

AVT

Temperature and Air Velocity Transmitter

thermokon[®]
HOME OF SENSOR TECHNOLOGY

Datasheet

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» APPLICATION

Temperature- & Air velocity transmitter for measuring and monitoring air velocities in supply/exhaust air plants, ventilators, regulation flaps and electro damper registers.

» TYPES AVAILABLE

- | | |
|-----------|--|
| • AVT | <i>Temperature- & Air Velocity Transmitter</i> |
| • AVT-D | <i>Temperature- & Air Velocity Transmitter with LC-Display</i> |
| • AVT-D-R | <i>Temperature- & Air Velocity Transmitter with LC-Display and Relay</i> |

» SECURITY ADVICE – CAUTION

The installation and assembly of electrical equipment should only be performed by authorized personnel.



The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets. Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

CAUTION! Risk of electric shock due to live components within the enclosure, especially devices with mains voltage supply (usually between 90..265 V).



Please comply with

- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

» PRODUCT TESTING AND CERTIFICATION



Declaration of conformity

The declaration of conformity of the products are available on our website
<https://www.thermokon.de/direct/en-gb/categories/avt>

» NOTES ON DISPOSAL



The crossed-out wheeled bin symbol indicates that the product or removable batteries must not be disposed of with household or commercial waste. Within the EU, you are legally obliged to dispose of the product separately and appropriately in accordance with the national laws of your country. Alternatively, please contact your supplier or Thermokon Sensortechnik GmbH. Further information can be found at: www.thermokon.com

» TECHNICAL DATA

Measuring values	air velocity and temperature	
Medium	air or other non-flammable/non-aggressive gases	
Output voltage	2x 0..10 V min. load 1 kΩ	
Output ampere	2x 4..20 mA max. load 400 Ω	
Output switch contact <i>(optional)</i>	AVT-D-R (LCD relay) relay with change-over contact (volt free contact), 250 VAC 6 A / 30 V= 6 A resistive load	
Power supply	24 V= (±10%) or 24 VAC (±10%) SELV	
Power consumption	max. 2 W AVT-R LCD: max. 2,4 W	
Measuring range temp. (Probe)	AVT 0..+50 °C	AVT-D / AVT-D-R default: 0..+50 °C (configurable -25..+50 C)
Measuring range velocity	0..2 m/s 0..10 m/s 0..20 m/s selectable at the device	
Accuracy temperature	±0,5 K (typ. at 25 °C and air velocity > 0,5 m/s)	
Accuracy velocity	0,15..2 m/s: 0,2 m/s + 2% of measuring value* 2..10 m/s: 0,5 m/s + 3% of measuring value* 10..20 m/s: 1,0 m/s + 3% of measuring value*	*typ. at 25°C, Minimum stabilization time 10 min.
Sensor	calorimetric measuring principle	
Display <i>(optional)</i>	LCD 3,5", 46,0 x 14,5 mm optional for indication of measured values	
Enclosure	housing: ABS, cover: PC	
Protection	IP54 according to EN 60529	
Cable entry	M16 for wire max. Ø=8 mm	AVT-D-R 2x M16
Connection electrical	terminal block, max. 1,5 mm²	
Probe	stainless steel V2A L=200 mm, Ø=10 mm	
Ambient condition	Enclosure: 0..+50 °C max. 95% rH (non condensing) Probe: -25..50 °C	
Delivery contents	incl. mounting flange	
Notes	optional with display "LCD", optional with relay, adjustable Immersion length: 50..180 mm, using mounting flange adjustable switching threshold and hysteresis	

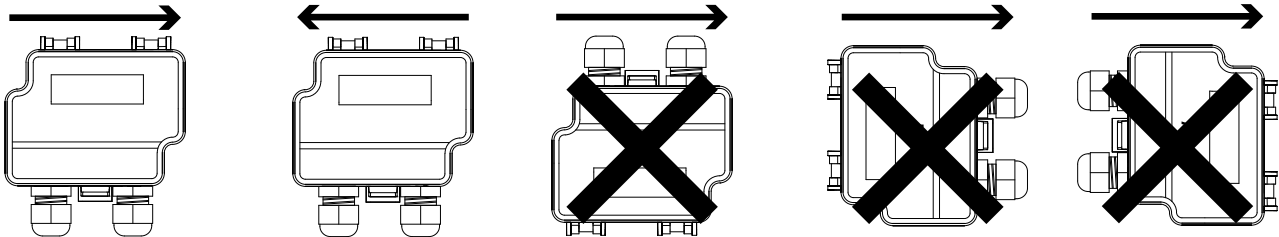
» MOUNTING ADVICES

The supply cable and control cable for relay should be separated, if high voltage (no safety extra-low voltage) is used as relay contact. Both cables have their own cable entries.

