

Modularly expandable network analyzer – UMG 801



ALL-IN-ONE
NETWORK ANALYZER

HIGHLY AVAILABLE DATA – SECURE COMMUNICATION

A key factor for success for modern companies is transparency across all data levels. The acquisition and consolidation of data from all areas of the company is necessary for purposes such as optimizing planning for production processes, establishing safety measures to protect systems and machinery, and to save costs. This goal is associated with many challenges, because different standards, interfaces and communication options must all be coordinated with each other. The networking of previously isolated areas, from the machine level to ERP systems and building management systems, is very complex. OPC UA is a standardization for data transmission that simplifies this consolidation.

The Janitza UMG 801 energy measurement device offers various communication interfaces and protocols (e.g. OPC UA) for standardized and manufacturer-independent data transmission to higher-order systems, thus eliminating the need for costly integration.

With its modular expansion capability, the UMG 801 is optimally suited to cover the complete range of needs in an energy management system (according to ISO 50001). It delivers transparency concerning energy consumption and energy costs at all measurement levels. In addition, critical deviations in power quality and residual currents (RCM) that can stress or even endanger systems can be detected.

A future-proof investment: subsequent expansion of the measurement points to up to 92 measuring channels is ensured with current measuring modules that can be added in series and easily integrated.



ALL-IN-ONE ENERGY MONITORING

○ **EVERYTHING IN ONE DEVICE**

- The basic device has
 - 8 current measuring channels with 1/5 A inputs
 - 4 multifunction channels, optionally configurable as RCM, a temperature measuring channel or further current measuring channels via mA signals
- Generous 4 GB measurement data memory for storing measurement data
- Two groups with four digital IOs each (tariff switching and pulse input, logical states)
- Analog output (direct current 0/4-20 mA)

○ **HIGH PRECISION MEASUREMENTS**

- High sampling frequency (51.2 kHz voltage)
- 1024 samples for voltage measurement
- High measuring accuracy on all channels (V: 0.2% / A: 0.2% / kWh: class 0.2)
- Highest possible safety: 1000 V CAT III
- Extensive power quality parameters
 - Voltage up to 127th harmonic and interharmonics
 - THD U and THD I
 - Unbalance
 - Event and transient detection

○ **VISUALIZATION, DOCUMENTATION AND ANALYSIS**

- Extensive options for visualization, analysis and documentation of energy measurement data (GridVis® software)
- Integrated automatic report generation (GridVis® software)
- Integrated color graphic display for visualization and intuitive configuration on site, as well as optional color graphic display for front panel operation

○ **MANAGING AND USING DATA**

- Various interfaces for simultaneous use
 - 2 Ethernet interfaces
 - RS-485 interface for data readout and optional use as a gateway
- Comprehensive protocols and services
- PQ data via PQDiff and Comtrade

○ **BENEFIT FROM OPC UA**

- Easy integration of measurement data from basic device and measuring modules into higher-order systems (e.g. building management systems, SCADA systems)
- Cybersecurity: Integrated security mechanisms to protect against unauthorized access and misuse
- Configuration of the entire measuring system via OPC UA
- Future-proof software architecture because the OPC UA standard grows with new applications

FLEXIBLE CONNECTION

DATA ACCESS MADE EASY

The networking options offered by the UMG 801 maximize its usefulness and minimize the work required for integration in higher-order systems.

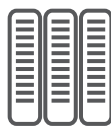
The device is equipped with two simultaneously usable Ethernet interfaces for direct wiring and data transmission as well as an RS-485 interface for reading out the acquired data or for setting up a measurement topology.

With the OPC UA standard you also benefit from a software architecture that features integrated security mechanisms. This significantly simplifies the consolidation of data from all corporate divisions, which is a further milestone in the implementation of Industry 4.0.

Industry 4.0 – that means networking on the one hand, and intelligent means of control that reach deep into the system on the other. What sensors at the tip of a robot arm detect is transmitted to a development team on the opposite side of the world. This technology requires connectivity at the highest level. Whether OPC UA, Modbus or standardized data formats such as PQDiff and Comtrade – we offer many options for data access. An open and future-proof system.



