorded could be inaccurate.

4. Measurements

4.1 Manual Mode

To take measurements, put the probe at the initial position along the core (or sample) and press the «**MEMORY**» space (the «**MEMORY**» button on the probe can be used in the same way as the «**MEMORY**» space on the DELL™ pocket PC). The depth position always indicates the location where one should put the probe to take the next measurement. At any time one can switch the chosen spacing by clicking on the spacing menu, in the upper part of the screen.



The user may erase a wrong reading stocked in the memory by pressing the «**BACK**» key. The program will ask the user to confirm the task. One may repeat this action as many times as necessary.

When the sound signal indicates that you should initialize the probe, put the probe in the air and reinitialize (see section 3.3).

Recommendations for the Manual Mode

During the measurement process, the probe must be in contact with the core or samples to standardize the process.

4.2 Continuous Mode (regular or irregular intervals)

For a continuous measurement process you must choose the recording frequency (section 3.1). A red rectangle will appear at the bottom of the screen to indicate that the probe operates in automatic mode. The «**STAMP**» command will serve to put in memory some position references during the automatic measurement process (the «**STAMP**» button on the probe can be used in the same way as the «**STAMP**» command on the DELL™ pocket PC). The position («**DEPTH**») will be incremented according to the previously chosen interval. As for the manual mode, you can switch the chosen spacing by clicking on the spacing menu, in the upper part of the screen if you choose to work with specific intervals. You may also choose to work with irregular intervals. If so, enter «**0**» as the increment, then each time you start a new interval, enter the depth and press «**STAMP**» to confirm. In both cases you are now ready to pick up your readings.

Put the probe at the initial position. Press the «**MEMORY**» space to begin the automatic recording while you begin to move the probe along the core. During recording, the «**STAMP**» rectangle will turn to

green to indicate the automatic recording process. When you have covered the chosen interval, press again the «**MEMORY**» space to stop the continuous recording. The «**STAMP**» rectangle will turn to red again. Press «**STAMP**» to increment the position value if you are using a regular interval or enter the beginning of your new interval (irregular interval). To carry on the automatic measurements put the probe at the beginning of the new interval to scan and repeat the process by pressing again in the «**MEMORY**» space.

When the sound signal indicates that you should initialize the probe, put the probe in the air and reinitialize (see section 3.3).

Recommendations for the Continuous Mode

Try to keep a contact between the probe and the core. The tendency to slightly move the probe away from the core during the continuous process could induce slightly smaller values in the profiles. In addition, keep a constant displacement speed along the core. This will facilitate data interpretation.

4.3 Graphic Automatic Mode

For a graphic visualization, you can proceed the same way as for the continuous mode. However, no value can be recorded. A red rectangle will appear at the bottom of the screen. Press «**START**» to begin the graphic tracing. The rectangle will turn to green to indicate that the sampling has begun. The graphic lines will appear, in real time, at the right extremity of the screen. Simply press «**STOP**» to stop the tracing process.

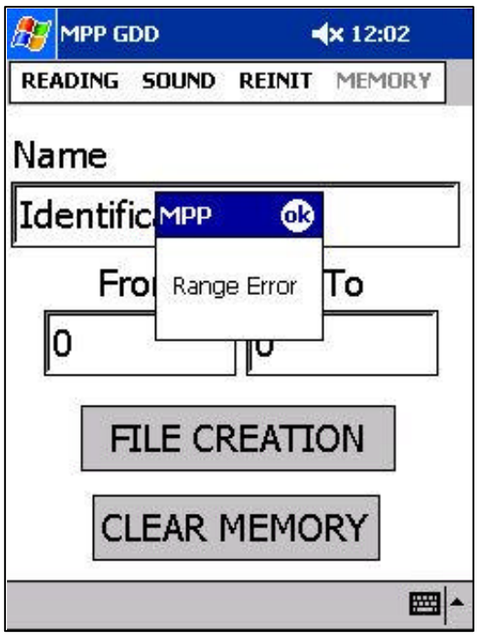
When the sound signal indicates that you should initialize the probe, put the probe in the air and press «**INIT**» within the rectangle, at the bottom of the screen.

The «**CONFIG**» option will allow you to return anytime to the configuration page for the graph.

5. Memory and File Creation

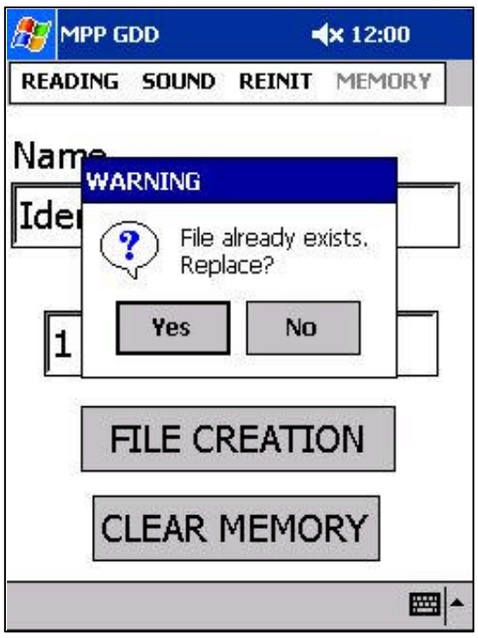
5.1 File Creation

To be able to transfer the recorded data to a computer, one has to create a file previously.

