Description

Secure TCP/IP connection

for UMG 604, UMG 605, UMG 508, UMG 509, UMG 511 and UMG 512

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Comments on the manual

We welcome your comments. If anything in this manual seems unclear, please let us know by sending an e-mail to: info@janitza.de

Meaning of symbols

This manual uses the following pictograms:

Dangerous voltage!

Risk to life or serious injury. Before commencing work on the system and the device, they must first be de-energised.

Attention!

Please pay attention to the documentation. This symbol is intended to warn you of potential dangers, which could occur during installation, commissioning and use.

Note

Secure TCP/IP connection

The communication with the measurement devices from the UMG series is customarily implemented via Ethernet. To do so, the measurement devices have various protocols for the respective connection ports. This enables software applications such as GridVis, to communicate with the measurement devices via FTP, Modbus or HTTP protocols.

Network security plays an increasingly important role here.

This guideline is intended to support you with the secure incorporation of the measurement devices into the network and thus to effectively protect the measurement devices from unauthorised access.

The guide relates to firmware > 4.057 as the following HTML changes have been carried out

- Improvement of the challenge evaluation
- After three failed logins the IP is locked (by the client) for 900 seconds
- GridVis settings reworked
- HTML password: 8 characters can be set
- HTML configuration can be completely locked

If the measurement device is set up in GridVis, there are multiple connection protocols available: A standard protocol is the FTP protocol – i.e. the GridVis reads files from the measurement device via FTP port 21 with the respective data ports 1024 to 1027. An unsecure connection can be implemented via FTP in the “TCP/IP”. A secure connection can be established with the “TCP” type of connection.

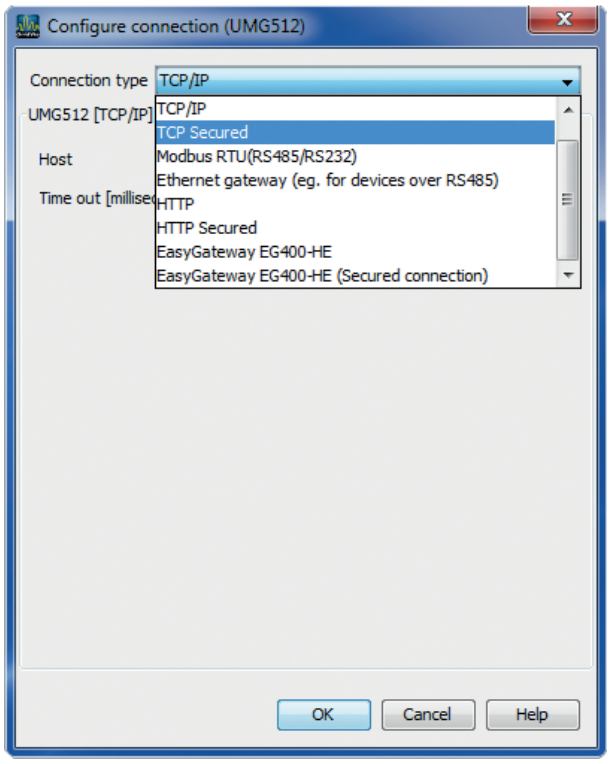


Fig.: Settings for connection type under “Configure connection”

Change FTP password

- An FTP user and an FTP password are required for the secure connection.
- These are set to user “**admin**” and password “**Janitza**” at the factory.
- For a secure connection, the password for administrator access (admin) can be changed in the configuration menu.

Step 1.)

- Call up the “Configure connection” dialogue
  Example 1: To do so, mark the corresponding device in the project window with the mouse button and select “Configure connection” in the context menu with the right mouse button
  Example 2: Double-click on the respective device to open the overview window and select the “Configure connection” button
- Select the “TCP secured” connection type
- Set the host address of the device
- Fill in the username and password with
  Username: admin
  Password: Janitza
- Set the “Encrypted” menu point
  This enabled an **AES 256-bit data encryption**.

