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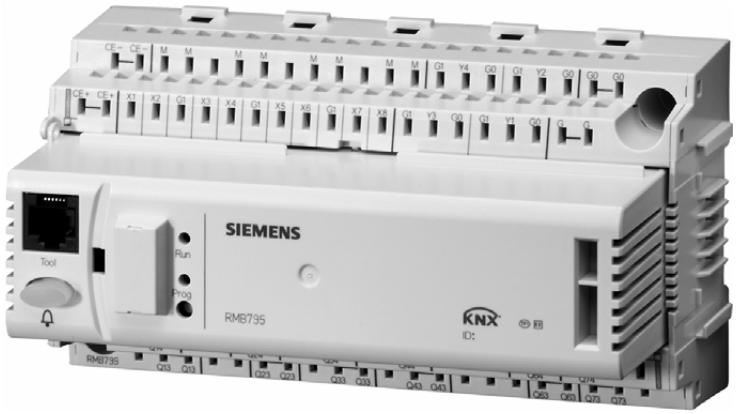

Synco™ 700
Central Control Unit RMB795
for use with RXB... room controllers

Basic Documentation

Edition 1.0

CE1P3121en
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Contents

1 Summary

1.1 Central control unit RMB795

What is the RMB795 central control unit?

The RMB795 is a central control and operator unit for room control in connection with Synco™ RXB room controllers. It extends markedly the field of use of the Synco™ system.

Konnex makes it possible

Thanks to the Konnex bus, communication in the controller network can be utilized in the most efficient way. And the typical easy-to-understand Synco™ operating concept is maintained.

User-friendliness at all levels

Whether for endusers, engineering, service or commissioning staff, menu-driven operation in clear-text underlines the system's user-friendliness at all levels.
The RMB795 central control unit is operated via a plug-in type or detached operator unit.

Functions

The RMB795 central control unit facilitates central operation of room groups equipped with RXB room controllers while offering the following features:

- Time switch, calendar and special day programs
- Preselected setpoints and trend functions
- Supervision of the highest / lowest temperatures and device supervision
- Passing on demand signals to the primary side

1.2 Range of units

Control units, accessories

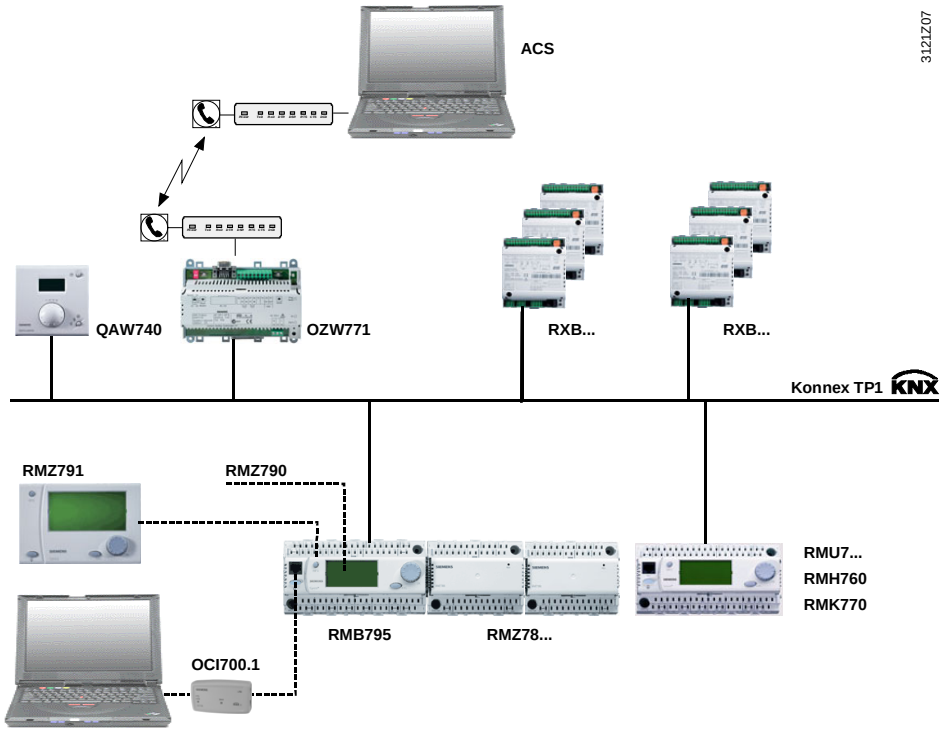
The summary given below shows the devices that afford comprehensive solutions with RXB room controllers and central control and operation with the RMB795 central control unit:

Type of device	*Illustration*	*Name*	*Type reference*	*Data Sheet no.*
Control units		Central control unit	**RMB795**	N3121
		Room controller	**RXB**	N3871
Extension modules		Universal module	**RMZ787**	N3146
		Universal module	**RMZ785**	N3146
		Module connector	**RMZ780**	N3138
Operator units		Operator unit, plug-in type	**RMZ790**	N3111
		Operator unit, detached	**RMZ791**	N3112
		Room unit	**QAW740**	N1633
Service unit		Service tool	**OCI700.1**	N5655

1.3 Topology of Synco™700

Use of RMB795 central control unit

The following illustration shows the typical topology of the RMB795 central control unit:



Legend

RMB795	Central control unit for RXB…	QZW771	Central communication unit
RMZ790	Operator unit, plug-in type	RXB	Room controller
RMZ791	Operator unit, detached	RMU7...	Universal controller
OCI700.1	Service tool	RMH760	Heating controller
RMZ...	Extension modules	RMK770	Boiler sequence controller
QAW740	Room unit	ACS	Software "Operator station ACS"

1.4 Equipment combinations

Sensors and frost protection unit

The table below shows the devices that can be combined with the RMB795 central control unit and extension modules:

Type of device	*Type reference*	*Data Sheet no.*
Passive sensors	All types of sensors using a sensing element LG-Ni 1000, Pt 1000 or T1 (PTC)	N1721...N1847, N1713
Active sensors	All types of sensors with - AC 24 V operating voltage - Modulating output DC 0...10 V	N1821, N1850...N1962
Monitors	QAF81..., QAF64..., QFA81, QFM81, QFA1000, QFA1001, QFX21, QXA2000, QBM81...	N1284, N1283, N1513, N1514, N1518, N1541, N1542 N1552

1.5 Product documentation

Supplementary information

In addition to this Basic Documentation, the pieces of product documentation listed below provide detailed information about the safe and correct use and operation of Synco™ 700 products in building services plant.

Type of document	*Document no.*
Product range description "HVAC controllers with Konnex interface"	**CE1N3110en**
Basic Documentation "Central control unit RMB795"	**CE1P3121en**
Basic Documentation "Universal controllers RMU7..."	**CE1P3140en**
Basic Documentation "Communication with Konnex bus"	**CE1P3127en**
Data Sheet "Central control unit RMB795"	**CE1N3121en**
Data Sheet "Univeral modules RMZ78x"	**CE1N3146 en**
Data Sheet ”Module connector RMZ780”	**CE1N3138 en**
Data Sheet ”Universal controllers RMU710, RMU720, RMU730”	**CE1N3144en**
Data Sheet "Room controllers RXB..."	**CA2N3871en**
Data Sheet "Room unit QAW740"	**CE1N1633E**
Data Sheet "Konnex bus KNX"	**CE1N3127en**
Operating Instructions B3121x1 for central control unit RMB795-1	**74 319 0461 0**
Operating Instructions B3121x2 for central control unit RMB795-2	**74 319 0462 0**
Operating Instructions B3121x3 for central control unit RMB795-3	**74 319 0463 0**
Operating Instructions B3121x4 for central control unit RMB795-4	**74 319 0464 0**
Operating Instructions B3121x5 for central control unit RMB795-5	**74 319 0465 0**
Installation Instructions G3140 for central control unit RMB795	**74 319 0398 0**
Installation Instructions for extension modules RMZ78...	**74 319 0353 0**
Installation Instructions for detached operator unit RMZ791	**74 319 0339 0**
Mounting Instructions for module connector RMZ780	**74 319 0380 0**
Declaration of CE conformity, Synco 700	**CE1T3110xx**
Environmental Declaration for controllers RMH760, RMU7..., RMB795	**CE1E3110en01**
Environmental Declaration for extension modules RMZ781...783 and RMZ785...789	**CE1E3110en02**
Environmental Declaration for operator unit RMZ790	**CE1E3110en03**
Environmental Declaration for operator unit RMZ791	**CE1E3110en04**

1.6 Performance

Overview

Overview of the central control unit's features and functions:

Features / functions	*RMB795*
Ready loaded applications	1
Extension modules Extension with 2 universal modules RMZ787 each with 4 universal inputs and 4 relay outputs Extension with 1 universal module RMZ785 with 8 universal inputs	3
Room groups	10
Control of room operating mode per room group	✓
Via operator unit RMZ79x	✓
Via digital inputs, (room operating mode selector and timer function)	✓
Via internal time switch (7-day time switch)	✓
Via room unit QAW740	✓
Control of calendar per room group	✓
Via operator unit RMZ79x	✓
Via digital inputs (for holidays / special days)	✓
Control functions per room group	✓
Night cooling	✓
Fire alarm off	✓
Smoke extraction supply air	✓
Smoke extraction extract air	✓
Room operating mode output per room group	✓
Setpoints per room group	✓
Summer / winter compensation	✓
Setpoints (absolute)	✓
Setpoint readjustment via QAW740 room unit	✓
Highest / lowest temperature supervision per room group	✓
Fault status messages	✓
Free fault inputs (digital or analog)	10
Number of fault status signal relays	2
Universal inputs (central control unit + extension modules)	22 (6 + 4 + 4 + 8)
As analog input DC 0...10 V	✓
As analog input Ni 1000	✓
As analog input Pt 1000	✓
As analog input T1	✓
As digital input	✓
Switching outputs (relays)	12 (4 + 4 + 4)
Modulating outputs (analog)	2
Heating demand signal: Relays and modulating	✓
Cooling demand signal: Relays and modulating	✓
Changeover for 2-pipe system H/C	✓
Operation and observation of RXB room controllers	✓
Setpoints for room groups	✓
Online trend channels	4
Device supervision	✓

1.7 Important notes

This symbol draws your attention to special safety notes and warnings. If such notes are not observed, personal injury and / or considerable damage to property can occur.

Field of use

Synco™ 700 products may only be used for the control and supervision of heating, ventilation, air conditioning and chilled water plant.

Correct use

Prerequisites for flawless and safe operation of Synco™ 700 products are proper transport, installation and commissioning, as well as correct operation.

Electrical installation

Fuses, switches, wiring and earthing must be in compliance with local safety regulations for electrical installations.

Commissioning

Preparation for use and commissioning of Synco™ 700 products must be undertaken by qualified staff who have been appropriately trained by **Siemens Building Technologies**.

Operation

Synco™ 700 products may only be operated by staff who have been instructed by Siemens Building Technologies or their delegates and whose attention has been drawn to potential risks.

Wiring

When wiring the system, the AC 230 V section must be strictly separated from the AC 24 V safety extra low-voltage (SELV) section in order to ensure protection against electric shock hazard!

Storage and transport

For storage and transport, the limits given in the relevant Data Sheets must always be observed.
If in doubt, contact your supplier or **Siemens Building Technologies**.

Maintenance

Synco™ 700 products are maintenance-free, apart from cleaning at regular intervals. System sections accommodated in the control panel should be freed from dust and dirt whenever normal service visits are due.

Faults

Should system faults occur and you are not authorized to make diagnostics and to rectify faults, call your Siemens Building Technologies service staff.

Only authorized staff are permitted to make diagnostics, to rectify faults and to restart the plant. This also applies to work carried out within the control panel (e.g. safety checks or replacing fuses).

Disposal

The products contain electrical and electronic components and must not be disposed of together with domestic waste.
Current local legislation must be observed.

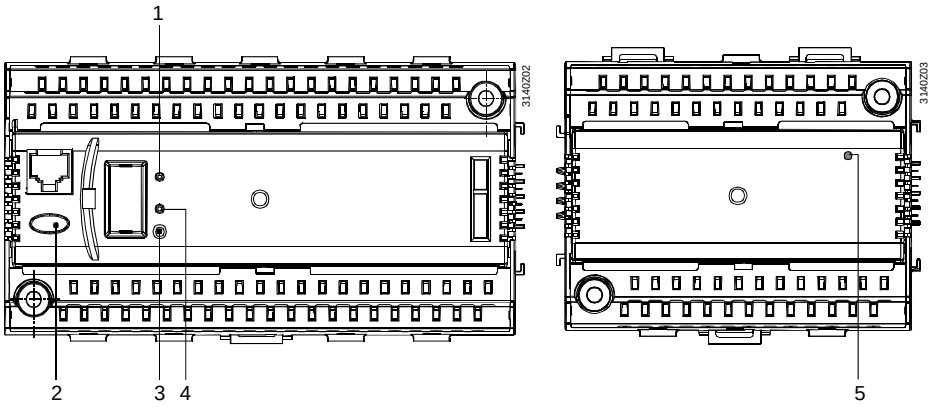
2 Operation

⚠ **Synco™ 700 devices may only be operated by staff who have been instructed by Siemens Building Technologies or their delegates and whose attention has been drawn to potential risks.**

2.1 Operation without operator unit

Operating elements

Without operator unit, the following operating elements on the central control unit and extension module can be used:



Central control unit Extension module

Functions

The operating elements shown above have the following functions:

Item	*Operating element*	*Function*
1	LED **Run**	Indication of the unit's operating state: *LED lit:* Power on, correct use and no fault in the peripheral devices *LED off:* No power, incorrect use or fault in the peripheral devices
2	**Fault button** 🔔 with LED (red)	Indication and acknowledgement of a fault status message: *LED flashes:* Fault status message ready to be acknowledged *LED lit:* Fault status message still present but not yet reset *LED off:* No fault status message present *Press button* Acknowledgement or resetting of fault
3	**Prog** button	Learning button for switching between normal mode and addressing to adopt the physical device address (tool required)
4	LED **Prog**	LED to indicate "Normal mode" (LED off) or "Addressing mode" (LED on); it extinguishes after adoption of the physical address
5	LED **Run**	Supervision of power supply and addressing: *LED lit:* Power on, module addressing successful *LED flashes:* Power on, but module not yet addressed by the RMB795 central control unit *LED off:* No power

2.2 Operation with operator unit

2.2.1 Functions of the operator unit

Brief description

The operator unit is used to make all settings and readouts required for operating the RMB795 central control unit.
All entries made on the operator unit are transmitted to the central control unit where they are handled and stored. The operator unit itself does not store any data.
Information for the user is generated by the central control unit and then transmitted to the operator unit for display.

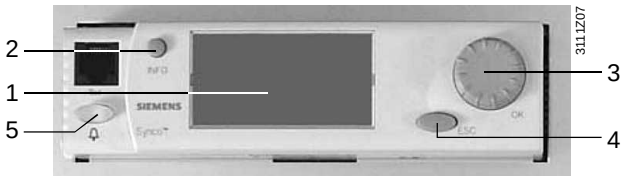
2.2.2 Operating concept

Basics

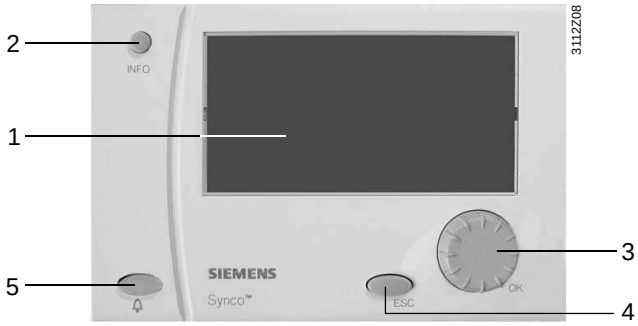
On the software side, all settings and readout values are arranged as datapoints (operating lines) of the menu tree. Using the operating elements, every datapoint can be selected, displayed or set. All menus appear on the LCD as clear-text.
The central control unit has several languages loaded. When commissioning the unit, the required language is to be activated. The Operating Instructions for the enduser are included with the central control unit; they contain the languages with which the unit is supplied.

Operating elements

The pictures below show the 2 types of operator units with their operating elements:



Plug-in type operator unit RMZ790



Detached operator unit RMZ791

Functions

The operating elements shown above have the following functions:

Item	*Operating element*	*Function*	
1	Display	Display of key plant data (info level)	
2	**INFO** button	*Function 1:*	Display of key plant data
		Function 2:	Display of information about the individual datapoints on the current menu
3	Press-and-select knob **OK**	*Turn:*	Selection of operating line and adjustment of value
		Press:	Confirmation of operating line or setting
4	**ESC** button	Going back to the previous menu	
5	**Fault** button 🔔 with LED (red)	*LED:*	Indication of fault
		Press:	Acknowledgement or resetting of fault

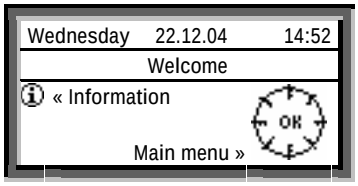
Backlit display

When one of the operating elements is activated, the backlit display will automatically be switched on. If there is no operation for 30 minutes, it will switch off and the start page appears.

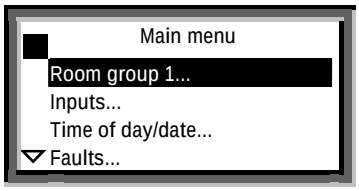
Display examples

The pictures below show a number of typical displays, including explanations:

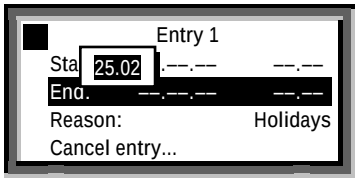
Display | *Explanation*



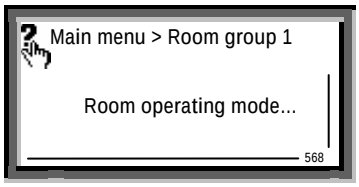
Start page



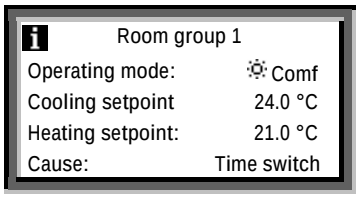
Setting level
Selection of a setting parameter,
e.g. from the **Main menu**



Setting level
Pop-up, setting a numerical value



Setting level, **INFO** button pressed:
Help picture with explanations relating to the selected setting parameter (as long as **INFO** button is kept depressed).
Note:
When on the access levels "Service" and "Password", the number given in the corner at bottom right is the text ID number of the menu or setting parameter.



Info level:
Here, for example, info page RG1 (room group 1), after pressing the **INFO** button and selecting **Display of key plant data**.
Note:
When turning the knob, the other info pages can be retrieved, e.g. the time programs of the relevant room group.

Note

The names of the submenus **Room group 1…10** and **Trend channel 1…4** are factory settings. They can be replaced by the service engineer during commissioning by using project-related clear-text names.
If, later, with the respective menu lines, the **INFO** button is pressed, the original default text will reappear.

2.2.3 Operating levels

2 operating levels

There are 2 operating levels:
- Info level
- Setting level

These 2 levels are always available, no matter which access level is active.

Info level

When on this level, important plant data can be displayed.

Setting level

The setting level is arranged in the form of a menu structure. Here, datapoints can be read and / or their values can be changed.
Using the **INFO** button, explanations relating to the menus with the individual datapoints can be displayed. The information is displayed as long as the button is kept depressed.

Switching between the operating levels

Switching from the info level to the setting level:
1. Select the start page by pressing the **ESC** button.
2. Press the **OK** knob to change to the setting level.

Switching from the setting level to the info level:
1. Select the start page with the **ESC** button. Press the button repeatedly until the start page reappears.
2. Press the **INFO** button to change to the info level.

2.2.4 Access levels

3 access levels

The RMB795 central control unit has 3 access levels. An access right is defined for each parameter (operating line).

Level	*Access*	*Icon*
User level (for the plant operator)	The user level is always accessible. The user can change all adjustable datapoints that appear here.	
Service level (for maintenance jobs)	Press the **OK** knob and the **ESC** button simultaneously. Then, select operating line **Sevice level** and confirm by pressing the **OK** knob.	
Password level (for commissioning)	Press the **OK** knob and the **ESC** button simultaneouly; then select operating line **Password level** and confirm by pressing the **OK** knob. Then, enter number **7** as the password and confirm by pressing the **OK** knob.	

Common properties

- Individual menus or operating lines are enabled depending on the access level
- On a higher access level, it is always possible to also view all menus and datapoints of the lower access levels
- The levels are all based on a common menu tree. The password level displays the entire menu tree
- After a time-out, the central control unit changes to the user level.
  Time-out: If the central control unit is not operated for 30 minutes

Changing the access level

Switching from the current access level to some other access level:
1. Press the **OK** knob and the **ESC** button simultaneously:
   The **Access levels** menu will appear.
2. Select the required access level by turning the **OK** knob and confirm by pressing the knob.
3. Enter number **7** as the password to access the **password level**.

3 Philosophy of room group

3.1 What is a room group?

Room group

A room group is a combination of 1 to maximum 63 RXB room controllers (rooms) with the following features:

- Same operating mode
- Same setpoints and setpoint readjustments
- Simultaneous release of night cooling
- Same fire and smoke extraction zones

For details, refer to chapter 8, "Room group"

Number of room groups

On the RMB795 central control unit, up to 10 independent room groups can be released. Following can be selected per room group:

- Own time program
- Own calendar

Use of room group

A room group can consist of one or several rooms.

To simplify operational management, it can make sense to interconnect several room applications and to have them managed by one room group.

Each room is equipped with several RXB room controllers that are used for the control of local heating or cooling equipment (e.g. radiators, chilled ceiling, fan coils, or VAV).

The RXB room controllers are assigned by entering the geographical zone address via the KNX bus of a room group of the RMB795 central control unit.

3.2 Application example

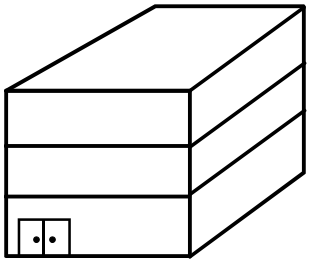
Introduction

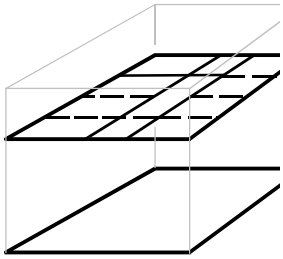
To explain the philosophy of the room group, we use the following example.

Subdivision of building

We assume to have a building with 3 floors accommocating a number of companies. The 2 following companies are located on the third floor:

- *Sport Ltd* with a conference room and 2 offices
- *Logistics Ltd* with 6 offices and 1 conference room





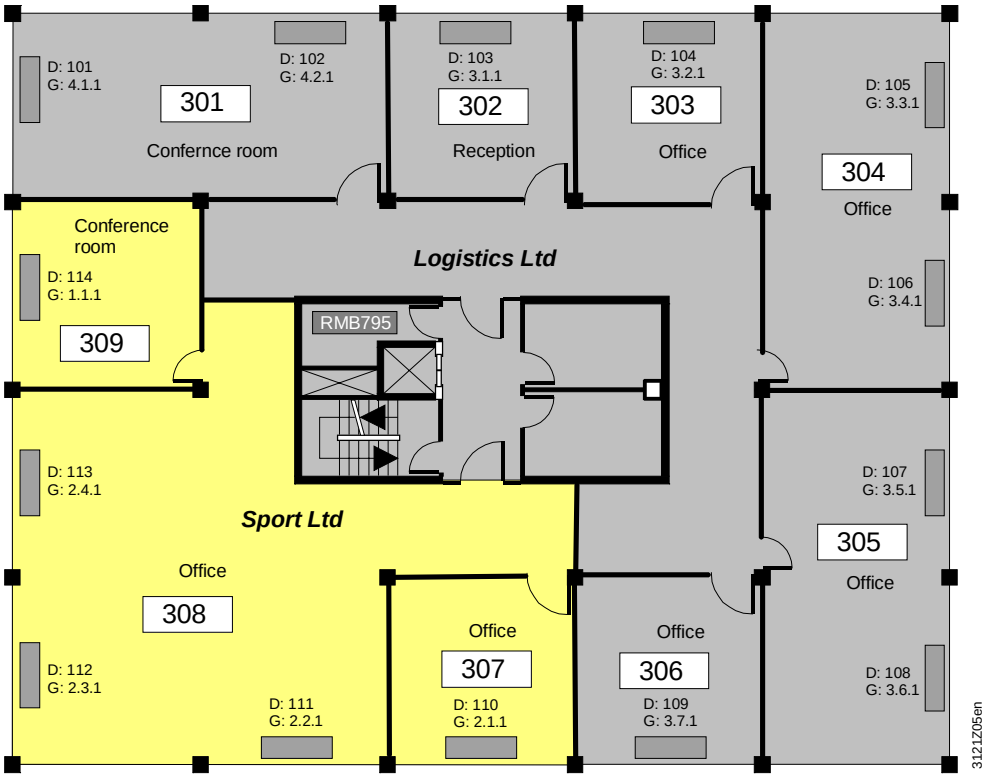
User requirements / operating modes

Each of the 2 companies wants to operate its room groups according to different operating modes, that is, with own

- time programs
- setpoints
- fire and smoke extraction functions

Floor plan of floor 3

The following floor plan shows usage of the rooms on the third floor by *Logistics Ltd* and *Sport Ltd*:

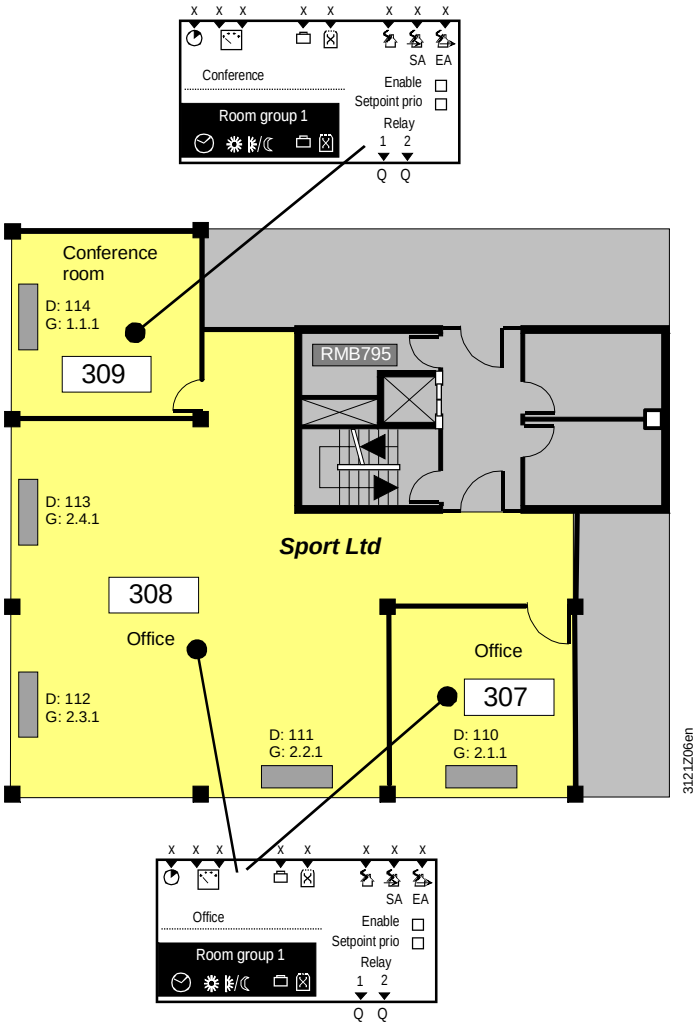


***Sport Ltd* uses 2 room groups**

For implementation of the application example, we focus on the floor plan of *Sport Ltd*. Due to company needs, a subdivision into 2 room groups or 2 "geographical zones (apartment)" is made:

- Conference room (room group 1)
- All the other rooms are offices (room group 2)

The fan coils, all of which are equipped with RXB room controllers, are already shown on the floor plan, and the appropriate assignments by means of addresses have been made:



Legend

D = device address, G = geographical zone (Apartment.Room.Subzone)

Definition of room group

The combination of several groups to 1 room group is made on the KNX bus by addressing the "Geographical zone". This address consists of 3 components:

Geographical zone: **Apartment.Room.Subzone** (e.g. **2**.**1**.**1**)

Important

A geographical zone **must** be assigned to:

- Each RXB room controller
- Each room group in the RMB795 central control unit

All devices which, together, shall form **one room group** must be assigned the same **apartment** number.

