

HIGH  
AVAILABILITY  
WITH TRANSPARENT  
ENERGY DATA



# DATA CENTERS

Industry brief

# ENERGY DATA ACQUISITION IN DATA CENTERS

Energy management in a data center must be able to do more than just record meter readings. Stringent requirements for energy efficiency, safety, and high availability require a comprehensive overview of the energy supply.



## PROACTIVELY MONITOR

By detecting voltage events promptly, the damage and impairments resulting from them can be avoided. Companies are also directed to monitor their power quality through specifications such as EN 50160, EN 61000-2-4, IEEE 519, and ITIC (CBEMA).

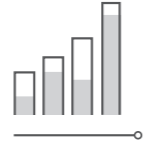
- Monitor high availability
- Provide evidence of power quality
- Measure redundancies
- Avoid shutdowns



## MONITOR FIRE PROTECTION AND EMC

The functionality of TN-S systems can be monitored and logged using a comprehensive residual current monitoring system. Fires and failures can be detected and prevented before they occur.

- Monitor residual currents
- Quickly report on RCM
- Avoid shutdowns



## IMPROVE ENERGY EFFICIENCY

The efficiency of energy usage over a certain period of time is given by the PUE value (key performance indicator for the energy used). Calculation of the PUE requires the recording and documentation of  $E_{CC}$  and  $E_{IT}$  over a 12-month period.

- PUE according to 50600-4-2
- Show losses
- Calculate utilization
- Evaluate key performance indicators and prepare forecasts
- Perform benchmarks

