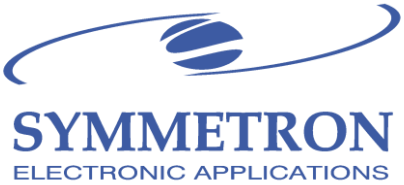
SYM-O-NET

USER GUIDE



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MANUFACTURER'S DECLARATION OF CONFORMITY

I, the undersigned, hereby declare that the equipment specified conforms to the below Directives and Standards.

Standards to which Conformity is Declared

EMC Emmisions: EN55022, EN61000-4-3

EMC Immunity: EN61000-4-2, EN61000-4-4, EN61000-4-5, EN61000-4-6

Safety: EN61010-1

Description of Equipment

Modem for automated remote GPRS/data connections.

Model

Sym-o-net

CONTENTS

GENERALLY ABOUT SYM-O-NET 6

A. STARTING UP - LOCAL SETUP 7

B. CONNECT VIA THE GPRS NETWORK VIA A DYNAMIC IP SIM CARD (CLIENT MODE) 14

0. DIAMESON SETTINGS 14

1. STARTING UP - LOCAL SETUP 16

2. CONNECTION TYPE SELECTION (client mode) 16

3. REMOTE CONNECTION IN CLIENT MODE 18

i. Connect to a datalogger via Stylitis Explorer 18

ii. Connect to a datalogger via Opton 4 22

iii. Connect to a Sym-o-net's DEVICE port via SymonetCOM 25

C. MULTIPLE SYM-O-NET CONNECTION IN A VIRTUAL WIRELESS RS-485 NETWORK VIA THE GPRS NETWORK 28

0. DIAMESON SETTINGS 28

1. STARTING UP- LOCAL SETUP 30

2. CONNECTION TYPE SELECTION (client mode) 31

3. REMOTE COMMUNICATION WITH THE NETWORK DEVICES VIA THE NETWORK'S USER (via SymonetCOM) 33

D. CONNECT VIA THE GPRS NETWORK VIA A STATIC IP SIM CARD (SERVER MODE) 36

1. STARTING UP- LOCAL SETUP 36

2. CONNECTION TYPE SELECTION (server mode) 36

3. REMOTE CONNECTION IN SERVER MODE 39

i. Connect to a datalogger via Stylitis Explorer 39

ii. Connect to a datalogger via Opton 4 42

iii. Connect to a Sym-o-net's DEVICE port via SymonetCOM 45

E. CONNECT VIA A DATA CALL VIA A DATA SIM CARD (DATA MODE) 48

1. STARTING UP- LOCAL SETUP 48

2. CONNECTION TYPE SELECTION (data mode)..... 48

3. REMOTE CONNECTION WITH THE DATALOGGER..... 50

i. Connect to a datalogger via Stylitis Explorer..... 51

ii. Connect to a datalogger via Opton 4 54

APPENDIX A: FILES SENT VIA EMAIL 57

APPENDIX B: MANAGEMENT OF ENCRYPTED EMAILS 58

APPENDIX C: GENERAL NOTES 62

GENERALLY ABOUT SYM-O-NET

The Sym-o-net gives you the capability to achieve connections with it, via various ways. You can connect remotely to its modem and:

- Connect to any serial device, as if it were connected to your PC.
- Device baud rates supported: 1200~38400 (default: 9600).
- There is also an option supporting 3 serial devices, with which you can connect with one device at a time (with the same modem).

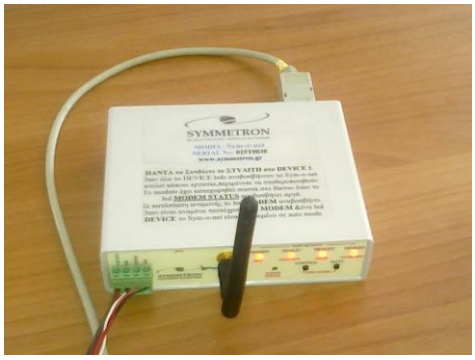
Sym-o-net's modem can be ON (available for communication) certain times of the day, to save power consumption. Moreover, for the 3 device option, each serial device may be available at different times (the corresponding DEVICE port is open).

NOTE: You can also use it with a Symmetron *Stylitis-41* or *Stylitis-101* datalogger, connected to DEVICE 1 port. In this case, there is the extra capability of automatically receiving the data via an encrypted email (according to the PASSWORD) at least once a day. For more details about setting the email parameters, about the files received, and about managing them, please refer to the corresponding chapters below and to APPENDIX A and APPENDIX B.

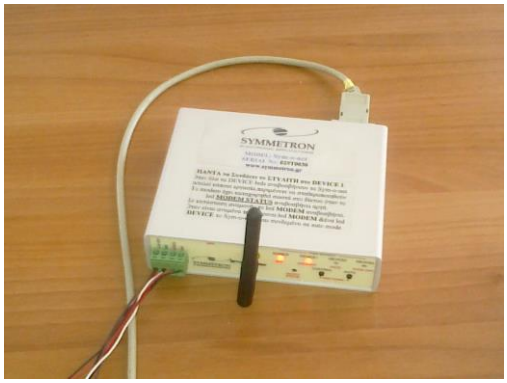
The types of connection to the Sym-o-net, along with the steps to achieve them are explained analytically below.

A. STARTING UP - LOCAL SETUP

- Connect a NULL MODEM DB9F to DB9F cable between the device's MASTER port and a computer COM port.
- If the Sym-o-net has already a SIM card and is already powered, omit the next 3 steps.
- Place your SIM Card in the corresponding slot of the Sym-o-net (depending on the connection type you wish- see next chapters- select the appropriate SIM card type- GPRS or data) and screw an Antenna to the corresponding connector.
- Connect the Sym-o-net to the power supply (recommended 12V DC between the '12~18VDC' and 'GND' pins.
- Sym-o-net red LEDs will be steadily lit for a few seconds.



- Some of the leds will flash intermittently for about half a minute, until the MODEM led and the DEVICE 1 led are permanently lit.

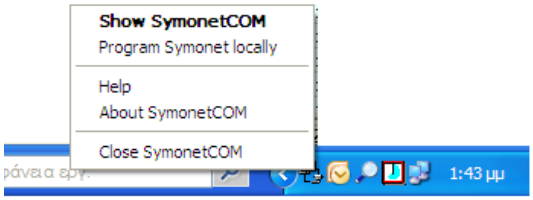


NOTES

a. The DEVICE 1 port is set by default to be always ON. However, if this is not the first time you are using this Sym-o-net and you have set another DEVICE port to be ON (3 device option), the corresponding DEVICE led will be steadily lit, instead.

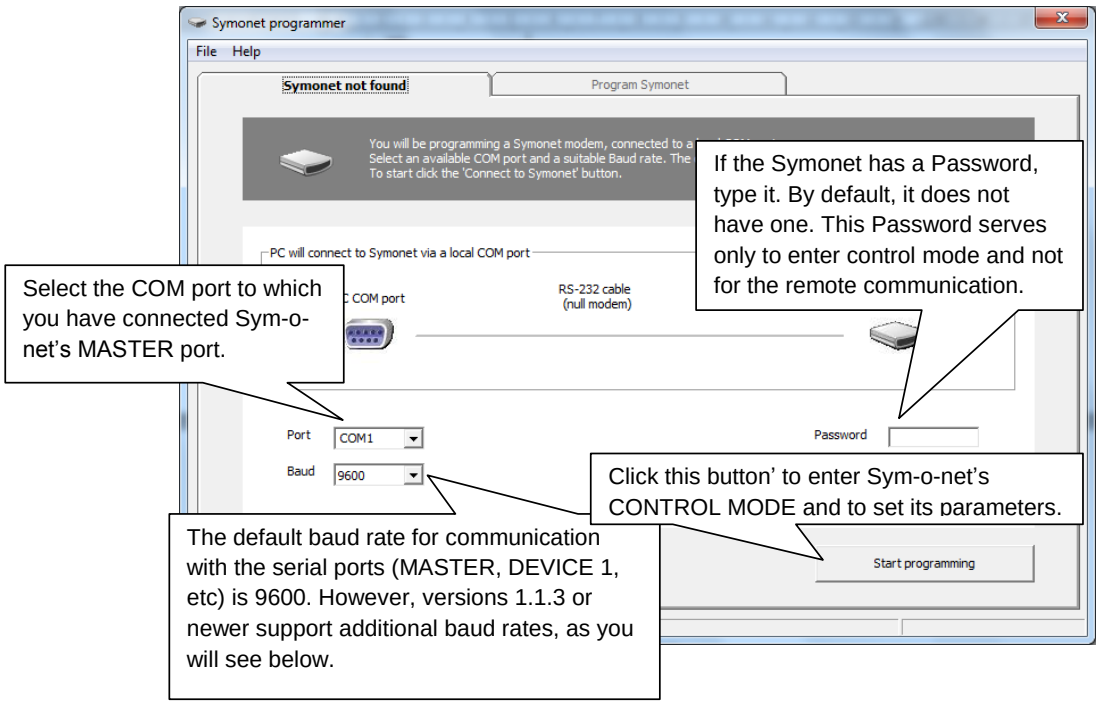
b. If you are using a Stylitis-41 or 101 datalogger, connect it to the DEVICE 1 serial port via the attached cable and adaptor.

- There are two capabilities of adjusting Sym-o-net's settings locally, according to the software you are using
  - If you are using **SymonetCOM,** open it from 'All Programs|Symmetron| SymonetCOM', and right-click its icon on the lower right part of the screen. Select 'Program Symonet locally' from the menu.

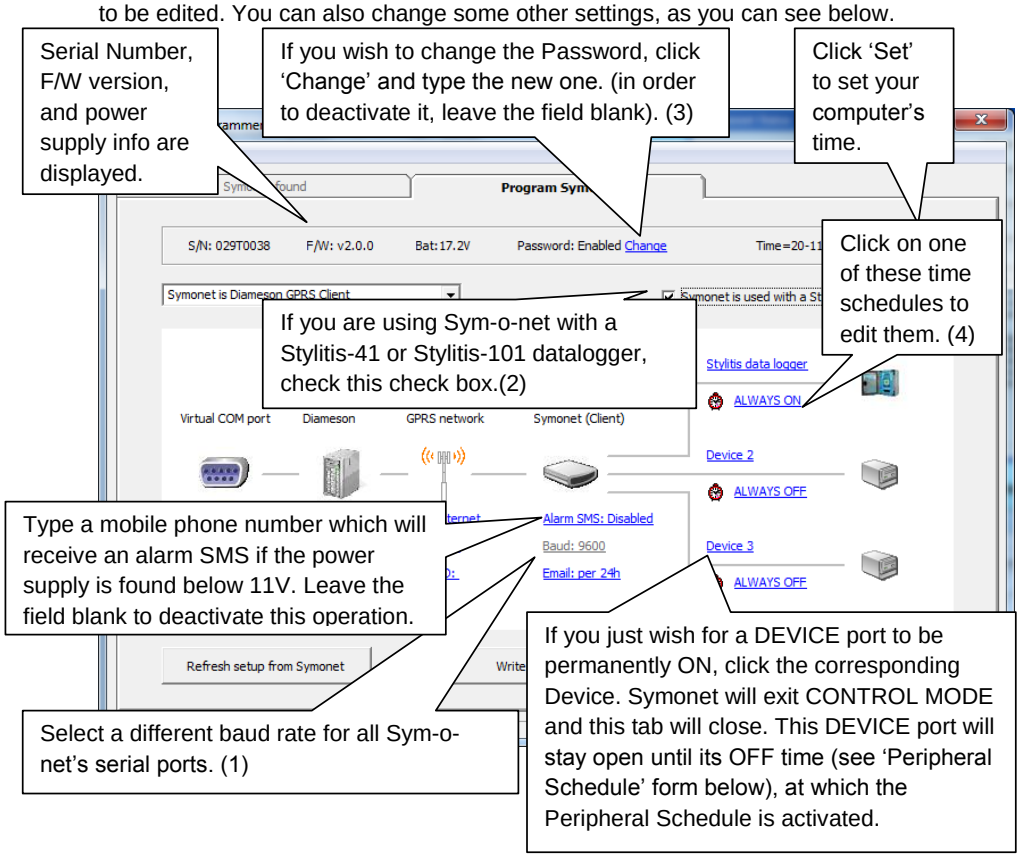


  - If you are using **Stylitis Explorer** or **Opton 4**:
    - **Stylitis Explorer**: Open it from 'All Programs|Symmetron|Stylitis Explorer 4', and regardless of site, without opening any connection, select 'Communicate| Program Symonet locally' from the menu.
    - **Opton 4**: Open it from 'All Programs | Symmetron | Opton 4', and open/create a *Stylitis-41 or 101* site. In the 'Setup' tab, without connecting, click '*Local Symonet Setup'.*

- In both cases, **Sym-o-net Programmer** will open, which is a software which accompanies SymonetCOM and Stylitis Explorer, with which you can view and change Sym-o-net's setup. In this case, Sym-o-net exits its default mode (**AUTO MODE**), in which remote communication with its peripheral devices can be achieved, and enters a special mode, named **CONTROL MODE**.



- After a few seconds, the '*Program Symonet'* tab opens, which contains the summary of all Sym-o-net settings. By clicking on a group of settings, the corresponding form opens to be edited. You can also change some other settings, as you can see below.



- The remaining settings concern the connection type you will use and the settings of a data email from a Stylitis-41 or Stylitis-101 data logger (if you are using one). These settings will be discussed in the *corresponding chapters*, according to the connection type you wish to achieve. Specifically:
    - If you wish a connection via the GPRS network via a **dynamic** IP SIM card (via **Diameson** server), click here.
    - If you wish multiple Sym-o-net connection in a network, via the GPRS network, via **Diameson** server (**virtual wireless RS-485 network**), click here.
    - If you wish a connection via the GPRS network via a **static** IP SIM card, click here.
    - If you wish a connection via data callk via a **data** SIM card, click here.

- When you finish editing the settings, click the *'Write Setup to Symonet'* button. When you have written the settings, click '*Finish programming'* in order to exit CONTROL MODE and return to AUTO MODE.

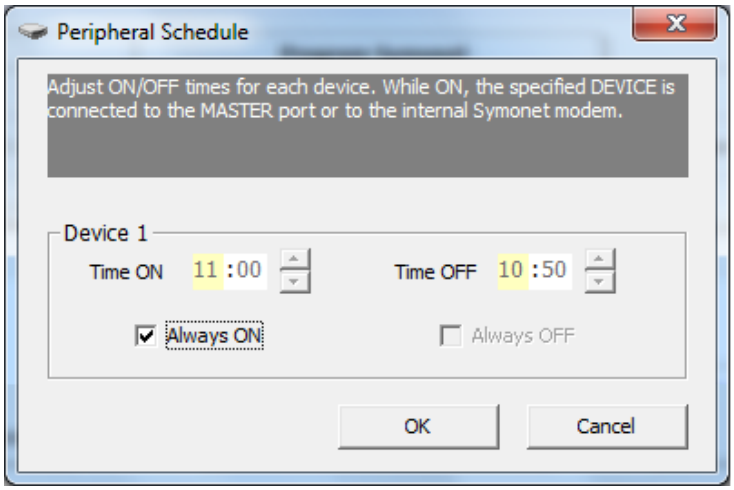
NOTES

1. Select the baud rate of the MASTER port and the DEVICE port(s). The available baud rates are: 1200~38400. If you change it, Sym-o-net with F/W version 2.0.0 or newer will be automatically reset after you click '*Finish Programming'*. (about 3 minutes required) For older versions, you must reset the power supply *manually*, for the new baud rate to be applied, or it will be reset automatically at 23:30, as it does every day.

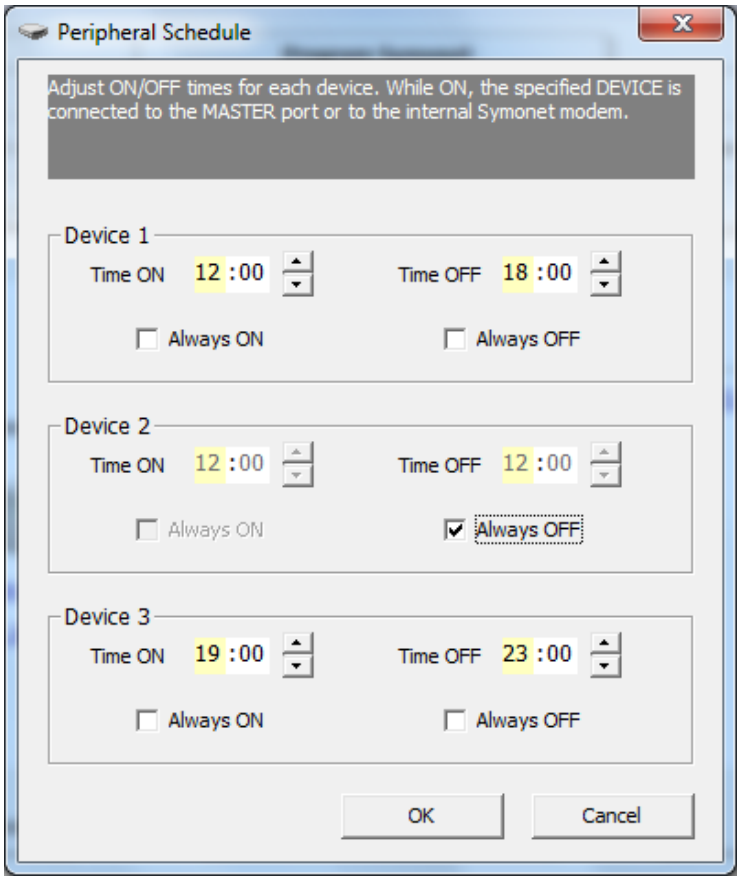
2. i. This option is available only in Sym-o-net version 2.0.0 or newer. This option enables **data emailing**, while the **baud rate** is locked to 9600. If the check box is unchecked, you can change baud rate, but you cannot enable data emailing, since you are not using a Stylitis datalogger.
   ii. These versions also support **password synchronization** (see note 2.ii.).
   For older versions, data emailing is always enabled, while password synchronization is not supported.

3. i. In case you are opening Sym-o-net Programmer via **SymonetCOM**, and you are changing Sym-o-net's Password, a message will appear, which induces you to also change the Password of the GPRS connection you are using, in case you wish to reconnect. This applies in case of a connection in **client mode** (see chapter B.3.ii.) and in **server mode** (see chapter D.3.ii.).
   ii. In case you are using a Stylitis data logger, you are opening Sym-o-net Programmer via **Stylitis Explorer.** For Symonet versions 2.0.0 or newer and for Stylitis-41 versions 45.1 or newer and for Stylitis-101 versions 6.12 or newer, **password synchronization** with the data logger is supported. Sym-o-net and the data logger always need to have the **same password**. Therefore when Sym-o-net needs it, it will read the data logger's password, and it will replace its password with this one. Therefore, changing Sym-o-net's password is meaningless. For older Symonet or data logger versions, you must make sure that the **Sym-o-net** and the **data logger** always have the **same password.** Otherwise, Symonet may lock the data logger!

4. i. The peripheral schedule gives you the capability to switch on the modem's power and activate each Sym-o-net peripheral DEVICE port, between certain hours of the day, in order to communicate with the corresponding device. In Sym-o-net's standard version, only DEVICE 1's schedule is available, while in the 3 device version all 3 devices' schedule is available (see screen shots below).
   ii. You can type/select multiples of 10 minutes in the fields, ie the time '10:56', for instance, is not valid. Alternatively, check or uncheck the 'Always ON' or 'Always OFF' check boxes, in order for a port and device to be active all day or to be never active. However, at least one DEVICE port needs to be open for at least 1 hour.
   iii. For the 3 device version: It is not recommended to have common active time periods for the DEVICE ports, because only one port can be available at a time. That is, for instance, it is not advised for the DEVICE 1 to be active from 09:00 to 12:00 and DEVICE 2 from 11:00 to 14:00. If you do so, DEVICE 1 has greater priority than DEVICE 2 and DEVICE 2 has greater priority than DEVICE 3. Therefore, in the example above, DEVICE 1 will be active, from 09:00 to 12:00 and DEVICE 2 from 12:00 to 14:00.

5. 

Standard version *peripheral schedule*



3 device version *peripheral schedule*

- Finally, after clicking '*Finish programming'*, in order to be able to communicate remotely, unplug the NULL MODEM cable from the MASTER port to activate the

modem (as long as the cable is plugged and the COM port is open, the modem is deactivated- the green MODEM STATUS led is off).

- In this state, after about 1 minute, the DEVICE port you have selected to be active will be open, according to the '*Peripheral Schedule'* and the MODEM led and the corresponding DEVICE led, will be **steadily lit**. The green MODEM STATUS led will be flashing slowly (mainly OFF-instantly ON, indicating that the modem is registered in the network). In this state, you will be able to communicate remotely with the device you have connected to the specific DEVICE port, according to the connection type you are using (see next chapters).
- However, if at this time, no device is programmed to be available, the modem will be off and no port will be open. This is indicated by the MODEM led which flashes intermittently, while all the other leds are off.

