SIEMENS 3¹⁵⁰





Synco™ 700

Universal controller

RMU7..B

- With yearly timeswitch
- Each type of controller is supplied with 5 different ventilation/air conditioning plants preprogrammed
- Freely programmable controller, for optimum adaptation to the relevant type of plant
- Modular expandable with extension modules RMZ785, RMZ787 and RMZ788
- Menu-driven operation with separate operator unit (plug-in type or detached)
- KNX bus connection for operation and process information.

Application

For use on basic to complex ventilation, air conditioning and cold water plants and primary air handling featuring communicative room thermostats.

The universal controllers are designed to handle the following controlled variables: Temperature, relative/absolute humidity, pressure/differential pressure, airflow, indoor air quality and enthalpy.

Functions

Timeswitch and operating modes

- Yearly timeswitch with automatic summer-/wintertime changeover.
- 7-day program (6 switching points per day) and yearly program for holidays/special days (16 periods).
- Selection of operating mode
 with local operator unit: auto, comfort, precomfort, economy and protection or via
 status inputs: Comfort, precomfort, economy and protection.
- Room controller combination with multiple ventilation controllers or heating controllers via the KNX bus. Exchange information such as room temperature, operating mode and setpoints.
- Display of the current operating mode (comfort, precomfort, economy and protection), including the reason for it

Setpoints

- Depending on the sequence controller: Individually adjustable heating and cooling setpoints (or maximum and minimum setpoints) for comfort and precomfort modes
- Predefined room temperature setpoint with room unit or relative setpoint adjuster (passive)
- Depending on the sequence controller: Predefined setpoint with absolute remote setpoint adjuster (active or passive)
- Room temperature setpoint with summer and/or winter compensation
- Depending on the sequence controller: Setpoint shift depending on a sensor, selectable start and end points

Universal inputs

8 universal inputs for

- Passive or active analog input signals of the following measured values (°C, %, g/kg, kJ/kg, W/m², bar, mbar, m/s, Pa, and ppm, Universal 000.0, Universal 0000, pulse).
- Digital input signals (potential-free contacts)

Additional I/Os through extension modules

Additional inputs and outputs to extend functionality.

Total max. 4 extension modules per RMU7..B can be connected.

Select from:

- max. 1 universal module RMZ785 (8 universal inputs).
- max. 2 universal modules RMZ787 (4 universal inputs, 4 relay outputs).
- max. 2 universal modules RMZ788 (4 universal inputs, 2 analog outputs, 2 relay outputs).

Data acquisition

Pulse meter (for display only, not for billing purposes).

Two meters available to acquire consumption data.

Processes pulses from gas, hot water, low-temperature hot water, chilled water, electricity meters.

 Pulse metering (Wh, kWh, MWh, kJ, MJ, GJ, ml, l, m3, heating costs units, BTU, no unit).

Trend data display

Four independent trend channels available to log measured values for a set period. KNX bus room temperature and outside air temperatures can be logged in addition to logical device inputs.

Control functions

- Sequence controller for 3 heating sequences (reverse acting) and 2 cooling sequences (direct acting), can be used as a controller providing P, PI or PID mode, or as a differential controller
- Controller can be configured as a room/supply air temperature cascade controller with limitation of the supply air temperature
- Each sequence can be assigned modulating control (modulating output, step switch, mixed air damper, heat recovery equipment) and a pump. Up to 3 sequences can act on the same analog control (e.g. priority cooling/dehumidification)
- General limitation function (minimum / maximum with PI mode per sequence controller, either as absolute limitation (e.g. for the supply air temperature or supply air humidity), or as relative temperature limitation (e.g. maximum limitation of the room/supply air temperature differential). Limitation acts on all sequences.
 Minimum limitation for switched on cooling (example: cooling with direct expansion cooler battery) can be set to a lower setpoint.
- Sequence limitation function with PI mode per sequence controller, can be defined as minimum or maximum limitation. Limitation acts on a single sequence (e.g. heat recovery anti-icing protection or maximum limitation of the air heating coil's return temperature)
- Lock individual sequences by outside air temperature.
- Messages about deviations of setpoint/actual value per sequence controller

Switching and supervisory functions

Fans

Control and monitor supply air and extract air fan with preselected command, preselected command feedback signal and operating hours meter.

- Single-speed fan (recirculated air operation possible)
- 2-speed fan (lock the second speed per outside air temperature)
- Speed-controlled fan, including pressure or volume flow controller.

Pumps

Control and supervise up to 4 simple or twin pumps.

- Pump kick.
- Permanent ON for low outside air temperatures.
- ON after last sequence controller or per operating mode.
- Plant stop for pump fault depending on the outside temperature.

Heat recovery

Control heat recovery.

- · Maximum economy changeover.
- · Efficiency monitoring.
- Enabling relay for heat recovery.

Mixed air damper

Control mixed air damper.

- Maximum economy changeover.
- Minimum position.
- Startup and maximum position depending on the outside air temperature.
- Mixed air damper temperature control at a constant setpoint (economizer).

