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Doc no. 2.033.107.1

Functional description

Multitouch/BACnet

UMG 604 / UMG 605 / UMG 508 / UMG 509
UMG 511 / UMG 512

BACnet activation UMG 604,	Article no.: 52.16.081
BACnet activation UMG 605,	Article no.: 52.16.083
BACnet activation UMG 508,	Article no.: 52.21.081
BACnet activation UMG 509,	Artikel no.: 52.21.081
BACnet activation UMG 511,	Article no.: 52.19.081
BACnet activation UMG 512,	Artikel no.: 52.17.081

Multitouch application, Article no.: 51.00.207

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Contents

Prerequisite

The Power Analyser for the BACnet communications must be activated to use the Multitouch function. The activation code required for this must be purchased and can be pre-entered at the manufacturing factory - or subsequently directly on the device - with the help of a numerical code.

Attention

Without paying for the BACnet option, the BACnet specific expansion cannot be used!

Description	Art. no.
BACnet activation code UMG 604	52.16.081
BACnet activation code UMG 605	52.16.083
BACnet activation code UMG 508	52.21.081
BACnet activation code UMG 509	52.21.081
BACnet activation code UMG 511	52.19.081
BACnet activation code UMG 512	52.17.081

Setting the activation code with UMG 604 / 605:

- Set the device to programming mode (see operating instructions) to enter the activation code.
- Set address 520 and enter the first part of the license as the value.
- Then set address 521 and enter the second part of the license as the value.

Address	Description	Setting range
520	Activation "BACnet" option, license part 1	0 .. 9999
521	Activation "BACnet" option, license part 2	0 .. 9999

Setting the activation code with UMG 508 / 509 / 511 / 512:

- The entering of the activation code is implemented directly via the device display. In doing so observe the "Expansion/activation" chapter (UMG 508 / 509 / 512) or "Display/activation" chapter (UMG 511) of the corresponding operating instructions.

Integrate Power Analyser into the GridVis

To integrate the Power Analyser into the GridVis evaluation and configuration software an Ethernet connection must be established to the device and the TCP/IP address defined.

- Establish a connection between the PC and the device (see connection example) via a direct connection or via a switch/router. It is recommended to use CAT5 cable.
- Determine or set the addressing mode ("fixed IP" or "DHCP"). If "fixed IP" mode is selected then set the TCP/IP address of the device.

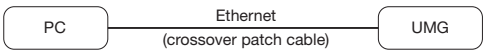


Fig. Example connection:
Direct connection between UMG and PC. Both devices require a fixed IP address.

Fig. Example connection:
Configuration using a switch UMG and PC require a fixed IP address.

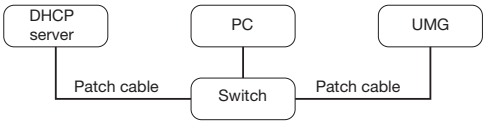


Fig. Example connection:
Integration into a network with DHCP server. UMG and PC are assigned their IP addresses automatically from a DHCP server.

Fixed IP address

In simple networks without a DHCP server, the network address has to be set directly in the device.

With a direct PC-UMG connection, note:

- Use a crossover patch cable.
- The first three segments of the IP addresses for the device and the computer should be identical. The last segments must be different! The subnet mask must match in all four blocks.

  Example:

  Computer's IP address: 192.168.000.020 with the subnet mask: 255.255.255.0

  UMG's IP address: 192.168.000.021 with the subnet mask: 255.255.255.0

DHCP mode

DHCP allows for the fully automatic integration of a UMG into an existing network without additional configuration. When started, the UMG automatically obtains the IP address, the network mask and the gateway from the DHCP server.

Attention

The connection of the UMG to an existing Ethernet network may only be carried out after discussion with the network administrator!

Integrating the UMG 604 / 605

- Change the device to programming mode. To do so press buttons 1 and 2 simultaneously for approx. 1 second. With the password query deactivated the programming mode is then started and identified with the text "PRG". The first digit of the address flashes.
- Set the address 205 for the selection "**DHCP-Modus**" (=2) or "**Fixed IP address**" (=0).
  - To do so, use button 2 to set the first digit to the value 2. Then switch to the second digit with button 1 and set it to a value of 0 with button 2. Set the third digit to a value of 5 in the same way.
  - Once the address is set, switch to the setting with button 1. Use button 2 to set the parameter to the corresponding value (cf. "Addressing mode" table).
  - For further settings use button 1 to go back and enter the next address.
  - If no button is actuated for ca. 60 seconds, or if buttons 1 and 2 are pressed simultaneously for ca. 1 seconds, then the device exits programming mode and changes back to display mode.

Address	Description
205	DHCP mode 0 = **Fixed IP** 1 = BootP 2 = **DHCP client** 3 = Zeroconf

Table: Addressing mode

- With the selection of "Fixed IP address", other additional network parameters must be set:
  - Setting the device IP address
    - Change to programming mode. Set the address 300 as described and set the first three digit block of the device IP address (cf. IP addresses table).
    - Then set the address 301 and allocate the second block of the device IP address.
    - Complete the entries with the addresses 302 and 303.
  - Setting the subnet mask
    - Set the subnet mask, using the same method as for configuring the device IP address, with addresses 304 to 307 (cf. IP addresses table).
  - Setting the standard gateway
    - Set the standard gateway (if present), in the same way as the IP address, with addresses 310 to 313 (cf. IP addresses table).
    - Note: Gateway adjustment is normally not required for the configuration.

- Read out the device address with "DHCP mode" selection:
  - Change to the programming mode as described. Set the address to 300, using buttons 1 and 2 and note down the three digit block in the Contents area. Carry out the same step for addresses 301 to 303 (cf. table under step 10).

Address	Description	Address	Description	Address	Description
300	IP address, xxx --- --- ---	304	IP mask, xxx --- --- ---	310	IP gateway, xxx --- --- ---
301	IP address, --- xxx --- ---	305	IP mask, --- xxx --- ---	311	IP gateway, --- xxx --- ---
302	IP address, --- --- xxx ---	306	IP mask, --- --- xxx ---	312	IP gateway, --- --- xxx ---
303	IP address, --- --- --- xxx	307	IP mask, --- --- --- xxx	313	IP gateway, --- --- --- xxx

Table: ID addresses

Integrating the UMG 508 / 509 / 511 / 512

- Start the configuration menu from the home display with button 1 ("ESC"). Change to the "Communication" entry with button 3 and open this with button 6.
- Similarly to above, set the selection to "DHCP". To do so mark the "DHCP" entry and open this via button 6. Select the corresponding entry "DHCP" or "Off" with button 3 or 4 and confirm this with button 6. Deactivate the entry in the case of networks without DHCP servers ("Off").