DATABASE



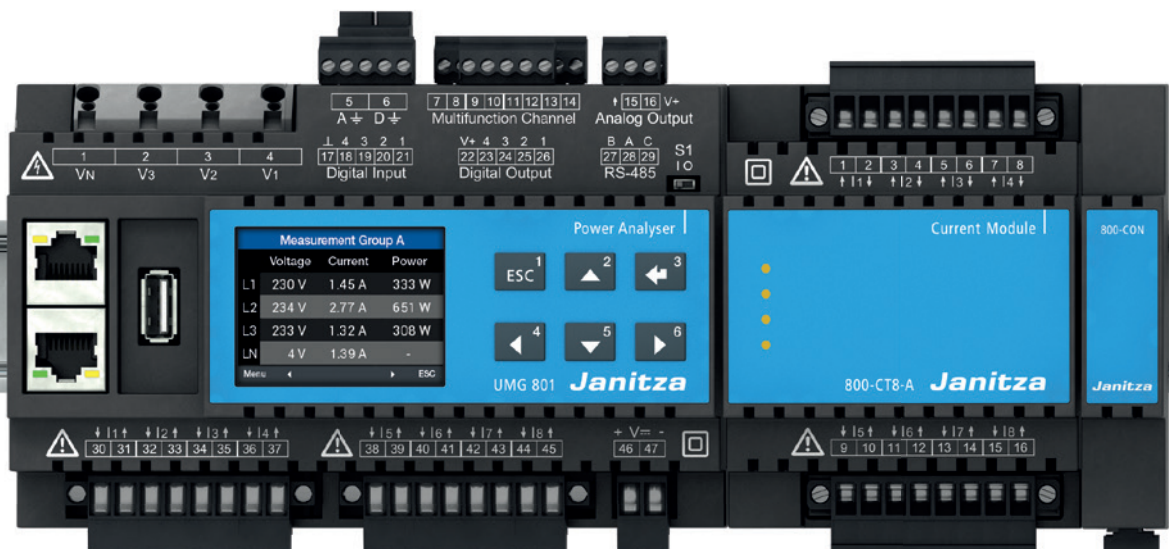
PLC



ERP



BMS



MODULAR STRUCTURE

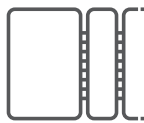
COMPACT AND ECONOMICAL MEASUREMENT POINT EXPANSION

The UMG 801 can be expanded modularly to 92 current measuring channels. To do so, the 800-CT8-A module offers eight current measuring channels in a compact design to optimize space usage in the switchboard cabinet. Up to 10 current measuring modules can be integrated using a click system, with no external wiring between the basic device and the current measuring modules. The integration of the modules is convenient and saves time and expense. An integrated bus system connects the basic device with the current measuring modules and ensures trouble-free power supply as well as data transmission. In addition, spatially distant measurement points can be connected using the

800-CON transfer modules. This enables remote placements at distances of up to 100 m using cables.

Advantages of modular measurement point expansion

- Space-saving, compact system
- No additional power supply necessary for the measuring modules
- Shorter installation time with simple click system
- Fewer sources of error due to plug & play approach
- Minimum cost per additional current measurement channel
- No additional voltage measurement required



