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## ► Technical System Catalogue Dynamic Rack Control



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# Dynamic Rack Control DRC



Dynamic Rack Control is an inventory system for data centres. It allows all 482.6 mm (19") components in the rack to be managed easily and clearly.

- Capacity management and visualisation of all built-in components
- Position logging of components to  $\frac{1}{3}$  U accuracy
- Storage of key information about the built-in device directly on the RFID tag (zero current)
- Data retrievable via Web browser, integration and automatic detection via SNMP
- Reliable RFID technology (13.56 MHz) to ISO 18000-3 (ISO 15693)

# Dynamic Rack Control DRC

## System overview

Dynamic Rack Control offers fully automated, continuously updated capacity monitoring of the IT racks installed in data centres. Manual updating of inventories is now a thing of the past.

The system comprises an RFID hardware solution, which may also be retrospectively integrated into a fully populated Rittal TS IT rack, and the DCIM software RiZone (V 3.6 and above), which provides superordinate database functions.

This enables comprehensive monitoring of the 482.6 mm (19") components installed in all racks, and selectively searches for individual hardware components.

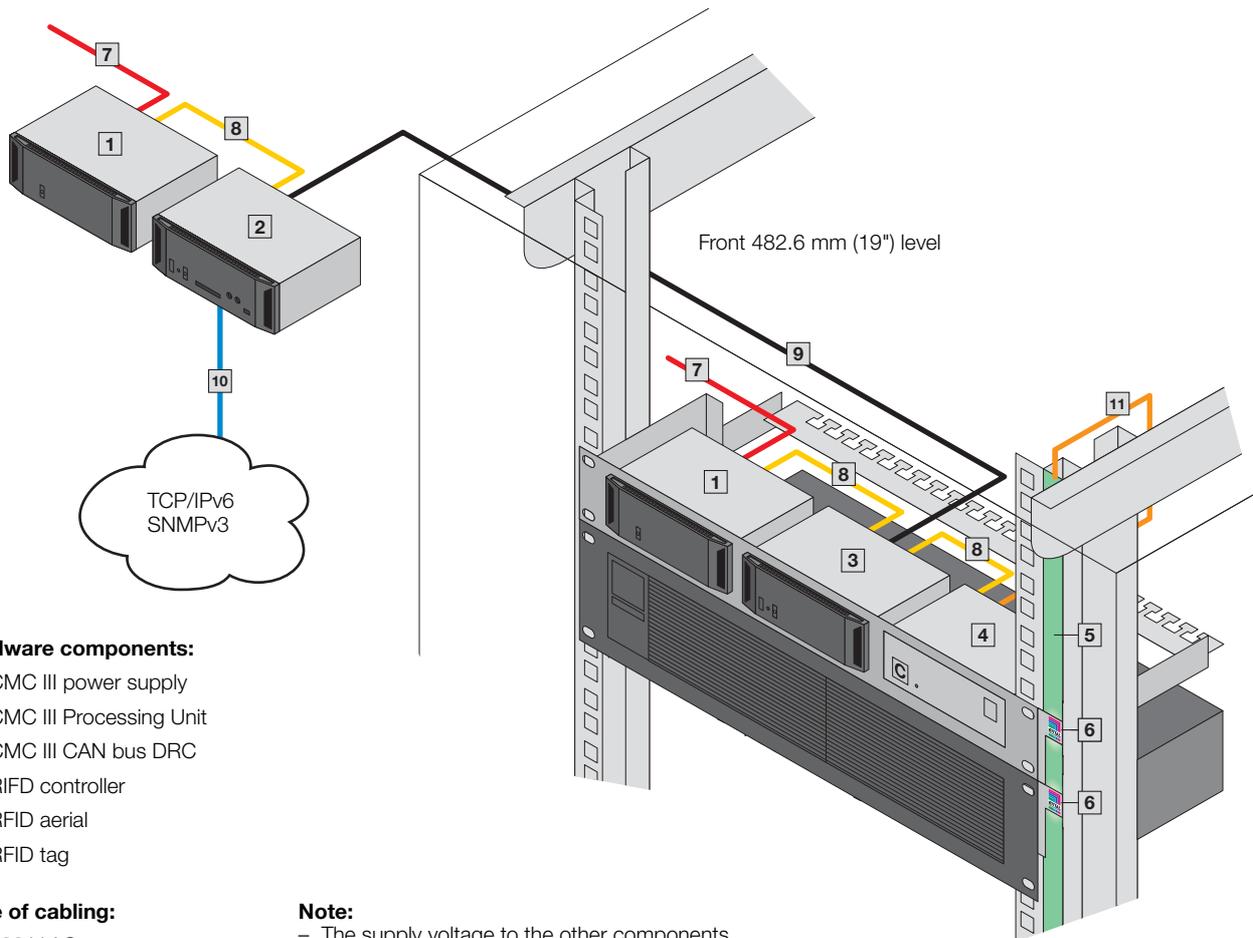
The principal task of any data centre infrastructure management software is to monitor the data centre's physical infrastructure. This generally entails monitoring the areas of power, cooling and security using appropriate sensors. An RFID extension to the enclosures also supports capacity management via the management software.

