



MID energy meter and measurement system

Measurable energy efficiency – full cost control

MID energy meter and measurement system



Communication:
Modbus, M-Bus,
S0 pulse outputs



Direct measurement
up to 65 A, transformer
measurement up to 6 A
secondary (CT ratio freely
adjustable)



1 or 2 tariffs
4 quadrant measurement
Class 1 for effective
energy



MID and IEC calibrated
at the factory
Lead-sealed terminal
cover



Measured values:
- Active energy
- Reactive energy
- Active power
- Reactive power



Capture. Assign. Control.

Save money with fair and precise cost assignment

Administrators of shopping centres, airports, hotels, office complexes and other commercial properties all face the same challenge. How can energy efficiency be increased whilst at the same time assigning the costs to all of the tenants in a fair and precise manner? Both objectives can be achieved with the MID energy meters. The assignment of the energy consumption to the individual tenants or consumption points can be made significantly easier through comprehensive acquisition. Sources of energy wastage are quickly identified, undesired energy consumption can be reduced and the energy efficiency increased.

Areas of application

Electronic energy meters are primarily used for the recording of effective energy and reactive energy. Their area of application is in the field of energy management for cost centre analysis. Various communication options are available for this in order to avoid the time consuming process of manually reading out on-site. As a measured value transducer the effective pulses on a control system, e.g. GLT, SPS, SCADA or the ProData® data logger incl. GridVis® network visualisation software, can be switched via pulse outputs.

The M-Bus and Modbus RTU protocols are available via the integrated communications interface for the field of building control technology. With the corresponding selections these interfaces enable the additional values of voltage, current, power, power factor and frequency

on the bus, alongside effective power and reactive power. The energy meters can be used for consumption data acquisition, in conjunction with the measurement devices UMG 96RM-E, UMG 604, UMG 605, UMG 508, UMG 509, UMG 511 and UMG 512 via Modbus RTU for sub-measurements.

Applications

The electronic energy meters are suitable for the measurement of effective and reactive energy consumption. The measurement is designed for 1-phase and 3-phase systems with a voltage of L-N 230 VAC ± 20 %. The current inputs are designed for either direct connection or measurement via a current transformer. The installation is implemented via DIN rails, where special value is placed on the extraordinarily compact construction. All meters can be lead-sealed. Effective energy and reactive energy are available in one tariff or two tariffs and in four quadrants. The accuracy of the meter is class 1 for effective energy and class 2 for reactive energy.

Capturing and recording

All meters save the meter readings to non-volatile memory. The meter reading cannot be reset in the MID version.



MID energy meter B21 – Single-phase energy meter, 65 A

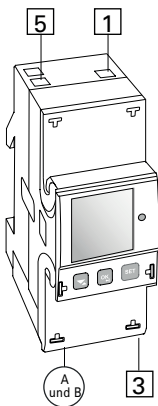
Single-phase energy meter (1 + N)

- Direct connection up to 65 A
- With measured values and alarm function
- Width, 2 DIN modules
- Tested and approved per MID*1 and IEC
- Pulse output included

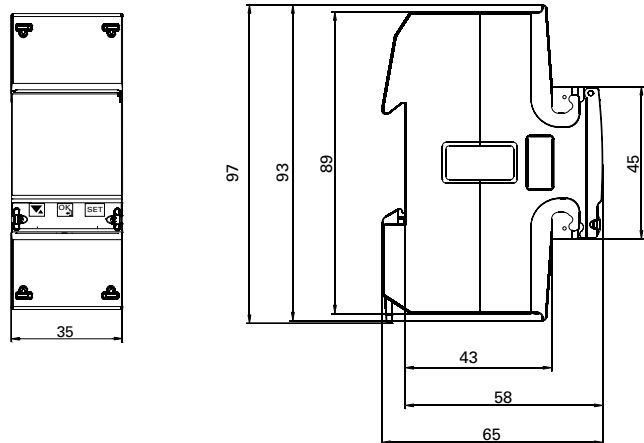


*1 Regional different requirements apply in Switzerland in connection with MID energy meters.

