

RDCV

Residential analogue/digital controller



The RDCV series are residential HVAC controllers used to control EC-fans, actuators, lighting or other applications with an analog (0–10 VDC / 0–20 mA / PWM) signal. They feature a wide supply voltage range 110–230 VAC / 50–60 Hz and a variable control output signal between an adjustable minimum and maximum level. The controller can work in 2 modes. In Automatic mode it is a demand-based controller with adjustable setpoint that can be connected to a broad range of Sentera sensors. In Manual mode, the RDCV works as a full-featured potentiometer. The settings are easily adjustable either via a 3-button interface equipped with a 7-Segment LED display, via our 3SModbus software application or via the Sensistant configurator.

Key features

- User-friendly menu using a 3-digit, 7-segment display with 3-button keyboard interface
- Extended menu via 3SModbus software application or Sensistant configurator
- Selectable output: analog / digital (PWM)
- Adjustable minimum and maximum output values
- Suitable for inset or surface mounting
- 2 operating modes: Manual or Automatic (in combination with a sensor)
- Adjustable setpoint for temperature, Relative humidity, CO₂, Air quality, differential pressure
- Setpoint for PI control or direct control with fixed hysteresis
- Display can be toggled between measured value and output value
- User can manually override the output value for a fixed time
- Compatible with all Sentera sensors with Modbus RTU communication
- Stepless output or output in 2–10 steps
- Adjustable start output value or start output step
- Display can be toggled between output value and step
- Modbus RTU (RS485) communication for integration with BMS

Automatic mode features
Manual mode features

Area of use

- Manual control for HVAC applications
- Demand based control for HVAC applications
- For indoor use only

Technical Specifications

Inrush current	Max. 15 A (100 VAC) Max. 25 A (240 VAC)	
No-load (stand-by) power	110 VAC / 60 Hz < 1,1 W 230 VAC / 50 Hz < 1,2 W	
Load resistance	0–10 VDC mode ≥ 10 kΩ 0–20 mA mode ≤ 500 Ω PWM mode ≥ 10 kΩ	
Output	0–10 VDC	Min: 0–8 VDC Max: 4–10 VDC
	0–20 mA	Min: 0–16 mA Max: 8–20 mA
	0–100 % PWM	Min: 0–80 % PWM Max: 20–100 % PWM
Selectable PWM output	Open collector Internally supplied (12 VDC)	
Protection standard	IP44 / IP54 (according to EN 60529)	
Ambient conditions	Temperature	-10–40 °C
	Rel. humidity	5–80 % rH (non-condensing)

Modbus registers



The Sensistant Modbus configurator allows you to easily monitor and/or configure Modbus parameters.

The parameters of the unit can be monitored / configured through the 3SModbus software platform. You can download it from the following link:

<https://www.sentera.eu/en/3SMCenter>



For more information about the Modbus registers, please refer to the product Modbus Register Map.



Article codes

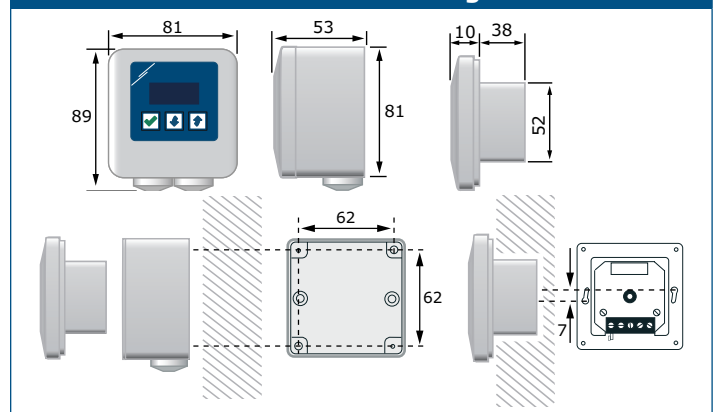
Article code	Supply voltage, Us	Enclosure
RDCV9-AD-WH	110–230 VAC ±10 % / 50–60 Hz	White
RDCV9-AD-BK		Black (anthracite)

Standards

- Low Voltage Directive 2014/35/EC
- EMC Directive 2014/30/EC: EN 61000-6-2: 2005/AC:2005, EN 61000-6-3:2007/A1:2011/AC:2012, EN 61326-2-3:2013
- RoHS Directive 2011/65/EC



Fixing and dimensions



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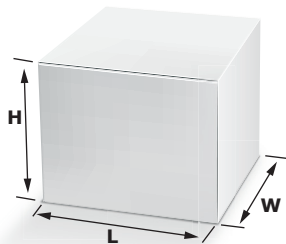
Wiring and connections



L	Line, power supply (110–230 VAC ±10 % / 50–60 Hz)
N	Neutral, power supply (110–230 VAC ±10 % / 50–60 Hz)
Ao	Analog / digital output (0–10 VDC / 0–20 mA / PWM)
GND	Ground
A	Modbus RTU (RS485), signal A
/B	Modbus RTU (RS485), signal /B
Connections	Cable cross section: max. 2,5 mm ²

Caution: If an AC power supply is used with any of the units in a Modbus network, the GND terminal should NOT BE CONNECTED to other units on the network or via the CNVT-USB-RS485 converter. This may cause permanent damage to the communication semiconductors and / or the computer!