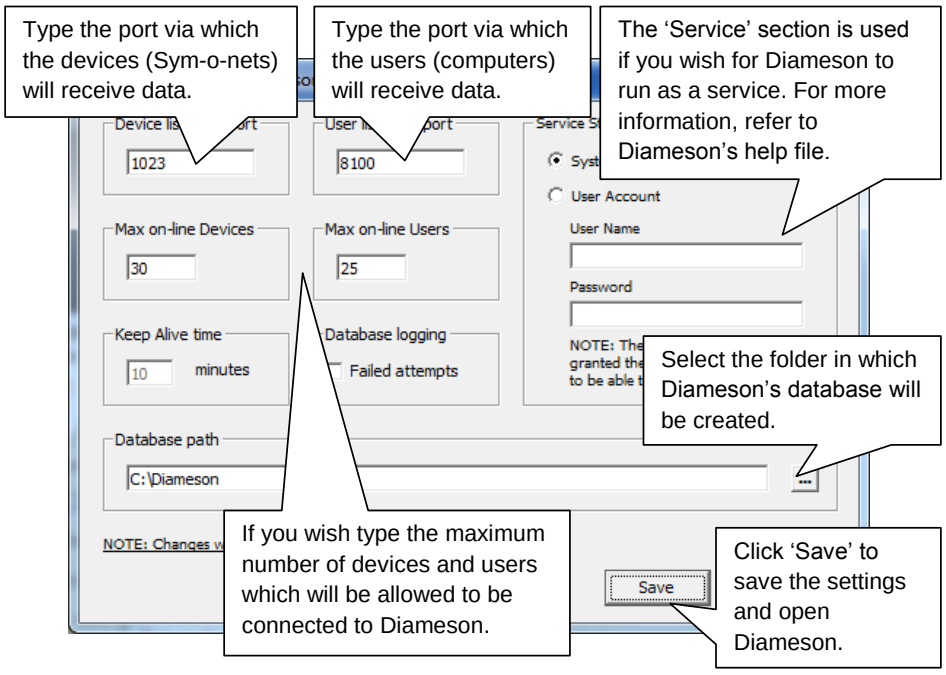
B. CONNECT VIA THE GPRS NETWORK VIA A DYNAMIC IP SIM CARD (client mode)

By connecting to the Sym-o-net via the GPRS network, its SIM card is charged, according to the data sent and not to the connection's duration. Specifically, in this case, you will need a GPRS SIM card in the Sym-o-net, but not an expensive static IP one, but a dynamic IP one.

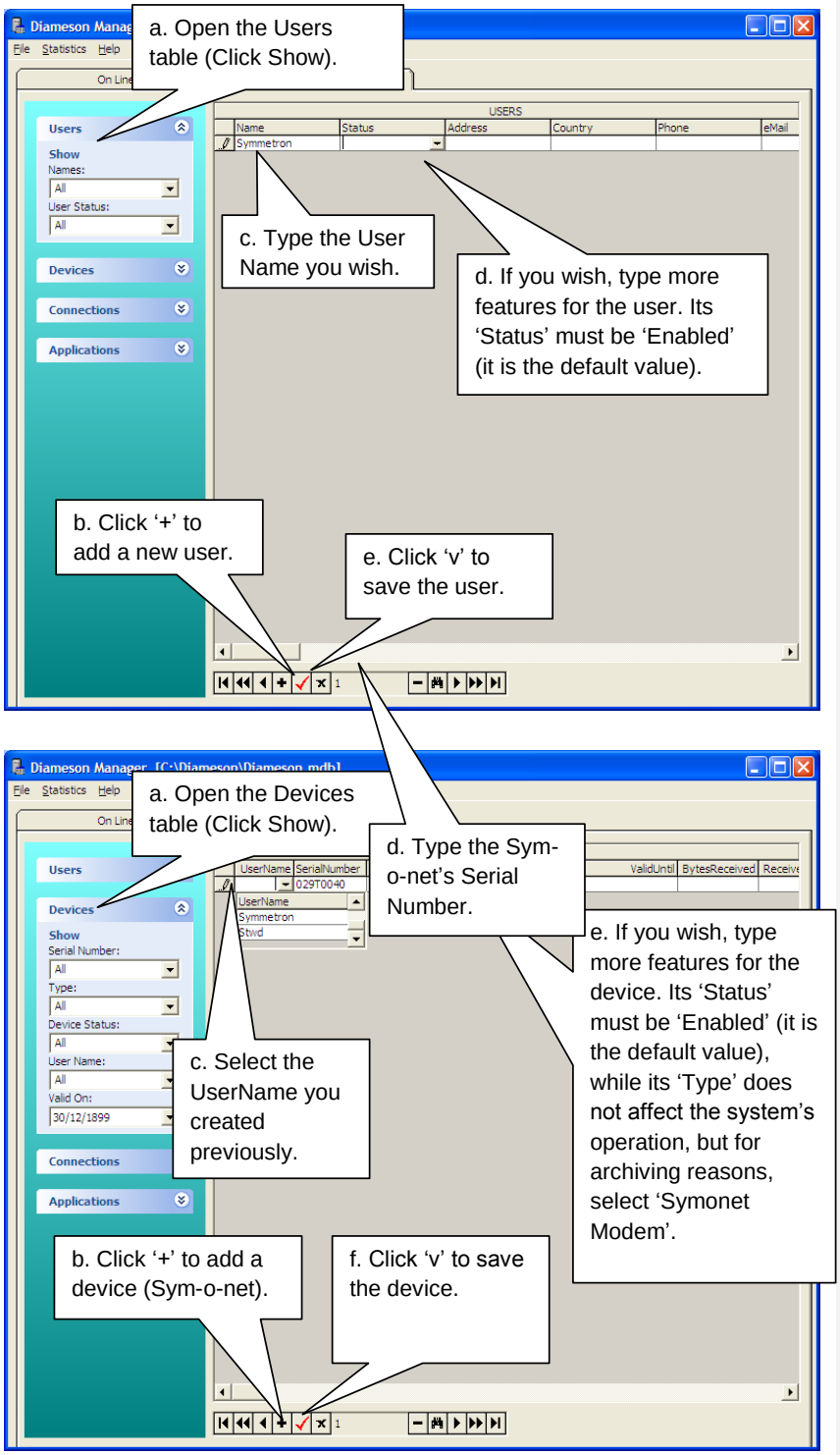
You will use Diameson Gateway, a software server developed by Symmetron to which the Symonet will be a **GPRS client**. If you are using Symmetron's Diameson, omit the steps below. Just inform us about your user name, so that we can register your Symonets in our Diameson database. If you wish to use your own Diameson, (in a computer of your local network), follow the steps below. Otherwise, omit them and go to **1. STARTING UP -LOCAL SETUP**.

0. DIAMESON SETTINGS

- Open Diameson and edit its default properties if you wish so.



- If Diameson is running in a LAN computer make sure the computer's IP address is **static.** Set your router to redirect these two ports to this computer's (local) IP. Furthermore, add these ports to the Firewall Exceptions of this computer.
- Open Diameson's database via Diameson Manager (select the Diameson.mdb database via the Diameson Manager's 'File|Open' menu).



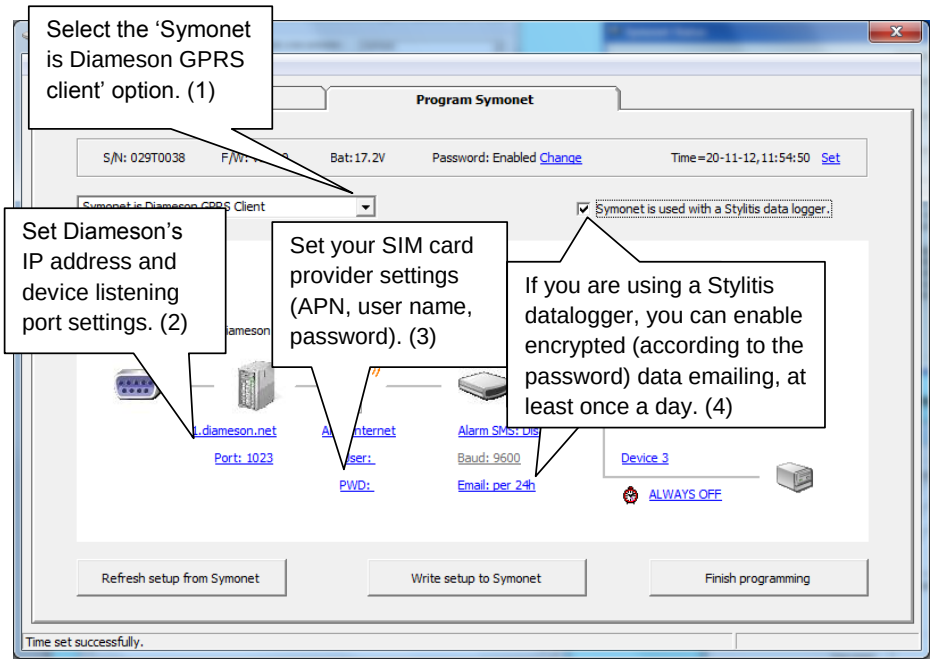
- Now this device will have the right to connect to Diameson, which uses the specific database. Repeat for as many users and devices as you wish.

1. STARTING UP - LOCAL SETUP

Follow exactly the same steps as in the chapter **A. STARTING UP –LOCAL SETUP**. Set the Sym-o-net's parameters discussed in this chapter (see corresponding screen shot and notes).

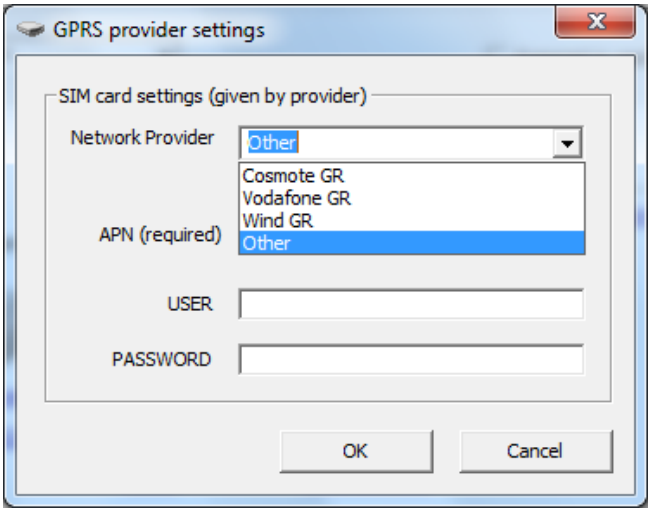
2. CONNECTION TYPE SELECTION (client mode)

Afterwards, set the following parameters:



NOTES

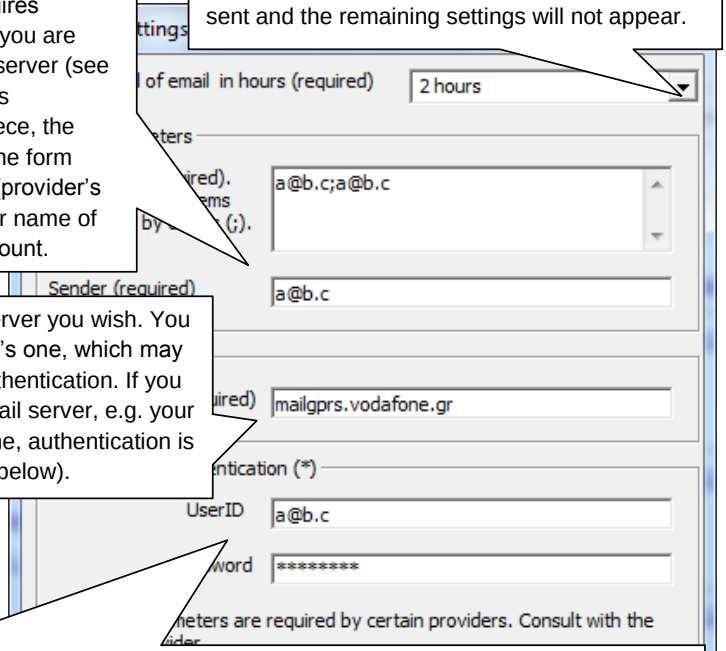
1. If you change the modem's operation, Sym-o-net with F/W version 2.0.0 or newer will be automatically **reset** after you click '*Finish Programming'*. (about 3 minutes required) For older versions, and for *baud rates* different from 9600, you are advised to reset the power supply *manually*, for the new baud rate to be applied, or it will be reset automatically at 23:30, as it does every day.
2. If you are using Symmetron's Diameson, leave the default values: '1.diameson.net' and '1023' for IP address and port respectively.
3. Greek providers are available to be selected, so that the settings are set automatically. In this case, you will be asked if you wish to update the *smtp mail server* to the one of the provider you selected. For email settings, see next note.



4. When you click the '*Email'* option, the following form appears

Type a valid sender and one or more recipients separated by colons (;). In case your SIM card's provider requires authentication, and you are using its smtp mail server (see next setting) such as COSMOTE* in Greece, the sender must have the form '{Phone number}@{provider's domain}', ie the user name of the SIM's email account.

Select the email interval, from 1 to 24 hours, starting from midnight. In this example, an email will be sent every 3 hours, (at 0:00, at 03:00, etc). If you select 'Disabled', no emails will be sent and the remaining settings will not appear.



Type the smtp mail server you wish. You can type the SIM card's one, which may or may not require authentication. If you are using any other mail server, e.g. your internet connection one, authentication is needed (see settings below).

- If your SIM card's provider requires authentication, such as COSMOTE* in Greece, and you are using its smtp mail server, you must type the username (in the form '{Phone number}@{provider's domain}') and the password of the SIM's email account.
- If you are using any other mail server, e.g. your internet connection one, authentication is also needed (your email account user name and password).
- Otherwise, leave the fields blank.

* COSMOTE GR requires a sender and an authentication user name having the form: '{Phone number}@mycosmos.gr'. To get the password, send an SMS via the SIM card with the text 'OPEN' to 54000.

NOTE: Email sending has the highest priority. No remote connections can be achieved during this process. EMAIL MODE is indicated by DEVICE 1 led **flashing** and all the other leds **permanently lit**.

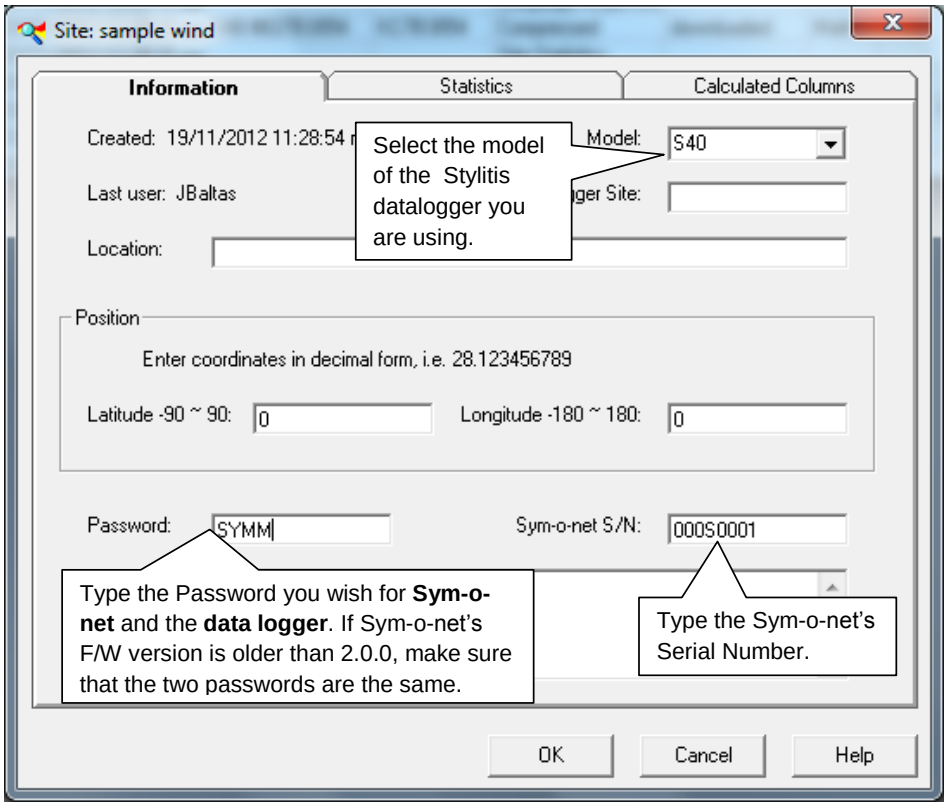
Finally, to save all the settings, click the 'Write Setup to Symonet' button.

3. REMOTE CONNECTION IN CLIENT MODE

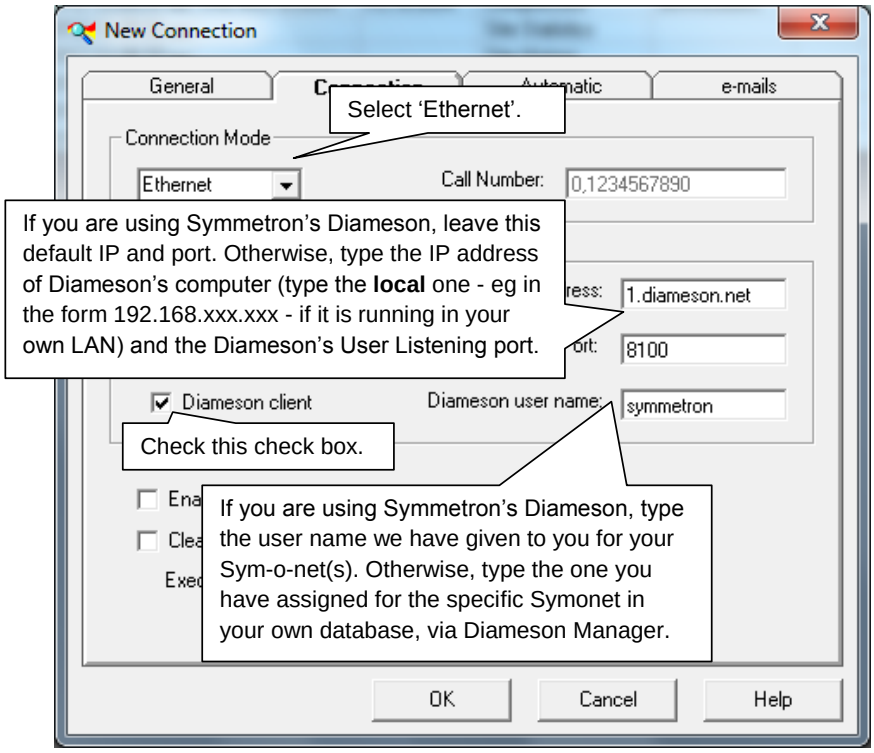
Since the Sym-o-net has been connected to Diameson, it is available for remote communication via the GPRS network and the internet. The appropriate software for such connections depends on the devices you have connected to the Sym-o-net's DEVICE port(s). In case you are using only a Stylitis-41 or 101 datalogger (connected to the DEVICE 1 port as stated above), the appropriate software is **Stylitis Explorer** or **Opton 4**, while if you are using any other serial devices as well or only other serial devices, connected to any DEVICE ports, the appropriate software is **SymonetCOM**.

i. Connect to a datalogger via Stylitis Explorer

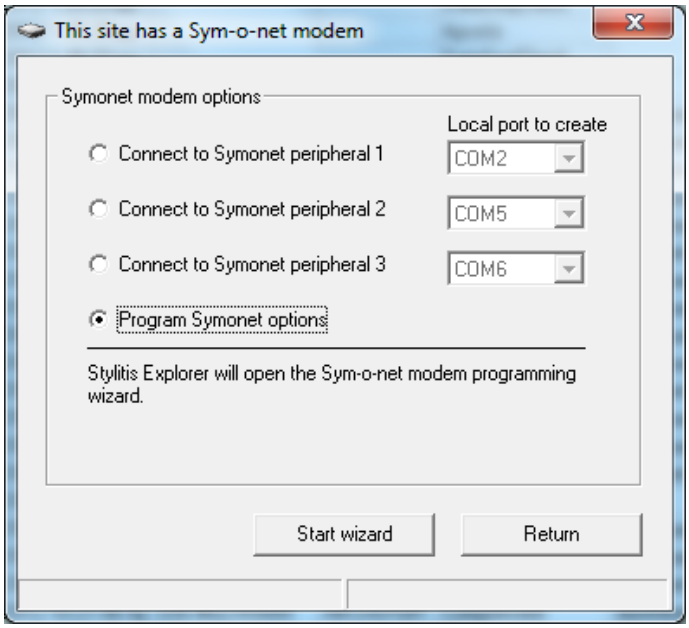
- Open **Stylitis Explorer** and create a new site, by selecting 'Site|Create new Site' from the menu. The site's Properties will appear.



