

1 Notes on documentation

These instructions describe the installation and commissioning of the door control module with the door kits of the TS-IT rack. They contain neither technical details nor detailed information about the individual products.

1.1 Symbols used



Caution!

A dangerous situation for which the failure to comply with this note can cause (minor) injuries.



Note!

Identification of the situations that can lead to material damage.

1.2 Reference documents

The operating and installation instructions for the automatic door control unit 7320.790 and the installation instructions for the door kits TS-IT 7030.240/.250/.260 are reference documents.

2 Safety instructions

Please observe the following general safety instructions for the installation and the commissioning.

- The installation and commissioning may be performed only by a trained electrician.
- Please observe the valid regulations for the country in which the system is installed and operated, and the national regulations for accident prevention. Please also observe any company-internal regulations, such as work, operating and safety regulations.
- Do not make any changes to the product. Refer to the other reference documents.
- Note that the operational safety of the product is guaranteed only for its proper use. Also refer to the other reference documents.
- Please observe not only these general safety instructions but also the specific safety instructions in this document.

3 Installation

3.1 Description of the application

The system has the task of automatically opening the rack doors. The reason for the activation can be an excessive temperature in the rack or the initiation of a room extinguishing system.

Note!

No extinguishing system in the rack may be used in conjunction with the door control module; the enclosure would lose its degree of protection and the functions would work against each other. The doors must be closed when the extinguishing system is activated. This cannot be guaranteed with the combination.



3.2 Product combinations

Depending on the application, different products must be combined:

- Application without climate-control system
 - Application with LCP/climate-control system
- If servers with powerful fans or a climate-control system, such as an LCP, are used in the racks, a strong underpressure results. To ensure the automatic door opening in these applications, the door kit TS-IT Extension LCP must also be used.

Product combination for the application:
“without climate control/without underpressure”

One 7320.790 door control module (DCM)
One 5050.304 CMC-TC single mounting unit
One 7030.060 CMC III power pack
One 7030.070 CMC III 19" mounting unit
One 7200.210 230 VAC earthed connection cable
The connection cable can also be chosen in a different country variant.
Two 7030.100 CAN bus sensors
Two 7030.090 CAN bus cables, 0.5 m

**Door Control Module (DCM)
DK 7320.790
with door kit TS-IT**

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One controller with accessories, attachment and sensors:

The following are available:

- CMC III Processing Unit (PU) 7030.000
- CMC III Processing Unit Compact (PU C) 7030.010
- LCP with CMC III PU controller

Note!



The controller with accessories (attachment and sensors) appropriate for the application must be selected.

Caution!



When the CMC III Grouping function is used, the controller requires software version 3.13.00 or a higher version number. If this is not observed, the spindle motor can travel-out if the door is closed and damage it. There is also a major risk of injury to persons present in the immediate vicinity of the rack.

Selection depending on the door type:

One or two 7030.240 door kit TS-IT, one-part door

One or two 7030.250 door kit TS-IT, two-part door

Optional door opener:

Two 7320.794 door comfort handles

or

Two 7320.793 door pushbuttons

If an LCP is used (with existing underpressure), the following items are also required:

One 7030.060 CMC III power pack

One 7200.215 connection cable C13/C14 230 V

Two 7030.260 door kit TS-IT, extension LCP (pack = two items)

Note!



The system does not use the listed products to monitor the status of the door (open/closed). The installation of a door-opening monitor is recommended (7030.120 access sensors on all doors). These sensors can be connected to the CMC III system and signal the status of the doors.

The listed products are designed for the automation of a rack with two doors. When rack rows are used, appropriately more products must be provided appropriately.

3.3 Installation of the application

The overview of the complete installation is shown on the last page of these instructions (Figure 5).

For an application without climate control (LCP) or without underpressure in the rack (Figure 5), the indicated installation of and the power supply to the spindle motor with attachment and connection cable (Figure 5), CAN bus sensor for the spindle motor and the door kit extension LCP are omitted.

First mount the individual components mechanically on the rack. Ensure that the basic components, such as the door control module and power packs, are mounted centrally at the top of the rack so that the cable lengths provided suffice. As an option, 19" assembly systems can be used for these components.