The relay settings need to be done before high voltage (no safety extra-low voltage) is connected to the device. This ensures human protection against electrical shock.

A prerequisite for the operation is a proper installation of all electrical supply, control and sensing leads as well as the pressurized connection line.

According to the direction of flow, the installation is to be carried out according to the following illustration:



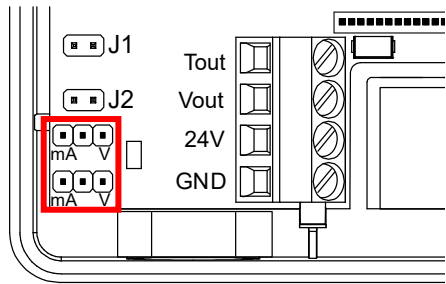
» CONFIGURATION (NO DISPLAY)



Set the jumper output configuration before connecting the supply voltage!

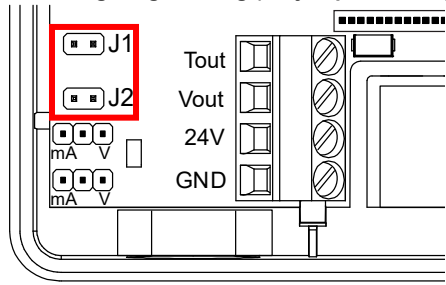
Output settings (via jumper)

Both outputs (temperature and air velocity) can be configured as a voltage (0..10 V) or current output (4-20mA) independently.



Jumper					
Output					
Temperature output	Tout	current (mA)	voltage (V)	current (mA)	voltage (V)
Air velocity output	Vout	current (mA)	voltage (V)	voltage (V)	current (mA)

Measuring range setting (via jumper, no Display type only)



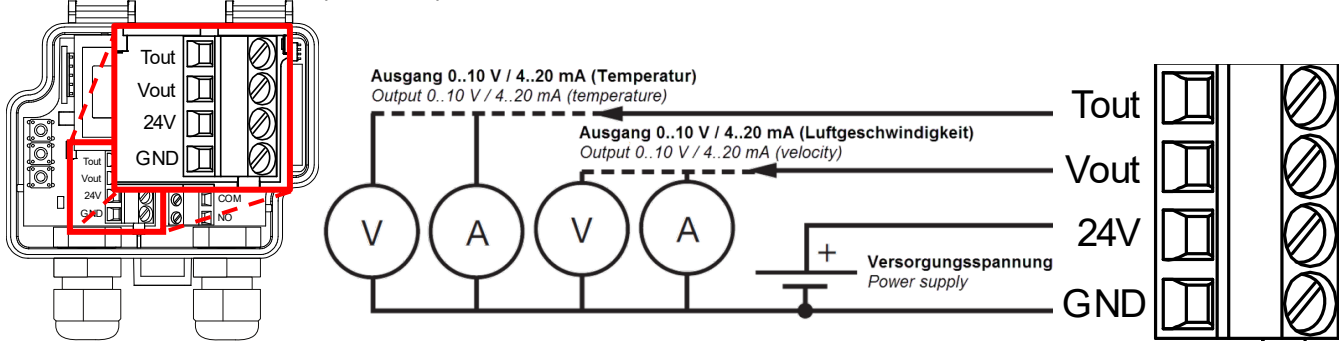
Jumper installed		Jumper not installed	
Measuring range		0..2 m/s	0..10 m/s
Jumper	J1		
	J2		