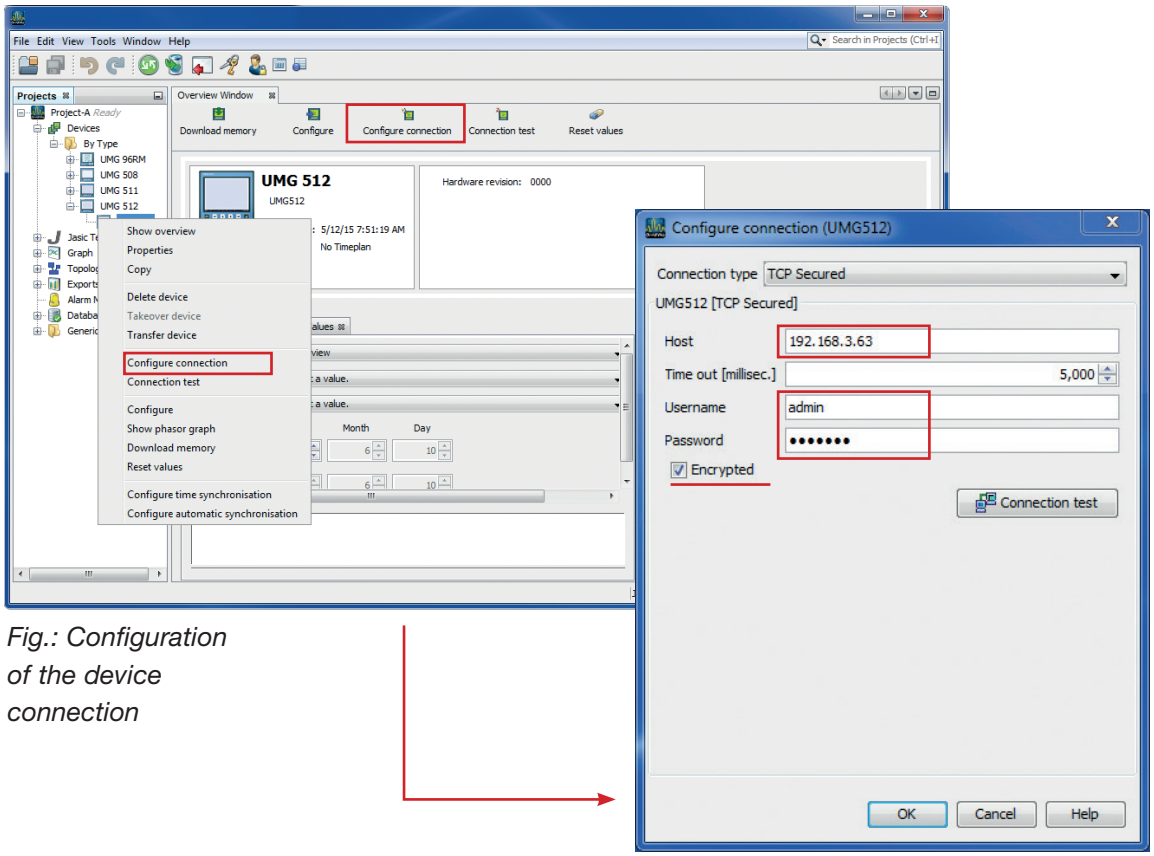


Fig.: Configuration of the device connection

Step 2.)

- Call up the configuration window
  Example 1: To do so, mark the corresponding device in the project window with the mouse button and select “Configure” in the context menu with the right mouse button
  Example 2: Double-click on the respective device to open the overview window and select the “Configure” button
- Select the “Passwords” button in the configuration window.
  Change the administrator password, if desired.
- Save the changes by transferred the data to the device (“Transmit” button).

Attention!

MAKE SURE THAT YOU DON'T FORGET THE PASSWORD. THERE IS NO MASTER PASSWORD. IF THE PASSWORD IS NO LONGER AVAILABLE THE DEVICE MUST BE SENT BACK TO THE FACTORY!

The admin password may be max. 30 characters long and can comprise numerals, letters and special characters (ASCII codes 32 - 126).