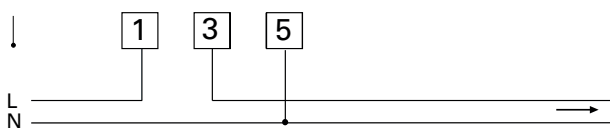
Voltage V	Precision class	Inputs/outputs	Communication	Type	Item no.	Weight
1 x 230 V AC	Active energy: B (class 1) Reactive energy: class 2	2 outputs, 2 inputs	Pulse output	B21 311-10J	14.01.353	0.14
			Pulse output, RS-485	B21 312-10J	14.01.354	0.15
			Pulse output, M-Bus	B21 313-10J	14.01.355	0.15



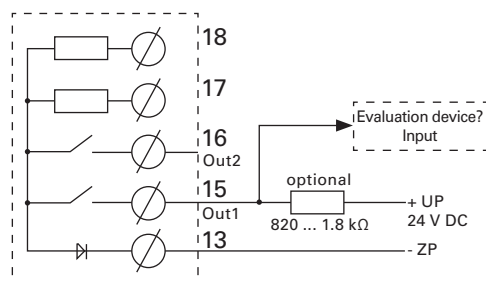
Dimensions in mm



B21 Connection terminals



Pulse output S0



MID energy meter B23 –

Three-phase energy meter, direct measurement, 65 A

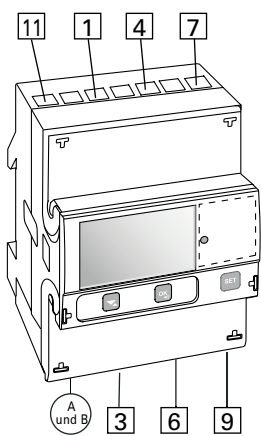
Three-phase energy meter, direct measurement (3 + N)

- Direct connection up to 65 A
- With measured values and alarm function
- For 3-conductor and 4-conductor connection
- Width, 4 DIN modules
- Tested and approved per MID*1 and IEC
- Pulse output included

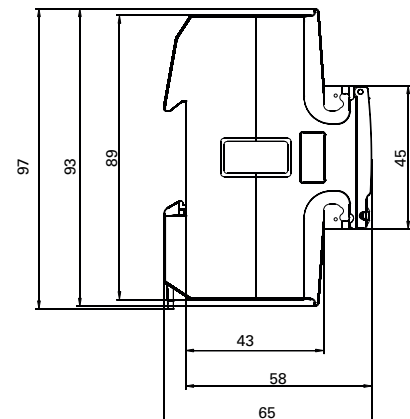
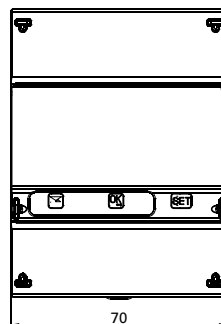


*1 Regional different requirements apply in Switzerland in connection with MID energy meters.

Voltage V	Precision class	Inputs/outputs	Communication	Type	Item no.	Weight
3 x 230/400 V AC	Active energy: B (class 1) Reactive energy: class 2	2 outputs, 2 inputs	Pulse output	B23 311-10J	14.01.356	0.33
			Pulse output, RS-485	B23 312-10J	14.01.357	0.34
			Pulse output, M-Bus	B23 313-10J	14.01.358	0.35

