



# MEMO2 MANUAL

Version 1.5

## Short

This guide describes the many functionalities of the MEMo2 data logger web server. The energy meters and measurement modules that are linked on this web server are described in the quickstart manual.

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## MEMo2 MANUAL

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### 1. [Overview](#)

The MEMo2 web server, articlecode WS.502, offers a lot of possibilities to enable the logging and visualization and control of data. What the type of data is can be all sorts of:

1. Measurements of electrical consumers: voltage, current, power recorded power, reactive power, power factor, consumption.
2. Measurement values of caloric consumers: water temperature departure and return, flow ability, consumption heating and cooling
3. Thermostat metrics: regimen (heating, cooling, venting) set point, room temperature, fan speed.
4. Air sensor measurements: CO2, room temperature, humidity, IAQ.
5. Impulses count from energy meters such as gas and water meter.
6. Measuring energy consumption of known appliances **on a timely basis**. (e.g. hot water boiler, mazout burner, lighting...)
7. Alerts to mailbox when power is exceeded, consumption, temperature control
8. Billing of energy costs based on counter positions of calibrated meters

On the web pages, all log values of the modules can be viewed in graphs, per hour, per day or per year, including the consumption costs of that year.

Intermediate totals are also calculated, which can be exported in different sizes.

**Characteristics WS.502:**

1. DIN-rail module (2 modules wide)
2. Power supply: 15V/1A
3. Bus connection: MODBUS (max. 32 modules)
4. RF LORA-FSK transceiver 868 MHz, 100mW
5. Ethernet connection with integrated transfo's
6. Network processor 10/100Mbit/sec
7. Real Time Clock with backup battery synced daily with NTP server
8. FRAM memory for backup meter readings 32 kb
9. SD card 8Gb (backup configuration and datalogs 3 years)
10. Upgrading via FTP-server 2-WIRE
11. 64 log channels, each up to 5 readings (32bits) and 2 consumption values (import export)
12. Communication every minute to the connected modules for the readings
13. Logging every minute to SD of 5 measurements per channel, every 5 minutes for consumption
14. Use costings with adjustable period (approximate, NOT FOR OFFSET)
15. EPC level calculation (kWh/m2)
16. Web server HTML : 4 users + 1 administrator can use the server simultaneously.
17. Login, password and language choice (NL-FR-EN-DU) per user.
18. IP-adres fix of dynamisch via DHCP-server
19. Domain name instead of IP address possible via DNS server
20. Full configuration of all modules, creating groups for layout
21. FTP Client: Set rhythm for logging data to remote FTP server individually adjustable for real-time measurements (interval per minute, up to 60 minutes) and for consumption measurements (interval per 5min, up to 24h). The format is CSV, in the AMR-MMR format (BE: EANDIS). Each file has a unique name and can be processed in your own database.
22. Exporting data to a local csv file
23. Deactivated for MEMo2 (*HTTP-request: Via a instruction set all readings and consume requests per channel, from a chosen time and a certain period (1 day to 31 days). The format is JSON and can easily be converted to tables.* )
24. Deactivated for MEMo2 Online operation or request statuses of vb relay contacts, thermostat can also be via an HTTP request.
25. Visual logic user interface for monitoring or controlling consumer, creating calculated graphs,...

## 1. BUS STRUCTURE

The WS.502 has 2 communicationsystems on board: a wirelessRFbus according to the LORAprotocol, and a MODBUScommunication.

1. **MODBUS:** GND = BUSCLAMP 1, A = BUSCLAMP 2, B = BUSCLAMP 3
2. **EC.441-RG.016:** GND = BUSCLAMP 1, A = BUSCLAMP 2, B = BUSCLAMP 3, VDD = BUSCLAMP 4

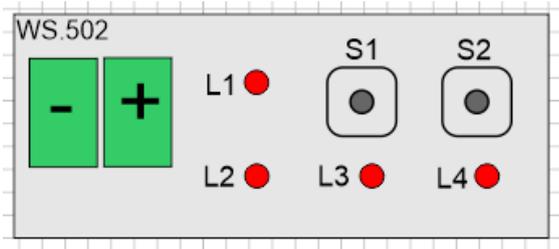
Between the clamps A-B, the supplied resistors (120 ohm) must be placed on both ends of the bus! Recommended is EIB bus cable (4 wire)

**More info: please consult documentation modules**

## 3. Start

1. Supplied power supply (15V) to WS.502 connect to power clamps at the top. (Polarity **does not play a role**)
2. Connect network cable at the bottom must be connected to the Internet via switch or (wireless) router.
3. Connect bus to the energy modules: EC.441 – RG.016 – EMMxxx etc.
4. **Attention:** Always connect first network cable and only then provide power to the Memo server

Power supply: at the top of the WS.502, all LEDs must be lit. After a few seconds, led L2 should go out, followed by LED L3 and LED L4. Afterwards, led L3 will light up every 2 seconds (heart-beat)



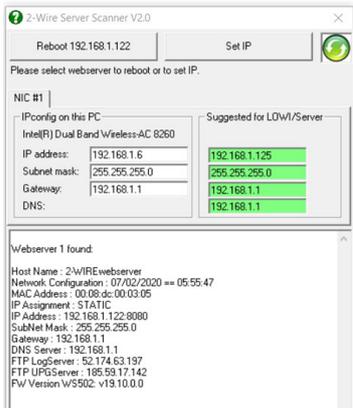
At the bottom where the network cable is plugged in, a green LED should be lit, and regularly an orange LED. Then the network connection is fine. If EC.441 or RG.016 modules are connected, the powered of these modules must light up.

### 4. NETWORK SETTINGS

By default, the WS.502 is on 'FIXIP', which means that at the first boot the IP address is standard at 192.168.0.123:8080. To change or verify this address, the 'ServerScanner' program is available. You can download this program on the website of 2-WIRE. <https://www.2-wire.net/product/ip-server-scanner/>

**Start this program and press the green button until data appears.**

 (Sometimes multiple attempts are required)



You can keep the found IP address or you can change the network settings from the server scanner with the 'Set IP' button to 'Suggested for Lowi/server' so that Memo will be in your network range or you can set the Memo server to DHCP and after restarting the Memo it will be assigned an IP address from your router which you will find with the server scanner.

*Note HARD RESET to fixed IP address  
Should DHCP fail, and you want to return to the default address (192.168.0.123:8080), you can follow the following procedure:*

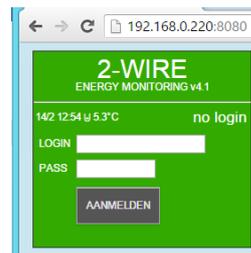
*Procedure: Turn off voltage of the WS502, wait 5 seconds, hold down key S2, turn on voltage, and keep pressing until the LED starts flashing. Keep pressing for another 3 seconds until the LED stops blinking, and then release the key. After about 5seconds all LEDs are off and the WS502 is at a fixed address. You must now 'surf' to the default IP address: 192.168.0.123:8080 (100% tested and recommended browser = Google chrome)*

*Note. This standard address is not always suitable for the network where your PC or laptop is connected. When you're in a different range, you'll need to adjust the web server's network settings via the IPserver scanner to suggested for lowi/server! Further explanation can be found at addendum 'problem solutions'*

As soon as an IP address is assigned, you can surf to the IP address by typing it into the address bar of a web browser, including the port number! (recommended: google chrome)

**The gate No. is standard on '8080'. As an example, you type in: 192,168. 1.122:8080**

Note the *colon* between address and port number!



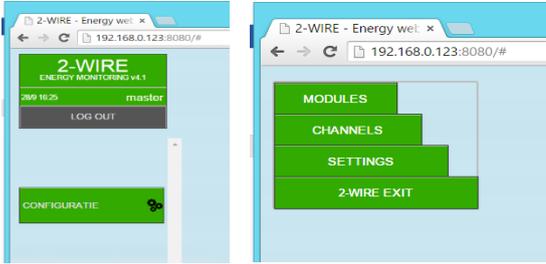
The next login screen should now appear. If this is not the case, check the connections of the web server again.

Login with login and password: 'adminIP' and password '2015'

**With this login you can change all IP settings, but not change a password (this should be done with login 'admin2-WIRE' and password'2015')**

Once logged in:

Click **'CONFIGURATION'**: the following *menus* appear:

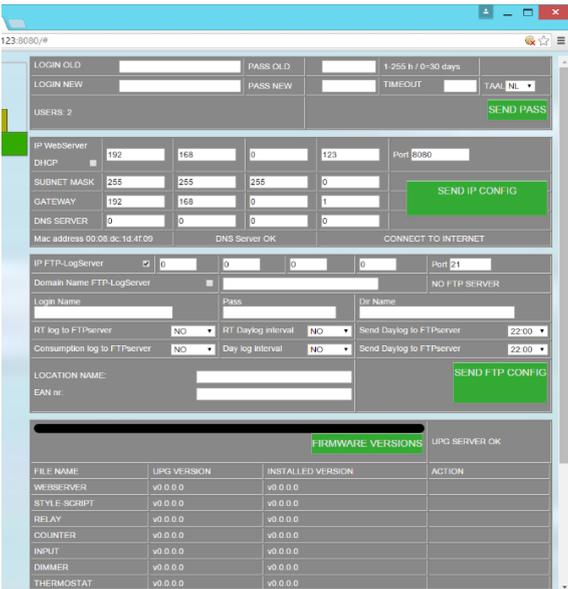


Start

with **'SETTINGS'**:

We start by checking the network settings. If 'DHCP' is checked, it must be checked out, otherwise there is a chance that a different IP address will be assigned at the next start-up. You can always change the address or port number if necessary.

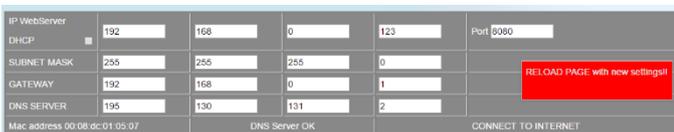
As an example:



**192.168.0.123** and port number **8080**.

**Please note** that when you change this address, you will need to write down what the new address and port number is! After sending, you no longer have communication and you have to start in the browser with the new IP address and port number.

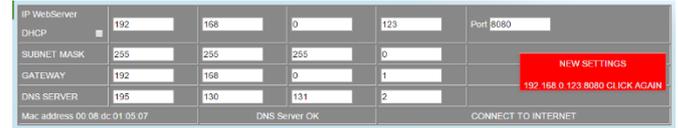
Press **'SEND CONFIG'**



After a second confirmation, you must enter the new address and port number in your web browser. If there is communication, the new institution has succeeded.

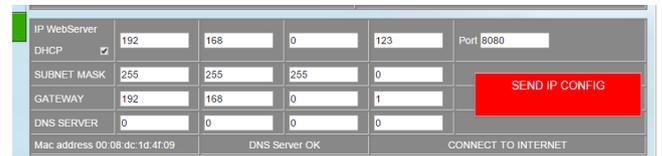
Now we have to surf to 192.168.0.123:8080 and then the address setting succeeded.

**Would you rather work with DHCP:** have an IP

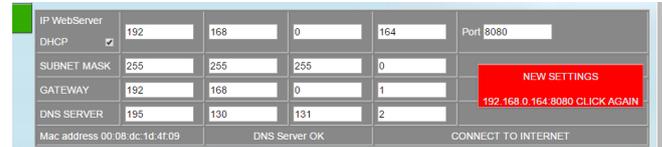


address automatically awarded via a 'DHCPserver'

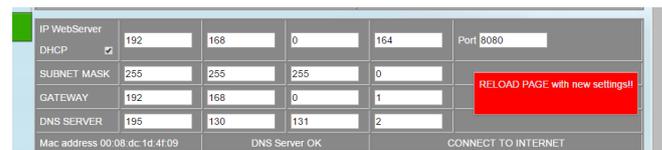
Tick **'DHCP'** and press **'SEND CONFIG'**.



After a short waiting period, a new IP address will be assigned to your web server. (In this example 192,168,0.164 : 8080)



Write down this new address and press the confirmation button again.



From now on, there is no communication at your former IP address.

In the toolbar, type the newly assigned address to get back connected.

Go back to **'CONFIGURATION'** -> **'SETTINGS'**

**GATEWAY-SUBNETMASK-DNS SERVER**

There must be internet on your web server, otherwise there are no charts to see, and you can't send logs to a remote FTP server so important that also 'GATEWAY', 'SUBNETMAK' and 'DNS SERVER' are entered correctly

'**GATEWAY**': Normally this is the 3 first digits of your IP address, and the last number '1'. (e.g. your IP address is 192.168.0.123, then the GATEWAY 192.168.0.1)

If you do not fill this in correctly, there is no internet on your web server.

'**SUBNET MASK**': stands default at 255,255,255.0

This should only be changed if the web server is connected to an extensive (sometimes industrial) network. These settings are then communicated to you by the IT technicians.

"**DNS SERVER**" : Fills in automatically when you've checked **DHCP**. Usually this also works when you type in the same IP address as your Gateway. (e.g. 192.168.0.1)

**TIP:** You can go to the IP data of the PC and not take over the IP address but Gateway, Subnet mask and DNS server in the web server, or you can take it from 'Suggested for LOWI/server' from the server scanner.

**FTP SERVER LOGS:**

You may also want to forward the log data to a remote FTP server. For this we have to work with an IP address, or with a 'domain name'. The port number is always '21' (e.g. 78.22.222.111:21)

**IP FTP LogServer** : Enter the IP address of your FTP log server here (port fix 21)

If you have a *domain name*, check the box for '**IP FTP-LogServer**' Domain Name : Enter domain name (e.g. www.mijnneigenftpserver.be')

*Note If you don't get it working with a domain name try with the IP address of your domain name. FAQ describes how to find that IP address via cmd ping : <https://www.2-wire.net/veel-gestelde-vragen/>*

In **sendftp config**, if a valid domain name is filled in, the found IP address will be filled in (e.g. 195.130.132.100:21)

Login Name - Pass: In the FTP server we also have to (security) also set up a user, password and possibly a folder where the data is stored.

After all, several web servers can log their data to the same FTP server and then it is desirable that each logger is assigned a folder for their data.

Of course, the login name, password and folder name must also be the same in the FTP server. If the FTP server has assigned a folder per user, the 'Dir Name' must remain blank.

