(http://nethix.com)

Software Manual

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1. General information

1.1. About this document

Present manual describes in details all functionalities of WE500, implemented in the Software version **3.1.6**, released on July 2016.
Please make sure that the Software Version of your WE500 is updated to the latest release mentioned on this manual, in order to avoid discrepancies between the versions.
The software version could be find on the “Info” page, through the path *Administration –> System –> Info*.
The software version is indicated in the second upper right frame, always available in the WE500’s web interface.

In case of questions and issues not covered by present manual, you can contact Nethix Customer Support for further information:

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Phone: +39 0423 770750

Web Site: nethix.com (http://nethix.com/)

1.2. Overview

WE500 is an easy-to-use remote monitoring and control system complete with an integrated web interface, where every single functionality of the system can be managed. The basic elements to start up the system are a **variable**, an **event** and an **action**. The first sections will therefore concentrate on the description of these elements and on the modbus protocol, the most used communication device protocol.

Further relevant concepts for a more comprehensive use of all available device functions are the data logging and the network configuration.

In the following sections all these concepts and their use through the WE500 will be described.

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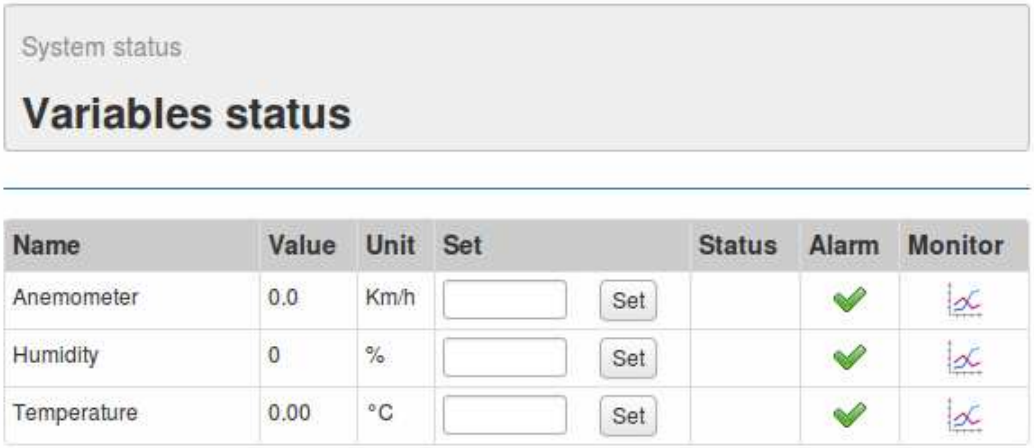
2. Variables

A variable indicates the value of one parameter of the monitoring/control system. For example, the variable called temperature indicates the value of the *temperature* measured by an analogical probe. WE500 allows to create variables and connect them to events and actions. Variables are fundamental elements of the system, since they indicate the value of the monitored parameters and allow to send notifications, save logs, create charts and tabs, send data to Portal and so on. The variables and their status are displayed in alphabetical order or in groups on the page **Status** → **Variables Status**.

On page **Administration** → **Variables** → **Variables** is possible to create a new variable or to modify an existing one.

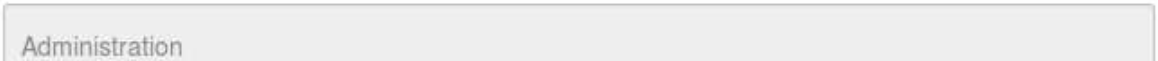
If variables are already defined, they will be displayed on a table showing some of the most relevant information. From this page is possible to disable a variable (and consequently any events and actions associated with it), to cancel it, to enable/disable the data sending to a Portal or to create a new one by clicking on **New**. For a quick selection of the desired variable/s is possible to use the function **Find**, that allows to search by name.

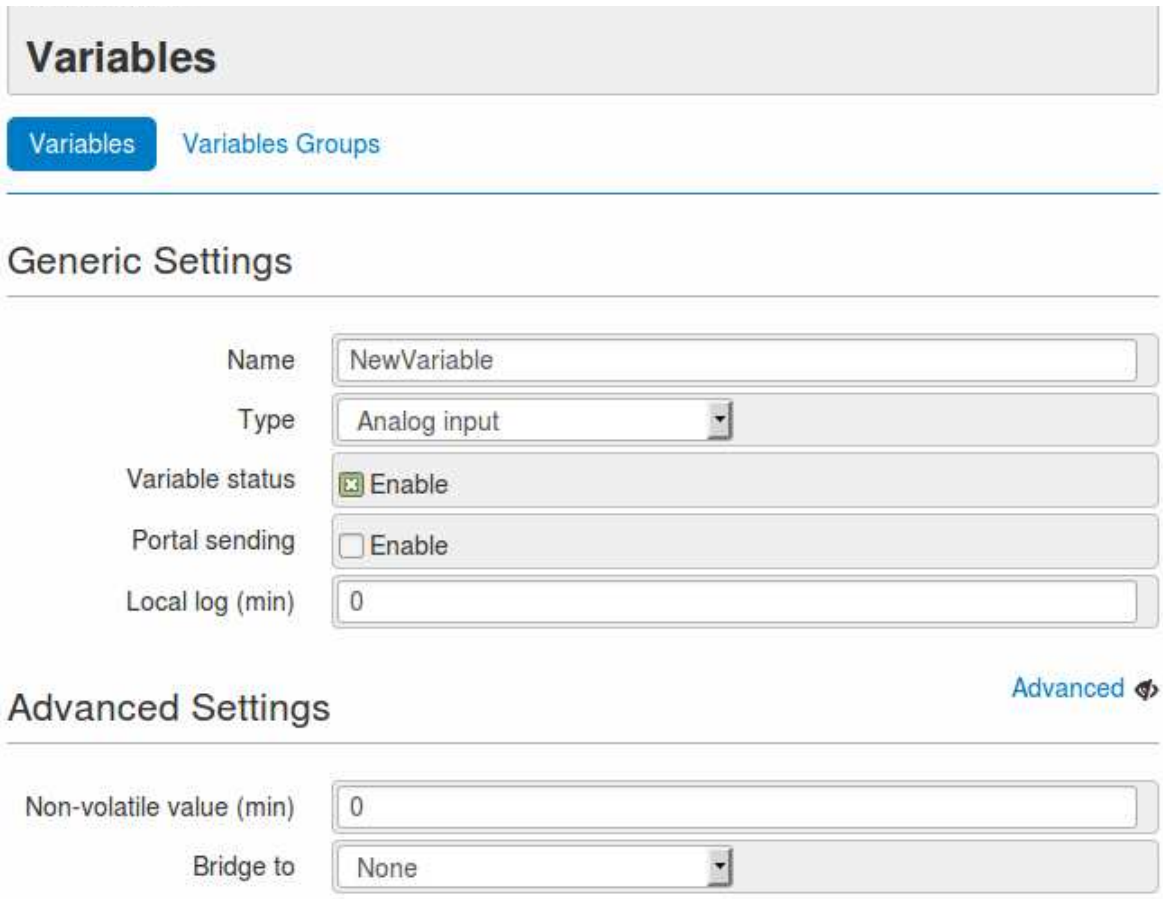


2.1. Generic variables

Many different types of variables are available, and for each of them parameters may differ. Only the section **Generic Variable** is valid for all types of variables. This section is structured as follows:

- **Name**: The name to be assigned to the variable. All alpha-numeric characters, and the character "_" are supported.
- **Type**: This allows to select the type of the variable. For each variable type the setting-parameters are different, see chapter *2.2. Type* (we500_sw_manual_pdf.html#we500-sw-var-type-en).
- **Variable Status**: enable/disable the variable
- **Portal sending**: it allows to enable/disable the sending of the variable value to an external portal/server. For further information regarding the data-sending, see relevant section *7. Data sending* (we500_sw_manual_pdf.html#we500-sw-data-sending-en) data sending.
- **Non-volatile value**: it allows to save the variable value every X minute and everytime the device is switched off or rebooted.
- **Skip first read**: enabling this optional function the system won't read the first value of the variable. For example, if an event has been defined on the variable, and at the reboot of the system the variable is in alarm status, through this optional function no action will be enabled.
- **Local log (min)**: it allows to set a different sampling time (in minutes) for each variable. The recorded data can be then exported or displayed in charts or tabs. For further information see section *8. Datalogger* (we500_sw_manual_pdf.html#we500-sw-datalogger-en).





2.2. Type

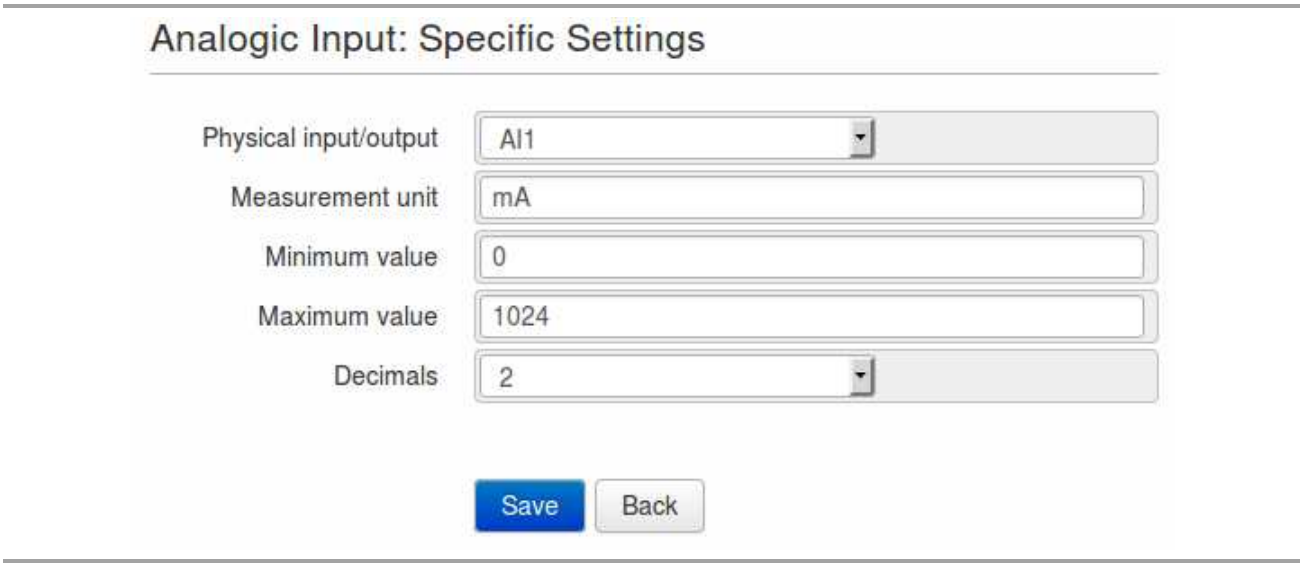
Here are the different types of variables:

- **Analog Input**: Variables associated to the analogue inputs available on the WE500. **AI1** has to be selected to associate the variable with the analogue input 1 (connectors AN1 and GND) while **AI2** has to be selected to associate the variable with the analogue input 2 (connectors AN 2 and GND). Further information on paragraph *2.3. Analog input variables (AI)* (we500_sw_manual_pdf.html#we500-sw-analog-in-en).
- **Digital Input**: Variables associated to the digital inputs available on the WE500. It's possible to choose among **DI1**, **DI2**, **DI3**, **DI4**, **DI5**, **DI6**, **DI7** and **DI8**. Further information on paragraph *2.4. Digital input vriables (DI)* (we500_sw_manual_pdf.html#we500-sw-digital-in-en).
- **Digital Output**: Variables associated to the digital (relay) outputs available on the WE500. Select **DOUT1** for the digital output 1 (connectors RL1A and RL1B) or **DOUT2** for the digital output 2 (connectors RL2A and RL2B). Further information on paragraph todo *2.5. Digital output variables (DO)* (we500_sw_manual_pdf.html#we500-sw-digital-out-en).
- **Modbus**: Variables associated to modbus registers. Further information on paragraph *3.2. Creation of Modbus variables* (we500_sw_manual_pdf.html#we500-sw-new-mb-var-en).
- **Virtual**: these are virtual variables that can be created in order to manage alarms or elaborate formulas. Further information on paragraph *2.6. Virtual variables* (we500_sw_manual_pdf.html#we500-sw-virtual-en).

2.3. Analog input variables (AI)

In order to create a AI variable, i.e. associated to one of the analogue inputs available on WE500, enter the page **Administration** → **Variables**. Clicking on **New**, it's possible to enter the variable configuration page. Select **Analogue Input** on the field **Type**. Under the section **Generic Variables** all standard settings for any type of variable are available. For the description of all the fields of this section, see *2.1. Generic variables* (we500_sw_manual_pdf.html#we500-sw-generic-var-en).

Let's skip into the section **Analogue Input: Variable Specific Settings**.



First of all is requested to confirm the choice of the input, where to read the value. The choice is among **AI1** or **AI2**. Then it has to be entered the measurement unit that will be displayed on charts and on **Status -> Variable Status**. Through the tabs **Minimum value** and **Maximum value** is possible to scale the variable. The minimum tension or current value will be associated to the Minimum Value; the same will be for setting the maximum value.

EXAMPLE: considering a temperature probe, controlled in tension, having min. value -20° and max. value 30°C, corresponding to 0V and 5V, it's possible to configure the variable minimum value at -20, and the maximum at 30, in order to display the temperature directly expressed in degrees. Using the **Decimals** field, it will be possible to specify the number of decimals to be displayed.

WE500 analogue inputs have 10bit resolution and are hardware-configurable at factory (software configuration is not possible) in current (0-20mA), in tension (0-5V or 0-10V) and in temperature (NTC). The input value is constantly checked by the WE500, thus keeping controlled any configured thresholds.

2.4. Digital input vriables (DI)

In order to create a DI Variable, i.e. associated to one of the digital inputs available on WE500, enter the **Administration** → **Variables** page. Clicking on **New**, it's possible to enter the variable configuration page.

Select **Digital Input** on the field **Type**. Under the section **Generic Variables** all standard settings for any type of variable are available For the description of all the fields of this section, see *2.1. Generic variables* (we500_sw_manual_pdf.html#we500-sw-generic-var-en).

Let's skip into the section **Digital Input: Variable Specific Settings**.

First of all is requested to confirm the digital input to be associated to the variable. It's possible to choose among **DI1**, **DI2**, **DI3**, **DI4**, **DI5**, **DI6**, **DI7** and **DI8**. Irrespective of the selected input, the fields **Close label** and **Open label** need to be completed. **Close label** refers to the value (or status), that will be displayed when the relevant digital input is closed, **Open label** refers to the open input. For WE500 a closed Digital Input variable has a logic value of 1. In case of an open input, the logic value is 0. This becomes a very important information for the definition and setting of the events.

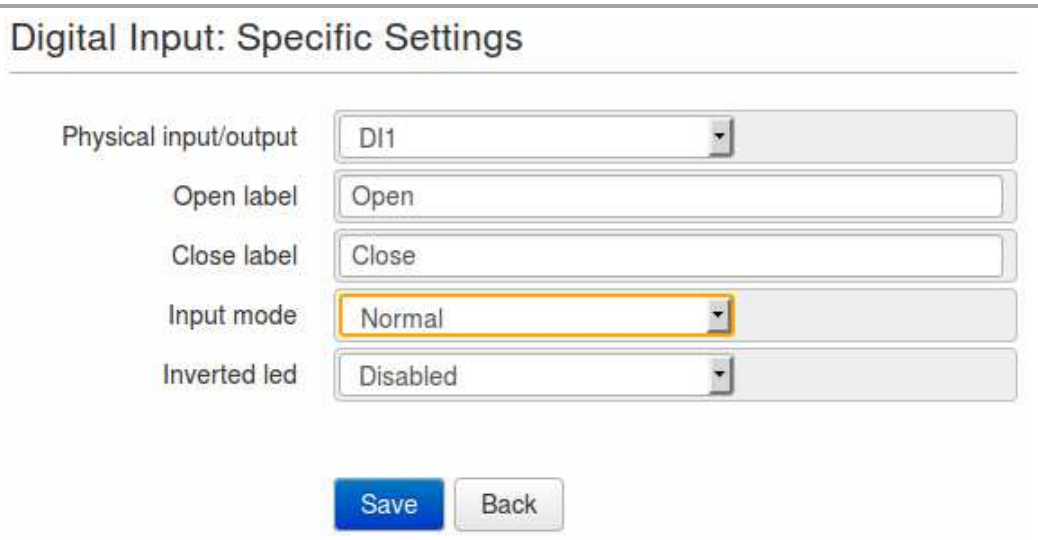
Once filled in above mentioned fields, the operating mode has to be selected in the *Input mode* field choosing among the following options:

- Normal
- Counter
- Flow measurement
- Time counter

Depending on selection, the meaning of the following fields will change.

2.4.1. Normal

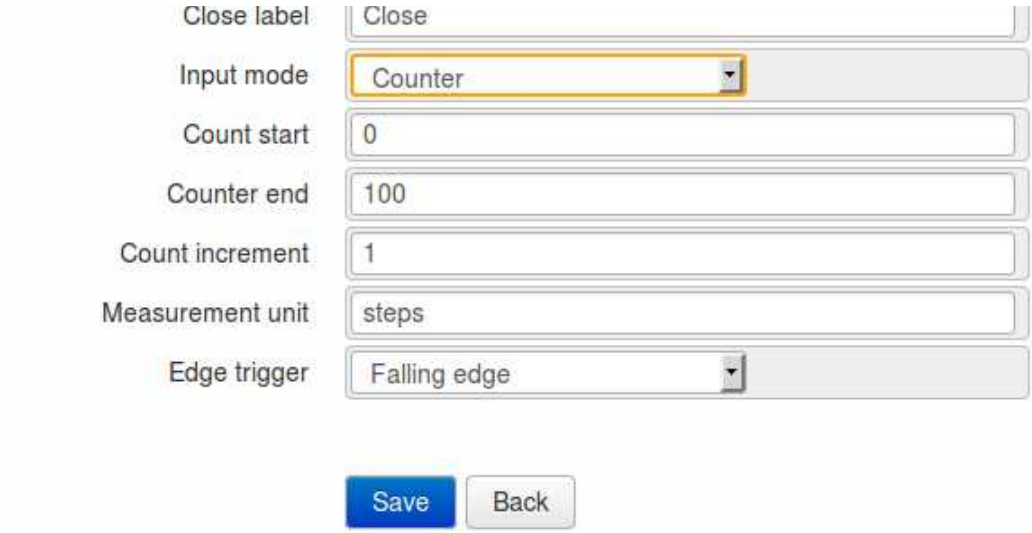
A DI → **Normal** type variable allows to display the status of the digital input. It is then possible to define events/actions connected to the status change (from open to closed and vice-versa).



The only additional field to be configured is the **Inverted led**. This can change the visualization of the variable on the page **Status** → **Variables Status**. If this option is disabled, the open status of the input will be associated to a grey spot, while the closed status to a green one. With enabled option, the situation will be the opposite. For further information see relevant section *6.1. Variables status* (we500_sw_manual_pdf.html#we500-sw-var-status-en).

2.4.2. Counter

A DI → **Counter** type variable allows to count impulses on a digital input.



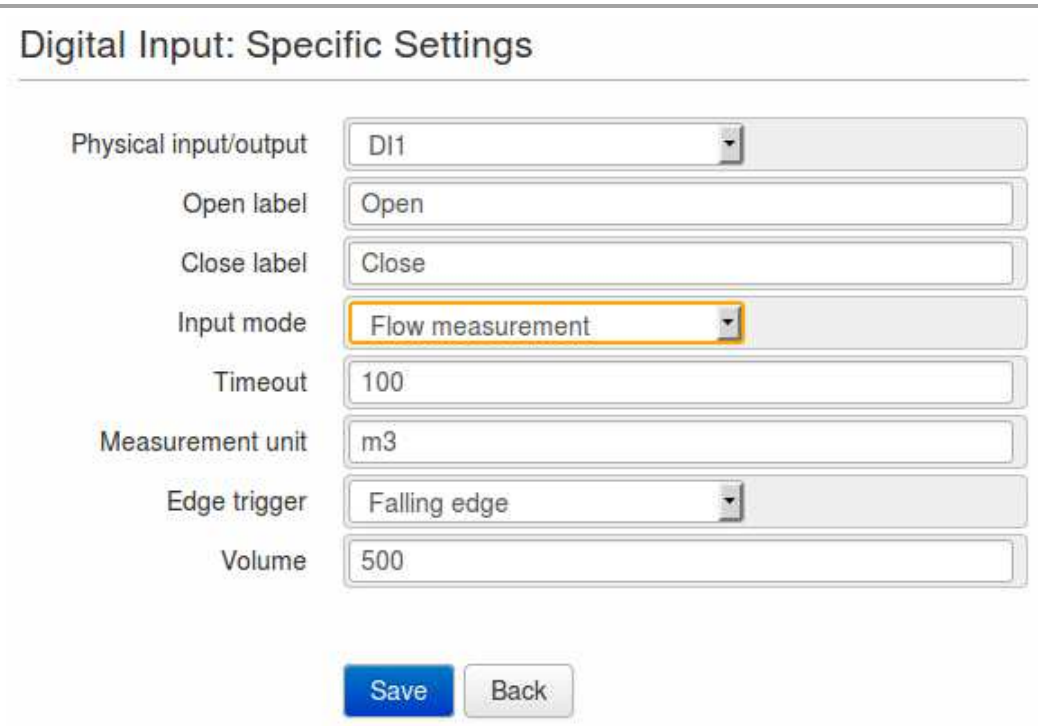
The first field to be completed is **Count start**, i.e. the starting point of the counter. This value will be considered only the first time: if the counter should be reset, it would then restart from 0.

- **Counter end** refers the maximum limit to be reached for resetting the counter. If this field is configured at zero, the counter will increase indefinitely without reverting to zero.
- **Count increment** is the increment unit value of each impulse of the counter.
- **Measurement unit** is the unit of measurement assigned to the counter. This will be displayed on charts and on the page **Status** → **Variable Status**.

The last field to be configured is **Edge trigger**, i.e. the edge to be considered for the impulse. Selecting **Falling edge** the counter will increase when the input changes form closed to open; selecting **Rising edge** the counter will increase when the input changes from open to closed; selecting **Rising and falling edge** the counter will increase at every edge changing.

2.4.3. Flow measurement

A DI → **Flow measurement** type variable allows to calculate the flow rate.



In the **Timeout** field is entered the max. interval of time (expressed in seconds) between two impulses. Once the

configured interval of time has passed, the variable will be reset to 0. This function can be useful in case, that the flow should stop for unexpected reasons. If no timeout value is set, the variable value would be the one of the last received impulse, and would therefore be giving wrong information at request and potentially generate incoherent logs.

In the **Volume** field is set the sample unit, to be associated with an impulse.

Measurement unit allows to set a unit of measurement for this variable, in **Edge Trigger** is possible to select the edge to be considered as an impulse: **Falling edge** if the changing from closed to open input has to be considered and **Rising Edge** for the contrary and Rising and falling edge for both of them.

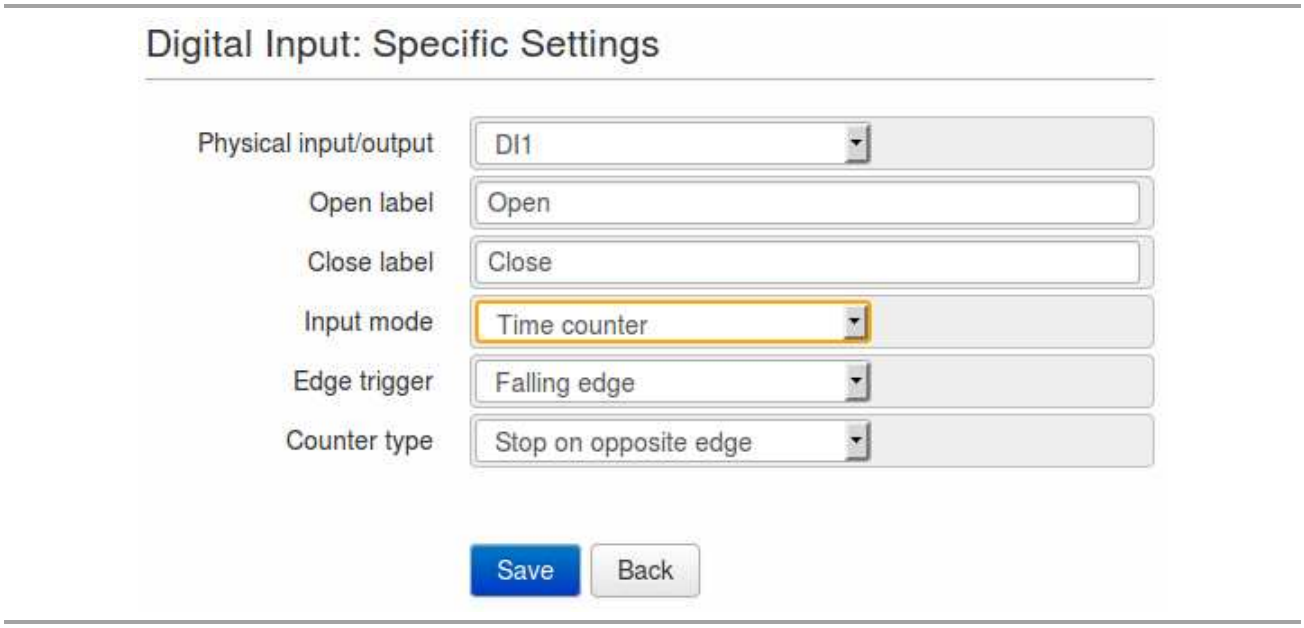
EXAMPLE:

Assuming the following configuration with timeout at "600"(seconds), **Rising edge**, unit of measurement L/s (Liters per second) and volume at 100, the situation will be:

- The input changes from open to closed; WE500 starts counting
- The input changes from closed to open
- The input changes from open to closed after 20 seconds
- W500 calculates the sample volume (100) for the passed time (20 seconds) and displays therefore a result of 5L/s
- The input doesn't change its status for at least 600 seconds
- WE500 reset the variable and waits for new incoming impulses before start counting again.

2.4.4. Time counter

A DI → **Time counter** type variable allows to count the opening/closing time of a contact (expressed in seconds). This variable can be used for calculating the total operating time of a defined machinery.



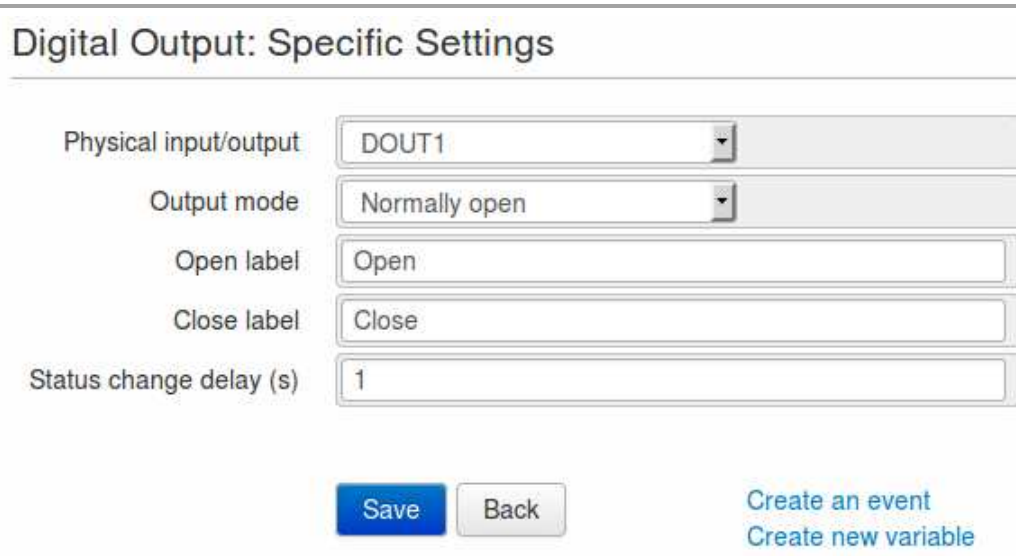
After the configuration of the **Edge Trigger** (reminding that **Falling edge** refers to the change from closed to open, **Rising edge** refers to the opposite and **Rising and falling edge** to both of them) the type of counter has to be selected among following possibilities:

- **Permanent**: After the start of the counter, WE500 will increase the value at every second, until the user will reset it
- **Stop on opposite edge**: the counting will start at the occurrence of an edge change according to the choice made on the relevant field; the counting will stop when reaching the opposite edge and restart again at next change.
- **Reset on opposite edge**: the counting will be reset when reaching the opposite edge, and restart from 0 when the selected edge will be reached again.

2.5. Digital output variables (DO)

In order to create a DO variable, i.e. associated to one of the digital outputs available on WE500, enter the page **Administration** → **Variables**. Clicking on **New**, it's possible to enter the variable configuration page.

Select **Digital Output** on the field **Type**.



Under the section **Generic Variables** all standard settings for any type of variable are available. For the description of all the fields of this section, see *2.1. Generic variables* (we500_sw_manual_pdf.html#we500-sw-generic-var-en).

Let's skip into the section Digital Output: Variable Specific Settings.

After the selection of the Output (between **DOUT1** and **DOUT2**) to be associated to the variable to be created, it's required to set the operating mode in the Output mode field. The available options are:

- **Normally open**: The output is normally open. Open label refers to the open status of the contact. Close label will close the contact.
- **Normally closed**: The output is normally closed. Open label refers to the open status of the contact. Close label will close the contact.
- **Pulse open**: The output operates in pulse mode. Open label refers to the open status of the contact. Close label will close the contact. Once closed, the outputs keeps this status for the time configured on the field Pulse duration, after that it returns automatically to the open status.
- **Pulse closed**: The output operates in pulse mode. Open label refers to the open status of the contact. Close label will close the contact. Once opened, the outputs keeps this status for the time configured on the field Pulse duration, after that it returns automatically to the closed status.

Regardless of the selected option, the field **Status change delay(s)** must be filled in with the number of seconds of delay required between an impulse and the enabling/disabling of the output.

Please note that the **Non-volatile value** option can be combined with the **Output mode**. If this option is not enabled, the start output status after a power-off or reboot will depend on the Output mode, i.e.: in case of Normally open/Pulse open output, the contact will start from open status; in case of Normally closed/Pulse closed output, the start of the contact will be from closed status. On the other hand if the non-volatile value option is enabled, the start output status will be the same as at the power-off or reboot of the system.

The status of the digital outputs can be modified through their association to an event either by an SMS command or directly from the page **Status** → **Variables status**.

2.6. Virtual variables

Virtual variables are not connected either to I/O or to modbus. These variables can be managed via SMS, EMAIL or from **Status -> Variables status** status, they can also be associated to an event or can be determined through a mathematical expression.

In order to create a **Virtual** variable enter the page **Administration** → **Variables**. Clicking on **New**, it's possible to enter the variable configuration page.

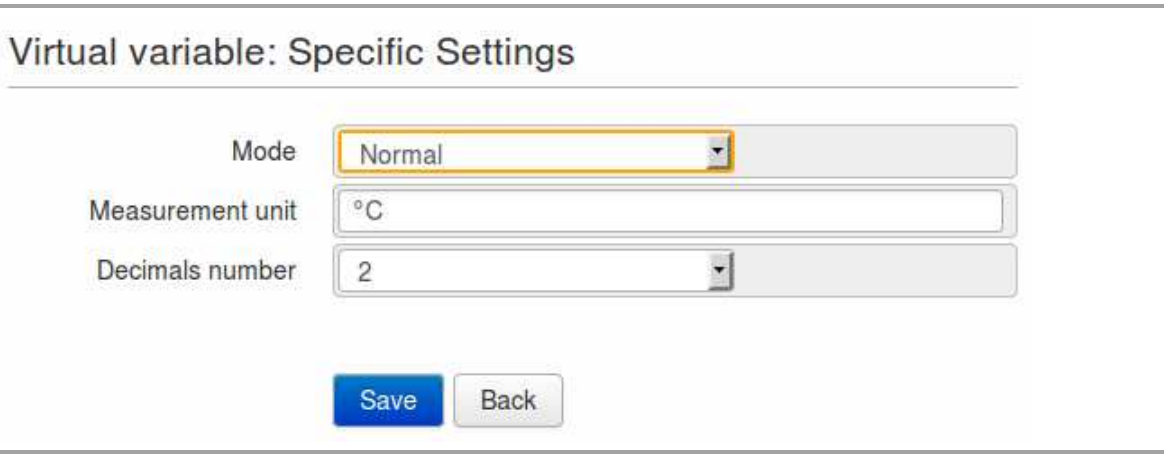
Select **Virtual** on the field **Type**.

Under the section **Generic Variables** all standard settings for any type of variable are available For the description of all the fields of this section, see *2.1. Generic variables* (we500_sw_manual_pdf.html#we500-sw-generic-var-en).

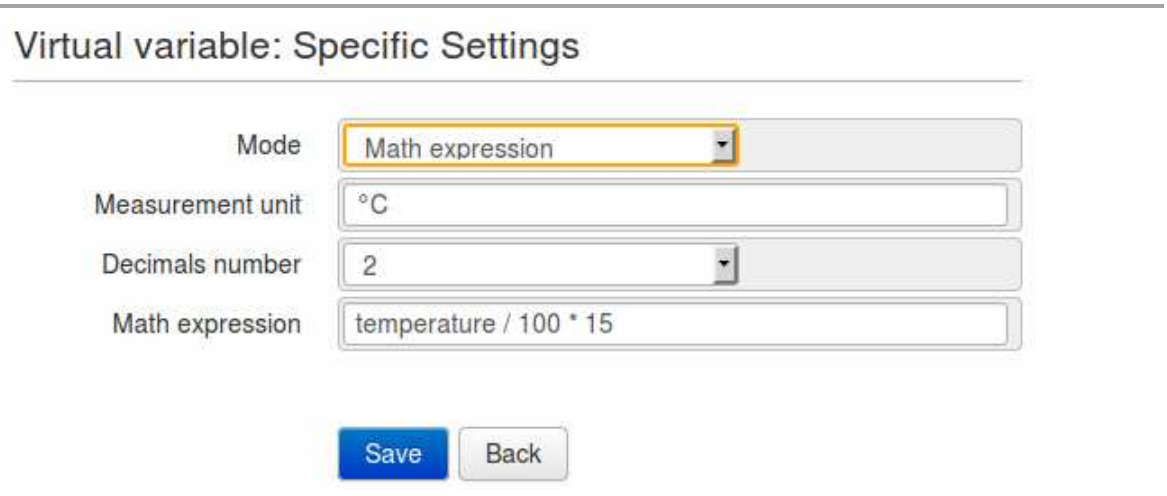
Let's skip into the section Virtual Variable: **Virtual variable: Variable Specific Settings**.

Two types of virtual variables are available:

- **Normal**: Once set the unit of measurement on the field **Measurement unit** and the number of decimals on **Decimals numbers**, it's possible to save the variable. Its value can be changed manually (via SMS, Email or from **Status** → **Variables status**) and/or automatically (as execute command on the page of events creation, see *4.2.3. Execute command* (we500_sw_manual_pdf.html#we500-sw-action-cmd-en)).



- **Math expression**: Once entered the unit of measurement on **Measurement unit** and the number of decimals on **Decimals numbers**, its possible to define a mathematical expression to be applied to the variable.



A Virtual variable with **Math expression** allows to make calculations using variables or constants and to use some of the most common mathematical operations, as for example:

- Addition (+)

- Subtraction (-)
- Multiplication (*)
- Division (/)
- Exponentiation (^)
- Squared root (sqrt)
- Logarithm (log)
- Sine (sin)
- Cosine (cos)

or constants as:

- e(e)
- logarithm base 2 of e (log2e)
- logarithm base 10 of e (log10e)
- squared root of PI (2_sqrtpi)
- squared root of 2 (sqrt)
- squared root of 1/2 (sqrt1_2)

The use of round brackets is supported.

EXAMPLE 1:

“Var1” is the name of a variable of any type (not necessarily a Virtual variable) and its value is 10. In the field **Math expression** we could write:

Var1^2 In this case the Virtual variable would have a value of “100”.

EXAMPLE 2:

Var1 as above Var2 is another variable of any type and its value is 15 In the field **Math expression** we could write:

(Var1 * (Var2 – 10)) / 2

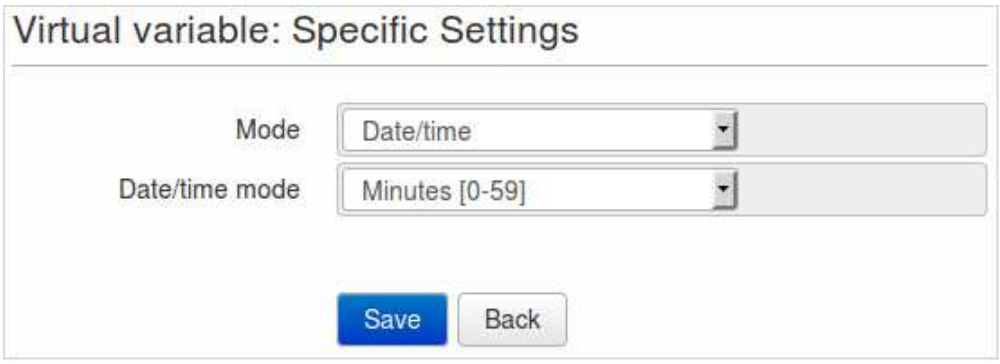
obtaining (10 * (15-10)) / 2 → (10*5)/2 → 50 / 2 → 25

The value displayed by WE500 will therefore be “25”.

Changing one of the expression’s factors, the result is automatically recalculated by the WE500.

A Math expression Virtual variable can be used as a element inside another expression.

- **Date/Time**: This variable type will display **seconds**, **minutes**, **hours**, **month’s day**, **month**, **year**, **day of the week**, **or day of the year**.



Selecting for example **Minutes [0-59]** on the field **Date/time**, when it’s 12:35, the variable will show the value 35.

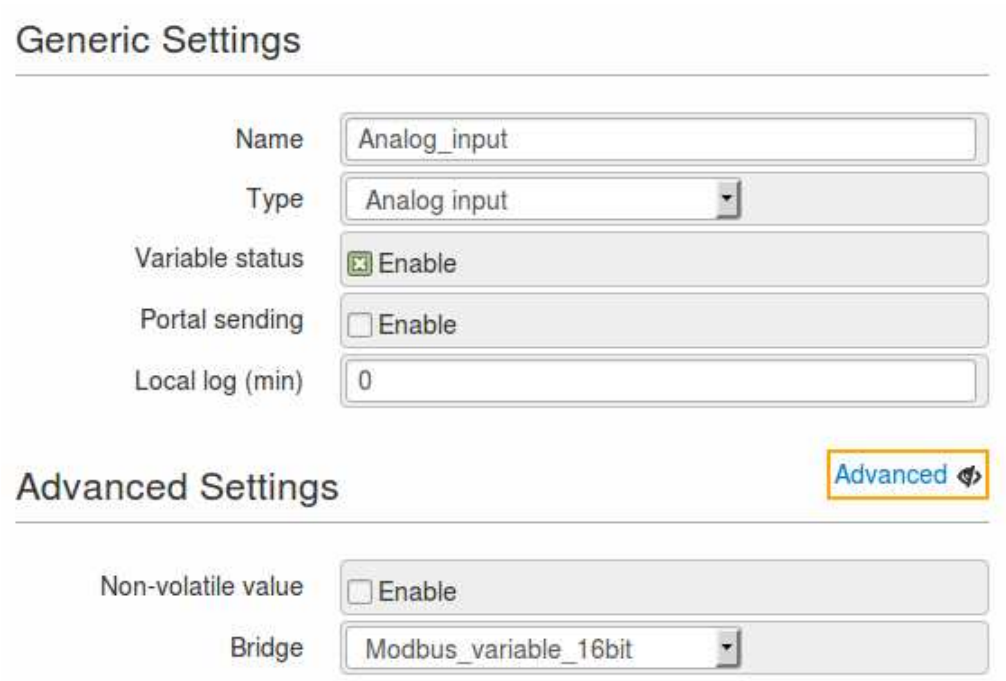
2.7. Bridge between variables

WE500 allows to create bridges between variables, in order to transfer the value or the status of a given variable to another variable. This type of function is very useful when it’s required to read via modbus the values of the

variables associated to the I/O of WE500.

Assuming for example, that it's required to read the value of the analogue input "1" of the WE500 on any Master device, the following operations have to be executed:

- Create a 16 bit read-only modbus variable (*3.2.3. 16-32 bit data type* (we500_sw_manual_pdf.html#we500-sw-mb-16-32bit-en))
- Create an **Analogue Input** variable, associated, for instance, to the **AI1** input (*2.3. Analog input variables (AI)* (we500_sw_manual_pdf.html#we500-sw-analog-in-en))
- On the page where the **Analog Input** is created, click on the link **Advanced**.



- Click on the drop-down menu and select the previously created 16 bit modbus variable from the list.
- Associate the 16bit modbus variable to a modbus command and to a **Slave** network (*3.1. Master/Slave Modbus* (we500_sw_manual_pdf.html#we500-sw-mb-master-slave-en))

Through this procedure two variables will have the same value. At every status/value change of the **Analog Input** variable will correspond a similar change of value of the modbus variable.

3. Modbus

Modbus is a communication protocol used for industrial systems. The graphical interface and the sequence of pages and sections of the WE500 make the modbus configuration very easy and intuitive under all aspects.

WE500 allows to create two types of modbus networks:

- **Master**, in order to read/write registers of a slave device
- **Slave**, in order to make available the own data to a master device

To create a functioning modbus network is necessary to:

- Create one or more modbus variables
- Create one or more modbus commands
- Set the communication parameters of the modbus network
- Associate the variables and the commands with a modbus network

There is no predetermined sequence: it can be started by defining the network parameters and then creating

variables and commands or starting with the creation of commands and variables and then associate them later on.

