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Deutsche Version: siehe Vorderseite

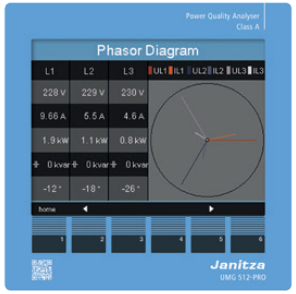
Power Quality Analyser

UMG 512-PRO

Installation manual

Residual current monitoring (RCM)

- Installation
- Device settings



User manual:

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General

Disclaimer
The observance of the information products for the devices is a prerequisite for safe operation and to achieve the stipulated performance characteristics and product characteristics. Janitza electronics GmbH accepts no liability for injuries to personnel, property damage or financial losses arising due to a failure to comply with the information products. Ensure that your information products are accessible and legible.

Further information can be found on our website www.janitza.com at Support > Downloads.

Copyright notice
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Subject to technical amendments
- Make sure that your device agrees with the installation manual.
- Read and understand first product-related documents.
- Keep product supporting documentation throughout the life available and, where appropriate, to pass on to subsequent users.
- Please inform yourself about device revisions and the associated adjustments to the product-related documentation on www.janitza.com.

Disposal
Please observe national regulations!
If disposing of individual parts, please dispose of them in accordance with their nature and existing country-specific regulations, for example as:
- Electrical scrap
- Plastics
- Metals

Or, task a certified disposal business with the scrapping.

Relevant laws, applied standards and directives
The laws, standards and directives for the device applied by Janitza electronic GmbH can be found in the declaration of conformity on our website.

2

Safety

Safety information
The installation manual does not represent a full listing of all necessary safety measures required for safe operation of the device.
Certain operating conditions may require further measures. The installation manual contains information that you must observe for your own personal safety and to avoid damage to property.

Symbols used:

⚡	This symbol is used as an addition to the safety instructions and warns of an electrical hazard.
⚠	This symbol is used as an addition to the safety instructions and warns of a potential hazard.
☞	This symbol with the word **NOTE!** describes: • Procedures that do not pose any risks of injures. • Important information, procedures or handling steps.

Safety information is highlighted by a warning triangle and is indicated as follows depending on the degree of danger:

⚠ **DANGER!**	Indicates an imminent danger that causes severe or fatal injuries.
⚠ **WARNING!**	Indicates a potentially hazardous situation that can cause severe injuries or death.
⚠ **CAUTION!**	Indicates a potentially hazardous situation that can cause minor injuries or damage to property.

Safety measures
When operating electrical devices, certain parts of these devices are invariably subjected to hazardous voltage. Therefore, severe bodily injuries or damage to property can occur if they are not handled properly:
- De-energise your device before starting work! Check that it is de-energised.
- Before connecting connections, earth the device at the ground wire connection if present.
- Hazardous voltages may be present in all switching parts that are connected to the power supply.
- Hazardous voltages may also be present in the device even after disconnecting the supply voltage (capacitor storage).
- Do not operate equipment with current transformer circuits while open.
- Do not exceed the threshold values specified in the user manual and on the rating plate. Also adhere to this when inspecting and commissioning.
- Observe the safety and warning instructions in the documents that belong to the device!

To protect your IT system, network, data communications and measurement devices:
- Notify your network administrator and/or IT manager.
- Always keep the measurement device firmware up to date and protect the communication to the measurement device with an external firewall. Close any unused ports.
- Take protective measures against viruses and cyber attacks from the Internet, e.g. through firewall solutions, security updates and antivirus programs.
- Eliminate security vulnerabilities and update or renew existing protection for your IT infrastructure.

Qualified staff
In order to prevent personal injuries and damage to property, only qualified staff with electrical training may work on the device, with knowledge of
- the national accident prevention regulations
- the safety engineering standards
- installing, commissioning and operating the device.

Proper use
The device is
- intended to be installed in switching cabinets and small installation distributors (see step 3, "Installation").
- not intended to be installed in vehicles! Using the device in non-stationary equipment is considered an extraordinary environmental condition and is only permitted with a special agreement.
- not intended to be installed in environments with harmful oils, acids, gases, vapours, dusts, radiation, etc.

The prerequisites for faultless, safe operation of the device are proper transport and proper storage, set-up and installation, as well as operation and maintenance.

3 Device short description

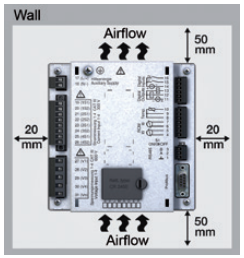
The device is a class A power quality analyser that

- measures and calculates electrical variables such as voltage, current, power, energy, harmonics, etc. in building installations, on distribution units, circuit breakers and busbar trunking systems.
- measures and monitors residual currents (RCM) and currents at the central grounding point (CGP). The residual current monitoring is carried out via an external residual current transformer (30 mA rated current) on the current measurement inputs I5 and I6.
- displays measurement results and transmits them via interfaces (Ethernet, Modbus, Profibus).

