

cMonitEM[®]



User's Manual

Table of Contents

1 Introduction.....	3
2 Presentation of the device.....	3
2.1 Components.....	3
2.2 cMonitEM details inside the IP65 box.....	4
3 Power supply.....	4
3.1 AC power supply.....	4
3.2 USB mode.....	5
4 Start-up.....	5
4.1 Installing the software.....	5
4.2 Using the software.....	6
4.2.1 First connection.....	6
4.2.2 Parameters.....	7
4.2.3 Actions.....	8
4.2.4 Online mode.....	9
4.2.5 Offline mode.....	9
4.2.6 Malfunctions.....	9
5 Installation.....	10
5.1 Site location.....	10
5.2 Fixing.....	10

1 Introduction

You have acquired a **cMonitEM** electromagnetic radiation monitoring device.

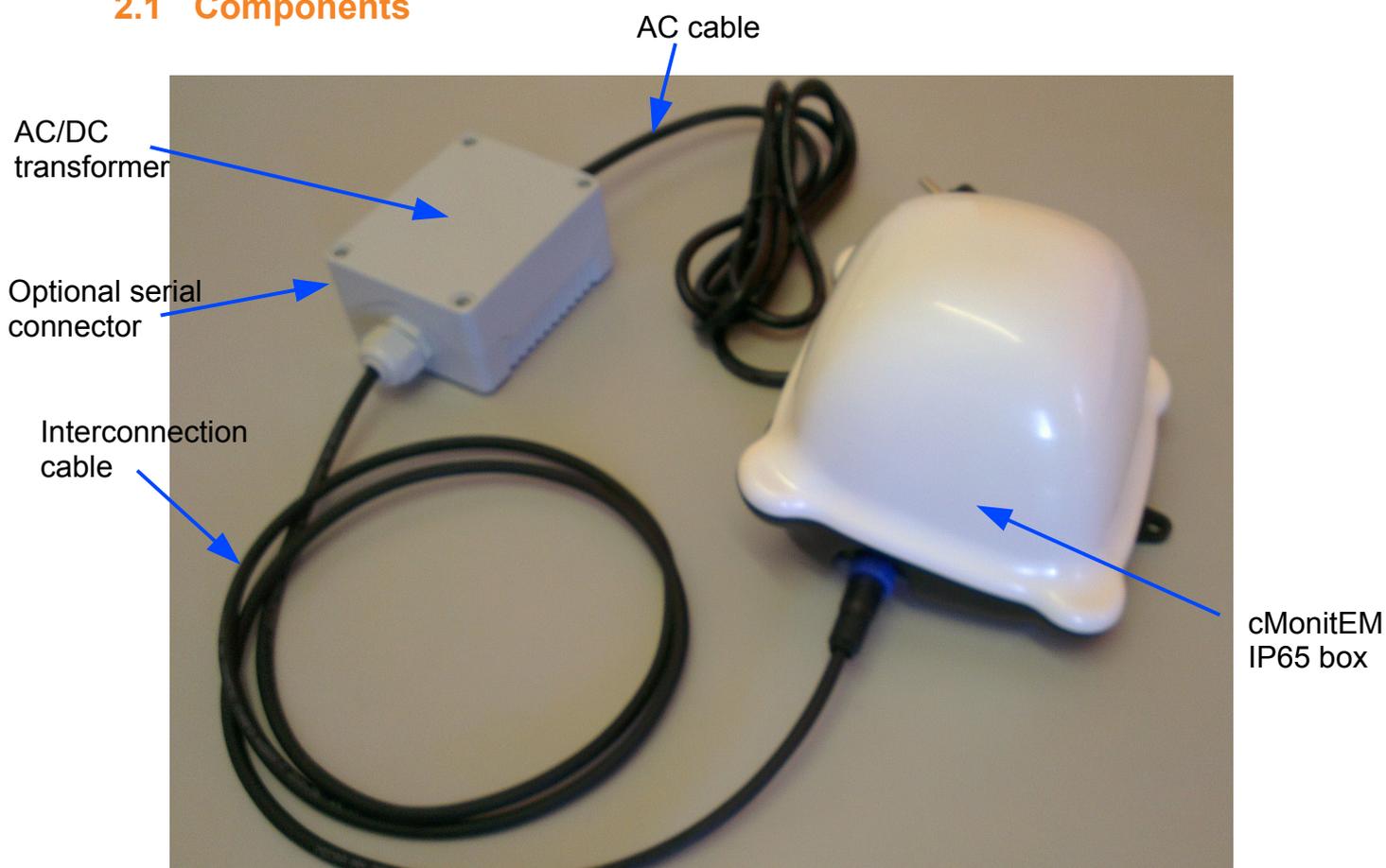
cMonitEM can measure the emissions of mobile telephone base stations or WIFI, in real time. The device stores the measurement data to a micro SD card. Depending on the configuration, measurements can be sent automatically by GRPS or can be downloaded with the **cMonitEM** reader software.