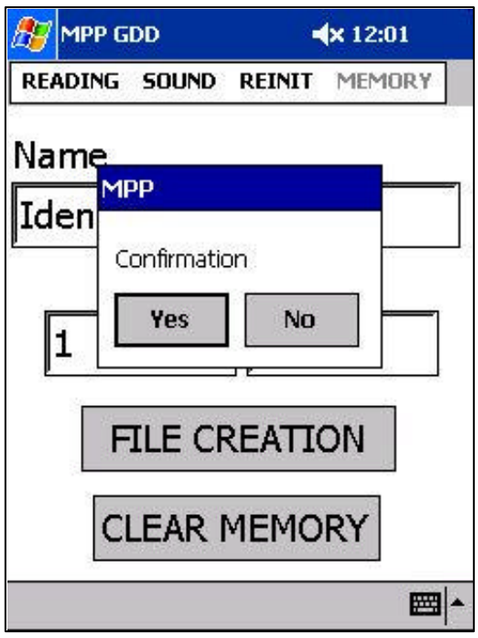


The «**MEMORY**» page allows the user to create files in which a set of readings will be recorded after the measurement process. By default, the program will record all the readings in the new file. However, one may choose to record only a measurement range. Note that the range values correspond to the reading numbers appearing beside the word «**memory**» on the main screen and not to the depth number. If one try to create a file with an inadequate range, an error message will appear.

One can choose a name for the file otherwise, the file name is going to be the same as the last one written on the «**READING**» page.



The «**CREATION**» operation will create the new file. If you try to write a file name already existing, a message will appear to ask if you want to replace the existing file. It is recommended to create a new file for each diamond drill hole on which measurements are taken. With the manual mode, the file will contain the names of the measurement sets, the numbers of the measurements, dates and hours as well as the physical properties values. Each name will be contained in an independent memory space. It explains why at the beginning of the measurement process - if you gave a name - the memory number appearing will be «**1**» whereas the position value will be «**0**» as default value. With the automatic mode, the file will contain the same information. However, in the «**Position**» column of the transferred file, the «**auto**» mention will appear for every automatic reading. When you will use the «**STAMP**» command, every position marked with the automatic mode will be contained in an individual memory space (see section 4.2 and the example of a transferred file in Annex 1).



5.2 Erase Memory

The 32 MB memory allows to store a very large amount of readings. The «**CLEAR MEMORY**» key allows to erase all data stocked in the memory. A message will ask you to confirm your intention. The operation will erase all the readings but will not erase the files already created. It is therefore highly recommended to create files before cleaning the memory to avoid to redo the measurements.

6. File Transfer

Before proceeding to the file transfer, make sure that the DELL™'s module drivers provided on the DELL™ CD are installed on your personal computer (see the DELL™ installation guide for details). To import a data file (in text format) put the DELL™ module in its charger and plug the charger's USB cable to the computer USB port. If the support is not included with the module, simply use the USB cable plugged to the module.

Turn off the «**MPP_en**» program and access the files from your computer by going to:

My Computer ® Mobile Device ® MPP

Copy the files on your hard disk to be able to process your data. Afterward, one may import data within EXCEL to make graphs or to perform other processing operations.

Within the transferred file, the signs associated to the values (see section 7) will be displayed in an individual column. The signs being separated from the values, it will be easier to process data in EXCEL. When a value is displayed with such a sign, it can not be recognized as a numerical value by EXCEL.

An example of a transferred file is provided in the ANNEX 1.

If you cannot access your created files when you try to localize them from your computer:

1. Make sure that the «**MPP_en**» program is off.
2. Find in the main menu of your DELL™ module:
   Start ® ActiveSync ® Tools ® Options
3. Select: «**Enable Pc Sync using this connection**»
4. Make sure that the «**USB**» option is selected in the window.

7. Readings Interpretation

7.1 HF/Cond Distinction

In the case of conductive sulphides: The HF response provides an indication of sulphides quantity. The Conductivity (Mhos/m) provides an indication of sulphides quality. The conductivity of a small and a large aluminium foil will be similar but the HF response will increase with the size of the aluminium surface.

7.2 Results Signification

«HF RESPONSE»: The number in this window represents the value of the HF response.

«SCPT 0.001 Magnetic Susceptibility»: The number in this window represents the value of the magnetic susceptibility As mentioned previously, it is important to note that, in the presence of a conductor, the MPP-EM2S+ probe will measure the magnetic susceptibility value. In the presence of pyrrhotite combined with a small amount of magnetite or no magnetite at all, the magnetic susceptibility will be measured.

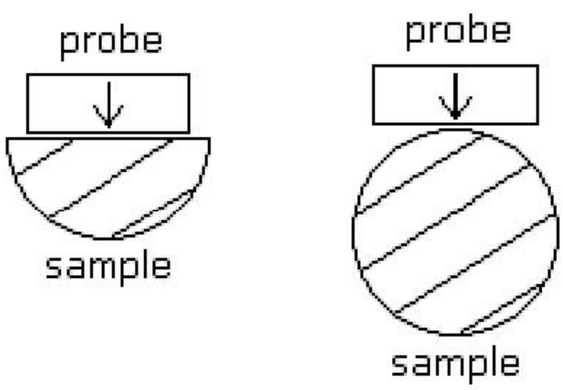
«COND MHOS/M Calculated Conductivity»: It is important to note that in the presence of some magnetite in the sample, the MPP-EM2S+ probe will overestimate the conductivity value.

