VDG Supervisor

User's manual

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Contents

1. GETTING STARTED

VDG Supervisor is a software designed to be used with the Radon Monitoring Instrument (ref P-545-109) developed by ALGADE.

VDG Supervisor controls, reads, displays and converts the data recorded by the Radon Monitoring Instrument.

VDG Supervisor is configured in our workshop and adapted to the instrument it has to manage.

VDG Supervisor is delivered on a USB flash drive with an installation manual.

☛※ **This software has been tested with :**
- **Microsoft Windows 2000**
- **Microsoft Windows XP**
- **Microsoft Windows Vista**

1.1. SOFTWARE INSTALLATION PROCEDURE

☛※ *WARNING : In order to proceed with the **VDG Supervisor** installation, administrator privileges are required. Please contact your system administrator if needed.*
*Furthermore, when using **VDG Supervisor**, write privileges will be required in the installation directory.*

Execute the *Setup_VDG_Vxx.exe* installation program.
Follow the instructions to choose the installation language and the installation directory. Please choose a directory where the final user has write privileges.

The installation program will install the files on your hard drive. Upon completion, a shortcut to *vdg.exe* will be available in the Windows Start Menu.

1.2. USB DRIVERS INSTALLATION

☛※ *WARNING : In order to proceed with USB drivers installation, administrator privileges are required. Please contact your system administrator if needed.*

USB drivers will be requested by Windows when the Radon Monitoring Instrument is connected to a USB port of your PC for the first time. Please note that the installation procedure must be repeated if the Radon Monitoring Instrument is connected to a different USB port.

Windows 2000 Drivers Setup

a. When the USB cable is connected, a "Found New Hardware" message appears.
After a brief interval, this will be replaced by the "Found New Hardware Wizard" dialog box. Click Next.
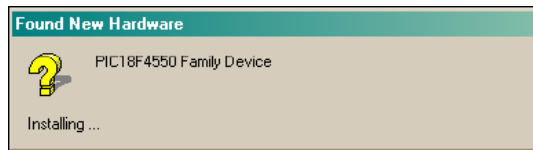
b. At the "Install Hardware Device Drivers" dialog box, select the "Search for a suitable driver" option. Click Next.
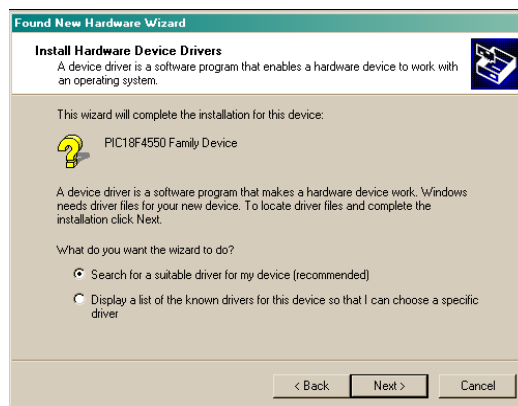
c. At the "Locate Driver Files" dialog box, select the "Specify a location" check box. Click Next.

d. At the next dialog box, click the Browse button to open the Windows Locate File dialog. Navigate to the installation directory of the **VDG Supervisor** software (by default C:\Program Files\Algade\VDG\)
Click Open to accept the location, and then click OK on the original dialog box.
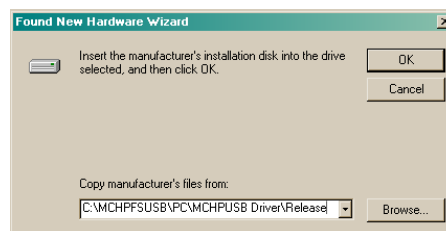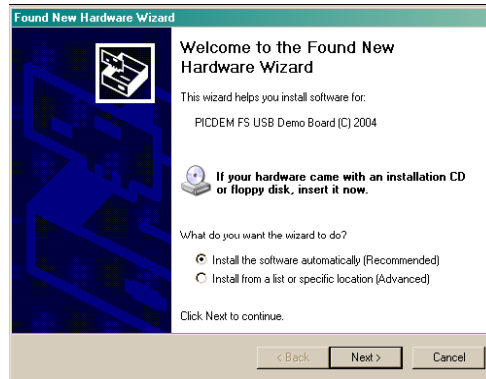

e. If a "File requested" panel appears, click the Browse button and navigate once again to the installation directory of the **VDG Supervisor** software.
Click Open to accept the location, then Next at the original dialog box.

f. After a brief interval, the final Hardware Wizard dialog will confirm that the driver has been installed. Click on Finish.

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Windows XP Drivers Setup

The USB driver installation process is similar to that of Windows 2000, but requires fewer steps.

a. After the USB cable is connected, Windows may attempt to connect to Windows Update to look for a driver. Select the "No, not this time" option and click Next.

b. The initial Hardware Wizard dialog box appears. Select the "Install from a list of specific locations" option. Click Next.

c. At the "Search and Installation Options" dialog, select the "Include this location..." option.
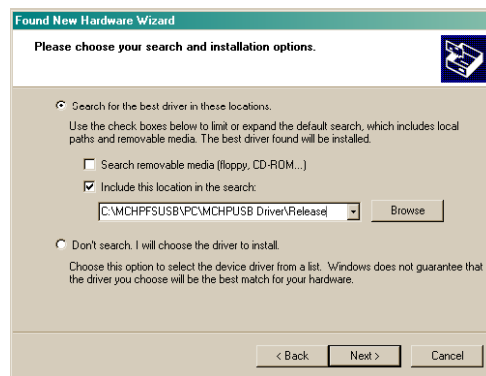
Click the Browse button to open the Windows Browse for Folder dialog box.
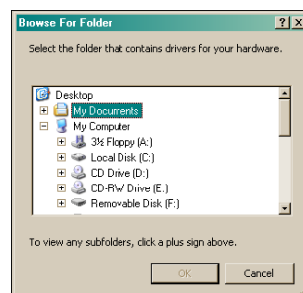
Navigate to the installation directory of the **VDG Supervisor** software:
Click OK to accept the location, then click Next on the original dialog box.
The system will search for the driver files.

d. If a "File requested" panel appears, click the Browse button and navigate once again to the **VDG Supervisor** installation directory: The system will copy and install the driver files and indicate when the process is finished. Click Next.

e. The final dialog box will indicate that the driver has been successfully installed. Click Finish.