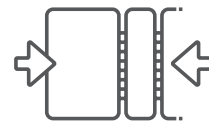
MODULAR

92

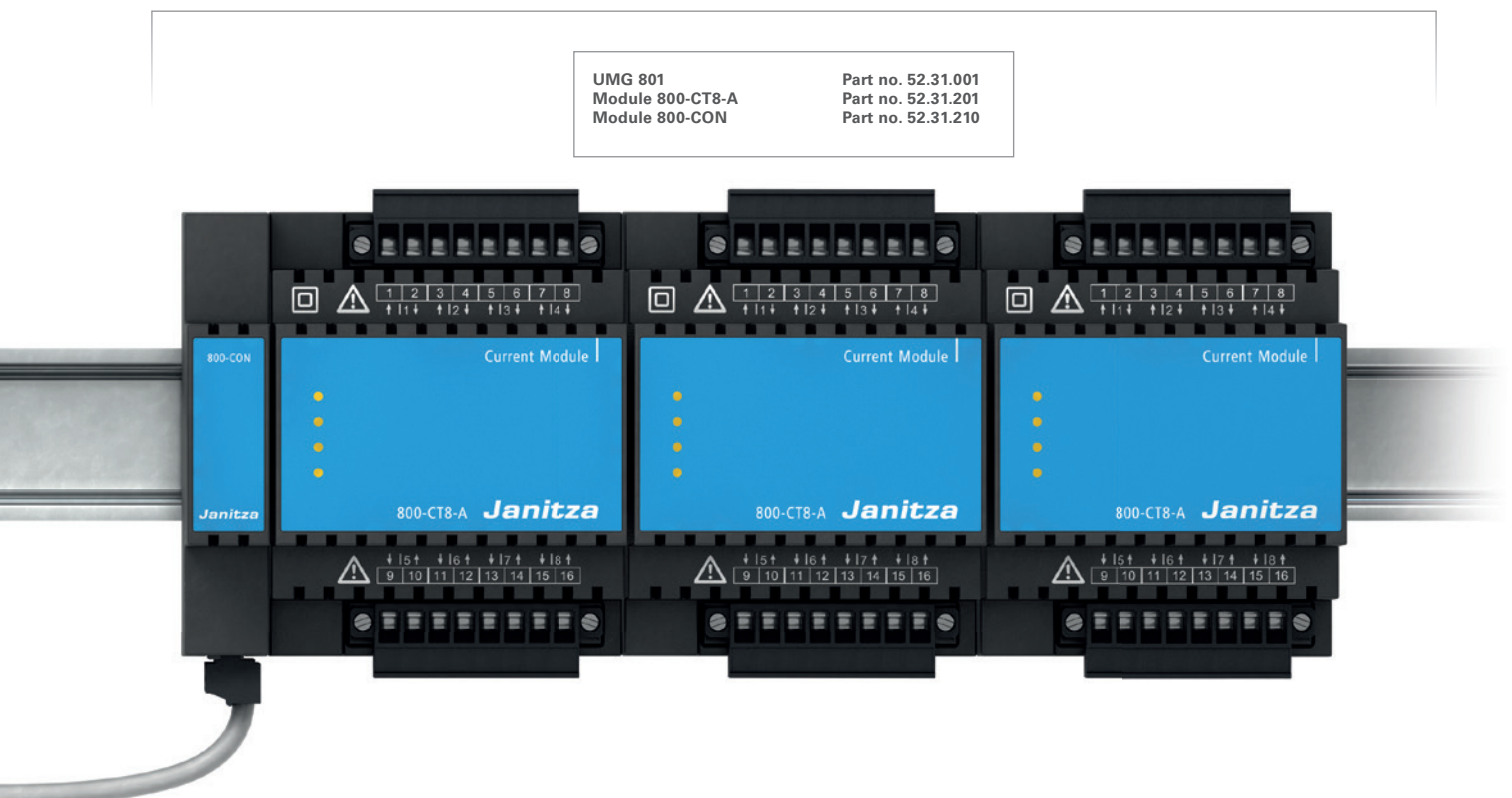
CURRENT MEASURING CHANNELS



CONNECTIVITY



COMPACT



AT A GLANCE

POWER QUALITY

- Capture, analysis and documentation of disturbance variables, e.g. harmonics current
- Event and transient detection with storage in PQDiff and Comtrade, comprehensive visualization in the event browser

RESIDUAL CURRENT MEASUREMENT

- 4 multifunction inputs for configuration as RCM measurement inputs
- Residual current measurement with open circuit detection

MINIMAL INTEGRATION EFFORT

- Integration into a higher-order system using an open communications architecture via OPC UA standard (e.g. BMS, SCADA and ERP applications)
- Versatile and simultaneously usable interfaces
- Gateway functionality for integration of additional devices, e.g. Janitza UMGs from downstream measurement levels
- IPv4 and IPv6 Ethernet IP addresses

FLEXIBLE USE

- Multifunction channels can be used flexibly as needed depending on the required application: RCM, temperature or current measurement

THE BEST DATA SECURITY

- Secure communication through OPC UA security structures

HIGH MEMORY CAPACITY - 4 GB

- Data storage ensured through large internal memory of the basic device

Minimal space requirement: 145 mm x 90 mm x 76 mm*



800-CT8-A module

COST REDUCTION

- Easy system expansion through flexible scaling for up to 92 current measurement channels
- Remote measuring distances of up to 100 m possible
- Low costs per additional measurement channel due to easy modular expansion
- Cost savings through shortened installation times

COMPACT SOLUTION

- Space optimization through compact design, also for measurement point expansion

SIMPLE EXPANSION

- Error prevention through easy to connect plug-in concept (plug & play)