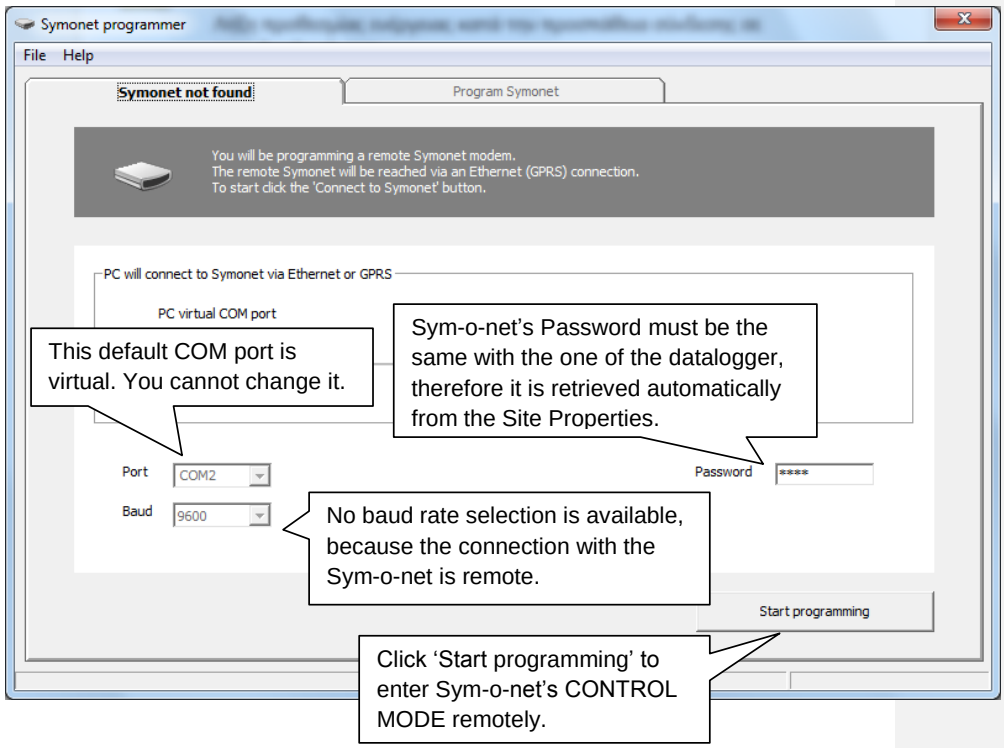
- Click OK
- Create a connection via the 'Communicate|New Connection' menu.



- Select a name for the connection in the 'General' tab and click OK.
- Select this connection by double-clicking its file (.cem) from Stylitis Explorer, or via the 'Communicate|Ethernet' menu.
- Click 'Connect' in 'Stylitis Communication' window. Your computer will be connected to Sym-o-net. If it is time for DEVICE 1 to be active (according to the *'Peripheral Schedule*'), click 'Activate' to communicate with the datalogger.
- NOTE: After the connection, you can also enter CONTROL MODE remotely. The 'Symonet modem options' option on the upper left part of the 'Stylitis Communication' window is activated. If you click on it, the form below will appear.

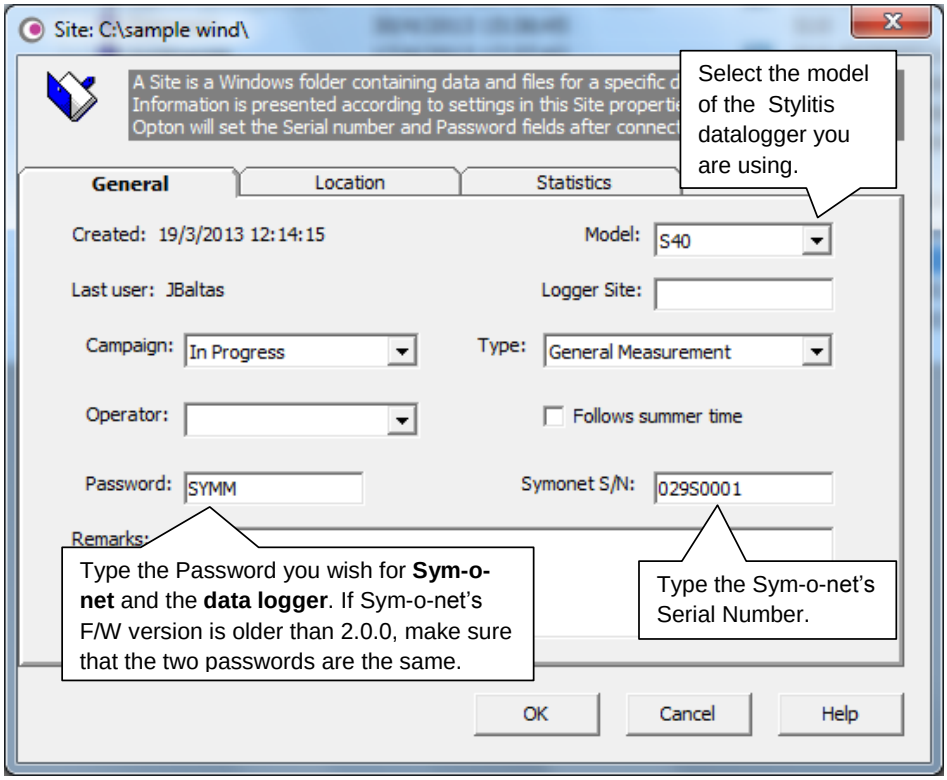


- By selecting 'Program Symonet options' and clicking 'Start wizard', Sym-o-net Programmer appears again.



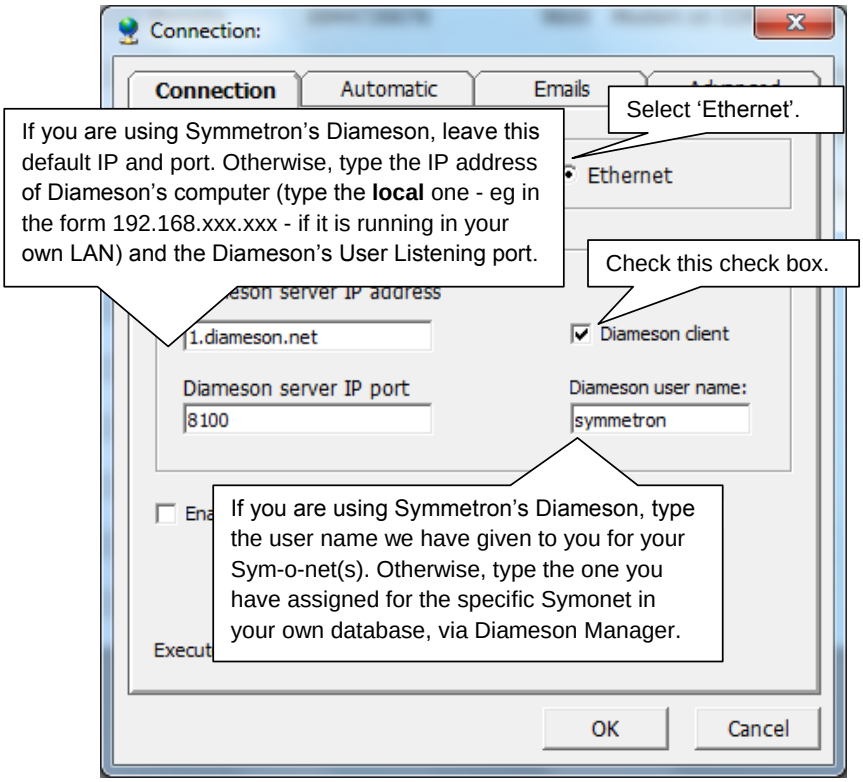
ii. Connect to a datalogger via Opton 4

Open **Opton 4** and open the '*Sites'* bar on the centre part of '*Start'* tab. Select any one of the first 3 options, to open the '*Sites'* tab. In '*Sites'* tab, create a new site, via the options of the 'Site Folders' bar on the left. The site properties will appear.

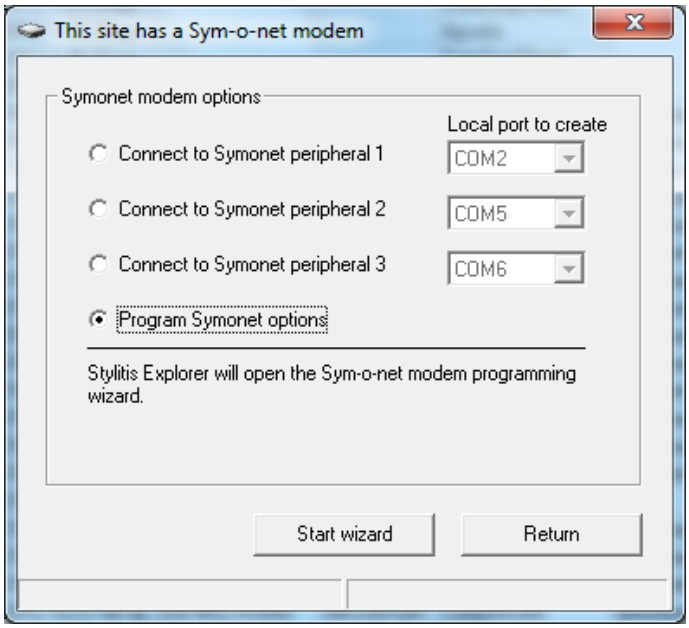


Click OK

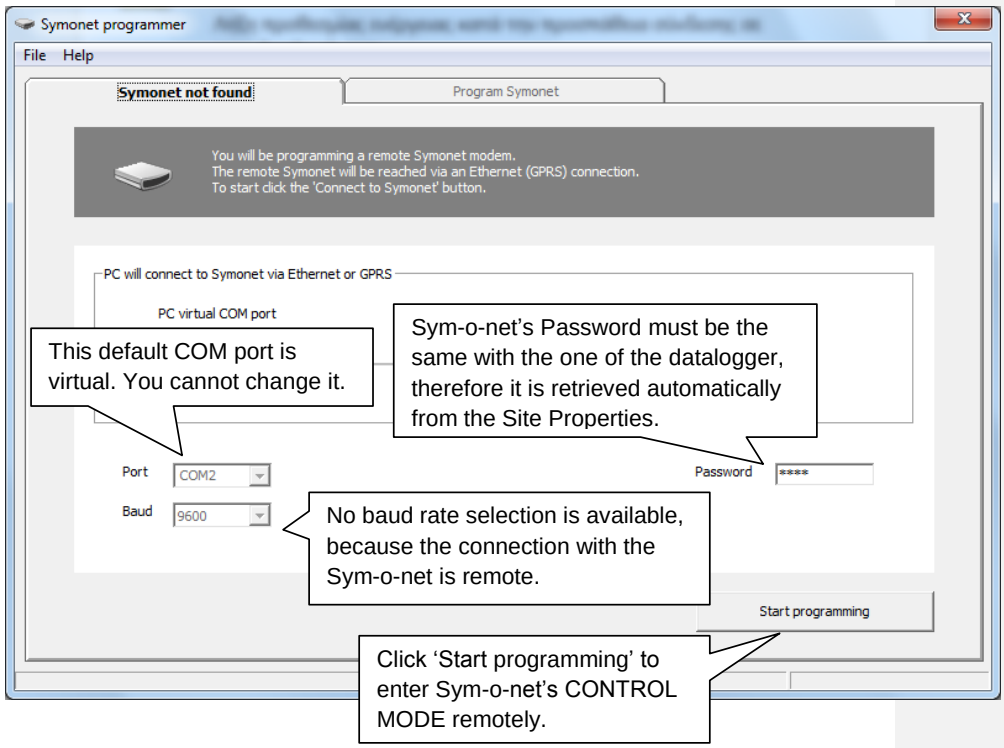
- The 5 tabs of the new site will open. Create a connection in the site's 'Connections' tab, by selecting *'+New Connection'* in the '*Communication'* bar on the left part.



- Click OK and select a name for the connection.
- Select this connection by double-clicking its file (.cem) from the '*Connections'* tab.
- Your computer will be connected to Sym-o-net. If it is time for DEVICE 1 to be active (according to the *'Peripheral Schedule*'), Opton 4 will locate the data logger.
- NOTE: After the connection, you can also enter CONTROL MODE remotely. In the 'Setup' tab, in the 'Data logger online' bar, select 'Read Symonet Setup' and the form below will appear.



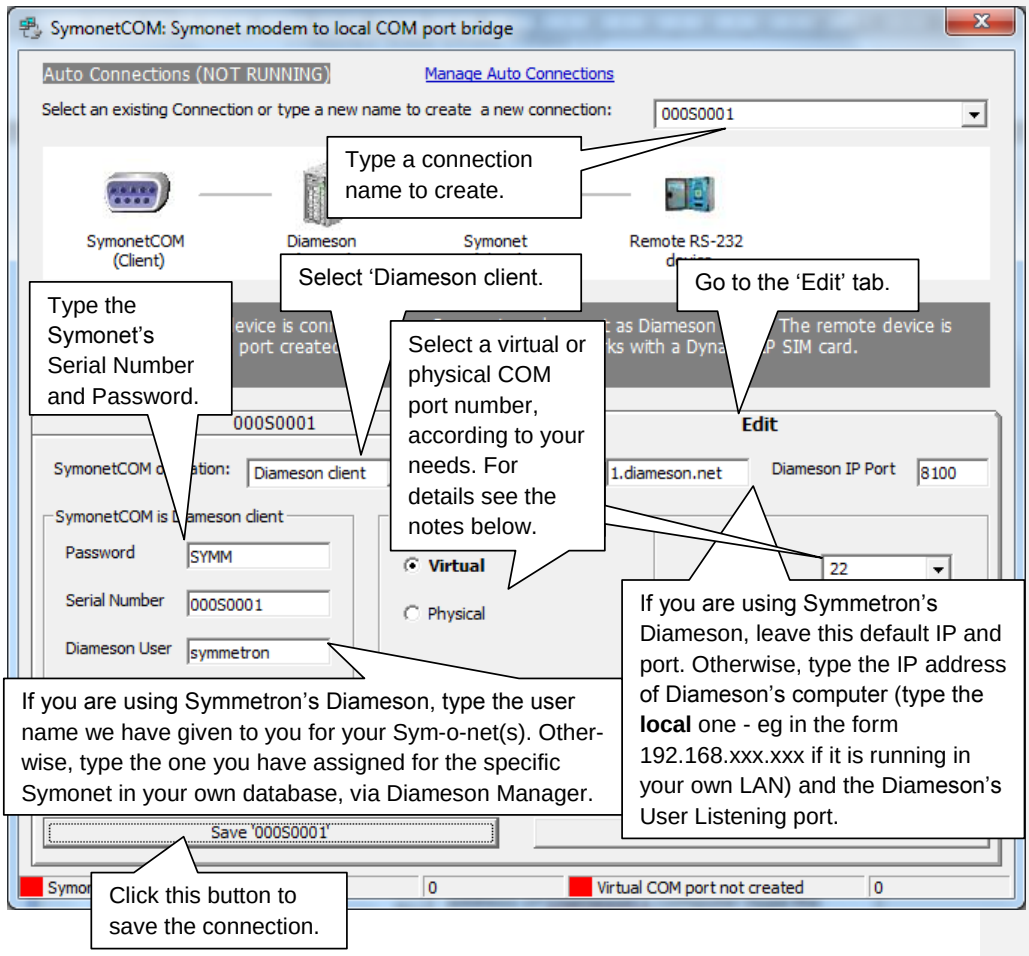
- By selecting 'Program Symonet options' and clicking 'Start wizard', Sym-o-net Programmer appears again.

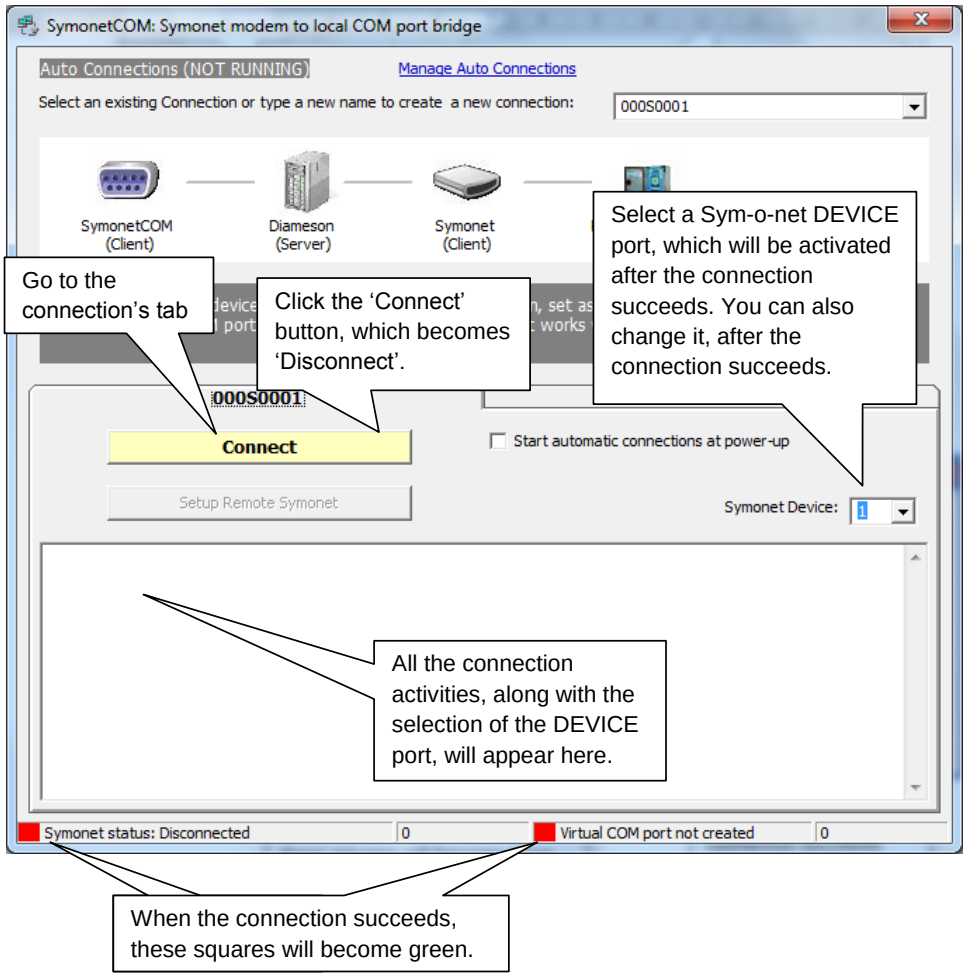


iii. Connect to a Sym-o-net's DEVICE port via SymonetCOM

SymonetCOM is a software which, besides opening Sym-o-net Programmer locally, enables remote GPRS communication with a Sym-o-net, and specifically with a peripheral device, connected to the corresponding DEVICE port. In client mode, it presupposes that the Sym-o-net is connected to Diameson.

- Open SymonetCOM from 'All Programs|Symmetron|SymonetCOM'.



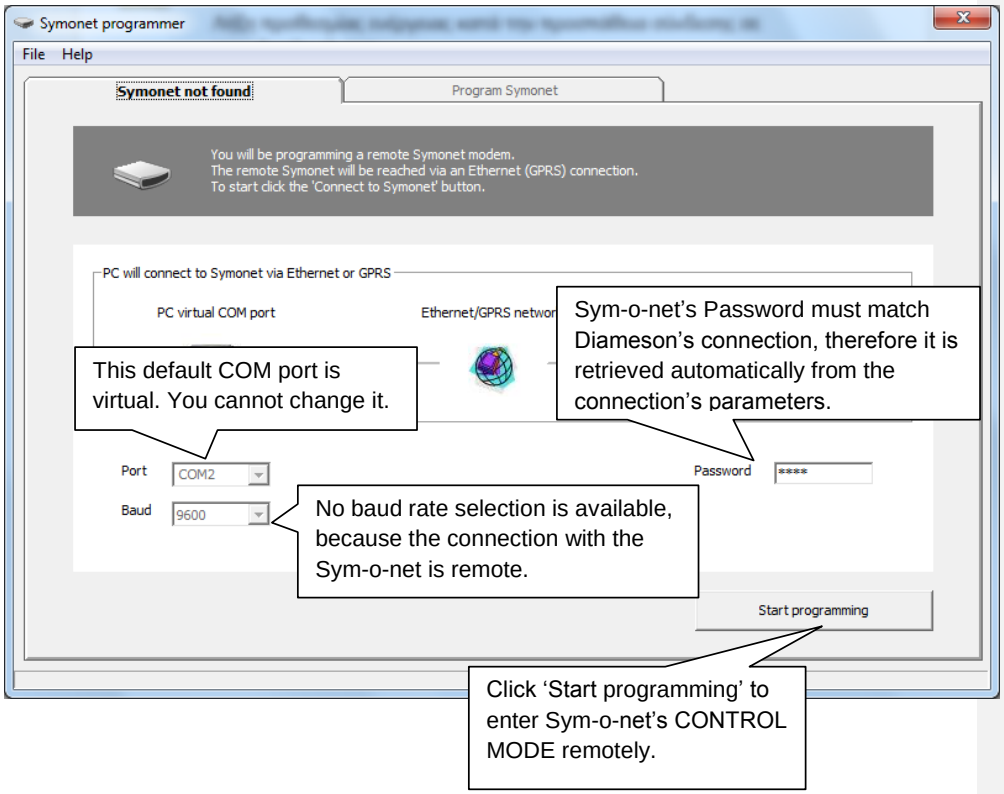


* This has a meaning only in the **3 device** version. In the standard one, it is not allowed.