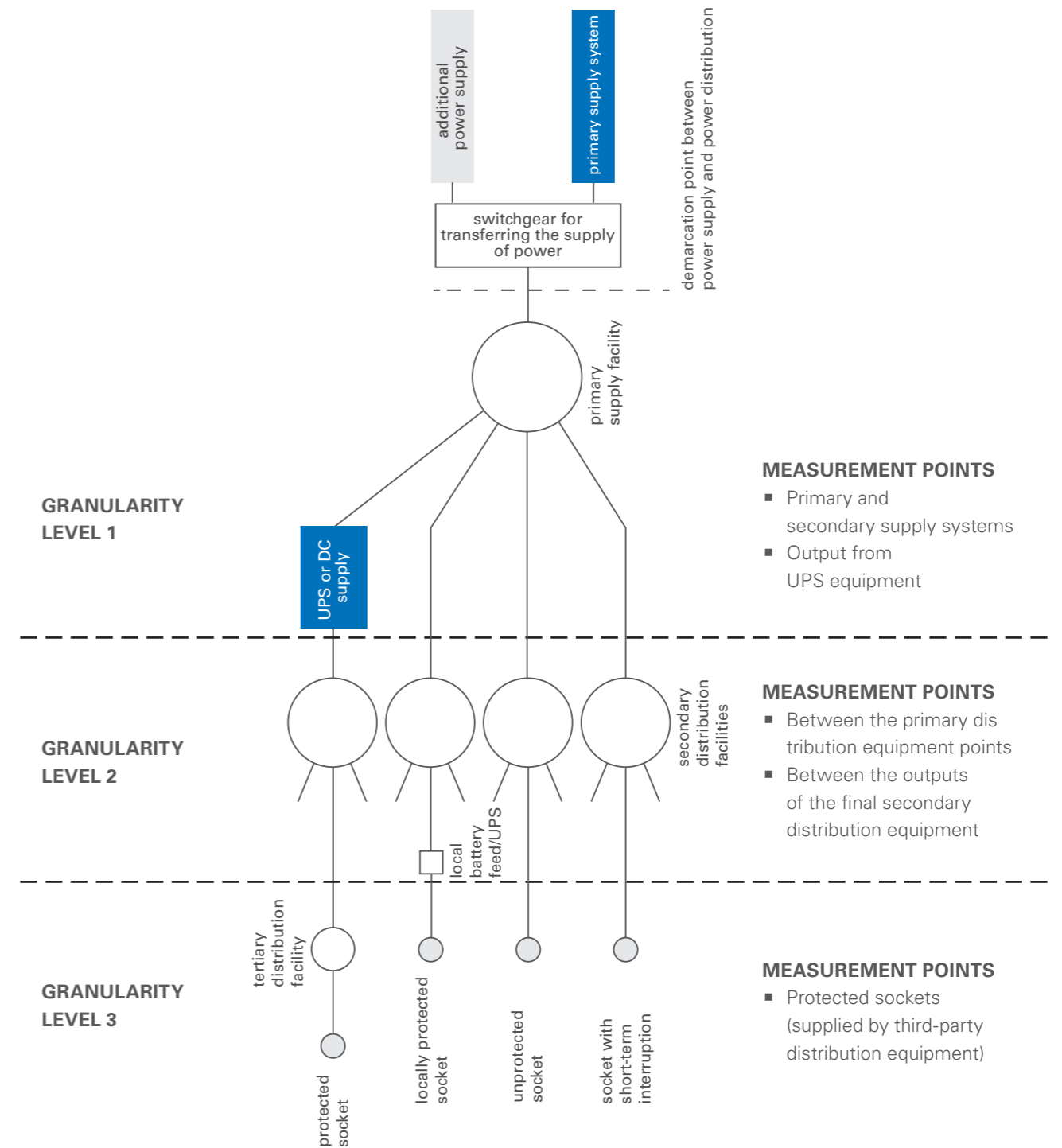


## MANAGE COST CENTERS

In colocation data centers, cost centers must be established and their energy metering values must be provided on a monthly basis. The MID-certified measurement of energy consumption per room or rack acts as the basis for recording energy costs.

- Record and bill racks or rental areas
- Allocate to customers and cost centers

# HOLISTIC ENERGY TRANSPARENCY WITH JANITZA MEASUREMENT TECHNOLOGY



## MEASUREMENT TECHNOLOGY REQUIREMENTS

### The right measurement technology at every point

To ensure optimal energy efficiency and meet legal requirements requires that the right measurement technology be used in the right place. Compliance with norms must be observed as it is already prescribed in the relevant norms on where and how measurements should take place.

Janitza offers modular system solutions to realize the requirements of an energy management system according to DIN EN ISO 50001 as well as energy efficiency enablement according to DIN EN 50600-2-2:2014-09; VDE 0801-600-2-2:2014-09.

### SECONDARY DISTRIBUTOR BUSBAR SYSTEMS

#### Busbars

- With outlet boxes for final circuits to the rack
- MID+- and RCM measurement

### SERVERS

#### IT final circuits for protected sockets

- Power supply measurements, e.g. with iPDUs

### CONTROL ROOM

#### Monitoring total data center energy consumption

- Merging all parameters for automated creation of reports and verifications
- Alarms

### TRANSFORMERS/ MAIN SUPPLY

#### Primary supply system

- An important measurement point as a basis for  $E_{cc}$  and detection of anomalies from the public distribution grid
- EN 61000-2-4 Class 2/ minimum EN 50160
- Utilization and redundancies

### SECONDARY DISTRIBUTOR

#### Sub-distributors for final circuits to the rack

- Measurement of the total current from the secondary distributor and final circuits
- Permanent monitoring of residual currents in accordance with EN 50600-2-2019
- MID+- and RCM measurement

### COOLING SYSTEMS

#### Temperature regulation

- Heat dissipation or inflow of cooled air
- Important measurement point for energy, climate and CER

### UPS

#### Secondary supply system

- Important measurement point for relevant energy supplied to  $E_{IT}$  as well as to evaluate the high availability of electricity.
- Power quality must correspond to EN 61000-2-4 Class 1
- Utilization and redundancies

