STYLITIS-10

USER'S MANUAL

SYMMETRON
ELECTRONIC APPLICATIONS

0508

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CONVENTIONS USED IN THIS MANUAL

Symbol	Meaning
	To avoid injury of personnel and/or damage to the instrument, the operator must refer to the user's manual.
CAUTION	Calls attention to a procedure or condition which, if not correctly performed could result in damage to the instrument.

SYMMETRON
ELECTRONIC APPLICATIONS

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MANUFACTURERS DECLARATION OF CONFORMITY
We, 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:
Data recording and logging instruments.

Model
Stylitis-10

Date and Place
Pallini, Greece, 20 Ιανουαρίου 2007

Authorized signatory on behalf of the manufacturer
Nick Hadzidakis
Theoni Katsabakou

Title: Owners and Directors

CONTENTS

1. INTRODUCTION

The model Stylitis-10 data logger is a versatile, low cost and user friendly device for technical measurements, control and data storage. It provides:

- A local user interface with 2 line - LCD display and 4 key-buttons.
- Standard connection for most widely used transducers, like thermometers, anemometers, wind direction vanes, pyranometers, switches, etc.
- User selectable time interval for average calculations.
- Internal flash memory 4 Mbyte for data storage
- Digital outputs that may be programmed to switch ON or OFF external relays, LEDs, etc. The outputs may be set to respond to combinations of input channels' values.
- Programming, control and data downloading through RS232, modem, internal or external GSM/GPRS modem, Ethernet.

Sampling and storage continues unaffected while communicating with the user.

WORKING WITH STYLITIS

Stylitis family data loggers operate in different ways according to your application. (see fig.2):

1. **As an autonomous unit with off-line data downloading.** The data logger samples the input signals and keeps the average values for each interval in the internal 2MB flash memory. The stored files are downloadable via the serial port. The connection between data logger and the PC may be via a direct link, via a modem (PSTN or GSM) or via the Ethernet network (LAN). *The unit accepts an optional internal GSM modem or Ethernet server* (in this case the 'COMMUNICATION'

serial port is disabled). The PC must be equipped with an RS232 COM port, a modem or a network card respectively. The data logger is accompanied by Opton, the software required for programming, inspecting, data downloading, and decompression. Data files are arranged in ASCII text files.

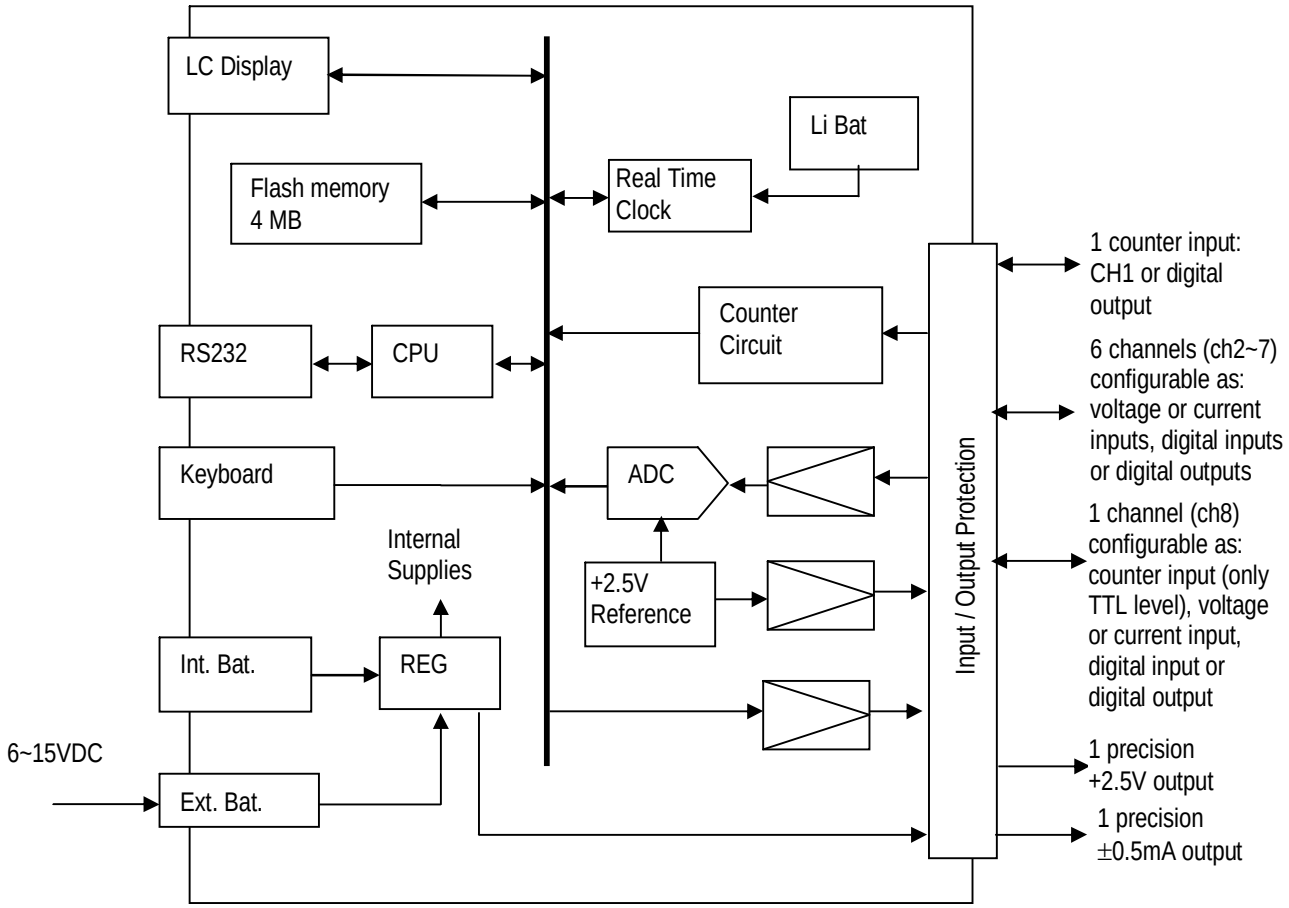
2. **Real Time Measurements.** On line data reading with appropriate user software, for storing and manipulation in a PC. The connection between data logger and the PC is as described above.

This manual includes detailed operation description. Technical support is available by phone: +30- 210-6034002, or e-mail:

support@symmetron.gr

and at: www.symmetron.gr

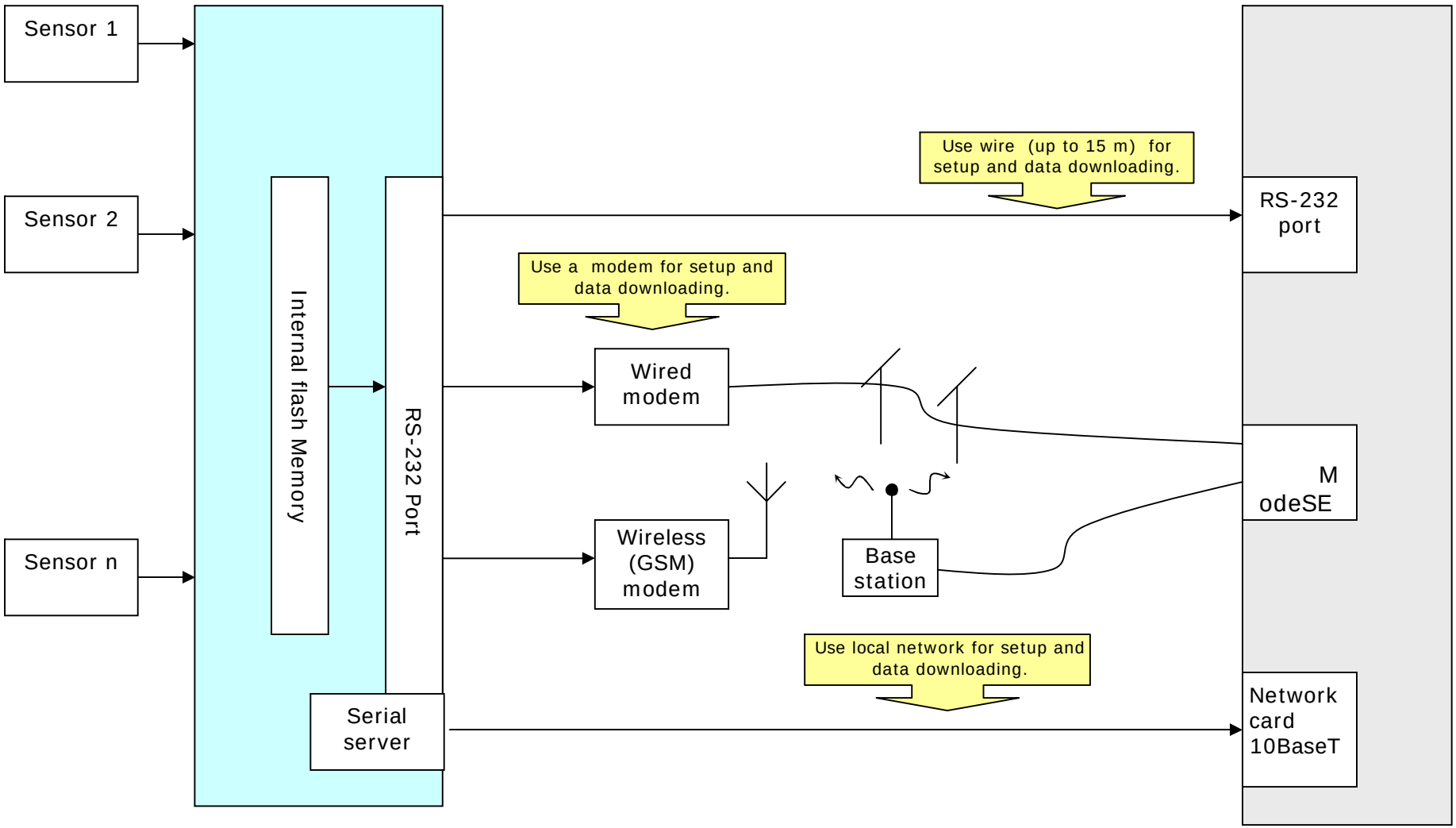
Fig 1: General Diagram



Stylitis-10

Fig. 2: Operation

PC



2. OPERATION AND SAFETY

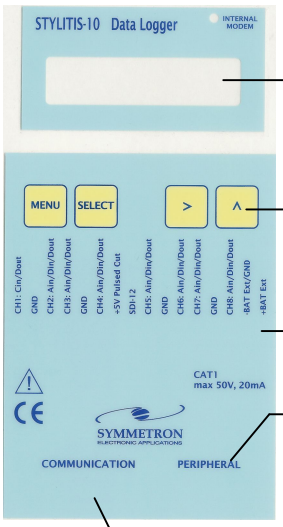
EXTERNAL DESCRIPTION.

CAUTION

Do not:
- destroy
- overheat
- short-circuit
- charge

dry cells.
If the instrument will not be used for a long time, remove the dry cells.

Front View



2 line-LCD-display

Keyboard

Input/Output connectors

RS232 port, D9M to be connected with modem or PC

RS232 port, peripheral for general input/output use.

Back panel:
1 battery case PP3 (9V). Use of alkaline batteries is advised.

CAUTION

The fuse used must of the specified
raAcq
On/Off
shortcircuit
the fuse

FUSE REPLACEMENT.

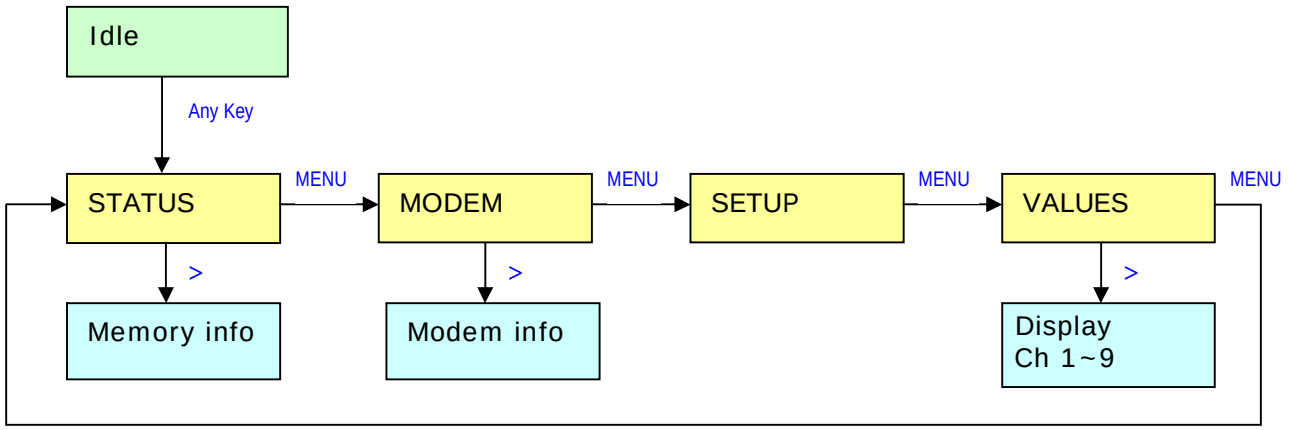
The instrument uses a 1 A power supply fuse, which must be replaced if blown (supply voltage out of limits). It can be found on the printed circuit board, after removing the 4 screws that hold the back panel in place.
Make sure you have removed the external supply and cells before attempting the replacement.

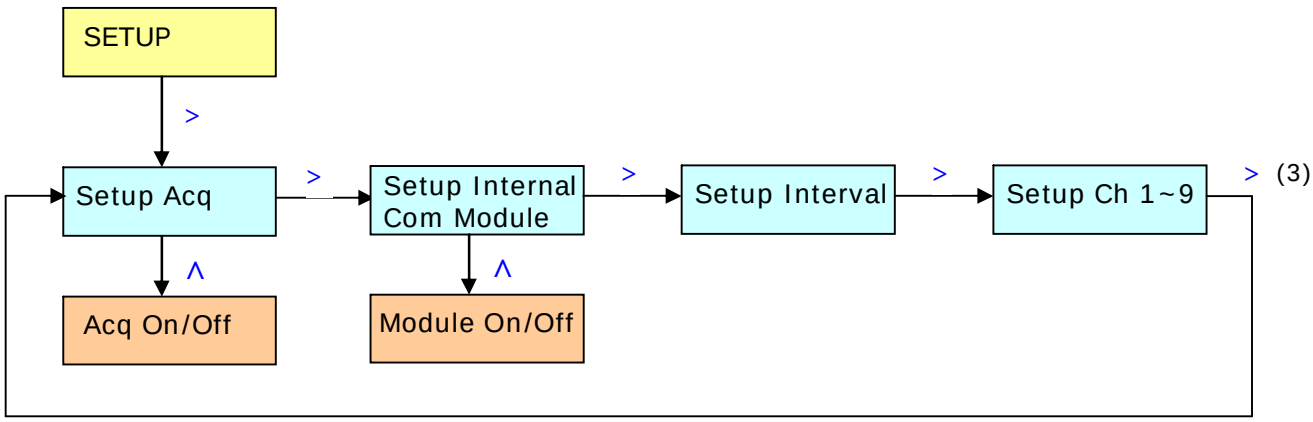
3. USER INTERFACE AND OPERATIONS REVIEW

The display and keyboard may be used to:

- To see the current status and time.
- To check the battery.
- To check the amount of free memory.
- To check the current input data values.
- To check the modem signal.
- To check the input setup.
- To start or stop data storing (ACQuisition OFF/ON).
- To activate or deactivate the internal server (internal GSM/GRPS modem or internal Ethernet module, if there are any)
- To type the service code, to deactivate outputs and alarms for the datalogger's service.

MENU STRUCTURE





NOTES:

1. The parameter setting is done through serial port and is permitted only if ACQUISITION is OFF.
2. From local interface only system inspection is possible and the change of ACQUISITION status (ON/OFF).
3. Channel types are explained in the table in next page.

KEYS

MENU	Go to next menu
SELECT	Accept change and go to next menu
>	Go to next sub-menu
^	Change setting

Channel type	Channel	Input signal	Operation
C	1	SIN	Measures the number of sinusoidal periods per second and applies the formula: [Slope2 * x^2 + Slope * x + Offset]. Stores the average for each interval.
C	1,8	TTL	Measures the number of TTL pulses per second and applies the formula: [Slope2 * x^2 + Slope * x + Offset]. Stores the average for each interval.
E	1	SIN	Measures and stores the number of sinusoidal periods inside interval and applies the formula: [Slope2 * x^2 + Slope * x + Offset] (Event counting)
E	1,8	TTL	Measures and stores the number of TTL pulses inside interval and applies the formula: [Slope2 * x^2 + Slope * x + Offset] (Event counting)
A	2,3,4,5,6,7,8	VOLTAGE	Measures analog voltage per second. Applies the formula: [Slope2 * x^2 + Slope * x + Offset]. Stores the average for each interval.
A	2,3,4,5,6,7,8	CURRENT	Measures analog current per second. Applies the formula: [Slope2 * x^2 + Slope * x + Offset]. Stores the average for each interval.
V	5,6,7		Measures wind direction (vane). Measures the ratio: (Input voltage)/(Pulsed Out Voltage) per second, adds offset and converts to degrees. Calculates and stores vector direction average for each interval.
T	2,3,4,5,6,7,8		Temperature sensor PT100 or PT1000. Measures analog voltage per second and applies conversion formula for PT100 or PT1000. Stores averages for each interval.
I	2,3,4,5,6,7,8		Measures the digital input state (TTL 0/1) every second. Stores sum of input states for each interval.
O	1,2,3,4,5,6,7,8		Digital output (open-drain) according to user defined conditions.

SERVICE CODE

While in the first menu ('STATUS'), press '^'. In the LCD screen, the 'SERVICE PASSWORD?' message will appear. This password consists of 6 digits, between 1 and 4. To type it, use the datalogger's buttons, with the following correspondence: press 'MENU' for 1, 'SELECT' for 2, '>' for 3 and '^' for 4.