COM PORT NOTES

- Select a **virtual** COM port, in order to create it. In this case, it will be available to open it via another software (via a "local" connection via this COM port), such as Symonet Programmer (via the 'Symonet Wizard' button) or HyperTerminal. In this case, the communication will be remote, but you will use a virtual 'local' port. The program you will select will open the port. Therefore, it will define the 'Baud rate', 'Parity', 'Length bits' and 'Stop bits' parameters and not SymonetCOM, which just creates the port. When you are done using the program, close it to close the port and then press 'Disconnect'.
- Select a **physical** COM port, ie an existing one in your computer, in order to open it. In this case, you cannot use the port via a program (since it is already open), but you can connect an external device to your COM port which will send commands to the Sym-o-net (and hence to your remote devices). In this case, you must define the 'Baud rate', 'Parity', 'Length bits' and 'Stop bits' parameters, (the ones at which the external device operates) because now the program which opens the COM port is SymonetCOM.

- After the connection succeeds, the 'Symonet Wizard' button is activated. If you click it, Symonet Programmer appears again.


Symonet programmer
File Help
Symonet not found
Program Symonet
You will be programming a remote Symonet modem.
The remote Symonet will be reached via an Ethernet (GPRS) connection.
To start click the 'Connect to Symonet' button.
PC will connect to Symonet via Ethernet or GPRS
PC virtual COM port
Ethernet/GPRS networ
Port
COM2
Baud
9600
Password
****
Start programming
This default COM port is virtual. You cannot change it.
Sym-o-net's Password must match Diameson's connection, therefore it is retrieved automatically from the connection's parameters.
No baud rate selection is available, because the connection with the Sym-o-net is remote.
Click 'Start programming' to enter Sym-o-net's CONTROL MODE remotely.

C. MULTIPLE SYM-O-NET CONNECTION IN A VIRTUAL WIRELESS RS-485 NETWORK VIA THE GPRS NETWORK

In the simple GPRS client connection described above, one user (either Stylitis Explorer or Opton 4 or SymonetCOM) was connected to one Sym-o-net only (from the ones connected to Diameson).

However, **more than one Sym-o-nets** may be registered in Diameson's database in **network** form. This network works as a wired **RS-485** one, but each serial device (Sym-o-net) can be anywhere in the world. That is, any device of the network sends data (via its Sym-o-net) to all other Sym-o-nets of the same network, ie it becomes the Master.

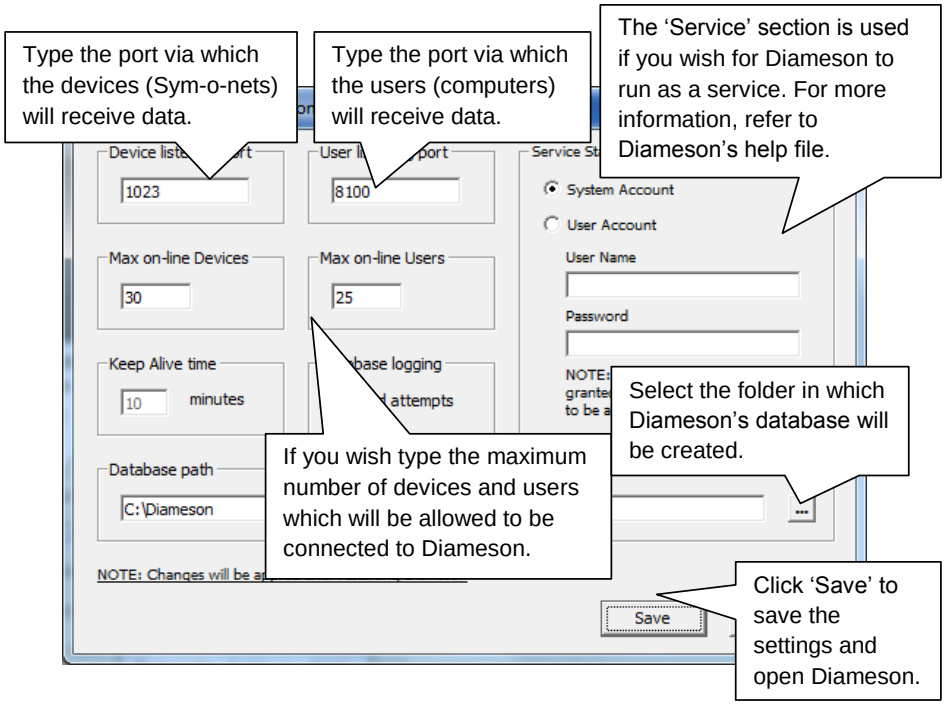
There is also a **Diameson User** which may:

- *Receive* data from **all network devices**. This capability is useful for monitoring of the data sent by all network devices.
- *Send* data **only to one device**. This capability is useful for remote Sym-o-net setup, via *Sym-o-net Programmer*.

As mentioned, you will use Diameson Gateway, the software server by Symmetron, to which each network Symonet will be a **GPRS client**. If you are using Symmetron's Diameson, omit the steps below. Just inform us about your user name and your network name, so that we can register your Symonets in our Diameson database. If you wish to use your own Diameson, (in a computer of your local network), follow the steps below. Otherwise, omit them and go to **1. STARTING UP -LOCAL SETUP**.

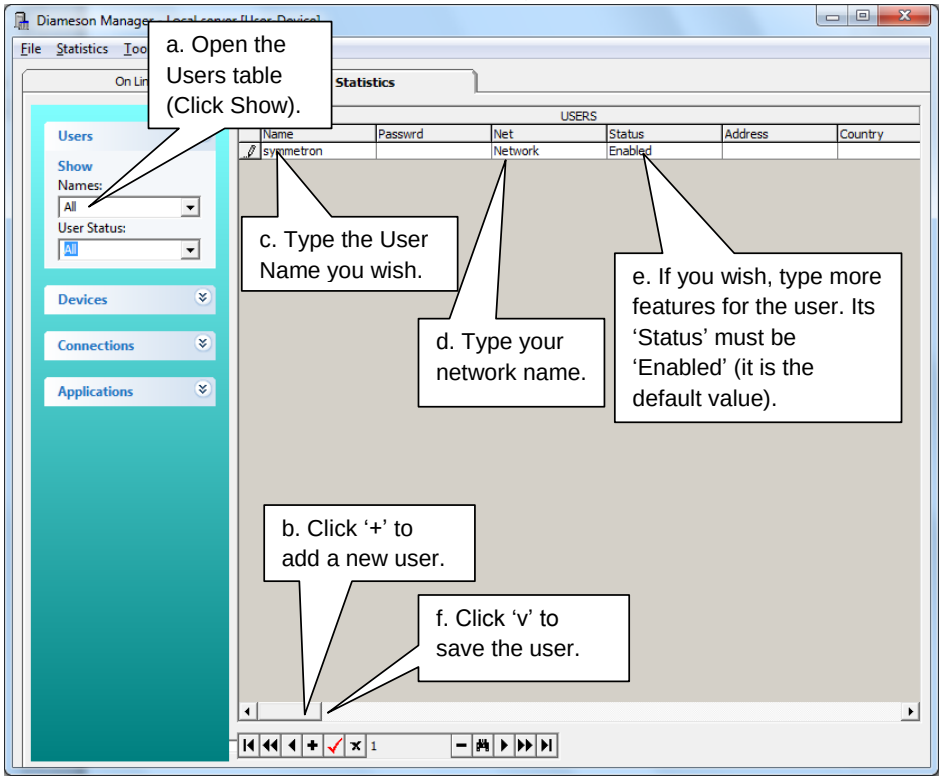
0. DIAMESON SETTINGS

- Open Diameson and edit its default properties if you wish so.

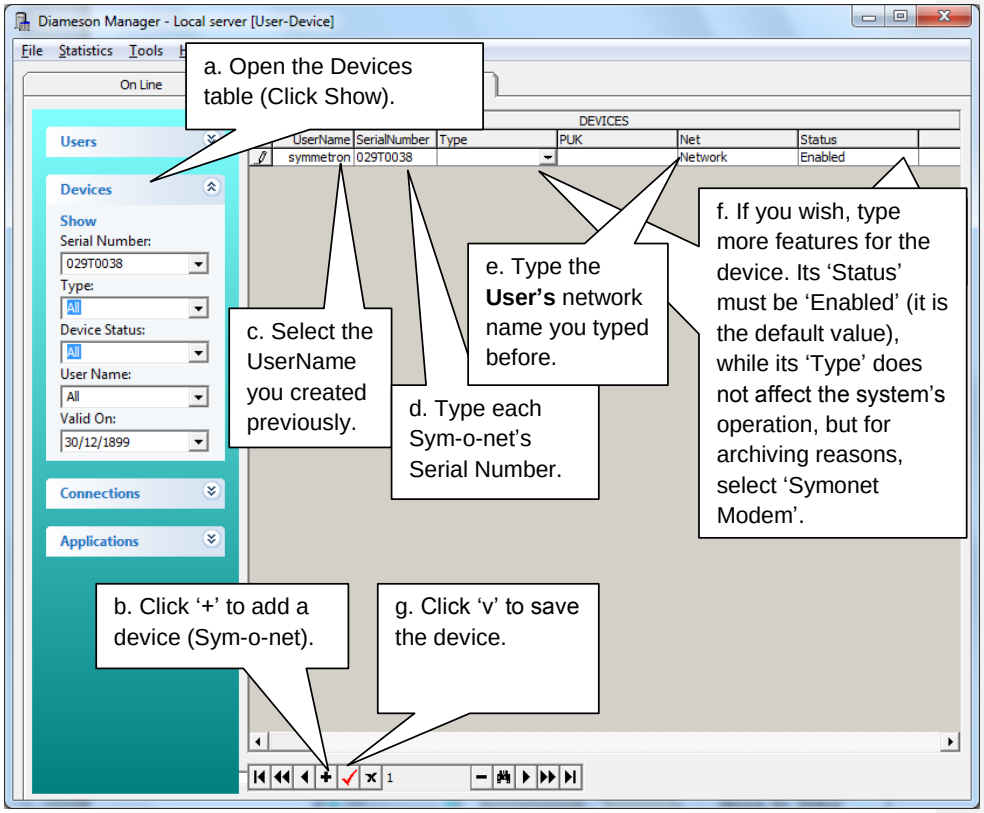


- If Diameson is running in a LAN computer make sure the computer's IP address is **static.** Set your router to redirect these two ports to this computer's (local) IP. Furthermore, add these ports to the Firewall Exceptions of this computer.

- Open Diameson's database via Diameson Manager (select the Diameson.mdb database via the Diameson Manager's 'File|Open' menu).



- Afterwards, **repeat for every network Sym-o-net** (register all Serial Numbers, while their network name must be the same):



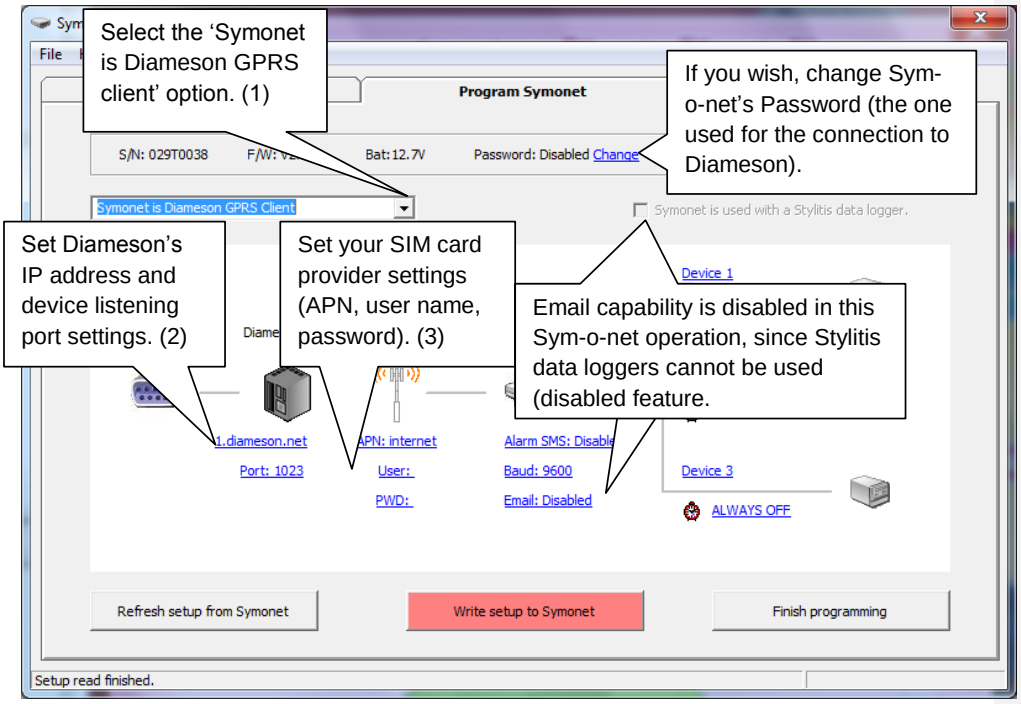
- Now all Sym-o-nets will have the right to connect to Diameson, which uses the specific database.
- This way, all the devices and the user belong to the same network.

1. STARTING UP- LOCAL SETUP

For each Sym-o-net you wish to be connected to Diameson in network, follow exactly the same steps as in the chapter **A. STARTING UP –LOCAL SETUP** Set the Sym-o-net's parameters discussed in this chapter (see corresponding screen shot and notes).

2. CONNECTION TYPE SELECTION (client mode)

Afterwards, set the following parameters:

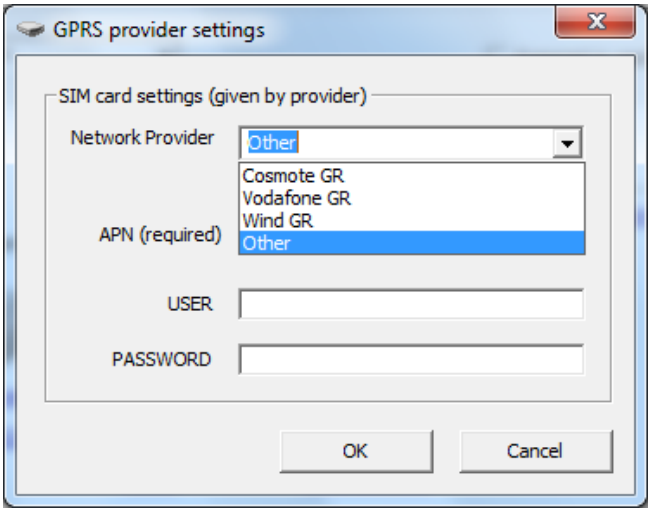


NOTES

1. If you change the modem's operation, Sym-o-net with F/W version 2.0.0 or newer will be automatically **reset** after you click '*Finish Programming'*. (about 3 minutes required) For older versions, and for *baud rates* different from 9600, you are advised to reset the power supply *manually*, for the new baud rate to be applied, or it will be reset automatically at 23:30, as it does every day.

2. If you are using Symmetron's Diameson, leave the default values: '1.diameson.net' and '1023' for IP address and port respectively.

3. Greek providers are available to be selected, so that the settings are set automatically. In this case, you will be asked if you wish to update the *smtp mail server* to the one of the provider you selected. For email settings, see next note.



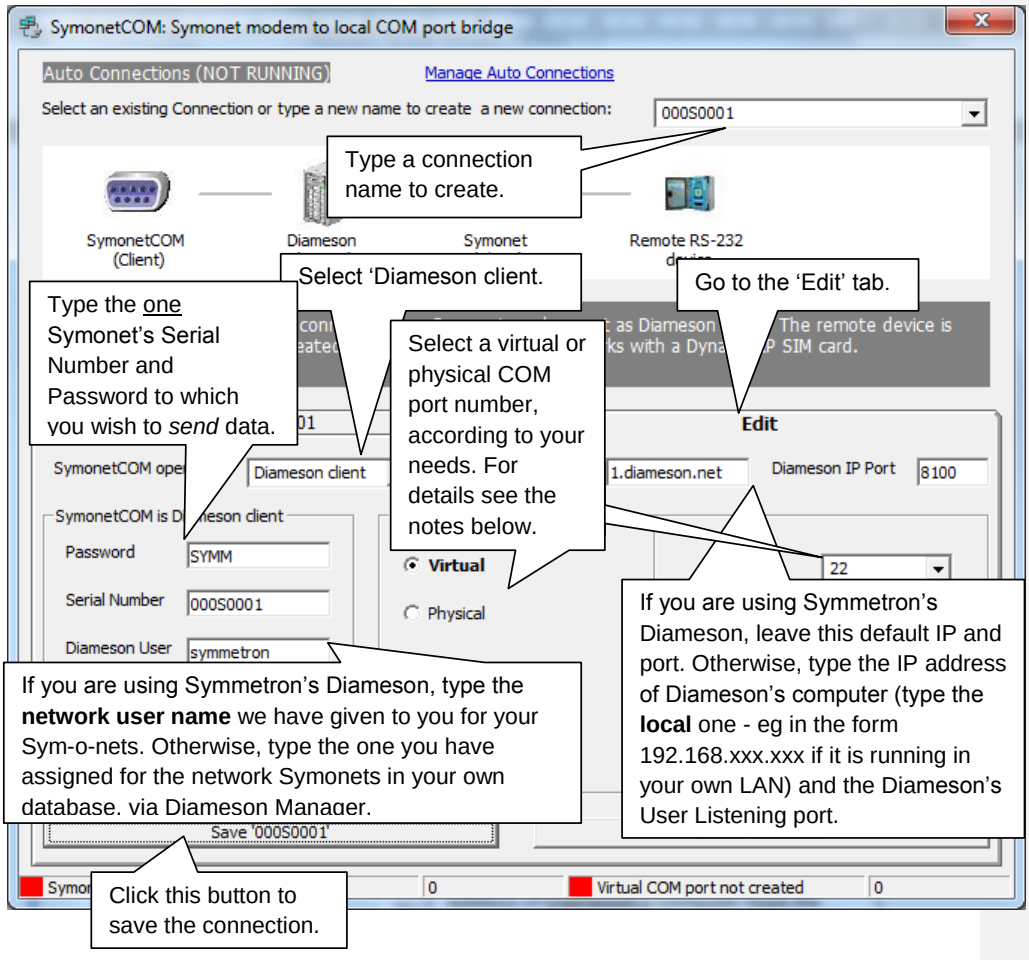
Finally, to save all the settings, click the '[Write Setup to Symonet]' button.

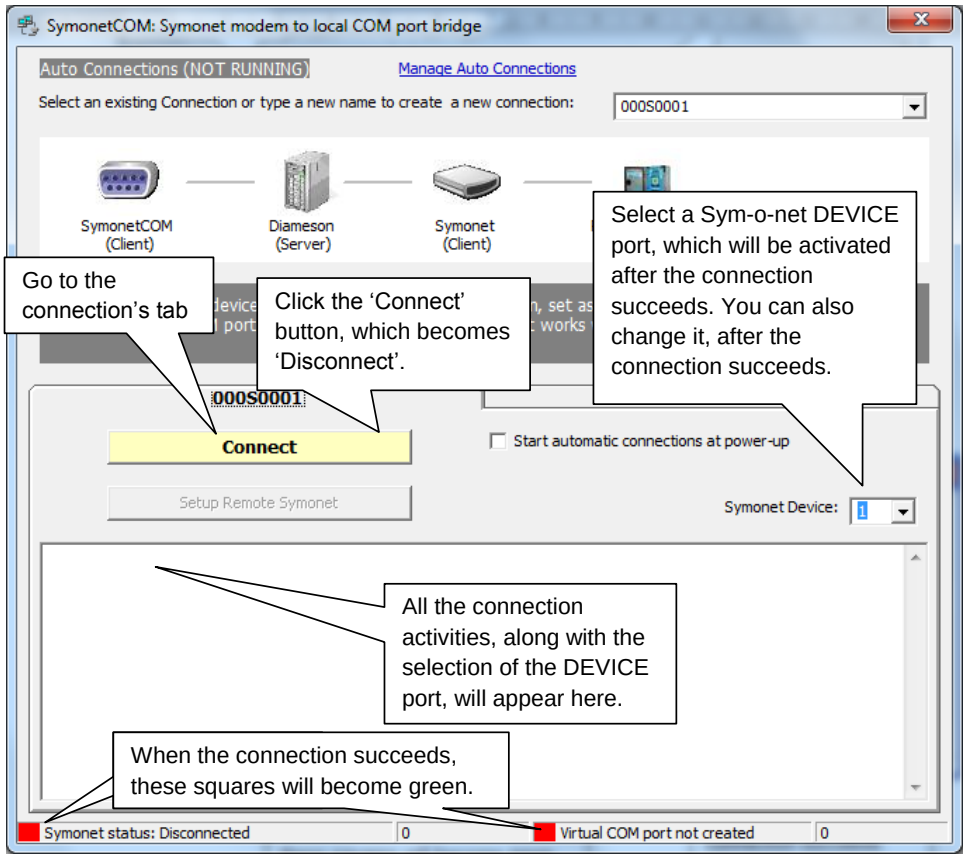
3. REMOTE COMMUNICATION WITH THE NETWORK DEVICES VIA THE NETWORK'S USER (via SymonetCOM)

Since the Sym-o-nets have been connected to Diameson, they can communicate with each other according to the **RS-485** protocol, as described before.

