Smart Energy & Power Quality Solutions

Portable energy measurement devices

COMPACT – FLEXIBLE – PRECISE

Janitza®

Portable energy measurement devices

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The portable energy measurement devices from Janitza

Stay flexible with the portable energy measurement devices from Janitza. Depending on the variant, the portable energy measurement devices are equipped with a UMG 96RM-E or UMG 512-PRO. This enables residual current and power quality (harmonics, short term interruptions, unbalances, etc.), for example, to be measured anywhere. The portable energy measurement devices are simple to use and integrate. They are the right choice for any application, thanks to a highly flexible measurement range from 100-4000 A.

The **MRG 512-PRO PQ Flex** measures harmonics up to the 63rd. harmonic, as well as flicker and short term interruptions. The MRG 512-PRO PQ Flex can be used for high-quality network analysis at class A level (IEC 61000-4-30), validation of the device accuracy, for example, and much more besides. The GridVis® visualisation software GridVis®-Basic is available for free download. There are no gaps in the measurement in the event of power outages thanks to three-hour UPS buffering. The device also has PLC functionality.

The **MRG 96RM-E RCM Flex** measures harmonics up to the 40th. harmonic. Possible uses include the analysis of electrical disturbances in the event of network problems, high quality comparative measurement of energy measurement devices and meters or the acquisition of residual currents via external current transformers. The GridVis®-Basic software is also available for free here too.

The advantages

- Flexible measurement of the power quality and the residual current
- Cost-effective, robust and compact network analysers
- Simple use and rapid integration of the measuring case
- Large measurement range of 100–4000 A through Rogowski current transformer with measurement range changeover
- Acquisition of all power quality parameters (harmonics, short term interruptions, unbalances, etc.) – depending on the model
- Remote access via Ethernet and embedded web server
- GridVis® PQ analysis software
- Standard PQ reports, depending on model: EN 50160, IEEE519, ITIC, IEC 61000-2-4
- Cost centre report
- Large 256 MB internal memory for recording measurement data
- Avoidance of measurement gaps in the event of power outages thanks to the three-hour UPS buffering (only with MRG 512-PRO PQ Flex)
- Measurement up to 63rd. harmonic (MRG 512-PRO PQ Flex)

MRG 512-PRO PQ Flex

Complete package – portable power quality analyser incl. accessories:

1 MRG 512-PRO PQ Flex
4 Voltage pickoffs with fuses, black (gripping probes)
1 Voltage pickoff with fuse, blue (gripping probe)
1 Voltage measurement set (brown, black, grey, red, blue)
4 Rogowski coils with connection cables and plugs
1 Cross patch cable, CAT 5e
2 Connection cables with plugs for residual current monitoring, 3 m (residual current transformer not included in the scope of deliverables)

MRG 512-PRO PQ FLEX

Portable class A power quality analyser for monitoring the power quality

Communication
- Modbus TCP
- TCP/IP
- BACnet (optional)
- HTTP
- FTP (file transfer)
- TFTP
- NTP (time synchronisation)
- SMTP (email function)
- DHCP
- SNMP

Interfaces
- Ethernet

RCM – Residual Current Monitoring
- 2 residual current inputs

Power quality
- Harmonics up to the 63rd. harmonic
- Interharmonics for U and I
- Distortion factor THD-U / THD-I / TDD
- Measurement of positive, negative and zero sequence component
- Rotary field direction detection
- Voltage crest factor
- Acquisition of short term interruptions (from 20 ms)
- Transient recorder (> 50 µs)
- Start-up currents (from 20 ms)
- Unbalance
- Flicker measurement per EN 61000-4-15
- Display of waveforms

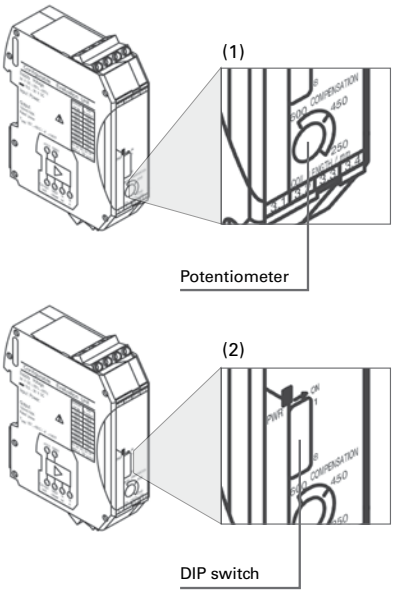
Buffered UPS
- Up to 3 hrs

PLC functionality
- Graphical programming
- Jasic® programming language

Networks
- TN, TT networks
- 3 and 4-phase networks
- Up to 4 single-phase networks