» TERMINAL CONNECTION PLAN

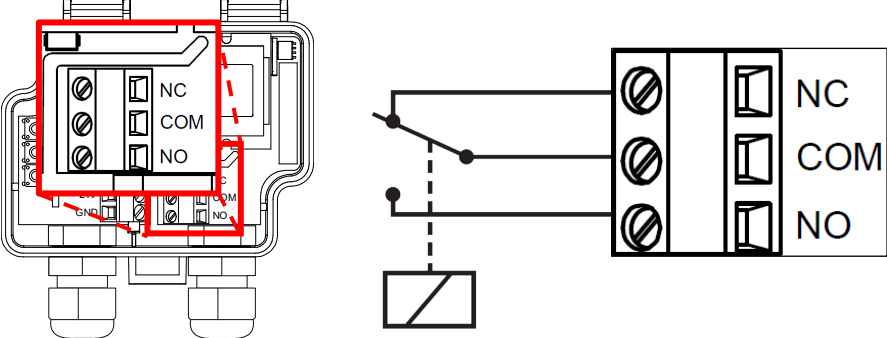


Set the jumper output configuration before connecting the supply voltage!

Wiring of the analog outputs (Tout / Vout)

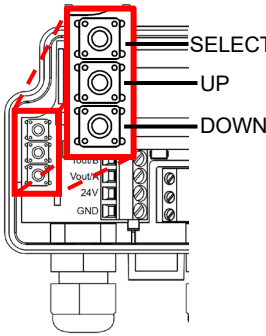


Wiring of the relay



After connecting the relay switch supply, make sure to secure the enclosure with the locking screw to prevent dangerous hazards!