Settings on the central control unit

On the RMB795 central control unit, only the room group, that is, the "Geographical zone (**apartment**)" can be set.

The room and the subzone use a fixed assignment (Room = 1, Subzone = 1).

This means that for setting a room group on the central control unit, following applies: **Room group** = geographical zone (**apartment**.1.1).

Settings on the room controllers

The RXB room controllers offer the following setting choices:

- Geographical zone (**apartment**)
- Geographical zone (**room**)
- Geographical zone (**subzone**)

On HVAC applications using RXB… room controllers, it is only the "Geographical zone (**apartment**)" and the "Geographical zone (**room**)" that should be used.

Extension of addressing by the "Geographical zone (**room**)" leads to room control with RXB room controllers. This offers individual operational interventions (from an operator unit or the central control unit via bus), such as room setpoint readjustments from any of the rooms or devices.

Significance of subzone

The "Geographical zone (**room**)" can be subdivided; for that, the RXB room controller offers the "Geographical zone (**subzone**)".
This subzone is for use in plant where lighting conditions shall be taken into consideration if, for example, a "Geographical zone (room)" shall be divided into the 2 subzones "Lighting window side" and "Lighting corridor side".
For HVAC applications, the preset subzone = 1 should be left unchanged.

Significance of suffixes

Suffixes (**apartment**), (**room**) and (**subzone**) are defined by Konnex, whereby (apartment) has nothing to do with a living space or an apartment in the proper sense.

The device address

Each KNX user requires an individual device address – on the floor plan of the preceding page shown as D:11x.
The device addresses in our example were assigned in accordance with the bus' topology.

Assignment of external time switch to the room controllers

On the RXB room controller, setting "Time switch slave (apartment)" must be set to the same apartment number as the room group in which the room controller is located. In that case, room and subzone are not relevant and ready set to 1 (refer to completed planning and commissioning protocol for the plant of Sport Ltd. in section 3.3).

3.3 Implementation of application example

Procedure for engineering

Using the "C3127_Planning and Commissioning Report, Communication Synco 700" , the plant and the required communication settings can be represented in an easy-to-understand way.
Proceed as follows:

1. Enter general information, such as plant name, device names, device types, applications, etc.
2. Transfer the device addresses of all bus users and the basic settings of communication from the floor plan.
3. Enter the "Geographical zone addresses" in agreement with the group formations made.

Example *Sport Ltd*

The following illustration shows the completed report for the plant of *Sport Ltd:*

	Possible settings	RMU	RMH	RMK	OZW	RMB	RXB	QAW	1	2	3	4	5	6	7
Information 1	Plant								Sport Ltd	Sport Ltd	Sport Ltd	Sport Ltd	Sport Ltd	Sport Ltd	Sport Ltd
	Room number									309		307	308	308	308
	Device name	X	X	X	-	X	X	-	Reception	Conference	Reception	Office	Office	Office	Office
	Device type	RMU 7..	RMH, RMZ	RMK	OZW 771..	RMB 795	RXB	QAW 740	RMB795	RXB..	RMB795 [2]	RXB..	RXB..	RXB..	RXB..
	Plant type	X	X	X	-	X	X	-	B	FC03		FC03	FC03	FC03	FC03
	KNX-ID (Example ID: 00FD000016D5)	X	X	X	X	X	X	X							
Basic settings 2	Area [0...15] . Line [1; 2...15] . Device address [1..253;**255**]	X	X	X	X	X	X	X	0.2.10	0.2.114		0.2.110	0.2.111	0.2.112	0.2.113
	Decentral bus power supply [Off, **On**]	X	X	X	-	X	-	-	Aus						
	Clock time operation [**Autonomous**, Slave, Master]	X	X	X	X	X	-	-	Autonom						
	Remote setting chlock slave [No, **Yes**]	X	X	X	X	X	-	-	Nein						
	Remote reset of fault [**No**, Yes]	X	X	X	-	X	-	-	Nein						
Room / Room group 3	Geographical zone (Apartment.Room.Subzone) (A.R.S) [**1**...126] [1...63]. [1]	X_2	2X	X	-	10X	X.X.1	X	1.1.1	1.1.1	2.1.1	2.1.1	2.2.1	2.3.1	2.4.1
	(with own room sensor)	X_1	2X	X	-	-	X	X		X		----	X	X	X
	Time switch operation [**Autonomous**, Slave, Master]	X_1	2X	X	-	-	-	-							
	Time switch slave (apartment) [**1**...126] . 1 . 1	X_1	2X	X	-	-	X.1.1	-		1.1.1		2.1.1	2.1.1	2.1.1	2.1.1
	Temperature control [**Master**, Slave]	-	-	-	-	-	X	-		Master		Master	Master	Master	Master
	* Control strategy [**Caskade**, Constant, Alternating]	X_4	-	-	-	-	-	-							
	** Combination of room control [**Master**, Slave external setpoint , Slave internal setpoint]	-	2X	X	-	-	-	-							
	Room group (name)	-	-	-	-	10X	-	-	Conference		Office				
	QAW operation zone (apartment) [---,**1**...126] . 1 . 1	-	-	-	-	10X	-	-							

Room group Conference
Apartment = 1

Room group Office
Apartment = 2

Implementation with commissioning

In agreement with the list created, the settings of the datapoints with the same names are to be made on the devices during commissioning.

Other details

For detailed descriptions of the choices and settings offered by the RMB795 central control unit, refer to the following chapters and sections of this document.

4 Guidelines for engineering and commissioning

Introduction

These guidelines describe the procedure to be followed when engineering and commissioning the RMB795 central control unit.

Based on the HVAC plant concept, the RXB room controllers must be assigned to room groups.

Within these room groups, the RMB795 central control unit permits central control of time, calendar and special day programs, preselected setpoints, trend functions, highest / lowest room temperatures, device supervision of the RXB room controllers, and passing on requisition signals.

Procedure

The procedure for engineering and commissioning the RMB795 central control unit should be the following:

1. Provision of the necessary tools.
2. Planning 1: Implementation of the HVAC plant concept for the central control unit.
3. Planning 2: Organization of communication on the KNX bus.
4. Installation of devices and KNX bus.
5. Commissioning.

A detailed description of the necessary tools and the procedure to be followed is given in the following.

Provision of the necessary tools

Check to ensure that the following tools are available:

Tools	*Note*
HVAC plant concept based on the specific user needs	(Engineer, customer)
Floor plans of the object	(Engineer, customer)
Synco™ planning and commissioning tool	C3127
Synco™ Basic Documentation “Konnex bus KNX”	CE1P3127en
Synco™ Data Sheet "Konnex bus KNX"	CE1P3127en
Synco™ OCI700.1, ACS70	
Configuration diagram RMB795	
Synco™ Select (contains additional documentation on Synco™ 700)	

Planning 1: Implementation of the HVAC plant concept

Steps required to implement the HVAC plant concept for the RMB795 central control unit:

Step	*Action*	*Notes*
1	Decide on the device types, their number and application	Number of RXB..., RMB795, QAW740, RMU7x, etc.
2	Select locations for installation	Plug-in type or detached operator unit, location of controller
3	Combine RXB room controllers to room groups	Based on the HVAC plant concept given on the floor plans
4	Enter the devices on the floor plan	Including addressing of the room group and the geographical zone address [1…126].[1…63].

Planning 2: Organization of communication

Organization of communication on the KNX bus is subdivided as follows:

- Planning the bus network
- Completion of the Synco™ planning and commissioning protocol "Communication" (C3127)

Planning the bus network

And these are the individual steps:

Step	*Action*	*Notes*
1	Topology: Create area, backbone and line, define the device addresses	Depending on: Number of devices, network extension, embedding
2	Define the type of bus power supply	Size, central, decentral
3	Define the required system components	Line couplers, bus power supply, etc.
4	Check the limitations	Number of bus users per line, network extension, bus power supply
5	Design the network structure and connection diagrams	
6	Create the cable lists	
7	Transfer the topology and the physical device addresses [1…254] to the floor plan	Define cable routing and cable lengths

Completion of the planning and commissioning protocol

These are the individual steps to be followed when completing the Synco™ planning and commissioning protocol "Communication" (C3127):

Step	*Action*	*Notes*
1	Enter general information about the plant and the device types	
2	Press button **Menu > Update fields**	Fields that need not be completed appear with hatched lines
3	Enter the device addresses of all users	To be adopted from the floor plans
4	Define the names and room numbers of all users and room groups	While observing the floor plans
5	Define the bus power supply according to the supply concept	Refer to Data Sheet N3127, "Konnex bus"
6	Define clock time operation	Master, slave, autonomous
7	Enter the geographical zone address	To be adopted from the floor plans
8	Define the QAW zone (apartment)	According to the room group assignments
9	Define the time switch zone	According to customer needs
10	Define holidays / special day zones	Ditto
11	Define the outside temperature zones	According to HVAC plant
12	Define the refrigeration distribution zones on the generation side	Ditto
13	Define the refrigeration distribution zones on the consumer side	Ditto
14	Define the heat distribution zones on the generation side	Ditto
15	Define the heat distribution zones on the consumer side	Ditto

Installation

Observance of the points listed below contributes to trouble-free and effective commissioning:

- Early coordination of installation of devices and Konnex bus with the project leader or installer responsible for the project
- Correct installation of the devices in accordance with the Mounting Instructions
- Observance of Konnex bus Installation Instructions
- Setting a commissioning date on which the installation will be completed and all forms of energy (electricity, heat and refrigeration) will have to be available

Commissioning

Put the plant into operation line by line.

And these are the individual steps to be followed:

Step	*Action*	*Notes*
1	Make addressing of the line couplers.	
2	Commission the RXB room controllers with the OCI700.1 service tool: 1. Select the application and adjust the setting values according to HVAC planning. 2. Set RXB communication datapoints according to the Synco™ Planning and Commissioning Protocol C3127.	
3	Commission the RMB795 central control unit: 1. Set configuration and setting values according to the configuration diagram. 2. Make the wiring test. 3. Set the RMB795 communication datapoints according to the Synco™ Planning and Commissioning Protocol C3127. 4. Make the device supervision search run. 5. Compare the identified devices with the planning documentation. 6. Quit commissioning.	
4	Commission the other devices.	Line coupler filter tables, QAW740, RMU7xx, RMH760 etc.
5	Check setpoints and setting values, time programs, calendar, etc. Check the building functions.	Night cooling, fire alarm off, smoke extraction, heat demand, refrigeration demand, etc.
6	Generate the commissioning protocols.	
7	Do the final work, handover, instructions to the customer / plant operator.	

5 Commissioning

5.1 Before you start

5.1.1 Safety notes

⚠ Preparation for use and commissioning of Synco™ 700 devices must be undertaken by qualified staff who have been appropriately trained by Siemens Building Technologies.

⚠
- When the central control unit is in commissioning mode, control will remain off, that is, all outputs are set to a defined OFF state
- In that case, all internal safety functions of the central control unit will also be deactivated. Communication will stay inactive also

5.1.2 Potential impact of power failures

Starting point

As mentioned above, certain activities of the central control unit will be interrupted during commissioning. In the case of distributed plant, this can have the effect of a partial power failure.

Plant example

The possible effects are investigated and explained using a plant example with the following devices:

Type of device	*Function*
RMB795	Preselection of operating modes for the different room groups
RXB...	Room controllers, assigned to different room groups
RMU7... (or RMH760)	Collection of the refrigeration / heat requisition signals of preparation

Results

A power failure or wrong configuration of communication has exactly the same effect as if the respective device was in commissioning mode.
The following table shows the results in detail:

Case	***RMB795***	***RXB***	***RMU7...***	***Potential effect***
1	Power failure / commissioning mode	Comfort mode	According to the requisition signals	Preparation may also be in progress during the night
2	Normal operation	Power failure / commissioning mode	No requisition → OFF	No room control and no preparation
3	Normal operation	According to the operating mode of RMB795	Power failure / commissioning mode	No preparation

Recommendation

If, during "Economy" mode at night, power failures are to be expected, it is recommended to change RXB setting parameter "Veto time" (timer function) from 30 minutes to 0 minutes.
This ensures that, after power-up, the RXB room controllers will not work in “Comfort" mode for 30 minutes.

5.2 Starting commissioning

5.2.1 Starting with the first power-up

Initiating the start

The RMB795 central control unit automatically displays the **Commissioning** menu for the first time when AC 24 V power is applied. Please note the following:

- During the commissioning phase, the control remains off – when starting the central control unit, all outputs are set to a defined OFF state
- All internal safety functions of the central control unit are deactivated

Make the basic settings

After startup, the operator unit displays the **Language** menu. Now, proceed as follows:

Step	*Action*	*Result*
1	Select and confirm the **Language** for commissioning or operating the plant using the **OK** knob	The display appears in the selected language.
2	Select and confirm in the same way the **Time of day**, the **Date** and the **Year**.	Then, the **Commissioning** menu will appear. The access level is set to **Password level.**
3	Change to the **Plant type** menu. Path: Main menu > Commissioning > Basic configuration > Plant type	A choice of plant types is offered.

Next steps

When commissioning the RMB795 central control unit for the first time, follow the Installation Instructions 74 319 0398 0 (G3140). They are enclosed with the RMB795.

5.2.2 Starting from the “Main menu”

Procedure

This is how to start commissing from the **Main menu**:

Step	*Action*	*Result*
1	To select the **Access level** menu, press simultaneously the **OK** knob and the **ESC** button. Select operating line **Password level** and confirm with the **OK** knob. Enter the password (**7**).	The password level is active.
2	Select and confirm operating line **Commissioning** with the **OK** knob	
3	Press the **OK** knob a second time	On the device side: • The application (communication) is stopped • All outputs will be set to a defined OFF state On the display: • The **Commissioning** menu appears 

5.3 Making the basic configuration

Introduction

On the **Basic configuration** menu, the following settings are to be made:
- Select basic type “B“
- Assign the central control unit position to the connected extension modules

5.3.1 Selecting basic type “B”

Selection deletes the extra configuration

On the RMB795 central control unit, an empty "Basic configuration" is filed. If selected, all configurations of the extra configuration will be deleted (for connections, refer to the configuration diagram).

Values that are maintained

When selecting a new, empty basic configuration, the following values will not be deleted:
- All user-defined texts and the business card
- Calendar and time switch settings of the room groups
- Basic settings on the **Communication** menu
- Current time of day
- Trend settings
- Values on the **Settings > Device** menu

New extra configuration

After selecting basic type “B”, a start can be made with a new configuration on the **Extra configuration** menu.

5.3.2 Assignment of extension modules

Selection

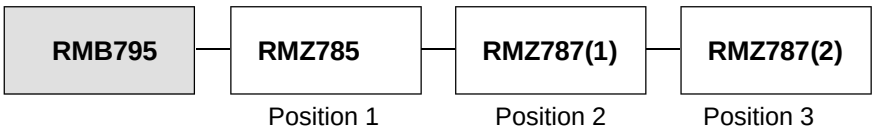
The number of inputs and outputs of the RMB795 central control unit can be increased by attaching extension modules.
These modules can be connected to every central control unit:

Quantity	*Type reference*	*Purpose*
1	RMZ785	Extension of inputs by 8 universal inputs
2	RMZ787	Extension of inputs and outputs by 4 universal inputs each and 4 relay outputs each

Activation and assignment

The extension modules are activated simply by attaching them to the RMB795 central control unit. The positions of the extension modules must be set on the central control unit.

Example showing the assignment of positions:



⚠ Observe the following notes in connection with the extension mdules:
- Prior to attaching an extension module, the system must be disconnected from power
- Free configuration can also contain connections to the extension modules. The relevant functions are only active if the extension module is connected and activated
- The extension modules can be arranged in any order desired

5.3.3 Settings

Configuration

Main menu > Commissioning > Basic configuration

Operating line	*Adjustable values / remarks*
Basic type	B
Position 1	---, RMZ785, RMZ787(1), RMZ787(2)
Position 2	---, RMZ785, RMZ787(1), RMZ787(2)
Position 3	---, RMZ785, RMZ787(1), RMZ787(2)

Fault status messages

A fault status message will be generated in the following cases:

- If the extension modules actually fitted and their positions do not agree with the values entered on the list of the central control unit
- If, during operation, an extension module becomes defective

No.	*Name*	*Effect*
7101	Fault extension module	Urgent message; must be acknowledged

5.4 Making the free configuration

Application

With the help of the configuration diagram, the RMB795 central control unit can be matched to the requirements of the plant (refer to section17.2).

5.5 Making the wiring test

Functions

A wiring test can be made with all connected peripheral devices. We recommend to perform the test after completion of configuration and after all settings have been made. It offers the following functions:

- Indication of reading values for the inputs
- Switching aggregates connected to the outputs, e.g. operating mode outputs, heat demand, fault relay, etc.

During the wiring test, the application is deactivated.

- The outputs are in a defined OFF state; safety-related functions (e.g. smoke extraction functions) are deactivated
- Communication with the RXB room controllers will be cut. No more defined values are transmitted

Error checks

The wiring test checks the inputs and outputs for the following types of errors:

- Connection errors, that is, wires mixed up
- Location errors, that is, sensors or actuators connected in the wrong place
- Discrepency between the type of connections made and the configuration of the central control unit, e.g. Ni 1000 in place of active DC 0...10 V

Settings

Main menu > Commissioning > Wiring test > Inputs

Operating line	*Remarks*
E.g. N.X1	Display of the current measured value

Main menu > Commissioning > Wiring test > Outputs

Operating line	*Positions*
E.g. operating mode room group 1	---, Comfort, Precomfort, Economy, Protection

5.6 Exiting commissioning

Procedure

The **Commissioning** menu is quit as fllows:

Step	*Action*	*Result*
1	Press the **ESC** button	The display shows a dialog box with the following information: 
2	Confirm the information by pressing the **OK** knob	The central control unit starts with the settings made, the application (communication) starts and the display shows the Main menu: 

5.7 Backing up the data

Purpose

When commissioning is completed, the entire commissioning data set (configuration and settings) can be saved in the RMB795 central control unit. If, in operation, an unauthorized user makes important readjustments, the function can be used to retrieve the state the device had after commissioning.

Important!

However, in case of data backup, the following values will not be saved or retrieved:

- All user-defined texts and the business card
- Calendar and time switch settings of the room groups
- Basic settings on the **Communication** menu
- Current time of day
- Trend settings
- Values on the **Settings > Device** menu

Setting values

Main menu > Data backup >

Operating line	*Range*	*Factory setting*
Restore		
Save		

Display values

Main menu > Data backup >

Operating line	*Remarks*
Storage date	Display of date on which the commissioning data set was downloaded to the memory of the central control unit
Storage year	Display of year in which the commissioning data set was downloaded to the memory of the central control unit

5.8 Leaving the password level

Setting the user level

When commissioning is completed, the user level must be selected, that is, the access level for the plant operator. To do this, exit the main menu and proceed as follows:

Step	*Action*	*Result*
1	Press simultaneously the **OK** knob and the **ESC** button	The **Access levels** menu appears.
2	Select the user level by turning the **OK** knob and confirm by pressing the knob	The selected user level is set and the previous menu reappears.

5.9 Viewing device information

Purpose

Important information about the RMB795 central control unit, the connected extension modules, the configuration and the communication settings can be viewed on the **Device information** menu.

Display values

■ Main menu > Device information > Controller

Operating line	*Remarks*
Basic type	Display of application (application "B") loaded during commissioning
Basic type adapted	Display of an intervention made in the programmed application (yes, no)
File name	Name of an application that was downloaded by the ACS
Device type	Display of the device used (e.g. RMB795-1)
Software version	Display of software version
Hardware version	Display of hardware version

■ Main menu > Device information > Position 1...3

Operating line	*Remarks*
Extension module	Display of the module's type reference
Software version	Display of the module's software version
Hardware version	Display of hardware version

Main menu > Device information > Extra configuration

Using this menu, all settings of the extra configuration can be viewed. This offers a quick overview of the connections used in the configuration.

Main menu > Device information > Communication

All communication settings can be viewed here.

5.10 Marking interventions

Marking

When the internal standard application (that is, basic type “B“) was adapted, or the **Extra configuration** menu was subsequently accessed, an asterisk will be set on the **Basic configuration** menu, in front of type reference "B" on operating line “Plant type".
In addition, “Yes“ will be set on the **Device information** menu, on operating line "Basic type adapted".

Note

The asterisk is set automatically when leaving the **Extra configuration** menu, even if no changes have been made.

Resetting the marking

The asterisk will be deleted and “No“ will appear on operating line "Basic type adapted" when, on the **Basic configuration** menu, the empty standard application (that is, basic type ”B”) is loaded. A new configuration will be made based on basic type “B”.

6 General settings

6.1 Time of day and date

6.1.1 Operating principle

Yearly clock

The central control unit has a yearly clock with time of day, weekday and date.

2 time formats available

The following time formats can be selected:

24 h:

- The **date** appears as dd.mm.yyyy (day.month.year).
  Example: 31.05.2005
- The **time of day** appears as hh:mm (hours:minutes).
  Example: 15:56

am/pm

- The **date** appears as mm/dd/yy (month/day/year).
  Example: 05/31/2005
- The **time of day** appears as hh:mm am/pm (hours:minutes am/pm).
  Example: 03:56 PM

Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Device >

Operating line	*Range*	*Factory setting*
Time format	24 hours, 12 hours (am/pm)	24 h

Main menu > Time of day/date

Operating line	*Range*	*Factory setting*
Time	00:00...24:00	00:00
Date	01.01...31.12	01.01
Year	2000...2100	Current

Summer- / wintertime changeover

The change from summertime to wintertime, and vice versa, is made automatically in accordance with the settings.
The date of the earliest changeover can be adjusted should the relevant regulations change.

Setting values

Main menu > Time of day/date

Operating line	*Range*	*Factory setting*
Summer time start	01.01. … 31.12	25.03
Winter time start	01.01. … 31.12	25.10

Notes

The dates set for the change from wintertime to summertime, or vice versa, ensure that on the first Sunday after that date the time of day will change from 02:00 (wintertime) to 03:00 (summertime), and from 03:00 (summertime) to 02:00 (wintertime).

If both dates are set to coincide, summer- / wintertime changeover will be inactive.

6.1.2 Communication

Clock time operation

For the clock time, different sources can be used, depending on the master clock. This can be selected on the RMB795 central control unit. Time of day and date can be exchanged via the bus.
The following settings for clock time operation are possible:

- Autonomous (does not send and does not receive)
- Clock time *from* the bus: Clock time slave (receives the synchronization signal from the bus)
- Clock time *to* the bus: Clock time master (sends the synchronization signal to the bus)

Setting values for clock time operation

Commissioning > Communication > Basic settings

Operating line	*Range*	*Factory setting*
Clock time operation	Autonomous / Slave / Master	Autonomous

If the central control unit is set as a clock time slave, it can also be selected whether it shall be possible to adjust the master clock's time from this central control unit.
The following remote clock slave settings can be made:

- No (clock time slave with no facility for setting the system time)
- Yes (clock time slave with facility for setting the system time)

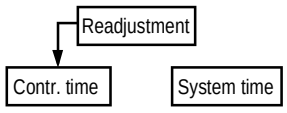
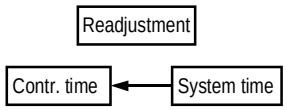
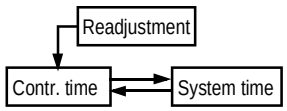
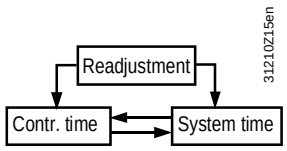
Setting values for remote setting clock slave

Commissioning > Communication > Basic settings >

Operating line	*Range*	*Factory setting*
Remote setting clock slave	Yes / No	Yes

Impact of setting values

The above settings have the following impact:

Entry	*Effect*	*Diagram*
Autonomous	The clock time on the central control unit can be adjusted. The central control unit's clock time will not be adapted to the system time.	
Slave, remote setting clock slave **No**	The clock time on the central control unit cannot be adjusted. The central control unit's clock time is continuously and automatically adapted to the system time.	
Slave, remote setting clock slave **Yes**	The clock time on the central control unit can be adjusted and, at the same time, adjusts the system time The central control unit's clock time is continuously and automatically adapted to the system time.	
Master	The clock time on the central control unit can be adjusted and, at the same time, adjusts the system time. The central control unit's clock time is used for the system.	

Note

Only one clock time master per system may be used. If several devices are parameterized as master, a fault status message (to the master) will be delivered.

Recommendation

Always run the system in synchronized mode, that is, in master-slave mode (1 master, all other devices as slaves).

6.1.3 Error handling

Possible cases

In connection with the time of day and date, the RMB795 central control unit generates a fault status message in the following cases:

- If the clock on the bus is missing and the local clock is parameterized as the clock time slave, operation continues with the internal clock and a fault status message ”System time failure” will be delivered
- If several devices on the bus are parameterized as clock time masters, fault status message ">1 clock time master" will be delivered
- The clock in the central control unit has a reserve of 12 hours. In the event of longer power failures, the clock time must be newly set.
  If the central control unit loses its clock time after a longer power failure and the time is not retransmitted via bus, a fault status message "Invalid time of day will be delivered *Note:* Invalid clock times flash.