The « > » sign appearing before conductivity value indicates that real conductivity is higher than 999999.

The « XXX XXX » sign indicates that the conductivity may be present or not.

7.3 Sample Shape and Distance

The measured values could depend on the shape of the sample. For an equivalent content of conductive/magnetic ore, the response will increase with an increasing surface of contact.

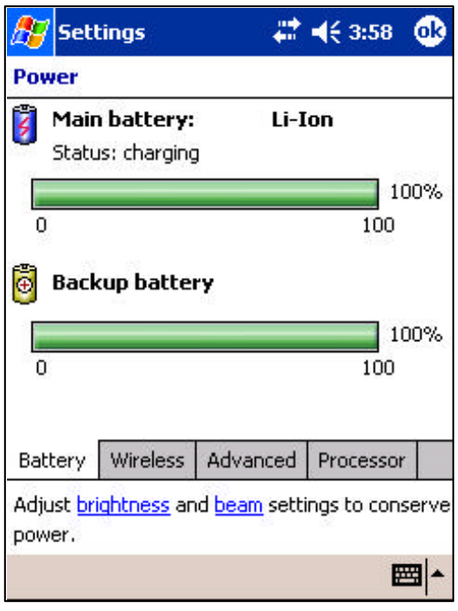


In the same way, the response will decrease with an increasing distance between the probe and the sample.

8. Battery Supply

It is strongly recommended to always keep a charged battery within the module. The backup battery, on the back of the module, should supply only during the short time needed to change the main battery. A part of the GDD program is dependent of the supply. If, by accident, the total supply is cut, you will loose not only the data stored in the memory but also some elements needed to operate the program. **It is therefore suggested to put the DELL™ Axim on charge when not in use to avoid discharge of the lithium batteries and potential loss of data or software**. When you acquire the module, an initial backup has already been done, allowing to retrieve the elements needed to the software operation with the «**restore**» process described in section 10. The initial backup file is named «**GDD**».

To check the remaining battery supply, go to «**Start ® Settings**», and tap on the System tab at the bottom of the screen. Then, tap on the «**Power**» icon to open the power settings. Please note that it may take a few seconds (sometimes up to one minute) to refresh the remaining battery supply.



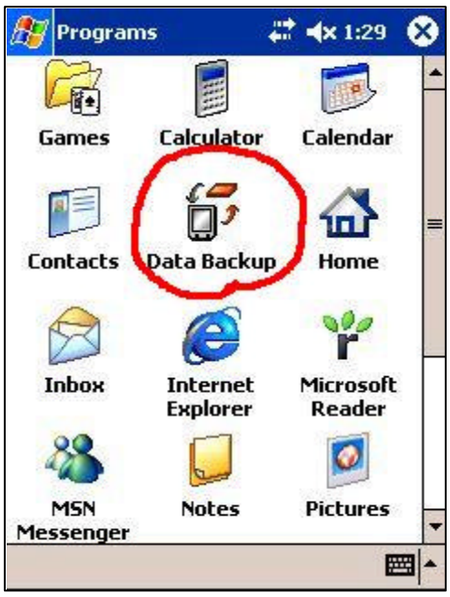
We recommend the following steps:

- Check that the Backup battery is at 100% capacity. Change it if it is not full.
- Check that the main battery is also full. Recharge it if necessary. **Please note that the small battery should not be used, unless the main battery is being replaced.**
- In the «**ADVANCED**» tab, uncheck the *«Turn off device if not used for…»* button.

- Tap OK in the upper right corner once you have finished. You will be brought back to the System settings.

9. GDD MPP Software Backup

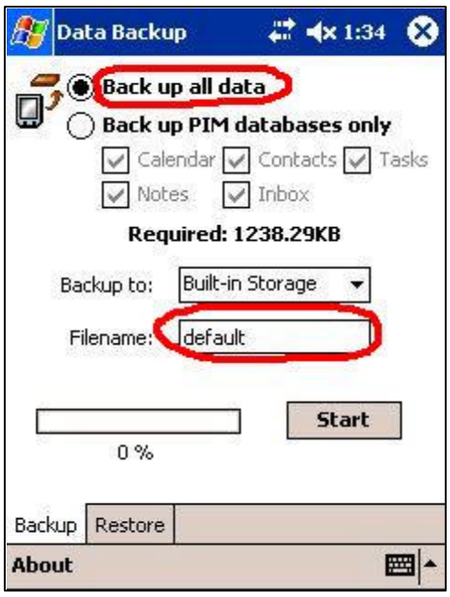
However, when you install a software update (section 12), it is recommended to perform the backup process described below to keep in memory the new software version. To avoid overloading unnecessarily the memory, it is recommended to overwrite the ancient backup file by naming the new file «**GDD**».



If your software version does not contain the initial GDD backup file (first MPP versions, delivered before February 2004), it is strongly recommended to do the backup process as described below.