Note!



Observe the installation instructions for the individual products during the installation.

Before wiring, ensure that a CMC III system with the appropriate sensors, e.g. temperature sensors, is available. This system controls the complete automated process with temperature measurement and activation of the door opening. Ensure that the temperature sensor is present in the air supply to the active components in the rack.

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For applications with room extinguishing systems, the fire alarm from the extinguishing system must be attached to the CMC III using a digital input.



Note!

Observe the operating instructions of the CMC III system to combine the correct products for your application.

Only then begin with the wiring.



Caution!

The installation must be performed in a de-energised state. Do this by disconnecting the system from the mains power.



Note!

Ensure during wiring that the cables are laid to prevent wire breakage.

Begin with the wiring from left to right in accordance with Figure 5:

- Connect the two RJ12 sockets of the DCM using the provided RJ12 cables to the two CAN bus sensors (RJ12 socket). The two CAN bus sensors must be connected via the bus to a CMC III Processing Unit 7030.000 or Processing Unit Compact 7030.010, or to an LCP with CMC III. The CAN bus sensor and the spindle motor are omitted for applications without climate control (LCP) or without underpressure in the rack.
- Select the door kit appropriate for the door type of the TS-IT racks, one- or two-part. The cable harness of the front and rear magnets is each inserted in the DCM Doors 1 and Doors 2 sockets.
- Optional for applications with climate control (LCP) or underpressure in the rack, the door kit extension LCP for the front door and the door kit extension LCP for the rear door are connected to the DCM Doors 3 socket and DCM Doors 4 socket, respectively.

- For the routine work on the enclosure, a door opener can be included. The door comfort handle 7320.794 is optimum. As an alternative, the door pushbutton 7320.793 can also be used. The jumper at the DCM Access-Input socket 1 must be removed and the handle/pushbutton of the front door connected. The jumper at the DCM Access-Input socket 2 must be removed and the handle/pushbutton of the rear door connected. The DCM Access-Input sockets 3 and 4 must be given permanent jumpers. The jumpers are included in the DCM scope of delivery.
- As Figure 5 shows, the power pack shown in the centre is connected to the power supply for the DCM. The required 24 V power cable accompanies the power pack and is simply plugged in. The primary side of the power pack is supplied via the C14 socket with the 7200.210 connection cable. For climate-control applications (LCP), this supply must be connected to the same circuit as the climate-control system (LCP) (observe the phase). This ensures that the doors are opened automatically should the power supply to the climate-control system (LCP) fail.
- For climate-control applications (LCP) and underpressure in the rack, the spindle motors are supplied with a separate power pack (Figure 5). The cables coming from the spindle motor have wire end ferrules. The **brown** conductor must be connected to the +24 V screw terminal. The **blue** conductor must be connected to the earth screw terminal. The primary side of the power pack is supplied via the C14 socket with the 7200.215 connection cable. The connection must be made to a UPS that maintains the power supply for the door kit extension LCP (spindle motors) in case of a power failure.



Note!

The operator must ensure that the UPS supply is available permanently. This is essential to ensure the function of the automated door opening.

4 Commissioning

Once the wiring has been completed, the system can be supplied with power.

The doors can then be closed and the magnets keep the door held to the rack.

Note!



Ensure that the doors are pressed securely at the upper, middle and lower magnets so that the doors are held securely to the rack.

The manual door opening can be tested with the handle/pushbutton. After being activated, the door opens and, provided underpressure is present in the rack, the door can be pulled open.



Caution!

Provide adequate clearance in front of the door so that injuries cannot occur if the door opens.

The automation with the CMC III system now follows as important item.

4.1 Programming the spindle motor and magnet using a task with the grouping of outputs

A task is required. The following example opens the door automatically in case of overtemperature.

Note!

To program the grouping function, at least software version **3.13.00 MUST** be installed on the PU/PU Compact / LCP. If this is not observed, the spindle motors can bend the doors when the magnets are activated. Program and test the system only with enclosure doors open.



Note!

Ensure that the task and the grouping function were programmed correctly. If errors are present, the spindle motors can bend the doors when the magnets are activated. Program and test the system only with enclosure doors open.