- With the DHCP mode deactivated ("Off") further network parameters must be set:

    - Setting the device IP address
        - Select the entry "Address" with button 3 or 4 and open this with button 6. Change the first digit of the address via button 3 or 4. Then switch to the second digit with button 5 and set this in a similar manner to above. Complete the IP address and confirm the entries with button 6.
    - Setting the subnet mask
        - Select the entry "Netmask" with button 3 or 4 and open this with button 6. Set the subnet mask in a similar manner to the setting of the IP address for the device.
    - Setting the standard gateway
        - Select the entry "Address" with button 3 or 4 and open this with button 6. Set the IP address for the Standard Gateway (if present) in a similar manner.
        - Note: Gateway adjustment is normally not required for the configuration.

- Reading out the device address:

    - Start the configuration menu from the home display with button 1 ("ESC"). Change to the "Communication" entry with button 3 and open this with button 6.
    - Note the addresses under "Address" and "Netmask".

Setting the IP address of the computer for a direct connection

PCs on company networks normally use DHCP. If you would like to assign a fixed IP address for the PC (e.g. for a direct PC to UMG connection), proceed as follows:

Attention
Settings in a company network can vary.

Attention
The connection of the UMG to an existing Ethernet network may only be carried out after discussion with the network administrator!

- Open the Network and Sharing Center in the Windows Control Panel.
- Open the status window via the LAN connection (fig. Network and Sharing Center).
- By selecting "Properties", it is possible to assign a fixed IP address to the PC (see fig. Process for defining a fixed IP address under Windows 7).

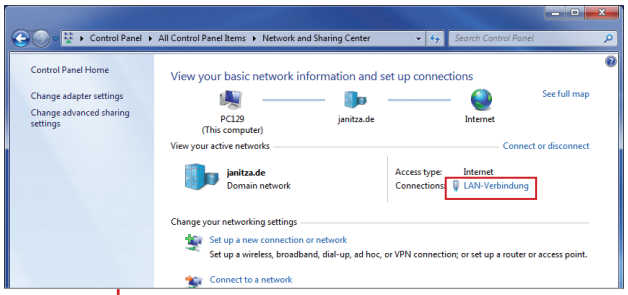


Fig.: Network and Sharing Center

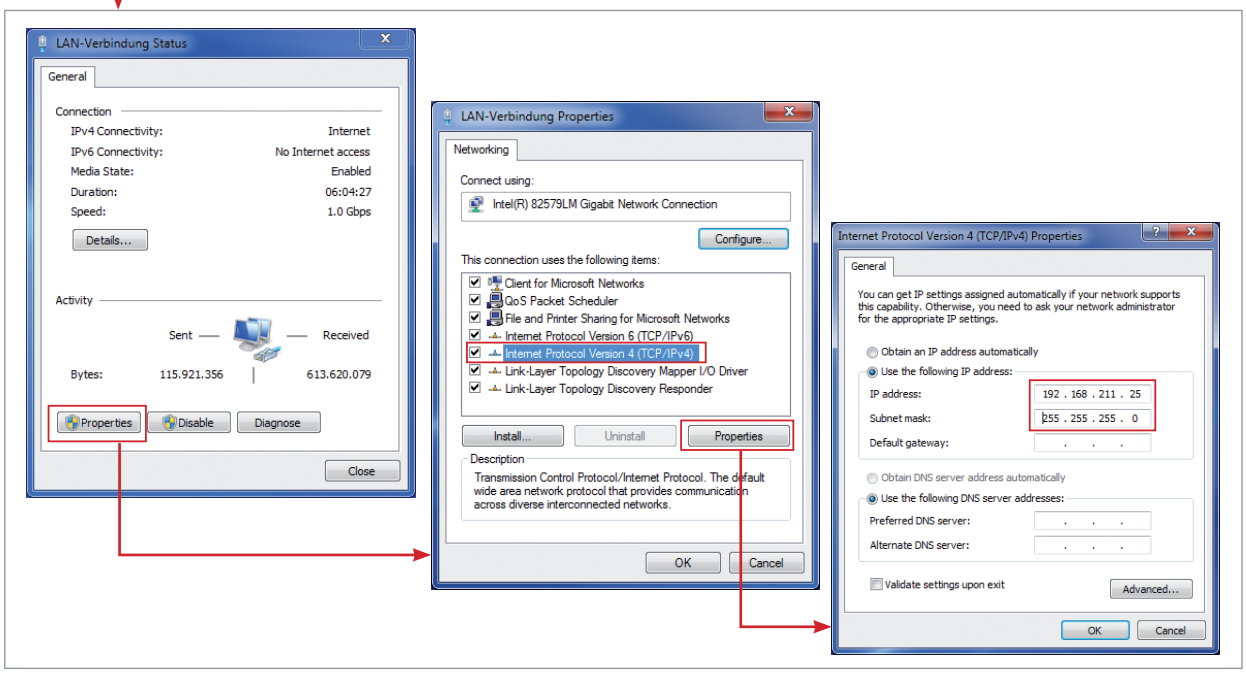


Fig.: Process for defining a fixed IP address under Windows 7.

Insert the device in the GridVis software

- Open the GridVis software and load or create a project.
- Open the "Device" node in the project window and activate the context menu for the "Device" node with a right click of the mouse.
- Select the "Add new device" context menu item (cf. fig. Add new device).

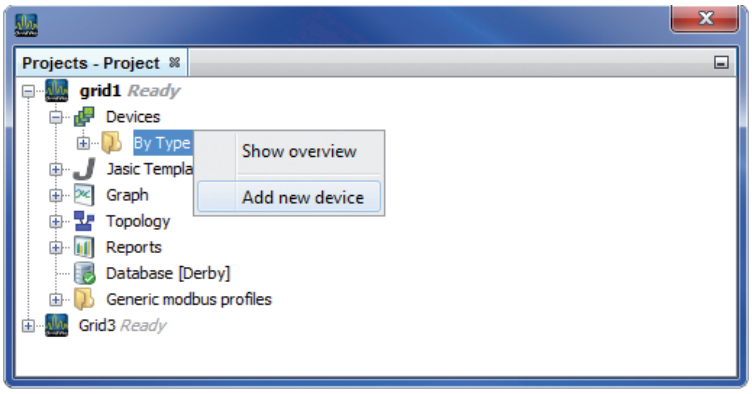


Fig.: "Add new device"

- Select the type of device, listed under the device category, and confirm the selection with "Next".