When you type the correct code, the 'SERVICE' message will blink in the right bottom part of the 'STATUS' menu. In this state, the datalogger deactivates its digital outputs (see 8.PROGRAMMABLE DIGITAL OUTPUTS), if you have selected any in the datalogger's setup via *Opton* software (see 19. SOFTWARE), via the *Read Setup* and *Write Setup* commands. Therefore, since the digital outputs are deactivated, the Alarm SMSs are also deactivated (see 18. MESSAGES (SMS and EMAIL)). This function is useful for service or maintenance of the datalogger, without disconnecting it from the measuring system. This way it will not be busy sending an SMS in case the corresponding conditions are satisfied.
The datalogger exits this state if you press again '^' while in the 'STATUS' menu. It will request the code again. Type any code, and the datalogger will exit this state (the 'SERVICE' message will cease to blink in the 'STATUS' menu). In this case (to exit the service state), the ERROR message is of no importance.
You can set this code by connecting with the datalogger via Opton and selecting the command 'Set Service Code'.

4. POWER SUPPLY

There are 3 modes of operation:

- **ENERGY SAVING MODE**

This is the default mode. The system is in an idle condition, which is interrupted by the system clock every second, in order to take the input sampling, perform any calculation and store the data in memory. During this low consumption mode the display is off.

➢ COMMUNICATION MODE

By pressing any button or upon receiving a character from the COMMUNICATION serial port, the display is switched on and the serial communication is activated. The unit is active and the power consumption increases. The system returns automatically to energy save mode, 60 seconds after the last pressing of a button or 60 seconds after the last character received from the serial port.

➢ CONTINUOUS OPERATION MODE

By issuing the appropriate serial command (CONTINUOUS OPERATION) the data logger remains in COMMUNICATION MODE until another serial command switches it back to ENERGY SAVE mode.

5. MEASUREMENTS

Connection Examples:
See Appendix A.

Stylitis-10 is capable of directly measuring voltage, current, frequency, pulses and RTD temperature.

With the proper sensors it can measure:

- ✓ Solar radiation, humidity, pressure.
- ✓ Wind speed, wind direction. It connects with many types of anemometers and vane sensors.
- ✓ Rain height, water speed, water depth, etc

The sensors must output Voltage (from 0~125mV to 0~2.5V full-scale), current (from 0~5mA to 0~50mA full-scale), or a frequency signal (0~5 kHz).

6. SENSOR SUPPLY OUTPUT

CAUTION

Do not apply Voltage to device's output.

For *voltage* sensor supply, the + PULSED OUT may be used. It can supply 2.5V at up to 25 milliamps, with ±0.2% accuracy.

For *current* sensor supply, the + AUX output may be used. It can supply 0.5mA, with ±0.3% accuracy.

In Energy Save mode *both these outputs are pulsed* in order to save battery power. They are always ON in Continuous Operation mode.

7. CHANNELS

- DIGITAL INPUTS: CH2~CH8

  The channel is connected to a digital signal. Stylitis samples the value (0 or 1) of the digital signal every second. The samples are summed up during selected interval and stored in memory.

- DIGITAL OUTPUTS: CH1~CH8

  Any channel may be used as a digital programmable output, which is driven low (0) for user-programmable combinations of input channels' values.

- ANALOG INPUTS: CH2~CH8

  Stylitis-10 has an 7-channel Analog to Digital Converter (for CH2~CH8), with 13 bit-resolution plus sign and 0~+2.5V input range. Channel 8 can also be selected as a counter input of 16 bits (see below).

  In addition there is a programmable input amplifier for the following full scale input ranges:

CAUTION

Do not apply Voltage exceeding the limit of (±20V to system's Inputs

Voltage: *0~2.5V, 0~1.25V, 0~625mV, 0~500mV, 0~312,5mV, 0~250mV, 0~156.25mV, 0~125mV.*

Current: *0~50mA, 0~25mA, 0~20mA, 0~12.5mA, 0~10mA, 0~6.25mA, 0~5mA.*

There are 6 basic options for each analog input channel:

1. NOT USED. The channel is not stored.

2. VOLTAGE INPUT. A formula is applied to the measured value in order to convert it to appropriate physical units. Three user-programmable parameters, Slope2, Slope and Offset are applied to measured value *x*:
   *Physical value = [Slope2 * x^2 + Slope * x + Offset].*

3. DIFFERENTIAL VOLTAGE INPUT. A formula is applied to the measured value in order to convert it to appropriate physical units. Three user-programmable parameters, Slope2, Slope and Offset are applied to measured value *x*:
   *Physical value = [Slope2 * x^2 + Slope * x + Offset].*

4. CURRENT INPUT. A formula is applied to the measured value in order to convert it to appropriate physical units. Three user-programmable parameters, Slope2, Slope and Offset are applied to measured value *x*:
   *Physical value = [Slope2 * x^2 + Slope * x + Offset].*

5. VANE. Measures wind direction from potentiometric sensors. The Voltage input 0V~2.5V is transformed to 0~360 degrees, with resolution 2.8 degrees.
   The vector averaging is needed for continuation from 360 deg. to 0 deg.

The offset (0~359 deg.) from north is user selectable. E.g. if the vane alignment is 30° East the offset must be set 30, if the vane alignment is 30° West the offset must be set 330 (=360-30).

6. RTD. Measures temperature with PT100 or PT1000 type sensors and an external precision resistor. (see Appendix A). A conversion formula is applied internally.

- BATTERY INPUT: CH9

There are 2 options for the Battery channel:

CAUTION

Do not apply Voltage exceeding the limit of (±20V to system's Inputs

1. NOT USED. The channel is not stored.

2. SLOPE/OFFSET. A linear formula is applied to display battery voltage with an accuracy of ±5%. The Slope & Offset parameters have fixed values.

- COUNTER INPUTS: CH1, CH8

There are 2 counter input channels of 16-bit (0-65535 counts), channels 1 and 8. Channel 8 can also be selected as an analog input (see above). There are 3 basic options:

1. NOT USED.

2. FREQUENCY COUNTER. A linear formula is applied. The input signal type is selectable; it can be a low voltage AC sinusoidal signal (SIN) or a pulsed positive signal (TTL). Only channel 1 can be selected as SIN. User programmable Slope2, Slope and Offset parameters are applied to the measured input frequency *x*:

*Physical value = [Slope2 * x^2 + Slope * x + Offset].*

3. EVENT COUNTER. Counts-up the pulses during interval time period. The input signal type is selectable; it can be a low voltage AC sinusoidal signal (SIN) or a pulsed positive signal (TTL). Only channel 1 can be selected as SIN.User programmable Slope2, Slope and Offset parameters are applied to the measured number of pulses *x*:
   *Physical value = [Slope2 * x^2 + Slope * x + Offset].*

NOTES: There are two additional storing options for channels 1 and 8, (when channel 8 is also selected as a counter channel).

1. If both channels are selected as *event counters*, one accumulator per channel is updated as following: At each recording interval, the events recorded by each channel are multiplied with the corresponding Slope and added to the corresponding accumulator. You can reset each accumulator via *Opton* software (see chapter 19.SOFTWARE), via the 'Reset Accumulator 1' and 'Reset Accumulator 8' commands.
   This function is useful for measuring energy at a solar park. Each channel can measure the energy produced at an inverter's output, by connecting an energy meter, which measures events, and by typing the appropriate Slope for the sensor. You can see the total energy produced in each channel's accumulator via Opton, with the *Read Data* command.
   If you have a solar park with multiple inverters, you may use both channels to perform a test for the proper operation of your system. The datalogger can send you a *PV alarm SMS* if your system is malfunctioning. (see Chapter 18. MESSAGES (SMS AND EMAIL)).

2. If channel 1 is selected as a Frequency counter of the appropriate type (Sin or TTL) with the appropriate Slope and Offset to measure *wind speed*, via an anemometer connected to the channel, you can measure the equivalent wind energy produced by an equivalent *Viking 25* wind turbine, the rotor of which is at the same height with the anemometer. Activate this function via Opton, by setting the 'Show Energy from the Viking 25 wind turbine' option on the left bottom part of Opton's window to ON. This way, at the end of each interval, the energy derived from the average wind speed in the interval is added to the total energy. There are two wind energy measurements, which you can see via Opton, with the *Read Status* command. At the last two lines of the status read, at each interval the daily (only for the current day) and the total energy produced are added, at the 'KWh today' and the 'KWh total' lines respectively. You can reset the energy recorded via the 'Reset daily and total energy registers' command from Opton's left bottom part. It is worthy of note that in order for this function to work, an **interval** of at least 1 minute is required!