Then test the door opening operation by lowering the High setpoint of the temperature sensor.

Note!

Ensure that the doors can also be closed again only after rectification of the error or the temperature is lowered again.



Other combinations can also be chosen. For example, a digital input can be used to connect a room extinguishing system so that extinguishing gas can enter the enclosure.

4.1.1 Setting the spindle motor and magnet link

Grouping function setting:

In the Observation tab, each output of the DCM door control module,

- to which the magnet is connected,
 - to which the spindle motor is connected,
- is set the same grouping, in the example, "1".

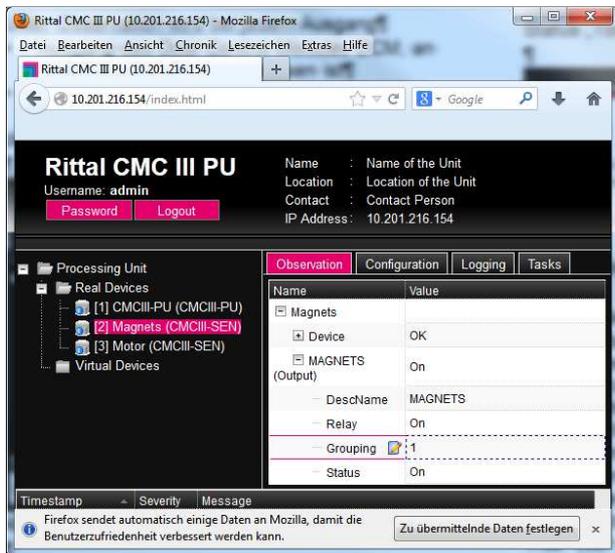


Fig. 1: Grouping for magnet

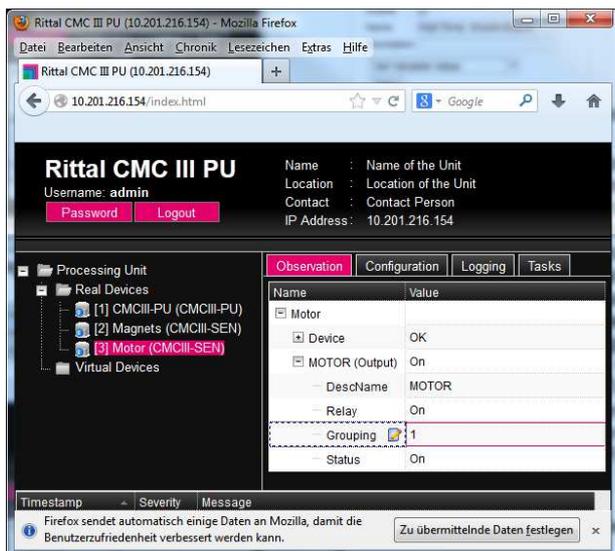


Fig. 2: Grouping for spindle motor

The grouping function always switches both outputs together.

4.1.2 Creating the magnet task

Link the status of the temperature sensor with the output of the DCM door control module to which the magnet is connected.

First, a trigger is programmed that opens the doors automatically in case of overtemperature. This requires that a new task is created. First, a temperature sensor is selected as trigger variable ("Trigger Expression" in the right-hand area of the window) and tested for status "Too High".

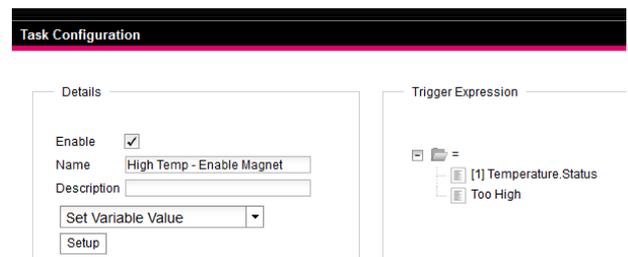


Fig. 3: Link with the temperature sensor

Name and describe the task on the left-hand side of the task configuration. Select the action to be performed from the "Set Variable Value" list and click the "Setup" button. Select the device "[X] CMCIII-SEN", namely, the CAN bus sensor to which the associated channel of the automatic door opening unit is connected. The variable to be switched is the Output.Relay output. This is switched as follows: The magnets should switch off ("Off") for "Value on True" (the temperature sensor selected on the right-hand side has status "Too High"). If the temperature sensor does not have "Too High" ("Value on False"), the magnets should remain switched on ("On").

