RYMASKON® 1000 C Controller

Interface for control of temperature, fan, light and sun protection
Room controller with colour TFT display and capacitive keys (touch keys),
with Modbus connection or W-Modbus (Wireless)

Modbus
W-Modbus

S+S REGELTECHNIK

The room control units of the **RYM**ASKON® **1000** / **2000** / **3000** series are designed for control (up to 5 climate zones) in residential, hotel and office rooms and individually regulate the heating, cooling and fan levels of the internal rooms. The controller variants can be operated as stand-alone units thanks to the integrated control functions PI, PWM or 2-/3-point control. The product family is characterised by its elegant design, intuitive operation and the many possible combinations of the individual components.

The room control units **RYM**ASKON® **1000 C** (Controller) 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. In addition, the sun protection (Venetian blinds, shutters) and light (with dimming function) functions can be controlled via the bus. Visual indication takes place on a 2" TFT **display**, where as the unit is controlled via capacitative keys (**touch keys**).

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.

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 in the Modbus register)
Data points:	Temperature [°C] [°F], relative humidity [% RH], air quality (VOC) [%] [pbb], carbon dioxide (CO2) [ppm], setpoint (temperature, fan, presence)
Power consumption:	typically < 3 W at 24 V DC; typically < 4.5 VA at 24 V AC
Voltage supply:	24 V AC/DC (± 10 %) or 230 V AC (100-240 V AC)
Communication:	**Modbus** (RTU cable), Slave, address range 1...247, max. 32 units, RS 485 interface, **galvanically isolated**, 9600 / 19200 / 38400 / 57500 Baud, 8N1, even / odd parity, 1 / 2 stop bits or **W-Modbus** (Wireless Modbus, AES-128 encrypted), Frequency **2.4 GHz** ISM, Transmission power **100 mW**, Range **max. 500 m** (open field) / approx. 50 - 70 m (inside buildings), Slave, address range 1...247, max. 100 units on one gateway, BMS connection is radio-based via W-Modbus gateway
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 or for potential-loaded switch (230 V AC relay variant)
Outputs:	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) or relay outputs **RO** (230 VAC, max. 3 A, cos φ = 1.0) 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** for heating/cooling, 6-way-valves, fan, number depends on controller type (see connection diagrams)
Electrical connection:	0.2 - 1.5 mm², 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)
Standards:	CE conformity according to Low-Voltage Directive 2014/35/EU, EMC Directive 2014/30/EU (Modbus) or Radio Equipment Directive 2014/53/EU (W-Modbus)

Continued on next page!

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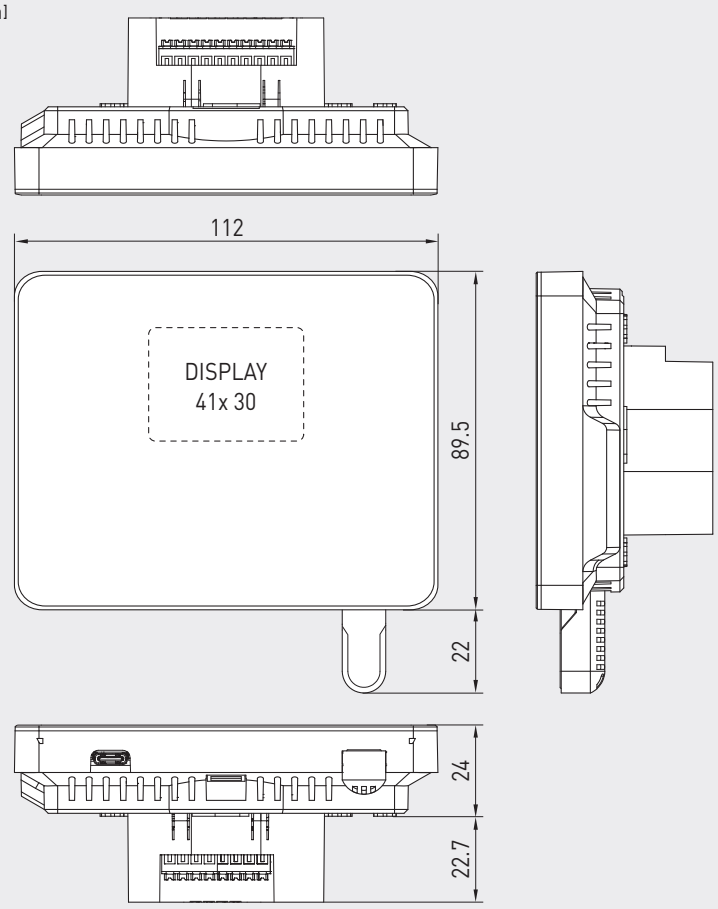
NEW