Capacity management provides automated answers to the following administrator questions:

- Which rack is the server installed in?
- Which height units (U) are used by the server?
- What is the specified output of the servers installed in the rack?
- What power reserves are still available?
- What cooling output is provided for the enclosure?
- Are the free height units and available cooling output sufficient for installing an additional server in the enclosure?

All these questions may be answered with the DCIM solution RiZone and the RFID-based Dynamic Rack Control (DRC).

## TS IT rack with DRC system



### Hardware components:

- 1 CMC III power supply
- 2 CMC III Processing Unit
- 3 CMC III CAN bus DRC
- 4 RFID controller
- 5 RFID aerial
- 6 RFID tag

### Type of cabling:

- 7 230 V AC
- 8 24 V DC
- 9 CMC III CAN bus
- 10 Network/IP/SNMP
- 11 Serial connection

### Note:

- The supply voltage to the other components (24 V DC, max. 1 A) is routed in the CAN bus and serial cabling.

# Dynamic Rack Control DRC

## Benefits of DRC capacity management at a glance

- Capacity management for 482.6 mm (19") equipment
- Position logging to 1/3 U accuracy
- Storage of all key information about the installed components
- The RFID tag is stuck onto the component and remains there for its entire service life
- Data may be retrieved via the SNMP and CMC III website
- Incorporation into the DCIM RiZone software and other management systems
- The DRC variables may be read and set via SNMP. A corresponding CMC III MIB is available.
- Data storage on the RFID tags and in the RiZone database
- Fits the Rittal TS IT rack, in heights 1200 mm (24 U), 2000 mm (42 U) and 2200 mm (47 U)
- Other aerial dimensions are possible on an individual project basis
- May be retrofitted at any time into existing, fully pre-configured TS IT racks
- Up to 4 racks and additional sensors may be connected to each CMC III rack management system

## 1. DRC data records

The following DRC data records are available and are written onto the RFID tag via the DRC aerial (compliant with ISO 18000-3/ISO 15693).

### 1.1 Rack position data (rack)

This data applies jointly to all components installed in a rack.

For this reason, this data is transferred once collectively to the DRC controller and stored there. The DRC controller transfers this data to all RFID tags in the rack.

Description	Address	No. of characters	No. of blocks
Location	00	32	8
Building	08	32	8
Level	16	32	8
Room	24	32	8
Row	32	16	4
Rack number	36	8	2

### 1.2 Basic data (component I)

This data is specific to each component and is written onto the valid RFID tag.

Description	Address	No. of characters	No. of blocks
U detected	50	4	1
Tag offset	51	4	1
Enclosure form factor	52	4	1
Description	53	20	5
Manufacturer	58	16	4
Type designation	62	16	4
Serial number	66	16	4
Vendor	70	16	4
MAC address 1	74	20	5
MAC address 2	79	20	5
Service contact	84	64	16

### 1.3 Extended data record (component II)

This data is specific to each component and is written onto the valid RFID tag.

Description	Address	No. of characters	No. of blocks
Device	100	32	8
Device class	108	4	1
Inventory code	109	200	50
Power consumption [W]	159	8	2
Current rating [A]	161	8	2
Rated voltage [V]	163	8	2
Last service [YYYYMMDD/employee/company]	165	40	10
Next service [YYYYMMDD/employee/company]	175	40	10
Last update [YYYYMMDD/HH:MM:SS]	185	20	5
Next update [YYYYMMDD/HH:MM:SS]	190	20	5
First commissioned	195	8	2
RiZone	197	40	10

Additionally, device classes are pre-defined within the DRC system which may be easily selected and then later selectively searched.

