



Residual Current, Operating Current and Output Monitoring with the *WebVisEC*® Monitoring System

System Outline

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avoiding failures



preventing interruptions to production



protecting critical zones



securing traffic flow

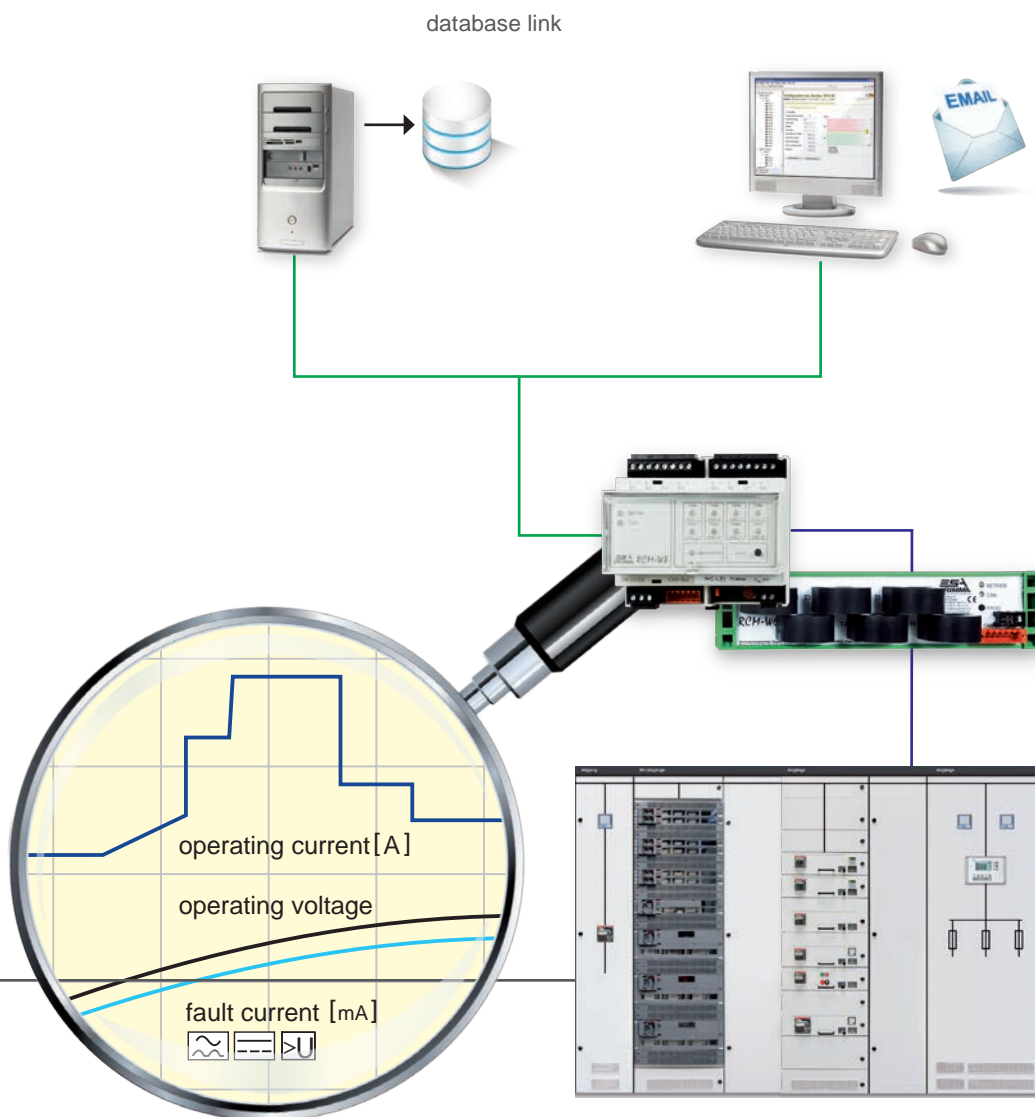


monitoring vital equipment



Detecting the values for
current for the energy
management system (EnMS)

Monitoring and signalling
regardless of location



Multi-channel residual current, operating current and output
monitoring in one system

Power supply without failures...

In many fields and areas of application, this requirement is a key function for the reliability and economic success of the company. Beyond this, the system used should be easy to handle, automatically point out problems while offering service technicians valuable assistance

...by monitoring all current,
voltage and output

Signalling before there are failures

The decisive criterion is identifying faults that do occur on time – meaning before fuses or residual-current devices (RCD) switch off the systems or output circuits. Creeping boosts in differential currents triggered by insulation faults or excessively high operating currents on system components or consumers have to be monitored, analysed and signalled before failures occur.

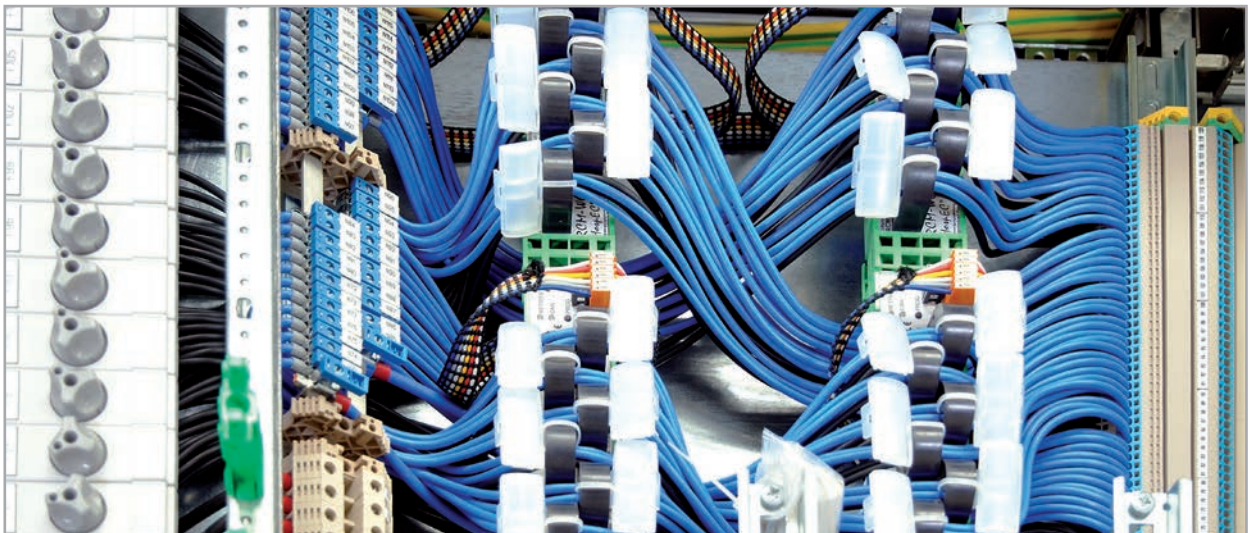
Sensory systems for energy management

Our system is excellent for detecting operating currents with a reasonable amount of effort even from a larger number of consumers (as a reflection of energy consumption) and passing them onto databases. Energy streamlining and savings always spell out a high level of economic savings regardless of any future legal requirements and options for low-priced energy import. DIN EN 16001:2009 describes energy detection as one of the prerequisites of energy management systems. And the greater the information density, the greater the potential for savings you can pinpoint.

Detecting operating currents and output...

and passing them onto the databases managed by the customer supplies the basis for energy streamlining analysis and energy management systems. And depending upon the size of the customer system, it has to be possible to automatically detect and archive operating currents. Meanwhile, the system should stay simple and manageable for the operator.

...archiving in databases



Differenzstrom-Überwachungsgeräte **RCM-W6** in der Verteilung eines Datacenters (Aufnahme während der Montage)

Our solution

You can use our residual current, operating current and output monitoring system to prevent faults in the power supplies with an early warning system. Beyond this, it boosts system and fire protection while readings and alarms can be passed onto databases. Detecting operating current forms the basis for assessing energy management systems because multi-channel monitoring equipment (with connectable or built-in current transformers) are mounted in distribution boards on standardised top-hat rails. They are used in TN and TT systems for operating current measurement and even in IT systems.