Interface for control of temperature, fan, light and sun protection
Room controller with colour TFT display and capacitive keys (touch keys), with Modbus connection or W-Modbus (Wireless)

Dimensional drawing
Iduna 3
[mm]

RYMASKON® **13xx**
RYMASKON® **14xx**

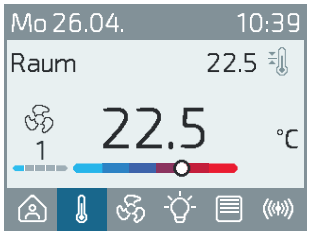


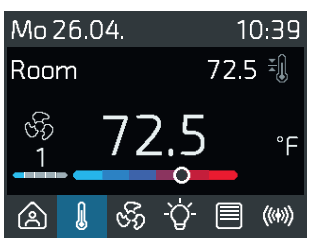
Device versions with optional extra keys
for controlling light (**L**) and sun protection (**B**)

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 ± 0,5 K / ± 0,9 °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:	< ± 15 %
Service life:	> 10 years (if used as intended, depending on type and duration of VOC exposure)

Display symbols





RYMASKON® 1000 C Controller

Modbus
W-Modbus

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Interface for control of temperature, fan, light and sun protection
Room controller with colour TFT display and capacitive keys (touch keys),
with Modbus connection or W-Modbus (Wireless)

Type 132xC-MOD
24 V

3 AO (h, c, 6W)

1	free
2	free
3	free
4	free
5	**AO3** 0-10V (6-way valvel)
6	**AO2** 0-10V (cooling)
7	**AO1** 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)
15	Modbus A
16	Modbus B
17	Modbus A
18	Modbus B

Type 143xC-MOD
24 V

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

1	free
2	free
3	free
4	free
5	**AO3** 0-10V (fan)
6	**AO2** 0-10V (cooling, 6-way valve)
7	**AO1** 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)
15	Modbus A
16	Modbus B
17	Modbus A
18	Modbus B

Type 136xC-MOD
Type 146xC-MOD
24 V

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

1	**DO2** (NO contact, 400mA, cooling)
2	**DO1** (NO contact, 400mA, heating)
3	Root/COM (24V, max.1A ohm load)
4	free
5	free
6	**AO2** 0-10V (cooling) / (fan)
7	**AO1** 0-10V (heating) / (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)
15	Modbus A
16	Modbus B
17	Modbus A
18	Modbus B

Type 132xC-WMOD
24 V

3 AO (h, c, 6W)

1	free
2	free
3	free
4	free
5	**AO3** 0-10V (6-way valvel)
6	**AO2** 0-10V (cooling)
7	**AO1** 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)
15	free
16	free
17	free
18	free

Type 143xC-WMOD
24 V

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

1	free
2	free
3	free
4	free
5	**AO3** 0-10V (fan)
6	**AO2** 0-10V (cooling, 6-way valve)
7	**AO1** 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)
15	free
16	free
17	free
18	free

Type 136xC-WMOD
Type 146xC-WMOD
24 V

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

1	**DO2** (NO contact, 400mA, cooling)
2	**DO1** (NO contact, 400mA, heating)
3	Root/COM (24V, max.1A ohm load)
4	free
5	free
6	**AO2** 0-10V (cooling) / (fan)
7	**AO1** 0-10V (heating) / (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)
15	free
16	free
17	free
18	free

Type 131xC-WMOD
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** (230V AC) - Ref N
7	**N** (230V AC)
8	**L** (230V AC)
11	Output 0-10V (6-way valve)
12	GND (Output 0-10V)
13	**NTC10K** (**DI1**, potential-free)
14	GND (NTC10K/DI1)