Moreover, the network's **user** can monitor all devices' activity and connect with only one to send data to it (usually to set the Sym-o-net setup via Sym-o-net Programmer). Since communication with dataloggers is not available in this mode, this user cannot be **Stylitis Explorer** or **Opton 4**, but only **SymonetCOM**, a software which, besides opening Sym-o-net Programmer locally, enables remote GPRS communication with the network Sym-o-nets.

- Open SymonetCOM from 'All Programs|Symmetron|SymonetCOM'.





* This has a meaning only in the **3 device** version. In the standard one, it is not allowed.

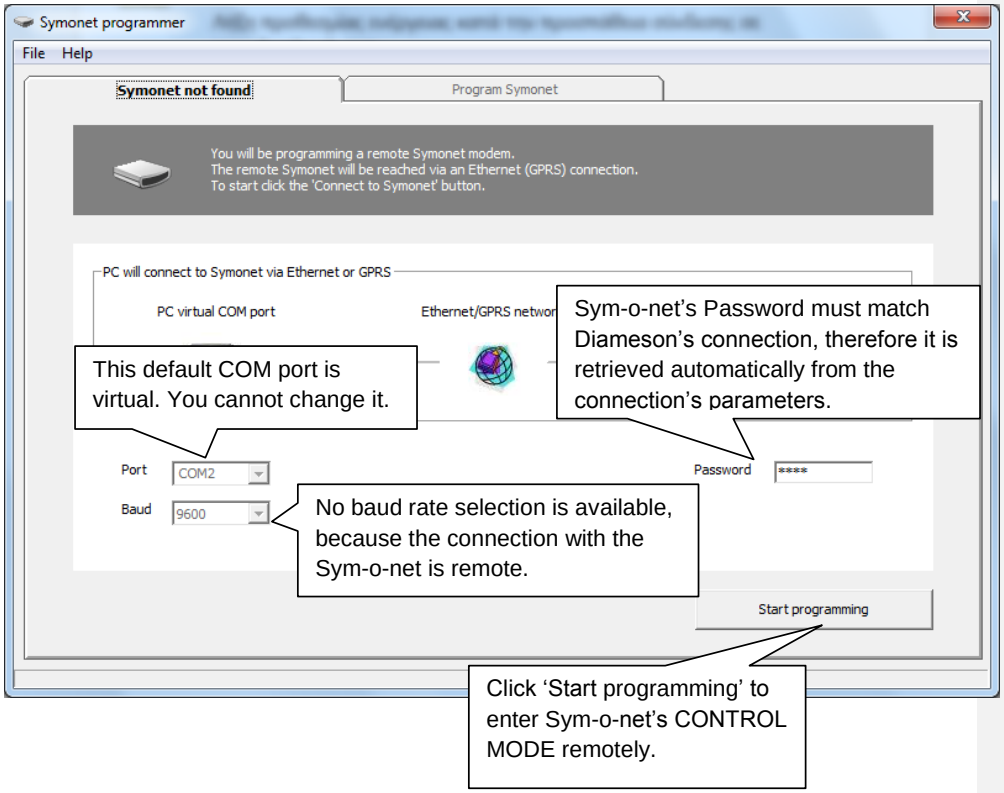
COM PORT NOTES

- Select a **virtual** COM port, in order to create it. In this case, it will be available to open it via another software (via a "local" connection via this COM port), such as Symonet Programmer (via the 'Symonet Wizard' button) or HyperTerminal. In this case, the communication will be remote, but you will use a virtual 'local' port. The program you will select will open the port. Therefore, it will define the 'Baud rate', 'Parity', 'Length bits' and 'Stop bits' parameters and not SymonetCOM, which just creates the port. When you are done using the program, close it to close the port and then press 'Disconnect'.

- Select a **physical** COM port, ie an existing one in your computer, in order to open it. In this case, you cannot use the port via a program (since it is already open), but you can connect an external device to your COM port which will send commands to the Sym-o-net (and hence to your remote devices). In this case, you must define the 'Baud rate', 'Parity', 'Length bits' and 'Stop bits' parameters, (the ones at which the external device operates) because now the program which opens the COM port is SymonetCOM.

- You will need this COM port to open a software (via a **virtual** COM port), like HyperTerminal, to *monitor data sent* by all network Sym-o-nets or to communicate with *a specific Sym-o-net* (via a **virtual** or **physical** COM port).

- After the connection succeeds, the ‘Symonet Wizard’ button is activated. If you click it, Symonet Programmer appears again for communication (programming) of **one** Sym-o-net.



This default COM port is virtual. You cannot change it.

Sym-o-net’s Password must match Diameson’s connection, therefore it is retrieved automatically from the connection’s parameters.

No baud rate selection is available, because the connection with the Sym-o-net is remote.

Click ‘Start programming’ to enter Sym-o-net’s CONTROL MODE remotely.

D. CONNECT VIA THE GPRS NETWORK VIA A STATIC IP SIM CARD (server mode)

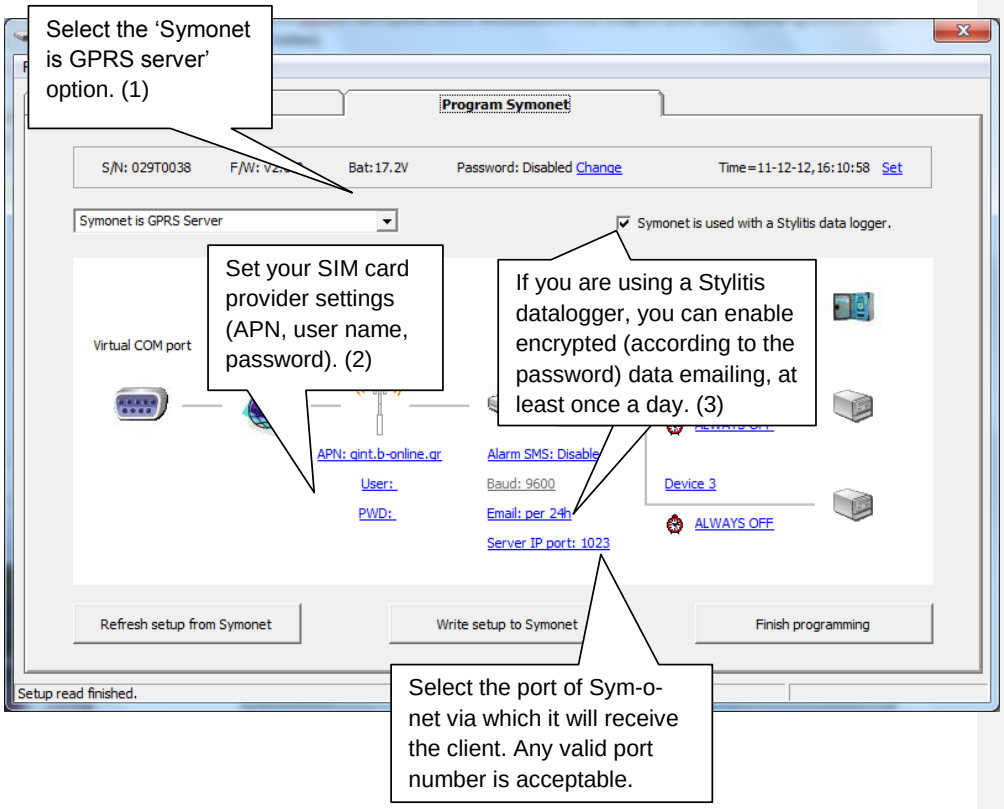
There is an extra capability for a computer's connection to the Sym-o-net via the GPRS network. You can use a static IP SIM card. In this case you do not need Diameson, because Sym-o-net itself will operate as a server (it will be set in server mode) and it will be able to receive only one client at a time.

1. STARTING UP- LOCAL SETUP

Follow exactly the same steps as in the chapter **A. STARTING UP –LOCAL SETUP.** Set the Sym-o-net's parameters discussed in this chapter (see corresponding screen shot and notes).

2. CONNECTION TYPE SELECTION (server mode)

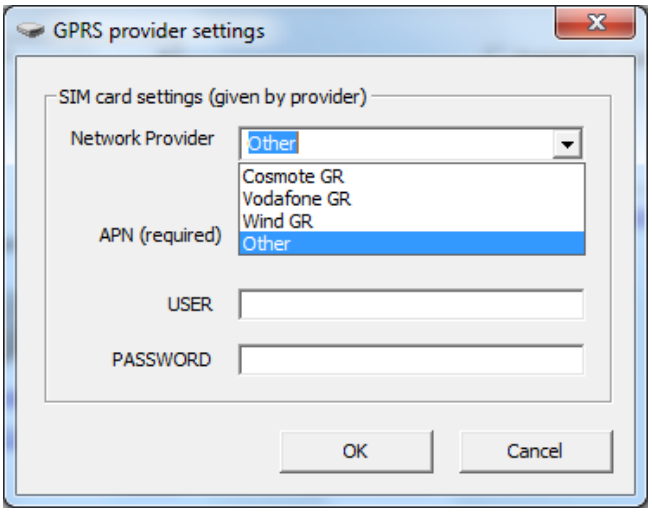
Afterwards, set the following parameters:



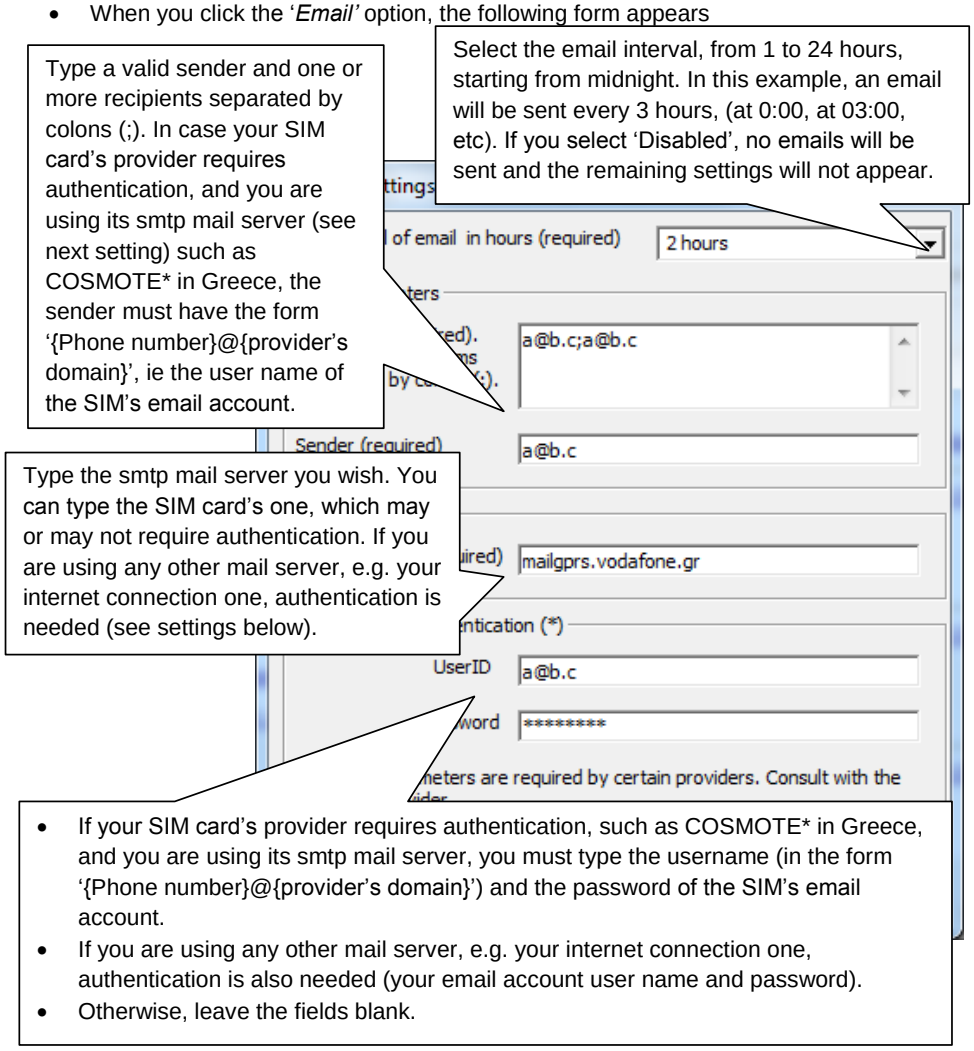
NOTES

- If you change the modem's operation, Sym-o-net with F/W version 2.0.0 or newer will be automatically **reset** after you click '*Finish Programming'*. (about 3 minutes required) For older versions, and for *baud rates* different from 9600, you are advised to reset the power supply *manually*, for the new baud rate to be applied, or it will be reset automatically at 23:30, as it does every day.

- Greek providers are available to be selected, so that the settings are set automatically. In this case, you will be asked if you wish to update the *smtp mail server* to the one of the provider you selected. For email settings, see next note.



- When you click the '*Email'* option, the following form appears



* COSMOTE GR requires a sender and an authentication user name having the form: '{Phone number}@mycosmos.gr'. To get the password, send an SMS via the SIM card with the text 'OPEN' to 54000.

NOTE: Email sending has the highest priority. No remote connections can be achieved during this process. EMAIL MODE is indicated by DEVICE 1 led **flashing** and all the other leds **permanently lit**.

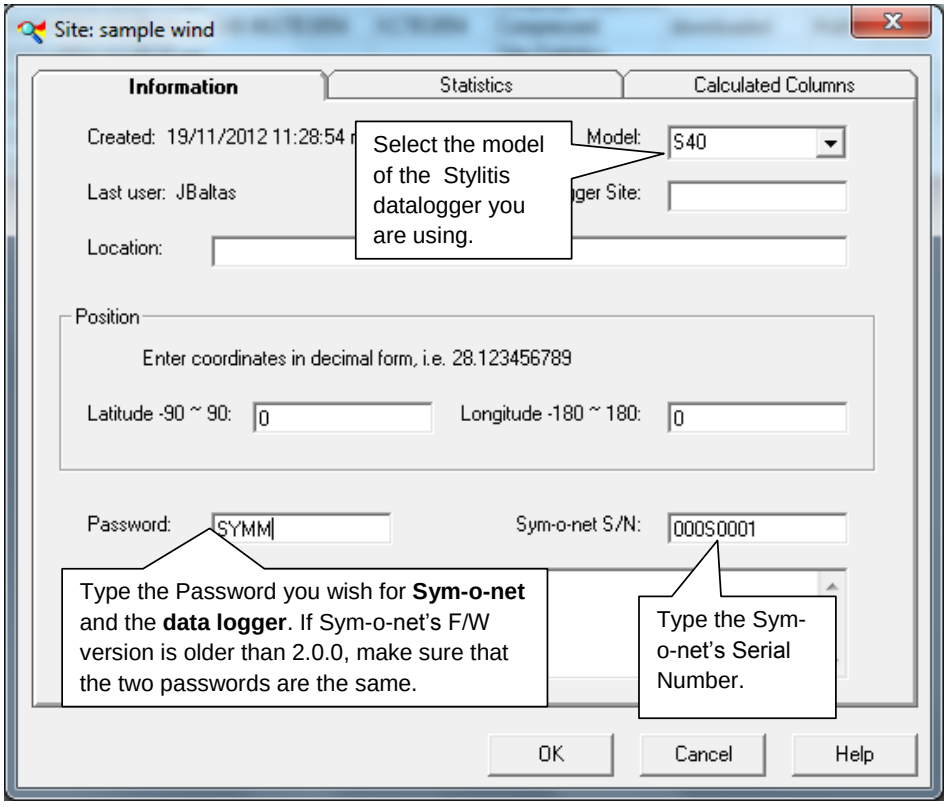
Finally, to save all the settings, click the 'Write Setup to Symonet' button.

3. REMOTE CONNECTION IN SERVER MODE

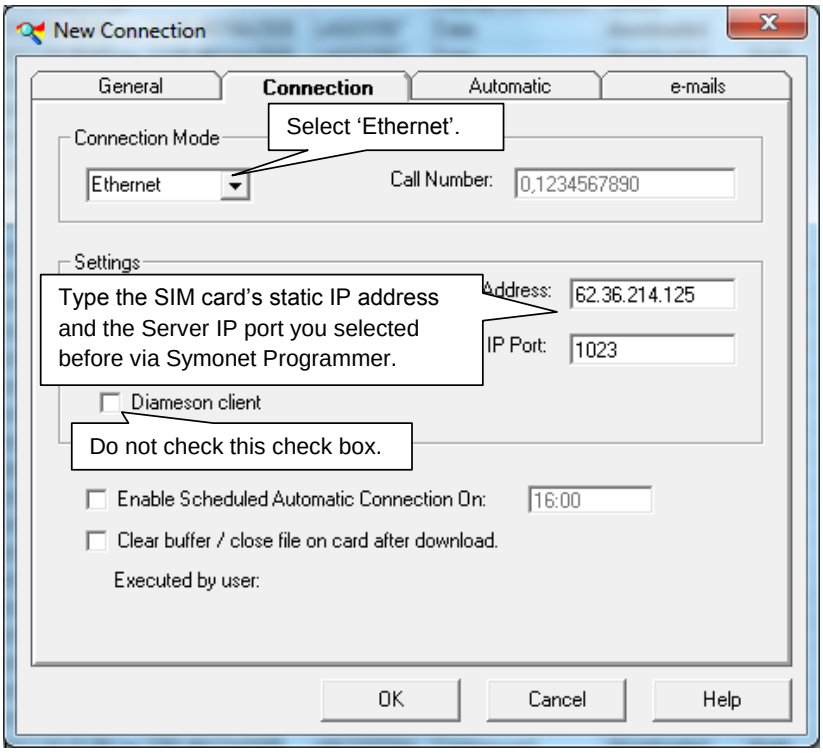
Since the Sym-o-net has been registered to the network as a server, it is available for remote communication via the GPRS network and the internet. The appropriate software for such connections, which will have the role of the client, depends on the devices you have connected to the Sym-o-net's DEVICE port(s). In case you are using only a Stylitis-41 or 101 datalogger (connected to the DEVICE 1 port as stated above), the appropriate software is Stylitis Explorer, while if you are using any other serial devices as well or only other serial devices, connected to any DEVICE ports, the appropriate software is SymonetCOM.

i. Connect to a datalogger via Stylitis Explorer

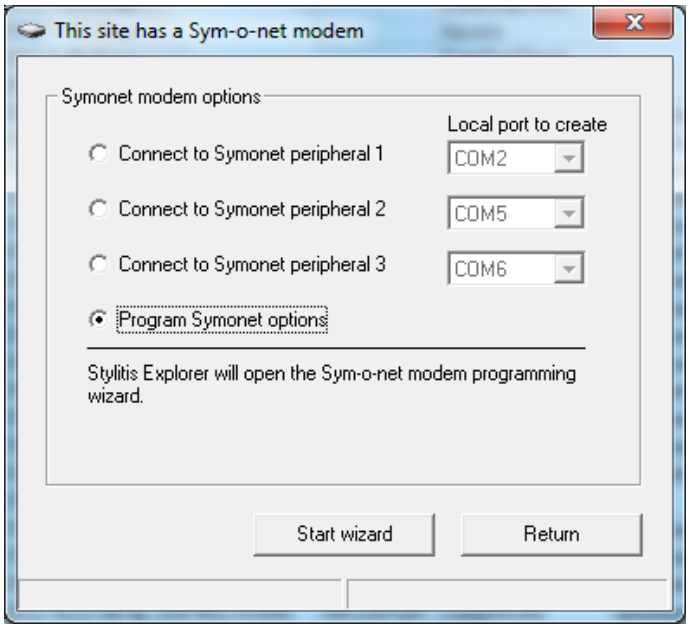
- Open **Stylitis Explorer** and create a new site, by selecting 'Site|Create new Site' from the menu. The site's Properties will appear.