Using the current transformers in such applications as:

- in feeds
- in outgoing circuits (consumers and systems)
- with PEN and N conductors (for stray currents in TN-S systems)
- at central earthable points (ZEP)

You can conveniently parameter the monitoring equipment where the current readings can be shown in the form of a progression graph. Furthermore, there are various alarm and signalling options if there is a fault – right down to remote monitoring and notification by email

How you benefit

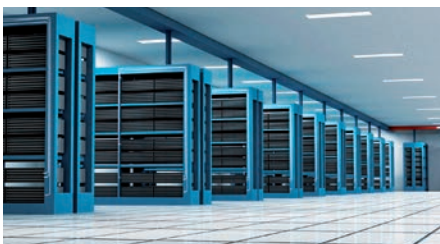
- localising faults without switching the system off
- early warning of plant faults
- avoiding expensive or hazardous system breakdowns which boost your plant's availability
- lower expenditures for troubleshooting and repair by localising specific faulty outgoing circuits or consumers
- conductors overloads and critical fault currents are identified at an early point in time which spells out greater safety against fires

- parameterising your plant when new makes it possible to identify all changes in the plant status starting from commissioning.
- this meets the safety criterion for RCM fault current monitoring in data centres
- convenient monitoring and parameterising solutions with web browsers make it easy to handle – the *WebVisEC®* monitoring system
- linking databases administered by the customer
- detecting the operating current of all relevant consumers as a basis for an energy management system (EnMS)

Where it can be used

- data centres/office buildings
- power stations
- traffic systems
- media technology equipment

- industrial systems
- railway and road tunnels
- areas used for medical sciences
- energy-intensive industry with potential for streamlining



The Principle

Residual Current, Operating Current and Output Monitoring

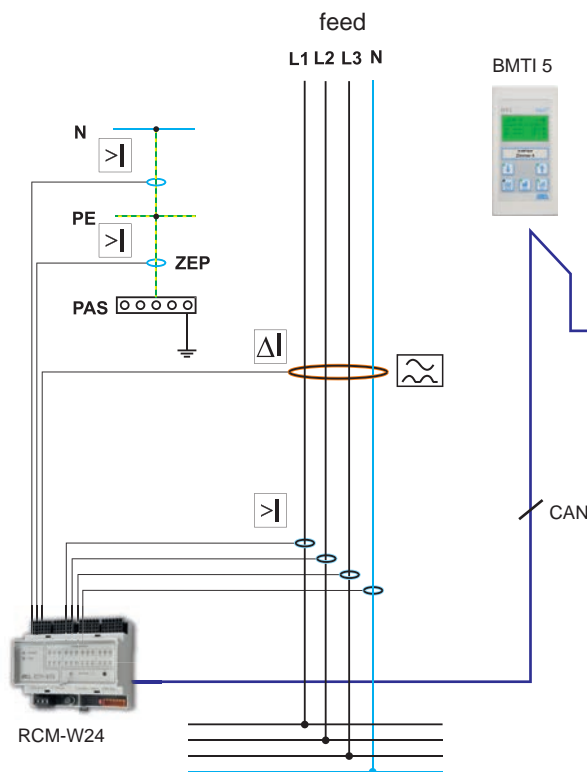
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You can use the **BMTI 5** display and parameterising equipment to display channel readings on current monitoring equipment. If there are warnings or fault signals, it automatically overlays the display of readings and alarms are displayed. Beyond this, the appropriate alarm texts can be projected as needed and you can also have an acoustic alarm. Furthermore, you can use the **BMTI 5** to parameterise the residual current and operating current monitoring equipment. They only have to be connected to the CAN bus and pre-parameterised

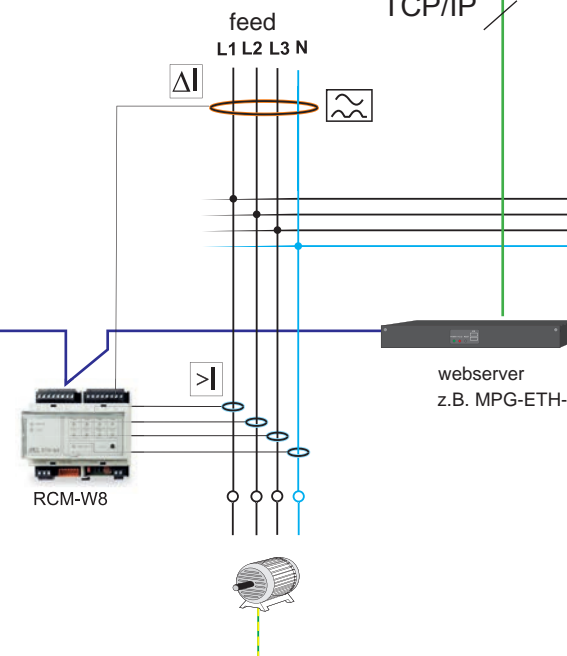
Energy management systems (EnMS)

This system is excellent as the basis for analysing an energy management system (EnMS) if all relevant operating currents are detected and the readings are passed onto the databases administered by the customer.

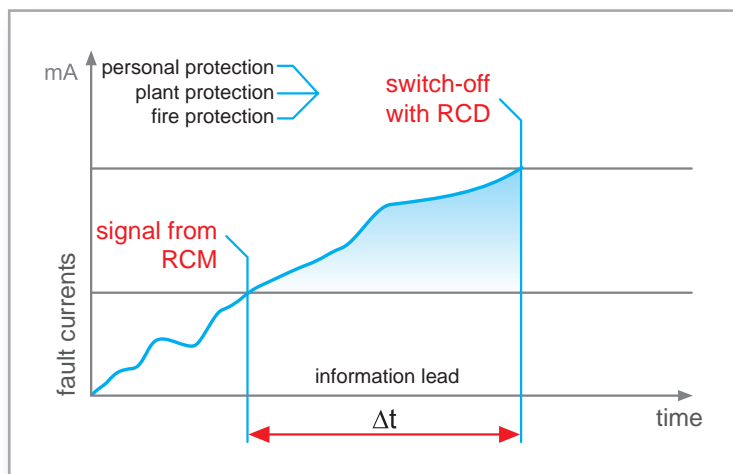
main distribution switchboard



sub-distribution board

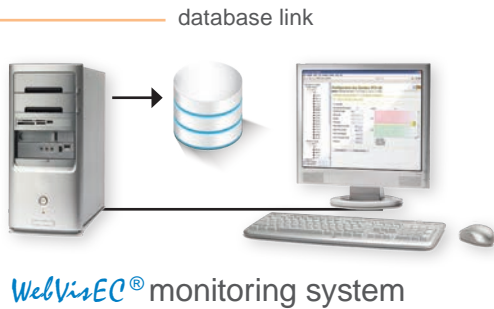


- P** performance
- U** voltage
- ΔI** differential current
- $>I$** operating current