Fault status messages

No.	*Text*	*Effect*
5001	System time failure	Nonurgent message; must not be acknowledged
5002	>1 clock time master	Nonurgent message; must be acknowledged
5003	Invalid time of day	Nonurgent message; must not be acknowledged

6.2 Selecting the language

Behavior when switching on for the first time

Every RMB795 central control unit has several languages loaded.
When switching on the central control unit for the first time, the **Language** menu appears in English, independent of the unit’s language set. Select the required language from that menu.
The language can also be changed later during operation.

Choice of languages

The following languages are loaded, depending on the type of central control unit:

Type reference	*Language 1*	*Language 2*	*Language 3*	*Language 4*
RMB795-1	German	French	Italian	Spanish
RMB795-2	German	French	Dutch	English
RMB795-3	Danish	Finnish	Norwegian	Swedish
RMB795-4	Czech	Hungarian	Polish	Slowakian
RMB795-5	Rumanish	Slowenian	Serbian	Croatian

Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Device >

Operating line	*Range*	*Factory setting*
Language		English

6.3 Selecting the unit of temperature

Setting values

The unit of temperature displayed by the RMB795 central control unit can be switched between °C/K and °F.

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Device >

Operating line	*Range*	*Factory setting*
Unit	Degrees Celsius, degrees Fahrenheit	°C

6.4 Display contrast on the operator unit

Setting values

The display's contrast can be adjusted to ambient conditions:

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Device >

Operating line	*Range*	*Factory setting*
Contrast	0...100 %	50 %

6.5 Entering text

6.5.1 Device name

Setting values

The text for the device name appears in the welcome picture.

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Texts >

Operating line	*Range*	*Factory setting*
Device name	Max. 20 characters	

6.5.2 File name

Setting values

The file name can be assigned individual text for the selected application:

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Texts >

Operating line	*Range*	*Factory setting*
File name	Max. 20 characters	B

6.5.3 Electronic business card

Configuration

The text of the electronic business card is displayed as an Info picture. The electronic business card must be activated in the extra configuration.

Main menu > Commissioning > Extra configuration > Miscellaneous > Business card

Operating line	*Range*	*Factory setting*
Business card	Yes / No	Yes

Settings

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Texts > Business card >

Operating line	*Range*	*Factory setting*
Business card line 1	Max. 20 characters	
Business card line 2	Max. 20 characters	
Business card line 3	Max. 20 characters	
Business card line 4	Max. 20 characters	

7 Inputs

7.1 Universal inputs (Xx)

7.1.1 General settings

Connectable signals

The following types of signals can be fed to the universal inputs:

- Digital signals
- Passive analog signals
- Active analog signals

Number of universal inputs

The following number of universal inputs are available:
RMB795: 6 inputs

If more inputs are required, the number can be increased by a maximum of 3 extension modules:
RMZ785: 8 inputs
RMZ787: 4 inputs

Hence, the maximum number of inputs is:
RMB795 (6) + RMZ785 (8) + RMZ787 (4) + RMZ787 (4) = 22 inputs

7.1.2 Activating the function

Availability

All universal inputs Xx are always available. If not required for their assigned functionality, they can be used for display.

Recommendation

Inputs that are not required should be set to "Digital".

Assigning an identifier

For activation, each input used must be assigned an identifier.
The identifier also defines the input's unit:

- Outside temperature [1)]
- °C
- %
- g/kg
- kJ/kg
- W/m
- m/s
- bar
- mbar
- Pa
- ppm
- Universal 000.0: Universal input with one decimal place, resolution –99.9…+999.9, increment 0.1
- Universal 0000: Universal input with no decimal place, resolution –999…+9999, increment 1
- Digital

[1)] The identifier offers additional functionality (refer to subsection 7.4.2 "Outside temperature at the terminal")

Activating the function (cont'd)

Configuration

Main menu > Commissioning > Extra configuration > Input identifier >

Operating line	*Adjustable values / remarks*
N.X1	Activation of function by assigning the input one of the following identifiers: Outside temperature, °C, %, g/kg, kJ/kg, W/m², m/s, bar, mbar, Pa, ppm, universal 000.0, universal 0000, digital
...	Ditto
RMZ787(2).X4	Ditto

The settings made are also displayed under:
"Main menu > Device information > Extra configuration > Input identifier"

Notes

- The unit of the outside temperature is always °C or °F
- The outside temperature signal can also be sent via the bus (Konnex) (refer to section 7.4 "Outside temperature")
- The units °C, %, g/kg, kJ/kg, W/m², m/s, bar, mbar, Pa, ppm, 100 and 1000 are always analog inputs
- The digital inputs have no unit.
  Logical display for signal handling: 0 = off, 1 = on

7.1.3 Error handling

Set identifiers of inputs first

With some of the function blocks, defined inputs are mandatory, such as the outside temperature. For this reason, when making a configuration, the input identifiers must always be set first.

Exercise caution when changing identifiers!

If the identifier of the inputs is changed after configuration of the other function blocks is completed, it can well be that individual functions of the other function blocks are set inactive, because otherwise they would have to work with invalid units!

7.1.4 Functional check / wiring test

Checking the measured values

During the wiring test, the measured values of all inputs can be checked as follows:

Main menu > Commissioning > Wiring test > Inputs >

Operating line	*Adjustable values / remarks*
N.X1	Display of the current measured value
...	Ditto
RMZ787(2).X4	Ditto

7.2 Analog inputs (Xx)

7.2.1 Activation and type

Activation

The analog inputs can be activated as described in subsection 7.1.2 "Activation of function".
With the analog inputs, the following settings can be made:

- Type reference
- Measuring range
- Measured value correction

Type reference

If the unit is °C, the type can be selected. The following types are available:

- Ni 1000
- 2 x Ni 1000
- T1
- Pt 1000
- DC 0…10 V

If the unit is not °C, the type is always DC 0...10 V.

Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Inputs > ...X...

Operating line	*Range*	*Factory setting*
Type reference	Ni 1000, 2 x Ni 1000, T1, Pt 1000, DC 0…10 V	Ni 1000

7.2.2 Measuring range

Passive temperature signals

The following measuring ranges are defined for passive temperature signals:

Temperature signal	*Measuring range*
LG-Ni 1000	–50…+250 °C (fixed)
2 x LG-Ni 1000 or T1	–50…+150 °C (fixed)
Pt 1000	–50…+400 °C (fixed)

Active signals

In the case of active signals, the measuring range can be defined. A lower and an upper measured value must be entered.
Active DC 0…10 V temperature signals have a default measuring range of 0…200 °C, but are adjustable within the overall range of –50…+500 °C.

Example

Room temperature with an active signal DC 0...10 V = 0...50 °C:
Lower measured value: 0 °C
Upper measured value: 50 °C

Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Inputs > ...X...

Operating line	*Range*	*Factory setting*
Value low	Depending on the selected type	Depending on the type
Value high	Depending on the selected type	Depending on the type

7.2.3 Measured value correction

Purpose

To compensate for line resistance, a passive temperature sensor can be assigned a measured value correction of –3.0 to +3.0 K.
This can be used to perform on site calibration with a reference measuring unit.

Setting values

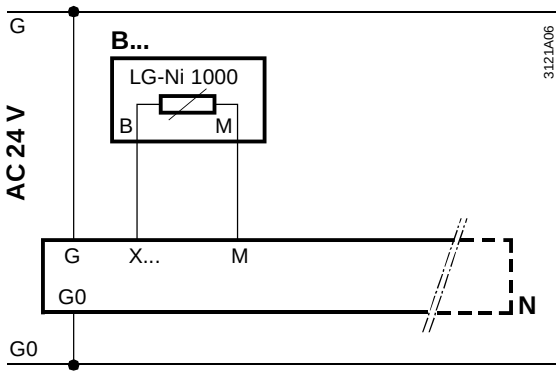
Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Inputs > ...X...

Operating line	*Range*	*Factory setting*
Correction	−3.0…+3.0	0 K

7.2.4 Connection examples for sensors

1 sensor LG-Ni 1000

A passive temperature sensor LG-Ni 1000 can be connected to the input.
It must be connected according to the following diagram:



Configuration of input

Main menu > Commissioning > Extra configuration > Input identifier >

Operating line	*Setting*
N.X1	°C

Setting values

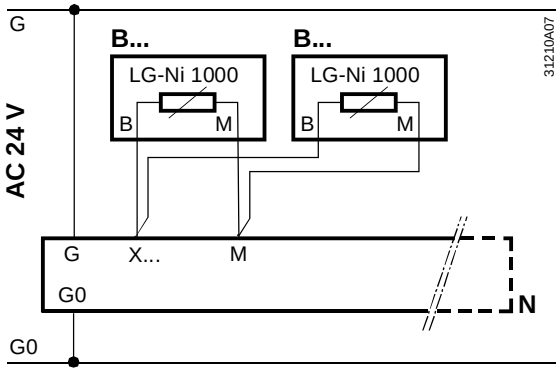
Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Inputs > N.X1

Operating line	*Setting*
Type reference	Ni 1000

Connection examples for sensors (cont'd)

2 sensors LG-Ni 1000

2 passive LG-Ni 1000 temperatures sensor can be connected to the input. The RMB795 central control unit calculates the average temperature. The sensors must be connected according to the following diagram:



Configuration of input

Main menu > Commissioning > Extra configuration > Input identifier

Operating line	*Setting*
N.X1	°C

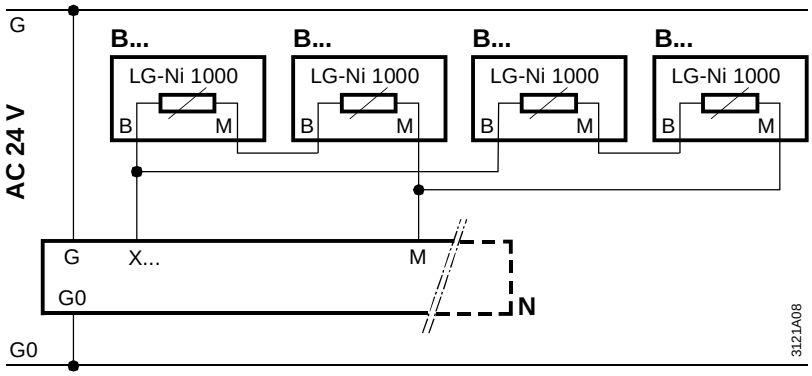
Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Inputs > N.X1

Operating line	*Setting*
Type reference	2 x Ni 1000

4 sensors LG-Ni 1000

It is also possible to do averaging with 4 passive sensors. They must be connected according to the following diagram:



Configuration of input

Main menu > Commissioning > Extra configuration > Input identifier

Operating line	*Setting*
N.X1	°C

Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Inputs >N.X1

Operating line	*Setting*
Type reference	Ni 1000

7.2.5 Error handling

Supervision of sensor signals

When leaving the commissioning menu, the central control unit checks to see which sensors are connected.
If, later, one of the sensors connected at this point in time is missing, or if there is a short-circuit, a fault status message will be delivered.
"[...X...] sensor error".
Display with the measured value:

- Open-circuit: ----
- Short-circuit: oooo

Fault status messages

No.	*Text*	*Effect*
101… 224	[N.X1] sensor error, [RMZ787(2).X4] sensor error	Nonurgent message; must not be acknowledged

7.2.6 Multiple use of sensors

Problem and solution

Not all sensor signals can be routed via bus to some other device.
For this reason, function "Multiple use of sensors" offers the choice of wiring a passive signal at an input terminal directly to a Y-output and to deliver it as a DC 0…10 V signal. The signal can thus be fed to other devices.

Configuration

Main menu > Commissioning > Extra configuration > Sensor multiple use

Operating line	*Adjustable values / remarks*
Signal Y N.X1…	Activation of function by assigning an input terminal to the output terminal

Setting values

Conversion of a Ni 1000 or Pt 1000 signal to a DC 0...10 V signal is made via parameter setting "Value low" or "Value high" (refer to subsection 7.4.2).

7.3 Digital inputs (Xx)

7.3.1 Use and activation

Use

The digital inputs can accept signals for control functions.

Activation

The inputs can be activated as described in subsection 7.1.2

7.3.2 Normal position

Setting values

For each digital input, the normal position can be preselected:

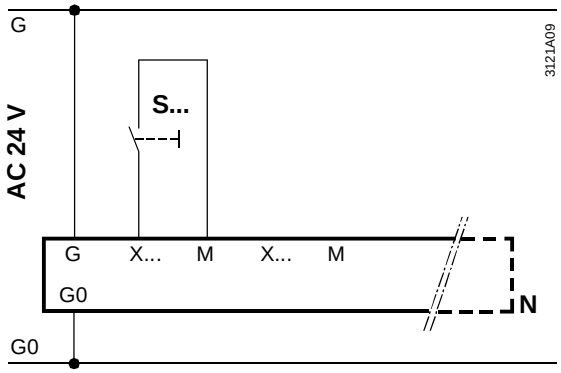
Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Inputs > ...X...

Operating line	*Range*	*Factory setting*
Normal position	Open / Closed	Open

7.3.3 Connection example

Connection diagram

Potential-free contacts can be connected to the digital inputs. The connection must be made according to the following diagram:



Configuration of input

Main menu > Commissioning > Extra configuration > Input identifier

Operating line	*Setting*
N.X2	Digital

Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Inputs >N.X1

Operating line	*Setting*
Normal position	Open

7.3.4 Error handling

No supervision possible

Digital signals cannot be monitored.
If important protective functions, such as “Fire alarm off”, are connected to this terminal, we recommend the following:

- Choose wiring such that “Fire alarm off” will also be triggered when there is no signal (open-circuit)
- Setting value “Normal position”: Closed

7.4 Outside temperature

7.4.1 Connection choices

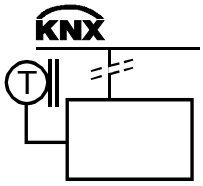
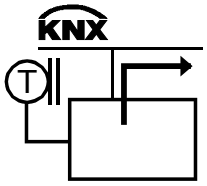
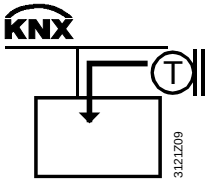
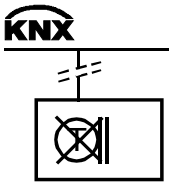
2 possible signal sources

For the outside temperature, the following 2 signal sources can be used:

- Outside temperature connected locally to terminal, activated by identifier "Outside temperature"
- Outside temperature signal from bus

4 variants

In addition, it is important whether or not "Outside temperature" communication is active. Hence, the following 4 variants are made available:

Variant	*Diagram*	*Effect*
Outside temperature at the terminal. Outside temperature communication **inactive**		The central control unit operates with its own outside temperature. No impact on the bus.
Outside temperature at the terminal. Outside temperature communication **active**		The central control unit operates with its own outside temperature. The outside temperature is also delivered to other devices via the bus.
No outside temperature at the terminal. Outside temperature communication **active**		The central control unit operates with the outside temperature, delivered via the bus by some other device.
No outside temperature at the terminal. Outside temperature communication **not active**		No outside temperature for the central control unit available.

7.4.2 Outside temperature at the terminal

Settings and connection

The settings and the connection diagram for the outside temperature at the terminal are described in section 7.2.

Configuration

Main menu > Commissioning > Extra configuration > Input identifier

Operating line	*Adjustable values / remarks*
…X…	Activation of function by assigning the value of the "Outside temperature" to the input

Setting values

Main menu > Commissioning > Settings > ... *or*
Main menu > Settings > Inputs > ...X...

Operating line	*Range*	*Factory setting*
Type reference	Ni 1000, 2 x Ni 1000, T1, Pt 1000, DC 0…10 V	Ni 1000
Value low	Depending on the selected type	Depending on the type
Value high	Depending on the selected type	Depending on the type
Correction	−3.0…+3.0 K	0 K

7.4.3 Outside temperature from the bus

Prerequisites

The outside temperature can only be transmitted via bus if communication is activated and an outside temperature zone has been set.

To enable different outside temperatures to be delivered via the bus (e.g. outside temperature on the northern side of the building for the air conditioning plant, and outside temperature on the eastern side of the building for heating group "East", etc.), they must be assigned to specific outside temperature zones.
The relevant settings are described in chapter 11.

Setting values

Main menu > Commissioning > Communication > Distribution zones

Operating line	*Range*	*Factory setting*
Outside temperature zone	---, 1…31	---

Outside temperature zone = "---" means that the outside temperature on the bus is not active.

7.4.4 Outside temperature simulation

Overriding the measured value

To simulate the outside temperature and to test the response of the plant, the measured value of the outside temperature can be overridden.

Setting values

Main menu > Inputs

Operating line	*Range*	*Factory setting*
Outside temperature simulation	----, −50...+50 °C	----

⚠ The inputs should only be overridden by qualified staff and only for a limited period of time!

Fault status message

During the time the outside temperature is simulated, a fault status message "Outside sensor simulation active" will be delivered:

No.	*Text*	*Effect*
12	Outs sensor simulation active	Nonurgent message; must not be acknowledged

The fault status message is present until "Outside temperature simulation" is set back to position "----". This is to make certain that staff on the plant will not forget to terminate the simulation.

Note

The simulated outside temperature is only used locally; it is not sent to other devices via the bus.

7.4.5 Error handling

Supervision of the measured value

When the commissioning menu is quit, the central control unit checks if there is a measured value of the outside temperature. If, at this point in time, a measured value is available and then missing later, a fault status message will be delivered: "[...X...]: Sensor error

Fault status messages

No.	*Text*	*Effect*
101… 224	[N.X1] sensor error... [RMZ787(2).X4] sensor error	Nonurgent message; must not be acknowledged

Only 1 outside temperature per zone permitted

In each Synco system, only 1 outside temperature may be communicated in the same zone, that is, only 1 outside temperature master may be present.
If several devices in the same zone deliver their outside temperature, the following fault status message will be delivered: ">1 outside temperature sensor".
The message is delivered by the devices that send outside temperature signals to and receive them from the same zone.

Fault status message

No.	*Text*	*Effect*
11	>1 outside temperature sensor	Urgent message; must be acknowledged

Outside temperature via bus available?

If the RMB795 central control unit expects an outside temperature from the bus and that outside temperature is not communicated, the following fault status message will be delivered: “Outside temp sensor error”.

Fault status message

No.	*Text*	*Effect*
10	Outside temp sensor error	Nonurgent message; must not be acknowledged

If other outside temperatures are available on the bus, any of them will be used randomly.

7.5 Texts

Assigning plant-specific text

Each input can be assigned plant-specific text with a maximum length of 20 characters. Such text is displayed locally in place of standard text (e.g. N.X1).

Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Inputs

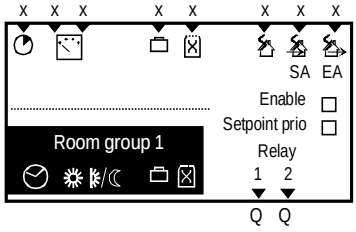
Operating line	*Range*	*Factory setting*
N.X1	Max. 20 characters	N.X1
N.X2	Max. 20 characters	N.X2
N.X3	Max. 20 characters	N.X3
N.X4	Max. 20 characters	N.X4
N.X5	Max. 20 characters	N.X5
N.X6	Max. 20 characters	N.X6
RMZ785.X1	Max. 20 characters	RMZ785.X1
RMZ785.X2	Max. 20 characters	RMZ785.X2
RMZ785.X3	Max. 20 characters	RMZ785.X3
RMZ785.X4	Max. 20 characters	RMZ785.X4
RMZ785.X5	Max. 20 characters	RMZ785.X5
RMZ785.X6	Max. 20 characters	RMZ785.X6
RMZ785.X7	Max. 20 characters	RMZ785.X7
RMZ785.X8	Max. 20 characters	RMZ785.X8
RMZ787 (1).X1	Max. 20 characters	RMZ787 (1).X1
RMZ787 (1).X2	Max. 20 characters	RMZ787 (1).X2
RMZ787 (1).X3	Max. 20 characters	RMZ787 (1).X3
RMZ787 (1).X4	Max. 20 characters	RMZ787 (1).X4
RMZ787 (2).X1	Max. 20 characters	RMZ787 (2).X1
RMZ787 (2).X2	Max. 20 characters	RMZ787 (2).X2
RMZ787 (2).X3	Max. 20 characters	RMZ787 (2).X3
RMZ787 (2).X4	Max. 20 characters	RMZ787 (2).X4

8 Function block "Room group"

8.1 Overview

Connections

The illustration shows function block "Room group 1" with its connections and selection boxes as they appear on the configuration sheet:



The connections and functions are described in the following sections.

Features and functions

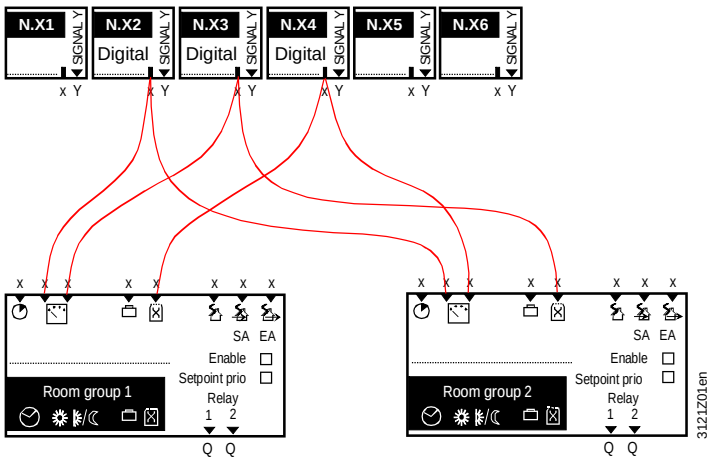
The most important features and functions of the room group are the following:

- On an RMB795 central control unit, up to 10 individual room groups can be activated or configured
- One room group consists of 1 up to (theoretically) 63 rooms
- Every room group has its own time switch. Time switch entries can be copied
- Each room group can make use of a calendar. This calendar can act on several time switches or room groups
- For the entire room group, the same:
  - **Room operating modes** (Comfort, Precomfort, Economy, Protection) apply; they can be influenced via calendar, time program or user interventions
  - **Room setpoints** apply; they can be switched on and off by means of parameter "Setpoint priority". On each RXB room controller, the setpoints can be overwritten or changed
  - **Setpoint corrections** (summer / winter compensation, QAW740 room unit)
  - **Emergency modes** (pressurize, depressurize, purge, fire)
  - **Application modes** (auto, night purge, etc.)

Depending on the application, extra functions such as night cooling can be activated.

Same operating mode, but different setpoints

External signal sources integrated via digital inputs (timer, manual switch) can simultaneously act on several room groups. Example:



ACS operator station and RMB795 central control unit

If, in addition to the RMB795 central control unit, an ACS operator station is installed, following applies:

- The operating modes and setpoints of each room controller of a room group can be separately changed via the ACS operator station
- The values predefined by the ACS operator station or RMB795 central control unit apply until the next change is made.
  Consequence: If the ACS operator station shall assign the setpoints individually, configuration parameter "Setpoint priority RMB central control unit" must be set to "No".

Room operating modes

The central control unit differentiates between 4 room operating modes:

Room operating mode	*Explanation*
Comfort (☼):	Operating mode for the occupied room
Precomfort (☼):	Energy-saving operating mode for the room
Economy (☾)	Plant OFF. A maximum / minimum temperature is ensured in the room (sustained mode)
Protection (❄):	Plant OFF. Frost protection active

8.2 Activating the function block

Configuration

Each room group can be enabled via a configuration parameter:

Main menu > Commissioning > Extra configuration > Room group 1....10 >

Operating line	*Setting*
Enable	Yes / No

Setting values

Each room group can be assigned individual text:

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Room group 1....n >

Operating line	*Range*	*Factory setting*
Room group 1	Max. 20 characters	Room group 1
Room group 2	Max. 20 characters	Room group 2
Room group 3	Max. 20 characters	Room group 3
Room group 4	Max. 20 characters	Room group 4
Room group 5	Max. 20 characters	Room group 5
Room group 6	Max. 20 characters	Room group 6
Room group 7	Max. 20 characters	Room group 7
Room group 8	Max. 20 characters	Room group 8
Room group 9	Max. 20 characters	Room group 9
Room group 10	Max. 20 characters	Room group 10

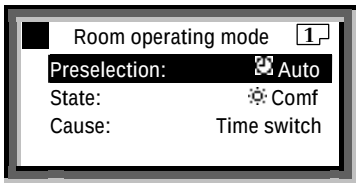
8.3 Room operating modes per room group

8.3.1 Room operating mode selector

"Room operating mode" menu

The **Room operating mode** menu contains 3 operating lines:

- Preselection: Manual entry of operating mode for a room group
- State: Display of current room operating mode
- Cause: Display of cause of this operating mode



The possible entries and displays are listed below.

Operating line "Preselection"

The following operating modes are available for selection:

Setting values

■ Main menu > Room group 1..10 > Room operating mode >

Operating line	*Range*	*Factory setting*
Preselection	Auto Comfort Precomfort Economy Protection	Auto

Operating line "State"

The current room operating mode can assume the following states:

- Comfort
- Precomfort
- Economy
- Protection

Operating line "Cause"

The different user interventions are given as a cause. The following user interventions are possible (in the order of priority):

- Selection of room operating mode via digital inputs (room operating mode contact)
- Room operating mode selector (preselection via **Room operating mode** menu) or room operating mode via QAW740
- Special day
- Holidays
- Time switch

Display values

■ Main menu > Room group 1..10 > Room operating mode >

Operating line	*Remarks*
State	
Cause	Room operating mode contact, room operating mode selector, timer function, special day, holidays, time switch, external master, night cooling

8.3.2 Selection of room operating mode via digital inputs

Purpose

This function enables the user to make external interventions in the running program (e.g. via switches) without having to make manipulations on the RMB795 central control unit itself.
To activate the function, the relevant digital inputs must be configured.

Types of interventions

The following types of interventions can be configured:

- Timer function
- Switching to the required room operating mode
- Room operating mode selector

If several of these functions are simultaneously active, the following priority applies:

1. Room operating mode selector or switching to the required operating mode.
2. Timer function.

Settings

The following settings must be made, depending on the required function:

Type of action	*Operating line*	*Value*
Timer function	Timer function (digital input) Timer function(duration)	N.Xx > 0 min
Switching to the required room operating mode	Room operating mode input 1 Room operating mode input 2 Preselected room operating mode	N.Xx --- Selecting the required operating mode
Room operating mode selector	Room operating mode input 1 Room operating mode input 2	N.Xx N.Xx

Wrong configuration

If only room operating mode input is wired, switching of the external contacts connected to Xx has no impact:

Operating line	*Value*	*Effect*
Room operating mode input 1	---	None
Room operating mode input 2	N.Xx	

Timer function

The digital input selected for the timer function enables the controller to be switched to Comfort mode for the period of time set.