3.1. Master/Slave Modbus

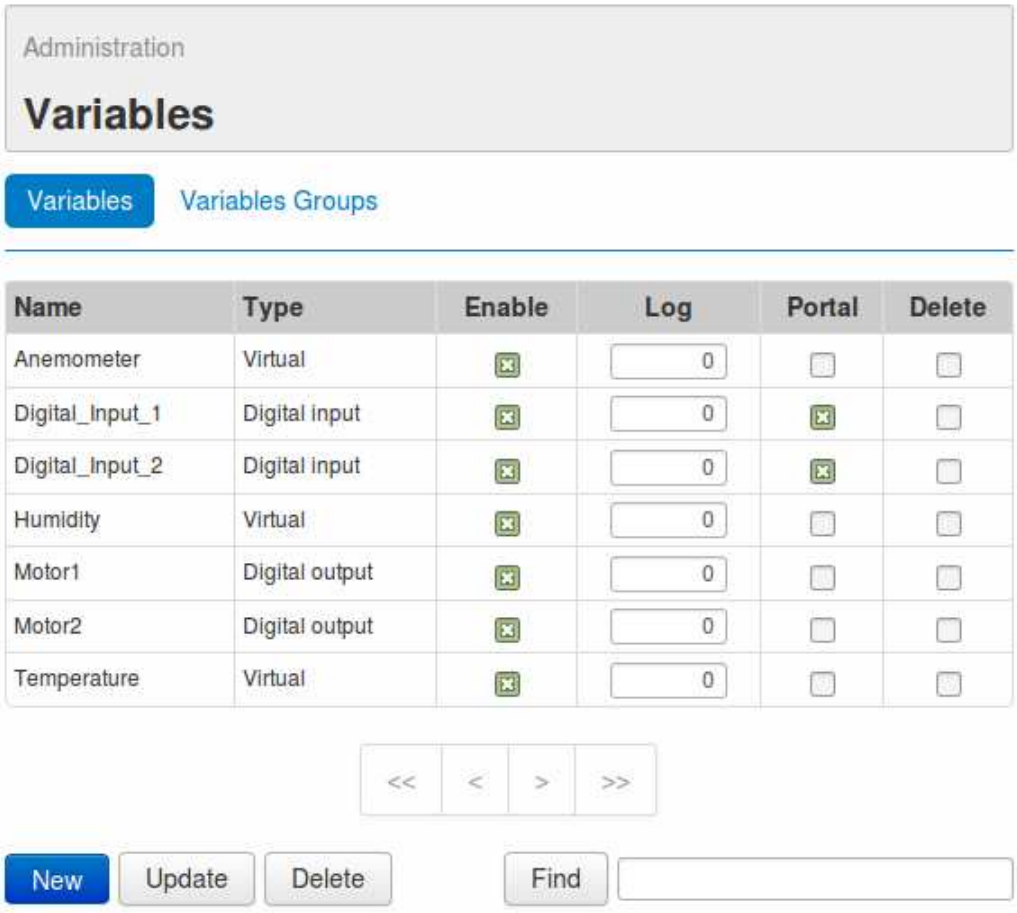
WE500 allows to create an unlimited number of Modbus networks irrespective of the type (master/slave) or of the physical network (TCP/IP, 232, 485). This allows to have a system, where the WE500 acts as Master in some networks and as Slave in some others at the same time.

The separation between Master and Slave network is available only in the definition of the modbus network (**Administration** → **Modbus** → **Networks**)), while variables and commands can be defined on the same way. For example, a **16bit** variable and its relevant reading command **Read holding registers-0x03** can be created without specifying if they refer to a Master or a Slave network. Defining the network, two are the possible scenarios:

- **Master**: the WE500 will try to read the register associated to the variable, using the previously defined command.
- **Slave**: the WE500 will allow any Master device to read the register associated to the variable, using the previously defined command.

3.2. Creation of Modbus variables

To create a variable (of any type) enter **Administration** → **Variables** → **Variables**.



If some variables are already available, they will be displayed in the table with some of their main features.

To edit an existing variable click on its name, to create a new one click on **New**.

The name of the new variable is entered in the page for creating variables: the field **Name** accepts alpha-numeric characters and "_". The space is not allowed.

Then select **Modbus** in the **Type** field.

Under the section **Generic Variables** all standard settings for any type of variables are available For the description of all the fields of this section, see *2.1. Generic variables* (we500_sw_manual_pdf.html#we500-sw-generic-var-en).

According to the type of variable selected, the following section will have a specific structure:

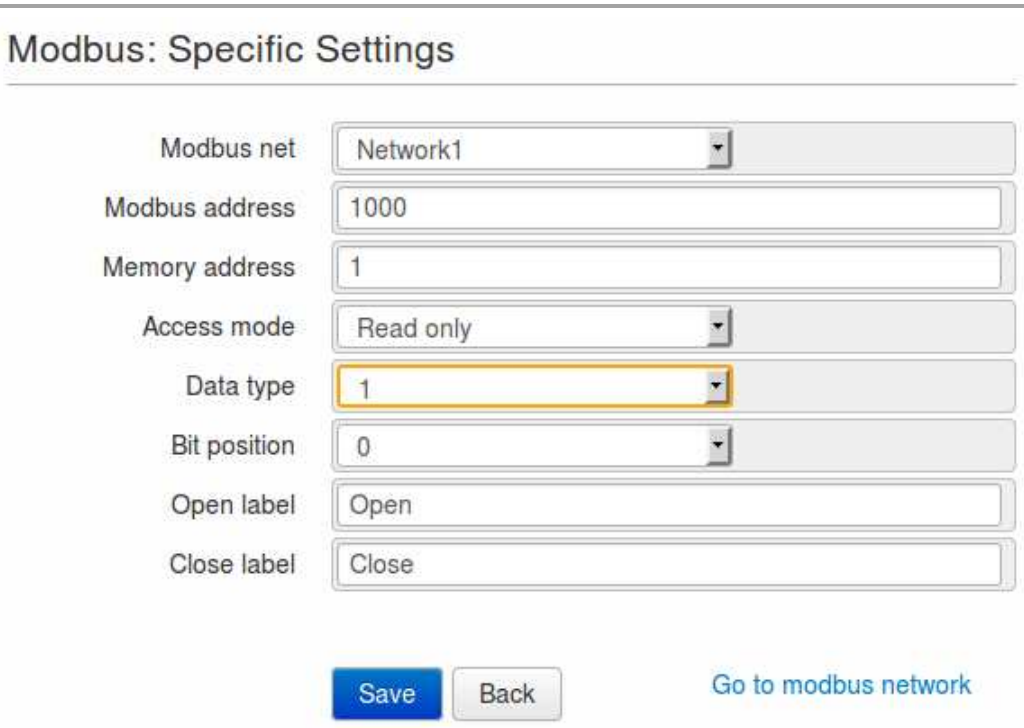
- **Modbus net**: It allows to select a modbus network to be associated with the new variable to be created. If no modbus network is available, this field must be left blank.
- **Modbus address**: If the variable has to be associated to a Master network, this field must be completed with the slave address of the device to be interrogated by the WE500. If the variable has to be associated to a Slave network, this field must be completed with a generic address, that the Master will interrogate to communicate with the WE500.
- **Memory address**: this field must be completed with the memory register, to be associated with the variable.

It's now necessary to select the **Access mode**, i.e. the type of modbus variable, among the following options:

- **Read only**: It's possible to read the variable value but not to change it
- **Write only**: It's possible to edit the variable value but not to read it.
- **Read and write**: The variable value can be read and edited.

In the field **Data type** is possible to select the variable number of bit.

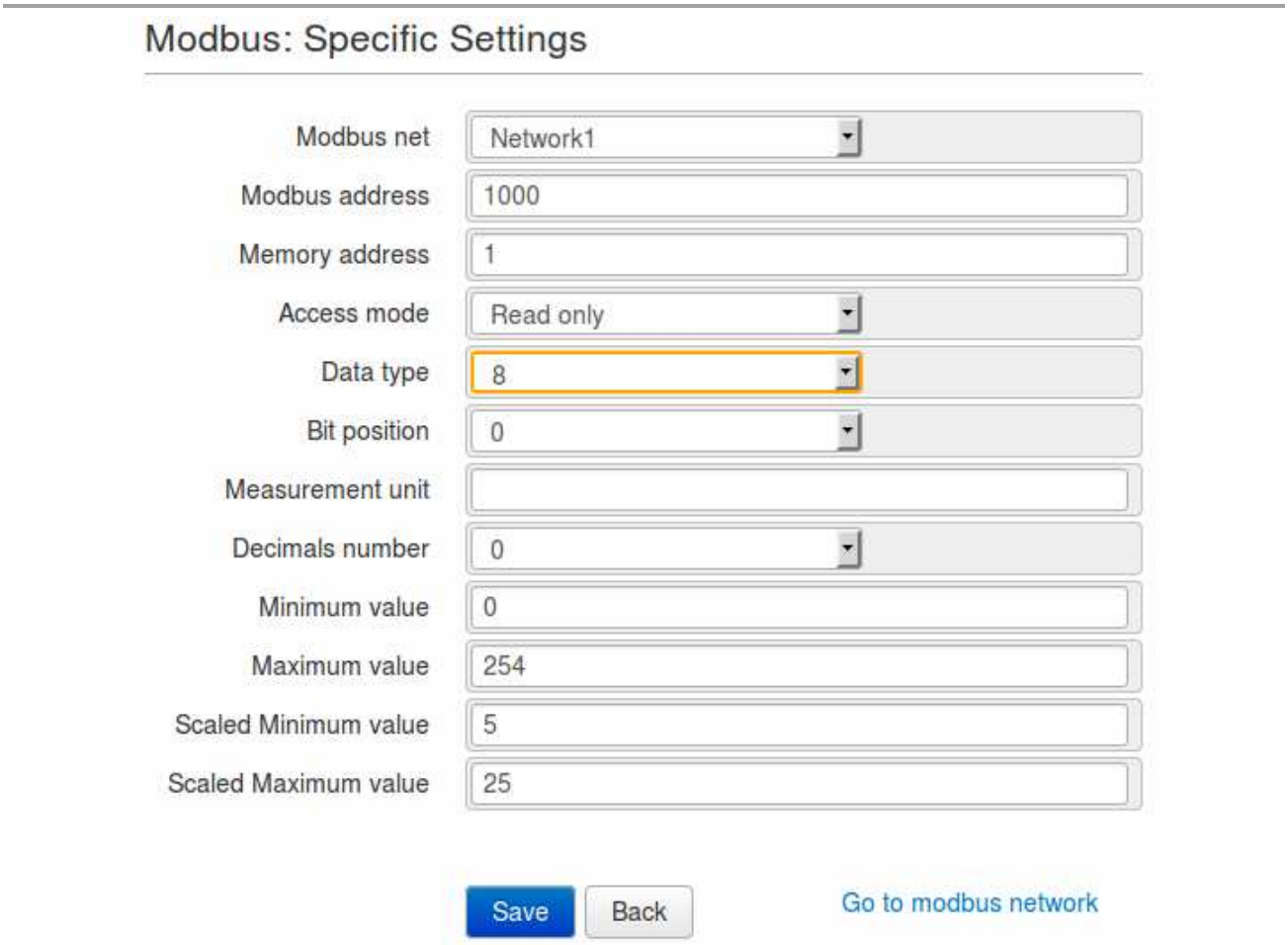
3.2.1. 1 bit data type



In this field is requested to specify the position of the bit inside the word (1word=16 bit). Inside one single word there can be up to 16 variables of 1 bit each. If the variable, that we want to create, is on the first position of the word, the value "0" must be selected in the field **Bit position**. Alternatively if the variable, that we want to create, is on the last position of the word, the value "15" in the field **Bit position** must be entered.

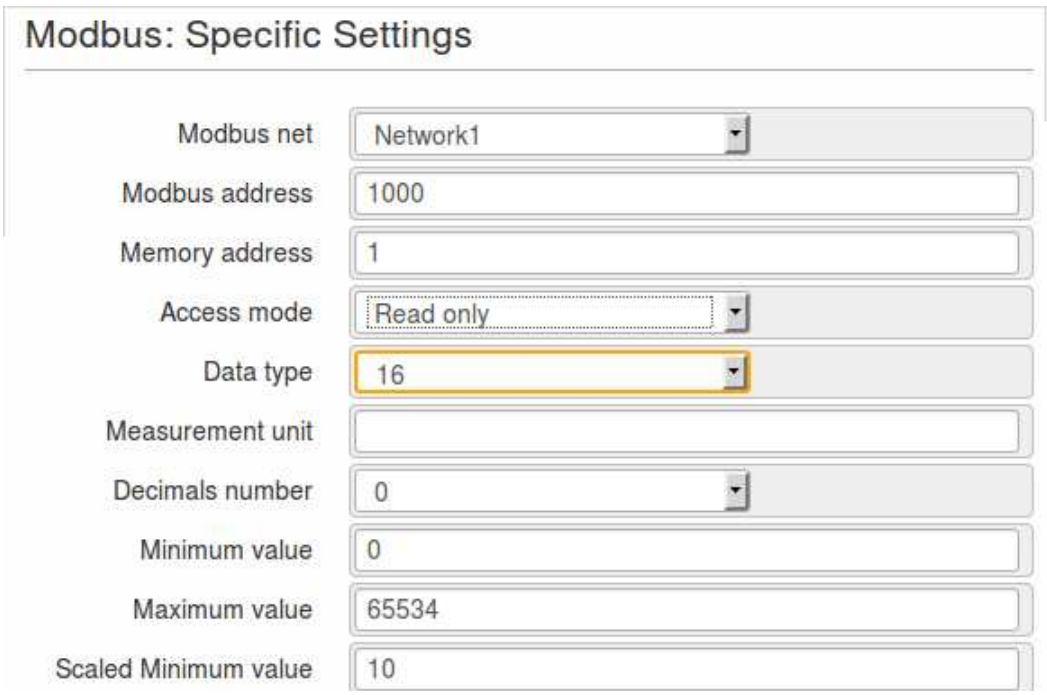
In order to complete the creation of the variable, just set up a string for the open status (corresponding to value 0) and a string for the closed status (corresponding to value 1). These strings will allow to display the variable status (for example Open/closed, on/off, and so on..)

3.2.2. 8 bit data type



For the 8 bit variables is requested to specify the **Bit position** (it's possible to choose only between 0 and 7, since 8 bit corresponds to half a word) and some other information available also for 16-32-32inv variables. If the variable, that we want to create, is in the first word position, the value "0" must be entered in the field Bit position. Alternatively if the variable, that we want to create, is in the middle of the word, the value "7" must be entered in field **Bit position**.

3.2.3. 16-32 bit data type



Selecting **16**, **32** or **32inv** on the field Data type, the following fields must be completed and specified:

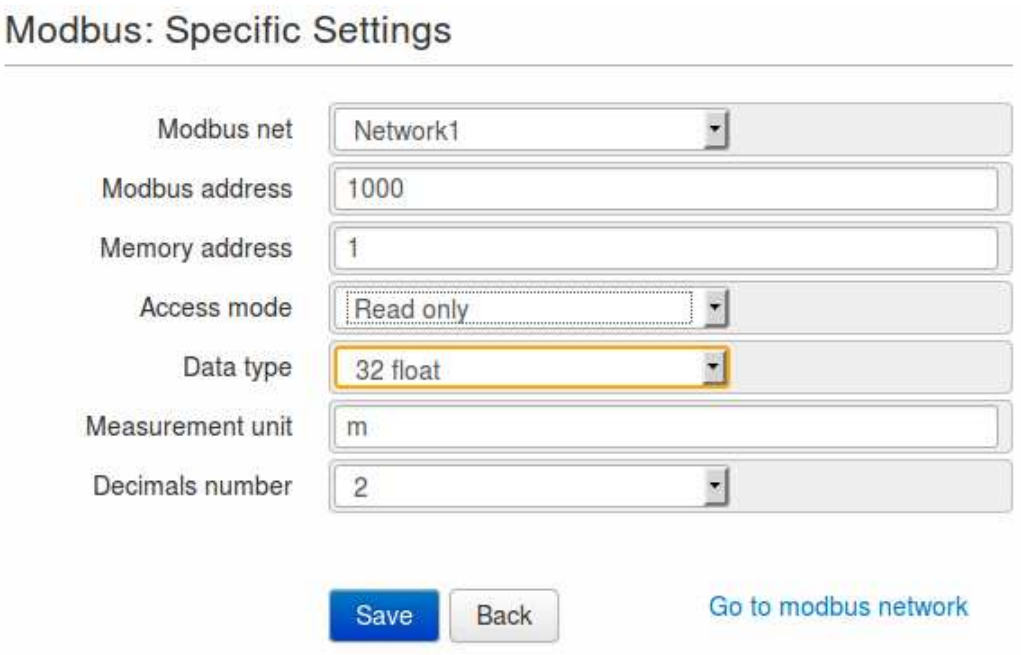
- **Measurement unit**: measurement unit selected to be assigned to the variable
- **Decimals number**: quantity of decimal numbers to be displayed
- **Minimum value**: set the minimum (normally "0") according to the type of variable
- **Maximum value**: set the maximum (for example 65535 for 16 bit variables) according to the type of variable.
- **Scaled Minimum value/Scaled Maximum value**: the two above mentioned fields are necessary for a correct interpretation of the read/written data by the WE500, even though they might not be relevant for the end-user.

Selecting **16**, **32** or **32inv** on the field **Data type**, the following fields must be completed and specified:

- **Measurement unit**: measurement unit to be assigned to the variable
- **Decimals number**: quantity of decimal numbers to be displayed
- **Minimum value**: set the minimum (normally "0") according to the type of variable
- **Maximum value**: set the maximum (for example 65535 for 16 bit variables) according to the type of variable.
- **Scaled Minimum value/Scaled Maximum value**: the two above mentioned fields are necessary for a correct interpretation of the read/written data by the WE500, even though they might not be relevant for the end-user.

Assuming for example a 16 bit variable with min./max. values of respectively 0/65535: a user should need to measure a level from 0 to 10 meters. To this purpose it's enough to set "0" as **Scaled Minimum value** and "10" as **Scaled Maximum value**.

3.2.4. 32 bit float data type



For the 32Float/32Float inv variables it's necessary to set the measurement unit and the number of decimals. This type of variable doesn't require any scaling.

By clicking **Save** the variable will be created.

> **Note**
> Information as **Modbus address**, **Memory address**, **Access mode**, **Data type**, **Bit position** are normally described in the data sheets of the modbus devices.

It's important to make sure that all parameters are correct, in case of doubts contact the salve device's manufacturer or the Support at Nethix.

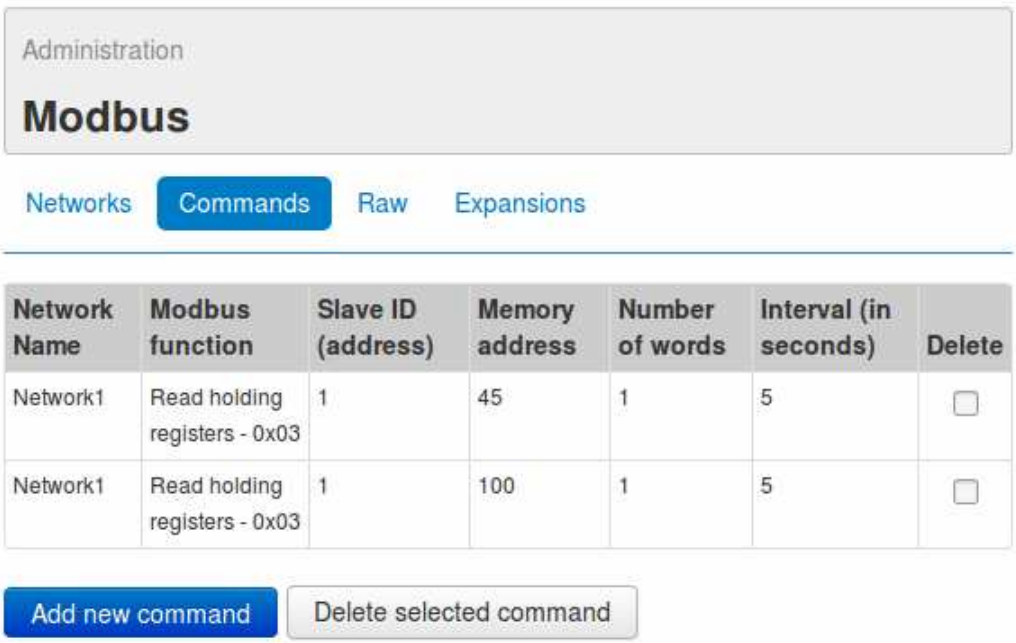
For further information about the use of the Modbus Protocol, visit the official site modbus.org (http://modbus.org/).

The following step is to create a modbus command, suitable to interact by reading or writing with the new created variable. In order to enter the section dedicated to the modbus commands, select **Administration** → **Modbus** → **Commands** on the menu.

3.3. Creation of Modbus commands

All modbus variables need to be associated to a read or write command.

Under the section **Administration** → **Modbus** → **Commands** all available commands (if previously created) will be displayed. In order to create a new command click on **Add new command**.



According to the type of created variable it's possible to define a read/write command using one of the following functions:

- Read coils -0x01
- Read holding registers -0x03
- Read input registers -0x04
- Write single coil -0x05
- Write single register -0x06
- Write multiple registers -0x10

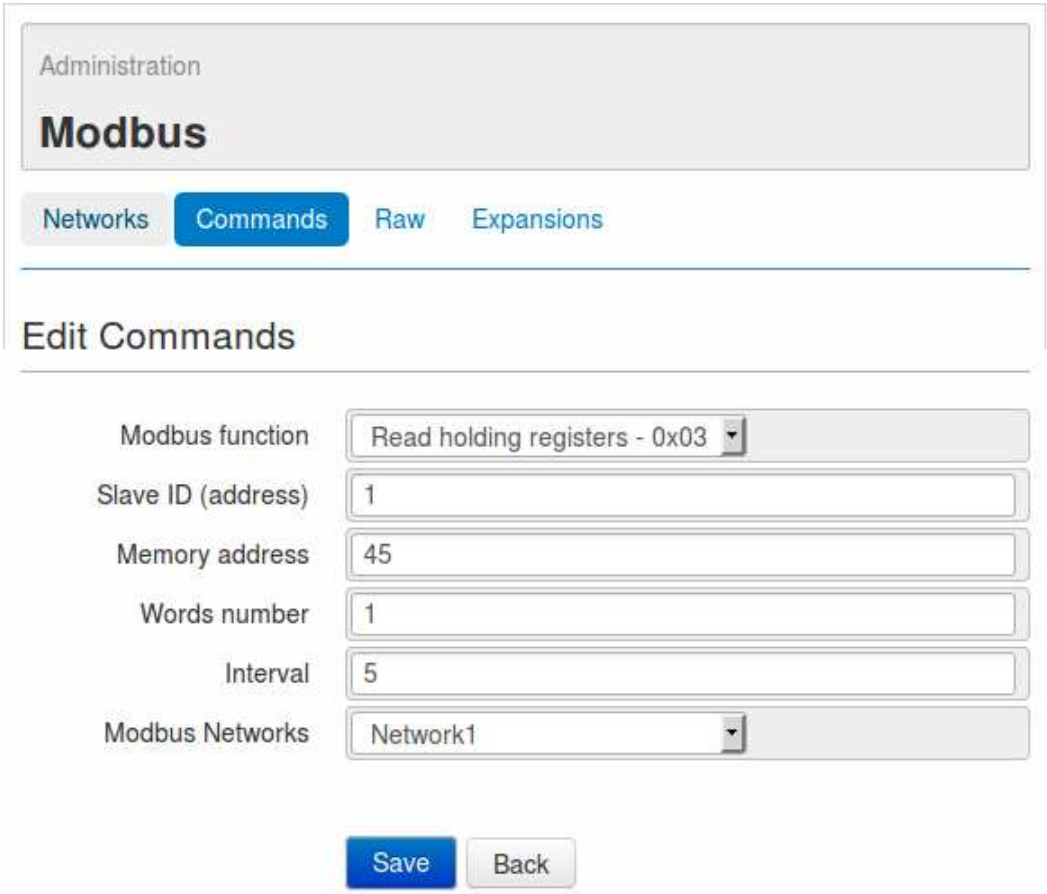
All functions available in WE500 respect the Modbus standard.

Once made the selection of the function to be used, the following parameters need to be set:

- **Slave address**: it's the address of the slave device, where to send all requests/writings. This address must

be the same as the one entered in the field Modbus address, previously set in the variable configuration.

- **Memory address**: it's the memory address associated to the command. This must be the same as the one previously entered in the field Memory address of the variable.
- **Words number**: it's the number of word where to use the command. Some functions allow to enter more than one word (to be checked on slave device's documentation). Setting for example "1" as Memory address and "10" as Words number, it should be possible to use one single command to enter 10 consecutive registers.
- **Interval**: Interval of time for the reading function. For the write function this option is not available (the writing of a register is enabled at request). Setting for example "5", the reading of one or more registers/word is executed every five seconds.
- **Modbus Networks**: If one or more Modbus networks have already been created, it's possible to select the one to be associated with the created command.



Clicking on **Save** the command will be saved.

Note

Information as **Modbus address**, **Memory address**, **Access mode**, **Data type**, **Bit position** are normally described in the data sheets of the modbus devices.

It's important to make sure that all parameters are correct, in case of doubts contact the salve device's manufacturer or the Support at Nethix.

For further information about the use of the Modbus Protocol, visit the official site modbus.org (http://modbus.org/).

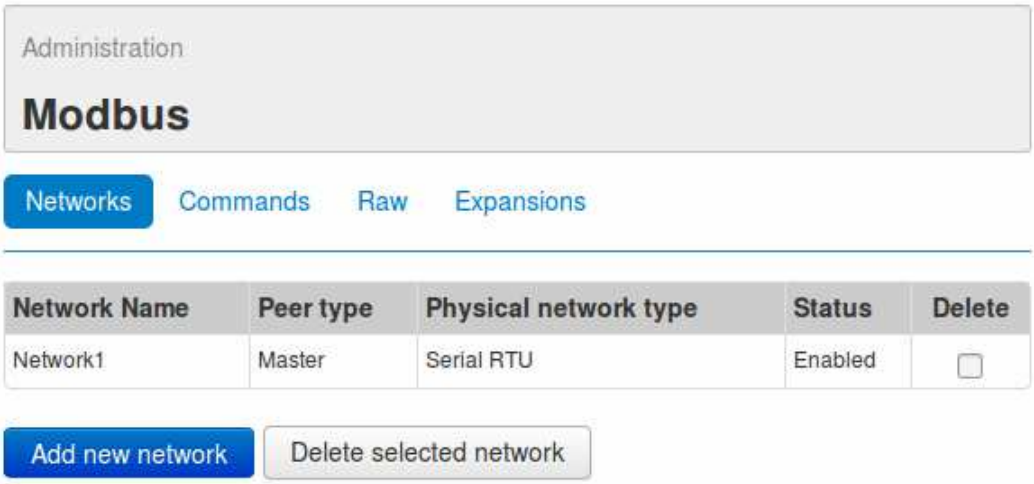
Once created the command, it's possible to proceed with the definition of the modbus network. To enter this section, select **Administration-> Modbus-> Networks** from the menu, click the tab **Networks** on the top left side or click the link **Create new network** on the right side of the **Save** button.

In this last case, when the page for the creation of modbus networks opens, the new created command is already associated with the network.

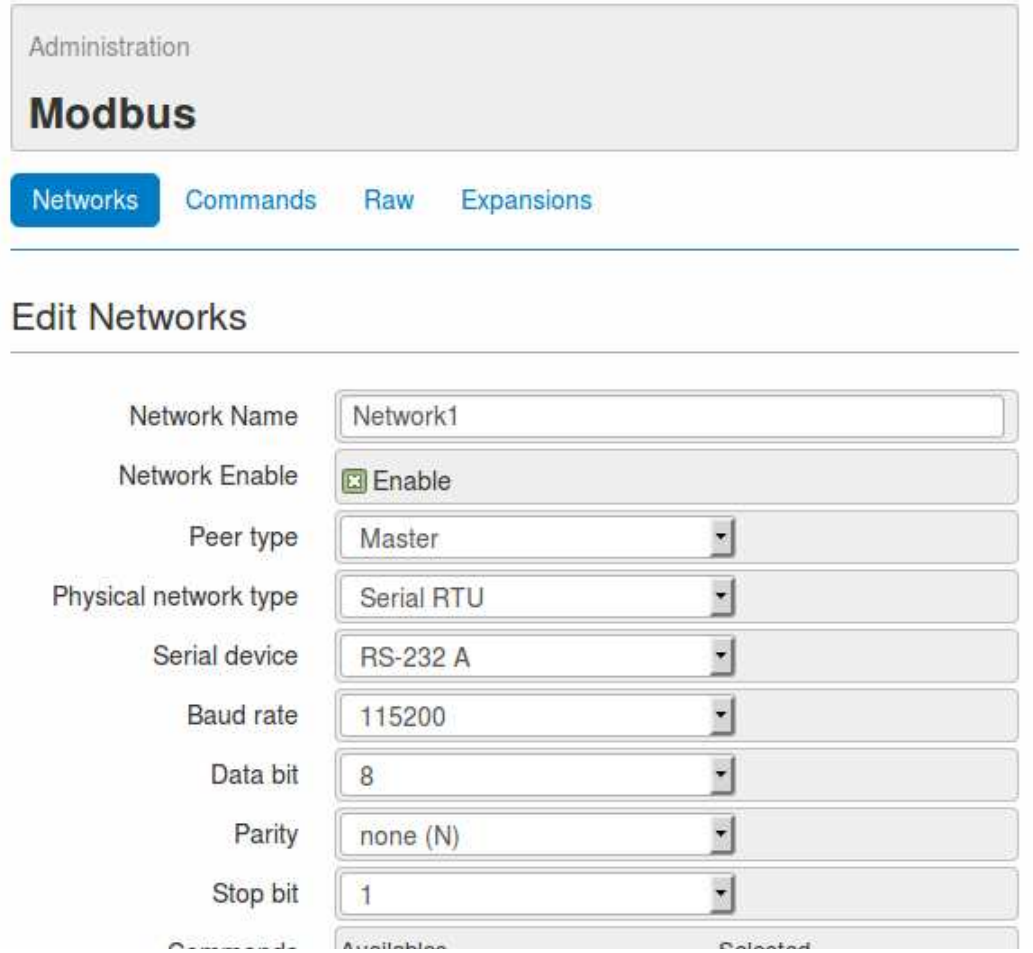
3.4. Modbus network creation

All modbus variables and commands need to belong to a modbus network to grant a correct functioning. WE500 supports several modbus networks of different physical types.

Selecting **Administration** → **Modbus** → **Networks** from the menu, an overview of all available networks will be displayed.



It's possible to create a new network clicking on **Add new network**.



Through the fields **Peer type** and **Physical network type** is possible to get 4 different combinations:

- Master-RTU
- Slave-RTU
- Master-TCP
- Slave-TCP

3.4.1. Master - RTU Modbus network

According to this combination the WE500 will act as Master inside a RTU network, using one of the available serial ports in order to read/write on the registers of any modbus slave devices.

The settings to be defined are the following:

- **Network Name**: it's the name to be assigned to the network. Alpha-numeric characters and the character "_" are supported.
- **Network enable**: Enable/Disable the network. By disabling an enabled network all associated commands will be canceled. Thus all the variables associated to the network will cease to be updated.
- **Peer type**: Master
- **Physical Network type**: Serial RTU
- **Serial device**: it allows to select one of the following serial ports:
  - RS-232 A (connectors TX1, RX1, GND)
  - RS-232 B (connectors TX2, RX2, GND)
  - RS-485 (connectors A, B, GND)
- **Baud rate**: Data transmission speed rate. This field is available in case of RTU Serial.
- **Data bit**: Number of data bit for each character (normally 8).This field is available in case of RTU Serial.
- **Parity**: Bit of Parity. This filed is available in case of RTU Serial.
- **Stop bit**: Number of stop bit. This field is available in case of RTU Serial.

3.4.2. Slave - RTU Modbus network

According to this combination the WE500 will act as Slave inside a RTU network, using one of the available serial ports in order to receive commands from the connected master device.

The settings to be defined are the following:

- **Network Name**: it's the name to be assigned to the network. Alpha-numeric characters and the character "_" are supported.
- **Network enable**: Enable/Disable the network. By disabling an enabled network all associated commands will be canceled. Thus all the variables associated to the network will cease to be updated.
- **Peer type**: Slave

- **Physical Network type**: Serial RTU
- **Slave address**: slave address to be associated to the WE500
- **Serial device**: it allows to select one of the following serial ports:
    - RS-232 A (connectors TX1, RX1, GND)
    - RS-232 B (connectors TX2, RX2, GND)
    - RS-485 (connectors A, B, GND)
- **Baud rate**: Data transmission speed rate. This field is available in case of **RTU Serial**.
- **Data bit**: Number of data bit for each character (normally 8).This field is available in case of RTU Serial.
- **Parity**: Bit of Parity. This filed is available in case of RTU Serial.
- **Stop bit**: Number of stop bit. This field is available in case of RTU Serial.

3.4.3. Master - TCP Modbus network

According to this combination the WE500 will act as Master inside a TCP network, using one of the available network interfaces in order to read/write on registers of any modbus slave devices.

The settings to be defined are the following:

- **Network Name**: it's the name to be assigned to the network. Alpha-numeric characters and the character "_" are supported.
- **Network enable**: Enable/Disable the network. By disabling an enabled modbus network all associated commands will be canceled. Thus all the variables associated to the network will cease to be updated.
- **Peer type**: Master
- **Physical Network type**: Ethernet TCP
- **IP address**: IP address of the slave where the WE500 has to connect.
- **Port**: Slave access Port.

3.4.4. Slave - TCP Modbus network

According to this combination the WE500 will act as Slave inside a TCP network, using one of the available network interfaces in order to receive reading/writing commands from any master devices.

The settings to be defined are the following:

- **Network Name**: it's the name to be assigned to the network. Alpha-numeric characters and the character "_" are supported.
- **Network enable**: Enable/Disable the network. By disabling an enabled modbus network all associated commands will be canceled. Thus all the variables associated to the network will cease to be updated.
- **Peer type**: Slave
- **Physical Network type**: Ethernet TCP
- **Interface**: It allows to select the network interface to be used by the WE500 in order to receive commands from the master device. The available options are: **LAN**, **GPRS/HSPA**, and **VPN**.
- **Port**: It's the Port where the master device will interrogate the WE500

Regardless of the selections made on the fields **Peer type** and **Physical network type**, the previously created commands and variables have to be associated to the relevant network through the tabs **commands** and **variables**.

In the table **Availables** are listed all variables and modbus commands previously created. Selecting and clicking > (or with a double click on it), the variable or the command is moved to the table **Selected**.

To remove a variable or a command from the modbus network, select it and then click on < (or click twice on it)

When Save, without configuration errors, is clicked, the system will activate the new modbus network.

In order to check the correctness of all settings, it's possible to check on page **Status->Variables** status or the system's logs on page **Diagnostics-> General**.

Note that, once created a modbus network, on the left side of the tabs Save and Back some links will be available, these allow to enter directly the relevant pages, without passing through the menu:

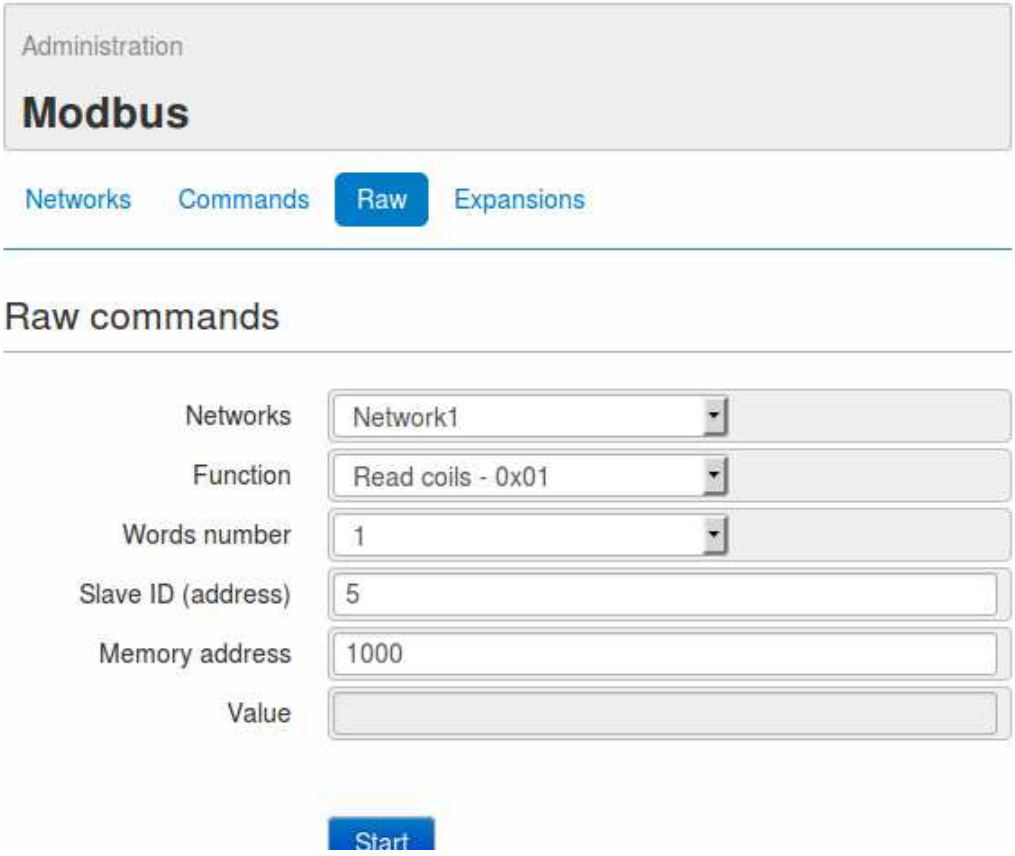
- **Create new network**: clicking on this link, the field **Name** on the same page will be reset, allowing to create a new modbus network. All communication parameters of the previous network will be copied.
- **Create new command**: clicking on this link, there will be a redirection to the page of command creation. The command will be associated to the modbus network. Once saved the command, it's possible to click on **Create new command**. Thus all fields will be reset and it will be possible to create a new command. The command will be assigned to the previously available network, but it will be possible to select a different network by changing the content of the field **Modbus Network**.
- **Create new variable**: through this link there will be a redirection to the page of variable creation. By default the field Type will be set at **Modbus** and **Modbus Net** will show the name of the available modbus network. Clicking on **Save** the variable will be automatically associated to the modbus network. At this stage is possible to click on **Create new variable**. The field Name will be reset, while all other fields will be duplicated. This procedure will speed up the creation of a new modbus variable especially if several similar variables are available (having the same Access mode, Data type, Open/Close label): in this case it will be enough to change only the name and just a few more specific parameters. Also in this case the variable will be at first associated with the previous modbus network.

3.5. Istant reading

It's possible to read or write one or more modbus registers without creating a variable or a command.

Entering the page **Administration** → **Modbus** → **Raw**, it's possible to start an instant reading/writing of a given register, just by properly completing the following fields:

- **Networks**: Select a network among the available ones. This function is possible only if at least one network is already available.
- **Function**: Select the modbus function to be used in order to read or write the register/s.
- **Words number**: indicate the word number "1" in case of 1-8-16 bit variables, and the "2" in case of 32 bit or float variables.
- **Slave address**: indicate the slave address to be entered
- **Memory address**: indicate the memory address to be entered.

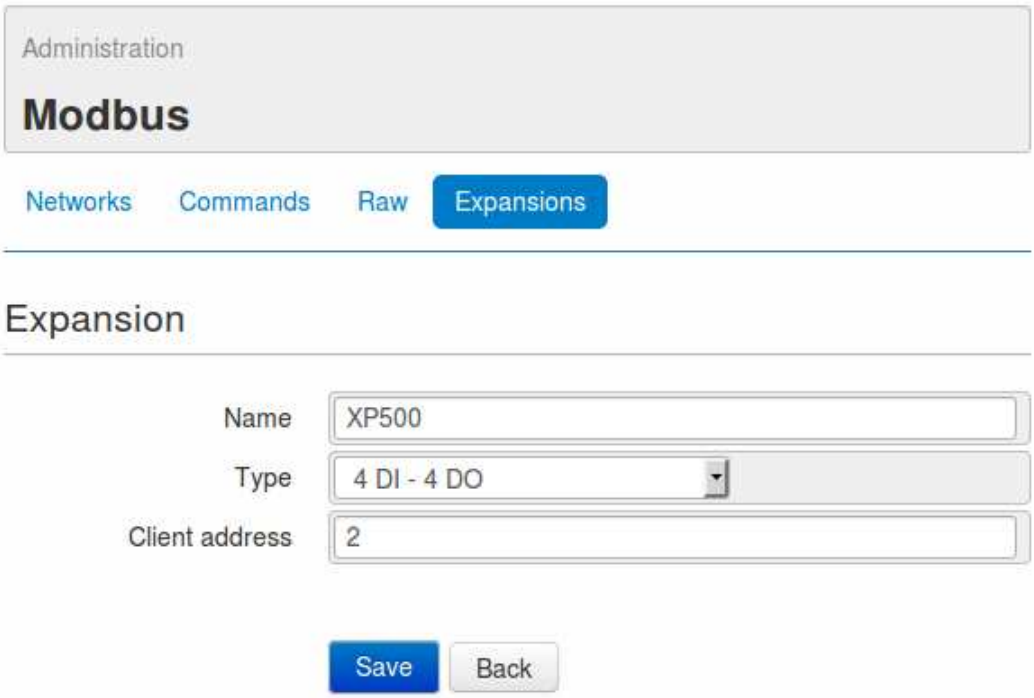


In the field **Value** it will be displayed the value read (in case of reading functions) and a notification message of successfully executed reading/writing will be sent by the WE500.

3.6. Modbus expansions

WE500 includes 8 digital inputs, 2 analogue inputs and 2 digital outputs. The I/O module of WE500 can nevertheless be expanded with one or more additional expansion units of the range **XP500**.

In order to add or edit an expansion unit is necessary to enter the page **Administration** → **Modbus** → **Expansions** and click on **New** or select one of the previously added expansions.