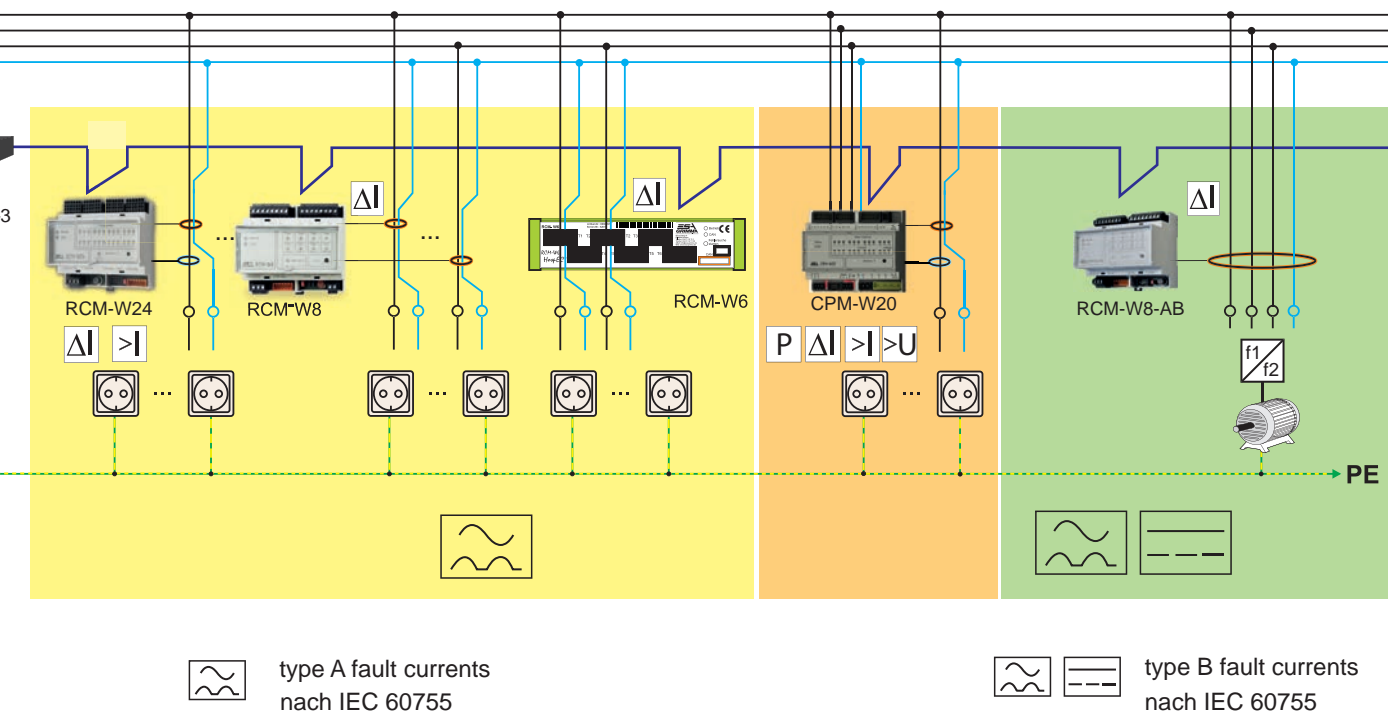


principal schematics of residual current, operating current monitoring

signal before switching off – one objective of residual current monitoring



The **WebVisEC®** monitoring system is the most convenient solution for monitoring, documenting and parameterising. The data stored in the monitoring equipment (such as location information and monitored operational equipment), their readings and exceeding parameterised threshold values are provided by webservers. Furthermore, the readings from each of the channels are shown in progression graphs while operational and fault messages can be automatically sent to any receiver by email. Finally, there is remote monitoring of the entire system via internet including linking databases



The 8/20/24 channels of the **RCM-W8/-W24** monitoring equipment can be used as needed for residual current and operating current monitoring using the appropriate current transformers. This detects the fault currents flowing off towards the earth or other paths with differential current monitoring.

RCM-W8/-W24: Fault currents in conformity with IEC 60755 type A

RCM-W8-AB: Fault currents in conformity with IEC 60755 type B (no operating current monitoring).

The **CPM-W20** monitoring unit not only has residual current and operating current monitoring from the voltage monitoring channels, but also the option of output analysis and enumeration. The model **RCM-W6** monitoring equipment only monitors differential currents with its 6 integrated current transformers. It detects the fault currents flowing towards earth or other paths.

RCM-W6: fault currents in conformity with type A IEC 60755.



RCM-W6 differential current device



*differential current monitoring device
RCM-W8-AB (a.c. – d.c.)*



RCM-W8 residual and operating current monitoring device



RCM-W24 residual and operating current monitoring device



CPM-W20 energy monitoring and differential current monitoring device



Beispiel für Strommesswandler der Serie DW

Product description

- RCM-W6 series: differential current analysis with 6 built-in current transformers
- RCM-W8/-W24 series: residual current or operating current analysis with connectable current transformers, 8 or 24 measuring channels that can be used at your choice for residual current or operating current analysis (RCM-W8-AB only differential current analysis).
- CPM-W20 series: residual current, operating current and output analysis with connectable current transformers
- used in earthed power supply systems (TN/TT systems) and also operating current analysis in the IT system
- detecting and processing readings in parallel (not a multiplex process)
- true root-mean-square value measuring (true RMS)
- analysing fault currents (detected as differential currents) in conformity with IEC 60755 type A and B (regardless of equipment; refer to the technical data table)
- convenient parameterising options for each channel such as:
 - readings from the upper and lower warning thresholds (leaving the normal zone = window function with operating current analysis)
 - readings from the upper and lower response threshold (reaching the critical zone)
 - Time delay warning and response messages (if it exceeds or falls below the thresholds), has the same effect on all channels
 - Adjustable hysteresis zone for the response threshold

► Refer to page 14 technical data

Product description

The **BMTI 5** display and parameterising unit has the purpose of showing readings and plain-text displays of all ESA field bus units and signals from outside equipment. Furthermore, it makes it possible to parameter the series RCM residual current and operating current monitoring equipment. It is just right for on-site display and can be mounted in places such as control cubicle doors.



BMTI 5 display and parameterising

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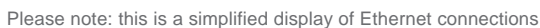
► Refer to page 17 technical data

The **WebVis-EC** monitoring system is a web-based solution that offers the widest possible range for parameterising monitoring equipment and displaying readings right down to progression graphs of readings. Furthermore, it can automatically send operating and fault messages to any receiver by email, it can remote monitor the entire system via internet and you can link up databases. The user interfaces of its WEB pages are custom-made for a simple and clearly structured view where all equipment assigned a project is always shown in a tree structure (in the Explorer zone). Finally, other designations (such as installation locations, plain-text for monitored operational equipment or renaming equipment, i.e. operational equipment designation) are available for fast and user-friendly organisation.



WebVis-EC web-based solution – monitoring system

- Refer to page 12 for **WebVis-EC** system outline
- Refer to page 17 technical data

