

Controller for regulate temperature, fan, light and sun protection

Room control unit with colour TFT display and capacitive keys (touch keys), RS485 interface, galvanically isolated, Modbus (RTU) / BACnet (MS/TP) or W-Modbus / W-BACnet (Wireless)



W-Modbus
W-BACnet



The room control units of the **RYMASKON® 1000** series are designed for control in residential, hotel and office rooms and individually regulate the heating, cooling and fan levels of the internal rooms. The product family is characterised by its elegant design, intuitive operation and the many possible combinations of the individual components.

The **RYMASKON® 1000 Controller** room control units are used to control and regulate heating convectors and fan coils. Depending on the type variant, the units are available with analogue outputs (0-10 V) and with Digital/relay outputs for controlling heating valves, cooling valves, 6-way valves, staged fans or EC fans. Control takes place via PI, PWM or 2-point/3-point control. The change-over function can be used to operate 2-pipe and 4-pipe systems. The Modbus or W-Modbus communication interface enables the climate parameters on the controller to be changed and monitored via the BMS at any time. The Communication is either wired via **Modbus** (RTU) / **BACnet** (MS/TP) or wireless via **W-Modbus** / **W-BACnet** (Wireless).

In addition to the integrated temperature and humidity sensor, **sensors** for CO₂ and VOC are available as an option. An input for a passive temperature sensor (NTC10K) and an input for a potential-free contact are additionally available. This allows a window contact or a condensation control switch to be connected, for example. This provides all options for air-conditioning of the rooms according to individual requirements.

In addition, the sun protection (Venetian blinds, shutters) and light (with dimming function) functions can be controlled via bus. Visual indication takes place on a 2" TFT **display**, where as the unit is controlled via capacitive keys (**touch keys**). All unit types are available in the contemporary **housing** Iduna 3 (112 x 89.5 x 24 mm) in white or black colour. Wall-mounting is performed on standard in-wall flush boxes.