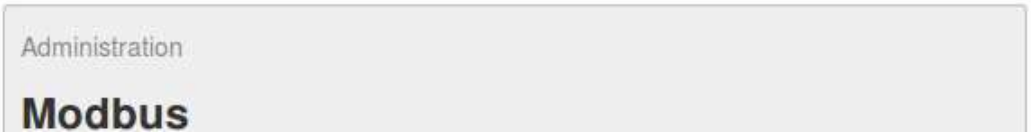
- **Name**: Enter the name to be assigned to the expansion. This name will be used to create a variables group, where the variables referred to the inputs/outputs of the expansion unit will be saved.
- **Type**: It's possible to select the type of expansion unit to be added.
- **Client address**: In this field is selected the slave address to be assigned to the expansion.

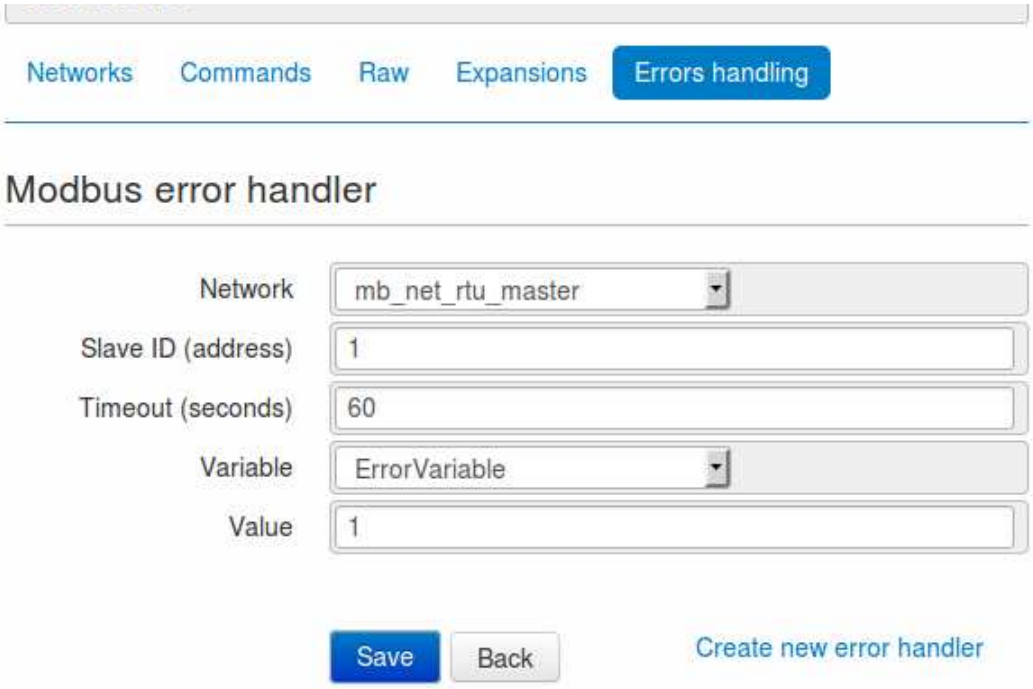
After clicked on **Save**, the WE500 will try to set the client address entered in the connected expansion unit, using the default communication parameters (38400, 8, N,1) and assuming that the expansion is connected to the slave address 1 (according to manufacturing settings). It's therefore recommended, always to keep the slave address 1 free.

Once added the expansion, the WE500 will automatically create all variables and modbus commands (beside the network, if not already available) in order to allow the communication with the XP500. The variables name can be then later on modified from *Variables* (we500_sw_manual_pdf.html#we500-sw-variables-en).

3.7 Manage Modbus errors

WE500 allows to manage the modbus errors on the page **Administration** → **Modbus** → **Errors handling**, clicking on new.





At the occurence of a modbus error it's possible to set a variable at a specific value:

- **Network**: the network where the error occurs
- **Slave ID (address)**: the slave address to be monitored (this field appears only in case of master networks)
- **Timeout (seconds)**: the error is displayed only if available for more than X seconds
- **Variable**: the variable to be set. Selecting **None**, it's possible to avoid the setting of any variable
- **Value**: the value, that the variable should assume at the occurence of the error

Clicking on **Save** the error handling is configured and starts monitoring the errors that may occur on the selected network.

4. Events/Actions

Beside variables, events and actions are the other fundamental elements of the WE500.

An event allows the activation of an action when a variable reaches a certain value/status. For example, an event called warm_room can be intercepted when a variable called temperature is higher than 25°C.

An action is the consequence of the identification of an event. For instance when the event called warm_room is detected, an SMS can be sent to a preconfigured user.

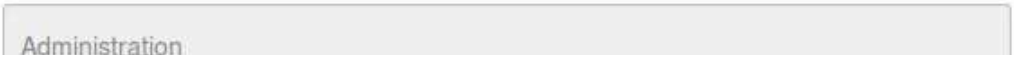
WE500 allows to configure events, that can be associated to actions, in the case that a variable reaches a certain value or status.

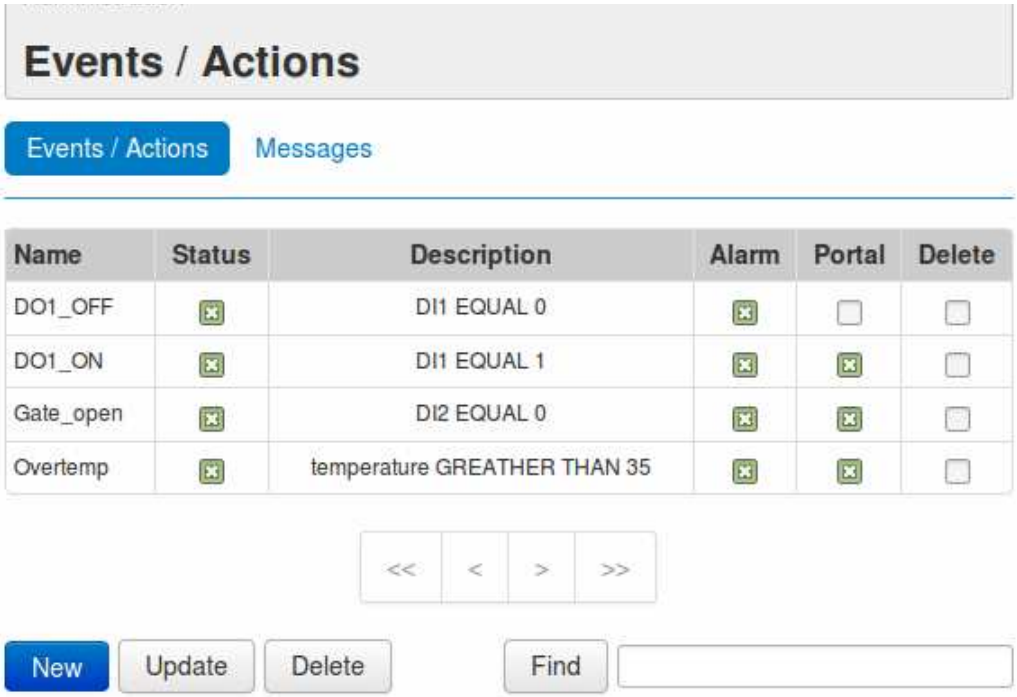
4.1. Events

The events allow the WE500 to acknowledge when a monitored parameter reaches a relevant threshold for the user.

Different types of events are available and each type of event is composed of several parameters, in order to reach a high flexibility in controlling and monitoring the system.

To create an event, enter the page **Administration/Events/Actions** and click on **New**.

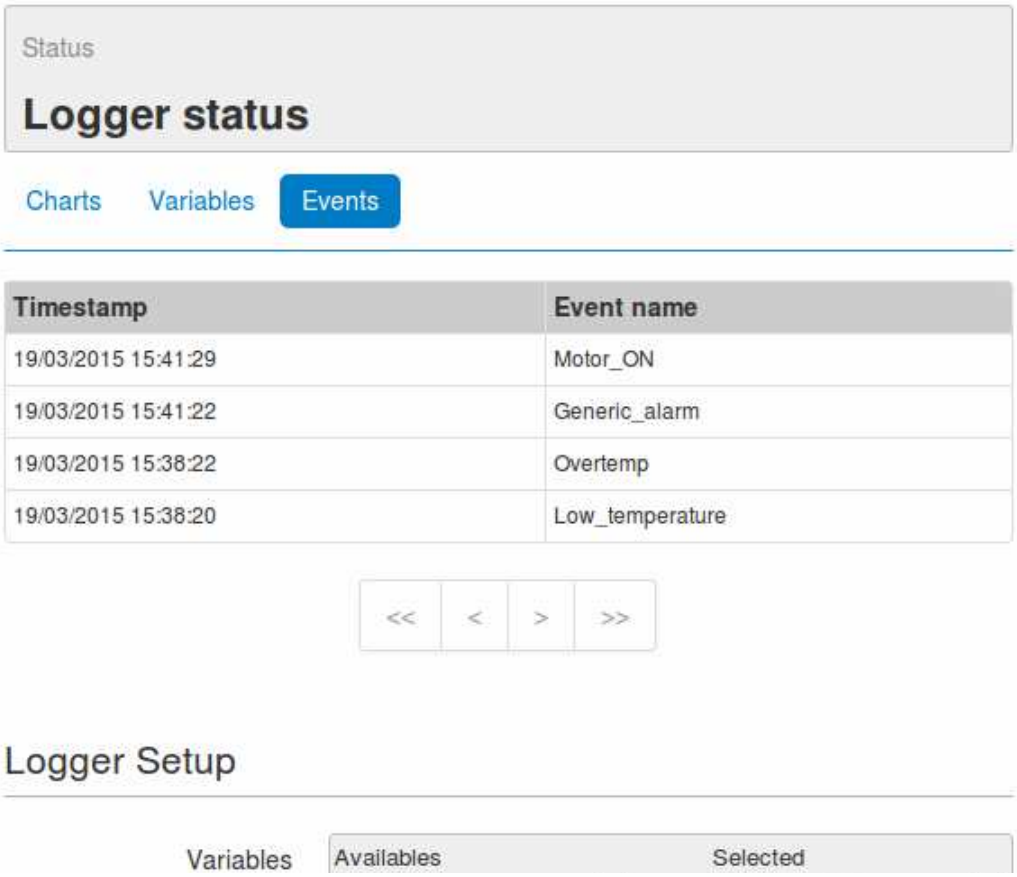


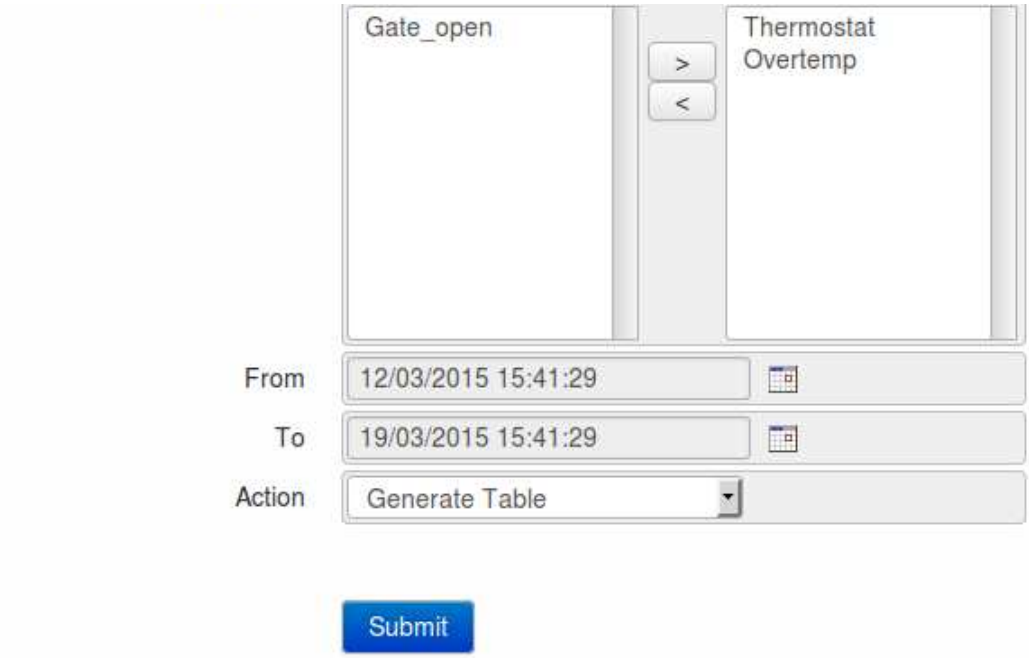


The tab **Delete** allows to cancel one or more selected events. With the tab **Update** it's possible to edit the enabling/disabling of one or more events, to configure events as alarms and send them to a web portal. For a quick search by name of one or more events the Tab **Find** can be used.

All occurred events can be displayed in a chronological chart, entering the page **Status** → **Logger status** → **Events**.

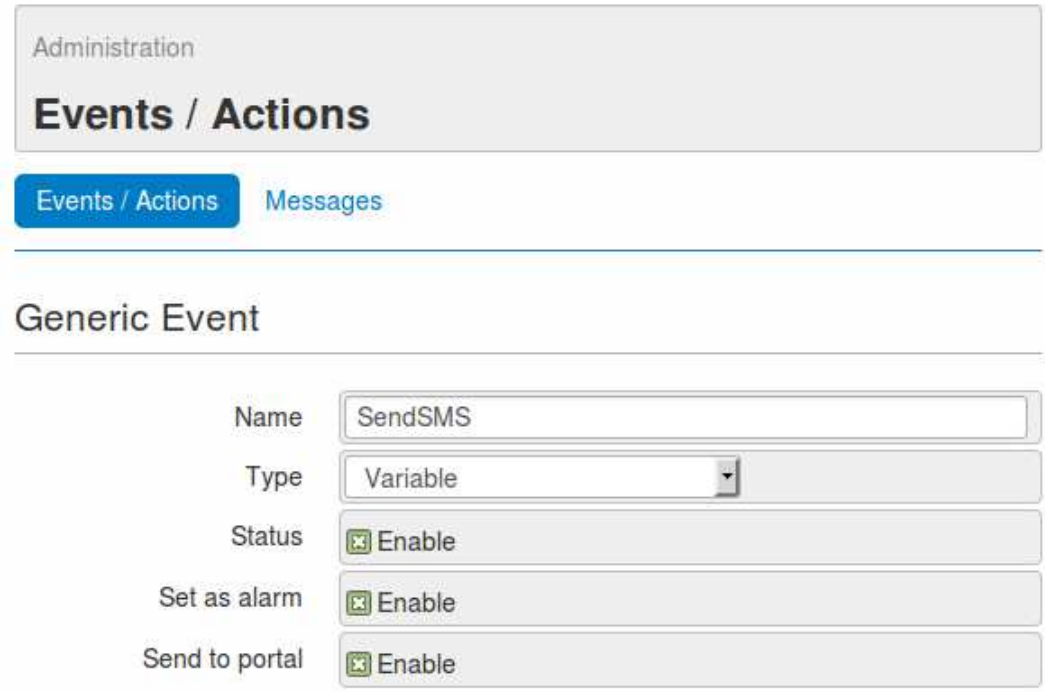
From this page it's possible to display one or more events, by selecting them, and the time interval to be considered, from the relevant list, and possibly export data on CSV or Excel format.





During the creation of an event, and after entering the name, must be selected the type of event among **Variable**, **Events**, **Formula**, **Incoming data** or **Scheduler** (see *5. Scheduler* (we500_sw_manual_pdf.html#we500-sw-scheduler-en)).

Some generic options can be activated according to the selected type of event: it's possible to decide the enabling of the event from **Status**, the visualization as an alarm on the field **Set as alarm** and to send it to a web portal from the field **Send to portal**.



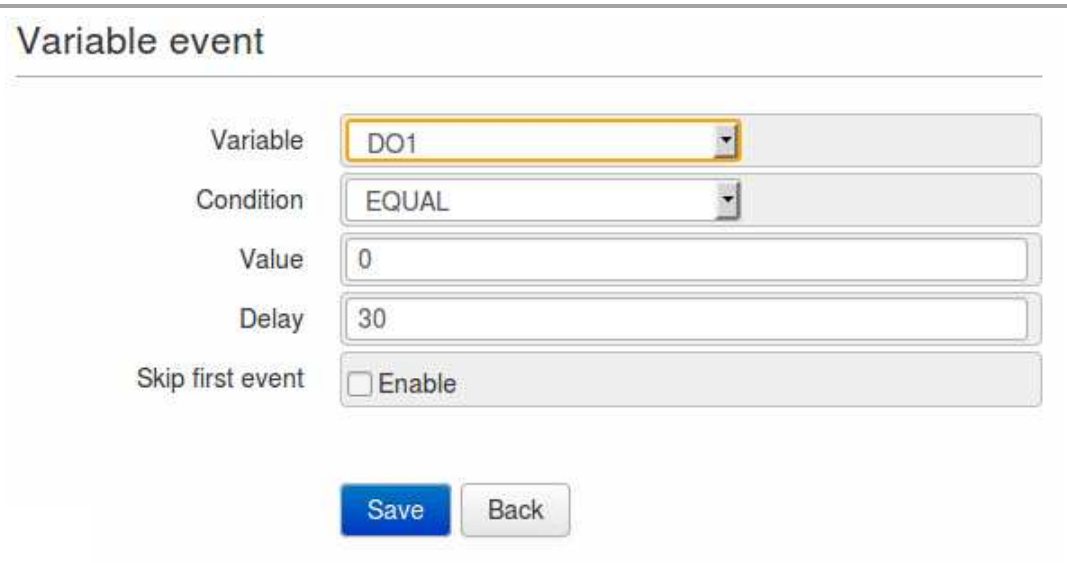
With the option **Set as alarm** enabled, at the occurrence of the event,, a red "X" will be displayed near the name of the relevant variable on the page **Administration** → **Variables status** status, to indicate the presence of a critical condition

The **Send to Portal** option allows to send an event to a web portal. At the occurrence of the event, the WE500 will execute the associated action/s and send to Portal a string containing the name of the event and other additional information.

4.1.1. Event on variable

Event on variable refers to an event that occurs when a variable reaches a defined value or a defined status.
This kind of event is influenced by the behaviour of the variables associated with it.
The Event on variable will be influenced by the delay of the variables in signalling their status and by the time, the variables keep their status.

First of all a variable in the field **variable** has to be selected.



In the drop-down menu is possible to see all previously created variables and select the one to be associated to an event.

The second parameter to be selected is the **Condition**, among the following possibilities: EQUAL, NOT EQUAL, GREATER THAN, GREATER OR EQUAL THAN, LESS THAN and LESS OR EQUAL THAN.

It's now necessary to set the threshold value for the event triggering, i.e. a numeric value will be entered in the field Value, according to the type of the selected variable.

It's possible to set a value in the field **Delay**. The value is expressed in second, the function of this parameter is to postpone the triggering of the event for a defined time.

Finally it's also possible to enable the field **Skip first event**, that allows the WE500 to ignore the first time that an event occurs.

This can be useful, for instance, in case of an analogue variable (with an ever changing value, having a floating mode). Setting a delay it's possible to avoid the triggering of any event, before the value has come to a stabilized value. If the delay has been for example set at 10 seconds, the value entered in the relevant field will be kept until the expiry of the 10 seconds, allowing the execution of any possible events.

Once set all parameters, the situation may be the following:

Variable: Var1

Condition: EQUAL

Value: 3

Delay:10

According to this configuration the event would be triggered 10 seconds after the variable Var1 has reached the value 3.

4.1.2. Event on event

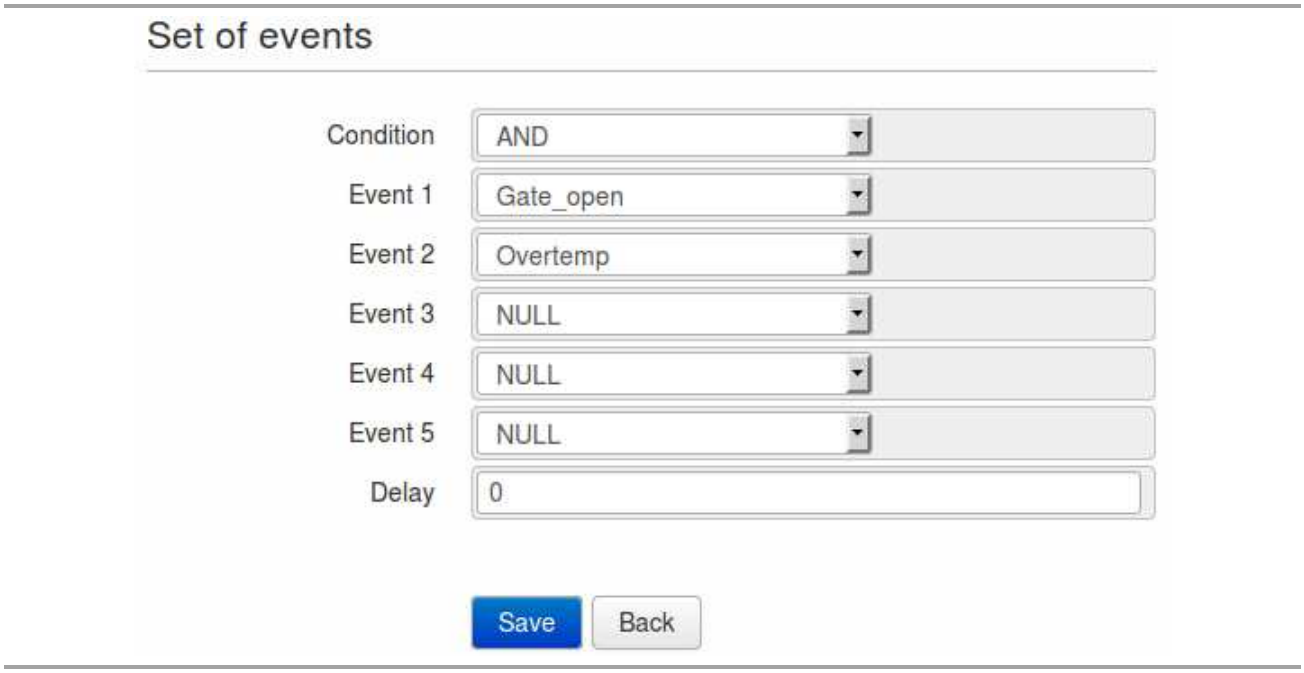
Once defined an event it's possible to use it as an element of another event.
The behavior of the Event on event can be different according to the kind of event used to create it.
The Events on variables, depending on the variables they're associated with, mostly influence the creation of Events on events.

EXAMPLE:

The event "EV1" is configured to occur if the variable "Var1" has value "3"
The event "EV2" is configured to occur if the variable "Var2" has value "5"
We can now define an event "EV3" that will occur if both "EV1" and "EV2" are triggered or if one of them is triggered.

According to the above mentioned example, the events on variable "EV1" and "EV2" may have associated actions or not.
The two will be managed separately by WE500, i.e. if "Var1" reaches value "3"(EV1), defined actions may follow (the same is also for "EV2").
Creating the new event "EV3" it will be possible to define some additional actions to be executed.

Selecting **Events** on the field **Type**, is possible to decide whether to enable or not the event from **Status** and to display it or not as an alarm in the field **Set as alarm**.



If this last option is enabled, at the occurrence of the event, a red "X" will be displayed near the name of the relevant variable on the page **Administration->Variables status**, to indicate the presence of a critical condition.

The field **Condition** allows to select the type of comparison that has to be made between one or more events. The two available conditions are AND or OR.

In the fields **Events 1...5** is possible to select two or more events among those previously created.

Back to the above mentioned example, and assuming that the selected condition is **AND**, the event on event "EV3" would be triggered when "Var1" is equal to "3" (of course considering the set delay) and when "Var2" is equal to "5".

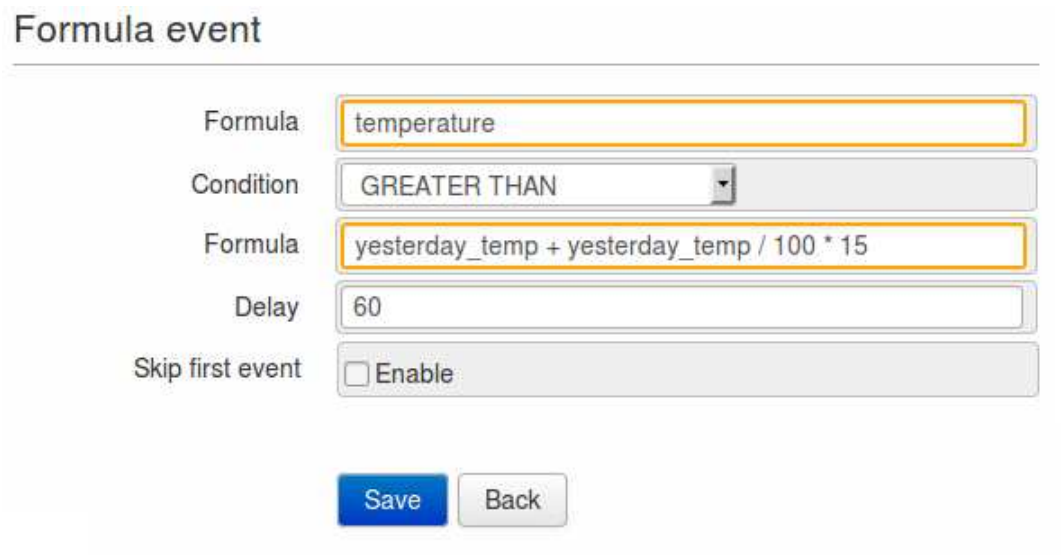
On the other hand, if the selected condition is **OR**, "EV3" would be triggered even if only one among "EV1" and "EV2" should occur.

All events may be used to generate an event on event.

4.1.3. Event on formula

Event on formula is an event that will occur comparing two maths expressions.

Selecting **Formula** on the field **Type**, it's possible to decide whether to enable or not the event from Status and display it or not as an alarm in the field **Set as alarm**.



If this last option is enabled, at the occurrence of the event, a red "X" will be displayed near the name of the relevant variable on the page **Administration->Variables status**, to indicate the presence of a critical condition.

In the fields **Formula** can be entered a real maths formula, that may include several arithmetical operations, constants or variables.

The available operations are:

- Addition (+)
- Subtraction (-)
- Multiplication (*)
- Division (/)
- Exponentiation (^)
- Squared root (sqrt)
- Logarithm (log)
- Sine (sin)
- Cosine (cos)

and constants as:

- e(e)
- logarithm base 2 of e (log2e)
- logarithm base 10 of e (log10e)
- square rooted of pi (2_sqrtpi)
- square rooted of 2 (sqrt)
- square rooted of 1/2 (sqrt1_2)

The use of round brackets is also supported.

Beside the formula to be compared, it's also necessary to select a *Condition* among the following: EQUAL, NOT EQUAL, GREATER THAN, EQUAL OR GREATER THAN, LESS THAN, LESS OR EQUAL THAN.

It's possible to set a value in the field **Delay**. The value is expressed in second, the function of this parameter is to postpone the triggering of the event for a defined time.

Finally it's also possible to enable the field **Skip first event**, that allows the WE500 to ignore the first time that an event occurs.

Here is an example of event on formula:

Formula: (Var1+5)/2 Condition: EQUAL Formula: Var2 Delay: 10

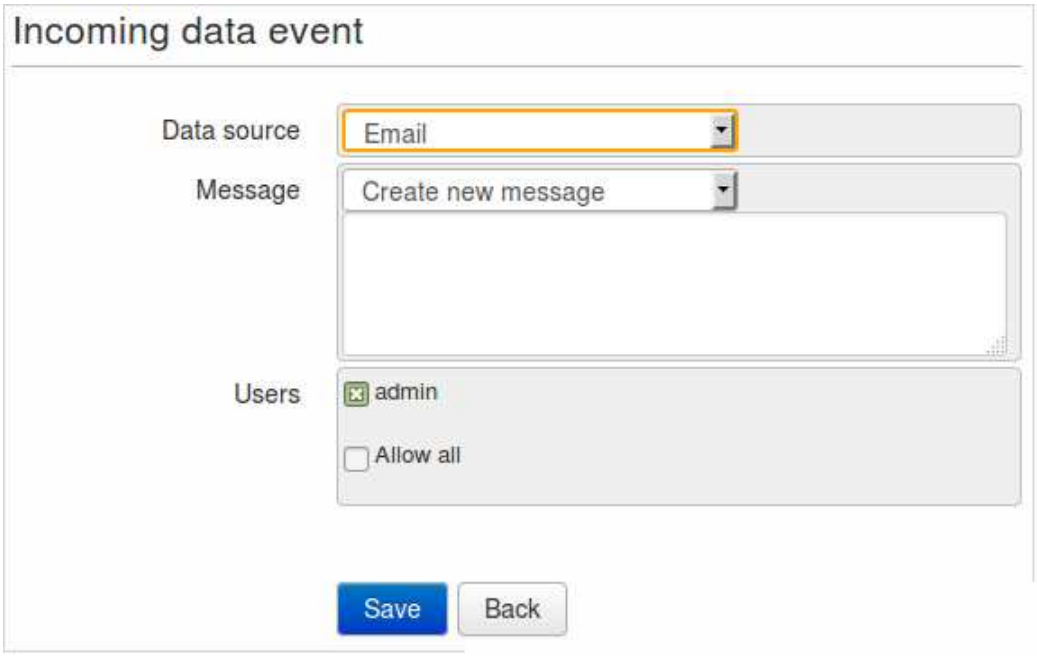
The event will be triggered when the result of the formula “(Var1+5)/2” will remain equal to the value of “Var2” for at least 10 seconds.

4.1.4. Incoming data

The incoming data are the events coming from external factors.
Three are the types of external events managed by the WE500:

- **SMS**
- **Email**
- **Ring**

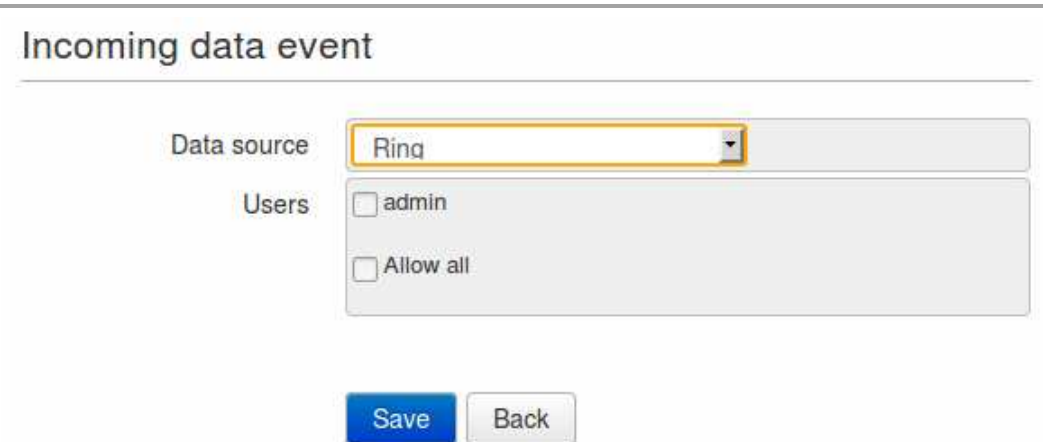
Selecting **SMS** or **Email** on the field **Data source**, it’s possible to enter any text in **Message** and enable one or more users/groups from the filed **Users**.



Thus the event will occur when the WE500 receives an SMS or an Email, containing the specified text, sent by an authorized user in **Administration –> Users**.

Note that the WE500 checks only the object of the mail (relevant commands or instructions must therefore entered in the object and not in the body of the email).

Selecting **Ring** on **Data source** there will be the possibility of choosing one or more of the registered users.



The event will occur, when the WE500 receives a ring from one of the authorized users. At ring receipt, the WE500 will disconnect the call, avoiding any costs.

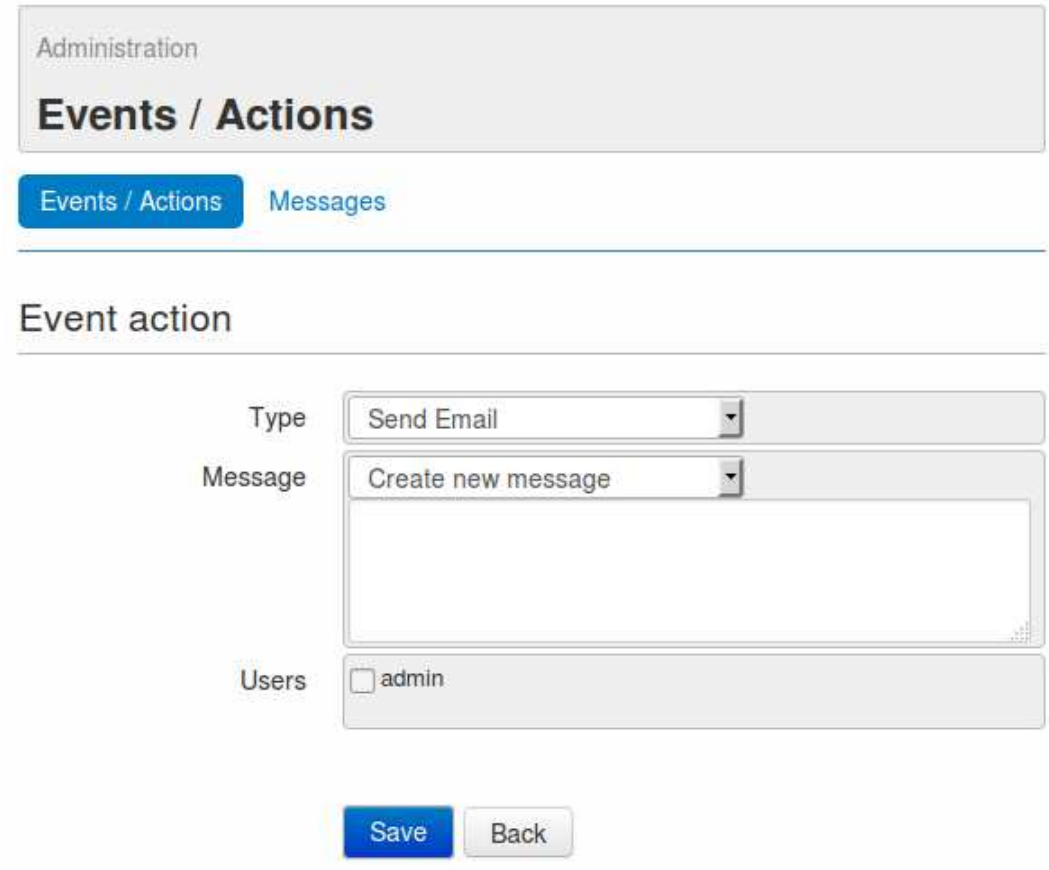
It's recommended to disable all mailbox or call waiting functions of the SIM installed in the device. For each user is possible to define only a single **Ring** event.

4.2. Actions

Actions allow the WE500 to react to the conditions defined in an event. Through the actions, the WE500 can monitor a system and then send to the users or to other systems the collected data.

Once created an event and clicked on **Save**, a new section called **Actions** will open, where the link **Add actions** is available.

Clicking on above mentioned link a new page will be entered.



On this page is possible to create an action for the event previously defined. The possible actions are the following: **Send Email**, **Send SMS**, **Execute a Command**, **Ring a User**, **Reboot** and **Poweroff**.

Once created an action, this will be available in the list under the event. It's possible to create up to5 actions for each single alarm.

4.2.1. Send Email

Selecting **Send Email**, it's allowed to enter the text to be sent at the occurrence of the event.

If previously used messages are available it's possible to select them from the field **Message**, using the drop-down menu.

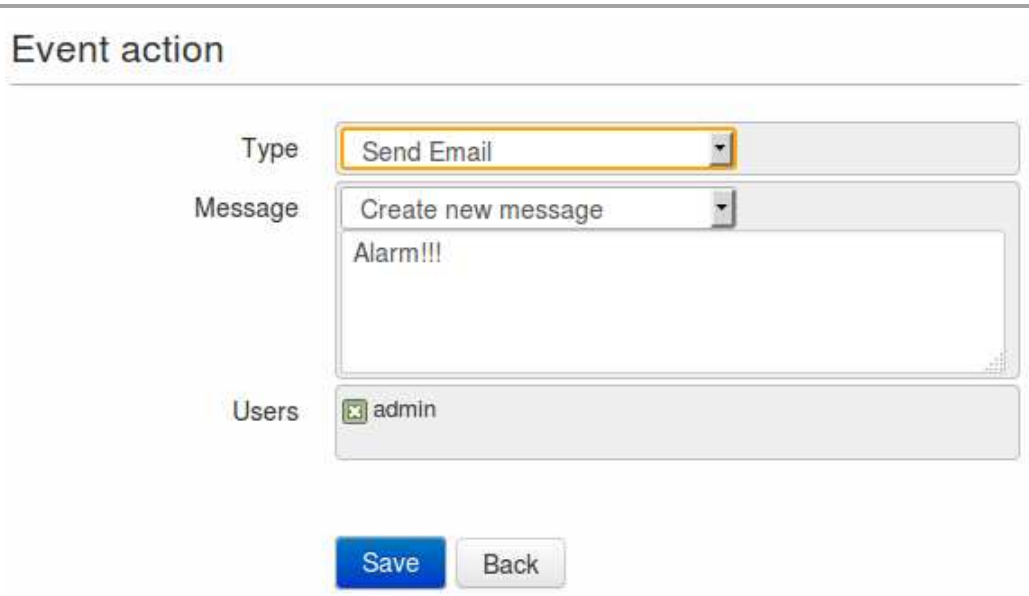
For entering a new text, select **Create new message**.

To modify an already existing text, enter the messages page using the link on top of the page or the link in the left side menù **Administration –> Events/Actions –> Messages** and select the message to be modified.

Once the message is defined, it's possible to select the receivers among the several available users and groups.

After definition of the event and action that generate the email to be sent to a defined user, some more conditions are necessary:

- Availability of a LAN or GPRS/HSPA connection (see section *10.1. Connectivity* (we500_sw_manual_pdf.html#we500-sw-networking-en) and *12.3. Ping* (we500_sw_manual_pdf.html#we500-sw-ping-en))
- The configured user/s should be enabled to receive notifications emails at a valid email address (see *9. Users* (we500_sw_manual_pdf.html#we500-sw-users-en))
- The mail service must be properly configured (see *10.1.7. Email* (we500_sw_manual_pdf.html#we500-sw-email-en))



All the text used for the existing actions are available on the page **Administration/Event/Actions/Messages**. From this page is possible to cancel any message, by clicking on the relevant tab and then **Delete**, or edit one or more messages by clicking upon it.

On the messages to be sent at the occurrence of defined events, it's possible to write the value of one or more variables: it's enough to report on the text of the message **$** and the name of the variable.

EXAMPLE

If a variable "VAR1" has value 5.7, and this should be reported in the alarm message, the text of the message should be the following:

Alarm high level. The level is $Var1 meters

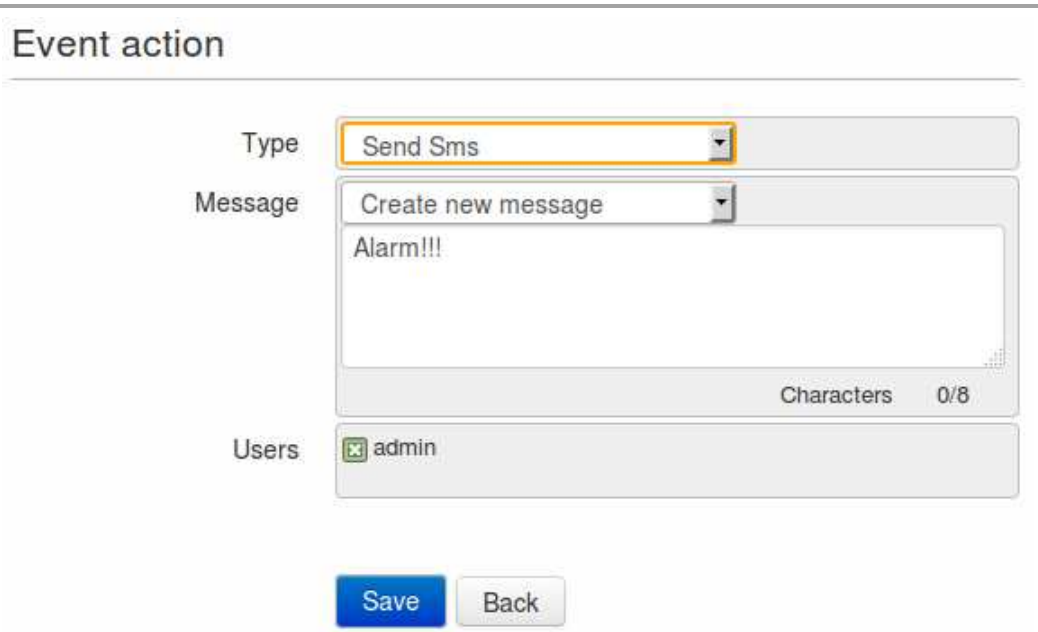
The message that will be sent to the configured users will then be:

Alarm high level. The level is 5.7 meters

Inside one single message more variables can be reported.

4.2.2. Send SMS

Selecting **Send SMS** it's possible to enter the text to be sent at the occurrence of a defined event.



If previously used messages are available it's possible to select them from the field **Message**, using the drop-down menu.

For entering a new text, select **Create new message**.

To modify an already existing text, enter the messages page using the link on top of the page or the link in the left side menù **Administration –> Events/Actions –> Messages** and select the message to be modified.

Once the message is defined, it's possible to select the receivers among the several available users and groups.

After definition of the event and action that generate the SMS to be sent to a defined user, some more conditions are necessary:

Network Availability The configured user/s should be enabled to receive SMS at a valid telephone number (see section *9.1. How to create a new user* (we500_sw_manual_pdf.html#we500-sw-new-user-en)) The SMS service must be properly configured (see section *10.1.5. SMS* (we500_sw_manual_pdf.html#we500-sw-sms-en))

All the text used for the existing actions are available on the page **Administration/Event/Actions/Messages**. From this page is possible to cancel any messages, by clicking on **Delete**, or edit one or more messages by clicking upon it.

On the messages to be sent at the occurrence of defined events, it's possible to write the value of one or more variables: it's enough to report on the text of the message $ and the name of the variable.