Packaging

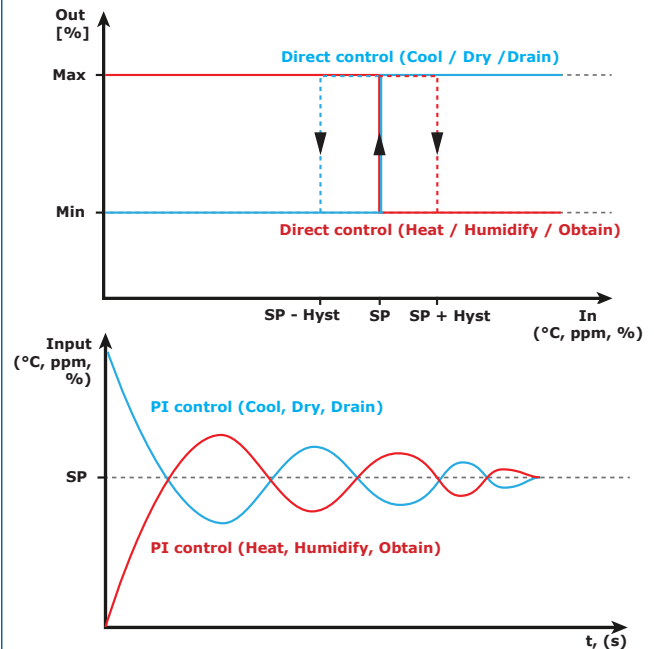


Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
RDCV9-AD-WH RDCV9-AD-BK	Unit (1 pc.)	85	95	70	0,17 kg	0,88 kg
	Carton (10 pcs.)	485	175	77	1,68 kg	2,03 kg
	Box (60 pcs.)	580	370	270	10,08 kg	13,17 kg

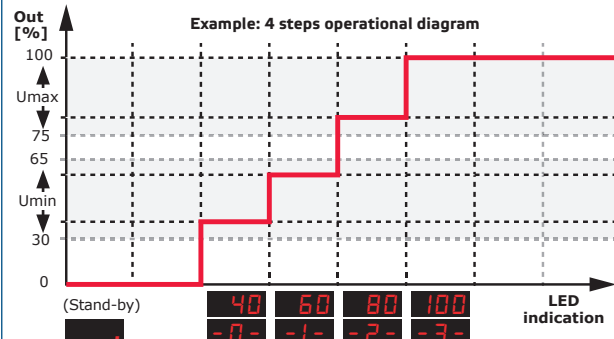
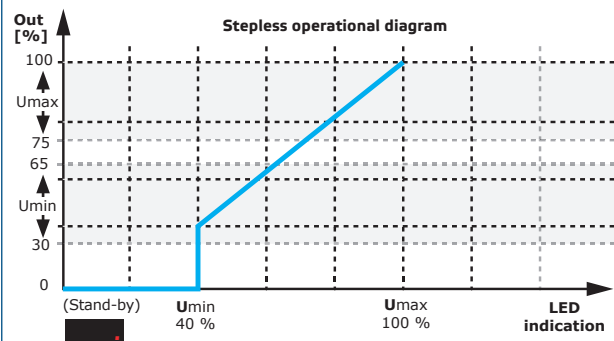
Global trade item numbers (GTIN)

Packaging	RDCV9-AD-WH	RDCV9-AD-BK
Unit	05401003011195	05401003011188
Carton	05401003301685	05401003301678
Box	05401003502501	05401003502495

Operational diagrams



* PI control can require adjustment of parameters, depending on the local circumstances.



* In the examples Umin is set to 40% and Umax to 100%

Legend	
DP	Decimal point - OFF / Stand-by
0–100	Output value in percentage of Us
Min	Minimum output value (0–80 % of the output range)
Max	Maximum output value (20–100 % of the output range), Max. ≥ Min. + 20 %
Out	Output value

Automatic mode

Manual mode



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Application examples

Automatic mode

RST
Room sensor



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Residential Digital Controller



AC fan (voltage controllable motor)



Modbus RTU

0–10 VDC /
0–20 mA / PWM

Manual mode

RDCV
Residential Digital Controller



AC fan (voltage controllable motor)



0–10 VDC /
0–20 mA / PWM