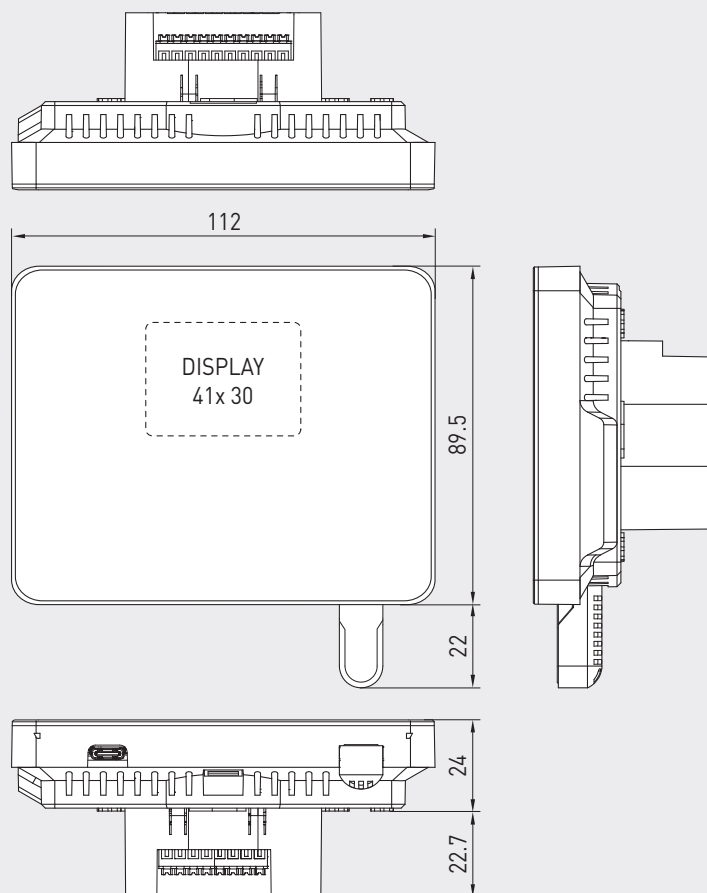
TECHNICAL DATA

Unit type:	room controller for heating convectors or fan coils
Functions:	temperature, fan, sun protection and light (see type table)
System of units:	SI (default) or imperial (can be changed via bus)
Data points:	temperature [°C] [°F], relative humidity [%RH], air quality (VOC) [%] [ppb], carbon dioxide (CO ₂) [ppm], setpoint (temperature, fan, presence)
Power consumption:	typically < 3 W at 24 V DC; < 4.5 VA at 24 V AC; < 6.5 VA at 230 V AC
Voltage supply:	24 V AC/DC (± 10 %) or 230 V AC (100-240 V AC)
Communication:	transmission type depends on the unit type (wired or wireless), protocol is configurable (can be changed via bus; bus parameters are retained)
(Cable)	RS 485 interface, galvanically isolated , max. 32 units, • Modbus (RTU), slave, address range 1...247 (9600/19200/38400/57600/115200 baud, 8N1, even/odd parity, 1/2 stop bits) • BACnet (MS/TP), master, address range 0...127 (9600/19200/38400/57600/115200 baud, 8N1, 1 stop bit)
(Wireless)	wireless module (AES-128 encrypted), max. 100 units (per gateway), frequency 2.4 GHz ISM, transmission power 100 mW range max. 500 m (open field) / approx. 50 - 70 m (inside buildings) • W-Modbus (Wireless Modbus), slave, address range 1...247 • W-BACnet (Wireless BACnet), master, address range 0...127
Display:	TFT display , 2" (41 x 30 mm), 320 x 240 x 3 pixels (RGB), LED backlighting, viewing angle ± 85°
Operating elements:	capacitive keys (up to 10 keys, depending on type) for setting the target temperature, fan stages, presence message, sensor values, and for operating sun protection and light
Inputs:	1 Input NTC10K (can be configured as a digital input DI1 , potential-free) 1 Digital input DI2 for potential-free switches (24 V devices) or for potential-loaded switch (230 V devices)
Outputs:	for heating/cooling, 6-way-valves, fan, number depends on device type (see connection diagrams) • Analogue outputs AO (0-10 V DC, max. 5 mA) as PI controllers • Relay outputs RO (230 V AC, max. 500 mA, cos φ = 1.0 / resistive load) or (230 V AC, max. 3 A, cos φ = 1.0 / resistive load) as 2-point/3-point controllers • Digital outputs DO (I_n 400 mA, short circuit max. 1.2 A) as 2-point/3-point controllers, PWM
Electrical connection:	0.2 - 1.5 mm ² , using push-in terminals
Housing:	plastic, flame retardant (UL 94 V-0), PC/ABS material, colour white (similar to RAL 9016) or black (similar to RAL 9004)
Housing dimensions:	112 x 89.5 x 24 mm (W x H x D) (Iduna 3) in-wall: + 23 mm (D), sensor protection: + 22 mm (H)
Mounting:	Wall-mounting on in-wall flush box, Ø 55 mm
Ambient temperature:	0...+50°C (operation); -30...+70°C (storage)
Permitted humidity:	0...90 % RH (non-precipitating air)
Protection type:	IP 30 (according to EN 60 529)
Overvoltage category:	OVC1 (at 24 V); OVC2 (at 230 V)
Contamination degree:	PD2
Standards:	CE conformity according to Low-Voltage Directive 2014/35/EU, EMC Directive 2014/30/EU (Cable) or Radio Equipment Directive 2014/53/EU (Wireless)

Continued on next page!