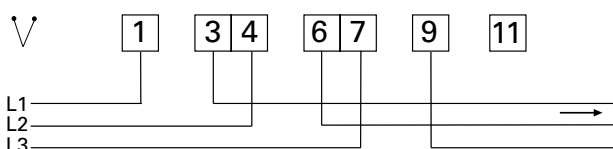


Dimensions in mm

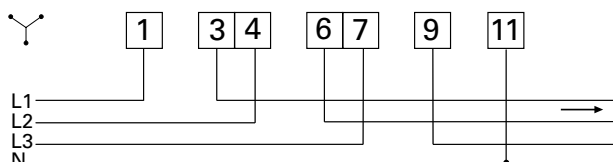


B23 Connection terminals

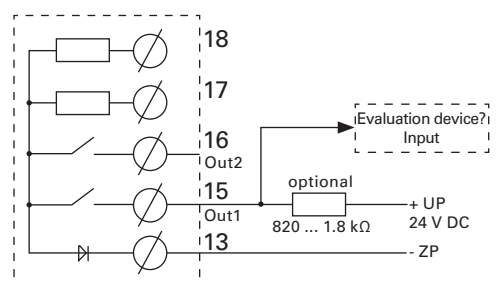
3-conductor connection with 2 measuring units



4-conductor connection with 3 measuring units



Pulse output S0



MID energy meter B24 – Three-phase energy meter, CT measurement, 6 A

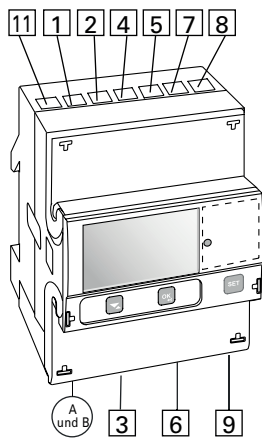
Three-phase energy meter, CT measurement (3 + N)

- Transformer connection CT, 1(6) A
- Transformer ratio freely adjusted up to 9999/1-6
- With measured values and alarm function
- For 3-conductor and 4-conductor connection
- Width, 4 DIN modules
- Tested and approved per MID*1 and IEC
- Pulse output included

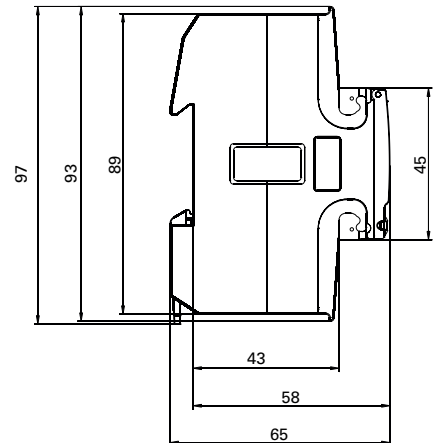
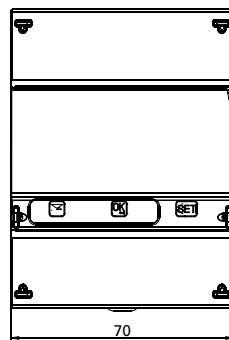


*1 Regional different requirements apply in Switzerland in connection with MID energy meters.

Voltage V	Precision class	Inputs/outputs	Communication	Type	Item no.	Weight
3 x 230/400 V AC	Active energy: B (class 1) Reactive energy: class 2	2 outputs, 2 inputs	Pulse output	B24 311-10J	14.01.359	0.27
			Pulse output, RS-485	B24 312-10J	14.01.360	0.27
			Pulse output, M-Bus	B24 313-10J	14.01.361	0.29

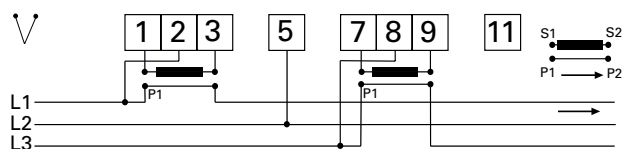


Dimensions in mm

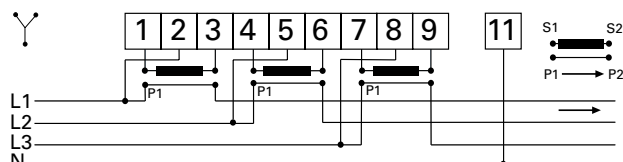


B24 Connection terminals

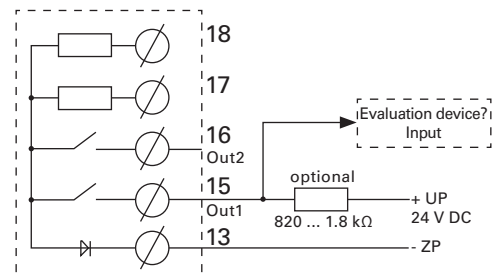
3-conductor connection with 2 measuring units