### GENERATORS

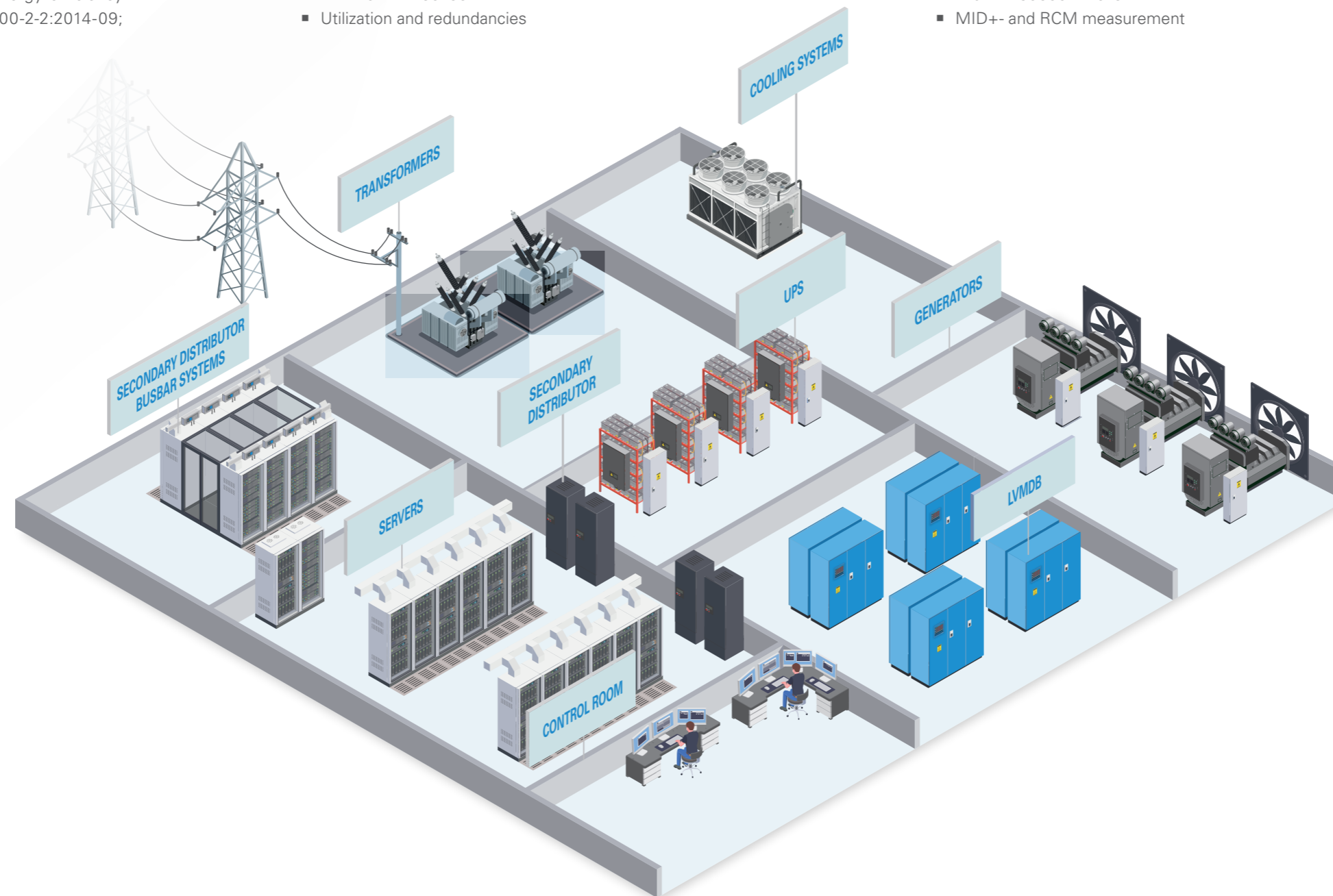
#### Secondary supply system

- Important measurement point for additional energy for  $E_{cc}$  and for detection of possible anomalies during operation of emergency power systems
- EN 61000-2-4 Class 2/ minimum EN 50160

### LVMDB

#### Primary distributor set-up

- Main distributor for consumers within the infrastructure, e.g. refrigeration, UPS port, other consumers
- EN 61000-2-4 Class 2
- Utilization and redundancies