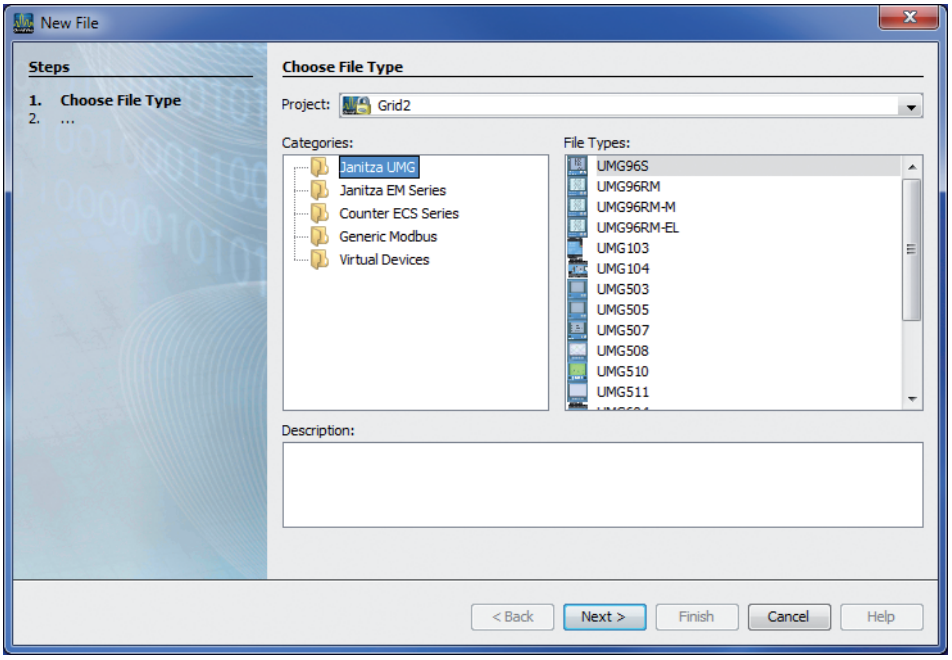


Fig.: "Add new device" - Device selection

- Set the connection type to "TCP/IP" and enter the corresponding device IP address (cf. chapter "Integrate UMG 604 / 605" or "Integrate UMG 508 / 509 / 511 / 512")

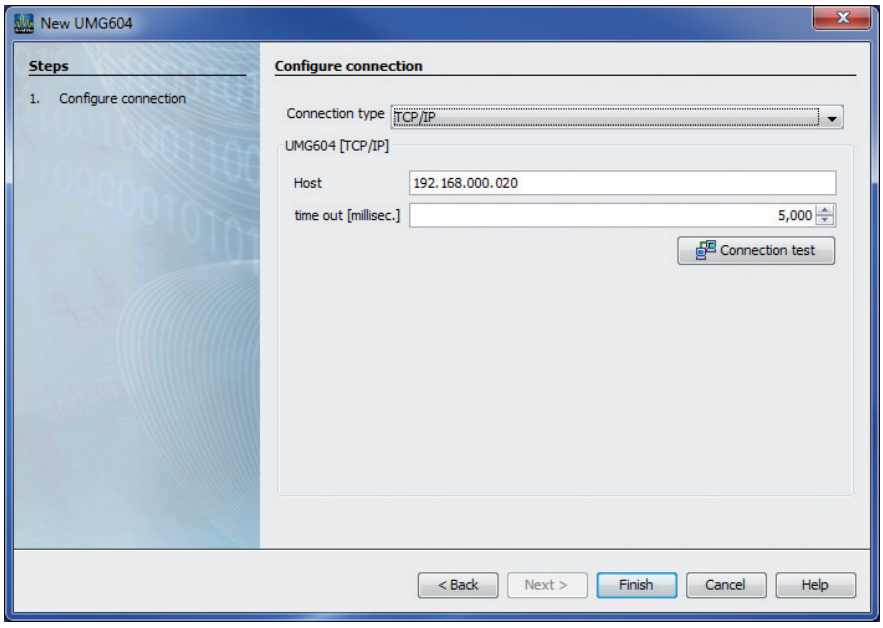


Fig.: Configure device integration

- Carry out a connection test after entering the device IP address. If the connection with the UMG has been established then device information - such as the serial number for example - will be displayed. The device can now be used and configured within the software.

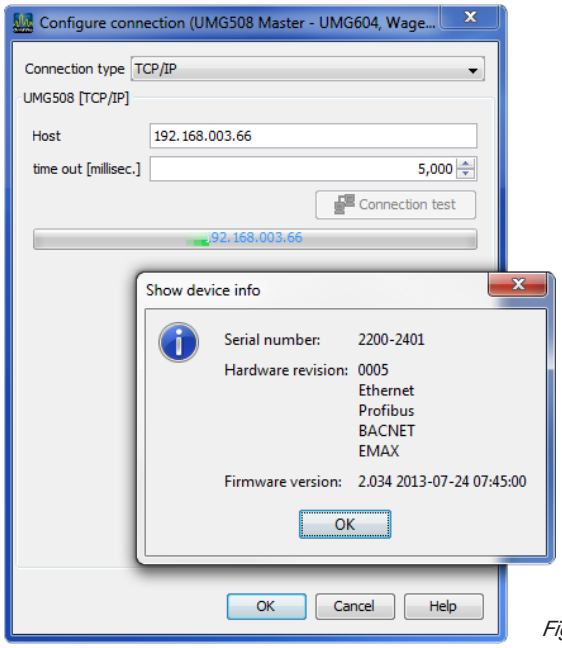


Fig: Successful connection test for device

Further information on using the GridVis software can be found in the internet at:
https://wiki.janitza.de/display/GRIDVIS70EN/GridVis-Documentation+7.0

Installing the "Multitouch" (Touch & BACnet) application

If the BACnet has been activated for the UMG and there is a connection between the computer and the device, then the "Multitouch" application can be installed via the GridVis software. With the help of this application it is possible to display and process up to 31 slave devices on the device homepage of the Power Analyser.

Attention

The "Multitouch" application must run alone on the Power Analyser. The installation of additional applications is not possible!

- Open the "Extras / Install applications" menu in the GridVis system and select the corresponding application via the "..." button. If the application has been selected then further information is listed in the description field. Confirm the selection with the "Next" button.