The length of the login is max 32 characters (contiguous without special characters !)

The length of the password up to 22 characters, and the folder up to 32 characters

**RT LOG- CONSUMPTION LOG**

- RT log** : stands for *RealTime*. This is only data from connected modules and continuously gives the current values according to set **interval** by i.f.v. the type of module: electrical measurements (voltage-current-power-reactive power – PF), temperatures, CO2, humidity, pulse counters... Interval adjustable between 5-60minutes or 'NO'.

2. **RT Daylog Interval:** One can also transmit the full data of the previous day once a day at a chosen **time**, where an interval can be chosen between 1 and 60minutes.

**Send Daylog:** time of day to forward all RT logs.

1. **ConsumptionLog:** (=counter values) continuously forward consumption to the FTP server according to set **interval**. Interval adjustable between 5-60mins or 'NO'.
2. **Day Log Interval:** One can also transmit the full data of the previous day once a day at a chosen time, where an interval can be chosen between 5 min. and 24h.  
**Send Daylog:** time of day to transmit all consumption logs.
3. **Location Name:** all log files will be named: 'Location Name', along with date The same name will also serve for 'Alerts' emails. See later

## 5. MAIL SETTINGS

With 'logic', 'alerts' can be set which, if exceeding limits for consumption or temperatures, send an e-mail. If you have an account with a provider, you can enter the address of the **outgoing** mail server (e.g. uit.telenet.be) and your own mail address (sender address). The alerts can be sent to up to 2 addresses. (Mail Address1 and 2)

## 6. UPGRADING:

The following compartment is used to upgrade the web server and any linked 2-WIRE modules. In order for this feature to work, your web server must of course also be connected to the Internet.

2-WIRE has set up a server with the necessary upgrade files. To check if upgrading is needed, you can press the **'FIRMWAREVERSIONS'** key

FIRMWARE VERSIONS			UPG SERVER OK
FILE NAME	UPG VERSION	INSTALLED VERSION	ACTION
STYLE-SCRIPT	v19.1.10.1	v19.1.10.1	
WEBSERVER WS.502	v19.2.11.3	v19.2.11.3	<b>INSTALL</b>
RELAY RL.440	v19.2.10.2	v19.2.10.2	
ENERGY EC.441	v18.1.15.1	v18.1.15.1	
ENERGY EF.441	v19.2.11.1	v19.2.11.1	
RF PLUG EP.101	v18.8.13.1	v18.8.13.1	
RF PLUG TP.101	v18.8.9.1	v18.8.9.1	
GATEWAY RG.441	v19.2.10.2	v19.2.10.2	
RF AIR RA.401	v19.2.11.9	v19.2.11.9	
RF INPUT RB.201	v19.2.11.4	v19.2.11.4	<b>DOWNLOAD</b>

When connected to the 2-WIRE Upgrade Server, the different firmware versions can be seen. (sometimes a second attempt is possible if the server is "busy".)

1. **'UPG VERSION'** means the versions on the 2-WIRE Upgrade Server.
2. **'INSTALLED VERSION'** is the firmware that the modules in your system have on board.
3. If the UPGversion has a higher number than the INSTALLEDversion, an upgrade of the affected components is required.
4. **'STYLE-SCRIPT'** includes the CSS style (=look of the web page), and the JavaScript, which serves to give all 'buttons' a function and add the necessary logic.

### INSTALL KNOP

WEBSERVER: Upgrading the web server is done in 3 phases: the first stage is uploading the script, the second stage is uploading the firmware for the web server, and the third stage is installing this firmware. During uploading, we see a 'progress' bar appear. When the progress bar is done, it is automatically updated and you must log in again.

### DOWNLOAD KNOP

MODULES: When you have 2-WIRE modules, such as the RG.016 or EC.441, sometimes an upgrade may be required: If the UPGversion is higher than the INSTALLEDversion, you will need to press the **'DOWNLOAD'** button. After some time there will be green check marks next to the available module versions.

FIRMWARE VERSIONS			UPG SERVER OK
FILE NAME	UPG VERSION	INSTALLED VERSION	ACTION
STYLE-SCRIPT	v19.1.10.1	v19.1.10.1	
WEBSERVER WS.502	v19.2.11.3	v19.2.11.3	INSTALL
RELAY RL.440	v19.2.10.2	v19.2.10.2	✓
ENERGY EC.441	v18.1.15.1	v18.1.15.1	✓
ENERGY EF.441	v19.2.11.1	v19.2.11.1	✓
RF PLUG EP.101	v18.8.13.1	v18.8.13.1	✓
RF PLUG TP.101	v18.8.9.1	v18.8.9.1	✓
GATEWAY RG.441	v19.2.10.2	v19.2.10.2	✓
RF AIR RA.401	v19.2.11.9	v19.2.11.9	✓
RF INPUT RB.201	v19.2.11.4	v19.2.11.4	✓ DOWNLOAD OK

(a red cross means unavailable (v255,255,255,255), or failed transfer)

The modules themselves have not yet been upgraded! This should be done in menu 'MODULES'

**Important:**

During upgrading WS.502 or other modules there are no logs possible !

**Never interrupt voltage during upgrading!!**

## 7. ENERGY PRICES

As already mentioned, we can also (approximate) calculate what the daily energy consumption is and put a price tag on it. When we know the cost for gas, water electricity, we can fill it in the table below. There are 2 tariffs for electricity (day and night consumption). Everything has to be filled in euro cents, so DO NOT use DECIMALS!

"SEND" after the values are filled in.

ENERGIE KOST	
ELECTR DAGTARIEF ( €ct / kWh)	20
ELECTR NACHTTARIEF ( €ct / kWh)	10
BEGIN DAGTARIEF 0	EINDE DAGTARIEF 21
VERZENDEN	
GAS ( €ct / m3)	70
GASOLIE ( €ct / l)	70
WATER ( €ct / m3)	120

*Note. You can always adjust tariff changes, you can calculate every day what your consumption cost was at the prompted rate, and is thus also stored in the database. If you fill in other values afterwards, that will no longer have any effect on the previous calculations.*

## 8. LOGIN

The last part of the SETTINGS is at the top, and is certainly not insignificant:

login – password

**LOGIN:** The WS.502 can work simultaneously with 4 users. Each user can choose a login name (max 16 characters), a password (always 4 digits) and a language version.



Only logged in as an **administrator**, with password 'admin2-WIRE' you can make changes here

At the first start-up we see: 'USERS': 0

The administrator is not counted among the 4 users, it usually only serves to adjust the configuration so that the other users can't change it. (So don't sprinkle the admin login name and password around) You can never change the login name 'admin2-WIRE' or 'adminIP', but you can change the password (2015).

**CHANGE THE ADMINISTRATOR'S PASSWORD:**

At '**LOGIN OLD**' and '**PASS OLD**', type the current login name (admin2-WIRE) and password.

At '**LOGIN NEW**' back 'admin2-WIRE', and at '**PASS NEW**' type your new password (4 digits)



Press **SEND PASS** to send the new data.

### NEW USERS

The same applies to new users to be created:

At **LOGIN OLD** type 'loginold' and at **PASS OLD** '1234'

At **LOGIN NEW**, the username (max 16 characters) and pass **new** now has the password (4 digits)



The **'TIMEOUT'** is used to set the expiration time of your login. When there are actions with the web server, this time is restarted over and over again. When there are no more actions, and the expiration time has expired, it is necessary to log in again.

Adjustable between 1 and 255h. 0 means 30 days of expiration time.

The language version is user-only and only serves for the fixed texts on your web server.

Not all texts have been translated. Some are difficult to translate and are usually displayed in English. Press **SENDPASS** to confirm.

When sending the login we always return to the start-up menu. We now need to log in again to confirm who you are.

### DELETE OLD USER

To remove a user, one does the other way around:

At **LOGIN OLD** his username, with **PASS OLD** his password.

At **LOGIN NEW** comes now 'loginold' and at **PASS NEW** '1234'

Press **SEND PASS** to confirm.



*Note. You can also request the login and password by entering a number between 1 (user1) and 5 (admin) next to the 'USERS:' field. Each user's data is now displayed.*

*Note. **Forget the password?** Via the reset buttons on the Memo module you can reset this, see point 19*

## 9. MODULE PARAMETERS

Choose the menu **'MODULES'**

On the left we see a number of text boxes, and a few keys:



1. **'NEW'** : entering new Serial Number
2. **"CHANGE"** : Change the module name or serial number
3. **"DELETE"** - Delete selected module
4. **"CANCEL"** : Undo changes made if they have not yet been sent.
5. **'ZEND'** : forward module to web server
6. **'TEST'**: communication test of the selected module.

7. **'UPGRADE'** : only active if modules works with 2-WIRE protocol

To start, we first need to fill in a 'serial number' at the place where we see **'Serialno'**.

The serial number always consists of 2 digits, 1 capital letter, and back 5 digits. These have a meaning:

1. A = Air quality meter = AIR.04
2. B = Battery Counter module BC.002
3. E = Energymeter = EMM.120.. 630 series(**fictional**)
4. F = RF energy counter CT = ECF. 08
5. G = RF Gateway = RG.016
6. H = caloric modbus(**fictitious**)
7. K = calorie meter Kamstrup(**fictitious fix**)
8. L = Logic module (**fictitious**)
9. M = Modbus energy counter = EC.441
10. R = Relay module = REL.40
11. S = RF smartplug = EP.16A
12. T = RF smartplug thermo TP.16A
13. U = caloric modbus(**fictitious**)

### Serial numbers:

*Modules of 2-WIRE have a fixed serial number and are listed on the module.*

Other modules such as EMM.120... 630 do not have SerialNr, but only Modbus addresses (range 1-247). However, only serialNrs can be used in the projectammation.

That's why we're going to make a **fictitious serial number** for these *modules ourselves*. Most modbusmodules only need one channel, except for the more complex modules such as the EMM.630 or calorie meters. Those modules have 3 or more channels (e.g. 3 phases). **The maximum is 8 channels per module. (08xxxxxx)**

The first two digits of the serial number shall determine the number of outputs/entries:

1. '01' are for single-rigid meters
2. '02' are for single-rigid meters, which measures in both directions (import-export)
3. '03' are for three-legged meters

You can choose the following 5 digits yourself, but make sure the serial number remains 'unique'!

Examples for the EMMxxx energy modbus meters series:

1. Enkelfasige (enkel import): EMM120 – EMM220 : **01E00001...01E99999**
2. Enkelfasige (import + export) : EMM220 : **02E00001... 02E99999**
3. Three-rate: EMM630 – EMM630CT: **03E00001...03E99999**
4. Calorimeters : **03U00001... 03U99999**
5. Kamstrup : 03K00001... 03K99999  
are configured by 2-Wire

**The limit of the number of log channels is 64 and the limit of the number of modules is 32.**

The first serial number we are going to enter in the field '**SerialNr**'. In the '**Module Name**' field, one can enter a name related to the module. (e.g. distribution cabinet garage... thermostat..) When we press '**NEW**' now, the typed serial no. is put in the '**listbox**'. On the right side of the picture, a module will appear with a number of channels according to our serial number

(e.g. 01E00001 = 1 channel. )



1. **CH:** stands for 'CHANNEL' and is automatically generated by the web server. This channel No will later serve to make the link between log channel and (modbus) address. (see below).
2. **MODE:** (Counter, Thermostat, AirQ...) is automatically dialed
3. **ADDR:** Each channel must have a **UNIQUE ADDRESS** in the range 1-247. Therefore, no channel may have the same address. Start from 1 and number so that each meeting entrance has a unique address. The simplest is for 'ADDR' to fill in the same value as the channel number 'CH'. When we have modules without a serial number (series EMMxxxx) we have to program these addresses on these modules via the existing display. (How to change the address on the module is described in the manual of the module itself.)
4. **SUBAD:** for modules with multiple log channels such as 3-fazen meters and calorie meters there is always only 1 modbus address, but with the subaddress you can log different data:

For the EMMxxxx series:

1. serienr 01Exxxx : subadd = 0
2. series no 02Exxxx: both channels **SAME MODBUS ADDRESS**, subadres 0 (import) and subadres 1 (export)
3. series no 03Exxxx: all 3 channels **SAME MODBUS ADDRESS**, subad = 0 – 1 - 2
4. **PARA3: PARA6:** are specifically explained in the manual of the modules. Nothing needs to be filled in for the EMMxxx.
  - **UNIT:** wordt soms automatisch ingevuld met 'kWh, °C, ppm...'

1. **LOGTYPE:** This is for those who also want to forward the log data to a remote FTP server.( see part 9) or export to Excel. You can check the log types you want to be added into the csv file.

*Note. The log types depend on the type of module, and will always be logged to SD every minute, even if nothing is checked!*

An overview of the 'MODE' LOGTYPE and 'UNIT':

TYPE	MODULE	BETEKENIS	MODE	LOGTYPE	UNIT
A	AIR04	IAQ meting	AirQ	roomtp RH Press VOC	°C % hPa %
E	EMM.120/220	electr.vermogen	Teller	spanning stroom vermogen power factor verbruik import verbruik export	V mA W/Var -- kWh+ kWh-
M	EC.441	Counter module	Teller	spanning stroom	V mA
F	ECF.08			vermogen verbruik	W kWh
K	Calorie Kamstrup	Calorie meter	Teller	vertrek tp retour tp	°C °C
U	Calorie 2-Wire			debiet verbruik	m3/u kWh

We now assume that the EMM series have been assigned a **unique address through their display**. Write down these addresses as well as the group with which this module is connected. Give this a name (vb lighting above, living, hobbyroom.. etc)

If the module is connected to the bus, and there is power supply on the module, then you can press **'ZEND'**. At **'Module OK'** you know that the communication, the address and the power supply is in order. If not: check power supply, address and bus connection (A and B do not swapd ?)