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2. USING THE SOFTWARE

Run the **VDG Supervisor** application using the *Algade* icon or via the shortcut on the *Start Menu*.

The accessible functions are designated by the text in bold.
The paths will be given in the form : **command1 >> command2 >> command3**, i.e. : **File >> Export**.

The functions are accessible by a left click of the mouse or by the sequence *Alt* + Underlined letter.

After start up, the main screen appears. The following functions are accessible on the menu bar:

File	Probe	Display	Parameters	Maintenance	?
>> **Default Directory**	>> **Read All Data**				
Open	**Initialization**				
Close	**Configuration**				
Save As	**Test**				
Print	**Stop**				
Screenshot					
Merge					
Conversion					
Exit					

Nota: the **VDG Supervisor** software uses the following regional options:
- dot " ." as decimal separator
- date format dd/MM/aaaa   separator" / "
- time format HH:mm   separator " : "

Each time the **VDG Supervisor** software is started, these options are checked and modified if not adequate. These options can be changed manually by accessing the *Regional and language Options* panel on the Windows *Control Panel*.

2.1. FILE MENU

2.1.1. Default Directory
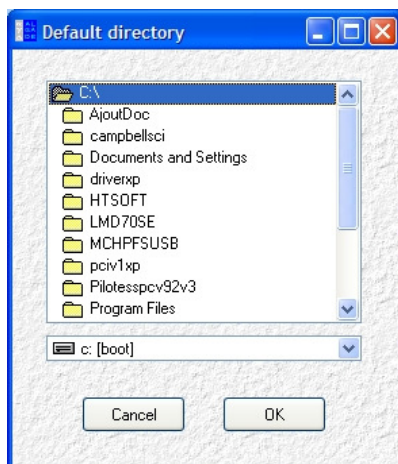
This panel defines the directory where the data files will be stored.

2.1.2. Open

A *vdg* file previously stored with the **File >> Save As** command can be loaded. Once it is loaded, the corresponding parameters can be viewed and measurements can be displayed as graphs on the main window (see sections 3 for more information about displaying and using graphs).

2.1.3. Save As

This command saves data previously read from the Radon Monitoring Instrument or loaded from an existing file. A *vdg* suffix is automatically added to the selected file name. This file contains all the parameters of the Radon Monitoring Instrument and the raw data recorded by the instrument.

2.1.4. Print

The graphs on the main window can be printed via this menu. Any comment can be entered as graph title. Then, the printer configuration is achieved via the standard Windows panel.

2.1.5. Screenshot

A bitmap file of the current graphs on the main window can be saved via this command.

2.1.6. Merge

This command merges several *vdg* files into one *vdg* file. This is useful in particular for Wireless Radon Monitoring Instruments that periodically send their measurements on a FTP server, which results in numerous small *vdg* files. Thus, these files can be joined into one big *vdg* file for easier data process.
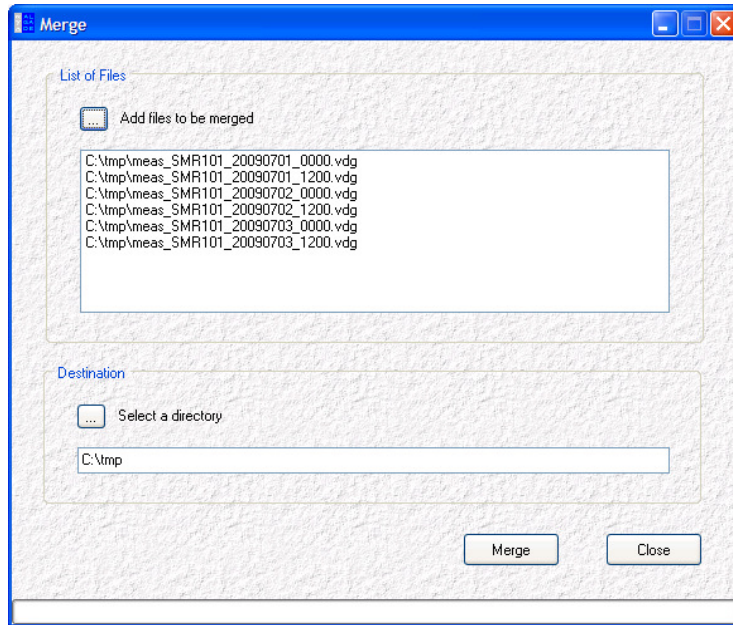
In the *list of files* section, click the [...] button to select several *vdg* files.

In the *Destination* section, click the [...] button to select the directory where the resulting file will be saved, then click *Merge* to start.