Network visualisation software
- GridVis®-Basic (in the scope of supply)

Rogowski coil (Ø 190 mm)
- 100 – 4,000 A
- Measurement ranges 100 A, 250 A, 400 A, 630 A, 1000 A, 1500 A, 2000 A, 4000 A



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MRG 512-PRO PQ Flex

The portable MRG 512-PRO PQ Flex power quality analyser with the integrated UMG 512-PRO class A measurement device can be used in a variety of applications. This device can be used to measure harmonics up to the 63rd. harmonic and detect short term interruptions. The device records residual currents, is buffered with a UPS for up to 3 hours and has an Ethernet interface for communication via various protocols.

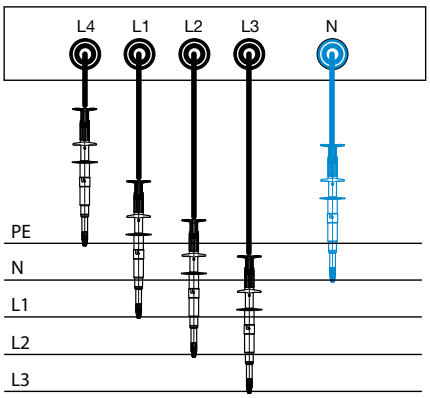
Rogowski current transformer included in the scope of supply

The flexible Rogowski coils offer a great advantage, particularly in applications with large conductor cross-sections. The Rogowski current transformers are also preferable to ferrite core current transformers with regard to higher frequencies (harmonics).

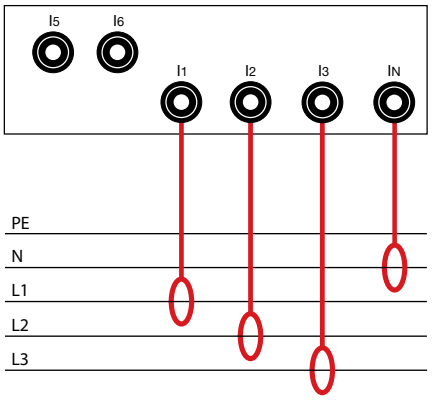
Large measurement data memory

The large measurement data memory also enables long-term recordings, such as are required for the one-week power quality analysis per EN 50160, for example.

Example connection – voltage measurement



Example connection – current measurement



Rogowski coil

Voltage measurement terms connections

RCM measurement cable

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MRG 96RM-E RCM FLEX

Cost efficient and multifunctional network analyser
(incl. residual current monitoring)

Communication
- Modbus TCP
- TCP/IP
- BACnet (optional)
- HTTP
- FTP (file transfer)
- TFTP
- NTP (time synchronisation)
- SMTP (email function)
- DHCP
- SNMP

Interfaces
- Ethernet

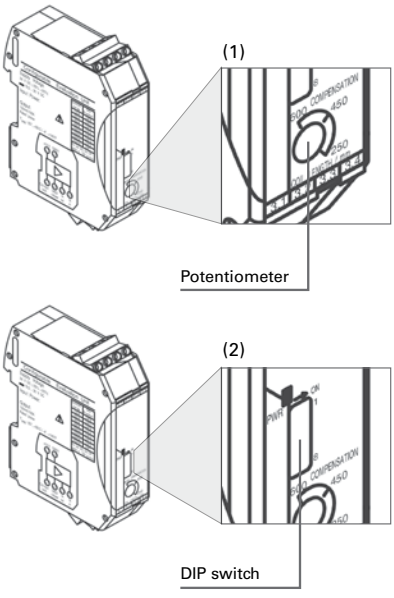
RCM – Residual Current Monitoring
- 2 residual current inputs

