

OMC-Programmer 2010

OMC Data logger programming utility
OMC-045-II & OMC-045-III

User manual



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Introduction.

This manual is intended to guide you through OMC-programmer in able to program your OMC-045 Datalogger. Setting up the OMC-045-II & OMC-045-III configuration is pretty similar, but OMC-045-III users will have more functionality available.

OMC-programmer is a utility, which will make programming your data logger a lot easier. Most functions are straight forward, but some require some attention. We recommend you study this manual, so you will get the most out of your data logger.

You will find a getting started chapter, which will help you to make a simple configuration with some examples. The example configurations can also be downloaded from our support site. Following this guide will give you the basic knowledge how to program your data logger. Further more you will find the help pages of each function in OMC-programmer, they will also popup when you press [F1] on the particular page.

Do not hesitate to contact our servicedesk if you need assistance or have any questions. Do this preferable by email (service@observator.com) and include the following:

- your configuration
- Serial number of the OMC-045-III
- Version of OMC-programmer
- Build (firmware version) of the OMC-045-III

Getting started.

A basic Email configuration.

First you should decide what you actually want. You want to have data. In order to get this you will need sensors, those sensors will have to be powered and the signals have to be read by the OMC-045-II(I). The data has to be stored in certain intervals. And the data has to be transferred a database, by GPRS, Radio, Satellite etc.

So, what do we need to know:

- What data do we want to collect.
- What sensors are we going to use in order to get this data.
- Which sample rate will we use.
- How are we going to transfer the data (email, FTP, Radio or just on SD card etc.)
- Is the site powered by mains or batteries (what power mode do we use)
- Do we power the sensor through the OMC-045-III
- Etc...

In order to understand how the OMC-045-III works, we start with a basic example how the data is acquired. We assume the sensors are powered through the OMC-045-III, it's a lower power (battery power) situation and the data is transferred through email by GPRS.

We store data once an hour and transfer the data twice a day.

1. The OMC-045-III sleeps in this situation as much as possible, it wants so save energy!
2. The OMC-045-III wakes up, and powers the sensor. A sensor usually has a warm up time before starts sending sensible data or any data at all, this time is set with the **power delay**.
3. After the warm up time, the OMC-045-III expects data within the time set in **normal sample rate**. It will retry once if no data is received. The data will be stored on the SD card.
4. The OMC-045-III will get back to sleep for an hour (minus the used time for powering the sensor and logging) this interval is set in **Log Data to SD Card**.
5. The data will be send every 12 hours, so the 12th cycle will include the Email routine, this interval is set in **Email data**.

We use Email in this example, since this is easier to play with in this stage. A FTP server will be much more reliable, so we recommend FTP whenever possible. Email suffers from spam filters and antivirus software, which can make it slow and unreliable.

Let's start with a simple configuration: the OMC-045-III has several internal sensors, so we can make a configuration, without any sensors attached.

What do we want?

- Monitor the battery voltage
- Monitor the internal temperature
- Store the data once a minute
- Send the data by email once every 5 minutes

What do we need?

- An OMC-045-III (with gprs antenna, SD-card and USB cable)
- A power supply (or battery)
- A simcard and the GPRS login details of your provider.
- OMC-Programmer (download the latest version from our support page)
- A pc with Windows (XP, Vista or 7)

Check your sim card has **NO** pin code enabled, test it in a cell phone if you are in doubt, disable the pin code via your cell phone if it was enabled. If possible test the gprs (internet) settings as well.

- Install OMC-programmer.
- Power the OMC-045-III (see hardware section for connections).
- Connect the USB cable to the OMC-045-III and your PC.
- The first time Windows will ask you to look for a driver, say 'yes'.
- Windows will recognize the OMC-045-III
- Start OMC-programmer
If you get the Start screen instead of the one underneath, select OMC-programmer.

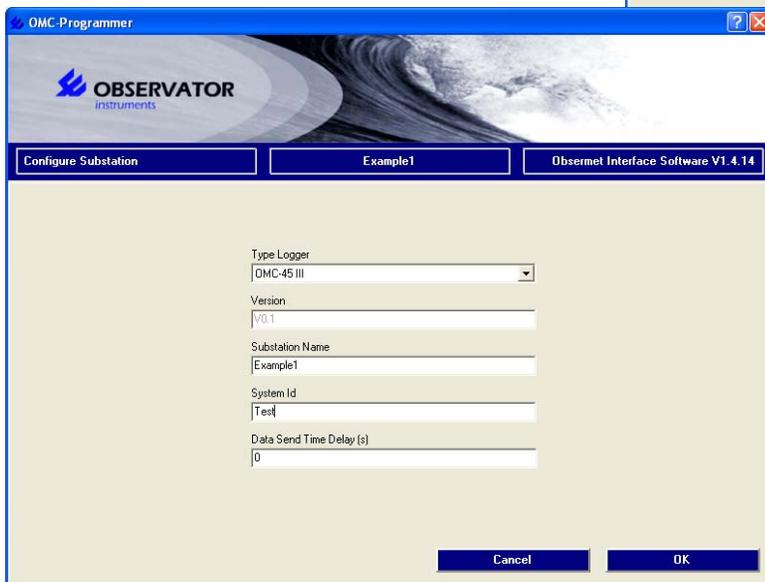
Select: Configure Substation



Select: Empty Configuration



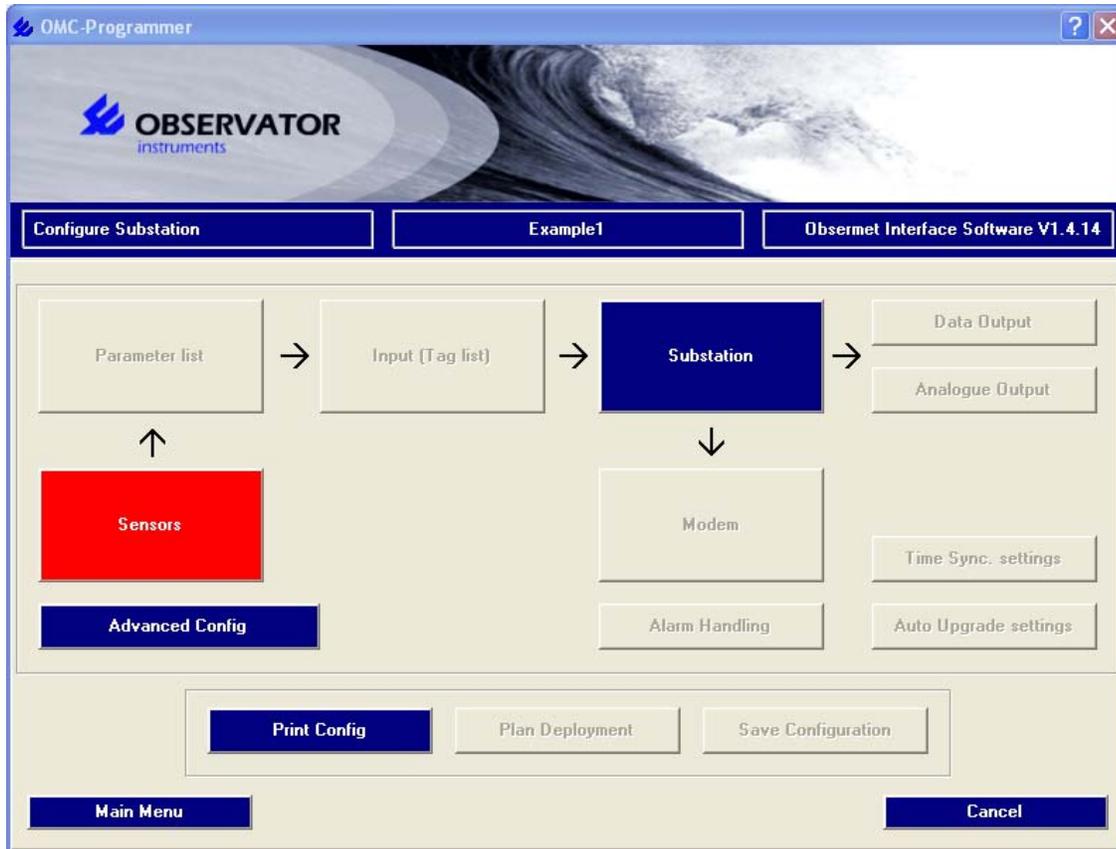
Select type logger: OMC-045-III



You will be required to name the Substation and give it an ID, you could use 'Example1' & 'Test'.

Click: **OK**

The following flow diagram will appear and you see 'Sensors' in red, to indicate you should start here.



Click on **Sensors**:



select 'Internal' in the left column by double clicking (or 1 click + add).

Internal will move to the right column.

Click **OK**.

Click: **Parameter list**



In the right column you'll find the selected parameters, in the left the available unselected.
OMC-programmer has selected some parameters by default and more then we wanted for this example, so we will have to remove some:

All we want the **(case) temperature** and the **V Batt** (Battery voltage).

Click on the other parameters one by one followed by **Remove** until you have only both left.



Click **OK**

The next step is the **Input (Tag list)**.



In here you see the selected parameters.
Double click on:
Internal Case temperature

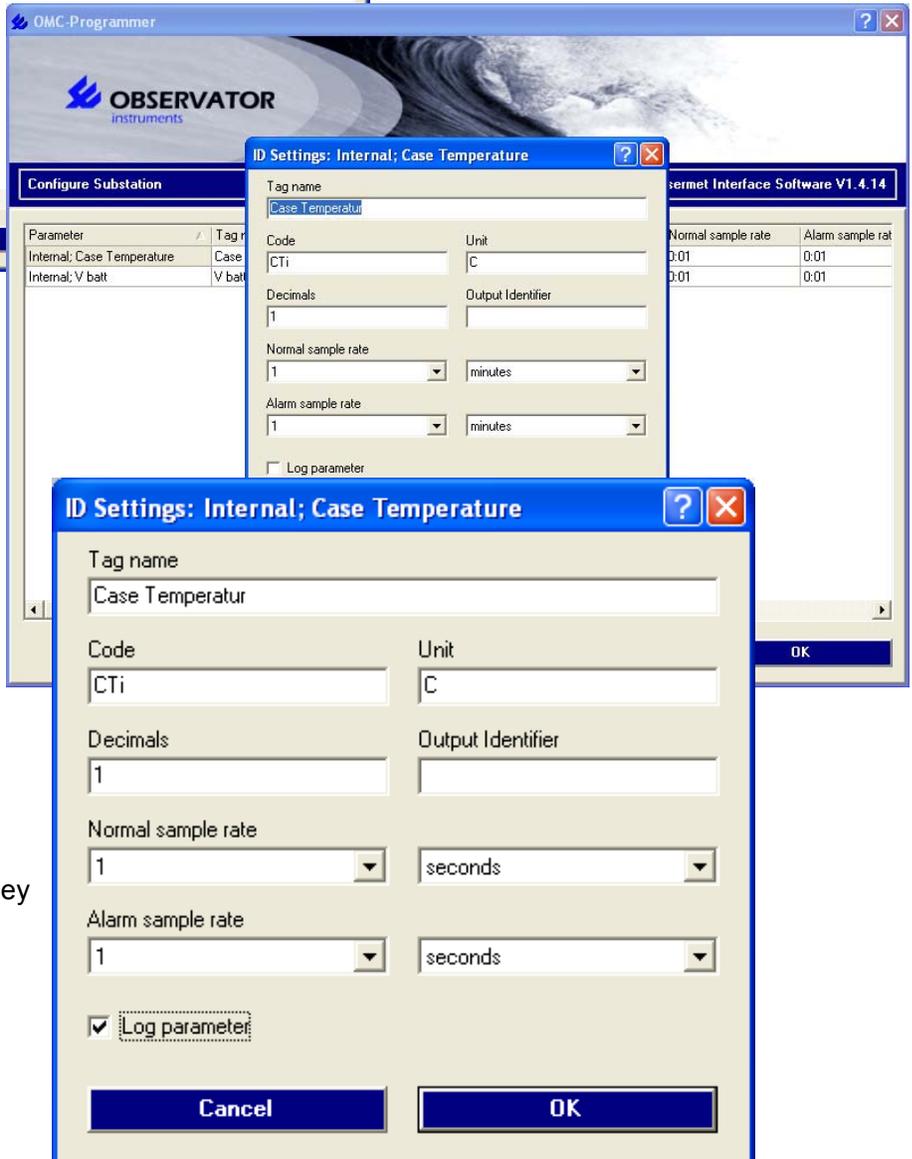


You see in here the normal and alarm sample rate. The OMC-045 offers you the option to define an alarm situation, but we will skip this part for now. The internal temperature will be immediately available, so we can set the sample rate for normal on 1 second. Change minutes to **seconds** and select **1**. OMC-programmer does not allow you to use a longer sample rate for the alarm rate, so you will have to set this one also to **1 second**. We want to log this parameter, so we have to tag **'Log parameter'**.

It should look like this:

All other settings are fine the way they are, we will explain them later.

Click: **OK**



Now do them same for **V batt**.

You will notice that the interval for Internal Vbatt has already changed to 1 s. The sample rate will always be selected for the sensor, so all the parameters from one sensor will have the same sample rate.

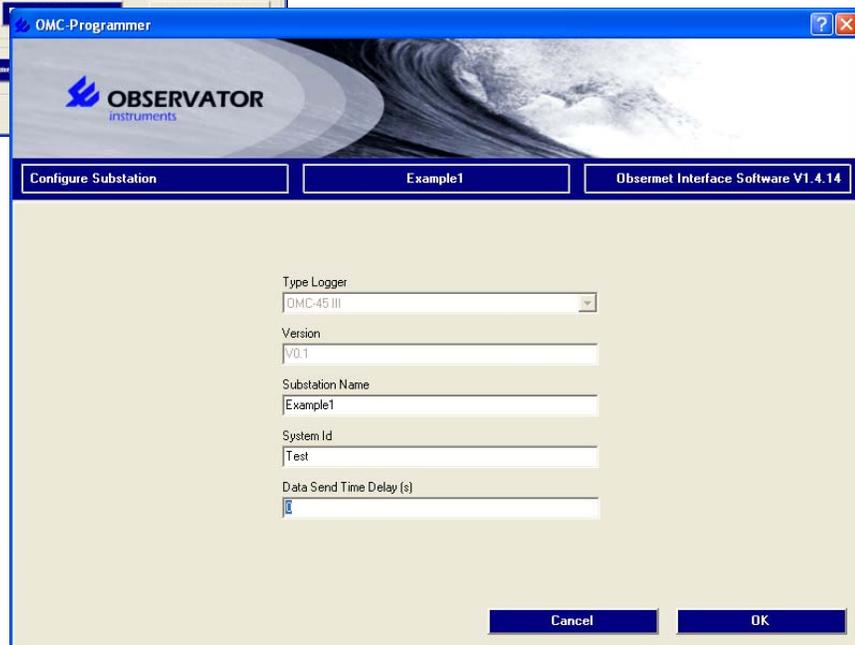
All you have to do is: **tag Log parameter** and click: **OK**.



and click **OK** again....



Next step is Substation: we have no need to change anything here, just make sure the Data Send Time Delay is set to 0.



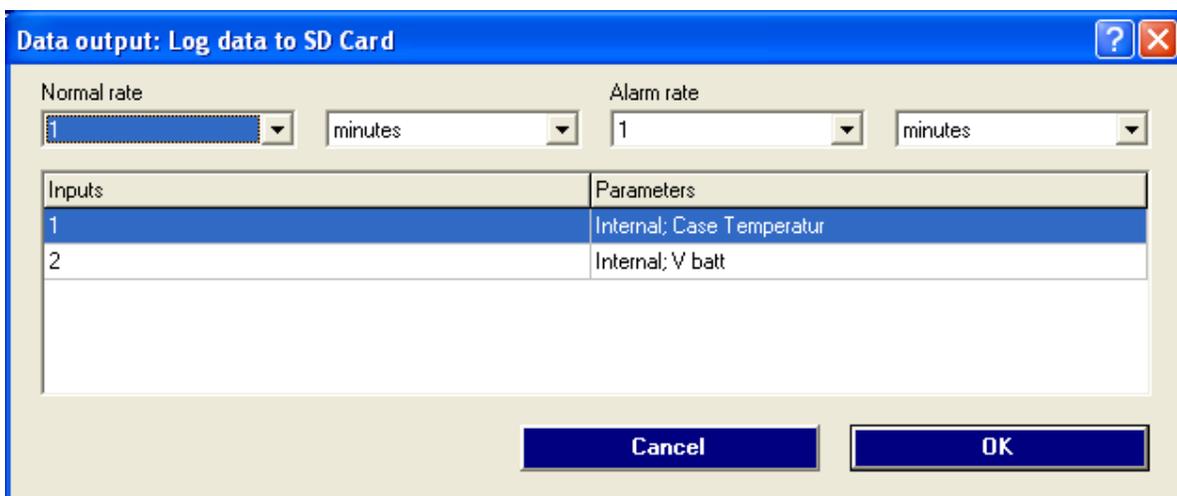
Click: **OK**

Next is **Data Output**:



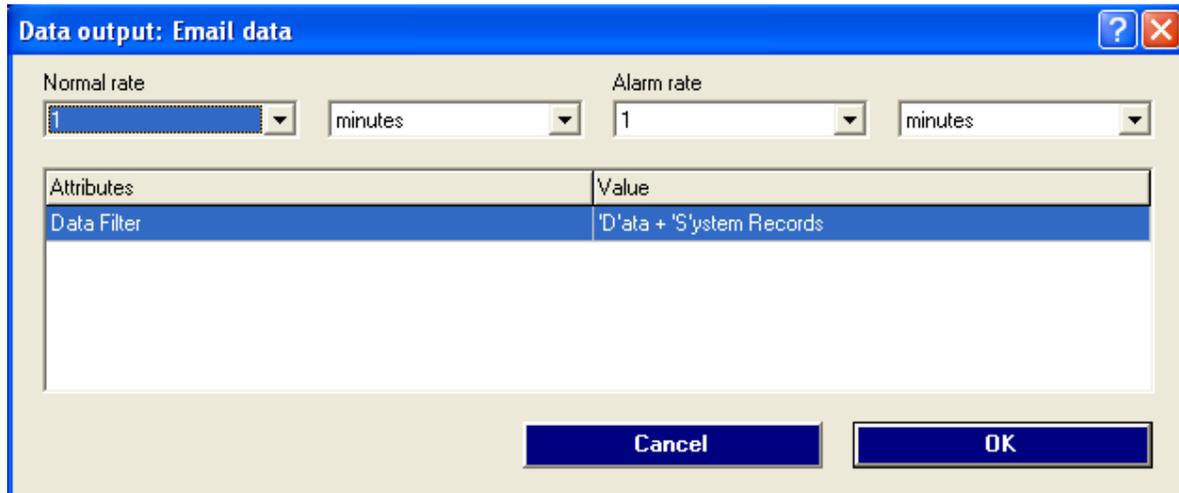
We have '**Log data to SD Card**' in the right column and several other options in the left.

Double click on **Log data to SD card**. It should give you a list of the 2 parameters we want to log and a normal & alarm rate. This is the actual rate in which we will store data, do not confuse this with the sample rate used in 'Input (Tag list)' (which is more or less your sensor sample rate). We want to store data once a minute so set these values to 1 minute if they aren't already.



Click: **OK**

We also want to email the data, so double click 'Email data' in the left column to move it to the right. Double click **Email data** to open it (or click once and click **Advanced**).



Data output: Email data

Normal rate: 1 minutes | Alarm rate: 1 minutes

Attributes	Value
Data Filter	'Data + System Records'

Buttons: Cancel, OK

Now we can set the email rate, which we want at 5 minutes (we are testing and want quick results) so change at least the normal rate to 5 minutes (the alarm rate we won't use in this example, as long as it is \leq normal, OMC-programmer will accept it).

Next we can also choose what we would like to mail, we definitely want Data, but we can also add System records and Raw data. In our example Raw data is of no use (only if you have serial devices connected) and system system records are only useful for debug information (if you experience problems and request our support, these records can be very useful for our support engineers). In this example we only want data records: Double click on **Data filter** and select '**D**'ata records' followed by **OK**.