The name of the output file is *<name of the first file>_all.vdg*

2.1.7. Conversion

This command converts one or several *vdg* files previously read from the Radon Monitoring Instrument into *xls* or *txt* files.
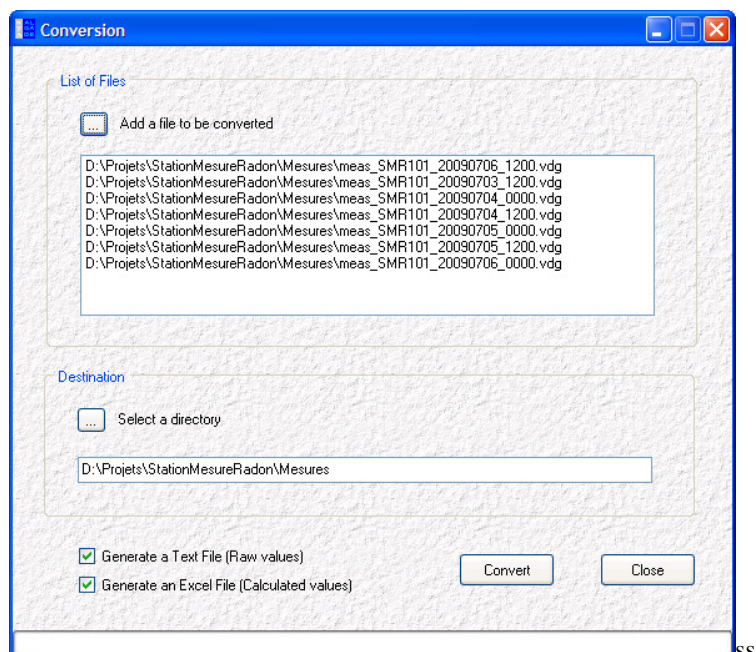
In the *list of files* section, click the [...] button to select one or several *vdg* files.

In the *Destination* section, click the [...] button to select the directory where the resulting files will be saved.

Tick the boxes as needed to choose the type of files that will be generated (raw or calculated). Click *Convert* to start conversion.

a) Excel file (xls):

This file can be opened with Excel and contains all the parameters of the Radon Monitoring Instrument and the calculated measurements, based on the sensors calibration coefficients.

File format:

The first area contains the parameters of the Radon Measurement Station:

```
HEADER
Probe Number          SMR100
Probe Type              60
Probe Configuration      8
etc…                    …
```

The second area contains the measurements:

MEASUREMENTS							
#Meas	Date/Hour	Radon 1 (Pulses/h)	Radon 2 (Pulses/h)	Radon 3 (Pulses/h)	Radon 1 (Bq/m^3)	Radon 2 (Bq/m^3)	Radon 3 (Bq/m^3) Etc…
0	13/04/2007 17:45	4	4	0	179	178	0
1	13/04/2007 18:00	0	4	4	0	178	177
2	13/04/2007 18:15	0	4	4	0	178	177
3	13/04/2007 18:30	4	4	0	179	178	0

The following data is available:

Measurement identification:

- **#Meas :** Up to 65536 measurements can be stored in the Radon Monitoring Instrument memory
- **Date/Hour :** In European format : *dd/mm/yyyy hh:mm*

Sensors data:

- **Radon (Pulses/h)**
- **Radon (Bq.m^{-3})**
- **Temperature (°C)** - OPTIONAL - This value is used for humidity and radon compensation.
- **Pressure** - OPTIONAL -
- **Humidity (%)** - OPTIONAL - This is the humidity inside the Radon Monitoring Instrument internal case. This value is used for radon compensation.
- **Sensor Supply (V)**: The sensor supply should be between 4.5 and 5 Volts during normal operation.
- **Shock Sensor** - OPTIONAL -
- **Battery Voltage (V)**: The battery voltage should be around 13 Volts (±2 Volts) for normal operation.

Status flags:

- **Connection**: When set to 1, this flag indicates a USB connection has occurred with *VDG Supervisor* since the previous measurement.
- **Pump** - OPTIONAL - For devices equipped with a pump. Set to 1 if the pump is sampling ambient air.
- **Heating** - OPTIONAL - Indicates if the temperature regulation has been activated (used to keep the internal temperature of the Radon Monitoring Instrument case above a minimum temperature)
- **Alarm 1** - OPTIONAL - Set to 1 if the volumic activity is between the alarm threshold #1 and the alarm threshold #2

- **Alarm 2** - OPTIONAL - Set to 1 if the volumic activity is greater than the alarm threshold #2
- **Alarm 3** - OPTIONAL - Set to 1 if the volumic activity is greater than the alarm threshold #3
- **Low Battery**: Set to 1 if there is a battery fault when the measurement is taken.
- **Power Supply** - OPTIONAL - For 220V devices only. Set to 1 in normal operation. If a power supply failure occurs, the Radon Monitoring Instrument runs on its internal battery and this flag is set to 0.
- **External Memory** - OPTIONAL - Set to 1 if an external memory module is connected.
- **Sensor Timeout**: Set to 1 if one or more sensors failed to reply during the previous measurement cycle.
- **Watch-Dog Error**: A 1 value indicates the electronic of the probe is out of order.
- **Watch-Dog Status** - NA
- **Clock Error:** A 1 value indicates the electronic of the probe is out of order.
- **Reset** : NA
- **FTP Error** - OPTIONAL – If the latest FTP transfer has failed, this value is not equal to 0.

b) Text file (txt):

This file can be opened with any text editor and contains all the parameters of the Radon Monitoring Instrument and all the raw measurements, without any calculation.

File format:

The first area contains the parameters of the Radon Monitoring Instrument (same format as Excel files)

The second area contains the measurements. The following data is available:

- **#Meas**
- **Date/Hour**
- **Battery Voltage**
- **Master Status**
- **Reset Status**
- **FTP Error**
- **Radon**
- **Pluviometer**
- **Temperature**
- **Pressure**
- **Sensor Supply**
- **Humidity**
- **Sensor Status**

2.1.8. File > Exit

This command terminates the **VDG Supervisor** software. If some data has been read but not saved, a confirmation box allows the user to choose whether he wants to ignore the current data or save them as a *vdg* file.

