RSA-DCTA / RSA-DCTD Carbon Dioxide (CO_2) / Temperature Transmitter
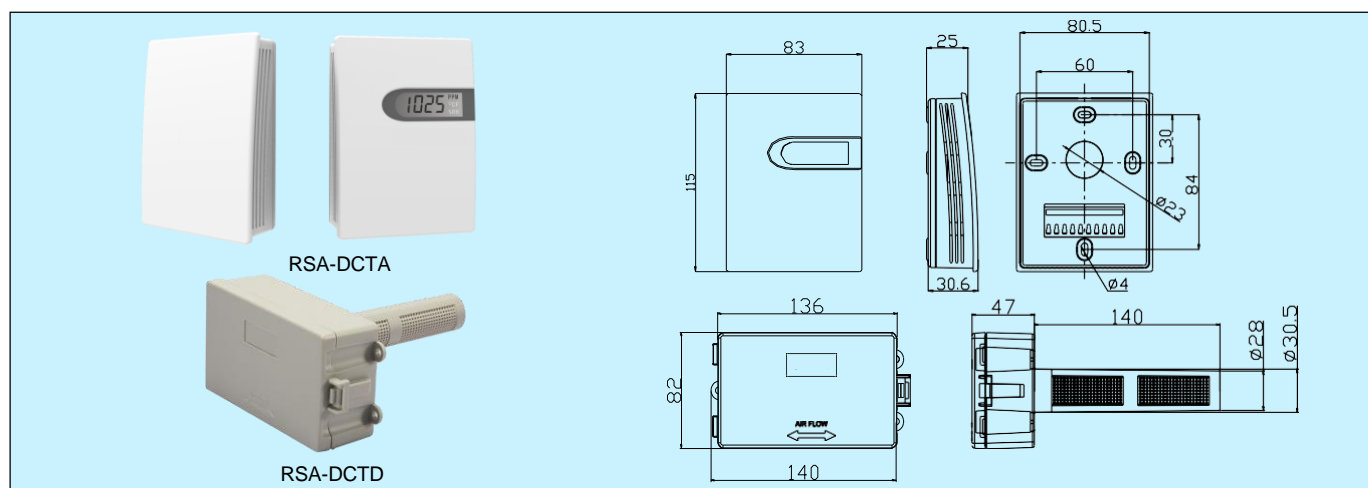
RSA-DCTA

RSA-DCTD

Applications & Features

- RSA-DCT series carbon dioxide (CO_2) & temperature transmitters are designed for monitoring & controlling indoor air quality and temperature
- RSA-DCTA is suitable for wall mount and RSA-DCTD is suitable for duct mount
- High performance NDIR digital sensor and circuit, ensure precise measurement and temperature compensation
- Multiple optional RTD or thermistor sensors, compatible with a variety of control systems
- Stable, reliable and fast response
- 15 years of CO_2 sensor life without maintenance
- All electrical terminals are on the inside bottom, avoid any possible destroy to PCB when wiring(RSA-DCTA)
- Digital technology applied, multiple outputs optional, over voltage and reverse polarity protection, high reliability and anti-interference capability
- Large LCD with unit indicator(RSA-DCTA), display carbon dioxide (CO_2) and temperature alternatively (no temperature display for RTD or thermistor models)

Specifications

Carbon dioxide (CO_2)
Sensor: NDIR sensor, with ABC algorithm*
Sampling Method: diffusion
Accuracy: (40+3%MV) ppm
Response time: ＜10s (30cc/min, low airflow)
Drift: ＜±10ppm/year
Range: 0~2000ppm(measure range 400~2000ppm)
Output: 4~20mA, 0~10V, RS485/Modbus

Temperature
Sensor: Digital, RTD or thermistor, see models
Range: 0~50°C
Accuracy: see accuracy table
Output: 4~20mA, 0~10V, RS485/Modbus or RTD/ thermistor

Power supply: 16~28VAC/16-35VDC
Load resistance: ≤500Ω (Current output), ≥2kΩ (Voltage output)
Display: Optional LCD Display (RSA-DCTA)
Display resolution: 1ppm, 0.1°C
Working environment: 0~50°C, 0~95%RH (Non-cond.)
Temp. compensation: 0~50°C
Storage temperature: -20~60°C
Housing material: ABS+PC(RSA-DCTA),fireproof ABS(RSA-DCTD)

Protection: IP30 (RSA-DCTA), IP65 (RSA-DCTD)
Weight: 175g(RSA-DCTA),416g(RSA-DCTD)
Approval: CE
***ABC algorithm:** Automatic Baseline Correction, it constantly keeps track of the sensor's lowest reading over a few days interval and slowly corrects for any long term drift detected as compared to the expected fresh air value of 400 ppm CO_2.