The device can also generate alarms when it detects field values in excess of the limit established by the user and transmit them immediately to the Control Centre when GPRS connection is available.

This manual explains how to install and use the **cMonitEM** device.

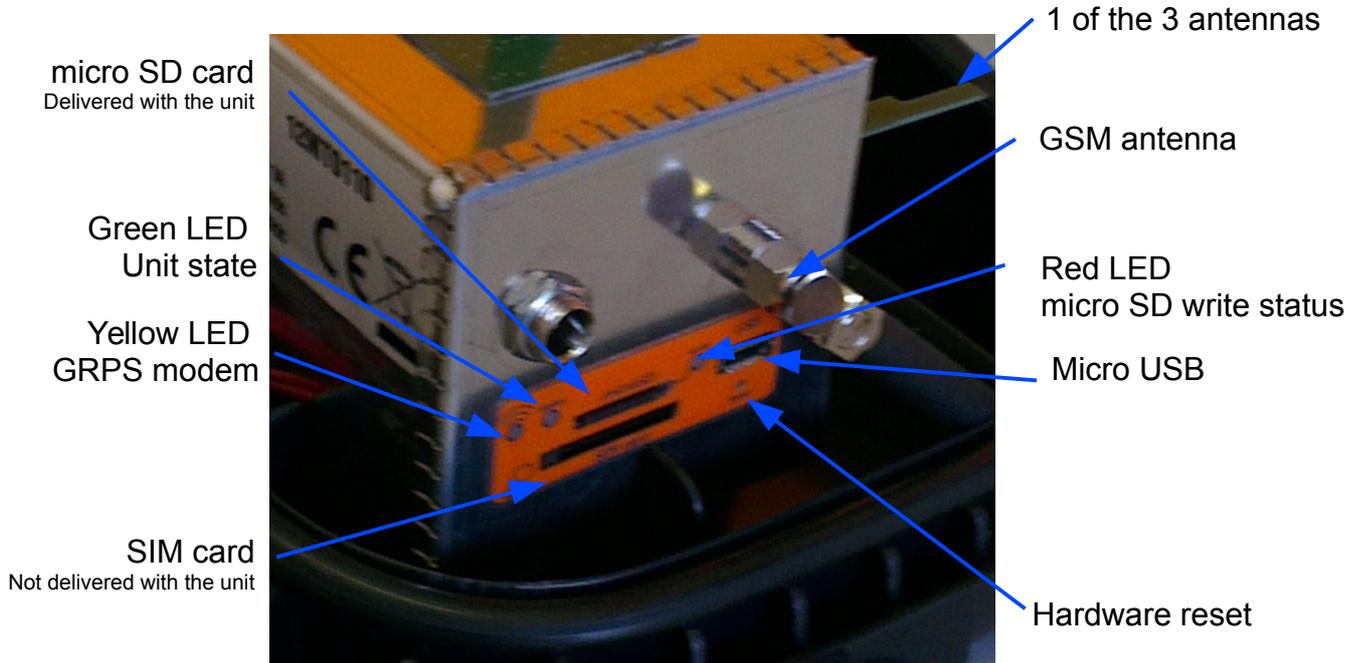
2 Presentation of the device

2.1 Components



Below the IP65 box, there are 4 screws to open the **cMonitEM**

2.2 cMonitEM details inside the IP65 box



Please take good care of the 3 antennas because this is a fragile part of the unit

The 3 LEDs show the status of the device.