### 1.4 Device class sub-division (by numbers)

- 01 Blanking plate
- 02 Component shelf
- 03 Cable routing
- 04 Patch panel Cat5/6/7
- 05 Patch panel fibre-optic
- 06 UPS
- 07 Power supply
- 08 KVM
- 09 Switch, active network components
- 10 Monitor/keyboard drawer
- 11 Monitor
- 12 Server
- 13 Storage

# Dynamic Rack Control DRC

## 2. RiZone DCIM software with DRC administrative function

The data for all RFID tags installed in the enclosures is regularly polled by the management software via SNMP and saved in a database. The recorded values are then summarised to provide the user with a precise overview of the capacities per rack, rack suite, and the room as a whole. These values enable the user to plan any future expansion of server and network technology in the data centre: Enclosures with free height units and adequate cooling capacity may be defined, and hotspots caused by excessive loads in an enclosure can be avoided.

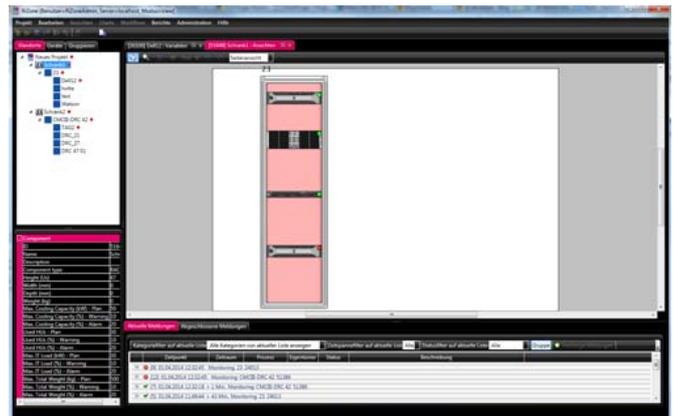
The DCIM solution also actively warns against overloads in the data centre. If a definable limit in terms of cooling load, electrical power, used height units or weight is exceeded, the user will receive an alarm, either via e-mail or in graphical form on the dashboard. Additionally, data and alarms may be forwarded to another superordinate management system.

These limits are not only defined at rack level, but also for each rack suite, room or building, and adapted to individual circumstances. The alarm facilitates immediate identification of the infrastructure hierarchy level where a problem has occurred.

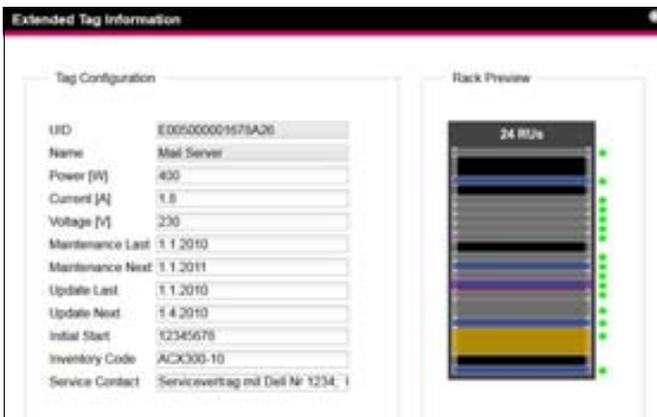
As well as monitoring the other infrastructure parameters in the data centre, such as temperature, humidity, access protection, smoke etc., this will also create a protection package to safeguard server operation and accommodate the availability requirements of the hosted services.



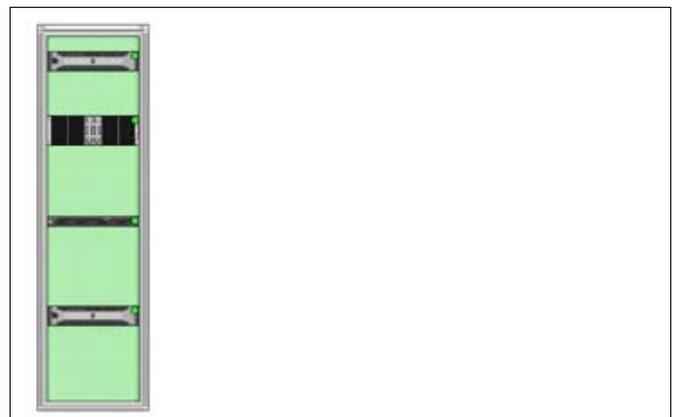
Capacity utilisation for height units, climate control, electrical power and weight. Data is represented in RiZone.