8. PROGRAMMABLE DIGITAL OUTPUTS

All channels (CH1-CH8) may be programmed as digital outputs. The output state depends on measured values of input channels:

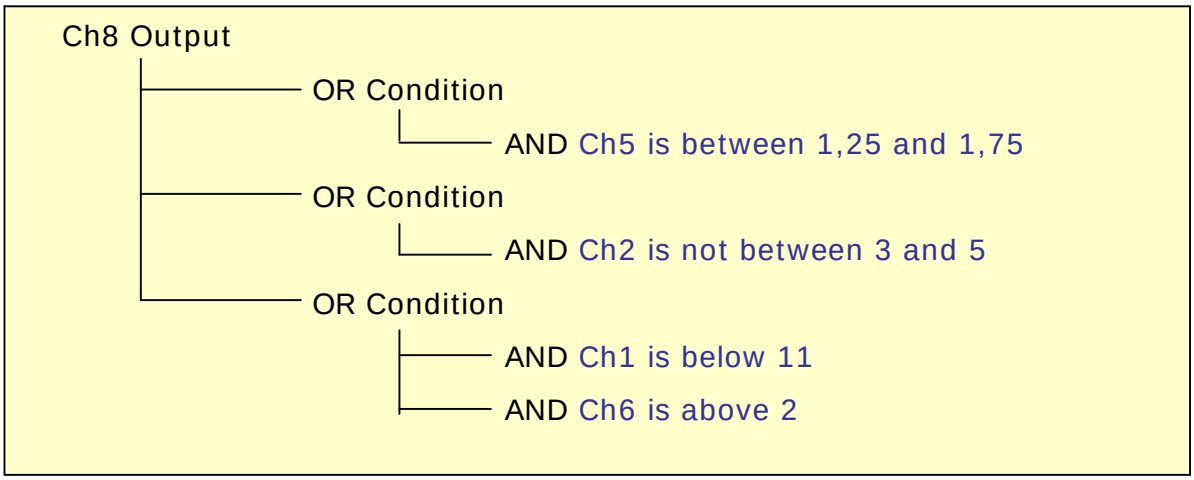
- For each individual output, up to 5 **conditions** may be defined. The conditions are **ORed**, which means that it is enough to satisfy one or more conditions in order to drive the specified output Low (0).
- Each condition contains one or more **requirements**. The requirements are **ANDed**, which means that all

requirements in a condition must be satisfied to satisfy this condition. A requirement utilizes the measurement result of any specified input channel and compares it to user-programmed values using 4 operators: *Above, Below, Between* and *Not Between*.

In the example below, 3 conditions are set:

1. Ch8 will be driven low whenever Ch5's value falls between 1.25 and 1.75.
2. Ch8 will be driven low whenever Ch2 falls outside the 3~5 zone.
3. Ch8 will also be driven low, if Ch1 is below 11 and, at the same time, Ch6 is above 2.

Each of the 3 conditions can drive Ch8 low independently of the others. However, the requirements in the last condition must be satisfied simultaneously.



9. DATA PROCESSING AND STORAGE

The statistical interval is user selectable from 1 second to 60 minutes. Inputs are measured per second and their values are placed in temporary storage.

Math processing is selectable: Average values only or Average, Minimum and Maximum values.

At the end of the time interval, the values are calculated and stored in the internal FLASH Memory, along with a time mark corresponding to the end of statistical interval time..

Stored data in the FLASH memory is organized in files, which are kept even without supply power. For enhanced data safety each individual record is marked with its own time stamp.

10. DATA RECORDING

During recording (acquisition on): no change of parameters is permitted.

- Upon selection of acquisition ON the following happen:

1. A new file is opened in memory.
2. Recording starts according to user set parameters.

- Upon selection of acquisition OFF the following happen:

Only when acquisition is off parameter change is permitted.

1. Recording stops.
2. The file is closed in memory.

- When downloading during recording:

1. The recording is continued in a temporary memory.
2. Upon completion of successful downloading, the file closes.
3. The recording is continued in a new file.

- Default data download is from file currently open. Previous files can also be downloaded.
- File downloading does not disturb the recording process.

11. DATA RETRIEVAL

File downloading and memory erasure are done via serial commands (direct link, modem, etc.), using the accompanying Opton software in the host PC (See CHAPTER 19).

Files downloaded to a PC are compressed to save memory space and speed up data transfer. The data are retrieved using the Opton software. Data are decompressed to ASCII text files, suitable for further manipulation using available programs like Excel, etc.

12. DATA SAFETY

Stored data in the FLASH memory is organized in files, which are kept even without supply power. Data files are individually accessible. Each record has its own time stamp.

13. PASSWORD

The user can activate a password to prevent logger usage by unauthorized personnel. A password may contain up to 8 alphanumeric characters and is set by the NEW PASSWORD command. Password protection is activated when the logger switches to Energy Save mode. Stylitis-10 becomes active after a button is pressed or a serial character is received. At this point the password is asked for. No further action can take place without first providing the correct password. Up to 4 attempts are allowed.

After 4 contiguous wrong attempts the system locks up and further access is denied. Only SYMMETRON can unlock it using any serial communication method.

To deactivate the password supply an empty NEW PASSWORD.

14. COMMUNICATION SERIAL PORTS

The Opton software is used for communicating with the host PC. Stylitis-10 comes with 2 RS232 ports. Both can be used for communication.

COMMUNICATION port DB9M:
- PIN 2 Receive
- PIN 3 Transmit
- PIN 5 Ground
- PIN 7 RTS
- PIN 8 CTS

PERIPHERAL port DB9F:
- PIN 2 Transmit
- PIN 3 Receive
- PIN 5 Ground

Communication settings: 9600 baud, 8 data bits, 1 stop bit, no parity bit.

- The 'COMMUNICATION' port is a DTE type, i.e. Stylitis-10 appears as a PC. A 'straight' cable (DB9M male to DB9F female) is required for connection to an external modem. A 'null modem' cable (DB9F female to DB9F female) is required for connection to a PC. The 'COMMUNICATION' port is enabled only when an internal modem or Ethernet server are not used.
- The 'PERIPHERAL' port is a DCE type, i.e. Stylitis-10 appears as a modem. A 'null modem' cable (DB9M male to DB9M male) is required for connection to an external modem. A 'straight' cable (DB9M male to DB9F female) is required for connection to a PC.

15. INTERNAL ETHERNET

You can enable/ disable the internal server module using the LCD and keys, from the 'Setup Internal Com Module' menu (see chapter 3). To setup, follow these steps:

1. Power-up the logger and connect the RJ-11 connector to the LAN. A yellow light on the connector indicates a correct connection. Wait 30 seconds to allow LAN setup.
2. Use the command '*Find Logger in LAN*' in the Opton software 'Communication' menu to find the IP address. In the right pane of the *Digi Device Discovery* window, you should read the IP

address of the found device, marked as 'Digi Connect ME'. If you wish, you can enter a fixed IP address for the logger: to do so, select the 'Configure Network Settings' option in the left pane.

3. Enter this IP address in the Opton '*Communication* | *Edit connection*| *CONNECTION NAME'* menu (to edit an existing connection) or in the '*Communication* | *New connection'* menu (to create a new connection). Close the *Digi Device Discovery* window. To connect to the logger from the Opton software, use the '*Connect'* command.

16. INTERNAL GSM/GPRS MODEM

You can enable/ disable the internal modem using the LCD and keys, from the 'Setup Internal Com Module' menu (see chapter 3). To setup, follow these steps:

1. Disconnect all power supplies and remove the 4 screws on the back side of the logger. Open the back cover and insert a Data SIM card in the modem (the direction is shown on modem). Remember to permanently unlock the SIM card using any available cell phone before you put it in the logger.
2. Power-up the logger. The INTERNAL MODEM indicator on the logger has the following states: Flashing quickly – Searching for Network; Flashing slowly – registered to the network (idle); Continuously ON – connected.
3. By default, the modem is in *data mode*, ie available to be called via a GSM data call. Wait until the INTERNAL MODEM indicator starts flashing slowly (registered). Use the 'Check modem' command in the logger to display the GSM network operator name and received signal strength (see chapter 3).
4. Enter the SIM data call number in the in the Opton '*Communication* | *Edit connection*| *CONNECTION NAME'* menu (to edit an existing connection) or in the '*Communication* | *New*

connection' menu (to create a new connection). To connect to the logger, use the 'Connect' command.

Data mode is also indicated if you Check the datalogger's setup via e.g. a local connection ('*Read Setup*' command from the left part). The value of the 'GPRS Connection' combo box is 'DISABLED'. You can change it to 'CLIENT ENABLED' or 'SERVER ENABLED' for GPRS connections (see next chapter). Finally, you can set it as 'MODEM ENERGY SAVE ENABLED'. In this state, the modem is always OFF-its LED is OFF (not available for data calls or GPRS connections), except for the times at which it has to send a message(SMS or email). For the available types of messages, see chapter 18. MESSAGES (SMS and EMAIL).

NOTE: If you attempt to change the 'GPRS connections' or 'Communication Module' remotely (via a **remote connection**-data call via Opton), while the datalogger's modem is DISABLED, you will not be allowed to, because if you were, you would lose the remote communication.

17. GPRS CONNECTIONS

After you have activated the datalogger's internal modem, besides a remote connection via a GSM call, there is also the capability to communicate via a GPRS connection, so that you are charged according to the downloaded data, instead of according to the time duration of the call.

There are two types of GPRS connections.

1. The first one can be achieved via *Diameson Gateway*, a software server, which accepts the datalogger as a ***client***. Diameson can be installed to any computer which is connected to the internet and is available to be purchased or to be provided to you as a service by Symmetron company (after contacting us).

The benefit of this method is that you can use a cheap *dynamic IP* GPRS SIM card in the logger's internal modem. In order for the datalogger to be connected to Diameson's server, first of all it must be registered to Diameson's database, via the *Diameson Manager* software.