Type 145xC-WMOD
230 V

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

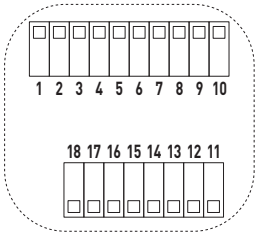
1	free
2	free
3	free
4	**RO1** Heating relay (solid state, 0.5A)
5	**RO2** Cooling relay (solid state, 0.5A)
6	**DI2** (230V AC) - Ref N
7	**N** (230V AC)
8	**L** (230V AC)
11	Output 0-10V (Fan)
12	GND (Output 0-10V)
13	**NTC10K** (**DI1**, potential-free)
14	GND (NTC10K/DI1)

Type 144xC-WMOD
230 V

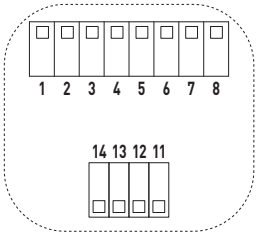
2 RO (h, c) + 3 RO (f)

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** (230V AC) - Ref N
7	**N** (230V AC)
8	**L** (230V AC)
11	free
12	free
13	**NTC10K** (**DI1**, potential-free)
14	GND (NTC10K/DI1)

Connection diagram **24 V**



Connection diagram **230 V**



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Room controller with colour TFT display and capacitive keys (touch keys),
with Modbus connection or W-Modbus (Wireless)

BASIC MODELS
RYMASKON® **1000 C** 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** Interface

- 24 V AC/DC voltage supply or 230 V AC
- **Modbus** connection or wireless **W-Modbus**
- 2.0" TFT **display** (320 x 240 x 3 RGB pixels),
  with LED backlighting, high contrast, 85° viewing angle
- Capacitative 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

RYMASKON® 1000 C Controller

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Modbus
W-Modbus

S+S REGELTECHNIK

RYMASKON® 1000 C Controller (series)
Number key for type versions

RYM1-xxx1-xxx0-0xx

Pos. 1-4 **Type name**
RYMASKON 1000 C — RYM1

Pos. 5-6 **Controller type**
Setpoint adjustment I outputs

Temperature
- **[1]** 2 **RO** (h, c) + 1 **AO** (6W) — *1 31
- **[2]** 3 **AO** (h, c, 6W) — 32
- **[3]** 2 **AO** (h, c) + 2 **DO** (h, c) — 36

Temperature + fan
- **[4]** 2 **AO** (h, c, 6W) + 1 **AO** (f) — 43
- **[5]** 2 **RO** (h, c) + 3 **RO** (f) — *1 44
- **[6]** 2 **RO** (h, c) + 1 **AO** (f) — *1 45
- **[7]** 2 **AO** (h, c, f) + 2 **DO** (h, c) — 46

Pos. 7 **Housing colour**
- White — 1
- Black — 2

Pos. 8 **Visual indication**
- TFT display (2.0") — 1

Pos. 9 **Communication**
- Modbus — *2 M
- W-Modbus (Wireless) — W
- without — 0

Pos. 10 **Sensors** *3
- **T** [°C/°F], **RH** [%] — 2
- **T** [°C/°F], **RH** [%], **CO2** [ppm] — 6
- **T** [°C/°F], **RH** [%], **VOC** [%] — 7
- **T** [°C/°F], **RH** [%], **CO2** [ppm], **VOC** [%] — 8

Pos. 11 **Voltage supply**
- 24 V AC/DC — 1
- 230 V AC — 2

Pos. 12 **Mounting**
- on in-wall flush box, Ø 55 mm — 0

Pos. 14-15 **Touch key extension** *4
- Basic model (cf. **Pos. 5**) including room occupancy — 00
- + **B** (1 sun protection) — 01
- + **BB** (2 sun protection) — 02
- + **L** (1 light) — 03
- + **LL** (2 light) — 04
- + **LB** (1 light, 1 sun protection) — 05

*1 230 V units
*2 not with 230 V unitsn
*3 With units without bus (cf. **Pos. 9**) no output, display only
*4 Adjustment of sun protection (**B**) and light (**L**) is only possible via bus

Outputs
- **AO** Analogue (0-10 V DC)
- **RO** Relay (230 V AC)
- **DO** Digital (24 V DC)
- (h, c) heating, cooling
- (f) Fan
- (6 W) 6-way valve