NOTE!
Detailed information on the device functions and data can be found in the user manual.

Assembly

Install the device in a weather-protected front panel on switching cabinets.



Cut-out size:
$138^{+0.8}$ x $138^{+0.8}$ mm

Ensure!
Adequate ventilation

- The device is installed vertically!
- Adherence to clearances from neighbouring components!

Fig.Mounting position, rear view

CAUTION!
Damage to property due to not observing the installation instructions

Failing to observe the installation instructions can damage or destroy your device.
Ensure that there is adequate air circulation in your installation environment; if the ambient temperatures are high, ensure there is adequate cooling if required.

4 Connecting the supply voltage

The supply voltage level for your device is specified on the rating plate.
After connecting the supply voltage, the first measured value indication "Home" appears on the display. If no indication appears, check whether the supply voltage is within the rated voltage range.

WARNING!
Risk of injury due to electric voltage!

Severe bodily injuries or death can occur due to

- touching bare or stripped wires that are live.
- device inputs that are dangerous to touch.

De-energise your device before starting work! Check that it is de-energised.

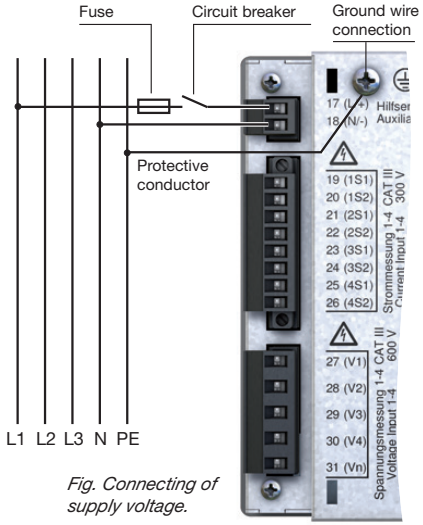


Fig. Connecting of supply voltage.

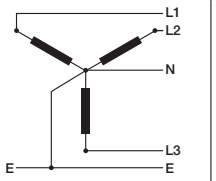
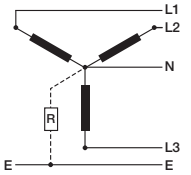
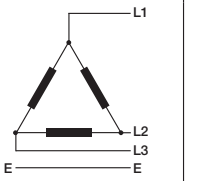
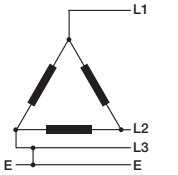
CAUTION!
Damage to property due to not observing the connection conditions or impermissible overvoltages

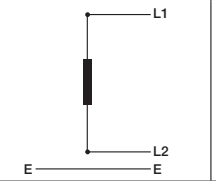
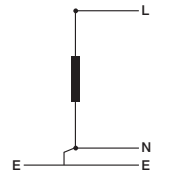
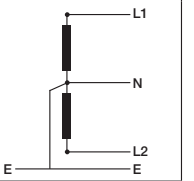
Your device can be damaged or destroyed by a failure to comply with the connection conditions or by exceeding the permissible voltage range.
Before connecting the device to the supply voltage, check:

- **The ground wire connection must be connected with the system earthing!**
- **The voltage and frequency must meet the specifications on the rating plate! Adhere to the threshold values as described in the user manual!**
- **In building installations, the supply voltage must be protected with a UL/IEC approved circuit breaker / a fuse!**
- **The circuit breaker**
  - **must be easily accessible for the user and be installed close to the device.**
  - **must be labelled for the relevant device.**
- **Do not connect the supply voltage to the voltage transformers.**
- **Provide a fuse for the neutral conductor if the source's neutral conductor connection is not earthed.**

5 Network systems

Network systems and maximum rated voltages (DIN EN 61010-1/A1):

Three-phase four-conductor systems with earthed neutral conductor	**Three-phase four-conductor systems** with non-earthed neutral conductor (IT networks)	**Three-phase four-conductor systems,** not earthed	**Three-phase four-conductor systems** with earthed phase
			
IEC U_{L-N} / U_{L-L}: 417 VLN / 720 VLL UL U_{L-N} / U_{L-L}: 347 VLN / 600 VLL	Only partially suitable for use in non-earthed networks (see step 7).		U_{L-L} 600 VLL

Two-phase two-conductor systems, not earthed	**Single-phase two-conductor systems** with earthed neutral conductor	**Separated single-phase three-conductor systems** with earthed neutral conductor
		
Only partially suitable for use in non-earthed networks (see step 7).	IEC U_{L-N} 480 VLN UL U_{L-N} 480 VLN	IEC U_{L-N} / U_{L-L}: 400 VLN / 690 VLL UL U_{L-N} / U_{L-L}: 347 VLN / 600 VLL

Application areas for the device:

- 2, 3 and 4 conductor networks (TN and TT networks).
- In residential and industrial applications.

