

Register tables

RYMASKON[®] 500-Modbus

Room control unit with colour touch screen,
with BACnet or Modbus connection

Thermostat for controlling and regulating
temperature, light, air conditioning and blind (1 zone)



Modbus Registers

The **RYMASKON 500 Thermostat** supports the Modbus registers and function codes listed below. The following are factory defaults:

Baud rate:	9,600	(register 301)
Data bits:	8	
Parity:	none	(register 302)
Stop bits:	1	(register 303)
Modbus slave address:	1	(register 300)

The parity of the unit can be switched between Odd, None and Even. The settable baud rates are 9600, 19200, 38300, 57600, 76800 and 115200 bit/s. The table shows the register offsets starting at 0 (0 Base). For example, the temperature recorded with the internal sensor is read from Modbus register 100 with function code 04. Some Modbus masters need their register value increased by 1 (e.g., 1 Base). In this case, enter function code 04 and register 101.

FUNCTION CODE 01 – READ COILS

FUNCTION CODE 05 – WRITE SINGLE COIL

FUNCTION CODE 15 – WRITE MULTIPLE COILS

Register	Parameter description	Data Type	Raw Data	Range
100	OFF mode override		0 to 1	OFF–ON
101	ECO mode override		0 to 1	OFF–ON
102	Changeover function (switching between heating/cooling)		0 to 1	0 = Heating 1 = Cooling

FUNCTION CODE 02 – READ DISCRETE INPUTS (Add 10,000 for Modicon Addressing)

Register	Parameter description	Data Type	Raw Data	Range
100	Digital input status (DI1)		0 to 1	OFF–ON
101	Relay output status		0 to 1	OFF–ON
102	Holiday status		0 to 1	OFF–ON
103	Light status		0 to 1	OFF–ON
104	Air conditioning status		0 to 1	OFF–ON
105	Cleaning status		0 to 1	OFF–ON
106	Display locking status		0 to 1	OFF–ON
107	Boost status		0 to 1	OFF–ON
108	ECO status		0 to 1	OFF–ON
109	Frost protection status		0 to 1	OFF–ON
111	Digital input 2 status (RI1 in DI mode)		0 to 1	OFF–ON
112	Digital input 3 status (RI2 in DI mode)		0 to 1	OFF–ON

FUNCTION CODE 04 – READ INPUT REGISTERS (Add 30,000 for Modicon Addressing)

Register	Parameter description	Data Type	Raw Data	Range
100	Temperature recording via integrated sensor	Signed 16 bit	-400 to 3020	-40.0 to 150.0 °C (-40.0 to 302.0°F)
101	RI1 (NTC10K) Temperature recording via external NTC10K sensor on RI1 input	Signed 16 bit	-400 to 3020	-40.0 to 150.0 °C (-40.0 to 302.0°F)
102	RI2 (NTC10K) Temperature recording via external NTC10K sensor on RI2 input	Signed 16 bit	-400 to 3020	-40.0 to 150.0 °C (-40.0 to 302.0°F)
103	Currently calculated target temperature (temperature main control circuit)	Signed 16 bit	-400 to 3020	-40.0 to 150.0 °C (-40.0 to 302.0°F)
104	Current operating status of the unit	Unsigned 16 bit	0 to 3	0 = Comfort (standard mode) 1 = ECO 2 = OFF/frost protection 3 = Boost
105	Recording of relative humidity (with devices with RH option)	Unsigned 16 bit	0 to 1000	0 to 100.0 % RH
106	Alarm status	Unsigned 16 bit	0 to 256	Bit 0 - Internal NTC (1) Bit 1 - RI1 (2) Bit 2 - RI2 (4) Bit 3 - Humidity Sensor (8) Bit 4 - DI1 (16) Bit 5 - DI2 (N/A) Bit 6 - Time Lost (64)
111	User target temperature for comfort mode / standard mode (Nominal target temperature + user adjustment)	Signed 16 bit	-400 to 3020	-40.0 to 150.0 °C (-40.0 to 302.0°F)
112	Actual temperature main control circuit	Signed 16 bit	-400 to 3020	-40.0 to 150.0 °C (-40.0 to 302.0°F)
113	Actual temperature auxiliary control circuit / floor heating (If register 107/108 is configured to 2)	Signed 16 bit	-400 to 3020	-40.0 to 150.0 °C (-40.0 to 302.0°F)
114	Outside temperature (If register 107/108 is configured to 3)	Signed 16 bit	-400 to 3020	-40.0 to 150.0 °C (-40.0 to 302.0°F)
200	Firmware version	Unsigned 16 bit	N/A	N/A

FUNCTION CODE 03 – READ HOLDING REGISTERS (For Modicon Addressing Add 40,000)**FUNCTION CODE 06 – WRITE SINGLE HOLDING REGISTER****FUNCTION CODE 16 – WRITE MULTIPLE HOLDING REGISTERS**

Register	Parameter description	Data Type	Raw Data	Range
100	Nominal target temperature	Unsigned 16 bit	0 to 950	0.0 to 95.0 °C/°F (default 21 °C)
101	ECO heating target temperature	Unsigned 16 bit	0 to 950	0.0 to 95.0 °C/°F (default 19 °C)
102	ECO cooling target temperature	Unsigned 16 bit	0 to 950	0.0 to 95.0 °C/°F (default 24 °C)
103	Frost protection target temperature (OFF mode)	Unsigned 16 bit	0 to 950	0.0 to 95.0 °C/°F (default 8 °C)
104	Setpoint min (temperature main control circuit)	Unsigned 16 bit	0 to 950	0.0 to 95.0 °C/°F (default 14 °C)
105	Setpoint max (temperature main control circuit)	Unsigned 16 bit	0 to 950	0.0 to 95.0 °C/°F (default 30 °C)
106	Hysteresis (temperature main control circuit)	Unsigned 16 bit	0 to 200	0.0 to 20.0 °C/°F (default 1.0 °C)

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Register	Parameter description	Data Type	Raw Data	Range
107	<p>RI1 Mode Operating mode of the input RI1 for temperature measurement/control with an external NTC10k sensor or as a digital input (DI mode)</p> <p>Cf. section Modes for inputs RI1 and RI2</p> <p>Status monitoring via the bus active for all operating modes.</p>	Unsigned 16 bit	0 to 10	<p>0 = Deactivated (default)</p> <p>1 = Main control circuit (control), room, zone 1, NTC10k</p> <p>2 = Auxiliary control circuit (min-max), floor, zone 2, NTC10k</p> <p>3 = Outside temperature, simple display, zone 3, NTC10k</p> <p>4 = Bus, NTC10k</p> <p>5 = N/A</p> <p>6 = Close for ECO, DI mode</p>
108	<p>RI2 Mode Operating mode of the input RI2 for temperature measurement/control with an external NTC10k sensor or as a digital input (DI mode)</p> <p>Cf. section Modes for inputs RI1 and RI2</p> <p>Status monitoring via the bus active for all operating modes.</p>	Unsigned 16 bit	0 to 10	<p>7 = Open for ECO, DI mode</p> <p>8 = Close for OFF, DI mode</p> <p>9 = Open OFF, DI mode</p> <p>10 = DI bus</p>
109	<p>Control operating modes Heating and/or cooling control of the temperature main control circuit (cf. section main control circuit)</p> <p>NOTE: The changeover function is activated with value 2. Switchover between heating and cooling mode occurs via the digital input or via the bus.</p>	Unsigned 16 bit	0 to 2	<p>0 = Heating control (default)</p> <p>1 = Cooling control</p> <p>2 = Changeover (heating/cooling)</p>
110	Lower limit auxiliary control circuit (Cf. section Auxiliary control circuit)	Unsigned 16 bit	0 to 950	0.0 to 95.0 °C/°F (default 18.0°C)
111	Upper limit auxiliary control circuit (Cf. section Auxiliary control circuit)	Unsigned 16 bit	0 to 1220	0.0 to 122.0°C/°F (default 30.0°C)
112	Hysteresis auxiliary control circuit (Cf. section Auxiliary control circuit)	Unsigned 16 bit	0 to 100	0.0 to 10.0 (default 1.0)
113	Digital Input Mode (DI Mode)	Unsigned 16 bit	0 to 7	<p>0 = Disabled</p> <p>1 = Close for ECO (Default)</p> <p>2 = Open for ECO</p> <p>3 = Close for OFF/frost protection</p> <p>4 = Open for OFF/frost protection</p> <p>5 = Changeover (heating/cooling mode)</p> <p>6 = Alarm</p> <p>7 = Bus</p>
114	Digital input delay	Unsigned 16 bit	0 to 7200	0 to 7200 s (default 0 s)
115	<p>Light or blind enabling</p> <p>NOTE: If blind is enabled, pay attention to registers 410 and 411.</p>	Unsigned 16 bit	0 to 2	<p>0 = Disabled (default)</p> <p>1 = Lights</p> <p>2 = Blind</p>
116	Air conditioning icon enabling	Unsigned 16 bit	0 to 1	<p>0 = Disabled (default)</p> <p>1 = Released</p>
118	Lock mode (see Section "Lock Mode")	Unsigned 16 bit	0 to 3	<p>0 = Disabled (default)</p> <p>1 = ON/OFF Only</p> <p>2 = Adjust Only</p> <p>3 = No Input</p>

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Register	Parameter description	Data Type	Raw Data	Range
119	Unit change via home screen (°C/°F) Enables the icon on the main screen for toggling between °C and °F	Unsigned 16 bit	0 to 1	0 = Disabled (default) 1 = Released
120	Calibration of integrated temperature sensor (Internal Sensor Cal.)	Signed 16 bit	-100 to +100	-10.0 to +10.0 °C/°F
121	Calibration RI1 (NTC10K)	Signed 16 bit	-100 to +100	-10.0 to +10.0 °C/°F
122	Calibration RI2 (NTC10K)	Signed 16 bit	-100 to +100	-10.0 to +10.0 °C/°F
123	Calibration of integrated humidity sensor (Units with RH option)	Signed 16 bit	-100 to +100	-10.0 to +10.0 % RH
124	RH display (for units with RH option)	Unsigned 16 bit	0 to 1	0 = Disabled 1 = Released (default)
125	Cleaning mode (runtime) OFF mode is activated during this time. NOTE: The cleaning mode can be deactivated at any time by tapping on the switching icon.	Unsigned 16 bit	0 to 480	0 to 480 min (Default 0 = deactivated)
126	Boost mode (runtime) The relay is switched on for the set time when you tap the switching icon.	Unsigned 16 bit	0 to 480	0 to 480 min (Default 0 = deactivated)
127	Display lighting in standby	Unsigned 16 bit	1 to 20	0 to 20 (default 5)
128	Relay operating mode for the temperature control	Unsigned 16 bit	0 to 1	0 = NO (normally open, default) 1 = NC (normally closed)
129	PIN for display lock (Lock Mode) (0000 requires no PIN)	Unsigned 16 bit	0 to 9999	0000 to 9999 (default 0000)
130	PIN for setting mode (0000 requires no PIN)	Unsigned 16 bit	0 to 9999	0000 to 9999 (default 6666)
131	Air conditioning system override NOTE: Register for status change via the bus. Set parameter to 0 for control enable by the user	Unsigned 16 bit	0 to 2	0 = No override (default) 1 = Air conditioning ON 2 = Air conditioning OFF
132	Light override NOTE: Register for status change via the bus. Set parameter to 0 for control enable by the user	Unsigned 16 bit	0 to 2	0 = No override (default) 1 = Light ON 2 = Light OFF
133	Display lock override NOTE: Register for status change via the bus. Set parameter to 0 for control enable by the user.	Unsigned 16 bit	0 to 2	0 = No override (default) 1 = Display locked 2 = Display unlocked
134	Holiday icon enabling Enables the holiday icon on the secondary screen	Unsigned 16 bit	0 to 1	0 = Disabled 1 = Released (default)
135	Holiday mode Activate Holiday mode to switch the unit to OFF or ECO mode. The duration of Holiday mode must be specified during activation via the screen (1–31 days).	Unsigned 16 bit	0 to 1	0 = OFF (default) 1 = ECO
136	Override relay (Direct priority switching via the bus for relay actuation)	Unsigned 16 bit	0 to 2	0 = No override (default) 1 = Override relay On 2 = Override relay Off
137	PIN for secondary screen (0000 requires no PIN)	Unsigned 16 bit	0 to 9999	0000 to 9999 (default 0000)