Configuration

Main menu > Commissioning > Extra configuration > Room group 1...10 > Room operating mode >

Operating line	*Adjustable values / remarks*
Timer function	---, N.X1, N.X2,... (only digital inputs)

Setting values

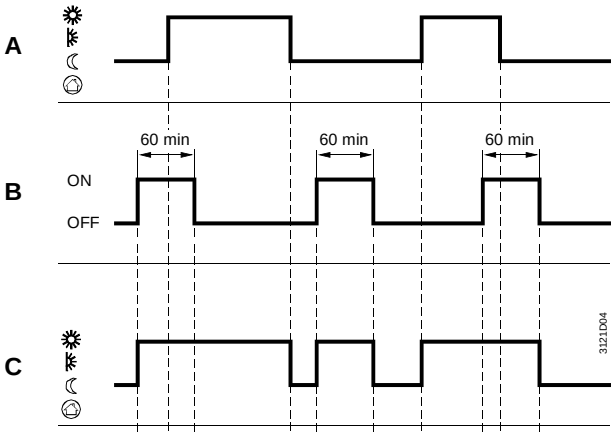
Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Room group 1...10 > Room operating mode >

Operating line	*Range*	*Factory setting*
Timer function	0…720 min	60 min

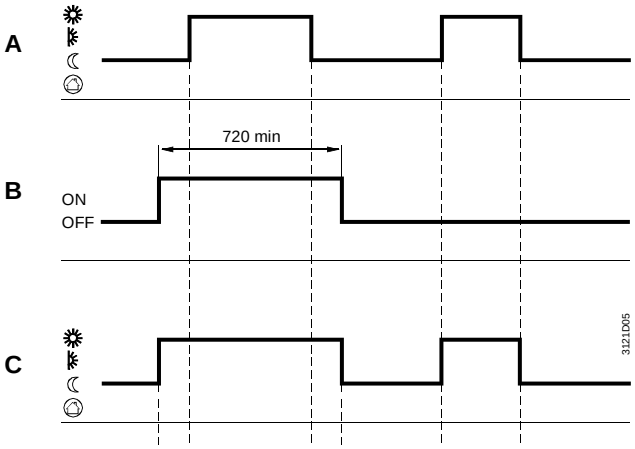
Function diagrams

The function diagrams below show the impact of the timer function on the effective room operating mode with 2 different setting values.

a) Setting value 60 min:



a) Setting value 720 min:



Legend

A Time switch
B Switching command via digital input for "Timer function", with time set for comfort mode
C Effective room operating mode

Switching to the required room operating mode

The digtial input enable the plant to permanently run in the required room operating mode. The required operating mode can be selected via datapoint "Room operating mode input 1" on menu Room group X > Room operating mode >.
This operating mode is active until the signal at the control input is no longer present. Only then will the normal 7-day program be resumed.

Configuration

Main menu > Commissioning > Extra configuration > Room group 1...10 > Room operating mode >

Operating line	*Adjustable values / remarks*
Room operating mode input 1	---, N.X1, N.X2, ... (only digital inputs)

Setting values

Main menu > Settings > Room group 1...10 > Room operating mode >

Operating line	*Range*	*Factory setting*
Preselected room operating mode	Comfort, Precomfort, Economy, Protection	Comfort

Selection of room operating mode via digital inputs (cont'd)

Room operating mode selector

2 digital inputs enable the plant to be constantly switched to the desired operating mode via an **external switch**.
The desired operating mode is active until the signal is no longer present. Only then will the normal 7-day program be resumed.

Configuration

Main menu > Commissioning > Extra configuration > Room group 1...10 > Room operating mode >

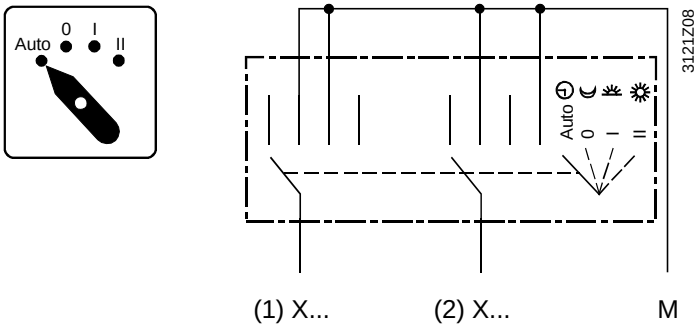
Operating line	*Adjustable values / remarks*
Room operating mode input 1	---, N.X1, N.X2, ... (only digital inputs)
Room operating mode input 2	---, N.X1, N.X2, ... (only digital inputs)

The operating modes are assigned according to the following table:

State of control input 1	*State of control input 2*	*Resulting operating mode*
Normal position	Normal position	Auto
Operating position	Operating position	Economy
Operating position	Normal position	Precomfort
Normal position	Operating position	Comfort

Example

The illustration shows an external switch and its wiring to 2 digital inputs:



Holidays / special day

It is also possible to configure separate control inputs for holidays and special days. For detailed information, refer to subsection 8.3.5.

Errors in operation

The RMB795 central control unit cannot monitor digital signals.

Recommendation

The potential-free contacts for the digital inputs should be open when in the normal position, enabling the RMB795 central control unit to operate in automatic mode in the event of an open-circuit.

8.3.3 Selection of room operating mode via the QAW740 room unit

Activation of function

For every room group, a room operating mode preselection can be configured via a QAW740 room unit. It is active when, under “Communication", the “QAW operation zone (apartm)" is selected (refer to subsection 11.2.2) and, with the QAW740 room unit, the same zone is assigned.

Operating principle

Using the Mode button on the QAW740 room unit, the required operating mode can be selected. This room operating mode is transmitted to the RMB room group. From the RMB795 central control unit, the room operating mode will then be passed on to the room group. The QAW740 room unit does **not** directly act on the RXB room controllers.

Preselection of the room operating mode by the QAW740 room unit has the same priority as preselection via the RMZ79x, whereby the latter always prevails.

Order of priority for the room operating mode.

1. Contacts on the RMB795 central control unit.
2. RMZ79x or QAW740 room unit (Mode or Timer button).
3. Timer function on the RMB795 central control unit.
4. Special day contact/RMZ79x .
5. Holiday contact/RMZ79x.
6. Time switch.

Example

The timer function of the QAW740 room unit can be used to extend the Comfort mode of a room group.

8.3.4 7-day time switch

Assignment and function

Every function block "Room group" has its own 7-day time switch. This time switch is firmly coupled to the relevant room group.

The 7-day time switch controls the change of the operating modes and the associated setpoints in accordance with the 7-day program entered.

Different times from one week to another are not possible.

Operation of the 7-day time switch is described in Operating Instructions B3121.

Setting values

A specific 24-hour profile can be selected for the following weekdays.

■ Main menu > Room group 1..10 > Time switch

Operating line	*Range*	*Factory setting*
Monday through Sunday	Comfort / Precomfort / Economy	06:00 Comf 22:00 Eco
Special day	Comfort / Precomfort / Economy	06:00 Comf 22:00 Eco

Activation of the special day

Activation of the special day is described in chapter 11 "Communication".
Every day can be assigned a maximum of 6 entries in the 24-hour program.
Entries required for an entry:

- Time of day from which the desired operating mode shall apply
- The required operating mode

Copying 24-hour profiles

When all entries for one day have been made, that day can be copied to the other days. To do this, the respective time switch and day must be selected (e.g. room group 1 > Time switch > Monday >).
When turning the OK knob in clockwise direction, the selection "Copy to" will appear at the end of the list of time switch entries. Here, it is possible to copy to Monday through Friday, Monday through Sunday, or to each individual weekday.

Copying 7-day programs

When all entries have been made in a 7-day program, that program can be copied to other room groups. For that purpose, the relevant time switch must be selected (e.g. Room group 1 > Time switch >).
When turning the OK knob in clockwise direction, the selection "Copy to" will appear at the end of the list of weekdays. Here, it is possible to copy to all room groups or to each individual room group.

Note

The copy process will only take place if the target room group in the function block is enabled.

Error handling

Only 1 time switch master per time switch zone (apartment) may be used. If several devices are parameterized as master, a fault status message will be delivered:

Fault status messages

No.	*Text*	*Effect*
5102	>1 time switch in room group 1	Nonurgent message; must be acknowledged
...		
5192	>1 time switch in room group 10	Nonurgent message; must be acknowledged

8.3.5 Holidays / special days

Assignment and function

For each room group, a specific holidays / special day program is available. This program is firmly coupled to the relevant room group.

Weekdays deviating from the normal 7-day program can be entered by the plant operator as holidays or special days, using the **Holidays / special days** menu.

Entry of holidays / special days is described in the Operating Instructions B3121.

As default, the holiday / special day program of room group 1 is defined as the master, and all other holiday / special day programs as slaves. This means that the settings apply to the entire RMB795 central control unit.

If independent holiday / special day programs are required, appropriate communication settings must be made:

- Autonomous (for a specific holiday / special day program of room group x)
  or
- Master in some other calendar zone (for a holiday / special day program that shall also be used by other room groups)

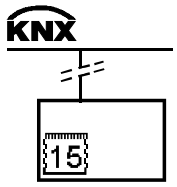
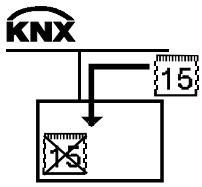
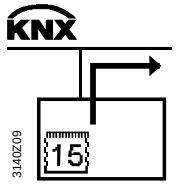
Assignment of holiday / special day programs

Holiday / special day programs can be assigned to room groups or to other devices on the bus.
Different sources can be used as the master. These can be entered on the RMB795 central control unit.

The following settings can be made:

- Autonomous: Does not send and does not receive
- Slave: Receives the holiday / special day program from the bus
- Master: Sends the holiday / special day program via the bus

The impact of the individual settings are explained below:

Setting	*Effect*	*Diagram*
Autonomous	The holiday / special day program only acts locally on this central control unit. It has no impact on the holiday / special day zone entered under "Communication".	
Slave	The holiday / special day program in this central control unit is not active. The program that acts is the external holiday / special day program that has the same holiday / special day zone set. The external holiday / special day program must be set as the master holiday / special day program.	
Master	The holiday / special day program in this central control unit is active. The holiday / special day program also acts on all other devices where the holiday / special day program is switched off (slave) and which lie in the same holiday / special day zone.	

Note

Setting of the holiday / special day zone is described in subsection 11.2.2.

Holidays / special days (cont'd)

Holidays: Explanation

Holidays are periods of time during which the building is **unoccupied** and whose start and duration are known in advance. Examples:

- Works holidays in commercially used spaces and buildings
- School holidays in school buildings
- Public holidays

Setting values

It is possible to enter whether Economy or Protection mode shall be used during the holiday period.

Main menu > Room group 1...10 > Holidays/special days

Operating line	*Range*	*Factory setting*
Room operating mode holidays	Economy, Protection	Eco
DHW operating mode holidays	Auto Protection Normal / Reduced	Prot

Explanations relating to the setting values

When the RMB795 central control unit is connected to other devices via communication, the operating mode selected here will apply to all devices in the same holiday / special day zone.
If DHW heating is included in the same holiday / special day zone, the operating mode selected under "DHW operating mode holidays" will apply during the holiday period.

Special days: Definition

Special days are periods of time during which the building is used for **special** purposes and whose start and duration are known in advance. Examples:

- Visitor days in recreation homes
- Church holidays

Entry choices

An extra 24-hour program (special day) as a special day program can be entered in the 7-day program (refer to paragraph ”7-day time switch“ under ”Setting values“).
When the RMB795 central control unit (master) is connected to other devices on the bus (slaves) via communication, a specific 24-hour program (as a special day) can be entered for each of these slaves. But the time of the special day is communicated by the master and applies to all devices included in the holiday / special day zone.

Calendar entries

A maximum of 16 calendar entries can be made. The central control unit sorts the entries in chronological order. Each entry requires an entry of:

- Date, year and start time
- Date and end time
- Reason for entry (holidays or special day)

Setting values

Main menu > Room group 1...10 > Holidays/special days > Calendar

Operating line	*Range*	*Factory setting*
Entry 1...16	Start End Reason	

Annual holidays or special days

Annually reoccurring holidays or special days can be entered by setting an asterisk "*" for the annual setting. Otherwise, the entries will automatically be deleted after the relevant days have been handled.

Priority

If 2 entries overlap, following applies:

Special days have priority over holidays.

Example of a special day during the holiday period: Theatrical performance in the school building.

Note on optimum start control

After the holiday period or the special day has elapsed, the room operating mode according to the normal 7-day program will be resumed.

During this transition period, it can occur that optimum start control (e.g. boost heating) cannot be started in due time.

It is therefore recommended to bring the end of the holiday period somewhat forward in time, thereby giving the plant sufficient time to adapt to the relevant setpoints.

Control input "Holidays / special days"

Holidays and special days can also be activated via digital inputs. For that purpose, they must be assigned.

Configuration

Main menu > Commissioning > Extra configuration > Room group 1...10 > Room operating mode

Operating line	*Adjustable values / remarks*
Holiday input	---, N.X1, N.X2, ... (only digital inputs)
Special day input	---, N.X1, N.X2, ... (only digital inputs)

Notes

These entries take effect only when the holiday / special day mode is set to "Autonomous" or "Master".

Activation of a special day or holiday period via the digital inputs will not be entered in the holiday / special day program, so that there will be no annual reoccurrence.

Holiday input

The digital input enables the plant to constantly use the "Holidays" mode without necessitating interventions on the RMB795 central control unit.
If a continuous signal is fed to the configured input, the plant will switch to "Holidays" mode. This operating mode is maintained until a signal is no longer present. Only then will the normal 7-day program be resumed.

Special day input

The digital input enables the plant to constantly use the special day program contained in the 7-day program without necessitating interventions on the RMB795 central control unit.
If a continuous signal is fed to the configured input, the special day program will be activated. This operating mode is maintained as long as the signal is present. Only then will the normal 7-day program be resumed.

Priorities

If, at the same time, a special day or holiday period is activated via the control switches and an entry in the calendar, the following priorities apply:

- Control switch "Special day"
- Control switch "Holidays"
- "Special day" entry in the calendar
- "Holidays" entry in the calendar

Note

If other devices are configured as slaves in the same holiday / special day zone, the digital inputs will act on all these devices.

Error handling

When handling errors, a differentiation is made between the 2 following cases:

- Only 1 master may be set per holiday / special day zone (refer to subsection 11.2.2 "Room group 1…10)
  If several devices are set as the master, a fault status message will be delivered. The message will be sent by the device which receives 2 holiday / special day signals
- If the RMB795 central control unit expects a holiday / special day signal from the bus and that signal is not sent, a fault status message will be delivered:
  "Hol/sp day prgm fail"

In both cases, the operating modes of the 7-day program are used, without giving consideration to the holiday / special day entries.

Fault status messages

No.	*Text*	*Effect*
5201	Hol/sp day prgm fail r'grp 1	Nonurgent message; must not be acknowledged
...	...	...
5291	Hol/sp day prgm fail r'grp 10	Ditto
5202	>1 hol/sp day prgm R'grp. 1	Nonurgent message; must be acknowledged
...	...	...
5292	>1 hol/sp day prgm R'grp. 10	Ditto

Priorities

When evaluating the priority in the holiday / special day program, only the first 2 entries are taken into consideration. If more than 2 overlapping entries are made, it can occur that the special day no longer has priority over the holiday period.

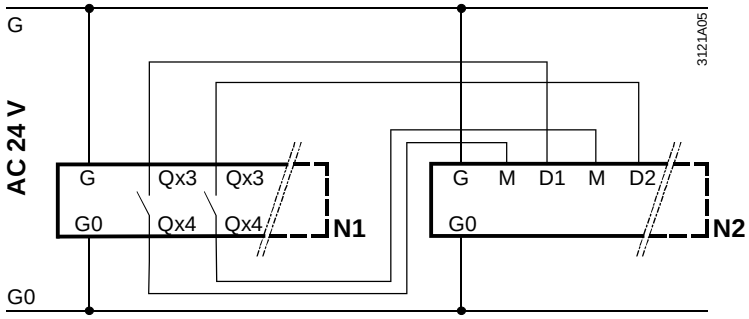
8.3.6 Room operating mode outputs

Purpose

Outputs "Relays 1 / 2" (operating mode relays) at the function block make it possible to feed the resulting room operating mode of the respective room group to 2 relays Qx of the RMB795 central control unit.

Possible application

Passing on the resulting room operating mode from the central control unit's relay outputs Qx to a Synco™200 controller:



Legend

N1: RMB795
N2: Synco™200 RLU2...

Configuration of operating mode relays 1 and 2

Main menu > Commissioning > Extra configuration > Room group 1...10 > Room operating mode

Operating line	*Adjustable values / remarks*
Operating mode relay 1	---, N.Q1 ... (only free relays) / assignment of operating mode relays
Operating mode relay 2	---, N.Q1 ... (only free relays) / assignment of operating mode relays

Settings

On the **Settings** menu, it is possible to select the operating mode relay that shall be energized with each room operating mode. This ensures full flexibility, offering a host of applications.

Main menu > Settings > Room group 1..10 > Room operating mode

Operating line	*Adjustable values / remarks*	*Factory setting*
Comfort relay control	--, R1, R2, R1 + R2	---
Precomfort relay control	--, R1, R2, R1 + R2	---
Economy relay control	--, R1, R2, R1 + R2	R2
Protection relay control	---, R1, R2, R1 + R2	R1 + R2

Room operating mode outputs (cont'd)

Meaning of adjustable values

The adjustable values previously listed under "Settings" have the following meaning:

Value set	*State relay R1*	*State relay R2*
---	Normal position	Normal position
R1	Operating position	Normal position
R2	Normal position	Operating position
R1 + R2	Operating position	Operating position

Note on factory setting

The factory setting has been chosen such that the digital outputs can be connected directly to the digital inputs of the Synco™200 controller.
Since Synco™200 controllers do not use the "Precomfort" mode, the RMB795 central control unit switches to "Economy" mode if "Precomfort" is called for. Naturally, this setting can be changed to suit individual needs.

Connecting room operating modes

When the digital outputs "Relays 1/2" of a "Room group" function block are connected to the room operating inputs of 1 or several other "Room group" function blocks, the following assignments for the "Relays 1/2" outputs are to be made:

Operating line	*Assignment*
Comfort	R2
Precomfort	R1
Economy	R1 + R2
Protection	---

Display values

Menu item **Outputs** shows the state of the operating mode relays:

Main menu > Outputs >

Operating line	*Current state*
Operating mode relays 1 R'grp. 1…10	Off / On
Operating mode relays 2 R'grp 1…10	Off / On

8.3.7 Functional check / wiring test

Purpose

During the wiring test, the room operating mode outputs of the room groups can be switched directly, enabling their function to be checked.

Setting values

Main menu > Commissioning > Wiring test > Outputs

Operating line	*Remarks*
Operating mode room group 1…10	----, Comfort, Precomfort, Economy, Protection

8.4 Setpoints and setpoint corrections

8.4.1 Setpoints

Preselected setpoints per room group

For the Comfort, Precomfort and Economy modes, specific setpoints can be preselected for each room group.

The RXB room controllers adopt the setpoints only if configuration parameter "Setpoint priority" has been set to "Yes". In that case, the setpoints locally adjusted on the RXB room controller will be overwritten by the setpoints of the room group.

Configuration

Main menu > Commissioning > Extra configuration > Room group 1...10 >

Operating line	*Adjustable values / remarks*
Setpoint priority	Yes / No

Setting values

Main menu > Commissioning > Settings > ... *or*
Main menu > Settings > Room group 1...10 > Room temp setpoint >

Operating line	*Range*	*Factory setting*
Economy cooling setpoint	Precomfort cooling setpoint ... 250 °C	30 °C
Precomfort cooling setpoint	Comfort cooling setpoint … Economy cooling setpoint	28 °C
Comfort cooling setpoint	Comfort heating setpoint ... Precomfort cooling setpoint	24 °C
Comfort heating setpoint	Precomfort heating setpoint ... Comfort cooling setpoint	21 °C
Precomfort heating setpoint	Economy heating setpoint … Comfort heating setpoint	19 °C
Economy heating setpoint	-50.0 °C... Precomfort heating setpoint	15 °C

Impact on the setting values

The values can be influenced as follows:

- Per room group by summer / winter compensation (refer to the following subsection)
- Individually on each RXB room controller by a QAX room unit (refer to functional description of RXB, Technical Handbook CA2A3899en)

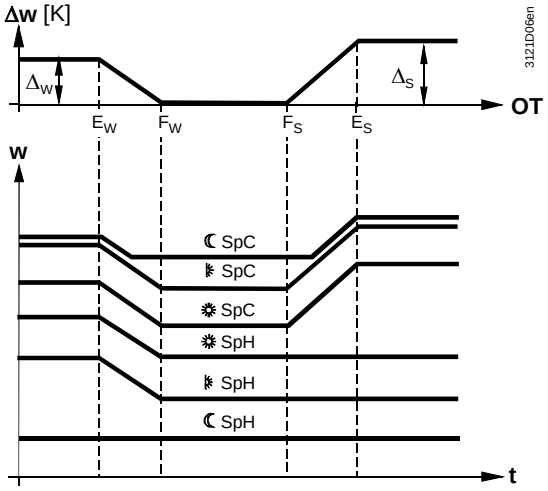
8.4.2 Summer / winter compensation

Activation

For each room group, summer / winter compensation can be parameterized. It is active when an outside temperature is available. This function always acts independently of setting parameter "Setpoint priority".

Operating principle

Summer / winter compensation shifts the setpoint of the RXB room controllers according to the outside temperature.
This setpoint correction acts on the Comfort and Precomfort setpoints according to the following diagram:



Legend:

F_S	Summer compensation start
E_S	Summer compensation end
E_W	Winter compensation end
F_W	Winter compensation start
Δw_S	Summer compensation delta
Δw_W	Winter compensation delta

Use

Summer / winter compensation is used for the following reasons:

- Summer compensation to compensate for the lighter clothing worn by building occupants
- Winter compensation to give consideration to the cold envelope of the space (e.g. the windows)

Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Room group 1...10 > Setpoint effects >

Operating line	*Range*	*Factory setting*
Summer compensation delta	−50.0 ... +50.0 K	0 K
Summer compensation end	Summer compensation start ... 250 °C	30.0 °C
Summer compensation start	Winter compensation start ... Summer compensation end	20.0 °C
Winter compensation start	Winter compensation end ... Summer compensation start	0.0 °C
Winter compensation end	−50.0 ... Winter compensation start	−10.0 °C
Winter compensation delta	−50.0 ... +50.0 K	0 K

Error handling

If there is no outside temperature signal from the outside sensor, the setpoint will not be shifted.

8.4.3 Relative setpoint readjustment by means of the QAW740 room unit

Activation of function

For every room group, a setpoint readjustment can be configured via a QAW740 room unit. It is active when, under "Communication", the "QAW zone (apartm.)" has been set (refer to subsection 11.2.2) and, with the QAW740 room unit, the same zone has been assigned.

Operating principle

The setpoint readjustment via the QAW740 room unit acts on the relevant setpoint readjustments of the RMB room group. From the RMB795 central control unit, the setpoint readjustment is then passed on to the RXB room controllers of the room group. The QAW740 room unit does **not** act directly on the RXB room controllers.
If, in addition, summer / winter compensation has been parameterized, the setpoint readjustment will be added to the RMB room group (example 2).

Examples

The following examples show the assignment of zone addresses, the passing on of setpoint readjustments and the resulting setpoints on the RXB room controllers:

					
	QAW740	RMB795 room group 1	RXB...	RXB...	RXB...
Geographical zone	Apartment: **3**.1.1	QAW zone: **3**.1.1			
Geographical zone		Apartment: **5**.1.1	Apartment: **5**.1.1	Apartment: **5**.2.1	Apartment: **5**.3.1

Example 1					
Operating mode		Comfort	Comfort	Comfort	Comfort
Comfort heating setpoint		21 °C	21 °C	21 °C	21 °C
Summer / winter compensation		0 K	0 K	0 K	0 K
Setpoint readjustment	+2 K → →	+2 K → →	+2 K	+2 K	+2 K
Resulting heating setpoint			23 °C	23 °C	23 °C

Example 2					
Operating mode		Comfort	Comfort	Comfort	Comfort
Comfort heating setpoint		21 °C	21 °C	21 °C	21 °C
Summer / winter compensation		+3 K → →	+3 K	+3 K	+3 K
Setpoint readjustment	+1 K → →	+1 K → →	+1 K	+1 K	+1 K
Resulting heating setpoint			25 °C	25 °C	25 °C

Notes

Passing on the setpoints from the RMB795 central control unit to the RXB room controllers takes place only if, during room group configuration, "Setpoint priority" has been set to "Yes".
Additional setpoint readjustments can be made on the RXB room controller by means of the QAX room unit or the OCI700.1 service tool. These settings are not shown in the examples.

8.5 Temperatures of "Reference rooms"

Purpose

1 to 3 specially selected individual rooms can be defined as reference rooms, which are used for calculating the "Night cooling" function.
The temperatures of the reference rooms can be displayed for each room group.

Configuration

Configuration of the reference rooms is described in subsection 11.2.2.

Display values

Menu item **Room temp actual value** displays the temperatures of the reference rooms:

■ Main menu > Room group 1...10 > Room temp actual value

Operating line	*Current room temperature*
Reference room 1	Temperature of reference room 1
Reference room 2	Temperature of reference room 2
Reference room 3	Temperature of reference room 3

Note

"Reference room X" is the default text. It can be edited and will then be displayed.

8.6 Temperature supervision

Purpose

Temperature supervision shall provide an overview of the temperature distribution in a room group. For this purpose, the following temperatures are displayed:

- The highest current room temperature in a room group and the zone address of the relevant RXB room controller
- The lowest current room temperature in a room group and the zone address of the relevant RXB room controller

The evaluation is made in the form of a dynamic list which constantly records the highest and the lowest valid room temperature.

Note

To ensure that temperature supervision works, a device list must be created as described in section 14.3.

Display values

Main menu > Room group 1...10 > Room temp actual value >

Operating line	*Description*
Highest room temperature	Currently highest room temperature in a room group
Zone (apart.room)	Geographical zone address of the RXB room controller with the highest room temperature, e.g. 2.1
Lowest room temperature	Currently lowest room temperature in a room group
Zone (apart.room)	Geographical zone address of the RXB room controller with the lowest room temperature, e.g. 2.4

Limit values

For each room group, a high and a low limit value for the room temperature can be set. If one of the limit values is crossed, a fault status message will be delivered.

Main menu > Commissioning > Settings > ... *or*
Main menu > Settings > Room group 1...10 > Room temp. Supervision >

Operating line	*Range*	*Factory setting*
Limit value high	0...50 °C	40 °C
Limit value low	0...50 °C	12 °C

Fault status message

In the fault status message, the geographical zone address is given in the following format:
"Apartment.Room" (e.g. 6.24).