- The modem LED blinks during communication
- The status LED:
 - blinks twice per second when in measurement mode
 - is lit continuously when connected to a computer
 - blinks intermittently when in communication mode
 - blinks rapidly for 5 seconds after initial calls (if communication is successful)
- The LED of the SD indicates that it is writing. Do not switch off the device if this LED is lit, since this could damage the SD.

3 Power supply

3.1 AC power supply

The device is powered directly from an external power connection. This connection is a transformer 100-240V AC into 9V DC that is connected to the **cMonitEM**. Earth cable is connected to the ground of the output in order to avoid any disturbance for the measurement.

3.2 USB mode

This power supply mode can only be used to change the parameters of the device. The USB powers the microprocessor and the SD card so that it can read and change the device's data. It is not a normal operating mode. It can be very useful as an initial connection, since in this mode the device will not make calls to the server and will allow adjustment of all the desired values before starting up in normal mode.

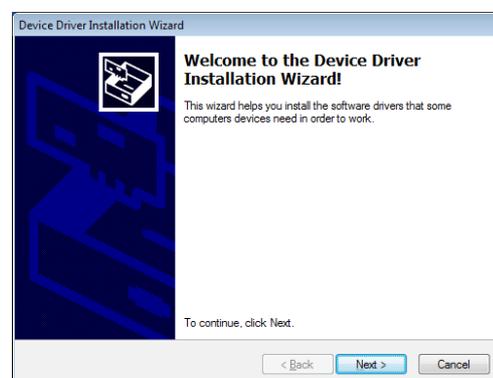
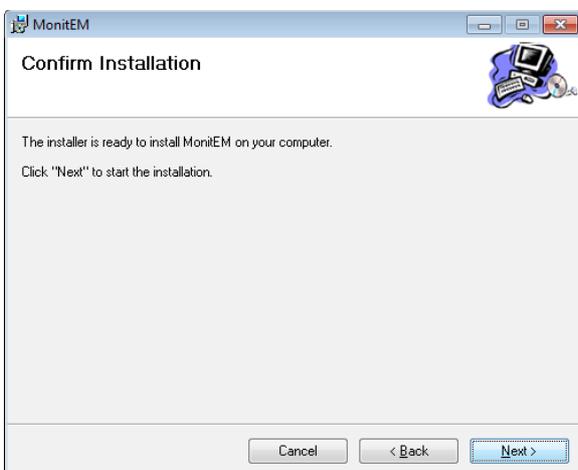
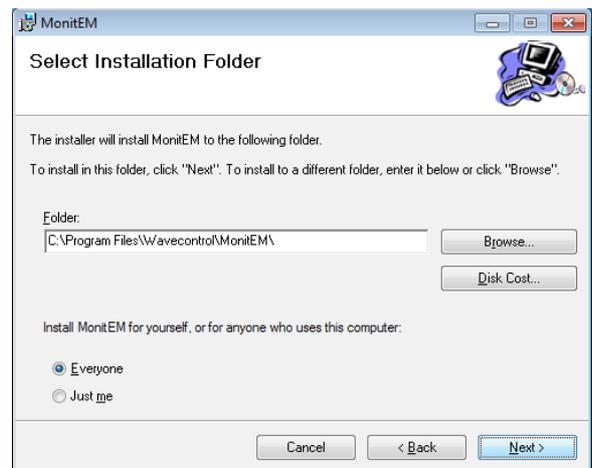
Note: if the USB is connected before or just after the cMonitEM is connected to a power supply, the system will start in USB mode, since the power supply controller takes 2–3 seconds to power up the device. To change back to normal mode, unplug the USB and DC connector and plug the DC connector back first.

