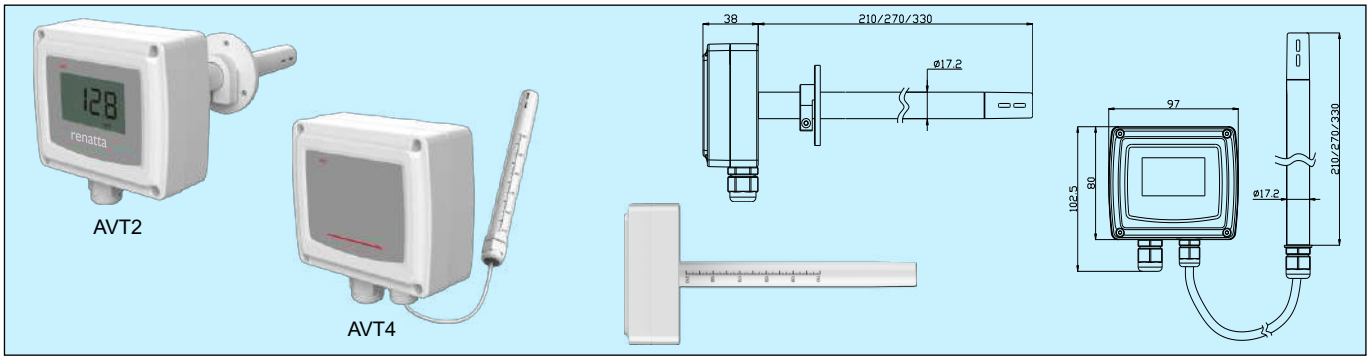
AVT Air Velocity Transmitter



Applications & Features

It is designed for air velocity monitoring and controlling in the ventilation system and reducing energy consumption in BMS and various HVAC application. It is applied for single point air velocity measurement. AVT2 is for duct mount, AVT4 is for remote installation

Based on thermal anemometer principle, use innovative and sensitive hot-film sensor, which is insensitive to dust and dirt, easy to install and maintain

No moving parts, provide accurate, reliable, sensitive and long-term measurement, with good temp. compensation

Digital technology applied to ensure output accuracy

Over voltage and reverse polarity protection with high reliability and anti-interference capacity

Multiple outputs, ranges and optional LCD display

Innovative probe design with various lengths available with scales on

Specifications

Air velocity sensor: Hot-film sensor
Range: 0~5/10/15/20m/s or 0~16/32/48/64ft/s, jumper selectable
Accuracy: m/s:±(0. 2m/s+5% reading) or ±(0. 2m/s+3% reading) @0.5~20m/s; ft/s:±(0. 65ft/s +5% reading) or ±(0. 65ft/s +3% reading)@1.6~64ft/s 25℃ , 55%RH, 1013hPa
Response time: typical 2s
Angle dependence: < 3%reading @ | Δα | < 10°
Temperature compensation: 10~40℃
Temp. output(option): range 0~50℃, accuracy <±0.5℃@25 ° C
Output: 4~20mA(3 wires), 0~10/0~5VDC, RS485/Modbus
Output Load: ≤500Ω(current), ≥2kΩ(voltage)
Display: LCD, with unit m/s or ft/s, DIP switch selectable
Power: 16~28VAC/16~35VDC
Working Environment: -20~70℃, 0~95%RH(Non cond.)
Housing: fire retardant PC (UL94 V-0)
Protection: IP65
Weight: 440g
Approval: CE

Models

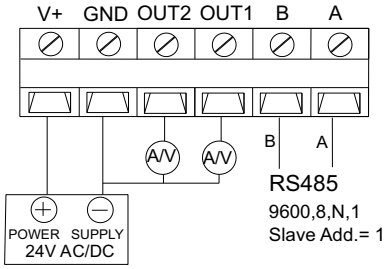
Model	AVT2 AVT4					Duct mount air velocity transmitter Remote mount air velocity transmitter
Accuracy		3 5				± (0.2m/s+3% reading) ± (0.2m/s+5% reading)
Output			1 8			4~20mA/0~10V/0~5VDC RS485/Modbus
LCD Display				0 1		N/A LCD
Probe Length					1 2 3	210 mm 270 mm 330 mm