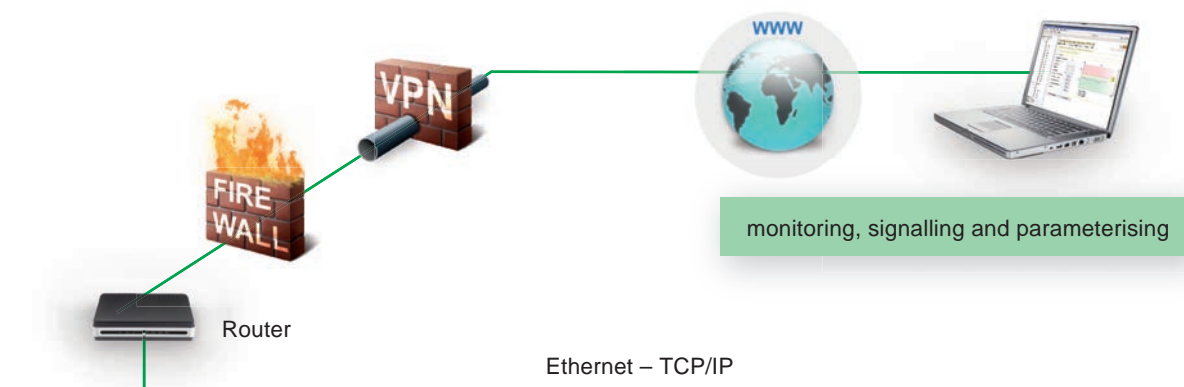


principal schematics of the *WebVisEC*[®] monitoring system

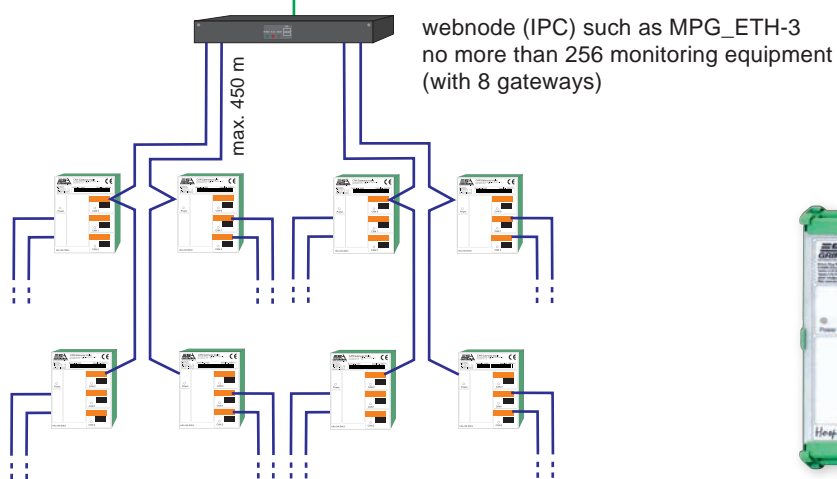
Agenda-Setting Benefits

The principle of our design throughout is state-of-the-art: distributed intelligence How do you benefit?

First of all, it keeps all information you need to set up your websites (channels designations, parameterising and other data) in the monitoring equipment. Furthermore, the web servers automatically scan the connected devices when the user requests it. This principle simplifies extending systems and changing devices immensely. That means that the system can be expanded very easily so that it stays scalable regardless of its dimension – in other words, easy and clearly structured. Finally, the normal browsers such as Internet Explorer, Opera or Mozilla Firefox are enough for showing the websites and there are no special requirements made of the hardware.



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no more than 2 CAN gateways
triple per CAN bus segment

The gateways of the CAN type gateways triple are used for connecting 2 bus segments each and therefore boost the maximum number of monitoring equipment on one webserver

You can link it up to the central instrumentation & control for example with BACnet® (IP) or via Gateways with Modbus® (TCP).

The security mechanisms already applied on the user level for the network are added for the monitoring system to be password-protected for authorised access.

The system is perfect as basis for analysing an energy management system (EnMS) when all relevant operating currents are detected and the readings are passed onto the databases administered by the customer.

Technical Data for the Monitoring Equipment




Residual Current, Operating Current and Output Monitoring



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	RCM-W6	RCM-W24
measuring channels / analysis		
number of measuring channels I/U	6 / 0	24 / 0
maximum number of measuring channels per CAN bus segment	96	128
maximum number of measuring channels with the <i>WebVis-EC</i> ® monitoring system (web-based solution)	unlimited	unlimited
parallel readings and processing analysis, true measuring the root-mean-square value (True RMS)	✓	✓
analysis excluding the differential currents	✓	-
analysis of residual currents and operating currents (any channels can be used) / output	- / -	✓ / -
differential current type in conformity with IEC 60755		
analysis range for differential current (rated response differential current $I_{\Delta n}$)	5...1000 mA	5...1000 mA
analysis range for operating current (depending upon the transformer model)	-	1...6000 A
instrument transformer		
built into the unit	✓	-
can be connected to the unit (externally)	-	✓
rated voltage (based on the network configuration) / measuring-circuit voltage	AC 20...720 V / -	AC 20...720 V / -
rated frequency (based on the network configuration)	50 / 60 Hz	50 / 60 Hz
rated current (based on the network configuration)	50 A	1...6000 A
standard differential current instrument transformer such as DW or DW-T series: x/1 (z.B.: 500/1, 600/1, 700/1)	-	✓
transformation ratio for all types: x/1 or existing/100 mentioned above (such as...) xx/1 bzw. xx/100 mA	-	✓
parameterisable readings per channel as needed		
upper and lower warning threshold (leaving the normal zone = window function with operating current analysis)	✓	✓
upper and lower response threshold (reaching the critical zone)	✓	✓
hysteresis for the response threshold	✓	✓
time delay for alarms if it exceeds or falls below the thresholds (has the same impact on all channels)	✓	✓
alarms / interfaces / parameterising		
signalling output with relay, 1 transformer (potential-free) / 2x open collector	- / -	✓ / -
display with an LED on the unit	✓	✓
external alarms via fieldbus (CAN) such as on the <i>BMTI S</i> , web-based through the webnode (TCP/IP) - <i>WebVis-EC</i> ® monitoring system	✓	✓
CAN / RS485 MODBUS communication interface	✓ / -	✓ / -
parameterising on the <i>BMTI S</i> display and parameterising equipment (via fieldbus CAN) or webbrowser - <i>WebVis-EC</i> ® monitoring system	✓	✓
non-volatile storage of all parameterising data in the unit (including location information, operational equipment index and plain-text data on the operational equipment to be monitored per channel)	✓	✓
voltage supply / dimensions / assembly / standards		
Us (PELV) supply voltage	24 V DC	24 V DC
power consumption	ca. 2,5 W	ca. 2,5 W
dimensions (H x W x D) in mm	46 x 190 x 60 (11 TE)	90 x 105 x 73 (6 TE)
mounted on a top-hat rail in conformity with DIN EN 60715	✓	✓
design in conformity with DIN EN 62020 (VDE 0663)	✓	✓



RCM-W8	CPM-W20	RCM-W8-AB
8 / 0	20 / 4	8 / 0
128	-	128
unlimited	unlimited	unlimited
✓	✓	✓
-	-	✓
✓ / -	✓ / ✓	- / -
		
5...1000 mA	5...1000 mA	5...1000 mA
1...6000 A	1...6000 A	-
-	-	-
✓	✓	✓
AC 20...720 V / -	AC 20...720 V / 480 V	AC 20...720 V / -
50 / 60 Hz	45 / 65 Hz	50 / 60 Hz
1...6000 A	1...6000 A	1...6000 A
✓	✓	✓
✓	✓	-
✓	✓	✓
✓	✓	✓
✓	✓	✓
✓ / -	- / ✓	✓ / -
✓	✓	✓
✓	✓	✓
✓ / -	✓ / ✓	✓ / -
✓	✓	✓
✓	✓	✓
24 V DC	90 ... 276 V AC und DC	24 V DC
ca. 2,5 W	ca. 2,5 W	ca. 2,5 W
90 x 105 x 73 (6 TE)	90 x 105 x 73 (6 TE)	90 x 105 x 73 (6 TE)
✓	✓	✓
✓	✓	✓

Standard differential current transformer – a benefit of our systems

All common (standard) types with the transformation ratio of x/1 are suited to connectable current transformers. That is crucial when retooling old systems if you can continue to use available transformers – also for any direct-current sensitive monitoring you may want. We recommend the DW or DW-T series differential current instrument transformer series (type A DW-T only for differential currents) for new equipment. When selecting current transformers, also remember not only the transformation ratio (refer to table) but also the geometric dimensions of the conductors to be monitored because some types call for an additional shunt to be installed. We would be glad to give you precise information and order data for your specific project.