EXAMPLE:

If a variable "VAR1" has value 5.7, and this should be reported in the alarm message, the text of the message should be the following:

Alarm high level. The level is $Var1 meters

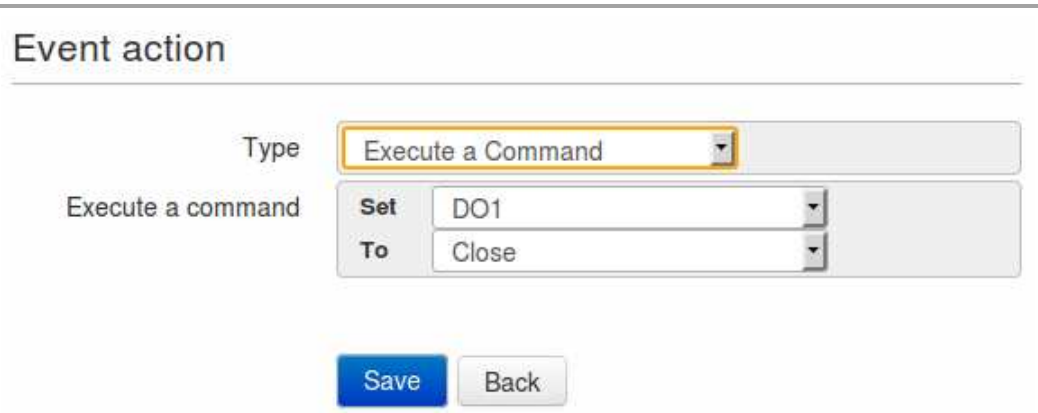
The message that will be sent to the configured users will then be:

Alarm high level. The level is 5.7 meters

Inside one single message more variables can be reported.

4.2.3. Execute command

Selecting **Execute a Command** in the field **Type** is possible to choose a variable among those available in the list below and then specify a value in the filed **To**.



Thus, at the occurrence of the defined event, the selected variable will be set at the value entered in the field **To**.

The drop-down menu could miss some of the already created variables. The reason is that the system automatically recognizes the variables, where the value can be modified:

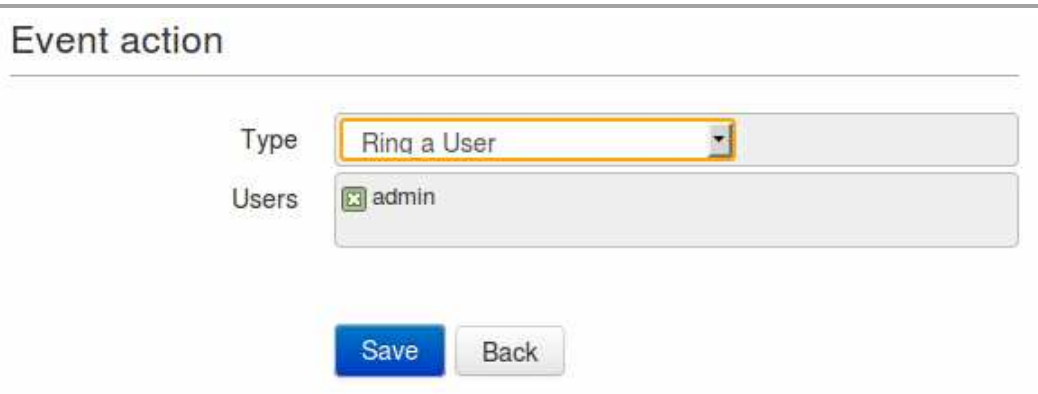
- DO Varaiables
- Virtual variables
- Modbus write variables
- Modbus write/read variables

For the same reason the following variables will never be included in the menu: * DI variables * AI variables * Modbus read variables

Through an action of **Execute a Command**, it's possible to create some automatic operations at the occurrence of a certain event, as for example to close the contact of an output if an analogue input reaches a defined threshold.

4.2.4. Ring a user action

Selecting **Ring a user** in the field **Type** it's possible to choose one or more users/groups of users, that WE500 will send a voice call in case the associated event occurs.



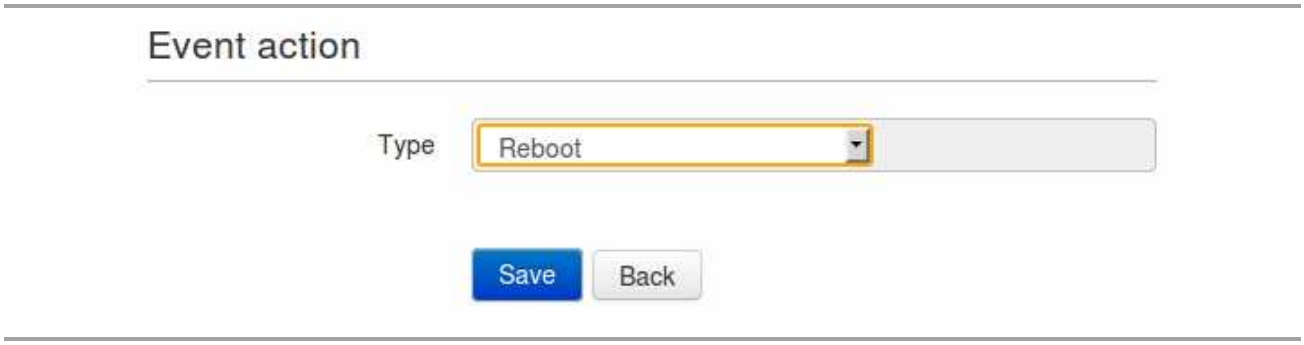
If no feedback will be received, the WE500 will stop the call automatically after 30seconds, and then pass to the

following user/s in the list.

If the user rejects the call, the WE500 will immediately pass to the following user. Likewise, if a user should answer, the WE500 will pass to the following user in the list immediately after the termination of the call.

4.2.5. Reboot action

Selecting **Reboot** in the field Type, it's possible to reboot the WE500 at the occurrence of the associated event.



4.2.6. Power off action

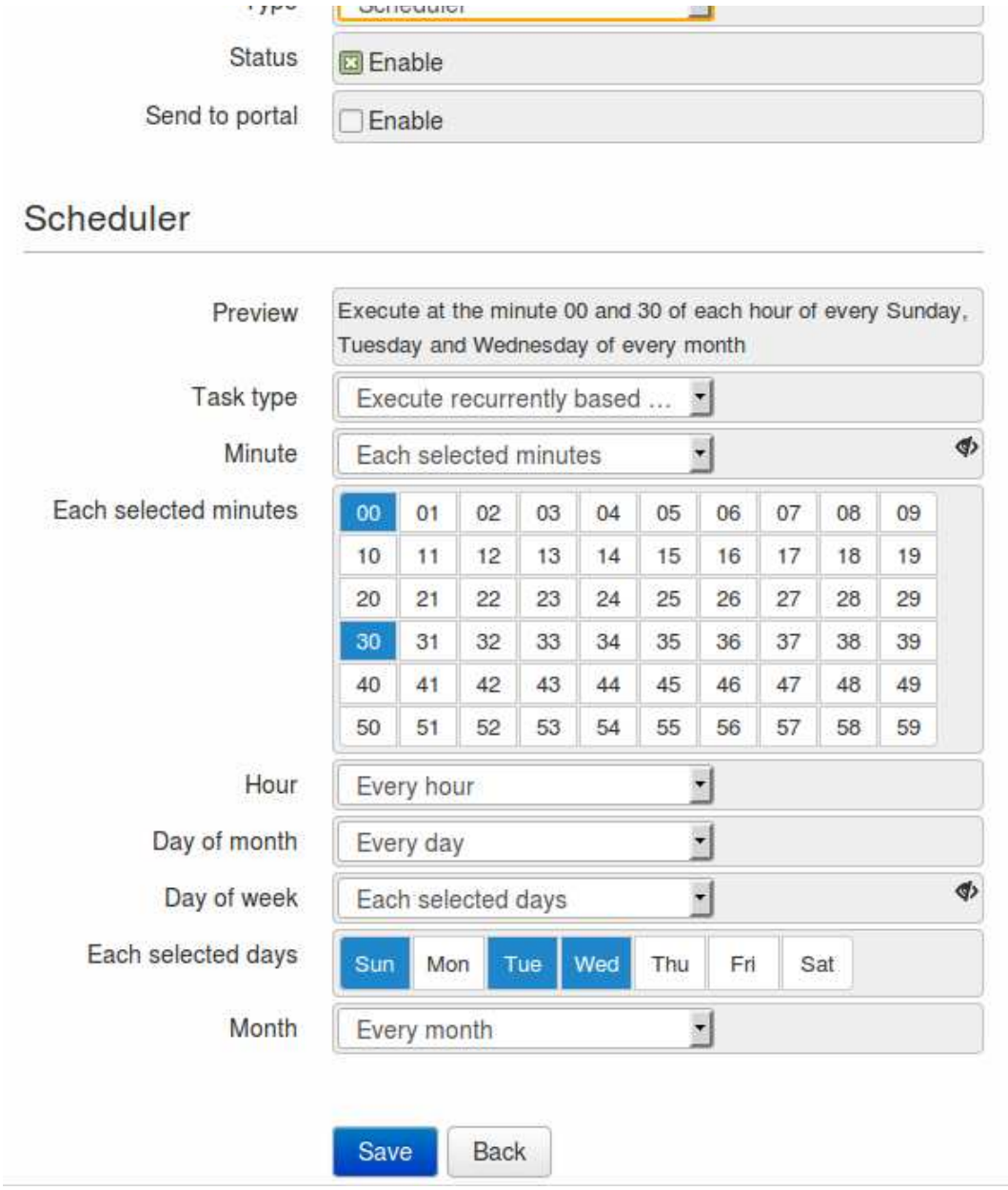
Selecting **Poweroff** in the field **Type**, the WE500 can be turned off at the occurrence of the associated event

A typical situation where the controlled power-off of the device can be useful, is when the WE500 is battery powered (for example using a **UPS500**).

When the battery is low, this could send a request of controlled power-off to the WE500 (through a digital/analogue input), in order to avoid unexpected current interruptions while the system is working.

5. Scheduler

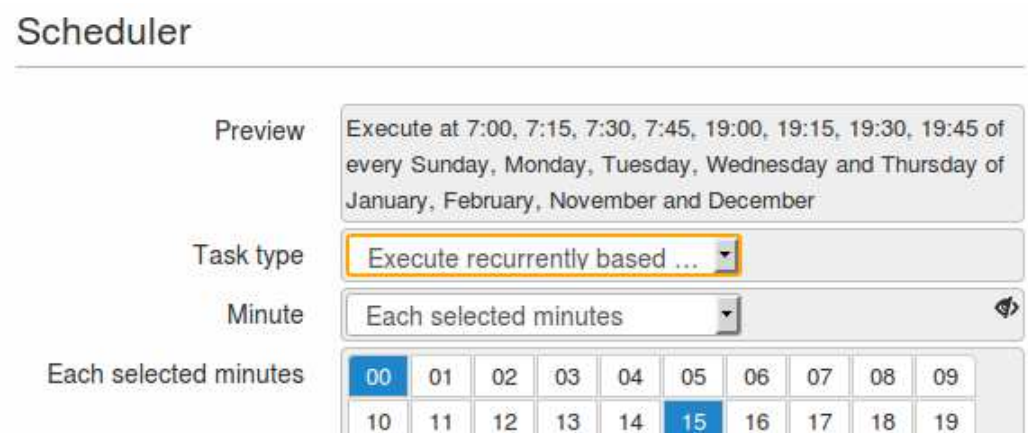
WE500 allows to define planned actions, to be executed periodically or only once. To access the scheduler functions, enter the section **Event/Actions** (see section *4. Events/Actions* (we500_sw_manual_pdf.html#we500-sw-event-action-en)). The action, that the Scheduler can execute are those available for any other type of event (*4.2. Actions* (we500_sw_manual_pdf.html#we500-sw-action-en)). Selecting the option **Scheduler** on the field **Type** it's possible to enter the dedicated section.

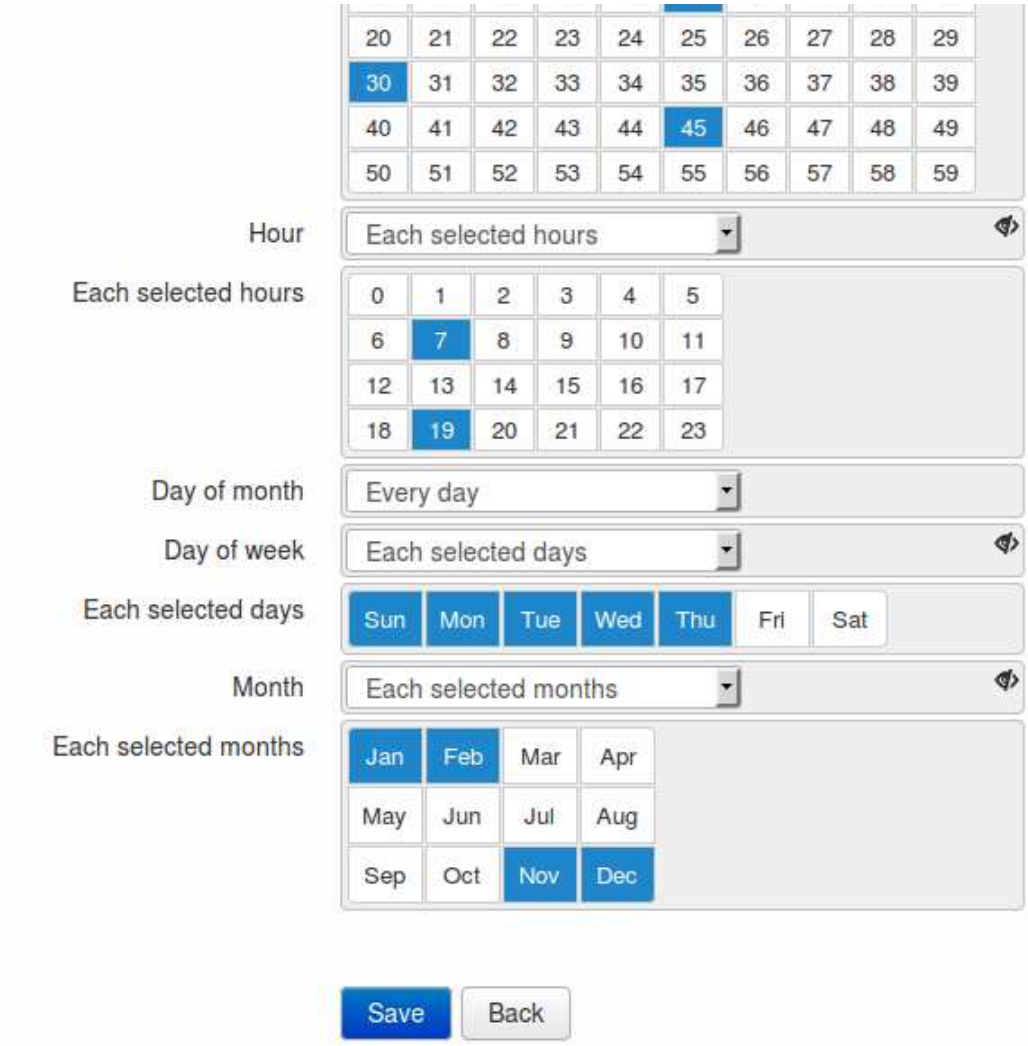


Different combinations are available in the three following options: **Execute recurrently based on a schedule**, **Execute every** and **Execute only once**.

5.1. Execute recurrently

This option allows to enter the calender and specify when the action has to be executed.





- **Minute**: in this field is possible to set the exact minute in the hour (between 00 and 59), when the action has to be executed. It's allowed to set more than one minute (even all minutes).
- **Hour**: in this field is possible to set the hour of the day (0-23), when the action has to be executed. Also in this case is allowed to select more than one options (even all).
- **Day of month**: in this field it's possible to select the day of the month (1-31), when the action has to be executed. It's allowed to select more than one option (even all).
- **Day of week**: in this field it's possible to schedule the action execution selecting the day of the week. Also in this case it's possible to select more than one day (even all).
- **Month**: The field **Month** allows to define in which month the action has to be executed, allowing to select more than one month (even all).

If, for instance, we want to schedule the execution of an action every 15 minutes:

In the field **Minute** select the numbers *00*, *15*, *30*, and *45*.

Assuming that we want to limit the execution of the action between 10.00 and 11.00am, in the field **Hour** has to be selected *10*.

If the action has to be executed every Monday and the last day of every month: in the field **Day of month** select *31*, while in the field **Day of week** select the option *Mon* (Monday).

If the action has to be executed only on the first and on the last month of the year, select *Jan* (January) and *Dec* (December) in the field **Month**.

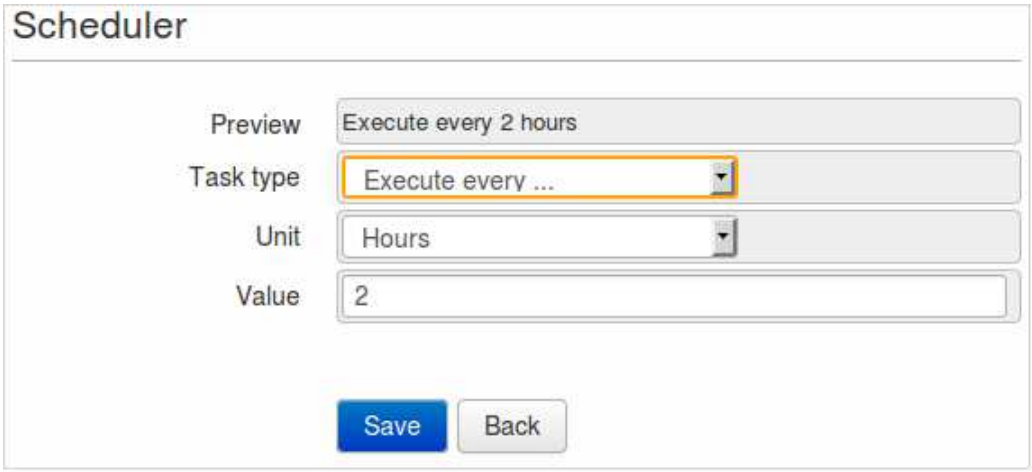
The field **Preview** allows us to see when the action is going to be executed according to the current configuration. In case of above mentioned example it will be displayed:

Execute at 10:00, 10:15, 10:30, 10:45 if the day is 31 or is Monday of January and December

The action will be therefore executed on every Monday and end of month of January and December at 10:00, 10:15, 10:30 and 10:45.

5.2. Execute every

The option Execute every allows to execute an action at regular intervals. In the field Unit it's possible to select the measurement unit among **Seconds**, **Minutes**, **Hours** and **Days**.



- **Seconds**: Entering a value "N" in the field Value, the action will be executed every "N" seconds.
- **Minutes**: Entering a value "N" in the field Value, the action will be executed every "N" minutes.
- **Hours**: Entering a value "N" in the field Value, the action will be executed every "N" hours.
- *Days**: Entering a value "N" in the field Value, the action will be executed every "N" days.

For example, if we want an action to be executed every hour:

Select *Hours* in the field **Unit**.

Enter *1* in the field **Value**.

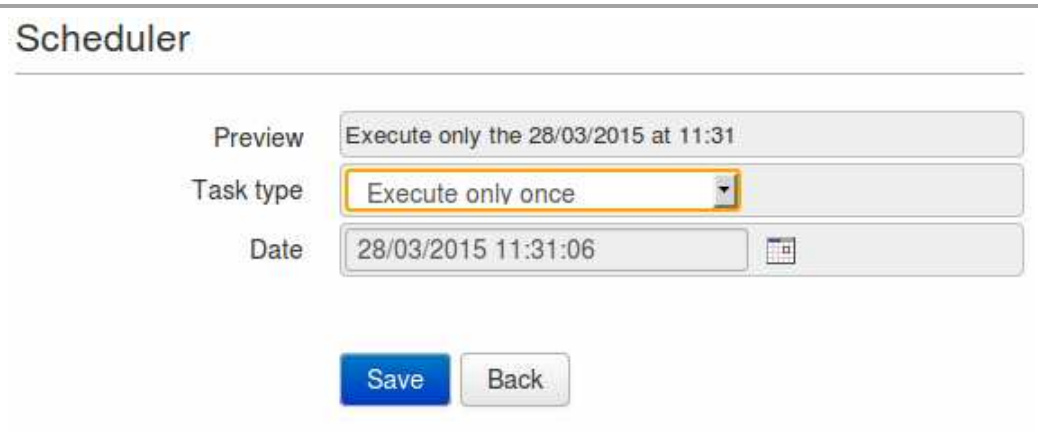
Even in this case, the field **Preview** will give the possibility to display when the execution of the action is scheduled. According to the above example, the field Preview will display:

Execute every hour

The action will then be executed at the beginning of every hour.

5.3. Execute only once

The option **Execute only once** allows to enter the calender and define when the action has to be executed.



Clicking on the icon located on the right side of the field Date, the calender will open and allow to select the hour, the day, the month and the year, when the action has to be executed. Once the action has been executed, the event will be deleted.

For example, if an action has to be executed on the 31 of January 2020 at 12:30, it's necessary to scroll down the calender until the desired data, then select the day and fill in the fields referred to the hour. Then click **OK** for confirmation.

6. Variables monitoring

Beside receiving notification in case of alarms, it's allowed to interrogate and monitor the variables status at any time.

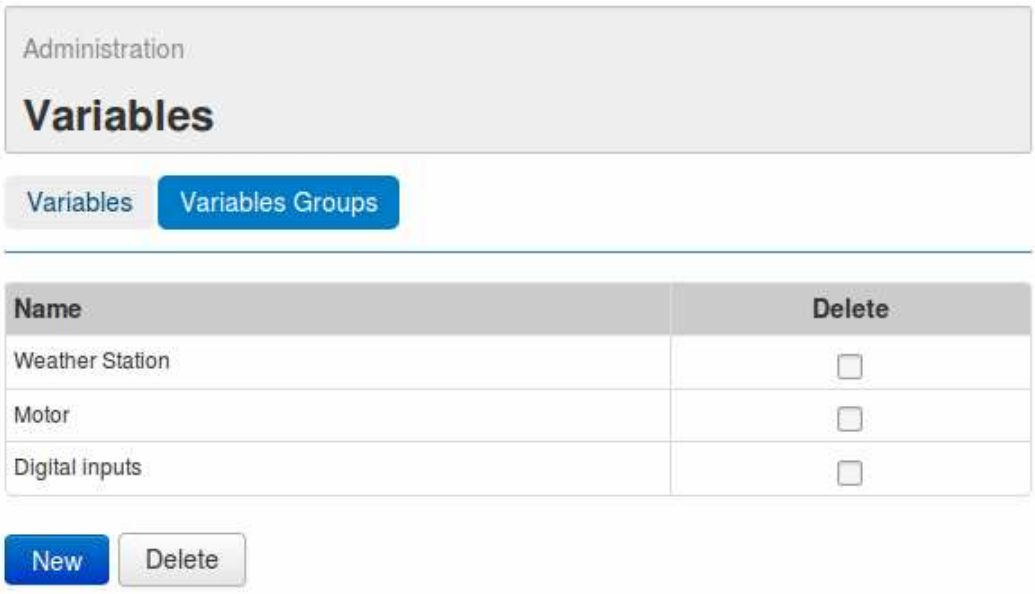
The available procedures to interrogate the status and the value of a variable are the following:

- On Page **Status** → **Variables status**
- **Set/Get** SMS and Email
- **Incoming data**

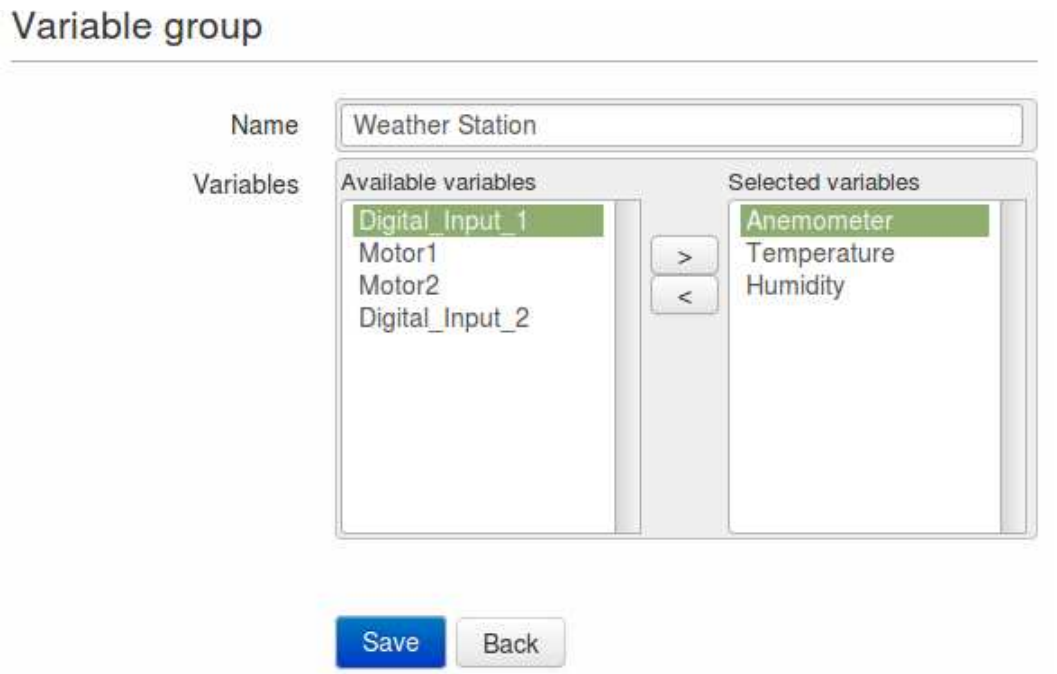
6.1. Variables status

The page **Status** → **Variables Status** contains and displays all created variables. Variables are listed in alphabetical order and can be arranged in groups.

It's possible to create one or more variables groups on page **Administration** → **Variables** → **Variables Groups**:



Clicking on **New** a new page is entered, where all created variables are available.

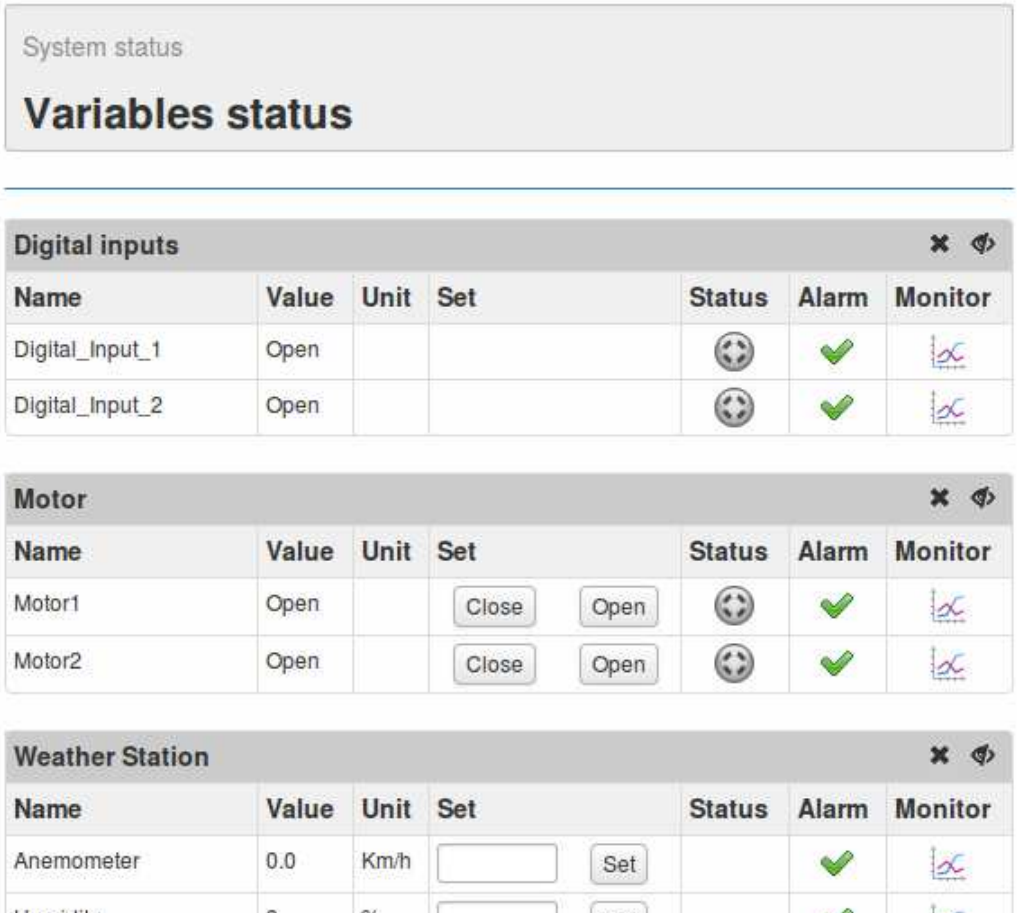


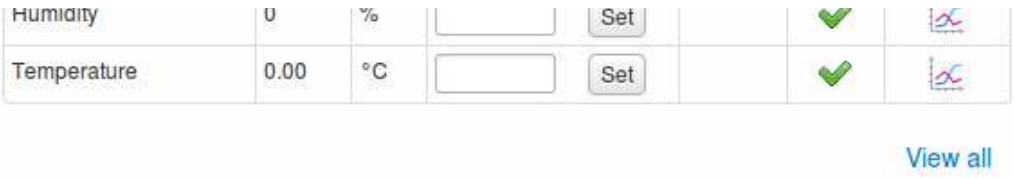
After having selected a name, it's possible to choose the variables to be included in the group by selecting them from the **Available variables** list.

Once confirmed through the tab **Save**, it's possible to find the new added group on the page **Variable status**.

After the creation of the first group, all the variables not associated to any group will be included by default in the group **Others**.

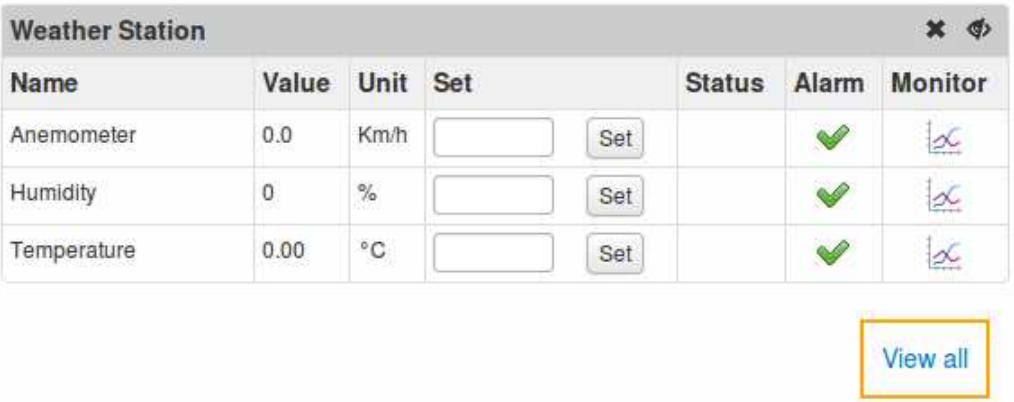
Returning on page **Status** → **Variables Status** Status the following situation will be displayed:





On the top right corner of the name tab, two icons are shown:

1. cancel group: clicking on this icon the group is deleted from the page, but the group remains saved and all its variables are active.
2. hide group: clicking on this icon the group is reduced to the only name, and the varibels are hidden. Also in this case the variables functionality is not impaired.



It's possible to recall and display the hidden or reduced groups clicking on View all, positioned in the bottom right corner of the page.

The table with all variables is divided into 7 columns:

- **Name**: name of variable
- **Value**: numeric or mnemonic value of variable. This column will remain void in case of modbus write-only variables (being a write-only variable it's not possible to know the status).
- **Unit**: displays the measurement unit assigned to the variable. For the variables with no measurement unit the column will remain void.
- **Set**: Allows to set a value (or status) to the editable variables (modbus write, modbus read write, DO, Virtual). In case of modbus variables write 1bit, read/write 1bit and DO, the defined status (open/closed) will be displayed as a choice for changing the variable status. For all other modbus variables: write, read/write and for the virtual variables, it's possible to enter a numeric value and confirm the choice clicking on **Set**.
- **Status**: In case of modbus variables 1bit, DI and DO variables, an icon showing the status of the variable will be displayed: green or gray , according to the status and configuration of the variable.
- **Alarm**: There's a column that shows the alarm status of a variable. The icon indicates that no active alarms are available. The icon indicates on the other hand the presence of an event configured as an

alarm.

- **Monitor**: For all the variables having a readable status it's possible to click on the icon positioned on the column Monitor in order to display a chart in real time. The value will be refreshed every 5 seconds, and the chart will show the records of the last 5 minutes.

The page **Status** → **Variables Status** is automatically refreshed every 5 seconds. It's therefore possible to display possible status variations without refreshing the page manually.

6.2. Set/Get via SMS/Email commands

It's possible to interrogate or modify the variable status using a suitable syntax via SMS or Email.

According to the type of variable it will be possible to read or write a value.

6.2.1. Set

The variables that can be modified in their value through the SET command are the following: counters on digital inputs, digital outputs, modbus write variables (and read/write) and virtual variables.

The **SET** command can be used both through SMS and Email. In both cases it's necessary to define the parameters of the users, authorized to send commands to a WE500 (telephone number for the SMS, email address for the email). For authorizing the users to send command, it's necessary to enable the relevant functions on the user configuration page. Also the SMS and/or the Email service (in this last case the incoming email service will be enough) must be enabled.

Once appropriately configured the WE500, it's possible to use the following syntax:

Set Variable Name=Value

Assuming for example,that the virtual variable "Var1" has to be set with value "5", the SMS to be sent will be the following:

Set Var1=5

If the command will be sent by Email, the same syntax, as in the above example, has to be reported on the Email's object. If more than one variables value have to be set, it's enough to separate each command with a space:

Set Var1=5 Var2=10 Var3=15

When writing the commands it's important to respect the correct spelling of the variables name.

6.2.2. Get

All variables can be read, with the only exception of the modbus write-only variables.

The **GET** command can be used both through SMS and Email. In both cases it's necessary to define the parameters of the users, authorized to send commands to a WE500 (telephone number for the SMS, email address for the email). For authorizing the users to send commands, it's necessary to enable the relevant functions on the user configuration page. Also the SMS and/or the Email service (both incoming and outgoing) must be enabled.

Once appropriately configured the WE500, it's possible to use the following syntax:

Get Variable Name Value

Assuming for example, that the value of the virtual variable "Var1" has to be interrogated, the SMS to be sent will be the following:

Get Var1

If the command will be executed by Email, the same syntax, as in the above example, has to be reported on the Email's object. If more than one variables value have to be interrogated, it's enough to separate each command with a space:

Get Var1 Var2 Var3

When writing the commands it's important to respect the correct spelling of the variables name.

6.3. Customize commands

Using the function **Incoming data** it's possible to create customized commands, both for setting the value of one or more variables, and for create status messages.

If you want to create a customized command to be sent as text either via SMS or Email, or to be recalled by Ring, it's necessary to define an **Incoming Data** event (for further info see *4.1.4. Incoming data* (we500_sw_manual_pdf.html#we500-sw-event-incoming-en)) and create then **Execute command** actions (see *4.2.3. Execute command* (we500_sw_manual_pdf.html#we500-sw-action-cmd-en)).

Through this procedure is possible to set the status of more than one variables.

On the other hand, if it's necessary to create a customized command in order to get the value of one or more variables, it's possible to use the symbol **$**:

Creating an **Incoming data** event and defining afterwards an action as **Send Email** or **Send SMS** (see *4.2.2. Send SMS* (we500_sw_manual_pdf.html#we500-sw-action-sms-en) and *4.2.1. Send Email* (we500_sw_manual_pdf.html#we500-sw-action-email-en)), it's possible to define the message, that the WE500 has to send to the selected users.

In the message it's possible to include the name of one or more variables after the symbol **$**. When the message will be sent, the WE500 will replace *$variable_name* with the value of the same variable.

EXAMPLE:

Assuming variable "Var1" having value "5,7".

The message text to be defined in the action could be

The level is $Var1 meters

The message that will be sent to the defined users will be:

The level is 5,7meters

More than one variables can be included in one single message.

---

7. Data sending

All variables with known status can be sent to an Portal or Web Server, if appropriately configured.
The automatic sending of the variable values can be very useful, where several WE500/devices should be centrally managed to monitor the relevant variables, avoiding a direct connection and interrogation of the web interface of each single device.
It will then be possible to elaborate charts and tables with the collected data, according to the configuration of the Portal.

Two steps are necessary to let the WE500 sending the variables values:

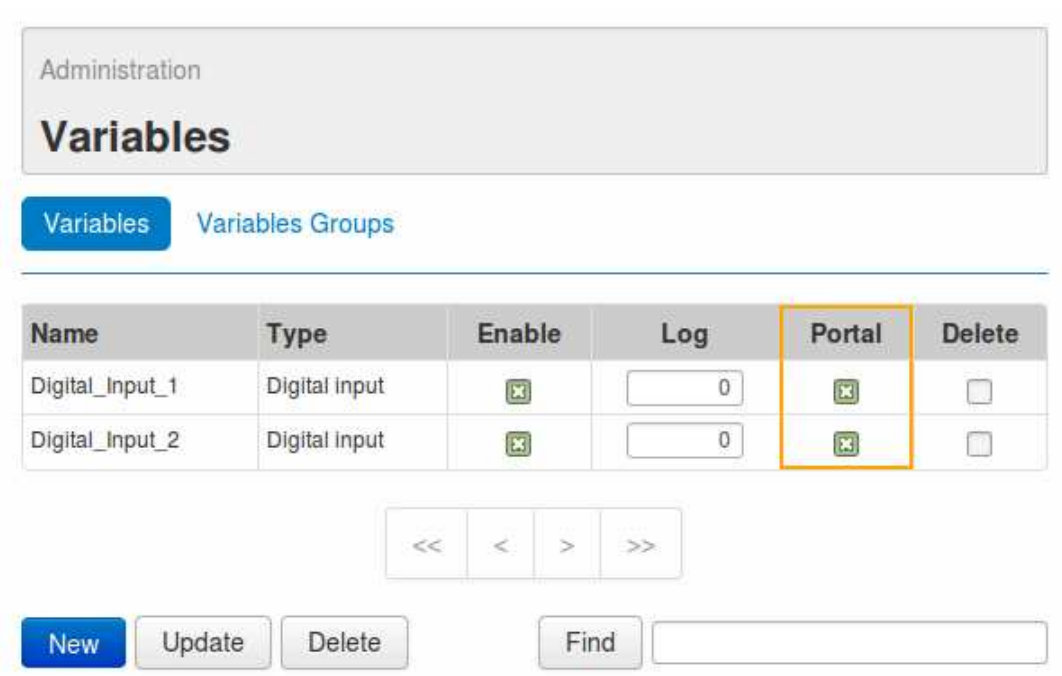
- The enabling of the variables
- Configuration of method and destination of the sending

The export of the data to a server is made in "csv" files.

7.1. Enabling of the variable for the data sending

In order to allow the data sending to a Portal, it's first of all necessary to enable this function on the relevant variable/s. This can be made on the variable creation page, by enabling the option **Portal sending**.

It's possible to enable/disable the option of data sending to portal also from the page **Administration** → **Variables**, selecting (or deselecting) the column **Portal** and clicking then on **Update**.

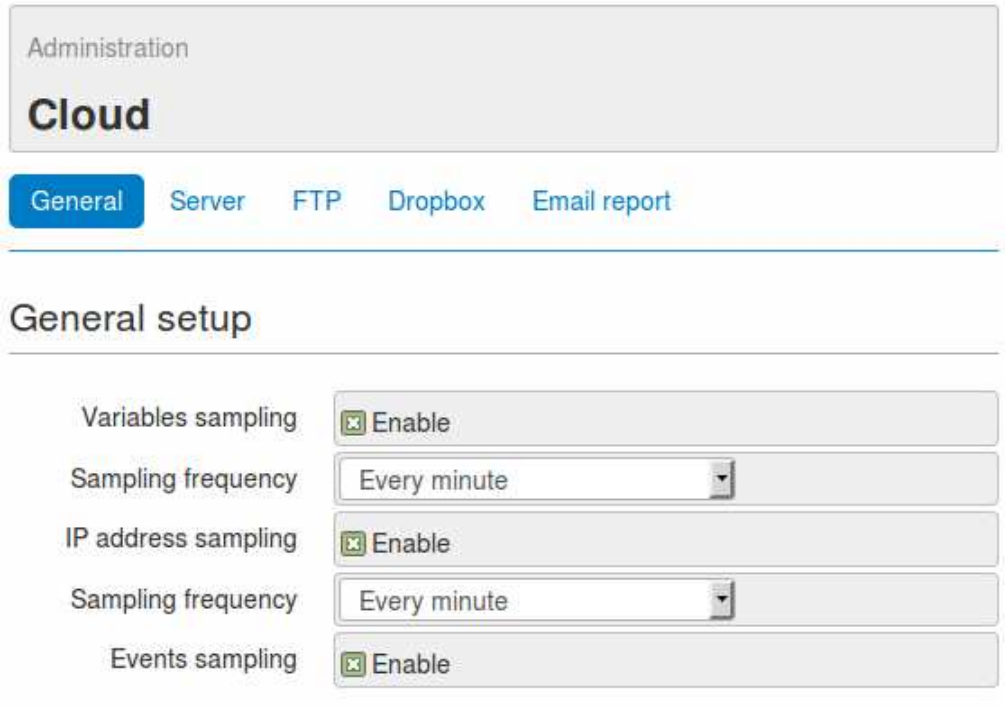


7.2. Configuration data sending

After the selection of the variables to be enabled for data sending, it's necessary to appropriately configure all the parameters, that allow the correct functioning of the system, on the **Administration** → **Cloud** page.

Some of the information requested on this page, require a minimum knowledge of the data transmission techniques or the support of the Provider of the Portal.

On the first section, called **General**, are defined some of the basic settings as the enabling of the service and the sending frequency.



The parameters listed in this page must be defined, before proceeding with the further configuration.

- **Variable sampling**: enables/disables the sending of variable values
- **Sampling frequency**: allows to select the interval of time for the sending
- **IP address sampling**: enables /disables the sending of the IP address of the device
- **Sampling frequency**: allows to select the interval of time for the sending of the IP address
- **Events sampling**: allows to enable the sending of events to a portal

Once enabled the service and decided the frequency of the sending, it's possible to enable one or more methods or destination among: **Server**, **FTP**, **Dropbox** and **Email report**.