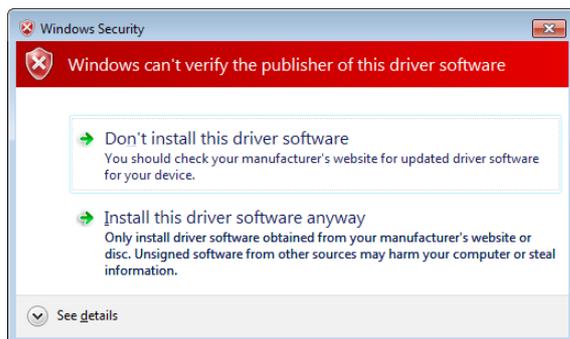
Note: in USB mode, no reading from the probe, no access to the serial port and no call to the server are possible.

4 Start-up

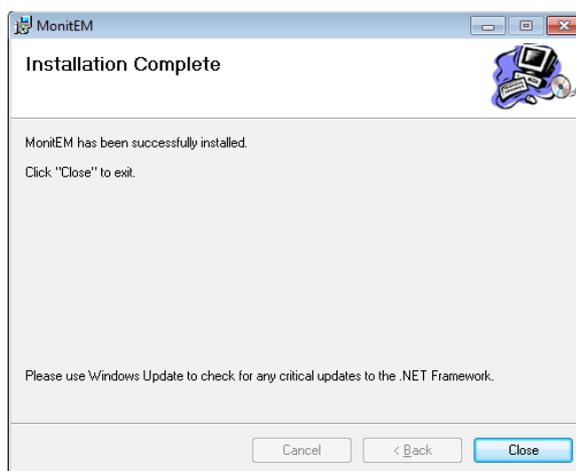
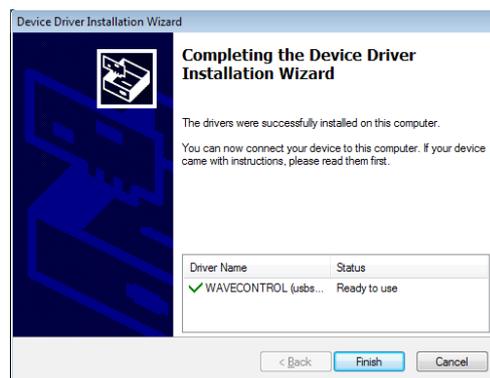
4.1 Installing the software

Insert the USB drive containing the software for the device, open the “MonitEM Setup” file, and follow the screens (it will install the software and drivers of the monitEM):





If Windows indicates that it cannot verify the digital signature for the driver, continue with the installation anyway.



Then connect the micro USB cord of the **cMonitEM** to the computer. The driver should be installed automatically.

If any problems occur with installation of the driver, consult the Appendix: Problem with drivers Installation