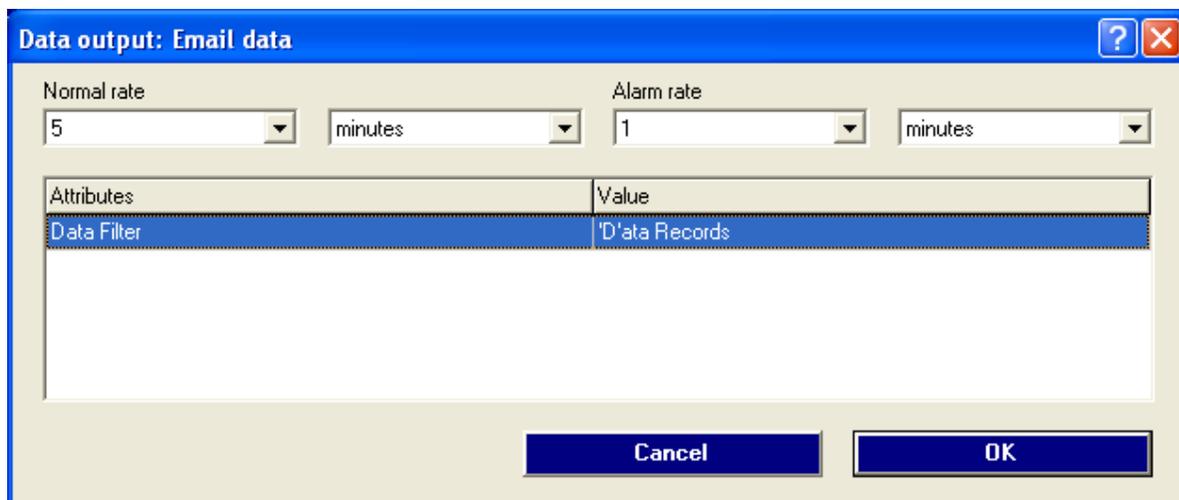


Edit value: Data Filter

Data Records

Buttons: Cancel, OK

It should look like this:



Data output: Email data

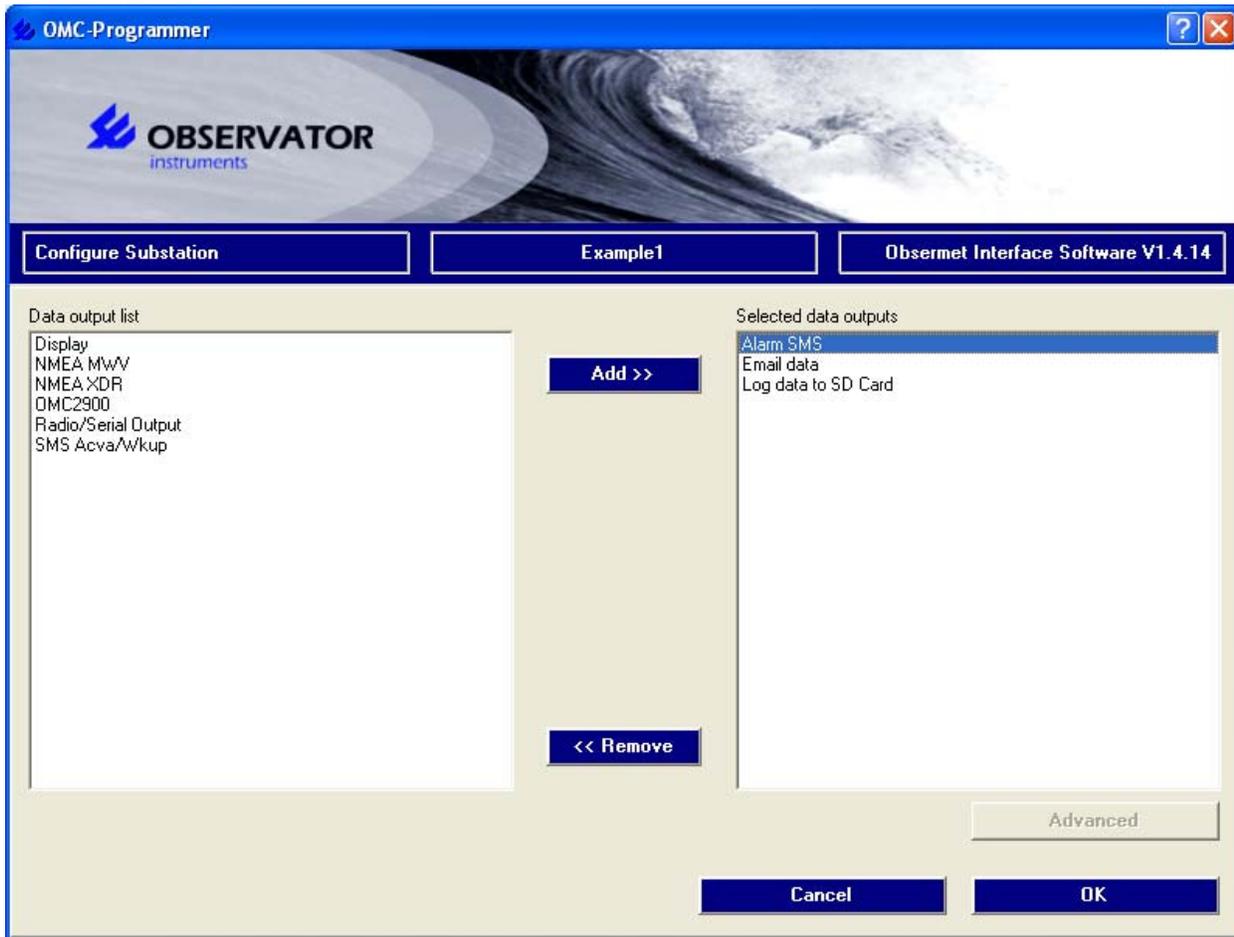
Normal rate: 5 minutes | Alarm rate: 1 minutes

Attributes	Value
Data Filter	'Data Records'

Buttons: Cancel, OK

Click **OK**.

Since we would also like to be alarmed by SMS in case something goes wrong, let's add that too:



No **Advanced** settings here for sms, we will have to set our number somewhere else (in Alarm Handling).

Click **OK** to return to the flow diagram.

The next step we have to do is the gprs setting, click on '**Modem**'.

Select: '**Email/FTP and TCP/IP through GPRS**'.





If your provider is listed for email in 'Select provider details', use that one, all you will need to change is the 'to address' in the right column, fill in the email address on which you want to receive the data emails.

If not, select: KPN Nederland Email. This will give you the standard settings for a Dutch provider, so you do have to change some things, but at least the basic settings are already correct. You will need to change the following:

Access Point

User name

Password

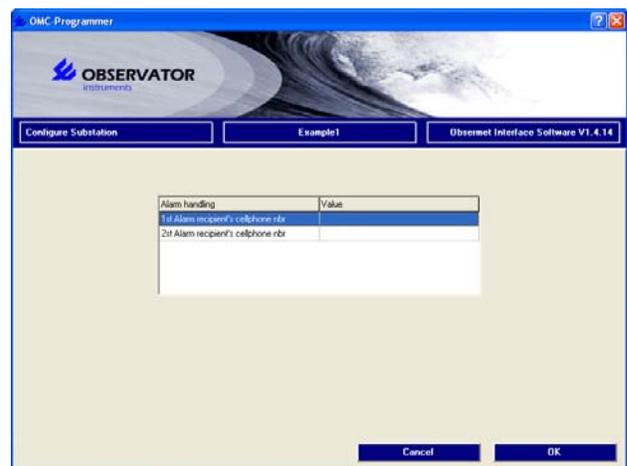
And naturally the '**to address**'

(The correct Access point (APN), User name & password must be retrieved from your provider).

Once set click **OK**.twice to return to the flow diagram.

What is left is the cell number where would like to receive the alarm sms, click: **Alarm Handling**. Double click on **1st Alarm recipient's cellphone nbr** and fill in your cell phone number.

Click **OK**



We have now programmed our logger with the correct parameters and intervals, one more thing to check, we said we want the logger to work in low power mode. This part can be found in the **Advanced Config** in the Flow Diagram. When you click on it, you will be asked for the password, which is: **manager** .

You will get the next screen and what we are looking for is the **Operating mode**

The following mode's are available:

Mode	System	Sensor	Modem
Low power	Low Power	Low Power	Low Power
Modem always on	Low Power	Low Power	Always On
System always on	Always On	Low Power	Low Power
System + sensor always on	Always On	Always On	Low Power
Full power	Always On	Always On	Always On



They are ranked in power consumption: Low power used the minimum, while Full power used the most power. Depending on the situation you select the mode which requires the least power suitable for your requirements.

In this case we said we wanted the logger to work in low power. We can choose between **Low power** and **Modem always on**. You select Modem always on if you want to be able to reach the logger any time from distance via a modem. If this is not required, select **Low power**. That is what we will do, so select this.

You will also find **Time zone** in this menu. Set this to the zone you are in, if you don't know, double click on your PC time (right bottom corner) and check your time zone there. Time zone can be positive and negative! Your data logger will synchronize time and date with your pc time whenever you connect to it.

While we are in this menu, let's have a look at some other items, which will be useful for future programming:

- Digital out settings useful for alarm outputs more info can be found in the corresponding chapter.
- Power Delay switches:
The OMC-045-II has 2 programmable power outputs for sensors, while the OMC-045-III has 4. For each output you can define a warm up time of your sensor. Some sensor require some startup time before they give any or reliable data, the logger will power the sensor in advance (the delay you set here, the logger will delay the measurement for that period).

No need to change those for our configuration, so we can click on **OK** so we get back to the Flow diagram.

Now we are almost done, all we need to do is to save the configuration.

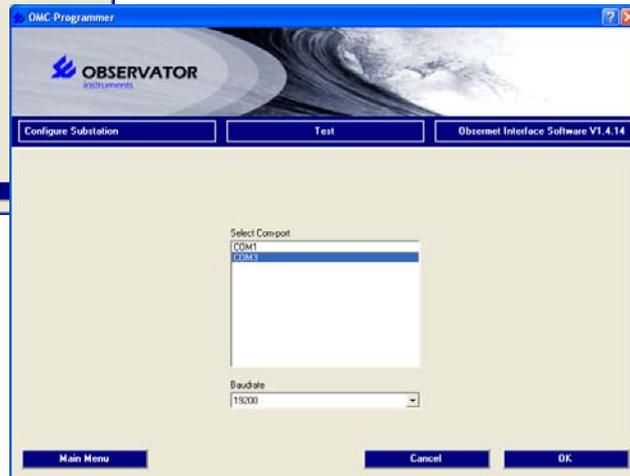
Click on 'save configuration' followed by 'save configuration to file' to backup this on your pc.



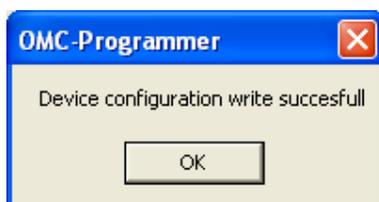
The next step is 'Write configuration to substation' to upload it in your OMC-045-III.



Make sure your logger is connected.
Click: **Use Direct communication**



Select the right Com port
Click: **OK**



This should be the response.
Click **OK** and you are done!

If we have done everything right it will send you a sms: **Deployment started**
start collecting data.....
and after 15 minutes start sending emails to you....

Keep in mind that sometimes depending on provider spam & virus filters it can take a little longer before you receive the email.

If you have a FTP server, you simply can change this configuration to FPT, which will be explained in the next chapter.

A basic FTP configuration.

FTP is much more reliable than email, when connected the logger will write the data direct on the FTP server, no delays or problems with spam & virus filters. Therefore FTP is preferred over email whenever possible. Naturally you do need a FTP server.

So before we start you should have access to a FTP server and need the following:

- Server address (IP or web address)
- FTP Login
- FTP Password

We assume you have the email example completed, if not follow that one first.

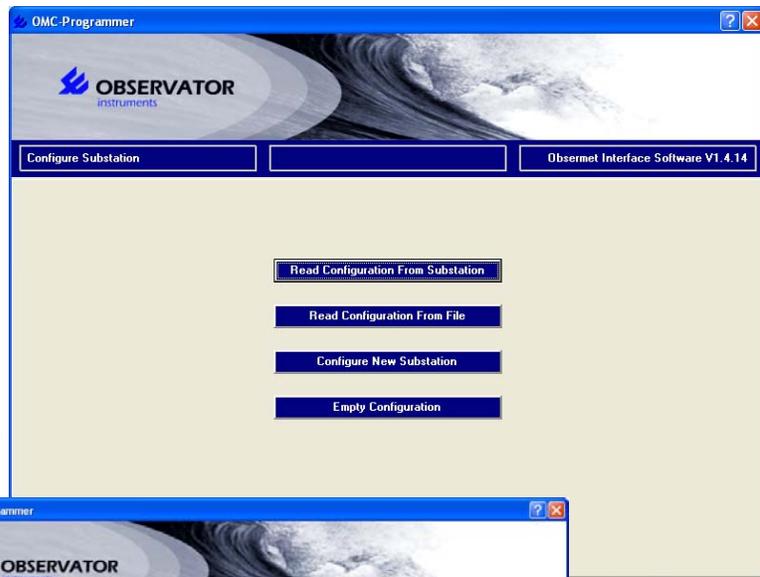
Connect you logger and start OMC-programmer.

In the Main Menu choose:

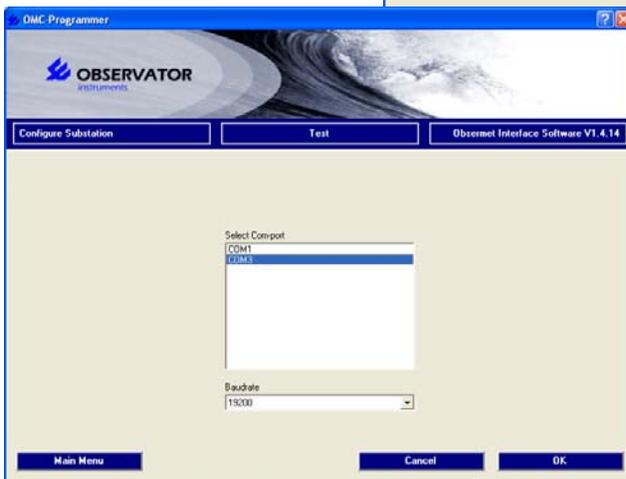
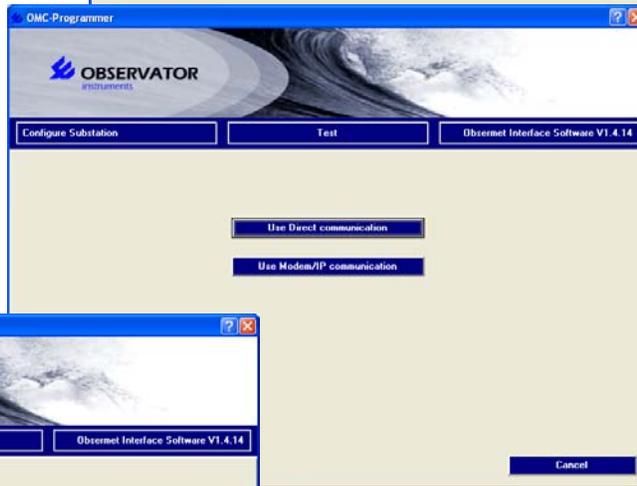
Configure Substation

Followed by :

Read Configuration From Substation



Use Direct Communication



Select the correct **com port**

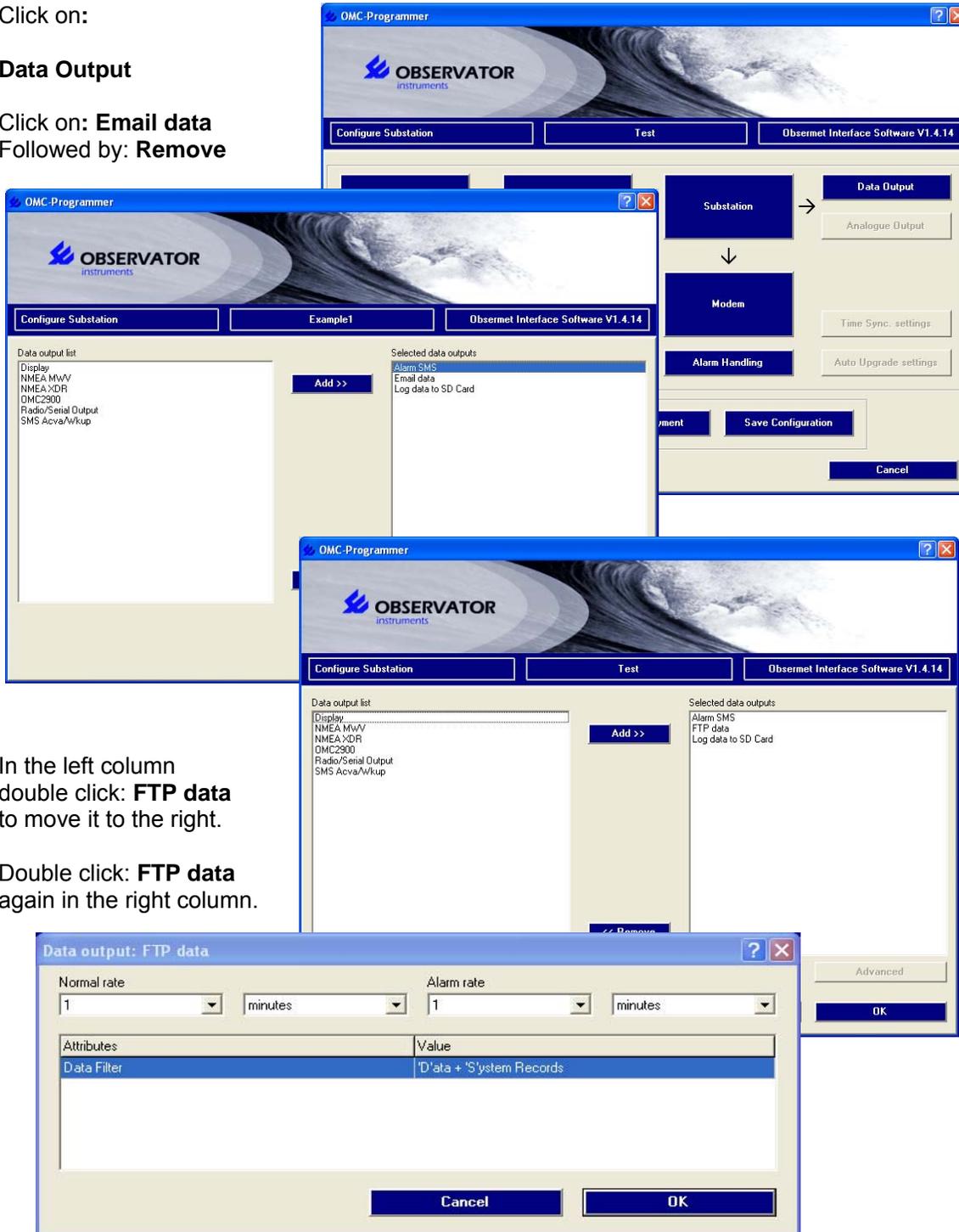
And click: **OK**

We want to change the output for email to FTP.

Click on:

Data Output

Click on: **Email data**
Followed by: **Remove**



In the left column
double click: **FTP data**
to move it to the right.

Double click: **FTP data**
again in the right column.

Change the **Normal rate** to **5** minutes, let's leave the Data Filter to **Data + System records** this time,
so you will see the difference.
Click **OK** twice to return to the Flow Diagram.

Next step is **Modem**, followed by **Email/FTP** and **TCP/IP** through **GPRS**



Your GPRS settings will remain the same, but you will have to make some changes in the right column.

By double clicking on items you can change them.