Models

Model	RSA-DCTA				Wall mount CO_2/ Temp. Transmitter
	RSA-DCTD				Duct mount CO_2/ Temp. Transmitter
CO_2 Output		1 C			4~20mA/0~10VDC RS485/Modbus
Temp. Output			1 3 4 5 6 7 9 A C		4~20mA / 0~10VDC PT1000,±0.2°C @25°C PT100,±0.2°C @25°C NTC20K, ±0.4°C @25°C Ni1000, ±0.4°C @25°C NTC10K-II, ±0.4°C @25°C NTC10K-III, ±0.4°C @25°C NTC10K-A, ±0.4°C @25°C RS485/Modbus
Display RSA-DCTA				0 1	N/A LCD

*1. All products are factory set to 4~20mA as output default, and can be set to 0~10V by jumper on the PCB

*2. See resistance table on page 1 of this catalog.

Accuracy table for temperature

Outputs	CDTW	CDTD
0~10V DC	<±0.5°C@10~40°C	<±0.5°C@10~40°C
4~20mA	<±0.8°C@10~40°C	<±0.5°C@10~40°C
RS485/Modbus	<±0.5°C@10~40°C	<±0.5°C@10~40°C
RTD/ thermistor	See models	See models

* When select RTD/ thermistor, RSA-DCTA total error will be 0.5°C more than the accuracy in the models.

Connection

Different models have different electrical terminals. Please wire specific model according to the wiring diagram inside the front cover.
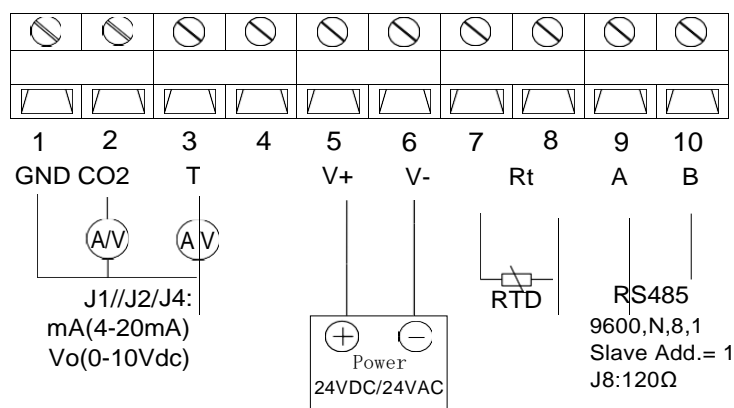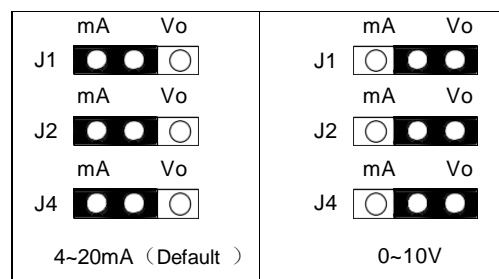

1. 4-20mA/0-10V output jumper J1/J2/J4 description**:**
   4-20mA output (Default) **:** left short J1/J2/J4 pin1 and pin2.
   0-10V output**:** right short J1/J2/J4 pin2 and pin3.
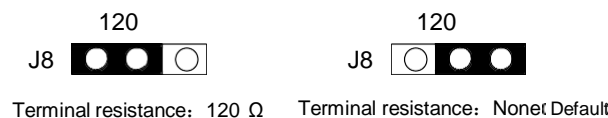   As follow figure**:**