4.2 Using the software

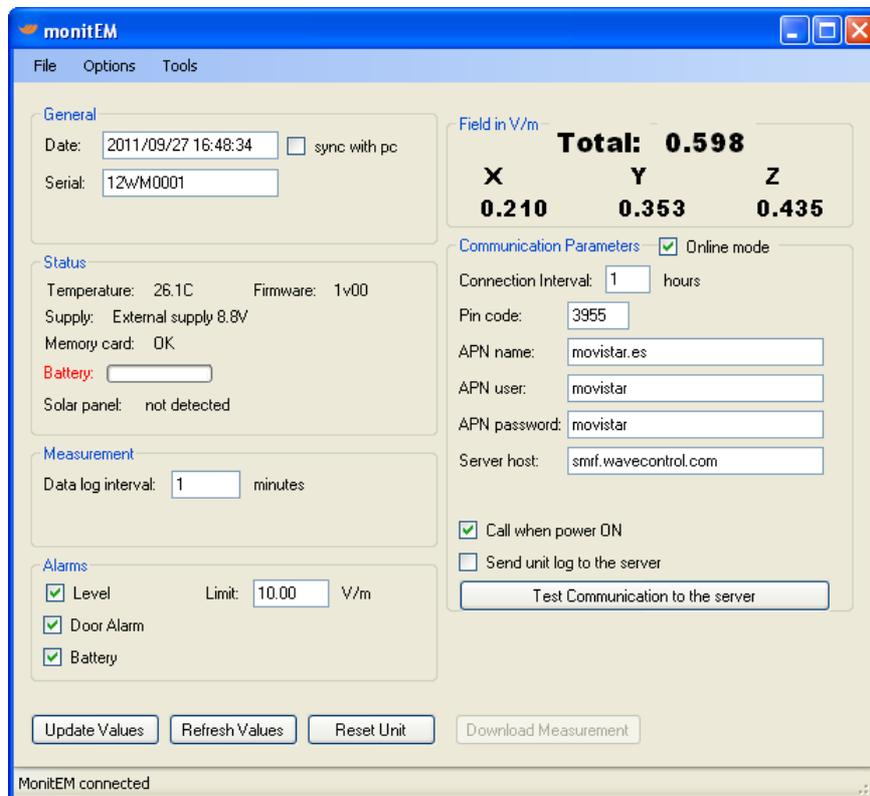
4.2.1 First connection

We highly recommend connecting the device for the first time using only the USB so that you can check the principal parameters, such as the PIN code of the SIM card.

The program for managing the **MonitEM** is very easy to use. Start the program and connect the device's USB cord (the order is unimportant). The program itself will detect the device and display the configuration screen.

*Note: When the MonitEM is connected to the program it enters a **special mode** in which **it will not save the measurements made**. When the program is closed, the device returns to the normal operating mode.*

4.2.2 Parameters



We can distinguish between different parts of the program:

General: this indicates the time to which the device is set along with its serial number and the serial number of the connected probe

Status: gives information on

- type of power supply
- temperature of the system
- firmware version

Measurement: allows definition of

- the interval of recording in minutes or seconds
- the average windows. European recommendation is 6 minutes = 360 seconds. 0 means no average is done.

Alarms: (activated in online mode) allows

- activate and de-activate the alarms for level, battery and temperature
- change the value for the level, battery and temperature alarms

Field: allows display of the total field and for each axis of the probe (does not work with USB power)

Communication Parameters: defines the parameters related to sending data via USB:

- **Online mode** activates or de-activates communication with the server.
- **Connection Interval:** defines the interval of communication with the server in minutes (0 = never)
- **Pin code:** PIN code of the SIM card. Not needed if blank
- **APN Name:** number for access to the GPRS connection. The operator can provide this data (in the Appendix: APN example, several examples of APN are given) Appendix: APN example
- **APN user:** user of GPRS connection (leave it in blank if you are not sure)
- **APN password:** GPRS connection password (leave it in blank if you are not sure)
- **Server Host:** control centre domain (e.g. smrf.wavecontrol.com)
- **Server path:** control centre path (don't change this unless you are sure to understand this parameter)
- **Server port:** by default port 80 (http) is used. You can force it to a different port as 8080 for firewall issues.
- **Call when power ON:** activates or de-activates forcing a call on each start-up of the **MonitEM**. For example, allows the installer (with no need for a computer) to ascertain whether the device can communicate with the server, since when the call is completed, if the server accepts the data from the **MonitEM**, the green light on the device will flash quickly for five seconds (the other two lights will remain off).
- **Send unit log to server:** activates or de-activates transmission of the device's operating data to the server. With this option activated, the device will consume more Kbits of the GPRS connection, but it allows greater information when a problem needs to be solved. With a data flat rate, we highly recommend activating this option

Note: On the Options menu, the advanced options can be activated to allow modification of some of these parameters more sensitive. We do not recommend activating this option by default.