Based on this address and the planning documentation, the relevant RXB room controller can be unambiguously identified.

No.	*Text*	*Effect*
45XX	Rm temp > lim val high r grp 1…10	Nonurgent message; must not be acknowledged
45XX	Rm temp < lim val low r grp 1…10	Nonurgent message; must not be acknowledged

8.7 Night cooling

Purpose

The "Night cooling" function is used in the summer during nonoccupancy times to cool down the rooms with cool outside air.
Cooling energy can thus be saved during occupancy times.

8.7.1 Activating the function

Conditions

For the "Night cooling" function to be activated, the following conditions must be satisfied:

- At least 1 reference room temperature must be available
- The outside temperature must be available

Reference rooms

For acquisition of the reference room temperature, following applies:

- On the **Communication** menu, 1 to 3 individual rooms from the relevant room group can be defined as reference rooms by assigning to them the “Geographical zone (room)” (refer to subsection 11.2.2)
- Of the maximum of 3 reference rooms, it is always the highest room temperature that is selected

Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Room group 1...10 > Night cooling >

Operating line	*Range*	*Factory setting*
Outside temperature limit	0...50 °C	12 °C
Room-outside temp delta	0.0...20.0 K	5 K
Operating time min	0...720 min	30 min
Precooling time max	0...2880 min	0 min

Deactivation of night cooling

The "Night cooling" function can be deactivated by setting parameter "Precooling time max" to 0 min (default value).

8.7.2 Operating principle

Use and release

When RXB room controllers are used on applications that support the "Night cooling" function (e.g. VAV), the room controllers can be released via the RMB795 central control unit.

For detailed information about RXB room controllers that support the "Night cooling" function, refer to the relevant RXB documentation.

Switch-on conditions

The switch-on conditions for the "Night cooling" function are the following:

- Room temperature (RT actual value) > Comfort heating setpoint plus 1 K
- Outside temperature (OT actual value) > outside temperature limit (OT limit)
- Room temperature minus outside temperature > room-outside temperature delta
- Period of time to elapse until the plant is switched on the next time according to the time switch or holiday / special day program < precooling time max
- Controller in Auto mode (Economy of time program)

Switch-off conditions

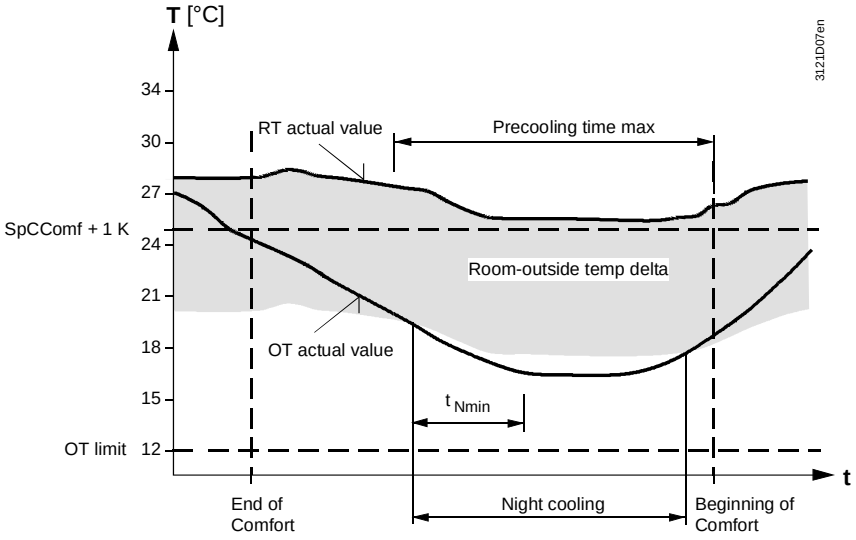
The switch-off conditions for the "Night cooling" function are the following:

- Room temperature < Comfort heating setpoint
- Outside temperature < outside temperature limit
- Room temperature minus outside temperature < room-outside temperature delta

With these conditions, the minimum operating time of the “Night cooling” function is observed.

Function diagram

The following diagram is an example of the period of time night cooling takes place based on the setting values according to “Activation of function“ and the above mentioned switch-on and switch-off criteria:
Night cooling starts where the actual outside temperature leaves the grey "Room-outside temp delta" band (setting value). It ends where the actual outside temperature reenters the band.



8.7.3 Error handling

Brief description

Supervision of the outside temperature is described in section 7.4.
The values of the reference room temperature are communicated by the RXB room controllers.
If no reference room temperatures or no outside temperature values are available, the "Night cooling" function will be deactivated.

8.8 Fire alarm off

Function

In case of emergency, a room group can be switched off via a digital input at an input Xx of the RMB795 central control unit. The signal can be delivered by an external fire alarm system, for example.

8.8.1 Activating the function

Configuration

The function is activated by configuring a digital input:

Main menu > Commissioning > Extra configuration> Room group 1...10 > Fire and smoke extraction >

Operating line	*Adjustable values / remarks*
Fire alarm off	---, X1, X2, ... (only digital inputs)

8.8.2 Operating principle

Bus telegram to the RXB room controllers

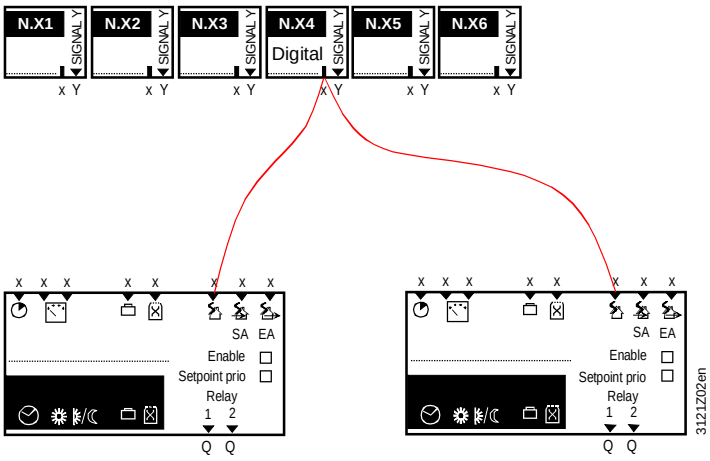
When RXB room controllers are used on applications that support the "Emergency override" function (e.g. VAV), the RMB795 central control unit can transmit to them via bus the signal for fire alarm off received via the digital input.
The signal acts on the geographical zone of the relevant room group. It has no impact on the operating mode of that room group.

Note

For detailed information about the RXB room controllers that support the "Emergency override" function, refer to the relevant RXB documentation.

Application example

The signal at digital input X4 is passed to the "Fire alarm off" inputs of 2 room groups:



8.8.3 Error handling

Priority is "Urgent"

The fault priority is "Urgent" (fixed). A fire alarm signal must always be acknowledged and reset. Only then will the room group(s) resume normal operation according to the time program.

Fault status messages

No.	*Text*	*Effect*
3900	Fire alarm off	Urgent message; must be acknowledged and reset

8.9 Smoke extraction

Function

Function block "Room group" can be switched to "Smoke extraction" mode via 1 or 2 digital signals at its inputs "SA" and "EA".

8.9.1 Activating the function

Configuration

The function is activated by configuring at least 1 digital input Xx:

Main menu > Commissioning > Extra configuration> Room group 1...10 > Fire and smoke extraction >

Operating line	*Adjustable values / remarks*
Smoke extraction supply air	---, X1, X2, ... (only digital inputs)
Smoke extraction extract air	---, X1, X2, ... (only digital inputs)

8.9.2 Operating principle

Bus telegram to the RXB room controllers

When RXB room controllers are used on applications that support the "Emergency override" function (e.g. VAV), the RMB795 central control unit can transmit to them via bus the smoke extraction signal for supply air, extract air or supply air / extract air operation.
The signal acts on the geographical zone of the relevant room group. It has no impact on the operating mode of that room group.

Notes on configuration

For detailed information about the RXB room controllers that support the "Emergency override" function, refer to the relevant RXB documentation.

Smoke extraction with supply air and / or extract air can be configured separately:

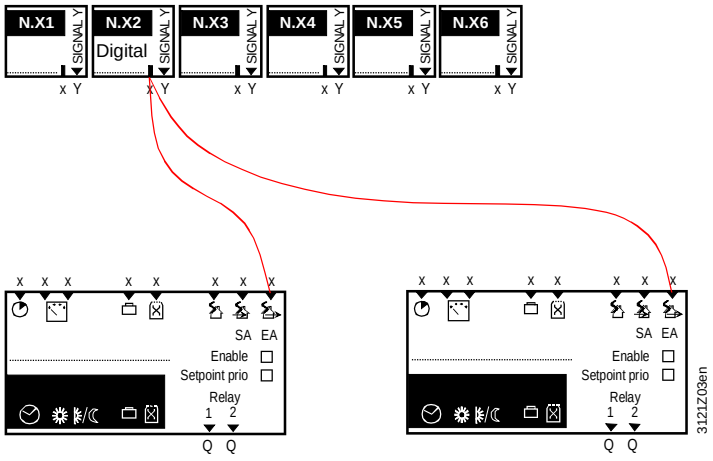
- If smoke extraction shall be accomplished with supply air and extract air, both inputs of the function block can be controlled
- The digital input Xx can be configured for smoke extraction with supply air and smoke extraction with extract air

Priority

Smoke extraction has a higher priority than fire alarm off or, in other words, smoke extraction takes place inspite of a "Fire alarm off" signal.

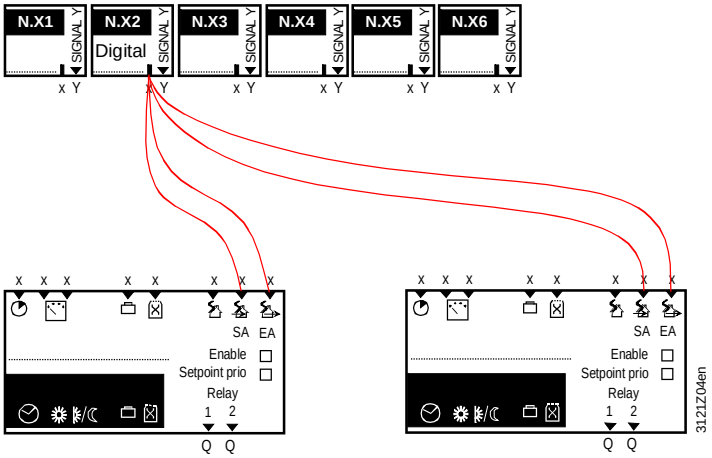
Configuration example: Smoke extraction with extract air

Smoke extraction with extract air for the rooms in room groups 1 and 2 is triggered via the signal from digital input X2:



Configuration example: Smoke extraction with supply air and extract air

Smoke extraction with supply air and extract air for the rooms in room groups 1 and 2 is triggered via the signal from digital input X2:



8.9.3 Error handling

Priority is "Urgent"

The fault priority is "Urgent" (fixed). Smoke extraction must always be acknowledged. When the relevant external contact is deenergized so that the signal at digital input Xx is no longer present, the room group(s) will resume normal automatic operation according to the time program.

Fault status messages

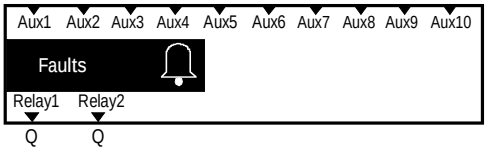
No.	*Text*	*Effect*
3901	Smoke extraction	Urgent message; must be acknowledged

9 Function block "Faults"

9.1 Purpose and activation

Task

Function block "Faults" collects all fault status messages, evaluates them and responds to protect building and plant.



Activation

To activate the function block, 1 of the inputs Aux1…Aux10 must be configured.

However, a large number of faults are acquired automatically and need not be specifically configured on function block "Faults". These faults are described with the relevant function. Example: "Fire alarm off".

9.2 Fault priorities and acknowledgement

Fault priorities

The RMB795 central control unit differentiates between 2 fault priorities:

Urgent:	These are fault status messages that represent plant risks, or where reliable operation of plant can no longer be ensured (e.g. "Smoke extraction").
Nonurgent:	These are fault status messages that do not represent direct plant risks (e.g. "faulty outside temperature sensor").

Fault acknowledgement

The RMB795 central control unit differentiates between 3 types of fault acknowledgement:
No acknowledgement / acknowledgement / acknowledgement and reset.
For details, refer to section 15.2.2.

9.3 Universal fault inputs (AUX1...10)

Connections

Using function block "Faults", the RMB795 central control unit can make use of 10 universal fault inputs AUX1…10. Any type of analog or digital signal can be fed to these inputs.
To activate an AUXx fault input, an Xx input of the central control unit or of an extension module must be assigned to it.

Configuration

Main menu > Commissioning > Extra configuration > Faults

Operating line	*Adjustable values / remarks*
Fault input 1	---, N.X1, N.X2, ...
...	
Fault input 1	---, N.X1, N.X2, ...

Settings

For every fault status message, the following settings can be made:

- Fault status signal delay: Time that elapses until a pending fault generates a fault status message.
- Fault acknowledgement
- Fault priority
- Limit value fault on: Limit value after which the fault status message is generated
- Limit value for the normal state (difference to "Limit value fault on" is the switching differential)

Universal fault inputs (AUX1...10) (cont'd)

Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Faults > Fault input 1...10

Operating line	*Range*	*Factory setting*
Fault status message delay	00.00...60.00 m.s	00.05 m.s
Fault acknowledgement	None, Acknowledge, Acknowledge and reset	None
Fault priority	Urgent / Not urgent	Nonurgent
Limit value fault on	Depending on the selected type	Depending on the type
Limit value fault off	Depending on the selected type	Depending on the type

Notes

If the upper and the lower limit of a measured value shall be monitored, the signal is to be fed to 2 Aux inputs.

To monitor the lower limit, datapoint "Limit value fault on" must be set to a level lower than "Limit value fault off". This generates a fault status message when the measured value is lower than the "Limit value fault on".

The differential of datapoint "Limit value fault on" and "Limit value fault off" represents the hysteresis.

If datapoint "Limit value fault on" is set to the same value as "Limit value fault off", no fault status message will be generated.

Fault text

The texts for the universal status inputs are predefined by "AUX1" through "AUX4". They can be adjusted via operation.

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Faults > Fault input 1...10

Operating line	*Range*	*Factory setting*
Fault text 1	Max. 20 characters	Aux 1
Fault text 2	Max. 20 characters	Aux 2
Fault text 3	Max. 20 characters	Aux 3
Fault text 4	Max. 20 characters	Aux 4
Fault text 5	Max. 20 characters	Aux 5
Fault text 6	Max. 20 characters	Aux 6
Fault text 7	Max. 20 characters	Aux 7
Fault text 8	Max. 20 characters	Aux 8
Fault text 9	Max. 20 characters	Aux 9
Fault text 10	Max. 20 characters	Aux 10

Fault status messages

No.	*Standard text*	*Effect*
9001	Aux 1	According to the settings (refer to "Setting values")
9002	Aux 2	Ditto
9003	Aux 3	Ditto
9004	Aux 4	Ditto
9005	Aux 5	Ditto
9006	Aux 6	Ditto
9007	Aux 7	Ditto
9008	Aux 8	Ditto
9009	Aux 9	Ditto
9010	Aux 10	Ditto

9.4 Fault relay

Passing on fault status messages

To pass on fault status messages, or to have them optically or acoustically signaled on a control panel, for example, 2 fault status outputs "Relay1" and "Relay2" of the function block can be configured to any 2 free outputs N.Qx of the RMB795 central control unit.

Configuration

Main menu > Commissioning > Extra configuration > Faults

Operating line	*Adjustable values / remarks*
Fault relay 1	---, N.Q1 ... (only free relays) / assignment of fault relay
Fault relay 2	---, N.Q1 ... (only free relays) / assignment of fault relay

Settings

For each of the 2 fault relays 1 and 2, the following settings can be made:

- Fault priority: The priorities at which the relay shall be energized
- Fault source: If communication is activated, fault source "Bus" can be set, or makes sense only then

Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Faults > Fault relay 1...2

Operating line	*Range*	*Factory setting*
Fault priority	Urgent / Nonurgent / All	All
Fault source	Internal, bus	Internal

Display values

Under menu item **Outputs**, the state of the 2 fault relays can be read off:

Main menu > Outputs >

Operating line	*Current state*
Fault relay 1	Off / On
Fault relay 2	Off / On

9.5 Functional check / wiring test

Wiring test

During the time the wiring test is made, the 2 fault relays can be activated directly:

Main menu > Commissioning > Wiring test > Outputs

Operating line	*Remarks*
Fault relay 1	Off / On
Fault relay 2	Off / On

10 Distribution zones

10.1 Summary

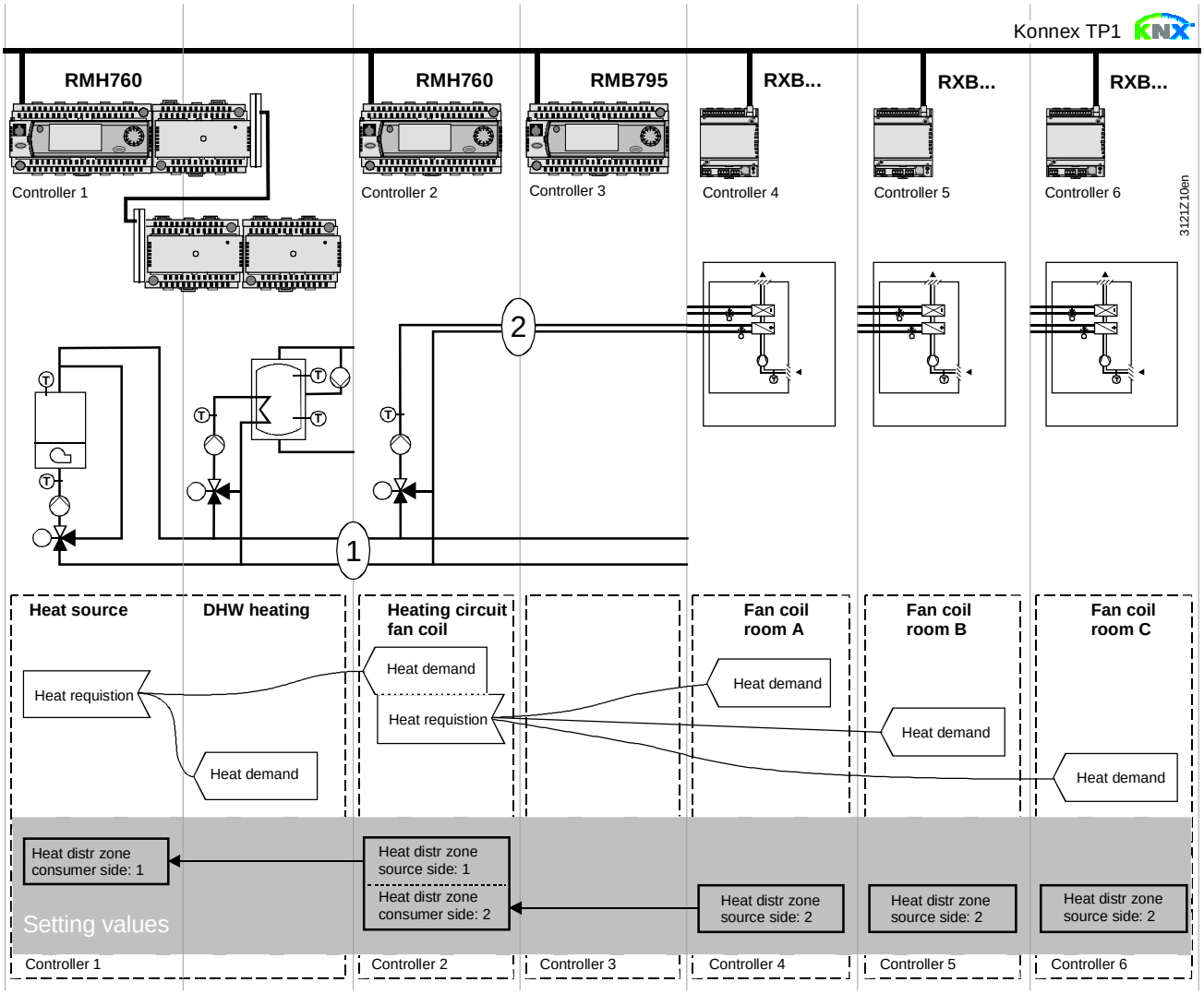
Types of application

With regard to the distribution zones, we differentiate between 3 types of application:

- Direct application (normal situation)
- Indirect application
- 2-pipe system (or changeover system)

The individual applications are depicted and described below.

10.1.1 Direct application



Explanation relating to the illustration

In the case of a typical application, the individual RXB room controllers - when used with the RMB central control unit - signal their heat demand directly to the primary controller (in the above example to the RMH760).

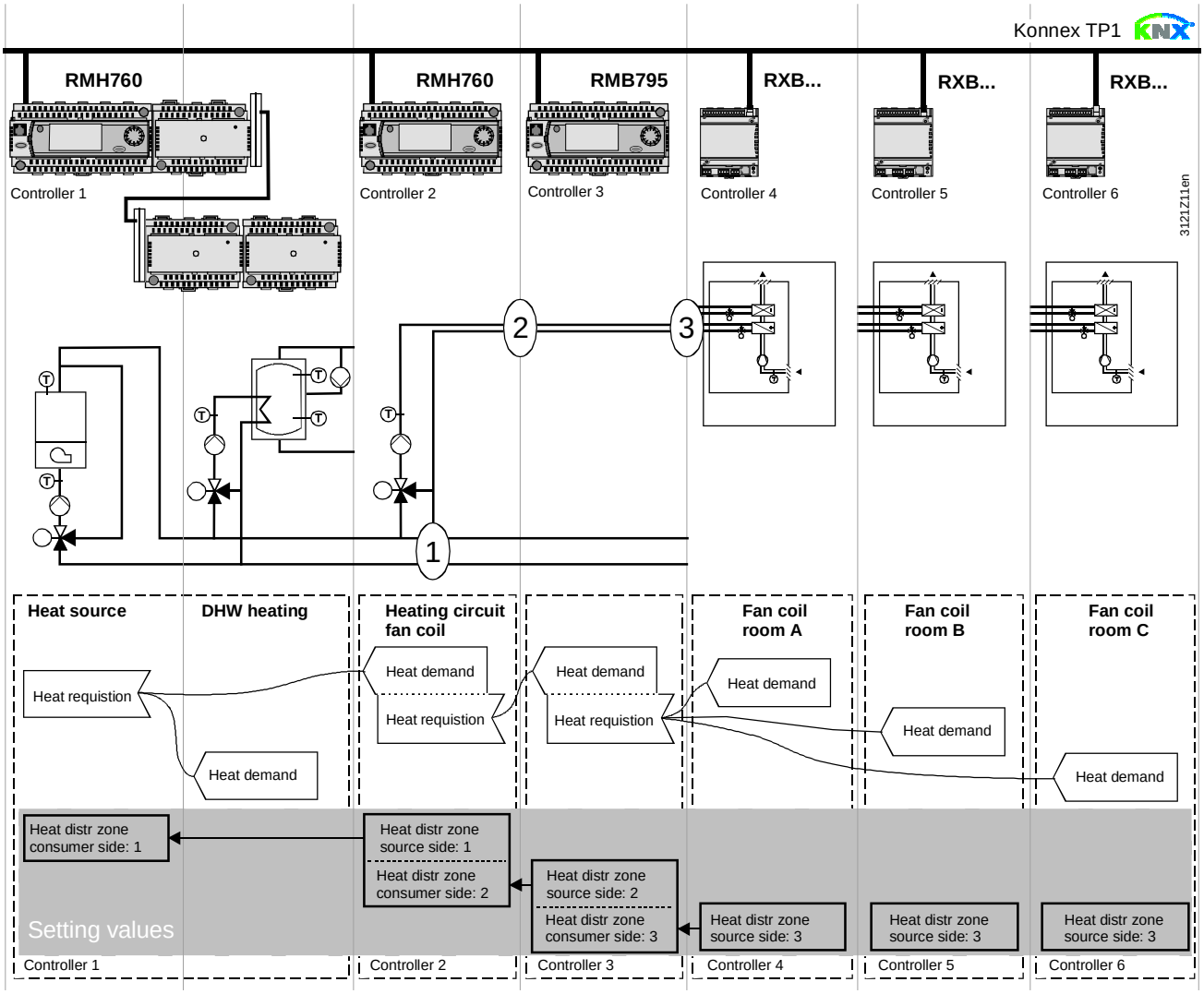
(1) and (2) designate the numbers of the distribution zone.

Notes

This type of application can analogously be applied to refrigeration distribution zones.

If no 2-pipe system is used, heat and refrigeration demand signals are sent simultaneously to the primary plant.