Functionalities of the Monitoring and Parameterising Solutions

Residual Current, Operating Current and Output Monitoring

WebVistaEC® monitoring – the unlimited web-based solution

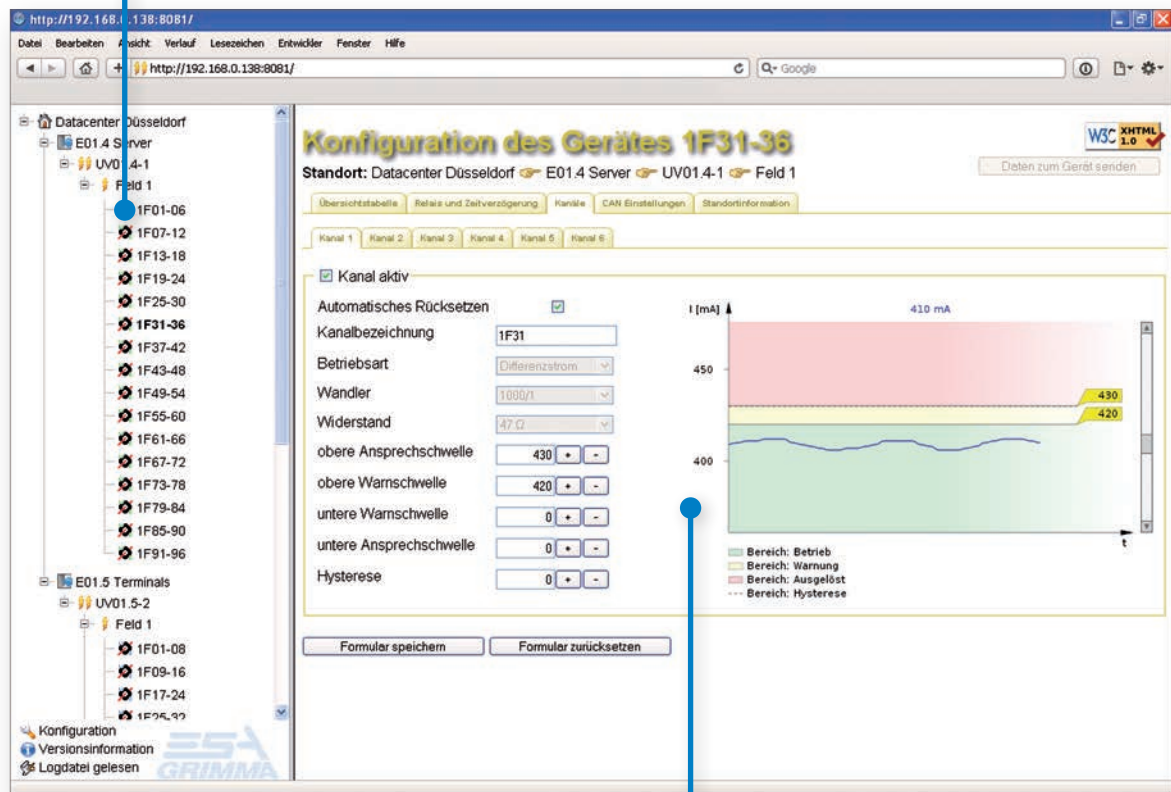
For every size unit – monitoring, parameterising and data analysis regardless of location

Explorer area

Automatic display of the system hierarchy with the monitoring equipment (systems and location designation)

Standardised plant index systems can also be shown such as a power station identification system (KKS) in conformity with the VGB directive B105 and B106

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Gerätespezifische Seiten – Detailansichten / Darstellungsart je nach Gerätetyp



Functionalities of the Monitoring and Parameterising Solutions (excerpt)



	BMTI 5	WebVisEC® monitoring (web-based solution)
Parameterising options of the RCM-xx series current monitoring equipment		
activating channels	✓	✓
adjusting the operating or differential current measurement depending upon the current transformer connected per channel	-	✓
adjusting the readings of the current transformer type with the appropriate shunt	-	✓
adjusting the hysteresis zone of the upper and lower response threshold for each channel	✓	✓
adjusting the upper and lower warning or response threshold per channel	✓	✓
adjusting the delay time for the response messages/warning messages/resetting delay period of the response or warning messages relay control when reaching the warning threshold/response threshold (centralised fault indication) if there is an equipment fault	✓	✓
adjusting the fault indication relay in accordance with the working or closed-circuit current principle	-	✓
changing the CAN address	✓	✓
creating and passing on data such as location information, operational equipment index and providing the plain-text for the monitored operational equipment per channel	-	✓
displays and alarms		
plain-text displays (BMTI 5: number of freely projectable texts)	no more than 1000	✓
maximum number of monitoring equipment to be mapped	16	unlimited
numerical display of readings	✓	✓
display of readings in a progression graphic	-	✓
graphic support for parameterising (progression graphic)	-	✓
any number of receivers can be notified by email	-	✓
communication		
system link	fieldbus CAN	fieldbus CAN / Ethernet
number of communication interfaces (CAN 2.0)	2	4 per webnode
additional protocols via Ethernet: BACnet® (IP) / Modbus® (TCP)	with 1 additional RS 485 module RS 485 module protocol	✓
special options		
automatically identifying the field equipment (RCM) and reading via webnodes	-	✓
database link	-	✓
showing standardised plant index systems (such as power station identification system - KKS)	-	✓
BACnet® link for such things as available control system	-	✓
dimensions/mounting		
dimensions (H x W x D) in mm	171 x 86 x 59	-
housing cut-out dimensions (H x W) in mm	161 x 76	-
mounted in hollow walls/control cubicle doors	✓	-

Evaluation of Specific Channels for Process Control

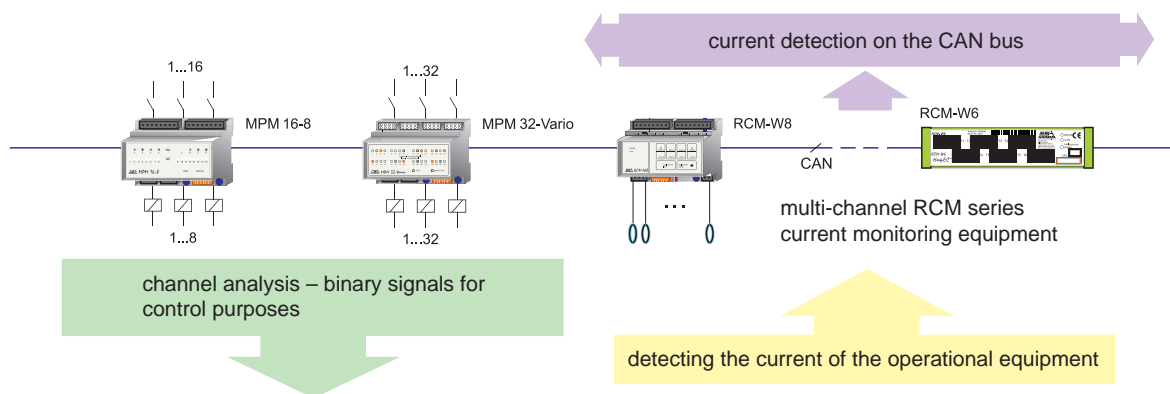
Residual Current, Operating Current and Output Monitoring

Signals are transmitted via secure standard fieldbus (CAN) and are also available for control purposes. For instance, you can switch up to the building services management system with BACnet®. Furthermore, you can link data to outside systems such as SPC or conventional control systems via **MPM** series (binary) digital input/output equipment or via gateways to protocols such as LON® or Modbus®.

The principle

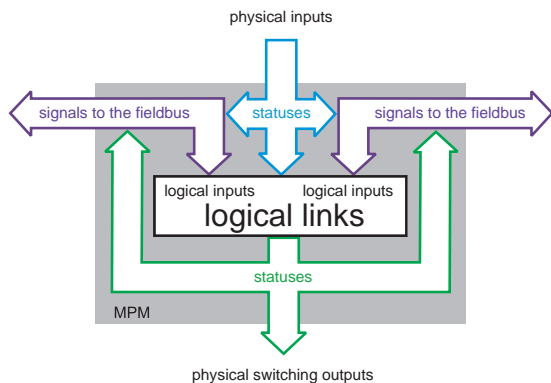
With its independent logic functions, our **MPM** series digital input/output equipment can provide your system with such things as limit violations (for any monitoring channel) as a binary signal for other control purposes. Whether a consumer is defective at zero amperes (0 A) of operating current or switched off is evaluated in a downstream logic, for example with the equipment of these series.