4-conductor connection with 3 measuring units



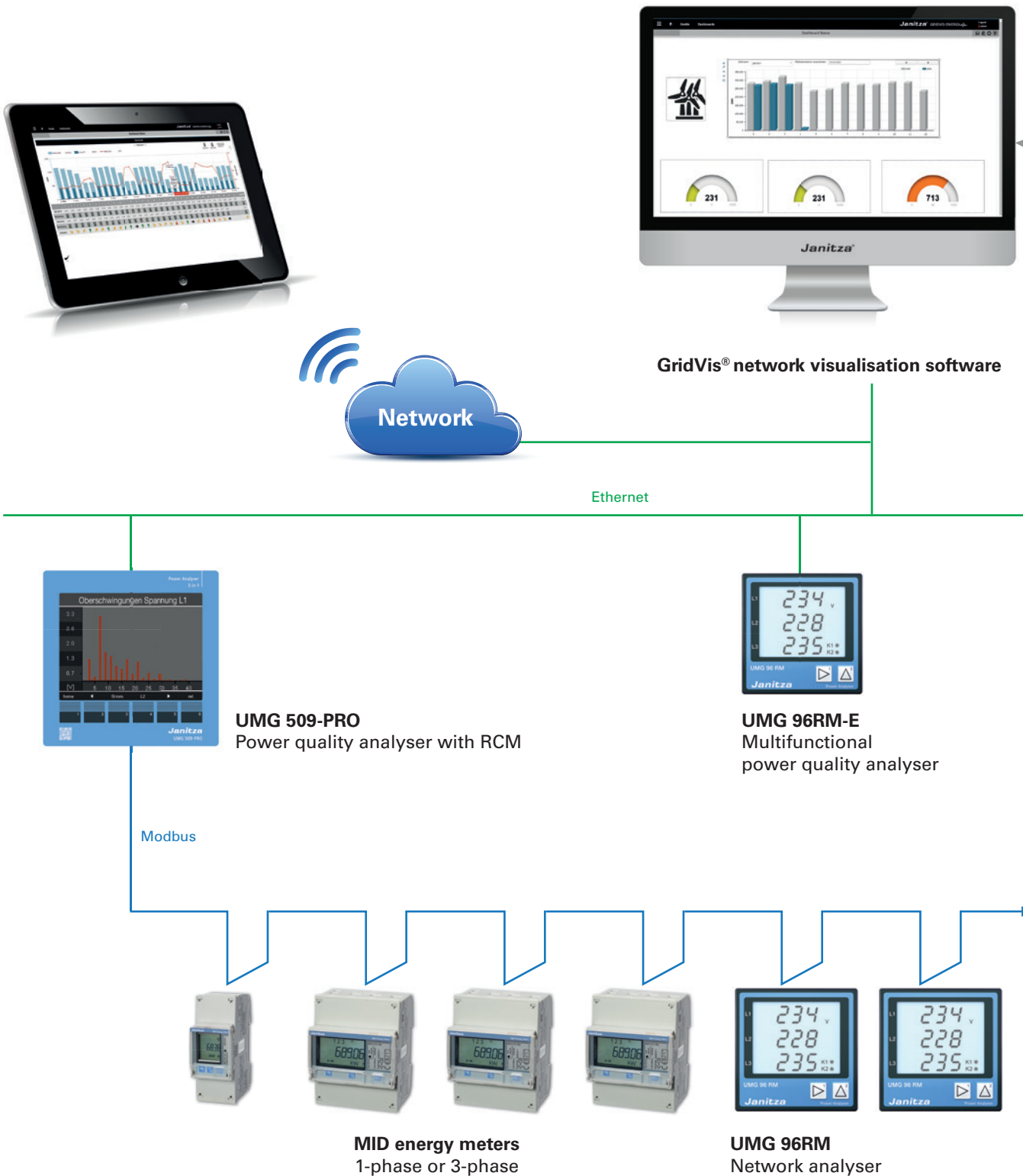
Pulse output S0



MID energy meter and measurement system
Measurable energy efficiency – full cost control