10.1.2 Indirect application



Explanation relating to the illustration

With this type of application, the individual RXB room controllers signal their heat demand indirectly to the heat source via the RMB795 central control unit.
This type of application is used for 2 reasons:

a) From the RMB central control unit, the heat demand signal is passed on to an external primary controller or heat source via a modulating output or relay output
b) To reduce the KNX network load, the requisition signals are collected on the RMB central control unit and passed on as heat demand signals to the heat source via a line coupler

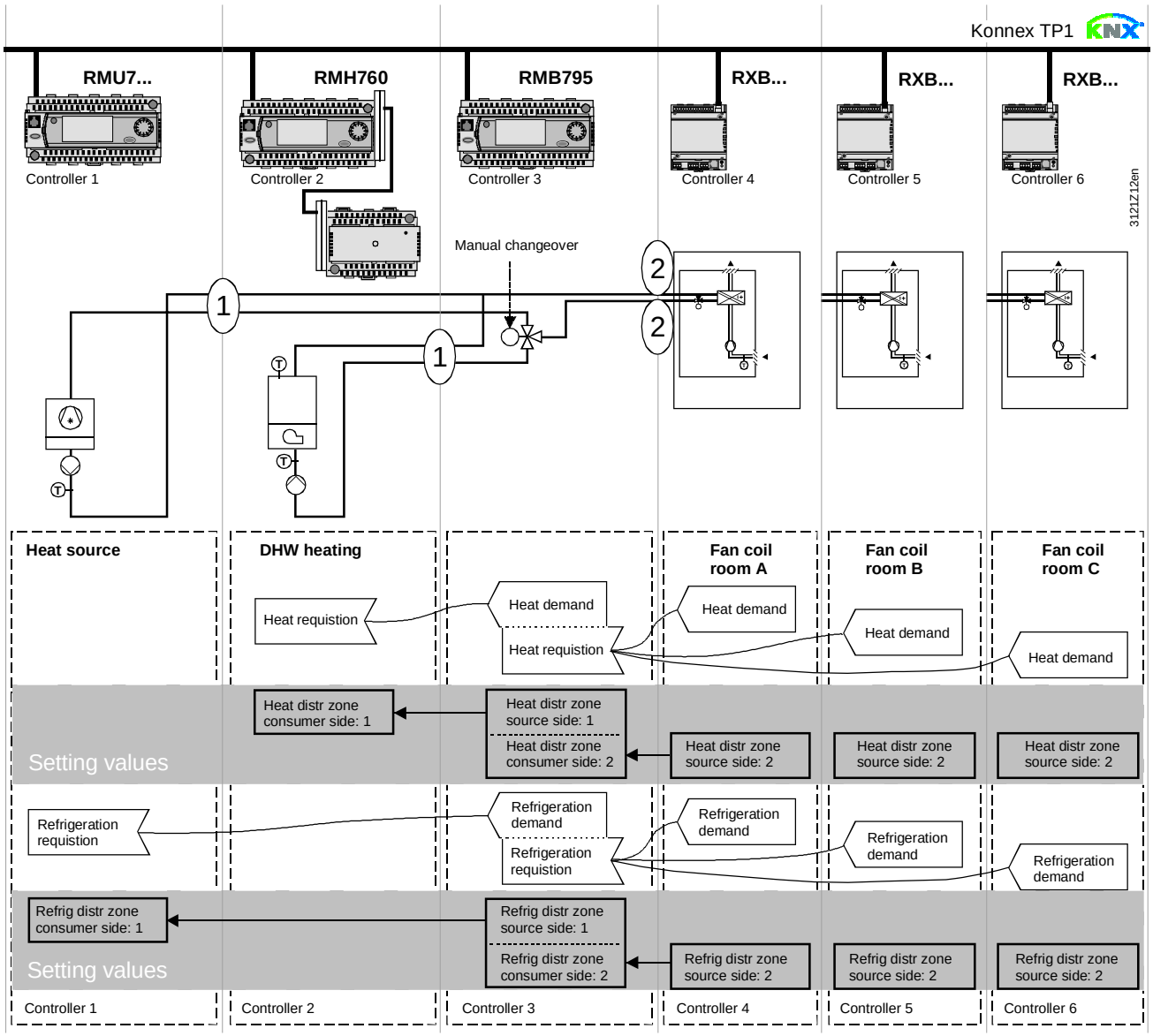
(1), (2) and (3) designate the numbers of the distribution zone.

Notes

This type of application can analogously be applied to refrigeration distribution zones.

If no 2-pipe system is used, heat and refrigeration demand signals are sent simultaneously to the primary plant.

10.1.3 Explanation example 2-pipe system



Explanation relating to the illustration

With the 2-pipe system, the heat or refrigeration demand signal is sent to the primary plant depending on the changeover position.

(1) and (2) designate the numbers of the distribution zone.

10.2 Function "Heat requisition"

10.2.1 Purpose and activation

Purpose

The "Heat requisition" function collects heat requisitions from different devices on the bus.
From these signals, a resulting preselected setpoint is determined (temperature requisition signal, heating flow setpoint), which is passed on to other devices via the “Heat demand" function block.

Activation

For the "Heat requisition" function to become activated, a heat distribution zone must be assigned to it on the consumption side:

Main menu > Commissioning > Communication > Distribution zones

Operating line	*Range*	*Factory setting*
Heat distr zone consumer side	----, 1…31	----

10.2.2 Operating principle

Requisition signals

The RMB795 central control unit receives the following ypes of requisition signals via bus:

- Heat demand in %,
  e.g. from room control "RXB with heating coil or radiator / floor heating system"
- Valve position in %,
  e.g. from a control system "RMU7... as basic type A or U" for an air handling plant with heating coil / cooling coil
- Temperature requisition in °C,
  e.g. from an RMH760 controller (heating circuit controller or cascaded primary controller)

All these signals are handled simultaneously.

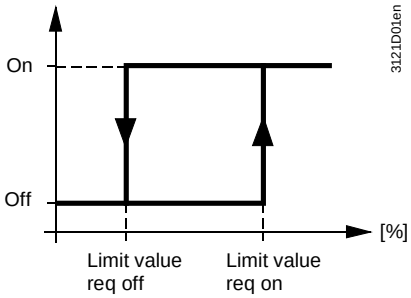
Setting values

Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Heat requisition >

Operating line	*Range*	*Factory setting*
Limit value requisition on	0...100 %	10 %
Limit value requisition off	0...100 %	5 %
Heating flow setpoint	0...140 °C	40 °C
Flow temperature reduction max	0..100 K	0 K
Control mode	Slow / Medium / Fast	Medium
Requisition evaluation	Maximum / Average	Maximum

"Limit value requisition on"

The %-requisition signals received (heat demand or valve position) are passed on only when they have exceeded the level of "Limit value requisition on". This function prevents the heat generation plant from being switched on when heat requisition is only small.



"Heating flow setpoint", "Flow temperature reduction max"

From the heat requisition signals received, a resulting flow temperature is determined. This flow temperature is matched to the actual heat demand in a way that the heat consumer with the greatest heat demand has a valve position of 90 %.

- If the valve position is >90 %, the flow temperature will be increased
- If the valve position is <90 %, the flow temperature will be decreased

The maximum flow temperature readjustment can be parameterized.
With valve positions ≤90 %, the current flow temperature is:
"Heating flow setpoint" minus "Flow temperature reduction max".

Control action

To match the control system to the plant, the control action of flow temperature control can be adapted to the setpoint readjustments by making use of 1 of 3 setting choices (Fast, Medium, Slow):

Main menu > Settings > Heat requisition > Control action: Slow / Medium / Fast

Requisition evaluation

Setting "Requisition evaluation" is used to determine whether the maximum value or the average of the requisitions shall be used.

- When using the “Maximum" setting, the flow temperature will be readjusted in a way that the valve position of the consumer with the greatest heat demand is 90 %
- When using the “Average” setting, the flow temperature will be readjusted in a way that the valve positions of the 4 largest consumers will be 90 % on average
  Note: This setting does not ensure that the heat demand of all consumers can be satisfied. It makes certain, however, that an individual consumer cannot force the flow temperature to high levels (e.g. because a window was left open).

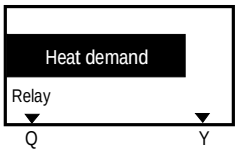
10.3 Function block "Heat demand"

10.3.1 Task

Generation of a "Heat demand" signal

The function block generates a "Heat demand" signal that can be used by other devices. The heat demand is delivered in the form of the following signals:

- As a digital signal at output Q ("Heat demand relay")
- As an analog signal at output Y ("Heat demand modulating")
- As a bus signal ("Communication")



The 3 variants are described below.

10.3.2 Heat demand relay

Purpose and function

The heat demand relay must be configured to a relay output N.Qx of the RMB795 central control unit. At this output, it is possible to connect a release for external heat generation, for example.
The heat demand relay responds as soon as heat is demanded on the bus.
Meanings:

- Contact open = no heat demand
- Contact closed = heat demand

Configuration

Main menu > Commissioning > Extra configuration > Heat demand

Operating line	*Adjustable values / remarks*
Heat demand relay	---, N.Q1, N.Q3, ... / activation of output

10.3.3 Heat demand modulating

Purpose

In addition to the heat demand relay, the heat demand can be made available to other devices at a modulating output N.Yx.

Configuration

Main menu > Commissioning > Extra configuration > Heat demand

Operating line	*Adjustable values / remarks*
Heat demand modulating	---, N.Y1, N.Y2, ... Activation of output

Setting values

Main menu > Settings > Heat demand

Operating line	*Range*	*Factory setting*
Setpoint at 0 V	–50 … +50 °C	0 °C
Setpoint at 10 V	50 … 500 °C	100 °C
Limit value	–50 … +250 °C	10 °C

Explanations relating to the setting values

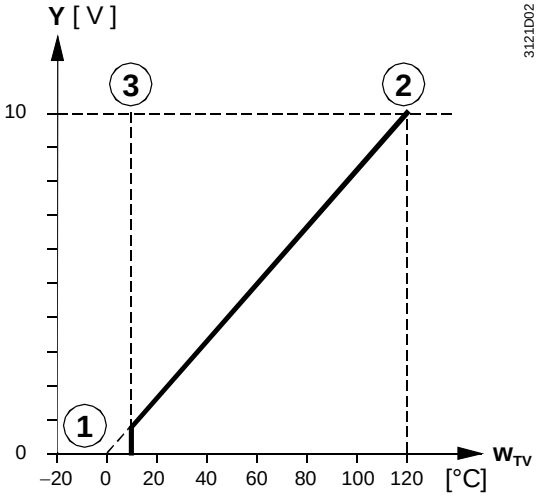
"Setpoint at 0 V" defines the flow temperature setpoint at DC 0 V.
"Setpoint at 10 V" defines the flow temperature setpoint at DC 10 V.

"Limit value" means "Limit value for heat demand": Temperatures below this level are interpreted as "no heat demand".

As long as the flow temperature setpoint has not exceeded the adjusted limit value, output signal DC 0 V will be delivered. When the limit value is exceeded, the relevant output signal will be delivered until the setpoint has again fallen below the limit value minus a hysteresis of 0.5 K.

Diagram for the setting values (example)

Output signal Y (DC 0…10 V) for the heat demand shall correspond to a flow temperature setpoint range w_{TV} of 0…120 °C. The limit value shall be at 10 °C. The diagram shows the values of the parameters to be set and the resulting progression of the heat demand signal:



Legend

① Setpoint in °C at DC 0 V — here 0 °C (factory setting)
② Setpoint in °C at DC 10 V — here 120 °C
③ Limit value for heat demand — here 10 °C (factory setting)

10.3.4 Communication

Purpose

When communication has been activated (refer to chapter 11), the heat can be transmitted via bus to other devices of a heat distribution zone on the source side.
For that purpose, a "Heat distr zone source side" must be defined (refer to subsection 11.2.3).

Setting values

Main menu > Commissioning > Communication > Distribution zones >

Operating line	*Range*	*Factory setting*
Heat distr zone source side	----, 1…31	----

10.3.5 Functional check / wiring test

Purpose

For making a functional check during the wiring test, the outputs of the "Heat demand" function block can be switched directly.

Settings

Main menu > Commissioning > Wiring test > Outputs

Operating line	*Remarks*
Heat demand relay	Off / On
Heat demand modulating	---, 0...100 %

10.4 Function "Refrigeration requisition"

10.4.1 Purpose and activation

Purpose

The "Refrigeration requisition" function collects refrigeration requisitions from different devices on the bus.
From these signals, a resulting preselected setpoint is determined (chilled water flow setpoint), which is passed on to other devices via the "Refrigeration demand" function block.

Activation

For the "Refrigeration requisition" function to become activated, a refrigeration distribution zone must be assigned to it on the consumption side:

Main menu > Commissioning > Communication > Distribution zones

Operating line	*Range*	*Factory setting*
Refrig distr zone consumer side	----, 1…31	----

10.4.2 Operating principle

Requisition signals

The RMB795 central control unit receives the following types of requisition signals via bus:

- Refrigeration demand in %,
  e.g. from room control "RXB with cooling coil or chilled ceiling"
- Valve position in %,
  e.g. from a control system "RMU7… as basic type A or U" for an air handling plant with heating coil / cooling coil
- Temperature requisition in °C,
  from a primary controller "RMU7… as basic type C"

All these signals are handled simultaneously.

Setting values

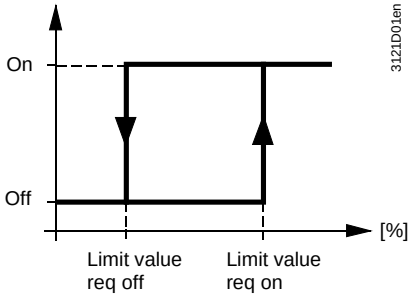
Main menu > Commissioning > Settings > .... *or*
Main menu > Settings > Refrigeration requisition >

Operating line	*Range*	*Factory setting*
Limit value requisition on	0...100 %	10 %
Limit value requisition off	0...100 %	5 %
Chilled water flow setpoint	0...140 °C	6 °C
Flow temperature boost max	0…100 K	0 K
Control mode	Slow / Medium / Fast	Medium
Requisition evaluation	Maximum / Average	Maximum

Operating principle *(cont'd)*

"Limit value requisition on"

The requisition signals received are handled only when they have exceeded the level of "Limit value requisition on". This function prevents the refrigeration plant from being switched on when refrigeration requisition is only small.



"Chilled water flow setpoint", "Flow temperature boost max"

From the requisition signals received, a resulting flow temperature is determined. This flow temperature is matched to the actual refrigeration demand in a way that the refrigeration consumer with the greatest demand has a valve position of 90 %.

- If the valve position is $<$90 %, the flow temperature will be increased
- If the valve position is $>$90 %, the flow temperature will be decreased

The maximum flow temperature readjustment can be parameterized.
With valve positions $\leq$90 %, the current flow temperature is:
"Chilled water flow setpoint" plus "Flow temperature boost max".

Control action

To match the control system to the plant, the control action of flow temperature control can be adapted to the setpoint adjustments by making use of 1 of 3 setting choices (Fast, Medium, Slow):

Main menu > Settings > Heat requisition > Control action: Fast / Medium / Slow

Requisition evaluation

Setting "Requisition evaluation" is used to determine whether the maximum value or the average of the requisitions shall be used:

- When using the “Maximum" setting, the flow temperature will be readjusted in a way that the valve position of the consumer with the greatest heat demand is 90 %
- When using the “Average” setting, the flow temperature will be readjusted in a way that the valve positions of the 4 largest consumers will be 90 % on average
  Note: This setting does not ensure that the refrigeration demand of all consumers can be satisfied. This makes certain, however, that an individual consumer cannot force the flow temperature to a low level (e.g. because a window was left open).

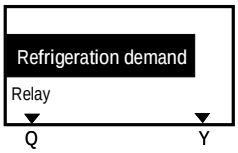
10.5 Function block "Refrigeration demand"

10.5.1 Task

Generation of a "Refrigeration demand" signal

The function block generates a "Refrigeration demand" signal that can be used by other devices. The refrigeration demand is delivered in the form of the following signals:

- As a digital signal at output Q ("Refrigeration demand relay")
- As an analog signal at output Y ("Refrigeration demand modulating")
- As a bus signal (“Communication")



The 3 variants are described below.

10.5.2 Refrigeration demand relay

Purpose and function

The refrigeration demand relay must be configured to a relay output N.Qx of the RMB795 central control unit. At this output, it is possible to connect a release for an external chiller, for example.
The refrigeration demand relay responds as soon as refrigeration is demanded on the bus.
Meanings:

- Contact open = no refrigeration demand
- Contact closed = refrigeration demand

Configuration

Main menu > Commissioning > Extra configuration > Refrigeration demand

Operating line	*Adjustable values / remarks*
Refrigeration demand relay	---, N.Q1, N.Q3, ... / activation of output

10.5.3 Refrigeration demand modulating

Purpose

In addition to the refrigeration demand relay, the refrigeration demand can be made available to other devices at a modulating output N.Yx.

Configuration

Main menu > Commissioning > Extra configuration > Refrigeration demand

Operating line	*Adjustable values / remarks*
Refrig demand modulating	---, N.Y1, N.Y2 activation of output

Setting values

Main menu > Settings > Refrigeration demand

Operating line	*Range*	*Factory setting*
Setpoint at 0 V	–50 … +50 °C	12 °C
Setpoint at 10 V	50 … 500 °C	6 °C
Limit value	–50 … +250 °C	12 °C

Refrigeration demand modulating (cont'd)

Explanations relating to the setting values

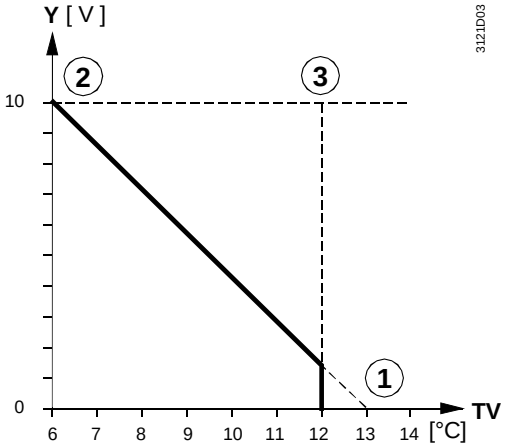
"Setpoint at 0 V" defines the flow temperature setpoint at DC 0 V fixed
"Setpoint at 10 V" defines the flow temperature setpoint at DC 10 V fixed.

"Limit value" means the limit for refrigeration demand: Temperatures exceeding that level are interpreted as "No refrigeration demand".

As long as the flow temperature setpoint has not fallen below the set limit value, the DC 0 V output signal will be delivered. When the temperature drops below the limit value, the relevant output signal will be delivered until the setpoint has again exceeded the limit value plus a hysteresis of 0.5 K.

Diagram relating to the setting values (example)

Output signal Y (DC 0…10 V) for the refrigation demand shall correspond to a flow temperature setpoint range of 6…13 °C. The limit value shall be at 12 °C. The diagram shows the parameters to be set and the progression of the refrigeration demand signals:



Legend

①	Setpoint in °C at DC 0 V	here 13 °C
②	Setpoint in °C at DC 10 V	here 6 °C (factory setting)
③	Limit value for refrigeration demand	here 12 °C (factory setting)

10.5.4 Communication

Purpose

When communication has been activated (refer to chapter 11), the refrigeration demand can be transmitted via bus to other devices of a refrigeration distribution zone. For that purpose, a "Refrigeration distr zone source side" must be defined.

Setting values

Main menu > Commissioning > Communication > Distribution zones >

Operating line	*Range*	*Factory setting*
Refrig distr zone source side	----, 1…31	----

10.5.5 Functional check / wiring test

Purpose

To make a functional check during the wiring test, the outputs of the "Refrigeration demand" function block can be switched directly.

Setting values

Main menu > Commissioning > Wiring test > Outputs

Operating line	*Remarks*
Refrigeration demand relay	Off / On
Refrig demand modulating	---, 0...100 %

10.6 Function block "H/C changeover"

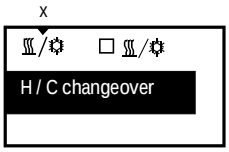
10.6.1 Use and functions

Use

The "H/C changeover" function block is used for changeover of heating and cooling in 2-pipe systems.

The following illustration shows the function block with:

- The "H/C changeover input" x, and
- The selection field "2-pipe heating/cooling system"



Functions

When the function block has been activated and a "H/C changeover input" has been defined, the RMB795 central control unit can pass on via bus the external changeover signal received via a digital input Xx to the RXB room controllers.

10.6.2 Activating the function

Configuration

For activating the "Heating / cooling changeover" function, the setting on operating line "2-pipe heating/cooling system" must be "Yes".

Main menu > Commissioning > Extra configuration > Heating/cooling ch'over

Operating line	*Range*	*Factory setting*
2-pipe heating/cooling system	Yes / No	No
H/C changeover input	---, N.X1, N.X2, ... / only digital inputs	---

10.6.3 Operating principle

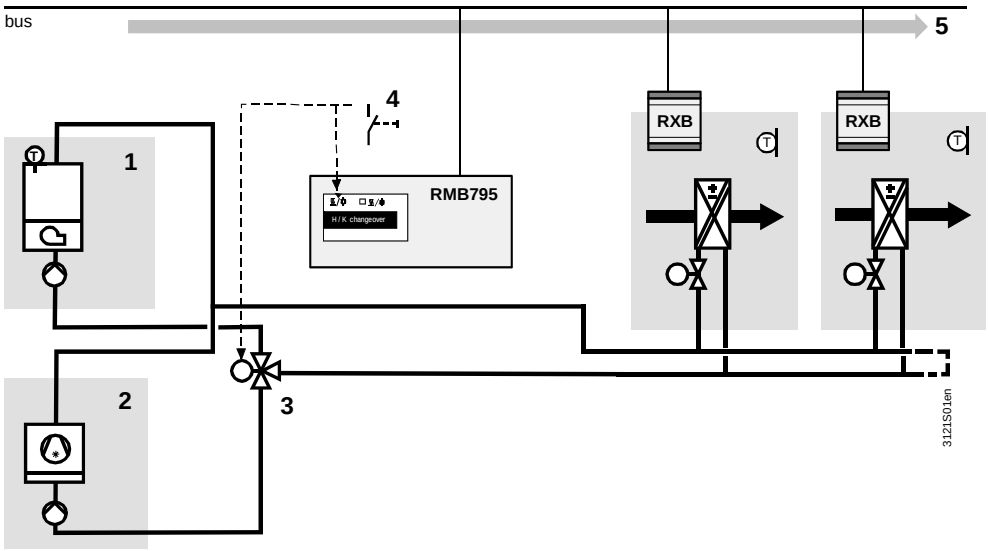
Impact of configuration parameters

If only configuration parameter "2-pipe heating/cooling system" is activated, collection of the demand signals is only made on the cooling or heating side.

If, in addition, "H/C changeover" is activated, the information whether the pipes carry hot or cold water is sent to the RXB room controllers.

Plant example

The plant diagram below shows a "2-pipe heating/cooling system" with generation of heat and refrigeration. The diverting valve is switched over with a manual switch:



Legend

Item	*Element*
1	Heat generation
2	Generation of refrigeration
3	Diverting valve
4	Manual changeover of diverting valve and function block "H/C changeover"
5	Passing on of "Heating/cooling" changeover signal via bus

Note

The RMB795 central control unit does not perform any control functions (precontrol) but only the collection of the requisition signals and passing them on to the relevant source (generation of heat or refrigeration) via function blocks "Heat demand" and "Refrigeration demand".

10.6.4 Error handling

Behavior

If the "Heating / cooling" changeover signal on the bus is missing, the RXB room controllers continue to use the value received last.

If, on the RMB795 central control unit, a digital input N.Xx is activated as a "H/C changeover input" and, in one of the distribution zones, a changeover signal from some other device is received, the RMB795 central control unit will deliver a fault status message.

Fault status message

No.	*Text*	*Effect*
5801	H/C changeover signal failure	Urgent message; must be acknowledged

11 Communication

Introduction

A detailed description of communication is given in the Basic Documentation "Communication via Konnex bus" (ordering number: CE1P3127en).
The following section only gives a description of the most important settings so that a basic plant can be commissioned.

11.1 Activating communication

3 criteria for activation

Communication is activated when:

- The device address has been entered (every bus user requires its individual device address)
- Bus power supply is available, and
- The device is not in commissioning mode

Fault status messages

No.	*Text*	*Effect*
5000	No bus power supply	Nonurgent message; must not be acknowledged
6001	> 1 identical device address	Urgent message; must be acknowledged

11.2 Menu "Communication"

11.2.1 Basic settings

Setting values

Main menu > Commissioning > Communication > Basic settings >

Operating line	*Range*	*Factory setting*
Device address	1...253 (1...255)	255
Decentral bus power supply	Off / On	On
Clock time operation	Autonomous, Slave, Master	Autonomous
Remote setting clock slave	Yes / No	Yes
Remote reset of fault	Yes / No	No

Operating line "Device address"

Every bus user requires its individual device address.
Device addresses 254 and 255 are reserved for special functions. With device address 255, communication is deactivated (no exchange of process data).
If on 2 devices on the Konnex bus, the same device address is set, a fault status message ">1 identical device address" will be delivered.

Operating line "Decentral bus power supply

For small plant, decentral bus power supply is adequate. This represents the default setting.
For detailed information, refer to Data Sheet N3127 (KNX bus) or Basic Documentation CE1P3127en (KNX communication).
If there is no bus power supply, a fault status message "No bus power supply" will be triggered.

Operating line "Clock time operation"

If the system shall use a common time of day, one of the devices must be defined as the master, all the other devices are slaves.
Using the setting "Remote setting clock slave = Yes", it is possible to readjust the time of day at the respective slave. This is then sent to the master, which passes it on to all the other devices.
When using setting "Autonomous", the device does not receive or send the time of day.

Operating line "Remote setting clock slave"

Function "Remote setting clock slave" enables the operator to set the time of day and the date on a clock time slave. The new values are then send to the clock time master via Konnex. The master then delivers the new time of day to all bus users. Hence, for the operator, operation is the same as on the clock time master.

Operating line "Remote reset of fault"

All fault status messages can be acknowledged from a remote location (e.g. from the CI700.1 service tool).

11.2.2 Room group 1...10

Geographical zone (apartment)

Geographical zone (apartment)", buildings or building sections are combined from an operational point of view that meet the following criteria:

- Same room operating mode
- Same room temperature (setpoint)

By definition, the address of a geographical zone is made up as follows:

Apartment.Room.Subzone

With the room groups, it is only the apartment number that need to be set. Room and subzone use a fixed setting (= 1).

Setting values

Main menu > Commissioning > Communication > 1 Room group 1...10 >

Operating line	*Range*	*Factory setting*
Geographical zone (apartment)	1...126	Room group 1 = 1 Room group 2 = 2 … Room group 10 = 10

Fault status message

If 2 room groups have the same "Geographical zone (apartment)" set, a fault status message ">1 time switch in room group x" will be triggered.

Room units with communication

Using "QAW operation zone (apartment)", a zone can be defined in which a QAW740 room unit can communicate with a room group. It is then possible via this zone to preselect from the QAW740 the room operating mode and the setpoint readjustment of a group.

Setting values

Main menu > Commissioning > Communication > 1 Room group 1... 10 >

Operating line	*Range*	*Factory setting*
QAW zone (apartm)	1...126	----

Note

Only 1 QAW740 room unit per room group can be defined.

Submenu "Holidays/special days"

For details about this subject, refer to subsection 8.3.5.

Main menu > Commissioning > Communication > Room group 1...10 >

Operating line	*Range*	*Factory setting*
Holidays/special day operation	Autonomous, Slave, Master	Room group 1 = master, all other room group slaves
Hol/spec day zone	1...31	1

Explanations relating to the setting values

The behavior and the zone address for exchange of holiday/special day operation can be set via the above setting values:

- "Master" setting means that at the beginning of the switching period, and then every 15 minutes, the RMB795 central control unit transmits the holiday/special day operation values via Konnex bus
- When using the "Slave" setting, the central control unit receives the holiday / special day operation values from the holiday / special day master
  For that purpose, the slave must be assigned the same holiday / special day zone.

Reference room 1...3

1 to 3 specially selected individual rooms can be defined as reference rooms, which are then used for calculating "Night cooling" (refer to section 8.7). These rooms must then be in the same room group (geographical zone.apartment) as defined for the room group. For this reason, for choosing the reference rooms, it is not possible to set the Geographical zones.apartment, but only the Geographical zones.Room.
Each reference room can be assigned individual text.

Setting values

Main menu > Commissioning > Communication > Room group 1...10 > Reference room 1...3 >

Operating line	*Range*	*Factory setting*
Geographical zone (room)	---, 1...63	---
Reference room 1…3	20 characters	

11.2.3 Submenu "Distribution zones"

Setting values

Main menu > Commissioning > Communication > Distribution zones >

Operating line	*Range*	*Factory setting*
Outside temperature zone	----, 1...31	----
Refrig distr zone source side	----, 1...31	----
Heat distr zone consumer side	----, 1...31	----
Heat distr zone source side	----, 1...31	----
Heat distr zone consumer side	----, 1...31	----

12 RXB operation

12.1 Operation of individual RXB room controllers

What can be operated?