6 Voltage measurement

The device has 4 voltage measurement inputs and is suitable for various connection variants.

CAUTION! **Risk of injuries or damage to the device**

Failure to observe the connection conditions for the voltage measurement inputs can cause injuries to you or damage to the device. Therefore, note the following:

- **Do not connect the voltage measurement inputs**
  - **to DC voltage.**
  - **Do not use for voltage measurement in SELV circuits (safe extra low voltage).**
- **Voltages that exceed the allowed network rated voltages be connected via a voltage transformer.**
- **The voltage measurement inputs are to be equipped with a suitable, labelled fuse and isolation device located in the vicinity.**

NOTE!
As an alternative to the fuse and circuit breaker, you can use a line safety switch.

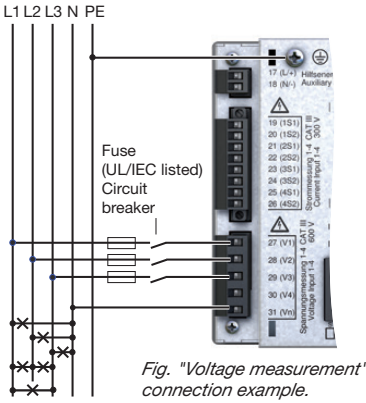


Fig. "Voltage measurement" connection example.

The voltage measurement inputs are designed for measurements in low voltage networks, in which the following rated voltages occur:

- Per IEC - 417 V phase to earth and 720 V phase to phase in the 4-conductor system.
- Per UL - 347 V phase to earth and 600 V phase to phase in the 4-conductor system.
- 600 V phase to phase in the 3-conductor system.

The measurement and surge voltages meet overvoltage category 600 V CATIII.

7 Schematic diagram for voltage measurement

Voltage measurement in the three-phase four-conductor system (TN, TT networks).
Note: Earth your system!

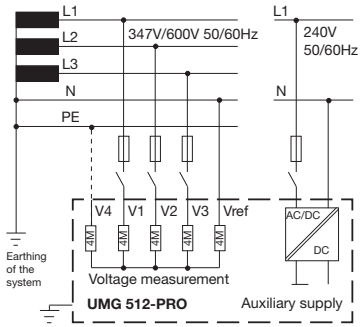


*Fig. Schematic diagram, device in a **TN** network.*

RECOMMENDATION!
For a PE/N measurement, connect the protective earth (PE) to measurement input V4. Do not use a green and yellow wire for this as the conductor does not have any protective function!

Voltage measurement in the three-phase three-conductor system (IT network).
The device is only suitable for use in IT networks to a limited extent, as the measured voltage relative to the housing potential is measured and the input impedance of the device creates residual current against the earth. The residual current can trigger insulation monitoring in IT networks.
Connection variants with voltage transformers are suitable for IT networks without restrictions!

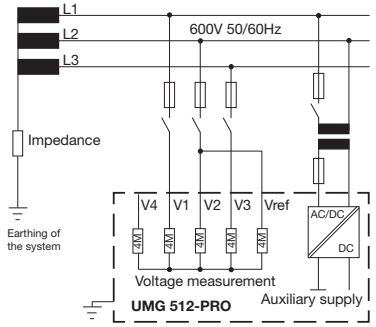


Fig. Schematic diagram, device in an IT network without N.

8 Current measurement

The device

- is intended for connecting current transformers with secondary currents of ../1 A and ../5 A.
- does not measure DC.
- has current measurement inputs that can be loaded with a maximum of 120 A for 1 second.

WARNING! **Risk of injury due to electric voltage!**

Severe bodily injuries or death can occur due to:

- touching bare or stripped wires that are live,
- current measurement inputs that are dangerous to touch on the device and on the current transformers.

De-energise your device before starting work! Check that it is de-energised. Earth the system. To do this, use the earth connection points with the earthing symbol. Also earth the secondary windings on the current transformer and all metal parts on the transformer that are able to be touched.