1. Find in the main menu of your DELL™ module:

Start ® Programs ® DataBackup



2. Choose a name for your Backup file (we suggest «**GDD**»)

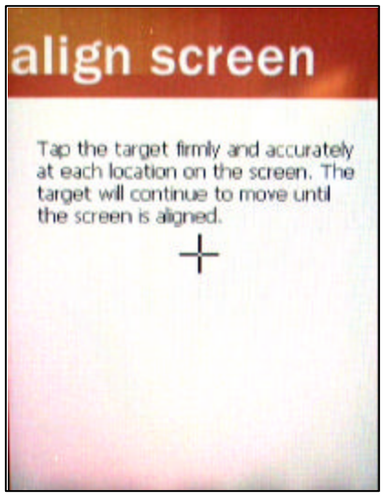
3. Make sure that «**Back Up All Data**» option is selected.

4. Click on «**Start**»

10. How to Restore Data and the GDD MPP Software

If, accidentally, all the batteries become discharged and you loose the use of the program (section 8), you could retrieve the elements needed for the program with the «**RESTORE**» command.

Before beginning the restoration process, a few steps must be taken. When you first open the DELL™ Pocket PC after the loss of program, the pocket PC will take you through the **set-up process**:

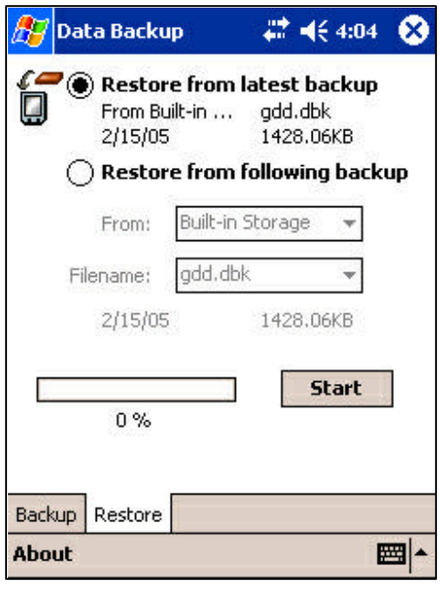


1. Align screen: You must accurately tap the targets that show up on the screen. There will be one target in the middle of the screen and then one in each corner. The targets will keep appearing until they tapped precisely in their centre.
2. Stylus: tap the «**NEXT**» button at the bottom of the screen.
3. Pop-up menus: follow the instructions.
4. Location: Select the time zone in which you are. The time zone can also be changed later.

The set-up is complete.

The restoration process can now be performed as follows:

1 Plug the DELL™ module on the electrical circuit (the restoration process requires a lot of energy).



2 Find in the main menu of your DELL™ module:
Start ® Programs ® DataBackup

3 There are two tabs at the bottom of the screen (Backup or Restore). Select **Restore**.

4 Select «**Restore from latest backup**». As mentioned previously, the initial GDD backup is named «**GDD.dbk**»

5 Click the «**START**» command at the bottom of the screen.

6 Once the restoration is finished, the following message will pop up: «*Restore is complete. Press [reset] to restart the system*». The «**RESET**» button is located on the side of the DELL™ module. You must press in the hole with the grey pointer stick to restart the module's system.

If you have installed a software update without doing a backup, the restoration of «**GDD**» file will not give back the last software version. In this case, after the «**restore**» operation, you must reinstall the software update as described in section 12.

If your software version (delivered before February 2004) does not contain the «GDD» backup file: If you omit to do the backup process and lose your module's memory, it will be necessary to reinstall the software from the original CD. The re-installation process is essentially the same as the process described in section 12 (Software Update Installation).

After the reinstallation, you will see that «**MPP_en**» will not appear anymore in the «**Start**» menu. To make it appear again as an option, the process is as follows:

Start ® Settings® Menus

The list of the available programs will appear. You must remove a tick in a square of your choice and mark a tick to «**MPP_en**» (We recommended to remove all ticks on the Menu settings except «**ActivSync**», «**File Explorer**» and «**MPP_en**»). The «**MPP_en**» software will be available again in the «**Start**» menu.

11. Probe-Computer Connection (optional)

If you chose the probe-computer connection, you can control the probe directly from your computer.

- First, the MPP program must be installed on the computer with the MPP-PC CD.
- Then, connect the NULL end of the NULL-modem cable to the probe, and the other end to the serial port of the computer.
- Run the software (MPP.exe). The software works the same way as the DELL™ Pocket computer program (see previous sections).
- If nothing happens when you click on «**INIT**», check in **Config ® COMM ports** that the good port is selected. If it still does not work, check the probe's batteries.

WARNING: When the batteries are low, the data recorded could be inaccurate.

12. Software Update Installation

You can always check if the software installed in your module corresponds to the last update by clicking on «**Version**» in the «**Help**» menu of your module. The number of the actual version will appear.