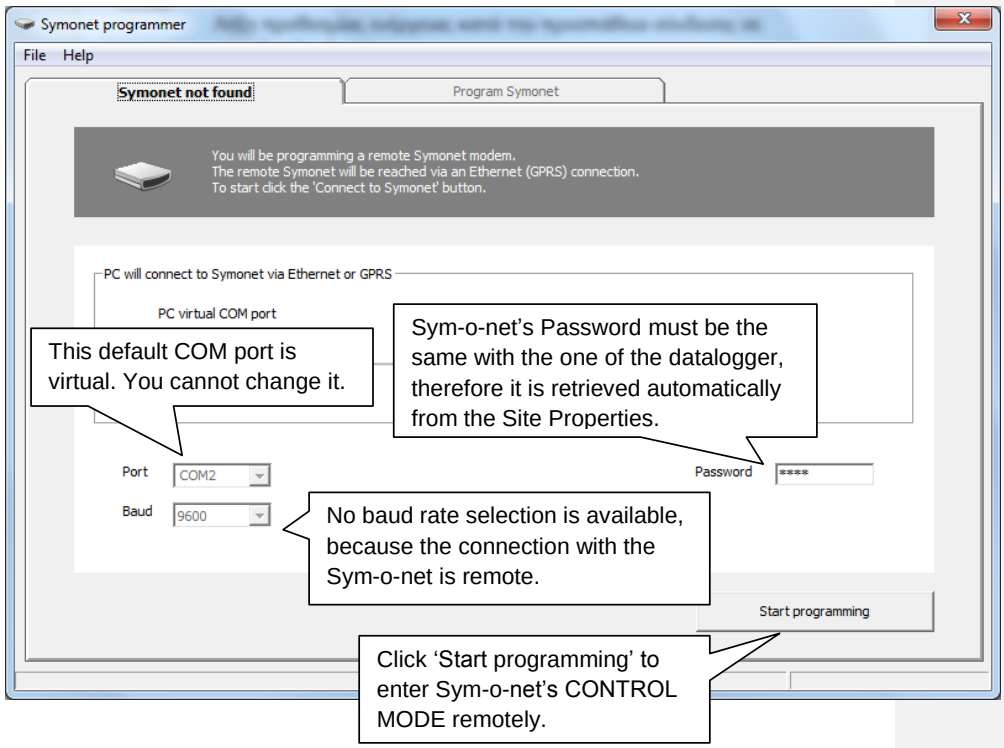
- Click OK
- Create a connection via the 'Communicate|New Connection' menu.



- Select a name for the connection in the 'General' tab and click OK.
- Select this connection by double-clicking its file (.cem) from Stylitis Explorer, or via the 'Communicate|Ethernet' menu.
- Click 'Connect' in 'Stylitis Communication' window. Your computer will be connected to Sym-o-net. If it is time for DEVICE 1 to be active (according to the *'Peripheral Schedule*'), click 'Activate' to communicate with the datalogger.
- NOTE: After the connection, you can also enter CONTROL MODE remotely. The 'Symonet modem options' option on the upper left part of the 'Stylitis Communication' window is activated. If you click on it, the form below will appear.

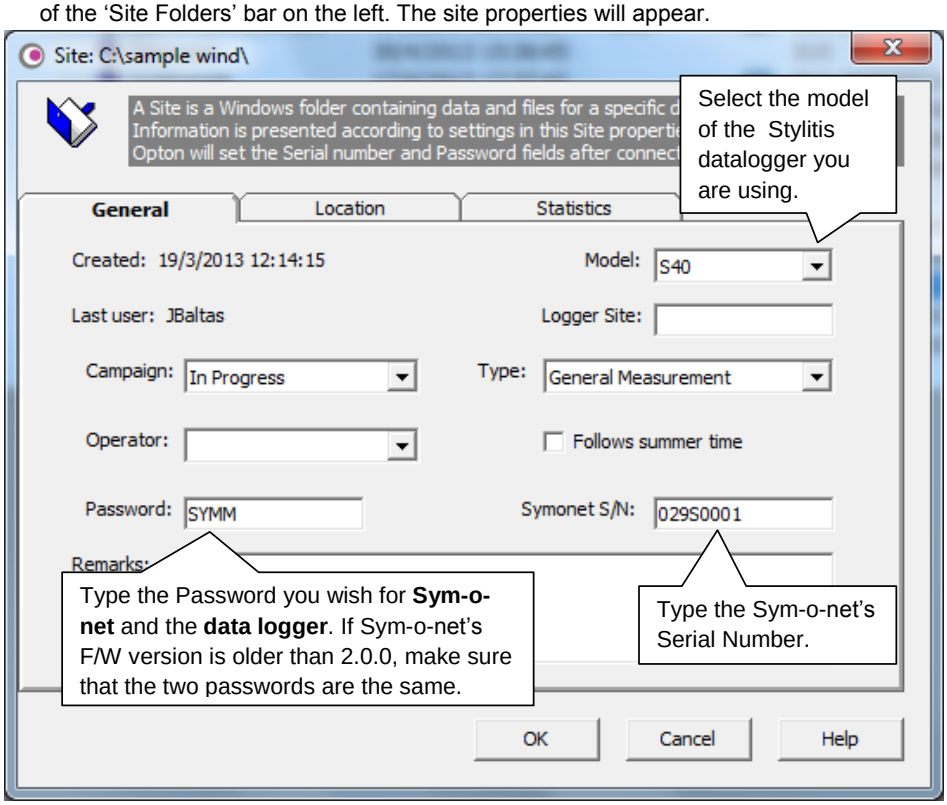


- By selecting 'Program Symonet options' and clicking 'Start wizard', Sym-o-net Programmer appears again.



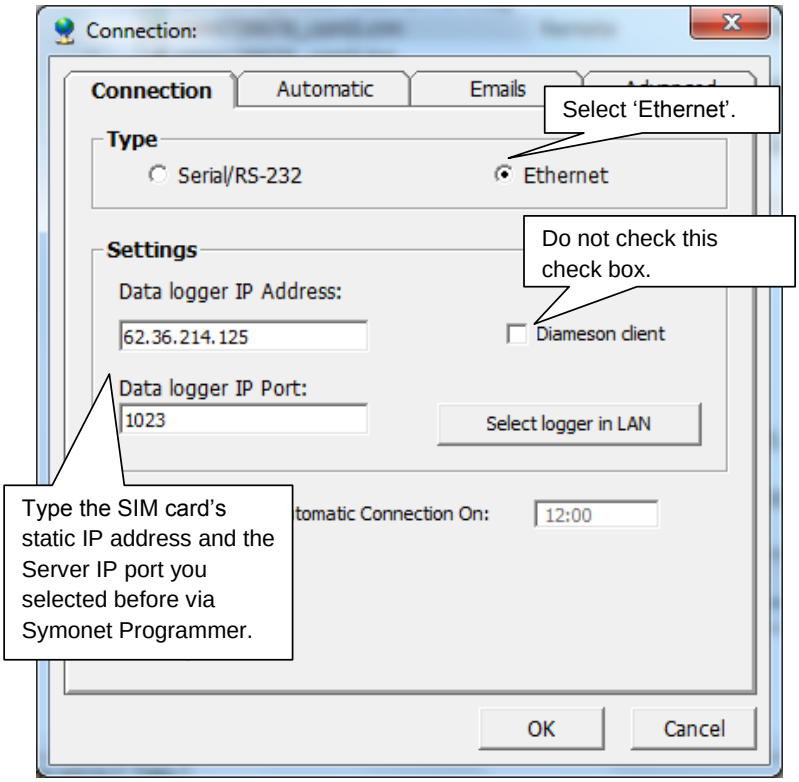
ii. Connect to a datalogger via Opton 4

Open **Opton 4** and open the '*Sites'* bar on the centre part of '*Start'* tab. Select any one of the first 3 options, to open the '*Sites'* tab. In '*Sites'* tab, create a new site, via the options of the 'Site Folders' bar on the left. The site properties will appear.

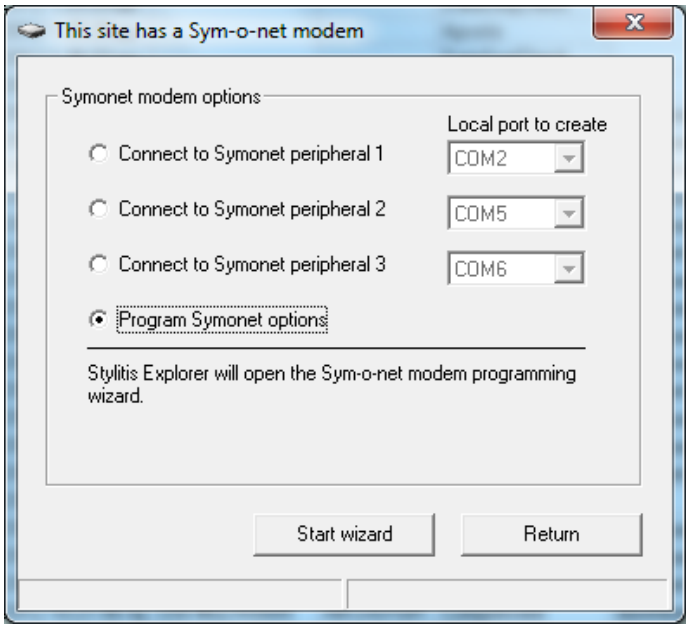


Click OK

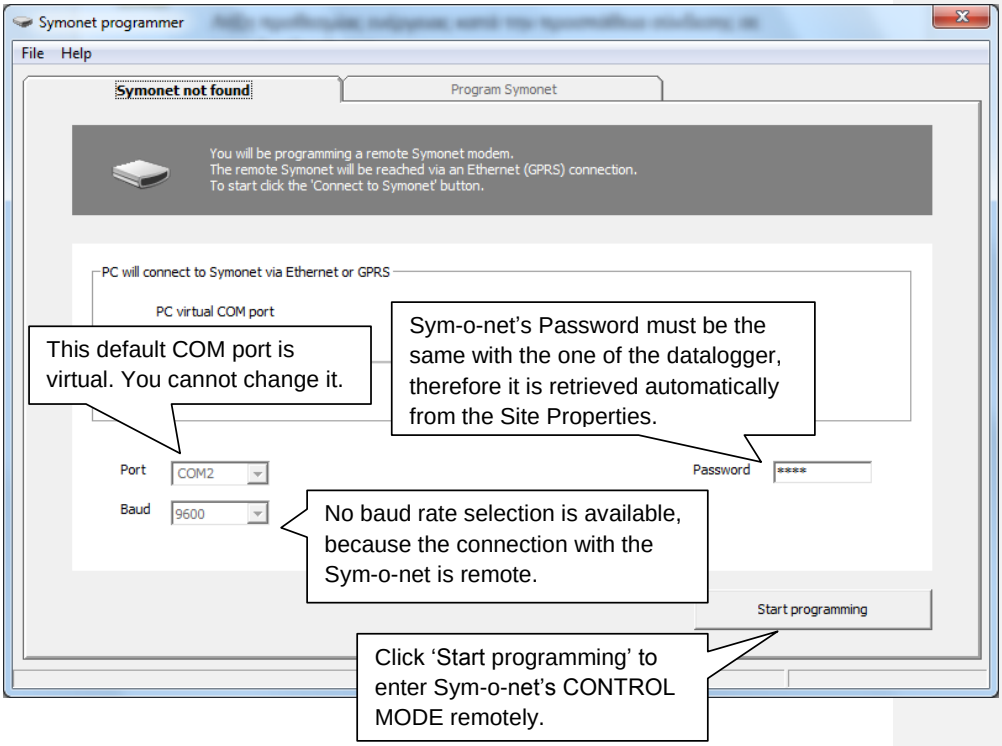
- The 5 tabs of the new site will open. Create a connection in the site's 'Connections' tab, by selecting *'+New Connection'* in the '*Communication'* bar on the left part.



- Click OK and select a name for the connection.
- Select this connection by double-clicking its file (.cem) from the '*Connections'* tab.
- Your computer will be connected to Sym-o-net. If it is time for DEVICE 1 to be active (according to the *'Peripheral Schedule*'), Opton 4 will locate the data logger.
- NOTE: After the connection, you can also enter CONTROL MODE remotely. In the 'Setup' tab, in the 'Data logger online' bar, select 'Read Symonet Setup' and the form below will appear.



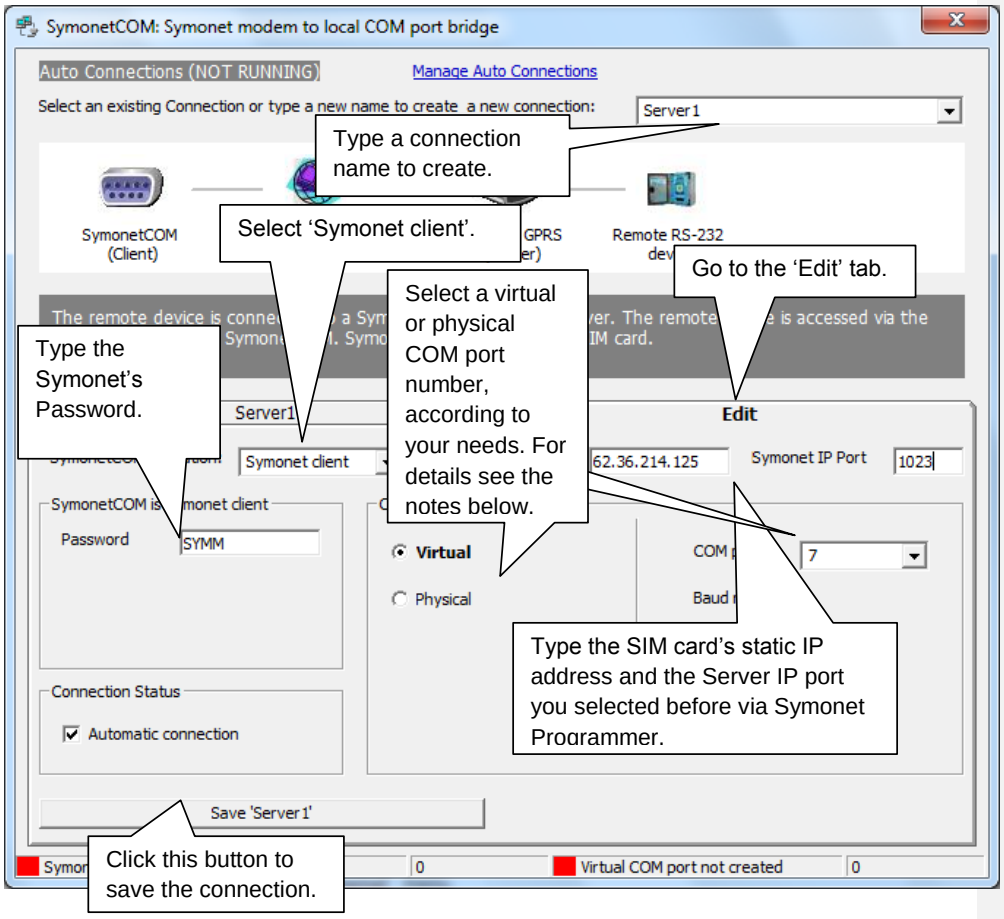
- By selecting 'Program Symonet options' and clicking 'Start wizard', Sym-o-net Programmer appears again.

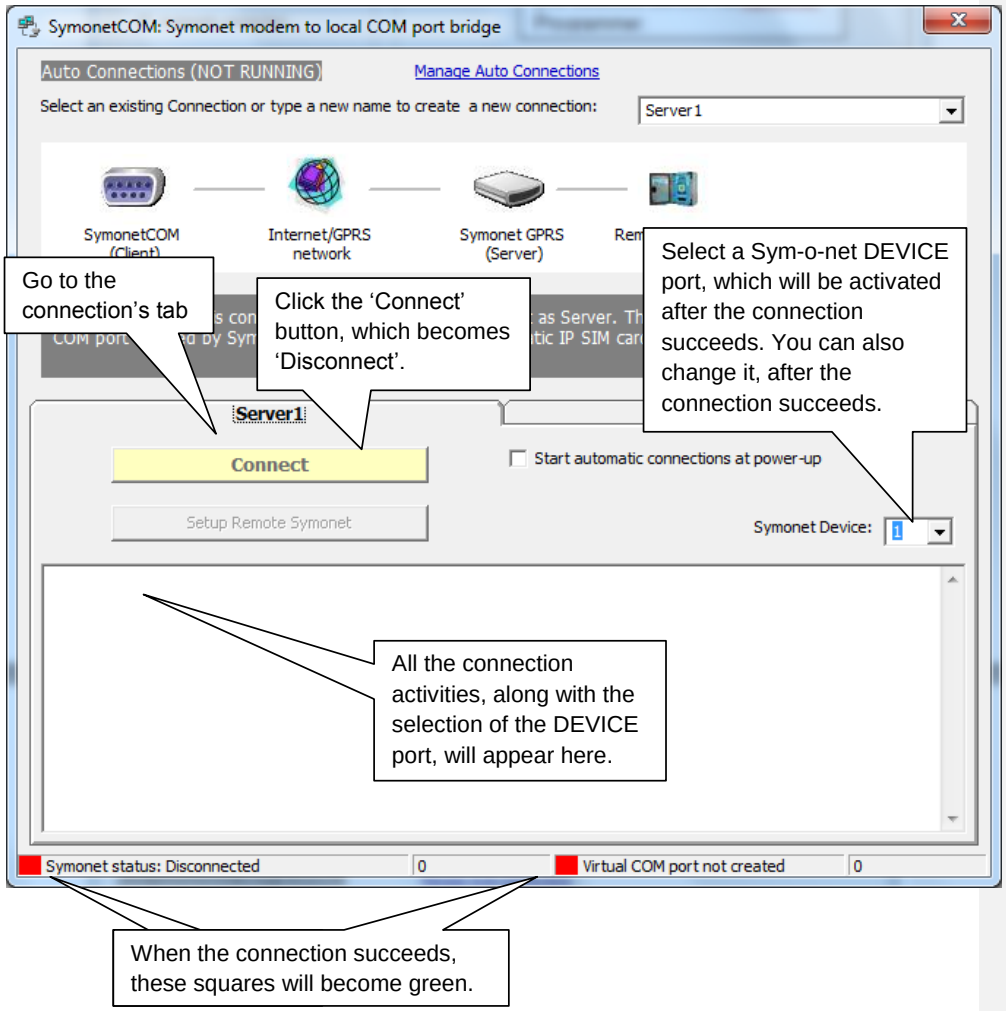


iii. Connect to a Sym-o-net's DEVICE port via SymonetCOM

SymonetCOM is a software which, besides opening Sym-o-net Programmer locally, enables remote GPRS communication with a Sym-o-net, and specifically with a peripheral device, connected to the corresponding DEVICE port. In server mode, it presupposes that the Sym-o-net is registered in the network as a server.

- Open SymonetCOM from 'All Programs|Symmetron|SymonetCOM'.





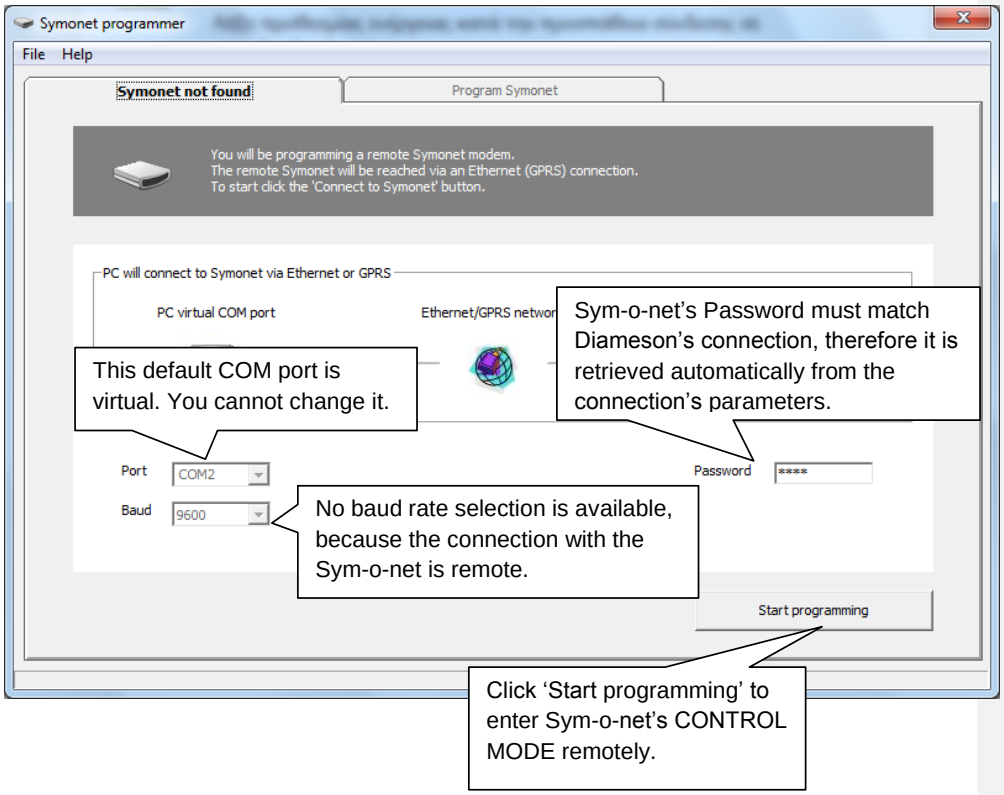
* This has a meaning only in the **3 device** version. In the standard one, it is not allowed.