2.2. PROBE MENU

2.2.1. Read All Data

This command allows the user to read all the measurements that have been recorded by the Radon Monitoring Instrument since the latest initialization, along with its parameters.

Data can then be displayed (See sections 2.3 and 3 for more information about displaying and using graphs), saved as a *vdg* file or converted into a *xls* or *txt* file.

2.2.2. Initialization

This command starts a complete initialization cycle. The Radon Monitoring Instrument will not take measurements until it has been initialized with this command.

First, the Radon Monitoring Instrument internal clock can be checked and modified if necessary.
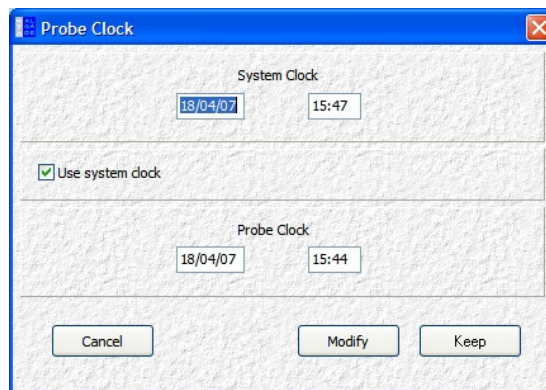
Check the "*Use System Clock*" box to set the clock according to the PC internal clock.
Click the *Modify* button to set the clock or the *Keep* button to leave the clock unchanged.

The initialization panel then appears. This panel displays all the current parameters of the Radon Monitoring Instrument and allows the user to modify the following ones:

a) On the *Master>>Measurement* tab:

- **Measurement period**: This is the Integration Time (P) and ranges from 1 to 240 minutes.

b) On the *Master>>Network* tab (Wireless instruments only)

- GPRS connection parameters
- Connection Time and period for GPRS connection
- FTP parameters for automatic data retrieval on a FTP server
- SMTP parameters for e-mail service

Refer to section 4 for a detailed description of these parameters.

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c) On the *Master>>Comments* tab, 240 characters are available for any user comments:
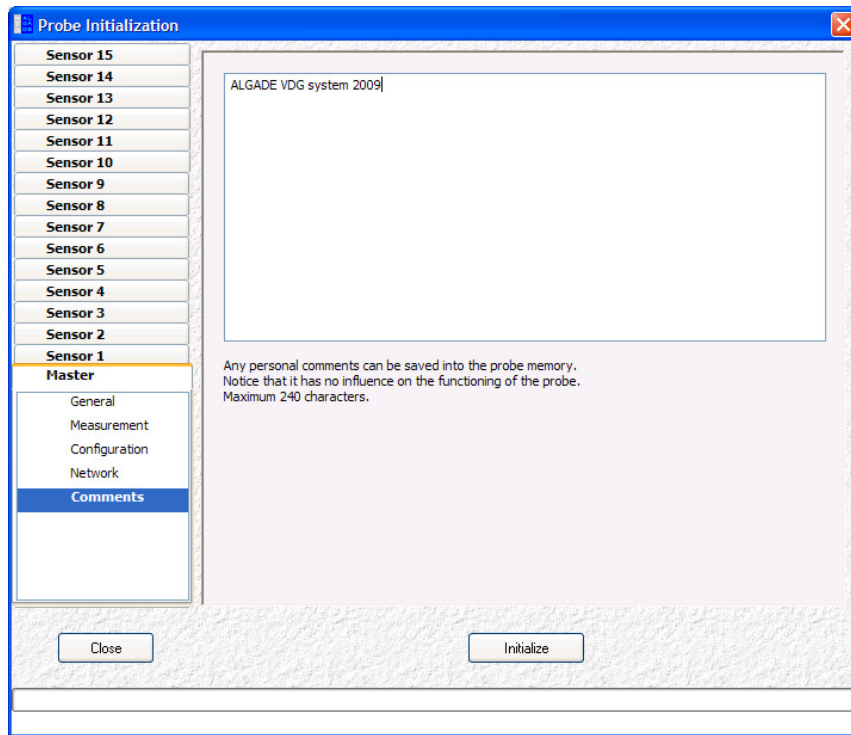
Nota: All other parameters are used for factory configuration of the Radon Monitoring Instrument and can be modified by authorized personnel only.

Finally, click the Initialize button to start the initialization procedure:

- previous measurements are erased from the memory of the Radon Monitoring Instrument
- current parameters are erased
- new parameters are written into the Radon Monitoring Instrument memory
- acquisition is started.

Warning: All data in the Radon Monitoring Instrument memory will be lost during the initialization procedure. Please, make sure you have read and saved all the previous data before starting this procedure.

The acquisition will take place periodically, according to the selected measurement period. Moreover, to make it easier to interpret the measurements, the acquisition will start up at a whole fraction of an hour:
- Period = 5 minutes: Start-up at T=0 modulo 5 minutes (i.e. 0, 5, 10, 15, etc…)
- Period = 10 minutes : Start-up at T=0 modulo 10 minutes (i.e. 0, 10, 20, 30, 40, 50 minutes)
- Period = 15 minutes : Start-up at T=0 modulo 15 minutes (i.e. 0, 15, 30, 45 minutes)
- Period = 30 minutes : Start-up at T=0 modulo 30 minutes (i.e. 0, 30 minutes)
- Period = 60, 120, 180 and 240 minutes: Start-up at T=0 minutes.

Example: If started at 2:07 pm with a 15 min period, the Radon Monitoring Instrument will stay idle until 2:15 pm, then the acquisition will start at 2:15 pm and the first measurement will be available at 2:30 pm.

Measurements will be stored in the instrument's internal memory until it is full. A memory reset is needed from time to time, otherwise, memory will finally be full and no more measurement will be saved. To reset the instrument memory, a new initialization is needed.