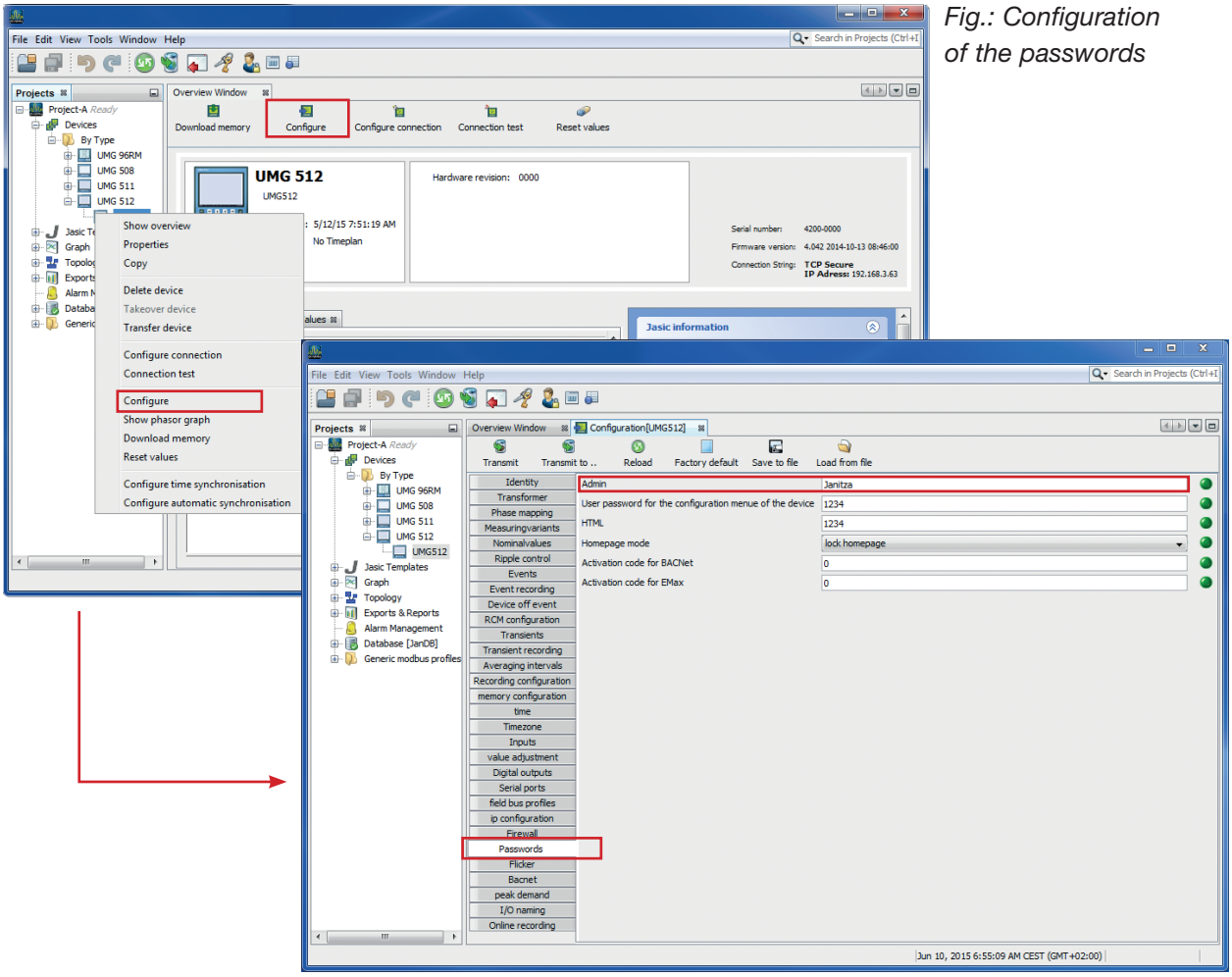


Fig.: Configuration of the passwords

Firewall settings

- The measurement devices have an integrated firewall that enables ports that are not required to be disabled.