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Register	Parameter description	Data Type	Raw Data	Range
138	User interface language	Unsigned 16 bit	0 to 4	0 = DE (default) 1 = EN 2 = FR 3 = ES 4 = IT
139	Zone 1Text (main control circuit) Name of the room sensor for the main control circuit. NOTE: By default, the internal sensor of the unit is assigned to the main control circuit. Alternatively, RI1/2 can be assigned (register 107, 108). If set to disabled, the temperature value continues to be shown, only the name is hidden. Default 1 = Room	Unsigned 16 bit	1 to 15	0 = Disabled 1 = Room 2 = Floor 3 = Outside 4 = Zone 1 5 = Zone 2 6 = Zone 3 7 = Bathroom 8 = Sauna 9 = Bedroom 10 = Kitchen 11 = Cooler 12 = Flow 13 = Hot Water 14 = Boiler 15 = Pool
140	Zone 2 text (auxiliary control circuit / floor heating) If an external NTC10K sensor is connected to one of the inputs RI1/2 and the RI1/2 mode is configured to min-max (register 107, 108), the name of the sensor can be input here (auxiliary control circuit). NOTE: If set to disabled, no temperature value and no name is displayed. Default 2 = Floor	Unsigned 16 bit	0 to 15	
141	Zone 3 text (outside temperature) If an external NTC10K sensor is connected to one of the inputs RI1/2 and the RI1/2 mode is configured to outside temperature (register 107, 108), the name of the sensor can be input here. Alternatively, the outside temperature can also be made available to the unit via the bus. To do this, the parameter "Outside temperature source" must be configured to bus (register 142), and the value must be written in register 143. NOTE: If set to disabled, no temperature value and no name is displayed. Default 3 = Outside	Unsigned 16 bit	0 to 15	
142	Outside temperature source NOTE: "Internal sensor" refers to the 2 physical inputs RI1 and RI2. If set to bus, the modes RI1 and RI2 must not be configured to outside. The name of the outside temperature is input via the parameter Zone 3 Text	Unsigned 16 bit	0 to 1	0 = Internal sensor (default) 1 = Bus
143	Outside air temperature Bus value	Signed 16 bit	-580 to 1220	-58.0 to 122.0 °C/°F

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Register	Parameter description	Data Type	Raw Data	Range
162	Setpoint reset Reset of the target temperature to the nominal setpoint upon switchover from OFF to standard mode	Unsigned 16 bit	0 to 1	0 = Released (default) 1 = Disabled
163	Enable OFF icon for the main screen	Unsigned 16 bit	0 to 1	0 = Disabled 1 = Released (default)
164	Override thermostat operation	Unsigned 16 bit	0 to 3	0 = Comfort (standard mode) 1 = ECO 2 = Frost protection 3 = Boost (only read)
300	Modbus address	Unsigned 16 bit	0 to 247	0 to 247 (default 1)
301	Modbus baud rate	Unsigned 16 bit	0 to 4	0 = 9600 (default) 1 = 19200 2 = 38400 3 = 57600 4 = 76800
302	Modbus parity	Unsigned 16 bit	0 to 2	0 = None (default) 1 = Odd 2 = Even
303	Stop bits	Unsigned 16 bit	0 to 1	0 = 1 Stop Bit (default) 1 = 2 Stop Bits
304	Display refresh rate	Unsigned 16 bit	0 to 2	0 = Fast 1 = Medium (default) 2 = Slow
308	Language change via home screen Display of switching icon (code) for selecting the operating language on the main screen	Unsigned 16 bit	0 to 1	0 = Disabled (default) 1 = Released
400	Reset	Unsigned 16 bit	0 to 1	0 = Standard 1 = Enforce Reset
401	Save in non-volatile memory	Unsigned 16 bit	0 to 1	0 = Standard 1 = Update
403	Enforce factory defaults	Unsigned 16 bit	0 to 1	0 = Standard 1 = Enforce Defaults
410	Blind mode (cf. section "blind control") Sets the increments for the blind when actuating the arrow keys on the screen. (1) On/Off: 0, 100% (2) 4 steps: 0, 25, 50, 75, 100% (3) 10 steps: 0, 10, 20, ..., 100% (4) infinite: 0, 1, 2, 3, ..., 100% Parameter 4 enables an automatic function automatically modifying the value if the key is pressed for a long time. NOTE: Pay attention to register 115.	Unsigned 16 bit	1 to 4	1 = 2 Positions (on/off) 2 = 5 Positions (25% increments) 3 = 11 Positions (10% increments) 4 = Smoothly (1% increments)

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Register	Parameter description	Data Type	Raw Data	Range
411	Blind configuration (cf. section "blind control") Releases the graphical display of the movement type of the blind and the relevant variables for manual control. (0) Level: translatory movement, UP/DOWN (1) Tilt: rotary movement, rotation (2) Level + tilt NOTE: Pay attention to register 115.	Unsigned 16 bit	0 to 2	0 = Level (up/down) 1 = Tilt (rotation) 2 = Level + Tilt
412	Blind level value	Unsigned 16 bit	0 to 1000	0 to 100 %
413	Blind tilt value	Unsigned 16 bit	0 to 1000	0 to 100 %



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