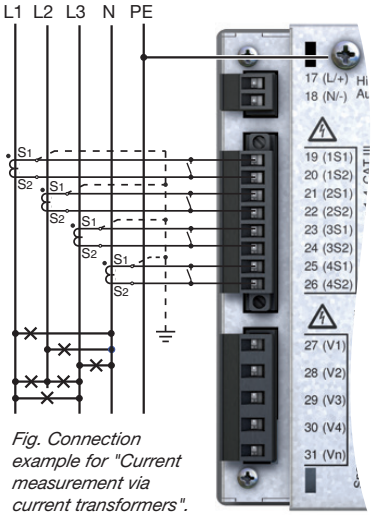
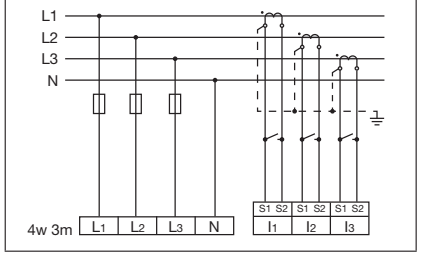


Fig. Connection example for "Current measurement via current transformers".

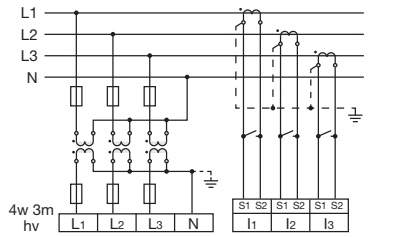
The current direction can be corrected via the serial interfaces or on the device for each phase. If incorrectly connected, a subsequent re-connection of the current transformer is not required.

9 Connection variants for baseline measurement inputs 1-3 (voltage and current)

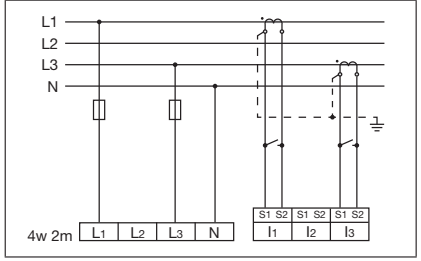
Measurement in a three-phase 4-conductor network with asymmetric loading.



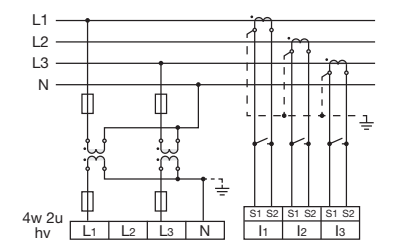
Measurement via 3 voltage transformers in a three-phase 4-conductor network with asymmetric loading.



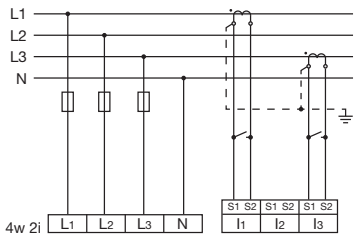
Measurement in a three-phase 4-conductor network with symmetric loading.



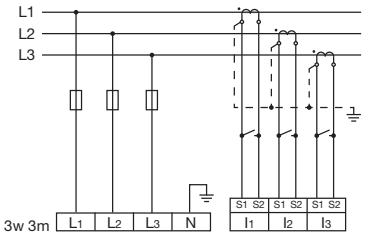
Measurement via 2 voltage transformers in a three-phase 4-conductor network with asymmetric loading.



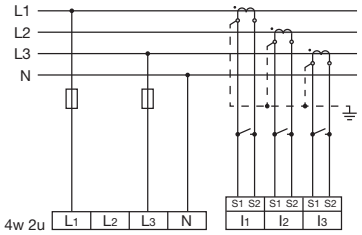
Measurement via 2 current transformers in a three-phase 3-conductor network with symmetric loading.



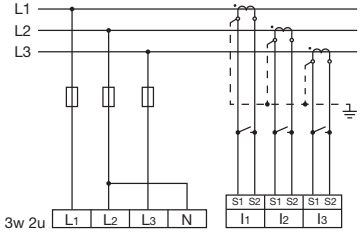
Measurement in a three-phase 3-conductor network with asymmetric loading.



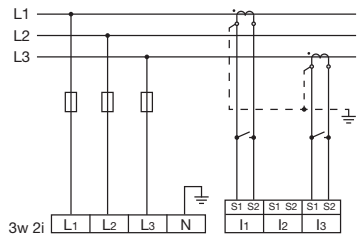
Measurement in a three-phase 4-conductor network with asymmetric loading.



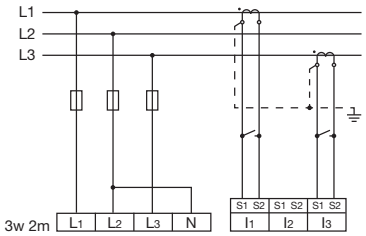
Measurement in a three-phase 3-conductor network with asymmetric loading.



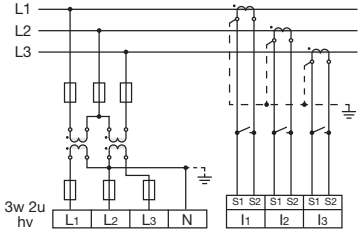
Measurement in a three-phase 3-conductor network with asymmetric loading.