For Wireless Radon Monitoring Instruments, a memory reset can be done remotely (see section 4.5 for more information).

2.2.3. Stop

The Radon Monitoring Instrument is stopped and goes into sleep mode. An initialization procedure will be necessary to start the acquisition again.

2.2.4. Configuration

Reserved for maintenance purposes. The user must contact Algade to obtain a time-limited access to this functionality.

2.2.5. Test

Reserved for maintenance purposes. The user must contact Algade to obtain a time-limited access to this functionality. This panel allows two operations for troubleshooting.
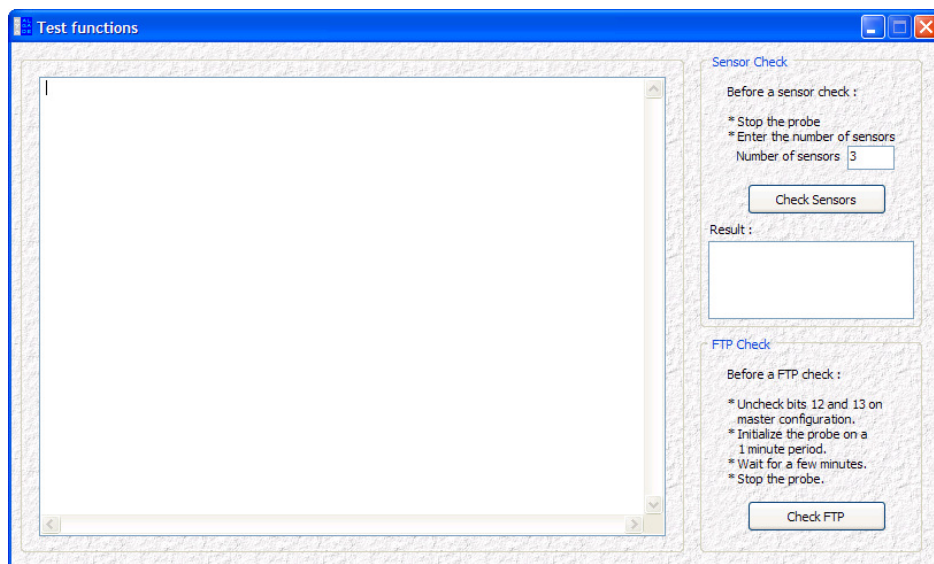
Sensor check

To check communication between the Radon Monitoring Instrument main case and the radon probes:

  a) Stop the instrument (Menu *Probe>>Stop*)
  b) Enter the Test panel (Menu *Probe>>Test*)
  c) Enter the number of radon sensors.
  d) Click *Check Sensors*.
  e) The Result box displays status for each sensor : OK or ERROR

### FTP check (For Wireless Instruments only)

WARNING: THIS OPERATION MUST ONLY BE DONE UNDER THE SUPERVISION OF AN ALGADE AGENT. THIS PROCEDURE MAY DAMAGE THE INSTRUMENT IF NOT FOLLOWED CORRECTLY.

To check if FTP transfer via GSM modem is operating properly:

a) Enter the configuration panel (Menu *Probe>>Configuration*)
b) Click *Read* to get the parameters from the Radon Monitoring Instrument
c) On the *Master>>Configuration* tab, un-tick bits 12 and 13

d) Click *Write* to update the parameters
e) Close the configuration panel and initialize the instrument with a 1 minute period (Menu *Probe>>Initialization*).
f) Wait for a few minutes, as the instrument will take some measurements.
g) Stop the instrument (Menu *Probe>>Stop*)
h) Press the reset button on the electronic board inside the Radon Monitoring Instrument to reset the system
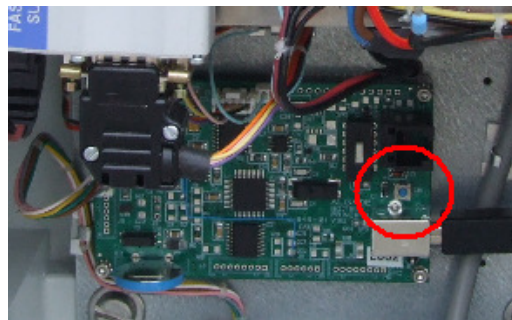
i) Enter the Test panel (Menu *Probe>>Test*)
j) Click *Check FTP* to start a FTP transfer. The red led on the modem of the Radon Monitoring Instrument should be on. After a few seconds, it should start blinking.


k) Wait for 5 minutes (The red led on the modem of the Radon Monitoring Instrument turns off when transfer is complete)
l) If the red led is still on after 5 minutes, restart the procedure from step h)
m) Connect to the FTP server with a web browser to check that the *vdg* file has been transferred.
n) In **VDG Supervisor**, return to the configuration panel (Menu *Probe>>Configuration*), re-tick bits 12 and 13 (*Master > Configuration* tab), and click *Write*.

o) Close the configuration panel and initialize the instrument with the correct measurement period (Menu *Probe>>Initialization*).