Next, connect to the datalogger via a local RS-232 connection via *Opton* (see CHAPTER 19). Check its setup ('*Read Setup*' command from the left part). In the 'Client/Server settings' tree node, open the 'NETWORK' node and type the settings of the SIM Card's provider (APN, USERNAME, PASSWORD). In the 'CLIENT' node, type the IP address of the host computer (the one in which Diameson is running). If this computer is in the same LAN with your computer (even if it is your computer), type the local IP address. Otherwise, type the external one. In the 'IP PORT' field, type the 'Device Listening Port' of Diameson's running configuration (the default value is '1023', and unless you change it in Diameson, it is the correct one). Finally, select 'GPRS connection: CLIENT ENABLED' from the left part of Opton's window. In order to save the settings, select '*Write Setup'*. The datalogger will be connected to Diameson within the next minute.

The next step is to connect via the GPRS network to the datalogger from your PC (any PC connected to the internet), which will be also connected as a client to Diameson, via a dynamic IP address. Create the GPRS connection via Opton with the following steps: Select '*Communication* | *New connection'* from the menu. In the 'Connection' tab, select *Ethernet*. In the *'Remote IP address'* field, type the IP address of the host computer, as mentioned above. In the *'Remote IP Port'* field, type the 'User Listening Port' of Diameson's current configuration Diameson (the default value is '8100', and it is correct, unless you change it in Diameson). Finally, in the *'Diameson User Name'* field, you must type the name of the user (person or company) which uses the specific datalogger. This name must also be registered in Diameson's database (if you are using Diameson you must add it yourselves

via Diameson Manager or if it is provided to you as a service, communicate with Symmetron). Click OK to save the connection. You can now select this connection from Opton's *Start* tab ('Connection' field on the upper right part) and select 'Communication|Connect to Logger' from the menu to connect.

In case you are using Diameson and Diameson Manager yourselves, you can find more details about their usage in their help files.

2. The second method for a GPRS connection is for the datalogger itself to have the role of the ***server*** (therefore you do not need Diameson). For this method you are advised to use a *static IP* GPRS SIM card.

The only thing needed in this case is the registration of the datalogger's server to the network. Therefore, you must again type the correct network parameters of the SIM card's provider (APN, USERNAME, PASSWORD) in the datalogger's setup (NETWORK node), via a local connection. Moreover, in the SERVER node, you must type the IP PORT, which is again 1023 by default, but this time it is not related to Diameson. Save the settings (Write Setup) and select '*GPRS connection: SERVER ENABLED*' from the left part of Opton's window.

Then, in the next minute, the datalogger's server will try to register in the network ('server start..' message in the datalogger's screen). Since you have given the correct parameters, it will manage to ('SERVER UP' message, followed by the SIM card's IP address). Then you can connect via any computer which is connected to the internet as a *client* to the datalogger's server . Only one client can be connected at a time.

In order to create the suitable connection in this case, follow the following steps: Select '*Communication | New connection'* from the menu. In the 'Connection' tab, select *Ethernet*. In the *'Remote IP address'* field, type the SIM card's IP address. In the *'Remote IP Port'* field, leave the default value '2101', while leave the

'Diameson User Name' field blank . Select this connection from the 'Start' tab, in the way described above.

NOTE: When you disconnect from this connection, not only the client (PC) is disconnected, but the datalogger's server as well. Therefore, you need to wait for a minute or so, until it is registered again in the network.

GENERAL NOTE: If you attempt to change the 'GPRS connections' or 'Communication Module' remotely (via a **GPRS connection** via Opton), while the datalogger's modem is CLIENT ENABLED or SERVER ENABLED, you will not be allowed to, because if you were, you would lose the remote communication.

18. MESSAGES (SMS AND EMAIL)

The datalogger can send messages, SMS and Emails, via the optional GSM modem, according to your selections in its Setup, via an Opton connection (see CHAPTER 19), in the line MSG. Open the MSG node and in the 'SMS TO' field, type the cellphone number, to which you will receive the SMSs.

Moreover, if you wish to receive **Emails**, open the 'GPRS' node and then the 'NETWORK' node and type the 'APN', 'USERNAME' and 'PASSWORD' of your SIM card's provider. Then, open the EMAIL node, in order to set the email parameters. Type the sender and recipient you wish, along with the smtp mailserver of the SIM card's provider, in the 'SERVER' field. If the provider requires authentication, like Cosmote in Greece, you must open the 'SERVER' node and also fill the 'AUTH USER' and 'AUTH PWD' fields, while the email's **sender** must be also a specific one. All these parameters, for the 3 main providers in Greece, are summarized in the table of APPENDIX D.

Click the MSG line and select one of the following:

1. Messages OFF. In this case, no message is sent.
2. SMS Alarms ON. With this option, when a control output changes to low (when the conditions are satisfied), you receive an SMS as an alarm.

   It must be noted that you will not receive another alarm (SMS or PV-see below) for an hour since the previous one.
3. SMS PV Alarms ON. This option is useful if you have a solar park with multiple inverters. You may use channel 1 and channel 8, set as EVENT COUNTERS (to measure energy via energy counters) to perform a test for the proper operation of your system. The datalogger can send you an *alarm SMS* if your system is malfunctioning. For instance, if you have a park with 3 inverters which produce the same power, you would expect the total energy to be 3 times greater than the energy produced by one inverter. Therefore you can connect an energy counter to the output of one of your inverters (measured by channel 8) and another one to the output of your entire system(measured by channel 1). Then, you can set two parameters to the datalogger's setup via Opton. Open the PV node and set 'RATIO CH1/CH8' to 3 for the example mentioned. Then, you must set a tolerance for this ratio in the 'WINDOW %±' field. If you type 10, you will be sent an alarm SMS if the ratio is greater than 3.3 or lower than 2.7 (over ±10%), which means that at least one of your inverters is malfunctioning. The energy produced at channels 1 and 8 is measured and compared at the end of the statistic interval.

   It must be noted that you will not receive another alarm (SMS or PV) for an hour since the previous one.
4. SMS alarms+ SMS PV alarms ON. This option combines options 2 and 3.
5. SMS data per interval ON. With this option, you receive an SMS with the data values at the end of the statistic interval.

6. SMS data per day ON. With this option, you receive an SMS every midnight, with the average of the data recorded during the entire day.
7. Email data per day ON. With this option, you receive an Email every midnight, with the average of the data recorded during the entire day.
8. SMS Alarms + Email data per day ON. This option combines options 2 and 7.
9. SMS PV alarms + Email data per day ON. This option combines options 3 and 7.
10. SMS Alarms + SMS PV Alarms + Email data per day ON. This option combines options 2,3 and 7.

NOTES

1. The options are exclusive: Only one of ten can be active.
2. In order to send any of the messages above, the **acquisition** must be **activated**. (**ACQ=ON**).
3. In order to receive the SMS with the data values at the end of the statistic interval, it must be at least 10 minutes. For the remaining SMSs, it must be at least 1 minute.
4. If the datalogger's modem is **CLIENT ENABLED** (connected to Diameson- see chapter 17. GPRS CONNECTIONS), no SMS can be sent, but only the daily Email.

19. SOFTWARE

Install Opton from the accompanying CD or download it from the Symmetron site. Software upgrades are free to download.

Following the first installation select *File* | *Add New Site* and choose a Windows folder to use as data storage for this specific data logger. If you use several data loggers it is recommended to repeat this procedure choosing a separate folder for each one of them.

To work with the site folder you wish, select it with a single click from the tree structure on the top left part of Opton's main window.

In the next step, determine how the PC will get connected to the data logger. Select *Communication* | *New Connection* and enter the connection details (for example, to connect via RS-232 select *Connect Using: COM1* and *Com Port Rate: 9600*). If you select one of the installed modems, (field *Connect Using*) then fill in the *Call number*. The RS-232-to-PC connection is described in chapter 14.

You can create as many connections as you wish in a specific site folder and edit them afterwards by selecting one of them from the *Communication* | *Edit Connection* menu. The same properties window appears.

Moreover, you can select via which connection you will connect, from Opton's *Start* tab ('Connection' field). Finally, select 'Communication|Connect to Logger' from the menu and you will connect via this connection.

Now you can try some of the commands in the left pane of the Opton window, i.e. *Read Status, Read Data* etc.

To change logger settings first select *Read Setup*. Then change settings in the right hand pane and click *Write Setup*. The settings can be changed only when data recording is stopped (Acquisition Off). Select Acquisition On to start recording.

To get stored data select *Download File*. To avoid missing data you can download files while *Acquisition On*. If you want to automate data downloading, check the *Enable Scheduled Automatic Connection* box in the connection's properties *Communication* | *Edit connection*| *CONNECTION NAME* and set the download time. In the *Automatic* tab select the action for each weekday.

The automatic downloading is possible only after downloading and installing the AutoConnect software.

20. TECHNICAL CHARACTERISTICS

All accuracies stated are the **mean of 5 measurements**.

COUNTER INPUT (CH1) 16 bit.

- Resolution: ±0.2 count (Hz). Accuracy: ±0.2 count.
- Input Frequency range: 0~5 kHz.
- Input resistance: 100 kΩ. Sensitivity bipolar AC: 200 mV_{p-p}. Unipolar TTL 1 V_{p-p}.
- Channel may be programmed as active-low (open-drain) output, i.e. as a switch with one end grounded. Output resistance 30 Ohms, maximum sink current 60 mA.
- Maximum external DC Voltage at connector: ±20V.