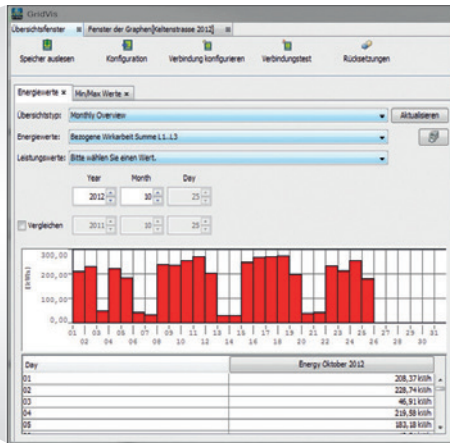
	B21 Single-phase energy meter	B23 Three-phase energy meter, direct measurement	B24 Three-phase energy meter, CT measurement
Voltage/current inputs			
Rated voltage	230 V AC	3 x 230/400 V AC	3 x 230/400 V AC
Voltage range	220 – 240 V AC (-20% – +15%)	3 x 220 – 240 V AC (-20% – +15%)	3 x 220 – 240 V AC (-20% – +15%)
Power dissipation, voltage circuits	< 0.9 VA (0.4 W) at 230 VAC	< 1.6 VA (0.7 W) total at 230 VAC	< 1.6 VA (0.7 W) total at 230 VAC
Power dissipation, current circuits	0.015 VA (0.015 W) at 230 V AC and I_b/I_{ref}	0.007 VA (0.007 W) per phase at 230 V AC and I_b/I_{ref}	0.007 VA (0.007 W) per phase at 230 V AC and I_b/I_{ref}
Reference current I_{ref}	5 A	5 A	1 A
Transition current I_{tr}	0.5 A	0.5 A	0.05 A
Max. current I_{max}	65 A	65 A	6 A
Min. current I_{min}	0.25 A	0.25 A	0.02 A
Start-up current I_{st}	< 20 mA	< 20 mA	< 1 mA
Connection cross-section	1 – 25 mm ²	1 – 25 mm ²	0.5 – 10 mm ²
Recommended tightening torque	2 Nm	2 Nm	1.2 Nm
Transformer ratio			
Configurable current ratio (CT)	–	–	9999/1-6
Pulse display (LED)			
Pulse frequency	1000 imp/kWh	1000 imp/kWh	5000 imp/kWh
Pulse length	40 ms	40 ms	40 ms
General information			
Frequency	50 or 60 Hz ± 5%	50 or 60 Hz ± 5%	50 or 60 Hz ± 5%
Precision class	B (cl. 1) and reactive power cl. 2	B (cl. 1) and reactive power cl. 2	B (cl. 1) and reactive power cl. 2
Effective power	1%	1%	1%
Energy display	LCD with 6 digits	LCD with 7 digits	LCD with 7 digits
Environmental			
Operating temperature	-40 °C – +70 °C	-40 °C – +70 °C	-40 °C – +70 °C
Storage temperature	-40 °C – +85 °C	-40 °C – +85 °C	-40 °C – +85 °C
Humidity	75% annual average, 95% on 30 days/year	75% annual average, 95% on 30 days/year	75% annual average, 95% on 30 days/year
Fire and heat resistance	Terminal 960 °C, covering 650 °C (IEC 60695-2-1)	Terminal 960 °C, covering 650 °C (IEC 60695-2-1)	Terminal 960 °C, covering 650 °C (IEC 60695-2-1)
Water and dust resistance	IP20 on terminal strip without protective housing and IP51 in protective housing, per IEC 60529	IP20 on terminal strip without protective housing and IP51 in protective housing, per IEC 60529	IP20 on terminal strip without protective housing and IP51 in protective housing, per IEC 60529
Mechanical environment	Class M1 per Measuring Instrument Directive (MID), (2004/22/EC)	Class M1 per Measuring Instrument Directive (MID), (2004/22/EC)	Class M1 per Measuring Instrument Directive (MID), (2004/22/EC)