Linear/binary step switch

Control of up to 3 available function blocks, each with 1 **linear** or **binary** step switch with a maximum of 4 relay outputs and 1 analog output.

Variable step switch

Control of 2 available function blocks with a **variable** step switch with 6 or 4 steps and one analog output each.

Logic functions

Four freely configurable logic function blocks are available to process multiple logically linked universal input variables.

- Configurable logic functions.
- Adjustable switch-on and switch-off delay and minimum switch-on and switch-off time
- Operating switch (auto, off, on), configurable for manual control.

Additional timeswitch

Additional timeswitch with 6 daily switch-on or switch-off times.

• Operating switch (auto, off, on), configurable for manual control.

Demand-dependent ventilation (CO₂/VOC)

Demand-dependent ventilation (CO₂/VOC), acting on the air dampers or the variable speed/multispeed fans.

Frost protection

2-stage frost protection function (modulating/2-position) or frost protection thermostat (heating sequences delivering 100 % output, fans switched off).

• Frost protection and 3 frost protection monitors.

Preheating function

The following preheating functions are available:

Switch-on optimization

Comfort function Switch-on optimization for heating and cooling.

Sustained mode

• Sustained heating and cooling mode during occupied or unoccupied periods.

Night cooling

Night purging during unoccupied periods in the summer.

Heating/cooling demand

- Output of heat and cooling demand signal (relay and DC 0...10 V).
- Collect, evaluate and forward heat and cooling demand from and via the KNX bus. Can also be configured:
- Modeling output (e.g. for demand-dependent setpoint shift of a refrigeration machine).
- Relay output (e.g. to switch-on/switch-off a refrigeration machine).
- Demand-dependent setpoint shift acting on a primary controller.
- Adjustable setpoint increase for use with primary controller.

Switching heating/cooling

If a 2-pipe system (heating/cooling) is used, you can switch heating/cooling via a digital or analog input, via an operating mode switch (auto, heating, cooling), by date or via the KNX bus. The heating/cooling signal can be sent to the KNX bus or issued via a relay.

Fault messages

Fault indication with red LED, acknowledgement with button.

The following options are available:

- 2 relay outputs as fault message relay.
- 10 universal inputs as fault message inputs.
- 4 predefined fault inputs (filter supervision, fire shutdown, "supply air smoke extraction" and "extract air smoke extraction").

Bus functions

- Remote operation of KNX functions with RMZ792 bus operating unit.
- Room operator unit with the relevant functions.
- Indication of fault status messages delivered by other devices on the bus.
- Delivery of a common fault status message from all devices on the bus to a fault relay.
- Time synchronization.
- Passing on and adoption of outside temperature signal.
- Common control strategy of a ventilation controller with a heating controller or multiple ventilation controllers to control of the same room.
- Sending or receiving the yearly timeswitch schedule (holidays/special days) from some other controller.
- Sending or receiving the 7-day program or the yearly program for the holidays/special days of any other controller.
- Generating and sending a demand signal (hot water, chilled water) to the primary controller or the hot water/chilled water source.
- Receiving and evaluating refrigeration demand signals if configured as a primary controller or hot water/chilled water source.

Demand control: Exchange of data between primary and VAV individual room control using the following functions via KNX bus:

- Demand-dependent plant operation primary ventilation plant (switch on and off based on load) and demand-dependent supply air temperature control
- Receive and evaluate energy demand signals (heating and cooling)
- Pressure setpoint compensation supply/extract air fan functioning as VAV damper position

Universal sending and receiving zones

Device RMU7x0B allows for universal data exchange via own terminals as well as via terminals of extension modules RMZ78x.

Data between devices is exchanged via KNX bus.

Universal inputs, digital and analog outputs of RMU7x0B can be used as sending objects (for sending zones).

Universal inputs of RMU7x0B can be used as receiving objects (in receiving zones).

• Sending zones:

Universal inputs (N.X1...A8(2).X4)

Digital outputs (N.Q1...A8(2).Q5)

Analog outputs (N.Y1...A8(2).Y2)

Receiving zones:

Universal inputs (N.X1...A8(2).X4)

Examples of applications not permitted using KNX bus

The following applications or input/output values may not be implemented using universal sending and receiving zones:

- Safety-relevant plants and equipment (e.g. fire alarm off, smoke extraction, frost protection function).
- If request "Simultaneous synchronous start condition of plants" exists.
- Applications where communications failure of sending or receiving zones may cause damage.
- Time-critical control paths or control paths with greater degree of difficulty (e.g. speed control via pressure, humidity).
- Main controlled variables that must be available.
- · Acquisition and evaluation of pulses.

Note

After RMU7x0B power-up, it may take a few minutes until the bus signals are available. This may result in faulty plant behavior in the case of sending and receiving zone applications that are not allowed.

Service and operating functions

- Display of setpoint and actual values.
- Input terminal simulation.
- Outside temperature simulation.
- Wiring test.
- Data backup.