COUNTER INPUT (CH8) 16 bit.

- Resolution: ±0.2 count (Hz). Accuracy: ±0.2 count.
- Input Frequency range: 0~5 kHz.
- Input resistance: 1 MΩ. Sensitivity: 3 Unipolar TTL V_{p-p}.
- Channel may be programmed as active-low (open-drain) output, i.e. as a switch with one end grounded. Output resistance 30 Ohms, maximum sink current 60 mA.
- Maximum external DC Voltage at connector: ±20V.

ANALOG INPUTS (CH2~CH8) individually selectable.

- 7, 13 bits+sign each. For input ranges see Table below.
- Channel may be programmed as digital input (0/1) with a threshold of 1.5 V.
- Channel may be programmed as active-low (open-drain) output, i.e. as a switch with one end grounded. Output resistance 30 Ohms, maximum sink current 60 mA.
- Channels pairs 2/3, 4/5, 6/7 can be configured as differential inputs. Differential common mode input range: 0~2.5V (from v2.59)
- Maximum external DC Voltage at connector: ±20 V.
- Maximum external DC Current at connector: ±60 mA.

Input	*Accuracy referred to input*	*Resolution*	*Remarks*
0~2.5V	(±0.3%)+ (±1.5mV)	305 ì V	Input resistance 1 MOhm
0~1.25V	(±0.3%)+ (±0.5mV)	153 ì V	Input resistance 1 MOhm
0~625mV	(±0.3%)+ (±0.5mV)	76 ì V	Input resistance 1 MOhm
0~500mV	(±0.3%)+ (±0.5mV)	61 ì V	Input resistance 1 MOhm
0~312,5mV	(±0.3%)+ (±0.5mV)	38 ì V	Input resistance 1 MOhm
0~250mV	(±0.3%)+ (±0.5mV)	30 ì V	Input resistance 1 MOhm
0~156.25mV	(±0.3%)+ (±0.5mV)	19 ì V	Input resistance 1 MOhm
0~125mV	(±0.3%)+ (±0.5mV)	15 ì V	Input resistance 1 MOhm
0~50mA	(±0.3%)+ (±30 µA)	6.1 µA	Input resistance 30 Ohms
0~25mA	(±0.3%)+ (±10 µA)	3 µA	Input resistance 30 Ohms
0~20mA	(±0.3%)+ (±10 µA)	2.4 µA	Input resistance 30 Ohms
0~12.5mA	(±0.3%)+ (±10 µA)	1.5 µA	Input resistance 30 Ohms
0~10mA	(±0.3%)+ (±10 µA)	1.2 µA	Input resistance 30 Ohms
0~6.25mA	(±0.3%)+ (±10 µA)	0.76 µA	Input resistance 30 Ohms
0~5mA	(±0.3%)+ (±10 µA)	0.61 µA	Input resistance 30 Ohms
VANE	±2.8 degrees	2.8 degrees	CH5, 6, 7. Pot value: 1~100K
PT100/1000	±0.4 degrees	0.06 degrees	External Resistor: 2K, 0.1%

BATTERY VOLTAGE (CH9)

The power supply voltage is measured. Resolution: 0.1 V. Accuracy: ±5%.

SDI-12/AUX OUTPUT (from serial number 020xxxxx or newer)

- 1, 0.5 mA. Pulsed (Energy Save mode, Duration On: 5 mSec) or Continuous (Continuous mode). Accuracy: ±0.3 %.

- Maximum short-circuit duration to Ground: infinite.

PULSED OUT OUTPUT (for sensors supply)
- 1, +2.5 V. Pulsed (Energy Save mode, Duration On: 5 mSec) or Continuous (Continuous mode). Maximum supply current 25 mA. Accuracy: ±0.2 %.
- Maximum short-circuit duration to Ground: infinite.

PROTECTION
- All inputs and outputs are protected from over voltage by quick acting diodes.

SENSOR EXAMPLES
- RTD, switch, anemometer, potentiometric vane, pyranometer, thermometer, rain gauge, water speed, barometer, pulse meter, etc.

DATA STORAGE
- *INTERNAL FLASH MEMORY: size 4MB*. Typical duration for storing averages for all channels, every 10 min, is about 32 months.

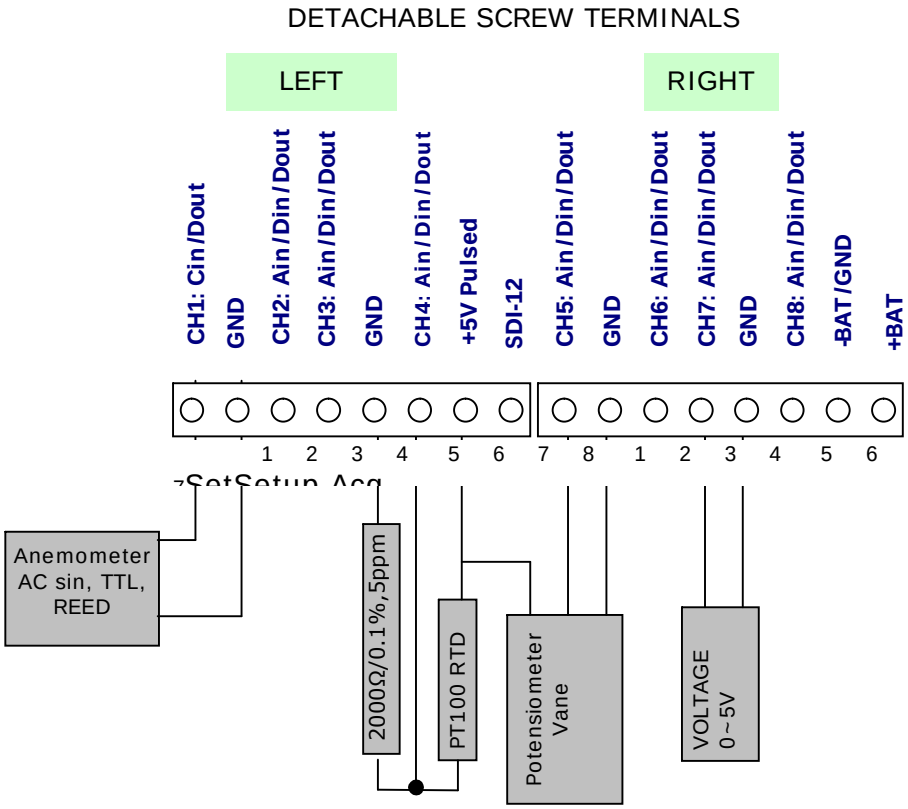
DATA PROCESSING
- For each channel, Slope2, Slope and Offset are independently programmable. Sampling: 1 Hz. Calculation and storage of ax^2+bx+c. Selectable storage of *Average* only or *Average, Min, Max* values at selectable intervals: 1-59 seconds, 1, 2, 5, 10, 15 or 60 minutes. In case of 1 sec interval, all samples are recorded (time series).
- Dedicated wind vane algorithm for vector averaging.
- Real time clock with automatic correction of leap years. Accuracy: ±1 minute per month.

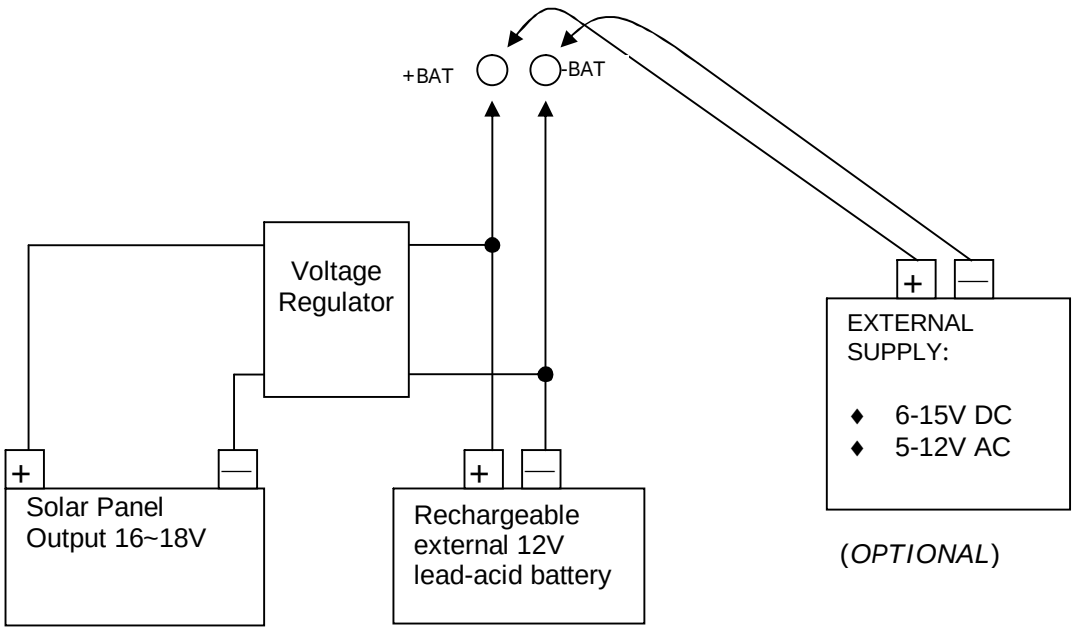
SERIAL PORTS
- *PROGRAMMING AND DOWNLOADING:* 2 RS232C ports, 9600 baud, 8 bits, no parity, 1 stop bit. Connectors DB9M (DTE) , DB9F (DCE). Support for direct connection, modems (PSTN or GSM) and Ethernet servers.