1. All products are factory set to 4-20mA as output default, and can be set to 0-10V or 0-5V by DIP switch.
2. When temperature output is needed, add suffix -T after the model number. And the output is the same as air velocity

Renatta Technology Co.,Ltd
Add : No. 5, Dongkeng Zhongli, Fengxiang Street, Xiangan District, Xiamen, Fujian, China
Tel : +86 172 6820 8207
Email : sales@renatta-tech.com (Sales)
support@renatta-tech.com (Tech support)

Connection

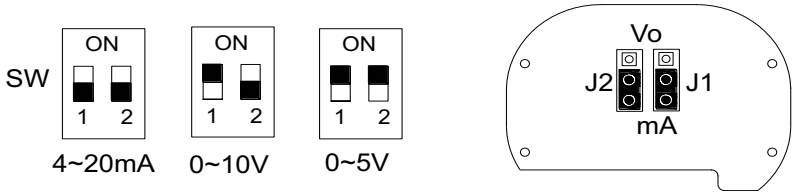
Different models have different electrical terminals. Please wire specific model according to the wiring diagram inside the front cover.



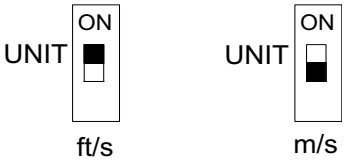
OUT1: 0~50℃
OUT2: 0-5m/s @1
0-10m/s@2(Default)
0-15m/s@3
0-20m/s@4

DIP Switch and Jumper setting

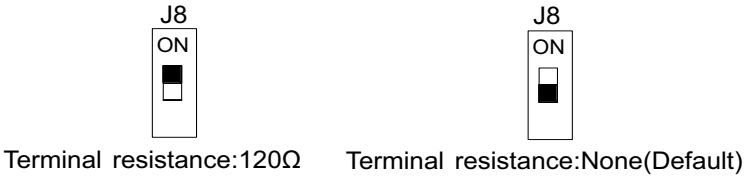
1. Use DIP SW and jumpers J1/J2 to set the output of OUT1 and OUT2:
   Switch SW setting: 4~20mA (default), 0~10V, 0~5VDC.
   Jumper J1/J2 setting: Vo, mA.
   J1 and J2 set to “Vo”: voltage output 0~10V or 0~5V; J1 and J2 set to “mA”: current output 4~20mA.



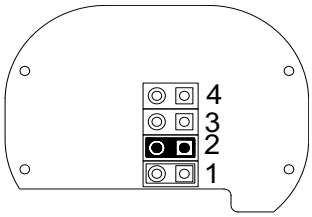
2. Unit setting: Set the engineering unit ft/s or m/s(default) for air velocity



3. RS485 terminal resistance (120Ω) setting: When "J8" is ON, the terminal resistance (120Ω) is applied.



4. Range setting: 1: 0~5m/s; 2: 0~10m/s(Default); 3: 0~15m/s; 4: 0~20m/s, or for 0~16/32/48/64 ft/s respectively.



Installation and instruction

To ensure the best installation and application, please strictly follow the instructions below.
(1) The air velocity probe should be installed in stable air flow. It should be installed in the middle of a long duct, with front >10D and back >5D, as Fig 1 below. And try to insert the probe end (location of the sensor) near the duct center as much as possible.
(2) The depth of the probe insertion: the probes have scales as shown in Fig 2 below. The scale value is the length from the end of the probe to this position. It means, the scale value can be seen and read from outside is the depth of the inserted part.
(3) The flow direction and angle: It was calibrated in standard wind tunnel with fixed air flow direction in factory. So, it should be installed with the same flow direction, as Fig 2 and 3 below. The flow direction should be exactly 90° angle with the scale line on the probe, as shown in Fig 5.

● AVT2 duct mount installation:
AVT2 is recommended to be installed with flange. Open a hole of Φ19 mm on duct, install the flange on the duct with 3 screws, insert the probe and adjust required depth, then use another screw to tighten the probe with the flange.