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Dimensional drawing
housing **Iduna 3**
[mm]**RYMASKON® 13xx**
RYMASKON® 14xx**Device versions with
optional extra keys**
for controlling light (L)
and/or sun protection (B)**TECHNICAL DATA**

(continuation)

TEMPERATURE (basic equipment)	
Sensor:	digital temperature sensor, low hysteresis, high long-term stability
Measuring range:	0...+50 °C / +32...+122 °F
Accuracy:	typically ± 0.3 K / ± 0.5 °F at +25 °C / +77 °F
HUMIDITY (basic equipment)	
Sensor:	digital humidity sensor, low hysteresis, high long-term stability
Measuring range:	0...100 % RH
Accuracy:	typically ± 2.0 % (20...80 % RH) at +25 °C / +77 °F, otherwise ± 3.0 %
CARBON DIOXIDE (CO2) (optional)	
Sensor:	digital photoacoustic NDIR-CO2 sensor (non-dispersive infra-red technology), with automatic calibration and high long-term stability
Measuring range:	0...2000 ppm
Accuracy:	typically ± 50 ppm, ± 3 % of the measured value at +25 °C / +77 °F
AIR QUALITY (VOC) (optional)	
Sensor:	digital metal oxide (MOX) based VOC sensor
Measuring range:	0...100 % (corresponds to IAQ Index 1...500 or 0...2383 ppb ethanol equivalent – non-linear)
Accuracy:	$< \pm 15$ %
Service life:	> 10 years (if used as intended, depending on type and duration of VOC exposure)

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W-Modbus
W-BACnet

S+S REGELTECHNIK

Type 132xC-M (RS485) 24 V Type 132xC-WM (Wireless)

3 AO (h, c, 6W)

- 1 free
 - 2 free
 - 3 free
 - 4 free
 - 5 **A03** 0-10V (6-way valve)
 - 6 **A02** 0-10V (cooling)
 - 7 **A01** 0-10V (heating)
 - 8 GND (AO)
 - 9 GND (DI2)
 - 10 **DI2** (potential-free)
 - 11 **UB+** 24V AC/DC
 - 12 **UB-** GND AC/DC
 - 13 **NTC10K (DI1)**, potential-free
 - 14 GND (NTC10K/DI1)
- RTU, MS/TP wireless**
- 15 RS485 A (D+) free
 - 16 RS485 B (D-) free
 - 17 RS485 A (D+) free
 - 18 RS485 B (D-) free

Type 136xC-M (RS485) 24 V Type 136xC-WM (Wireless)

2 AO (h, c) + 2 DO (h, c)

- 1 **DO2** (NO contact, 400mA, cooling)
 - 2 **DO1** (NO contact, 400mA, heating)
 - 3 Root/COM (24V, max. 1A res. load)
 - 4 free
 - 5 free
 - 6 **A02** 0-10V (cooling)
 - 7 **A01** 0-10V (heating)
 - 8 GND (AO)
 - 9 GND (DI2)
 - 10 **DI2** (potential-free)
 - 11 **UB+** 24V AC/DC
 - 12 **UB-** GND AC/DC
 - 13 **NTC10K (DI1)**, potential-free
 - 14 GND (NTC10K/DI1)
- RTU, MS/TP wireless**
- 15 RS485 A (D+) free
 - 16 RS485 B (D-) free
 - 17 RS485 A (D+) free
 - 18 RS485 B (D-) free

Type 131xC-WM (Wireless) 230 V



2 RO (h, c) + 1 AO (6W)

- 1 free
- 2 free
- 3 free
- 4 **RO1** Heating relay (solid state, 0.5A)
- 5 **RO2** Cooling relay (solid state, 0.5A)
- 6 **DI2** (100-240V AC) - Ref N
- 7 **N** (100-240V AC)
- 8 **L** (100-240V AC)
- 11 Output 0-10V (6-way valve)
- 12 GND (Output 0-10V)
- 13 **NTC10K (DI1)**, potential-free
- 14 GND (NTC10K/DI1)

Type 143xC-M (RS485) 24 V Type 143xC-WM (Wireless)