Power quality
- Harmonics up to the 40th harmonic
- Interharmonics for U and I
- Distortion factor THD-U / THD-I / TDD
- Measurement of positive, negative and zero sequence component
- Rotary field direction detection
- Voltage crest factor
- Recording of short term interruptions
- Start-up currents (from 20 ms)
- Unbalance

Networks
- TN, TT networks
- 3 and 4-phase networks
- Up to 4 single-phase networks

Network visualisation software
- GridVis®-Basic (in the scope of supply)

Rogowski coil (Ø 190 mm)
- 100 – 4,000 A
- Measurement ranges 100 A, 250 A, 400 A, 630 A, 1000 A, 1500 A, 2000 A, 4000 A



MRG 96RM-E RCM Flex

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4 Voltage pickoffs with fuses, black (gripping probes)
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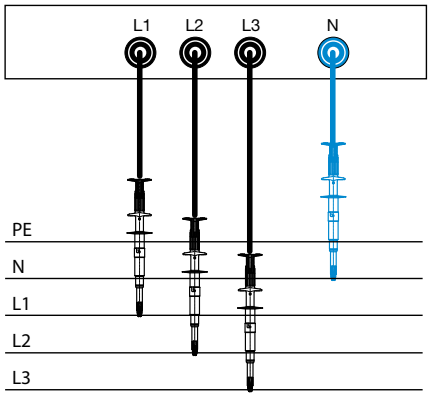
MRG 96RM-E RCM Flex

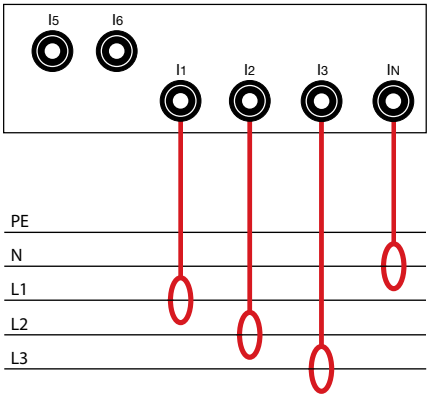
The compact MRG 96RM-E RCM FLEX is suitable for energy audits, for recording the residual current and measuring power quality parameters – anywhere it is required! It has 256 MB memory and can save minimum and maximum values. Furthermore, it is also equipped with an Ethernet interface.

Rogowski current transformer included in the scope of supply
The flexible Rogowski coils offer a great advantage, particularly in applications with large conductor cross-sections. The Rogowski current transformers are also preferable to ferrite core current transformers with regard to higher frequencies (harmonics).

Example connection - voltage measurement



Example connection - current measurement



Rogowski coil

Voltage measurement terms connections

RCM measurement cable

Janitza®

	MRG 96RM-E RCM Flex	MRG 512-PRO PQ Flex
Item number	**52.16.906**	**52.16.905**
Interfaces		
Ethernet 10/100 Base-TX (RJ-45 socket)	•	•
Measurement of the power quality		
Harmonics per order / current and voltage	1. – 40.	1. – 63.
Harmonics per order / active and reactive power	1. – 40.	1. – 63.
Interharmonics - current / voltage	-	•
Flicker: Short term, long term, present	-	•
Measured data recording		
Memory (Flash)	256 MB	256 MB
Measured voltage input		
Overvoltage category	300 V CAT III	600 V CAT III
Displays and inputs / outputs		
LCD display	LCD display with backlight, 2 buttons	Colour graphical display 320 x 240, 256 colours, 6 buttons
General	**MRG 96RM-E RCM Flex**	**MRG 512-PRO PQ Flex**
Use in low and medium voltage networks	•	•
Accuracy of measurement with voltage	0.2 %	0.1 %
Accuracy of measurement with current	0.2 %	0.1 %
Accuracy of measurement with active energy (kWh, .../5 A)	Class 0.5S	Class 0.2S
Number of measurement points per period	426	512
Uninterrupted measurement	•	•
RMS - momentary value		
Current, voltage, frequency	•	•
Active, reactive and apparent power / total and per phase	•	•
Power factor / total and per phase	•	•
Energy measurement		
Active, reactive and apparent energy [L1, L2, L3, L4, Σ L1–3,Σ L1–4]	•	•
Recording of the mean values		
Voltage, current / actual and maximum	•	•
Active, reactive and apparent power / actual and maximum	•	•
Frequency / actual and maximum	•	•
Requirement calculation mode (bi-metallic function) / thermal	•	•
Other measurements		
Operating hours measurement	•	•
Clock	•	•
Measurement of the power quality		
Distortion factor THD-U in %	•	•
Distortion factor THD-I in %	•	•
Current and voltage, positive, zero and negative sequence component	•	•
Transients	-	> 39 µs
Error / event plotter function	•	•
Short term interruptions	•	•
Oscillogram function (wave form U and I)	-	•
Under and overvoltage recording	•	•
Measured data recording		
Mean, minimum, maximum values	•	•
Alarm messages	•	•
Time stamp	•	•
Time basis mean value	freely user-defined	freely user-defined
RMS averaging, arithmetic	•	•