2. RS485/Modbus communication refer to "RSA-DCA series carbon dioxide transmitter Modbus communication
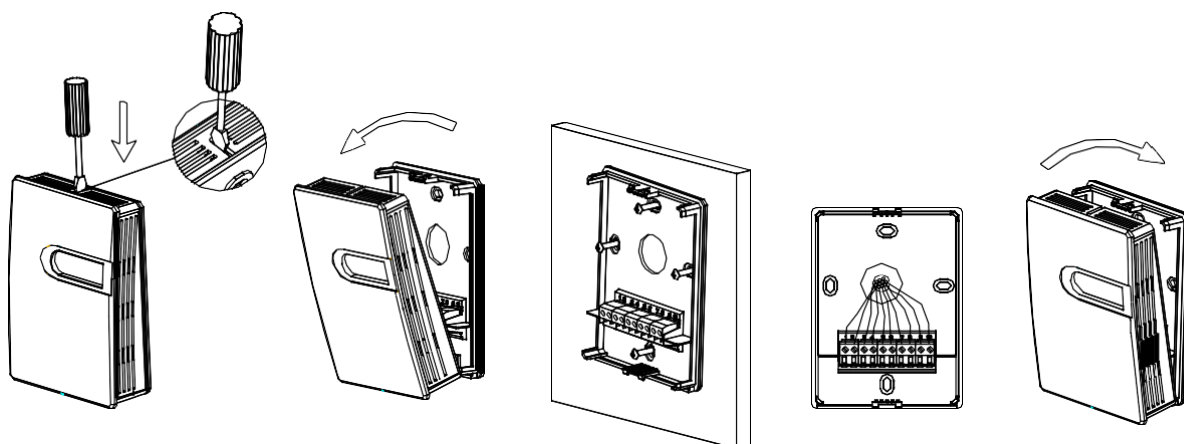   instruction". RS485 terminal resistance jumper J8 description**:**
   Terminal resistance 120 Ω**:** left short J8 pin1 and pin2.
   Terminal resistance 0 Ω(None) **:** right short J8 pin2 and pin3.
   As follow figure**:**

Wall mount installation

● It should be installed vertically on the wall. The installation site should be far away from heater, cooler, fan, humidifier, dehumidifier,
   and other heat/cool/humidity sources.
● Use a screwdriver, insert into the snap at the upper side of the housing, and push down a little, then open the front cover.
● Feed the cable into the housing before installing the base on the wall according to the diagram.
● Finish electrical connection according to the wiring diagram.
● Restore the front cover, and finish the installation.

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Duct mount installation
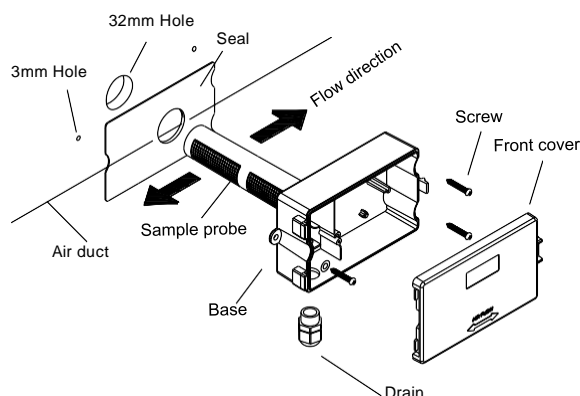
Duct mount installation

● Make sure the air flow direction in the duct is the same as shown on the front cover.
● Mount the housing. Drill a hole with ø32 mm diameter for the sample probe and three holes with ø3 mm for the screws in the air duct. Then insert the sample probe into the hole with the seal on and install the housing base completely with the three screws.
● Electrical wiring. Open the front cover. Install the PG9 drain on the base and feed the cable through into the base. Finish wiring according to the diagram. Restore the front cover.
● Since there may be a pressure difference, it is necessary to avoid environment air being sucked into the housing due to negative pressure. Make sure the seal of the front cover, the drain and the cable feed through are completely air-tight. So the only entry of the sensing air is from the sample probe. Meanwhile the housing protection rate can meet up to IP 65.

Attention

● The product is not suitable for high SO_2 concentration environment.
● In normal application environment, the transmitter could reach to the accuracy stated in the specifications after 3 ABC cycles of continuing work. Especially within 3 days after the initial power on, the measured value may not be accurate. But after 3 cycles of the internal ABC operation, the function can correct the output to the real value and meet the accuracy. The ABC cycle is 8 days.
● It should be power OFF during installing and wiring. When using 24VAC, it is strongly recommended to power the unit with independent transformer. If sharing a 24VAC transformer with other equipments such as controllers, transmitters or actuators, please make sure the terminals 24V and GND are connected correctly. Otherwise, it will perhaps reduce serious damages.

Warranty

● It has limited warranty for eighteen (18) months after the production date.

Error code

When the device fails, it will display a number of fault code. The following is the fault code table.

Error code	Possible Problems	Solution
Err	Key input error	Input right code
Er1	Temp. sensor detection failure	Check if the temp. sensor is properly connected? If the PCB is in good condition? If the model has the temperature option selected?
Er3	CO_2 sensor detection failure	CO_2 sensor work abnormal, restart the product