Change:

Server: your FTP server address (IP number or web address)

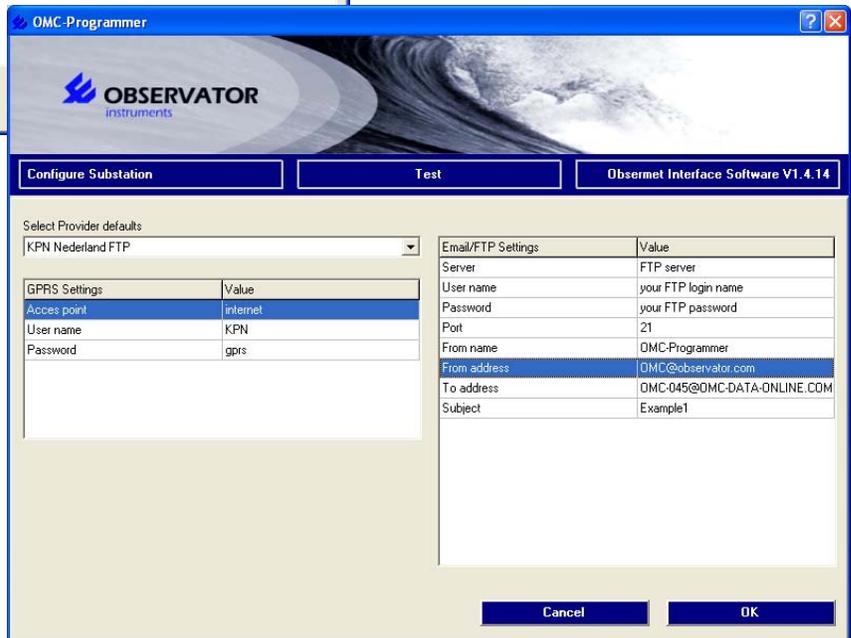
User name: your FTP login

Password: your FTP password

Port: (standard FTP port is 21)

From name / from/to address are used for email, no need to change them now.

Click: **OK** twice to return to the Flow diagram



Finally save your configuration to the substation (and to file to make a backup) and you're done...

Help pages.

Following you find all the help pages, which you can also access using the [F1] key in OMC-programmer. It will give you a description of each function and some background information.

You can use this for reference when programming your device.

Advanced Config settings.



With this option you can change the advanced settings of the substation. It is also possible to configure additional hardware to add additional functionality to the substation. This means sending out e-mails and SMS a modem-board should be configured. For storing data it is necessary to configure a SD card.

This screen is meant for the more experienced user.

The right screen will only be available when a substation is connected and shows the substation information. In the left screen information is shown and some settings can be changed.

System configuration

- **System id** System id as set in ' Substation'
- **Type number** Type of logger can be set
- **Time zone** Set your time zone to get the correct time (check your Windows settings and set the zone equal).
Keep in mind that a datalogger will not use Daylight Saving, this would create a gap & overlap in the data!
- **Scheduled output rate** This is your normal 'storage to SD' interval in seconds.
- **Scheduled alarm output rate** This is your alarm 'storage to SD' interval in seconds.

Hardware configuration

- **Data send time delay** To delay your data transmission in seconds.
- **Operating mode:**

Mode	System	Sensor	Modem
Low power	Low Power	Low Power	Low Power
Modem always on	Low Power	Low Power	Always On
System always on	Always On	Low Power	Low Power
System + sensor always on	Always On	Always On	Low Power
Full power	Always On	Always On	Always On

- **Modem:** Default GSM/GPRS, disable if you don't use it (like when you use Radio or Satellite)

communication).

- **SD Card:** Set the size of the used SD card, default is 2GB.
- **Digital out type:** Set the type to puls or status.
- **Digital out polarity:** Set the output active status to High or Low.
- **Digital out duration:** Set the output puls length in seconds.
- **Power Delay switch:** Set the time the sensor should be powered before the first measurement for every used poweroutput.
This will usually be at minimum the startup time of your sensor.

1. Cancel.

Return to the previous screen.

2. OK.

Save all changes and return to the overview screen of the configuration.

Advanced Config settings.

Depending of the setting you want to change a follow up screen is shown. This help screen is used by several settings. Every setting should be explained in this help screen.

Type number

It is possible to enter a type number or code for the substation. For example Q for quality, R for rain-recorder etc.

=====

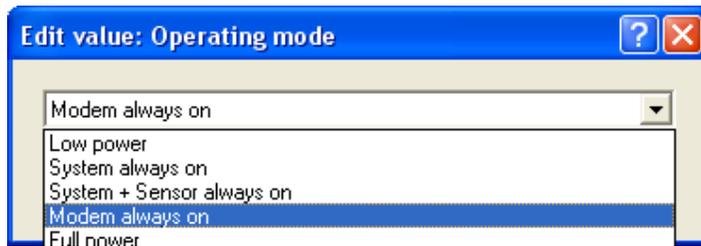
Time zone

Here you can enter the offset from the GMT, timezone for The Netherlands is 1

=====

Operation mode

It is possible to use the substation in different modes. You can choose from the following operation modes;



Using the "operation mode" it is possible to optimise the power consumption of the substation. Three different parts of the logger can be configured: System, Sensor and Modem. Each part can be configured in "Full power/Always On" or "Low Power".

Possible combinations are;

Description System Sensor Modem

- 0 Low power Low Power Low Power Low Power
- 1 System always on Always On Low Power Low Power
- 3 System + sensor always on Always On Always On Low Power
- 4 Modem always on Low Power Low Power Always On
- 7 Full power Always On Always On Always On

When a part of the substation is configured as Low Power, this part of the substation will be switched off as soon as it is not used any more.

Low power

The system will switch in to "sleep mode" when all tasks have been full filled. "power delay" will be taken into account when switching of the system.

System always on

The system is always on. However the sensor(s) and the modem will be switch in "Low Power".

System + Sensor always on

In this operation mode the sensor(s) are powered continuously, unless a error occurs. In that case the power to the sensor(s) will be cut for 5 seconds.

Modem always on

In this operation mode, the modem will be switched on so it will answer on incoming calls. This option has to be used if it should be possible to configure the substation on distance. If you can reach the substation using modem, it is possible to change the configuration, upgrade the firmware en download data. In this mode, the modem will be switched to "Slow Idle" to save as much power as possible.

Full power

All parts of the substation will be switched on always. This means maximum power consumption.

=====
Modem

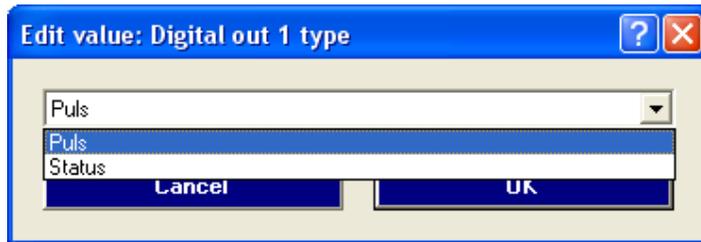
From a list a available modem can be chosen.

=====
SD card



From a list a available SD card can be chosen. The OMC-045-II & III is default equipped with a 2GB SD card.

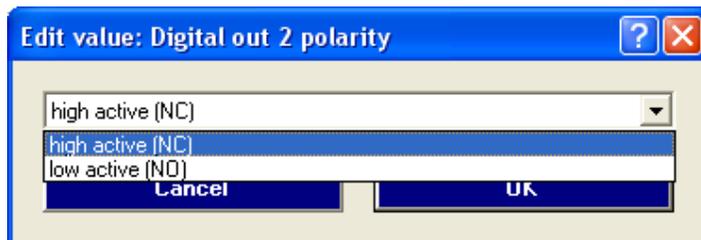
=====
Digital output type



Puls = Using this option the digital output will be switched high or low, depending on the configured polarity during the puls period.

Status = Using this option the value of the output signal from the digital output indicates, if there is an alarm or not, depending on the configured polarity.

=====
Polarity digital output



High active (NC) = Normal off, during alarm on.

Low active (NO) = Normal on, during alarm off.

=====
Puls period[s] digital output

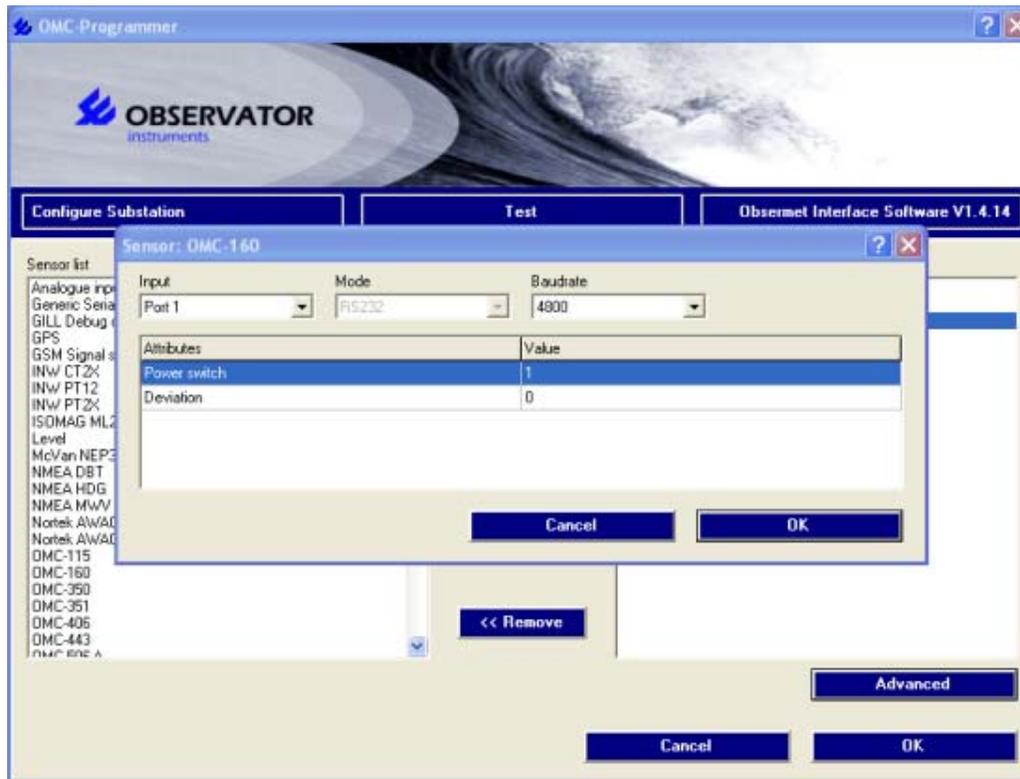
This is the period of time used to switch the digital output high or low.

=====

Power delay[s] switch

After the power is set to the connected sensor the logger will wait the configured period of time before a sample is taken. This allows the sensor to "warm up / stabilise".

Advanced settings sensors.



Depending on which sensors are selected, you can enter/change additional settings in this screen. If you don't understand certain settings (especially with serial sensors) do not change them.

What must be set:

- For all external sensors the power switch you use
- For all Modbus sensors (like the INW PT2X) the correct address

What can be set:

This list will not be complete, since the list is frequently updated, usually the settings speak for them selves, if in doubt contact our service desk.

- small log

Small log can be used if you require a different storage interval and you and/or you don't want the logger to wait/retry to retrieve the data.

Commonly used for GPS. GPS sometimes requires quite some time to get a fix, which is not wanted in low power situations. The substation won't stay awake if no fix is established in the sample time if small log is used. If you use small log, do not tag 'log' in the input (Tag list) for the parameters belonging to the particular sensor.

- Rain, Status
- Bucket size (mm per puls)
- Daily reset at midnight on or off
- Identify the sensor as a floater (vlotter) on or off
- Hysteresis of the floater (vlotter) on and off in seconds
- invert status input on or off

- Serial sensors:

Port number

baudrate

start/ stop / separation/ characters / string length: **Do not change unless you know what you are doing!**

- YSI



For the YSI the button 'Read Parameters' is included. This button will read the settings from the the YSI, so you won't have to set the parameters yourself.

Naturally you must setup the YSI correct and have it connected to the substation first.

Analogue sensors

Select power switch

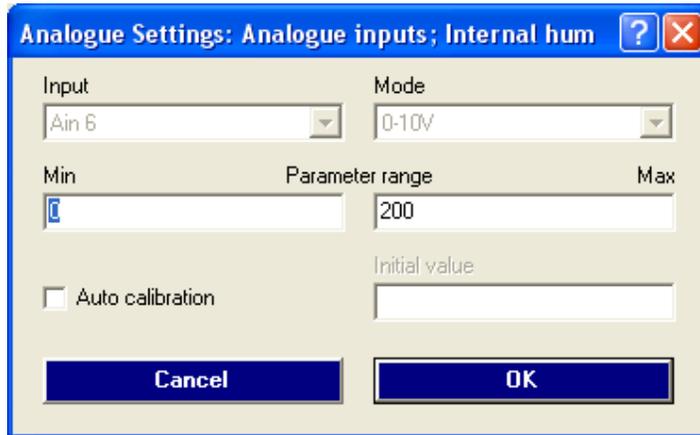
1. Cancel.

Return to the previous screen.

2. OK.

Save changes and return to the sensor list.

Advanced settings parameters.



Analogue Settings: Analogue inputs; Internal hum

Input: Ain 6 Mode: 0-10V

Min: 0 Parameter range: 200 Max: 200

Auto calibration Initial value:

Cancel OK

From some parameters additional settings can be altered. The screen which is shown is only an example. Depending on the type of parameter a follow up a screen will be shown on which the settings can be made.

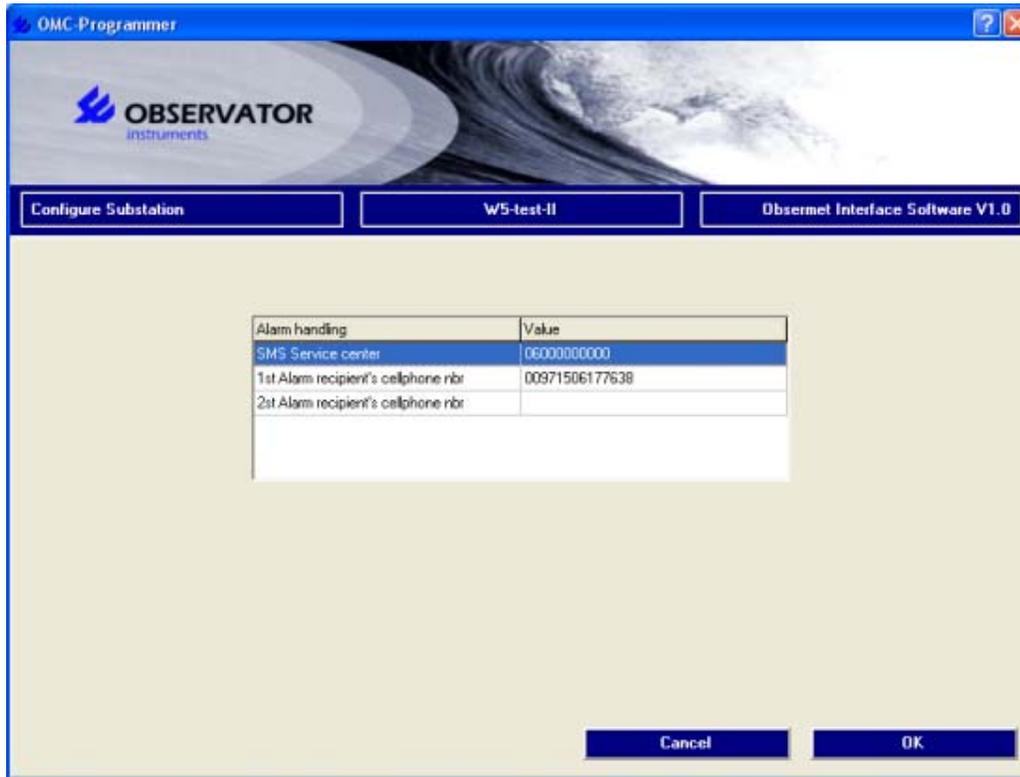
1. Cancel.

Return to the previous screen.

2. OK.

Save changes and return to the parameter list.

Alarm Handling.



In this screen the alarm recipients can be configured.

1. 1st Alarm recipient's cellphone nbr

The mobile number of the first recipient of the alarm SMS messages.

2. 2nd Alarm recipient's cellphone nbr

The mobile number of the second recipient of the alarm SMS messages.

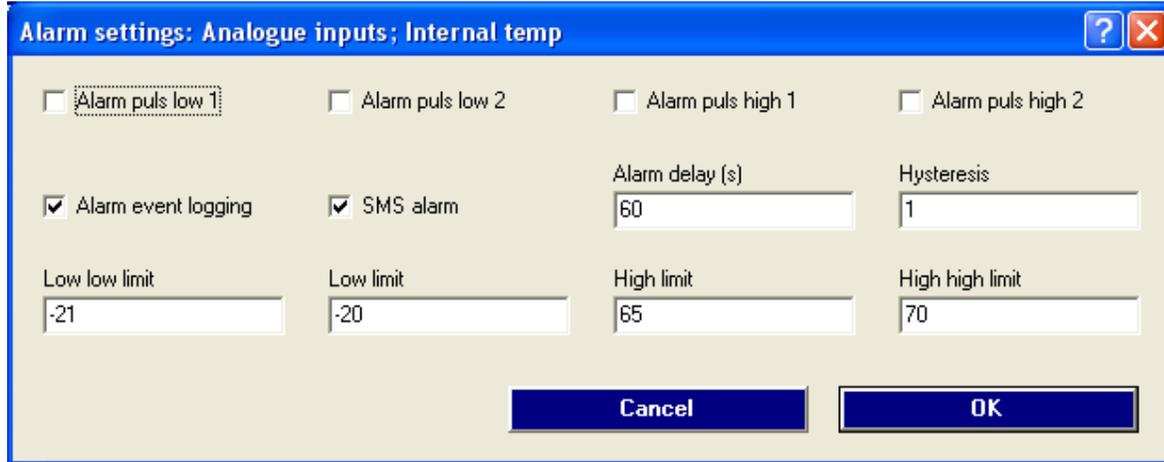
3. Cancel.

Return to the previous screen.

4. OK.

Save all changes and return to the overview screen of the configuration.

Alarm settings.



1. Alarm pulse low 1.

When the value *Low Low limit* is exceeded, the digital output 1 is set to high for a period of x seconds (the pulse period). Using the option *Advanced Configuration* at the overview screen of the configuration the duration of the pulse period can be set. It is possible to switch on or off an external device using the digital outputs of the substation.

2. Alarm pulse low 2.

When the value *Low limit* is exceeded, the digital output 1 is set to high for a period of x seconds (the pulse period). Using the option *Advanced Configuration* at the overview screen of the configuration the duration of the pulse period can be set. It is possible to switch on or off an external device using the digital outputs of the substation.

3. Alarm pulse high 1.

When the value *High Limit* is exceeded, the digital output 1 is set to high for a period of x seconds (the pulse period). Using the option *Advanced Configuration* at the overview screen of the configuration the duration of the pulse period can be set. It is possible to switch on or off an external device using the digital outputs of the substation.

4. Alarm pulse high 2.

When the value *High High limit* is exceeded, the digital output 1 is set to high for a period of x seconds (the pulse period). Using the option *Advanced Configuration* at the overview screen of the configuration the duration of the pulse period can be set. It is possible to switch on or off an external device using the digital outputs of the substation.

5. Alarm event logging.

When this option is enabled, every alarm will be logged as an event in the log files.

6. SMS alarm.

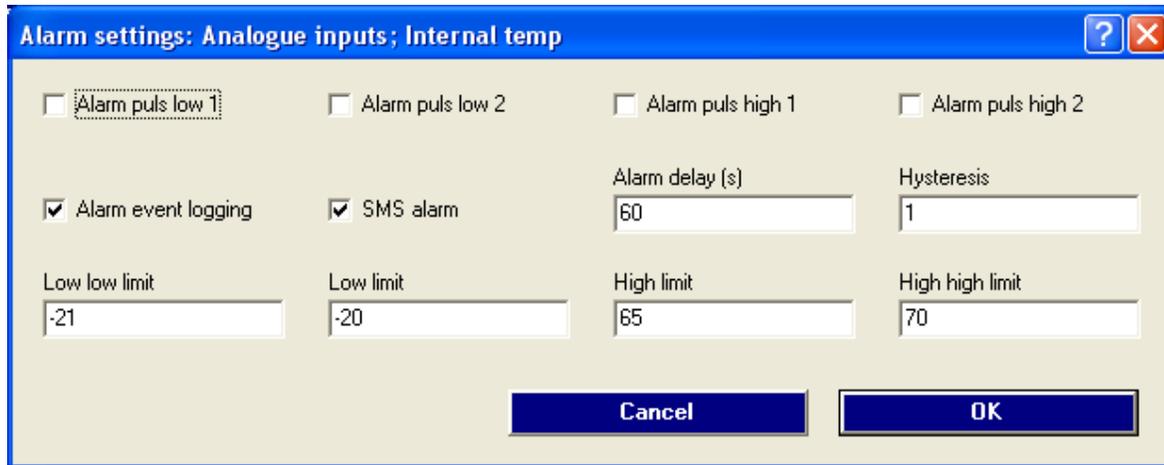
As soon as an alarm occurs, a alarm SMS will be send using the settings made in *Alarm handling*.