Displays and inputs / outputs	MRG 96RM-E RCM Flex	MRG 512-PRO PQ Flex
Analogue inputs (RCM, analogue)	•	•
Voltage and current inputs	L1, L2, L3 + N	every 4
Password protection	•	•

Communication		
Protocols		
Modbus TCP, Ethernet	•	•
HTTP (homepage configurable)	•	•
SMTP (email)	•	•
NTP (time synchronisation)	•	•
TFTP (automatic configuration)	•	•
FTP (file transfer)	•	•
SNMP	•	•
DHCP	•	•
TCP/IP	•	•
BACnet (optional)	•	•
ICMP (Ping)	•	•

GridVis®-Basic software included in the scope of supply*1		
Programming / threshold values / alarm management		
Application programs freely programmable	-	7
Graphical programming	-	•
Programming via source code Jasic®	-	•
Comparator (5 Groups with 10 comparators each)	•	-

Technical data	MRG 96RM-E RCM	MRG 512-PRO PQ Flex
Nominal voltage, three-phase, 4-conductor (L-N, L-L)	277 / 480 V AC	417 / 720 V AC
Nominal voltage, three-phase, 3-conductor (L-L)	480 V AC	600 V AC
Measurement in which quadrants	4	4
Networks	TN, TT, IT	TN, TT
Measurement in single-phase/multi-phase networks	1 ph, 2 ph, 3 ph, 4 ph	1 ph, 2 ph, 3 ph, 4 ph and up to 4 times 1 ph

Measured voltage input		
Measurement range, voltage L-N, AC (without transformer)	10 to 300 Vrms	10 to 600 Vrms
Measurement range, voltage L-L, AC (without transformer)	18 to 520 Vrms	18 to 1000 Vrms
Resolution	0.01 V	0.01 V
Impedance	4 MOhm / phase	4 MOhm / phase
Frequency measuring range	45 to 65 Hz	15 to 440 Hz
Power consumption	Approx. 0.1 VA	Approx. 0.1 VA

Measured current input		
Rated current	1 A	1 A
Resolution	0.1 mA	0.1 mA
Metering range	0.001 - 6 Amps	0.001 - 7 Amps
Overvoltage category	300 V CAT III	300 V CAT III
Measurement surge voltage	2 kV	6 kV
Power consumption	Approx. 0.2 VA (Ri = 5 mOhm)	Approx. 0.1 VA (Ri = 5 MOhm)
Overload for 1 sec.	120 A (sinusoidal)	120 A (sinusoidal)
Sampling rate	20 kHz	25.6 kHz

Mechanical properties		
Weight	Approx. 3.4 Kg	Approx. 14.2 Kg
Device dimensions in mm (L x W x H)	350 x 295 x 150	approx. 500 x 390 x 230
Protection class per EN 60529	Front: IP40; Back: IP20	Front: IP40; Back: IP20

Security		
Europe	CE labelling	CE labelling

Comment:
For detailed technical information, please refer to the operation manual and the Modbus address list.

• = included
– = not included

*1 Optional additional functions with the packages GridVis®-Professional, GridVis®-Service and GridVis®-Ultimate.

Smart Energy & Power Quality Solutions

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Sales partner

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The current version of the brochure is available at www.janitza.de.

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