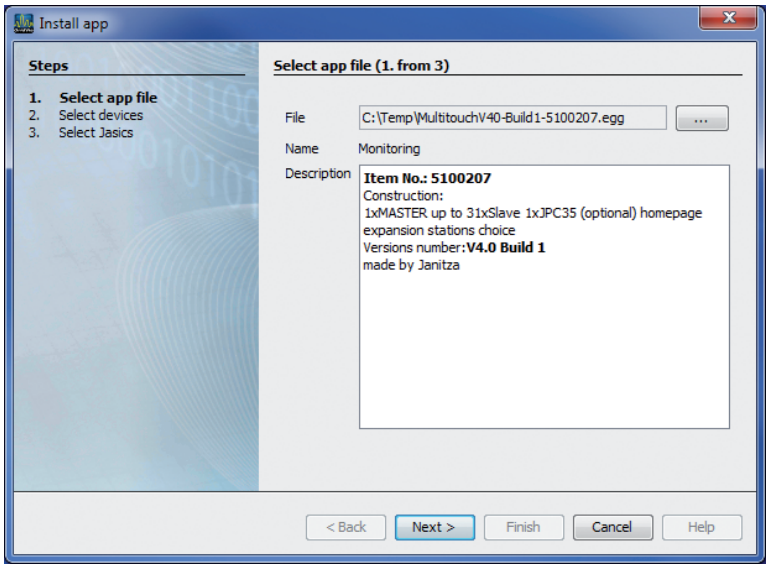


Fig.: Installing the Application

- Select the corresponding device in the following field and confirm the selection with "Next".

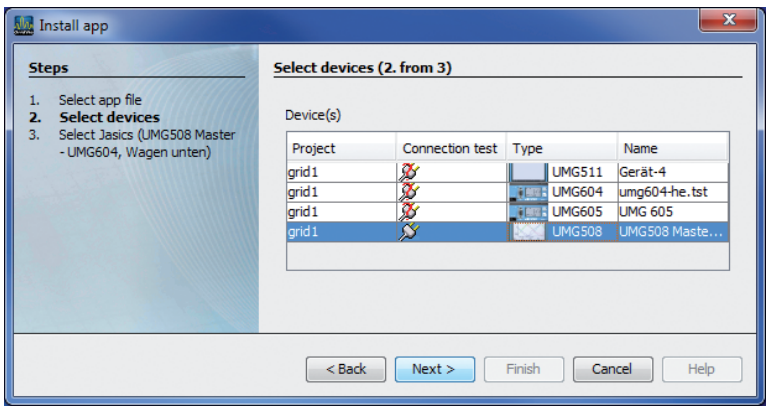


Fig.: Device selection for the application installation

- Indicate which program location the application should be saved to. Because at least two program locations will be required for this, at least two program locations should be selected by multiple marking! To do so, mark a program location with the mouse and then select a second with an additional mouse click whilst simultaneously holding down the <CTRL> key.

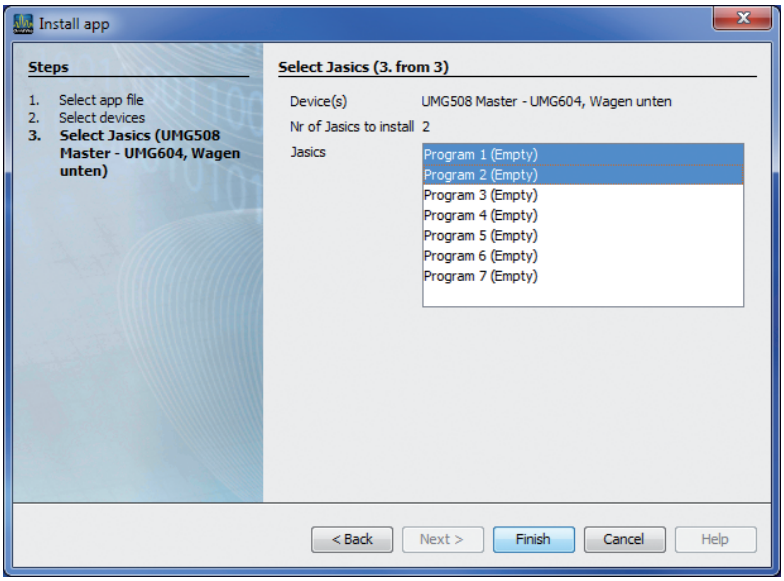
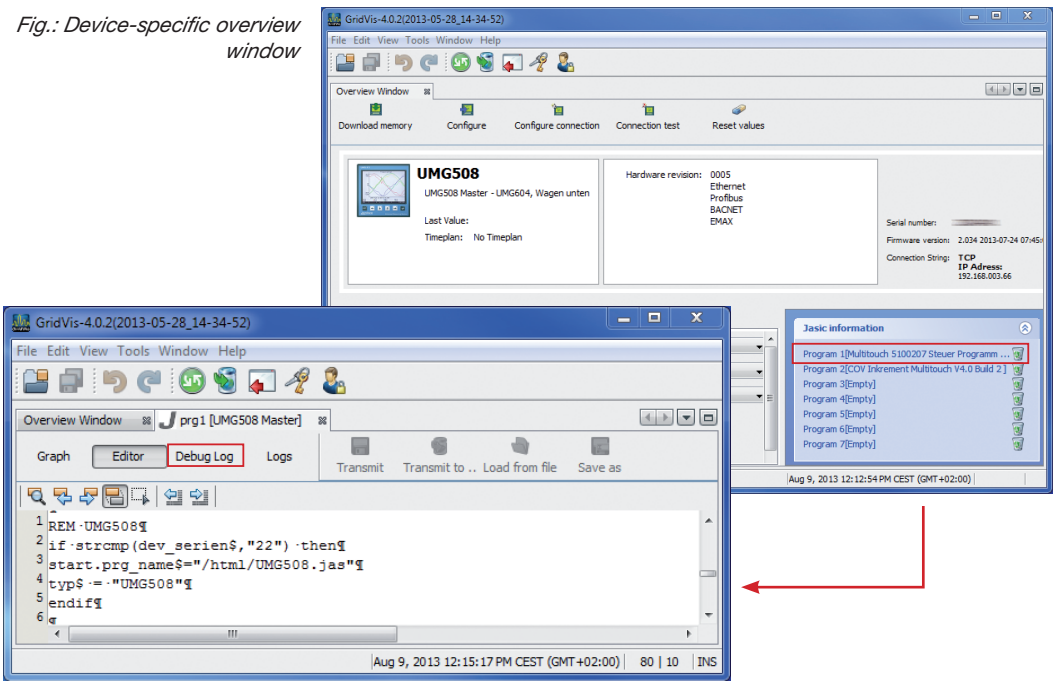


Fig.: Selection of the program location

- Three programs will be installed. The control program "Multitouch 5100207", the program "COV Increment Multitouch" and a third program (read-out program), which will be stored in a free program location during the runtime. This program will not be shown in the list! The exact installation location can only be queried via the DEBUG function of the control program:

  - To do so, open the overview window for the respective device and click on the Multitouch program in the "Jasic information" area.
  - Then open the log file via the "Debug Log" button.