7. Alarm delay [s].

Here you can enter a delay time. This means that the alarm must be active for at least the entered period of time, before the substation will be switched to the alarm-mode.

8. Hysteresis.

Here you can enter a value which will avoid the alarm from switching on and off very fast. As soon as an



Alarm settings: Analogue inputs; Internal temp

Alarm puls low 1 Alarm puls low 2 Alarm puls high 1 Alarm puls high 2

Alarm event logging SMS alarm

Alarm delay (s): 60 Hysteresis: 1

Low low limit: -21 Low limit: -20 High limit: 65 High high limit: 70

Cancel OK

alarm occurs, the alarm will only fall off as soon as the measured value differs more than the entered hysteresis from the entered limit.

9. Low Low limit.

This is an alarm value limit.

10. Low limit.

This is an alarm value limit.

11. High limit.

This is an alarm value limit.

12. High High limit.

This is an alarm value limit.

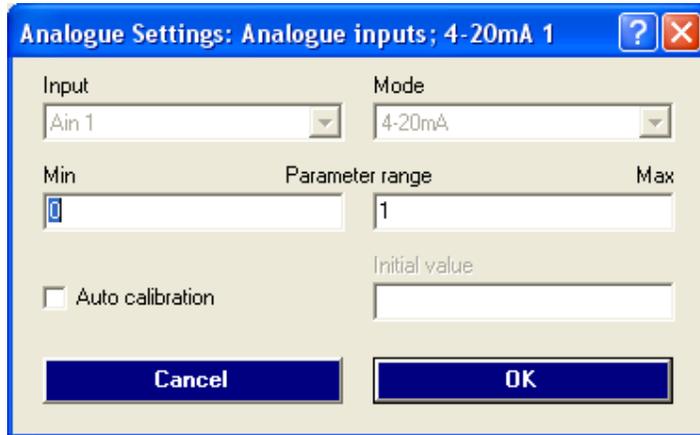
13. Cancel.

With this option you can return to the previous screen.

14. OK.

With this option the settings will be saved and you will return to the parameterlist.

Advanced settings analogue input.



1. Input.

This is the number of the selected analogue input. This value can't be changed.

2. Mode.

This is the mode of the analogue input. A 4-20mA and a 0-10V mode is available. This setting can not be changed.

3. Min. Parameter range

This is the value of the parameter at 4 Ma.

4. Max. Parameter range

This is the value of the parameter at 20 Ma.

5. Auto calibration

When Auto calibration is enabled the parameter will be calibrated using the *Initial value* as soon as the substation is started up the first time. Using the *Initial value* and the measured value it is possible to calculate the offset for the parameter. The option can be used when you want to measure values according a certain reference level, for example meters above sea level.

6. Initial value.

This is a known value of the parameter that is used for calibrating the parameter. This initial value must be stable and match with the actual measured value when the substation is started for the first time.

7. Cancel.

With this option you can return to the previous screen.

8. OK.

With this option the settings will be saved and you will return to the parameter list.

Auto Upgrade settings.

NOT AVAILABLE YET !!!!!

Calculation calculated parameters.



At this screen you can configure calculated parameters. A calculated parameter is a parameter which is the result of a mathematic calculation of a measured parameter. A calculated parameter will be calculated over the calculation rate.

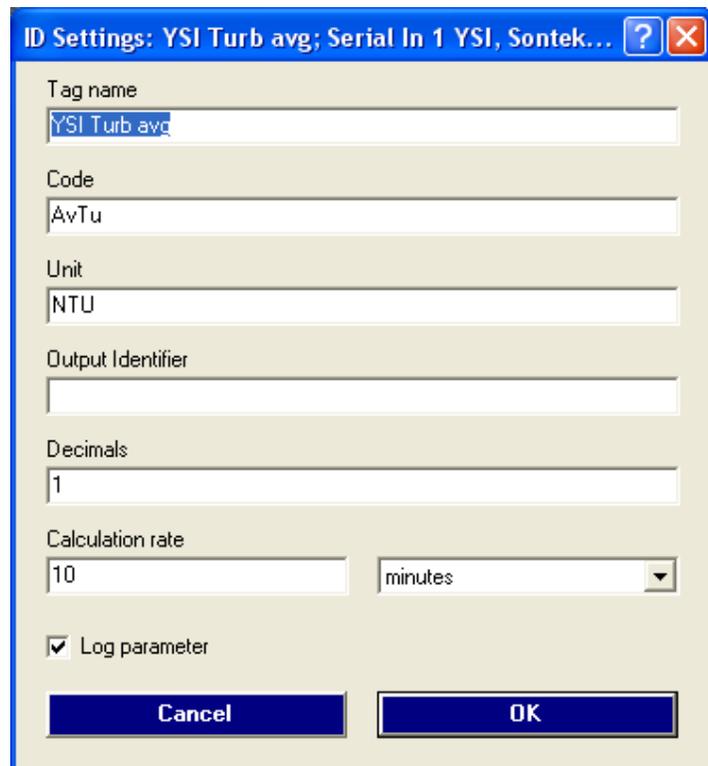
The calculation rate has to be configured in the *Input (Tag List)*. For every measured parameter you can calculate the minimum, maximum, average or the sum. The value of this calculation will be stored as the calculated parameter.

1. Cancel.

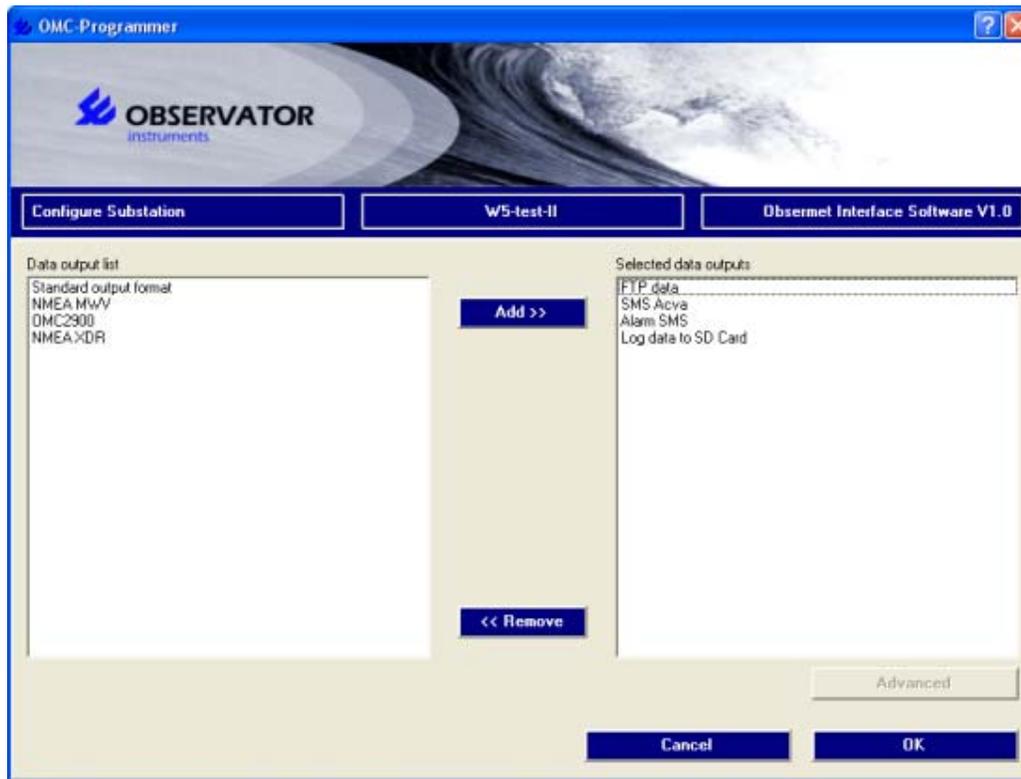
Return to the previous screen.

2. OK.

Save changes and return to the parameter list.



Configure Data Output.



In this screen the output from the substation can be configured. Depending on the chosen output protocol, using the option **advanced** all the necessary settings for the selected protocol can be configured. For the selected protocol all necessary settings have to be made. When for example a NMEA MWV message is selected it will be necessary to select the parameters that have to be used in this message.

Always check the advanced settings of all selected output protocols. Each follow up screen with the advanced settings has their own help screen.

For example, if you want to send data by FTP it is necessary to select the protocols "Log data to SD card" and "FTP data"

There might be additional protocols in the list that are not explained in the manual. If a protocol is missing in the manual please contact Observator.

1. Add >>

The selected protocol from the left list will be added to the right list. You can also add this by double clicking on a protocol.

2. << Remove

Remove the selected protocol from the right list.

3. Advanced

For some protocols it is possible/necessary to add a few additional settings. The necessary settings depend on the selected protocol. After choosing this option a follow up screen will be showed. These follow up screens have their own help-function.

NMEA protocols

These protocols are the standard NMEA-0183 protocols. When this protocol is selected the user has to select the parameters that should be used in the selected NMEA message. The data will be send out in a serial data string coming directly from the logger.

Data output: NMEA MWV [?] [X]

Normal rate: minutes | Alarm rate: minutes | Output: | Mode: | Baudrate:

Inputs	Parameters
Wind Direction	<Does not exist>
Wind Speed	<Does not exist>

OMC2900 protocol

This protocol is used for Observator equipment. When this protocol is selected the user can select the parameters that should be used in the output. The data will be send out in a serial data string coming directly from the logger.

Data output: OMC2900 [?] [X]

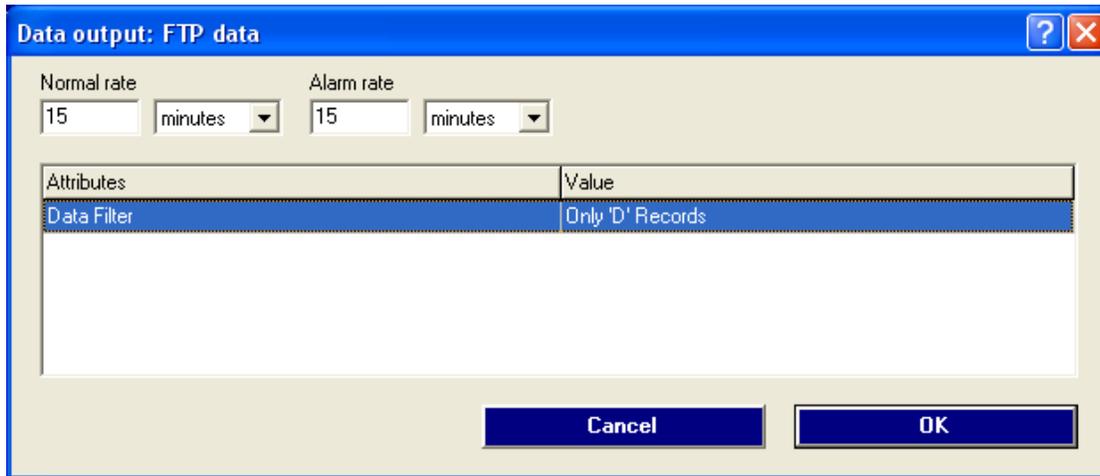
Normal rate: minutes | Alarm rate: minutes | Output: | Mode: | Baudrate:

Inputs	Parameters
1	Analogue inputs; Internal hum
2	Analogue inputs; V Batt
3	Analogue inputs; Internal temp
4	GSM Signal strength; GPRS Signaal
5	GPS NMEA GGA; SAT Count

Attributes	Value
Decimals	2

FTP Data

This protocol is selected when you want to send the stored data to an FTP server. The data has to be stored on the SD card first.



Data output: FTP data

Normal rate: 15 minutes Alarm rate: 15 minutes

Attributes	Value
Data Filter	Only 'D' Records

Cancel OK

In this window it is possible to select the data records that should be send.



Edit value: Data Filter

Only 'D' Records

Cancel OK

"D" records are the records with the actual data.

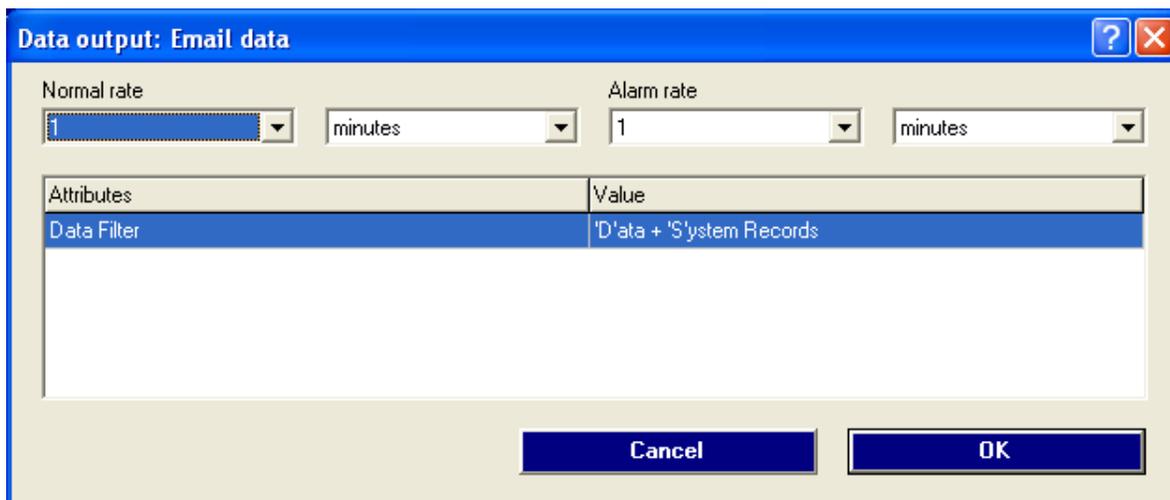
"S" records are the records with system information.

"X" records are records with the raw data coming from the connected serial sensors.

In most cases only the "D" records will be selected to save memory and costs of data-transfer.

Email Data

This protocol is selected when you want to send the stored data by email. The data has to be stored on the SD card first.



Data output: Email data

Normal rate: 1 minutes Alarm rate: 1 minutes

Attributes	Value
Data Filter	'D'ata + 'S'ystem Records

Cancel OK

In this window it is possible to select the data records that should be send.



"D" records are the records with the actual data.

"S" records are the records with system information.

"X" records are records with the raw data coming from the connected serial sensors.

In most cases only the "D" records will be selected to save memory and costs of data-transfer.

SMS Acva/Wkup

This protocol is selected when you want the logger to respond on incoming "ACVA" SMS messages. You can set the interval the logger should check for incoming SMS messages in normal and in alarm mode. This will also give you the option to wakeup the substation by sms (sms: WKUP) for remote access (by modem or URL). The substation will respond with a sms when it will be awake.

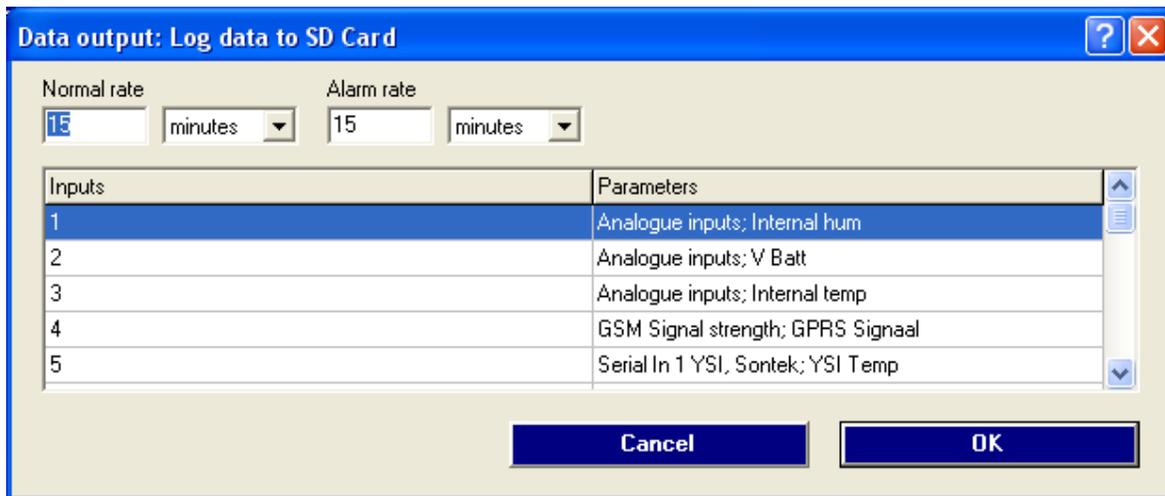
Alarm SMS

This protocol is selected when you want the logger to send out an alarm SMS when the substation is in alarm-mode.

Log Data to SD card

This protocol is selected when you want to store the data on the SD card.

All parameters where the option "log parameter" in the Input (Tag list) is enabled will be written to the SD card.



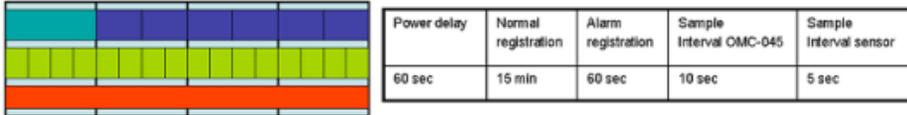
In the special window you can set the interval that should be used to store the data to the SD card in normal and alarm mode. Please note this interval should be \geq than the smallest sample rate of the selected parameters.

Explanation of used intervals,

Normal mode



Alarm mode



-  = Registration-interval (has to be xx times the Sample-interval OMC-045-II)
-  = Power delay (to keep sensor powered Power delay > Sample-interval OMC-045-II)
-  = Sample-interval OMC-045-II (sample interval has to be whole part of Registration-interval)
-  = Sample-interval sensor
-  = Sensor powered

Display

Select this protocol when you have the optional display connected.

In advanced you will have to select the power switch (default = 4) and power down inactivity time (default 120s), select 0 if you want it continuously on.

4. Cancel.

Return to the previous screen.

5. OK.

Save all changes and return to the overview screen of the configuration.

Configure modem.



In this screen the way the data is transmitted is configured. For each choice a follow up screen will be shown. These follow up screens have their own help screen.

1. Cancel.

Return to the previous screen.

2. OK.

Save all changes and return to the overview screen of the configuration.

Configuration OMC-3556.



1. System ID

The ID is default set to 0. The user can enter an ID. The ID will be stored together with the serial data and will be send in the radio message.

2. Operating mode

The module can operate in a *Slave* and *Master* mode. In both modes the data received from a connected serial device will be stored in the internal memory of the module. This means that a data message can contain more than one line of serial data.

Slave Mode: The module will wake up the radio on the *transmit rate* and will be ready to receive the "Request for Data" from the Master PC. If the Request for Data is received the module will send the data stored in the internal memory.

Master Mode: The module will wake up the radio on the *transmit rate* and will send the data stored in the internal memory. The Slave PC has to be ready to receive the data. If the internal memory is full the module will send an extra data message even if the transmit interval is not exceeded. If you are using more than one module please be careful to avoid data-collision.

3. Baud rate

The current baud rate is set to 19200 and can not be changed using OMC-Programmer.

4. Transmit Rate (60 to 900 sec.)

The Transmit Rate is default 180 sec. This means that the module will wake up every 180 seconds to send data or to be ready to receive "Request for Data". The internal memory of the module is limited (max. 1.500 bytes), this means that if the sensor is sensing data at a fast interval the *transmit rate* can not be too high. The module can store app. 15 samples in it's internal memory before it will send the data automatically (only in *Master mode*)

5. Pre Trigger time (10 sec. to 1/6 of the *transmit rate*)

This is the time that the module will wake up, before sending data (*transmit rate*), in order to read in the last serial data.