2 AO (h, c, 6W) + 1 AO (f)

- 1 free
 - 2 free
 - 3 free
 - 4 free
 - 5 **A03** 0-10V (fan)
 - 6 **A02** 0-10V (cooling, 6-way valve)
 - 7 **A01** 0-10V (heating, 6-way valve)
 - 8 GND (AO)
 - 9 GND (DI2)
 - 10 **DI2** (potential-free)
 - 11 **UB+** 24V AC/DC
 - 12 **UB-** GND AC/DC
 - 13 **NTC10K (DI1)**, potential-free
 - 14 GND (NTC10K/DI1)
- RTU, MS/TP wireless**
- 15 RS485 A (D+) free
 - 16 RS485 B (D-) free
 - 17 RS485 A (D+) free
 - 18 RS485 B (D-) free

Type 146xC-M (RS485) 24 V Type 146xC-WM (Wireless)

2 AO (f) + 2 DO (h, c)

- 1 **DO2** (NO contact, 400mA, cooling)
 - 2 **DO1** (NO contact, 400mA, heating)
 - 3 Root/COM (24V, max. 1A res. load)
 - 4 free
 - 5 free
 - 6 **A02** 0-10V (fan)
 - 7 **A01** 0-10V (fan)
 - 8 GND (AO)
 - 9 GND (DI2)
 - 10 **DI2** (potential-free)
 - 11 **UB+** 24V AC/DC
 - 12 **UB-** GND AC/DC
 - 13 **NTC10K (DI1)**, potential-free
 - 14 GND (NTC10K/DI1)
- RTU, MS/TP wireless**
- 15 RS485 A (D+) free
 - 16 RS485 B (D-) free
 - 17 RS485 A (D+) free
 - 18 RS485 B (D-) free

Type 145xC-WM (Wireless) 230 V



2 RO (h, c) + 1 AO (f)

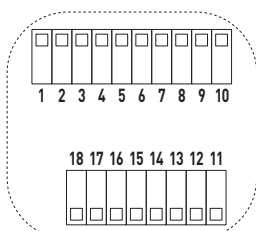
- 1 free
- 2 free
- 3 free
- 4 **RO1** Heating relay (solid state, 0.5A)
- 5 **RO2** Cooling relay (solid state, 0.5A)
- 6 **DI2** (100-240V AC) - Ref N
- 7 **N** (100-240V AC)
- 8 **L** (100-240V AC)
- 11 Output 0-10V (Fan)
- 12 GND (Output 0-10V)
- 13 **NTC10K (DI1)**, potential-free
- 14 GND (NTC10K/DI1)

Type 144xC-WM (Wireless) 230 V

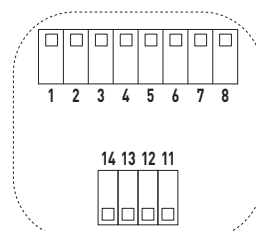
2 RO (h, c) + 3 RO (f)

- 1 **RO3 Fan level 1** relay (mechanical, 3A)
- 2 **RO4 Fan level 2** relay (mechanical, 3A)
- 3 **RO5 Fan level 3** relay (mechanical, 3A)
- 4 **RO1** Cooling relay (solid state, 0.5A)
- 5 **RO2** Heating relay (solid state, 0.5A)
- 6 **DI2** (100-240V AC) - Ref N
- 7 **N** (100-240V AC)
- 8 **L** (100-240V AC)
- 11 free
- 12 free
- 13 **NTC10K (DI1)**, potential-free
- 14 GND (NTC10K/DI1)

Connection diagram 24 V



Connection diagram 230 V



**NEW****S+S REGELTECHNIK****RYMASKON® 1000 Controller****Controller for regulate temperature, fan, light and sun protection**

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BASIC MODELS**RYMASKON® 1000 Controller**