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Please note: the MPM series equipment does not minimise the maximum number of current monitoring units per CAN bus segment

MPM Series digital input/out equipment - channel binary signals for control purposes



simplified **MPM** 16-8 / 32-Vario principle

This equipment detects any digital signal with its physical inputs (potential-free or non-floating). It also detects logical inputs – they are signals on the fieldbus (CAN) that come from other fieldbus equipment such as warning or response messages from RCM series current monitoring equipment. All of these signals can be logically linked to one another and made available for analysis and control purposes at the physical (switching) outputs. They constantly transmit the status of the physical inputs/ outputs to the field bus and are available to the other devices there.

MPM series equipment – a brief description

- parameterisable input/output units with an independent logic function
- **MPM 16-8**: physical inputs and 8 physical outputs
- **MPM 32-Vario**: 32 physical inputs or outputs (parameterisable as needed)
- taking on and processing signals from the fieldbus
- free assignment of the input/output channels (operating/warning/fault messages)
- logical link of variables (physical inputs of the equipment and status messages from the fieldbus)
- 120 logical inputs can be processed (signals from the fieldbus)
- AND, OR, XOR, NOT logic operations and as many as 20 operations per logic formula 5 timer operants and reset output operants
- 32 time switch channels with built-in real-time clock (RTC)
- fault identification from other fieldbus participants (signs of life)



MPM 16-8



MPM 32-Vario

Foreword

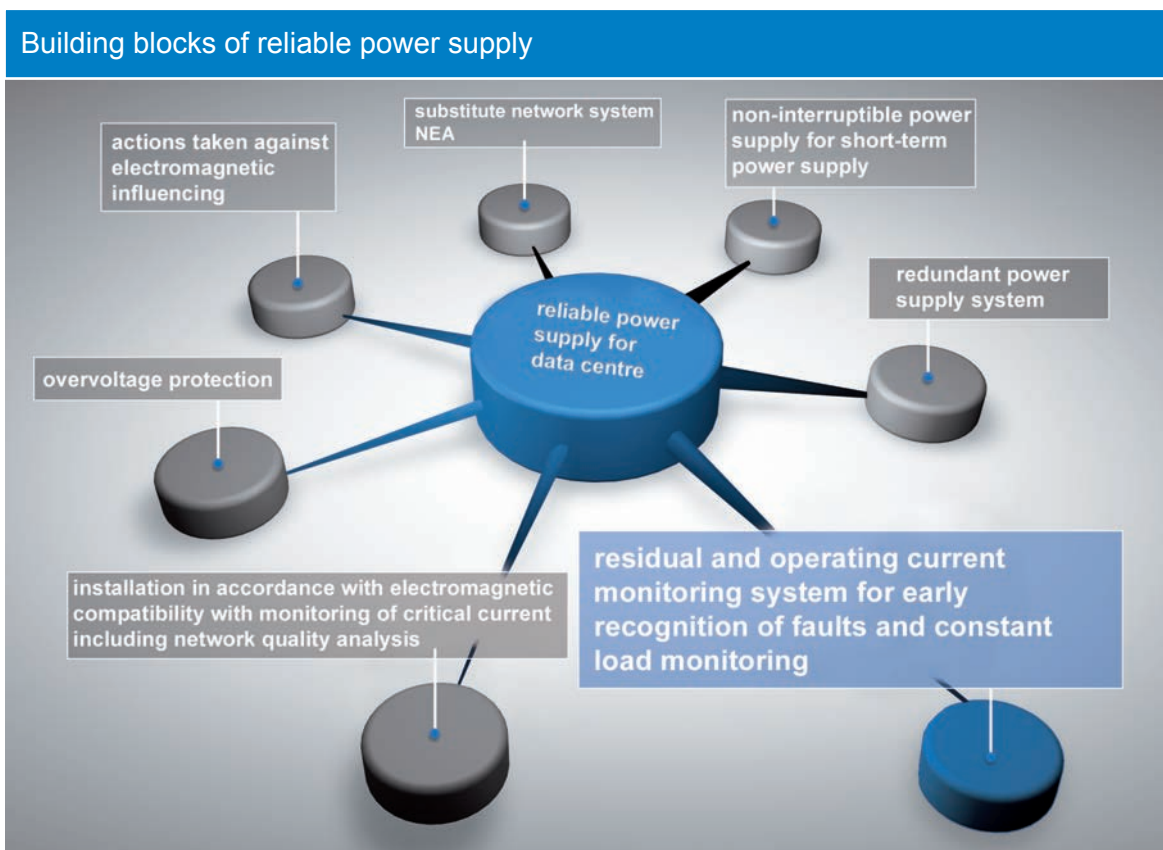
The residual current and operating current monitoring is only one building block, although an important one, among the series of secure power supply for data centres and other fail-safe critical systems. We see this specific project and example shown as a demonstration object in the classical meaning of the word. It shows you the solution for your problem by logical deduction.

If you see a general use for our systems, even though some of the functions you need aren't there, don't hesitate to get in contact with us. We can adapt our systems to your specific project or with add-on functions. The project described here (data centres from a large-scale German bank) constitutes the state of construction as per March.

Why monitor currents?

Availability places the greatest demands on data centres. If they break down, that could jeopardise the success of any company. Stable hardware operation calls for a fail-safe power supply for the computer components themselves, for air conditioning systems, the security and fire protection equipment right down to illumination.

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An important building block of a secure power supply is monitoring and analysing all of the currents. A residual current and operating current monitoring system is the only solution that makes sense for on-time warning – before failures occur.

The Federal Office for Information Security states the following in its High-Availability Compendium HV 1.2 (Bonn 2009, 11 Infrastructure, chapter 7.3.2, page 31):

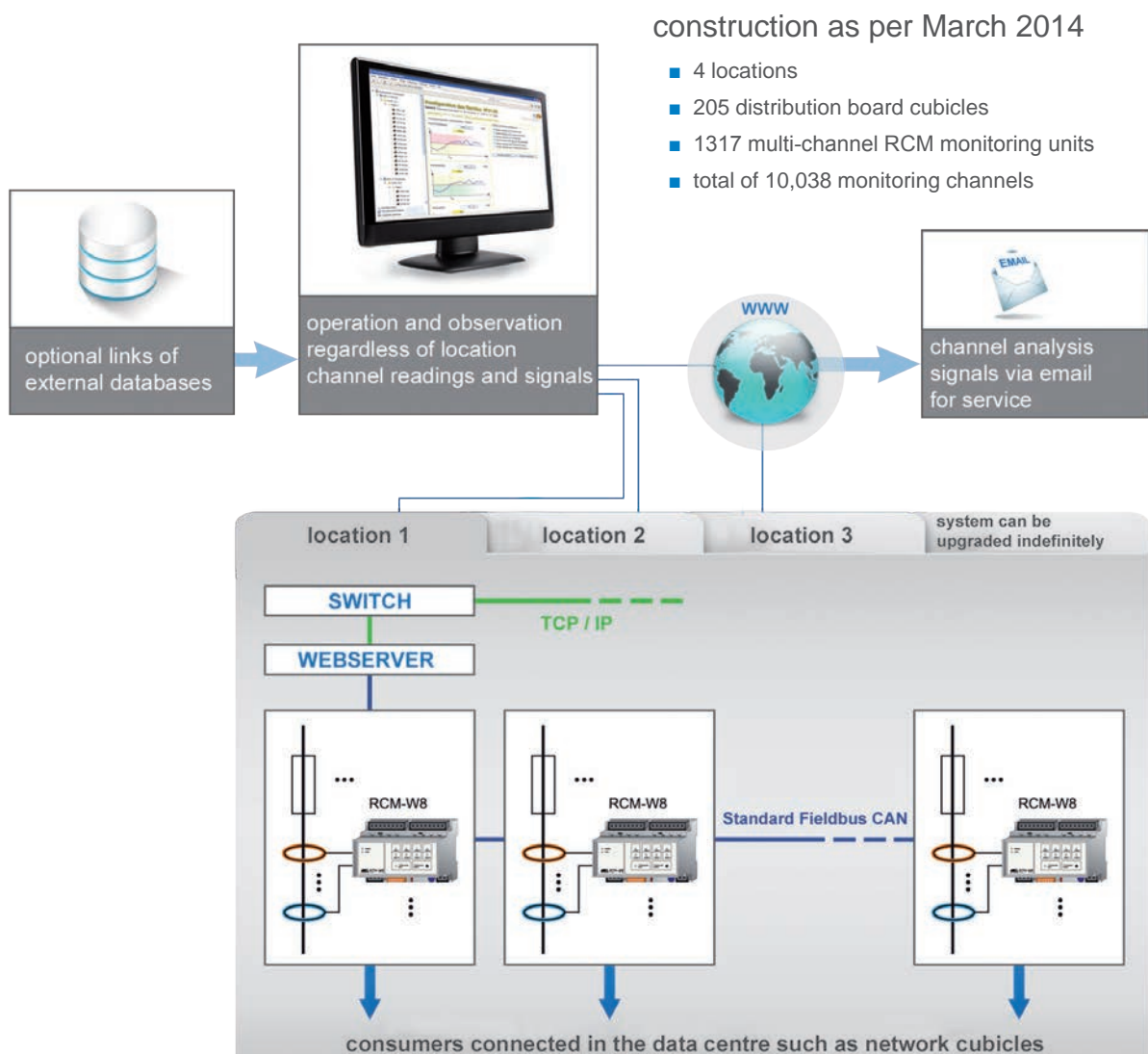
"This is why differential current monitoring by means of residual current monitors (RCM) is called for that works similar to RCD. However, they offer the benefit of not reacting immediately when reaching the nominal fault current. RCMs can observe the differential current over its temporal development and it can generate a warning depending upon individual settings that is supposed to be displayed at a central point as soon as a certain signalling fault current is reached."