6. Max. Receive Time (10 to 40 sec.)

In *Slave mode* this is the time that the module will wait after the *transmit rate*, for a "Request for Data" from the *Master*. Increasing this period will also increase the power consumption because the radio-modem will be switched in listening mode for a longer period of time.

7. Print Configuration

With this option the XML file of the configuration will be showed. In the future a short readable overview of the complete configuration will be shown. Maybe in the future it will also be possible to choose between displaying an XML or PDF file. The PDF file could show the layout of the wiring of the complete configuration. In Ridderkerk these PDF's will have to be made. Observator is thinking of a way we can realise this.

8. Save Configuration

With this option you can save the configuration either on file or by sending it to the module.

9. Main Menu.

Using this option you can return to the main menu.

10. Cancel.

With this option you can return to the previous screen.

Data output from module

Typical data output from the module is;

```
[1]27 2008/10/10 11:54:35 20.39 0.00 0.00 -38.1 0.00 0.00 15.068 0.357 -50.7 0  
[1]27 2008/10/10 11:56:01 20.39 0.00 0.00 -39.3 0.00 0.00 15.068 0.357 -50.7 0
```

When the YSI sensor is disconnected the output will be;

```
27 No Data From YSI  
27 No Data From YSI
```

Configure Substation.



1. Read Configuration From Substation.

Establish a connection with your substation and read the configuration after which you can make changes and/or save it to file and back to substation.

2. Read Configuration From File.

Read the configuration from a previous stored file.

3. Configuration New Substation.

This does the same as 1, except it won't give you the remote connection option.

4. Empty configuration.

Configure you substation from start. This can be done without a substation connected.

5. Main Menu.

Return to the main menu.

Configuring GPRS modem for correct frequency.

In order to connect to a network in a country you will have to know the frequency used by the local provider.

Default the modem is set to the 900/1800 MHz.

If you need to change this connect the modem to the PC and follow the next procedure;

Activate Terminal Window in option Maintenance on the Main Menu
Open communication with modem

For 850/1900 network, type command; **AT+WMBS=4,1**

For 900/1800 network, type command; **AT+WMBS=5,1**

Type command **AT** to check communication.

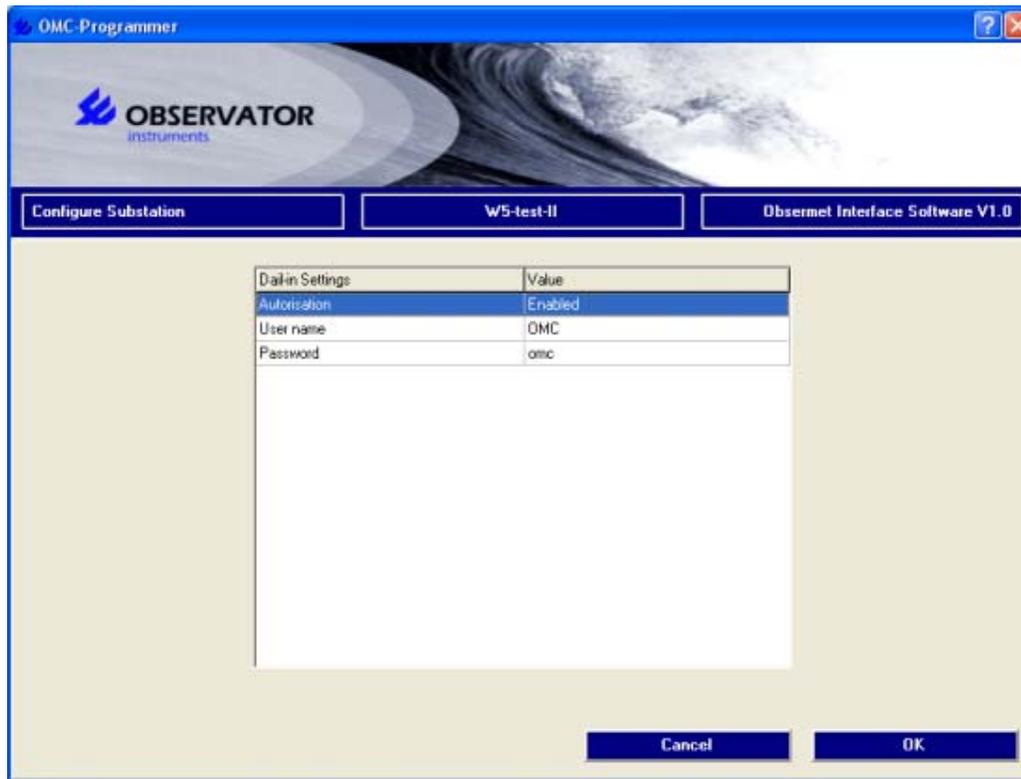
Using the command: **AT+WMBS?** the modem will return the actual settings
For the 850/1900 network the modem should return;
+WMBS: 4,0 or *+WMBS: 4,1*

For the 900/1800 network the modem should return;
+WMBS: 5,0 or *+WMBS: 5,1*

Using the command **AT+CGMM** the modem will return the actual status
For the 850/1900 network the modem should return;
MULTIBAND G850 1900

For the 900/1800 network the modem should ;
MULTIBAND G900 1800

Dial-in communication.



In this screen all settings must be configured to dial-in in the substation using, for example an PC and modem.

1. Authorisation

It is possible to disable or enable authorisation before getting access to the substation. We always advise to enable authorisation.

2. Username

When the authorisation is enabled the username must be entered, which in combination with the password is necessary to get access to the substation.

3. Password

When the authorisation is enabled the password must be entered, which in combination with the username is necessary to get access to the substation.

4. Cancel.

Return to the previous screen.

5. OK.

Save all changes and return to the overview screen of the configuration.

Dial-out communication.



In this screen the settings must be made in order to build up a connection from the substation with for example a host-pc. The settings are depending on the settings of the Host-pc.

1. Phonenumber

This is the phonenumber of the Host-pc.

2. Usersname

When authorisation is enabled on at the host-pc the usersname must be entered, which in combination with the password is necessary to get access to the substation.

3. Password

When authorisation enabled on at the host-pc the password must be entered, which in combination with the usersname is necessary to get access to the substation.

=====

TCP Settings

4. Server

This is the IP address of the host-pc which the substation should communicate with using TCP.

5. Port

This is the portnumber that should be used together with the IP address of the host-pc which the substation should with using TCP.

=====

UDP Settings

6. Server

This is the IP address of the host-pc which the substation should communicate with using UDP.

5. Port

This is the portnumber that should be used together with the IP address of the host-pc which the substation should communicate with using UDP.

=====

6. Cancel.

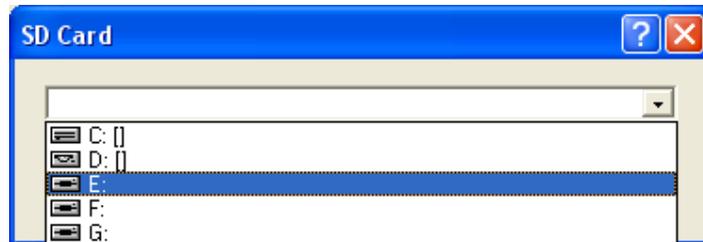
With this option you can return to the previous screen.

7. OK.

With this option the settings will be saved and you will return to the overview screen of the configuration.

Download data directly from SD Card.

Using this option it is possible to read the stored data directly from an OMC-SD card inserted in a card reader connected to the PC.



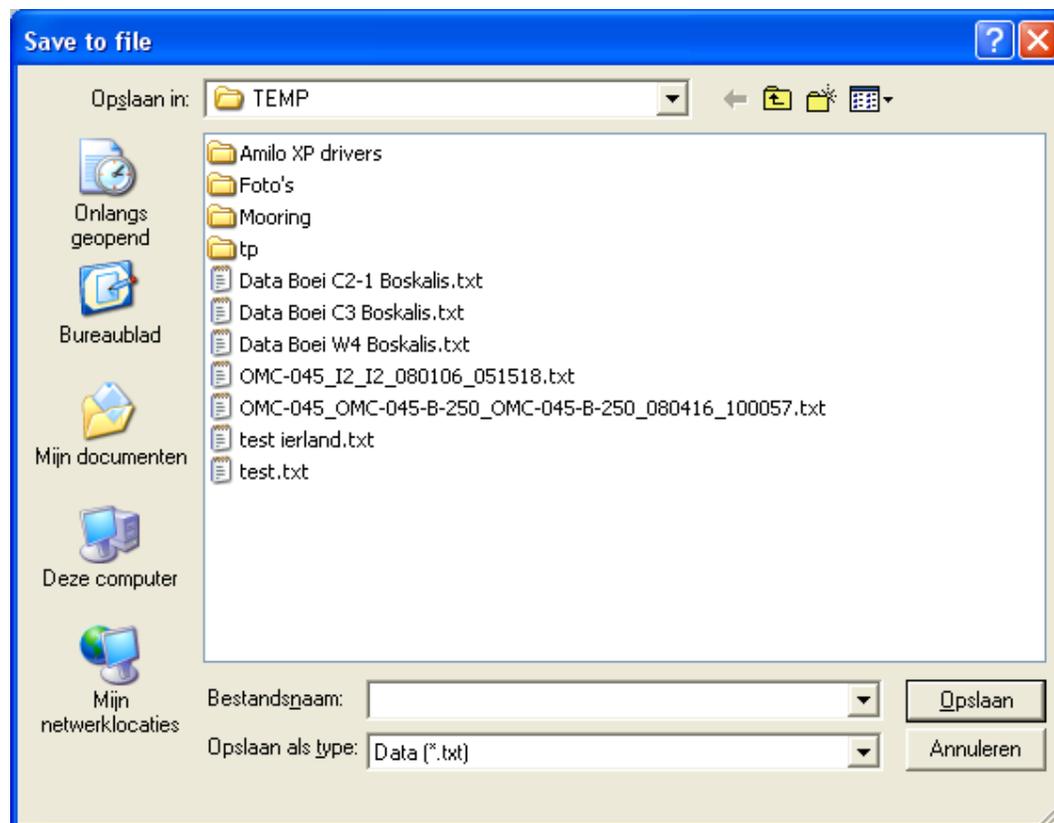
Simply select the drive.

1. Cancel.

Return to the previous screen.

2. OK.

After choosing this option you will be asked to select the location and the file name to store the file.



This is the fastest way to download data from an SD card for the OMC-045-II. The OMC-045-III has a FAT file structure and the SD card can be read via Windows.

Download data from substation.



1. Start of Period

Select the start of the period where you want to download data from.

2. End of Period

Select the end of the period where you want to download data from.

3. Select record type

Select the type of records that should be downloaded from the logger. Normally only "D"(ata) records will be used.

4. Create CSV import file

This will create an export file that can be opened using f.e. Excel.

Please note that the data will be exported using the actual configuration of the substation. If the configuration has been changed (adding or removing parameters) the file may be corrupt or the export might even fail. Please only select a period with data, that was gathered with the same configuration as the actual configuration. If csv-files are often used, it is wise to export the stored data always before changing the configuration.

5. Main Menu.

Return to the Main Menu.

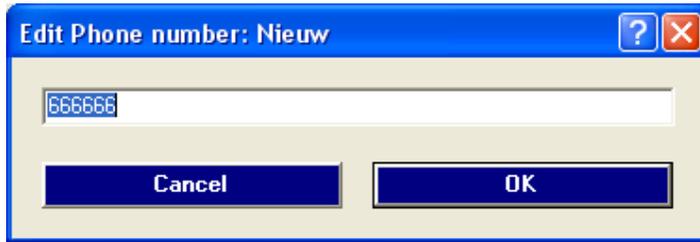
6. Cancel.

Return to the previous screen.

7. OK.

Save all changes and return to the overview screen of the configuration.

Edit phone number.



In this screen the phone number of the substation can be entered or altered.

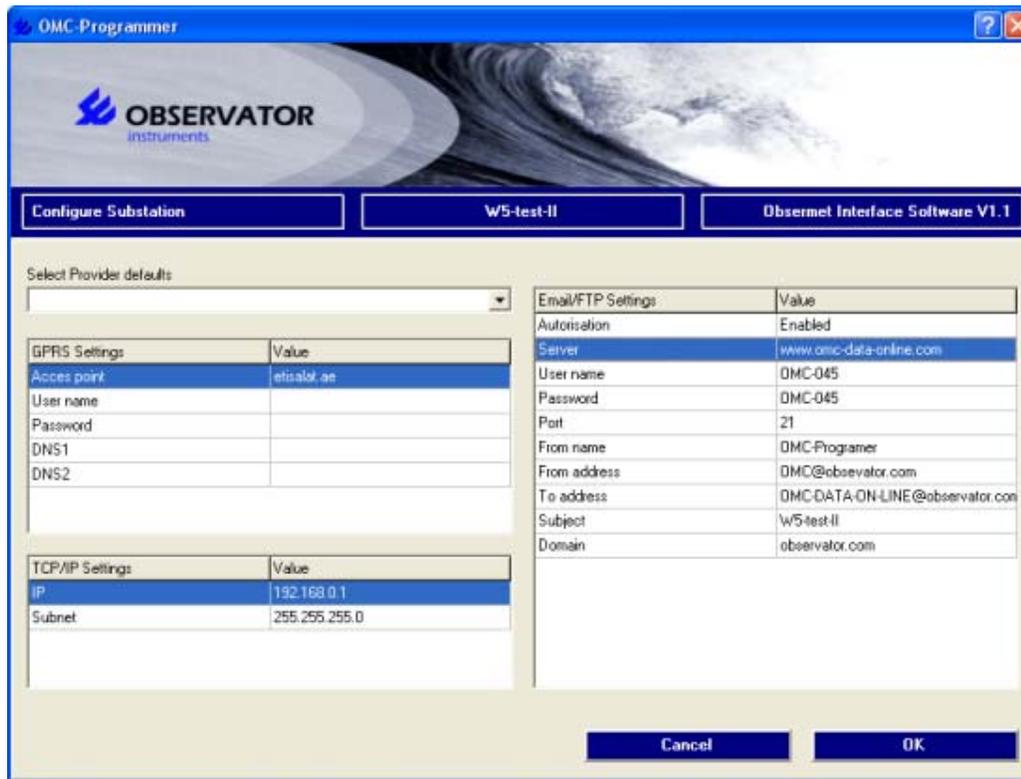
1. Cancel.

Return to the previous screen.

2. OK.

Save changes and return to the overview screen of the configuration.

Email/FTP and TCP/IP settings.



In this screen you must configure all necessary settings for sending data through e-mail, FTP or TCP/IP using GPRS.

Please note that different Firmware in the OMC-045-II is required for sending data using FTP or email. If you want to switch from sending data using FTP to sending data using email, you will have to install the correct firmware version in the OMC-045-II first, check our support page for the latest firmware for your purpose.

Not required for the OMC-045-III

1. Select Provider defaults.

With this option the GSM/GPRS provider of the SIM card can be selected. When the provider is known all the SIM card settings will be used as default in this screen. When the provider is not in the list you can the option *No defaults* and just enter the settings manually. If your provider is not in the list and the settings are known please contact Observator. Observator will place the provider in the list of OMC-Programmer.

GPRS Settings

2. Access point

Provider setting to access internet using GPRS

3. User name

Provider setting to access internet using GPRS

4. Password

Provider setting to access internet using GPRS

~~5. DNS1 *~~

~~Provider setting to access internet using GPRS~~

~~6. DNS2 *~~

~~Provider setting to access internet using GPRS~~

* Not required for the OMC-045-II and not available for the OMC-045-III

=====

TPC/IP settings

7. IP

IP address of the PC you the data should be sent to *

8. Subnet

Subnet IP address of the PC the data should be sent to. *

* Not required for the OMC-045-II and not available for the OMC-045-III

=====

Email/FTP Settings

9. Authorisation

With this option you can disable or enable authorisation.

10. Server

Here you have to enter the IP address or the name of the server where the email or FTP messages should be send to.

11. Username

This is the username which in combination with the password is necessary to log in at the server if authorisation is enabled.

12. Password

This is the password which in combination with the username is necessary to log in at the server if authorisation is enabled.

13. Port

Here you have to enter the port which in combination with the IP address will be used at the server for the incoming messages. Please note that when using the OMC-Data-OnLine server, the portnumber for FTP is 21, the portnumber for e-mail is 25.

14. From name

This is a name which can be chosen by yourself and will mostly be the name of the substation or the user. (email only)

15. From address

This e-mail address will be shown at the address note as the e-mail address of the sender. (email only)

16. To address

To this e-mail address an e-mail message will be send to. (email only)

17. Subject

For the subject default the name of the substation will be used.

~~**18. Domain**~~

~~**This is the domain in which the server works. In case of Observator, observator.com. ***~~

* Not required for the OMC-045-II and not available for the OMC-045-III

=====

19. Cancel.

Return to the previous screen.

20. OK.

Save all changes and return to the overview screen of the configuration.

GPS Information Substation.

Using this option it is possible to read out the actual GPS position. This is only possible when a GPS antenna is installed. It will take app. one minute before the GPS will have a fix and the information is shown. Please be sure that the GPS antenna can "see" the sky.



The screenshot shows a software window titled "OMC-Programmer". The window has a header bar with the OBSERVATOR logo and the text "instruments". Below the header, there are three buttons: "GPS Information Substation", "Grote Boei", and "Observer Interface Software V1.0". The main area of the window contains three input fields labeled "Latitude", "Longitude", and "Satellites", each with a "0" entered. At the bottom of the window, there are two buttons: "Main Menu" and "Cancel".

1. Cancel.

Return to the previous screen.

2. OK.

Save changes and return to the overview screen of the configuration.

GPRS Signal strength.



Using this option it is possible to check the GPRS signal strength & quality. Using this it is possible to point a antenna in the direction with the best GPRS signal. Before deployment it is very wise to check the signal strength & quality at the site first. A low signal will cause problems sending data.

It is also possible to manually select a provider from the list of available providers.

1. Main Menu.

Using this option you can return to the main menu.

2. Cancel.

With this option you can return to the previous screen.

3. Signal Strength

This indicates the strength of the signal, which result in the power required for the transmission (lower strenght, requires more power).

4. Signal Quality

This indicates the signal quality of the signal, actually this is the bit-error rate. 100% indicates <0,1 % of error, while 0% indicates >15% of error.

This really needs to be close to 100% for a good operation of the logger.

5. Provider

This shows the provider to which the logger is currently connected for strength & quality measurement. If this is not the provider you expected, the signal of your provider could be to weak in this location area.

6. Available providers

This shows a list of available providers. It doesn't necessarily mean you can connect to a provider of this list. They might not accept roaming.

The blue bar indicates the selected provider, standard this is set to 'automatic': the OMC-045-II will automatically select your provider.

In some situations it can be useful to manually select a provider: just double clicking on it. If an error +CME 32 occurs, the provider does not accept your simcard. It does allow you to measure the signal quality. This can be useful if the signal of your current provider is too weak and you would like to check which provider does provide a strong signal in your location area. **Your selection will be directly stored in the modem memory, so do not forget to put it back to the correct setting before leaving this menu!** If you are not sure which provider to select, use 'automatic'.

Input (Tag list).



Parameter	Tag name	Code	Unit	Decimals	Output Id...	Normal sample rate	Alarm sample rate	L
Analogue inputs: 0-10V	Internal hum	HUMi	%	1		0.10	0.01	
Analogue inputs: V batt	V Batt	Vbat	V	1		0.10	0.01	
Analogue inputs: Internal temp	Internal temp	TMPi	C	1		0.10	0.01	
GSM Signal strength: Signal	GPRS Signal	GPRS	%	0		0.10	0.10	
GPS NMEA GGA: Satellite Count	SAT Count	Scnt		0		0.30	0.30	
GPS NMEA GGA: Latitude	LATITUDE	LAT	degr	5		0.30	0.30	
GPS NMEA GGA: Longitude	LONGITUDE	LON	degr	5		0.30	0.30	
Serial In 1 YSI, Sontek; Position 1	YSI Temp	TMPw	C	1		0.00.0.5	0.00.0.5	
Serial In 1 YSI, Sontek; Position 2	YSI Depth	SDep	m	2		0.00.0.5	0.00.0.5	
Serial In 1 YSI, Sontek; Position 3	YSI Turbidity	Turb	NTU	1		0.00.0.5	0.00.0.5	
Average of: Serial In 1 YSI, Sontek; Position	YSI Tub avg	AvTu	NTU	1		0.10	--	

In this list all settings can be configured to make the substation function as you want. When you double click in the list on an setting that you would like to change a new follow up screen will open, where the changes can be made in. On these follow up screens the help function is also available.