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Type	Universal inputs	Positioning outputs	Switching outputs	Open control loop	Default languages
RMU710B-1	6	2	2	1	de, fr, it, es, pt
RMU720B-1	8	3	4	2	de, fr, it, es, pt
RMU730B-1	8	4	6	3	de, fr, it, es, pt
RMU710B-2	6	2	2	1	de, en, fr, nl
RMU720B-2	8	3	4	2	de, en, fr, nl
RMU730B-2	8	4	6	3	de, en, fr, nl
RMU710B-3	6	2	2	1	sv, fi, no, da
RMU720B-3	8	3	4	2	sv, fi, no, da
RMU730B-3	8	4	6	3	sv, fi, no, da
RMU710B-4	6	2	2	1	pl, cs, sk, hu, ru, bg
RMU720B-4	8	3	4	2	pl, cs, sk, hu, ru, bg
RMU730B-4	8	4	6	3	pl, cs, sk, hu, ru, bg
RMU710B-5	6	2	2	1	ro, sl, sr, hr, el, tr
RMU720B-5	8	3	4	2	ro, sl, sr, hr, el, tr
RMU730B-5	8	4	6	3	ro, sl, sr, hr, el, tr
RMU710B-6	6	2	2	1	zh
RMU720B-6	8	3	4	2	zh
RMU730B-6	8	4	6	3	zh

Accessories

Operator / service units

Extension modules

Name	Тур	Datenblatt
Operator unit, plug-in type	RMZ790	N3111
Operator unit, detached	RMZ791	N3112
Service tool	OCI700.1	N5655
Universal module with 8 universal inputs	RMZ785	N3146
Universal module with 4 universal inputs and 4 relay	RMZ787	N3146
outputs		
Universal module with 4 universal inputs, 2 relay	RMZ788	N3146
outputs and 2 analog DC 010 V outputs.		
Module connector for detached extension modules	RMZ780	N3138

Ordering and delivery

When ordering, please provide the name and type reference of the controller, for example,

Universal controller RMU730B-1.

The devices and components listed under listed under "Accessories" must be ordered as separate items.

Each controller is supplied as follows:

- Complete with 5 standard applications plus one empty application each of basic types A, P, C and U (configuration must be adapted)
- Operating languages (see "Type overview")

The following table lists equipment that can be combined with the RMU7x0B and extension modules:

Unit	Type	Data sheet
Passive sensors	All sensors with sensing element	N1721N1846
	LG-Ni1000, Pt1000, T1 (PTC)	N1713
Active sensors	All sensors with	N1821,
	- AC 24 V supply voltage	N1850N1932
	- modulating output DC 010 V	
Monitoring devices	QAF81, QAF64,	N1284, N1283,
	QFA1000, QFA1001, QFM81,	N1518, N1514,
	QXA2000,	N1542,
	QBM81	N1552
Passive signal	BSG21.1	N1991
sources		
Active signal sources	BSG61	N1992
Room units	QAA25, QAA27	N1721
Actuating equipment	All motorized, hydraulic and magnetic	N4000N4999
	actuators with	
	- operating voltage AC 24 V	
	- for modulating control DC 010 V.	
VAV Volume flow	GB181.1E/3	N3544
controller	GB181.1E/KN networked versions	N3547
Variable speed drive	SED2	N5192
Transformers	SEM62.1, SEM62.2	N5536

Product documentation

Type of document	Ordering number
Product range description: Synco™ 700	CE1S3110en
Basic Documentation: Universal Controllers RMU710B, RMU720B, RMU730B	CE1P3150en
Installation Instructions (G3151xx): RMB795, RMS705B, RMU7B	74 319 0731 0
Operating Instructions Ge, En, Fr, NL (B3144x1).	74 319 0349 0
Universal controller RMU7B.	
Data sheet: KNX bus	CE1N3127en
Basis documentation: Communication via KNX bus	CE1P3127en
CE Declaration of conformity: HVAC Controls Synco™ 700 Range	CE1T3110xx
Environmental product declaration	CE1E3110en01

Siemens Building Technologies

Each type of controller has 5 applications of ventilation/air conditioning plants preprogrammed. Some of them require extension modules.

When commissioning a plant, the relevant plant type must be entered. All associated functions, terminal assignments, settings and displays will then automatically be activated, and parameters not required will be deactivated.

In addition, each type of universal controller has 4 empty applications loaded:

- 1 for basic type A (ventilation controller).
- 1 for basic type P (primary air handling).
- 1 for basic type C (demand-dependent chilled water controller).
- 1 for basic type U (universal controller).

Using the operator unit RMZ790 or RMZ791, the controller permits:

- Activation of a preprogrammed application.
- Modification of a preprogrammed application.
- Free configuration of applications.
- Optimization of the controller settings.

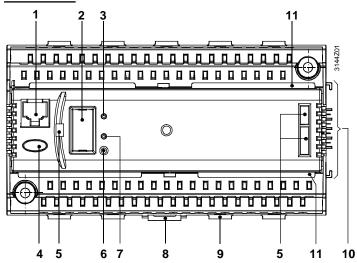
For operating actions of the functions, refer to the Basic Documentation CE1P3150en.

The universal controller consists of terminal base and controller insert. It has a plastic housing with the printed circuit boards, 2 terminal levels and accommodates the connecting elements (electrical and mechanical) for one extension module (refer to "Accessories").