Step 1.)

- Call up the “Configure connection” dialogue
  Example 1: To do so, mark the corresponding device in the project window with the mouse button and select “Configure connection” in the context menu with the right mouse button
  Example 2: Double-click on the respective device to open the overview window and select the “Configure connection” button
- Select the “TCP secured” connection type
- Log in as administrator

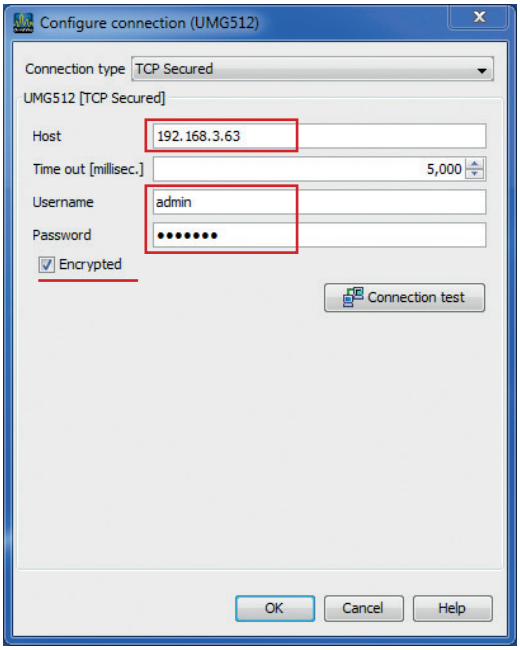


Fig.: Configuration of the device connection (Admin)

Step **2.)**

- Call up the configuration window
  Example 1: To do so, mark the corresponding device in the project window with the mouse button and select “Configure” in the context menu with the right mouse button
  Example 2: Double-click on the respective device to open the overview window and select the “Configure” button
- Select the “Firewall” button in the configuration window.

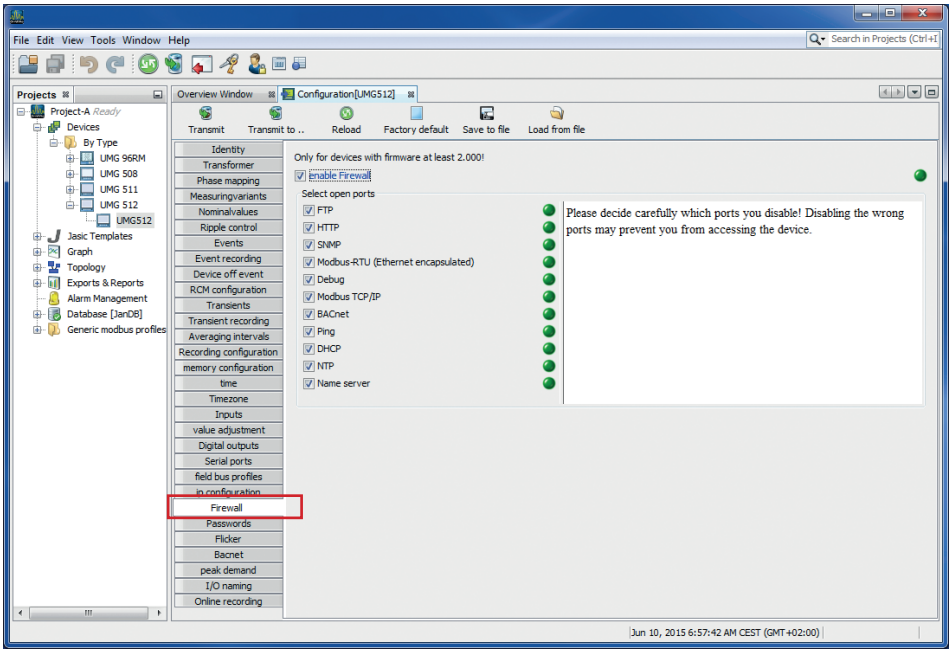


Fig.: Configuration of the firewall

- The firewall is switched on via the “Firewall” button.
  - From release X.XXX, this is already activated at the factory.
  - The protocols that you do not require can be deactivated here.
  - With the firewall switched on, the device only permits requests on the respective activated protocols