Fig.: Device-specific overview window



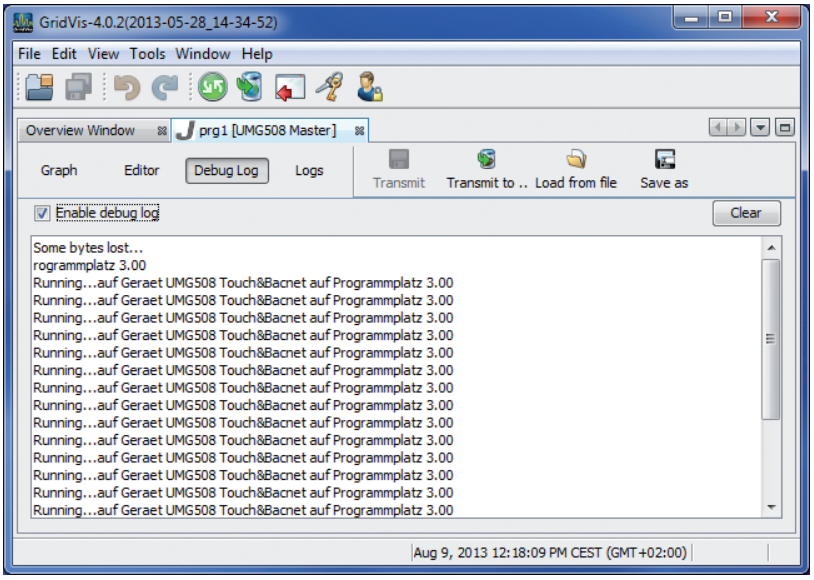
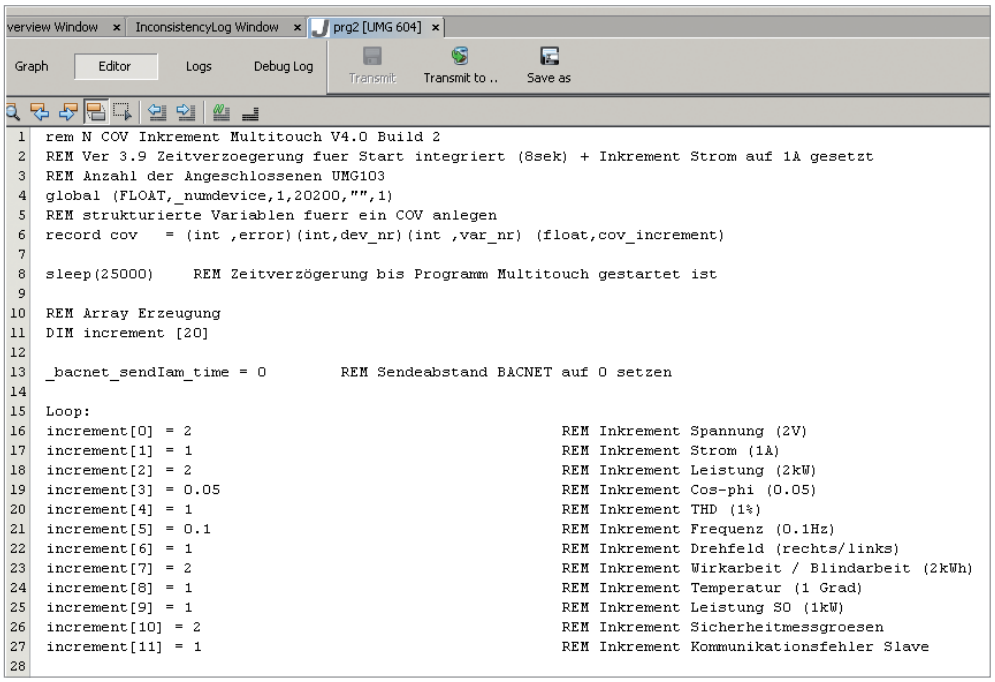


Fig.: "Debug log" window

- In the example above the read-out program was automatically installed in program location 3. After the application installation the precise program sequence is as follows

  1. Control program and COV program are installed.
  2. The control program waits for 15 seconds until all HTML pages are transferred and then installs the read-out program in a free program location.
  3. After 40 seconds the COV increments for all value groups are automatically set.

- The COV increments are not persistently saved in the device, if these are set per BACnet on the device. The COV increments are preset in the JASIC program per value group and can be changed in the JASIC program. After the change, the program must be transferred to the device. The BACNet Sendlam_time is deactivated in default condition, but can be set to a number of seconds if desired. A _bacnet_sendlam_time = 5 would mean that a broadcast message would be sent every 5 seconds.




```
rem N COV Inkrement Multitouch V4.0 Build 2
REM Ver 3.9 Zeitverzoegerung fuer Start integriert (8sek) + Inkrement Strom auf 1A gesetzt
REM Anzahl der Angeschlossenen UMG103
global (FLOAT,_numdevice,1,20200,"",1)
REM strukturierte Variablen fuerr ein COV anlegen
record cov   = (int ,error)(int,dev_nr)(int ,var_nr) (float,cov_increment)

sleep(25000)    REM Zeitverzögerung bis Programm Multitouch gestartet ist

REM Array Erzeugung
DIM increment [20]

_bacnet_sendIam_time = 0        REM Sendeabstand BACNET auf 0 setzen

Loop:
increment[0] = 2                                    REM Inkrement Spannung (2V)
increment[1] = 1                                    REM Inkrement Strom (1A)
increment[2] = 2                                    REM Inkrement Leistung (2kW)
increment[3] = 0.05                                 REM Inkrement Cos-phi (0.05)
increment[4] = 1                                    REM Inkrement THD (1%)
increment[5] = 0.1                                  REM Inkrement Frequenz (0.1Hz)
increment[6] = 1                                    REM Inkrement Drehfeld (rechts/links)
increment[7] = 2                                    REM Inkrement Wirkarbeit / Blindarbeit (2kWh)
increment[8] = 1                                    REM Inkrement Temperatur (1 Grad)
increment[9] = 1                                    REM Inkrement Leistung S0 (1kW)
increment[10] = 2                                   REM Inkrement Sicherheitmessgroesen
increment[11] = 1                                   REM Inkrement Kommunikationsfehler Slave
```

Set up master device

- The transmission speed of all subscribers must be the same in order to establish communication between master and slave devices. The RS485 baud rate should be set to 38.4 kBit/s.
- Each subscriber receives a device address, wherein these addresses may not be assigned twice.
- The master device can receive a device address starting from 32.
- The interface mode must be parameterised to RS485 on the Modbus master (Gateway).
- All settings can be carried out directly on the device or via the GridVis software.