VISUALIZATION AND DOCUMENTATION

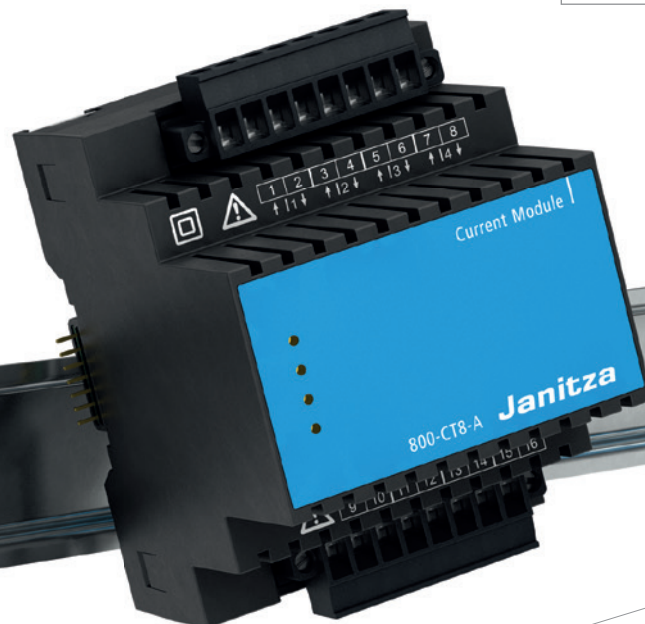
- Extensive options for data preparation using the GridVis® software

EXTERNAL DISPLAY

- On-site visualization via Remote Display RD 96 without opening the switchboard cabinet

UMG 801
Module 800-CT8-A

Part no. 52.31.001
Part no. 52.31.201



800-CT8-A module: 73 mm x 90 mm x 76 mm*

* Dimensions: Width x height x depth

POWER QUALITY IMPROVEMENT

CAPTURE OF EVENTS AND TRANSIENTS

Power supply issues are the cause of many events that are difficult to track down and are associated with equipment failures and downtime as well as software and data corruption.

For various reasons, the power supply is subject to irregular disruptions from time to time. Examples include lightning strikes, birds on overhead lines, high inrush currents, or grid overloads. Likewise, the increasing share of renewable energies in the power supply may cause fluctuations and disruptions in the grid in the future. As a result, the voltage in our networks today is far from the ideal sinusoidal shape. This negatively impacts the service life of operating equipment and leads to failures in sensitive control electronics and systems.

Companies are increasingly complaining about brief supply interruptions as well as deep voltage dips. The widespread use of electronics, from home electronics to the control of costly industrial processes, has increased attention to power quality.

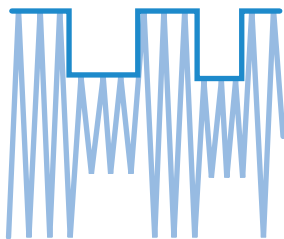
Continuous measurement of power quality and analysis of the data obtained enable the detection of deviations before damage to equipment is imminent.

The UMG 801 has functions and triggers that notify a system operator in the event of non-compliance with power quality agreements on the part of the utility when there are corresponding events and transients.

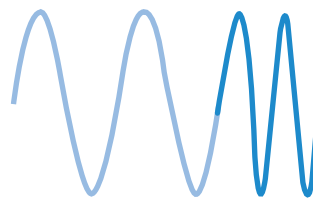
Capture of the power quality in the form of event and transient recording can optionally be extended for the UMG 801 to include one or even both measuring groups of the basic device.

The events and transients are stored in the standardized PQDiff format and can not only be analyzed clearly using the event browser of the GridVis® power grid monitoring software, but also documented in higher-order systems. At the same time, all data records are also available in Com-trade format for maximum flexibility in data exchange.

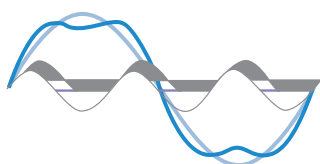
POWER QUALITY ISSUES



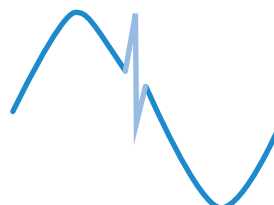
Voltage variations



Frequency variations



Harmonics current



Transients & short-term interruptions

FIRST-CLASS PQ MEASUREMENT

In addition to compliance with currently valid standards, you can always keep an eye on the energy supply of your system. The measured variables obtained are an important source of impetus for optimizing power quality and increasing plant safety.