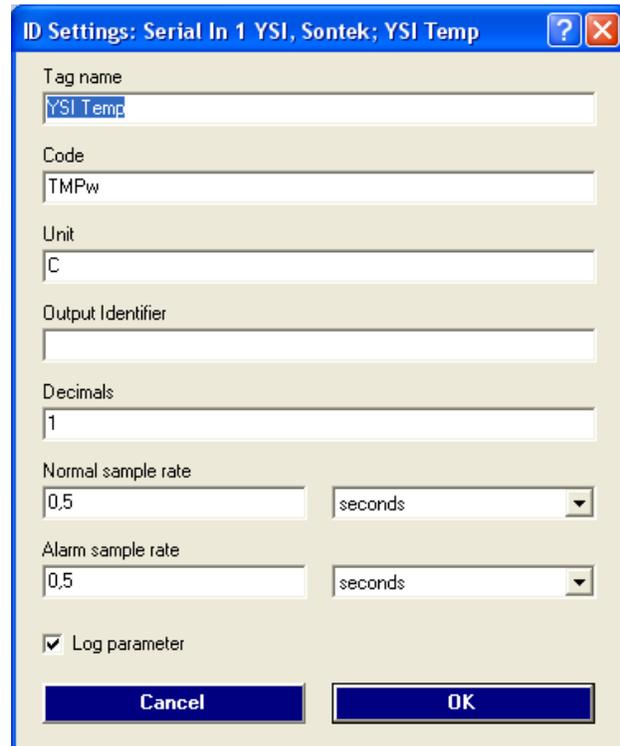
PLEASE NOTE: not all options can be entered/changed for all the parameters. All options that are marked with '--' are not available for the concerning parameter.

1. Cancel.

Return to the previous screen.

2. OK.

Save all changes and return to the overview screen of the configuration.



ID Settings: Serial In 1 YSI, Sontek; YSI Temp

Tag name: YSI Temp

Code: TMPw

Unit: C

Output Identifier:

Decimals: 1

Normal sample rate: 0.5 seconds

Alarm sample rate: 0.5 seconds

Log parameter

Buttons: Cancel, OK

Main Menu.



1. Configure Substation.

Create a new configuration or load an existing one from file or substation.

2. Read Actual Values.

Establish a connection with your substation and view the actual values.

3. Download Data from Substation.

Establish a connection with your substation and download specific data.

4. Read Data from SD Card.

Download all data from the SD card placed in your PC's SD reader.

5. Maintenance.

This menu will provide you several test and maintenance options. It's password protected, the password is 'manager'.

6. Select Language.

Select your language, currently you can choose between English, Dutch & French.

7. Exit Program.

This will end OMC-programmer

Maintenance.



1. Upgrade Firmware Substation.

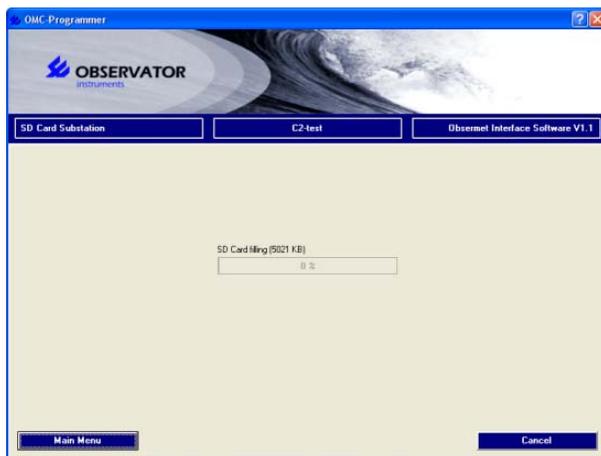
Using this option the firmware of the substation can be upgraded, after a connection with the substation is established. You will be requested to save your configuration, after the update your configuration will be portated to the new firmware. It is recommended to check your configuration afterwards. In some rear occasions portation might fail and you will have to reconfigure your substation manually.

2. Terminal Window Substation.

Using this option the low-level communication inside the substation can be displayed. Using this an experienced user can easily judge the status of the substation and the connected devices.

3. SD Card Substation.

Using this option it is possible to check the free memory on the SD card after a connection with the substation is made.



4. Signal Strength Substation.

Using this option the GPRS signal strength can be checked, once a direct (usb) connection with the substation is established. This will not work remotely, since the GPRS connection will be lost during signal strength tests.

5. GPS Information Substation.

Using this option it is possible to display the GPS data after a connection with the substation is made. Please note a GPS only works outside. It might take 30 seconds or longer before the GPS has a satellite fix.



6. Main Menu.

Using this option you can return to the main menu.

Overview Configuration.



The total configuration of the substation is displayed on this overview.

The **blue parts** have been configured and can be altered.

The **red parts** are not yet (completely) configured.

The **dimmed grey parts** can't be selected yet. After completing all red parts, new parts will be available for configuration, step by step.

It is, necessary that no red parts are shown in this screen. When a red part is displayed it means that the minimum configuration is not completed yet. A configuration will only work when all the minimal settings are configured. When a configuration of a parts is done, you will always return to this overview. In this way the substation can be configured step by step. Every option will show a next screen. All these screens have their own help function.

1. Sensors.

Select the sensors which are connected to the substation.

2. Parameter list.

Add / Remove the parameters that will be used by the substation.

3. Input (Tag list).

Edit the settings of the selected parameters.

4. Substation.

Alter the logger type, the name and the ID of the substation. The logger type can only be altered in an empty configuration.

In all other cases the logger type will be displayed and can not be altered.

5. Data Output.

Configure the data output of the substation. For example this can be by e-mail, FTP, RS-232 or TCP/IP.

6. Analog Output.

Configure the analog output of the substation. Using the analog output the substation can control equipment connected to this output.

7. Modem.

If a modem is installed in the substation, all the necessary modem settings need to be configured. If a modem is not configured, this option will not be available.

8. Alarm Handling.

Set the phonenumber which should receive alarm SMS.

9. Time Sync. settings. (not available yet)

When the substation has a modem available, you can synchronise the internal clock using this option. In most cases the GPS module will be used to synchronise the internal clock.

10. Auto Upgrade settings. (not available yet)

When the substation has a modem available, you can enter here, if and how, the substation can automatically download available upgrades. For the time being, this is only possible using this software.

11. Advanced Config.

A experienced user can adjust the configuration of the substation by adding hardware. After the hardware has been added extra options/parts for configuration will become available. It is for example possible to add a modem to the hardware. Password is 'manager'.

12. Printing Config.

To view the XML file of the configuration. In the future a short readable overview of the complete configuration will be shown. Maybe in the future it will also be possible to choose between displaying an XML or PDF file. The PDF file could show the layout of the wiring of the complete configuration. In Ridderkerk these PDF's will have to be made. Observator is thinking of a way we can realise this.

13. Plan Deployment.

Set a time and date to start the logger in the future. For direct use, simply use a date in the past.

14. Save Configuration.

Save the configuration either on file or to the substation.

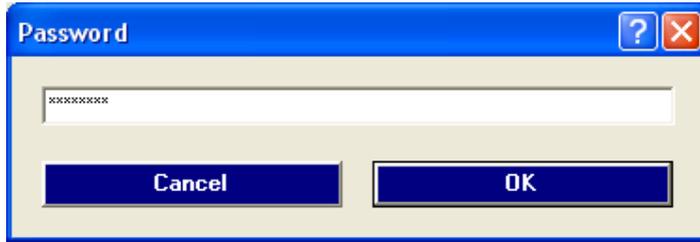
15. Main Menu.

Return to the main menu.

16. Cancel.

Return to the previous screen.

Password.



In this screen a password has to be entered to receive access to a few advanced settings of the substation. There are two levels;

"manager" first level for experienced users.

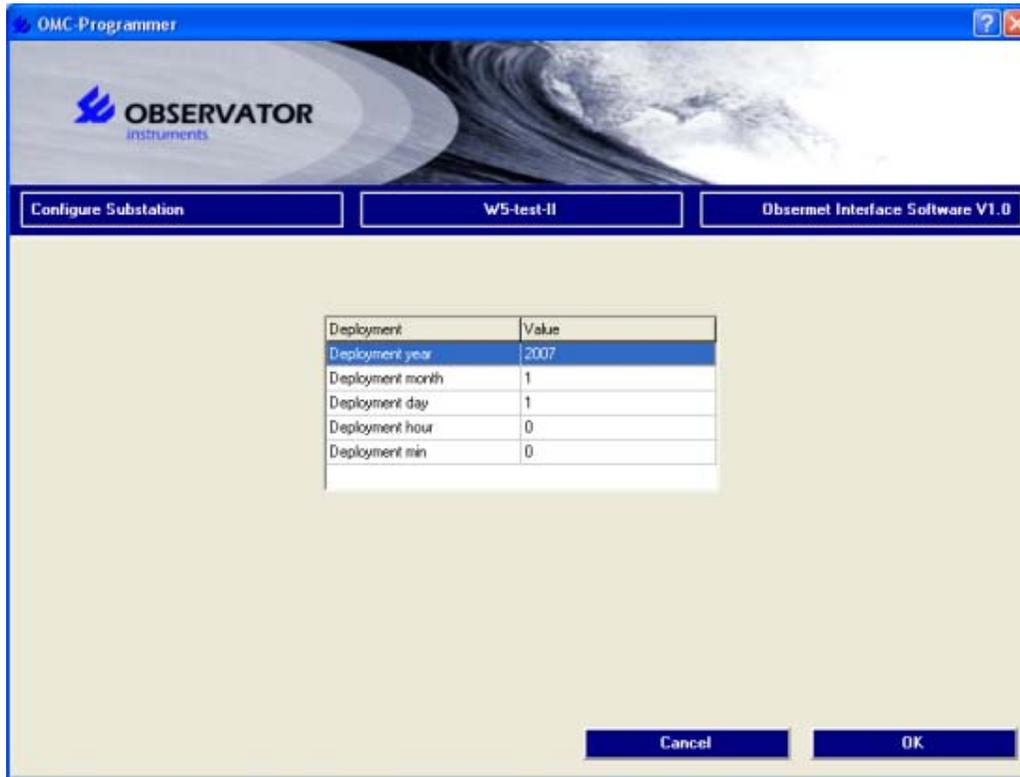
1. Cancel.

Return to the previous screen.

2. OK.

Save changes and return to the overview screen of the configuration.

Plan deployment.



The substation can be configured in such a way that it will "awake" at a certain time in the future and starts working. This way it is possible to start a few substations at the same time.

1. Deployment year

The year that the deployment will start.

2. Deployment month

The month that the deployment will start.

3. Deployment day

The day that the deployment will start.

4. Deployment hour

The hour that the deployment will start.

5. Deployment minute

The minute that the deployment will start.

6. Cancel.

Return to the previous screen.

7. OK.

Save all changes and return to the overview screen of the configuration.

Save Configuration.



The choices in this screen are clear. The configuration can be written to a substation, the configuration can be saved to a file or you can exit the program without saving the configuration. Each follow-up screen has its own help-function.

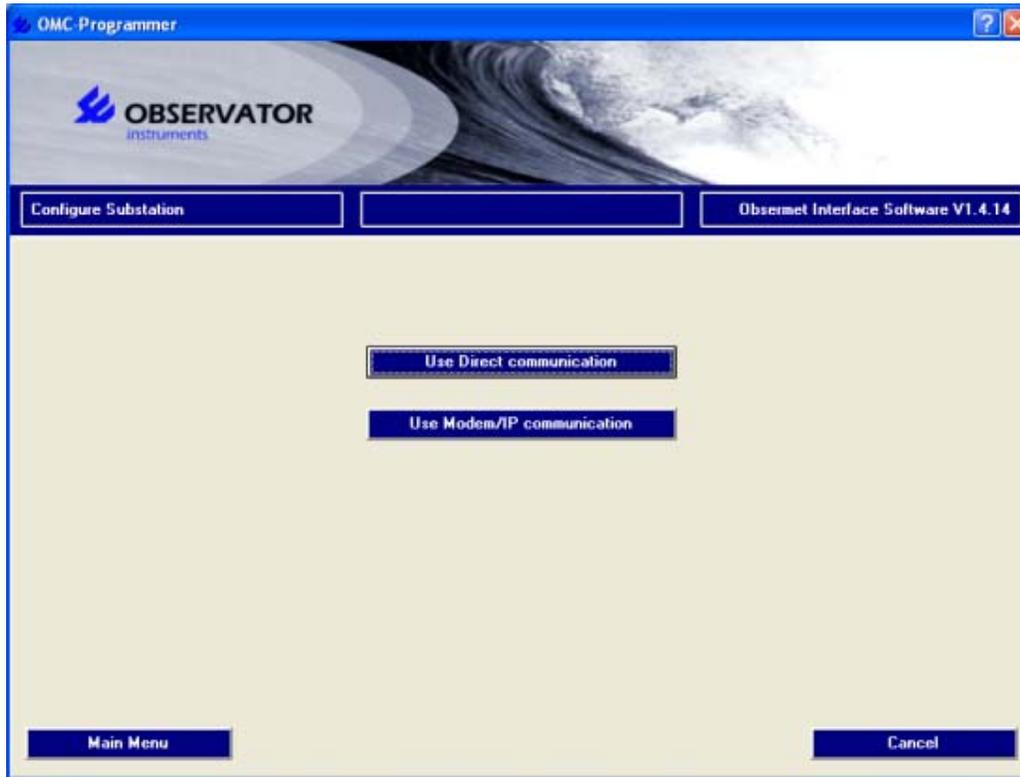
1. Main Menu.

With this option you can return to the Main Menu.

2. Cancel.

With this option you can return to the previous screen.

Select communication method.



1. Use Direct communication

Establish a direct connection by cable between your PC & substation

2. Use Modem/IP communication

Establish a modem or network connection between your PC & substation

3. Main Menu.

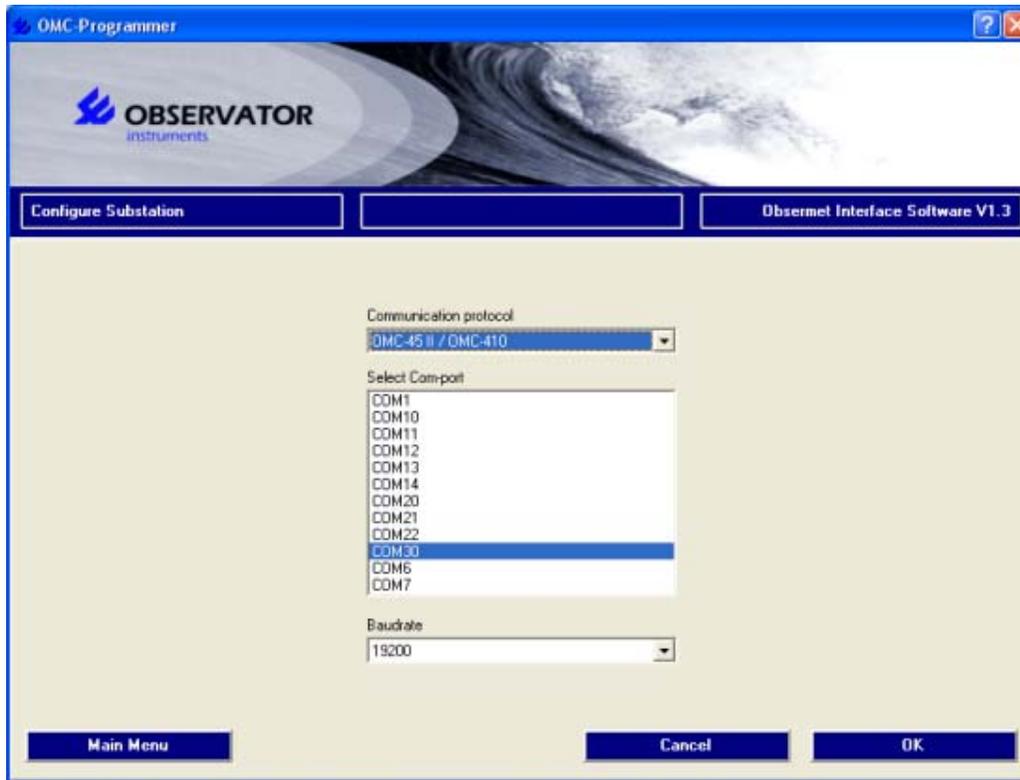
Return to the main menu.

4. Cancel.

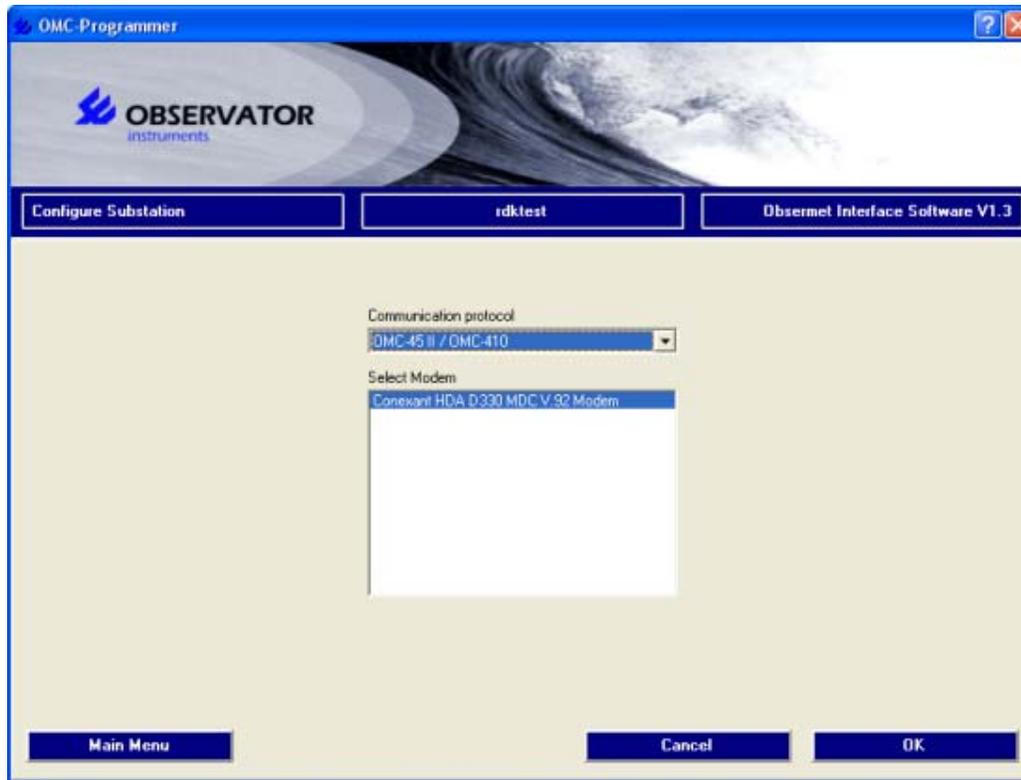
Return to the previous screen.

Select Com-port.

When you want to read the configuration from a logger, you will have to select the protocol that should be used for communication with the logger. The protocol depends on the type of logger that you want to communicate with.



When "direct communication" is chosen then you will have to select the com-port where the configuration cable of the substation is connected too. Only the com-ports which are available on the computer will be shown. The baud rate is default set correct and will only have to be altered in special cases.



When "modem communication" is chosen, a modem will have to be selected, which will be used to build up a connection with the substation. Only the modems which are available on the computer can be selected.

1. Main Menu.

Return the main menu.