It can be mounted on a top hat rail (EN 60715-TH35-7.5), or on a wall.

The controller is operated either with the plug-in type or detached operator unit (refer to "Accessories").

Operating, display and connecting elements



Key

- 1 Connection facility for the service tool (RJ45 connector)
- 2 Removable cover with connection facility for the operator unit.
- 3 LED (Run) for indicating the device's operating state: With the following meaning:

LED lit: Supply voltage, no fault in application and periphery LED off: No supply voltage or application fault or periphery.

Button " Ω " with LED (red) to display fault status message and its acknowledgement.

With the following meaning:

LED blinking: Fault status message, ready to acknowledge
LED lit: Fault status message still pending but not yet reset

LED off: No fault status message.

Press button: Acknowledge or reset fault.

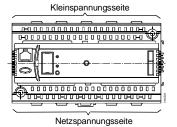
- 5 Openings for plug-in type operator unit RMZ790.
- Programming button "Prog": Learning button to changeover between the normal mode and the addressing mode to assume the physical device address (requires tool to operate).
- 7 Programming LED "Prog" to display normal mode (LED off) or addressing mode (LED on).
- 8 Catch for fitting the controller to a top hat rail.
- 9 Fixing facility for a cable tie (cable strain relief)
- 10 Electrical and mechanical connection elements for extension module.
- 11 Rest for the terminal cover.

Engineering Notes



- AC 24 V voltage required to power the controller. It must meet requirements for SELV/PELV (safety extra low-voltage).
- The transformers used must be safety isolating transformers featuring double insulation to EN 60742 or EN 61558-2-6. Design of switch-on period: 100 %.
- · Fuses, switches, wiring and earthing must be in compliance with local regulations
- Sensor wires should not be run parallel to mains carrying wires that power fans, actuators, pumps, etc.
- It is recommended to use the standard applications provided. Specific plant situations may require certain adaptations
- Total max. 4 extension modules per RMU7..B can be connected.
 Select from 1 RMZ785, 2 RMZ787 or 2 RMZ788.

- Controllers and extension modules are designed for:
 - Mounting in a standard cabinet as per DIN 43 880.
 - Wall mounting on an existing tophat rail (EN 50022-35x7.5).
 - Wall mounting using two fixing screws.
 - Flush panel mounting.
- Mounting in wet or humid room not permitted. Must have proper ambient conditions
- If the controller is not operated inside a control panel, use the detached operator unit RMZ791 in place of the plug-in type operator unit RMZ790.
- Disconnect the system from the power supply prior to mounting and installation the controller.
- Do no remove controller from the terminal base!
- If extension modules are used, they must be attached to the right side of the controller in the correct order in accordance with the internal configuration.
- Extension modules are not wired to one another or the controller. Electrical
 connections are automatic as of insertion. If it is not possible to arrange the extension
 modules side by side, the first of the detached modules must be connected to the last
 previous module or to the controller using the RMZ780 module connector. In that
 case, the cumulated cable length may not exceed 10 m.
- All connection terminals for protective extra low-voltage (sensors, data bus) are located in the upper half of the unit, those for mains voltage (actuators and pumps) at the bottom.
- Each terminal (spring cage terminal) can only accommodate one solid wire or one stranded wire. Cables must be stripped to 7 to 8 mm to connect. To introduce the cables into the spring cage terminals and to remove them, a screw driver size 0 or 1 required. Cable strain relief can be provided with the help of the fixing facility for cable ties.
- The controller mounted on a top hat rail together with modules can only be removed from the rail after the module directly attached to the controller has been removed
- The controller is supplied complete with installation instructions and operating instructions



Commissioning notes

- Using the operator unit RMZ790 or RMZ791, or the service tool, staff trained by HVAC Products and having the required access rights can change the configuration and the parameters online or offline at any time.
- During commissioning, the application is switched off. The outputs are in a defined OFF state. No process and alarm signals are issued on the bus
- The controller restarts automatically after completing configuration
- When leaving the commissioning pages, the peripheral devices connected to the universal inputs (including the extension modules) are automatically tested and identified. An error message is generated if peripheral device is missing
- The operator unit can be removed and plugged in or connected while the controller is operating
- If adaptations to specific plants are required, they must be recorded and the documentation kept inside the control panel.
- For the procedure to be followed when starting up the plant for the first time, refer to the installation instructions.

General notes

Maintenance The universal controller RMU7..B is maintenance free (no battery changes, no fuses).

The housing may only be cleaned with a dry towel.

Repair The universal controller cannot be repaired on site.

Disposal The universal controller is subject to Directive 2002/96/EG (WEEE, Waste of Electrical

and Electronic Equipment).

"The device is considered electronics device for disposal in terms of European Directive

2002/96/EG (WEEE) and may not be disposed of as domestic garbage.

The corresponding national, legal regulations must be observed and the device must be disposable via the appropriate channels. Observe all local and applicable laws."



