S+S REGELTECHNIK

RYMASKON® 400-Modbus
Modbus Slave User Manual

User Manual
for Room Control Units

RYMASKON® **411-Modbus**
RYMASKON® **412-Modbus**

RYMASKON® **421-Modbus**
RYMASKON® **421-Modbus**

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1   Introduction

This document describes the principle functions of the following room control units, which are basically identical in design:

RYMASKON® **410-Modbus** with two analog outputs (0-10 VDC)
RYMASKON® **420-Modbus** with two digital outputs (24 VDC) or pulse width modulation (PMW).

For reasons of simplification, both device types are referred to as **RYM**ASKON® **400** in the following sections, unless otherwise specified.

RYMASKON® **400-Configurator** software is available for configuring these devices.
Detailed Information on this configuration tool can be found in a separate documentation.

Fig. 1: Front design

1.1. Hardware Configuration

1.1.1 Front View
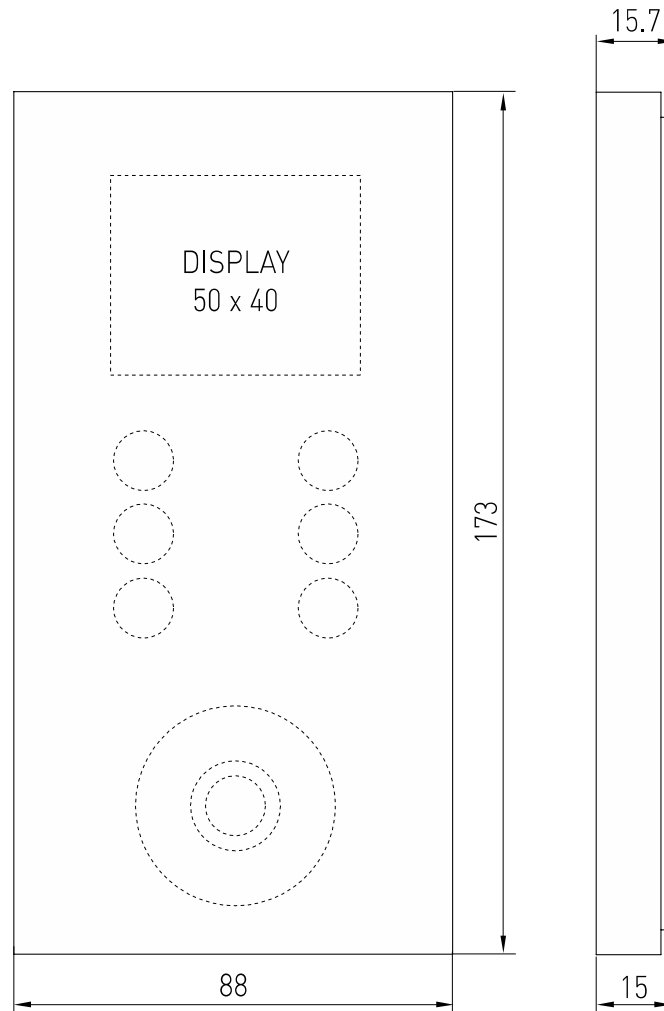
Fig. 2: Front view with outer dimensions

1.1.2 Front Design
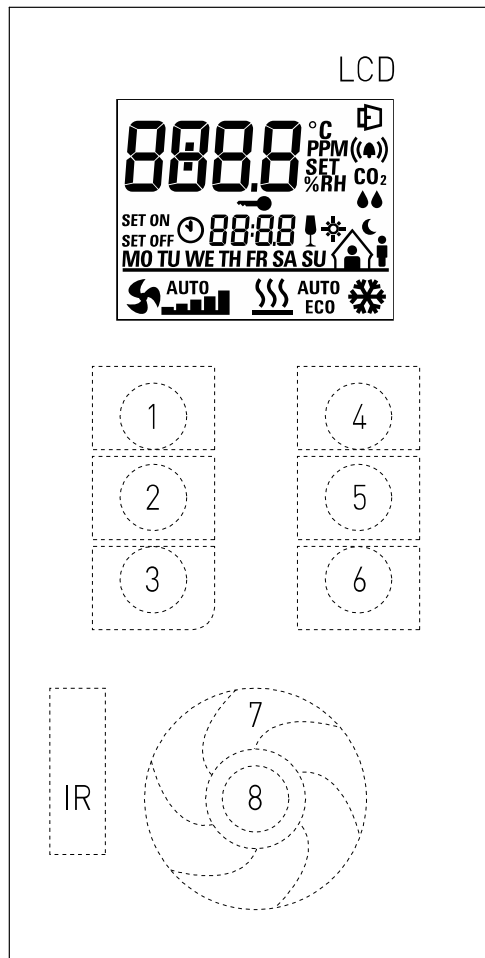
Fig. 3: Hardware front design

LCD	Liquid crystal display with dimmable back light
1, 2, 3	Sensor buttons at left (upper, central, lower)
4, 5, 6	Sensor buttons at right (upper, central, lower)
7	Sensor fields of rotary pulse encoder
8	Sensor button (ENTER) in the centre of the rotary encoder
IR	Transmission and receive IR diode of proximity sensor

1.1.3 Installation Frame
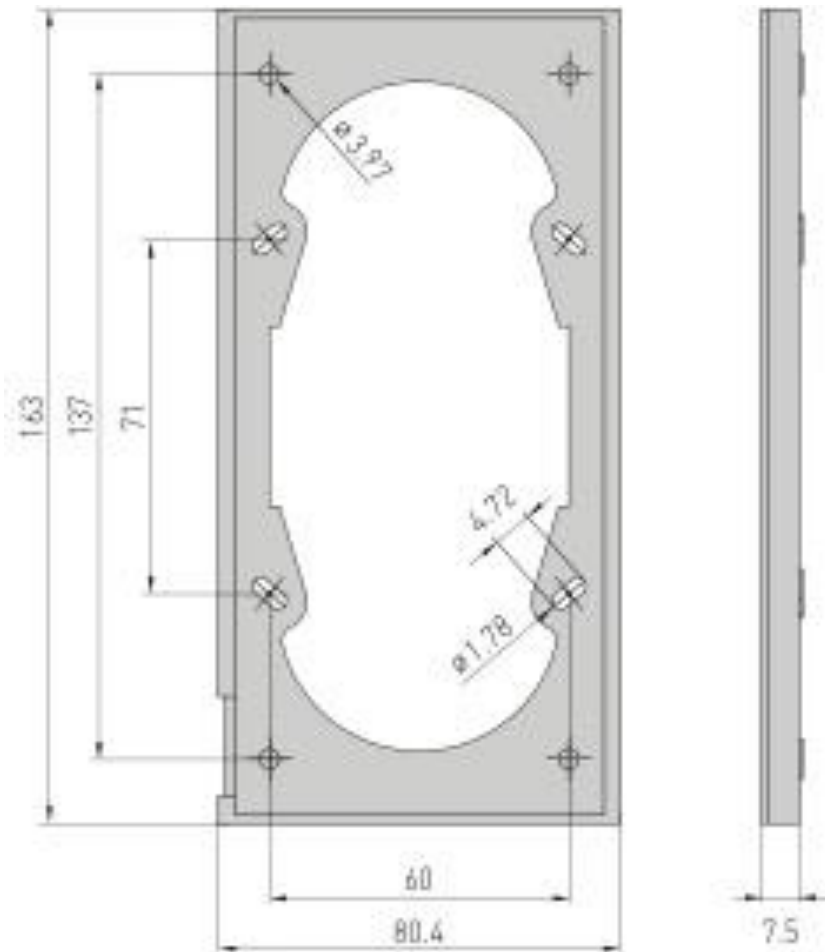
Fig. 4: Installation frame with dimensions

As shown in figure 4, **RYM**ASKON**® 400** is fixed on an installation frame.

This frame is mounted on-site on a **double device junction box**.
The front panel with the electronics is fastened using the upper and lower retaining clips of the installation frame.

Device dimensions including installation frame:
88 x 173 x 15.45 mm (Width x Height x Depth without flush-mounting socket)

1.1.4 Electrical Connections
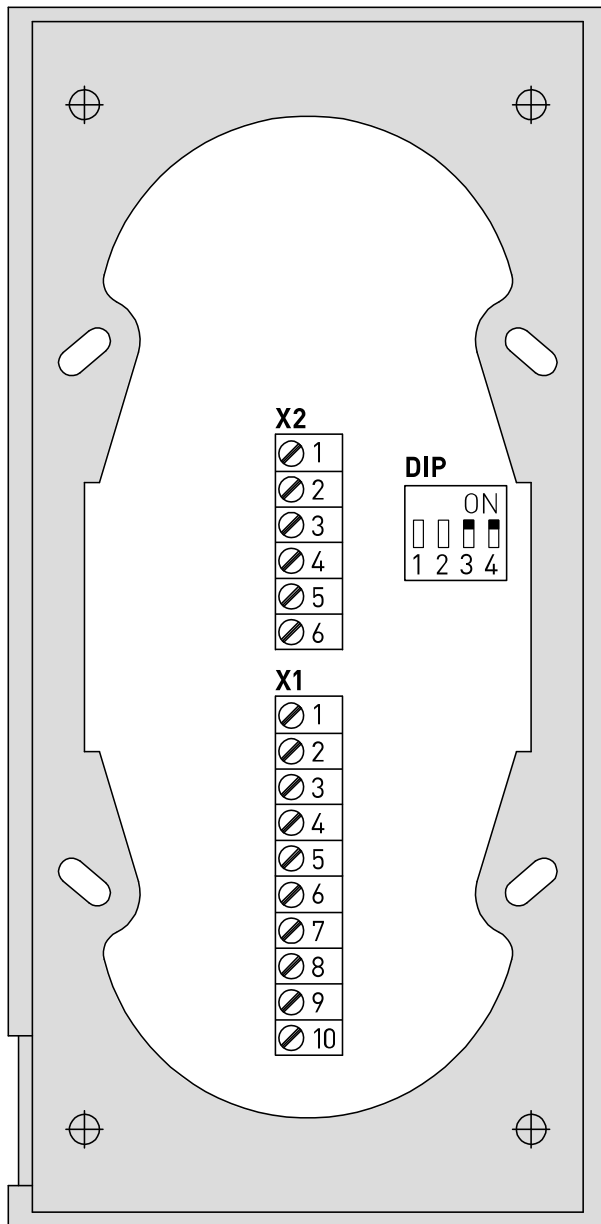
X2	Signal
1	DIE1 (digital input 1) 0 V (*1)
2	DIE2 (digital input 2) 0 V (*1)
3	GND
4	DIA1/AA1 (digital/analog output) (*2)
5	DIA2/AA2 (digital/analog output) (*2)
6	GND

(*1) For the purpose of connecting potential-free contacts, a GND signal (e.g. terminal X2-3) is wired through the contact to the desired input.

(*2) Depending on the device type with digital (24VDC) or analog (0-10V) outputs.

X1	Signal
1	+24 VDC supply voltage
2	GND supply voltage
3	RS485 – B (Modbus)
4	RS485 – A (Modbus)
5	GND
6	
7	
8	GND
9	GND
10	GND

DIP	Switch Function
1	
2	
3	ON = RS485 – Bus termination active (*3)
4	ON = RS485 – Bus termination active (*3)

(*3) The bus termination of the RS485 interface must always be set in pairs (DIP 3 and DIP 4).

Fig. 5: Rear side of device with terminals and DIP switches
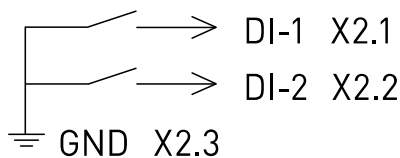
Fig. 6: Wiring schematic of digital inputs

1.2. Available Display Options and Icons
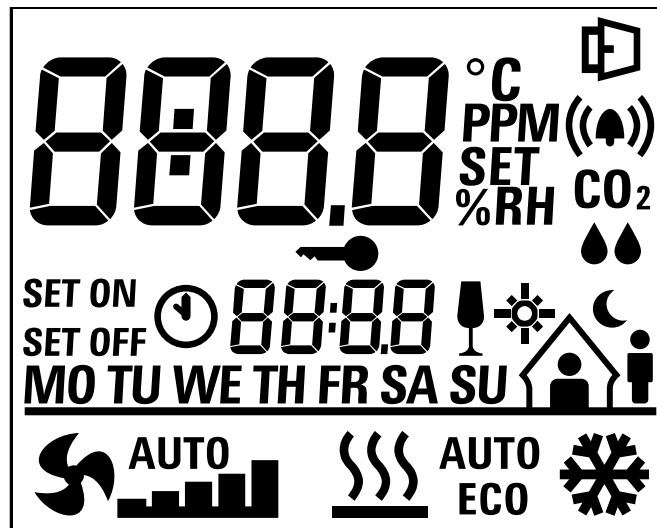
Fig. 7: Available display options

- Display of actual room temperature (large 7-segment display segment)
- Display of current room occupation (present, absent, day, night, use after hours)
- Display of fan stages (stage 1…5), automatic mode
- Display of weekdays MO...SU
- Display of current time (small 7-segment display segment)
- Various further room climate information and icons, such as for dew point, alarm, CO2 concentration, heating, cooling, key lock, etc.

The display is normally addressed directly by the **RYM**ASKON® **400** device depending on the status of the unit. Alternatively, a higher-level controller can be used to address each individual display icon and/or display area or set it to flashing mode.

1.3. Use of the Device Buttons

The front glass panel features 6 touch function buttons as well as a recessed capacitive rotary pulse encoder with a central enter button.

The 6 function buttons are freely configurable. Recommended functions include e.g.:

- Lights ON/OFF
- Dimming of lights
- Blinds UP/DOWN
- Fan stages +/–
- Room temperature setpoint +/–

The button functions are normally activated directly by the room controller. In addition, the entered information is transferred to a higher-level automation station (AS, if available). This enables both: the direct execution of desired functions depending on the selected button, and the free use of the six function buttons.

2 Device Functions

RYMASKON® **400** can be used as a stand-alone room climate controller independent from a higher-level AS, as described in the following.

There are 6 function buttons available, typically assigned to the primary functions of room temperature, lighting and blinds control. Alternatively, these buttons can also be configured for other functions, such as the switching and dimming of up to 6 different lighting circuits in a lights-only configuration.

Settings and/or parameters can be changed by means of the recessed rotary encoder in the front panel and its central enter button.

The local use of the buttons and rotary encoder can be restricted or completely disabled by means of a connected higher-level AS.

In general, the use of a button will result in a change of the information displayed.

However, many values, functions and modes of **RYM**ASKON® **400** are also displayed without manual intervention.

These functions are:

- Actual room temperature (large 4-digit 7-segment display segment)
- Time (large 4-digit 7-segment display segment) and day (weekday icons)
- Heating (icon)
- Cooling (icon)
- Control mode (AUTO icon)
- Day/night changeover (icons)
- Switching program active (timer icon)
- Status icons for CO2, dew point monitor, window open, device/button lock

3   Operator Functions

RYMASKON® **400** is a room controller supporting the following functions:

1. Room temperature control
2. Ventilation control
3. Lighting control
4. Blinds control
5. Time/date settings
6. Parameter settings (commissioning)
7. Service functions (commissioning)
8. Service functions (production)
9. Cleaning screen

3.1. Room Temperature Control

Room temperature control is one of the primary functions of **RYM**ASKON® **400**.
From a user's point of view, it serves to adjust the room temperature setpoint as well as the occupancy information.

Room temperature setpoint: Three different basic setpoints are assigned to the specific operating status – present (day mode), absent, night reduction or after hours ("party" mode).
These basic setpoints can only be changed by parameterization. Likewise, the maximum room temperature compensation value is stored as a parameter. It defines the maximum value by which the basic setpoint can be changed.

Operation: Operation depends on the configuration of the function buttons.

Option 1: In the default configuration, room temperature setpoint and occupancy are changed using buttons 1 + 4. A short touch of the minus or plus button in comfort mode changes the temperature setpoint. A long touch of the respective button changes the occupancy setting.

If all function buttons have been configured for other functions except those for room temperature control, these functions are adjusted by means of the rotary encoder and its central enter button:

A short touch of the enter button causes the currently active occupancy icon (present, absent) to flash. If **RYM**ASKON® **400** is in night reduction mode, the night icon will flash. The occupation status can now be changed by means of the rotary encoder:

- Absent <-> Present
- Night reduction <-> Night reduction + Party (extended after hours use)

While the occupancy icon is flashing, another short tough of the enter button will display the room temperature setpoint instead of the actual room temperature. In addition, the SET icon is displayed in order to indicate that a value is being adjusted. Using the rotary encoder, the room temperature setpoint can now be changed within the allowed limits.

With another short touch of the enter button or when there is no further intervention (timeout approximately 15 seconds), **RYM**ASKON® **400** returns to normal operation, and the data are saved.

Parameters configuring room temperature control:

Name	Description	Unit	Min	Max	Default
P 1	Master control: external (AS = 0), internal (1)		0	1	0
P 2	Output 1/2 currentless closed (0) / open (1)		0	1	0
P 3	Only RC05 Valve function (**RYM**ASKON® **420**) [0 = 2-point, 1 = PWM]		0	1	0
P 4	Setpoint change with touch button 1 + 4 (0 = no, 1 = yes, 2 = occupancy) 1 + 2 (= 3) 4 + 5 (= 4)		0	4	1
P 5	Set point change with touch buttons 2 + 5 (0 = no, 1= yes, 2 = occupancy) 1 + 2 (= 3) 4 + 5 (= 4)		0	4	0
P 6	Set point change with touch buttons 3 + 6 (0 = no, 1 = yes, 2 = occupancy)		0	2	0
P 7	2-point control (**RYM**ASKON® **420**) switch-on threshold output 0	%	0	100	33
P 8	2-point control (**RYM**ASKON® **420**) switch-off threshold output 0	%	0	100	10
P 9	2-point control (**RYM**ASKON® **420**) switch-on threshold output 1	%	0	100	33
P 10	2-point control (**RYM**ASKON® **420**) switch- off threshold output 1	%	0	100	10
P 11	Valve runtime (**RYM**ASKON® **420**): time until maximum valve stroke is reached	s	0	18000	100
P 12	Valve warm-up time (**RYM**ASKON® **420**): start-up time if valve output is longer than cooling time (<1%)	s	0	18000	80
P 13	Valve cooling-time (**RYM**ASKON® **420**): time until dead time is active	s	0	18000	360
P 14	Operating mode DIE1 [0 = switch ,1 = touch button, 2 = window contact (internal control)]		0	2	0
P 15	Operating mode DIE2 [0 = switch,1 = touch button, 2 = dew point monitor (internal control)]		0	2	0
P 16	Button pulse width extension DIE1, DIE2	0.1 s	1	255	20
P 17	Identification time DIE1	ms	1	1000	10
P 18	Identification time DIE2	ms	1	1000	10
P 19	Reserved		0	0	0
P 20	Reserved		0	0	0
P 21	Control function: heating = 0, cooling = 1, heating and cooling = 2		0	2	2
P 22	Reserved		0	0	0
P 23	Setpoint correction factor		0	10.0	1.0
P 24	Comfort setpoint	°C	5	30	21
P 25	Absence setpoint	°C	5	30	18
P 26	Night reduction setpoint	°C	5	30	16
P 27	Frost protection temperature: min. temperature for forced heating	°C	4.0	20.0	5.0
P 28	Overtemperature protection: cooling starts when the set temperature is exceeded (regardless of operating status)	°C	20.0	40.0	30.0
P 29	Heating controller KP proportional factor	%	0.1	100.0	5.0
P 30	Heating controller TN integral time (KI = KP/Tn)	min	0	300	10
P 31	Cooling controller KP proportional factor	%	0.1	100.0	5.0
P 32	Cooling controller TN integral time (KI = KP/Tn)	min	0	300	10
P 33	Dead zone: min. temperature undershoot/overshoot for heating/cooling to start	K	0.1	5.0	0.5

(see also

Appendix **1**: **RYMASKON**® 400-Modbus Mapping)

3.2. Ventilation Control

A fan icon, icons representing the actual fan stage (max. 5 stages) and an icon indicating automatic mode provide the user will the required information.

Ventilation can be set and adjusted by means of two of the 6 functions buttons.

The used can adjust the fan stage with these buttons at any time. If **RYM**ASKON® **400** is in automatic ventilation control mode (AUTO icon), any touch of these buttons will abort AUTO mode. The current fan stage can be raised or lowered with a touch on the respective left or right button. At the same time, the AUTO icon is switched off.

The maximum fan stage is stored as a parameter in **RYM**ASKON® **400**. Automatic mode is restored by means of the left function button (e.g. stage 2 -> stage 1 -> OFF -> AUTO) or by higher-level functions of **RYM**ASKON® **400** (e.g. timer, day/night mode).

Parameters for configuring ventilation control:

Name	Description	Unit	Min	Max	Default
P 34	Fan control no = 0 / yes = 1		0	1	0
P 35	Fan control staged = 0 / steady = 1		0	1	0
P 36	Reserve		0	0	0
P 37	Fan control with buttons 1 + 4 (0 = no, 1 = yes) 1 + 2 (= 2) 4 + 5 (= 3)		0	3	0
P 38	Fan control with buttons 2 + 5 (0 = no, 1 = yes) 1 + 2 (= 2) 4 + 5 (= 3)		0	3	0
P 39	Fan control with buttons 3 + 6 (0 = no, 1 = yes)		0	1	0
P 40	Fan control: max. number of stages		0	5	3
P 41	Reserved		0	100	5
P 42	Switch-on value stage 1	K	0.1	100.0	1.0
P 43	Switch-on value stage 2	K	0.1	100.0	2.0
P 44	Switch-on value stage 3	K	0.1	100.0	3.0
P 45	Switch-on value stage 4	K	0.1	100.0	4.0
P 46	Switch-on value stage 5	K	0.1	100.0	5.0
P 47	Switch on/off hysteresis of fan stages		0.5	2.0	0.5

(see also

Appendix **1**: **RYMASKON**® 400-Modbus Mapping)

3.3. Lighting Control

In default configuration, **RYM**ASKON® **400** supports two individual lighting circuits.

The current button status and any button actuation that has not yet been read since the last data retrieval are transmitted to the automation station. In addition, a time field is provided for each lighting button, useful e.g. for dimming.

Parameters for configuring lighting control:

Name	Description	Unit	Min	Max	Default
P 61	Lighting control #1 with buttons 1 + 4 (yes/no)		0	1	0
P 62	Lighting control #2 with buttons 2 + 5 (yes/no)		0	1	0
P 63	Lighting control #3 with buttons 3 + 6 (yes/no)		0	1	1
P 64	Reserved		1	4	1
P 65	Reserved		1	4	1
P 66	Reserved		1	4	1
P 67	Lighting control #1 0 = switching 1 = dimming		0	1	0
P 68	Lighting control #2 0 = switching 1 = dimming		0	1	0
P 69	Lighting control #3 0 = switching 1 = dimming		0	1	0

(see also

Appendix **1** **RYMASKON**® 400-Modbus Mapping)

3.4. Blinds Control

Depending on the configuration, **RYM**ASKON® **400** will support multiple blinds control schemes. Two function buttons are required (left button for UP, right button for DOWN).

The current button status and any button actuation that has not yet been read since the last data retrieval are transmitted to the automation station. In addition, a time field is provided for each blinds button, useful e.g. for tilting the slats or for raising and lowering the blinds for as long as the butting is touched.

3.5. Date/Time Settings

By simultaneous touch of the enter button and the rotary encoder at its 12 o'clock position for about 2 seconds, **RYM**ASKON® **400** branches into date and time setting mode.

The current day is shown flashing in the large 7-segment display segment. The day of month (1…31) is set by means of the rotary encoder. When confirmed with the enter button, the next entry step in the sequence is activated.

The date and time settings are entered in the following order:

Button Sequence	Action to Follow
Enter button + rotary encoder at 12 o'clock for activating the function	Entry of day
Enter button to confirm and proceed	Entry of month
Enter button to confirm and proceed	Entry of year
Enter button to confirm and proceed	Entry of hour
Enter button to confirm and proceed	Entry of minute
Enter button to confirm and proceed	End of sequence – return to main display

The sequence can also be aborted at any time by a long touch of the enter key.

4 RYMASKON® 400 Transmit and Receive Data

The following tables show all the data exchanged between **RYM**ASKON® **400** and a higher-level automation station. The parameters are listed in chapter 5.

4.1. Live Values of RYMASKON® 400

This section includes all the data transmitted by **RYM**ASKON® **400** to the higher-level automation station:

Address (144 + x)	Assignment
0	Room temperature
1	Feedback output #1
2	Feedback output #2
3	Setpoint correction
4	Operating status 0 = Off 1 = Comfort (current) 2 = Night reduction 3 = Absence 4 = Extension of use time (party)
5	Current status of operating elements: Bit 0: Digital input #1 Bit 1: Digital input #2 Bit 2: Proximity sensor Bit 3: Upper left button Bit 4: Centre left button Bit 5: Lower left button Bit 6: Upper right button Bit 7: Centre right button Bit 8: Lower right button Bit 9: Enter button
6	Status of operating elements since last reading (see field 5)
7	Current rotary encoder 1…12 corresponding to the hour hand of a clock
8	Rotary encoder position since last reading
9	Current status of blinds buttons: Bit 0: Upper right button (button 4) Bit 1: Centre right button (button 5) Bit 2: Lower right button (button 6) … Bit 8: Upper left button (button 1) Bit 9: Centre left button (button 2) Bit 10: Lower left button (button 3)
10	Status of blinds buttons since last reading: (see field 9)
11	Blinds control #1 – Raising time
12	Blinds control #1 – Lowering time
13	Blinds control #2 – Raising time
14	Blinds control #2 – Lowering time
15	Blinds control #3 – Raising time
16	Blinds control #3 – Lowering time
17	Current status of lighting buttons: Bit 0: Upper right button (button 4) Bit 1: Centre right button (button 5) Bit 2: Lower right button (button 6) … Bit 8: Upper left button (button 1) Bit 9: Centre left button (button 2) Bit 10: Lower left button (button 3)

Address (144 + x)	Assignment
18	Status of illumination buttons after last reading
19	Illumination control #1 – Dimming+ time
20	Illumination control #1 – Dimming- time
21	Illumination control #2 – Dimming+ time
22	Illumination control #2 – Dimming+ time
23	Illumination control #3 – Dimming+ time
24	Illumination control #3 – Dimming- time
25	Temperature control status: 0 = Heating/Cooling OFF 1 = Heating 2 = Cooling
26	Calculated temperature setpoint value
27	Temperature control 0 = External temperature control (AS) 1 = Internal temperature control
28	Current fan stage (0…5) / Fan value (0…100%) depending on whether the ventilation is configured to staged or steady (P35), Automatic operation = -1.0

(see also

Appendix **1**: **RYMASKON**® 400-Modbus Mapping)

4.2. RYMASKON® 400 Output Data

At runtime, the AS sends the following data to **RYM**ASKON**®** **400**.

Address (192 + x)	Assignment
0	Operating status 0 = Off 1 = Comfort (current) 2 = Night reduction 3 = Absence 4 = Extension of use time (party)
1	Actuating signal output #1
2	Actuating signal output #2
3	Control data I – 16 icons 0 = **RYM**ASKON® **400** control, 1 =AS control Bit 00 = Fan icon Bit 01 = Fan Auto Bit 02 = Fan stage 1 Bit 03 = Fan stage 2 Bit 04 = Fan stage 3 Bit 05 = Fan stage 4 Bit 06 = Fan stage 5 Bit 07 = Small 7-segment display – SEGMENT SET (SET OFF) Bit 08 = Presence icon Bit 09 = Absence icon Bit 10 = Day icon Bit 11 = Night icon Bit 12 = ECO icon Bit 13 = AUTO icon (heating/cooling) Bit 14 = Heating icon Bit 15 = Cooling Icon
4	Control data II – 16 icons 0 = **RYM**ASKON® **400** control, 1 =AS control Bit 00 = Party icon Bit 01 = Clock icon Bit 02 = CO2 icon Bit 03 = Dew point icon Bit 04 = Window icon Bit 05 = Key icon Bit 06 = Alarm icon Bit 07 = Reserved Bit 08 = Decimal point (large 7-segment display) Bit 09 = "+" character (large 7-segment display) Bit 10 = Decimal point (small 7-segment display) Bit 11 = Colon (small 7-segment display) Bit 12 = Reserved Bit 13 = Reserved Bit 14 = AS control small 7-segment display Bit 15 = AS control large 7-segment display
5	Control data III – 16 icons 0 = **RYM**ASKON® **400** control, 1 =AS control Bit 00 = SET (small 7-segment display) Bit 01 = OFF (small 7-segment display) Bit 02 = ON (small 7-segment display) Bit 03 = SET (large 7-segment display)

Address (192 + x)	Assignment
	Bit 04 = PPM (large 7-segment display) Bit 05 = % character (large 7-segment display) Bit 06 = RH (large 7-segment display) Bit 07 = °C (large 7-segment display) Bit 08 = House icon Bit 09 = MO Bit 10 = TU Bit 11 = WE Bit 12 = TH Bit 13 = FR Bit 14 = SA Bit 15 = SU
6	Display data I – 16 icons 0 = icon OFF, 1 = icon ON Bit 00 = Fan icon Bit 01 = Fan AUTO Bit 02 = Fan stage 1 Bit 03 = Fan stage 2 Bit 04 = Fan stage 3 Bit 05 = Fan stage 4 Bit 06 = Fan stage 5 Bit 07 = Small 7-segment display – SEGMENT SET (SET OFF) Bit 08 = Presence icon Bit 09 = Absence icon Bit 10 = Day icon Bit 11 = Night icon Bit 12 = ECO icon Bit 13 = AUTO icon (heating cooling) Bit 14 = Heating icon Bit 15 = Cooling icon
7	Display data II – 16 icons 0 = icon OFF, 1 = icon ON Bit 00 = Party icon Bit 01 = Clock icon Bit 02 = CO2 icon Bit 03 = Dew point icon Bit 04 = Window icon Bit 05 = Key icon Bit 06 = Alarm icon Bit 07 = Reserved Bit 08 = Decimal point (large 7-segment display) Bit 09 = "+" character (large 7-segment display) Bit 10 = Decimal point (small 7-segment display) Bit 11 = Colon (small 7-segment display) Bit 12 = reserved Bit 13 = reserved Bit 14 = reserved Bit 15 = reserved
8	Display data III – 16 icons 0 = icon OFF, 1 = icon ON Bit 00 = SET (small 7-segment display) Bit 01 = OFF (small 7-segment display) Bit 02 = ON (small 7-segment display) Bit 03 = SET (large 7-segment display) Bit 04 = PPM (large 7-segment display) Bit 05 = % character (large 7-segment display)

Address (192 + x)	Assignment
	Bit 06 = RH (large 7-segment display) Bit 07 = °C (large 7-segment display) Bit 08 = House icon Bit 09 = MO Bit 10 = TU Bit 11 = WE Bit 12 = TH Bit 13 = FR Bit 14 = SA Bit 15 = SU
9	Flashing control data I – 16 icons 0 = static, 1 = flashing Bit 00 = Fan icon Bit 01 = Fan AUTO Bit 02 = Fan stage 1 Bit 03 = Fan stage 2 Bit 04 = Fan stage 3 Bit 05 = Fan stage 4 Bit 06 = Fan stage 5 Bit 07 = Small 7-segment display – SEGMENT SET (SET OFF) Bit 08 = Presence icon Bit 09 = Absence icon Bit 10 = Day icon Bit 11 = Night icon Bit 12 = ECO icon Bit 13 = AUTO icon (heating/cooling) Bit 14 = Heating icon Bit 15 = Cooling icon
10	Flashing control data II – 16 icons 0 = static, 1 = flashing Bit 00 = Party icon Bit 01 = Clock icon Bit 02 = CO2 icon Bit 03 = Dew point icon Bit 04 = Window icon Bit 05 = Key icon Bit 06 = Alarm icon Bit 07 = reserved Bit 08 = Decimal point (large 7-segment display) Bit 09 = „+" character (large 7-segment display) Bit 10 = Decimal point (small 7-segment display) Bit 11 = Colon (small segment display) Bit 12 = reserved Bit 13 = reserved Bit 14 = AS control small 7-segment display Bit 15 = AS control large 7Segment display
11	Flashing control data III – 16 icons 0 = static, 1 = flashing Bit 00 = SET (small 7-segment display) Bit 01 = OFF (small 7-segment display) Bit 02 = ON (small 7-segment display) Bit 03 = SET (large 7-segment display) Bit 04 = PPM (large 7-segment display) Bit 05 = % character (large 7-segment display) Bit 06 = RH (large 7-segment display) Bit 07 = °C (large 7-segment display)

Address (192 + x)	Assignment
	Bit 08 = House icon Bit 09 = MO Bit 10 = TU Bit 11 = WE Bit 12 = TH Bit 13 = FR Bit 14 = SA Bit 15 = SU
12	Fixed text for small 7-segment display 1 = " " 2 = "----" 3 = "CODE" 4 = "ALRM" 5 = "ERR " 6 = "SCH "
13	Fixed text for large 7-segment display 1 = " " 2 = "----" 3 = "CODE" 4 = "ALRM" 5 = "ERR " 6 = "SCH "
14	Integer value for small 7-segment display Decimal point must be addressed separately
15	Integer value for large 7-segment display Decimal point must be addressed separately
16	Flashing control data small 7-segment display Bit 0 = 1 digit #1 (left) Bit 1 = 1 digit #2 (second) Bit 2 = 1 digit #3 (third) Bit 3 = 1 digit #4 (right)
17	Flashing control data large 7-segment display Bit-0 = 1 digit #1 (left) Bit-1 = 1 digit #2 (second) Bit-2 = 1 digit #3 (third) Bit-3 = 1 digit #4 (right)
18	Button unlocking/locking Bit 0 = 1 -> upper left button Bit 1 = 1 -> centre left button Bit 2 = 1 -> lower left button Bit 3 = 1 -> upper right button Bit 4 = 1 -> centre right button Bit 5 = 1 -> lower right button Bit 6 = 1 -> enter button Bit 7 = 1 -> rotary encoder
19	Two-point control Switch-on threshold Output 0, 0…100%
20	Two-point control Switch-off threshold Output 0, 0…100%
21	Two-point control Switch-on threshold Output 1, 0…100%
22	Two-point control Switch-off threshold Output 1, 0…100%
23	Comfort temperature setpoint (not saved)
24	Absence setpoint (not saved)
25	Night reduction setpoint (not saved)
26	Frost protection temperature (not saved) Minimum temperature for forced heating

Address (192 + x)	Assignment
27	Thermal protection temperature (not saved) Cooling starts when the set temperature is exceeded (independent from operating status)
28	Set point correction (not saved)
29	Time and date settings, hour (0-23)
30	Time and date settings, minute (0-59)
31	Time and date settings, second (0-59)
32	Time and date settings, day (1-31)
33	Time and date settings, month (1-12)
34	Time and date settings, year (0-99)
35	Entered time and date set values 1 = set X = no function
36	Fan control: Fan stage (0…5) Fan value (0…100%) Depending on configuration of ventilation as staged or steady (P 35)
37	Room temperature correction -10.0…+10.0 (use for internal test purposes only!)
38	Set point correction factor (see parameter 23) 0.0…10.0 K

(see also

Appendix **1**: **RYMASKON**® 400-Modbus Mapping)

5 Parameter Settings (Commissioning)

Various **RYM**ASKON® **400** functions are subject to configuration, which is normally carried out only once upon commissioning. The parameters can either be set directly using the device, the Modbus Configurator or a connected higher-level Modbus master controller.

All parameters are grouped in specific function blocks:

- Parameters for room temperature control
- Parameters for **RYM**ASKON® **400** outputs and inputs
- Configuration of ventilation control
- Configuration of blinds control
- Configuration of lighting control
- Configuration of communication interface(s)
- General device parameters
- Parameters for time zone settings and winter/summer time changeover

Parameter settings are initiated by simultaneously touching the enter button and the 6-o'clock position of the rotary encoder for a duration of >5 seconds. The various parameters are indicated in both 4-digit 7-segment display segments. The large 7-segment section shows the parameter number (e.g. P 1), and the smaller section shows its current value. The desired parameter is selected using the rotary encoder. Any change of a value starts with a short touch of the enter button. The change mode is indicated by the current value flashing. The value can now be changed by means of the rotary encoder within the allowed limits. The change is completed by another short touch of the enter button, which saves the modified parameter to the non-volatile memory of **RYM**ASKON® **400**.

The controller returns from parameter to operating mode upon a long touch of the enter button or when no button is used for a period of 60 seconds.

The following tables describe each parameter in consecutive order, beginning with parameter 1:

5.1. Room Temperature Control

Name	Description	Unit	Min	Max	Default
P 1	Master control: external (AS = 0), internal (1)		0	1	0
P 2	Output 1/2 current-free closed (0) / open (1)		0	1	0
P 3	**RYM**ASKON® **420** only Valve function [0 = 2-point, 1 = PWM]		0	1	0
P 4	Set point change with buttons 1 + 4 (0 = no, 1 = yes, 2 = occupancy) 1 + 2 (= 3) 4 + 5 (= 4)		0	4	1
P 5	Set point change with buttons 2 + 5 (0 = no, 1 = yes, 2 = occupancy) 1 + 2 (=3) 4 + 5 (=4)		0	4	0
P 6	Set point change with buttons 3 + 6 (0 = no, 1 = yes, 2 = occupancy)		0	2	0
P 7	2-point control (**RYM**ASKON® **420**) switch- on threshold output 0	%	0	100	33
P 8	2-point control (**RYM**ASKON® **420**) switch- off threshold output 0	%	0	100	10
P 9	2-point control (**RYM**ASKON® **420**) switch- on threshold output 1	%	0	100	33
P 10	2-point control (**RYM**ASKON® **420**) switch- off threshold output 1	%	0	100	10

Name	Description	Unit	Min	Max	Default
P 11	**RYM**ASKON® **420**: Valve runtime: time until maximum valve stroke is reached	s	0	18000	100
P 12	**RYM**ASKON® **420**: Valve warm-up time: start-up time if valve output is longer than cooling time (less than 1%)	s	0	18000	80
P 13	**RYM**ASKON® **420**: Valve cooling-time: time until dead time is active	s	0	18000	360
P 14	Operating mode DIE1 [0 = switch ,1= push button, 2 = window contact (internal control)]		0	2	0
P 15	Operating mode DIE 2 [0 = switch ,1 = push button, 2 = dew point monitor (internal control)]		0	2	0
P 16	Pulse width extension DIE1, DIE2	0.1 s	1	255	20
P 17	Identification time DIE1	ms	1	1000	10
P 18	Identification time DIE2	ms	1	1000	10
P 19	Reserved		0	0	0
P 20	Reserved		0	0	0
P 21	Control function: heating = 0, cooling = 1, heating and cooling = 2		0	2	2
P 22	Reserved		0	0	0
P 23	Setpoint correction factor		0	10.0	1.0
P 24	Comfort setpoint	°C	5	30	21
P 25	Absence setpoint	°C	5	30	18
P 26	Night reduction set point	°C	5	30	16
P 27	Frost protection temperature Min. temperature for forced heating	°C	4.0	20.0	5.0
P 28	Protection against overtemperature: Cooling starts when the set temperature is exceeded (regardless of operating status)	°C	20.0	40.0	30.0
P 29	Heating controller KP proportional factor	%	0.1	100.0	5.0
P 30	Heating controller TN integral time (KI = KP/Tn)	min	0	300	10
P 31	Cooling controller KP proportional factor	%	0.1	100.0	5.0
P 32	Cooling controller TN integral time (KI = KP/Tn)	min	0	300	10
P 33	Dead zone: min. temperature undershoot/overshoot for heating/cooling to start	K	0.1	5.0	0.5

(see also

Appendix **1**: **RYMASKON**® 400-Modbus Mapping)

5.2. Ventilation Control

Name	Description	Unit	Min	Max	Default
P 34	Fan control: no = 0 / yes = 1		0	1	0
P 35	Fan control: staged = 0 / steady = 1		0	1	0
P 36	Reserved		0	0	0
P 37	Fan control with buttons 1 + 4 (0 = no, 1 = yes) 1 + 2 (= 2) 4 + 5 (= 3)		0	3	0
P 38	Fan control with buttons 2 + 5 (0 = no, 1 = yes) 1 + 2 (= 2) 4 + 5 (= 3)		0	3	0
P 39	Fan control with buttons 3 + 6 (0 = no, 1 = yes)		0	1	0
P 40	Fan control: max. number of stages		0	5	3
P 41	Reserved		0	100	5
P 42	Switch-on value stage 1	K	0.1	100.0	1.0
P 43	Switch-on value stage 2	K	0.1	100.0	2.0
P 44	Switch-on value stage 3	K	0.1	100.0	3.0
P 45	Switch-on value stage 4	K	0.1	100.0	4.0
P 46	Switch-on value stage 5	K	0.1	100.0	5.0
P 47	Switch on/off hysteresis of fan stages		0.5	2.0	0.5
P 48	Reserved		0	3	0

(see also

Appendix **1**: **RYMASKON**® 400-Modbus Mapping)

5.3. Blinds Control

Name	Description	Unit	Min	Max	Default
P 49	Blinds control #1 with buttons 1 + 4 (yes/no)		0	1	0
P 50	Blinds control #2 with buttons 2 + 5 (yes/no)		0	1	1
P 51	Blinds control #3 with buttons 3 + 6 (yes/no)		0	1	0

(see also

Appendix **1**: **RYMASKON**® 400-Modbus Mapping)

5.4. Lights Control

Name	Description	Unit	Min	Max	Default
P 61	Lighting control #1 with buttons 1 + 4 (yes/no)		0	1	0
P 62	Lighting control #2 with buttons 2 + 5 (yes/no)		0	1	0
P 63	Lighting control #3 with buttons 3 + 6 (yes/no)		0	1	1
P 64	Reserved		0	0	0
P 65	Reserved		0	0	0
P 66	Reserved		0	0	0
P 67	Lighting control #1: 0 = switching / 1 = dimming		0	1	0
P 68	Lighting control #2: 0 = switching / 1 = dimming		0	1	0
P 69	Lighting control #3: 0 = switching / 1 = dimming		0	1	0

(see also

Appendix **1**: **RYMASKON**® 400-Modbus Mapping)

5.5. Device System Parameters

Name	Description	Unit	Min	Max	Default
P 88	Bus address		1	128	1
P 89	Bus speed 0 = 57k6 Baud 1 = 38k4 Baud 2 = 19k2 Baud 3 = 9k6 Baud		0	3	3
P 90	MIN display illumination	%	0	100	15
P 91	MAX display illumination	%	0	100	100
P 92	MIN button illumination	%	0	100	15
P 93	MAX button illumination	%	0	100	100
P 94	Button illumination time	s	30	255	30
P 95	Acoustic button feedback		0	1	1
P 96	Digital input #1 as window contact [no (0) / yes (1)]		0	1	1
P 97	Digital input #2 as dew point monitor [no (0) / yes (1)		0	1	1
P 98	Automatic summer/winter time changeover [no (0) / yes (1)		0	1	1
P 99	Timeshift of daylight saving time [minutes]	min	0	255	60
P 100	Beginning of daylight saving time, month 1…12		1	12	3
P 101	Beginning of daylight saving time, week 1…6 of month, 0 = last		0	6	0
P 102	Beginning of daylight saving time, weekday 1…7 MO…SU		1	7	7
P 103	Beginning of daylight saving time, hour of changeover		0	23	2
P 104	Beginning of daylight saving time, minute of changeover		0	59	0
P 105	End of daylight saving time, month 1…12		0	12	10
P 106	End of daylight saving time, week 1…6 of month, 0 = last		0	6	0
P 107	End of daylight saving time, weekday 1…7 MO…SU		1	7	7
P 108	End of daylight saving time, hour of changeover		0	23	3
P 109	End of daylight saving time, minute of changeover		0	59	0

(see also

Appendix **1**: **RYMASKON**® 400-Modbus Mapping)

6   Service Functions (Commissioning)

During commissioning, some functions are required that differ from the normal operating functions. In principle these are service function, such as the communication capability using the interface(s) of **RYM**ASKON® **400**.

Service mode is entered by simultaneously touching of the enter key and the 3-o'clock position of the rotary encoder for a duration of >10 seconds. Both 4-digit 7-segment display segments will then indicate the various service data: a service number in the large section, and the current value in the small section. The desired service number can then be selected using the rotary encoder.

The controller returns from service to operating mode upon a long touch of the enter button or when no button is used for a period of 60 seconds.

The following table lists the available service functions:

Service Number	Assignment	Display
1	Output PI controller output 1 [%]	S--1 xxx.x %
2	Output PI controller output 2 [%]	S--2 xxx.x %
3		S--3 0000
4	Output 1 = OFF or 0 V x = 5 / 6 for **RYM**ASKON® **420** or. **RYM**ASKON® **410**	S--4 rx-0
5	Output 1 = ON or 10 V x = 5 / 6 for **RYM**ASKON® **420** or **RYM**ASKON® **410**	S—5 rx-1
6	Output 2 = OFF or 0 V x = 5 / 6 for **RYM**ASKON® **420** or **RYM**ASKON® **410**	S--6 rx-0
7	Output 2 = ON or 10 V x = 5 / 6 for **RYM**ASKON® **420** or **RYM**ASKON® **410**	S--7 rx-1
8	Status of digital inputs x = DIE1 y = DIE2	S--8 -x-y
9	Software version x_xx (e.g. 1_09(	S--9 x_xx

7   Cleaning Screen

The cleaning screen function allows cleaning the glass front panel of **RYM**ASKON® **400** without accidentally changing any parameter or primary function.

The cleaning function is activated by touching the enter button for >1.5 seconds.
The "key lock" icon in the display will flash.

RYMASKON® **400** will now ignore any button usage for a period of 30 seconds.

When this time has elapsed, the controller will automatically return to operating mode, and the key icon will be statically switched off – or on, if **RYM**ASKON® **400** buttons have been disabled (parameter settings).

8 Bootloader

RYMASKON® **400** is equipped with a bootloader for receiving operating system software (firmware) updates. In this way, a connected Modbus master controller can be used to update the entire firmware of the device.

For safety reasons, the bootloader features additional operator functions allowing the user to the bus address of the device as well as the bus speed to be used by **RYM**ASKON® **400**.

The user can recognize an active bootloader by the display content.

While the upper 7-segment display segment indicates the bus address, the smaller lower display segment shows the bus speed.

Example:

A 12
57.6

The above example identifies a **RYM**ASKON® **400** unit assigned to bus address "12" and operating at a bus speed of 57.6 kBaud.

Bus address and speed can be modified by accessing the parameters menu.

The upper left and right touch buttons – by default assigned to room temperature (– and +) – are used to change the bus address within the allowed range.

The centre left and right button – by default assigned to blinds UP (∧) and DOWN (∨) – are used to set the desired bus speed.

During a firmware update by the bus master controller (e.g. ems4/ems2), the previous settings are indicated in the display. As the bus master start the update immediately, the user cannot make any changes to the bus address or speed.

If any interruptions occur during a firmware update, only the bootloader will remain in the device. In this case it "may" be necessary to change the address and speed before starting another update process.

The speed and address set in the bootloader will not be changed by firmware updates.

During updates, it is important to avoid any interference that may adversely affect the update process. Otherwise malfunctions can occur that can only be fixed at the factory.

9 Commissioning Instructions

(1) Each **RYM**ASKON**® 400** must first be disconnected from the supply voltage and the bus lines (plug-in terminal block).

(2) Care must be taken to ensure that the supply voltage of each **RYM**ASKON**® 400** refer to a common reference potential (identical GND signal).

(3) After checking both terminal blocks, these are connected to the first **RYM**ASKON**® 400** unit.

(4) After connecting the device to the supply voltage, bus address and speed (preferably 57k6 Baud) of the **RYM**ASKON**® 400** unit are set by means of the parameters menu.

(5) Then the service function (commissioning) is enabled at the **RYM**ASKON**® 400** unit.
Amongst others, the service function allows the user to check the quantity of bus telegrams (display of telegram receive and transmit counters).

(6) For test purposes, the control outputs can in part be switched when the service function is active.
The optional digital inputs are indicated in the display.

(7) One at a time, the other **RYM**ASKON**® 400** are then commissioned in the same way – steps (3) to (7).
Units that have already been tested will not be disconnected from the supply voltage and the bus.

10 Technical Characteristics

- Supply voltage 24 VDC

- Power consumption (without consumer at control outputs)
  1.08 W (backlight 100 %)
  0.94 W (backlight 15%)
  0.89 W (backlight OFF)

- Internal temperature sensor
  (temperature range: 0...+70°C, accuracy: +/– 0.4K)

- 2 digital inputs
  Optional functions for internal control purposes
  (window contact, dew point monitor or motion detector)

- 2 outputs
  RYMASKON**® 410:**
  2 analog outputs (0-10 VDC)
  Nominal current 4 mA per output
  RYMASKON**® 420:**
  2 digital outputs (0V/24 VDC)
  Nominal current 0.4 A per output, max. short circuit current 1.2 A
  2-point (open/closed), PWM

11 Notes

1. When using both outputs, ensure that the valves are of the same type.

2. Due to the high tolerances of thermal actuators, the valve opening cannot be precisely set by means of a PWM signal.

3. Each module address must be assigned only once.

12   Appendix 1: RYMASKON® 400-Modbus Mapping

12.1. Introduction

This appendix describes all available Modbus fields.

Addresses that are not listed cannot be read, and an error message is returned. In addition the minimum and maximum values are checked, again with an error message returned in case of discrepancies.

"HOLDING" type fields can be read and written.
"INPUT" type fields can only be read.

Each field regardless of type has a size of 16 bits and is INT16 coded.

All rationale numbers are shown in the Modbus mapping with one decimal (e.g. 12.3 => 123).
Scaling is always 0.1.

12.2. Overview of Modbus Fields

Address dez	Address hex	Register Type	Name	Description	Unit	Min	Max	Default
16	10	HOLDING	P 1	Main control External (AS = 0) Internal (1)		0	1	0
17	11	HOLDING	P 2	Output 1/2 currentless Closed (0) / Open (1)		0	1	0
18	12	HOLDING	P 3	ONLY **RYM**ASKON® **420**: Valve function: 0 = two-point 1 = PWM		0	1	0
19	13	HOLDING	P 4	Set point adjustment with buttons 1 + 4 (0 = No, 1 = Yes, 2 = Occupancy) 1 + 2 (= 3) 4 + 5 (= 4)		0	4	1
20	14	HOLDING	P 5	Set point adjustment with buttons 2 + 5 (0 = No, 1 = Yes, 2 = Occupancy) 1 + 2 (= 3) 4 + 5 (= 4)		0	4	0
21	15	HOLDING	P 6	Set point adjustment with buttons 3 + 6 (0 = No, 1 = Yes, 2 = Presence)		0	2	0
22	16	HOLDING	P 7	ONLY **RYM**ASKON® **420**: Two-point control: Switch-on threshold Output 0	%	0.0	100.0	33.0
23	17	HOLDING	P 8	ONLY **RYM**ASKON® **420**: Two-point control: Switch-off threshold Output 0	%	0.0	100.0	10.0
24	18	HOLDING	P 9	ONLY **RYM**ASKON® **420**: Two-point control: Switch-on threshold Output 1	%	0.0	100.0	33.0
25	19	HOLDING	P 10	ONLY **RYM**ASKON® **420**: Two-point control: Switch-off threshold Output 1	%	0.0	100.0	10.0
26	1A	HOLDING	P 11	ONLY **RYM**ASKON® **420**: Valve runtime: time until maximum valve stroke is reached	s	0	18000	100
27	1B	HOLDING	P 12	ONLY **RYM**ASKON® **420**: Valve warm-up time: start-up time if valve output is longer than cooling time (less than 1%)	s	0	18000	80

| Address | | Register Type | Name | Description | Unit | Min | Max | Default |
dez	hex							
28	1C	HOLDING	P 13	ONLY **RYM**ASKON® **420**: Valve cooling-time: time until dead time is active	s	0	18000	360
29	1D	HOLDING	P 14	Operating mode DIE1 0 = switch 1 = push button 2 = window contact (internal control)		0	2	0
30	1E	HOLDING	P 15	Operating mode DIE2 0 = switch 1 = push button 2 = dew point monitor (internal control)		0	2	0
31	1F	HOLDING	P 16	Pulse width extension DIE1, DIE2	0.1 s x	1	255	20
32	20	HOLDING	P 17	Identification time DIE1	ms	1	1000	10
33	21	HOLDING	P 18	Identification time DIE2	ms	1	1000	10
34	22	HOLDING	P 19	Reserved		0	0	0
35	23	HOLDING	P 20	Reserved		0	0	0
36	24	HOLDING	P 21	Control function: 0 = heating 1 = cooling 2 = heating and cooling		0	2	2
37	25	HOLDING	P 22	Reserved		0	0	0
38	26	HOLDING	P 23	Setpoint correction factor		0.0	10.0	1.0
39	27	HOLDING	P 24	Comfort setpoint	°C	5.0	30.0	21.0
40	28	HOLDING	P 25	Absence setpoint	°C	5.0	30.0	18.0
41	29	HOLDING	P 26	Night reduction setpoint	°C	5.0	30.0	16.0
42	2A	HOLDING	P 27	Frost protection temperature: min. temperature for forced heating	°C	4.0	20.0	5.0
43	2B	HOLDING	P 28	Thermal protection temperature: Cooling starts when the set temperature is exceeded (independent of operating status)	°C	20.0	40.0	30.0
44	2C	HOLDING	P 29	Heating controller KP proportional factor	%	0.1	100.0	5.0
45	2D	HOLDING	P 30	Heating controller TN integral time (KI = KP/Tn)	min	0.0	300.0	10.0
46	2E	HOLDING	P 31	Cooling controller KP proportional factor	%	0.1	100.0	5.0
47	2F	HOLDING	P 32	TN integral time cooling controller (KI = KP/Tn)	min	0.0	300.0	10.0
48	30	HOLDING	P 33	Dead zone: min. temperature undershoot/overshoot for heating/cooling to start	K	0.1	5.0	0.5
49	31	HOLDING	P 34	Fan control 0 = No 1 = Yes		0	1	0
50	32	HOLDING	P 35	Fan control 0 = staged 1 = steady		0	1	0
51	33	HOLDING	P 36	Reserved		0	0	0
52	34	HOLDING	P 37	Fan control with buttons 1 + 4 (0 = No, 1 = Yes) 1 + 2 (= 2) 4 + 5 (= 3)		0	3	0
53	35	HOLDING	P 38	Fan control with buttons 2+5 (0=No, 1=Yes) 1+2 (=2) 4+5 (=3)		0	3	0

| Address | | Register Type | Name | Description | Unit | Min | Max | Default |
dez	hex							
54	36	HOLDING	P 39	Fan control with buttons 3 + 6 (0 = No, 1 = Yes)		0	1	0
55	37	HOLDING	P 40	Fan control: max. number of stages		0	5	3
56	38	HOLDING	P 41	Temperature control: number of temperature set point value steps (e.g. +/-5 * Par.23)		0	100	5
57	39	HOLDING	P 42	Switch-on value stage 1	K	0.1	100.0	1.0
58	3A	HOLDING	P 43	Switch-on value stage 2	K	0.1	100.0	2.0
59	3B	HOLDING	P 44	Switch-on value stage 3	K	0.1	100.0	3.0
60	3C	HOLDING	P 45	Switch-on value stage 4	K	0.1	100.0	4.0
61	3D	HOLDING	P 46	Switch-on value stage 5	K	0.1	100.0	5.0
62	3E	HOLDING	P 47	Switch-on / switch-off hysteresis of fan stages		0.5	2.0	0.5
63	3F	HOLDING	P 48	Parity and stop bits: 0 = 8,N,2 1 = 8,E,1 2 = 8,O,1 3 = 8,N,1		0	3	0
64	40	HOLDING	P 49	Blinds control #1 with buttons 1 + 4 (0 = No / 1 = Yes)		0	1	0
65	41	HOLDING	P 50	Blinds control #2 with buttons 2 + 5 (0 = No / 1 = Yes)		0	1	1
66	42	HOLDING	P 51	Blinds control #3 with buttons 3 + 6 (0 = No / 1 = Yes)		0	1	0
76	4C	HOLDING	P 61	Lighting control #1 with buttons 1 + 4 (0 = No / 1 = Yes)		0	1	0
77	4D	HOLDING	P 62	Lighting control #2 with buttons 2 + 5 (0 =No / 1 = Yes)		0	1	0
78	4E	HOLDING	P 63	Lighting control #3 with buttons 3 + 6 (0 =No / 1 = Yes)		0	1	1
79	4F	HOLDING	P 64	Reserved		0	0	0
80	50	HOLDING	P 65	Reserved		0	0	0
81	51	HOLDING	P 66	Reserved		0	0	0
82	52	HOLDING	P 67	Lighting control #1: 0 = switching 1 = dimming		0	1	0
83	53	HOLDING	P 68	Lighting control #1: 0 = switching 1 = dimming		0	1	0
84	54	HOLDING	P 69	Lighting control #1: 0 = switching 1 = dimming		0	1	0
103	67	HOLDING	P 88	Bus address		1	128	1
104	68	HOLDING	P 89	Bus speed 0 = 57k6 Baud 1 = 38k4 Baud 2 = 19k2 Baud 3 = 9k6 Baud		0	3	3
105	69	HOLDING	P 90	MIN display illumination	%	0	100	15
106	6A	HOLDING	P 91	MAX display illumination	%	0	100	100
107	6B	HOLDING	P 92	MIN button illumination	%	0	100	15
108	6C	HOLDING	P 93	MAX button illumination	%	0	100	100
109	6D	HOLDING	P 94	Button illumination time	s	30	255	30
110	6E	HOLDING	P 95	Acoustic button feedback		0	1	1

| Address | | Register | Name | Description | Unit | Min | Max | Default |
dez	hex	Type						
111	6F	HOLDING	P 96	Digital input #1 as window contact 0 = No 1 = Yes		0	1	1
112	70	HOLDING	P 97	Digital input #2 as dew point monitor 0 = No 1 = Yes		0	1	1
113	71	HOLDING	P 98	Automatic summer/winter time switchover 0 = No 1 = Yes		0	1	1
114	72	HOLDING	P 99	Timeshift of daylight savings time (DST)	min	0	255	60
115	73	HOLDING	P 100	Beginning of DST, month 1…12		1	12	3
116	74	HOLDING	P 101	Beginning of DST, week 1…6 of month, 0 = last		0	6	0
117	75	HOLDING	P 102	Beginning of DST, weekday 1…7, MO…SU		1	7	7
118	76	HOLDING	P 103	Beginning of DST, hour		0	23	2
119	77	HOLDING	P 104	Beginning of DST, minute		0	59	0
120	78	HOLDING	P 105	End of DST, month 1…12		0	12	10
121	79	HOLDING	P 106	End of DST, week 1…6 of month, 0 = last		0	6	0
122	7A	HOLDING	P 107	End of DST, weekday 1…7, MO…SU		1	7	7
123	7B	HOLDING	P 108	End of DST, hour		0	23	3
124	7C	HOLDING	P 109	End of DST, minute		0	59	0
144	90	INPUT		Room temperature				
145	91	INPUT		Feedback output #1				
146	92	INPUT		Feedback output #2				
147	93	INPUT		Set point correction				
148	94	INPUT		Operating status 1 = Comfort (Presence) 2 = Night reduction 3 = Absence 4 = Extended use time (Party)				
149	95	INPUT		Current status of operating elements: Bit 0: Digital input #1 Bit 1: Digital input #2 Bit 2: Proximity sensor Bit 3: Upper left button Bit 4: Centre left button Bit 5: Lower left button Bit 6: Upper right button Bit 7: Centre right button Bit 8: Lower right button Bit 9: Enter button				
150	96	INPUT		Status of operating elements since last reading (see field 5)				
151	97	INPUT		Current rotary encoder position 1…12 corresponding to the positions of an hour hand				
152	98	INPUT		Rotary encoder position since last reading				

| Address | | Register Type | Name | Description | Unit | Min | Max | Default |
dez	hex							
153	99	INPUT		Present status of blinds buttons: Bit 0: Upper right button (button 4) Bit 1: Centre right button (button 5) Bit 2: Lower right button (button 6) … Bit 8: Upper left button (button 1) Bit 9: Centre left button (button 2) Bit 10: Lower left button (button 3)				
154	9A	INPUT		Status of blinds buttons since last reading (see field 9)				
155	9B	INPUT		Blinds control #1 – UP Time				
156	9C	INPUT		Blinds control #1 – DOWN Time				
157	9D	INPUT		Blinds control #2 – UP Time				
158	9E	INPUT		Blinds control #2 – DOWN Time				
159	9F	INPUT		Blinds control #3 – UP Time				
160	A0	INPUT		Blinds control #3 – DOWN Time				
161	A1	INPUT		Present status of lighting buttons: Bit 0: Upper right button (button 4) Bit 1: Centre right button (button 5) Bit 2: Lower right button (button 6) … Bit 8: Upper left button (button 1) Bit 9: Centre left button (button 2) Bit 10: Lower left button (button 3)				
162	A2	INPUT		Status of lighting buttons since last reading				
163	A3	INPUT		Lighting control #1 – dimming+ time				
164	A4	INPUT		Lighting control #1 – dimming - time				
165	A5	INPUT		Lighting control #2 – dimming + time				
166	A6	INPUT		Lighting control #2 – dimming + time				
167	A7	INPUT		Lighting control #3 – dimming + time				
168	A8	INPUT		Lighting control #3 – dimming - time				
169	A9	INPUT		Temperature control status: 0 = heating / cooling OFF 1 = heating 2 = cooling				
170	AA	INPUT		Calculated set point temperature				
171	AB	INPUT		Temperature control 0 = External temperature control (AS) 1 = Internal temperature control				
172	AC	INPUT		Present fan stage (0…5) / fan value (0…100%) depending on configuration of ventilation as staged or steady (P35) Automatic operation = -1.0				

Address		Register	Name	Description	Unit	Min	Max	Default
dez	hex	Type						
THE FOLLOWING FIELDS ARE SET TO A VALUE OF "0" AFTER EXECUTION:								
192	C0	HOLDING		Operating status 1 = Comfort (Presence) 2 = Night-time reduction 3 = Absence 4 = Extended use time (Party)				
193	C1	HOLDING		Actuating signal Output #1				
194	C2	HOLDING		Actuating signal Output #2				
195	C3	HOLDING		Control data I (16 icons) 0 = **RYM**ASKON® **400** control 1 = AS control Bit 00 = Fan-icon Bit 01 = Fan Auto Bit 02 = Fan stage 1 Bit 03 = Fan stage 2 Bit 04 = Fan stage 3 Bit 05 = Fan stage 4 Bit 06 = Fan stage 5 Bit 07 = Small 7-segment display 　　　　SEGMENT SET (SET OFF) Bit 08 = Presence icon Bit 09 = Absence icon Bit 10 = Day icon Bit 11 = Night icon Bit 12 = ECO icon Bit 13 = AUTO Icon (Heating/Cooling) Bit 14 = Heating icon Bit 15 = Cooling icon				
196	C4	HOLDING		Control data II (16 icons) 0 = **RYM**ASKON® **400** control 1 = AS control Bit 00 = Party icon Bit 01 = Clock icon Bit 02 = CO2 icon Bit 03 = Dew point icon Bit 04 = Window icon Bit 05 = Key icon Bit 06 = Alarm icon Bit 07 = reserved Bit 08 = Decimal point 　　　(large 7-segment display) Bit 09 = "+" character 　　　(large 7-segment display) Bit 10 = Decimal point 　　　(small 7-segment display) Bit 11 = Colon 　　　(small 7-segment display) Bit 12 = reserved Bit 13 = reserved Bit 14 = AS control 　　　(small 7-segment display) Bit 15 = AS control 　　　(large 7-segment display)				

Address		Register	Name	Description	Unit	Min	Max	Default
dez	hex	Type						
THE FOLLOWING FIELDS ARE SET TO A VALUE OF "0" AFTER EXECUTION:								

197	C5	HOLDING		Control data III (16 icons)
				0 = **RYM**ASKON® **400** control
				1 = AS control
				
				Bit 00 = SET icon
				    (small 7-segment display)
				Bit 01 = OFF icon
				    (small 7-segment display)
				Bit 02 = ON icon
				    (small 7-segment display)
				Bit 03 = SET icon
				    (large 7-segment display)
				Bit 04 = PPM icon
				    (large 7-segment display)
				Bit 05 = % character
				    (large 7-segment display)
				Bit 06 = RH
				    (large 7-segment display)
				Bit 07 = °C
				    (large 7-segment display)
				
				Bit 08 = House icon
				Bit 09 = MO
				Bit 10 = TU
				Bit 11 = WE
				Bit 12 = TH
				Bit 13 = FR
				Bit 14 = SA
				Bit 15 = SU				

198	C6	HOLDING		Display data I (16 icons) 0 = icon OFF, 1 = icon ON Bit 00 = Fan icon Bit 01 = Fan Auto Bit 02 = Fan Stage 1 Bit 03 = Fan Stage 2 Bit 04 = Fan Stage 3 Bit 05 = Fan Stage 4 Bit 06 = Fan Stage 5 Bit 07 = Small 7-segment display SEGMENT SET (SET OFF) Bit 08 = Presence icon Bit 09 = Absence icon Bit 10 = Day icon Bit 11 = Night icon Bit 12 = ECO icon Bit 13 = AUTO icon (heating/cooling) Bit 14 = Heating icon Bit 15 = Cooling icon				

Address		Register	Name	Description	Unit	Min	Max	Default
dez	hex	Type						
THE FOLLOWING FIELDS ARE SET TO A VALUE OF "0" AFTER EXECUTION:								

199	C7	HOLDING		Display data II (16 icons)
				0 = icon OFF, 1 = icon ON
				
				Bit 00 = Party icon
				Bit 01 = Clock icon
				Bit 02 = CO2 icon
				Bit 03 = Dew point icon
				Bit 04 = Window icon
				Bit 05 = Key icon
				Bit 06 = Alarm icon
				Bit 07 = reserved
				
				Bit 08 = Decimal point
				    (large 7-segment display)
				Bit 09 = "+" character
				    (large 7-segment display)
				Bit 10 = Decimal point
				    (small 7-segment display)
				Bit 11 = Colon
				    (small 7-segment display)
				Bit 12 = reserved
				Bit 13 = reserved
				Bit 14 = reserved
				Bit 15 = reserved				

200	C8	HOLDING		Display data III (16 icons)
				0 = icon OFF, 1 = icon ON
				
				Bit 00 = SET icon
				    (small 7-segment display)
				Bit 01 = OFF icon
				    (small 7-segment display)
				Bit 02 = ON icon
				    (small 7-segment display)
				Bit 03 = SET icon
				    (large 7-segment display)
				Bit 04 = PPM icon
				    (large 7-segment display)
				Bit 05 = % character
				    (large 7-segment display)
				Bit 06 = RH
				    (large 7-segment display)
				Bit 07 = °C
				    (large 7-segment display)
				
				Bit 08 = House icon
				Bit 09 = MO
				Bit 10 = TU
				Bit 11 = WE
				Bit 12 = TH
				Bit 13 = FR
				Bit 14 = SA
				Bit 15 = SU				

Address		Register	Name	Description	Unit	Min	Max	Default
dez	**hex**	**Type**						
THE FOLLOWING FIELDS ARE SET TO A VALUE OF "0" AFTER EXECUTION:								
201	C9	HOLDING		Flashing control data I (16 icons) 0 = static, 1 = flashing Bit 00 = Fan icon Bit 01 = Fan Auto Bit 02 = Fan Stage 1 Bit 03 = Fan Stage 2 Bit 04 = Fan Stage 3 Bit 05 = Fan Stage 4 Bit 06 = Fan Stage 5 Bit 07 = Small 7-segment display SEGMENT SET (SET OFF) Bit 08 = Presence icon Bit 09 = Absence icon Bit 10 = Day icon Bit 11 = Night icon Bit 12 = ECO icon Bit 13 = AUTO icon (Heating/Cooling) Bit 14 = Heating icon Bit 15 = Cooling icon				

202	CA	HOLDING		Flashing control data II (16 icons)
				0 = static, 1 = flashing
				
				Bit 00 = Party icon
				Bit 01 = Clock icon
				Bit 02 = CO_2 icon
				Bit 03 = Dew point icon
				Bit 04 = Window icon
				Bit 05 = Key icon
				Bit 06 = Alarm icon
				Bit 07 = reserved
				
				Bit 08 = Decimal point
				    (large 7-segment display)
				Bit 09 = "+" Icon
				    (large 7-segment display)
				Bit 10 = Decimal point
				    (small 7-segment display)
				Bit 11 = Colon
				    (small 7-segment display)
				Bit 12 = reserved
				Bit 13 = reserved
				Bit 14 = AS control
				    (small 7-segment display)
				Bit 15 = AS control
				    (large 7-segment display)				

Address		Register	Name	Description	Unit	Min	Max	Default
dez	hex	Type						
THE FOLLOWING FIELDS ARE SET TO A VALUE OF "0" AFTER EXECUTION:								

203	CB	HOLDING		Flashing control data III (16 icons)
				0 = static, 1 = flashing
				
				Bit 00 = SET icon
				    (small 7-segment display)
				Bit 01 = OFF icon
				    (small 7-segment display)
				Bit 02 = ON icon
				    (small 7-segment display)
				Bit 03 = SET icon
				    (large 7-segment display)
				Bit 04 = PPM icon
				    (large 7-segment display)
				Bit 05 = % character
				    (large 7-segment display)
				Bit 06 = RH
				    (large 7-segment display)
				Bit 07 = °C
				    (large 7-segment display)
				
				Bit 08 = House icon
				Bit 09 = MO
				Bit 10 = TU
				Bit 11 = WE
				Bit 12 = TH
				Bit 13 = FR
				Bit 14 = SA
				Bit 15 = SU				

204	CC	HOLDING		Fixed text for small 7-segment display 1 = " " 2 = "----" 3 = "CODE" 4 = "ALRM" 5 = "ERR " 6 = "SCH "				
205	CD	HOLDING		Fixed text for large 7-segment display 1 = " " 2 = "----" 3 = "CODE" 4 = "ALRM" 5 = "ERR " 6 = "SCH "				
206	CE	HOLDING		Integer value for small 7-segment display Decimal point must be separately addressed				
207	CF	HOLDING		Integer value for large 7 segment display Decimal point must be separately addressed				
208	D0	HOLDING		Flashing control data small 7-segment display Bit-0 = 1 digit #1 (left) Bit-1 = 1 digit #2 (second) Bit-2 = 1 digit #3 (third) Bit-3 = 1 digit #4 (right)				

Address		Register	Name	Description	Unit	Min	Max	Default
dez	hex	Type						
THE FOLLOWING FIELDS ARE SET TO A VALUE OF "0" AFTER EXECUTION:								
209	D1	HOLDING		Flashing control data large 7 segment display Bit 0 = 1 digit #1 (left) Bit 1 = 1 digit #2 (second) Bit 2 = 1 digit #3 (third) Bit 3 = 1 digit #4 (right)				
210	D2	HOLDING		Button unlock / button lock Bit 0 = 1 -> Lock upper left button Bit 1 = 1 -> Lock centre left button Bit 2 = 1 -> Lock lower left button Bit 3 = 1 -> Lock upper right button Bit 4 = 1 -> Lock centre right button Bit 5 = 1 -> Lock lower right button Bit 6 = 1 -> Lock enter button Bit 7 = 1 -> Lock rotary encoder				
211	D3	HOLDING		Two-point control Switch-on threshold Output 0, 0…100%				
212	D4	HOLDING		Two-point control Switch-off threshold Output 0, 0…100%				
213	D5	HOLDING		Two-point control Switch-on threshold Output 1, 0…100%				
214	D6	HOLDING		Two-point control Switch-off threshold Output 1, 0…100%				
215	D7	HOLDING		Comfort set temperature (will not be saved)				
216	D8	HOLDING		Absence setpoint (will not be saved)				
217	D9	HOLDING		Night time reduction set point (will not be saved)				
218	DA	HOLDING		Frost protection temperature (will not be saved) Min. temperature for forced heating				
219	DB	HOLDING		Overheating protection temperature (will not be saved) Cooling starts if this temperature is exceeded (independent of operating mode)				
220	DC	HOLDING		Setpoint correction (will not be saved)				
221	DD	HOLDING		Set time and date, hour (0-23)				
222	DE	HOLDING		Set time and date, minute (0-59)				
223	DF	HOLDING		Set time and date, second (0-59)				
224	E0	HOLDING		Set time and date, day (1-31)				
225	E1	HOLDING		Set time and date, month (1-12)				
226	E2	HOLDING		Set time and date, year (0-99)				
227	E3	HOLDING		Entered time and date Set values 1 = set X = no function				
228	E4	HOLDING		Fan control Fan stage (0…5) Fan value (0…100%) Depends on the configuration of ventilation as staged or steady (P 35)				

Address		Register	Name	Description	Unit	Min	Max	Default
dez	hex	Type						
THE FOLLOWING FIELDS ARE SET TO A VALUE OF "0" AFTER EXECUTION:								
229	E5	HOLDING		Room temperature correction 10.0…+10.0 (use for internal test purposes only!)				
230	E6	HOLDING		Setpoint correction factor (see parameter 23) 0.0…10.0 K				

13 History

Rev.	Content	Date	Editor
00	Release	24.03.2017	TG
01	Button „Dimming of Lights"	11.07.2017	TG