# Functional description App Tariff Switch



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# Introduction

### Copyright

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### Disclaimer

Janitza electronics GmbH takes no responsibility for errors or defects within this functional description and takes no responsibility for keeping the contents of this operating manual up to date.

### Comments on the manual

We welcome your comments. In the event that anything in this manual seems unclear, please let us know and send an EMAIL to: info@janitza.de



Follow the instructions in the operating manual when installation and operating the device!

### Meaning of the symbols

The following pictograms are used in the operating manual at hand:



### Dangerous voltage!

Danger to life or risk of serious injury. Disconnect system and device from power supply before beginning work on them.



## Caution!

Please follow the documentation. This symbol warns of possible dangers that can arise during installation, commissioning and use.



### Note

# Mode of operation of the "Tariff Switch" app

- You can use the "Tariff Switch" application to switch between up to 4 different tariffs on the master and slave devices (up to 31 slaves).
- Switching takes place via the controller for the digital outputs, Modbus register address #2000 or via a time control.
- The master device checks which tariff is to be activated and switches to this itself and on the slave devices that are set.



The following slave devices can be used: UMG 103, UMG 104, UMG 604, UMG 605, UMG 508, UMG 511, UMG 96RM

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

Switch

Patch cable

### **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.

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	I	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 / 511

- 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).

Control Panel + All Control Panel Hems + Network and Sharing Center       v reg       Section Control Panel         Control Panel Home Change adapter settings Change adapter settings Change adapter settings       View your basic network information and set up connections pinitza de provide methods       Sec full map posta de postant         PC239 retirings       PC239 pinitza de postant       Demain network       Sec full map posta de postant         PC239 retirings       pinitza de postant       Demain network       Connect or disconnect Connect or disconnect         PC139 retirings       pinitza de postant network       Access type connect or disconnect       Connect or disconnect         PC139 retirings       pinitza de postant network       Connect or disconnect       Connect or disconnect         PC139 retirings       pinitza de postant network       Access type connections gettings       Connect or disconnect         PC139 retirings       connections or network Set up a writes, breadband, dai up, ad hoc, or VPN connection; or set up a router or access point.       Fig.: Network and Sharing Center
Control Panel Home       View your basic network information and set up connections         Change adapter settings       Image: Connect adapter settings         Settings       Image: Connect adapter settings         Image: Connect adapter settings       Image: Connect adapter
Change adapter settings       PCL39       junita.ae       Set full map         PCL39       junita.ae       Internet       Internet         View your active networks       Connect or disconnect         Image your networking settings       Connect or disconnect         Change your networking settings       Connections Image         Set you a networking settings       Set you a networking settings         Set you a networking settings       Set you a networking settings
Change advanced sharing settings       PL29       junita.de       Internet         User your active etheroids       Connect or disconnect       Connect or disconnect         Image: Set up a new connection or network       Access type: Internet       Connect or disconnect         Change your networking settings       Internet       Connect or disconnect         Set up a new connection or network       Set up a new connection; or retwork or set up a router or secus point.
Kings     Chine compute)       View your active networks     Connect or disconnect       Image your networking settings     Connections I and the computed on a coses point.
Image your networking settings       Image your networking settings         Image your networking settings       Image your networking settings         Image your networking settings       Image your networking settings         Image your networking settings       Image your network         Image your networking settings       Image your network         Image your networking settings       Image your network         Image your network       Image your network
Change your network Change your networking settings Set up a new connection or network Set up a wineles, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Set up a new connection or network Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Set up a new connection or network Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
LAN-Verbindung Status     X       General     Connection       Drv4 Connectivity:     Internet       IPv6 Connectivity:     No Internet access       Media State:     Enabled       Duration:     06:04:27       Speed:     1.0 dops
Detais     Configure       This connection uses the following items:     General       V Client for Microsoft Networks     Vou can get IP settings assigned automatically if your network supports
ALtivity U 2 Julos racket sonebuer this capability. Otherwise, strour etwork administrator for the appropriate Petitings.
Sent — Received I I I Internet Protocol Version 6 (TCP/IPv6)
Litemet Protocol Version 4 (TCP/Pr-4)     Obtain an IP address automatically
Bytes: 115.921.356 613.620.079
17 ourss. 152 100 . 211 . 23
Subnet mask: \$25.25.0
Install Uninstall Properties Default gateway:
Close Description
Infansmission Control Protocol/Internet Protocol, inter offaut Usarrer adverse adv
across diverse interconnected networks.
Preferred DNS server:
OK Cancel Alternate DNS server:
Validate settings upon exit Advanced

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".

Steps	Choose File Type				
1. Choose File Type 2	Project: gridVis				
	Categories: Data Logger Weters and PQM devices El. Energy Meter EM Series El. Energy Meter ECS Series Generic Modbus Virtual Devices	File Types: UNG 505 UNG 507 UNG 507 UNG 508 UNG 509 UNG 510 UNG 511 UNG 511 UNG 512 UNG 604 UNG 605 UNG 605 UNG 605US UNG 605US			
	Description:	Next > Finish Cancel Help			

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 / 511")

New UMG 604				x	
Steps	Configure connection	n			
1. Configure connection	Connection type [ <u>r</u> C UMG 604 [TCP/IP] Host Time out [millisec.]		Connec	▼           5,000 ∲           Jion test	
	< Back Ne	xt > Finish	Cancel	Help	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.