Using menu item **Operation RXB**, a number of RXB datapoints can be read and written. These are specially selected values, such as:

- Room number
- Actual values and setpoints
- Operating mode
- Current heat and refrigeration requisitions
- etc.

The datapoints displayed at a time depend on the type of RXB room controller used and its application.

Menu and displays

For the relevant RXB room controller to be addressed, its geographical zone (apartment and room) must be entered. The relevant information can then be read under the **RXB device data** menu.

The first datapoints displayed are the room number and the description, which give the user an unambiguous reference.

Updating of values can take a few seconds. During this period of time, the values are displayed as " --- ".
Datapoints not available in the room controller are also displayed as " --- ".

Setting values

■ Main menu >Operation RXB >

Operating line	*Range*	*Factory setting*
	---,1...126	---
Geographical zone (room)	---,1...63	---

Display values

■ Main menu >Operation RXB > RXB device data

Operating line	*Description*	*L / S*
Room number	Text string stored in RXB	L
Device name	Text string stored in RXB	L
Active HVAC operating mode	Active HVAC operating mode (Comfort / Precomfort / Economy / Protection)	L
Actual value room temp	Actual room temperature value	L
Current room temp setpoint		L
Economy cooling setpoint		S
Precomfort cooling setpoint		S
Comfort cooling setpoint		S
Comfort heating setpoint		S
Precomfort heating setpoint		S
Economy heating setpoint		S
Local setpoint offset		L
Heating/cooling output		L
Fan output	Positioning signal in %	L
Heat demand signal	Calculated heat demand of RXB in %	L
Cooling demand signal	Calculated refrigeration demand of RXB in %	L

Legend: L = readable, S = writable

12.2 Special features of setpoint readjustment

Behavior in the case of RMB795 setpoint priority

As can be seen from the "Display values" table, the setpoints of Economy, Precomfort and Comfort can also be directly overwritten.

Exercise caution, however*:*
If, in the relevant room group, configuration parameter "Setpoint priority RMB central control unit is set to “Yes", the setpoints will be delivered by the room group and the individually adjusted values will be overwritten again.

Impact of "Slave" function in connection with RXB room controller

If, on one of the RXB room controllers, the "Slave" function is selected, the setpoints can only be preselected conditionally, because they are coupled with the master’s setpoints.

This means that only the master room controller acquires the room temperature. It sets the operating mode and the setpoints of the room temperature.

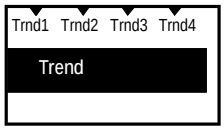
For more detailed information, refer to the description of the master-slave behavior in the Technical Handbook of the RXB room controller (CA2A3899en).

13 Function block "Trend"

13.1 Connections and use

Connections

The illustration shows the function block with its connections as depicted in the configuration sheet:



Use

Function block "Trend" is used for logging measured values. It provides 4 independent trend channels.

A trend channel can record **1** measured value.

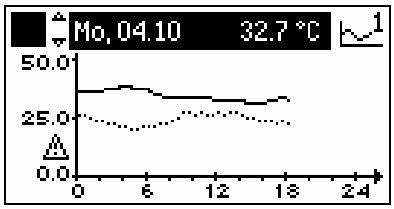
Each trend view can show 2 trend channels: Primary channel plus extra channel as a reference.

It is possible to log signals from the local inputs of the RMB795 central control unit and room and outside temperatures via the bus.

13.2 Views

Example

The illustration below shows a 24-hour view on the operator unit, with primary trend curve and reference curve of an extra channel:



Contents

The current 24-hour views (8 minutes, 8 hours, and 24-hours) show the date and the current value of the primary trend curve at the top.

The primary trend curve is shown as a solid line, the reference curve as a dotted line.

The lettering of the Y-axis refers to the settings of the primary channel. If the Y-axes of the 2 channels do not agree, a warning symbol appears at the bottom.

Changing between views

Navigation between the 4 different views is made easy with the OK knob:

- 8-minute view: Sampling every 5 seconds, last 8 minutes
- 8-hour view: Sampling every 5 minutes, last 8 hours
- 24-hour view: Sampling every 15 minutes, current day
- Rolling over the last 6 days: Sampling every 15 minutes, last 6 days

Remark: The last 6 days are shown in the 24-hour view.

13.3 Settings for the trend function

Settings

Main menu > Settings>Trend > Trend channel 1...4 >

Operating line	*Adjustable values / remarks*
Trend channel x	Name of channel (editable text comprising 20 characters)
Trend signal	Assignment of trend signal: ---, room temperature via bus, outside temperature via bus, N.X1, … A7(2).X4
Geographical zone (apartment)	1…126, Only relevant if "Room temperature via bus" is set
Geographical zone (room)	1…63 Only relevant if "Room temperature via bus" is set
Outside temperature zone	1…31 Only relevant if “Outside temperature via bus"
Y-axis min	Depending on the selected type
Y-axis max	Depending on the selected type
Selection extra channel	Trend channel 1 … Trend channel 4

Explanations relating to the settings

A trend channel is activated by assigning a "Trend signal" datapoint to it.

Each trend channel can be assigned a plant-specific text with a maximum of 20 characters under datapoint "Trend channel x".

The bus address of the room whose room temperature shall be logged can be set via the "Geographical zone".

For acquiring the outside temperature via bus, the relevant "Outside temperature zone" must be set.

The Y-axes can be scaled for each trend channel. Datapoints "Y-axis min" and "Y-axis max" refer to the representation of the values and must be set according to the expected signal range. If the current values lie outside the adjusted range, there will be no trending!

A second trend channel can be shown via datapoint "Selection extra channel". This channel is shown as a dotted line.

Notes on the extra channel

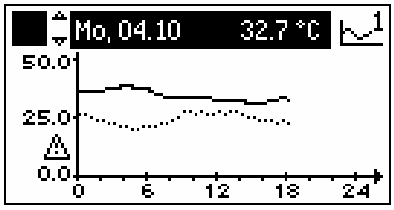
On the extra channel, only every second measured value is shown; for this reason, the measured value should be put on the main channel.

The lettering of the Y-axis only refers to the primary channel. The extra channel is represented according to the settings of the Y-axis. If the axes differ, a warning triangle will appear next to the axis.

Display values

The trend channels can be called up under the following menu:

Main menu > Trend > Trend channel 1...4



The trend channels are displayed with their assigned text.
When a trend channel is selected, the display immediately jumps to the 24-hour view. The OK knob can then be used to switch between the different views.

13.4 Error handling

Trend signal not available

If a trend signal **at the local inputs** is no longer available (e.g. due to a faulty sensor), there will be no more trending from that point in time.
In this case, the fault status messages must be checked under:

Main menu > Faults > Current faults >.

If the values are not available **via bus**, there will be no trending.
And there will be no fault status message

Power failure or fresh start

After a power failure or when leaving the **Extra configuration** menu (fresh start of the RMB795 central control unit), the values of the 8-hour and 8-minute view will be deleted.
But the values of the 24-hour view and those of the last 6 days will be retained.

14 Device supervision

14.1 Overview

Purpose and function

The device supervision checks the connections (bus communication) to the RXB room controllers in operation. This serves the following purposes:

- Checking the number of connected room controllers per room group
- Detecting the failure of 1 or several room controllers

In that case, the RXB room controllers are periodically queried in accordance with the created device list. If the RMB795 central control unit does not receive a reply, it will generate a fault status message.

The key used for the supervision is the geographical zone assigned to the RXB room controllers. The RXB room controllers supervised are only those assigned to one of the activated room groups.

Note

If the RXB room controllers are already supervised by other devices, such as the ACS7… plant operating software or the OZW771 central communication unit, we recommend to deactivate the function. This measure should be taken to keep the bus load as low as possible.

14.2 Activating the function

Configuration

To activate device supervision, it must be switched on via operating line ”Function”:

Main menu > Commissioning > Device supervision >

Operating line	*Range*	*Factory setting*
Function	Off / On	Off

Notes

When the function is deactivated, no periodic supervision telegrams will be sent via the bus.

But the device list can also be created when the function is deactivated. This is because the device list is also required for other functions, such as min / max supervision of the room temperature.

14.3 Creating the device list

Prior to creation

When creating the device list, all commissioning work on the RMB795 central control unit and on the RXB room controllers should be completed.
Bus connection to the RXB room controllers must be ensured.

Settings

Main menu > Commissioning > Device supervision >

Operating line	*Range*	*Factory setting*
Device list	Creating, updating, deleting	Blank
Identified devices	Display of identified RXB room controllers	

Command "Create"

The "Create" command is used to generate a complete device list. For that, a search is made on the Konnex bus aimed at finding RXB room controllers that have the same "Geographical zone (apartment) as the relevant room groups. When the RMB795 central control unit receives a reply from an RXB room controller, it will be entered on the device list.

Search process

The search process takes several minutes, depending on the number of activated room groups. During the search process, the sandglass symbol ⌛ appears on the "Device list" line.
When the search process is finished, a tick will appear ✓.
Now, the number of identified devices are valid.
If the number of devices are not identical with the number given in the planning documentation, the connection to the RXB room controllers is to be checked.

Command "Update"

The "Update" command is used to search the plant for devices that have not yet been detected.
This command is to be executed when devices have been added to the plant at a later point in time, for example.

Command "Delete"

The "Delete" command is used to delete the device list. When the list is empty, there is no supervision and the number of devices identified is 0.

14.4 Reading the device list

Settings

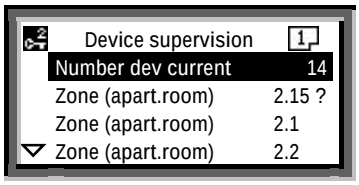
The list of assigned and supervised devices per room group can be read:

Main menu > Room group 1...10 > Device supervision >

Operating line	*Adjustable values / remarks*
Number dev current	Number of RXB room controllers assigned to the room group
Zone (apart.room)	Zone address (apartment.room) of the supervised room controllers

Display

The list displayed provides the following information:
- Number of RXB room controllers assigned to this room group
- Their geographical zone address on the display (apartment.room).



Icon	*Meaning*	*Example*
(Without)	Connection to RXB room controller ok	Zone (apart.room) 2.1
?	Connection to RXB room controller interrupted	Zone (apart.room) 2.15 ?

Notes

Based on the information of "Zone (apart.room)" and the plant diagram, the relevant RXB room controller can be unambiguously identified.

If no devices are assigned to the selected room group, the value of "Number dev current" is "0" and under "Zone (apart.room)", symbol " -.- " appears everywhere.

14.5 Fault status messages

Common fault status message

If the connection to 1 or several RXB room controllers is interrupted, a common fault status message will appear for each room group:

No.	*Text*	*Effect*
4503	Device superv R'g 1	Nonurgent message; must be acknowledged
4513	Device superv R'g 2	Nonurgent message; must be acknowledged
4523	Device superv R'g 3	Nonurgent message; must be acknowledged
4533	Device superv R'g 4	Nonurgent message; must be acknowledged
4543	Device superv R'g 5	Nonurgent message; must be acknowledged
4553	Device superv R'g 6	Nonurgent message; must be acknowledged
4563	Device superv R'g 7	Nonurgent message; must be acknowledged
4573	Device superv R'g 8	Nonurgent message; must be acknowledged
4583	Device superv R'g 9	Nonurgent message; must be acknowledged
4593	Device superv R'g 10	Nonurgent message; must be acknowledged

Based on this information, it can be checked on the **Device supervision** menu of the relevant room group which RXB room controllers are affected.

Text adjustments

The fault status mesage texts are predefined. They can be adjusted via operation.

Main menu > Commissioning > Settings > Room group 1...10 *or*
Main menu > Settings > Room group 1...10 > Device supervision >

Operating line	*Range*	*Factory setting*
Fault text	20 characters	Device supervision R'g. X

15 Remedy in the event of fault

15.1 Error code list

Cause and effect

The following list contains all codes and assigned texts that appear in the event of fault.

Code	*Cause of fault*	*Effect*
10	Outside temp sensor error	See 7.4
11	>1 outside temperature sensor	Ditto
12	Outs sensor simulation active	Ditto
101 ...224	[N.X1] sensor error ... [RMZ787(2).X4] sensor error	See 7.2 See 7.4
3880 ... 3889	Smoke extraction room grp 1 ... Smoke extraction room grp 10	See 15.2
3890 ... 3899	Fire alarm off room grp 1 ... Fire alarm off room grp 10	Ditto
3900	Fire alarm off	See 8.8
3901	Smoke extraction	See 8.9
4501	Rm temp < lim val low r grp 1	See 8.6
...	...	Ditto
4591	Rm temp < lim val low r grp 10	Ditto
4502	Rm temp > lim val high r grp 1	Ditto
...		Ditto
4592	Rm temp > lim val high r grp 10	Ditto
4503	Device supervision room grp 1	See 14
...		Ditto
4593	Device supervision room grp 10	Ditto
4920	RXB room temperature frost	Triggered by an RXB room controller; no impact on the RMB795 central control unit; only display of fault
4930	RXB room air condensation	Ditto
4940	RXB outside temperature frost	Ditto
4950	RXB el air heat batt overtemp	Ditto
4960	RXB general fault	Ditto
5000	No bus power supply	See 11
5001	System time failure	See 6.1
5002	>1 clock time master	Ditto
5003	Invalid time of day	Ditto
5102	>1 time switch in room group 1	See 8.3.4
...	...	Ditto
5192	>1 time switch in room group 10	Ditto

Code	*Cause of fault*	*Effect*
5201	Hol/spec day prog room group 1	See 8.3.5
...	...	Ditto
5291	Hol/spec day prog room group 10	Ditto
5202	>1 hol/spec day prog room grp 1	Ditto
...	...	Ditto
5292	>1 hol/spec day prog room grp 10	Ditto
5801	H/C changeover signal failure	See 10.6
6001	>1 identical device address	See 11
7101 ... 7103	Fault extension module	See 5.3
9001 … 9010	Aux 1 … Aux 10	See 15.2

15.2 Rectification of faults

15.2.1 Indication of faults

Significance of fault status messages

Fault status messages delivered to the RMB795 central control unit are indicated by the LED in the fault button. This button can be used to acknowledge fault status messages.

Meaning:

Fault status message	*Message acknowledged*	*State*
Fault pending	No	Flashing
Fault pending	Yes	Lit Also applies to fault status messages that must not be acknowledged
Fault no longer pending	No	Flashing
Fault no longer pending	Yes	OFF

If a fault relay is configured also (function block "Faults"), the LED of the fault button always flashes.

Note on acknowledgement

If the LED of the fault button is lit and does not extinguish when making acknowledgements, a fault status message is still pending.
The LED extinguishes only when faults are no longer present.

15.2.2 Fault acknowledgement

No acknowledgement required

This instruction applies to all fault status messages that require **neither** acknowledgement **nor** resetting.

Example:
If there is no signal for the outside temperature, a fault status message will be delivered. If the signal for the outside temperature returns, the fault status message disappears automatically and the plant will resume normal operation.

Acknowledge

This instruction applies to fault status messages that **only** require acknowledgement. Locking and resetting of fault must be triggered externally.

Important!
When the fault status message disappears (external reset), the plant will return to normal operation, even if the fault status message has not been acknowledged.

Example:
The plant incorporates an alarm for smoke extraction which must be locally reset. The only purpose of the alarm indication is to make sure that service staff will take note of the fault status message.

Acknowledge and reset

This instruction applies to all fault status messages that must be acknowledged **and** reset.
After acknowledgement, the fault status message will be maintained until the fault is no longer present. Only then can the fault status message be reset. When making the reset, the LED in the fault button extinguishes.

Example:
Fire alarm off must be acknowledged and reset.
To ensure that the fault status message is not triggered each time the plant is started up, it will only be acknowledged first. The fault status message shall be reset only after the fire alarm has disappeared.

Note

Fault status messages of other devices cannot be acknowledged on the RMB795 central control unit.

15.2.3 Deleting fault status messages

Function

Using operating line "Delete faults" on the operator unit's service level, the "Fault history" list can be deleted.

Main menu > Faults >

Operating line	*Remarks*
Delete faults	All current faults will be internally reset, the "Fault history" list will be canceled

Notes

When activating this function, all other fault status messages will be reset also. Hence, only pending faults continue to be indicated.

If the kind of acknowledgement with a pending fault is changed, it can happen that the fault status message can neither be acknowledged nor reset.
The function can also be used to reset these fault status messages!

15.3 Rectification of errors

Questions and replies

The following list contains questions and replies relating to errors and fault status messages:

Question	*Reply*
During commissioning, the wrong language was selected. How do I find “my” language?	1. Press the ESC button and the OK knob simultaneously. 2. Select the password level and enter number **112** as the password (same as international emergency call) and confirm by pressing the OK knob. The language will change to English. 3. Select your language from the "Settings > Device > Language" menu.
The device is completely switched off, “Operation locked, Remote operation" appears. How do I start the device again?	The device was put into commissioning mode via remote operation (OCI700.1). Local operation is locked. If the device is not correctly restarted via remote operation, it will maintain the present state. Locally, the device can only be restarted by briefly disconnecting the power supply.
It is not possible to change from the **Commissioning** menu to the **Main** menu. The operator unit displays "Caution! Invalid settings, Start not possible". How do I start the device again?	Downloading the configuration with the service tool (OCI700.1) has not been completed. The configuration must be loaded again with the service tool (OCI700.1), or the device must be newly configured via the operator unit.
Fault status message "[N.X4] sensor error" cannot be acknowledged.	When the **Commissioning** menu is quit, the central control unit checks to see which sensors are connected. If, later, one of the sensors connected now is missing, a fault status message will be delivered. If an incorrectly wired sensor is only rewired later, a “wrong“ fault status message will be generated. *Remedy:* Go to the **Commissioning** menu (Caution! Plant stops) and then back to the **Main** menu (Caution! Plant starts).
The RXB room controllers do not operate according to the desired operating mode.	Check to see if communication is connected and operational. The geographical address (apartment) of the relevant room group must be the same for the RMB795 central control unit and the RXB room controllers. In addition, the time switch zone slave (room) must be set to 1 (fixed), and all settings of the subzones must be set to 1 (fixed).

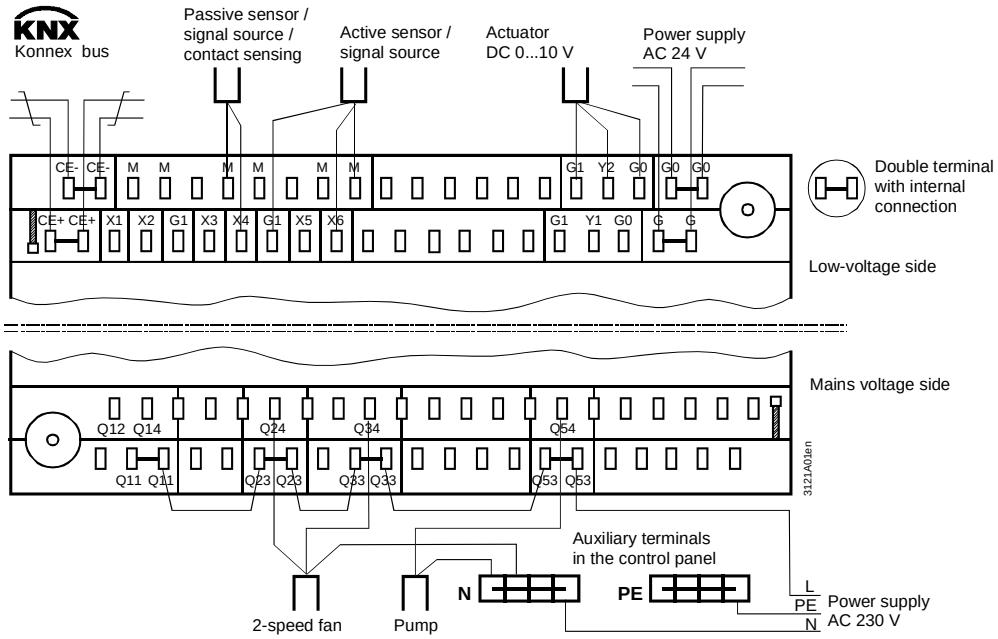
16 Electrical connections

16.1 Connection rules

Terminal connection concept

The following illustration shows the terminal base of the RMB795 central control unit including the connections:

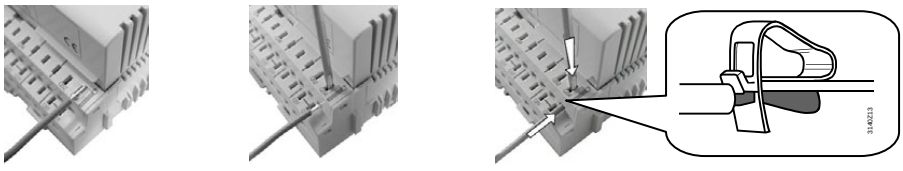
- Extra low-voltage side at the top
- Mains voltage side at the bottom



Note

Each connection terminal (cage terminal) can accommodate only 1 solid wire or 1 stranded wire.

Connection procedure for spring cage terminals



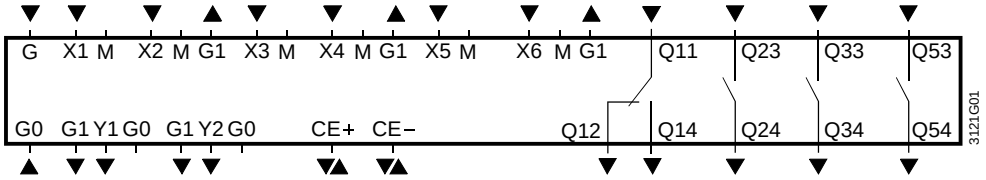
Procedure

1. Strip wire (length 7...8 mm; with module connector RMZ780 8...9 mm).
2. Have wire and screwdriver in place (size 0 to 1; with module connector size 0).
3. Apply pressure with the screwdriver while inserting the wire.
4. Remove the screwdriver.

16.2 Connection terminals

16.2.1 Central control unit RMB795

RMB795

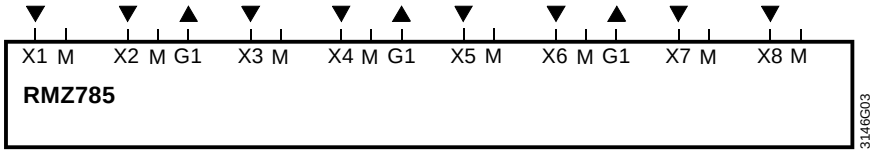


Legend

G, G0	Rated voltage AC 24 V
G1	Power supply AC 24 V for active sensors, signal sources or limiters
M	Measuring neutral for signal input
G0	System neutral for signal output
X1...X6	Universal signal inputs for LG-Ni 1000, 2x LG-Ni 1000 (averaging), T1, Pt 1000, DC 0...10 V, contact sensing (potential-free)
Y1...Y2	Control or status outputs, analog DC 0...10 V
Q1...	Potential-free relay outputs (changeover contact) for AC 24...230 V
Q2...	Potential-free relay outputs (N.O.) for AC 24...230 V
Q3...	Potential-free relay outputs (N.O.) for AC 24...230 V
Q5...	Potential-free relay outputs (N.O.) for AC 24...230 V
CE+	Konnex bus data line, positive
CE–	Konnex bus data line, negative

16.2.2 Universal modules RMZ785

RMZ785

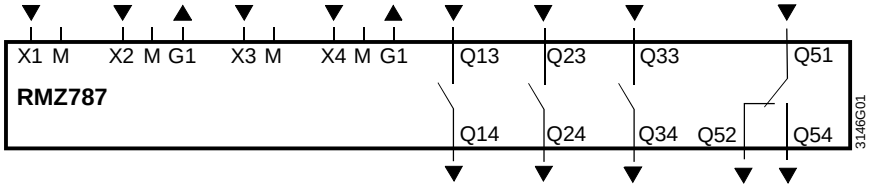


Legend

M	Measuring neutral for signal input
X1...X8	Universal signal inputs for: LG-Ni 1000, 2x LG-Ni 1000 (averaging), T1, Pt 1000, DC 0...10 V, contact sensing (potential-free)

16.2.3 Universal module RMZ787

RMZ787



Legend

M	Measuring neutral for signal input
G1	Power supply AC 24 V for connected active devices
X1...X4	Universal signal inputs for: LG-Ni 1000, 2x LG-Ni 1000 (averaging), T1, Pt 1000, DC 0...10 V, contact sensing (potential-free)
Q1...	Potential-free relay outputs (N.O.) for AC 24...230 V
Q2...	Potential-free relay outputs (N.O.) for AC 24...230 V
Q3...	Potential-free relay outputs (N.O.) for AC 24...230 V
Q5...	Potential-free relay outputs (changeover contact) for AC 24...230 V

17 Addendum

17.1 Abbreviations used in this document

To facilitate reading, the most common abbreviations are listed below in alphabetical order.

Abbreviation	*Meaning*
⊕	Heating
⊖	Cooling
Δw	Setpoint readjustment
Δw_S	Summer compensation delta
Δw_W	Winter compensation delta
AC	Alternating Current
AI	Analog Input
AO	Analog Output
DC	Direct Current
DI	Digital Input
DO	Digital Output
E_S	Summer compensation end
E_W	Winter compensation end
F_S	Summer compensation start
F_W	Winter compensation start
KNX	Konnex bus (for operation and process information)
LCD	Liquid Crystal Display
LED	Light Emitting Diode
HMI	Human Machine Interface
SpC	Cooling setpoint
SpCCmf	Comfort cooling setpoint
SpCEco	Economy cooling setpoint
SpH	Heating setpoint
SpHCmf	Comfort heating setpoint
SpHEco	Economy heating setpoint
SpSu	Supply air temperature setpoint
t	Time
OT	Outside temperature
t_{Nmin}	Operating time min for night cooling
RT	Room or extract air temperature
w	Setpoint
w_{TV}	Flow temperature setpoint
x	Actual value

17.2 Configuration diagrams

17.2.1 Explanation of the configuration principle

Configuration diagrams, contents

The RMB795 central control unit has a large number of preconfigured function blocks integrated. The available configuration choices are shown in the configuration diagrams; they include:

- Input identifier (inputs, input functions)
- Operating mode (calendar, schedular)
- Function blocks for supervision, refrigeration and heating demand, including the functions of the extension modules

Configuration diagrams, use

In the configuration diagram, the planning engineer can enter and draw the configuration diagram and show the interconnections of the individual input and output functions (of their internal signals) with the associated connection terminals.