Graphical representation of enclosure configuration in the DCIM software RiZone



Graphical representation of enclosure configuration on the CMC website



Enclosure visualisation with "real view" in RiZone

# Dynamic Rack Control DRC



## RFID aerial

The high-precision RFID aerial, mounted over the full height at the side of the 482.6 mm (19") level, is at the heart of the Dynamic Rack Control system. The 482.6 mm (19") section in the TS IT is pre-prepared for the aerial, enabling tool-free attachment. It is capable of reliably allocating RFID tags to any mounting hole in a given height unit (U). Each U has three mounting holes spaced just eight millimetres apart, which means that there are 126 holes in a 42 U high enclosure. Despite this, the aerial must be capable of clearly identifying the assigned U with a precision of one-third. Additionally, there are 3 LEDs integrated per U, allowing the visual display of alarms, and the marking of height units for service personnel.

The RFID aerial in the rack and RFID tags on the equipment mean that administrators are always aware of which components are installed in which U of the 482.6 mm (19") level. The configurable tags may be used to store a whole range of key data about the devices, such as manufacturer, model, weight, height units (U) required, servicing intervals and applications or services provided, and can then automatically forward this information to the management software. The tag is stuck onto the device and remains there for its entire service life. The tags mean that this information "follows" the terminal, even if it is relocated to another location in the rack or another server enclosure in the data centre.



## RFID tags

1 RFID tag is required for each component. Each tag has a "Unique ID" (UID, not sequential), which cannot be altered; all other data is stored on the tag in conformity with ISO 18000-3. The tag is stuck to the inside right of the 482.6 mm (19") mounting bracket using its adhesive surface. The component is later screw-fastened to the 482.6 mm (19") level, including the tag.

- Type: passive, writable
- Frequency: 13.56 MHz



## RFID controller

Connects the RFID aerial to the CAN bus DRC. This enables the CMC to report any automatic changes, graphically represent the enclosure with its built-in components, and list capacity management. One RFID controller is required for each rack/aerial.

- Interface RJ 45: 1 CAN bus DRC
- Mini-DIN interface: 1 RFID aerial
- W x H x D: 136 x 44 x 129 mm

# Dynamic Rack Control DRC

## CAN bus DRC

The CAN bus DRC acts as an interface between the CMC III Processing Unit (PU) and an RFID controller. The unit has three connections: Two connections represent the interface to the CAN bus, and one RFID controller may be connected to the third connection. The CAN bus DRC must be externally supplied with 24 V via terminals.

- Max. quantity on CMC III Processing Unit: 4
- Max. quantity on CMC III Processing Unit Compact: 2
- Interfaces RJ 45: 1 RFID controller
- CAN bus jacks RJ 45: 2
- W x H x D: 138 x 40 x 120 mm
- Colour: RAL 9005/7035

## Further information

## CMC III

Computer Multi Control (CMC) is an alarm system for network and server enclosures, standard enclosures, containers and rooms.

<http://www.rittal.com/r?tshiten-cmc3>

## RiZone

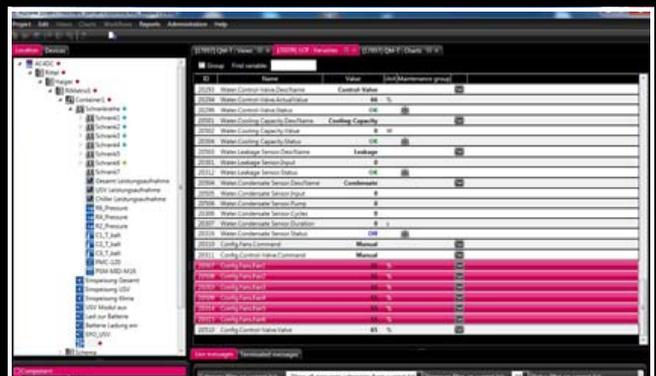
RiZone is Rittal's DCIM solution for easy, efficient monitoring and control of a data centre's physical infrastructure.

<http://www.rittal.com/r?tshiten-rizone>

## Network/server enclosures TS IT

The TS IT from Rittal sets global standards in network and server technology. The intelligent modular system, comprising a range of racks and accessories, plus assembly-friendly snap-in technology, allows almost any requirement for modular network and server racks to be met with a single, standardised rack system.

<http://www.rittal.com/r?tshiten-tsit>



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