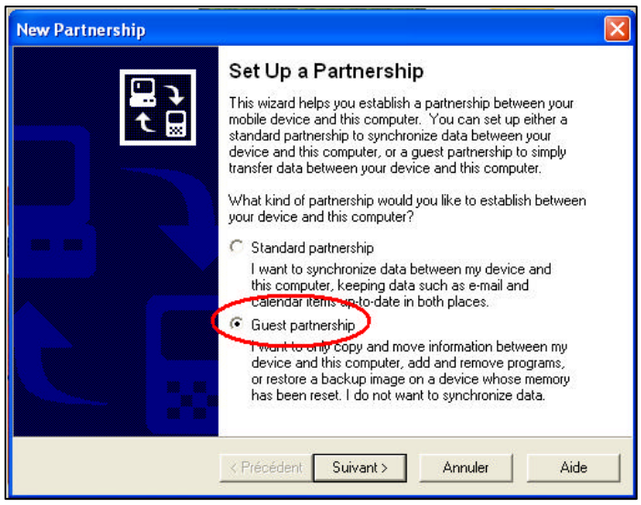
If you are advised that a new update is available on the Internet (at **www.gddinstrumentation.com**), the following process will allow to install it:

1 Install the DELL™ module in its charger support (cradle).

2 Plug the module to the PC with the cradle USB cable (if the cradle is not included with the module, simply use the USB cable and plug it to the module)

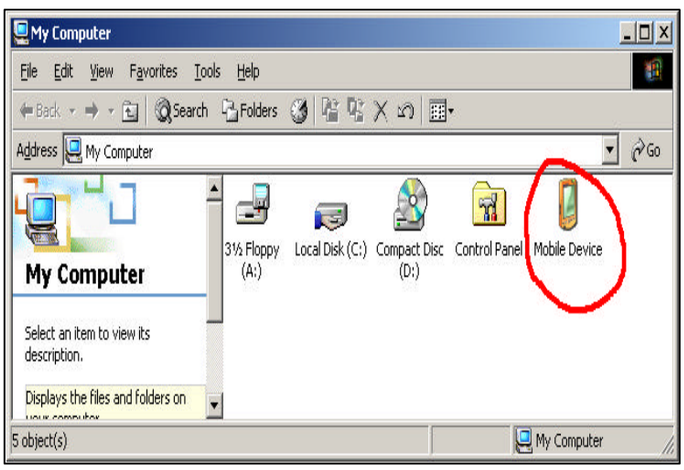
3 The connection is automatic. If it does not connect, check in ActiveSync that the connection is set to right port:

ActiveSync ® File ® Connection settings…



4 ActiveSync should open, and a window will pop up, asking for which type of partnership you desire. Click on «Guest Partnership».

5 On the desktop of your PC click on «**My Computer**» icon.

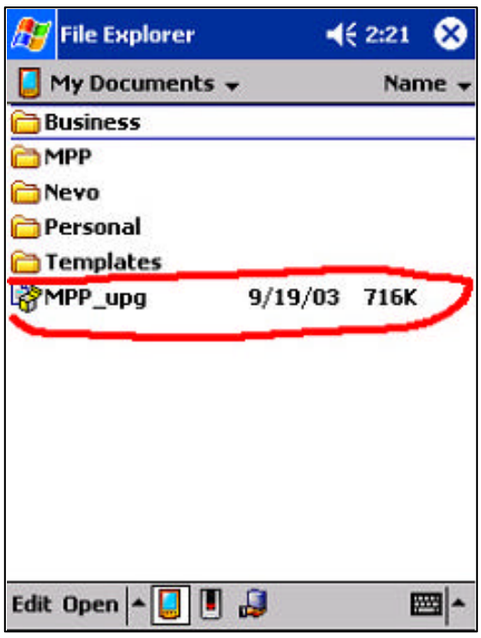


6 Open «**Mobile Device**» corresponding to the hardware of the DELL™ module

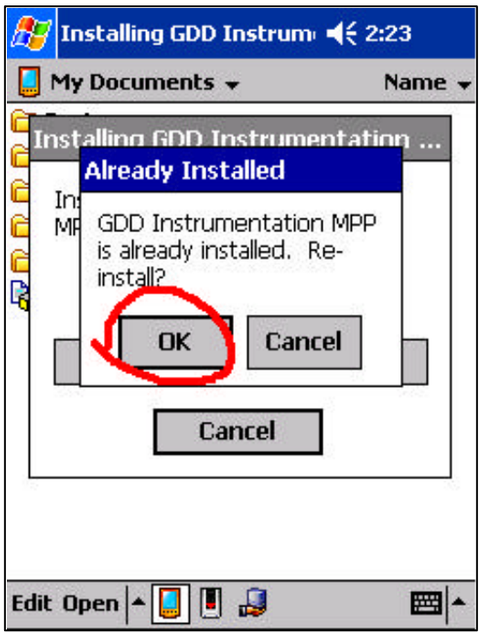
7 Copy the software update from the CD or file (file with the .cab extension) to «**Mobile device**» directory. The update will be transferred to your module.

8 Open the «**Start**» menu of the module

9 Chose «**File Explorer**» in the main menu or in the «**Program**» group.



10 Go to «**My Documents**» file and click on the update file (**.cab** file)



11 To the question «**Re-install the software?**», answer «**OK**». The update software will be installed automatically. You can now use the MPP system and log your core.

If, for any reason, it does not work, you may always go back and re-install the software from the original GDD CD.