## JANITZA MEASUREMENT TECHNOLOGY IN DATA CENTERS\*



Part number: 5217011 95 ... 240 V AC / 80 ... 300 V DC\*\*  
5217003 48 ... 110 V AC / 24 ... 150 V DC\*\*

### UMG 512-PRO CLASS A POWER QUALITY ANALYZER

- Granularity level 1
- Holistic appraisal of power quality, energy consumption and total residual current
- Class A certified according to IEC 61000-4-30 and EN 50160/61000-2-4
- Recording of operating and residual currents
- Dynamic CGP limit values



Part number: 5231003 external 24 V DC, PELV\*\*

### UMG 801 EXPANDABLE MODULAR NETWORK ANALYZER

- Granularity level 2–3
- Expandable with various modules up to 92 current measurement channels or 144 digital inputs
- Evaluate power quality in accordance with EN 61000-2-4 Class 1
- Detect faults (e.g. switching anomalies from 20 µs upwards)
- Simultaneous measurement of two current paths with residual current and neutral conductor monitoring



Part number: 5232004 (UL) 90 ... 277 V AC/90 ... 250 V DC\*\*

### UMG 96-PA-MID+ MODULARLY EXPANDABLE NETWORK ANALYZER

- Granularity level 2
- MID measurement: Tamper-proof and legally valid recording of energy data
- Record and bill racks or rental areas and allocate them to cost centers
- RCM limit values can be optimized for each use case
- Ethernet port and thermistor input



Part number: 1401625 90 ... 276 V AC / DC\*\*

### UMG 20CM MULTI-CHANNEL OPERATING CURRENT AND RESIDUAL CURRENT MONITORING DEVICE

- Granularity level 3
- 20 current measuring channels with 1 LED for each current channel
- Expandable to up to 96 current measuring channels with modules
- 6 channels per module with integrated current transformer
- Analysis of the harmonic residual current components
- RCM diagnostics variables

## GridVis® – POWER GRID MONITORING SOFTWARE

Energy monitoring software for data centers has a wide range of tasks and is not just restricted to energy efficiency and energy metering. High availability is of the utmost importance in data centers, as each failure costs a lot of money. High availability stands and falls with a reliable power supply and a grid compatibility level which must be maintained. Utilization levels and extreme values of many parameters must be monitored continuously in order to maintain consistent high availability.

GridVis® power grid monitoring software provides tools for all basic key tasks and supports operations with customized functions that are active during business operations. System solutions from Janitza are certified in accordance with DIN EN ISO 50001 and satisfy all requirements of DIN EN 50600-2-2/4-2 for ensuring energy efficiency and power distribution.

### ADVANTAGES

#### SAFETY

RCM report, alarm management, Limit value monitoring

#### ENERGY MANAGEMENT

in accordance with EN 50001, GridVis® KPIs

#### CONNECTIVITY

OPC UA, CSV, REST API

#### VISUALIZATION & DOCUMENTATION

Report editor, dashboards

#### NETWORK ANALYSIS & EVALUATION

Event browser, load and High availability report

#### AUTOMATION

Reporting, data import and export, Alarms



\*These products represent only a selection. For a full overview of measurement technology for data centers please visit [www.janitza.com](http://www.janitza.com) or get in touch with us  
\*\*Supply voltage

## COMPANY PORTRAIT

Janitza electronics GmbH is a German company that manufactures energy measurement technology to improve energy efficiency and ensure security of supply.

We provide solutions for various branches of industry that are tailored to customer requirements. Janitza makes the flow of energy transparent – for the responsible use of energy resources.

## OUR PORTFOLIO

Our portfolio consists of innovative measurement devices and the perfectly matched GridVis® power grid monitoring software – complemented by high-quality components.

## SOLUTION PROVIDER

Janitza customers worldwide enjoy solutions for energy data management, power quality monitoring, load management and residual current monitoring in a system environment – Made in Germany.

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Further information about measurement  
technology for data centers