Parameter	Setting
Baud rate	RS 485 = 38400 Bit/s or higher
Device address	Freely selectable from 32 onward
Serial interface	RS 485 = Modbus Master (Gateway)

We recommend the following cable types for the bus line: Li2YCY(TP)2x2x0, 22 !

Important parameters UMG 604 / 605:

Parameter	Setting	Parameter recommendation	Setting
205	TCP mode	0	Fixed IP
203	RS485 mode	1	Master
202	RS485 baud rate	2	38.4 kbit/s
200	Device ID	32	32
300	IP address XXX --- --- ---	192	*
301	IP address --- XXX --- ---	168	*
302	IP address --- --- XXX ---	000	*
303	IP address --- --- --- XXX	021	*
304	IP mask XXX --- --- ---	255	*
305	IP mask --- XXX --- ---	255	*
306	IP mask --- --- XXX ---	255	*
307	IP address --- --- --- XXX	000	*

Important settings UMG 508 / 511:

Parameter	Setting
DHCP	Off
Address	192.168.000.021
Net mask	255.255.255.000
Gateway	--
Protocol	Modbus gateway
Address	32
Baud rate	38400

Setting up slave devices

- The transmission speed of all subscribers must be the same in order to establish communication between master and slave devices. The RS485 baud rate should be set to 38.4 kBit/s.
- The slave device addresses must begin with "1" and then be assigned consecutively.
- All settings can be carried out directly on the device or via the GridVis software.

Parameter	Setting
Baud rate	RS 485 = 38400 Bit/s or higher
Device address	1,2,3,4……
Serial interface	RS 485 = Modbus Slave

BACnet configuration

- Enter the IP address for the Power Analyser into the address bar of the web browser (Windows Internet Explorer, Firefox etc.). As soon as a connection has been established with the Power Analyser, the web server of the device appears.

- A Power Analyser with the BACnet option can be used as a gateway with the "Multitouch" application. This enables all standard values of the sub-devices to be displayed on the BACnet protocol.
- The station selection can be configured via the "Configuration / Monitoring config" menu.
  - The number of slaves connected is defined here and the specific names allocated for the station selection.
  - The configuration is transferred to the device with the "Send configuration" button at end of table.
  - An additional storage of the configuration in the flash memory of the device is done via the button “Backup configuration”. You can reload the saved configuration with the button “Recover configuration”.

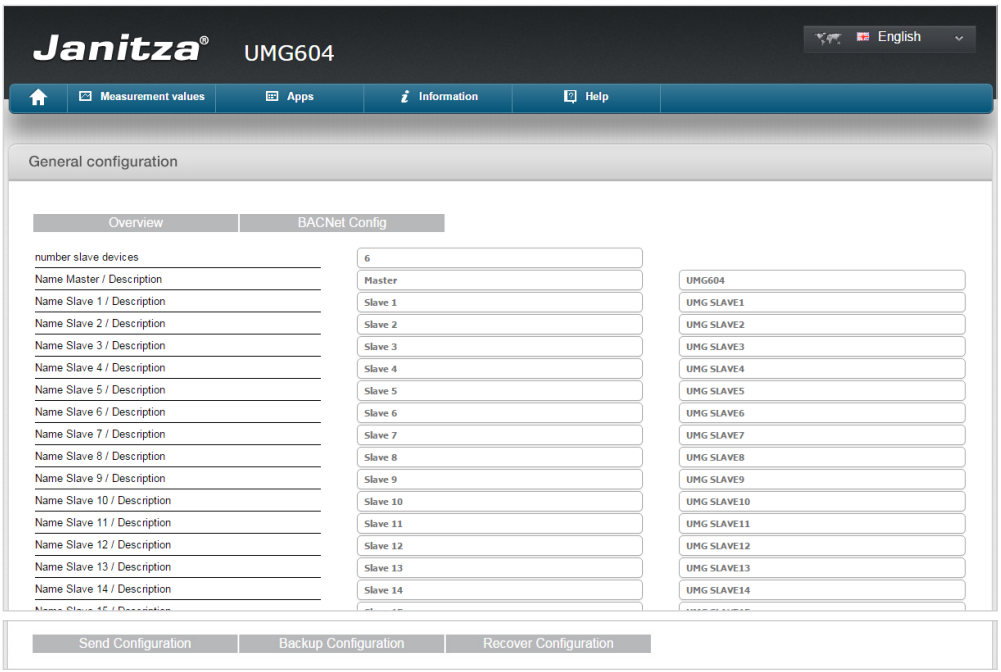


Fig.: Web browser with device homepage ("General Configuration").

- In the "Configuration / BACNet Config" menu.
  - The input of the virtual network addresses is necessary for the slave devices on the RS485 interface. Another address **must** be allocated for each line!

    - The 1st line (slave device) is allocated BACnet-MAC-Slave-Number 10.
    - The 2nd line (slave device) is allocated BACnet-MAC-Slave-Number 11 and so on.

    Example:

1st line	2nd line
UMG 508 Master	UMG 508 Master
BACnet-MAC-Slave-Number = **10**	BACnet-MAC-Slave-Number = **11**

  - The settings for "Bacnet ID / location" can be changed.
  - The configuration is transferred to the device with the “Send configuration” button at end of table.
  - An additional storage of the configuration in the flash memory of the device is done via the button “Backup configuration”. You can reload the saved configuration with the button “Recover configuration”.