Room control units for temperature adjustment



Type 1311 / 1321 / 1361



Type 1312 / 1322 / 1362



Room control units for temperature and fan adjustment



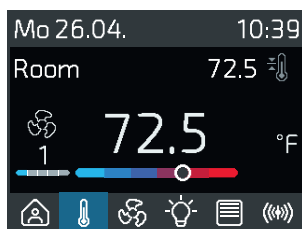
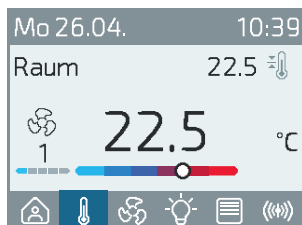
Type 1431 / 1441 / 1451 / 1461



Type 1432 / 1442 / 1452 / 1462

KEY FEATURES**RYMASKON® 1000 Controller**

- 24 V AC/DC or 230 V AC voltage supply
- Communication via **Modbus** (RTU) / **BACnet** (MS/TP) or **W-Modbus** / **W-BACnet** (Wireless)
- 2.0" TFT display (320 x 240 x 3 RGB pixels), with LED backlighting, high contrast, 85° viewing angle
- Capacitive keys (touch keys)
(optional extension, see number key pos. 14-15)
- **Housing** Iduna 3 (112 x 89.5 x 24 mm), white and black colours, for wall-mounting on in-wall flush boxes, quick and easy installation via push-in terminals
- Integrated temperature and humidity sensor (basic equipment)
(additional sensors optional: CO₂, VOC)
- **Control** of heating, cooling, 6-way valve, fan
- **Control** of temperature, fan
(sun protection and light with dimming function available as an option)
- Power-saving and environmentally friendly thanks to **features** such as brightness adjustment, stand-by, wake-up, etc.
- **CuRA** (Customized Register Assignment)
Assignment of individual register addresses for each data point

Display symbols

(((**W-Modbus**
(((**W-BACnet**

R Y M 1 - x x x 1 - x x x 0 - 0 x x

T	Temperature [°C/°F]
RH	Relative humidity [%]
CO2	Carbon dioxide [ppm]
VOC	Air quality [%]



S+S REGELTECHNIK

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RS485 interface, galvanically isolated,, Modbus (RTU) / BACnet (MS/TP)
or W-Modbus / W-BACnet (Wireless)

RYMASKON® 13xx C		Controller (basic model) for heating convectors (HC) for temperature adjustment						
Type / WG02 Control outputs	Communi- cation	Measuring element	Control system	Colour / Housing	Display	Item no.	Price	
[1] 2 RO (heating, cooling, 230 V AC, max. 500 mA) + 1 AO (6-way valve, 0-10 V)								
RYMASKON® 131x C				Iduna 3				
RYM 1311C-TH-OTS-WM-FM-W	Wireless	T RH	T – R	white		RYM1-3111-W220-000	328,33 €	
RYM 1312C-TH-OTS-WM-FM-B	Wireless	T RH	T – R	black		RYM1-3121-W220-000	328,33 €	
[2] 3 AO (heating, cooling, 6-way valve, 0-10 V)								
RYMASKON® 132x C				Iduna 3				
RYM 1321C-TH-OTS-M-FM-W	RS485	T RH	T – R	white		RYM1-3211-M210-000	242,64 €	
RYM 1322C-TH-OTS-M-FM-B	RS485	T RH	T – R	black		RYM1-3221-M210-000	242,64 €	
RYM 1321C-TH-OTS-WM-FM-W	Wireless	T RH	T – R	white		RYM1-3211-W210-000	328,33 €	
RYM 1322C-TH-OTS-WM-FM-B	Wireless	T RH	T – R	black		RYM1-3221-W210-000	328,33 €	
[3] 2 AO (heating, cooling, 0-10 V) + 2 DO (heating, cooling, 24 V, max. 1 A resistive load)								
RYMASKON® 136x C				Iduna 3				
RYM 1361C-TH-OTS-M-FM-W	RS485	T RH	T – R	white		RYM1-3611-M210-000	242,64 €	
RYM 1362C-TH-OTS-M-FM-B	RS485	T RH	T – R	black		RYM1-3621-M210-000	242,64 €	
RYM 1361C-TH-OTS-WM-FM-W	Wireless	T RH	T – R	white		RYM1-3611-W210-000	328,33 €	
RYM 1362C-TH-OTS-WM-FM-B	Wireless	T RH	T – R	black		RYM1-3621-W210-000	328,33 €	