7.2.1. Server

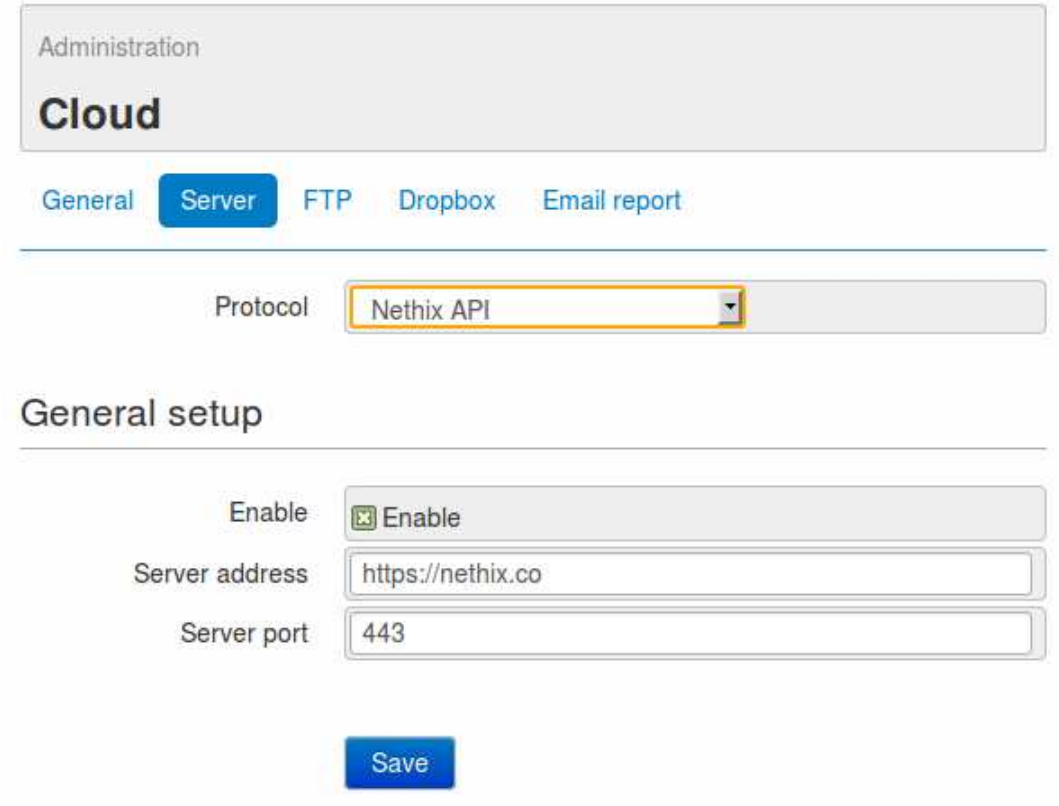
From the Tab **Server** is possible to activate the data sending to the Nethix Portal or to any other remote server.

Selecting **Nethix API** from the **Protocol** field and flagging **Enable**, the data sending to the portal nethix.co (https://nethix.co/) will be activated.

The portal service offered by Nethix allows:

- To send data and to display an overview of all installed devices
- To display the detailed data of every single device and all the records of the sent data in a chart or tab
- To create a synoptic that displays in a simpler and more intuitive way the status of the device.
- To allow a remote access from the device to the portal, in order to read/write the variables value, even if a public IP is not available.
- To establish a VPN connection between a PC and a portal. Activating the remote access, it will be possible to create a private VPN with all the owned devices, avoiding all possible difficulties referred to the non accessible IP addresses.

For further information, contact Nethix Support.

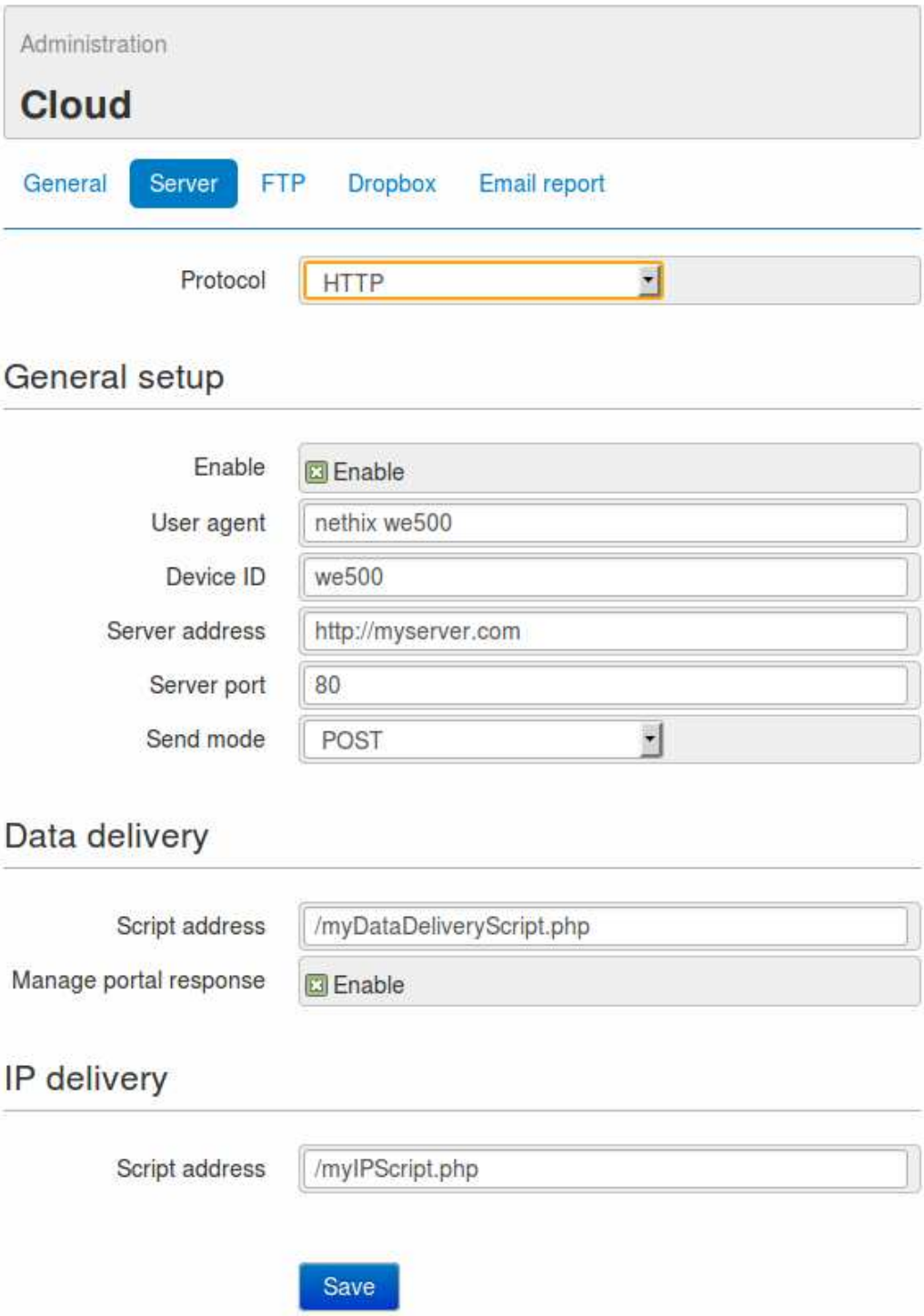


Default Settings are:

- **Server address**: https://nethix.co (https://nethix.co)
- **Server port**: 443

The updated parameters will be indicated by Nethix when the service will be activated.

In alternative it's possible to enable the data sending to an external server. For this it's enough to choose the option **HTTP** on the field **Protocol**.



In the **General Setup** the following parameters must be defined:

- **Enable**: enable/disable the sending
- **User agent**: it's the user agent that WE500 will use for authenticating in the server

- **Device ID**: ID of the device (this can be used for managing more than one device inside the same server)
- **Server address**: server address (complete with http:// (http://)) where to send the data
- **Server port**: Port of the server
- **Send mode**: mode of the sending. It's possible to choose among **POST** and **GET**. Before activating the option, please ask Nethix Support to have an example string sent by WE500.

In **Data Delivery** is possible to define the path inside the server, where the processing script of the received data is available

- **Script address**: name and complete path of the script inside the remote server
- **Manage portal response**: WE500 waits for the commands of the server every time it has to execute a data sending

In **IP Delivery** it's possible to specify the path, where to find the script , that will manage the sending of the IP address by the WE500. It's enough to fill in the field **Script Address**.

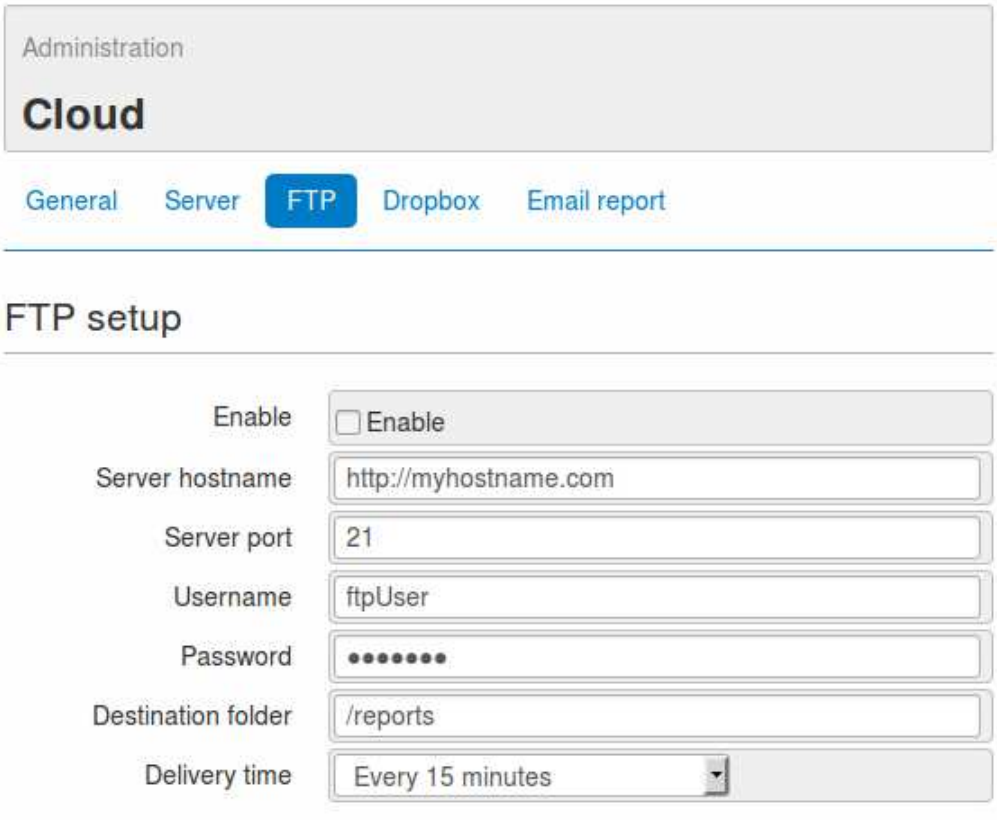
Hint

Please note: In case of data sending type **Server**, the WE500 will use the same frequency as set for the sampling (**Administration** → **Cloud** → **General**).

7.2.2. FTP

From the tab **FTP** it's possible to configure the sending of the logged data to any FTP server:

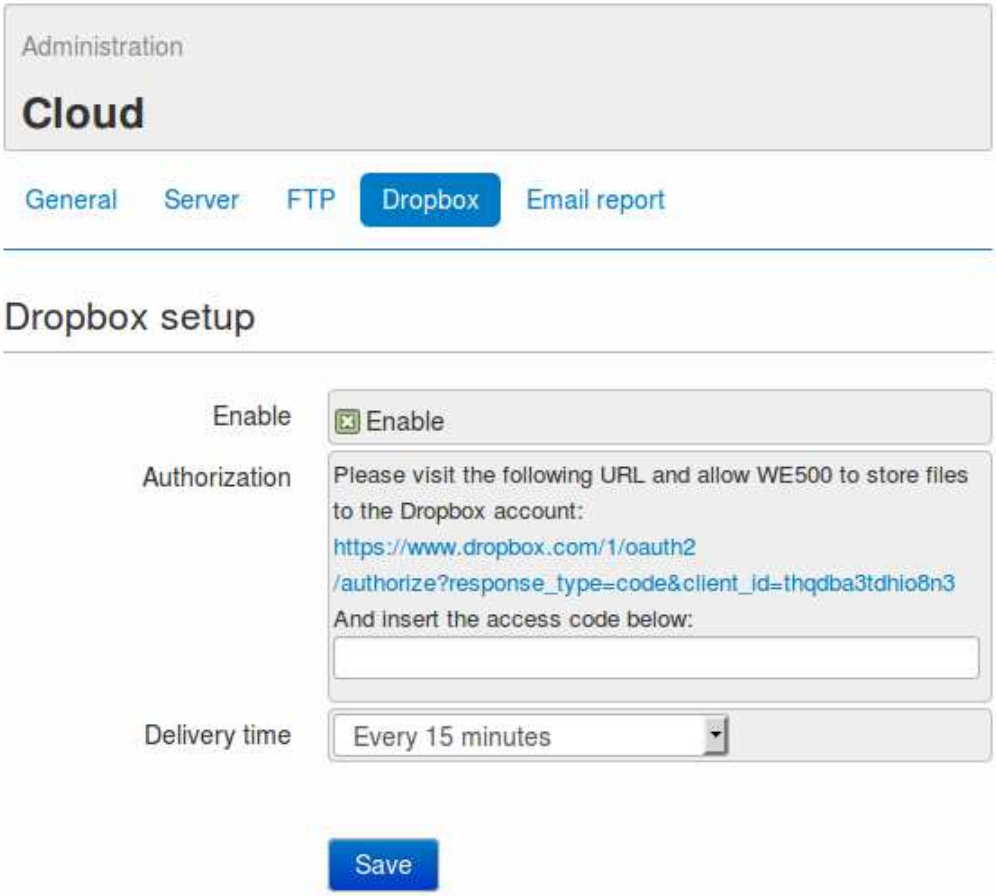
- **Enable**: enable/disable the sending
- **Server host name**: Server Port (default 21)
- **Username**: name of the user for authenticating on the server (if necessary)
- **Password**: password for authenticating on the server (if necessary)
- **Destination folder**: Server folder where to send the data (complete path).
- **Delivery time**: defined the interval of time for sending the data to server. Delivery and sampling time (field **Sampling frequency** on tab **General**) can be different. For example it will be possible to sample a variable every minute and to send data once in a day.



7.2.3. Dropbox

From the tab **Dropbox** it's possible to configure the sending of the data, collected by the WE500, to the Cloud service of Dropbox.
The data will be recorded in the path **application –> we500**.

- **Enable**: enable/disable the sending
- **Authorization**: in this field is reported the access code of the Dropbox-account to be used. In order to get this access code, it's possible to click on the nearby link and then be redirected to the Dropbox site. After login and confirm, the access code will be displayed and can be copied.
- **Delivery time**: Specify the frequency of data sending to cloud. Delivery and sampling time (field **Sampling frequency** on tab **General**) and can be different. For example it is possible to sample a variable every minute and to send data once in a day.



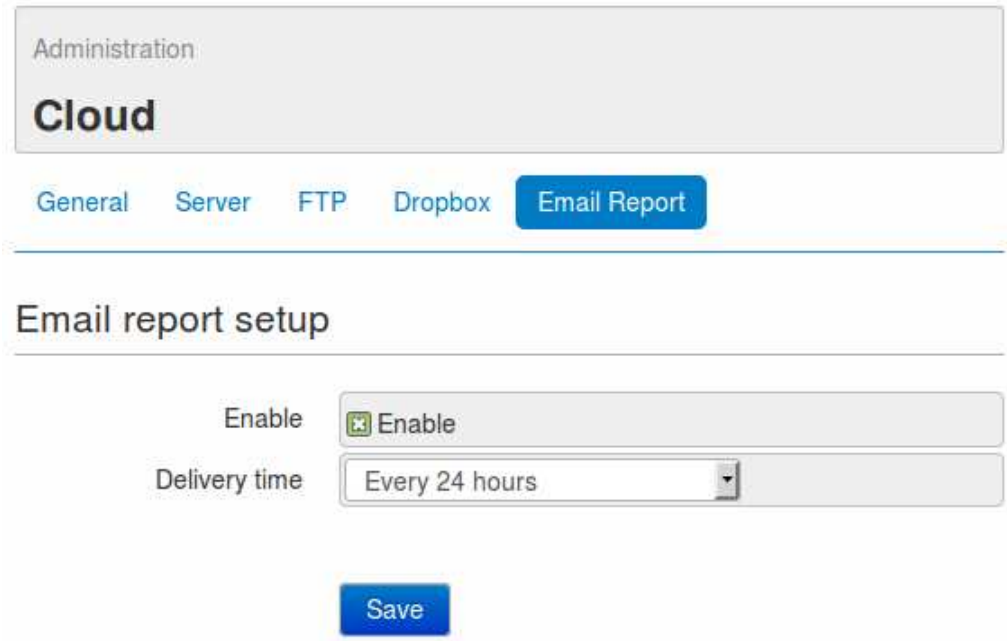
7.2.4. Email report

From the tab **Email report** it's possible to configure the sending, of the data collected by WE500, to one or more email address.

- **Enable**: Enable/disable the sending
- **Delivery time**: Defines the frequency of the data sending. Delivery and sampling time (field Sampling frequency on tab General) can be different. For example it is possible to sample a variable every minute and to send data once in a day.

For a correct sending of the report, the E-mail account associated to the WE500, *10.1.7. Email*

(we500_sw_manual_pdf.html#we500-sw-email-en)), should be properly configured and the option **Receive report by email** should be enabled in a proper configuration of the users (*9. Users* (we500_sw_manual_pdf.html#we500-sw-users-en)).



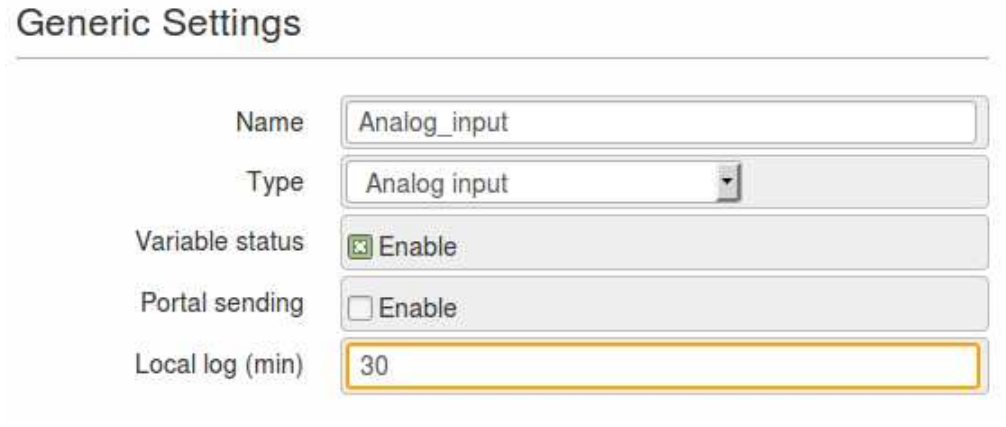
8. Datalogger

Thanks to its 1GB internal memory, the WE500 can log a big volume of data to be read or exported through charts ad tabs. It's possible to log all variables having a measurable value or status, and the sampling intervals can be different according to the variable type.

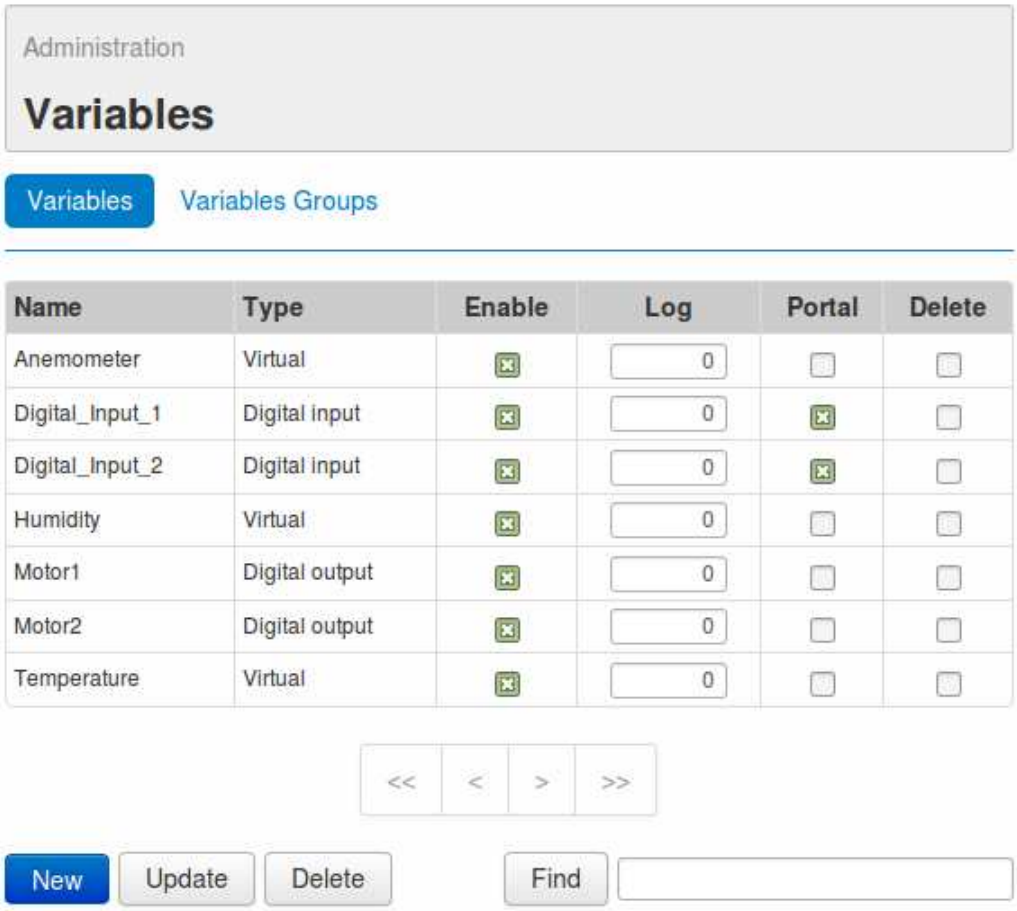
On request it's possible to to ask for the "USB Storage" option (the request must be presented at order confirmation): this function allows to save all data collected by the WE500 on a USB external unit, in order to display them from a PC.

8.1. Enable log on variable

The enabling of the logs on a variable has to be made during the creation of the variable (*2.1. Generic variables* (we500_sw_manual_pdf.html#we500-sw-generic-var-en)). On the section **Generic Settings** is in fact available the field **Local log (min)**.



Entering a correct numeric value and saving the variable, the logs will be recorded at the defined time interval. It's furthermore possible to enable the logs on one or more previously created variables, entering the page **Administration → Variables → Variables**:



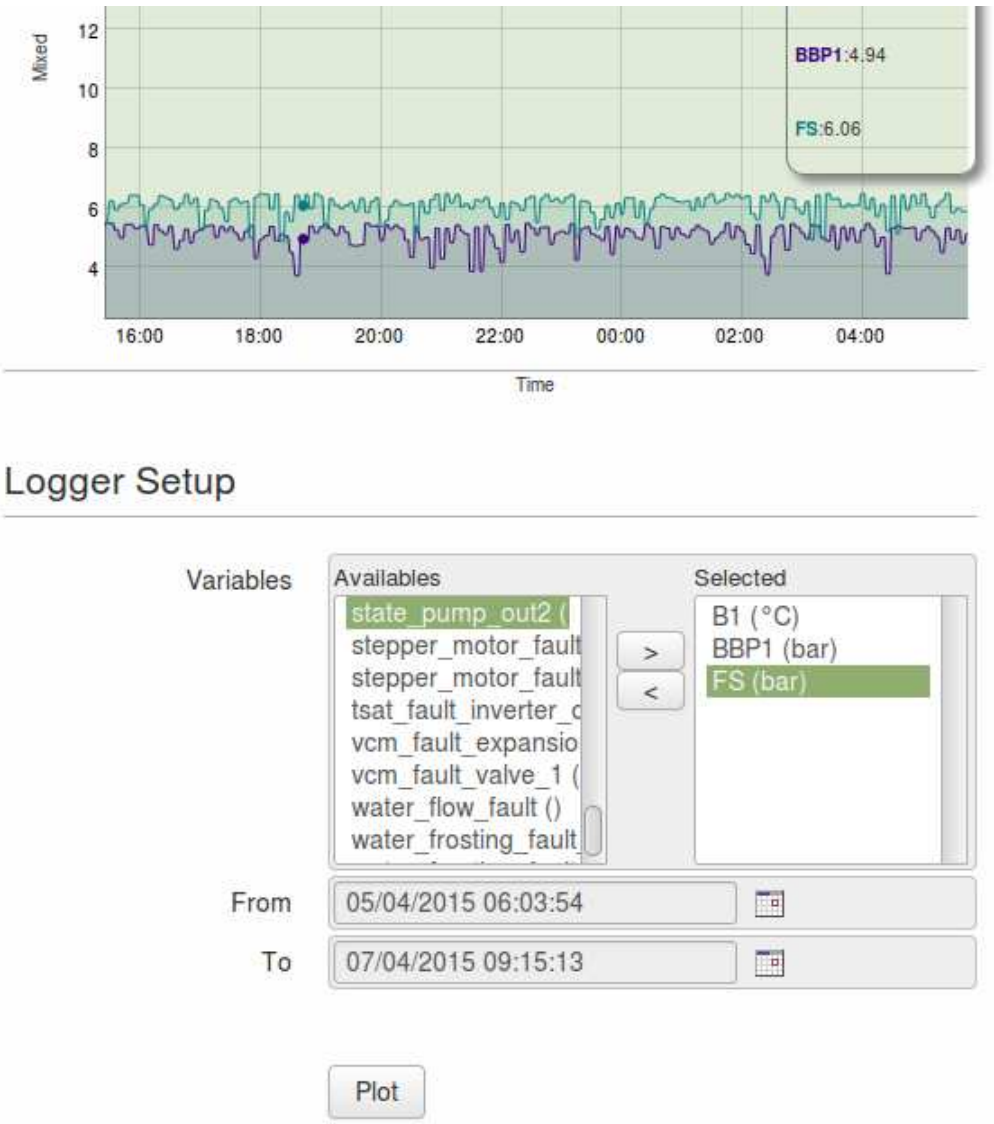
Enter a valid numeric value in the field **Log** and then click **Update**.

The data collected by the WE500 can be displayed in 4 different modes:

- In diagrams
- On tabs
- Exporting .csv or .xls files
- Inserting the USB external unit on a PC (available only if the option "USB Storage has been requested)

8.2. Data visualization on diagram

From the page **Status → Logger status → Charts** it's possible to display the collected data through a diagram. Inside the diagram can be displayed up to 5 traces (5 variables) simultaneously, selecting them from the list inside the box **Availables**. Once selected the variables, click on **>** to send them inside the box **Selected**, or **<** to remove them from the list.



For generating the diagram, the time interval of the data visualization has to be defined through the fields **From** and **To**, that select the starting and the end point on a calender. There are no time limits, but if the selected interval is too wide and the quantity of data to be managed too big, the selected time will be automatically reduced.

At this point it's possible to click on **Plot** and generate the diagram.

On the diagram is now possible to zoom one specific area, selecting it with the mouse. A double click removes the zoom.

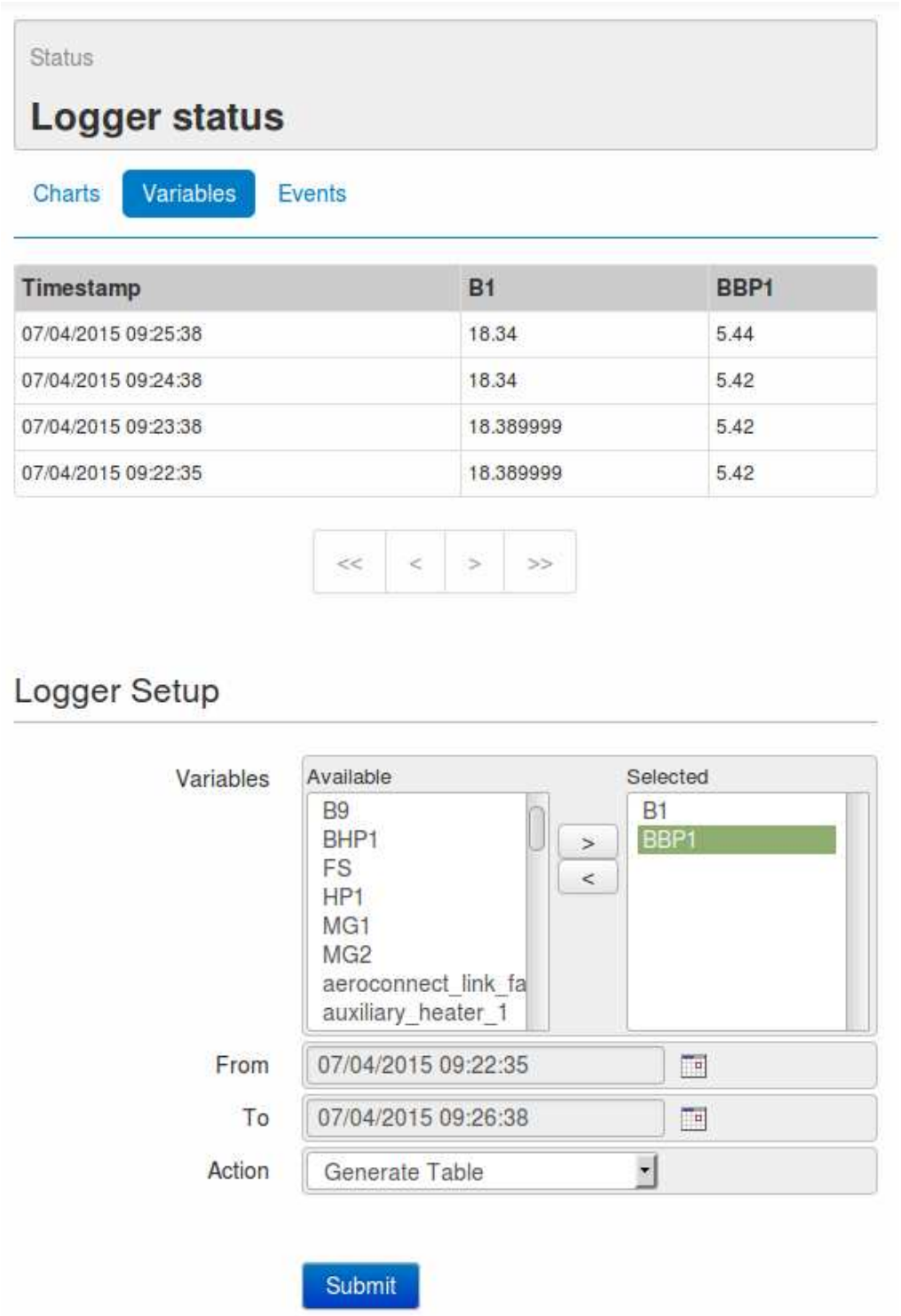
8.3. Data visualization on tab

The data collected by the WE500 can also be displayed in tables from the page **Status** → **Logger status** → **Variables**.

Also in this case it' necessary to select from the box **Available** the variables to be displayed on the tab (choosing among those having active log). Once selected the variables, click on **>** to send them inside the box **Selected**, or **<** to remove them from the list. There is no limit in the number of variables to be displayed.

For generating the table, the time interval of the data visualization has to be defined through the fields **From** and **To**, that select the starting and the end point on a calender. It's then necessary to select **Generate Table** from the field **Action**.

At this point it's possible to click **Submit** and generate the table.



The generated table will display the date and time on the first column on the left (structured according to the device settings) and all collected data on one or more additional columns (according to the number of selected variables).

8.4. Data export

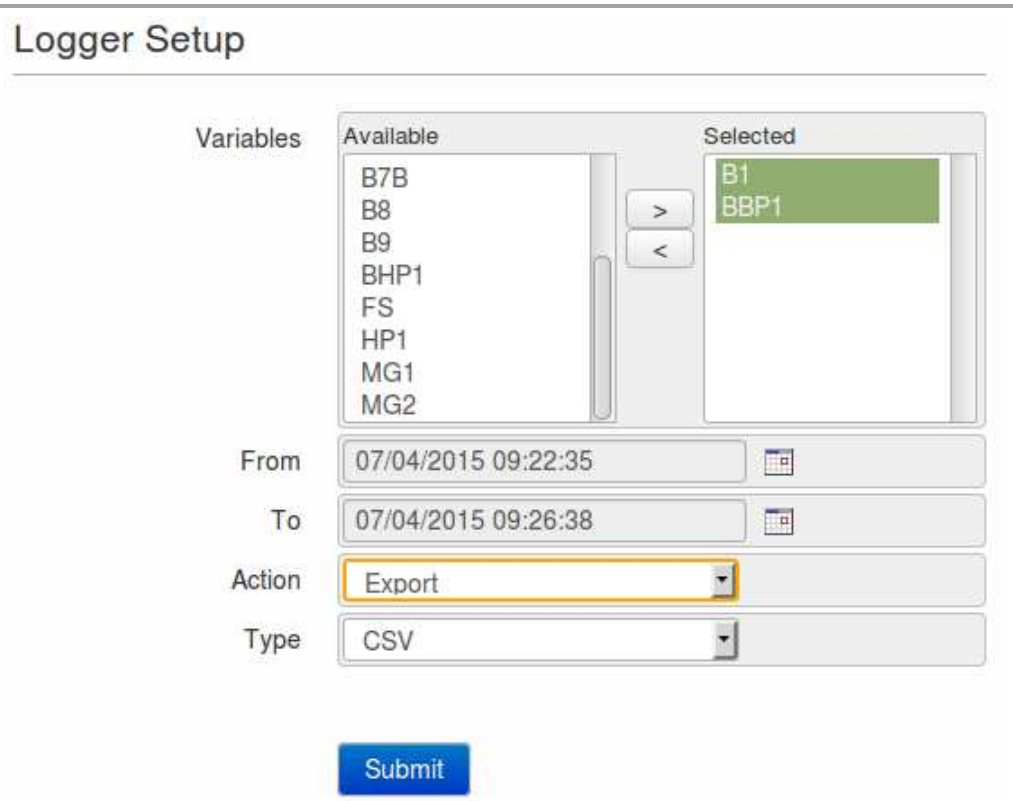
The collected data can be exported on .csv or .xls files, from the page **Status** → **Logger status** → **Variables**.

Once selected the variables to be exported (among those with active log), click on **>** to send them inside the box **Selected**, or **<** to remove them from the list. There is no limit in the number of variables to be displayed.

Before starting the export of the data, it has to be defined the time interval of the data visualization through the

fields **From** and **To**, that select the starting and the end point on a calender. It's then necessary to select **Export** from the field **Action** and choose an option between **CSV** and **Excel** from the field Type.

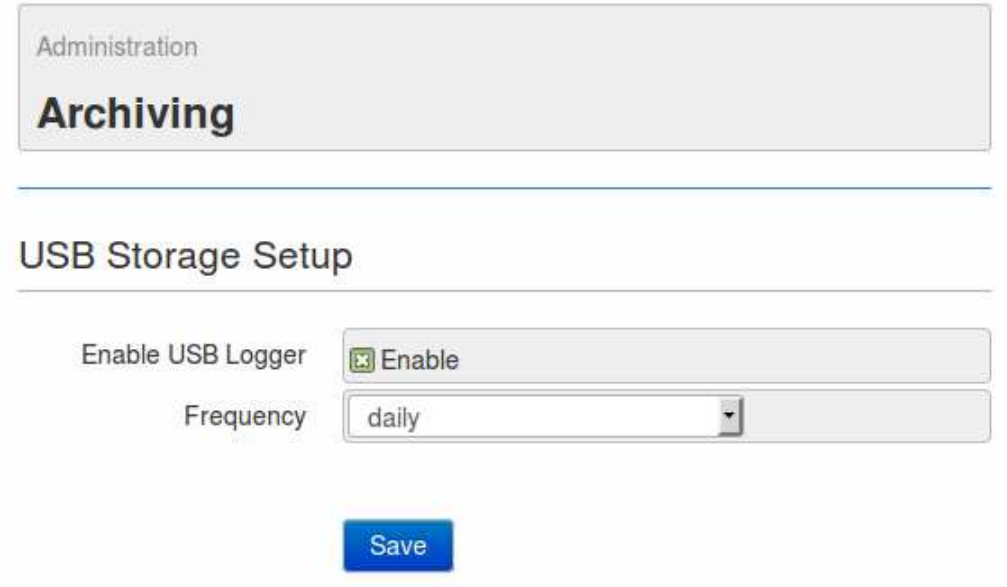
At this point it's possible to click **Submit** and generate the file.



In the first position of the file is the **Timestamp**, i.e. the date and time of the logs, and then many additional columns as the number of the selected variables. The separation symbol between the columns is "","".

8.5. How to save data on USB

At order confirmation it's possible to require the "USB Storage" option (not available together with the "wi-fi" option). In this version the device will show a USB port type A near the SIM card slot. On the other hand, the user interface will have the page **Administration** → **Archiving** → **USB Storage**.



On such page it's possible to enable/disable the option through **Enable USB Logger** and define the frequency of the data savings on the USB unit through the field **Frequency**:

- **daily**: the data collected by the WE500 will be copied on the USB unit every day at midnight.
- **weekly**: the data collected by the WE500 will be copied on the USB unit every Sunday at midnight.
- **monthy**: the data collected by the WE500 will be copied on the USB unit every last day of the month at midnight.

To read the data saved on the USB unit, this has to be removed and inserted in a PC. The WE500 will generate a directory inside the peripheral unit in order to structure the copied data. On a higher level there will be a directory referred to the year (for example "2015"), inside this there will be some other directories for each single month of the year (for example "January"). Inside the directory of the month, the .csv files will be available referred to the umber of the day (for example "10"). Inside the files there are as many columns, separated by ";" , as the number of the variable with activeated log. The first column on the left shows date and time of the log, while the following ones indicate the name of the logged variables and their relevant values.

The data copied on the USB unit are not deleted from the WE500 memory, so that it's possible to generate graphs or charts from the device's interface even if the USB option is enabled.

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9. Users

In order to enter the device web interface and to receive/send SMS, Mail and Ring, it's necessary to define the users.

Three different types of users are available: **SYSTEM**, **ADMIN** and **USER**. The main features of each user's level are the following:

- **SYSTEM**
  - Can read, edit, create and delete all other users
  - Is the only user that can generate other **ADMIN** users.
  - Is the only user that cannot be deleted. Only logging with **SYSTEM** credential is possible to change all parameters of this user (username and password included) but not delete its account
  - Can access all system's functionalities.
- **ADMIN**
  - Can read, edit, create and delete users of **USER** type
  - Cannot delete itself, but can change its own parameters
  - The **SYSTEM** user can set an expiry date for stopping the device's access to the **ADMIN** user.
  - Can access all system's functionalities, as the **SYSTEM** user.
- **USER**
  - Cannot read, edit, create nor delete any type of users.
  - Can change only its own parameters (but not delete itself)
  - Can access the submenu **Status**, but cannot configure the system nor create/edit/delete variables and events.
  - The **SYSTEM** user and the **ADMIN** users can set an expiry date for stopping the device's access to the **USER** user
  - Cannot reboot nor switch off the device.

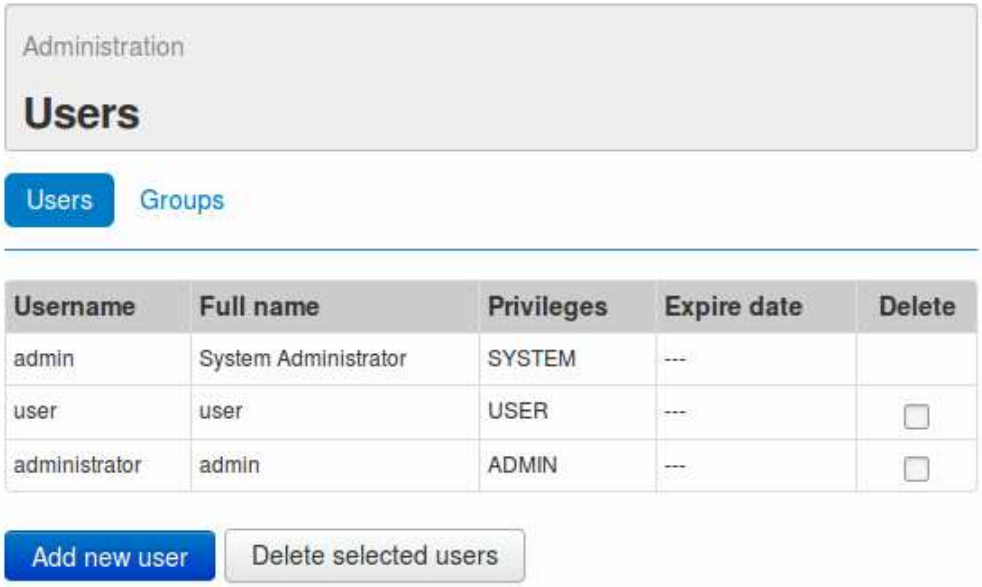
Originally the default user is a **System Administrator** type **SYSTEM**, whose credentials for access are the following (it's recommended to change these credentials as soon as possible):

Username: **admin**

Password: **admin**

9.1. How to create a new user

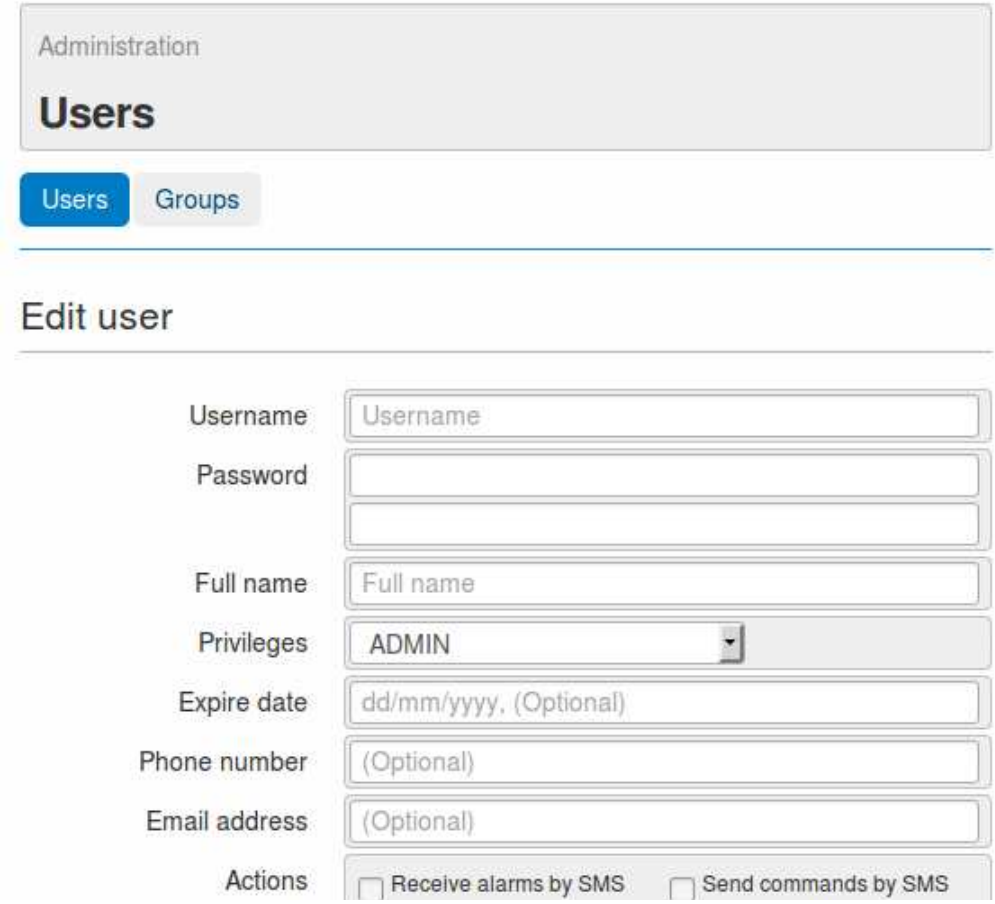
It's possible to create a new user from page **Administration** → **Users** → **Users**.