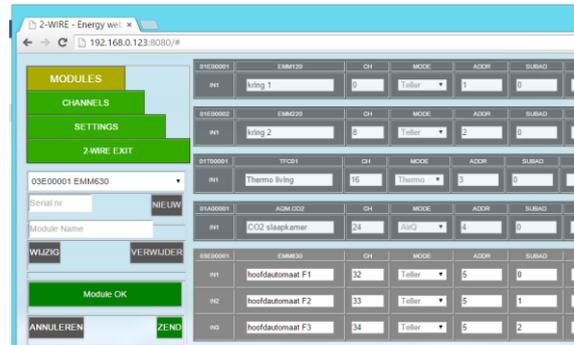
*Note.the entered modbus address can also be checked on the module via the display on the EMM120-220-630, see manual of the module*

Note: **You can only enter one module at a time or make changes. If you want to continue with new modules, the 'ZEND' key must first be pressed if it lights up red.**

If you want to change an existing module, do not type the SerialNr, but select it in the 'list box'.

A change, if not shipped yet you can also cancel ('CANCEL').

*Note. All RF wireless modules are discussed separately in part 18 : RF communication*



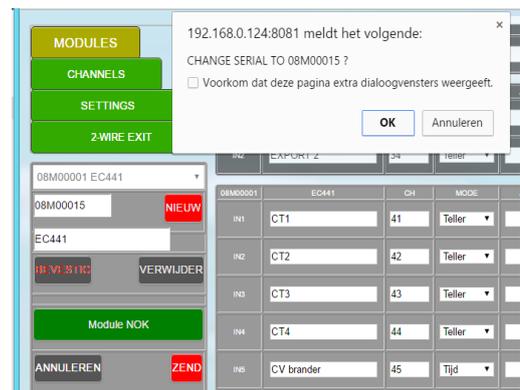
When all the modules are entered and the communication was in order, another brief explanation of what to do if changes need to be made.

### CHANGE MODULE

You can change a module that you want to change by selecting the serial number in the listbox.

### SO DON'T RETYPE!

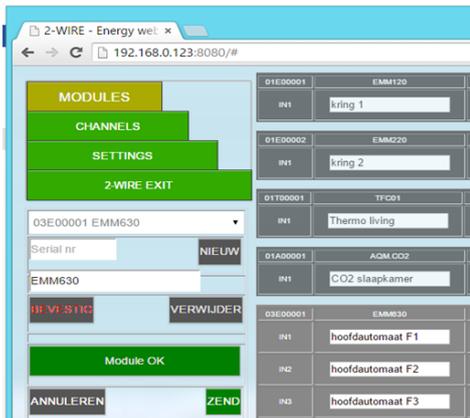
Now you can only make changes to this module. (The other modules are 'locked' so you can't change anything in the wrong module.)



After changing a text or number, you must always perform "ENTER": Click any other cell so that you are outside the cell where you made changes. Now the **'ZEND'** button will light up red again. If all changes have been made, click **'ZEND'**.

If you have forgotten to give a name to the module, which serves as a 'back support', select this serial number in the 'list box' and press '**CHANGE**'.

The text on the key now changes to "**CONFIRM.**" In the box where 'Module Name' is located, you can now apply your text. (E.g. 'EMM630')



Press '**CONFIRM**' now and this name will be next to the module's serial number.

When the module is fully ready, remember to press '**ZEND**', only then will all changes be stored in the server's memory.

#### REPLACE MODULE

If you would replace an existing module with the same type (e.g. EC441, SN **08M00001**) **and you want to keep the existing logs**, you can change the serial number provided that the 3 first digits are the same. (e.g. new module has serial number **08M00015**)

Select the serial number of the old module in the 'list box' and press '**CHANGE**'.

The text on the key now changes to "**CONFIRM.**" In the box where the old 'Serial No' is located, you can now change the last 5 digits to the new serial no.

Press "CONFIRM." A second screen will appear for confirmation again. Afterwards, press 'ZEND'.

If the module is connected correctly, the answer will be 'Module OK'. In case the module is not yet connected, the answer will be 'Module NOK'.

#### DELETE MODULE

**If you still want to start with new logs, and remove all previous logs from this module**, you first have to

clear the old module ('DELETE'), and then completely recreate the new module.

*Note. If an existing module is added to a log channel (modbus address > 0) or an existing modbus address is set to 0 (= CLEAR LOG !!), one must then go to 'CHANNELS' to adjust the layout of the channels ! (see part 11)*

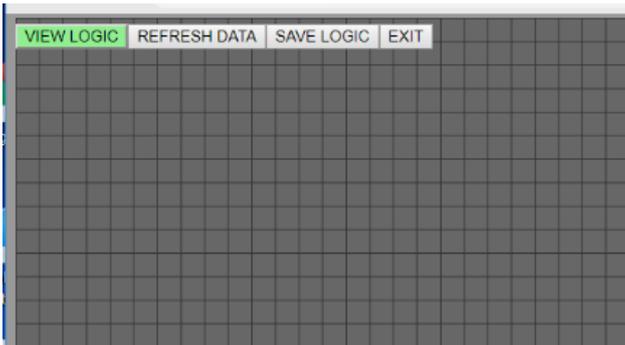
## 10. LOGIC MODULE



A tab was attached to the main menu: LOGIC

Click this tab, and a blank grid screen appears.

At the top there are 4 buttons:



**VIEW LOGIC:** If this button lights up red, you should wait until the logic is loaded. When the green button lights up, you can press this button. If logic has already been introduced, the logic will be shown. If no logic has been created, the screen remains blank.

Let's say you've already created logic, but you want to completely start over with new logic, don't press 'VIEW LOGIC'. You start with a blank logic.

**REFRESH DATA:** When you create logic, or you want to see the current statuses of the modules, you can press this button. Statuses are indicated by RED digits.

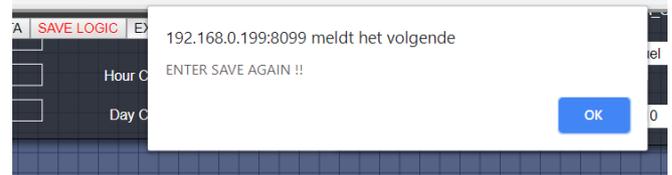
**SAVE LOGIC:** This key definitively brings the created logic to memory.

Attention!! There is no 'UNDO' button, which means that this action cannot be revoked. However, a confirmation is first requested:

If you don't want to enter the changes, press "Cancel."



**EXIT:** When you decide to leave logic, the next screen may be shown:



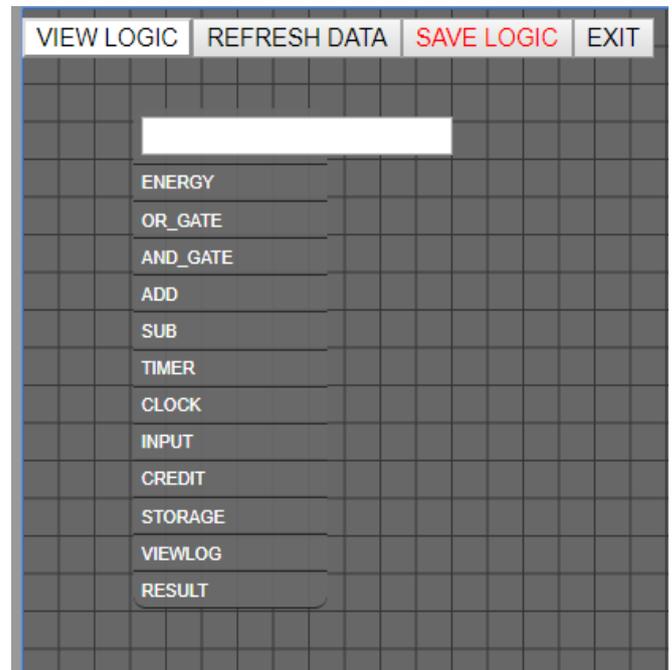
You then wanted to keep the logic, but printed 'Cancel'.

**You can now only leave logic by reloading the page!** (reload page in browser address bar)

**QUESTION:** What logic is possible?

**ANSWER:** Just about every conceivable logic !

There are a number of 'prefabricated' logic modules: Press the **LEFT MOUSE BUTTON**, and a list is shown

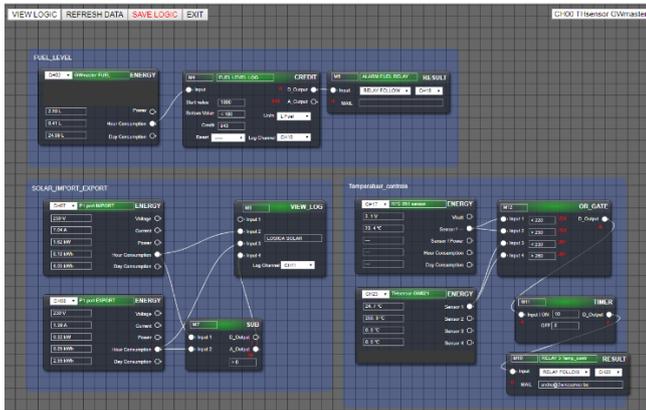


from the possible modules:

1. ENERGY : these are the measuring modules of your installation (energy modules, temperature, calorie, water...)
2. OR-GATE: an 'OR' port, with 4 inputs
3. AND-GATE: an 'AND' port with 4 entrances
4. DIFF-GATE: Switching between 2 values
5. ADD: Add up 4 analog values

6. SUB: Difference of 2 analogue values
7. TIMER: delay/extension of a digital value.
8. CLOCK: AND condition in function of a weekly clock
9. INPUT: a 'contact' ON/OFF of a relay
10. CREDIT: Countdown of a set starting value
11. STORAGE: approximate calculation of storage energy if own energy source and storage tank are present.
12. VIEWLOG: Visually rendering analog results of logic.
13. LIMITER: Set limits for power, hour or day consumption via a relay module.
14. RESULT: an eid result of a logic can be sent to a relay module or mailbox.

An example of 3 logic's:



Before we start, we need to formulate a logic and convert it into a graphic representation.

First, let's look at each logic module in detail:

Press the left mouse button. When you start with a blank screen, the following notification will first appear:



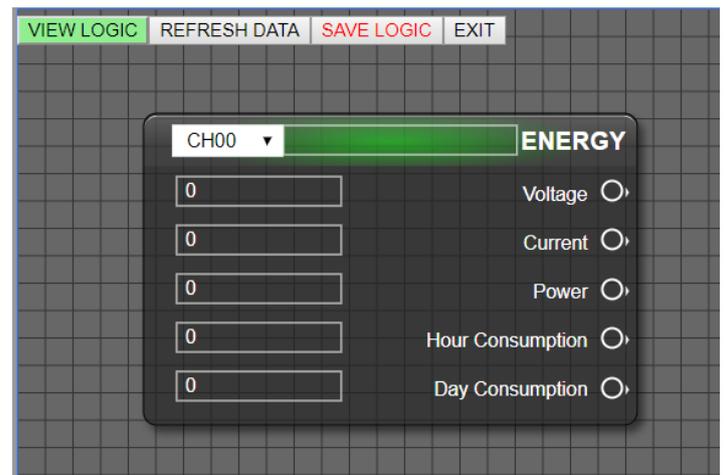
Press "OK" if you want to start with new logic.

Remember: if you had already created logic, and you start with this blank screen, the previous logic will be erased if you press 'SAVE LOGIC'. So you can still 'Cancel'!

When you press "OK," the list of possible logic modules appears.

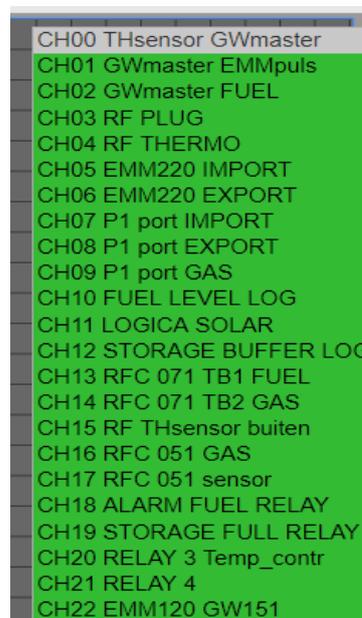
Logically, one starts with the energy sources, then the AND-OR-ADD-SUB gates, possibly timers or clocks, and then the result (mail or graphs)

After selecting 'ENERGY' we see our first module, standard the type EMMxxx



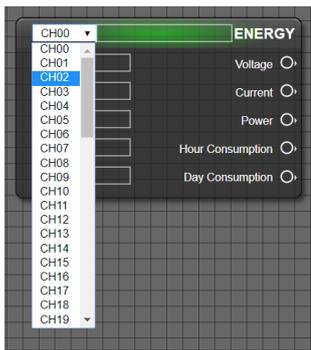
At the top is 'CH00', and on the right the possible outputs of this module. Start by selecting the log channel you want. Since there are 64 log channels, and numbers are difficult to remember, there is a 'help list' in the upper right corner.

This list shows all the log channels used, with the name and channel No. (The names are inserted with each module at configuration)



As an example, we are going to check the fuel oil level and give a warning if the threshold falls below 100 litres.

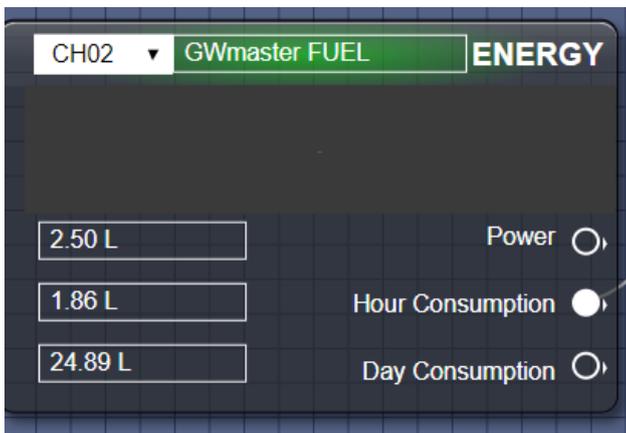
On the energy module we now select 'CH02' (GWmaster FUEL)



If we press 'SAVE LOGIC', the module is adjusted according to the energy type: in this case we see the current consumption in litres on the left,

and on the right are the corresponding names of the outputs (Volt-Amp

does not exist here)



In this way, we will continue with any other energy modules, or we will first further elaborate this logic.

The assignment was to check the current stock of fuel oil (approximate) and give a warning if the level is too low.