The operator's requirements made of the system

- ! setting up a residual current and operating current monitoring systems for data centres at 4 locations in Germany
- ! installing standard distribution boards for building two redundant power supply systems with exact specifications for the set-up
- ! monitoring the power supply network for connected control cubicles (using rack servers with dual power supply units)
- ! simple options (can also be retrofitted) for operating current monitoring for outgoing circuits and consumers
- ! variable fittings of the network control cubicles (in terms of performance and number) with rack servers may not cause any overload or limiting load of back-up fuses multiple socket assemblies (complying with thermally non-critical areas in the tripping characteristic).
- ! immediate alarm when the limiting load of the usable facility socket outlets is reached (operating current monitoring)
- ! differential current monitoring in 1- and 3-phase final circuits of as much as 63 A targeting the warning before failures occur – identifying critical statuses and channel detection (per monitored circuit) for fast and targeted access
- ! other requirements made of differential current monitoring:
 - high quality resolution and true RMS root-mean-square-value measurement
 - smallest/highest response wave (response message) from 10 mA to 1 A
 - the option of prewarning per channel (warning message)

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System dimension



Requirements made of parameterising and the display solution:

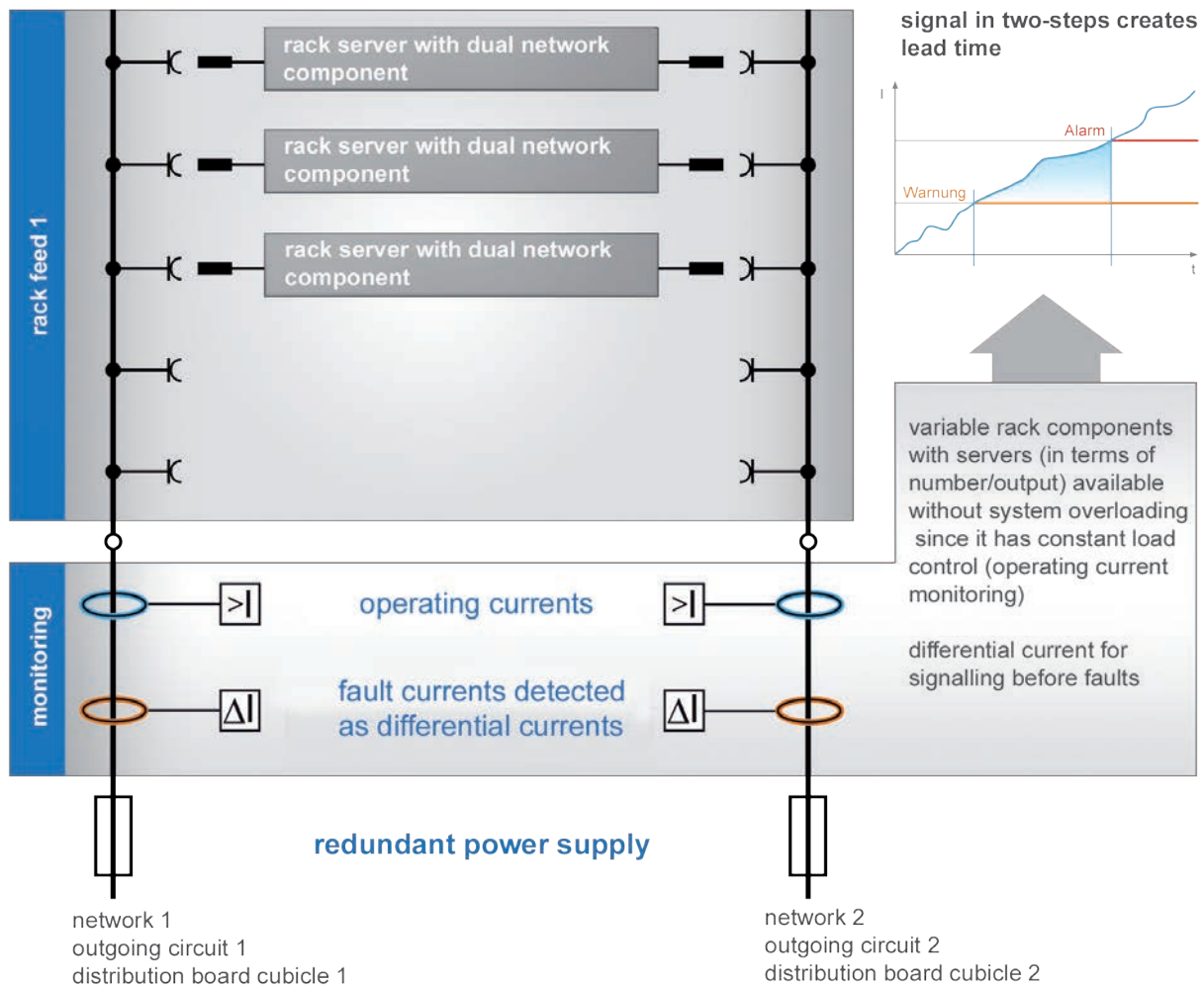
- ! central and independent display of all current readings and alarms
- ! central parameterising of all monitoring equipment
- ! no way to manipulate the monitoring equipment locally such as unauthorised change of the trigger threshold
- ! display of readings with reference to channels and alarms – this can be set off by email
- ! no special software to be installed – no special software to be installed

Something special for the web-based solution:

- ! fail-safe solution
- ! overall view of all webserver connected (in the systems) with just one operating interface
- ! easy-to-replace webserver and monitoring equipment
- ! fast updating of many data points
- ! no problems extending the system
- ! linking features to external databases administered by the customer (as an independent application for storing alarms and readings included in the customer's data security program)