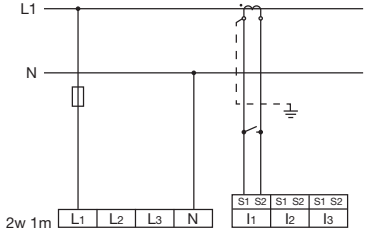
Measurement in a three-phase 3-conductor network with asymmetric loading.



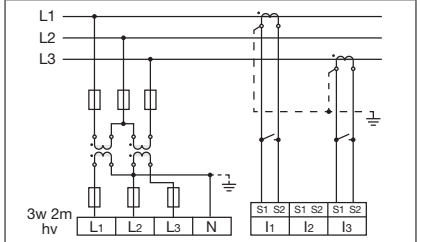
Measurement in a three-phase 3-conductor network with asymmetric loading.



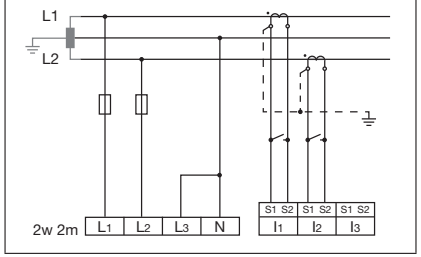
Measurement of one phase in a three-phase 4-conductor network.



Measurement in a three-phase 3-conductor network with asymmetric loading.



Measurement in a single-phase 3-conductor network. I3 and U3 are not calculated and set to zero.



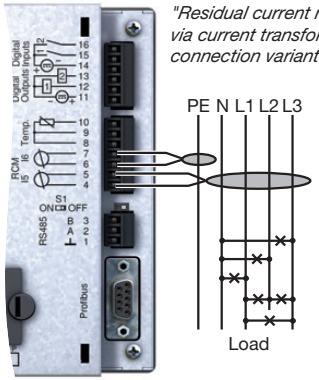
The device requires the mains frequency (range from 15 Hz to 440 Hz) to measure and calculate measured values.

It is not necessary to configure connection schematics for measurement inputs V4 and I4.

NOTE!
Further information on
- supporting measurements via inputs V4 (L4) and I4, and
- current data and current transformer data

is provided in the user manual.

10 Residual current monitoring (RCM) via I5 and I6



"Residual current monitoring via current transformer" connection variant

The device is suitable for use as a residual current monitoring device (RCM) to monitor
- AC and
- pulsing DC.

The UMG 512-PRO measures residual currents in accordance with IEC/TR 60755 (2008-01),

Type A

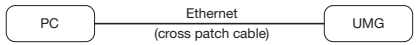
Suitable residual current transformers with a rated current of 30 mA are connected to terminals 4 and 5 (**I5**) and terminals 6 and 7 (**I6**).

NOTE!
- The transformation ratios for the residual current transformer inputs can be configured using the GridVis® software.
- The **"Energy Analyser 512-PRO with residual current monitoring via measurement inputs I5/I6"** connection variant and further information are provided in the user manual.
- It is not necessary to configure a connection schematic for measurement inputs I5 and I6.

11 Establish Ethernet connection to the PC

The three most common Ethernet connections between PC and device are described here:

1.



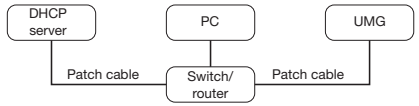
The PC and the UMG 512-PRO require a static IP address.

2.



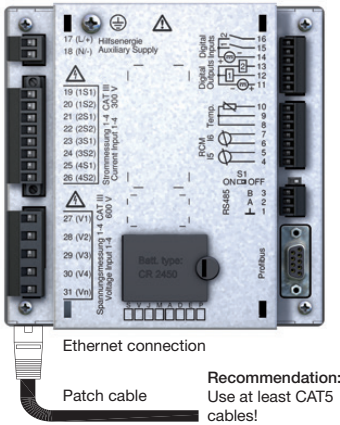
The PC and the UMG 512-PRO require a static IP address.

3.



The DHCP server assigns IP addresses to the UMG 512-PRO and the PC automatically.

More information on device configuration and communication is provided as of step 13.



Recommendation:
Use at least CAT5 cables!

CAUTION!

Damage to property due to incorrect network settings

Incorrect network settings can cause faults in the IT network!
Obtain information from your network administrator about the correct Ethernet network settings for your device.

12 Operation and button functions

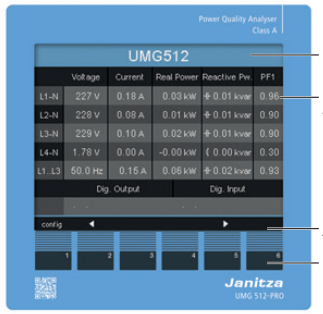
The UMG 512-PRO is operated via 6 function keys for

- selecting measured value indications.
- Navigation within the menus.
- Editing device settings.