Identifiers used

Devices and extension modules:

- N Central control unit RMB795
- A5 Universal module RMZ787
- A7(1) Universal module RMZ787 (first module)
- A7(2) Universal module RMZ787 (second module)

Physical inputs:

- D Digital
- X Universal

Physical outputs:

- Q Relay
- Y DC 0...10 V

Use of inputs Xx

Be sure to observe the following rules and properties when using the inputs:

- The input identifier can be a device or a special sensor (e.g. outside temperature)
- Multiple use of inputs is possible, no limitations (e.g. fire alarm off acts on several room groups)
- When an input is connected, the display only shows the possible units
- Alarming for inputs is only active when the input is connected prior to completing commissioning

Procedure for extra configuration

Order of configuration:

- First the basic configuration, then the extra configuration
- First the input identifiers, then the operating modes with all control functions

Wiring choices:

- Always from the arrow to the line
- From the function to the input: "x" to "x"
- From the output block to the output terminal: Analog "Y" to "Y"
- Relay "Q" to "Q"

Use of outputs Yx

When using the outputs, the following rules are to be observed:

- Connect the output functions to the relevant terminals
- Each output terminal can be used only once (e.g. N.Q1 for the fault relay)

17.2.2 Overview of function blocks

Introduction

The following pages provide an overview of the function blocks for the RMB795 central control unit, including a brief description. For the number of function blocks and the assignment of inputs and outputs, refer to the configuration diagram of the RMB795.

Basic configuration

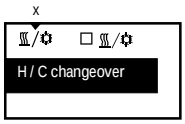
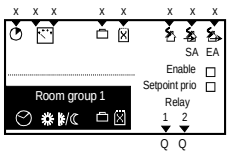
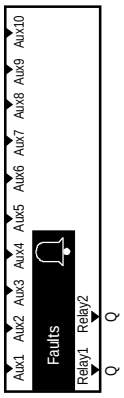
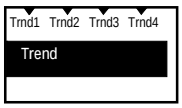
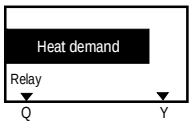
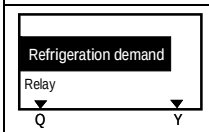
Configuration	Function
Basic type	• **Basic type B: RMB plant** (time programs with preselected setpoints and emergency control per room group)
☐ RMZ785 ☐ RMZ787 (1) ☐ RMZ787 (2)	• Use of additional inputs and outputs with the extension modules RMZ785 and RMZ787. The functions of the central control unit can be configured to these inputs / outputs • Input specifying which modules are connected to the central control unit in which order (position)

Input identifiers

Inputs	Configuration	Functions
	N.X1…N.X6 RMZ785.X1...RMZ785.X8 RMZ787.X1... RMZ787.X4	Input of input identifier: • Units: °C, %, g/kg, kJ/kg, W/m², m/s, bar, mbar, Pa, ppm, universal 000.0 (display with 1 decimal place), universal 0000 (display with no decimal place). The unit is required for the display. All settings that depend on this unit (e.g. P-bands) are displayed with this unit. Sensors for °C: Ni 1000, 2 x Ni1000 (averaging), T1, Pt 1000, DC 0…10 V, all other units DC 0…10 V, range adjustable • Digital (input for potential-free contact) • Special identifiers: Outside temperature With the special identifier, internal connections are used directly by the central control unit • SIGNAL Y: For sensors with passive signals at an input terminal that cannot be passed on to another device via bus, as described in subsection 7.2.6, “Multiple use of sensors"
	Outside temperature	Outside temperature, sensors as described in section 7.2, “Analog inputs", for the following functions: • Summer/winter compensation • Release of night cooling

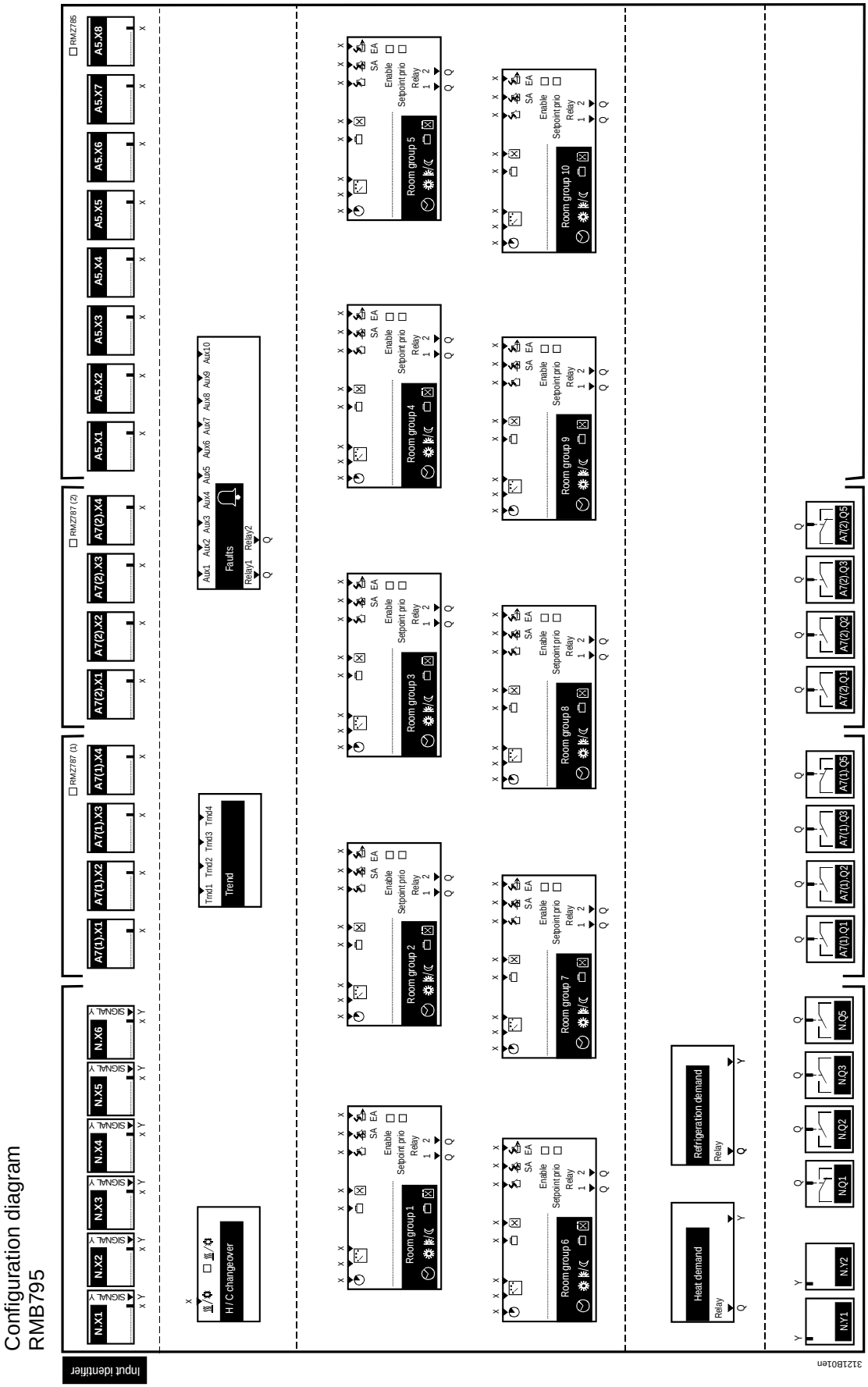
Overview of function blocks (cont'd)

Open loop control functions

Operating mode	Configuration	Functions
	• 2-pipe H/C system (☐ ♨/❄) • H/C changeover input (♨/❄)	Collection of heat and refrigeration demand. • Activation of 2-pipe heating / cooling system • Digital input for heating / cooling changeover (H/C changeover input)
	• Timer function (◔) • Rm optg mode inp 1 (▨) • Rm optg mode inp 2 (▨) • Fire alarm off(⌂) • Smoke extraction (⌂/⌂) • Holiday input (🗀) • Special day input (☒)	Room operating modes. • Timer function: Digital input for Comfort mode for an adjustable period of time • Preselection of an adjustable room operating mode with room operating mode input 1 • Room operating mode selector with room operating mode input 1+2 • Fire alarm off and smoke extraction (with selection of supply air, extract air, or supply air and extract air) Calendar functions • Holiday input and special day input: Digital input for holidays (selectable room operating mode) or special day (special day program of time switch)
Faults	**Configuration**	**Functions**
	• Fault input 1 through 10 (Aux...) • Fault relays 1 and 2 (relays...)	• 10 universal fault status inputs, fault status signal delay, fault acknowledgement (none, acknowledge, acknowledge and reset), fault priority (urgent, nonurgent) and impact of fault (stop, no stop) • Supervision of analog signals with regard to limit value crossings • 2 fault relays, priority (urgent, nonurgent, all) and origin (internal, bus)
Trend	**Configuration**	**Functions**
		The trend is used for logging the progression of signals. • 4 independent trend channels • Logging of local inputs, room temperatures and outside temperature from the bus • Simultaneous display of 2 channels • Views: 8-minute, 8-hour, 24-hour and 6-day history
Heat demand **Refrigeration demand**	**Configuration**	**Functions**
	• Passing on the heat demand via Konnex bus • Heat demand relay (relay Q) • Heat demand modulating	Plant functions when there is demand for heat. • Heat demand can also be transmitted via bus (refer to communication) • Heat demand relay for passing on the heat demand • Heat demand modulating for passing on the heat demand by means of analog DC 0..10 V signal
	• Passing on the refrigeration demand via Konnex bus • Refrigeration demand relay (relay Q) • Refrigeration demand modulating	Plant functions when there is demand for refrigeration. • Refrigeration demand can also be transmitted via bus (refer to "Communication") • Refrigeration demand relay for passing on the refrigeration demand • Refrigeration demand modulating by means of analog DC 0..10 V signal

17.2.3 Configuration diagram RMB795

Empty configuration diagram of basic type “B”:



17.3 Menu tree

Principle

On the software side, all settings and readout values are arranged as datapoints (operating line) of the menu tree.
Using the operating elements of the operator units, every operating line can be selected, displayed or set in accordance with the access right.

Submenus

The **Main menu** is subdivided into a maximum of 20 submenus:

1. Commissioning
2. Room group 1…10 (total of 10 submenus)
3. Inputs
4. Outputs
5. Time of day/date
6. Faults
7. Trend
8. Operation RXB
9. Settings
10. Device information
11. Data backup

Menu tree with operating lines

The following tables show the submenus with their operating lines:

Operating line	***Page***
1. Commissioning	
Basic configuration	
Plant type	
Position 1	
Position 2	
Position 3	
Extra configuration	
Input identifier	
N.X1	
N.X2	
N.X3	
N.X4	
N.X5	
N.X6	
RMZ785.X1	
RMZ785.X2	
RMZ785.X3	
RMZ785.X4	
RMZ785.X5	
RMZ785.X6	
RMZ785.X7	
RMZ785.X8	
RMZ787 (1).X1	
RMZ787 (1).X2	
RMZ787 (1).X3	
RMZ787 (1).X4	
RMZ787 (2).X1	
RMZ787 (2).X2	
RMZ787 (2).X3	
RMZ787 (2).X4	
Sensor multiple use	
Signal Y N.X1	
Signal Y N.X2	
Signal Y N.X3	
Signal Y N.X4	
Signal Y N.X5	
Signal Y N.X6	
Signal Y RMZ785.X1	
Signal Y RMZ785.X2	
Signal Y RMZ785.X3	
Signal Y RMZ785.X4	

Operating line					*Page*
			Signal Y RMZ785.X5		
			Signal Y RMZ785.X6		
			Signal Y RMZ785.X7		
			Signal Y RMZ785.X8		
			Signal Y RMZ787 (1).X1		
			Signal Y RMZ787 (1).X2		
			Signal Y RMZ787 (1).X3		
			Signal Y RMZ787 (1).X4		
			Signal Y RMZ787 (2).X1		
			Signal Y RMZ787 (2).X2		
			Signal Y RMZ787 (2).X3		
			Signal Y RMZ787 (2).X4		
		Room group 1...10			
			Enable		
			Setpoint priority		
			Room operating mode		
				Timer function	
				Room operating mode input 1	
				Room operating mode input 2	
				Holiday input	
				Special day input	
				Operating mode relay 1	
				Operating mode relay 2	
			Fire and smoke extraction		
				Fire alarm off	
				Smoke extraction supply air	
				Smoke extraction extract air	
		Faults			
			Fault input 1		
			Fault input 2		
			Fault input 3		
			Fault input 4		
			Fault input 1		
			Fault input 1		
			Fault input 1		
			Fault input 1		
			Fault input 2		
			Fault input 1		
			Fault relay 1		
			Fault relay 2		
		Heating/cooling changeover			
			2-pipe heating/cooling system		
			H/C changeover input		
		Heat demand			
			Heat demand relay		
			Heat demand modulating		
		Refrigeration demand			
			Refrigeration demand relay		
			Refrig demand modulating		
		Miscellaneous			
			Business card		
	Settings (menu tree like under 9. "Settings")				
	Communication				
		Basic settings			
			Area		
			Line		
			Device address		
			Decentral bus power supply		
			Clock time operation		
			Remote setting clock slave		
			Remote reset of fault		

Menu tree (cont'd)

Operating line						*Page*
		Room group 1...10				
			Geographical zone (apartment)			
			QAW operation zone (apartment)			
			Holidays/special day			
				Holiday/special day operation		
				Hol/spec day zone		
			Reference room 1...3			
				Geographical zone (apartment)		
				Geographical zone (room)		
				Reference room 1		
		Distribution zones				
			Outside temperature zone			
			Heat distr zone source side			
			Heat distr zone consumer side			
			Refrig distr zone source side			
			Heat distr zone consumer side			
	Wiring test					
		Inputs				
			N.X1			
			N.X2			
			N.X3			
			N.X4			
			N.X5			
			N.X6			
			RMZ785.X1			
			RMZ785.X2			
			RMZ785.X3			
			RMZ785.X4			
			RMZ785.X5			
			RMZ785.X6			
			RMZ785.X7			
			RMZ785.X8			
			RMZ787 (1).X1			
			RMZ787 (1).X2			
			RMZ787 (1).X3			
			RMZ787 (1).X4			
			RMZ787 (2).X1			
			RMZ787 (2).X2			
			RMZ787 (2).X3			
			RMZ787 (2).X4			
		Outputs				
			Operating mode room group 1			
			Operating mode room group 2			
			Operating mode room group 3			
			Operating mode room group 4			
			Operating mode room group 5			
			Operating mode room group 6			
			Operating mode room group 7			
			Operating mode room group 8			
			Operating mode room group 9			
			Operating mode room group 10			
			Fault relay 1			
			Fault relay 2			
			Heat demand			
			Refrigeration demand			
	Device supervision					
		Function				
		Device list				
		Identified devices				

Menu tree (cont'd)

Operating line	*Page*
2. Room group 1...10	
Time switch	
Monday	
From	
Copy to	
Tuesday	
From	
Copy to	
Wednesday	
From	
Copy to	
Thursday	
From	
Copy to	
Friday	
From	
Copy to	
Saturday	
From	
Copy to	
Sunday	
From	
Copy to	
Special day	
From	
Copy to	
Copy to	
Holidays/special day	
Calendar	
Entry 1...16	
Start	
End	
Reason	
Cancel entry	
Room operating mode holidays	
DHW operating mode holidays	
Room operating mode	
Preselection	
State	
Cause	
Room temp actual value	
Reference room 1	
Reference room 2	
Reference room 3	
Highest room temperature	
Zone (apart.room)	
Lowest room temperature	
Zone (apart.room)	
Room temp setpoint	
Economy cooling setpoint	
Precomfort cooling setpoint	
Comfort cooling setpoint	
Comfort heating setpoint	
Precomfort heating setpoint	
Economy heating setpoint	
Device supervision	
Number of devices current	
Zone (apart.room)	

Menu tree (cont'd)

Operating line		*Page*
3. Inputs		
	N.X1	
	N.X2	
	N.X3	
	N.X4	
	N.X5	
	N.X6	
	N.X7	
	N.X8	
	RMZ785.X1	
	RMZ785.X2	
	RMZ785.X3	
	RMZ785.X4	
	RMZ785.X5	
	RMZ785.X6	
	RMZ785.X7	
	RMZ785.X8	
	RMZ787 (1).X1	
	RMZ787 (1).X2	
	RMZ787 (1).X3	
	RMZ787 (1).X4	
	RMZ787 (2).X1	
	RMZ787 (2).X2	
	RMZ787 (2).X3	
	RMZ787 (2).X4	
	Outside temperature	
	Outside temperature simulation	
4. Outputs		
	Optg mode relay 1 room group 1	
	Optg mode relay 2 room group 1	
	Optg mode relay 1 room group 2	
	Optg mode relay 2 room group 2	
	Optg mode relay 1 room group 3	
	Optg mode relay 2 room group 3	
	Optg mode relay 1 room group 4	
	Optg mode relay 2 room group 4	
	Optg mode relay 1 room group 5	
	Optg mode relay 2 room group 5	
	Optg mode relay 1 room group 6	
	Optg mode relay 2 room group 6	
	Optg mode relay 1 room group 7	
	Optg mode relay 2 room group 7	
	Optg mode relay 1 room group 8	
	Optg mode relay 2 room group 8	
	Optg mode relay 1 room group 9	
	Optg mode relay 2 room group 9	
	Optg mode relay 1 room group 10	
	Optg mode relay 2 room group 10	
	Fault relay 1	
	Fault relay 2	
	Heat demand relay	
	Heat demand modulating	
	Refrigeration demand relay	
	Refrig demand modulating	
5. Time of day/date		
	Time of day	
	Date	
	Year	
	Summer time start	
	Winter time start	

Menu tree (cont'd)

Operating line				*Page*
6. Faults				
	Faults			
		Fault 1…		
			Fault number	
	Fault history			
		Fault 1…		
			Fault number	
	Fault status signal bus			
		Fault number		
		Device address		
	Delete faults			
7. Trend				
	Trend channel 1...4			
8. Operation RXB				
	Geographical zone (apartment)			
	Geographical zone (room)			
	RXB device data			
		Room number		
		Device name		
		Active HVAC operating mode		
		Actual value room temp		
		Current room temp setpoint		
		Economy cooling setpoint		
		Precomfort cooling setpoint		
		Comfort cooling setpoint		
		Comfort heating setpoint		
		Precomfort heating setpoint		
		Economy heating setpoint		
		Local setpoint offset		
		Heating/cooling output		
		Fan output		
		Heating demand signal		
		Cooling demand signal		

Menu tree (cont'd)

Operating line				*Page*
9. Settings				
	Device			
		Language		
		Unit		
		Time format		
		Contrast		
	Inputs			
		N.X1…X6		
			N.X1	
			Type reference	
			Value low	
			Value high	
			Correction	
			Normal position	
		Sensor attenuation		
		RMZ785.X1…X8		
			Type reference	
			Value low	
			Value high	
			Correction	
			Normal position	
		Sensor attenuation		
		RMZ787 (1).X1…X4		
			Type reference	
			Value low	
			Value high	
			Correction	
			Normal position	
		Sensor attenuation		
		RMZ787 (2).X1…X4		
			Type reference	
			Value low	
			Value high	
			Correction	
			Normal position	
		Sensor attenuation		
	Room group 1...10			
		Room group 1		
		Room temp setpoint		
			Economy cooling setpoint	
			Precomfort cooling setpoint	
			Comfort cooling setpoint	
			Comfort heating setpoint	
			Precomfort heating setpoint	
			Economy heating setpoint	
		Setpoint effects		
			Summer compensation delta	
			Summer compensation end	
			Summer compensation start	
			Winter compensation start	
			Winter compensation end	
			Winter compensation delta	
		Night cooling		
			Outside temperature limit	
			Room-outside temp delta	
			Operating time min	
			Precooling time max	

Menu tree (cont'd)

Operating line				*Page*
		Room temp supervision		
			Limit value high	
			Limit value low	
		Device supervision		
			Fault text	
	Trend			
		Trend channel 1...4		
			Trend channel 1	
			Trend signal	
			Geographical zone (room)	
			Outside temperature zone	
			Y-axis min	
			Y-axis max	
			Selection extra channel	
	Heat requisition			
		Limit value requisition on		
		Limit value requisition off		
		Heating flow setpoint		
		Flow temperature reduction max		
		Control mode		
		Requisition evaluation		
	Refrigeration requisition			
		Limit value requisition on		
		Limit value requisition off		
		Chilled water flow setpoint		
		Flow temperature boost max		
		Control mode		
		Requisition evaluation		
	Heat demand			
		Setpoint at 0 V		
		Setpoint at 10 V		
		Limit value		
	Refrigeration demand			
		Setpoint at 0 V		
		Setpoint at 10 V		
		Limit value		
	Texts			
		Device name		
		File name		
		Business card line 1		
		Business card line 2		
		Business card line 3		
		Business card line 4		

Menu tree (cont'd)

Operating line				*Page*
10. Device information				
	Controller			
		Basic type		
		Basic type adapted		
		File name		
		Device type		
		Software version		
		Hardware version		
	Position 1			
		Extension module		
		Software version		
		Hardware version		
	Extra configuration			
		Input identifier		
		Sensor multiple use		
		Room group 1...10		
		Faults		
		Heating/cooling changeover		
		Heat demand		
		Refrigeration demand		
		Miscellaneous		
	Communication			
		Basic settings		
			Area	
			Line	
			Device address	
			Decentral bus power supply	
			Clock time operation	
			Remote setting clock slave	
			Remote reset of fault	
		Room group 1...10		
			Geographical zone (apartment)	
			Holidays/special day	
			Reference room 1...3	
		Distribution zones		
			Outside temperature zone	
			Heat distr zone source side	
			Heat distr zone consumer side	
			Heat distr zone consumer side	
11. Data backup				
	Storage date			
	Storage year			
	Restore			
	Save			

17.4 Planning and Commissioning Report C3127

Purpose

To ensure successful planning of KNX communication between the RMB795 central control unit and the RXB room controller, a Planning and Commissioning Report has been made available. It is used to straightforwardly list and document all settings required for communication.

File name: C3127_Planning+Comm Report.xls

Example

The following illustration shows part of a report (application example Sport Ltd):

SIEMENS — Menu — **Planning and Commissioning Report, Communication Synco 700**

	Possible settings	RMU	RMH	RMK	OZW	RMB	RXB	QAW	1	2	3	4	5	6	7	8	9	0
Information	Plant								Sport Ltd	Sport Ltd	Sport Ltd	Sport Ltd	Sport Ltd	Sport Ltd	Sport Ltd			
	Room number									309		307	308	308	308			
	Device name	X	X	X	-	X	X	-	Reception	Conference	Reception	Office	Office	Office	Office			
	Device type	RMU 7..	RMH, RMZ	RMK	OZW 771...	RMB 795	RXB	QAW 740	RMB795	RXB..	RMB795 [2]	RXB..	RXB..	RXB..	RXB..			
	Plant type	X	X	X	-	X	X	-	B	FC03		FC03	FC03	FC03	FC03			
	KNX-ID (Example ID: 00FD000016D5)	X	X	X	X	X	X	X										
Basic settings	Area [0...15] . Line [1; 2...15] . Device address [1..253;**255**]	X	X	X	X	X	X	X	0.2.10	0.2.114		0.2.110	0.2.111	0.2.112	0.2.113			
	Decentral bus power supply [Off, **On**]	X	X	X	-	X	-	-	Aus									
	Clock time operation [**Autonomous**, Slave, Master]	X	X	X	X	X	-	-	Autonom									
	Remote setting chlock slave [No, **Yes**]	X	X	X	X	X	-	-	Nein									
	Remote reset of fault [**No**, Yes]	X	X	X	-	X	-	-	Nein									
Room / Room group	Geographical zone (Apartment,Room,Subzone) (A.R.S) [**1**...126].[1...63]. [1]	X_2	2X	X	-	10X	X.X.1	X	1.1.1	1.1.1	2.1.1	2.1.1	2.2.1	2.3.1	2.4.1			
	(with own room sensor)	X_1	2X	X	-	-	X	X		X		----	X	X	X			
	Time switch operation [**Autonomous**, Slave, Master]	X_1	2X	X	-	-	-	-										
	Time switch slave (apartment) [**1**...126] . 1 . 1	X_1	2X	X	-	-	X.1.1	-		1.1.1		2.1.1	2.1.1	2.1.1	2.1.1			
	Temperature control [**Master**, Slave]	-	-	-	-	-	X	-		Master		Master	Master	Master	Master			
	* Control strategy [**Caskade**, Constant, Alternating]	X_4	-	-	-	-	-	-										
	** Combination of room control [**Master**, Slave external setpoint , Slave internal setpoint]	-	2X	X	-	-	-	-										
	Room group (name)	-	-	-	-	10X	-	-	Conference		Office							
	QAW operation zone (apartment) [---,**1**...126] . 1 . 1	-	-	-	-	10X	-	-										
Domestic hot water	DHW zone [**1**...31]	-	X	-	-	-	-	-										
	Time switch operation [**Autonomous**, Slave, Master]	-	X	-	-	-	-	-										
	Time switch slave, from BW zone [**1**...31]	-	X	-	-	-	-	-										
Holidays / Special days	Holidays / secial day operation [**Autonom**, Slave, Master]	X_1	X	X	-	10X	-	-										
	Holiday / special day zone [**1**...31]	X_1	X	X	-	10X	-	-										
Distribution zone	Outside temperature zone [**----**, 1...31]	X	X	X	-	X	-	-										
	(with own sensor)	X	X	X	-	X	-	-										
	Heat distribution zone source side [----, **1**...31]	X_1	X_5	-	-	X	X	-										
	Heat distribution zone consumer side [1...31]	X_3	X_6	-	-	X	-	-										
	Refrigation distr zone source side [----, 1...31]	X_2	-	-	-	X	X	-										
	Refrigeration zone consumer side [**1**...31]	X_3	-	-	-	X	-	-										
	Heat distribution zone main distributor [**1**...31]	-	-	X	-	-	-	-										
	Heat distribution zone prim controller [1, **2**...31]	-	-	X	-	-	-	-										
	Solar zone [**----**, 1...31]	-	X	-	-	-	-	-										
	(with own sensor)	-	X	-	-	-	-	-										
	Wind zone [**----**, 1...31]	-	X	-	-	-	-	-										
	(with own sensor)	-	X	-	-	-	-	-										
Generation zone	Boiler sequence zone [----, **1**...16]	-	-	X	-	-	-	-										

Legend:

* Commissioning > Settings > Controller 1 > Cascade controller > Control strategy

** Commissioning > Extra configuration Heating circuit 1/2 >Functions>Room control combination>

X_2 Basic type 0-x, 1-x, 2-x
X_6 Basic type 1-x, 2-x, 3-x, 4-x
X_1 Basic type A, U
X_2 Basic type A, C, U
X_3 Basic type C
X_4 Basic type A

Object			
Planner		Date	
Commissioner		Date	

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