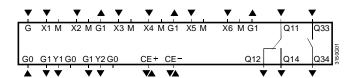
Power supply (G, G0)	Rated voltage Safety extra low-voltage (SELV) / protective extra low-voltage	AC 24 V ±20 %
	(PELV) to	HD 384
	Requirements for external safety isolating transformer (100 % ED, maximum 320 VA) to	EN 60742 / EN 61558-2-6
	Frequency	50/60 Hz
	Power consumption (excl. modules)	12 VA
	Supply line fusing	max. 10 A.
unctional data	Clock reserve	48 hours typical, min. 12 hours.
niversal inputs	Number	Cas IIT. as a series of
•		See " Type overview "
leasured value inputs (X)	Sensors Passive	LG-Ni 1000, T1, Pt 1000
	Passive	2x LG-Ni 1000, 11, Ft 1000 2x LG-Ni 1000 (averaging)
	Active	01000Ω ,
	Active	DC 010 V
totus inputs (V.)	Contact sensing	
tatus inputs (X)		DC 15 V
	Voltage Current	5 mA
		3 IIIA
	Requirements for status contacts	materalial from
	Signal coupling	potential-free
	Type of contact	maintained contact
	Insulating strength against mains potential	AC 3750 V to EN 60730
	Requirements for pulse contacts	Screened cables recommended
	Signal coupling	potential-free
	Type of contact	Pulse contact
	Mechanical transmitter (reed contract)	
	Maximum pulse frequency	25 Hz
	Minimum pulse length	20 ms (with max. 10 ms bounce
	Electronic transmitter	length)
	Maximum pulse frequency	
	Minimum pulse length	100 Hz
	Insulating strength against mains potential	5 ms
		AC 3750 V to EN 60730.
	Perm. resistance	
	Contacts closed	max. 200 Ω
	Contacts open	min. 50 kΩ.
utputs	Number of positioning and switching outputs	refer to "Type summary"
ositioning outputs Y	Output voltage	DC 010 V
ositoring outputs 1	Output current	
	Max. load	±1 mA continuous short-circuit
Switching outputs	External supply line fusing	
AC 230 V (Q1xQ7x)	Non-renewable fuse (slow)	max. 10 A
AC 250 V (Q1XQ1X)	Automatic line cutout	max. 13 A
	Release characteristic	B, C, D to EN 60898
	Release characteristic	D, C, D 10 EN 00090