POWER SUPPLY
- *INTERNAL BATTERY:* 1x9V alkaline – typical duration 2 weeks.
- *EXTERNAL:* 6~15V, DC/AC
- Maximum permitted External Supply Voltage: 18V
- *POWER CONSUMPTION (Typical):*
  Energy Save: 0.9 mA.
  Energy Save + Internal modem idle: 10 mA.
  Continuous: 4.5mA.
  Continuous + RS232 I/O: 12mA
  Continuous + Internal modem idle: 15mA
  Internal modem connected: 400mA
  Internal Ethernet server: 300mA
- Real-time clock operating time without any power source: 1 year
- *OPTIONAL:* Solar panel and rechargeable battery.

Miscellaneous
- *BOX:* small, portable
- *DIMENSIONS:* 180x100x40mm
- *WEIGHT: 200g.*
- *SCREW TERMINALS*: Detachable on the front panel.
- *OPERATIONAL/STORAGE TEMPERATURES:* -30°C~ +70°C
- *LCD OPERATIONAL TEMPERATURES:* 0-50°C
- *WARRANTY:* 1 year

- *OPTIONAL: internal GSM/GPRS modem or Ethernet server or secure wireless Ethernet (WiFi 802.11b) server.*

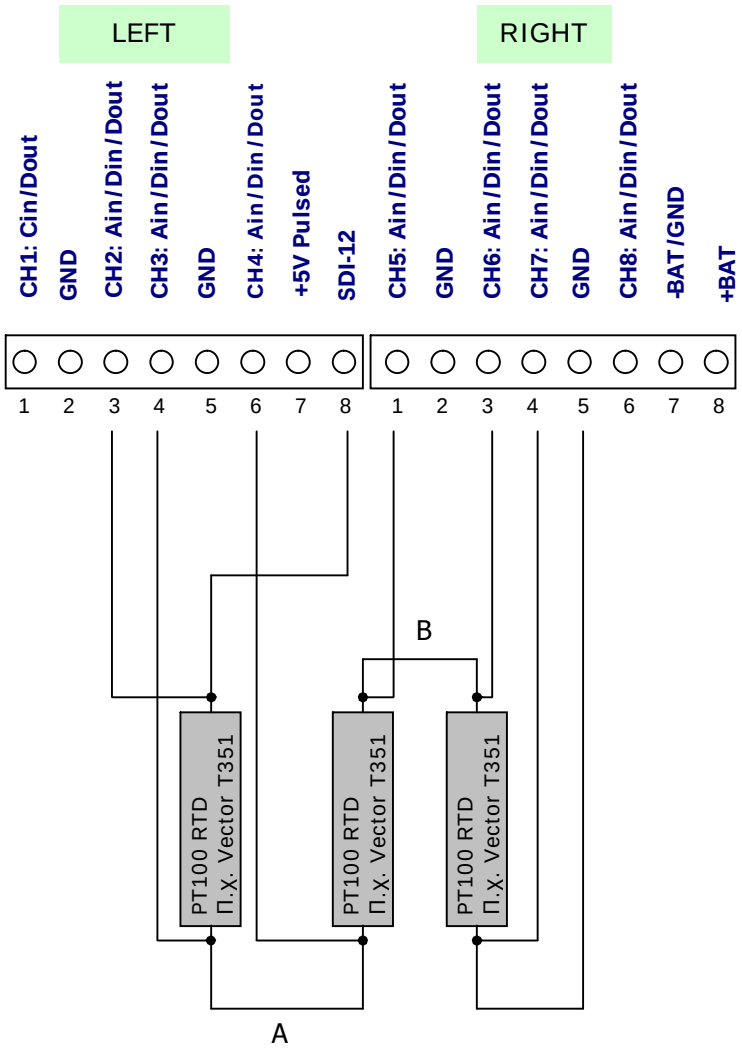




Check Technical Specifications for Inputs.

Alternative connection method of up to 3 PT100s, in order to avoid errors due to long cable resistance (firmware v2.61 or newer).

DETACHABLE SCREW TERMINALS



NOTES

- For only one PT100 connect wire A to GND.
- For only two PT100s connect wire B to GND.
- The corresponding input channels (2/3, 4/5, 6/7) must be set as in Appendix B, case 7.
- Wires to differential channel inputs must be connected close to PT100s.

APPENDIX B DATA LOGGER SETTINGS

	SENSOR[1]	TYPE	CHANNELS	INPUT TYPE SELECTION	SLOPE	OFFSET	UNITS
1	NRG MAX #40	Wind speed	1	Frequency Counter Sinus Level	0,765	0,35	m/sec
2	VECTOR A100LM	Wind speed	1	Frequency Counter TTL Level	0,1	0,0	m/sec
3	NRG RG	Rain Gauge	1	Event Counter TTL Level	0,254	0,0	mm/hour
4	NRG 200P	Wind vane	5, 6, 7	Vane Input	-	-	Degrees
5	VECTOR W200P	Wind vane	5, 6, 7	Vane Input	-	-	Degrees
6	VECTOR T351[2]	Temperature PT100	2..8	RTD Input	-	-	°C
7	VECTOR T351[3]	Temperature PT100	2/3, 4/5, 6/7	Differential Input 0…125 mV	5194.8	-259.74	°C
8	DELTAOHM 9009TR	Temperature	2…8	Analog Input 0…1250 mV	120,0	-40,0	°C
9	DELTAOHM 9009TR	Humidity	2…8	Analog Input 0…1250 mV	100,0	0,0	Relative %
10	DELTAOHM 9408T	Barometer	2…8	Analog Input 0…1250 mV	300,0	800,0	mBar
11	LiCor 200SA	Pyramometer	2…8	Analog Input 0…125 mV	83,33	0,0	W/m^2

NOTE (1): The SLOPE and OFFSET factors shown are nominal. Enter the corrected factors if the sensor comes calibrated.
NOTE (2): Voltage excitation with external resistor.
NOTE (3): Current excitation, no external resistor (serial numbers 020xxxxx or newer).

All commands or queries must be in CAPITAL and terminated with <CR>+<LF>. The characters are NOT echoed back. If you are using the Windows HyperTerminal utility you can set it to echo back characters.

By default Password is disabled. If enabled, this command must be the first to access Stylitis-10 remotely. If not Stylitis-10 will respond: "ENTER PASSWORD"+<CR>+<LF> to any question or command.

Host Question		*Action & response*	*Response end*
*ACQ?	√	ACQ ON, ACQ OFF	<CR>+<LF> + OK+<CR>+<LF> Or ERROR+<CR>+<LF>
*AUX?	√	AUX=6 : EXTERNAL Modem/Ethernet, no client, no server (modem) AUX=7 : INTERNAL Modem/Ethernet, no client, no server (modem) AUX=5 : INTERNAL Modem/Ethernet, client (modem) AUX=3 : INTERNAL Modem/Ethernet, server (modem) AUX=15 : INTERNAL Modem Energy save, no client, no server	
*INi? (i=1…9)	√	Input I value, e.g. IN1=3.5 (9:bat)	
*INALL?	√	All input values in ascii form separated by <CR>,<LF>	
*INTERVAL?	√	Gives averaging interval in min, e.g. INTERVAL=10	
*SITE?	√	SITE=xxxxxxxx (up to 8 chars)	
*BAT?	√	Battery voltage.	
*DIGOUTi?	√	Digital output value	
*DIGOUTiCOND?	√	Returns 5 masks(dw) & conditions(dw) in binary form (40Bytes total)	
*DIGOUTLEVS?	√	Returns Low comparison Level(w) & High comparison Level(w) for the 9 channels in binary form (36Bytes total)	
*TIME?	√	e.g. 18/11/04 10:50:00	
*FREEMEM?	√	------- Bytes free for ----- hours, etc.	
*INiSLOPE?	√	e.g. IN1SLOPE=0.77	
*INiSLOPE2?	√	e.g. IN1SLOPE2=0.77	
*INiOFFSET?	√	e.g. IN1OFFSET =-0.2	
*INiTYPE?	√	S/T(for ch1) V/C (for ch2-8)	
*INiMODE?	√	C/E /N(ch1) , A/V/T/N or I/O/N (ch2-8) , B/N(ch9)	
*INTYPES?	√	A series of input types, e.g SAAADDDD	
*INMODES?	√	A series of input modes, e.g CVTAIDNO	
*INiGAIN?	√	e.g. IN1GAIN=1/2/4/5/8/10/16/20	
*MINMAX?	√	MINMAX=ON/OFF. Enables Minimum & Maximum storage	
*NAMEi?	√	Returns channel's(i) name (up to 16 chars)	
*VERSION?	√	Returns f/w version	
*SERNO?	√	Returns SERIAL NUMBER (up to 8 chars)	
*SMSNUM?	√	Phone number to send data message per interval	
*SMSSEL?	√	SMSSEL=0: Daily Email/SMS and Interval SMS OFF SMSSEL=1: Interval SMS ON SMSSEL=2: Daily Email ON SMSSEL=4: Daily SMS ON	
*SMSALSEL?	√	SMSALSEL=0: SMS/PV Alarms=OFF SMSALSEL=1: SMS Alarms ON SMSALSEL=2: PV Alarms ON SMSALSEL=3: SMS Alarms+PV Alarms ON	