● AVT4 remote mount installation:
Housing installation: open the front cover, as shown in Fig 5 below, and fix the base on the installation surface with 4 screws.
Probe installation: it is recommended to be installed with the flange. Open a hole of Φ19 mm on duct, install the flange on the duct with 3 screws, insert the probe and adjust required depth, then use another screw to tighten the probe with the flange.

● Electrical connection: Open the front cover, connect the wires according to the wiring diagram.
● During the above procedures, the sealing ring must be used correctly to ensure overall protection rate could meet up to IP65.

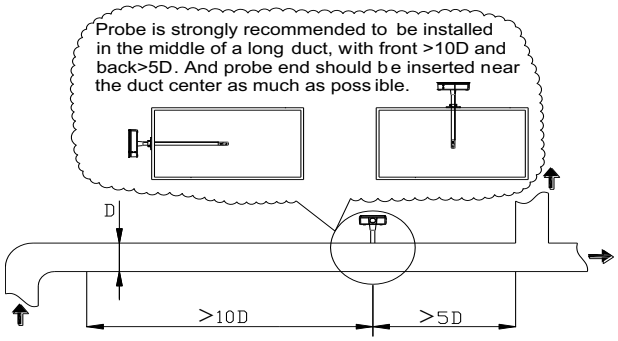


Fig 1

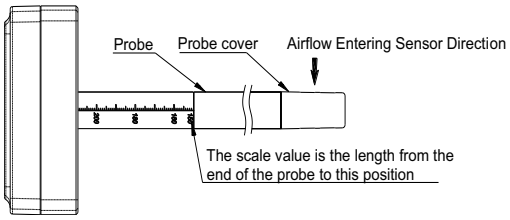


Fig 2

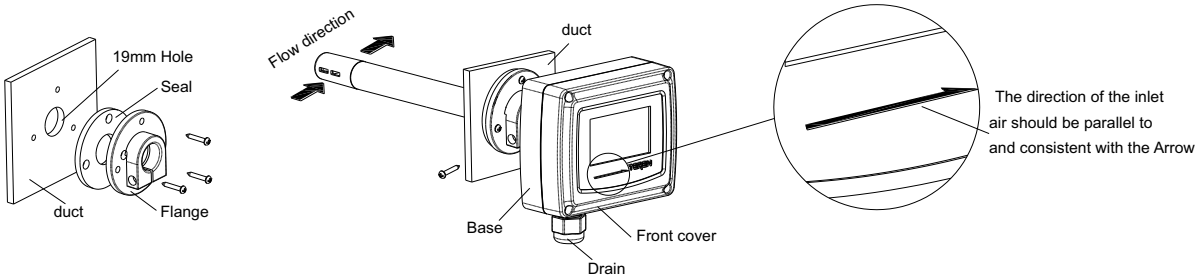


Fig 3

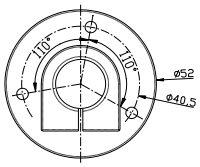


Fig 4

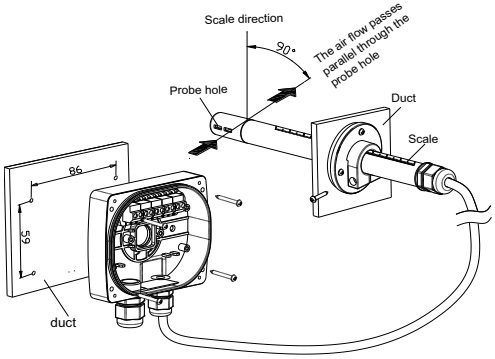


Fig 5

Attention

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 equipment such as controllers, transmitters or actuators, please make sure the terminals 24V and GND are connected correctly. Otherwise, it may reduce serious damages.

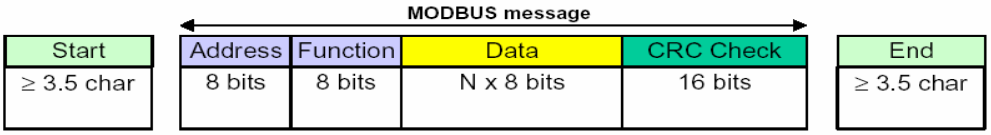
Warranty

It has limited warranty for eighteen (12) months after the production date.