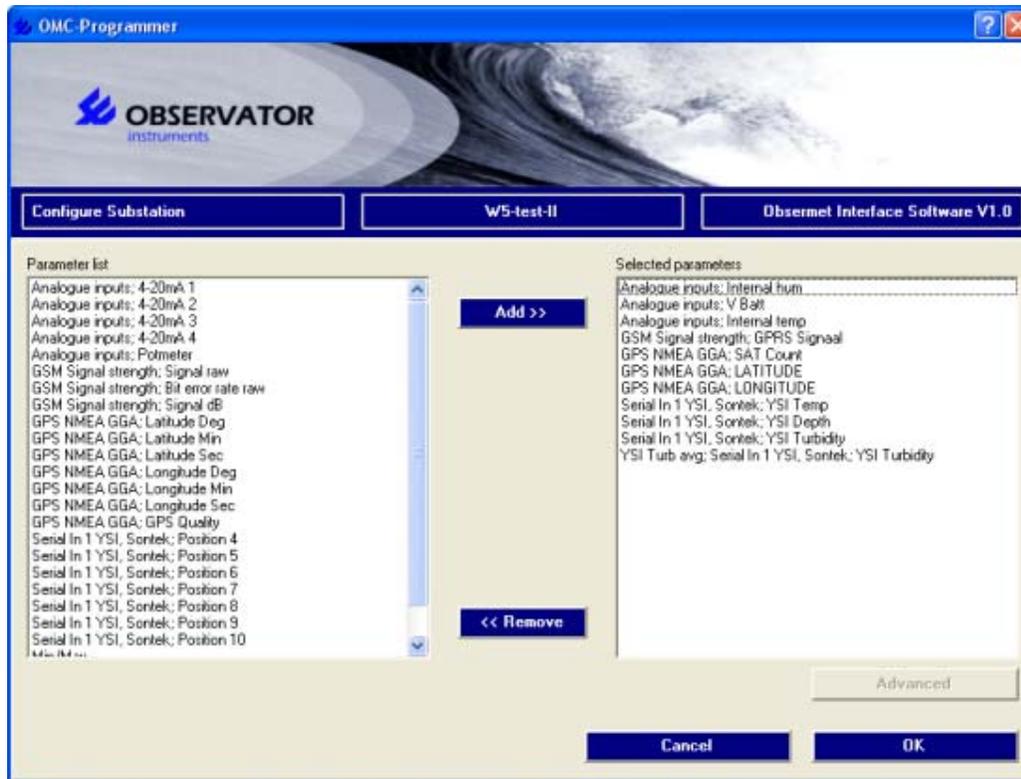
2. Cancel.

Return to the previous screen.

3. OK.

Confirms current selections.

Select parameters.



In this screen you can select the required parameters, which the substation has to work with. Just choose a parameter from the left list and add it to the right list. In the right list the selected parameters are shown.

From the left list you can also select the so called calculated parameters. Calculated parameters are parameters which are calculated over a set of data points of one parameter, like the average, minimal or maximal temperature. When a calculated parameter is selected in a next window you will be asked how the calculated parameter should be calculated. The parameter will be calculated over the registration period. If you want to use calculated parameters the sample period of the parameter should be less than the registration period of this parameter.

1. Add up >>.

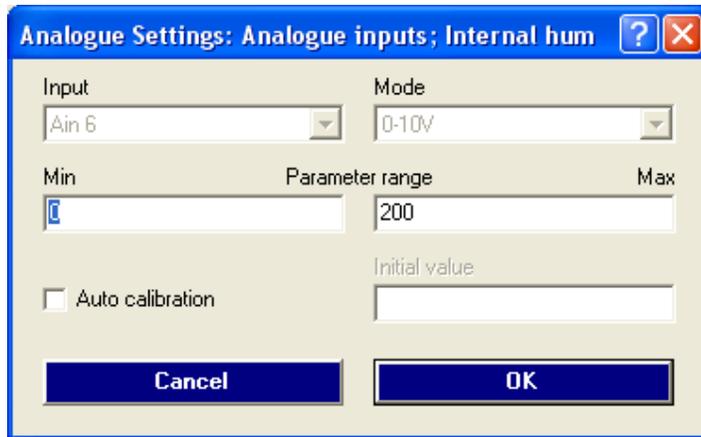
The selected parameter in the left list will be added to the right list. Also by double clicking the parameter will be added.

2. << Deleted

The selected parameter will be removed from the right list.

3. Advanced

For some parameters it is possible/necessary to configure some additional settings. This depends on the used sensors and in some cases the way these sensors have been connected to the logger.



Analogue Settings: Analogue inputs; Internal hum

Input: Ain 6 Mode: 0-10V

Min: Parameter range: 200 Max:

Auto calibration Initial value:

Cancel OK

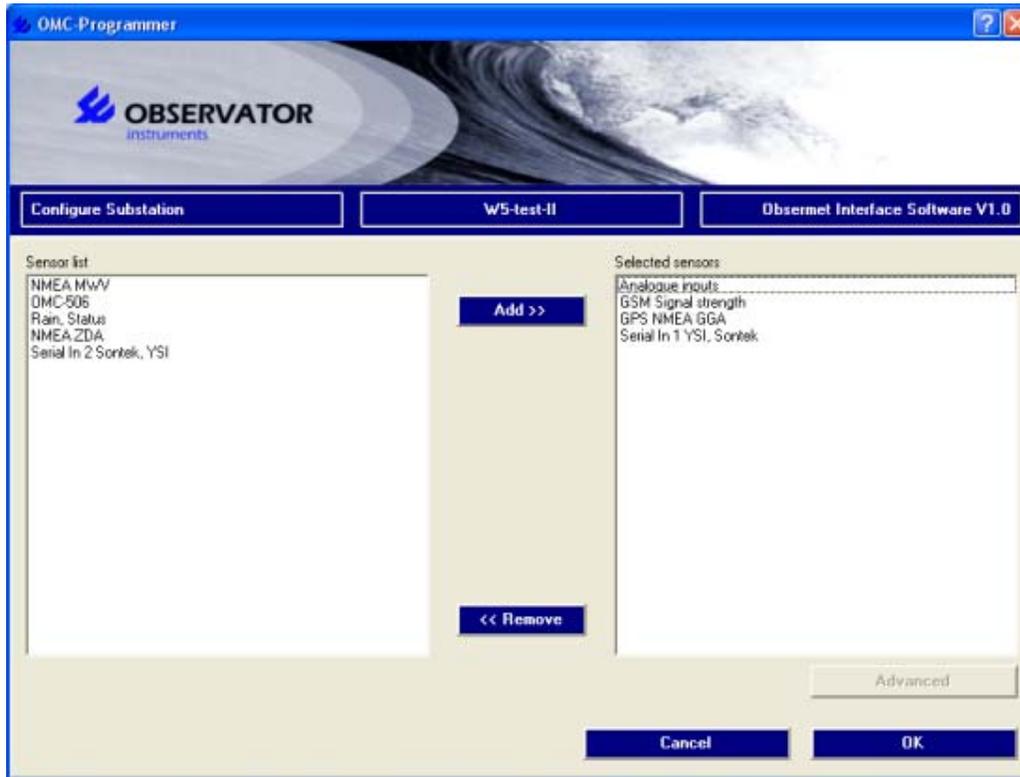
4. Cancel.

Return to the previous screen.

5. OK.

Save all changes and return to the overview screen of the configuration.

Select sensors.



On this page you can select the desired sensors by chosen from the left list. In the right list the selected sensors are displayed.

1. Add >>.

Add the selected sensor from the left list to the right list. You can also add a sensor by double clicking.

2. << Delete.

deleted the selected sensor from the right list.

3. Advanced.

Change the advanced settings of the selected sensors, only available if applicable for the selected sensor.

Select substation.



Setup a remote connection in this menu with your substation.

1. Edit number/URL

Edit the phonenumber or URL of the selected station.

Substations are automatically added when you configure one with your PC.

To access a station not in the list, select New and edit the phone number or URL.

If the list is empty, go back to 'Configure Substation' and select 'Configure New Substation', you can select 'cancel' on the next page, a New substation has been added now.

2. Delete Substation.

Delete the selected substation

3. Cancel.

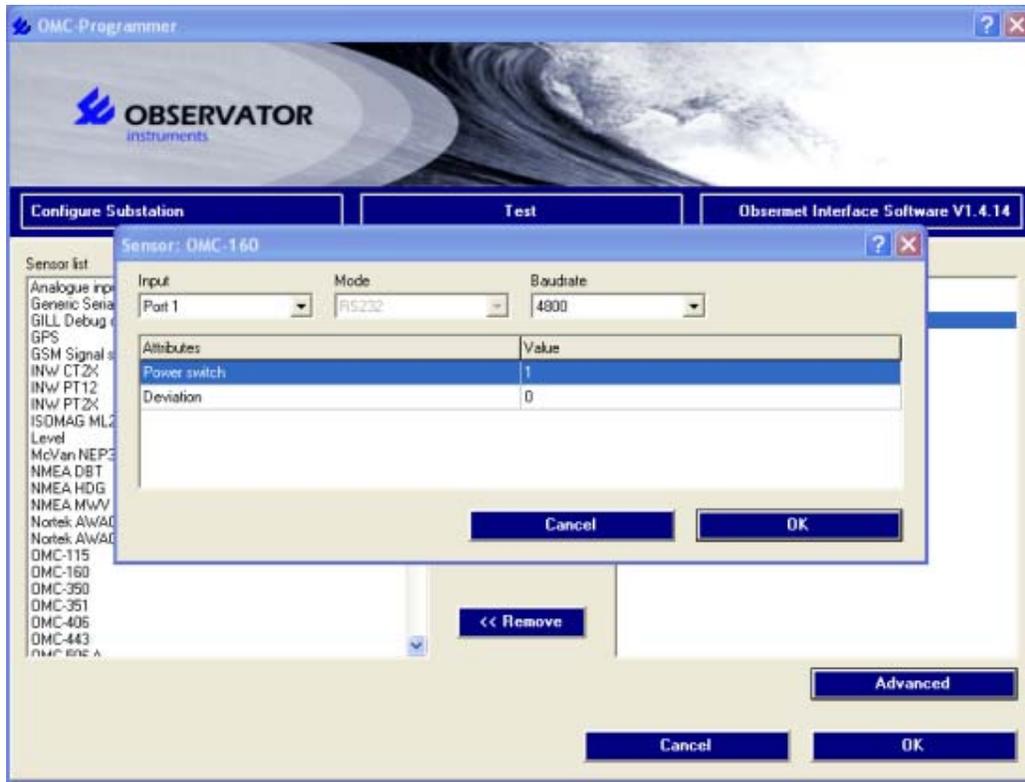
Return to the previous screen.

4. OK.

Establish a connection with the selected substation.

5. Main menu.

Return to the main menu.



4. Cancel.

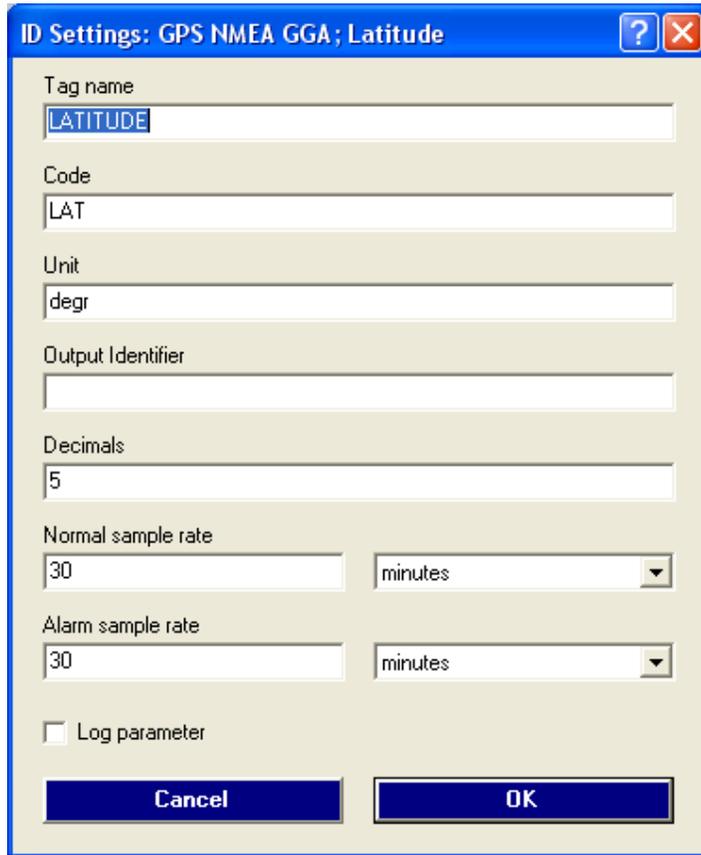
Return to the previous screen.

5. OK.

Save all changes and return to the overview screen of the configuration.

The program displays the default way to connect all sensors. In the next section is shown how to connect the sensors to the substation.

Settings parameters.



1. Tag name.

Here you can enter the name of the parameter.

2. Code.

Usually this code is filled in default and must be unique in the configuration. When several sensors, measuring the same parameter, are configured, such as (for instance) the temperature on various heights, you must alter/change this default code. However, we like to advise to use a standard code. Each new code is an extra tag in the database which creates an unnecessary large database. Observator uses a standard list with parameter names and codes.

3. Unit.

Here you can enter the unit of the parameter. In some cases the unit is linked to the parameter and therefore cannot be changed.

4. Output Identifier.

When direct serial output of the substation is used, you can enter the identifier that is used in the OMC-2900 protocol. The identifier must be unique and can only exist of one character. Both capital and lower case letters can be used. Therefore 52 characters are available.

5. Decimals.

Here you can enter the amount of decimals, that is used in the measured value. Please note that even when using digital parameters it is advisable to use at least 1 decimal. Using 0 decimals could cause errors in alarm handling.

6. Normal sample rate.

Here you can enter the sample rate that should be used when the system is in normal operation mode.

7. Alarm sample rate.

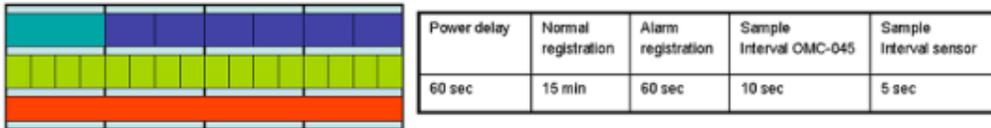
Here you can enter the sample rate that should be used when the system is in alarm mode.

Explanation of used intervals,

Normal mode



Alarm mode



-  = Registration-interval (has to be xx times the Sample-interval OMC-045-II)
-  = Power delay (to keep sensor powered Power delay > Sample-interval OMC-045-II)
-  = Sample-interval OMC-045-II (sample interval has to be whole part of Registration-interval)
-  = Sample-interval sensor
-  = Sensor powered

8. Log parameter.

When this option is enabled the parameter will be logged in the log file on the SD card.

9. Cancel.

With this option you can return to the previous screen.

10. OK.

With this option the settings will be saved and you will return to the parameter list.

StartUp Screen.



1. OMC-Programmer

Configure the OMC-045-II, OMC-045-III and OMC-410 data loggers.

2. OMC-045-I Configurator.

Configure an OMC-045-I via OMC-045-I programmer. It is not included in OMC-programmer and requires a separate installation. Not supported by this help function.

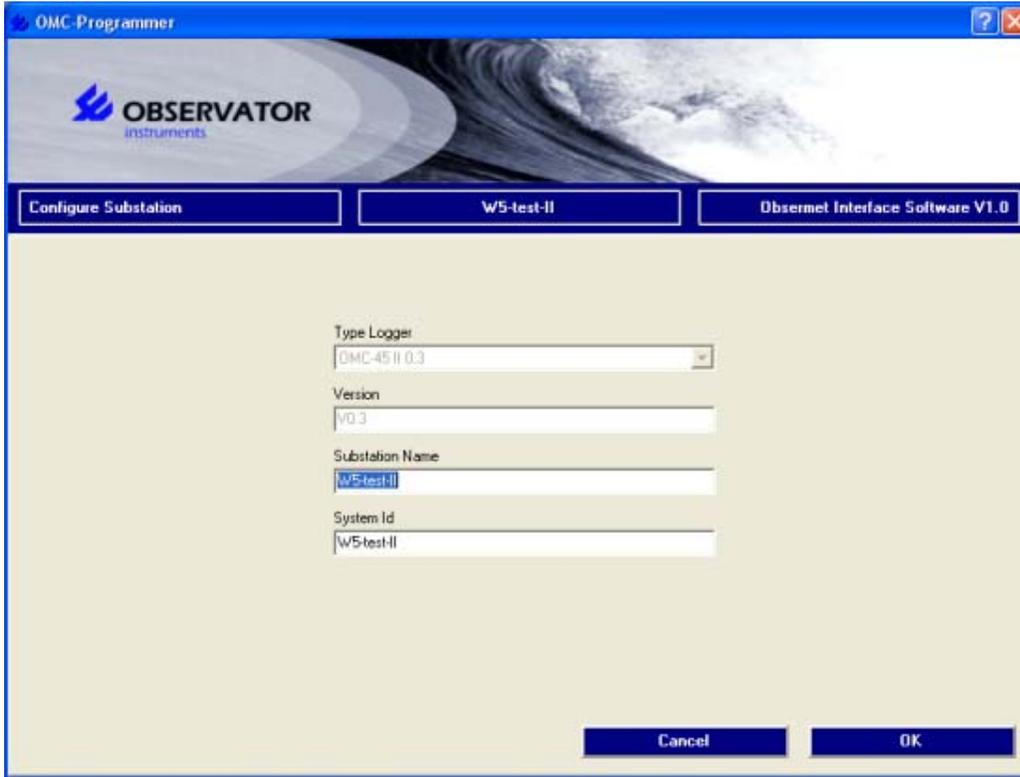
3. OMC-303/2650 Configurator.

Start the configuration tool for the OMC-303 & OMC-2650. It is not included in OMC-programmer and requires a separate installation. Not supported by this help function.

4. Exit Program.

This will exit OMC-programmer.

Substation Settings.



1. Type Logger.

Select a type of substation, which you want to configure using this program. When the configuration is uploaded to the substation, the type of substation must correspond with the substation where you want to upload the configuration to. It is not possible to change the substation type when the configuration is read from file or downloaded from a substation first.

2. Version

This is the logger version of the Hardware. This value will shown only and can not be altered.

3. Name of substation

Enter or alter the entire name of the substation.

4. System ID.

Enter or alter the ID (short name or code) of the substation.

5. Cancel.

Return to the previous screen.

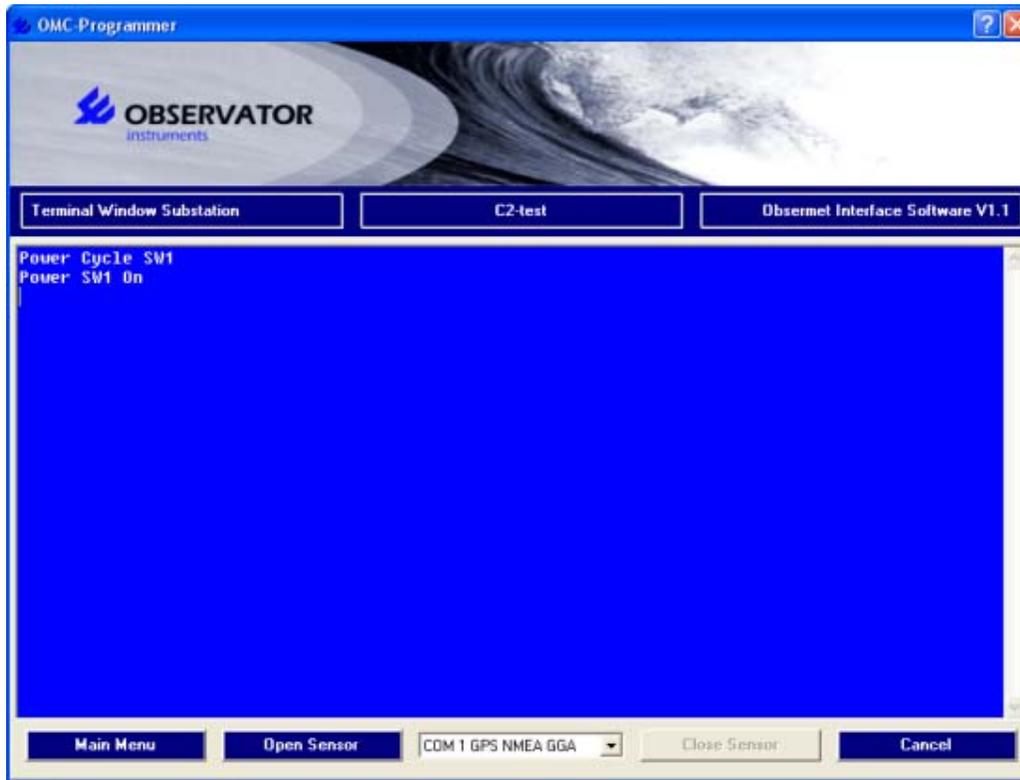
6. OK.