*SERVERIP?	√	IP Address of the host PC, in which Diameson Gateway is running.	
*SERVERIPPORT?	√	Remote IP port of the host PC, in which Diameson Gateway is running.	
*APN?	√	APN of the SIM Card's provider (needed for GPRS Connections and to send daily Emails)	
*NETID?	√	GPRS User Name of the SIM Card's provider (needed for GPRS Connections and to send daily Emails)	
*NETPW?	√	GPRS Password of the SIM Card's provider (needed for GPRS Connections and to send daily Emails)	
*EMV?	√	SMTP Email Server (needed to send daily Emails)	
*EMS?	√	Sender of the email (needed to send daily Emails)	
*EMR?	√	Recipient of the email (needed to send daily Emails)	
*EMUN?	√	Email Authentication User Name (needed to send daily Emails, in case Authentication is required by the SIM Card's provider)	
*EMPW?	√	Email Authentication Password (needed to send daily Emails, in case Authentication is required by the SIM Card's provider)	
*DISPWR?	√	*DISPWR=ON/OFF: Activate/deactivate display of daily and total energy from the Viking 25 wind turbine (from Ch1, in case it is set as FREQUENCY COUNTER)	
*PWR?	√	Display recorded daily and total energy from the Viking 25 wind turbine (from Ch1, in case it is set as FREQUENCY COUNTER)	
*ACC1?	√	Displays total energy recorded, in Channel 1's Accumulator (in case it is set as EVENT COUNTER)	
*ACC8?	√	Displays total energy recorded, in Channel 8's Accumulator (in case it is set as EVENT COUNTER)	

Host Command		*Action &* *response with OK,<CR>,<LF> Or ERROR,<CR>,<LF>*
*ACQ=ON, *ACQ=OFF	√	ON: Write new file header in flash memory. Set ACQ on flag. OFF: Clear ACQ on flag, do not store in flash anymore.
*AUX=XX	√	AUX=6 : EXTERNAL Modem/Ethernet, no client, no server (modem) AUX=7 : INTERNAL Modem/Ethernet, no client, no server (modem) AUX=5 : INTERNAL Modem/Ethernet, client (modem) AUX=3 : INTERNAL Modem/Ethernet, server (modem) AUX=15 : INTERNAL Modem Energy save, no client, no server
*CONT	√	Set CONTINUOUS mode
*DIGOUTi=1 or 0	√	Set a value to a Digital output
*DIGOUTiCOND=…	√	Sends 5 masks (dw) & conditions (dw) in binary form (40Bytes total)
*DIGOUTLEVS=…	√	Sends Low comparison Level(w) & High comparison Level(w) for the 9 channels in binary form (36Bytes total)
*DOWNLOAD=n	√	Download File #n
*DOWNLOADF	√	Download current File
*ENERGYSAVE	√	Set Energy Save mode
*ERASEFLASH	√	Erase Flash Memory
*EXIT	√	Exit communication after entering with password
*INTERVAL=…	√	Set new averaging interval in min (1,2,5,10,15,30,60)
*INTERVALSEC=…	√	Set new averaging interval in sec (0-59)
*NEWPASSWORD=…	√	Give a new password (up to 8 characters or nothing to deselect)
*NAMEi=	√	Give a name to channel i (up to 16 chars)
*INiSLOPE=…..	√	Set appropriate input cal slope in EEPROM table. Default 1.0
*INiSLOPE2=…..	√	Set appropriate input slope in EEPROM table
*INiOFFSET=……	√	Set appropriate input offset in EEPROM table
*MINMAX=…	√	ON: Enables Min & Max storage. OFF: Disables Min & Max storage (from v2.59).
*INiGAIN=….	√	Set appropriate input GAIN in EEPROM table
* INiTYPE=S/T(for ch1) V/C (for ch2-8)	√	Set appropriate input type in EEPROM table S: sinus T: TTL V: voltage input analog or digital C: current input Analog or digital
*INiMODE=A/D/V/T I/O C/E N	√	Set appropriate input mode in EEPROM table A for analog slope/offset, D for differential slope/offset (Channels 2, 4, 6 only) V for vane analog (Channels 5, 6, 7 only) T for pt100 temperature analog I for digital input O for digital output C for counter E for events N for not used B only for ch9 :battery
*PASSWORD=….	√	Give password to start communication (up to 8 characters or nothing if not selected)
*SITE=……	√	Set new Site name (up to 8 characters)
*SEROUT=….		Set a value to a Serial Port output
*TIME=dd/mm/yy,hh:mm:ss	√	Update real timer
*SMSNUM=……	√	Set Phone number to send data message per interval (up to 20 characters)
*SMSSEL=X	√	SMSSEL=0: Daily Email/SMS and Interval SMS OFF SMSSEL=1: Interval SMS ON SMSSEL=2: Daily Email ON SMSSEL=4: Daily SMS ON
*SMSALSEL=X	√	SMSALSEL=0: SMS/PV Alarms=OFF SMSALSEL=1: SMS Alarms ON SMSALSEL=2: PV Alarms ON SMSALSEL=3: SMS Alarms+PV Alarms ON

*SERVERIP=XXX.XXX.XXX.XXX	√	Set the IP Address of the host PC, in which Diameson Gateway is running.
*SERVERIPPORT=…	√	Set the Remote IP port of the host PC, in which Diameson Gateway is running.
*APN=…	√	Set the APN of the SIM Card's provider (needed for GPRS Connections and to send daily Emails)
*NETID=…	√	Set the GPRS User Name of the SIM Card's provider (needed for GPRS Connections and to send daily Emails)
*NETPW=…	√	Set the GPRS Password of the SIM Card's provider (needed for GPRS Connections and to send daily Emails)
*EMV=…	√	Set the SMTP Email Server (needed to send daily Emails)
*EMS=...	√	Set the Sender of the email (needed to send daily Emails)
*EMR=…	√	Set the Recipient of the email (needed to send daily Emails)
*EMUN=…	√	Set the Email Authentication User Name (needed to send daily Emails, in case Authentication is required by the SIM Card's provider. Otherwise, leave it blank)
*EMPW=…	√	Set the Email Authentication Password (needed to send daily Emails, in case Authentication is required by the SIM Card's provider. Otherwise, leave it blank)
*DISPWR=ON/OFF	√	Activate/deactivate display of daily and total energy from the Viking 25 wind turbine (from Ch1, in case it is set as FREQUENCY COUNTER)
*CLPWR	√	Reset/clear recorded daily and total energy from the Viking 25 wind turbine (from Ch1, in case it is set as FREQUENCY COUNTER)
*SERVPW=XXXXXX	√	Set the service code needed to deativate digital outputs and alarms. Receives exactly 6 digits only 1-4.
*ACC1=0	√	Reset/clear total energy recorded, in Channel 1's Accumulator (in case it is set as EVENT COUNTER)
*ACC8=0	√	Reset/clear total energy recorded, in Channel 8's Accumulator (in case it is set as EVENT COUNTER)

APPENDIX D GPRS PARAMETERS FOR PROVIDERS IN GREECE

Parameter	Command	Vodafone	Wind	Cosmote
APN	*APN=	internet	gint.b-online.gr	internet
GPRS User Name	*NETID=	user	N.R.*	N.R.*
GPRS Password	*NETPW=	pass	N.R.*	N.R.*
Mail Server	*EMV=	mailgprs.vodafone.gr	smtp.windnet.gr	mail.mycosmos.gr
Sender	*EMS=	ANY@ [domain name]***	ANY@ [domain name]***	[Sim Card Number] @mycosmos.gr**
Recipient	*EMR=	ANY***	ANY***	ANY***
Email Authentication User Name	*EMUN=	N.R.*	N.R.*	[Sim Card Number] @mycosmos.gr (After activation)**
Email Authentication Password	*EMPW=	N.R.*	N.R.*	After activation**

TABLE NOTES

*Not Required. Therefore, whatever value you have inserted will not be taken into account.

**If you are sending emails via a COSMOTE SIM Card, you have to activate your email account, even if you do not wish to receive emails via this SIM Card. You must put the Card in a Cellphone and send 'OPEN' or the Greek letter 'E' via SMS to the number '54000'. Then, you will be given the account's Password. The Sender must always consist of the SIM Card's number. The 'Email User Name', by default, is the same, but you can change it, via Outlook, to the form "anyone@mycosmos.gr". Otherwise, leave the authentication User Name and Password blank (*EMUN= <ENTER>, *EMPW=<ENTER>)

*** Except for Cosmote, as the Sender, you can type anyone (even a not valid one), provided that it has a valid domain name. As recipient, you can type any valid recipient you wish.

****The Settings above apply for networks in Greece.