RS485 Communication- - -Modbus RTU
For AVT series

1. Communication setting

1.1 Baud rate: 9600
1.2 Data: 8Bit
1.3 Parity: None
1.4 Stop: 1
1.5 Protocol: Modbus RTU/RS485



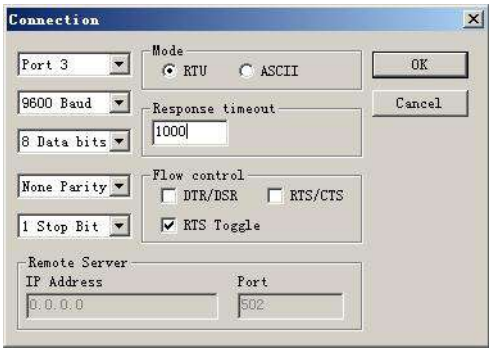
A typical Modbus RTU mode message frame is shown as above. In the Modbus RTU mode, the messages between frames are separated by at least 3.5 characters time's silent interval. If the silent interval between two characters is more than 3.5 characters time, the former character was transferred successfully, and the current character's transmission starts.

2. Modbus Address

The message's first frame field is the device's address. Modbus could locate up to 256 different addresses, including valid addresses from 1~247. Address 0 is for broadcast and address 248~255 are reserved for special addresses.
Slave address can be set with compatible Modbus RTU software. Default address is 1. It is suggested each single loop is less than 32 devices.

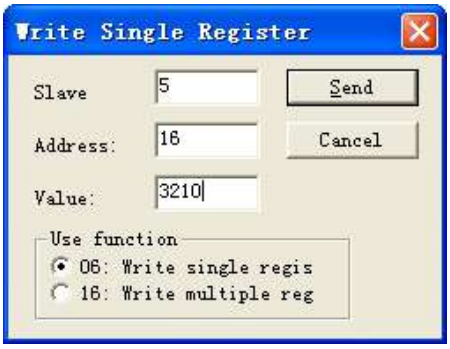
3. Modbus function

The function code is the second data in the frame. Valid function codes are from 0~127 (01H~7FH). See the relevant Modbus standard. It supports 03H/06H function codes, shown as the following Modbus Poll software. The detail register addresses are in: **6 General registers table**.



03H Read Holding Registers
Example: Read the current temperature value.
Shown as right
Slave address: 5
Function: 03
Register started address: 40002
Register reading length:2
Scan rate: 200 ms
Communication codes:
Master / PC to SLAVE: 05 03 00 01 00 01 D4 4E
SLAVE to Master / PC: 05 03 02 00 14 49 8B

06H Preset Single Register
Example: restore factory settings.
Shown as right
Slave address: 5
Function: 06
Register address: 40016
Set value: 3210
Communication codes:
Master / PC to SLAVE: 05 06 00 0F 0C 8A 3C 1A
SLAVE to Master / PC: 05 06 00 0F 0C 8A 3C 1A



4. General register table

Register address	R/W	Type	Definition	Remarks
40001, 00000	R	Signed	Product code	
40002, 00001	R	Signed	Temperature Value	Temperature=(40002 data)/10
40003, 00002	R	Signed	Air velocity value	Air velocity=(40003 data)/10, (Unit: m/s)
40013, 00012	R	Signed	Air velocity value	Air velocity=(40013 data)/10, (Unit: ft/s)
40016, 00015	R/W	Signed	Reset to factory default setting	Write(06 function) “3210” to reset default setting
40032, 00031	R/W	Signed	Modbus address	Modbus protocol address
40040, 00039	R	Signed	Air velocity unit	0:m/S, 1:ft/S

Function register 40016: Use the 06 function code to write password (3210) to the register 40016 to return to the factory set.

Renatta Technology Co.,Ltd

No. 5, Dongkeng Zhongli, Fengxiang Street, Xiangan District, Xiamen, Fujian, China

Tel. : +86 172 6820 8207

Email: support@renatta-tech.com (Tech support)

Email: sales@renatta-tech.com (Sales)

WhatsApp: Scan QR code to add contact

Wechat: Scan QR code to add contact