Save changes and return to the overview screen of the configuration.

Time Sync. settings.

NOT AVAILABLE YET !!!!!

Terminal window.



Check the real time internal communication in the logger and communicate directly with the serial sensors connected to the logger.
Without opening any sensor, you will monitor the status of the logger itself. Opening a sensor will give you direct communication with the sensor.

1. Main Menu.

With this option you can return to the main menu.

2. Open Sensor.

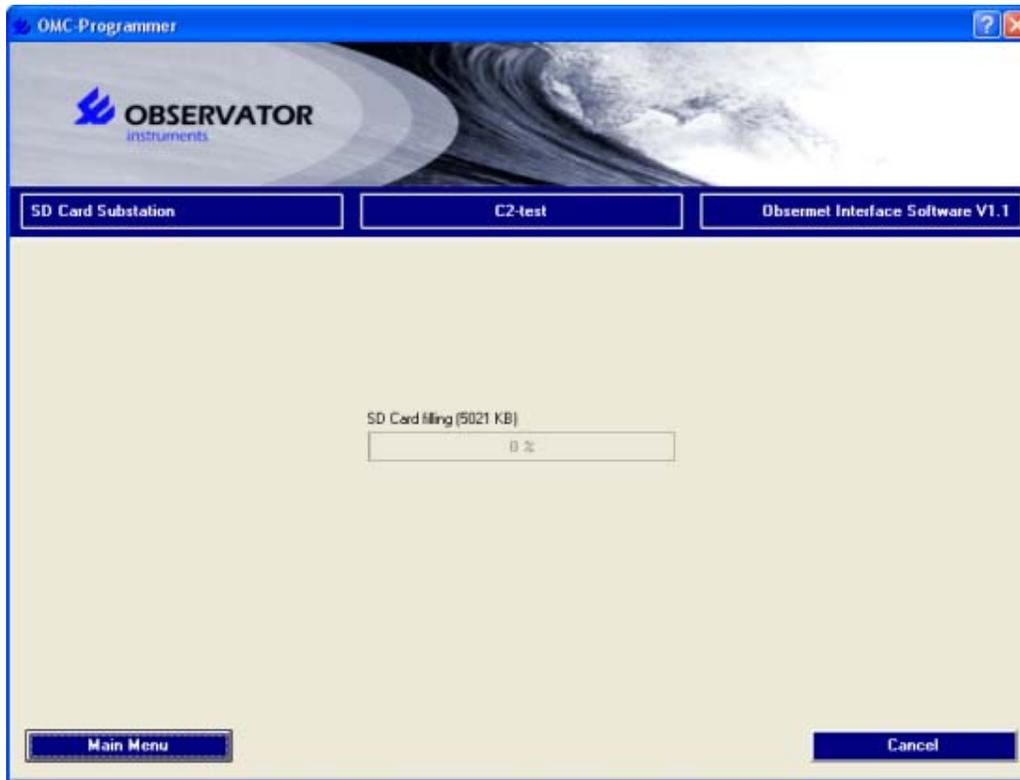
When this option is selected the communication will be started directly, with the sensor selected in the list box in the middle. After the communication is started it is possible to send commands to the sensor directly.

Note: Do not confuse internal comport numbers with OMC-045-III port numbers, there are more comport numbers then the 5 external I/O port numbers and the numbering is not identical.

Example: Port 1 has internal comport number 4, if you open a sensor on port 1, the OMC-045-III will respond with 'Com4Direct started'.

Used memory on SD card.

Using this option it is possible to check the free memory on the SD card installed in the OMC-045-II/III. The free memory on the SD card is also a parameter in the log file.



1. Main Menu.

Return to the main menu.

2. Cancel.

Return to the previous screen.

Technical info OMC-Data loggers

Connecting and configuring a YSI 6-series sonde.

To connect a YSI sonde to the OMC-045-II, Observator removes the MS-8 connector from the YSI field cable. The table is showing how to connect the YSI wires to the OMC-045-II. Please note X2 and X3 are different clamps. Also note that the power coming from the OMC-045-II(I) is equal to the power that the OMC-045-II is powered with. So if you use 24 Volts to power the OMC-045-II(I) you will damage the YSI sonde. A YSI sonde can take max. 15 Volts.

Wire Colour Pin	Description MS-8	OMC-045-II	OMC-45-III
Red + 12V DC	A	X2 - 2	4
Black GND	B	X2 - 1	3
Yellow RS232 TX	C	X3 - 7	21
Orange RS232 RX	D	X3 - 6	22

Connections are for Power Switch 1 and port 1, which are the default ports. If you wish to use a different port or powerswitch, find the corresponding terminals in the terminal overview.

When installed, remove all internal batteries from the sonde. The sonde is powered by the OMC-045-II, using internal batteries also, will cause mal functioning of the system.

To make a YSI 6-series sonde work together with the OMC-045-II, some settings have to be made in the YSI. These settings can be made in the Terminal Window of OMC-Programmer or using a YSI handheld. When using OMC-Programmer;

- Select Maintenance, password "manager",
- Choose Terminal Window Substation,
- Select the YSI sonde in the list box,
- Open the communication to the YSI sonde and enter "Enter" followed by "Esc" within the first 5 seconds after communication is opened. After that a # will be shown,
- Type "menu" to open the YSI menu.

In the YSI manual all YSI settings are explained. If the settings are not correct you will receive a error SMS message from the OMC-045-II, "Serial 1 Error". The next settings should be set;

Advanced Menu, Setup

- Start up: Run

System menu

- Page Length = 0

Report menu

- Date disabled
- Time disabled
- Select all parameters that you need in the output of the YSI sonde, please select the correct units also.

Remember the order of the parameters coming out of the YSI sonde. When configuring the Input (Tag list) you need to configure the parameters in the OMC-045-II in exactly the same order.

Advanced, data filter setup menu

- Data Filter "Enabled"
- Wait for Filter "OFF" (if wait for filter is ON, the sonde will give no data while wiping, if filter is OFF sonde will give last recorded data while wiping)
- Time Constant = 12 (this is the period in seconds that is used to calculate an rolling average at an internal 8 Hz sampling rate, Time Constant, 12 means that 96 individual samples are used for calculating the rolling average used as the output value)
- Threshold = 0.01

Advanced menu, sensor

- Turb Spike filter = "ON"
- Wipe interval = 15

Run menu

- Discrete sample
- Sample Interval >= 0.5, Sample interval <= Sample interval logger
- Start sampling

Close communication with the sensor or remove sensor from handheld, while YSI is running.

List of all YSI parameters.

Depending on the sensors that have been installed in the YSI and the parameters selected in the report function, the output will contain some of the listed parameters. The ID of the parameter gives the order of the parameter in the output string. So, when selected, temperature is always the first parameter in the output. The most common used parameters are shown in the list.

ID Parameter

- 1 Temp C
- 2 Temp F
- 3 Temp K
- 4 Cond mS/cm
- 5 Cond uS/cm
- 6 SpCond mS/cm
- 7 SpCond uS/cm
- 10 TDS g/L
- 12 Sal ppt
- 14 DOsat %
- 15 DO mg/L
- 17 pH mV
- 18 pH
- 19 Orp mV
- 20 Press psia
- 21 Press psig
- 22 Depth meters
- 23 Depth feet
- 28 Battery volts
- 37 Turbidity-6026 NTU
- 47 NH3 N mg/L
- 48 NH4+ N mg/L
- 94 Resist Ohm*cm
- 95 TDS Kg/L
- 96 DOchrg
- 101 NO3- N mV
- 106 NO3- N mg/L
- 108 NH4+ N mV
- 112 Cl- mgN/L
- 145 Cl- mV
- 193 Chlorophyll ug/L
- 194 Fluorecence % full scale
- 201 PAR1
- 202 PAR2
- 203 Rodamine
- 203 Turbidity-6136 NTU
- 211 ODO%
- 212 ODOmg/l
- 214 ODO% Local

Connecting and configuring a Sontek SW/SL.

Before connecting the Sontek SW/SL to the OMC-045-II be sure the Sontek is configured properly. The settings can be checked and changed using HyperTerminal. Please read the manual from the Sontek equipment first because this manual is not the Sontek manual.

The wiring in the Sontek cable is in pairs (black /red, black/yellow & black/white). The yellow wire is not always required (according Sonteks drawings it's not), but we have found that sometimes the Sontek does not respond without it connected. The The color between () indicates the black wire pair.

Wire Colour Pin	OMC-045-II	OMC-45-III
Black (red)GND	X2 -1	3
Black (yellow)	X2 -1	3
Red + 12V DC	X2 -2	4
(yellow)	X2 -2	4)
Black (white)RS232 TX	X3 -15	21
White RS232 RX	X3 -16	22

Connections are for Power Switch 1 and port 4 (OMC-045-II) or port 1 (OMC-045-III), which are the default ports. If you wish to use a different port or powerswitch, find the corresponding terminals in the terminal overview.

When the Sontek is connected as shown, you can use "Terminal Window Substation" under the "Maintenance Menu" to configure the Sontek while it is connected to the OMC-045-II. After opening communication on the correct com-port stopping the Sontek SL/SW can be done by sending the command +++ (three pluses) using the terminal Windowl.

Before using the Sontek SL/SW in combination with the OMC-045-II, be sure to check the next settings;

```

PROFILINGMODE NO
RECORDER OFF
AVGINTERVAL 60
SAMPLEINTERVAL 60
AUTOSLEEP NO
POWERPING ON1Z221
ALLOWONEBEAM YES
OUTFORMAT METRIC
  
```

If these settings are correct then give the command **START**, which will start-up the Sontek. The Sontek will send out each 60 seconds data. You can disconnect the power. And connect the Sontek to the OMC-045-II. The OMC-045-II will power the Sontek and the Sontek will send the data after one minute.

Please note that if the option **ALLOWONEBEAM** is activated the Sontek will continue working even if one of the beams is blocked. In that case it is assumed that the flow conditions in both beams are similar. If the installation of the Sontek is correct than in most cases this is reasonable. Please see the Sontek manual for further explanation.

The option **PROFILINGMODE** can not be used in combination with the OMC-045-II. The output from the Sontek will be too large using this mode. If you want to use this mode it is only possible in real-time mode when the OMC-045-II is only used as power supply and is connected to a PC were SonUtils is running on. Please be sure the mode is off when the Sontek is used in combination with the OMC-045-II otherwise you will get communication failures.

This table shows all data coming from the Sontek. The parameters that are selected in "Use in output" are preconfigured in OMC-Programmer. If you need additional parameters please contact your supplier.

Description Number Use in output Use for alarm

Year 1
 Month 2
 Day 3
 Hour 4
 Minute 5
 Second 6
 Vx 7 X
 Vy 8 X
 Waterlevel 9 X < 0.30, > 5.0
 St. Error X 10
 St. Error Y 11
 St. Error Z 12
 Signal strength beam 1 13 X < 76
 Signal strength beam 2 14 X < 76
 Signal strength beam 3 15 X < 76
 Percent good pings 16 X
 Heading 17
 Pitch 18
 Roll 19
 St. dev. Heading 20
 St. dev. Pitch 21
 St. dev. Roll 22
 Mean temperature 23 X < 5
 Mean pressure 24
 St. dev. Pressure 25
 Input power 26
 Start sampling volume 27 X < 0.0
 End sampling volume 28 X < 0.0
 Noise level beam 1 29
 Noise level beam 2 30
 Noise level beam 3 31
 Flow 32 X
 Area 33 X < 0.01

Use of internal logger of the Sontek

When you want to use the internal logger of the Sontek, the Sontek should be powered continuously otherwise it will create a logfile every time the Sontek is powered. That means you can not use the swithed power of the OMC-045-II. You can power the Sontek continuously, using X2, 13 (-) and, 14 (+12V), or simply power the Sontek directly to the power supply. If the sontek is powered through the logger as described the operation mode of the logger should be set to "System + sensor always on" in the Advanced menu.

It is very important that the Sontek and the logger are synchroized. That means that the date and time settings in the logger should be the same as date and time settings in the Sontek. When the configuration is written to the logger, the internal clock and dat of the logger is synchroized with the date and time of the connected PC. In the "Terminal window substation" you can set date and time of the Sontek using the commands, "Date" and "Time". After you are sure data and time of the OMC-045-II and Sontek are the same, you will have to be sure that the OMC-045-II and the Sontek start at the same time. For this example we will start at April 25, 2009 at 10:00.

In "Terminal window substation" use commands;

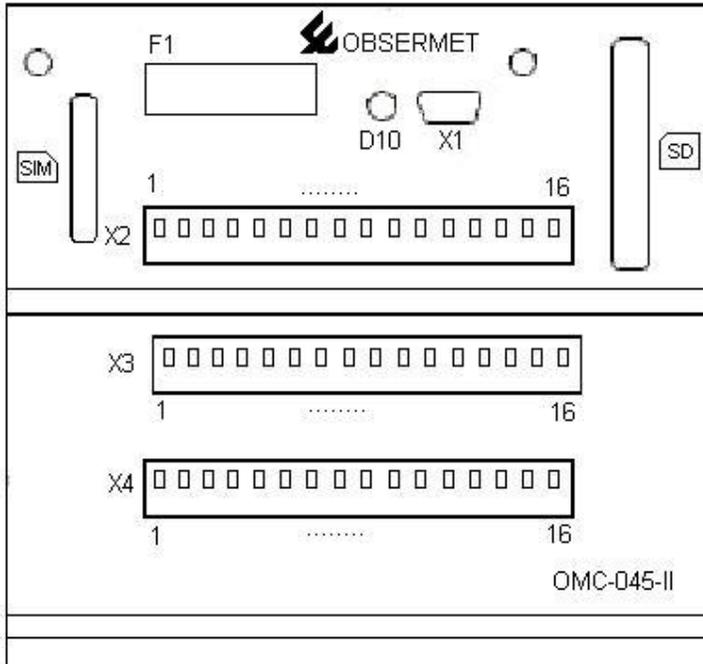
PROFILINGMODE NO	to disable profiling mode
AUTOSLEEP NO	to keep Sontek running
ALLOWONEBEAM YES	
OUTFORMAT METRIC	to be sure data is in correct format for OMC-045-II
STARTDATE 2009/04/25	to set the date the Sontek will start (don't use a date in the past)
STARTTIME 10:00:00	to set the time the Sontek will start (don't use a time in the past)
RECORDER ON	to start internal logger of the Sontek.
SAMPLEINTERVAL 720	to set sample interval for example to 12 minutes
AVGINTERVAL 720	to set averaging interval to 12 minutes
POWERPING OFF	to save power
SAVESETUP	to save the configuration

START to start the Sontek, after this keep the Sontek powered.

In the OMC-045-II you will have to configure the deployment using "Plan Deployment". Enter the exact same date and time as you have configured in the Sontek.

If everything is set correctly you will receive the SMS "deployment started" when the logger is started. If you get a SMS "Serial device communication failure" the Sontek is not responding in a way it should. Please check the settings again and use Sontek manual for additional information.

Terminals Overview OMC-045-II



X2 Connector Layout: power inputs, power outputs, and display

terminal	name	Description
X2.1	GND	Power supply input for 10-30V
X2.2	VIN	
X2.3	GND	Switched power supply output for sensors (output 1)
X2.4	VOUT1+	
X2.5	GND	
X2.6	VOUT1+	
X2.7	GND	Switched power supply output for sensors (output 2)
X2.8	VOUT2+	
X2.9	GND	
X2.10	VOUT2+	
X2.11	GND	Connection for external red LED.
X2.12	LEDOUT	
X2.13	GND	Reserved for connections of an external display
X2.14	VOUTCONT	
X2.15	TXDIS	
X2.16	RXDIS	

Note: The voltage on VOUT1, VOUT2, and VOUTCONT is (almost) equal to the power supply voltage. Be sure that this voltage is compatible to the connected sensors

X3 Connector Layout: digital inputs and communication ports

terminal	name	Description
X3.1	GND	Status input for connection of a passive switch
X3.2	DIN1	
X3.3	GND	Raingauge input/Pulse input for passive switch sensors
X3.4	DIN2	
X3.5	GND	RS232 PORT 1
X3.6	TX1	
X3.7	RX1	
X3.8	GND	RS232 PORT 2
X3.9	TX2	
X3.10	RX2	
X3.11	GND	RS232 PORT 3
X3.12	TX3	
X3.13	RX3	
X3.14	GND	RS232 PORT 4 or RS422/RS485 Software-selected in configuration
X3.15	TX4 / A	
X3.16	RX4 / B	

X4 Connector Layout: analogue inputs and alarm outputs

terminal	name	Description
X4.1	GND	4-20 mA input channel A1
X4.2	AI1	
X4.3	GND	4-20 mA input channel A2
X4.4	AI2	
X4.5	GND	4-20 mA input channel A3
X4.6	AI3	
X4.7	GND	4-20 mA input channel A4
X4.8	AI4	
X4.9	GND	Potentiometer input channel A5
X4.10	AI5	
X4.11	VREF	
X4.12	GND	0-10V input channel A6
X4.13	AI6	
X4.14	DOUT1	Alarm outputs DOUT1 and DOUT 2. These are open drain outputs.
X4.15	DOUT2	
X4.16	GND	

Terminals Overview OMC-045-III



terminal	name	Description	
1	GND		
2	VIN	Power supply input for 10-30V	
3	GND		
4	SensPower 1	Switched power supply output for sensors (output 1)	
5	GND		
6	SensPower 2	Switched power supply output for sensors (output 2)	
7	GND		
8	SensPower 3	Switched power supply output for sensors (output 3)	
9	GND		
10	SensPower 4	Switched power supply output for sensors (output 4)	
11	Sys Led Out -	External Led output negative terminal	Bi colour led
12	Sys Led Out +	External Led output positive terminal	
13	GND		
14	TX Display	RS232 transmit output	Future use
15	RX Display	RS232 receive input	Future use

terminal	name	Description	
16	GND		
17	Status In	Status input for connection of a passive switch	
18	GND		
19	Rain In	Raingauge input; Pulse input for connection of passive switch sensors	
20	GND	RS232 PORT 1	
21	TX1		Datalogger → Sensor
22	RX1		Datalogger ← Sensor
23	GND	RS232 PORT 3	
24	TX2		Datalogger → Sensor
25	RX2		Datalogger ← Sensor
26	GND	RS232 PORT 3	
27	TX3		Datalogger → Sensor
28	RX3		Datalogger ← Sensor
29	GND	RS232 PORT 4 or RS422/RS485	
30	TX4 / Y	Software-selected in the configuration	Datalogger → Sensor
31	RX4 / Z		Datalogger ← Sensor

terminal	name	Description	
32	GND		
33	4-20mA A1	4-20 mA input channel A1	
34	4-20mA A2	4-20 mA input channel A2	
35	GND		
36	4-20mA A3	4-20 mA input channel A3	
37	4-20mA A4	4-20 mA input channel A4	
38	GND		
39	Pot In	Potentiometer input channel A5	Max 2.5 Volt in
40	Vref		2.5 Volt ref out
41	GND		
42	0-10V	0-10V input channel A6	
43	REL1 Out	Alarm output 1	Potential free
44	REL2 Out	Alarm output 1	Potential free
45	Common	Common shared with REL 1 & REL2	

Note: The voltage on SensPower 1 -4 is (almost) equal to the power supply voltage. Be sure that this voltage is compatible to the connected sensors