Protocols	Port
FTP	Port 21, data port 1024 to 1027
HTTP	Port 80
SNMP	Port 161
Modbus RTU	Port 8000
Debug	PORT 1239 (for service purposes)
Modbus TCP/IP	Port 502
BACnet	Port 47808
DHCP	UTP Port 67 and 68
NTP	Port 123
Name Server	Port 53

- For rudimentary communication with GridVis and via the homepage, the following settings are sufficient:

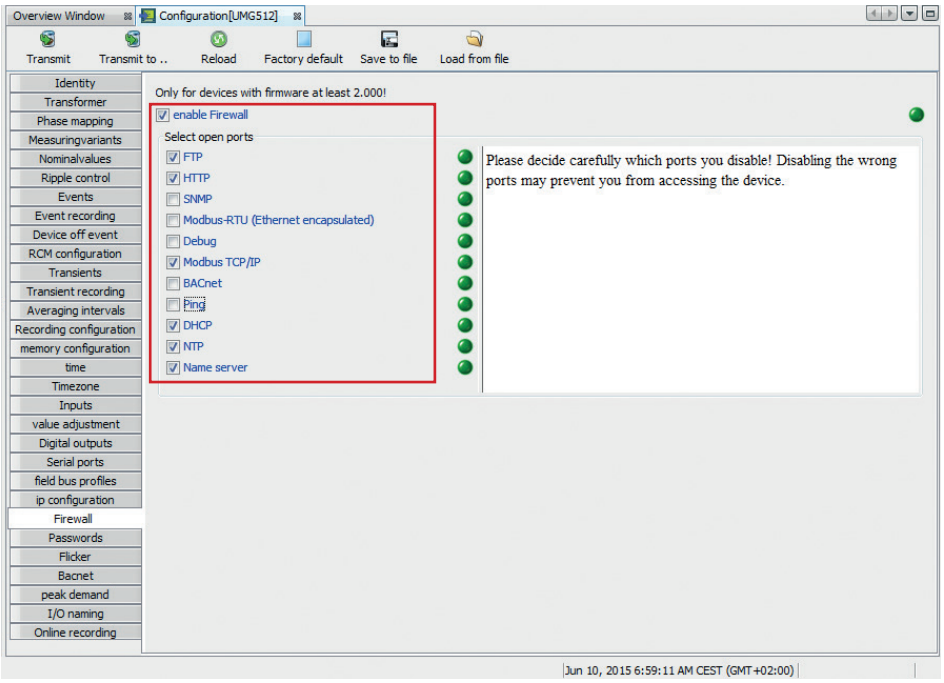


Fig.: Configuration of the firewall

- **Please be very careful when selecting the closed ports!** Depending on the connection protocol selected, it is possible to communicate only via http, for example.
- Save the changes by transferred the data to the device (“Transmit” button).

Display password

- The device configuration via the device buttons can also be protected. i.e. configuration is only possible after entering a password. The password can be set in the device itself or via GridVis in the configuration window.

The display password may be max. 5 characters long and may contain only numerals.