Key	Function
1	• Back to home screen • Exits selection menu
2	• Select digit (to the left) • Selects main values (U, I, P ...)
3	• Changes (number -1) • By-values (select) • Selects menu item
4	• Changes (number +1) • By-values (select) • Selects menu item
5	• Select digit (to the right) • Selects main values (U, I, P ...)
6	• Opens selection menu • Confirm selection

NOTE!
For further information on operating, displays and button functions on your device, see the user manual.

Fig. UMG 512-PRO display - "Home" measured value indication



NOTE! Current and voltage transformer ratios.
The current and voltage transformer ratios can be conveniently configured via

- the Configuration > Measurement > Measurement transformer > MAIN measurement transformer menu.
- the GridVis® software.

More details on current transformers and voltage transformer ratios and their adjustment can be found in the user manual.

13 Configuration

After the power returns, the device displays the first measured value indication "*Home*".

- Press button 1 "*ESC*" to access the "*Configuration*" menu:

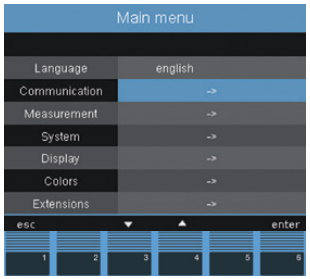


Fig. "Main menu"

- Use buttons 3 and 4 to select the menu entry to be adjusted in the "*Configuration*" menu.
- Confirm the selected menu entry by pressing button 6 "*Enter*"!

Press button 1 "*ESC*" to change back to the higher menu level.

The "*Communication*" menu entry takes you to the following window:

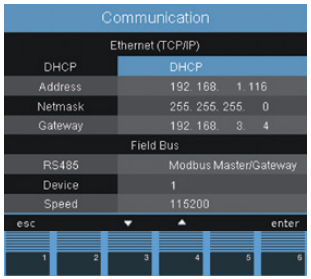


Fig. "Communication" window

Your device has 1 Ethernet interface and 1 RS485 interface (field bus) for communication, which can be adjusted in the "*Communication*" window.

NOTE!
Detailed information on all menu entries and their settings can be found in the user manual.

14 Communication via Ethernet interface (TCP/IP)

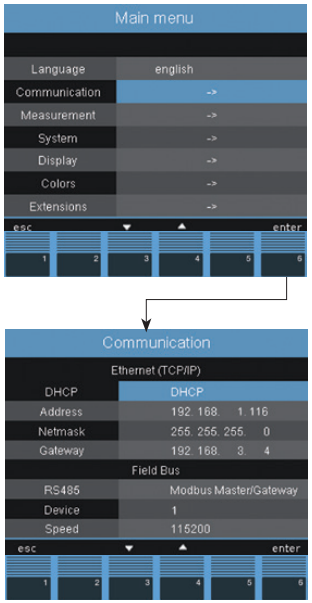
The device has 3 types of address allocation for the Ethernet interface (TCP/IP) in **DHCP** mode:

1. **OFF (fixed IP address)**
   The user selects the IP address, network mask and gateway on the device. Use this mode for straightforward networks without DHCP servers.
2. **BOOTP**
   Automatically integrates your device into an existing network. BOOTP is an older protocol and has a smaller scope of functions than DHCP.
3. **DHCP**
   When started, the device automatically receives the IP address, the network mask and the gateway from the DHCP server.

Standard setting for the device is DHCP!

NOTES!

- Find out the Ethernet network settings for your device from your network administrator.
- The description of additional communication interfaces can be found in the user manual for your device.
- For more information about connection and communication of your device with the software, see the quick guide of software GridVis®.



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Technical data

General	
Net weight (with attached connectors)	approx. 1080 g (2.38 lb)
Device dimensions	l = 144 mm, (5.64 in) b = 144 mm, (5.64 in) h = 75 mm, (2.95 in)
Battery	Typ Li-Mn CR2450, 3 V (approval i.a.w. UL 1642)
Clock, (in temperature range -40°C (-40 °F) to 85°C (185 °F))	+-5ppm (corresponding to approx. 3 minutes p.a.)
Impact resistance	IK07 according to IEC 62262

Transport and storage The following information applies to devices which are transported or stored in the original packaging.	
Free fall	1 m (39.37 in)
Temperature	-25° C (-13 °F) ... +70° C (158 °F)

Ambient conditions during operation	
The device • weather-protected and stationary use. • connected to the protective conductor connection. • corresponds to protection class I in acc. with IEC 60536 (VDE 0106, Part 1).	
Working temperature range	-10° C (14 °F) .. +55° C(131 °F)
Relative humidity	5 to 95% at 25°C (77 °F) without condensation
Operating altitude	0 to 2000 m (1.24 mi) above sea level
Pollution degree	2
Mounting position	vertical
Ventilation	no forced ventilation required.
Protection against ingress of solid foreign bodies and water - Front side - Rear side	 IP40 in acc. with EN60529 IP20 in acc. with EN60529