4.2.3 Actions

- **Update values:** When any value is modified, this field is displayed in yellow, indicating that this value has not been updated on the device. Pressing the button will update the values.
- **Restart unit:** This allows, for example, going from USB mode to normal mode when the general power supply is connected following a USB connection, or to read from a probe that has been connected after the device has been connected to the power supply.
- **Refresh values:** Reread the data for the device, e.g. time, temperature.
- **Download measurements:** Download the measurements saved in the SD when in offline mode
- **Test Communication to server:** Allows checking to see if the communication parameters are correct. A new screen will open to start the check. If the check is successful, it will show that the server has accepted the communication.
- **Menu-Tools-Force Port Number:** This textbox allows you to force the COM port. This is only useful when connecting to a monitEM not by its USB but through a serial connection (like RS232 or RS485). If the communication port is for example COM3 then write 3 in this textbox.

4.2.4 Online mode

In this mode (checkbox Online mode on), the device will transmit at intervals to the server. In this mode, the device will also send warnings in the event of an alarm (for the alarms that are activated). When unit connects to the server it will not measure, so the internal modem communication has no effect on the measurements.

Note: in this mode you need to insert an SIM card in the **cMonitEM** and check that that PIN code of the card corresponds to the PIN code given with the software

The measured data can be viewed directly from the control centre. The recording interval and the communication interval can be changed from the control centre. See the Manual for the control centre for further information.

4.2.5 Offline mode

In this mode (**Online mode** checkbox off) the device will not make any calls to the control centre or send any alarms.

The program can be used to download the data stored in the device. Click the “**Download measurement**” button. Data must be downloaded when the probe used to make the measurements is connected and it cannot be downloaded when the device is in USB power mode.

4.2.6 Malfunctions

If you have any problem with the program or the device.

- go to Advanced mode. “Options->Mode->advanced” menu
- download the device log by clicking “Download unit Log”
- download the program session file by clicking the “Tools->Save Log” menu
- send these files to your technical support contact

5 Installation

5.1 Site location

We can define two fundamentals features for the **cMonitEM**. In each case site situation will be different::

- **To measure and control an emission source:** The aim is to control emission source levels produced by a specific source of radiation such as a Mobile Phone Base Station.

Site: Unit will be installed in the closest point accessible by public to the source of radiation and with higher level of field. To check field level, you can use the **SMP** or the **cMonitEM** unit itself.

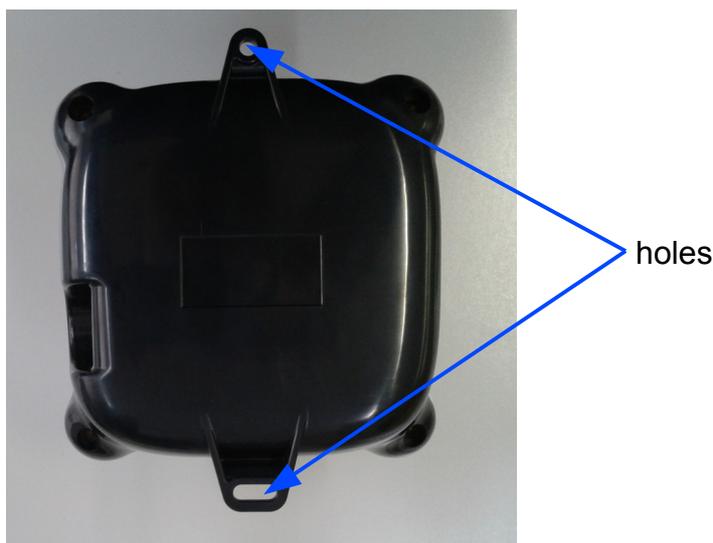
- **To control a sensitive site:** The aim is to control emission levels registered in sensitive sites such as hospitals, schools or buildings close the radiation source.

Site: Unit will be installed in a significant point in the “sensitive zone” usually decided by the user. Within this area, it has to be found a site with the higher field level..

5.2 Fixing

cMonitEM can be mounted without opening the box. So you can parameter the unit before the installation and then close the box to install it anywhere else.

Note: please note that you have to be sure GPRS connection is available before doing so. If you have any doubt you can make a test communication with the software connecting the unit to a PC.