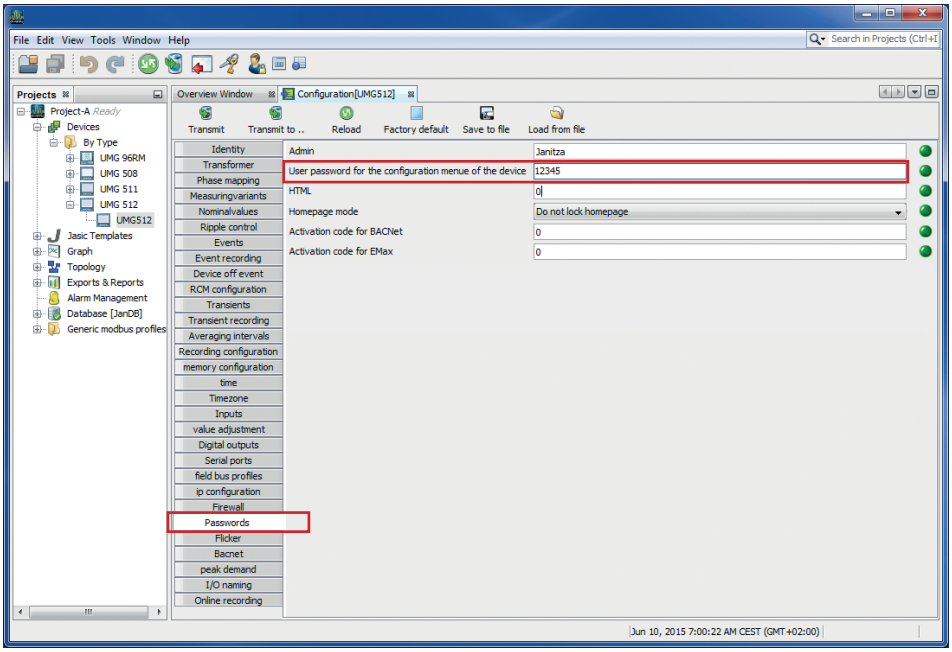
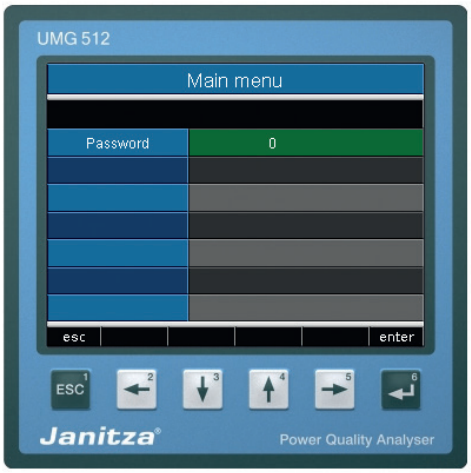


Fig.: Display - Set password

Step 1.)

- Call up the configuration window
  Example 1: To do so, mark the corresponding device in the project window with the mouse button and select “Configure” in the context menu with the right mouse button
  Example 2: Double-click on the respective device to open the overview window and select the “Configure” button
- Select the “Passwords” button in the configuration window. If desired, change the “User password for the configuration menue of the device” option
- Save the changes by transferred the data to the device (“Transmit” button).



After this, the configuration on the device can only be changed after entering a password.

Homepage password

- The homepage can also be protected from unauthorised access. The following modes are available:

  - **Do not lock homepage**
    The homepage can be accessed without logging in. Configuration can be carried out without logging in.
  - **Lock homepage**
    After logging in, the homepage and the configuration for the IP of the user is enabled for 3 minutes. The time is set to 3 minutes again with every access implemented.
  - **Lock configuration separately**
    The homepage can be accessed without logging in. Configuration can only be carried out after logging in.
  - **Lock homepage and configuration separately**
    - After logging in, the homepage for the IP of the user is enabled for 3 minutes.
    - The time is set to 3 minutes again with every access implemented.
    - Configuration can only be carried out after logging in.

Note: Only the variables that are in init.jas or that have “Admin” rights apply to the configuration.

The homepage password may be max. 8 characters long and may contain only numerals.