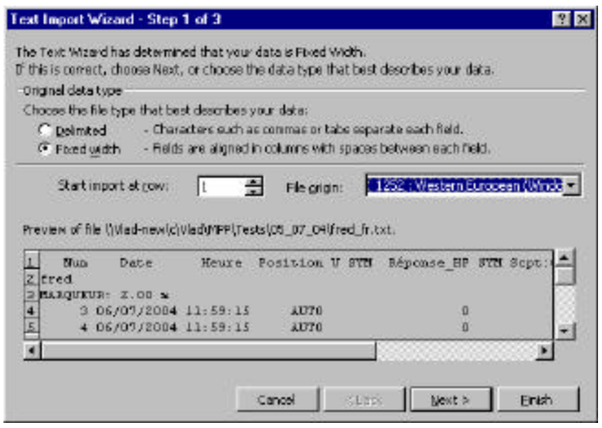
When the update is installed, it is important to redo the backup process suggested in section 9 to protect the new software version in the event that the batteries go down.

13. Importing a File in Microsoft Excel

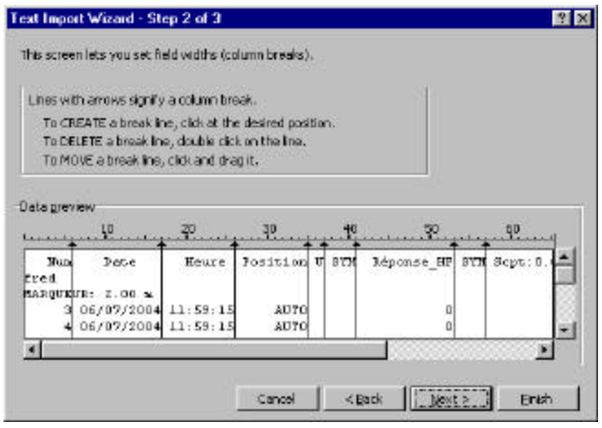
1 Open the Microsoft Excel software.

2 In the tool bar, select **File ® Open**

3 At **Files of type**, select **All Files** (*.*). At **Look in**, you have to localize your file. This is very important in order to find the file you need. The file extension is **.txt**. Then select the file you want to open → **Open**

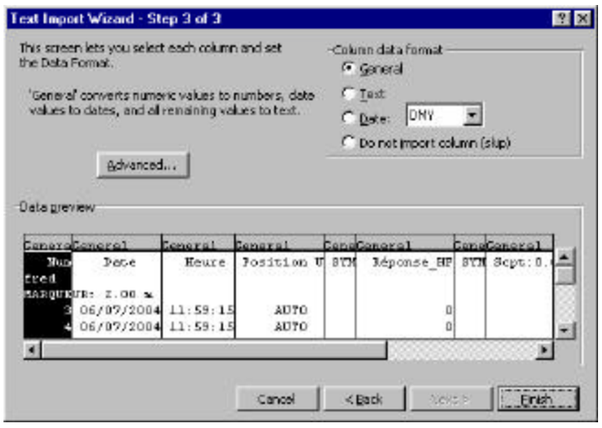


4 You now have **Text Import Wizard - Step 1 of 3.**
Select **Fixed width.**
Select **Next**

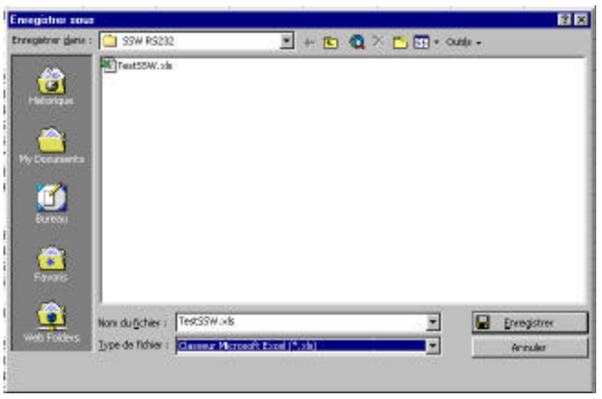


5 You now have **Text Import Wizard - Step 2 of 3.**

Make sure that break lines separate the following titles: «**U**» (position 35-37), «**SYM**» (position 37-41) and «**SYM**» (position 71-75).
Select **Next.**



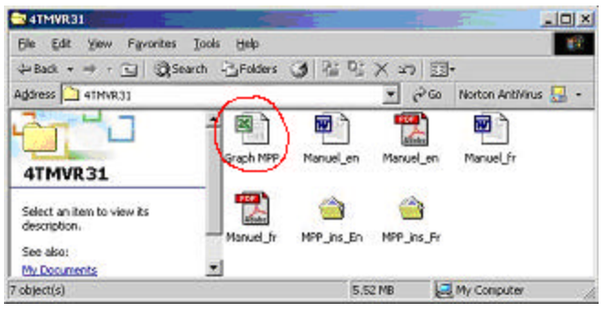
6 You now have **Text Import Wizard - Step 3 of 3.**
Select **Finish**.