Switching voltage AC current Max. AC 250 V min. AC 19 V min. AC 1250 V At 1250 V At 1250 V Switch-no current Max. AC 250 V min. Cm. Min. 20 m. Max. AC 14 N min. 20 m. Max. AC 14 N min. 20 m. M		Relay contacts	
Act 39 \ Switch-on current min. 5 m A min. 20 m A max. 10 Å (1 s). Contact life at AC 250 V		Switching voltage AC current	
Contact life at AC 250 V At 0.1 A res. At 0.5 A res. At 4 A res. Contact life at AC 250 V At 0.1 A res. At 0.5 A res. At 4 A res. Contact life at AC 250 V Coldie value 2 x 10° cycles (N.O.) At 0.1 A res. At 0.5 A res. At 4 A res. At 1.5 A res. At 0.5 A res. At 4 A res. At 1.5 Cycles (changeover) Coldie value At 1.5 Cycles (changeover) Coldie value At 1.5 Cycles (changeover) Coldie value At 1.5 Cycles (changeover) At 1.5 Cycles (changeover) Coldie value At 1.5 Cycles (changeover) At 1.5 Cycles (changeover) Coldie value At 1.5 Cycles (changeover)			
Contact lite at AC 250 V		At 19 V Switch-off current	
Red. factor at ind. (cos q = 0.6).		Contact life at AC 250 V	
Red. factor at ind. (cos φ = 0.6). 2 x 10° cycles (No.C) 3 x 10° cycles (No.C) 3 x 10° cycles (No.C) 1 x 10° cycle		At 0.1 A res. At 0.5 A res. At 4 A res.	2 x 10 ⁷ cycles
Insulating strength			4 x 10 ⁶ cycles (N. O.)
1 x 10° cycles (changeover)		Red. factor at ind. (cos $\varphi = 0.6$).	2 x 10° cycles (changeover)
Insulating strength Detween relay contacts and system electronics (reinforced insulation) Detween relay contacts (operational insulation) Detween neighboring relay contacts (operational insulation) Oft = O(2, O(3 - O(4, O(4, O(3 - O(4, O(4, O(4, O(4, O(4, O(4, O(4, O(4,			1 x 10 ⁵ cycles (changeover)
Between relay contacts and system electronical (reinforced insulation)			
Insulation		Insulating strength	
Between neighboring relay contacts (operational insulation) AC 1250 V, to EN 60730-1		· · · · · · · · · · · · · · · · · · ·	
Provisible line length Connection specified Connection specif		,	AC 3750 V, to EN 60730-1
Developing sterind Develo			AC 1250 V to EN 60730-1
Power supply external devices (G1) Voltage			7.6 1266 V, to 211 66766 1
Voltage			AC 3750 V, to EN 60730-1.
Power max. 4 A.		Vallana	AC 24 V
Interfaces	devices (G1)	-	
Type of interface Bus loading number 2.5 m		r owei	IIIax. 4 A.
Type of interface Bus loading number 2.5 max	Interfaces	KNX bus	
Bus power supply (decentral., can be switched off) 25 mA 20 mos with 1 extension module.		Type of interface	KNX-TP1
Power failure of short duration to Extension bus Connector specification Number of plug-in cycles Service tool connection facility Permissible line length For passive measuring and positioning signals Type of signal LG-Ni 1000, T1 Pt 1000 01000 0 Contact sensing (status and impulse contacts) Por KNX bus Type of cable For switching outputs (Q1xQ7x) For switching outputs (Q1xQ7x) For switching outputs (Q1xQ7x) Electrical connection Electrical connection Electrical connection Degree of protection Degree of protection Degree of protection Tope of protection of Climatic conditions Climatic conditions Operation to Climatic conditions Transport to Climatic conditions Mode of operation, automatic controls of entry incoment Degree of contamination, controls of environment Tapper to Class SM2. Class ifications to EN 60730 Degree of contamination, controls of environment Class ifications to EN 60730 Degree of contamination, controls of environment Class ifications to EN 60730 Mode of operation, automatic controls Degree of contamination, controls of environment Class ifications to EN 60730 Electrications to EN 60730 Class ifications to EN 60730 Degree of contamination, controls of environment Class ifications to EN 60730 Degree of contamination, controls of the proper incoment Class ifications to EN 60730 Class ifications to EN 60730 Degree of contamination, controls of the proper incoment Class ifications to EN 60730 Degree of contamination, controls of the proper incoment Class ifications to EN 60730 Degree of contamination, controls of the proper incoment Class ifications to EN 60730 Degree of contamination, controls of the proper incoment of			
To EN 6100-4-11 Extension bus Connector specification Number of plug-in cycles RJ45 connector RJ			25 mA
Extension bus			100 ms with 1 extension module
Connector specification Number of plug-1 roycles max. 10			100 ms with 1 extension module.
Permissible line length For passive measuring and positioning signals (measuring errors can be corrected on the "Settings / Inputs" menu) max. 300 m m			4 contacts SELV/PELV
Permissible line length For passive measuring and positioning signals Type of signal LG-Ni 1000, T1 max, 300 m ma		Number of plug-in cycles	max. 10
Type of signal		Service tool connection facility	RJ45 connector
Type of signal			
Pr 1000	Permissible line length	, , , , , , , , , , , , , , , , , , , ,	
Pit 1000			
Contact sensing (status and impulse contacts). max. 300 m.			
For DC 010 V measuring and control signals For KNX bus Type of cable Type of cable Temperature (housing and electronics) Temperature (housing and electronics) Temperature Humidity Mechanical conditions For StWard Class iffications to EN 60730 Class sifications to EN 60730 For Data Sheet for the signal delivering device. For LAX Data Sheet for the signal delivering device. For KNX bus Type of cable 2-core without screening, twisted pairs. Parax. 300 m. Connection terminals Spring cage terminals Ø 0,6 mm 2.5 mm² Ø 0,6 mm 2.5 mm² Ø 0,6 mm 2.5 mm² For stranded wires with terrules 0.25 2.5 mm² Non-interchangeable. Degree of protection Degree of protection of housing to IEC 60529 IP 20 (when mounted). Device suited for use with equipment of safety class II. Ambient conditions Class 3K5 Temperature (housing and electronics) 050 °C Humidity 595 % r. h. (non-condensing) Class 2K3 Transport to Climatic conditions Class 2K3 Temperature Humidity 4.95 % r. h. Class 2K3 Class 2K3 Temperature Class 2K3 Temperature A Mode of operation, automatic controls Type 1B. Degree of contamination, controls' environment 2 Software class A Rated surge voltage 4000 V			
For KNX bus			
For KNX bus Type of cable Pairs.		For DC 010 V measuring and control signals	9
Pairs. Por switching outputs (Q1xQ7x) max. 300 m.		For KNX bus	
For switching outputs (Q1xQ7x) max. 300 m.		Type of cable	2-core without screening, twisted
Electrical connections Connection terminals For wires For stranded wires without ferrules For stranded wires with ferrules For stranded wires with ferrules Electrical connection Degree of protection Degree of protection Degree of protection of housing to IEC 60529 Degree of protection of housing to IEC 60529 Electrical conditions Operation to Climatic conditions Operation to Climatic conditions Temperature (housing and electronics) Humidity Mechanical conditions Transport to Climatic conditions Class 3MS. Temperature Humidity Mechanical conditions Class 2K3 Temperature Humidity Mechanical conditions Class 2K3 Temperature Humidity Mechanical conditions Class 2MS. Class 2MS. Class 2MS. Temperature For the Mechanical conditions Class 2MS. Class 2MS. Temperature For the Mechanical conditions Class 2MS. Class 2MS. Class 2MS. Class 2MS. Type 1B. Degree of contamination, controls' environment Software class Rated surge voltage 4000 V			•
For wires For stranded wires without ferrules		For switching outputs (Q1xQ7x)	max. 300 m.
For wires For stranded wires without ferrules	Electrical connections	Connection terminals	Chring aggs terminals
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Ambient conditions			
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Climatic conditions			
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Humidity S95 % r. h. (non-condensing) Mechanical conditions Class 3M2. Transport to IEC 60721-3-2 Climatic conditions Class 2K3 Temperature -25+70 °C Humidity <95 % r. h. Mechanical conditions Class 2M2. Classifications to EN 60730 Mode of operation, automatic controls Type 1B. Degree of contamination, controls' environment 2 Software class A Rated surge voltage 4000 V			
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Climatic conditions			
Humidity <95 % r. h. Class 2M2. Classifications to EN 60730 Mode of operation, automatic controls Type 1B. Degree of contamination, controls' environment 2 Software class A Rated surge voltage 4000 V			
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Classifications to EN 60730 Mode of operation, automatic controls Type 1B. Degree of contamination, controls' environment 2 Software class A Rated surge voltage 4000 V			
Degree of contamination, controls' environment 2 Software class A Rated surge voltage 4000 V		INICOTATICAL COTOLIUNIS	Class ZIVIZ.
Degree of contamination, controls' environment 2 Software class A Rated surge voltage 4000 V	Classifications to EN 60730	Mode of operation, automatic controls	Type 1B.
Rated surge voltage 4000 V			
Temperature for ball-pressure test of housing 125 °C			
		Temperature for ball-pressure test of housing	125 °C