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2.3. DISPLAY MENU

This command opens the **Display** panel:
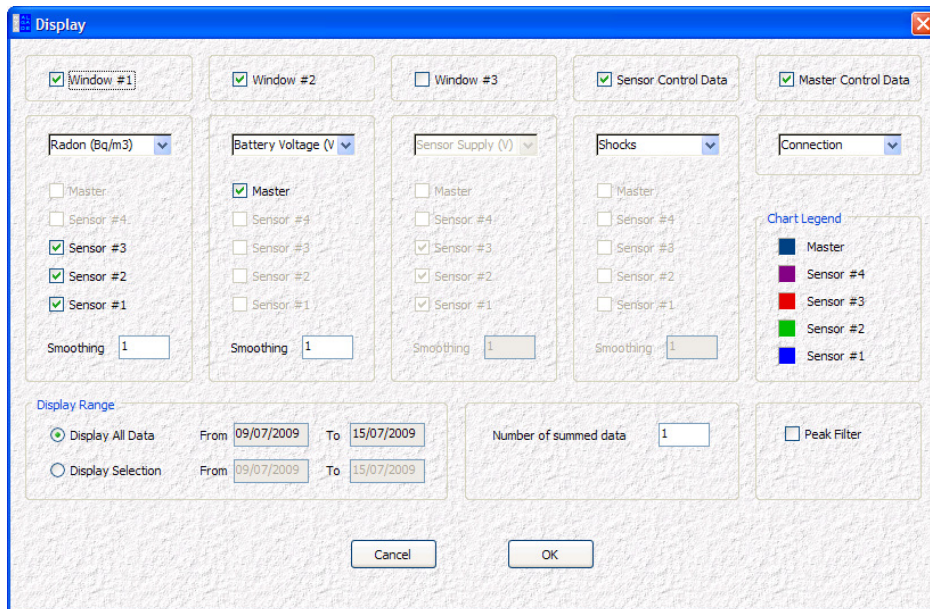
This panel also opens automatically after a *vdg* file has been opened with the **File >> Open** command or after having read the Radon Monitoring Instrument with the **Probe >> Read All Data** command.

The **Display** panel manages the representation of the values recorded by the Radon Monitoring Instrument. The representation will be divided into 1 to 4 windows. All the windows displayed simultaneously are temporally interdependent both for modifications of time scale and for curser moves.

- The *Window #X* checkbox defines whether each window will appear on the main window or not. For each window, a data type to be displayed must be selected in the corresponding **list box**.

- The *smoothing* coefficient associated with each curve is set in the "*smoothing*" box. A coefficient of 1 corresponds to the raw curve. Smoothing is carried out by a sliding average on the number of measurement points displayed in this area (from 1 to 10).

- The color associated with each sensor can be modified by clicking on the color boxes.

- The *Display Range* selects the time interval to be displayed.

- The *Number of summed data* parameter (from 1 to 20) can generate a display and file outputs at multiples of the integration time. For example, a display on a step of 1 hour can be obtained from an acquisition made on an integration step of 15 minutes by entering 4 as "*Number of summed data*".

- *Peak Filter* function : When the Radon Monitoring Instrument is used in electrically harsh environments (for example, electromagnetic interferences, GSM or radio communications being made very close to the Instrument, etc…), its radon detector may show abnormal peaks which does not correspond to radon signals. The "*Peak Filter*" function is used to filter these parasites when displaying a radon graph.

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2.4. PARAMETERS MENU

This command is accessible after having loaded a previous *vdg* file with the **File >> Open** command or after having read the Radon Monitoring Instrument with the **Probe >> Read All Data** command. The current parameters are displayed.

Nota: the parameter panel is the same than the one displayed during the initialization procedure excepted that no parameter can be modified.

2.5. MAINTENANCE MENU

Access to maintenance functions is restricted by a password. This function allows modification of the internal parameters of the Radon Monitoring Instrument, and is accessible by authorized personnel only.
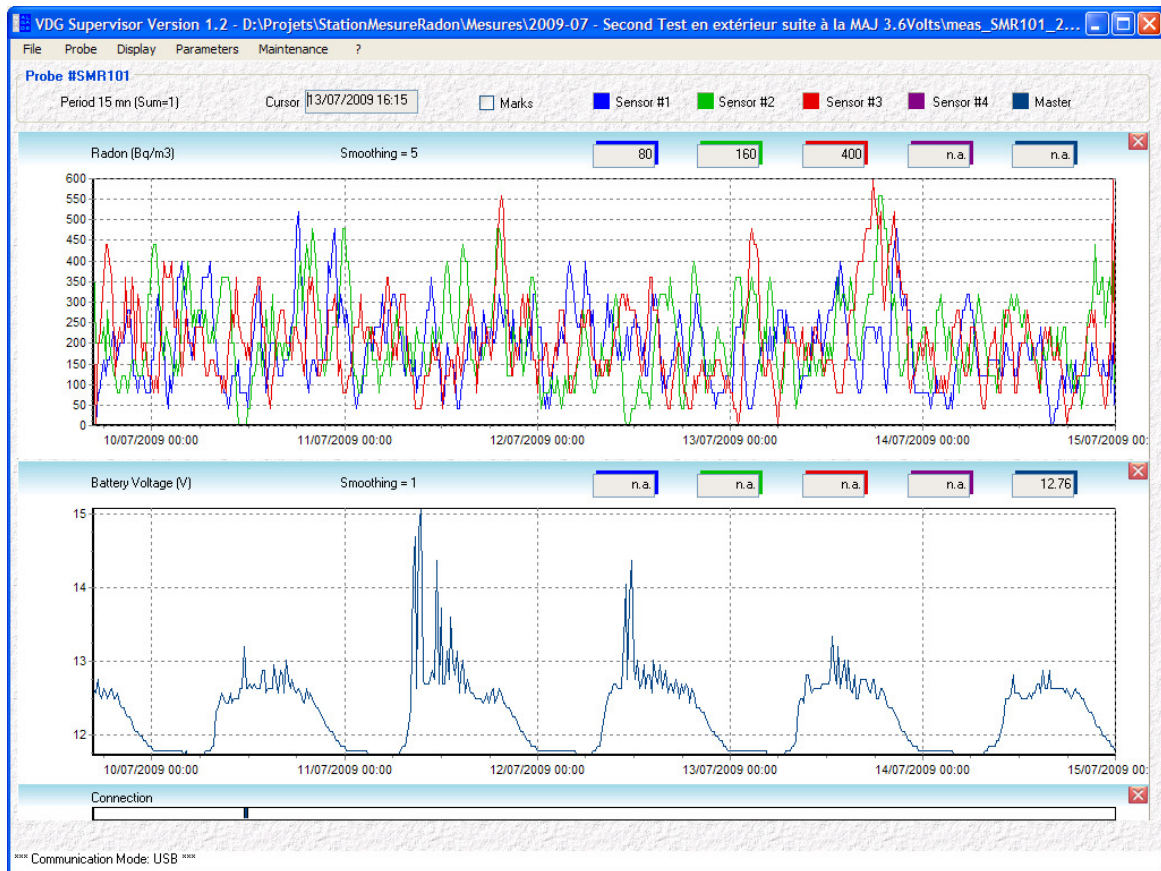
2.6. ABOUT (?) MENU