The configuration should then have the following form:

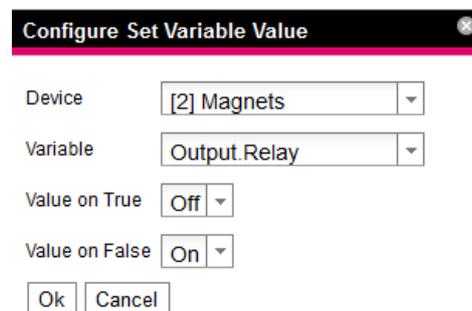


Fig. 4: Select magnet as output

This must be confirmed by clicking the “Ok” button and the task saved by clicking the “Save” button. Caution: The task must still be activated by selecting the “Enable” field.

This causes the magnets to be released when the “Too High” limit value of the selected temperature sensor is exceeded. The set “Grouping” function so also switches the spindle motor in parallel.

Note!



The function test must first be performed with opened doors. Only when this test was successful can the function test be performed with closed doors.

4.2 Programming the magnets for applications without spindle motor

A task is required. The following example opens the door automatically in case of overtemperature.

Note!



Ensure that the task was programmed correctly. If errors are present, the spindle motors can bend the doors when the magnets are activated. Program and test the system only with enclosure doors open.

Then test the door opening operation by lowering the High setpoint of the temperature sensor.

Note!



Ensure that the doors can also be closed again only after rectification of the error or the temperature is lowered again.

Other combinations can also be chosen. For example, a digital input can be used to connect a room extinguishing system so that extinguishing gas can enter the enclosure.

4.2.1 Creating the magnet task

The same settings as in Section 4.1.2 apply.

5 Maintenance

Maintenance includes the following visual inspection and function tests. Products not present because of the selected application cannot be tested.



Caution!

Provide adequate clearance in front of the door so that injuries cannot occur if the door opens.

Visual inspection:

- All plugs must be inserted securely.
- All deployed cables must be free from damage.
- The magnets and the metal counterpart must match exactly when the door is closed.
- The damper must move freely.
- All deployed components must be free from dirt and dust.
- No visible moisture may be present on the deployed components.
- The temperature and humidity operating range must be observed.

Function test:

- The opening of the doors with door comfort handle, door pushbutton or LCP display must be guaranteed.
- All pressure plates must be flush with the magnets when the doors are closed.
- The dampers must push open the doors when there is no underpressure in the enclosure.
- The dampers with the spindle motors must push open the doors when there is underpressure in the enclosure.
- The initiation of an alarm must open the doors automatically. All alarms linked in the CMC III must be tested separately. If the alarm is initiated by a smoke detector, a suitable test gas must be used. If the alarm is initiated by a room extinguishing system, the room extinguishing system must be blocked beforehand so that no extinguishing gas escapes.

- The doors may close again only when the previously pending alarm has been rectified.
- The doors must open automatically in the event of a power failure. The supply voltage of the DCM power pack and the primary side of the UPS must be separated simultaneously for the test.
- The UPS must be tested for correct operation.

This test must be repeated in regular maintenance intervals. This is essential so that error sources, such as

- Mechanical jamming of the door or warped door
- Magnets do not release the door opening or stick together with the counterparts
- The door does not close because of contaminated magnets
- The spindle motor motors do not travel-out
- The gas pressure spring is defective/worn
- Defective UPS, power pack or power supply
- Cable breakage
- Ripped out plugs
- Inadvertent deletion/change of the programming or incorrectly set software
- etc.

are detected.

The shorter the maintenance interval, the higher the safety level. Rittal recommends that this function test with visual inspection is performed at least monthly.



Note!

Maintenance with function test and a visual inspection must be performed at least monthly.



Note!

To further protect the server systems, when, for example, the operating temperature is too high, despite all measures listed here, the shutdown function should be activated with the server shutdown software in the CMC III. This shuts down the servers automatically in the event of overtemperature. The shutdown licences 7857.421 must be purchased separately.