Evaluation of the measurement data collected enables development of solutions for improving the power quality. The aim here is to actively protect and safeguard the availability of systems and buildings. Janitza's power quality solutions can be tailored to meet different challenges.

- Continuous true RMS measurement (True RMS)
- Harmonics analysis up to the 127th harmonic, (even/odd)
- Short-term interruptions, visualization with half-wave RMS values and waveform
- Capture of events (half-wave RMS values [10 ms] and waveform)
- Acquisition and storage of transients (for voltage ~19.5 μ s and for current ~39 μ s)
- Storage of up to 150 events and transients



Event browser and transient browser within GridVis®

HIGH AVAILABILITY USING RCM

PREVENT FAILURES AND DAMAGE WITH CONTINUOUS RESIDUAL CURRENT MONITORING

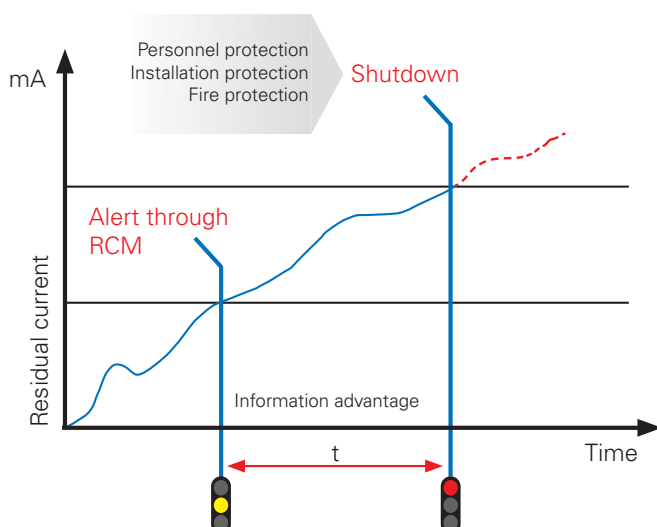
With continuous residual current monitoring (RCM), you have your low-voltage network under control. Hazardous residual currents that can cause equipment malfunctions or increase the risk of fire are detected immediately so that production downtime and damage can be avoided. Applications can be found in almost all market segments, especially when it comes to continuous processes and especially

sensitive applications. For example, datacenters, hospitals or semiconductor factories rely on RCM monitoring. Wherever insulation resistance measurements and RCD's cannot be realized due to local or operational conditions, continuous RCM measurement offers a good alternative.

DYNAMIC THRESHOLD VALUES FOR CUSTOMIZED MONITORING

The UMG 801 employs a special procedure to dynamically set RCM threshold values in dependence on the total electrically applied power. Thanks to this dynamic threshold value creation, a customized residual current threshold value is defined in all load ranges. Unnecessary false alarms can thus be avoided.

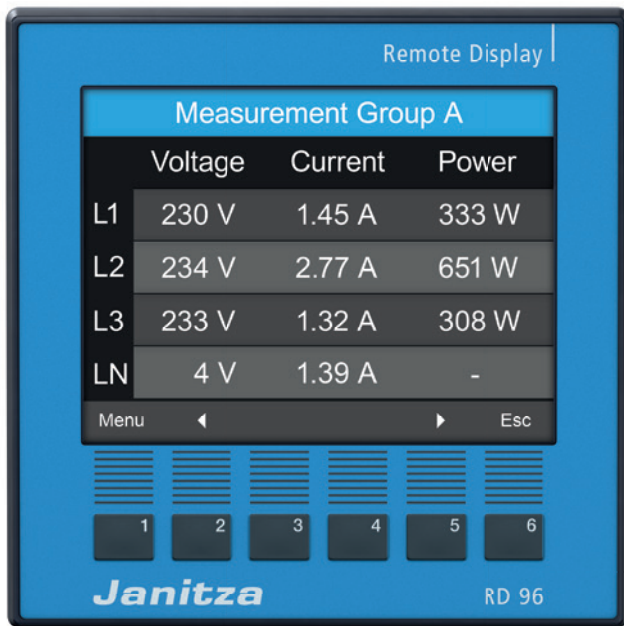
Even in the low load range, the UMG 801 offers an optimal residual current threshold value, thereby allowing flexible use in all load ranges. Extensive, pre-integrated RCM diagnostic variables enable deployment of an optimal monitoring solution for every requirement.