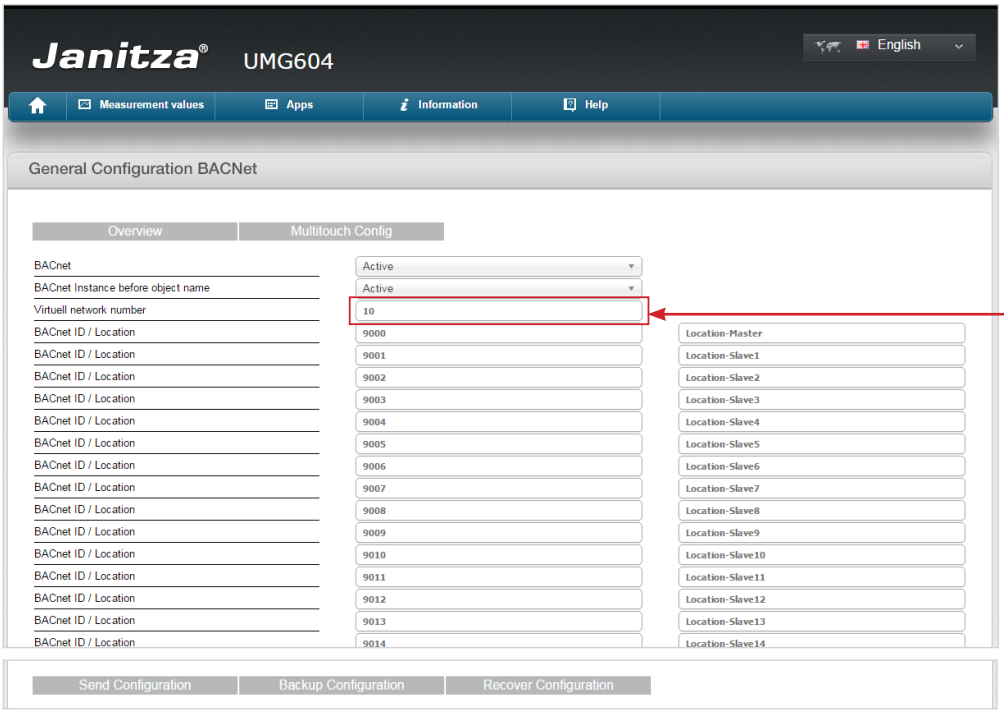
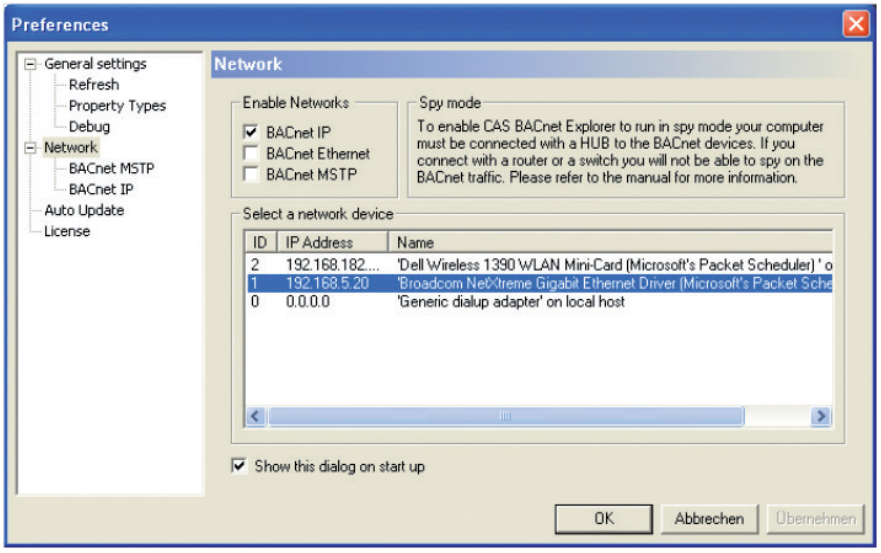


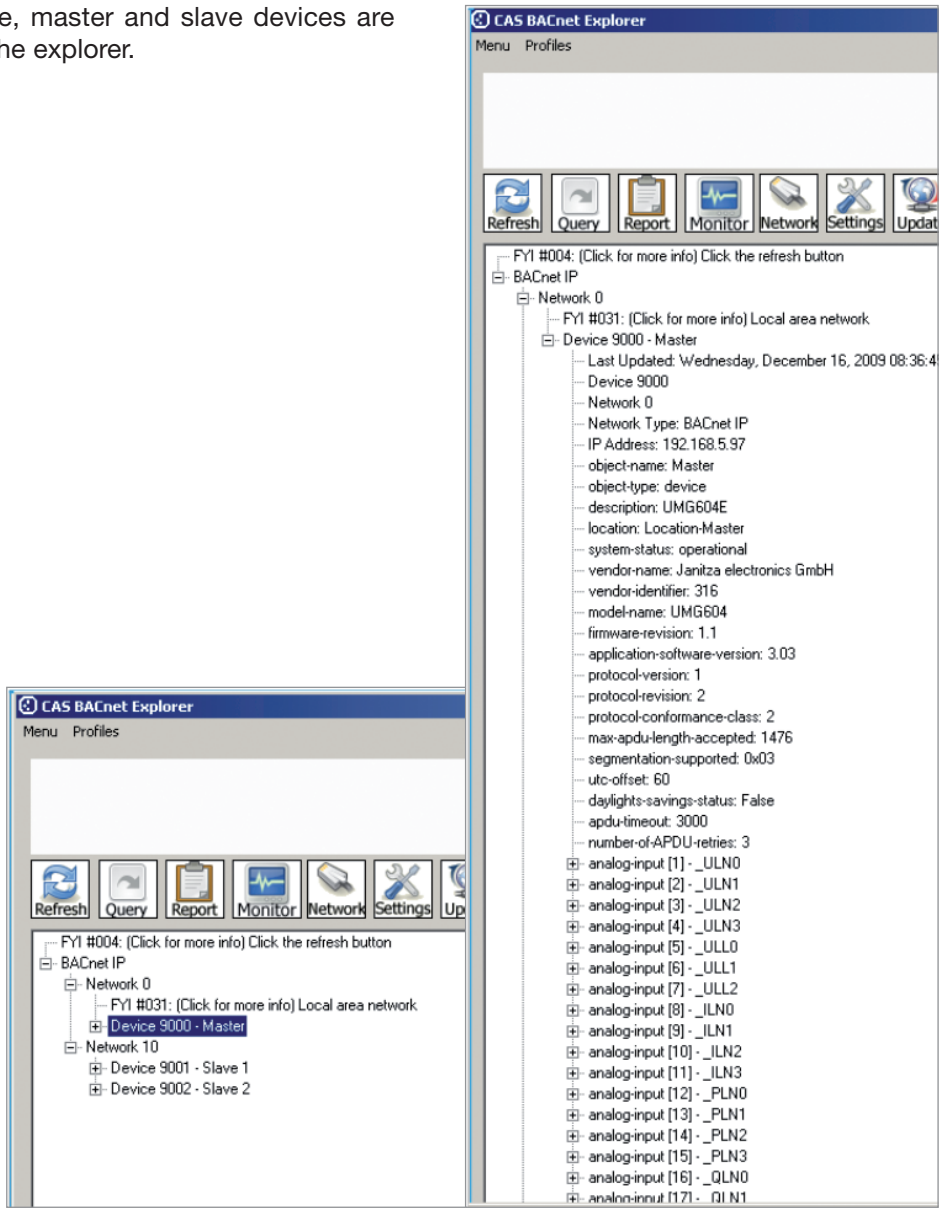
Fig.: Web browser with device homepage (“General Configuration BACNet”).