To do this, we need a 'CREDIT' module: select it with the left mouse button. You can drag the module to the desired position on your screen. (click the left mouse button when you're standing over this module and drag the module). **Zoom in or out** of the screen using the mouse's 'scroll' wheel. You can move the full screen by standing in a 'blank' place on the screen and pressing the left mouse button. You can now bring the full screen to the desired position and zoom in or out according to your preference.

With a 'CREDIT' module, we need a 'starting value', a minimum level (Bottom Value), and the desired units (in this case L Fuel).

As an example, we start with 1000 litres of fuel oil, and we want an alarm if the residual value is less than

100 litres. In 'Bottom Value' we now fill in '< 100'. (< = smaller than, > = larger than)

If we want to see the result in a graph, we need to create a 'log module' in the configuration! (see later: *log module 04Lxxxxx*)

The start value entered must be 'activated' when the tank is filled.

For this, there is a 'Reset' button: Select it and click 'NOW'.



A confirmation is requested, because from this moment on the residual value (Credit) will be equal to the completed starting value. Over time, the credit

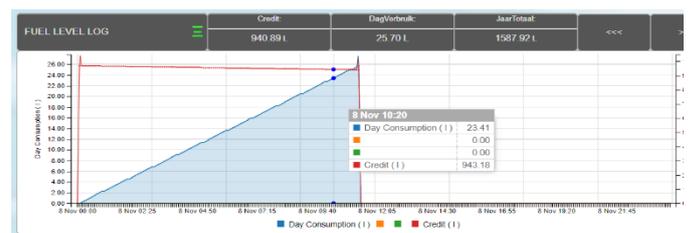


value will decrease according to consumption.

In the log chart we can now see both the consumption and the remaining quantity.

When the bottom value is exceeded, an 'alert' may follow in the form of a relay which is switched on (e.g. signalling light) or an e-mail (daily) sent.

Attention! The graph can also go negative (tank 'army then empty'...)



If the 'bottom' value is reached, the relay output can only be reset by reactivating the starting value (Reset NOW). Of course there is also refuelling...

This is just a simple example of logic. There are many more applications: monitoring temperatures, lower upper limit of power, currents, voltages, consumption etc.

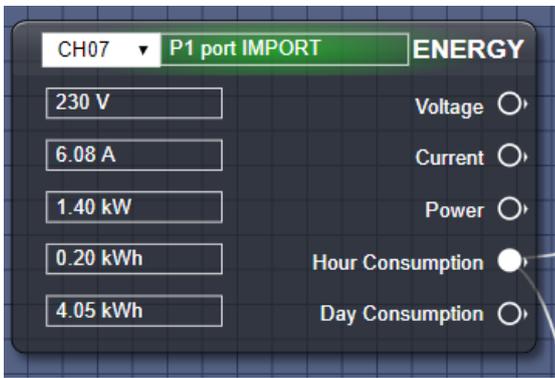
Consume differential measurements between import exports, disable consumers if too high consumption is measured, activate outputs according to a weekly clock and conditions in the form of AND-OR ports.

**ATTENTION: All logic cannot react faster than 1 minute, or 5 minutes when it comes to consumption (these are requested from the measurement modules every 5 minutes)**

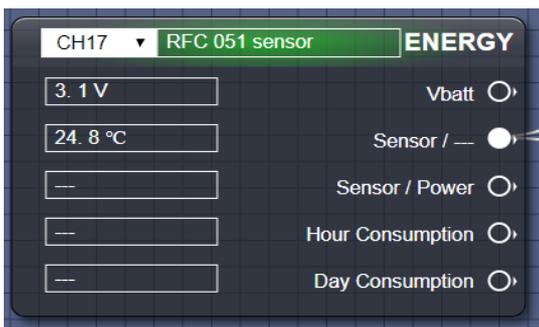
## ALL LOGIC MODULES IN DETAIL:

### ENERGY:

1. Type of electra: volts, ampere, watts, hour-consumption, day-consumption

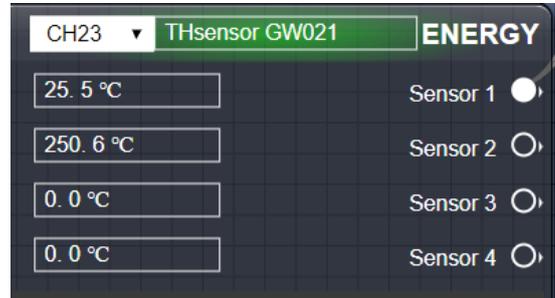


1. Type of temperature: if BC.002: Vbatt, Sensor1, Sensor2

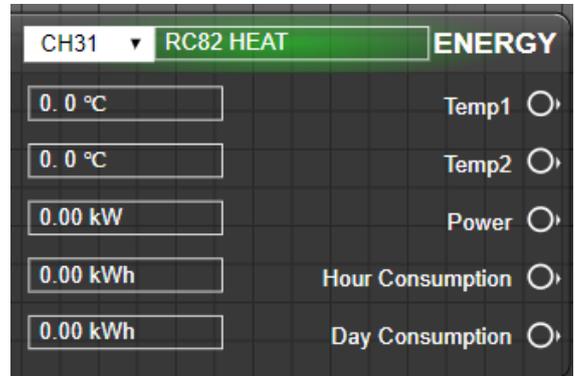


## 2-Wire Energy Monitor

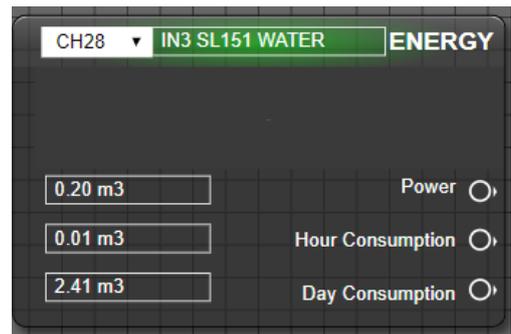
1. RF gateway temperature type (NB. sensors not connected can display extremely large values)



1. Calorie type: return departure temperature, power, hour and day consumption



1. Type of Water : current consumption, hourly and daily consumption

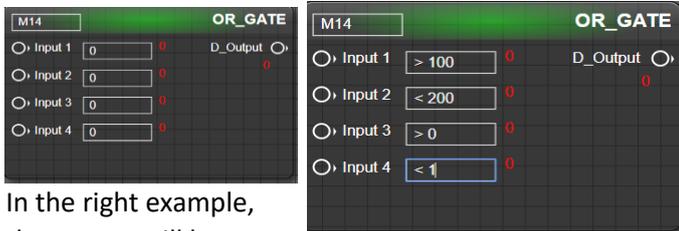


### OR-GATE:

Links are the 4 entrances, and on the right the digital output. The **RED** numbers show the status of the entrances and exits (ideal for 'debugging')

Each input can be compared to a threshold. This value can be positive and negative, and one can compare it to 'larger than' or 'smaller than'.

At an OR-gate, the result is '0' if no condition is valid. Unconnected inputs do not affect the result.



In the right example, the output will be active (1) if:

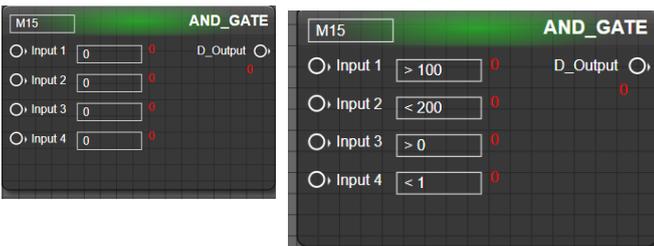
- ingang1 is greater than 100 (e.g. analog input)
- OR** Entrance2 is smaller than 200 (e.g. analog input)
- OR** Entrance3 is larger than 0 (e.g. digital input)
- OR** Entrance4 is smaller than 1 (e.g. digital input)

**AND-GATE:**

Left stand the 4 entrances, and on the right the digital output

Each input can be compared to a threshold. This value can be positive and negative, and one can compare it to 'larger than' or 'smaller than'.

At an AND-gate, the result is '1' if all conditions are valid. Unconnected inputs do not affect the result.



In the right example, the output will be active (1) when:

- Entrance1 greater than 100 (e.g. analog input)
- AND** Entrance2 is smaller than 200 (e.g. analog input)
- AND** Entrance3 is larger than 0 (e.g. digital input)
- AND** Entrance4 is smaller than 1 (e.g. digital input)

**DIFF-GATE:**

This module contains 2 separate logics that allow one to compare an input value with a starting value and a stop value (= hysteresis).

On the left are 4 entrances, and on the right there are 2 digital exits. The **RED** numbers show the status of the entrances and exits (ideal for 'debugging')

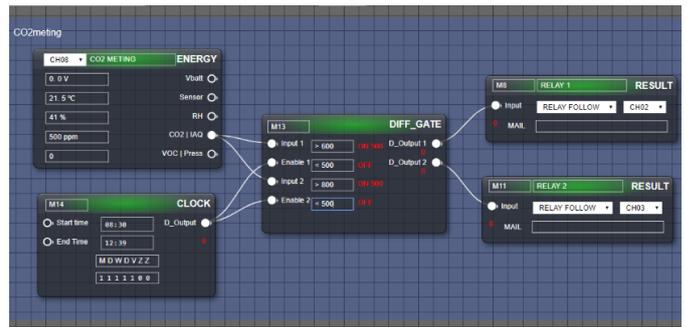
On Input1 or Input3 one can connect an analog measurement (e.g. CO2 measurement)

On Enable1 or Enable2 one can possibly connect a switch clock. If the Enable is off, output1 or output 2 will always be off, regardless of the conditions.

Unconnected Enable inputs will keep the logic active at all time.

If the input exceeds the starting value, the output will become active. If the input is smaller than the stop value, the output will be switched off.

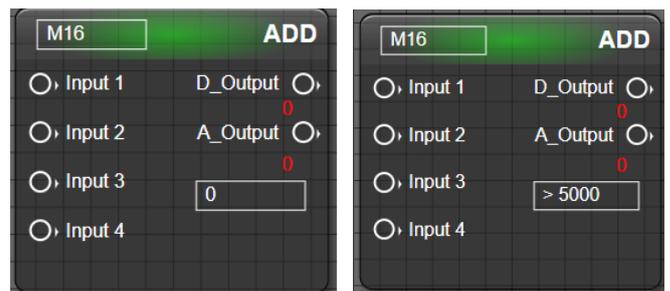
This allows one to set a condition for, for example, a fan control, which will switch on or off in function of the CO2 with the desired hysteresis.



**ADD:**

add up to 4 analogue values. Links can have up to 4 analog values attached

Be. PLEASE NOTE: DON'T ADD APPLES WITH PEARS. In other words, this module can only work correctly if the inputs have the same units (vb volts, amperen watt...)



In the right example there are 2 exits available:

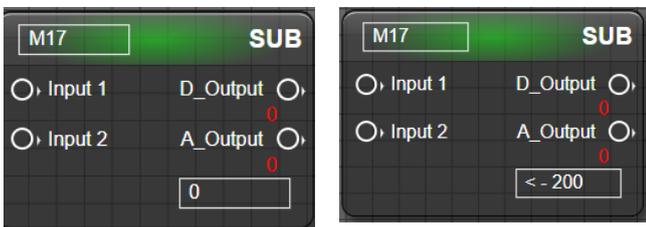
**D\_Output** is the digital output: this output, it will become active if the set threshold of 5000 (e.g. Watt) is exceeded.

**The A\_Output** is the analog addition of the connected inputs.

**SUB:**

calculation between 2 analogue inputs. The analogue end result can be both positive and

become negative.



In the right example, the digital output will be active (1) if the difference between input 1 and

Entrance 2 is smaller than -200 (vb Watt). *Pay attention to your knowledge mathematics: smaller than a negative number is*

a greater value! (e.g. as a result = -210 the output will be active)

**TIMER:**

the result of a digital output can be delayed and/or extended by minutes as a unit via this timer.



As an example, the output will become active if the input is active for MORE than 10 minutes.

Once the output is active, it will remain active for 5 minutes after the entrance turns 0.

**CLOCK:**

this module allows you to perform certain conditions only on the desired days and times. Active days can be indicated by filling in '0' (inactive) or '1' (active).

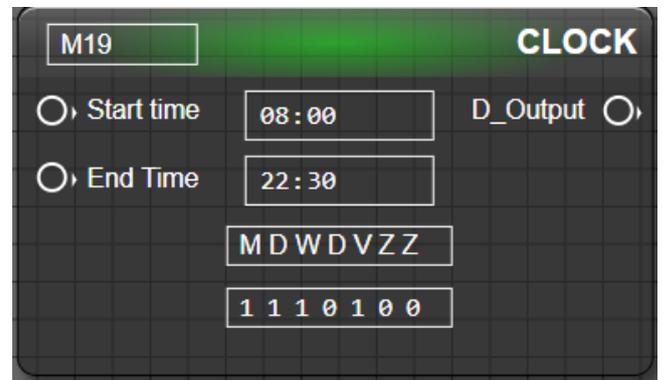
If the 'Start time' input is connected, and this input is greater than zero, the output will become active if the start time AND the day of the week is valid.

On the other hand, if the entrance 'End time' is connected, and this input is larger than zero, the exit will

if the end time is reached on a valid day.

If the Starttime or Endtime input is zero, the relevant start or end time will not run.

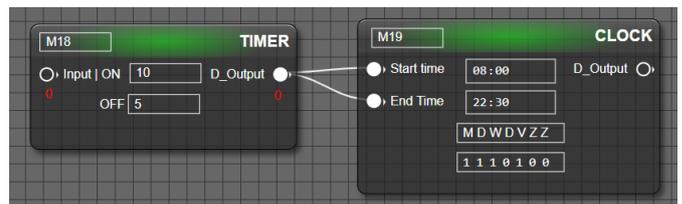
If both input and zero are, the clock is switched off, and the output is always off.



example: If 'Start time' and 'End time' are active, the output will become active if it is later than 8:00 am, but NOT on Thursday, Saturday and Sunday. The exit will be turned off when the time is later than 10:30 p.m., but NOT on thunderday, zaterdag, Sunday.