RYMASKON® 14xx C		Controller (basic models) for FAN COILS for temperature and fan adjustment					 	
Type / WG02 Control outputs	Communi- cation	Measuring element	Control system	Colour / Housing	Display	Item no.	Price	
[4] 3 AO (heating, cooling 6-way valve, EC fan, 0-10 V)								
RYMASKON® 143x C				Iduna 3				
RYM 1431C-TH-OTFS-M-FM-W	RS485	T RH	T F R	weiß		RYM1-4311-M210-000	242,64 €	
RYM 1432C-TH-OTFS-M-FM-B	RS485	T RH	T F R	schwarz		RYM1-4321-M210-000	242,64 €	
RYM 1431C-TH-OTFS-WM-FM-W	Wireless	T RH	T F R	weiß		RYM1-4311-W210-000	328,33 €	
RYM 1432C-TH-OTFS-WM-FM-B	Wireless	T RH	T F R	schwarz		RYM1-4321-W210-000	328,33 €	
[5] 5 RO (heating, cooling, 230 VAC, max. 500 mA 3-level fan, 230 VAC, max. 3 A)								
RYMASKON® 144x C				Iduna 3				
RYM 1441C-TH-OTFS-WM-FM-W	Wireless	T RH	T F R	white		RYM1-4411-W220-000	328,33 €	
RYM 1442C-TH-OTFS-WM-FM-B	Wireless	T RH	T F R	black		RYM1-4421-W220-000	328,33 €	
[6] 2 RO (heating, cooling, 230 VAC, max. 500 mA) + 1 AO (EC fan, 0-10 V)								
RYMASKON® 145x C				Iduna 3				
RYM 1451C-TH-OTFS-WM-FM-W	Wireless	T RH	T F R	white		RYM1-4511-W220-000	328,33 €	
RYM 1452C-TH-OTFS-WM-FM-B	Wireless	T RH	T F R	black		RYM1-4521-W220-000	328,33 €	
[7] 2 AO (EC fan, 0-10 V) + 2 DO (heating, cooling, 24 V, max. 1 A resistive load)								
RYMASKON® 146x C				Iduna 3				
RYM 1461C-TH-OTFS-M-FM-W	RS485	T RH	T F R	white		RYM1-4611-M210-000	242,64 €	
RYM 1462C-TH-OTFS-M-FM-B	RS485	T RH	T F R	black		RYM1-4621-M210-000	242,64 €	
RYM 1461C-TH-OTFS-WM-FM-W	Wireless	T RH	T F R	white		RYM1-4611-W210-000	328,33 €	
RYM 1462C-TH-OTFS-WM-FM-B	Wireless	T RH	T F R	black		RYM1-4621-W210-000	328,33 €	
Communication:	RS485 (wired) = Modbus (RTU) / BACnet (MS/TP) Wireless = W-Modbus / W-BACnet Communication protocol can be changed via bus (transmission type depends on the unit type)							
Measuring element / control system:	T = Temperature sensor RH = Humidity sensor		T = Temperature F = Fan R = Room occupancy					

OPTIONS			
Measuring elements:	Sensors for CO2 (ppm) (vgl. Pos. 10)	Extra charge	132,40 €
	Sensors for VOC [%] (vgl. Pos. 10)	Extra charge	129,09 €
Control	Keys for Sun Protection and/or Light (cf. Pos. 14-15)	on request	
Optional:	More type versions on request!		