» CONFIGURATION VIA DISPLAY

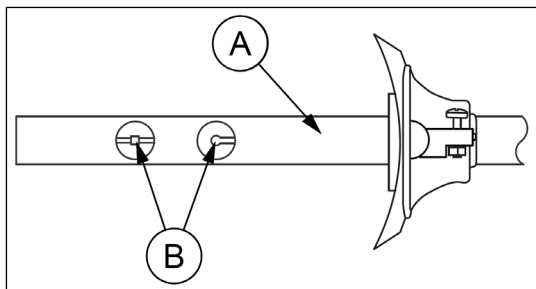
<div>Button description</div> <div></div>	<div>Device configuration</div> <div><div>1. Disconnect the relay supply voltage</div><div>2. Open the Cover</div><div>3. Press the SELECT button for two seconds to activate the device menu.</div><div>4. Use the UP / DOWN buttons to navigate the menu.</div><div>5. Press the SELECT button to change the value of a menu item.</div><div>6. Press the UP or DOWN button to select a value.</div><div>7. Press the SELECT button to accept the new value and to return to menu navigation.</div><div>8. Navigate to the EXIT MENU view and press the SELECT button to save the settings and exit the menu.</div></div>																																
<div>Device Menu description (available parameters)</div> <table><tr><td>Vel. Unit Menu</td><td>Velocity: m/s ft/min.</td></tr><tr><td>Temp. Unit Menu</td><td>Temperature: °C °F</td></tr><tr><td>PID in USE</td><td>No Yes</td></tr><tr><td>V RANGE MAX</td><td>Maximum value for velocity measurement: Range: 1 m/s .. 20 m/s 200 ft/min..4000 ft/min Steps: 1 m/s 200 ft/min</td></tr><tr><td>REFERENCE SP</td><td>Reference setpoint for PID controller: Steps: 0,1 m/s 1 ft/min</td></tr><tr><td>P-VALUE</td><td>Proportional gain (0..99,99): Steps: 0,01</td></tr><tr><td>I-VALUE</td><td>Integral gain (0..99,99): Steps: 0,01</td></tr><tr><td>D-VALUE</td><td>Derivative gain (0..99,99): Steps: 0,01</td></tr><tr><td>V-OUT SCALE MENU</td><td>Air velocity output scale: 0-5V 0-10V 2-10V custom</td></tr><tr><td>V-OUT MIN MENU</td><td>Minimum value for the air velocity output scale (0 V..10 V) Steps: 1 V (Select a minimum value that is bigger than the maximum value to reverse the operating direction)</td></tr><tr><td>V-OUT MAX MENU</td><td>Maximum value for the air velocity output scale (0 V..10 V) Steps: 1 V (Select a maximum value that is smaller than the minimum value to reverse the operating direction)</td></tr><tr><td>T RANGE MIN</td><td>Minimum value for temperature measurement range Range: -25°C..40°C -13°F..104°F Steps: 5°C 2°F</td></tr><tr><td>T RANGE MAX</td><td>Maximum value for temperature measurement range Range: -15°C..50°C 5°F..122°F Steps: 5°C 2°F</td></tr><tr><td>T OUT SCALE</td><td>Temperature output scale: 0-5V 0-10V 2-10V custom</td></tr><tr><td>T OUT MIN</td><td>Minimum value for the temperature output scale (0 V..10 V) Steps: 1 V (Select a minimum value that is bigger than the maximum value to reverse the operating direction)</td></tr><tr><td>T OUT MAX</td><td>Maximum value for the temperature output scale (0 V..10 V) Steps: 1 V (Select a maximum value that is smaller than the minimum value to reverse the operating direction)</td></tr></table>		Vel. Unit Menu	Velocity: m/s ft/min.	Temp. Unit Menu	Temperature: °C °F	PID in USE	No Yes	V RANGE MAX	Maximum value for velocity measurement: Range: 1 m/s .. 20 m/s 200 ft/min..4000 ft/min Steps: 1 m/s 200 ft/min	REFERENCE SP	Reference setpoint for PID controller: Steps: 0,1 m/s 1 ft/min	P-VALUE	Proportional gain (0..99,99): Steps: 0,01	I-VALUE	Integral gain (0..99,99): Steps: 0,01	D-VALUE	Derivative gain (0..99,99): Steps: 0,01	V-OUT SCALE MENU	Air velocity output scale: 0-5V 0-10V 2-10V custom	V-OUT MIN MENU	Minimum value for the air velocity output scale (0 V..10 V) Steps: 1 V (Select a minimum value that is bigger than the maximum value to reverse the operating direction)	V-OUT MAX MENU	Maximum value for the air velocity output scale (0 V..10 V) Steps: 1 V (Select a maximum value that is smaller than the minimum value to reverse the operating direction)	T RANGE MIN	Minimum value for temperature measurement range Range: -25°C..40°C -13°F..104°F Steps: 5°C 2°F	T RANGE MAX	Maximum value for temperature measurement range Range: -15°C..50°C 5°F..122°F Steps: 5°C 2°F	T OUT SCALE	Temperature output scale: 0-5V 0-10V 2-10V custom	T OUT MIN	Minimum value for the temperature output scale (0 V..10 V) Steps: 1 V (Select a minimum value that is bigger than the maximum value to reverse the operating direction)	T OUT MAX	Maximum value for the temperature output scale (0 V..10 V) Steps: 1 V (Select a maximum value that is smaller than the minimum value to reverse the operating direction)
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<div>Device Menu overview (* = default values)</div> <div><div><div>VEL. UNIT *m/s, ft/min</div><div>TEMP. UNIT *°C, °F</div><div>PID IN USE *no, yes</div><div>V RANGE MAX *10 m/s, 1...20 m/s *2000 ft/min, 200...4000 ft/min</div><div>REFERENCE SP *5.00 m/s, 0.01...20.00 m/s *1000 ft/min, 2...4000 ft/min</div><div>P-VALUE *1.00, 0.00...99.99</div><div>I-VALUE *1.00, 0.00...99.99</div><div>D-VALUE *1.00, 0.00...99.99</div><div>V OUT SCALE 0-5 V, *0-10 V 2-10 V Custom</div><div>V OUT MIN *0 V, 0...10 V</div><div>V OUT MAX *10 V 0...10 V</div><div>T RANGE MIN *0 °C, -25...40 °C, *32 °F; *13...104 °F</div><div>T RANGE MAX *50 °C, 0...50 °C, *122 °F; *82...122 °F</div><div>T OUT SCALE 0-5 V, *0-10 V 2-10 V Custom</div><div>T OUT MIN *0 V 0...10 V</div><div>T OUT MAX *10 V 0...10 V</div><div>RELAY DIR *Rise, Fall</div><div>RELAY SP *5.00 m/s, 0.01...20.00 m/s, 1000 ft/min, 2...4000 ft/min</div><div>RELAY HYST *0.5 m/s, 0.1...20.00 m/s *100 ft/min, 20...4000 ft/min</div><div>EXIT MENU</div></div><div>AVT-D-R</div></div>	
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» MAINTENANCE RECOMMENDATION - CLEANING INSTRUCTIONS



To ensure the measurement accuracy, clean the device regularly. The cleaning interval depends on the air cleanliness. Fibers, dust or other particles can clog the sensor surface and interfere with the measurement. Long exposure without maintenance can cause false readings."



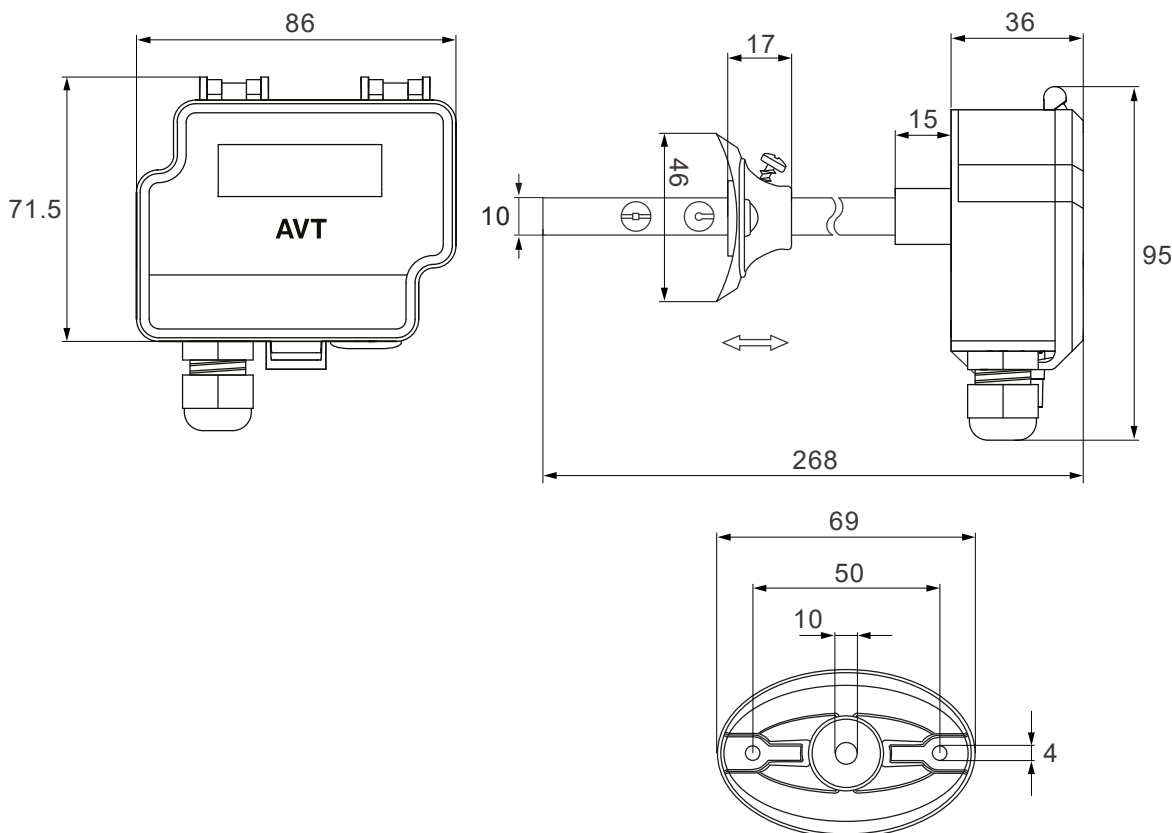
1. Disconnect the device supply voltage. For the -R models, disconnect the device supply voltage and the relay mains supply voltage.
2. Clean the Probe (A) with a soft cloth
3. Clean the Sensor Element (B) with compressed clean air.



Do not use too high pressure, touch the sensor element or use other cleaning methods that cause mechanical stress.

Mechanical stress damages the sensor element and changes the measurement accuracy of the sensors.

» DIMENSIONS (MM)



» ACCESSORIES INCLUDED

Mounting flange