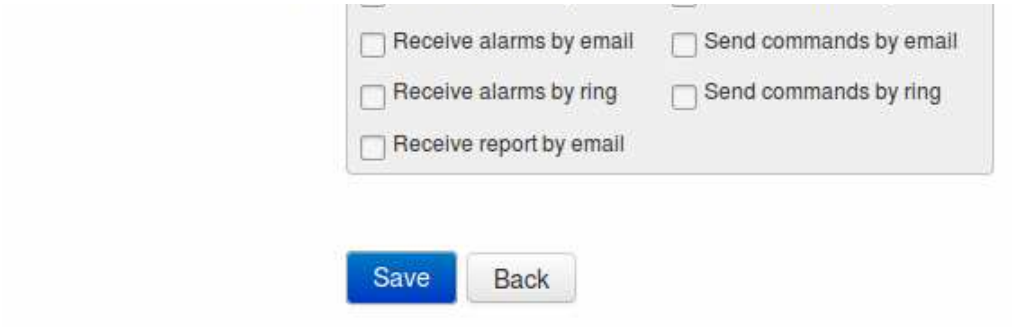


On this page some information regarding the previously created users are displayed:

- **Username**: the username to login
- **Full name**: the complete name assigned to the user
- **Privileges**: the authorization level of the user (**SYSTEM**, **ADMIN** o **USER**)
- **Expire date**: the expiry date for user's deactivation (not deletion)
- **Delete**: selection of the users to be deleted through the tab **Delete selected users**

To edit an existing user just click on its username, to generate a new one click on **Add new user**.





The parameters to be set in order to create a user are the following:

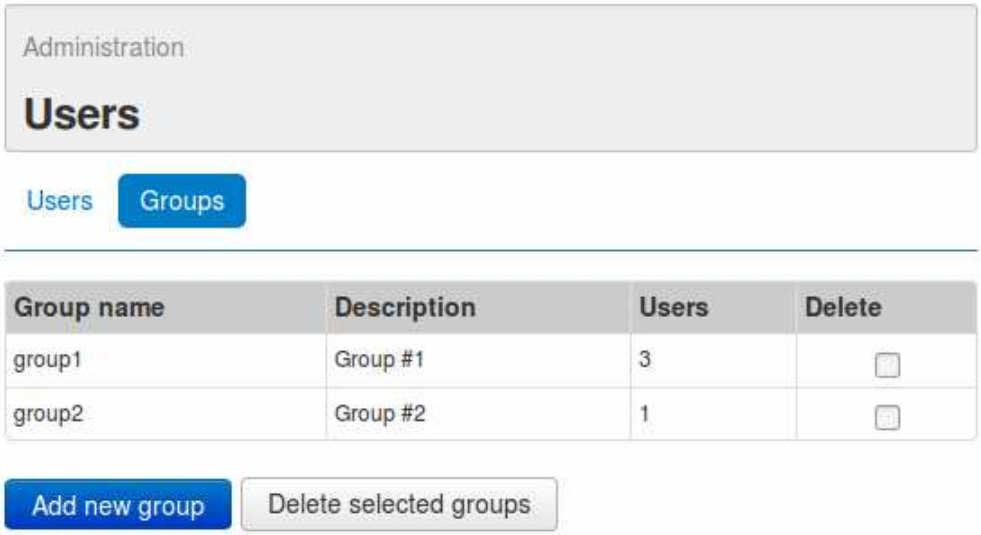
- **Username**: the username to login
- **Password**: the password to be used for login (to be entered twice). The password can be composed of alphanumeric characters and special characters. Being case sensitive, it's necessary to pay attention to upper and lower cases.
- **Full name**: the complete name assigned to the user. After the login, the Full name will be displayed on the top left corner, near the name assigned to the WE500. Clicking on it, the user configuration page is entered.
- **Privileges**: the authorization level to be assigned to the customer, among **SYSTEM**, **ADMIN** e **USER** (*9. Users* (we500_sw_manual_pdf.html#we500-sw-users-en))
- **Expire date**: Allows to set a deadline after which the user cannot access the interface nor send/receive commands or notifications from/to the WE500. If no expiry date is required this field must be left blank.
- **Phone number**: Telephone number associated to the user. It's necessary if the user wants to send/receive SMS or Rings from/to the device, on the contrary it can be left blank.
- **Email address**: Email address associated to the user. It's necessary if the user wants to send/receive email to/from the device, on the contrary it can be left blank.
- **Actions**: in this section it's possible to enable/disable all options connected to the user:
  - **Receive alarms by SMS**: if enabled, it allows the user to receive SMS alarms from the WE500, if previously configured.
  - **Receive alarms by email**: if enabled, it allows the user to receive email alarms from the WE500, if previously configured.
  - **Receive alarms by ring**: if enabled, it allows the user to receive ring alarms from the WE500, if previously configured.
  - **Receive report by email**: if enabled the WE500 sends a report via email to the email address of the user, according to the defined settings
  - **Send commands by SMS**: if enabled, it allows the user to send commands to a WE500 via SMS
  - **Send commands by email**: if enabled, it allows the user to send commands to a WE500 via mail.
  - **Send commands by ring**: if enabled, it allows the user to send commands to a WE500 via ring
  - **Receive remote command**: if enabled, any emails sent by the WE500 to the selected user won't bear the name of the WE500 on the object. This allows to send **Set/Get** commands (*6.2. Set/Get via SMS/Email commands* (we500_sw_manual_pdf.html#we500-sw-set-get-cmd-en)) between devices.

9.2. Users group

If the system has a high number of users, the management of events and actions might become complex. In order to help managing this situation, it's possible to create groups of users.

A typical application of this function is the sending of alarms to a group of users. If, for instance, a single user should be added to those who receive one or more SMS notifications, it should be necessary to edit all events/actions previously defined. But if the events and actions are associated to a group of users it will be enough to add (or delete) the new user in the relevant group.

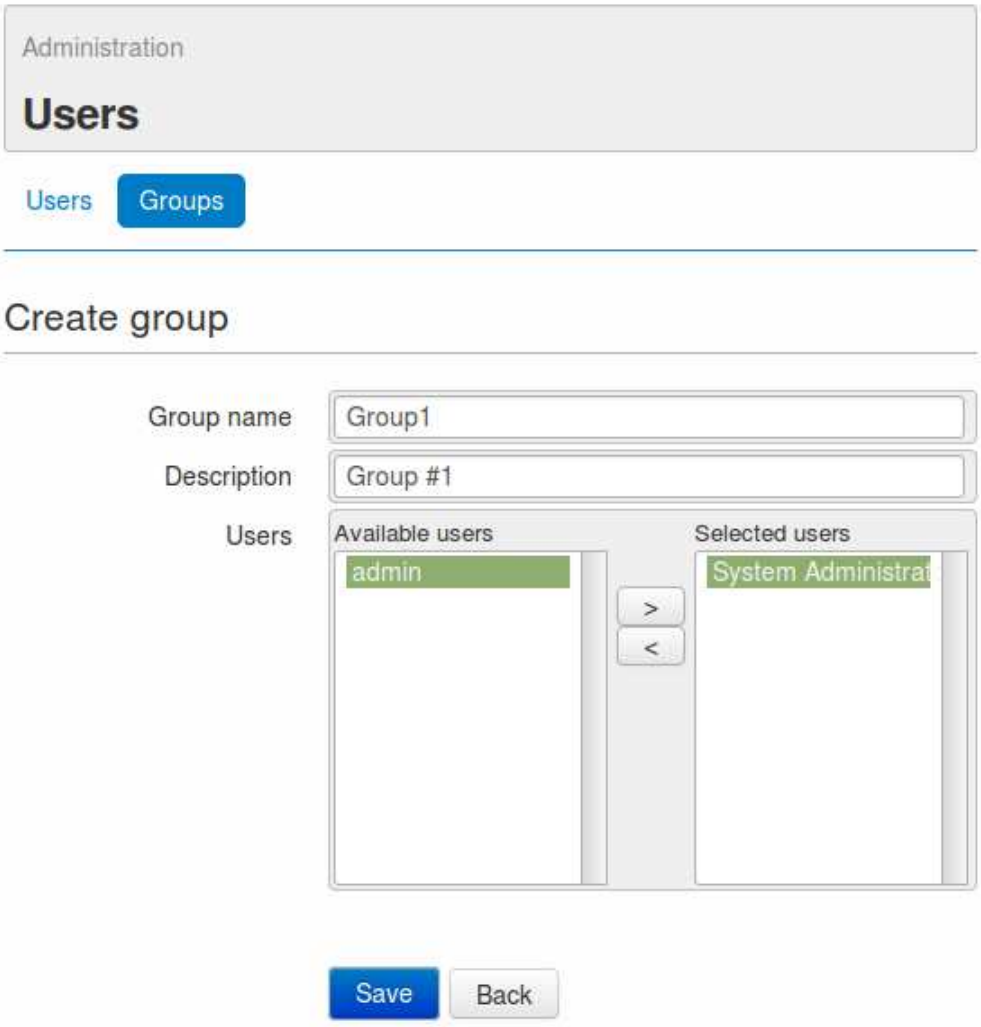
For creating, deleting and editing the groups of users, it's necessary to go to page **Administration → Users → Groups**.



On this page it's possible to read the information regarding the previously created groups, as for example:

- **Group name**: the name assigned to the group
- **Description**: the description of the group in object
- **Users**: The number of users available in the group
- **Delete**: selection of the groups to be deleted through the tab **Delete selected groups**.

To edit an existing group just click on its name, to generate a new one click on **Add new group**.



For the proper creation of a new group only few information are necessary:

- **Group name**: the name assigned to the group
- **Description**: the description of the group in object
- **Users**: this field allows to select the users to be included in the group. After the selection with the mouse from the box **Available users**, just click **>** to include them in the box **Selected users** or **<** to exclude them from the group.

Clicking Save, the group will be created. Here are some remarks referred to the groups of users:

- A user can be assigned to any group
- A user can belong to more than one group (even to all groups)
- Since the WE500 can recognize repeated numbers or email addresses, even if a user is registered in more than one group, it will receive only one notification.
- Deleting a group of users, the single users previously assigned to the group won't be deleted.

10. Settings

Beside the main functions described on the preceding chapters, the WE500 allows to configure other parameters in order to meet all customers requirements.

10.1. Connectivity

Connectivity, i.e. i all communication channels to the device, is a very important part of the system's setting.

From the page **Administration** → **Networking** it's possible to access the screenshots, that allow to configure and start-up the different network interfaces and the different services.

- **LAN**
- **WLAN** (if available)
- **SIM**
- **HSPA**
- **SMS**
- **Ring**
- **Email**
- **RAS**
- **VPN**

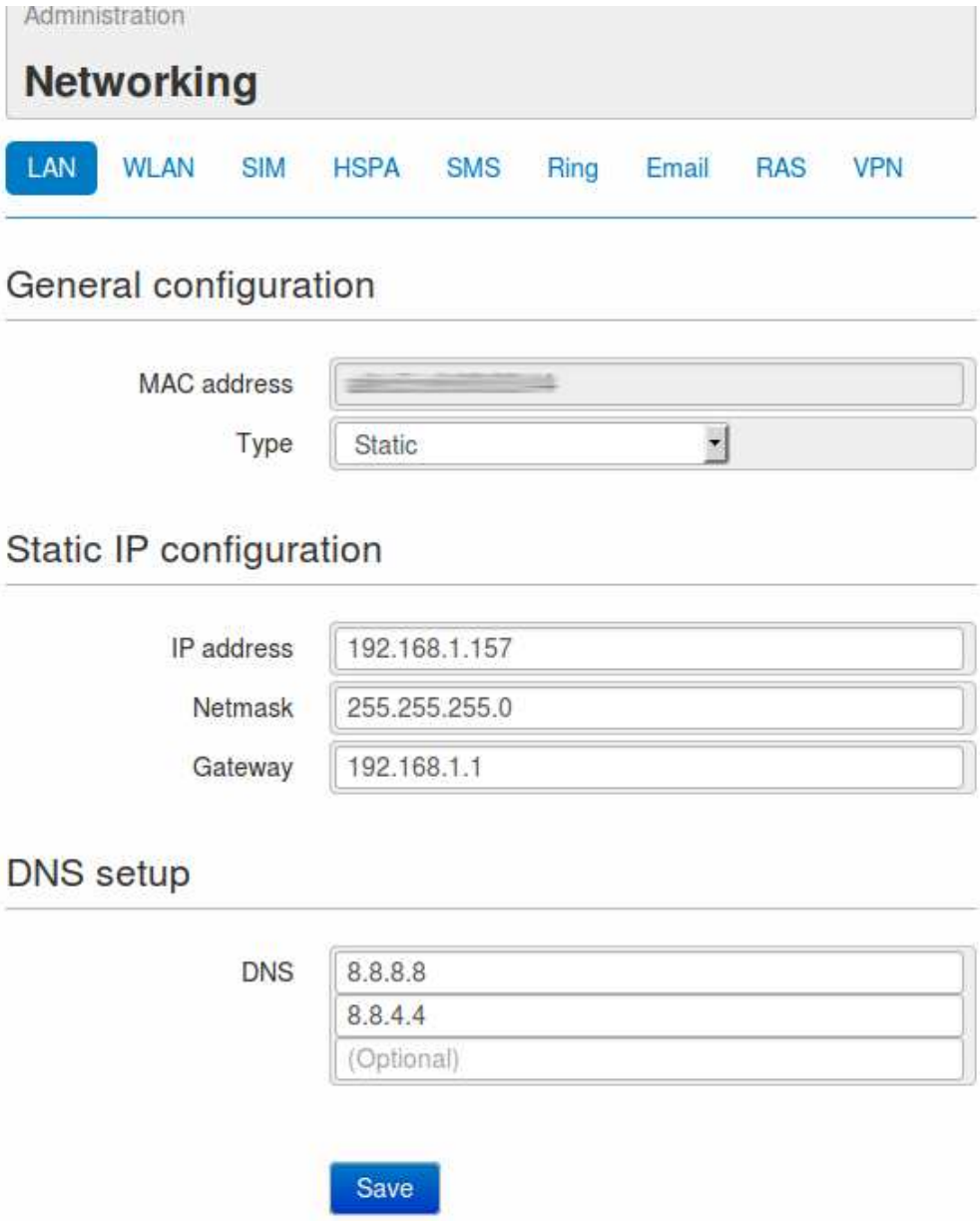
10.1.1. LAN connection

On the page **Administration** → **Networking** → **LAN** it's possible to modify all parameters of the RJ45 Interface.

First of all the **MAC address** of the device will be displayed, with the option of using the LAN network on static IP address or on DHCP.

If the Static address will be selected, the following parameters must be set for the correct operation of the service:

- **IP address** static IP address assigned to the WE500. Make sure that the address is available and not used on other devices.
- **Netmask** Subnet mask. A valid netmask must be entered, according to the specifications of the own local LAN.
- **Gateway** Network gateway
- **DNS** DNS that can be assigned to the WE500 (max. 3)



After settings modification the WE500 requires a reboot in order to activate them. If the entered parameters are correct, it's possible to enter the web interface of the WE500 (even remotely if the network allows it), to send emails and send data to a Portal/Server.

For further information regarding the status of the LAN connection, see page **Diagnostics** → **Networking** on section **LAN Interface** (see *12. Diagnostic* (we500_sw_manual_pdf.html#we500-sw-diagnostics-en))

10.1.2. WLAN connection

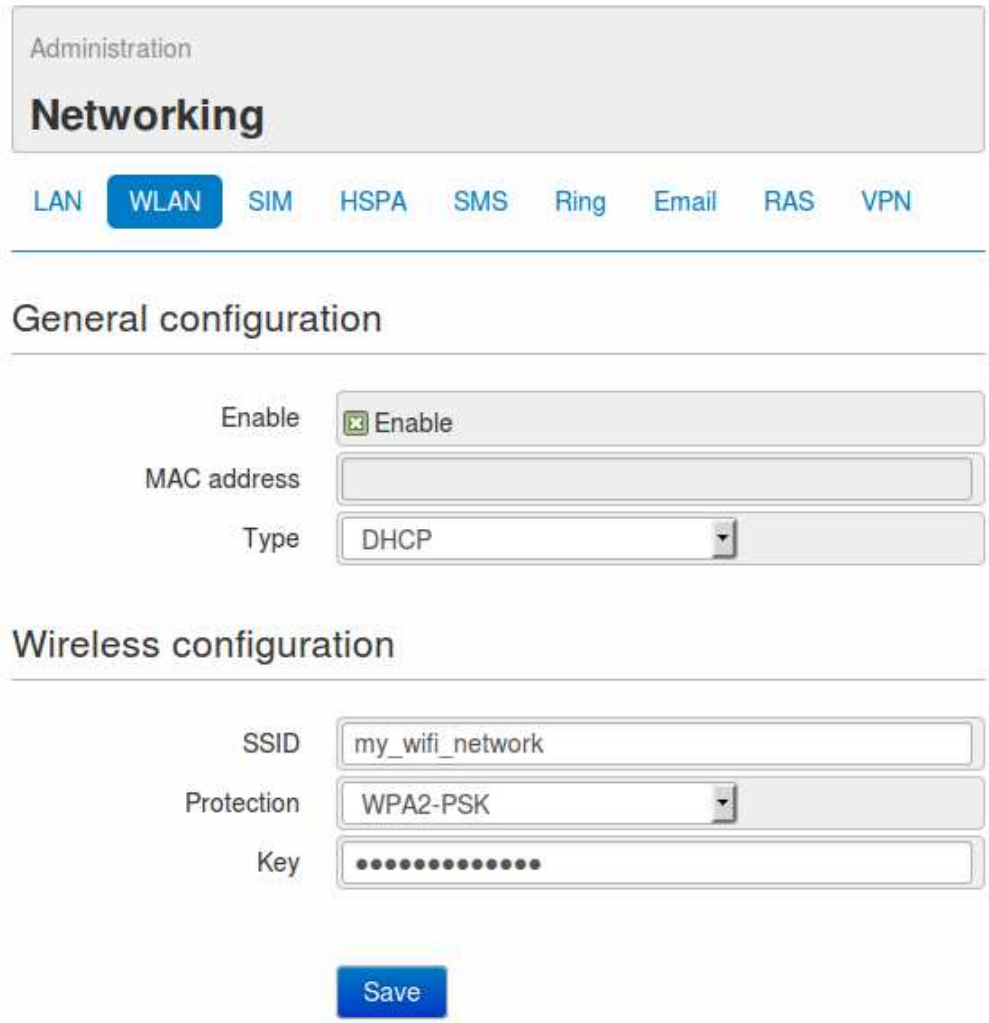
The page **Administration** → **Networking** → **WLAN** is available only if, at order confirmation, the option wi-fi on USB Port has been selected.
In this case it's possible to configure the WE500 in order to let it connect to an existing wi-fi network.

First of all it will be displayed the **MAC address** of the Wi-Fi device connected to the WE500, and it will be given the possibility to choose between a static or dynamic Ip address.

Choosing the static IP address, all necessary parameters for a proper functioning of the service will be required.

- **Choosing** a static ip-address the following parameters must be set for a proper operation of the service:
- **IP address**: static IP address assigned to the WE500. Make sure that the address is available and not used on other devices.

- **Netmask**: Subnet mask. A valid netmask must be entered, according to the specifications of the own local LAN.
- **Gateway**: Network gateway



Then the access data of the wi-fi network, where the WE500 has to get connected to, have to be defined:

- **SSID**: Complete name of the wi-fi network
- **Protection**: Encryption of the access key
- **Key**: type of key/password for the authentication

After clicking on **Save**, the We500 starts to scan the on-site available Wi-Fi networks. Once found the network with the previously set SSID, the WE500 will make the authentication using the indicated parameters.

If all operations will be successful executed, the indicators on the status panel will become green.

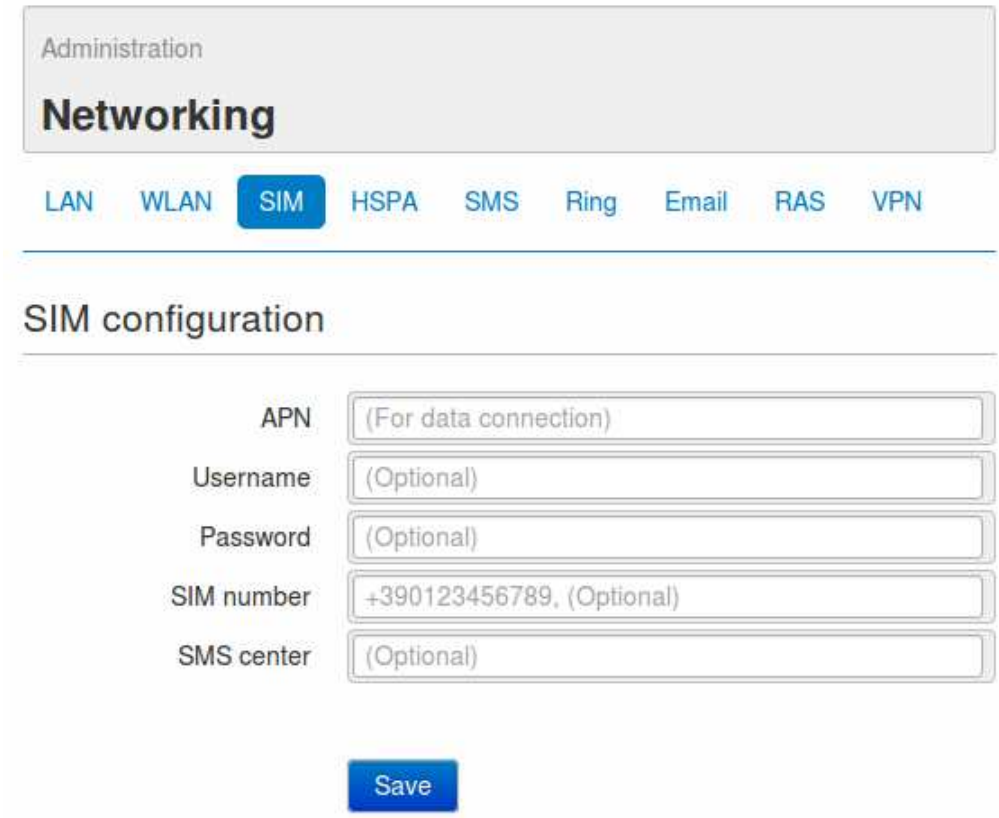
The WLAN network allows all operations permitted by the LAN network (remote access to the web server, data sending, email sending)

For further information regarding the status of the LAN connection, it's possible to enter the page **Administration** → **Diagnostics** → **Networking** on section **WLAN Interface** (see *12. Diagnostic* (we500_sw_manual_pdf.html#we500-sw-diagnostics-en)).

10.1.3. SIM parameters

Beside the parameters related to the connectivity, for the correct operating of the **SMS** and **RING** services, it could be necessary to define some SIM's parameters according to the selected provider.

Those parameters are available on page **Administration** → **Networking** → **SIM**.

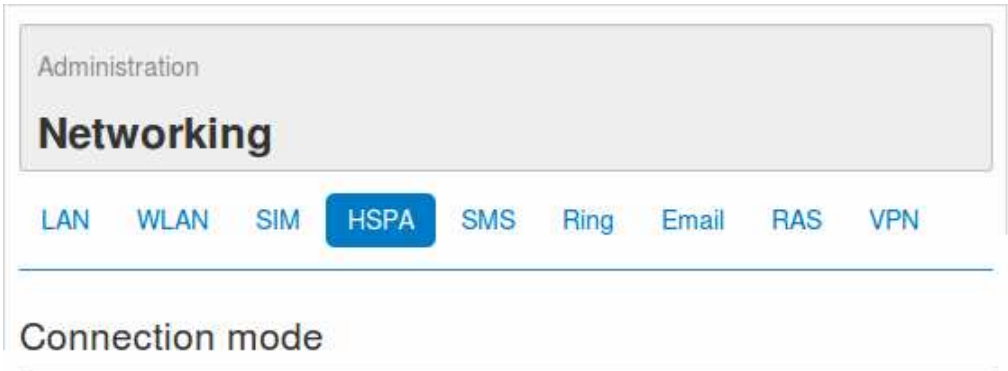


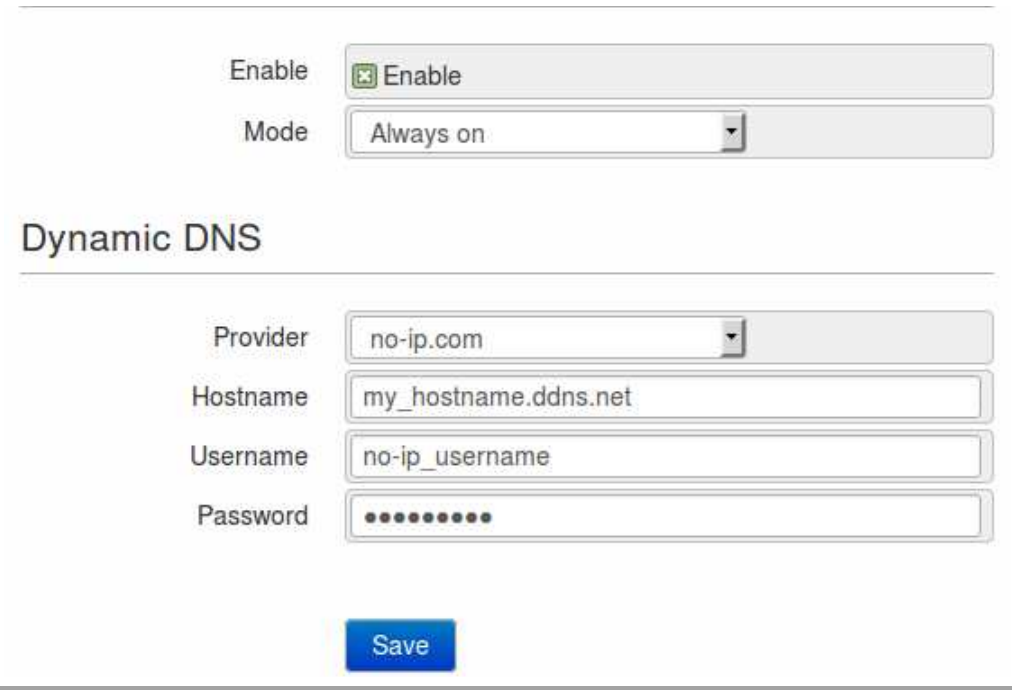
- **APN**: It's the name of the access point of the GPRS/HSPA network. It changes according to the provider and to the contract with it (in some cases this may be not necessary). It's an important parameter for a proper functioning of the connection. In case this should not be known, please contact the provider or Nethix Support.
- **Username**: it's the username for the GPRS/HSPA connection. This field is normally blank, if it's not differently required by the provider.
- **Password**: Password to be used for the GPRS/HSPA connection. This field is normally blank, if it's not differently required by the provider.
- **SIM number**: It's the Telephone number of the SIM inserted in the WE500. This is not relevant for the functioning (this number is never used by the WE500), but can be used for identifying the device later on.
- **SMS center**: It's the SMS Service Centre of the Provider. With some types of SIM this could not be required. If this number is not known, please contact the Provider or Nethix Support.

10.1.4. GPRS/HSPA connection

WE500 allows to establish a GPRS/HSPA connection (according to the modem required at order confirmation) in order to enter the web interface of the device and send data or emails, even if no Ethernet or Wi-Fi connections are available.

In order to activate the connection enter the page **Administration** → **Networking** → **GPRS/HSPA**.





Once enabled the service with a flag on the field **Enable**, it's required to specify whether the connection must be always on or on demand.

- **Always on**: The WE500 will keep the connection always on. In case it should be interrupted (missing credit, Signal not available..) the connection will be restored as soon as possible.
- **On demand**: the connection is activated on request by an authorized user through a **wake-up** message (*11. Commands* (we500_sw_manual_pdf.html#we500-sw-builtin-cmd-en)) and after 15 minutes is automatically disabled. If the activated services require a connection for data sending or email sending.., the connection of the WE500 will automatically be closed at the end of the configured operations.

If the parameters have been properly configured, after a few minutes the GPRS/HSPA connection will be activated. On the status panel, positioned on the right side of the web interface, the GPRS/HSPA indicator will become green and beneath it the connection uptime and the relevant IP address will be displayed.

The WE500 offers also the possibility of associating the connection with a dynamic DNS service, choosing from the List of Providers available on section Dynamic DNS. This service allows to access the WE500 even if no static IP is available, since the device will be identified by the selected provider at every single connection, allowing the users to reach the web interface, just entering the hostname as configured on the browser. For further information see the Provider's site or contact Nethix Support.

Make sure that the GPRS/HSPA connection has been successfully established, by checking if all necessary operations have been executed:

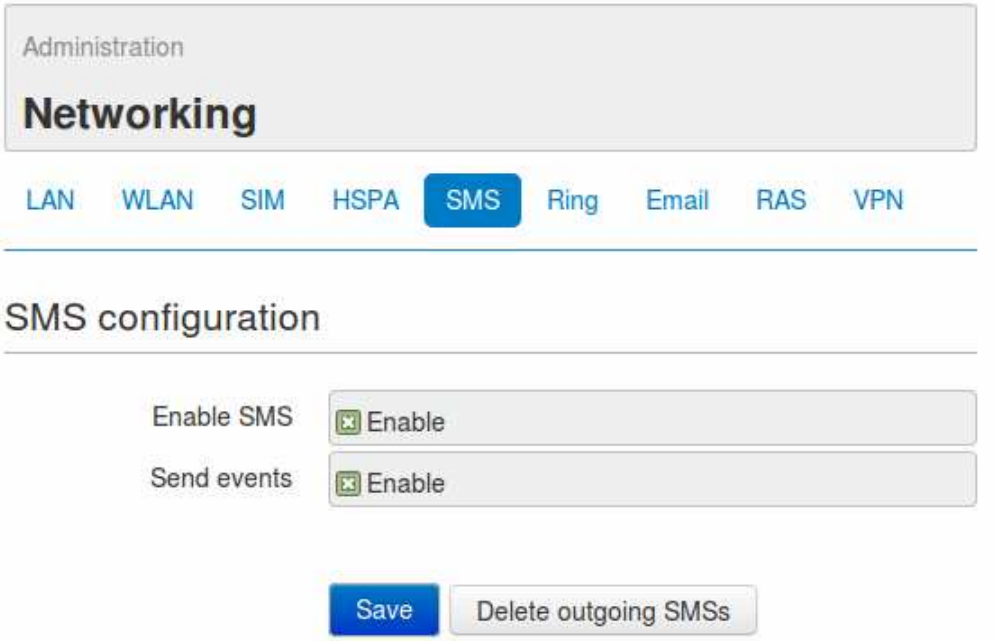
- Provide the WE500 with an enabled data SIM card (rechargeable or with flat tariff contract)
- Enter the APN (*10.1.3. SIM parameters* (we500_sw_manual_pdf.html#we500-sw-sim-en)) for the Providers, that require it.
- Connect the antenna and check the strength of the available GSM signal.
- Enable the GPRS/HSPA service.

It's possible to check the quality of the connection by using the diagnostic tool **Ping** (*12.3. Ping* (we500_sw_manual_pdf.html#we500-sw-ping-en)). Further information regarding the status of the connection can be found on page **Administration** → **Diagnostics** → **Networking** (*12.2. Information of connectivity* (we500_sw_manual_pdf.html#we500-sw-networking-info-en))

10.1.5. SMS

To enable/disable the SMS service go to page **Administration** → **Networking** → **SMS**. Beside the flag for enabling the service, it's possible to enable or disable the sending of pre-set SMS notifications (*4. Events/Actions*

(we500_sw_manual_pdf.html#we500-sw-event-action-en)).



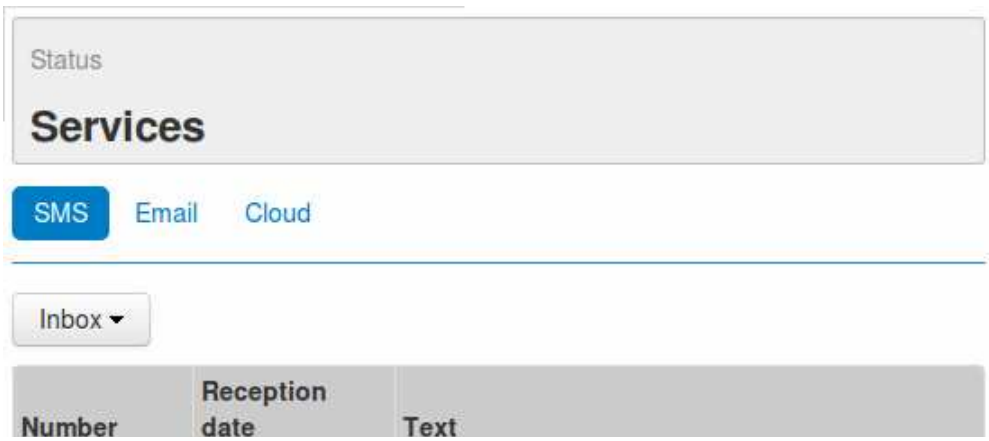
Enabling the service, it should be necessary to enter the SMS Service Centre number (*10.1.3. SIM parameters* (we500_sw_manual_pdf.html#we500-sw-sim-en)).

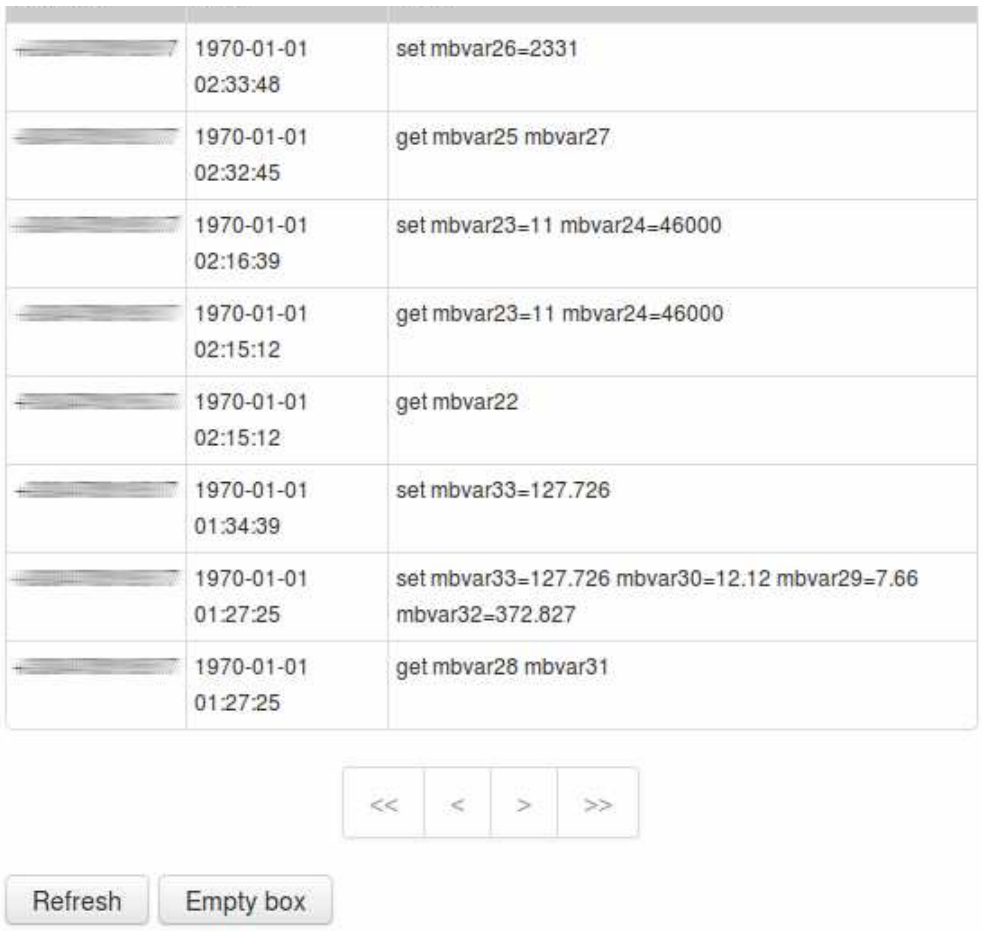
Once enabled the SMS service, it's possible to test the functioning through the section SMS test: entering a valid telephone number, complete with country code (for example +39NNNNNNNNN for Italy), the WE500 will try to send an SMS with the following text " *Test message from WE500* ".

For granting the proper functioning of the SMS service, allowing the users to communicate with the WE500 and the WE500 to send alarm notifications, the procedure below must be carefully carried out:

- Enter the SMS Service Centre (*10.1.3. SIM parameters* (we500_sw_manual_pdf.html#we500-sw-sim-en)).
- Enable the SMS service as described before
- Enable the SMS sending on event (field **Send events** on **Administration** → **Networking** → **SMS**)
- Define at least one user with activated SMS sending/receiving functions (*9. Users* (we500_sw_manual_pdf.html#we500-sw-users-en))
- Create one or more events as **Send SMS** action (se *4. Events/Actions* (we500_sw_manual_pdf.html#we500-sw-event-action-en)).
- Make sure that the SIM is properly inserted and with enough credit.
- Make sure that the antenna is properly connected and that the available signal is strong enough.

All sent and received SMS can be displayed on page **Status** → **Services** → **SMS**: the first page to be entered will show the SMS received by the device.



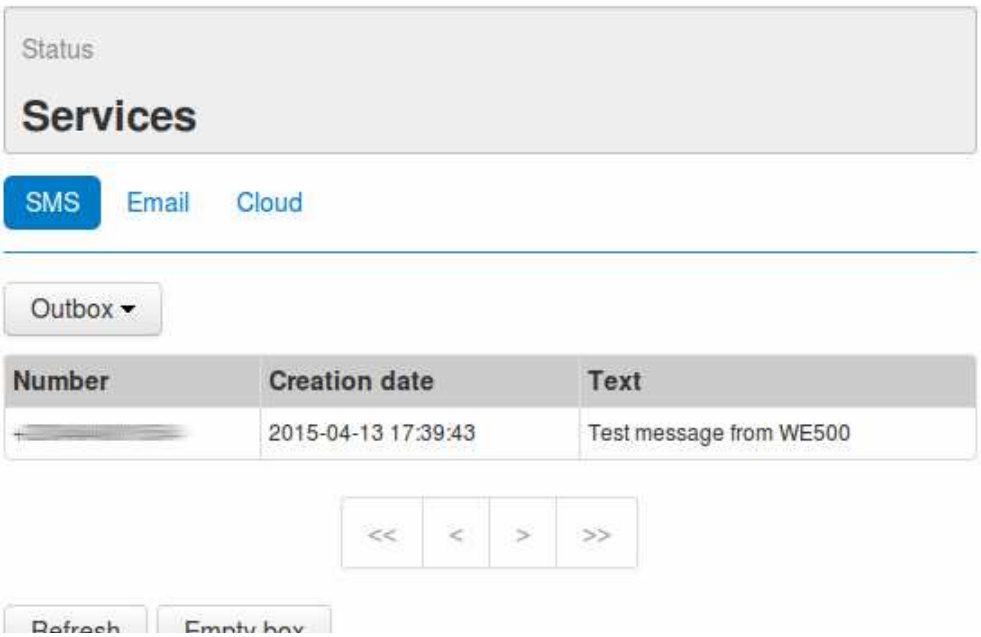


In the table the following information will be available:

- **Number**: shows the Phone number of the SMS sender
- **Reception date**: displays the date and time when the WE500 has received the message
- **Text**: contains the text of the received message

The button **Refresh** can be clicked at any time in order to update all information; **Empty box** for deleting all messages stored on **Inbox**.

Clicking on the drop-down menu on the top of the table, it's possible to pass from **Inbox** to **Outbox**.