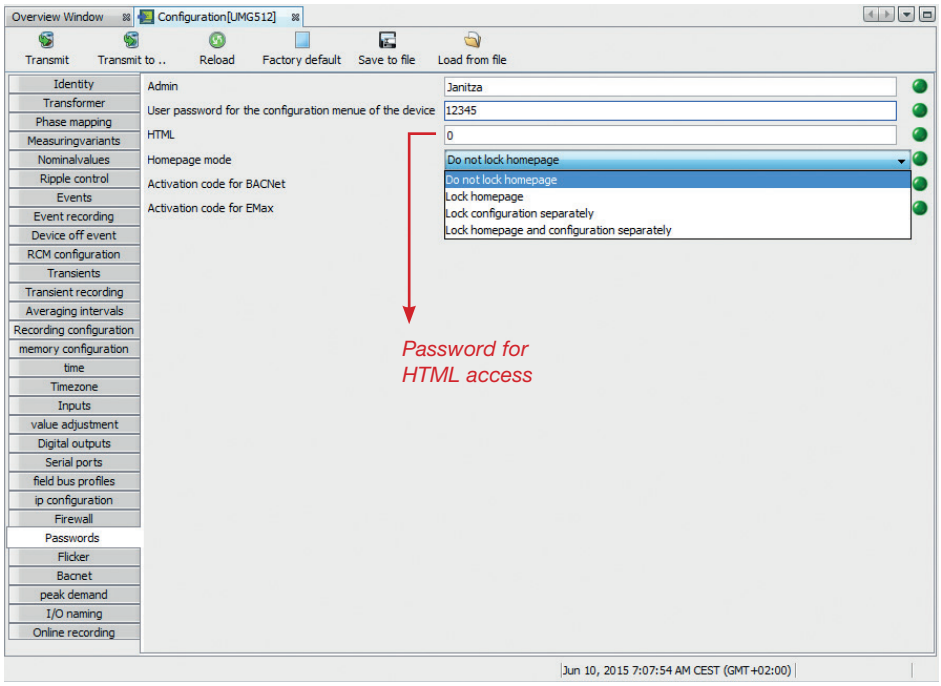


Fig.: Set homepage password

After activation, a login window appears after the device homepage is called up.

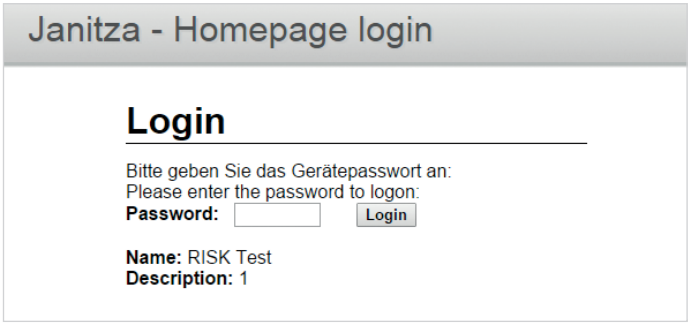


Fig.: Homepage login

Security - Modbus TCP/IP communication

It is not possible to secure the Modbus TCP/IP communication (port 502). The Modbus standard does not provide for secure communication. Integrated encryption would no longer be compliant with the Modbus standard and the interoperability with other devices would no longer be guaranteed. For this reason, no password can be assigned with Modbus communication.

If the IT department mandates that only secured protocols are permitted, the Modbus TCP/IP port must be deactivated in the device firewall. The device administrator password should be changed and the communication must be implemented via „TCP secured“ (FTP) or „http secured“.

Security - Modbus RS485 communication

It is not possible to secure the Modbus RS485 communication. The Modbus standard does not provide for secure communication. Integrated encryption would no longer be compliant with the Modbus standard and the interoperability with other devices would no longer be guaranteed. This also affects the Modbus-Master functionality. This means that no encryption can be activated for devices on the RS485 interface.

If the IT department mandates that only secured protocols are permitted, the Modbus TCP/IP port must be deactivated in the device firewall. The device administrator password should be changed and the communication must be implemented via „TCP secured“ (FTP) or „http secured“.

As a result however, devices on the RS485 interface can no longer be read out!

The alternative in this case is to waive the Modbus-Master functionality and the exclusive use of Ethernet devices such as the UMG 604 / 605 / 508 / 509 / 511 or UMG 512.

Security - „UMG 96RM-E“ communication

The UMG 96RM-E does not offer a secure protocol. With this device, the communication is implemented exclusively via Modbus TCP/IP. It is not possible to secure the Modbus TCP/IP communication (port 502). The Modbus standard does not provide for secure communication. This means, that if encryption is integrated, this would no longer be compliant with the Modbus standard and the interoperability with other devices would no longer be guaranteed. For this reason, no password can be assigned with Modbus communication.