- If you only want to use the start time, the 'End time' entrance must be zero.
- If you only want to use the stop time, the 'Start time' input must be zero.
- The inputs can be connected to an adjustable state (0 or > 0), via a fictitious dimmer module (see further SWITCH INPUT)

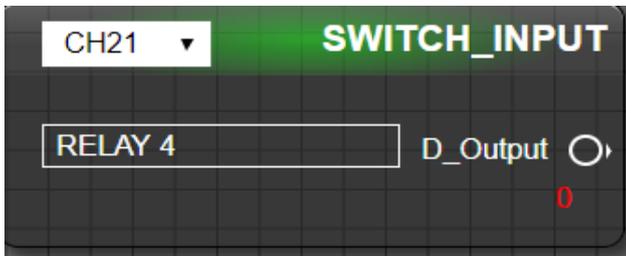
Example:



**SWITCH\_INPUT:**

the output of a relay module or (fictitious) dimmermodule can also be used

into logic. The status of this output can be linked to logicinputs.



One can create a 'dummy dimmer module' in the configuration (SN 04Dxxxxx or 08Dxxxxx), without this module really exists. This allows one to manually put logic active or inactive via the control panel.

SN	CH	MODE	ADDR	SUBAD	PARA3	LOGTYPE	PARA5	PARA6	UNIT
04D0001	INT EAN	LIMITER POWER	89	Dimmer	89	VOLT	10	200	kWh
	INT EAN	LIMITER HC	90	Dimmer	90	VOLT	200	5000	kWh
	INT EAN		91	Bistabil		VOLT			kWh
	INT EAN		92	Bistabil		VOLT			kWh

Para6 allows you to set the maximum value, and PARA5 set the 'STEP'.

The scooter is a value that increases or decreases the status when operating +/-

PARA6 must be at least 10, and a maximum of 32000, PARA5 should be smaller than PARA6

LIMITER POWER	UIT	-	+	AAN	50
LIMITER HC	UIT	-	+	AAN	400

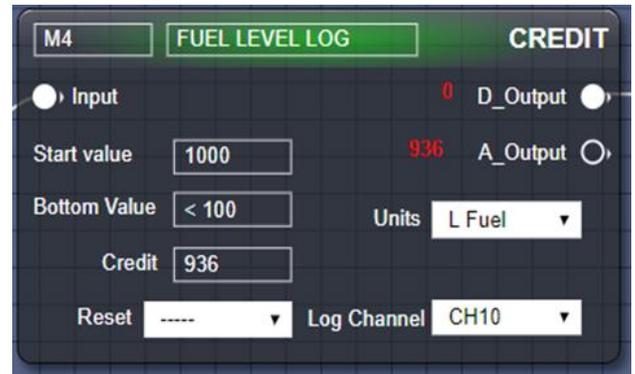
**CREDIT:**

this module will add up the hourly consumption of a measuring module and reduce an indicated 'starting value' with this value. The result is an analog value, which starts at the input value, and each hour will reduce this value according to consumption, connected to the Input.

Please note that only HOUR Consumption (HOUR CONSUMPTION) can be connected to this.

An application is a fuel oil consumption meter, or a budgetmeter, which indicates when

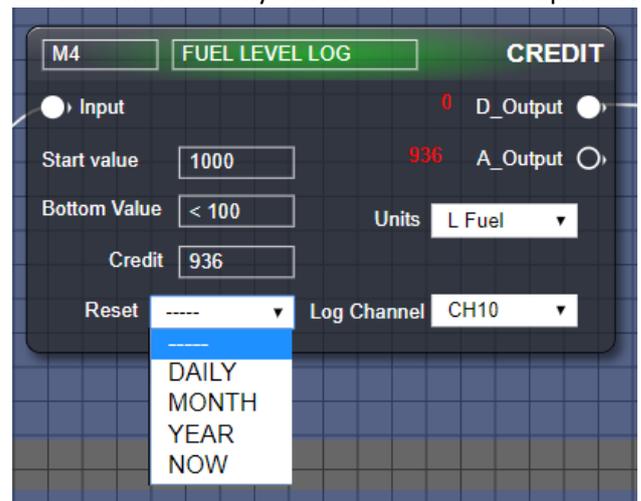
a consumption limit is approached.



For the 'budget meter' you can choose from 3 options: automatically restart daily (DAILY) with the set starting value, restart monthly or restart annually.

The end result can be viewed in the graphs.

As an example 2, the electricity consumption is taken: the entrance is connected to a measuring module, which measures the total consumption of the house. A monthly advance of 80 euros is paid. This

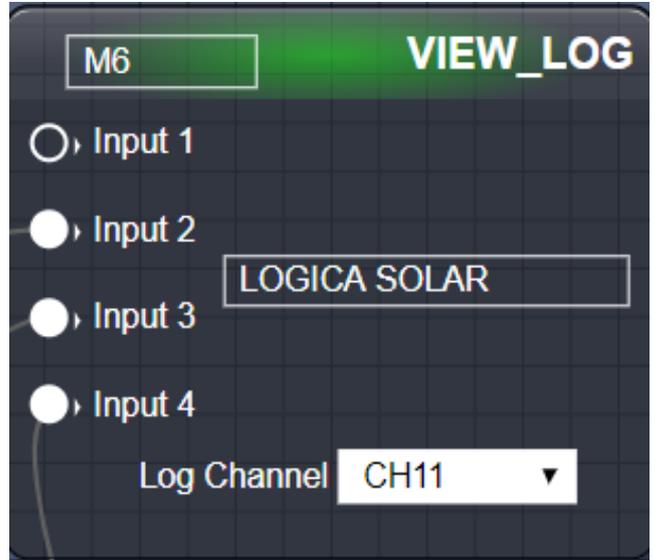
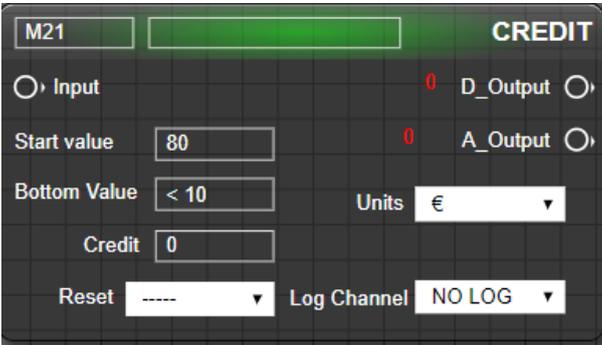


amount is entered in 'Start value'. The units are EURO. 'RESET' opts for monthly (auto-reset)

After confirmation and 'SAVE', the final value starts at 80 euros. After 1 month can evaluate with the result in the charts (positive or negative). Note the cost should be done at configuration.

**VIEWLOG:**

Up to 4 analog values can be logged in 1 chart. To do this, create a fictive module in configuration: SN **04Lxxxxx**.



**STORAGE:**

this is an 'experimental' module, for installations that have their own energy source (e.g. PV solar), and a storage medium (e.g. batteries).

At the 'Import' entrance, the consumption meter of the connected consumers is linked. At the 'Export' entrance, the meter that measures energy production to the batteries is connected.

At 'Start value' a value can be entered which indicates the minimum charge of the batteries (in kWh). Once this starting value is exceeded, the digital output will become active. This allows one (via relays) to now enable devices that draw energy from the batteries. The 'Bottom value' must be a value that determines the 'discharge depth'. Once this value is reached, the output will be switched off (and therefore the load)

- If log type electra, the order of the inputs is: V – A – W – Hour of Consumption (mode = TELLER)
- If log type water – gas – fuel: only input3 (current power) and input4 (hourly consumption) (mode = TELLER)
- If temperatures: input1 to input4 possible (mode = sensor, subad = 2)

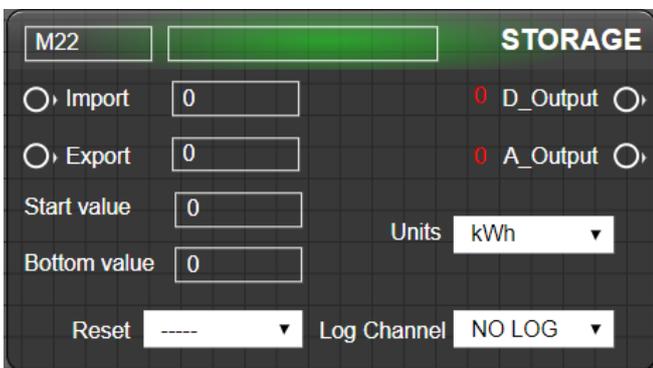
If there are **4 SAME TYPE OF UNITS** (e.g. all 4 inputs = volts or amp or watts or temp..): they can be shown in the same graph (subad 2-3-4-5). For this we will indicate this in the configuration modules:

Create a (fictitious) serial number, starting with 04L, followed by 5 digits (e.g. 04L00001)

Enter UNIQUE modbus addresses is (same way as a normal modbus module)

Choose the type of UNITS (kW, gas, water, fuel, temp)

According to the type of chart, we will fill in the following under SUBAD:



0 : normal graph or temperature display such as standard module (e.g. electra = V-A-W-Wh)

1: CREDIT chart (when using 'CREDIT' module in logic)

2: electra: 4 graphs only for display voltages or temperatures (V or °C)

3: electra: 4 charts only for display flows (A)

4: electra: 4 charts only for display power (kW)

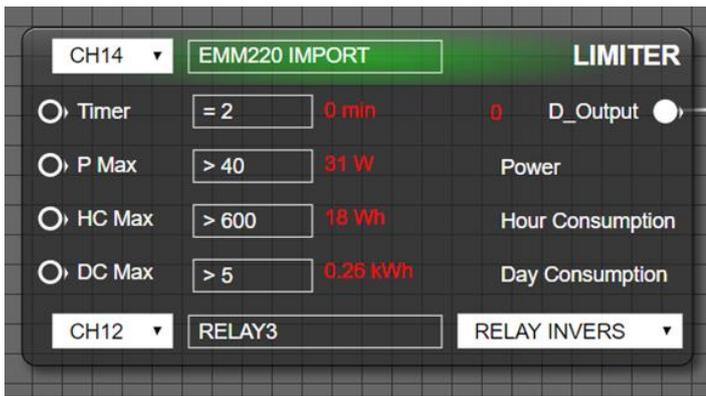
5: electra: 4 charts only for display hourly consumption (kWh)

CH	MODE	ADDR	DUBAD	PARA3	LOGTYPE	ALERT	PARA3	UNIT
CH14	FUEL LEVEL LOG	25	Teller	25	1			IFuel
CH14	LOGICA SOLAR	26	Teller	26	5	VOLT		kWh
CH14	STORAGE BUFFER LOG	27	Teller	27	1			kWh
CH14	LOGICA HOUR CONS.	28	Teller	28	5	VOLT		kWh

**LIMITER:**

with this logic module, a limit can easily be imposed on consumers. The aim is to set a limit on power, hourly consumption or daily consumption.

When this limit is exceeded, a relay module can disable the load for a certain amount of time, and switch it back on after a set time.



**TOP: CHANNEL MODULE SELECTION:**

- **NC: Mode1:**Power, Hour Consumption and Day Consumption measurements come from external module(s)

- **CH0-63: Mode2:** Power, Hour Consumption and Day Consumption measurements come from the selected measurement module.

**Inputs:**

Mode1: Indian ModuleChannel - NC:

- P Max = external measurement Power (can have multiple power measurements via ADD module).
- HC Max: External measurement Hour Consumption (can have multiple HC measurements via ADD module).
- DC Max: External Measurement Day Consumption (can have multiple DC measurements via ADD module).
- Timer: If a 'variable' timer is desired, this input can be connected to (for the time being) a 'dimmer', which determines the time how long the 'power overload' should remain active.

The measured values are compared in 'OR-LOGIC' with the internal compare values.

Mode2: If ModuleChannel is active (only for log channels, with power, hour and day consumption outputs available vb. EMMxx, P1poort...)

- P Max = external compare value for Power (1-65000W) via dimmer or other reference values.
- HC Max: external compare value (1-65000 Wh) for Hour Consumption (ditto).
- DC Max: external compare value (1-65000 kWh) for Day Consumption (ditto).
- Timer: If a 'variable' timer is desired, this input can be connected to (for the time being) a 'dimmer', which determines the time how long the 'power overload' should remain active (10-255min).

**Bottom:**

- RELAY CHANNEL 0-63

**SELECTOR:**

- NC = no relay, Digital\_OUT can be used to drive further logic.
- RELAY ON: relay starts at overload, after that relay remains in this status (manually de-)
- RELAY OFF: relay goes out at overload, after that relay remains in this status (manually to turn on)
- RELAY FOLLOW: relay starts at overload, after set delay relay goes out
- RELAY INVERS: relay goes out at overload, after set delay relay enters

**Settings:**

If a particular input is not connected, and there should be no compare of this input, **the compare value must be zero.** (> 0)

The timer **MUST** be at a minimum of 10min.

**Units:**

timer per minuut, power is per Watt, uurverbruik per Wh (of L), dagverbruik is per kWh (of m3).

**Operation:**

An overload occurs when one of the 3 measurements is exceeded.

With Power, the overload will only occur after the timer reaches its set limit (min 10min).

The relay is then switched on or off according to the selection (ON,OFF,FOLLOW,INVERS).

**With Power overload, the timer can only count down when the overload is done!**

This means that if a measurement that has caused the power overload is not interrupted by the relay, the overload persists, and the overload state is maintained.

When the relay is turned off, the load would be zero, after the delay, the overload would return and the relay would be turned off again. The switching time would then be a maximum of 1 minute. (bad for refrigerator, freezer...)

**THEREFORE, IT HAS BEEN CHOSEN THAT THE SWITCH-ON TIME = TURN OFF TIME FOR POWER OVERLOAD**

**For OVERLOAD HC or DC, the minimum time between on-off FIX is 10minutes.**

Update: at Power: every minute, at HC every 5minutes, at DC every hour.

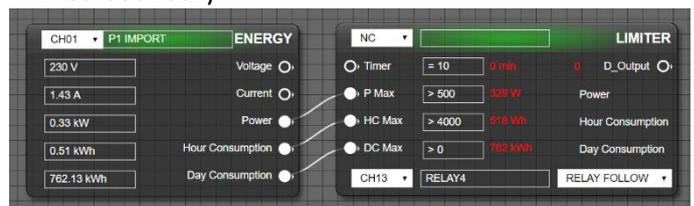
**TYPES OVERLOAD :**

- Power : If power is limited, the relay can switch back on after the delay time.
- Hour Consumption: If exceeding HC, the relay can only switch on at **the next hour** !
- Day Consumption: When crossing DC, the relay can only turn on **at the next day** !