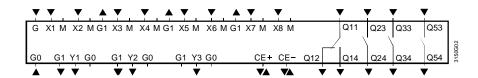
Materials and colors	Terminal base	Polycarbonate, RAL 7035 (light-grey) Packaging
	Controller insert	Polycarbonate, RAL 7035 (light-grey) Packaging
	Packaging	Corrugated cardboard
Standards, guidelines	Product safety Automatic electrical controls for household and similar use Applications Special requirements for energy controllers Electrical safety Electromagnetic compatibility	EN 60730-1 EN 60730-2-11 EN 50491-3
	For use in industrial and residential environment Immunity Emissions CConformity to EMC directive Low voltage directive	EN 60730-1, EN 50491-5-3 EN 60730-1, EN 50491-5-2 2004/108/EC 2006/95/EC.
	Conformity Australian EMC Framework Radio Interference Emission Standard	AS/NZS 61000-6-3
	Environmental compatibility The product environmental declaration CE1E3110en01 contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal)	ISO 14001 (Environment) ISO 9001 (Quality) SN 36350 (Environmentally compatible products) 2002/95/EG (RoHS)
Dimensions (weight)	Excl. packaging	0.49 kg

Connection diagrams

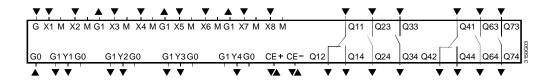
RMU710B



RMU720B



RMU730B



Key G, G0 Rated voltage AC 24 V.

> AC 24 V output voltage to supply external active sensors, detectors, monitors or G1

transmitters.

Measuring neutral for signal input. Μ G0 System ground for signal output. X1...X8

Universal signal inputs for

LG-Ni 1000, 2x LG-Ni 1000 (averaging), T1, Pt 1000, DC 0...10 V,

 $0...1000~\Omega$ (setpoint), $1000...1175~\Omega$ (rel. setpoint), pulse, contact sensing

(potential-free)

Y1...Y4 Control or status outputs, analog DC 0...10 V.

Q2x/3x/5x/6x/7x Potential-free relay outputs (N.O. contact) for AC 24...230 V Potential-free relay outputs (changeover) for AC 24...230 V Q1x/4x

CE+ KNX bus data line, positive. CE-KNX bus data line, negative.

Notes

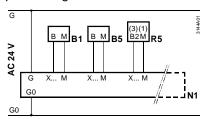
Each terminal (spring cage terminal) can only accommodate one solid wire or one stranded wire. Double terminals are internally interconnected.

Connection diagrams

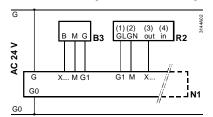
Examples:

Connections on the measuring side

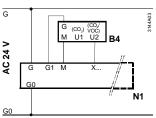
Connection diagram 1: Measuring section with passive main and auxiliary sensors and passive signal source

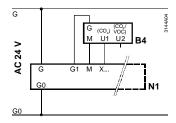


Connection diagram 2: Measuring section with active sensor and active signal source



Connection diagrams 3 and 4: Measuring section with CO₂/VOC- and CO₂ evaluation.