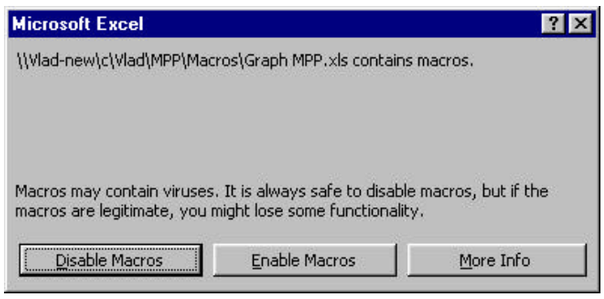
7 It is very important that you save your file now. To do so, go to the tool bar and select:
File ® Save as:
Save in: choose the folder in which you want to save it
Save as type: Microsoft Excel Workbook (*.xls)
File name: choose the name you want to save and put the extension .xls at the end of the name. Select **Save**

14. Creating Profiles with the MPP-EM2S+ Data Processing Software

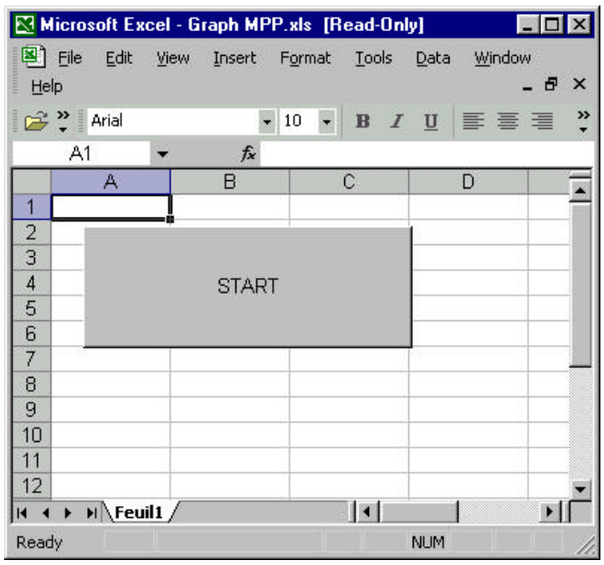
It is possible to create a chart with the values obtained with the continuous reading mode. Once the values are saved in a text file and transferred to your own personal computer, do the following:



1 Put the GDD Installation CD in your personal computer and open the directory called «**4TMVR31**».
Double-click on the «**Graph MPP**» Excel icon to launch the application;



2 A window asking if you want to enable the macros will appear. You must select «**Enable Macros**»;



3 Click on the «**START**» window. Open your text document containing the MPP-EM2S+ values to be used in the chart;

4 The charts are automatically created. Adjust the scales as needed and add titles or subtitles;

5 The IP values are more accurate if the user reinitializes the MPP-EMS2+ probe often (see the Warnings sections).

15. DELL™ Axim Module Characteristics

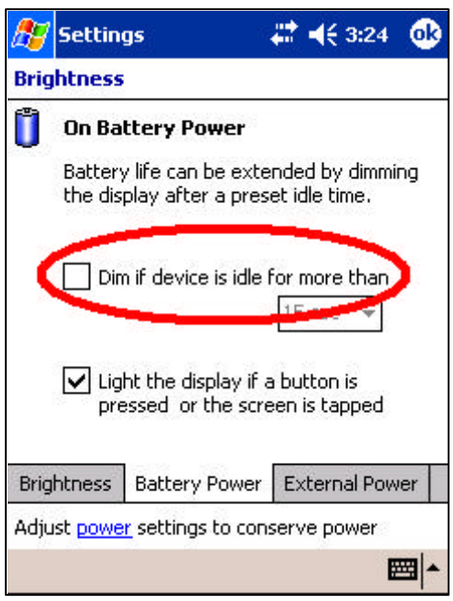
If you have any question related to the DELL™ Axim module characteristics, you can refer to the DELL™ User's Guide. For questions related to external properties of the module see DELL™ User's Guide section 1.

- Power button p. 12.
- Light for screen display p. 12
- Installing Main and Backup Batteries p. 16-17
- Charging battery p. 19
- Using the cradle p. 19

It is recommended to consult the other sections of the DELL™ User's Guide to learn about many other useful characteristics and facilities of the module.

Here are a few **suggested settings** :

Go to the menu «**Start ® Settings**», and tap on the «**System**» tab at the bottom of the screen. Then, tap on the «**Brightness**» icon.



Brightness:

Put both battery power and external power to maximum brightness.

In the «**BATTERY POWER**» tab, uncheck the *«Dim if idle for more than …»* button.

In the «**EXTERNAL POWER**» tab, also uncheck the *«Dim if idle for more than …»* button.

Clock: Set it to the right time.

To select the items that will appear in the Start menu, go back to «**Start ® Settings**» and click on the **Menus** icon. Many items will be checked, but only two are necessary. We suggest to remove all ticks on the Menus settings except «**ActivSync**» and «**File Explorer**».

16. Technical Support

If you have questions or need technical support, do not hesitate to contact **Instrumentation GDD Inc**.