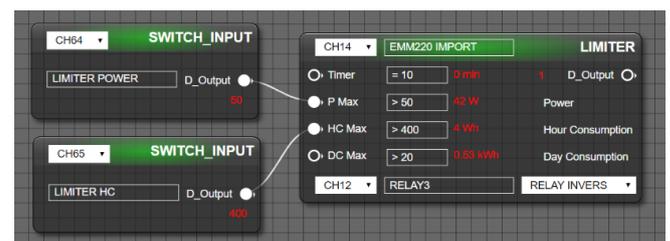
If a combination of these types is used, 'Power' has the lowest priority.

Note After an overload has turned it on/off, the relay can **be operated manually** to change the status of the relay. (possible only during overload HC or DC, not at Power overload or if there is no overload)

**Example 1:** Mode1, external measurement module, fixed boundary



**Example 2:** Mode2: internal measurement, external variable limit via 'dim module'

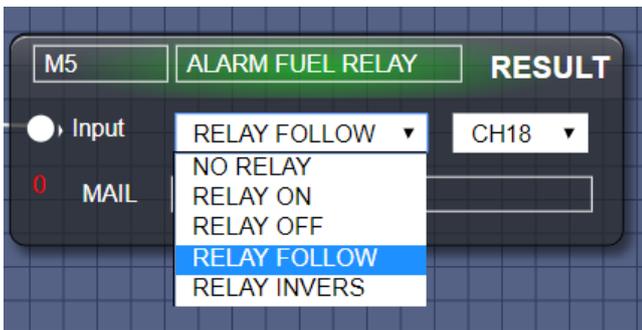


**RESULT:**

relay according to the input status and the selector:

- NO RELAY: no relay control
- RELAY ON: relay is turned on when input is on, afterwards relay stays on even if the entrance goes out
- RELAY OFF: relay is turned off when input is out, afterwards relay remains off even if the entrance is on
- RELAY FOLLOW: relay follows the status of the entrance
- RELAY INVERS: relay follows the inverse status of the entrance.

The channel No must of course be a channel with which the relay module is connected.



In the case of 'MAIL', a mail address can be entered where a message must be sent.



The content will be a short notice with the status of that output (e.g. Fuel credit < 100l)

NOTE: The mail server **does not have 'SMTP authentication'**. For some providers, this mail ends up in the 'SPAM'.

Example of an email received:

2-WIRE WARNING Site Testlabo WEB02

ALERT FOR :	CT1
DATE: 11/02/2016 <==>	21.44.00
Power Limit:	30 W
Measured Value:	44 W
<b>ALL RESULTS:</b>	
VOLTAGE :	235 V
CURRENT :	207 mA
ACTUAL POWER :	44 W
DAY CONSUMPTION :	0.32 kWh

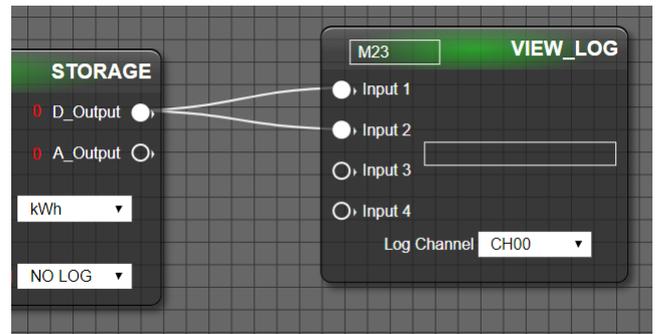
**WIRING:**

the 'wiring' of modules can only be done if starting on an 'output', and connecting them to an input.

To remove a connection: Stand with mouse cursor on the INPUT, click left, go with cursor to blank place (gray grid) and click back left.



An output can be connected to multiple inputs, but an input can only have one connection at any time.



11.LAYOUT

Go to the '**CHANNELS**' menu. We now see channel names in the same arrangement as we created them in our modules, but maybe this isn't the order you like them to see in the dashboard. It is also interesting to create 'groups'.



On the left there is a text field 'Group Name'. Furthermore, there are a number of buttons with the following features:

- **'NEW'**: giving a name to a group of vb Heating, lighting, ventilation, main automatic...
- **'CHANGE'**: editing a group name
- **"DELETE"**: Delete group
- **"SORT"**: Order the channels for the visualization
- **'FORMAT'**: Divide channels into the groups
- **"CANCEL"**: Do not make the change
- **'ZEND'**: forwarding the groups to the web server
- **'DOWNLOAD'**: show back the previous configuration provided that the changes made have not yet been sent !

We should always start filling in the group names: Go to the field where **'Group Name'** is located and type in the group name. Press **'NEW'**

The name will now appear in the 'list box', the **'ZEND'** key will turn red to indicate that a change has been made, but we will also be notified with the message **'RESETGROUPS?'** Press **'Cancel'**

So we continue until all desired groups have been given a name (max 8).

Now we can *sort* the channels if the order is not desired: press **'SORT'** Click the text field of the channel you want to move. This name is now colored red. Then click the number field where you want to bring the clicked channel.

The desired channel will now be placed in place and will be coloured yellow.

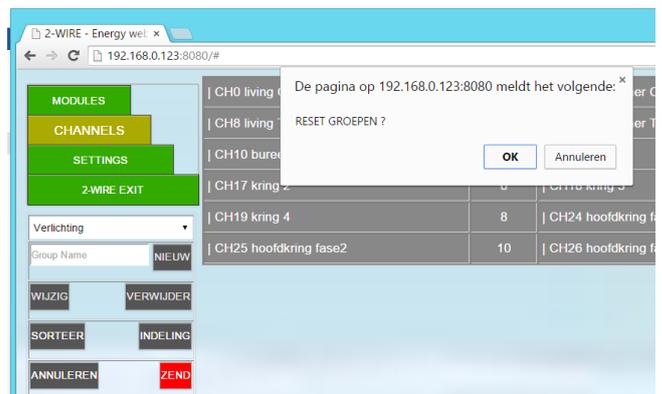
We repeat these 2 steps until all the names are in order.

Here's an example:



Now we have to include the channels in the groups:

Press **"LAYOUT"** and confirm the **"RESET GROUPS"** question -> **OK**



Click the last channel of each group. Each group is now colored... Made a mistake? No problem, you can always resort or delete/re-create groups.

When everything is fine, click **'ZEND'**.

example:



## 12. MAIN CHANNELS and EPC LEVEL

At the bottom of the channels there are a number of specific channels that we can use for the total overview of electricity consumption, heating consumption, water consumption and calculation of the EPC level. Example:

CH8 CV brander (LOG_6)	6	CH7 P1 import energy (LOG_7)	7
CH84 P1 export energy (LOG_17)	8	CH85 P1 gasmeter (LOG_18)	9
CH8 TOTAAL F1 (LOG_8)	10	CH9 TOTAAL F2 (LOG_9)	11
CH10 TOTAAL F3 (LOG_10)	12	CH16 TV LIVING (LOG_11)	13
CH24 KRING 1 (LOG_12)	14	CH32 FRIGO-DIEPVR (LOG_13)	15
CH40 KRING 4 (LOG_14)	16	CH48 KRING 5 (LOG_15)	17
CH56 KRING 6 (LOG_16)	18	CH72 thermo living (LOG_19)	19

SELECT LOGCHANNEL(S) TOTAL ENERGY (ELECTRA: 3-PH = 3 inputs / No channel = 255)			
ELECTRA Ph1 LOG_	0	ELECTRA Ph2 LOG_	0
ELECTRA Ph3 LOG_	10	GAS LOG_	18
FUEL LOG_	0	WATER LOG_	4

SELECT LOGCHANNEL(S) EXPORT ENERGY (3-PH = 3 inputs / No channel = 255)			
EXPORT Ph1 LOG_	17	EXPORT Ph2 LOG_	255
EXPORT Ph3 LOG_	255		

SELECT LOGCHANNEL(S) HEATING (max 3 inputs / No channel = 255)			
HEATING 1 LOG_	0	HEATING 2 LOG_	255
HEATING 3 LOG_	255	EXTRA HEATING kWh	0
FLOOR SPACE m2	180	OUTDOOR TP LOG_	255

If you have a total measurement of your electricity consumption (can also be a 'smart meter') then enter the channel number at ELECTRA Ph1. This channel number can be found in the table above (where LOG\_xx is listed). If you have a three-screen net, you have to fill in the 3 channel numbers.

E.g. LOG\_8 - 9 and 10 are the total measurements of phase1 phase2 and phase3

For heating, this can be gas or petroleum. If you also have these consumers linked to the web server, please fill in these channels. (the gas meter can also be connected via the 'smart meter' via the EC.441)

If a pulse contact is provided for the water meter (via EC.441 or BC.020), fill in this channel.

SELECT CHANNEL(S) TOTAL ENERGY (ELECTRA: 3-PH = 3 inputs / No channel = 255)			
ELECTRA Ph1 : CH	255	ELECTRA Ph2 : CH	2
GAS : CH	255	FUEL : CH	2

SELECT CHANNEL(S) EXPORT ENERGY (3-PH = 3 inputs / No channel = 255)			
EXPORT Ph1 : CH	255	EXPORT Ph2 : CH	2

If you have solar panels and an energy meter (EMMxxx) is connected to it, you can fill in up to 3 channels (for three-screen meters)

Finally, we do an (approximate) calculation of the EPC level: this is a value in kWh/m2, which is in function

with the heating consumption and the area of the house. The lower this number, the better your home is insulated.

The total consumption of the heating is divided by the heated areas in the house. The unit is kWh/m2. If there is not yet a full heating year, an estimate shall be made of the missing periods depending on the heating period already measured.

If you have a side heater such as a wood-burning stove, or if you regularly heat electrically, you have to enter the estimated annual energy consumption at 'EXTRA HEATING': for wood this is about 4 kWh / kg

SELECT LOGCHANNEL(S) TOTAL ENERGY (ELECTRA: 3-PH = 3 inputs / No channel = 255)			
ELECTRA Ph1 LOG_	8	ELECTRA Ph2 LOG_	9
ELECTRA Ph3 LOG_	10	GAS LOG_	18
FUEL LOG_	6	WATER LOG_	4

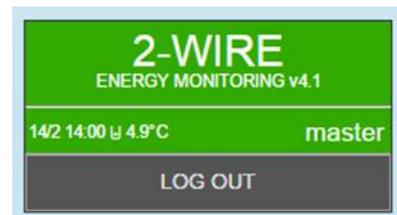
  

SELECT LOGCHANNEL(S) EXPORT ENERGY (3-PH = 3 inputs / No channel = 255)			
EXPORT Ph1 LOG_	17	EXPORT Ph2 LOG_	255
EXPORT Ph3 LOG_	255		

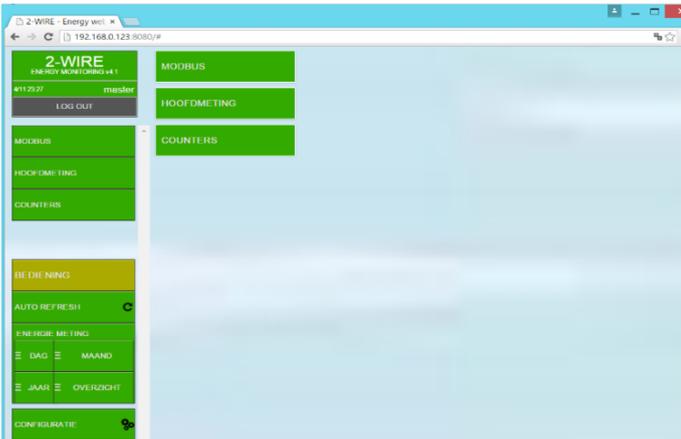
SELECT LOGCHANNEL(S) HEATING (max 3 inputs / No channel = 255)			
HEATING 1 LOG_	0	HEATING 2 LOG_	255
HEATING 3 LOG_	255	EXTRA HEATING kWh	0
FLOOR SPACE m2	180	OUTDOOR TP LOG_	255

If you have connected a temperature emitter via the module EC441 or BC.002, and if you want to show this temperature on the login screen, you can fill in this channel at 'OUTDOOR\_TP'



### 13. OPERATION

Go to **'EXIT'**. The page is now reloaded and you can see the following:



On the left are the group names, and some more menus for visualizing the logs. On the right, the channels come in the order as we would have liked.

Clicks on a group on the left may close other open groups and open the requested group.

Right, click the group names opens or close the group.



When consumers are connected and active, a measurement is made every minute.

However, the page as you see them now will not show the measured values. If you want to keep an eye on them, you can 'refresh' the page.

Press **'AUTO REFRESH'**, and every minute you will now see the newly measured values.

Each channel now shows the most important things: consumption, daily consumption, annual consumption. (or temperature.. CO2...)

NOTE. WHEN A 'GRAPH' IS SHOWN, THERE IS NO 'REFRESH' OF THAT CHANNEL !

The TP.16A thermostat allows you to change the set point. On the far right is the 'set point', and to the left of it is the 'room temperature'. By pressing one of them you can increase or decrease the set point per half degree.

For relay control (mode = TOGGLE – BISTABLE) there is an ON-OFF key.

At the AIR.04 we see the room temperature, humidity, air pressure, IAQ, and an indication of air quality: VERY GOOD – GOOD – MODERATE – POOR

### 14. GRAPHS

#### CONTROL:

Clicking on a consumer's name shows in chart the daily consumption of that consumer. By 'hovering' over the graph we get to see a 'tooltip' with the measurements of that time.

By clicking the name again, the month chart is now



shown.



On the right are 2 arrows <<< || >>> Allows us to go back up to 7 days with the daily overview, or up to 12 months with the monthly overview. Clicking back closes the chart.

Note. Opening charts for the first time can take a few seconds (according to the speed of

your browser and laptop/tablet). Next time, this will go increased ly because the graphs are 'buffered'.

consumption (gas or petroleum), water consumption and possibly solar panel yield.