The standard measurement values can be shown via the BACnet protocol with a BACnet Explorer. The Data link option is the BACnet-IP.

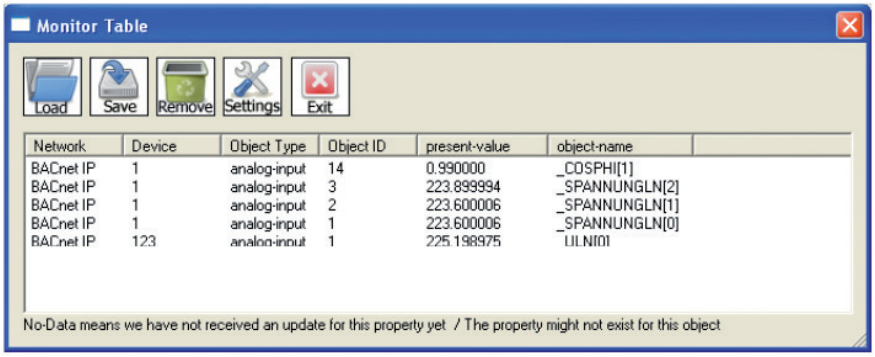
The illustrations below were created with the Chipkin Explorer.



In the illustration shown here, master and slave devices are shown in a tree structure in the explorer.



All measurement values can be shown in the ChipKin in a live monitor.



Visualisation of the measurement values on the homepage:

- The visualisation of the measurement values on the homepage is implemented on the first page (Overview) of the app "Multitouch".

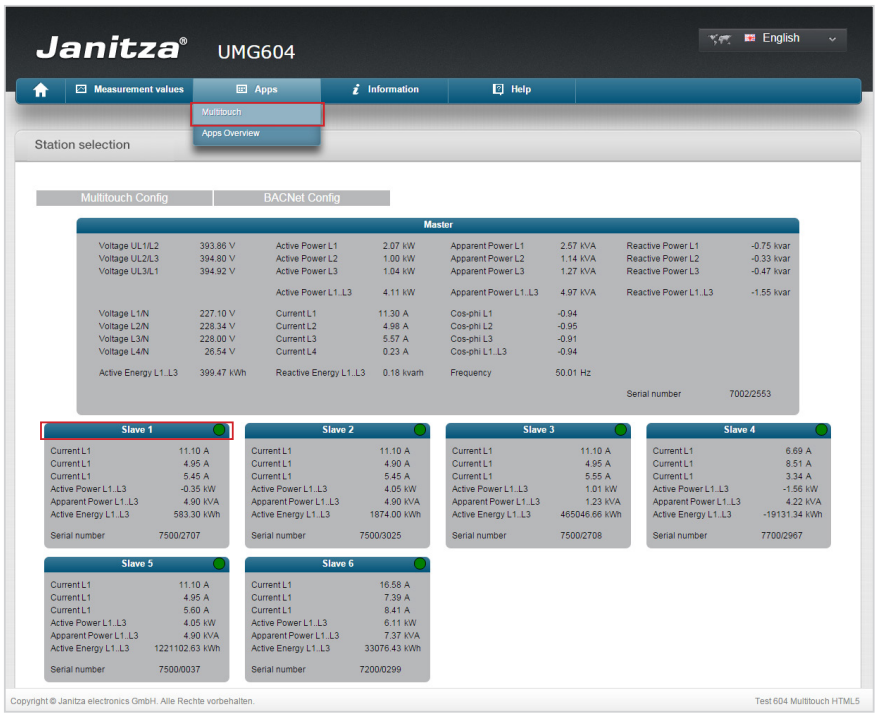


Fig.: Web browser with device homepage (start page of the app "Multitouch")

- A window with further measurement values appears with a click on the table header of a slave device.

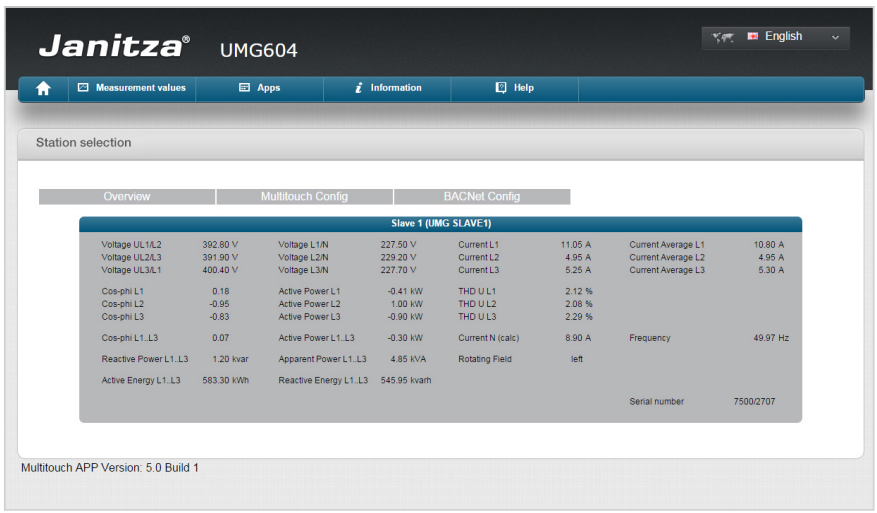


Fig.: Web browser with device homepage (detail window of a slave device)

- The individual pages can also be called up directly:

Call-up	Page
<IP address UMG>/multitouch.html	Master measurement values
<IP address UMG>/multitouch_SlaveDevice.html?SlaveDevice=1	Slave 1 measurement values
<IP address UMG>/multitouch_SlaveDevice.html?SlaveDevice=2	Slave 2 measurement values

with: <UMG IP address> describes the IP address of the Power Analyser

Example, call-up of measurement values from slave 1: