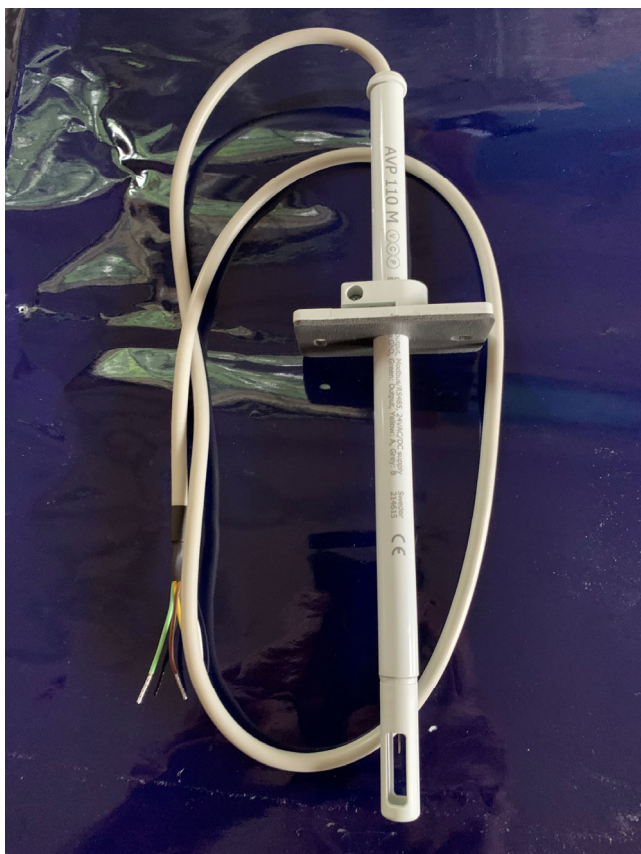


# AIR VELOCITY PROBE



AVP 011

## Applications

- Duct sensor for air velocity measurement in HVAC systems.
- Measurement in ventilation ducts
- For control, surveillance, and regulation of the flow rate in fresh-air and ventilation systems, etc.
- HVAC supply or extract air measuring
- Clean room monitoring and control etc

## Features

- Ranges  
0-1 m/s, 0-2 m/s, 0-5 m/s, 0-10 m/s, 0-20 m/s
- Outputs  
0-10 Vdc, 2-10 Vdc, 0-5 Vdc, 1-5 Vdc or 4-20 mA
- Accuracy Air Velocity  
 $\pm 5\%$  for FS
- Power supply 24 Vac/dc
- IP ratings  
IP65 for enclosure  
IP10 for probe
- Duct mounting flange with neoprene gasket for good sealing into the duct and to adjust the penetration probe depth
- Modbus RS485 communication as option

## Ordering codes

Type	Air Velocity Range	Air Velocity Output	Option
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
AVP	01 = 0-1 m/s	0 = no output	M = Modbus RS485
	02 = 0-2 m/s	1 = 0-10 Vdc	
	05 = 0-5 m/s	2 = 2-10 Vdc	
	10 = 0-10 m/s	3 = 0-5 Vdc	
	20 = 0-20 m/s	4 = 1-5 Vdc	
		5 = 4-20 mA	

## Ordering examples

**AVP 011**  
Air Velocity transmitter  
Ranges 0-1 m/s  
Output 0-10 Vdc

**AVP 055 M**  
Air Velocity transmitter  
Ranges 0-5 m/s  
Output 4-20 mA  
Modbus RS485

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## Technical data

Electrical	Power Supply	24 Vac ( $\pm 5\%$ ), 50-60 Hz 15-35 Vdc
	Power Consumption	< 2.5 W
Outputs	Current Output	4-20 mA, maximum 500 $\Omega$
	Voltage Output	0-10 Vdc, minimum 1.000 $\Omega$ 0-5 Vdc, minimum 1.000 $\Omega$
	Relay Output	max. rating 1A @ 220 Vac
Accuracy	Air Velocity	$\pm 5\%$ for FS
General Data	Sensing Element	Hotwire PT1200
	Media	Air or non-aggressive gasses
	Operating Temperature	-25 to +70°C
	Storage Temperature	-30 to +85°C
Ranges	fixed at factory	0-1 m/s
		0-2 m/s
		0-5 m/s
		0-10 m/s
		0-20 m/s
Connections	cable	5x0.34 mm <sup>2</sup> LIYY, 1 meter
	brown	15...35 Vdc or 24 Vac ( $\pm 5\%$ , 50-60 Hz)
	white	ground for power and reference for outputs
	green	analog output for AV
	yellow	modbus communication positive pair
	grey	modbus communication negative pair
Protection	Enclosure	IP65
	Probe	IP10
Standards	EMC Directive	EN 61326-1
	CE Conformity	CE1708
Dimensions	Probe	diameter 13 mm, length 250 mm
	Packed	320 x 120 x 20 mm
Weight Packed	100 grams	

## General Notes

- 1.. High density of humidity may effect the measurements.
- 2.. Observe maximum permissible cable lengths.
- 3.. If cable runs parallel to the mains cable: Use shielded cables.
- 4.. Never test with flammable gasses.
- 5.. The cable entry always should have to be pointing downwards.
- 6.. The data indicated under 'Technical Data' apply only to vertically mounted transmitters.
- 7.. Transmitters should be far away from humidifiers, min. 2 meters.

## Electrical Connections

1. Please be sure about current direction for current outputs and polarity for voltage outputs.
2. Please use shielded and twisted paired cables for Modbus connections
3. Please observe RS485 termination rules, max. 32 devices in a single Modbus line

### Cable Colors

brown	24V	15...35 Vdc or 24 Vac ( $\pm 5\%$ , 50-60 Hz)
white	GND	ground for power and reference for outputs
green	AO	analog output for AV
yellow	RS485 A	modbus communication positive pair
gray	RS485 B	modbus communication negative pair

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## Modbus RS485 Protocol

Default Settings: Modbus ID:1, 9600, 8bit, None, 1.

Register Table starts from Base 1.

Use Function 3 for Reading and Function 6 for Writing Holding Registers.

Whenever writing to any Modbus Parameter, the new parameter is activated instantly and you should have to configure the master device according to new parameters. For every reboot/initializing, Modbus is activated with default parameters for 3 seconds.

After 3 seconds, Modbus is reconfigured according to your parameter settings.

Unlisted registers are for analog output calibrations and some system parameters.

Please do not change unlisted registers.

Register	R/W	Range	Description
1	R & W	1...254	Modbus Address
2	R & W	0...4	Baudrate, 0: 9.600, 1: 19.200, 2: 38.400, 3: 57.600, 4: 115.200
3	R & W	0...3	Bit_Parity_Stop, 0: 8bit_None_1, 1: 8bit_None_2, 2: 8bit_Even_1, 3: 8bit_Odd_1
4	R	0...20.000	AV as m/s x1000, divide by 1000 for exact value
5	R	0...3.937	AV as fpm, 1m/s = 196.85fpm
6	R	-	blank for future needs
7	R	-	blank for future needs
8	R	-	blank for future needs
9	R	-	blank for future needs
10	R	-	blank for future needs
11	R & W	0...20	Response time as second
12	R & W	0...20	AV range as m/s
13	R	-	blank for future needs
14	R	-	blank for future needs
15	R & W	0...10.000	Raw value for U <sub>0</sub>
16	R & W	0...20.000	Raw value for U <sub>50</sub>
17	R & W	0...5.000	Square root of mid-range x 1.000
18	R	0...1.000	K constant, calculated by transmitter, specific for every unit
19	R	0...20.000	Raw value of actual velocity
20	R	0...20.000	AV as m/s x1000, divide by 1000 for exact value
21 to 23	R & W	0...1.000	Analog output parameters
24	R & W	0, 9	Record command, 0: work mode, 9: set command
25	R & W	0...1.000	Test parameter
26	R	-	blank for future needs

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## Calibration

### Set-up for Calibration

1. Power the unit and make Modbus connections as below:

Brown: Power, 15...35 Vdc or 24 Vac ( $\pm$  %5, 50-60 Hz)

White: Ground for power and reference for outputs

Green: Analog output for AV

Yellow: Modbus communication positive pair

Gray: Modbus communication negative pair

2. Check MR\_11 for response time, response time can be set from 1 sec. to 20 sec.,

It is recommended to set 1 second for any calibration,

You can finally set to needed response time after calibration,

for setting any parameter, please write 9 to MR\_24,

3. Check MR\_12 for range as m/s, range can be set from 1 m/s to 20 m/s,

if you need to change range, please write 9 to MR\_24,

### ZERO Calibration

4. Keep the probe working with no air velocity about 10 minutes,

5. Close the probe with the original cap for making air velocity 0 m/s,

6. Read U0 value from MR\_19, note this value to your records,

7. Write U0 value to MR\_15 and set it by writing 9 to MR\_24,

8. Remove the cap and you are ready for span calibration,

### SPAN Calibration

9. After ZERO please do not loose much time,

10. Apply air velocity as much as (range/2),

If your range is 1 m/s, apply 0.5 m/s,

or, if your range is 5 m/s, apply 2.5 m/s,

11. You do not need wait too much, just be sure that you have a stable measurement,

12. Read U50 value from MR\_19, note this value to your records,

13. Write U50 value to MR\_16 and set it by writing 9 to MR\_24,

### Parameter Setting

14. Please calculate the value for V50: square root of (range/2) X 1.000

15. Typical V50 values:

for the range 1 m/s V50 is 707, for the range 5 m/s V50 is 1.581, for the range 10 m/s V50 is 2.236,

16. Write V50 value to MR\_17 and set it by writing 9 to MR\_24,

17. Calibration is done.

### Notes:

18. Please do not un-power the unit while calibration,

19. Please use filtered clean air while applying air velocity,

20. Please re-power the unit and check the parameters that you set.

**Drawing / Dimensions**