An EPC level approximate calculation is calculated if the

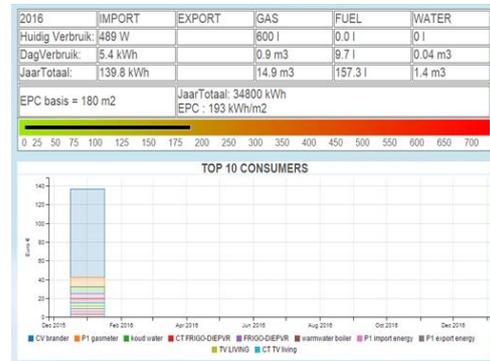
Clicking on **'DAY'** shows all channels at the same time as their hourly readings.



The screenshot shows the 'MONTH' view of the energy monitor. It displays a table with columns for 'MIDDELEMAAND', 'TOTAAL FASE 1', 'WAS-DROOG-DIEPVR', 'KRING 5', 'LIVING TV', 'KRING 4', and 'KRING 6'. Each column contains a table of monthly consumption data for the years 2014, 2015, and 2016. The 'TOTAAL FASE 1' table shows a total consumption of 31 W and 12.9 kWh. The 'WAS-DROOG-DIEPVR' table shows a total consumption of 0 W and 25.7 kWh. The 'KRING 5' table shows a total consumption of 0 W and 0.4 kWh. The 'LIVING TV' table shows a total consumption of 30 W and 0.72 kWh. The 'KRING 4' table shows a total consumption of 0 W and 0.03 kWh. The 'KRING 6' table shows a total consumption of 0 W and 0.12 kWh.

Clicks on **'MONTH'** show all channels at the same time as their daily readings.

parameters are completed as explained in Chapter 11 (LAYOUT)

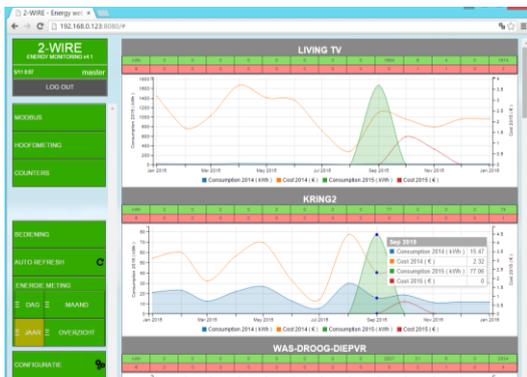


**'TOP 10 CONSUMERS'**

gives you an overview (in euros) of the biggest energy eaters. Below that, there is a table per month of consumption per month per measurement and estimated energy costs. By comparison, you can also see last year's consumption (if your system has been in service for more than a year) The outputs are sorted according to the biggest cost.

If you have temperature sensors connected, you will see in this graph the minimum and maximum temperature of that day.

Clicks on **'YEAR'** show all channels at the same time as their monthly readings. At the top of the chart are the consumption and estimated cost prices per month and the total.



The screenshot shows the 'OVERVIEW' view of the energy monitor. It displays a table with columns for 'MIDDELEMAAND', 'TOTAAL FASE 1', 'WAS-DROOG-DIEPVR', 'KRING 5', 'LIVING TV', 'KRING 4', and 'KRING 6'. Each column contains a table of monthly consumption data for the years 2014, 2015, and 2016. The 'TOTAAL FASE 1' table shows a total consumption of 200 W and 0.88 kWh. The 'WAS-DROOG-DIEPVR' table shows a total consumption of 0 W and 0.00 kWh. The 'KRING 5' table shows a total consumption of 0 W and 0.00 kWh. The 'LIVING TV' table shows a total consumption of 30 W and 0.72 kWh. The 'KRING 4' table shows a total consumption of 0 W and 0.03 kWh. The 'KRING 6' table shows a total consumption of 0 W and 0.12 kWh.

When you have filled in a channel for 'total electricity' (see chapter 12), there is now an additional channel to be seen: **'VARIA'**, this is the difference between the total measurement and the partial measurements.

Clicks on **'OVERVIEW'** shows in a table a total overview of electricity consumption, heating

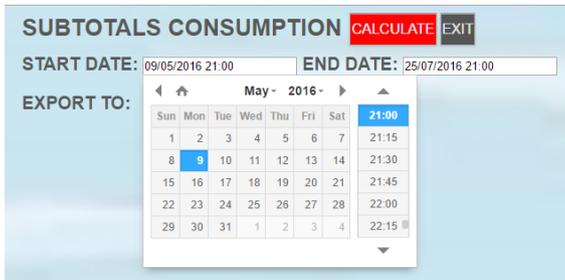
## 15. EXPORT SUBTOTALS

It can be useful if you want to calculate consumption over a certain period of time, and even attach an (approximate) cost to it.

For this, in the menu on the left, click '**SUBTOTALS**'. The image below now appears.



Click on the field next to **STARTDATE** and you'll see a calendar now. Select the start date for the desired period. You do the same for the end date (**ENDDATE**)



(standard it is at the current time)

Afterwards, click on the '**CALCULATE**' key.

1. The screen will now show all the intermediate totals of the log channels.
2. (LOG channels of CO2 or temperature are not included in this table, only 'consumers')
3. The waiting time for the calculation can vary depending on the period and the number of channels. (e.g. Period 9 months, with 20 channels can last about 8 sec)

An example:

Channel	Start Value	End Value	Diff	Unit	Cost
LOG_1 CT KIRING 1	11151	12823	1672	kWh	4.42
LOG_1 CT TV living	12403	22495	10096	kWh	26.17
LOG_3 CT FRIGO-DEEPR	28183	48854	20671	kWh	53.79
LOG_3 CT KIRING 5	8281	14191	5910	kWh	15.13
LOG_3 Inval water	18821	3872	-14949	kWh	-37.87
LOG_3 warmwater boiler	13828	53874	40046	kWh	103.43
LOG_3 CV boiler	21915	48528	26613	kWh	68.98
LOG_3 P1 input energy	1243	2029	783	kWh	1.98
LOG_3 P1 input energy	1243	2029	783	kWh	1.98
LOG_3 P1 output energy	1243	2029	783	kWh	1.98

The table first states the name, that the meter position of the start time (STARTVALUE), meter position of the end time (ENDVALUE), the difference between the two (DIFF), the unit (UNITS) and the (approximate) cost (COST). This price was calculated according to the entered values in the 'SETTINGS'.

In the '**Search**' field, you can type in part of a name and then only the consumers are shown the keyword in their name.

At the top of the table there are now some 'buttons': allows us to *export* the table shown with the file name = 'SUBTOTALS ENERGY jaar\_maand-day-hour-minute', and the extension:

1. **EXCEL:** '.xlsx'
2. **JSON:** '.json'
3. **CSV:** '.csv'
4. **PDF:** '.pdf'

With the '**PRINT**' key we can print out this table immediately.

*Na. The export choices 'EXCEL', 'JSON' are not supported on many tablets (certainly not IPAD), full support under Microsoft windows*

### Operation:

**The counter positions** of each meter ( Modbus and pulse) are logged every minute and stored on the internal SD card as a value for up to 3 years. The counter positions shown in SUBTOTALS is the counter position at 00.00 hr start day and this at 23.59 hours end day.

However, if for a given day the final counter > starting counter was replaced by, for example, the Modbus meter that day, or because the voltage on a pulse counter was interrupted so that it starts at zero, or because you create a new meter on an existing modbus address without first erasing it, then the starting counter for that day is assumed as zero in the calculation of the DIFF and COST for that day.

**DIFF and COST** are calculated every day and the result is stored and stored for up to 3 years. For example, if you set a 12-day period, the 12 DIFF's and the 12 COST's are added together and the sum of the 12 values is shown as a result.

Na. A pulse counter on a RG.016, BC.002, EC.441, PC.080 module is set to zero if the voltage is interrupted.

Na. The period of 1 day in SUBTOTALS is too small, especially if the start day is the day of configuration.

Na. Check out at point 16 below: AMR FILES EXPORT LOCALLY TO EXCEL

## 16. LOG TO FTP SERVER

Do you have your own FTP server? Or do you have one available through your provider? Then you can get more out of the 2-WIRE web server!

**LOG TYPES:** The logs are in **CSV** format and the separator is a **semicolon**. The decimal-sign is **comma**. There are 4 types of logs possible:

### RT LOG:

RealTime logs of measured values : voltage, current, power W(), power(VA), Power Factor (PF), m3 water, m3 gas, litres of fuel, temperature, CO2,...

The interval can be set from 5 minutes to 60 minutes. (NO is not active) If active, the readings of all log modules are forwarded to the log server following the interval.

Which measurements are logged can be checked per log channel ! (This is done in the configuration of the modules)

FileName: LOCATION NAME + LOGTYPE + DATE + TIME + csv  
(vb Nieuwstraat18Aalst\_RTLOG28082015\_013003.csv)

### RT DAYLOG (AMR):

You can also send **all** RealTime logs once a day. The interval of measurements can be set here from 1 minute to 60 minutes. In CSV format we see all log channels, with their corresponding measurements (as checked with RTlog)

The CSV file is drawn up according to the **'AMR'** format (see EANDIS)

Attention: A file with 32 log channels, each about 5 measurement types (V-A-W-VA-PF) with an interval of 1 minute is about 1MB in size.

The time when this file is sent on DAG+1 can be set per hour.

Logging always starts from midnight to midnight.

(vb Nieuwstraat18 Aalst\_AMR\_28082015\_0001.csv)

### CONSUMPTION LOG:

The usage(counter positions) can also be logged at an interval of 5 minutes to 60 minutes and transmitted directly to the log server. Here one can see the consumption, broken down according to day and nightly rate. (if any)

If solar panels, this can also be displayed separately.

(Vb Nieuwstraat18Aalst\_PAYLOG28082015\_013003.csv)

### CONSUMPTION DAYLOG (MMR) :

Analogous the RT Daylog, but only consume, with an adjustable interval of 5 to 60 minutes, or 1 total log of 24h.

The CSV file is set according to the **'MMR'** format (see EANDIS) The time when this file is sent can be set per hour. Logging always starts from midnight to midnight.

(e.g Nieuwstraat18Aalst\_MMR\_28082015\_013003.csv)

### LOCATION NAME:

this info is the file name, and also mentioned in the **'HEADER'** of the file.

### EANNR:

can be billing no, location no...

Na. If the value EAN541 is entered here, all modules will have a second input line where 16 digit EAN numbers can be entered.

01E00001	CH	MODE	ADDR	SUBAD	PARA3	LOGTYPE
IN1	elec totaal	1	Teller	27	0	VOLT
EAN	1234567890123456					<input checked="" type="checkbox"/>

**EXPORT AMR FILES LOCALLY TO EXCEL:**

In the MEMo2 web server can be generated by pressing the 'GENERATE' button via the 'SUBTOTALEN' page for a set start date.

The columns have a 5-minute fix interval, the rows are formed by the checked variables at 'LOGTYPE' (see FTP client above). You can return to the MEMo2 web server locally for more than 2 years in time to request data with 5' resolution locally.

Note. Depending on the number of variables desired, the calculation of this csv can require 1 to 2 minutes of calculation time from the web server. For further settings, see "Log to FTPServer."



**DETERMINE THE LOG VARIABLES YOU WANT**

Each module can be checked which of its readings and counter positions should be incorporated into these csv files



**17. DATA TRANSFER via HTTP**

This functionality was deleted in the MEMo2 web server

*You can also request log data with a very simple HTTP request.*

*In the 'toolbar' of your browser, type in an instruction and the 2-WIRE web server will give you an answer with a mass of log data. When you can store and*

*process this data in your database, you can create graphs, statistics or 'warnings at over-consumption'.*

1. *The following commands are possible:*
2. *Get current (real-time) measurements (5log types) of all log channels*
3. *Re-request (real-time) measurements of the previous period (up to 3 years ago)*
4. *Request hourly consumption up to 3 years back*
5. *Re-enertising daily consumption and cost per day up to 1 year back*

*Interested? Ask for the HTTP 2-WIRE instructionset*

**18. WIRELESS COMMUNICATION**

This is the big difference between the web recruiter WS.500 and WS.502:

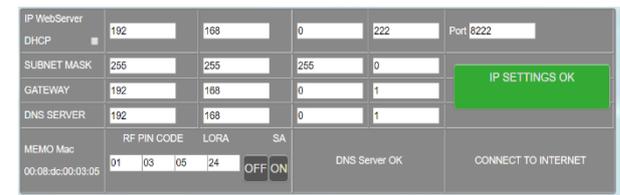
Internally, an RF-module has been added, which can communicate directly with 2-WIRE wireless modules such as: RF gateway RG.016, battery-counters BC.002, air quality AIR.04, relay module REL.40 and RF smart plugs.

The RF protocol is standard 'LORA' due to the large reception range, but can also automatically switch to 'FSK' for all RF smart plugs from 2-WIRE.

For RF, there needs to be a certain level of security so that only your RF modules can work without interference from other possible RF devices.

Therefore, a 'PIN' and a modulation setting should first be chosen:

GO to 'SETTINGS' in 'IP WebServer' section



**RF PIN CODE :**

Under 'Memo Mac' is the MAC address of the web server. In addition to 'MEMO Mac', there are 4 fields: The first 3 fields are on the last 3 Mac addresses of

the Memo module by default. This is the 'PIN' for your RF modules, and will also determine the carrier wave frequency (865-868 MHz). You can change it of your choice.

**LORA SETTINGS:**

The 4th box will determine the 'LORA' setting. The range ranges from 0 to 35.

The lower the number, the further the transmission range, but at a slower speed.

Typically, **16** is a good setting to start. From 24 and above the range is limited to about 20m.

*Na. Table with settings see at the back of this manual*

**STAND-ALONE COMMANDO RG.016**

On the far right is 'SA' with 2 keys 'OFF' and 'ON' underneath.

**These keys are used to 'activate the RF gateways in 'STANDALONE' mode.**

*NOTE: If you have a gateway connected to the WS.502 modbus, you may not use these keys unless you want to use this gateway as an RF modbus bridge afterwards. If you have pressed 'ON', you can nullify this action by pressing 'OFF'.*

More information about the *RF modbus bridge* can be seen in the RF gateway documentation.