Electromagnetic environment	Class E2 per Measuring Instrument Directive (MID), (2004/22/EC)	Class E2 per Measuring Instrument Directive (MID), (2004/22/EC)	Class E2 per Measuring Instrument Directive (MID), (2004/22/EC)
Digital outputs			
Current	2 – 100 mA	2 – 100 mA	2 – 100 mA
Voltage	24 V AC – 240 V AC, 24 V DC – 240 V DC	24 V AC – 240 V AC, 24 V DC – 240 V DC	24 V AC – 240 V AC, 24 V DC – 240 V DC
Output pulse frequency	Programmable: 1 – 999999 pulse/kWh, pulse/MWh	Programmable: 1 – 999999 pulse/kWh, pulse/MWh	Programmable: 1 – 999999 pulse/kWh, pulse/MWh
Pulse length	10 – 990 ms	10 – 990 ms	10 – 990 ms
Connection cross-section	0,5 – 1 mm ²	0,5 – 1 mm ²	0,5 – 1 mm ²
Recommended tightening torque	0.25 Nm	0.25 Nm	0.25 Nm
Digital inputs			
Voltage	0 – 240 V AC/DC	0 – 240 V AC/DC	0 – 240 V AC/DC
OFF	0 – 12 V AC/DC	0 – 12 V AC/DC	0 – 12 V AC/DC
ON	57 – 240 V AC/24 – 240 V DC	57 – 240 V AC/24 – 240 V DC	57 – 240 V AC/24 – 240 V DC
Min. pulse length	30 ms	30 ms	30 ms
Connection cross-section	0,5 – 1 mm ²	0,5 – 1 mm ²	0,5 – 1 mm ²
Recommended tightening torque	0,25 Nm	0,25 Nm	0,25 Nm
Electromagnetic compatibility			
Surge voltage testing	6 kV 1,2/50 μs (IEC 60060-1)	6 kV 1,2/50 μs (IEC 60060-1)	6 kV 1,2/50 μs (IEC 60060-1)
Voltage swell testing	4 kV 1,2/50 μs (IEC 61000-4-5)	4 kV 1,2/50 μs (IEC 61000-4-5)	4 kV 1,2/50 μs (IEC 61000-4-5)
Cable-based transients	4 kV (IEC 61000-4-4)	4 kV (IEC 61000-4-4)	4 kV (IEC 61000-4-4)
Immunity from interference from electromagnetic HF fields	80 MHz – 2 GHz (IEC 61000-4-6)	80 MHz – 2 GHz (IEC 61000-4-6)	80 MHz – 2 GHz (IEC 61000-4-6)
Immunity from interference from conducted interference	150 kHz – 80 MHz (IEC 61000-4-6)	150 kHz – 80 MHz (IEC 61000-4-6)	150 kHz – 80 MHz (IEC 61000-4-6)
Immunity from interference with harmonics	2 kHz – 150 kHz	2 kHz – 150 kHz	2 kHz – 150 kHz
High frequency emissions	EN 55022, Klasse B (CISPR22)	EN 55022, Klasse B (CISPR22)	EN 55022, Klasse B (CISPR22)
Electrostatic discharge	15 kV (IEC 61000-4-2)	15 kV (IEC 61000-4-2)	15 kV (IEC 61000-4-2)
Standards	IEC 62052-11, IEC 62053-21 class 1 & 2, IEC 62053-23 class 2, IEC 62054-21, GB/T 17215.211-2006, GB/T 17215.312-2008 class 1 & 2, GB 4208-2008, EN 50470-3 category A, B & C		
Mechanical			
Material	Polycarbonate in transparent front glass, top and bottom housing and terminal covering		
Dimensions	35 x 97 x 65 mm (B x H x T)	70 x 97 x 65 mm (B x H x T)	70 x 97 x 65 mm (B x H x T)
DIN modules	2	4	4