COM PORT NOTES

- Select a **virtual** COM port, in order to create it. In this case, it will be available to open it via another software (via a "local" connection via this COM port), such as Symonet Programmer (via the 'Symonet Wizard' button) or HyperTerminal. In this case, the communication will be remote, but you will use a virtual 'local' port. The program you will select will open the port. Therefore, it will define the 'Baud rate', 'Parity', 'Length bits' and 'Stop bits' parameters and not SymonetCOM, which just creates the port. When you are done using the program, close it to close the port and then press 'Disconnect'.

- Select a **physical** COM port, ie an existing one in your computer, in order to open it. In this case, you cannot use the port via a program (since it is already open), but you can connect an external device to your COM port which will send commands to the Sym-o-net (and hence to your remote devices). In this case, you must define the 'Baud rate', 'Parity', 'Length bits' and 'Stop bits' parameters, (the ones at which the external device operates) because now the program which opens the COM port is SymonetCOM.

- After the connection succeeds, the ‘Symonet Wizard’ button is activated. If you click it, Symonet Programmer appears again.



E. CONNECT VIA A DATA CALL VIA A DATA SIM CARD (data mode)

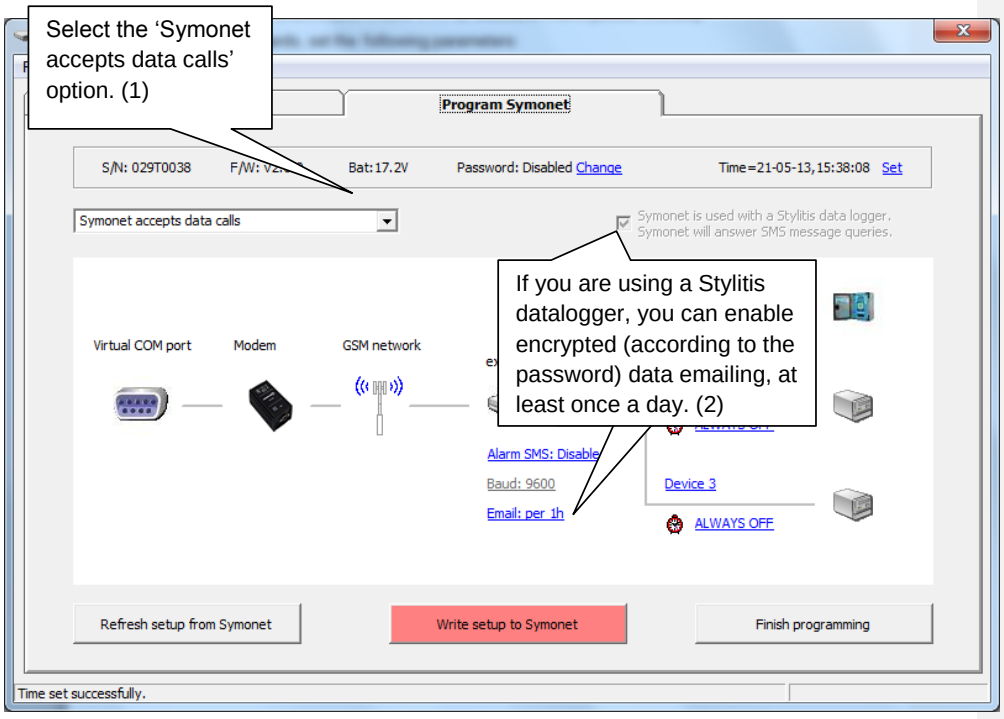
Besides a GPRS connection, you can also achieve a simple data call to Sym-o-net's SIM card via a GSM modem connected to your computer. For this operation, you need a GSM data SIM card for the Sym-o-net and one for your computer's modem. The one in your computer's modem is time-charged.

1. STARTING UP- LOCAL SETUP

Follow exactly the same steps as in the chapter **A. STARTING UP –LOCAL SETUP.** Set the Sym-o-net's parameters discussed in this chapter (see corresponding screen shot and notes).

2. CONNECTION TYPE SELECTION (data mode)

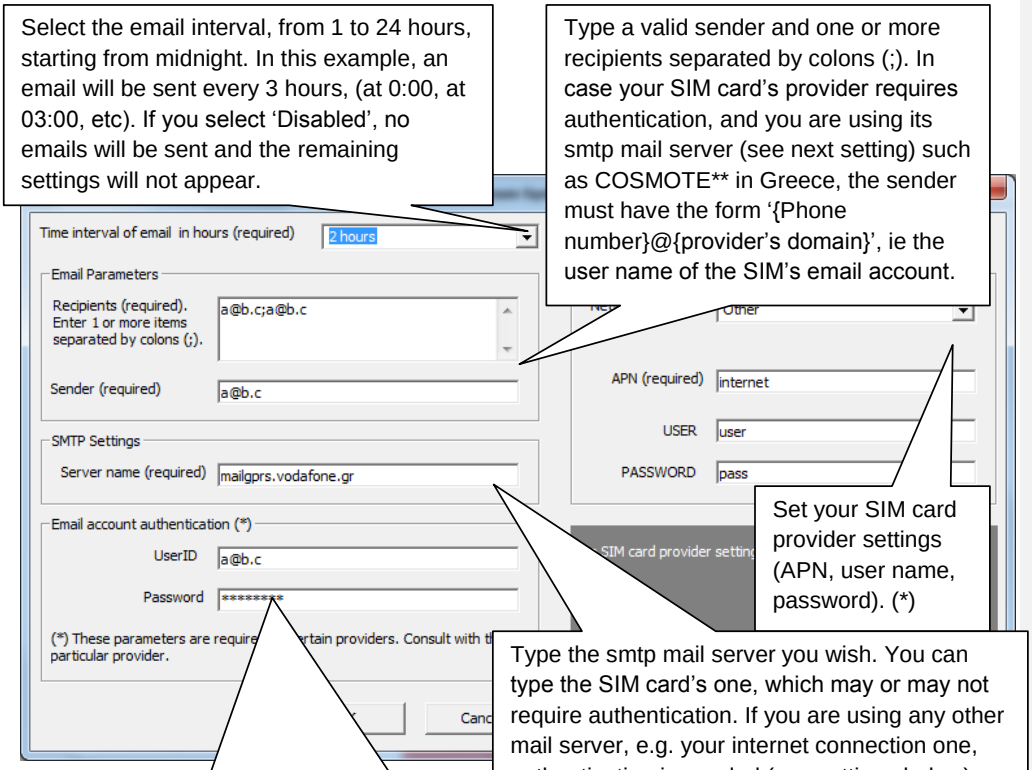
Afterwards, set the following parameters:



NOTES

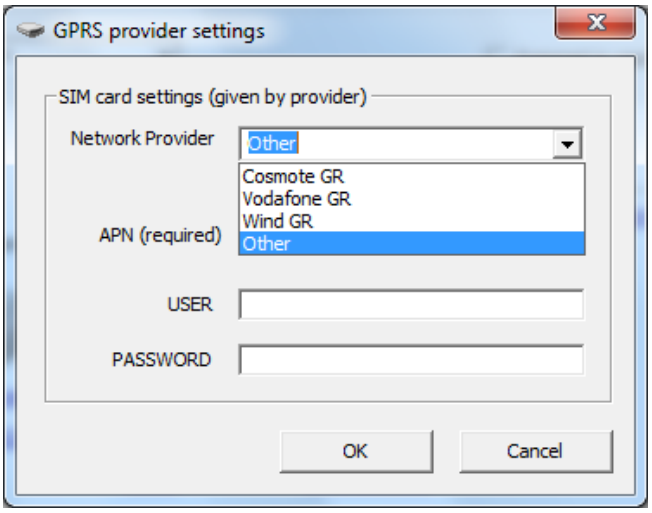
1. If you change the modem's operation, Sym-o-net with F/W version 2.0.0 or newer will be automatically **reset** after you click '*Finish Programming'*. (about 3 minutes required) For older versions, and for *baud rates* different from 9600, you are advised to reset the power supply *manually*, for the new baud rate to be applied, or it will be reset automatically at 23:30, as it does every day.

2. When you click the '*Email'* option, the following form appears



- If your SIM card's provider requires authentication, such as COSMOTE** in Greece, and you are using its smtp mail server, you must type the username (in the form '{Phone number}@{provider's domain}') and the password of the SIM's email account.
- If you are using any other mail server, e.g. your internet connection one, authentication is also needed (your email account user name and password).
- Otherwise, leave the fields blank.

* Greek providers are available to be selected, so that the settings are set automatically. In this case, you will be asked if you wish to update the *smtp mail server* to the one of the provider you selected. For email settings, see next note.



** COSMOTE GR requires a sender and an authentication user name having the form: '{Phone number}@mycosmos.gr'. To get the password, send an SMS via the SIM card with the text 'OPEN' to 54000.

ADDITIONAL NOTES:

- Email sending has the highest priority. No remote connections can be achieved during this process. EMAIL MODE is indicated by DEVICE 1 led **flashing** and all the other leds **permanently lit**.
- If you select data mode, when any DEVICE port is ON, you can send the '1111' string, via SMS, to the SIM Card's number, and the Sym-o-net will respond with an SMS containing the datalogger's battery voltage (power supply), its site name, its flash card status, its model (Stylitis 40 or Stylitis 100) and the current values of its first analog (A1) and counter (C1) channel. When you send the SMS, if no port is ON or if a data call is in progress or if an SMS is currently served, the SMS will be served when the Sym-o-net is available.

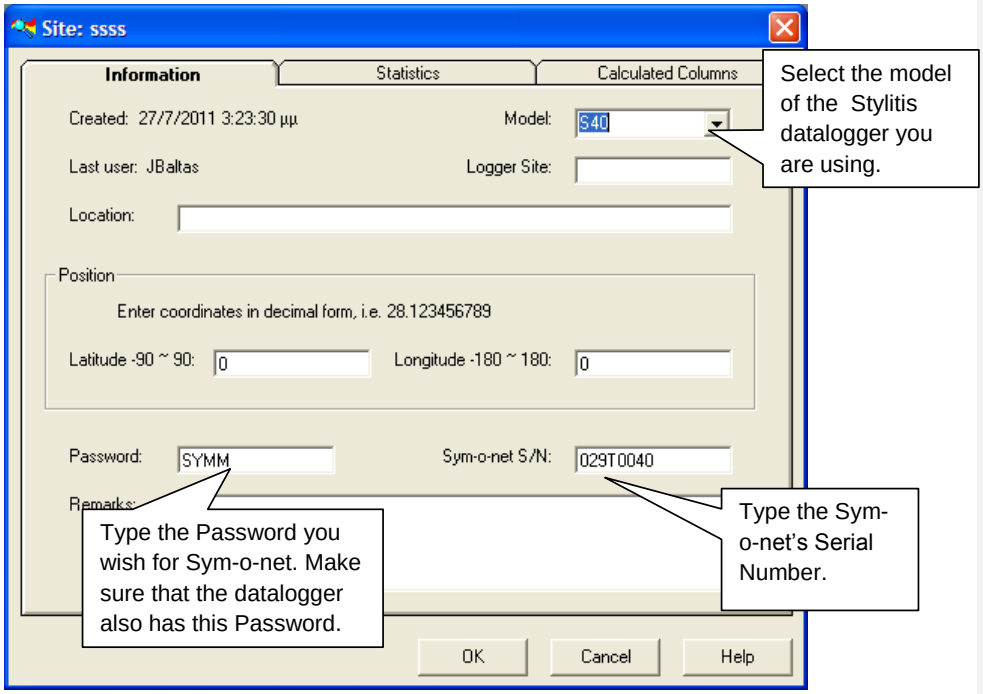
Finally, to save all the settings, click the 'Write Setup to Symonet' button.

3. REMOTE CONNECTION WITH THE DATALOGGER

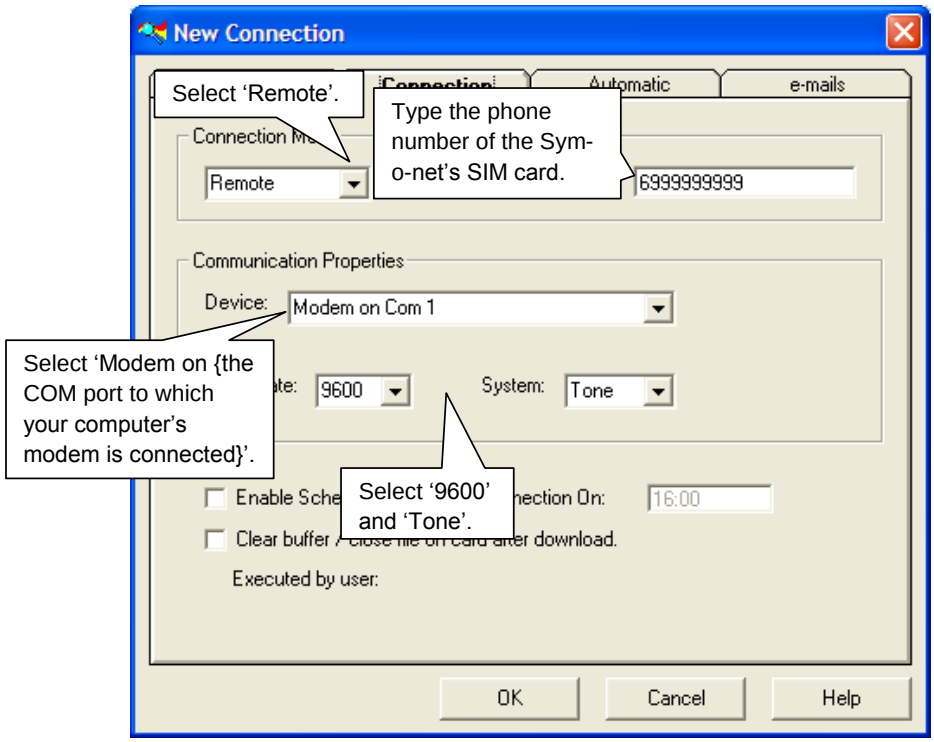
Since the Sym-o-net has checked the SIM card's buffer for any pending SMSs to be served, it is available for remote communication via a data call. The appropriate software for such connections with the data logger) is **Stylitis Explorer** or **Opton 4.**

i. Connect to a datalogger via Stylitis Explorer

- Open **Stylitis Explorer** and create a new site, by selecting 'Site|Create new Site' from the menu. The site's Properties will appear.

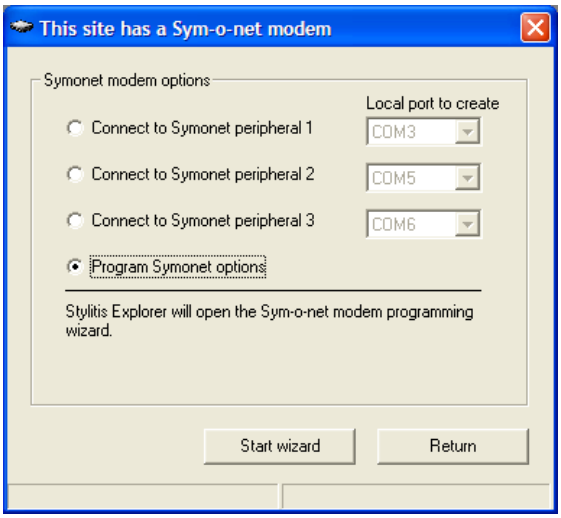


- Click OK
- Create a connection via the 'Communicate|New Connection' menu.

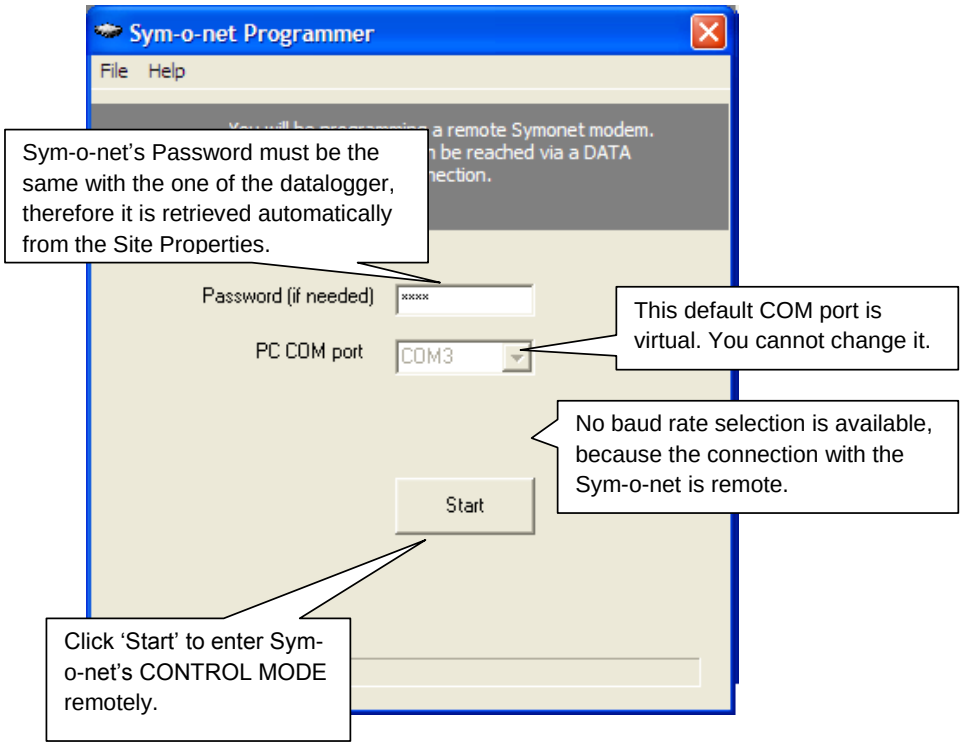


- Select a name for the connection in the 'General' tab and click OK.
- Select this connection by double-clicking its file (.crm) from Stylitis Explorer, or via the 'Communicate|Remote' menu.
- Click 'Connect' in 'Stylitis Communication' window. Your computer will be connected to Sym-o-net. If it is time for DEVICE 1 to be active (according to the Peripheral Schedule), click 'Activate' to communicate with the datalogger.

NOTE: After the connection, you can also enter control mode remotely. The 'Symonet modem options' option on the upper left part of the 'Stylitis Communication' window is activated. If you click on it, the form below will appear.

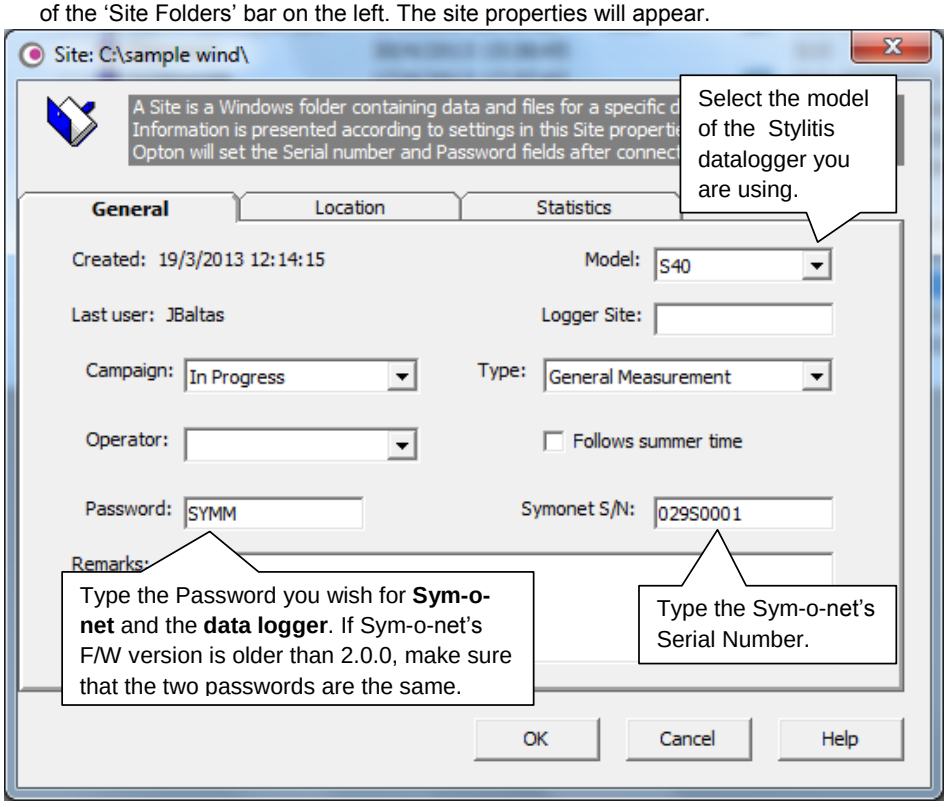


- By selecting 'Program Symonet options' and clicking 'Start wizard', Sym-o-net Programmer appears again.