**JOIN MODULES**

The next step is to 'link' the RF modules with the WS.502.

Now go to 'MODULES'. If the SN's have already been completed, select an RF module.

Vb 04A00001.

Each RF module has eand procedure to link the module (**JOIN**) See the documentation of the module itself. Put the RF module in 'JOIN' mode. (approx 60sec)

When the RF module is in this mode: press the green text box: There will now be 'JOIN 30sec'. Then press 'ZEND'. With a successful link, there will be 'JOIN OK'.

If 'JOIN NOK': repeat the procedure. When pressing again on the text box, you can use 'JOIN 30sec' and

'JOIN STOP'. To then test the link, one can press 'TEST'. Answer 'FW xx.xx.xx' or 'Module not found'.

**ATTENTION: All RF modules powered by batteries will only remain active for about 30 seconds. Afterwards, these modules go into 'drag mode', and are no longer accessible.**

Possibly put these modules back active and re-test the RF connection.



Repeat above for all RF modules.

**LINKING MODBUS MODULES VIA AN RF GATEWAY RG.016:**

Imagine the SN of the gateway is 08G00091 and the modbus module, connected to the bus of the gateway is 02E00001.

First, the gateway must be linked to the WS.502:

**THE GATEWAY SN, IF USED AS an RF module, must be the lowercase letter 'g'.**

E.g. SN **08G00091**, used as RF becomes **08g00091**.



In this way, the web server knows that this gateway will communicate via RF. The gateway must now be put under stress.

The LEDs will blink for 60sec during the 'JOIN' mode.

Follow the same procedure: click the green text box to say "JOIN

30sec." Now press "SEND." With good linking, 'JOIN OK' will appear. (flashing LEDs on gateway stops)

**WIRELESSLY LINK MODULES VIA THE RF GATEWAY**

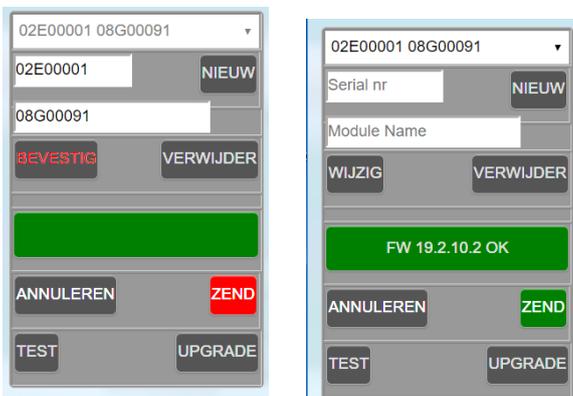
Then go to the connected modbus module (e.g. 02E00001)

Press "CHANGE." 'Module NAME' fills in the SN of the gateway

(e.g. 08G00091) Press "CONFIRM" and then press "SEND." When a valid modbus address is filled in, 'Module OK' will appear.

If no valid address, 'Module not found' may appear. Press 'TEST'. This feature only tests the RF communication between gateway and the web server.

Further explanation of configuration RG.016 is in the documentation gateway.

**19. QUICK START**

A shortened repetition of all steps:

1. Connection power supply, bus and network cable, which is connected to your local network.
2. Use *servercannertool* to find out the IP address and port number.
3. Browse to this address and port number (default 8080)
4. Login with *adminIP* or *admin2-WIRE* and password '2015'
5. To change the IP address: to menu 'SETTINGS' (see chapter 4)
6. To make up users: to menu 'SETTINGS', old login = 'loginold', old pass = '1234'
7. Energy prices : to menu 'SETTINGS', bottom, cost prices
8. Create modules: to menu 'MODULES', type in serial number, assign names, fill parameters according to the type of module (see leaflet of this module), send.
9. Create channels: to menu 'CHANNELS', first create groups (minimum 1), then possibly sort channels, then divide the groups between the channels.
10. Main energy sources: if there are total measurements, to menu 'CHANNELS', typing channel numbers for electricity, gas, water, fuel oil.
11. Export energy sources: if there are total measurements for export (solar panels), to menu 'CHANNELS', type in this channel number(s).
12. EPC level calculation: if there is total measurement of heating source(s), to menu 'CHANNELS', typing in this channel number(s) and estimated area of the heated spaces.
13. Go to 'EXIT' and test all channels. (Only after the first hour are consumed logged)

## 20. PROBLE SOLUTIONS

### REFRESH PAGE:

When you surf the Memo website , and no key gives any response, then you probablylose the 'connection'. This may be because your login *time* has expired, or your PC/tablet has been turned off. Then go to the 'toolbar' of your browser and refresh the *page*. Usually you will have to log in again and everything will work normally again.

If there are problems such as the 'page not found' notification or the 'hourglass' continues to run, there may be a network problem. Try reloading the page again. If this is not a success, check if there is still internet connection by browsing to a well-known website.

### SEARCH IP ADDRESS:

If you fail to log in, and if there is a solid network connection, you may have used the wrong IP address. To figure this out, an *IP scanner* is required. This program can be downloaded from the 2-WIRE website. (Server Scanner). "Broadcast" searches for your web server on your local network. When the connection is in order, you will be able to read all the settings. Another IP address may have been assigned. (DHCP...)

### NETWORK PROBLEM:

When you can no longer reach your web page, even after checking with the 'IP *ServerScanner*', first check the network cable: At the bottom of the web server, where the network connector is plugged in, there are 2 LEDs: the green one must always light up, the orange LED lights up every now and then.

When the orange LED never lights up, the network cable is not connected to your network.

At the top of the WS502, a green LED should be lit, which sits directly next to the power connector. Then the power supply is fine. At the top right there are 2 pressure keys, with 2 corresponding LEDs. Both LEDs should be off, and every 2 seconds the left LED should light up for a moment (**heartbea**t).

If an LED continues to burn continuously, something has gone wrong with the network. Turn off the voltage, wait 5 seconds, and turn the tension back on.

The LEDs should light up for about 3 seconds and then go out.

### DHCP:

If there are problems with 'DHCP' (e.g. your router does not assign an IP address), and the 'ServerScanner' does not find a web server, despite a solid network connection, then you can decide to go to a 'default' or fixed address:

Procedure: Turn off voltage of the WS502, wait 5 seconds, hold down **key 2**, turn on voltage, and keep pressing until the LED starts flashing. Keep pressing for another 3 seconds and then release the key. After about 5seconds all LEDs are off and the WS502 is at a fixed address. You must now 'surf' to the default IP address: **192.168.0.123:8080**

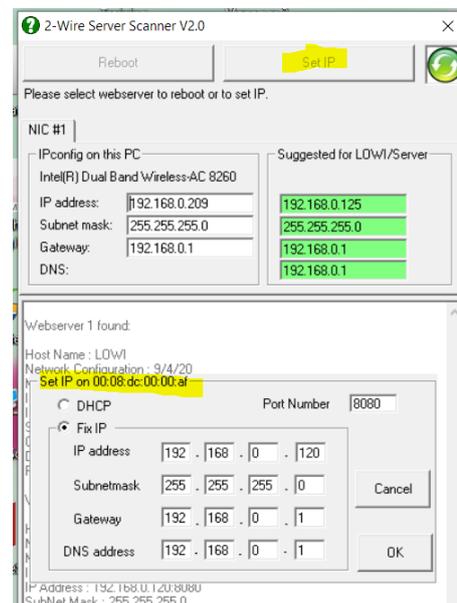
Note: This address is not always suitable for the network where your PC or laptop is connected.

When you are in a different range, you need to change the settings of your PC !

### CHANGE IP ADDRESS:

You can also change the IP address with the '**ServerScanner**'.

After the program has found your web server, you can also change the current IP address yourself with this program. Type the address and port number you want, along with all other information such as SUBNET, GATEWAY, DNS.



**RESET SUMMARIZED:**

Pressing keys while running:

1. Key 1: Upgrading Javascript and CSS.
2. Key 2: Upgrading firmware Web server WS502

Pressing keys during startup voltage:

3. Toets 1: clear full database, IP address reset, login and password
4. Key 2: Reset IP address and password.

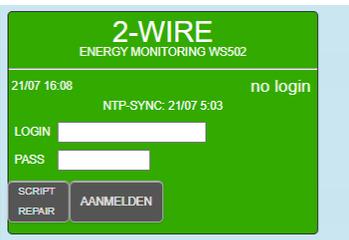
**FAULTY JAVASCRIPT/STYLE: TEST 1+TEST 2**

If you discover errors on the website, or there is no key that responds, even after 'refresh page', an error may have crept in when loading the script/style. There are a few ways to download the javascript and possibly the firmware again:

1. Via the Login page
2. Manually using the push buttons on the web server
3. Remote via an http statement

*VIA THE LOGIN PAGE*

With the "SCRIPT REPAIR" button on the login page, you can reload javascript from another location.



*MANUALLY USING THE PUSH BUTTONS ON THE WEB SERVER*

Re-download the java script from the 2-WIREserver by pressing key 1 (left, shortest against the power connector) and keep pressing until the left LED is continuous. Only then release key. Now the LED should stay on for 15 to 20 seconds and then go out again.

**Key 2** :If this is okay, then you do the same thing with the right push button (key 2): keep pressing until the flash stops and both LEDs are constantly burning, then release key.

Now the LEDs also have to light 15 to 20 sec and then the right LED starts flashing very quickly. After that, the LED will burn continuously for about 3 seconds and then go out. Everything okay !!!

When these things happen as described, try refresh page again and log in.

*REMOTE VIA AN HTTP STATEMENT*

If you only have remote access to the web server, you can use the following http instructions TO remotely execute KEY1 (upgrade css/javascript) and KEY 2 (memo2 firmware upgrade).

**Method:**

Step 1: Ask for an access: enter your own **IP address+ login + password** to get an XP key

ask XP key:

http://192.168.0.123:8080/adminIP?XP2015&

antw: |4|13| 5|4|0| 54 = XP-key

Step 2: Order upgrade css (KEY1):

req upgr FW CSS & script:

http://192.168.0.123:8080/adminIP?XP54&DLFwStyleScript&

antw na ca 10sec: \_30/06

9:26\_|0|18|84|20.6.28.1|&#9745|0 = FW css & script FW 20.6.28.1

Step 3: Order firmware upgrade (KEY2):

req upgrading FW server:

http://192.168.0.123:8080/adminIP?XP54&DLFwWeb&

antw na ca 10sec: \_30/06

9:26\_|0|19|84|20.6.29.4|&#9745| START UPGRADING|0 (FW 20.6.29.4)

Afterwards in toolbar get rid of instructions, reload page and log in normally!

**CLEAR FULL DATABASE, RESET IP ADDRESS AND PASSWORD: KEY 1**

Key 1 (shortest against power connector):

**Procedure:** Turn off voltage of the WS502, wait 5 seconds, hold down key 1, turn on voltage, and keep pressing until the LED starts flashing. Keep pressing for another 3 seconds until the LED stops blinking and then release the key.

The erasure procedure can take about 60 seconds, and the WS502 is ready when the LED goes off.

Afterwards in toolbar get rid of instructions, reload page and log in normally!

**IP ADDRESS OR PASSWORD FORGOTTEN: KEY 2**

Key 2 (completely right):

**Procedure :** Turn off voltage of the WS502, wait 5 seconds, hold down key 2, turn on voltage, and keep pressing until the LED starts flashing. Keep pressing for another 3 seconds until the LED stops blinking and then release the key.

The erasure procedure can take about 3 seconds, and the WS502 is ready when the LED goes off.

You must now 'surf' to the default IP address: 192.168.0.123:8080 and login, pass as described in part 8

**RESET ONE ENERGY LOG CHANNEL:**

If you delete a complete module in the "modules" tab (select serial number and press button more) all logs of this module will be removed immediately.

If you want to clear one channel on a module with multiple energy channels, you can: put modbus address to 0 and press "ZEND", then refill old modbus address and push on to the send and the logs are erased.

**IMPORT AND EXPORT CHART ON A MONOPHASE AND A 3 PHASE METER**

Each 2-wire modbus energy meter has a 2 meter reading, namely an import meter position (consumption over the 3 phases) and an export meter position (injection into the net over the three phases), these meter readings can be seen on the LCD display of the meter in question and these values are logged every minute by the MEMO server

MEMO uses these meter readings (import+export) to calculate consumption over one hour (=difference from the two-hour meter readings). These calculated hourly usages are then shown in the MEMO chart as follows:

1. Total import consumption as a blue graph at phase 1 (MODbus subaddress 0)

2. The total export( injection) as blue graph at phase 2 (MODbus subaddress .
3. The calculated import and export consumption(chart) can therefore be found at monophase( 02Exxxxx) and in 3 phase meters (03Exxxxx) meters shown.

**ANNEX RF LORA SETTINGS :**

In the table below you can find out the possible LoRa settings that you can fill in at Memo Mac in the fourth

SETTING	SF	SYMBOLS	CR	BW (kHz)	TIME ON AIR	
0	8	256	4 5	125	210ms	JOIN MODE
1	7	128	4 6	125		LONG RANGE
2	7	128	4 7	125		
3	7	128	4 8	125	270ms	
4	8	256	4 5	125		
5	8	256	4 6	125		
6	8	256	4 7	125		
7	8	256	4 8	125		
8	9	512	4 5	125		
9	9	512	4 6	125		
10	9	512	4 7	125		
11	9	512	4 8	125	540ms	LONGEST RANGE
12	7	128	4 5	250		MEDIUM RANGE
13	7	128	4 6	250	60ms	
14	7	128	4 7	250		
15	7	128	4 8	250		
16	8	256	4 5	250		
17	8	256	4 6	250	135ms	
18	8	256	4 7	250		
19	8	256	4 8	250		
20	9	512	4 5	250		
21	9	512	4 6	250		
22	9	512	4 7	250		
23	9	512	4 8	250	270ms	
24	7	128	4 5	500	30ms	SHORT RANGE
25	7	128	4 6	500		
26	7	128	4 7	500		
27	7	128	4 8	500	60ms	
28	8	256	4 5	500	60ms	
29	8	256	4 6	500		
30	8	256	4 7	500		
31	8	256	4 8	500		
32	9	512	4 5	500	120ms	
33	9	512	4 6	500		
34	9	512	4 7	500		
35	9	512	4 8	500		