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Monitoring network racks

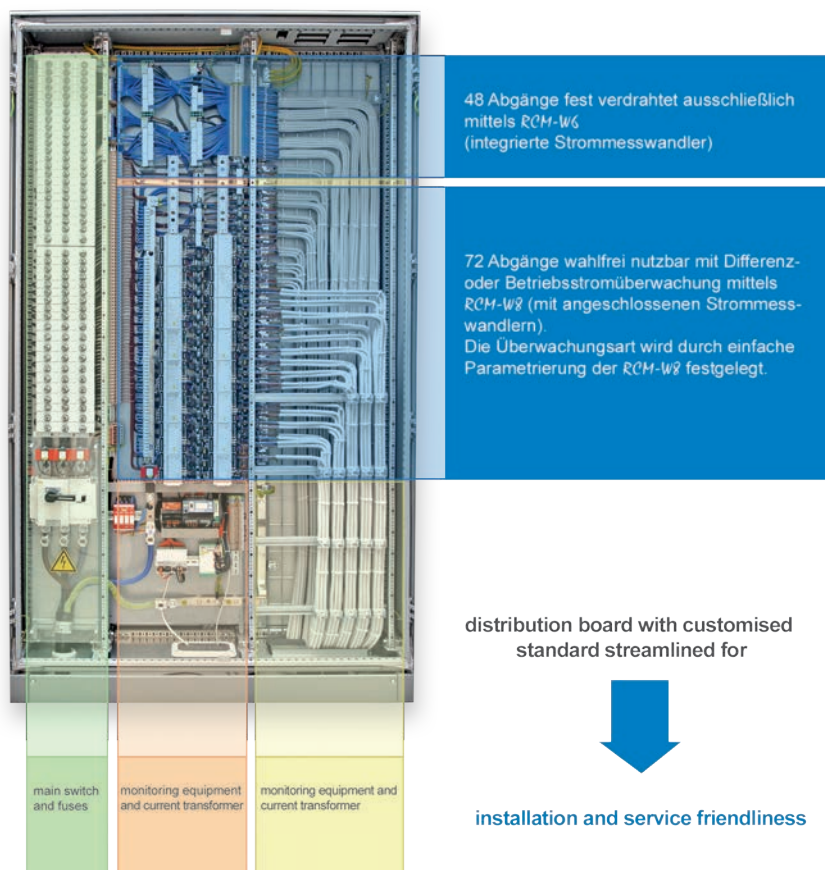


Technical implementation

- ✓ Distribution boards with a standardised design, a generous layout for the ancillary room and 2 redundant power supply systems with the same construction. Here is an example of our extension distribution cabinet:
 - 400 A switch disconnecter in the feed
 - UMG 605 net quality analyser with a JPC 35 touchpanel (from Janitza) with a separate link to the customer's internal monitoring system via Ethernet
 - overvoltage protector with trip monitoring
 - 120 DO2 fuses for as-needed utilisation of 1- or 3-phase outgoing consumer circuits and assigning fuse sizes, including
 - 48 fixed wiring outgoing circuits (16 A fused) exclusively with differential current monitoring by means of RCM-W6 (built-in current transformers)
 - 72 outgoing circuits (to 63 A) usable as needed with residual current or operating current monitoring by means of RCM-W8 (with connected current transformers). The customer can use all of the outgoing circuits as needed for residual current or operating current monitoring
 - 1 digital MPM 16-8 I/O unit on the CAN Bus (16 inputs/8 outputs)
- ✓ We have maintained this design at all locations, even if there are different numbers of outgoing circuits.
- ✓ MPG-ETH-3 webnodes (for linking up several distribution boards) mounted in a separate cubicle – building a decentralised webnode system in the field, meaning no limits to extension. The UNIX-based operating system provides the data online. The webnodes independently scan the connected units wherever the customer needs it.

This is based on the principle of distributed intelligence: all information such as needed for location (building/room/distribution board/field) or operational equipment (including in system parameterising) is kept in the field equipment – not in the webnode.

The construction principles for distribution boards



How you benefit

- installation- and service-friendly with the same construction principle as distribution boards
- permanent assignment of 48 outgoing circuits with differential current monitoring (with RCM-W6) meets the maximum connection requirements called for by customer's specs with 16 A back-up fuses
- You can assign the outgoing circuits any way you want with the free assignment option for residual current or operating current monitoring for 72 outgoing circuits. The type of monitoring is only defined by easy RCM-W8 monitoring equipment parameterising.
- digital MPM 16-8 I/O equipment is used for analysing centralised fault indicators for building services management system and can also be used for coupling and decoupling other signals (such as overvoltage protectors).
- the size of the distribution board connecting room allows easy initial and subsequent installation.
- You can have the required variation with the same usage while retaining the basic distribution board structure. You can even transfer this principle to other equipment with differing requirements.

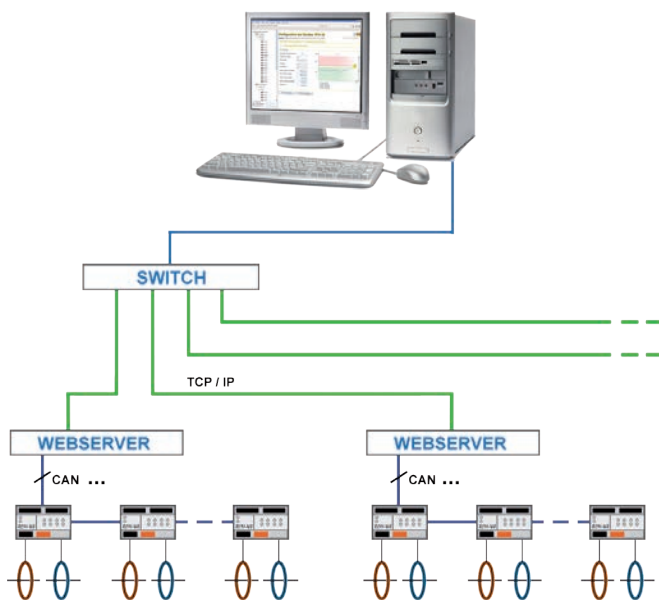
- Decentralised webnodes in the field make the system scalable. That spells out greater extension options while output can be retrofitted wherever needed.
- Extending or changing webnodes is uncomplicated since new servers scan in all connected field equipment with their information
- remote access with password-protected browser technology (standard internet browsers). One user interface for all monitored systems— regardless of location or spatial distances.

Secondary effects

- using operating current analysis for calculating the system's capacity utilisation (electrically)
- support for output-dependent adjustment of cooler efficiency for the system since the thermal output of the rack servers is proportional to the operating current.
- operating current analysis and passing the readings onto the customer's database as the essential condition for an energy management system (EnMS)

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Scalability as a crucial benefit to the system



Scalability as a crucial benefit to the system

That means that you can upscale the systems indefinitely. With increasing complexity, the structure remains clear and operation stays easy with the same user interface.

The principle of distributed intelligence

The webservers automatically scan the monitoring equipment (field equipment) required by the customer. That means that that upscaling or equipment replacement does not make manual configuration necessary. By the way, the field equipment retains the location-relevant information and parameterising data not the webserver.

Putting it all together

This monitoring system is a major contributor to boosting constant data centres availability. This is the reason why RCM monitoring systems have an increasing role to play in certifying IT interface in terms of the safe energy supply assessment criterion including auxiliary equipment for checking electrical systems in conformity with the relevant standards and directives such as VDE 0105-100, the VdS directives, BGV A3 and Betriebssicherheitsverordnung (German Industrial Safety Ordinance). What's more, the operating current analysis forms the basis for energy management systems (EnMS).

Our service for your equipment

If you have any questions or a problem
Or do you simply need some personal consultation?

We would be glad to help you fast and efficiently.

- specialised information and consultation
- consultation ahead of your investment decision
- planning or doing the technical groundwork for your specific project
- short-circuit and selectivity calculations
- service on workdays
- commissioning services
- official system acceptance with experts
- operating personnel training
- on-site training
- network and load analyses
- fault service

How you benefit

- one-step ahead of the others in the everyday project business
- optimum technical and economic design for the systems you are planning
- guaranteed system and operational safety
- guaranteeing a high level of availability
- advanced personal training for system functioning and operation

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We reserve ourselves the right to changes in terms of technical progress.
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