To fix the unit you only have to attach it with the 2 holes situated in the base of the box. You can mount it on a wall or on a mast.

The AC/DC converter can be mounted as well with 4 screws. To do so, open the box unscrewing the 4 plastic screws. Insert in the 4 holes the screw adapted to the mounting. Close the box once finished.

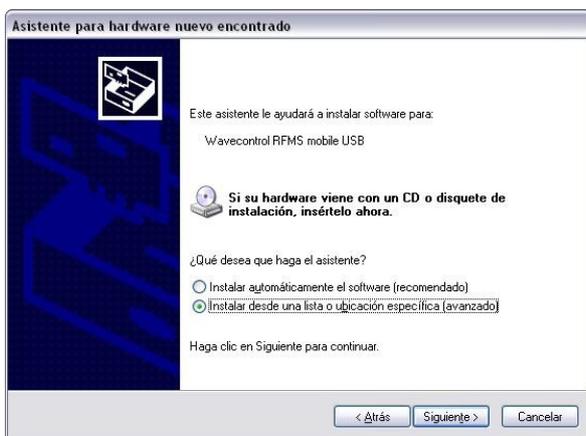


4 holes to fix
the converter

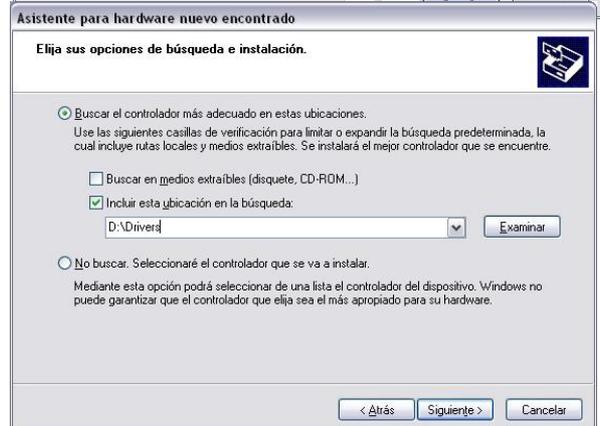
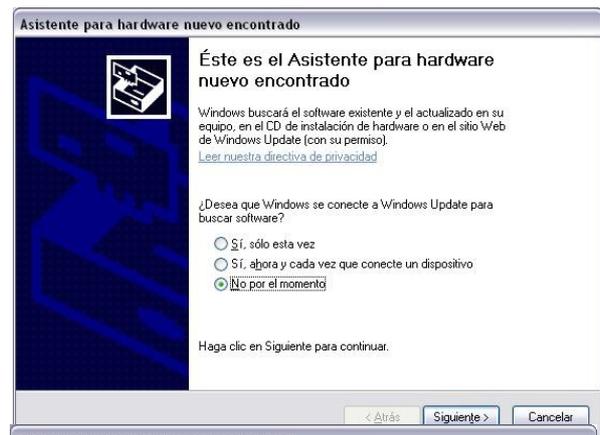
Appendix: Problem with drivers Installation

If you have any problems installing the drivers, they can be installed following the steps given by Windows when the USB is connected, as shown in the following images:

- 1) Connect the USB-mini USB cord to the PC and the **MonitEM**, respectively. Windows will automatically detect the new device. (Otherwise, go to Control Panel / System / Hardware / Device Manager, which should show an incorrectly installed device; right click on that device and update the driver.)
- 2) Do not allow Windows to find the driver automatically
- 3) Select "Install from a list or specific location"



- 4) Select "D:\Drivers" as the location, where D is the letter for the USD drive containing the software.
- 5) Wait until the driver has been correctly installed. Accept it if warns that it is not a certified driver.



- 6) If the driver is correctly installed and the device is connected to a computer, the list of COM ports will show the port associated with the SMP with the name 'USB Serial Port' (see Start / Control Panel / System / Hardware / Device Manager / Ports (COM & LTP)).

Appendix: APN example

	APN name	User	Password
España			
Movistar	movistar.es	movistar	movistar
Vodafone	airtelnet.es	vodafone	vodafone