Technical Data Sheet

CRW9-T-VAV01

VAV Modbus (RTU) Room Controller

Description

The VAV room controller (CRW9-T-VAV01) is tailored for individual room temperature control in commercial, industrial and residential buildings

The VAV room controller comes with Modbus RTU communication to the Building Automation System and a proprietary communication interface to the Gruner VAV Compact Controller

The VAV room controller supports cooling or heating mode

The power supply is AC/DC 24 V

Order Code	Application	BMS Communication	Room Unit to VAV Compact Controller	Input
CRW9-T-VAV01	Cooling & Heating	Modbus RTU	1x 0(2)–10 V	N/A

Features

- Elegant, extra slim design
- Modbus RTU communication to Building Management System
- Communication status indication
- Analogue control output to Gruner VAV Compact Controller
- Room temperature measurement/control
- Temperature setpoint setting
- Temperature controller
- Comfort/economy selection
- Cooling or heating mode
- Configurable user parameters
- Large display
- White backlit LCD
- Protection IP20
- EU box mounting

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Application

The CRW9-T-VAV01 series VAV room controller is used in individual rooms or zones in buildings. It is tailored for the Gruner Compact VAV Damper Actuator. The room temperature control depends on the room temperature and the selected setpoint.
The control signal to the Gruner VAV Compact Controller is 0(2)–10 V.
Depending on the room temperature control signal, the VAV Compact Controller will control the air volume based on the minimum/maximum settings. The controller communicates via Modbus RTU (RS-485) with any standard DDC system.

Notes of Usage

Please read this data sheet carefully. CRW9-T-VAV01 room controller is designed and manufactured in accordance with the latest technological developments and safety standards. To avoid injury and property damage, safety warnings must be observed.

Caution

Authorized service personnel must perform assembly, maintenance, and repair.
The device's power supply is AC/DC 24 V. Disconnect the device from the power supply before removing the front plate.

Technical Data

Power supply	AC/DC 24 V 50/60 Hz
Communication to BMS	Modbus RTU (RS-485)
Setpoint to VAV Compact	0(2)–10 V
Power consumption	Max 1 W
Electrical connection	Terminal connection
IP rating	IP20 according to IEC60529
Product safety	Safety class III
Product standard	2014/30/EU Electromagnetic Compatibility (EMC)
CE marking	Automatic electrical controls for household and similar use
Measuring range	0 °C to 50 °C
Typical accuracy	±0.5 °C
Resolution	0.1 °C
Comfort temperature setting	0 °C to 50 °C
Economic temperature	Fixed: Cooling mode 28 °C / Cooling mode 16 °C
Dimension	86 × 86 × 24 mm
RoHS compliance, in accordance with	Directive 2011/65/EU, as amended by (EU) 2015/863
REACH regulation	Regulation (EC) No. 1907/2006
Operating climatic conditions	IEC 60 721-3-3
Operating mechanical conditions	IEC 60 721-3-2, class 2M2
Transport to climatic conditions	IEC 60 721-3-2
Transport mechanical conditions	IEC 60 721-3-2, class 2M2
Storage climatic conditions	IEC 60 721-3-1
Storage mechanical conditions	IEC 60 721-3-1, class 2M2

Ordering Information

Product Code	Description	Power Supply	Room Unit to VAV Compact
CRW9-T-VAV01	VAV Modbus RTU Room Controller	AC/DC 24 V	0(2)–10 V

Mounting Location

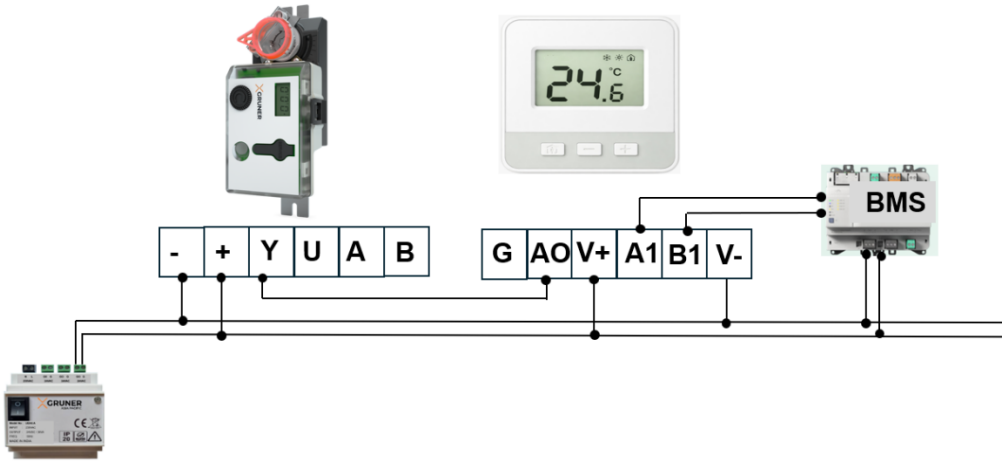
The controller is for indoor use only

Mounting Instructions

Please follow the instructions below:

Step 1: Take the controller out of the package
Step 2: Read the data sheet inside the package
Step 3: Separate the front plate and the back plate, using a screwdriver
Step 4: Fix the back plate onto the electric box with two screws
Step 5: Connect the wires properly according to the wiring diagram below
Step 6: Attach the front plate to the back plate, making sure the pin connectors on each side are properly aligned
Step 7: Compare the installation with the reference images
Step 8: Apply power to the controller

Connection Diagram



Display and Operation

The display shows

- Actual room temperature
- Actual comfort/economy mode
- Actual heating/cooling mode
- Commissioning mode

Operation

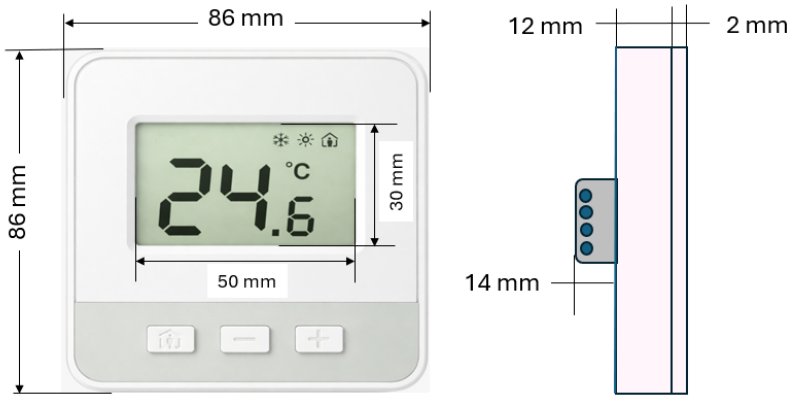
To change between comfort/economy mode, press the home button

To change the control setpoint, press the following buttons:

The **SET** icon will appear, and you can change the setpoint accordingly

The display will return to the original screen after 10 seconds without any changes

Dimensions (mm)



Modbus Address Review

View the actual Modbus address of the controller

Press the  button for <2 seconds ⇒  screen will appear

Press the  button again ⇒  actual Modbus address (001) will appear

After 10 seconds, the display will return to the original screen

Modbus Parameters

	Register	Register_Name	Register_Description_1	Register_Description_2	Attributes	Range	Default
Modbus Function 04	0	MODBUS_SOFTWAREVERSION	Software version	Actual version	R	N/A	N/A
	1	MODBUS_HARDWAREVERSION	Hardware version	Actual version	R	N/A	N/A
	17	MODBUS_ADDRESS	Modbus address	Default 120, selectable 1–254	R/W	1–254	120
Modbus Function 03	0	MODBUS_TEMPERATURE_VALUE	Temperature actual value (Reading x 0.1 °C)	Temperature value including calibration value	R	N/A	N/A
	1	MODBUS_TEMPERATURE_SETTING	Actual Setpoint (Reading x 0.1 °C)	Temperature measured in the room	R/W	10 °C to +35 °C	22 °C
	2	MODBUS_OPERATIONALMODE_SETTING	Selection of heating or cooling mode	0 = Cooling; 1 = Heating	R/W	0–1	0
	3	MODBUS_TEMPERATURE_CALIBRATION	Temperature sensor calibration (Reading x 0.1 °C)	Temperature sensor calibration 10 °C	R/W	0 °C to +10 °C	0 °C
	4	MODBUS_ZEROENERGY_BAND	Zero energy band between heating and cooling setpoints	Minimum temperature value between heating and cooling setpoints	R/W	0 °C to +5 °C	4 °C
	5	MODBUS_COMFORTECONOMY_MODE	Setting of comfort or economy mode	0 = Economy; 1 = Comfort	R/W	0–1	1
	9	MODBUS_BAUD_MANUAL	Baud rate	0 = 4.800; 1 = 9.600; 2 = 19.200; 3 = 38.400; 4 = 57.600	R/W	0–4	2
	11	MODBUS_ADDRESS	Modbus address	Default 120, selectable 1–247	R/W	1–247	120
	14	MODBUS_OUTPUT_RANGE	Output range	0 = 0–10 V, 1 = 2–10 V	R/W	0–1	1
	15	MODBUS_OUTPUTMINIMUM_VALUE	Minimim output value	0–10 V (10 = 1 V)	R/W	0–10	0
	16	MODBUS_OUTPUTMAXIMUM_VALUE	Maximum output value	1–10 V (10 = 1 V)	R/W	0–100	100
	17	MODBUS_ADDRESS	Modbus address	Selectable 1–254	R/W	1–254	120
	18	MODBUS_DATA_BIT	Modbus data bits	0 = 8 bit; 1 = 9 bit	R/W	0–1	0
	19	MODBUS_STOP_BITS	Modbus stop bits	0 = 1 bit; 1 = 2 bit	R/W	0–1	0
	20	MODBUS_PARITY_BITS	Parity bits	0 = none; 1 = even; 2 = odd	R/W	0–2	1
Modbus Function 06	20	MODBUS_P_BAND	P-band value (Reading x 0.1 °C)	0–100	R/W	0 °C to + 10 °C	2
	21	MODBUS_INTEGRATION_TIME	Integration time (Reading x 0.1 min)	0–100	R/W	0–100 minutes	2
	22	MODBUS_DERIVATION_VALUE	Deviation value (reading x 0.1)	0–100	R/W	0–100	0