3. USING GRAPHS FUNCTIONS

Marks checkbox: Displays the measurement dots on the curves.

Zoom function: Left-click on the chosen graph and draw a rectangle from the upper left to the bottom right to zoom in the desired area. Left-click on any graph and draw an inverted rectangle (from the bottom right to the upper left) to zoom out and go back to the whole curves.

Scroll function: Right-click on a graph and move in any direction to scroll along the time axis.

Scale function: A click on any axis opens the **Scale** window, which allows manual adjustment of the horizontal scale for all time axis and vertical scale for the corresponding Y axis.

4. ABOUT WIRELESS INSTRUMENTS

4.1. INTRODUCTION

Radon Monitoring Instruments equipped with a GSM modem automatically upload their measurements to a FTP server, eliminating the need for the user to go on site to read each instrument. Measurements can be accessed from any computer in the world, using a simple internet connection and any web browser.

Mobile service subscription must be chosen carefully, as Mobile Service Providers offer many types of subscriptions.
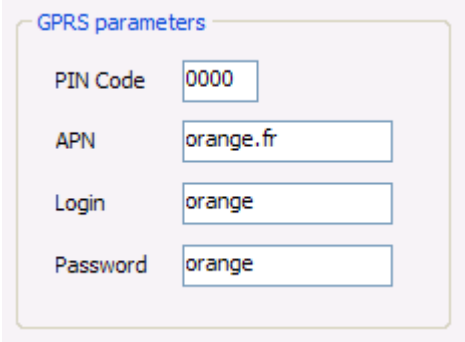In our case, the SIM card must allow internet connection via GPRS network for data transfer. Typically, this type of subscription is called M2M (Machine To Machine) subscription but each provider can have its own naming convention.

Make sure the SIM card used with the Radon Monitoring Instrument has already been activated. Most of the time, for security reasons, Mobile Service Providers ship non-activated SIM cards to their customers. In that case, an activation procedure must be followed to activate SIM card. Contact you Mobile Service Provider for more information on that subject.

4.2. CONFIGURATION

During the initialization cycle (see section 2.2.2), correct parameters must be entered on the *Master>Network* tab to configure a Wireless Radon Monitoring Instrument.

4.2.1. Mobile Service Provider Parameters

PIN Code: Enter the code corresponding to the SIM card which is inserted into the GSM modem of the Radon Monitoring Instrument (This code is usually 0000 for a brand new card).
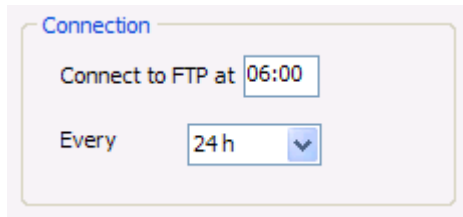
Warning: The Radon Monitoring Instrument does not allow the modification of an existing PIN Code. To change the PIN code of a SIM card, the easiest way is to insert the SIM card into a mobile phone.

APN (Access Point Name), **Login** and **Password:** These parameters enable a modem to establish a mobile internet connection via GSM network. They are given by your Mobile Service Provider or they can be found on internet databases such as:
http://www.quickim.com/support/gprs-settings.html
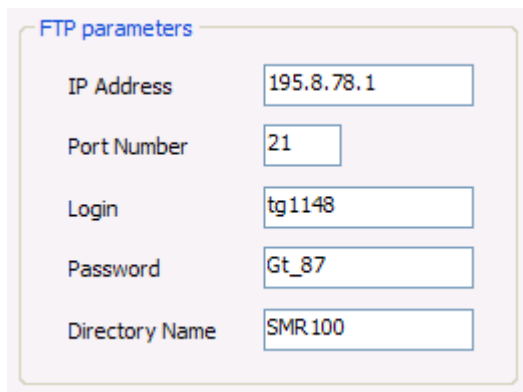or http://www.taniwha.org.uk/gprs.html

4.2.2. Connection time parameters

If the connection period is less than a day, a predefined time will be used:
- If period = 4h, connection will be made every day at midnight, 4 am, 8 am, noon, 4 pm and 8 pm.
- If period = 8h, connection will be made every day at midnight, 8 am, noon and 8 pm.
- If period = 12h, connection will be made every day at midnight and noon.

If the connection period is 24 or 48 hours, connection hour can be selected as desired (minutes are set to 00 and cannot be modified).

4.2.3. FTP parameters
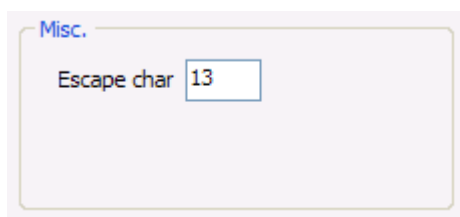
IP address: The IP address must be entered in numeric format as shown above.

Port Number: Port number 21 is usually reserved for FTP transfers.