Telephone: (418) 877-4249

Fax: (418) 877-4054

Toll free line in Canada and United States: 1 877 977-4249

E-Mail: gdd@gddinstrumentation.com

Emergency out of business hours:

Pierre Gaucher:	Res. tel.:	(418) 657-5870
	Cell phone:	(418) 261-5552
Régis Desbiens:	Res. tel.:	(418) 658-8539
	Cell phone:	(418) 570-3408

Annex 1: Example of a Dumped File

```
   Num          Date_&_Time        Position     SYM  HF_Response  SYM
   Scpt:0.001_SI SYM Cond:Mhos/m
   Échantillon 9045
     2 04/02/2004 10:47:24   41.00 m >=        8 ?          >=       0.1
     3 04/02/2004 10:47:24   42.00 m >=        8 ?          >=       0.1
     4 04/02/2004 10:47:25   43.00 m >=        9 ?          >=       0.1
     5 04/02/2004 10:47:25   44.00 m >=        9 ?          >=       0.1
     6 04/02/2004 10:47:25   45.00 m >=        9 ?          >=       0.1
     7 04/02/2004 10:47:25   46.00 m >=        9 ?          >=       0.1
     8 04/02/2004 10:47:25   47.00 m >=        9 ?          >=       0.1
     9 04/02/2004 10:47:26   48.00 m >=       10 ?          >=       0.1
    10 04/02/2004 10:47:26   49.00 m >=       10 ?          >=       0.2
STAMP: 50.00 m
    12 04/02/2004 10:47:35    AUTO   >=       12 ?          >=       0.2
    13 04/02/2004 10:47:35    AUTO   >=       13 ?          >=       0.2
    14 04/02/2004 10:47:35    AUTO   >=       13 ?          >=       0.2
    15 04/02/2004 10:47:36    AUTO   >=       13 ?          >=       0.2
    16 04/02/2004 10:47:36    AUTO   >=       13 ?          >=       0.2
    17 04/02/2004 10:47:36    AUTO   >=       13 ?          >=       0.2
    18 04/02/2004 10:47:36    AUTO   >=       13 ?          >=       0.2
    19 04/02/2004 10:47:36    AUTO           -3 IP?         >=       0.2
    20 04/02/2004 10:47:36    AUTO   >=       15 ?          >=       0.2
    21 04/02/2004 10:47:36    AUTO           -3 IP?         >=       0.3
    22 04/02/2004 10:47:36    AUTO   >=       15 ?          >=       0.2
    23 04/02/2004 10:47:36    AUTO           -2 IP?         >=       0.3
    24 04/02/2004 10:47:36    AUTO   >=       15 ?          >=       0.2
    25 04/02/2004 10:47:37    AUTO   >=       15 ?          >=       0.2
    26 04/02/2004 10:47:37    AUTO           -2 IP?         >=       0.2
    27 04/02/2004 10:47:37    AUTO   >=       15 ?          >=       0.2
    28 04/02/2004 10:47:37    AUTO   >=       15 ?          >=       0.2
    29 04/02/2004 10:47:37    AUTO           -3 IP?         >=       0.3
    30 04/02/2004 10:47:37    AUTO   >=       15 ?          >=       0.2
STAMP: 51.00 m
    32 04/02/2004 10:47:40    AUTO           -3 IP?         >=       0.2
    33 04/02/2004 10:47:40    AUTO           -3 IP?         >=       0.2
    34 04/02/2004 10:47:40    AUTO           -3 IP?         >=       0.2
    35 04/02/2004 10:47:40    AUTO           -4 IP?         >=       0.2
    36 04/02/2004 10:47:40    AUTO           -2 IP?         >=       0.2
    37 04/02/2004 10:47:40    AUTO           -3 IP?         >=       0.2
    38 04/02/2004 10:47:40    AUTO           -2 IP?         >=       0.2
    39 04/02/2004 10:47:40    AUTO           -3 IP?         >=       0.2
    40 04/02/2004 10:47:40    AUTO           -3 IP?         >=       0.2
    41 04/02/2004 10:47:41    AUTO   >=       14 ?          >=       0.2
    42 04/02/2004 10:47:41    AUTO           -2 IP?         >=       0.3
    43 04/02/2004 10:47:41    AUTO   >=       30 ?          >=       0.3
    44 04/02/2004 10:47:41    AUTO   >=      150 ?          >=       0.7
    45 04/02/2004 10:47:41    AUTO   >=      600 ?          >=       1.4
    46 04/02/2004 10:47:41    AUTO   >=     2200 ?          >=       2.7
    47 04/02/2004 10:47:41    AUTO   >=     4400 ?          >=       3.8
    48 04/02/2004 10:47:41    AUTO   >=     6400 ?          >=       797
    49 04/02/2004 10:47:41    AUTO   >=     7900 ?          >=       864
    50 04/02/2004 10:47:42    AUTO   >=     9200 ?          >=       904
    51 04/02/2004 10:47:42    AUTO   >=    10500 ?          >=       968
STAMP: 52.00 m
    53 04/02/2004 10:47:42    AUTO   >=    11700 ?          >=      1021
    54 04/02/2004 10:47:42    AUTO   >=    13000 ?          >=      1097
    55 04/02/2004 10:47:42    AUTO   >=    13800 ?          >=      1170
    56 04/02/2004 10:47:42    AUTO   >=    13800 ?          >=      1170
    57 04/02/2004 10:47:42    AUTO   >=    14000 ?          >=      1223
STAMP: 53.00 m
```

Annex 2 : Graphics from Manual and Automatic Modes