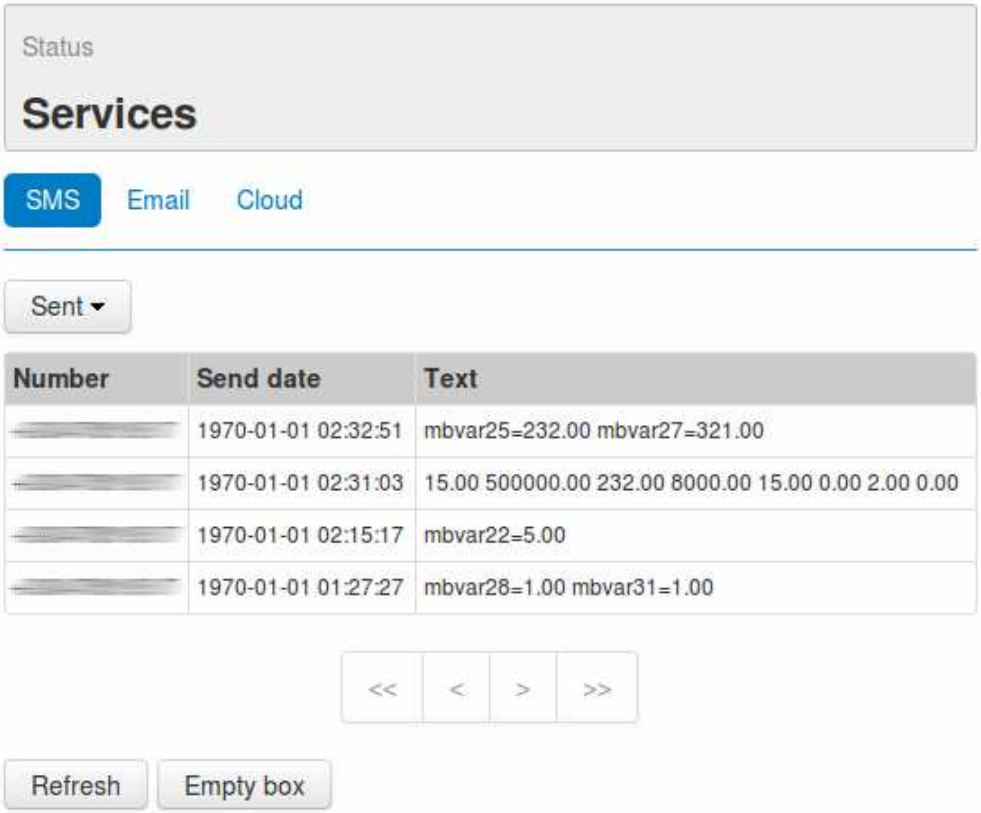
On this table is possible to display all the messages not yet delivered by the WE500. The available information are the following:

- **Number**: refers to the phone number of the message receiver
- **Creation date**: shows the date and time when the message has been created
- **Text**: displays the text of the message

The button **Refresh** can be clicked at any time in order to update all information; **Empty box** for deleting all messages available on **Outbox** (such messages won't be delivered).

Clicking on the drop-down menu on the top of the table, it's possible to pass from **Outbox** to **Sent**.

On this table are displayed some information regarding the SMS already delivered by the WE500:



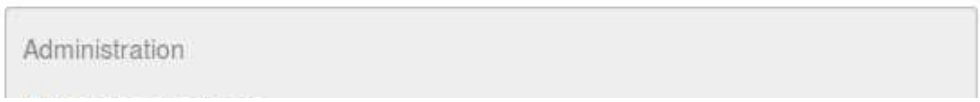
- **Number**: shows the receiver of the delivered messages
- **Send date**: displays the date and time when the We500 has delivered the message
- **Text**: contains the text of the sent messages

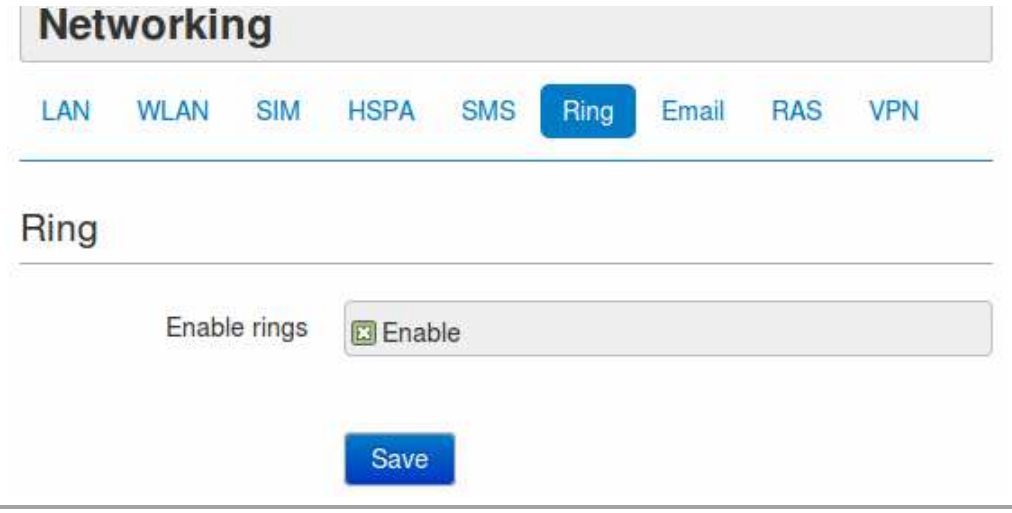
The button Refresh can be clicked at any time in order to update all information; Empty box for deleting all messages stored on Sent.

10.1.6. Ring

One of the actions that can be associated to an event (incoming or outgoing) is the RING, that can be sent or received to/by one or more registered users (*4. Events/Actions* (we500_sw_manual_pdf.html#we500-sw-event-action-en)).

To enable the **Ring** Function go to page **Administration** → **Networking** → **Ring** and enable the field **Enable rings**.





Once enabled the function and clicked on **Save**, it's possible to use this option.

To make sure that this function is properly operating, it's recommended to check the following points:

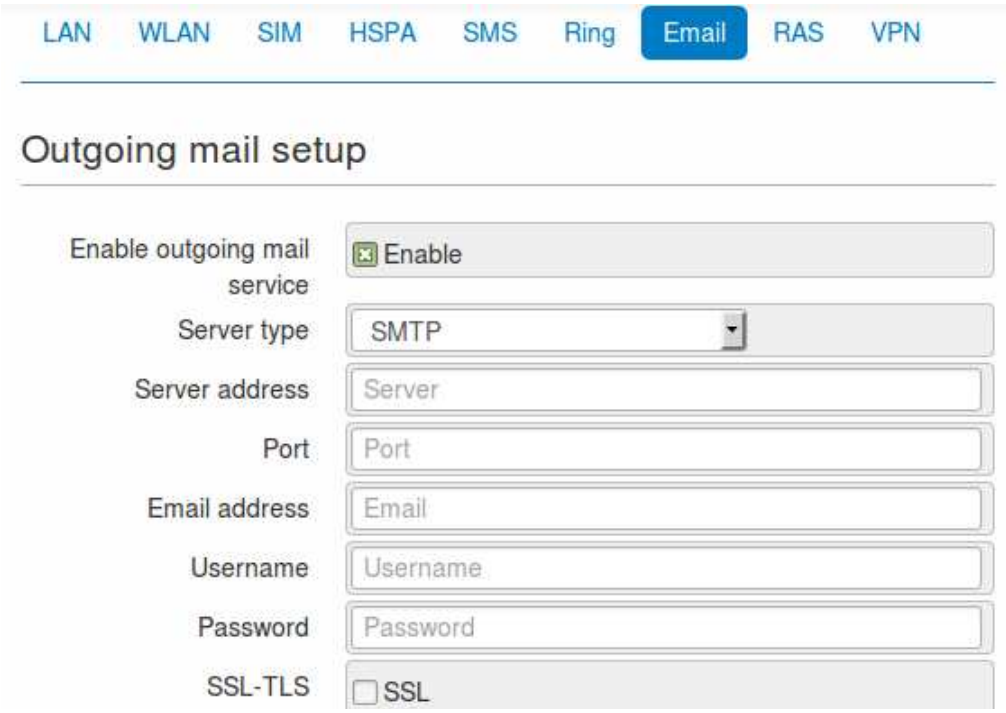
- Enable the Ring function, as described above.
- Define at least one user with valid telephone number, enabled to receive/send rings (see *9. Users* (we500_sw_manual_pdf.html#we500-sw-users-en))
- Make sure that the SIM card is properly inserted and voice call enabled.
- Make sure that the SIM card has enough credit to send rings.
- Make sure that the GSM antenna is properly assembled and that the signal is strong enough

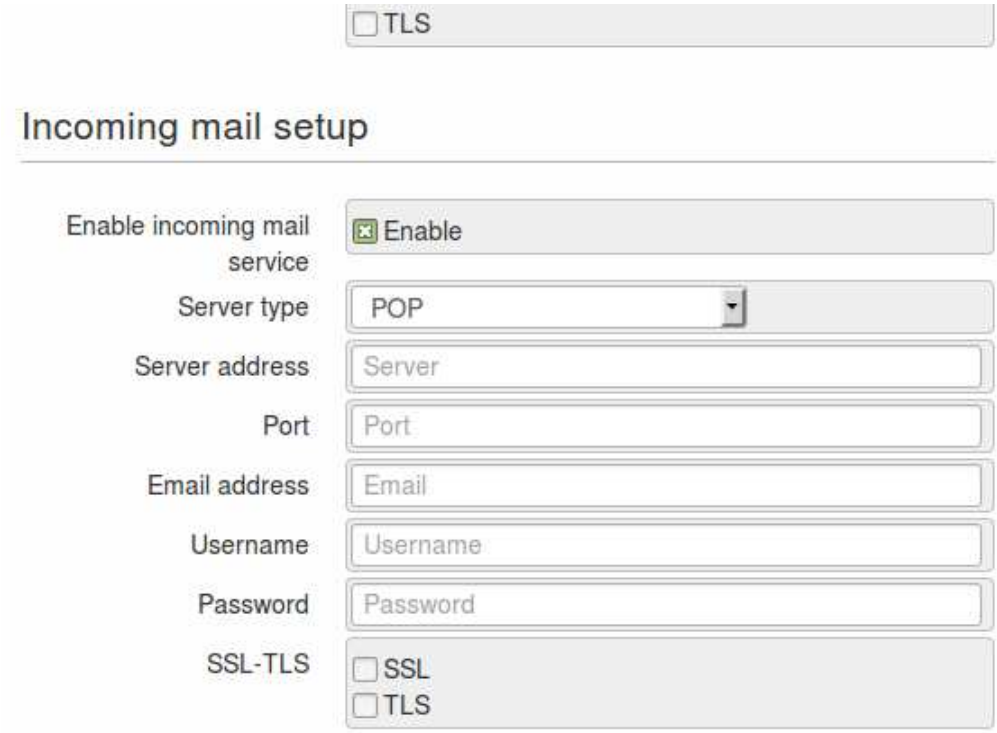
10.1.7. Email

Before proceeding with the configuration of the WE500, it's necessary to make the following:

- After the selection of the provider (Gmail, Yahoo, Hotmail etc..) enter the provider's site and create a new valid mail account
- In the site of the provider, collect all information regarding the parameters to be entered in order to configure the mail service

Once a new account has been created, it's possible to proceed with the configuration of the WE500, enabling the outgoing emails, the incoming emails or both of them from the page **Administration** → **Networking** → **Email**.





On the section **Outgoing mail setup** the parameters required for the email sending from the WE500 must be set:

- **Enable outgoing mail service** it enables/disables the email sending service.
- **Server type** it allows to choose the type of mail server (at the moment only SMTP available)
- **Server address** it's the address of the mail server (for example smtp.gmail.com)
- **Port** it's the number of the access port (for example 587)
- **Email address** the email address associated to the WE500. This will be the address visualized by the receivers of the emails.
- **Username** It's the username of the mail account associated to the WE500.
- **Password** It's the password of the mail account associated to the WE500.
- **SSL-TLS** Encryption

Once clicked on the button **Save**, a new section, called **Outgoing mail test**, will appear on the bottom of the page: from this section it's possible to send a test email to any address.

A properly configured mail service allows the WE500 to send notification mails to the configured users (see *4.2.1. Send Email* (we500_sw_manual_pdf.html#we500-sw-action-email-en))or to send scheduled reports (see *7.2.4. Email report* (we500_sw_manual_pdf.html#we500-sw-data-sending-email-report-en)).

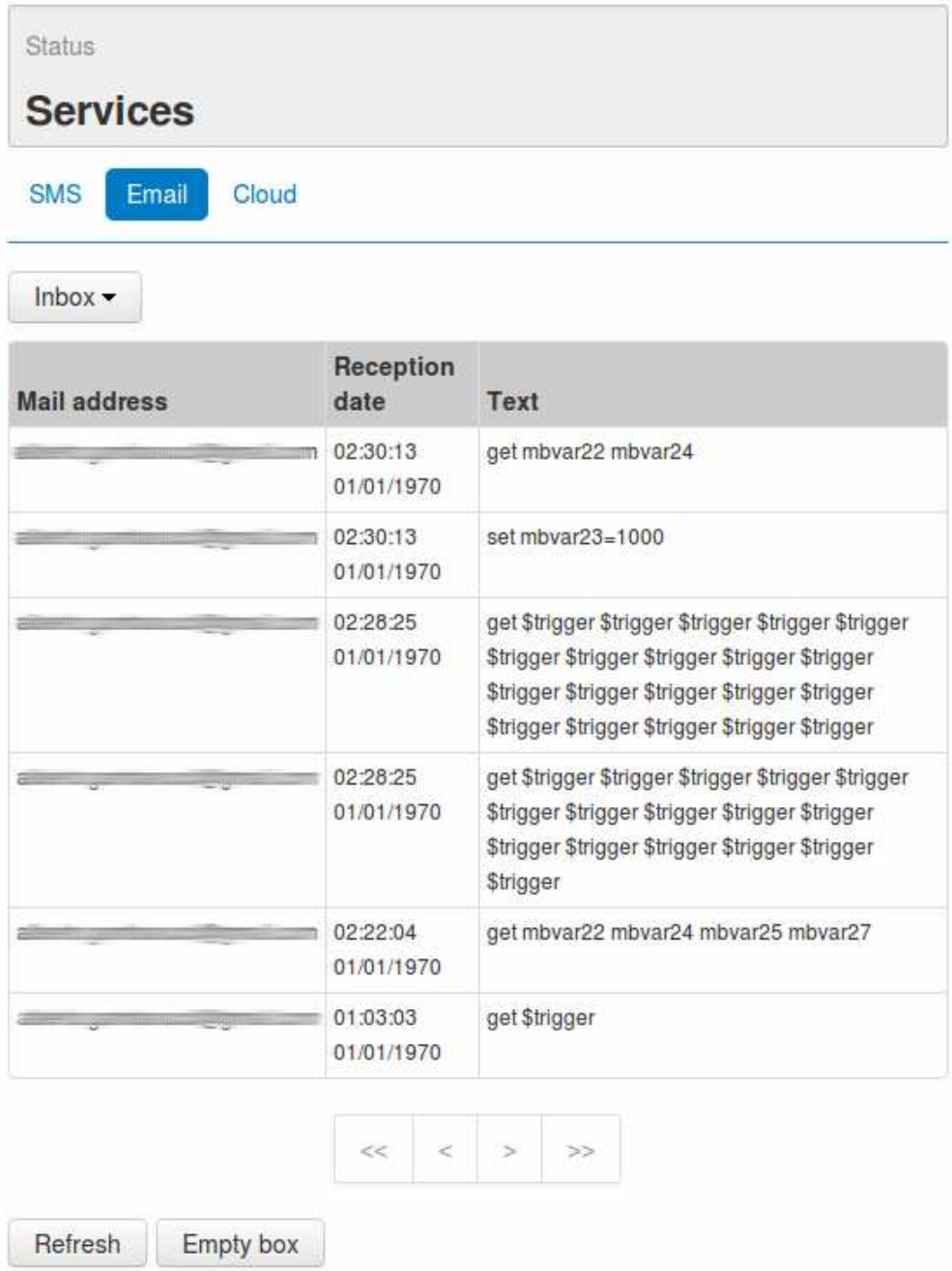
On the section Incoming mail setup the parameters required for the email sending from the WE500 must be set:

- **Enable incoming mail service**: Enables/disables the email receiving service.
- **Server Type**: Type of mail server (at the moment only POP available)
- **Server address**: the address of the mail server (for example pop.gmail.com)
- **Port**: Number of the access port (for example 995)
- **Email address**: the email address associated to the WE500. The commands sent by the authorized users should be sent to this address.
- **Username**: It's the username of the mail account associated to the WE500.
- **Password**: It's he password of the mail account associated to the WE500.
- **SSL-TLS**: Encryption

A properly configured mail service allows the authorized users to send commands to the WE500 (see *6.2. Set/Get via SMS/Email commands* (we500_sw_manual_pdf.html#we500-sw-set-get-cmd-en) and *11. Commands* (we500_sw_manual_pdf.html#we500-sw-builtin-cmd-en))

All sent and received emails can be visualized on the page **Status → Services → Email**.

The first page shows the emails received by the device:

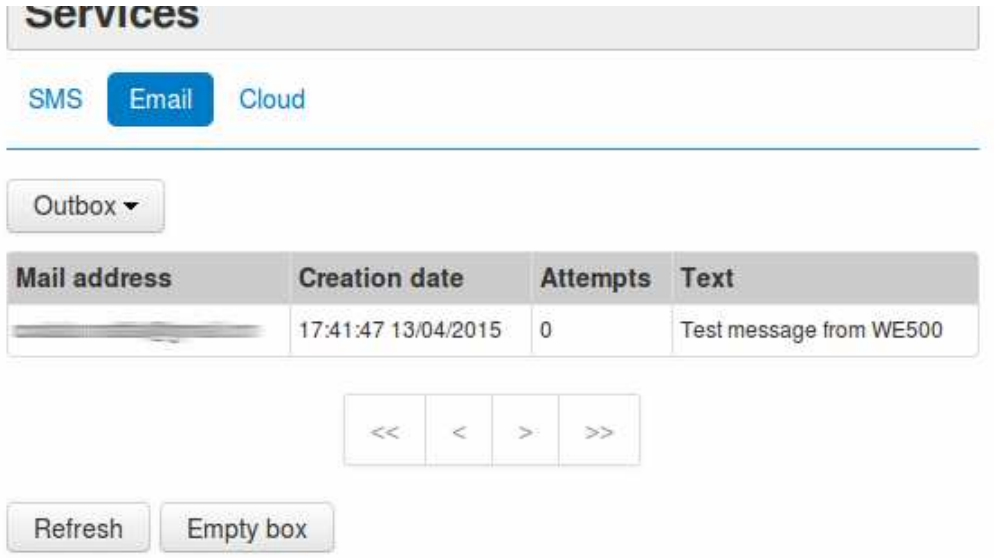


On the displayed table the following information are available:

- **Mail address**: the mail address of the sender
- **Reception date**: Date and time when the WE500 received the email.
- **Text**: text of the received email.

At any time it's possible to click on the button Refresh in order to update the information, or **Empty box**, in order to delete all messages available inside Inbox.

Clicking on the drop-down menu on top of the table, it's possible to pass from **Inbox** to **Outbox**.

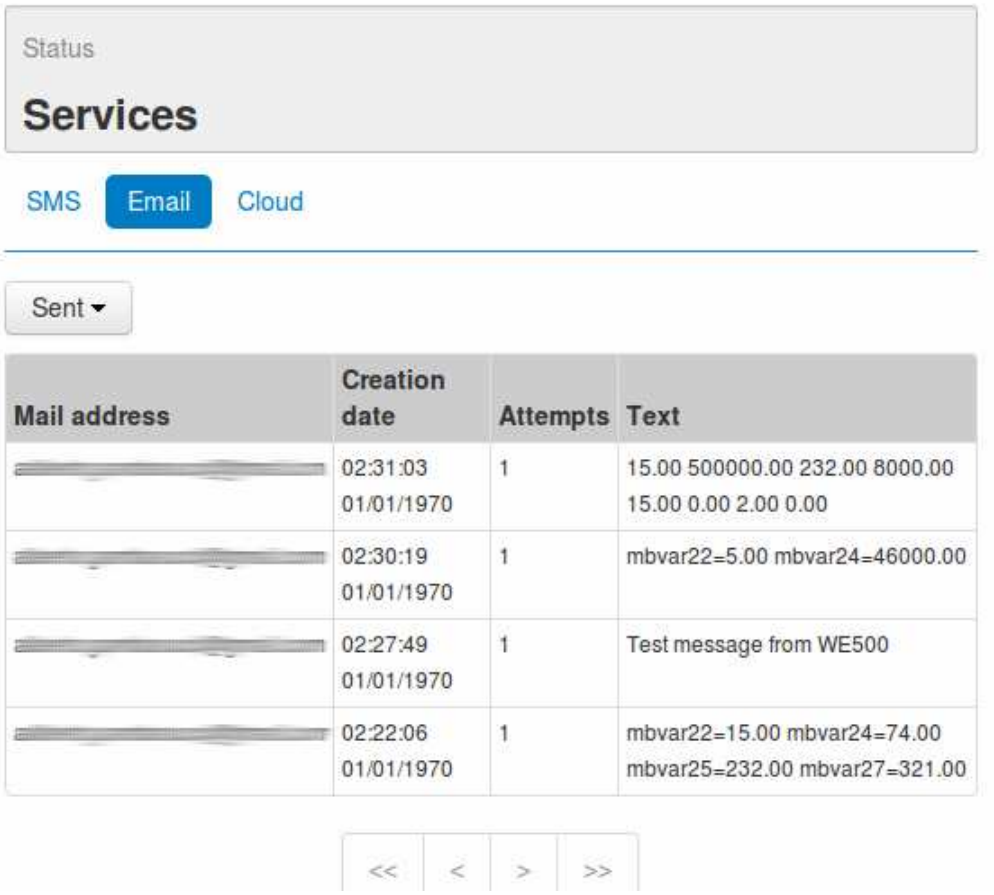


On this table it's possible to visualize all the emails not yet delivered by the WE500. The following information will be shown:

- **Mail address**: in this filed is shown the address of the receiver of the mail.
- **Creation date**: It's the date and time of the mail creation
- **Attempts**: it shows the sending attempts made by WE500
- **Text**: it displays the text of the mail

At any time it's possible to click on the button **Refresh** in order to update the information, or **Empty box**, in order to delete all messages available inside **Outbox** (deleted mails won't be sent out)

Clicking on the drop-down menu on top of the table, it's possible to pass from **Outbox** to **Sent**. On this table are displayed some information referred to the email already sent by the WE500:



- **Mail address**: in this filed is shown the address of the receiver of the mail.
- **Creation date**: It's the date and time of the mail delivery
- **Attempts**: it shows the sending attempts made by WE500 before the successful delivery
- **Text**: it displays the text of the sent mail

At any time it's possible to click on the button Refresh in order to update the information, or Empty box, in order to delete all messages available inside Sent.

10.1.8. VPN

From the page **Administration** → **Networking** → **VPN** it's possible to enable the VPN service to Nethix Portal or to a corporate VPN server.

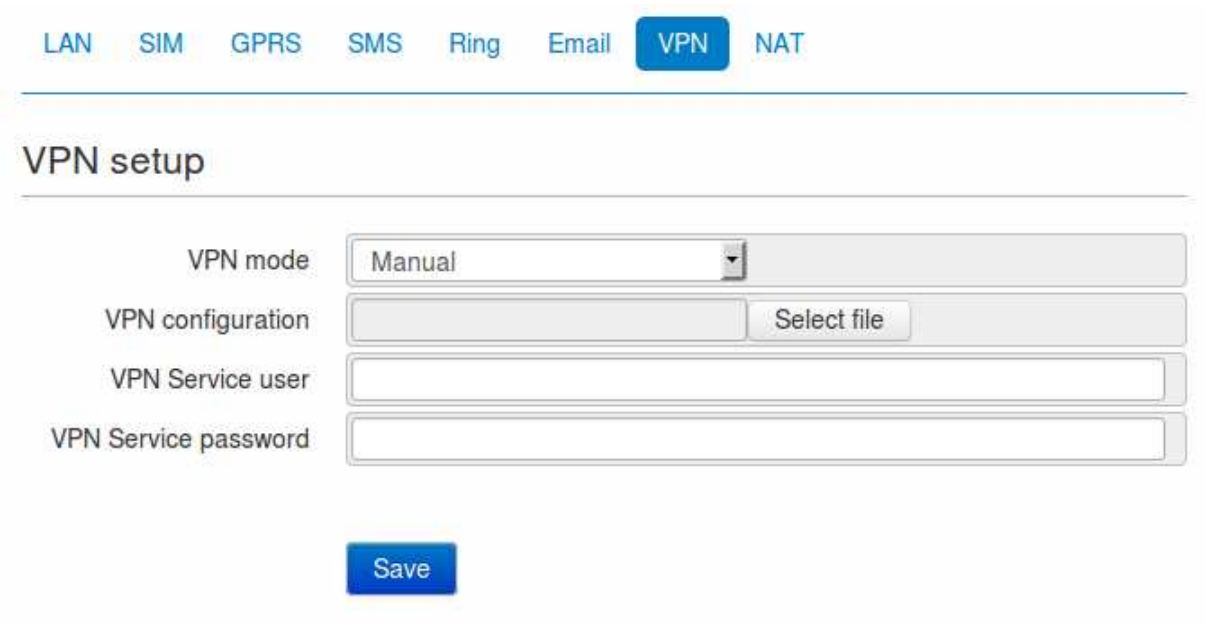
It's possible to enable the VPN according to two modes:

- **automatic**
- **manual**

The **automatic VPN** is used to build up a secure connection to Nethix Portal. The automatic VPN allows also to build up a secure and encripted connection between a PC and the device.

For further information about the use and the advantages granted by the VPN service, see the relevant manual *manual* (../portal/portal_vpn.html#portal-vpn).

On the other hand the **manual VPN** is used to build up a secure connection to a external VPN service, compatible with OpenVPN (https://openvpn.net) clients.



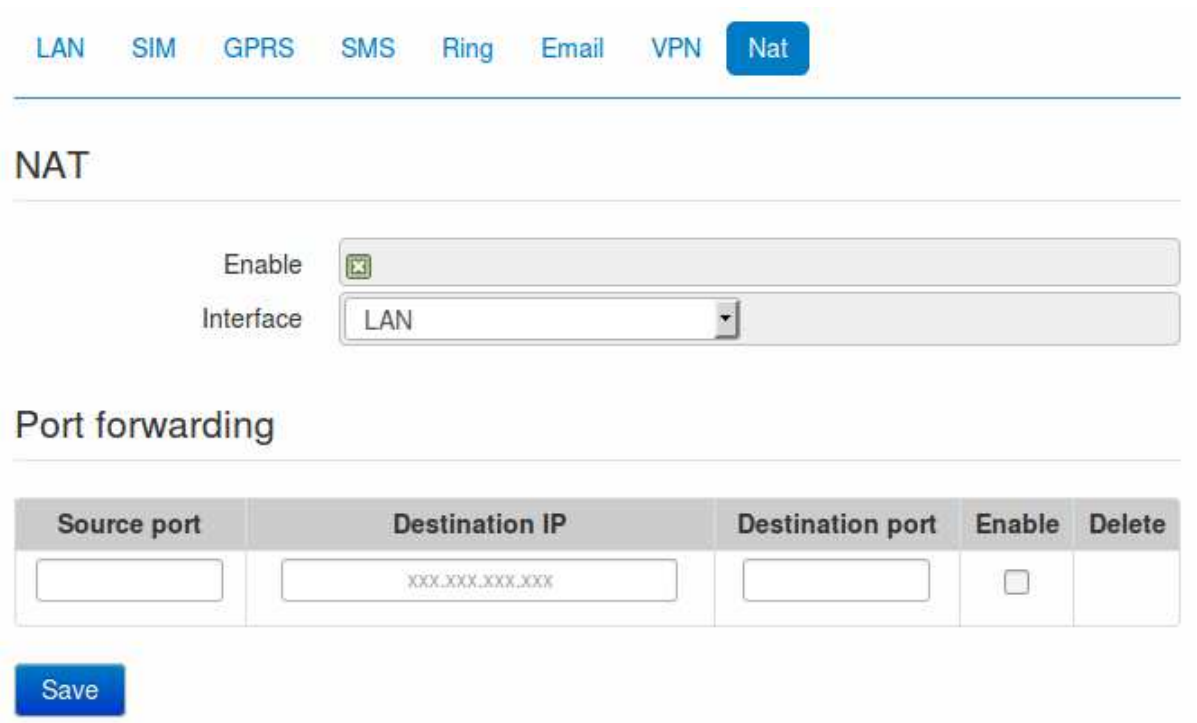
The parameters to be configured in order to enable a manual VPN are the following:

- **VPN mode**: modality of the VPN, in this case: *Manual*
- **VPN configuration**: this is the configuration file, released by the selected VPN Service Provider
- **VPN Service user**: the username for authenticating on the VPN service
- **VPN Service password**: the password for authenticating on the VPN service

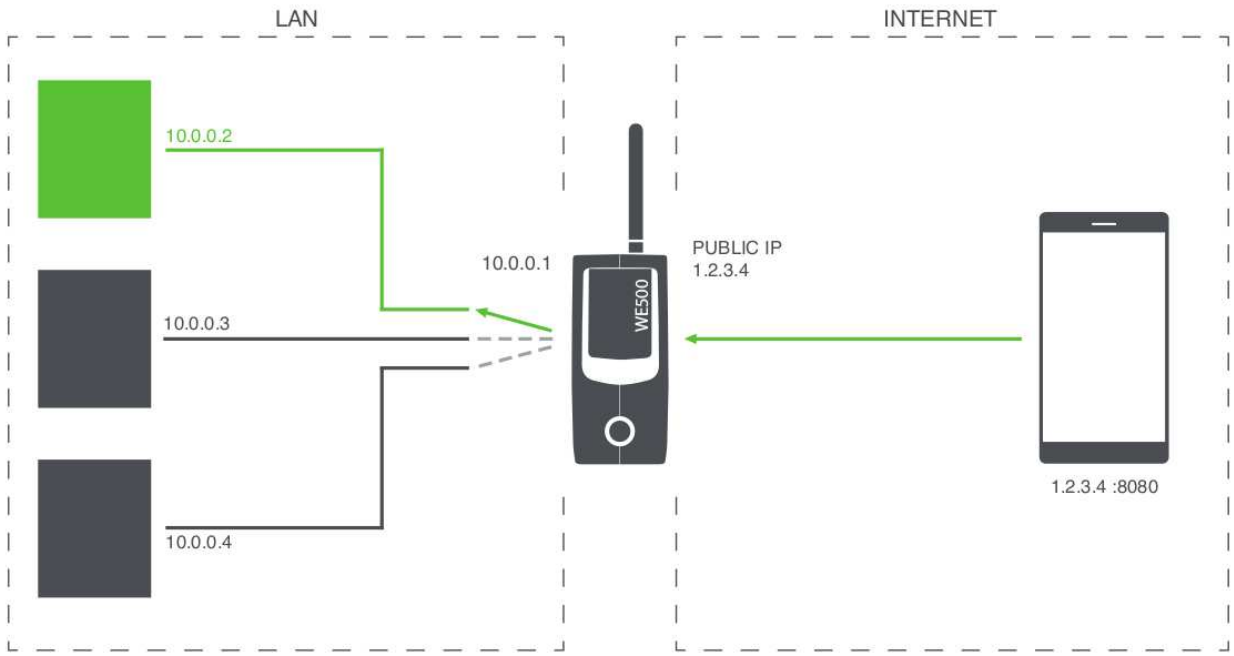
10.1.9 NAT

From the page **Administration-> Networking->NAT** it's possible to enable the **NAT** function and set the rules for

the **port forwarding**.



Enabling the function **NAT**, the device will run in **gateway** mode, i.e. it will provide connectivity through the interface, selected by the connected devices.



Setting the routing rules it's possible to forward to a defined **IP address** and **port**, the traffic coming to the

WE500.

For instance:

WE500 is inside a LAN network and has the local IP address 10.0.0.1 and the public IP address 1.2.3.4 (for entering internet). It is necessary to reach the port **80** of another device (connected with **WE500**) having local IP address 10.0.0.2. It's possible to set the following rule:

- Source port: 8080
- Destination IP: 10.0.0.2
- Destination port: 80

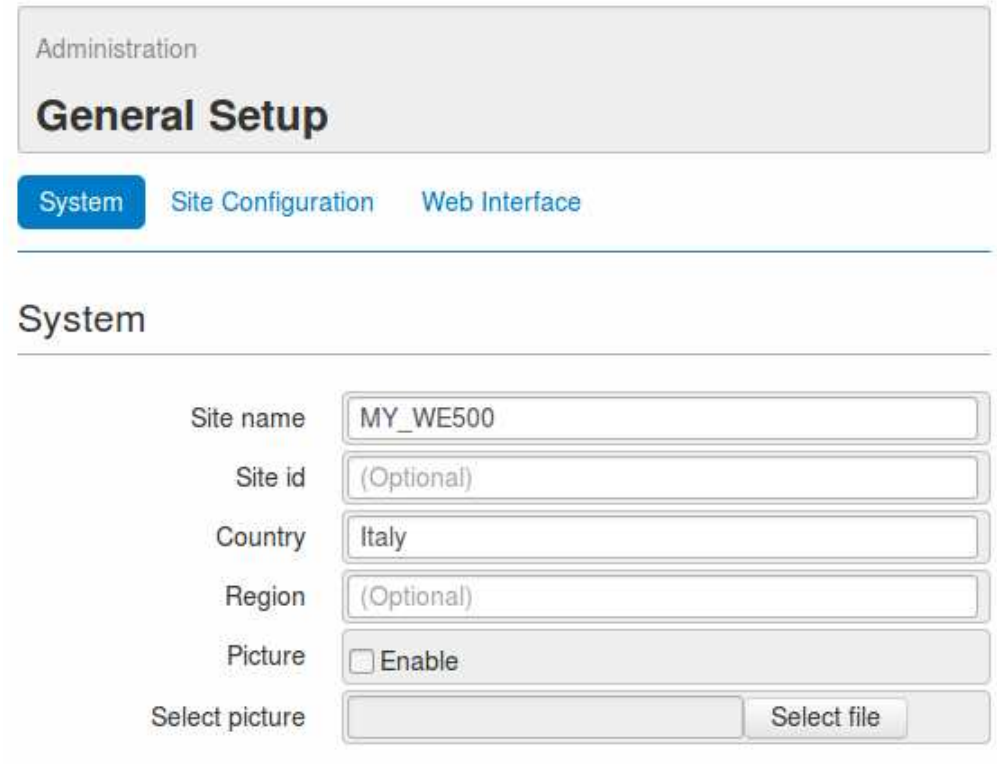
According to this rule, by typing **1.2.3.4:8080** in the address bar of your internet browser, you will be redirected to the port 80 of the device having IP 10.0.0.2.

10.2. System settings

On section **Administration → General Setup** it's possible to define some general settings of the device and enable some additional services.

10.2.1. Information about the system

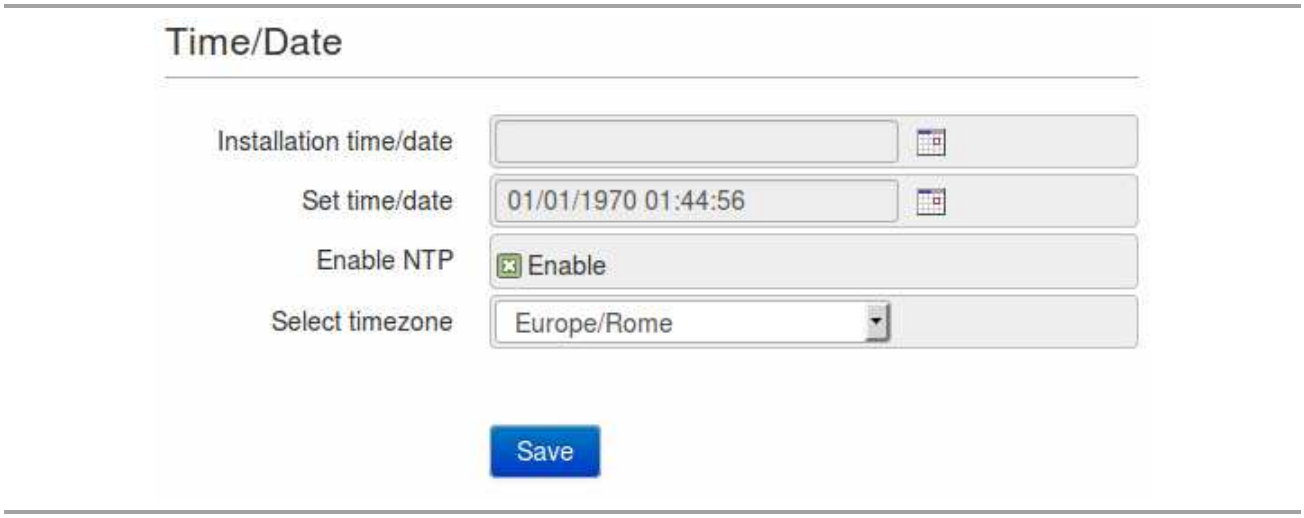
On the page **Administration → General Setup → System**, under the section **System**, it's possible to configure the contents to be displayed on the page **Status → Site** immediately after the login. These parameters are not compulsory and are used just to identify the device.



- **Site name**: the name assigned to the device
- **Site id**: numeric ID assigned to the device
- **Country**: Country where the device is installed
- **Region**: Region/Area where the device is installed
- **Picture**: when this option is enabled, it's possible to select an image, by clicking on **Select file**, and then display the selected image after the login (for example the picture of the installation, of the company..and so on..). The picture will be displayed on the page **Status -> Site**.

10.2.2. Date and time

On the page **Administration → General Setup → System**under the section **Time/Date**, it's possible to set the date and time of the device:



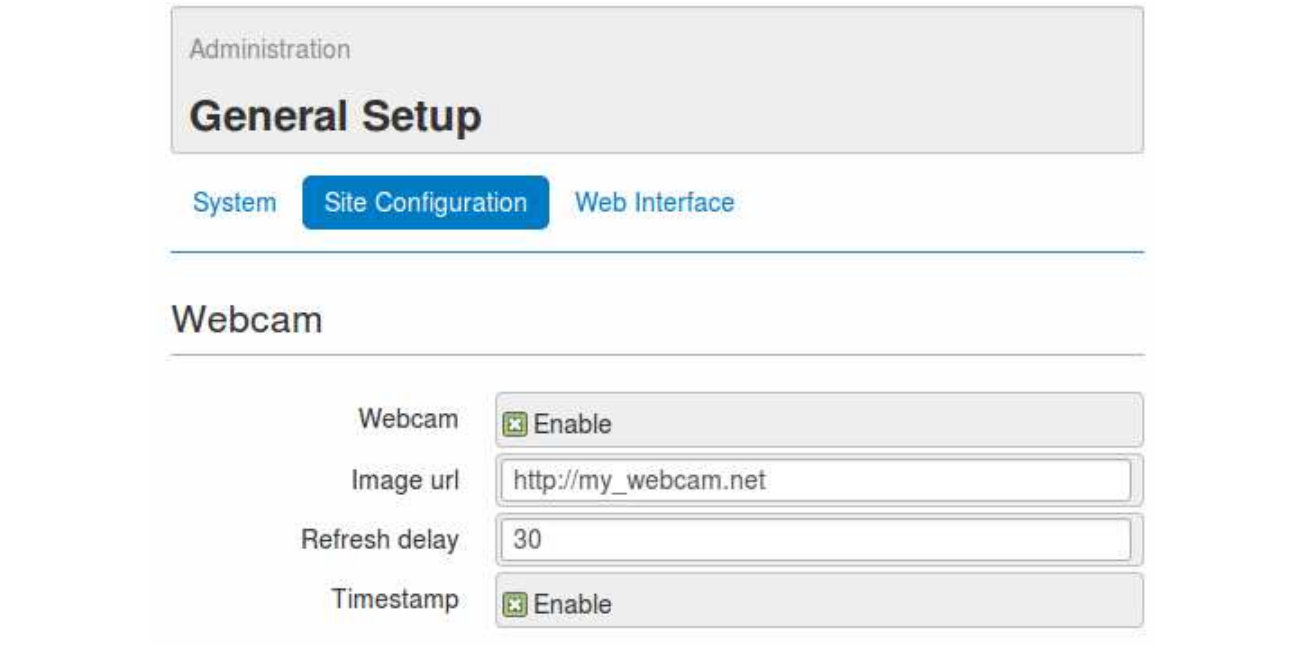
- **Installation time/date**: It states the date and time, when the device has been installed. This information has no influence on the functioning and has the only reason of identifying the installation.
- **Set time/date**: It allows to set the date and time of the device.
- **Enable NTP**: it enables the automatic synchronization of time. Once per day and at every reboot, the WE500 will connect to the server in order to update date and time precisely, according to the relevant timezone.
- **Select time-zone**: it allows to set the timezone of the device.

It is also possible to specify a custom NTP server, by clicking the **Advanced** link.

10.2.3. Web-cam

It's possible to enable a web-cam to be associated to the device, in order to display the captured image after the login. The image will be refreshed according to the pre-set timing. The webcam doesn't have to be necessarily connected to the WE500 via Ethernet, but it must be available via LAN, Wi-Fi, GPRS or HSPA.

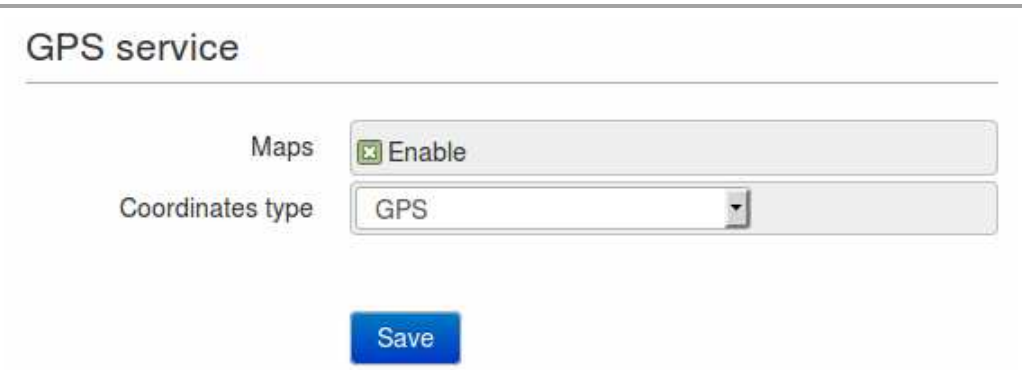
In order to define the web-cam parameters, go to page **Administration → General Setup → Site Configuration**, on the section **Web-cam**:



- **Webcam**: it enables the function
- **Image URL**: it refers to the network path for the WE500 to be connected to and receive the web-cam images.
- **Refresh**: Image refresh time expressed in seconds. The refresh time depends also by other factors, as for example the speed and the quality/resolution of the connection.
- **Timestamp**: enabling this function, the date and time of the image acquisition will be shown.