Login and **Password**: A user must be declared on the FTP server.

Directory Name: Once logged in the FTP server, the Radon Monitoring Instrument will transfer files in this directory.
Warning : This directory must be created manually on the FTP server, as the instrument cannot create a new directory by its own.

During file transfers, line feeds (character #10) and control returns (character #13) are not transmitted in the same way for all FTP servers. The *Escape char* parameter allows to adapt the file transfers initiated by the Radon Monitoring Instrument to the FTP server.

4.2.4. SMTP parameters

These parameters are reserved for future applications using e-mail service to transmit data, alarms or other information.

4.3. ACCESSING MEASUREMENTS ONLINE

FTP servers can be accessed with any web browser or with a dedicated software.

NB: Web browsers are usually not convenient for FTP operations. A dedicated software is recommended for FTP operations, allowing multiple file transfers at the same time, creation or deletion of directories, synchronization with local hard drive, etc…

**Example with Internet Explorer:**

Open your web browser and enter the FTP server address in the address bar. The address can be entered either as an IP address (numeric format preceded by "ftp://") or as a web address (alphanumeric format) :

For example: ftp://195.8.78.1 or ftp://ftp.algade.com

Enter your login information. The username and password must be the same than the ones configured in the Radon Monitoring Instrument ("*FTP parameters*" in the *Master > Network* tab, see section 4.2.3).

The content of the FTP directory is displayed.

*Warning: Files must be downloaded on the local hard drive before opening them with **VDG Supervisor**.*
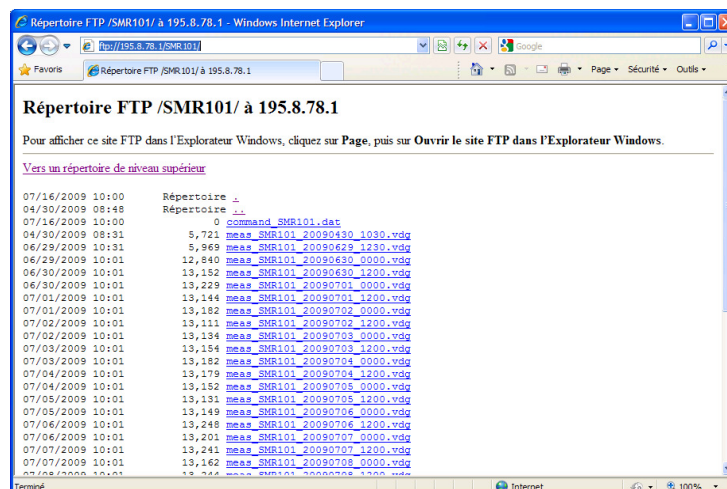
NB : If the latest files do not appear, click *Refresh* (or press F5) on your browser to refresh the page.

4.4. MANAGING VDG FILES

Once downloaded from the FTP server, vdg files can be opened with **VDG Supervisor** software as any file which has been read directly from the Radon Monitoring Instrument via its USB port.

Files located on the FTP server respect the following naming convention:

meas_<station name>_<date of transfer>_<time of transfer>.vdg

Format of the date of transfer is: YYYYMMDD
Format of the time of transfer is: hhmm

For example, a file transferred by station #SMR101 on July 15, 2009, at 00:00 will be named:
`meas_SMR101_20090715_0000.vdg`

4.5. REMOTE OPERATIONS

To alleviate the need to go on site and make a direct connection via USB, some simple operations can be done remotely, using FTP server:

In the directory where *vdg* files are transferred, create a file named: *command_<station name>.dat*

For example, for Radon Monitoring Instrument #SMR101, the file must be named:

`command_SMR101.dat`

Commands can be entered in this command file. On the next connection of the Radon Monitoring Instrument to the FTP server for data download, it will successively read the command file, execute the remote commands found in the command file, empty the command file and then continue the acquisition as usual.

The command file does not need to be deleted manually, as it will have no effect on the instrument once it is empty.

4.5.1. Memory reset

If the Radon Monitoring Instrument is configured to keep all measurements in its internal memory, it is necessary to reset the instrument memory from time to time. Otherwise, memory will finally be full and no more measurement will be saved.

NB : With a 15 minutes acquisition period and 3 VDG radon probes, the instrument memory can store up to 21 months of measurements.

In the probe command file, enter the "Set Memory" command:

`SM`

followed by a carriage return (i.e. press "Enter" key) and save the command file.

4.5.2. Clock update

In the probe command file, enter the "Set Date" and "Set Time" commands:

```
SThhmm
SDddMMYY
```

followed by a carriage return (i.e. press "Enter" key) and save the command file.

For example, to set the probe to July 14, 2009 at 12:00, enter:

```
ST1200
SD140709
```

4.6. ERROR MANAGEMENT

Software error management guarantees that no measurement is ever lost in case of GPRS or FTP server failure.

If GPRS network or FTP server is temporarily unavailable (or unstable), the Radon Monitoring Instrument keeps trying to complete its data transfer, at every measurement period, until it succeeds or until it fails 8 times in a row.

If the connection has failed 8 times in a row, the instrument will wait for the next planned transfer.

When connection finally succeeds, the instrument uploads all the measurements that have been taken since the last valid transfer.

For example :
Measurement period is 1 hour, connection is made each day at noon and a GPRS network failure occurs and lasts for a whole day : The instrument will try to upload its measurements each hour, from noon to 8 pm, then, it will wait for the next day at noon to try again. Then, if it succeeds, measurements from the last two days will be uploaded on the FTP server.

NB : When GPRS network is unstable, connection may be lost during the upload process. In that case, incomplete *vdg* files may remain on the FTP server. These files cannot be opened with **VDG Supervisor** and should be manually deleted from the FTP server.