New UMG 604	<u> </u>
Steps	Configure connection
1. Configure connection	Connection type TCP/IP UNG 604 [TCP/IP] Host 192.168.5.242 Time out [millisec.] 5,000 Connection test 190.168.5.242 Show device info Cerial number: Hardware revision: -001 Ethernet Profibus BACNET EMAX Firmware version: 4.060 2014-07-21 11:45:00 CC
	<pre><back next=""> Finish Cancel Help </back></pre> 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 "Tariff Switch" app

• To install the app, launch the GridVis software. Click on "Tools / Install app" and use the "..." button to select the app. Then select the master device that is connected to GridVis for installation and select a program location.



# Configuring the "Tariff Switch" app

- 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.
- Start the app configuration by selecting the "Configuration" menu and then "Tariff Switch".

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A Measurement values	🖭 Apps	i Information	🛛 Help			
Tarif Switch	Tarif Switch Apps Overview					
Tarif Switch Configuration:						
Option: disable	e Slave: 🔲					
f Switch Version 0.6.0						

Tariff Switch app / configuration

### **Selecting options**

Disable	The "Tariff Switch" application is disabled
Digital input 1	Tariffs are switched via digital input 1
Digital input 2	Tariffs are switched via digital input 2
Modbus-address	Tariffs are switched via Modbus register address #20000
Time	Tariffs are switched using the time control

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	witch Configuration:				
	disable 🚽 activate S	ilave:			
	disable digital input 1				
Save	digital input 2				
	digital input 2 Modbus-adress				

Fig.: Option selection and slave control in the "Tariff Switch" app

### Selecting options: Digital input 1 or 2

- When you select the "*Digital input 1*" or "*Digital input 2*" option, you must set the configuration for digital input switching.
  - You can switch between tariff 1 and tariff 2 when controlling via the digital inputs.
  - Choose between the "High signal tariff 1 low signal tariff 2" and the "high signal tariff 2 low signal tariff 1" options.
  - Choose "Save" to complete configuration.

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Switch Version 0.6.0							

### Selecting options: Modbus address

- If you select the "Modbus address" option, you must set the switch values for register address 20000.
  - For each tariff, specify a value at which the appropriate tariff is to be activated.
  - The specified value must be sent to Modbus address 20000 to ensure that the tariff is switched.
  - Choose "Save" to complete configuration.

Measurement values	🖽 Apps	i Information	🛛 Help	
arif Switch				
T KA 11 A A				
Tarif Switch Configuration: Option: Modbus-adress - activate	Slave:			
Configuration Modbus #Reg20000:				
Tariff 1: 158				
Tariff 2: 1564				
Tariff 3: 2				
Tariff 4: 32				
Save Show Slave Status				

Example: Sending the value 1564 to Modbus address 20000 activates tariff 2. Value 32 on Modbus address 20000 activates tariff 4.

### Selecting options: Time

- If you select the "*Time*" option, the tariffs can be switched by entering a time.
  - Choose "Add" to create a switch for the desired tariff and set the switching time.

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Save Show Slave Status					

- Adding or deleting a time tariff setting

- A tariff and a time must be set for each switch.
- Switches that are set are marked in the time bar.
- Choose "Delete" to delete the last switch.

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Measurement values	🖽 Apps	i Information	😰 Help				
arif Switch							
Tarif Switch Configuration:							
Option: time - activate Sla	we: 🔳						
Timebased:							
Tariff 1 Tariff 2 Tariff 3 Tariff 4							
0 1 2 3 4 5	6 7 8	9 10 11 1.	2 13 14 15	16 17	18 19	20 21	22 23
Choose tariff: Tariff 1 ▼ Time: 03:53							
Choose tariff: Tariff 2 ▼ Time: 10:20							
Choose tariff: Tariff 3 - Time: 13:35							
Choose tariff: Tariff 4 - Time: 16:40							
Add Delete							
Save Show Slave Status							

Example: Tariff 1 starts at 03:54 and ends at 10:20; tariff 2 is active from 10:21 to 13:35; tariff 3 starts at 13:36 and ends at 16:39, and tariff 4 is active from 16:40 to 03:53.

• Choose "Save" to complete configuration.

### Activate slave control

- Set the corresponding option indicator for one of the desired controllers for the slave devices. Up to 31 slave devices (UMG 103, 104, 604, 605, 508, 511 and UMG96RM) can be connected.
- The slave devices must be configured when slave control is activated. To do this, specify the number of slave devices these are then triggered starting with device address 1.
- Choose "Save" to complete configuration.

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Tarif Switch					Activate
					slave
Tarif Switch Configuration:					control
Option: digital input 1 👻 activate S	Slave: 🗵 🔫				option
digital Input 1: high Signal tariff 1 - low	Signal tariff 2 🔻				
Configuration for Slave Devices:					
Number of Slave Devices: 3	∃ ◀				- Specify
Save Show Slave Status				,	the num
					of slave
					devices
if Switch Version 0.6.0					

Example: Slave control is activated and the 3 slave devices are set up. The slave devices are triggered using device address 1, 2 and 3.

### Status of the slave devices

- Choose "Display slave status" to call the status display for the slave devices.
- The overview of slave devices informs you of the type and availability for the devices.

Colour information

Green	The last tariff that was sent has been sent to the slave device successfully.
Yellow	Slave device is available but does not support the last tariff that was sent.
Red	The last tariff that was sent could not be sent to the slave device.

	Measurement values	🖽 Apps	i Information	Help	
arif	Switch				
Tari	f Switch Configuration:				
Sla	ave Adress: 1 Type: U	JMG 103			
Sla	ave Adress: 2 Type: U	JMG 104			
Cor	nfigsite				
COI	liigsite				

Fig.: Status of the integrated slave devices