Supply voltage	
Protection of the supply voltage (fuse)	6 A, Char B (approved i.a.w. UL/IEC)
Installations of overvoltage category	300 V CAT III
Nominal range	**Option 230 V**: AC 95 V - 240 V (50/60 Hz) or DC 80 V - 300 V
	Option 24 V: AC 48 V - 110 V (50/60 Hz) or DC 24 V - 150 V
Operating range	+-10% of nominal range
Power consumption	**Option 230 V**: max. 14 VA / 7 W **Option 24 V**: max. 13 VA / 9 W

Voltage measurement	
Three-phase 4-conductor systems with rated voltages (L-N/L-L) up to	IEC: max. 417 V/720 V
	UL: max. 347 V/600 V
Three-phase 3-conductor systems with rated voltages (L-L) up to	max. 600 V (+10%)
Overvoltage category	600 V CAT III
Rated surge voltage	6 kV
Protection of voltage measurement	1 - 10 A (With IEC / UL approval)
Measurement range L-N [1]	0 .. 600 Vrms
Measurement range L-L [1]	0 .. 1000 Vrms
Resolution	0.01 V
Crest factor	1.6 (related to 600 Vrms)
Impedance	4 MΩ / phase
Power consumption	ca. 0.1 VA
Sampling rate	25.6 kHz / phase
Transients	39 µs
Frequency range of the fundamental oscillation - resolution	15 Hz .. 440 Hz 0.001 Hz

1) The device can only determine measured values, if at least a voltage L-N greater than 10Veff or a voltage L-L of greater than 18Veff is present at one voltage measurement input.
2) Udin = arranged input voltage according to DIN EN 61000-4-30

Current measurement	
Rated current	5 A
Metering range	0.005 to 7 Arms
Measurement range exceeded (overload)	From 8.5 Arms
Crest factor	1.41
Resolution	0.1 mA
Overvoltage category	**Option 230 V**: 300 V CAT III **Option 24 V**: 300 V CAT II
Measurement surge voltage	4 kV
Power consumption	approx. 0.2 VA (Ri=5 mΩ)
Overload for 1 sec.	120 A (sinusoidal)
Sampling rate	25.6 kHz / phase

Residual current monitoring I5 / I6 (RCM)	
Rated current	30 mArms
Metering range	0 to 40 mArms
Triggering current	100 µA
Resolution	1 µA
Crest factor	1.414 (related to 40mA)
Burden	4 Ohm
Overload for 1 sec.	5 A
Sustained overload	1 A
Overload for 20 ms	50 A
Maximum external burden	300 Ohm (for cable break detection)

Digital inputs 2 digital inputs with a joint earth.	
Maximum counter frequency	20 Hz
Response time (Jasic program)	200 ms
Input signal present	18 V to 28 V DC (typical 4 mA) (SELV or PELV supply)
Input signal not present	0 to 5 V DC, current less than 0.5 mA

Digital outputs 2 digital outputs with a joint earth; semiconductor relay, not short-circuit proof.	
Supply voltage	20 - 30 V DC (SELV or PELV supply)
Switching voltage	max. 60 V DC
Switching current	max. 50 mAeff AC/DC
Response time (Jasic program)	200 ms
Pulse output (energy pulse)	max. 20 Hz

Temperature measurement input 3-wire measurement.	
Update time	1 second
Connectable sensors	PT100, PT1000, KTY83, KTY84
Total burden (sensor + cable)	max. 4 kOhm

Cable length (Residual current monitoring, digital inputs and outputs, temperature measurement input)	
Up to 30 m (32.81 yd)	Unshielded
More than 30 m (32.81 yd)	Shielded

RS485 interface 3-wire connection with A, B, GND	
Protocol	Modbus RTU/slave, Modbus RTU/master, Modbus RTU/Gateway
Transmission rate	9.6 kbps, 19.2 kbps, 38.4 kbps, 57.6 kbps, 115.2 kbps, 921.6 kbps
Termination resistor	Can be activated by micro switch

Profibus interface	
Connection	SUB D 9-pole
Protocol	Profibus DP/V0 as per EN 50170
Übertragungsrate	9.6 kBaud to 12 MBaud

Ethernet interface	
Connection	RJ45
Function	Modbus Gateway, Embedded Webserver (HTTP)
Protocols	CP/IP, EMAIL (SMTP), DHCP-Client (BootP), Modbus/TCP, Modbus RTU over Ethernet, FTP, ICMP (Ping), NTP, TFTP, BACnet (Option), SNMP

Potential separation and electrical safety for the interfaces
The interfaces (RS485, Profibus, Ethernet) have • a double insulation to the inputs of the supply voltage, voltage and current measurement. • a functional insulation against each other, to the measuring inputs RCM and temperature and to the digital I/Os. The interfaces of the connected devices requires a double or reinforced insulation against the mains voltages (acc. to IEC 61010-1: 2010).