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

Interface for control of temperature, fan, light and sun protection
Room controller with colour TFT display and capacitive keys (touch keys), with Modbus connection or W-Modbus (Wireless)

RYMASKON® 13xx C — Controller (basic model) for heating convectors (HC) for temperature adjustment

Type / WG02 Control outputs	Communication	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-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | – | **R**	white	■	RYM1-3111-**W**220-000	**318,77 €**
RYM 1312C-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | – | **R**	black	■	RYM1-3121-**W**220-000	**318,77 €**
[2] 3 AO (heating, cooling, 6-way valve, 0-10 V)							
RYMASKON® 132x C				Iduna 3			
RYM 1321C-RH-MOD	Modbus	**T** | **RH**	**T** | – | **R**	white	■	RYM1-3211-M210-000	**235,57 €**
RYM 1322C-RH-MOD	Modbus	**T** | **RH**	**T** | – | **R**	black	■	RYM1-3221-M210-000	**235,57 €**
RYM 1321C-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | – | **R**	white	■	RYM1-3211-**W**210-000	**318,77 €**
RYM 1322C-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | – | **R**	black	■	RYM1-3221-**W**210-000	**318,77 €**
[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-RH-MOD	Modbus	**T** | **RH**	**T** | – | **R**	white	■	RYM1-3611-M210-000	**235,57 €**
RYM 1362C-RH-MOD	Modbus	**T** | **RH**	**T** | – | **R**	black	■	RYM1-3621-M210-000	**235,57 €**
RYM 1361C-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | – | **R**	white	■	RYM1-3611-**W**210-000	**318,77 €**
RYM 1362C-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | – | **R**	black	■	RYM1-3621-**W**210-000	**318,77 €**

RYMASKON® 14xx C — Controller (basic models) for FAN COILS for temperature and fan adjustment

Type / WG02 Control outputs	Communication	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-RH-MOD	Modbus	**T** | **RH**	**T** | **F** | **R**	white	■	RYM1-4311-M210-000	**235,57 €**
RYM 1432C-RH-MOD	Modbus	**T** | **RH**	**T** | **F** | **R**	black	■	RYM1-4321-M210-000	**235,57 €**
RYM 1431C-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | **F** | **R**	white	■	RYM1-4311-**W**210-000	**318,77 €**
RYM 1432C-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | **F** | **R**	black	■	RYM1-4321-**W**210-000	**318,77 €**
[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-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | **F** | **R**	white	■	RYM1-4411-**W**220-000	**318,77 €**
RYM 1442C-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | **F** | **R**	black	■	RYM1-4421-**W**220-000	**318,77 €**
[6] 2 RO (heating, cooling, 230 VAC, max. 500 mA) + 1 AO (EC fan, 0-10 V)							
RYMASKON® 145x C				Iduna 3			
RYM 1451C-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | **F** | **R**	white	■	RYM1-4511-**W**220-000	**318,77 €**
RYM 1452C-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | **F** | **R**	black	■	RYM1-4521-**W**220-000	**318,77 €**
[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-RH-MOD	Modbus	**T** | **RH**	**T** | **F** | **R**	white	■	RYM1-4611-M210-000	**235,57 €**
RYM 1462C-RH-MOD	Modbus	**T** | **RH**	**T** | **F** | **R**	black	■	RYM1-4621-M210-000	**235,57 €**
RYM 1461C-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | **F** | **R**	white	■	RYM1-4611-**W**210-000	**318,77 €**
RYM 1462C-RH-**W**MOD	**W**-Modbus	**T** | **RH**	**T** | **F** | **R**	black	■	RYM1-4621-**W**210-000	**318,77 €**

Measuring element / control system:	**T** = Temperature sensor (basic equipment) **RH** = Humidity sensor	**T** = Temperature **F** = Fan **R** = Room occupancy

OPTIONS

Measuring elements:	**CO2** = CO2 sensor	Extra charge	**128,54 €**
	VOC = VOC sensor	Extra charge	**125,33 €**
Control:	**B / L** Keys for sun protection and/or light (cf. **Pos. 14-15**)	on request	
Communication:	without Modbus	on request	
Optional:	**More type versions on request!** For configuration options, see number key (left)		