Remote read-out with a higher-level PC

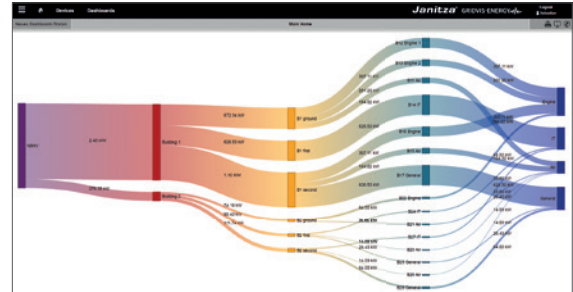


MID energy meter and measurement system

Measurable energy efficiency – full cost control



Tabular energy reports



Sankey diagrams



Dashboard Editor



UMG 604-PRO
Power quality analyser

Modbus



MID energy meters
1-phase or 3-phase



ProData® data logger
Gateway for energy meter

Pulse inputs



MID energy meters
1-phase or 3-phase

Janitza current transformer

The link between heavy current and digital technology

Janitza current transformer

The link between heavy current and digital technology

Current transformers are predominantly utilised in areas in which it is not possible to measure current directly. They convert almost any level of primary current into "bite-sized" secondary current. In doing so, the secondary output is .../1 or .../5A.

Janitza electronics® has a broad spectrum of different current transformers, be they plug-in current transformers, total current transformers, differential current transformers or core balance transformers. Low-power transformer with mA outputs and Rogowski coils including converter with 1 A output complete the product range.

Plug-in current transformer

Total current transformer

Core balance transformers

Three-phase current transformer

DIN rail current transformer

Calibratable billing current transformer*

Flexible current transformer

Split-core current transformers

Clear rating plate with technical details

Double insulated color coded leads

Special lugs for cable mounting with tytraps

Suitable for insulated conductor

Split-core

Build in spring for continuous pressure on the cores

Easy closing by click system

Easy mountable in narrow situations by removable hinge

*MID meters are often use for billing purposes. If this is the case, special calibratable billing current transformers are required.

GridVis® – network visualisation software



With GridVis®, Janitza offers powerful, user-friendly software to develop energy and power quality monitoring systems. The basic software version GridVis®-Basic, which is supplied together with the measuring devices, is used both to program and configure the Janitza measuring devices, as well as to read out, save, display, process and analyse the measurement data. GridVis® is a comprehensive and scalable software solution for energy suppliers, industrial applications, facility management, the building market and infrastructure projects. GridVis® provides technicians and managers with the required data to identify potential energy savings, reduce energy costs, avoid production shut-downs and optimise utilisation of production resources.

- Intuitive operation
- Configuration of the measurement system and the UMG measurement devices
- Certified ISO 50001 EnMS software
- Automatic or manual readout of measurement data
- Graphical illustration of online and historical measurement data
- Comprehensive alarm management
- User management
- Generic Modbus devices, virtual meters
- Graphic user interface (topological view) for visualising real-time data and messages

- Minimum, average and maximum values can be displayed in a graph
 - Statistical evaluation of the measured data
 - Comprehensive export functions (e.g. Excel)
 - Reports for energy usage and power quality (EN 50160, IEEE 519, EN 61000-2-4) manual or time-controlled with individual schedule
 - Saving data in a central database including database management (e.g. MySQL / MS SQL / Derby / Janitza DB)
 - Open system architecture and scalability
- Various characteristics depend on the version

3in1

- Energy management (per DIN EN ISO 50001)
- Power quality monitoring and analysis
- Residual current monitoring (RCM)

Janitza®

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The current brochure is always available for you under www.janitza.com