Alert before shutdown: A goal of residual current monitoring

The decisive factor is the detection of any disturbances early on, **before** fuses or residual current devices (RCDs) of the affected systems or socket power circuits are shut down. To do so, the increases in residual currents, which are typically very gradual (e.g. triggered by insulation faults and operating currents of system components or consumers that become too high), must be monitored, evaluated and reported before failures occur!

OVERVIEW ON SITE



With the Remote Display RD 96, the measured values from the UMG 801 and its connected modules can be conveniently visualized directly at the switchboard cabinet – without opening the switchboard cabinet door. In addition, the UMG 801 and its modules can be configured via the display.

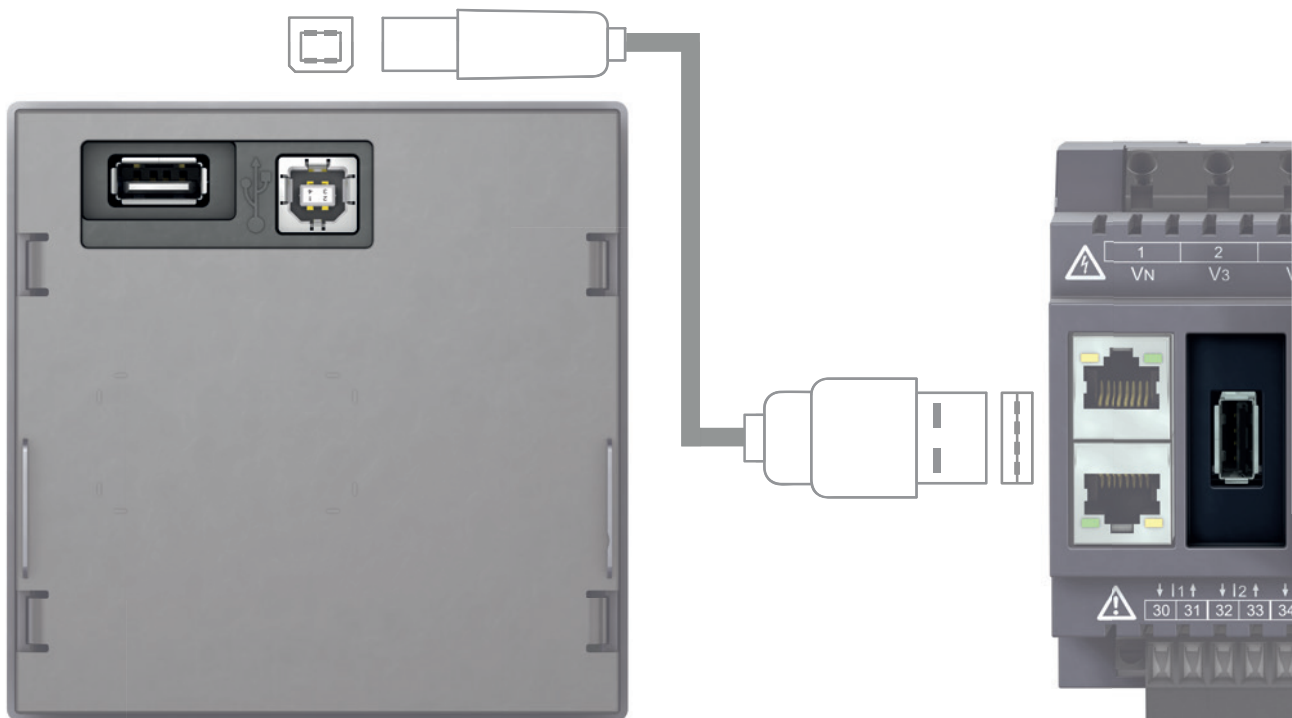
- Design: 96 x 96 mm front panel
- Simple operation via buttons
- Connection via USB interface
- Mirroring of the UMG 801 display on the RD 96
- All displays incl. the views of the modules are available
- Full operation including configuration of the UMG 801 as well as the modules

RD 96

Part no. 52.31.212

RD 96
USB port 2.0 (TYPE B)

UMG 801
USB port 2.0 (TYPE A)



Rear view of RD 96 device

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Sales partner

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The latest version of the brochure is available at www.janitza.com.