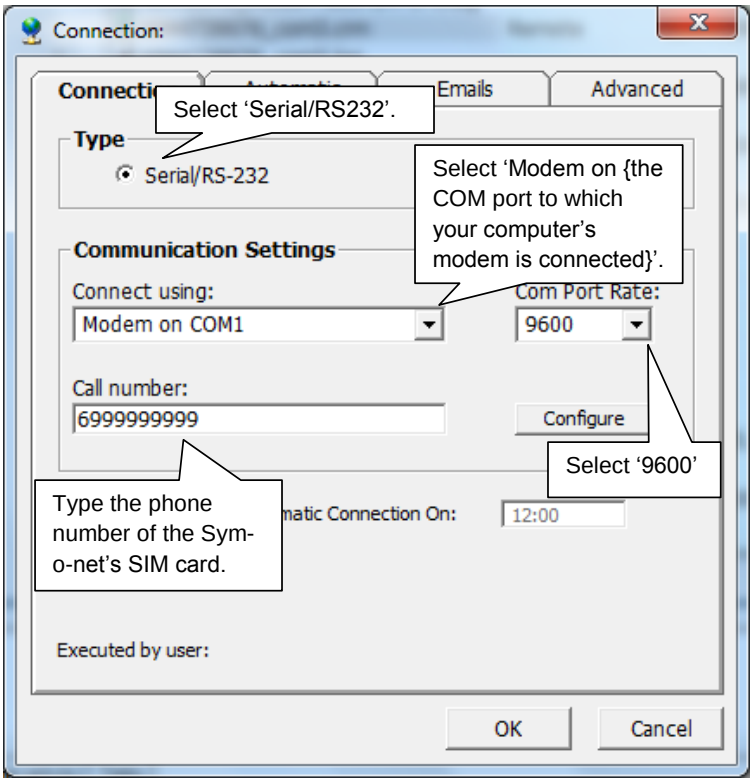
ii. Connect to a datalogger via Opton 4

Open **Opton 4** and open the '*Sites'* bar on the centre part of '*Start'* tab. Select any one of the first 3 options, to open the '*Sites'* tab. In '*Sites'* tab, create a new site, via the options of the 'Site Folders' bar on the left. The site properties will appear.

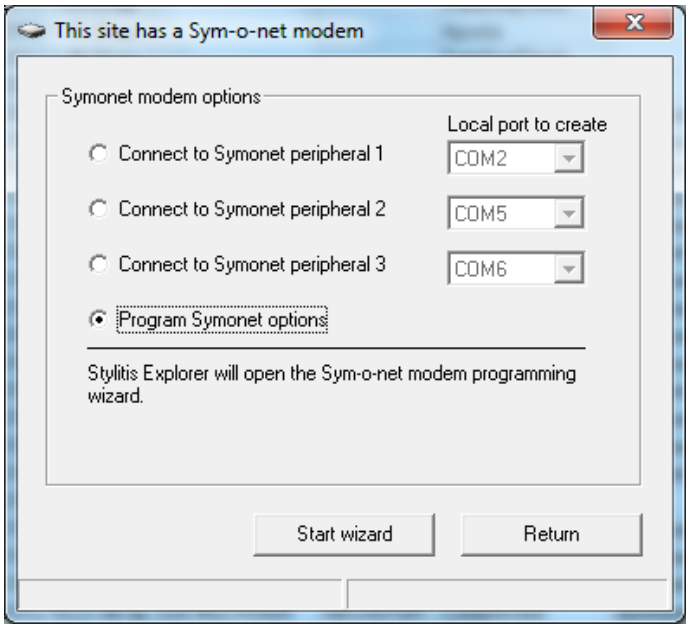


Click OK

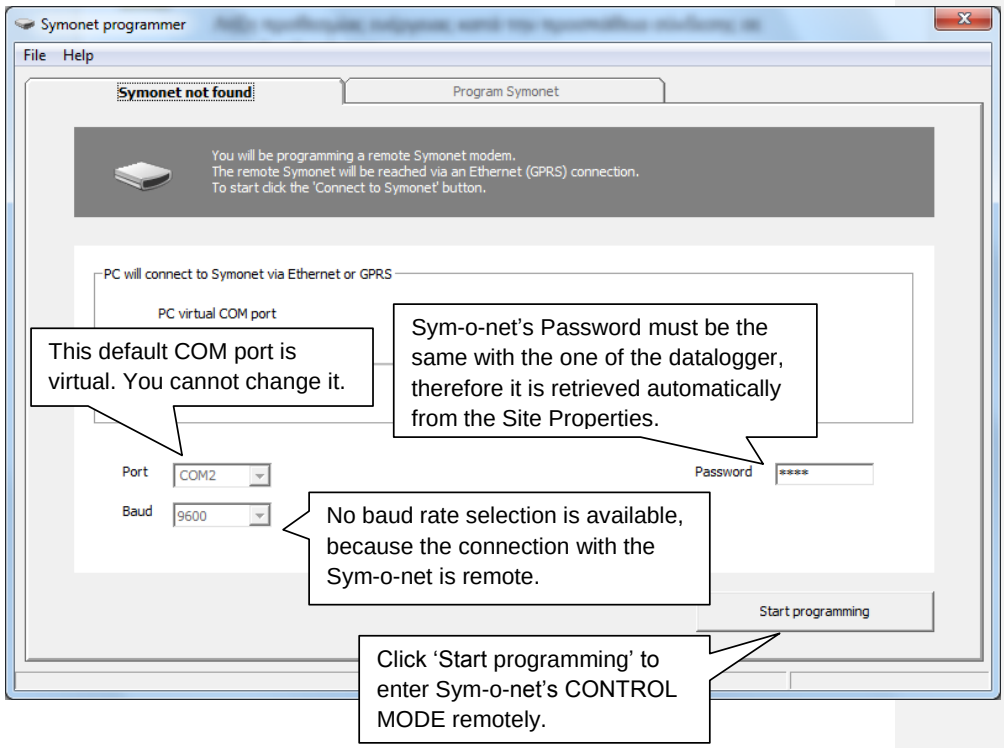
- The 5 tabs of the new site will open. Create a connection in the site's 'Connections' tab, by selecting *'+New Connection'* in the '*Communication'* bar on the left part.



- Click OK and select a name for the connection.
- Select this connection by double-clicking its file (.crm) from the '*Connections'* tab.
- Your computer will be connected to Sym-o-net. If it is time for DEVICE 1 to be active (according to the *'Peripheral Schedule*'), Opton 4 will locate the data logger.
- NOTE: After the connection, you can also enter CONTROL MODE remotely. In the 'Setup' tab, in the 'Data logger online' bar, select 'Read Symonet Setup' and the form below will appear.



- By selecting 'Program Symonet options' and clicking 'Start wizard', Sym-o-net Programmer appears again.



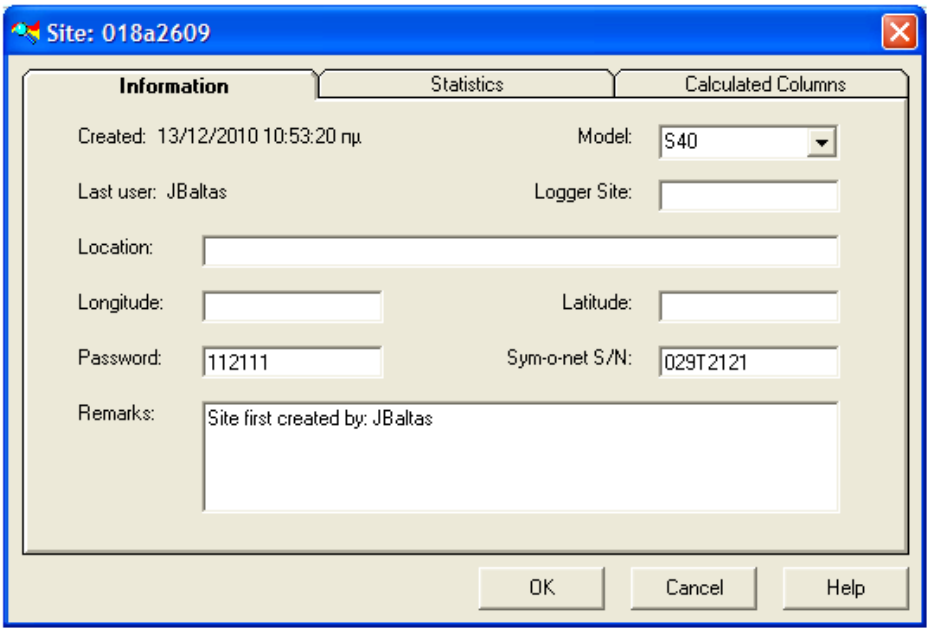
APPENDIX A: FILES SENT VIA EMAIL

- If you are using a datalogger without a flash card, that is the acquisition is done in the **internal memory** (**buffer**), then you are receiving an email with the buffer's file while at the end of the download (and provided that the email is successfully sent), the buffer is cleared.
- If you are using a datalogger with a **PCMCIA linear flash**, then you are receiving an email with the card's most recent file while at the end of the download (and provided that the email is successfully sent), the file in the card closes and the next one opens.
- If you are using a datalogger with a **Compact flash**, then the first email you receive contains the file with file number 1. At the beginning of the download, the file in the card closes and the next one opens. Only if the email is successful, in the next one you will receive file 2, etc. If you change or clear the card, therefore file 1 is recorded again, the next email will contain this new file 1. Finally, you will receive again file 1 if you reset Sym-o-net's power supply.

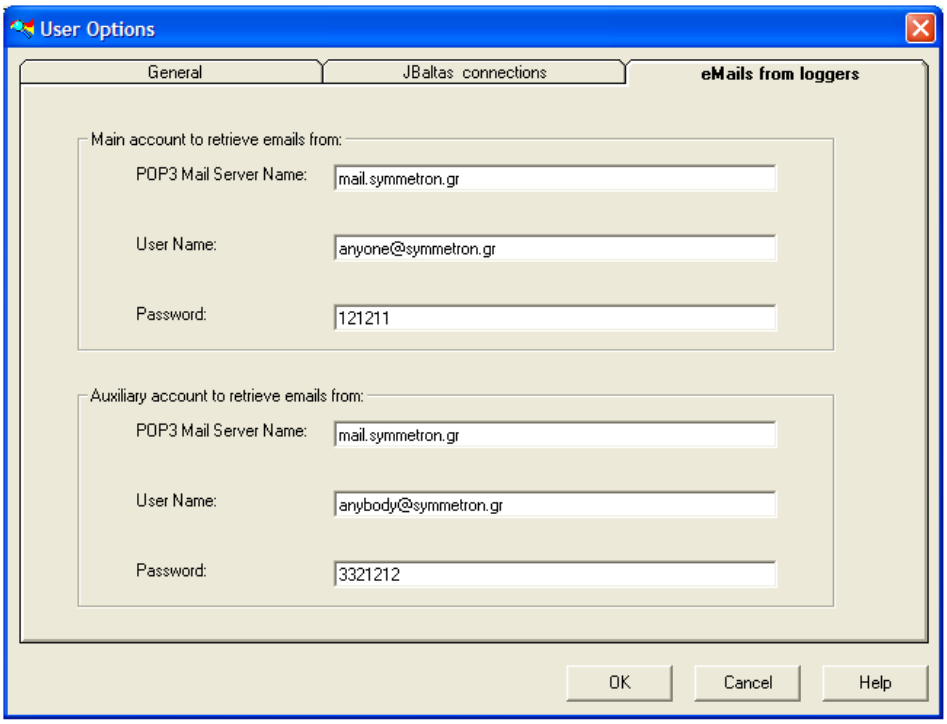
APPENDIX B: MANAGEMENT OF ENCRYPTED EMAILS

Instead of manually saving each file sent to you via email in the corresponding site folder, there is a second method, via **Stylitis Explorer**, which is useful for an automated mass import of files in one or all your sites.

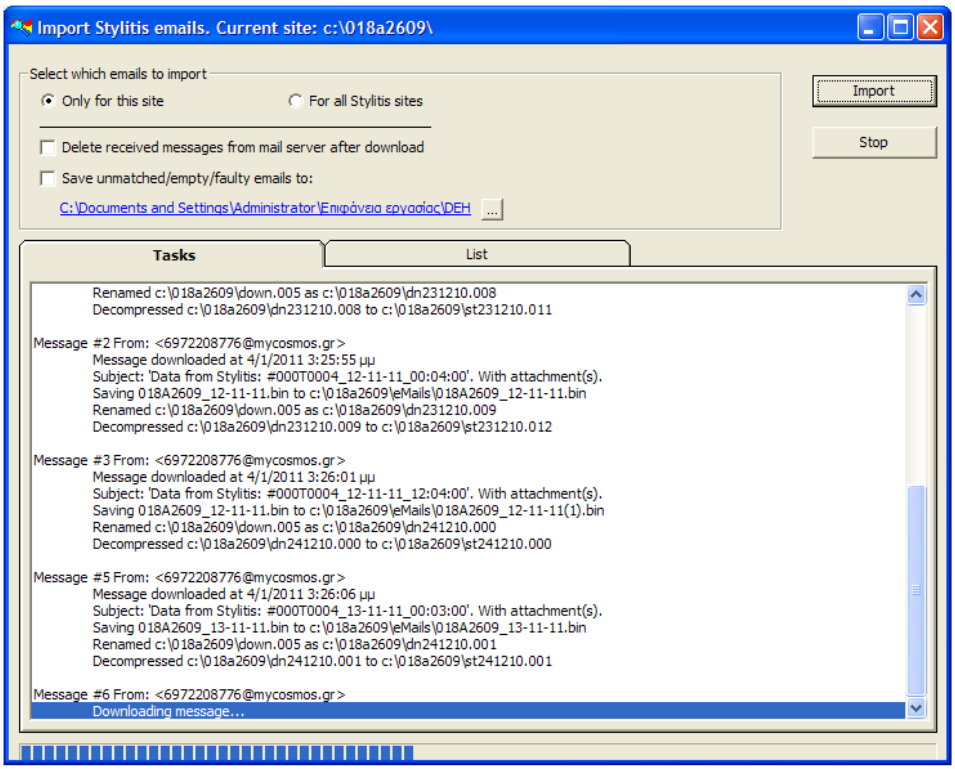
The first step is to select the site folders to which these files will be imported. For each site, with the “Site|Site Properties” option from the menu, the site's properties appear. In the "Information" tab, the Serial Number of the Sym-o-net to which the datalogger is connected must be defined ("Sym-o-net S/N" field), along with the datalogger's Password ("Password" field), which must be the same with the Sym-o-net's Password, and its model ("Model" field), ie S40 or S100. Of course, the process can be repeated for more sites, in each one of which a different datalogger corresponds, therefore a different Sym-o-net, as well.



Next, the appropriate email recipients must be defined, via the “File|User Options” menu, and specifically in the "eMails from loggers" tab, which appears in the following screen shot. Before that, the user must have created one or two accounts which will receive emails, via the mailserver of the connection they use. However, the emails from these accounts must not be automatically receivede by a program which will delete them from the mailserver, such as Outlook. Create these accounts by entering in the mailserver as an administrator. Next, in this tab, such an account must definitely be defined (main account) on the tab's upper half, and, optionally, a second one (auxiliary). The account's settings which must be typed in the corresponding fields are its Mail Server, its User Name and its Password.



Finally, via the “Communicate|Get data from eMails” option from the menu, Stylitis Explorer receives the emails from the accounts defined previously. The following window appears. If the "Only for this site" option is selected, the program checks all the mailserver's emails one by one, searching only the ones having the Serial Number of the current site folder (the one defined in the site's properties), which will be imported in this folder. Emails having a different Serial Number will be ignored. If the "For all Stylitis sites" option is selected, the program will compare the emails' Serial Numbers with the Serial Numbers of all the site folders of the computer. Each matched file will be imported in the corresponding site folder. However, if two or more sites have the same Serial Number, only the first folder found by Stylitis Explorer will be taken into account, while the rest ones will be ignored. So, the user is advised not to have multiple sites with the same Serial Number. Moreover, if the "Delete received messages" box is checked, then after the files' import in the folders, the corresponding emails will be deleted from the mailserver. This is the default option, but it is useful to deactivate this action, in case the user desires further management of the emails, such as to import them again. Finally, you can check the "Save unmatched/empty/faulty emails to" box, and select a computer folder (below) to which all the "failed" files will be stored. Such files are: unmatched (no site with the file's Serial Number was found, in case the "For all Stylitis sites" option has been selected), empty (no data were downloaded) or faulty (the file was matched, but the file's password and the site's password did not match, so the file was not decrypted
correctly).



By pressing the "Import" button, the import of the attached encrypted files in the corresponding site folders begins. In the window's Tasks tab, the process is described via messages. Firstly, all the computer's sites are checked, if "For all Stylitis sites" has been selected before. Missing (deleted) folders or folders with same Serial Number with one of the folders already found, will be ignored. Next, the main account will be checked. The email headers will be found, and afterwards, each email will be processed one by one. The corresponding messages, for each file, besides the first line which is the email's subject, describe 4 steps of the process, as it is apparent in the screen shot above: Importing the authentic encrypted files (.bin) in a subfolder of the site, named "eMails", which is automatically created ("**Saving**" line), decrypting these files to compressed ones, which will be put in the site folder ("**Decrypted**" line), renaming these compressed files to a form which is recognizable by the user, ie in the 'dn*DDMMYY.xxx*' form ("**Renamed**" line), and finally decompressing them in the site folder ("**Decompressed**" line). It is worthy of note that the program searches for emails with encrypted files, which correspond to the specific Serial Number defined in the site's properties. However, if the site's Password is not correct (the same with the one of the datalogger), the decryption will not be done correctly, therefore invalid files will be produced in the site folder (files with extensions .000, .001, .002, etc), which of course cannot be decompressed. The corresponding message in the 4th line, instead of "**Decompressed**", will be: "**!File not recognized**". This is the case of a **faulty** file, as mentioned above, so if you have checked the "Save unmatched/empty/faulty emails to" box, it will be saved in the folder defined. Furthermore, if the corresponding datalogger does not have a Password, the email's file will not be encrypted, but a normal compressed file. Such files are recognized by Stylitis Explorer as compressed, and after being imported in the "eMails" folder (in their original form, with extension .bin), they will simply be copied in the site folder (the "**Decrypted**" line becomes:"**Copied**") and then renamed in the familiar form: 'dn*DDMMYY.xxx*'.

When the process is completed, in the window's "List" tab, all the emails managed will appear in a list form, along with their features (sender, recipient, subject, etc). In the last column ("Status"), if the file was successfully imported, decrypted and decompressed, the corresponding value will be "Imported".

Finally during the process, the "Exit" button becomes "Stop" and if it is re-pressed, the process is interrupted. After the end of the process, the button becomes again "Exit", to close the window.

APPENDIX C: GENERAL NOTES

i. The following general rule applies: When the MODEM LED and a DEVICE LED are **continuously flashing**, you can communicate remotely via the methods described or locally via the corresponding DEVICE port (it is **active**) or the MASTER port. If at least one LED is **flashing intermittently**, the Sym-o-net is in the middle of a process, which (except for the email) lasts one minute maximum. More specifically, if **only** the MODEM LED is **flashing intermittently**, the modem is off and no DEVICE port is open (according to the 'Peripheral Schedule'). In these states, remote and local communication is not available.

ii. To communicate from an **active** peripheral (DEVICE) port, via a computer COM port (via the Sym-o-net Programmer, HyperTerminal, etc), a **straight** cable DB9 male-female is needed, while to communicate from the MASTER port, a **NULL MODEM** DB9 female-female is needed.

iii. If you wish to send emails from Stylitis (41 or 101) dataloggers or SMS from Stylitis dataloggers (only in data mode), you must make sure that you have connected a datalogger to **DEVICE 1** peripheral port via a DB9 **NULL MODEM** cable and that the **datalogger's Password** is the same with the **Sym-o-net's Password** (if the datalogger has a Password). Otherwise, the Sym-o-net will give a wrong Password to the datalogger to communicate with it, and the datalogger will be locked!