10.2.4. GPS

The WE500 allows to get or to set the geographical coordinates, in order to show through Google Maps the precise location of the installed device. For activating the GPS function, go to page **Administration → General Setup → Site Configuration** on section **GPS service**.



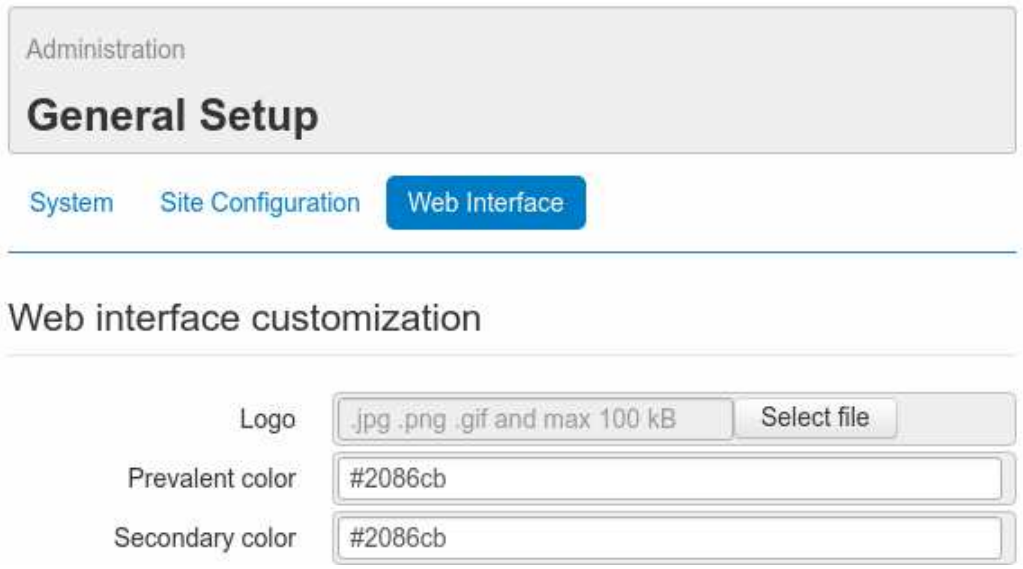
When the function has been activated, it's possible to decide how to use it, selecting on the field **Coordinates type** between the two options **Manual** and **GPS**.

- **Manual**: it allows to set manually the device coordinates. The fields Latitude and Longitude will be filled in with the coordinates acquired from Google Maps.
- **GPS**: it allows to acquire the geographical coordinates directly from a GPS sensor, connected through the serial 232(B) of the WE500. The GPS sensor must be requested at order confirmation, since it's considered as an optional accessory.

After a proper configuration of the required parameters, irrespective of the selected mode, it's possible to display the map on page **Status → Site**.

10.2.5. Web interface personalization

Some graphical personalizations of the web interface of the device are possible from page **Administration → General Setup → Web Interface**, and will be valid for all the users.



- **Logo**: this allows to choose an image to replace the Nethix logo on the left top of the page.
- **Prevalent color**: Primary color of the page. (RGB hexadecimal color, for example: #007BC5)
- **Secondary color**: Secondary color of the page. (RGB Hexadecimal color, for example #009FE9)
- **Font color**: Color of the text. (RGB Hexadecimal color, for example #007BC5)
- **White icons**: Disabling this option, all the icons of the header (power-off, reboot, logout) will be displayed in black.
- **Background color**: Color of page's background .(RGB Hexadecimal color for example #007BC5)
- **Footer**: it allows to configure the footer at convenience (HTML code is allowed)

Clicking on all coloured fields, a "color picker" will allow to select the desired color and automatically insert the relevant hexadecimal value.

11. Commands

The WE500 has a list of preconfigured commands, that allow to set or to read some system parameters. Commands can be sent by any authorized user, both via SMS and via mail. On the table below are listed all system commands with relevant description:

Command	Description
STAT	Request of the system status. The device answers sending an SMS or Mail, containing following information: • IP address (GPRS/HSPA if available, or LAN) • Uptime of the device • CPU load Example: IP:192.168.1.146 (15:54:49 UP 9 DAYS, 7:07, load average: 0.32, 0.23, 0.18)
WAKEUP	Request of a HSPA/GPRS On-Demand connection. When the WE500 receives this command (SMS or Mail) from an authorized user, if the GPRS/HSPA connection is on-Demand, it will establish a new connection, which remains on for 15 minutes. If no dynamic DNS service is enabled, it's possible to use the above mentioned STAT command to receive the IP address of the WE500.

Command	Description
SETTIME MMDDhhmmYYYY	When the WE500 receives this command (via SMS or Email) from a registered user, a new date and time, as indicated in the text message, will be set. The syntax means: MM=month, DD=day, hh=hour, mm=minutes, and YYYY=year EXAMPLE: For setting the date 6th December 2015 and the time 11:07 send the following message: SETTIME 020611072015
SIGNAL	Request for the GSM Signal strength When the We500 receives this command (either via SMS or Email) from a registered user, the device will check the strength of the available GSM signal and will inform the requesting party according to the following format: GSM Signal:XX Where instead of “XX” a number between “01”(no signal) and “31” (max. signal) will be reported.
ReBooT	Request for a system reboot. When the WE500 receives this command (either via SMS or Email) from a registered user, it will start a system reboot. Pay attention to upper and lower case letters.
PowerOff	Request for a system power off. When the WE500 receives this command (either via SMS or Email) from a registered user, it will turn off the system. It will be necessary to disconnect and then reconnect the power in order to let the device start again.

12. Diagnostic

The WE500 offers the possibility to make some diagnostic operations and display some data referred to the system functioning.

Entering the section Diagnostics it’s possible to get some additional information regarding the active connections, in order to check the proper functioning of the same.

12.1. System Log

From the page **Diagnostics** → **System** → **System** it’s possible to read the last 20 logs of the system.

Time	Text
Jan 2 18:30:53	mb_cmd_exec(): Modbus TCP connection failed: No route to host
Jan 2 18:30:48	popmaildir: fetch from account... ^M system command: |/usr/sbin/popmaildir /mnt/storage/spool/mail -t 30 -- openssl s_client -quiet -connect pop.gmail.com:995|
Jan 2 18:30:47	mb_cmd_exec(): Modbus TCP connection failed: No route to host
Jan 2 18:30:44	Sim not inserted!
Jan 2 18:30:41	mb_cmd_exec(): Modbus TCP connection failed: No route to host
Jan 2 18:30:35	mb_cmd_exec(): Modbus TCP connection failed: No route to host
Jan 2 18:30:34	Sim not inserted!
Jan 2 18:30:29	mb_cmd_exec(): Modbus TCP connection failed: No route to host
Jan 2 18:30:24	Sim not inserted!
Jan 2 18:30:23	mb_cmd_exec(): Modbus TCP connection failed: No route to host
Jan 2 18:30:17	mb_cmd_exec(): Modbus TCP connection failed: No route to host
Jan 2 18:30:14	Sim not inserted!
Jan 2 18:30:11	mb_cmd_exec(): Modbus TCP connection failed: No route to host
Jan 2 18:30:05	mb_cmd_exec(): Modbus TCP connection failed: No route to host
Jan 2 18:30:04	Sim not inserted!
Jan 2 18:29:59	mb_cmd_exec(): Modbus TCP connection failed: No route to host
Jan 2 18:29:54	Sim not inserted!
Jan 2 18:29:53	mb_cmd_exec(): Modbus TCP connection failed: No route to host

<< < > >>

Refresh

On the table are displayed some useful information for having a feedback on the system status and for finding possible malfunctions. For updating the list of the displayed logs, click on the button Refresh.

In case of error notifications, check the device configuration and refer to Nethix support for further instructions.

From the page **Diagnostics** → **System** → **Boot** it's possible to display the logs referred to the system boot, that is the operations executed by the WE500 at every restart/reboot.

01-01-70 00:00:07	Getting encrypted features vector...
01-01-70 00:00:07	Decrypting features vector...
01-01-70 00:00:07	Saving features into database...

Those information can be relevant for Nethix Support in case of technical assistance.

12.2. Information of connectivity

From the page **Diagnostics** → **Networking** it's possible to get additional information regarding the status of the active connections.

The page is divided into three sections: **LAN interface**, **WLAN Interface** (if the Wi-Fi option is available) and **GPRS Interface**.

Every section reports a number of technical information regarding the relevant connection.

LAN Interface:

- **Status**: up if the connection is established, down if the service is not available or if the WE500 has not come to establish a connection.
- **MAC address**: it displays the MAC address of the WE500 network interface
- **IP address**: previously configured (Static) or acquired (DHCP) IP address
- **Subnet mask**: previously configured (static) or acquired (DHCP) subnet mask
- **Gateway**: previously configured (static) or acquired (DHCP) gateway.
- **DNS servers**: available DNS servers.
- **In/Out bytes**: quantity of traffic carried out during current connection.
- **In/Out errors**: quantity of outgoing/incoming errors during current connection
- **Collisions**: quantity of collisions occurred during current connection.

WLAN Interface (if available):

- **Operstate**: up if the connection is established, down if the service is not available or if the WE500 has not come to establish a connection.
- **MAC address**: it displays the MAC address of the Wi-Fi device connected to the WE500.
- **SSID**: name of the Wi-Fi Network where the WE500 is connected to.
- **IP address**: previously configured (Static) or acquired (DHCP) IP address
- **Link Quality**: quality of the received signal
- **Signal Level**: strength of the signal
- **Subnet mask**: previously configured (static) or acquired (DHCP) subnet mask
- **In/Out bytes**: quantity of traffic carried out during current connection.
- **In/Out errors**: quantity of outgoing/incoming errors during current connection
- **Collisions**: quantity of collisions occurred during current connection.

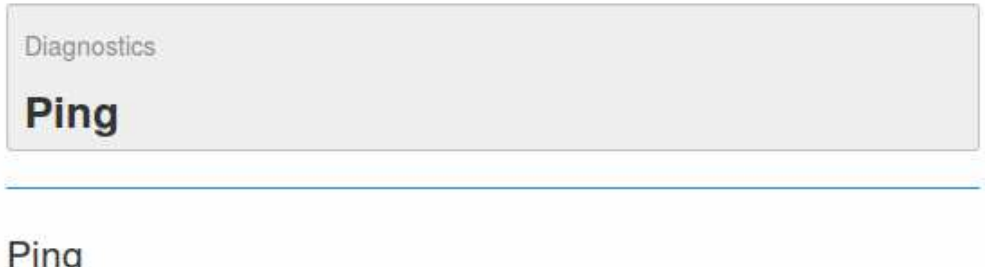
GPRS Interface:

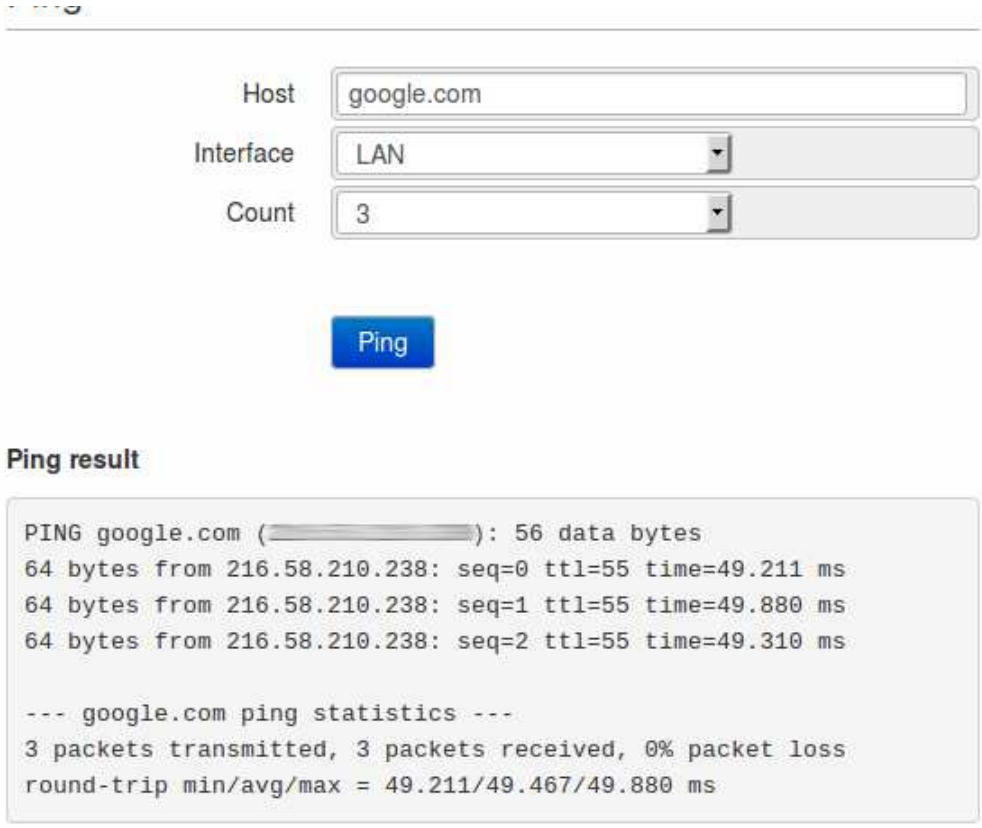
- **Status**: up if the connection is established, down if the service is not available or if the WE500 has not come to establish a connection.
- **Signal**: it gives the signal level in CSQ. The scale ranges from 1 to 31, where 31 is the max. coverage while 1 is the minimum. In order to have a stabilized connection, it's recommended to have at least a Signal of 15-16.
- **Network operator**: it's the name of the Provider used by the We500.
- **IP address**: IP address of the connection.
- **Gateway**: gateway provided by the operator
- **In/out bytes**: quantity of traffic carried out during current connection.
- **In/Out errors**: quantity of outgoing/incoming errors during current connection
- **Collisions**: quantity of collisions occurred during current connection.

12.3. Ping

In case of communication problems, for example when sending the data to a portal, sending a mail or similar, the WE500 gives the possibility to run a ping towards any host, allowing the selection of the network interface to be used.

For this operation enter the page **Diagnostics** → **Ping**.





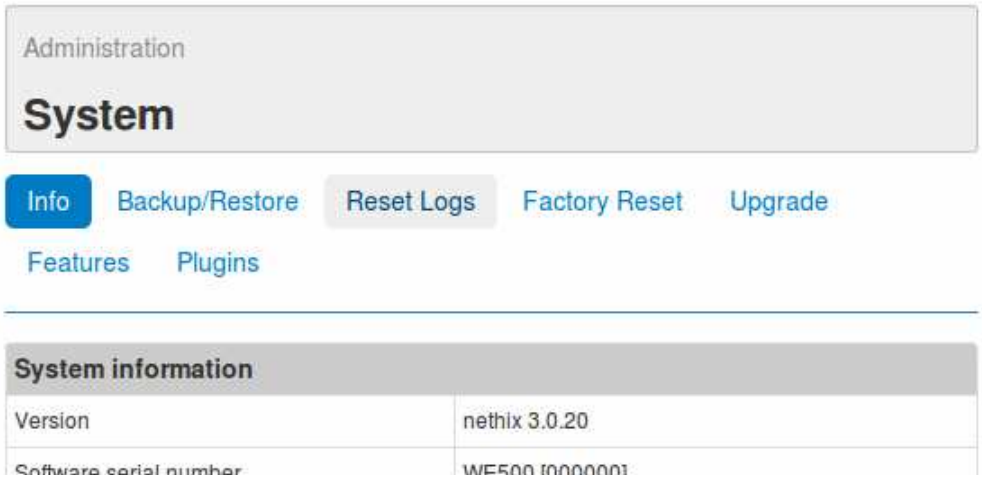
- **Host**: enter in this field a valid hostname, to be reached through ping (for example *www.google.com*)
- **Interface**: the network interface to be used for reaching the defined host. According to the configuration of the device and enabled services, it's possible to choose among **LAN**, **GRPS/HSPA** and **WLAN**.
- **Count**: it allows to select the ping number to be run.

Once completed above mentioned fields, click on Ping in order to start the operation. The results will be reported on the lower part, allowing the user to find any possible problems arising.

13. System operation

13.1. System information

On page **Administration** → **System** → **Info** it's possible to find some additional information regarding the WE500. On section **System Information** are displayed some general information:



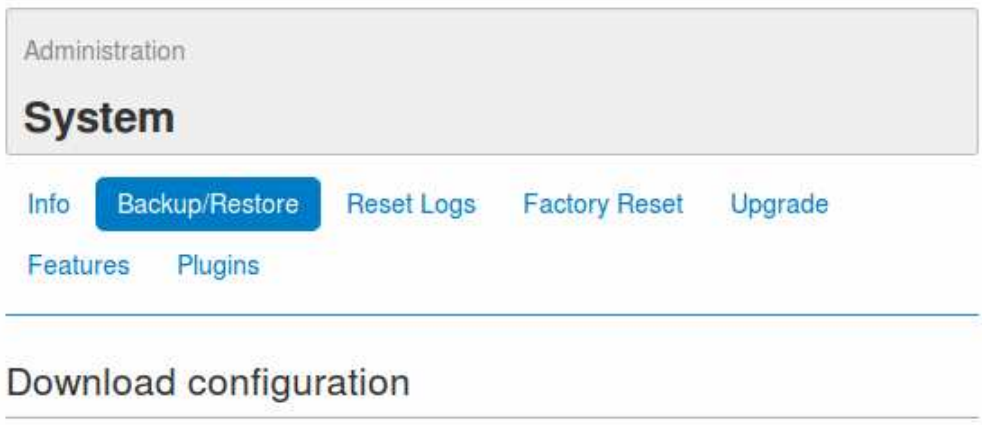
- **Version**: it's the version currently installed on the device.
- **Software serial number**: it's the serial number available on the backside label of the device.
- **Hardware serial number**: it's the hardware serial number, that is important for registrating on the portal and for using services as the VPN by Nethix.
- **Modem IMEI**: it's the IMEI code of the Modem inside the WE500.
- **Uptime**: it's the operating time of the WE500 from the last start.
- **Local time**: date and time of the device
- **Memory usage**: it's the status of the RAM memory.

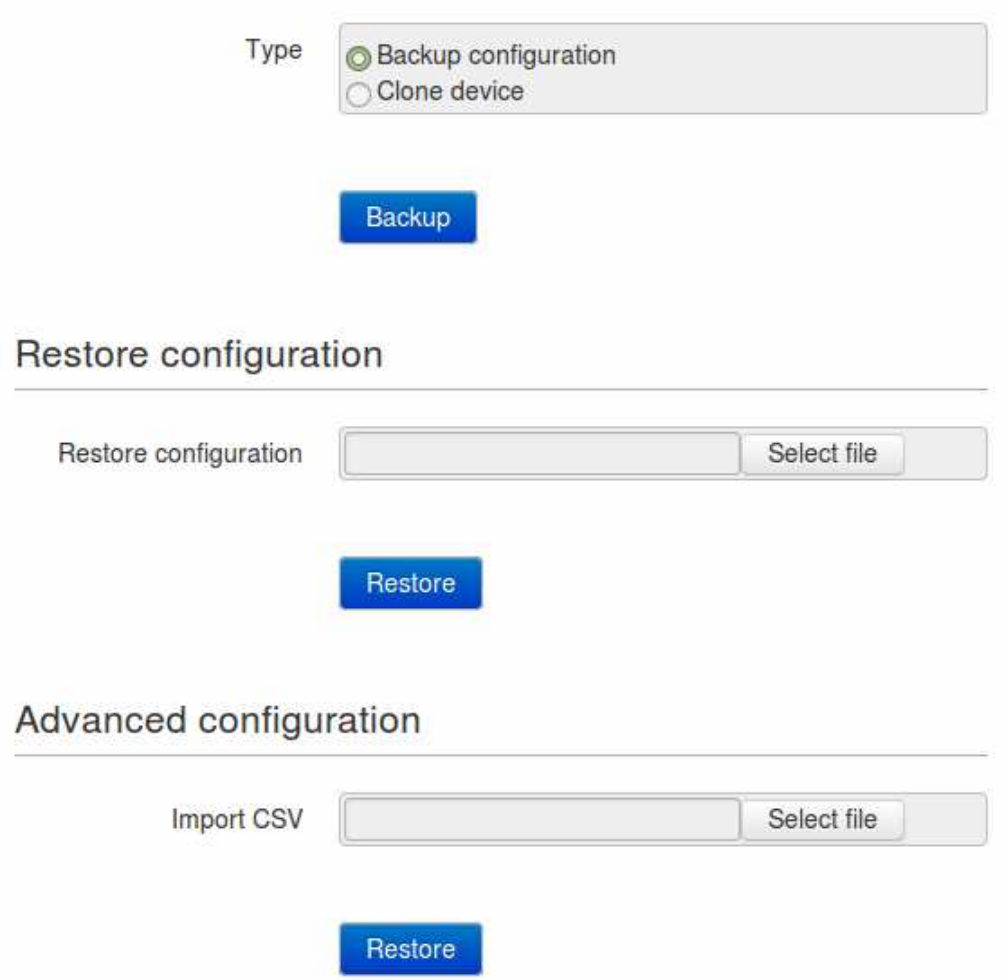
On the section System Status, the status of some other services and functions of the device is shown. Beside every single service is available a graphic indicator, that allows to have a quick overview of the We500 status.

Generally speaking, a green indicator means that the service is enabled and properly functioning, while a grey indicator means that the service is disabled and the red indicator, that the service is not properly configured and not in use. Clicking on any indicator, it's possible to access the configuration section of the relevant service.

13.2. Backup/Restore function

WE500 offers the possibility to make a backup of the device configuration as an encrypted file on page **Administration → System → Backup/Restore**.





The backup includes:

- Created variables
- Associated events and actions
- Networking settings
- Created users
- Enabling and configuration of the services

Not included in the backup:

- System log
- Service log
- SMS/Email/Cloud archives
- Variables log

To make the backup, click on **Download configuration**.

Once received the encrypted backup file, it's possible to load it on any other device in line with the first one.

From the section **Restore configuration**, select the encrypted backup file and click on **Restore**. After this operation, it's recommended to reboot the device, in order to make the modification effective.

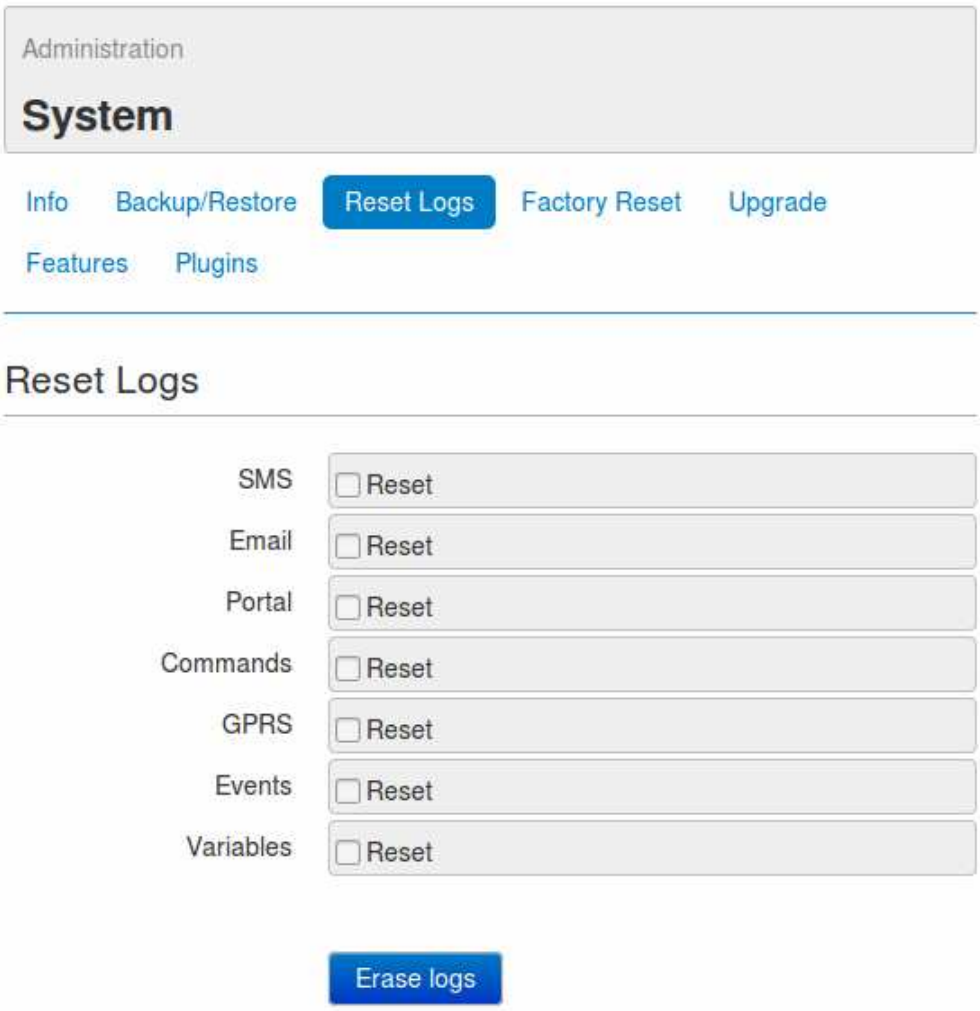
The Backup/Restore function can be useful to keep a copy of the configuration made, in order to reload it on the device itself or on some more additional devices having the same configuration.

In this last case (Restore on additional WE500) consider the following:

To restore the same configuration on two or more WE500, the devices must have the same Firmware version. If not, please contact Nethix support. The devices must also present the same hardware/software options (see *13.6. Features* (we500_sw_manual_pdf.html#we500-sw-features-en)).

13.3. Delete log

The internal memory of the WE500 allows to store a huge number of logs. But to avoid an overloading of the device, it's possible to delete any logs from the page **Administration** → **System** → **Reset Logs**.



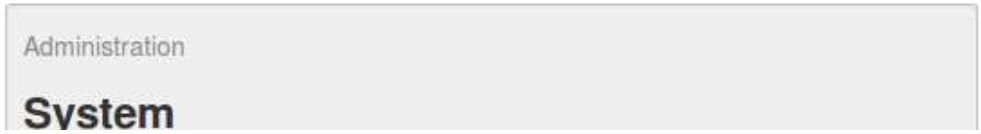
The Logs that can be deleted are the following:

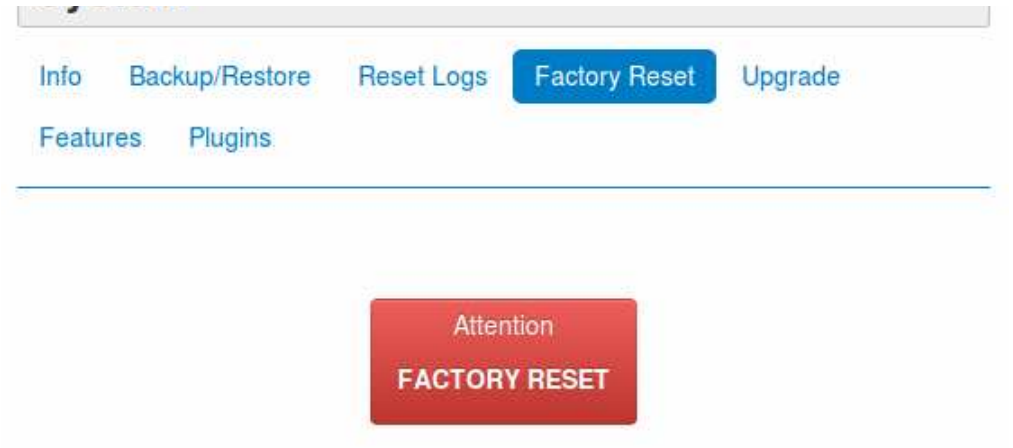
- **SMS**: it deletes all available SMS (sent, received and outgoing)
- **Email**: it deletes all available emails (sent, received and outgoing)
- **Portal**: it deletes all data sent to an external portal
- **Commands**: it deletes all the logs referred to the execute a command.
- **Events**: it deletes all the logs referred to occurred events/actions.
- **Variables**: it deletes all the logs from the datalogger

Once selected one or more of above listed positions, click on **Erase logs** for deleting permanently the logs from the device memory.

13.4. Factory reset

From the page **Administration** → **System** → **Factory Reset** it's possible to delete all stored logs and data and reset the configuration, bringing the device back to the factory settings.





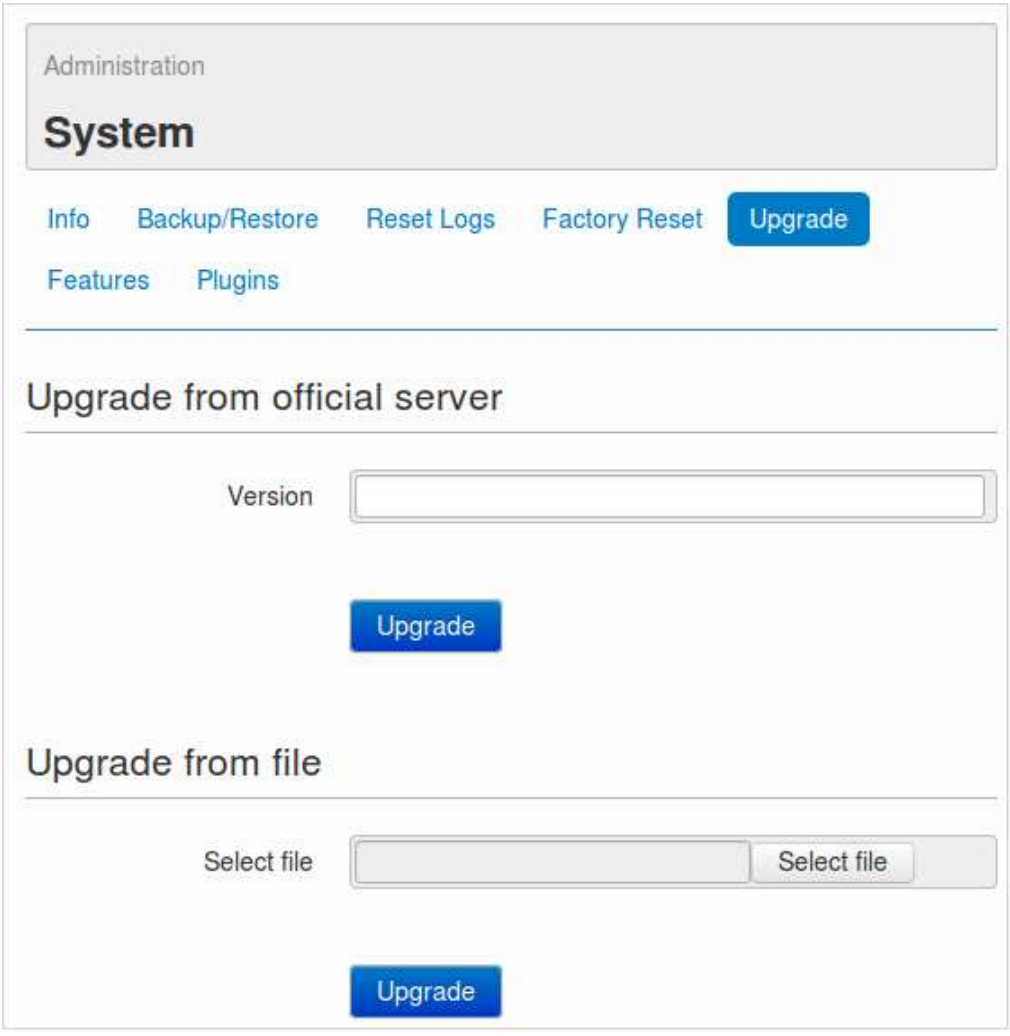
Click the big red button on the page, and confirm the choice. After the confirmation the WE500 will reboot and after the initialization phase the device will be again accessible via LAN.

13.5. Device upgrade

The WE500 can be upgraded any time upon customer's request or on suggestion of Nethix.

The upgrading can be made in two different ways: * downloading the updated version from the official Nethix Server (after having contacted Nethix Support) * uploading on the device an encrypted file, containing the upgrade (to be requested at Nethix Support).

Both procedures are available on page **Administration** → **System** → **Upgrade**.



On section **Upgrade from official server** it's possible to enter the name and number of the version to be downloaded, and get it directly from the Nethix Server. In order to know the Name and Firmware version number to be installed on the device, it's necessary to contact Nethix Support.

Once received the string, enter it in the field **Version** and then click on **Upgrade**.

The download time depends from the connection speed available with the WE500. Once downloaded the version, the WE500 will restart in order to proceed with the installation. This operation could require about 5 minutes.

Once the WE500 has returned to be available, it's recommended to enter the interface in order to check the result of the upgrading operation (on the status panel).

On the other hand, from the section Upgrade from file, it's possible to send to the WE500 an encrypted package, containing the upgrade, after having downloaded it on the PC.

The package changes according to the starting version to be upgraded, it therefore must be required directly at Nethix's support.

To start the upgrading it's required to select the file to be sent and click the relevant button **Upgrade**. Once the file has been sent to the device, the WE500 will restart in order to proceed with the installation of the new version.

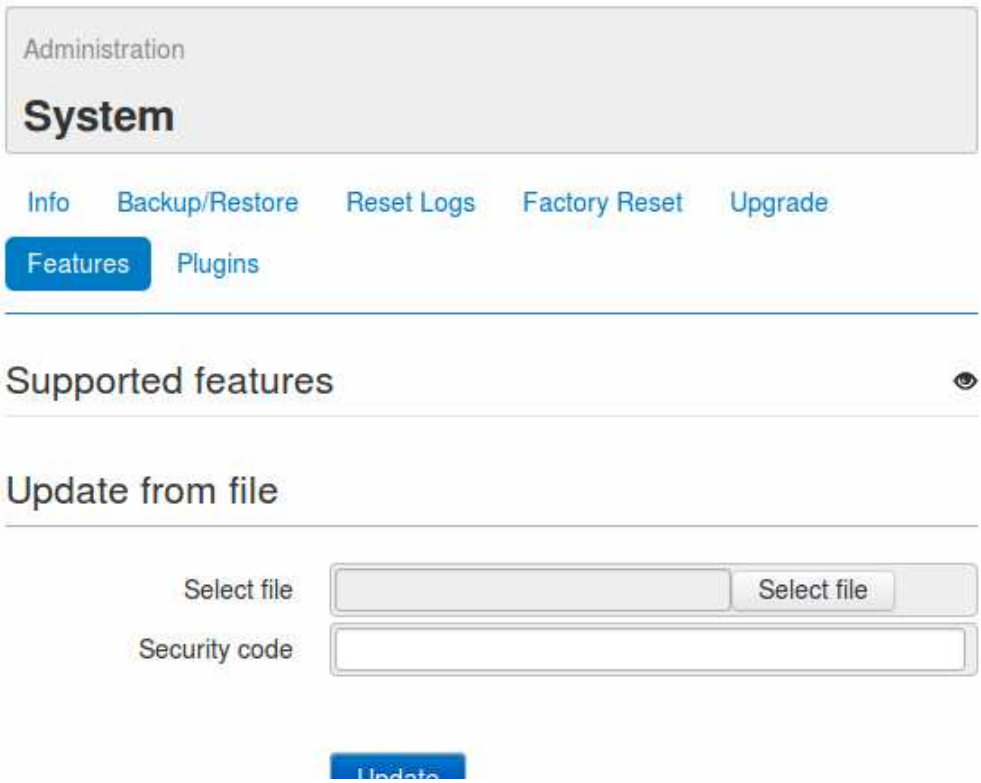
The download time depends directly from the speed of the active connection available with the WE500. Once downloaded the version, the WE500 will restart in order to proceed with the installation. This operation could require about 5 minutes.

Once the WE500 has returned to be available, it's recommended to enter the interface in order to check the result of the upgrading operation (on the status panel).

13.6. Features

The device features are a set of hardware and software options, that compose the system. The list of enabled features depends from the device type and from the additional hardware options, that have been required (for instance Wi-Fi, USB storage, etc..)

To check the enabled features in a device, go to page **Administration** → **System** → **Features**.



Clicking on the eye-shaped icon, available beside the section **Supported Features**, it's possible to visualize the complete list of the enabled features.

From the section **Update from file** it's possible to select an upgrading pack, that, together with a security code, will allow to enable or disable at any time the desired features.

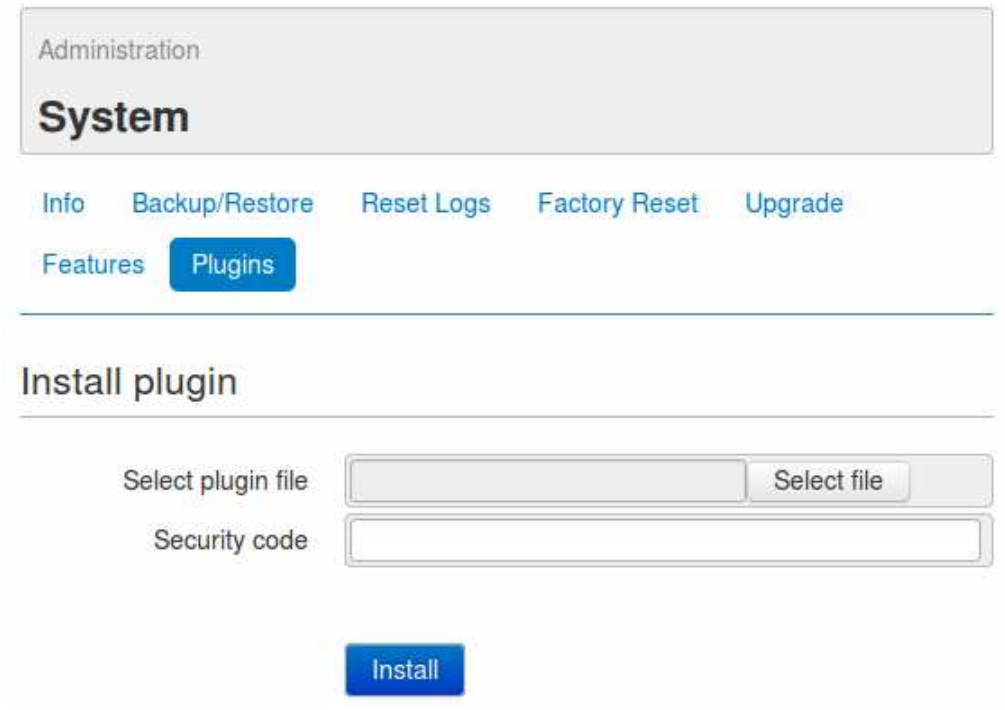
Both the pack and the code can be requested at Nethix support and are referred to one single WE500. It's not possible to use the same features pack on more than one device: the system will stop the procedure automatically.

In case the function backup/restore has to be applied, it's necessary to check in advance that all devices concerned have the same list of enabled features.

13.7. Plugins

The plugins are encrypted packs, that allow to add or change part of the configuration and some of the available web pages.

To load a new plugin or to check the list of the already installed plugins on a device, go to page **Administration → System → Plugins**.



The plugin tool allows, for example, to send a package to a WE500, in order to add a pre-set configuration according to the specifications or requirements of the customer.

Through a plugin it's possible to add:

- Variables
- Formulas
- Events and actions
- Customized pages, or dedicated to a specific application

The main difference between a plugin and a backup restore, is that through the plugins some additional pages can be created and added, and that also new additional variables, events or actions can be introduced beside those already existing (with the restore function the configuration is only overwritten).

To know the available plugins or to request additional customized plugins, it's necessary to contact Nethix's Support.

14. Safety guidelines

- Nethix products support SIM cards from providers of all around the world, particularly from Europe Africa and Asia. However, there could be some incompatible SIM cards.
- The device cannot receive/send SMS nor RING if the SIM card is not enabled to GSM services and network or credit is not available (if prepaid card is used).
- Verify that the device is operated in an area covered by GSM network with sufficient signal strength for granting proper functioning.
- In case of questions or doubts regarding the cost of the SMS service consult your Network Provider.
- This device is only suitable for being installed by a qualified operator
- Nethix is not responsible for improper use and/or its side effects
- Nethix products are designed for typical use in industrial automation and/or home applications.

If you plan to use Nethix products in special applications where anomalies and discontinuity of service can have serious effect on human life or can cause physical or material damages, or where extremely high levels of reliability are required (for example in aerospace systems, in atomic energy control systems or n electro-medical devices), please contact Nethix for support to your particular application. Nethix is not responsible of damages caused from its products if such applications are not previously authorized.

 The product shall not be treated as household waste. It shall be instead handed over to an appropriate collection point for the recycling of electrical and electronic products. For further information about recycling of this product, contact the local city office and/or the local waste disposal service.

15. Warranty and support

Nethix warrants to the buyer that the product will be defect-free within two years (24 months) from the date of purchase.

During warranty time, and against presentation of purchase invoice, the product will be repaired or replaced, at Nethix's discretion, without any additional costs as regards spare parts and repair, if the damages are proven to be manufacturing defects.

Warranty will be voided if the product has not been used properly.

In case of technical problems the user can ask for support:

- Contacting the reseller or distributor
- Sending and email request to support@nethix.com (mailto:support%40nethix.com)

16. Return and repair

Product return to **NETHIX** must be previously authorized, requesting a **RMA** number.

Please send an Email at Nethix containing all following information:

- Complete customer's name and address
- Distributor's or Reseller's name and address
- Date of purchase

- Product P/N and S/N as displayed on the product or the package
- Detailed description of fault and/or reason for return

Nethix will communicate the RMA number, in order to start the return procedure of the product. The delivery of the goods shall be arranged DDP at Nethix premises. Products returned without factory seals will be automatically treated as out-of-warranty repair services.