Terminal connection capacity (supply voltage) Connectable conductors. Only one conductor can be connected per terminal!	
Single core, multi-core, fine-stranded	0.2 - 4.0 mm², AWG 28-12
Cable end sleeve (not insulated)	0.2 - 2.5 mm², AWG 26-14
Cable end sleeve (insulated)	0.2 - 2.5 mm², AWG 26-14
Tightening torque	0.4 - 0.5 Nm (3.54 - 4.43 lbf in)
Stripping length	7 mm (0.2756 in)

Terminal connection capacity (voltage measurement) Connectable conductors. Only one conductor can be connected per terminal!	
Single core, multi-core, fine-stranded	0.2 - 4 mm², AWG 28-12
Cable end sleeve (not insulated)	0.2 - 2.5 mm², AWG 26-14
Cable end sleeve (insulated)	0.2 - 2.5 mm², AWG 26-14
Tightening torque	0.4 - 0.5 Nm (3.54 - 4.43 lbf in)
Stripping length	7 mm (0.2756 in)

Terminal connection capacity (current measurement) Connectable conductors. Only one conductor can be connected per terminal!	
Single core, multi-core, fine-stranded	0.2 - 4 mm², AWG 28-12
Cable end sleeve (not insulated)	0.2 - 4 mm², AWG 26-12
Cable end sleeve (insulated)	0.2 - 2.5 mm², AWG 26-14
Tightening torque	0.4 - 0.5 Nm (3.54 - 4.43 lbf in)
Stripping length	7 mm (0.2756 in)

Terminal connection capacity (temperature measurement input) Connectable conductors. Only one conductor can be connected per terminal!	
Single core, multi-core, fine-stranded	0.2 - 1.5 mm², AWG 28-16
Cable end sleeve (not insulated)	0.2 - 1.5 mm², AWG 26-16
Cable end sleeve (insulated)	0.2 - 1.5 mm², AWG 26-16
Tightening torque	0.2 - 0.25 Nm (1.77 - 2.21 lbf in)
Stripping length	7 mm (0.2756 in)

Potential separation and electrical safety of the temperature measurement input
The temperature measuring input has • a double insulation to the inputs of the supply voltage, voltage and current measurement. • no insulation for RCM measuring input. • a functional insulation of the interfaces Ethernet, Profibus, RS485 and digital I/Os. An external temperature sensor requires a double insulation to plant parts with dangerous contact voltage (acc. to IEC 61010-1: 2010).

Terminal connection capacity (residual current monitoring) Connectable conductors. Only one conductor can be connected per terminal!	
Single core, multi-core, fine-stranded	0.2 - 1.5 mm², AWG 28-16
Cable end sleeve (not insulated)	0.2 - 1.5 mm², AWG 26-16
Cable end sleeve (insulated)	0.2 - 1.5 mm², AWG 26-16
Tightening torque	0.2 - 0.25 Nm (1.77 - 2.21 lbf in)
Stripping length	7 mm (0.2756 in)

Potential separation and electrical safety of the RCM measurement inputs

The RCM-measurement inputs have
- a double insulation to the inputs of the supply voltage, voltage and current measurement.
- no insulation for temperature measurement input.
- a functional insulation of the interfaces Ethernet, Profibus, RS485 and digital I/Os.

The residual current transformer connected and the lines to be measured must each have at least one additional or a basic insulation per IEC61010-1:2010 for the mains voltage present.

Terminal connection capacity (digital inputs and outputs) Connectable conductors. Only one conductor can be connected per terminal!	
Single core, multi-core, fine-stranded	0.2 - 1.5 mm², AWG 28-16
Cable end sleeve (not insulated)	0.2 - 1.5 mm², AWG 26-16
Cable end sleeve (insulated)	0.2 - 1.5 mm², AWG 26-16
Tightening torque	0.2 - 0.25 Nm (1.77 - 2.21 lbf in)
Stripping length	7 mm (0.2756 in)

Potential separation and electrical safety of the digital inputs and outputs (I/Os)

The digital inputs and outputs have
- a double insulation to the inputs of the supply voltage, voltage and current measurement.
- a functional insulation against each other, to the interfaces Ethernet, Profibus, RS485 and temperature measurement input.

The external auxiliary voltage to be connected must be compliant with SELV or PELV.

NOTE!
Further technical data can be found in the user manual for the device.

Janitza®