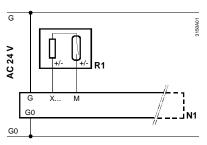




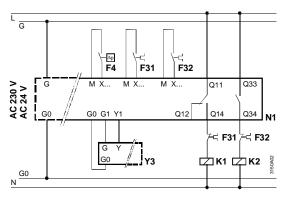
Connections on the control and monitoring side

Connection diagram 5: Measuring section with pulse transmitter

Connection diagram 6:



Recommendation: Use shielded wires



Legend to the connection diagrams 1 through 6

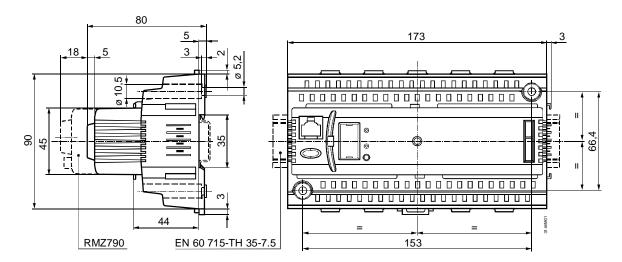
N1	Universal controller RMU7B	F3	Overcurrent trigger contact
B1	Supply air temperature sensor	F4	Differential pressure sensor
	QAM2120		QBM81
B3	Frost sensor QAF63.2/QAF63	K1, K2	Motor protection for fan
B4	CO ₂ sensor QPA2000	R1	Reed pulse transmitter
B4	CO ₂ /VOC sensor QPA2002/QPA2002D	R2	Setpoint adjuster BSG61
B5	Room temperature sensor QAA24	R5	Setpoint shifting unit BSG21.5
		Y3	Actuating device for heating

Overview of the preprogrammed standard applications

Controller type	Plant type	Application number/description	Anlagenschema
RMU710B	A01	ADA001 U1B HQ Supply air temperature control with hot water air heating coil. Variant: Room (extract)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature.	NOI F2 S NOI N
	A02	ADB001 U1B HQ Supply air temperature control with chilled water air cooling coil. Variant: Room (extract)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature.	I N.G1 F2
	A03	ADC001 U1B HQ Supply air temperature control with hot water heating coil and cold water cooling coil. Variant: Room (extract)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature.	F2 I NO1 I NO2 I NO2 I NO3 I NO3
	A04	AEA001 U1B HQ Supply air temperature control with mixing air dampers and hot water heating coil in sequence. Variante: Room (extract)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature.	1 N.01 1 N.03 1 N.03
	A05	ADAE01 U1B HQ Supply air temperature control with plate heat recovery system and hot water air heating coil in sequence. Variant: Room (extract)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature.	1 N.03 1

Controller type	Plant type	Application number/description	Anlagenschema
RMU720B	A01	AEC001 U2B HQ Supply air temperature control with mixing air dampers and cold water cooling coil in sequence. Variant: Room (extract)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature.	1 N.O1 1 N.O2 1 N.O2 1 N.O2 1 N.O2 1 N.O2 1 N.O3 1
	A02	ADCE01 U2B HQ Supply air temperature control with plate-type heat recovering, hot water heating coil and cold water cooling coil in sequence. Variant: Room (extract)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature.	1 N.01 1 N.02 1 N.03 1
	A03	ADFB01 U2B HQ Supply air temperature control with hot water heating coil and cold water cooling coil. Room humidity control with steam humidifier. Variant: Room (extract)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature.	1 N.Q1 1 N.Q2 1 N.Q2
	A04	AEDB01 U2B HQ Supply air temperature control with mixing air dampers and hot water heating coil in sequence. Room humidity control with steam humidifier. Variant: Room (extract)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature.	1 N.01 1 N.02 2 2 3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4
	A05	ADDP01 U2B HQ Supply air temperature control with thermal wheel heat recovery system and hot water air heating coil in sequence. Room humidity control with steam humidifier. Variant: Room (extract)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature.	1 N.01

Controller type	Plant type	Application number/description	Anlagenschema
RMU730B	A01	AEFB01 U3B HQ Supply air temperature control with mixing air dampers and cold water cooling coil in sequence. Room humidity control with steam humidifier. Variant: Room (extract)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature.	1 N.01 1 N.02 1 N.02 1 N.02 1 N.02 1 N.02 1 N.03 1 N.04 1 N.05
	A02	ADFP01 U3B HQ Supply air temperature control with rotating heat recovery device, hot water heating coil and cold water cooling coil in sequence. Room humidity control with steam humidifier. Variant: Room (extract)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature.	NO1
	A03	ADZA01 U3B HQ Room (extract air)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature, with hot water air reheater and chilled water air cooling coil in sequence. Room humidity control with spray humidifier (release). Dewpoint temperature control (supply air humidity constant) with hot water air preheating and cold water air cooler in sequence.	1 N.C1
	A04	AEZH01 U3B HQ Room (extract air)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature, with hot water air reheater and chilled water air cooling coil in sequence. Room humidity control with spray humidifier (release). Dewpoint temperature control (constant supply air humidity) with mixed air dampers, hot water air preheater and chilled water air cooling coil in sequence.	NO1 F2
	A05	AEZH02 U3B HQ Room (extract air)/supply air temperature cascade control with minimum and maximum limitation of the supply air temperature, with mixed air dampers, hot water air reheater and chilled water air cooling coil in sequence. Room humidity control with spray humidifier (release) and cold water air cooling. Dewpoint temperature control (constant supply air humidity) with hot water air preheater.	1 MO1 1 NO2 1 NO3 1



Masse in mm