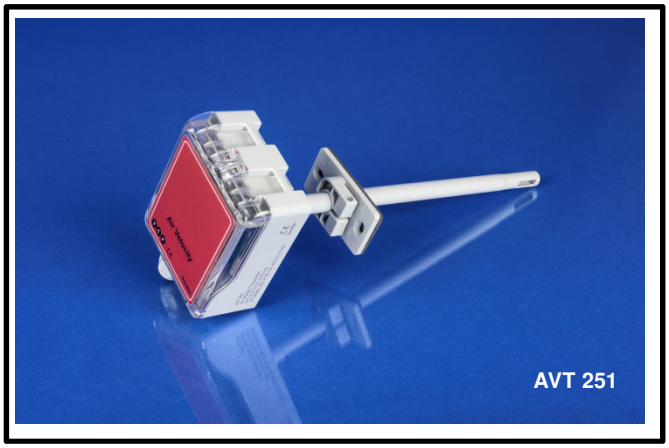


Features

<u>AVT 251 and AVT 551</u>

- Ranges
  AVT 251: 0-5 m/s, 0-10 m/s, 0-15 m/s or 0-20 m/s
  AVT 551: 0-1 m/s, 0-2 m/s, 0-3 m/s or 0-5 m/s
  DIP switches selectable
- Two outputs for Air Velocity
  4-20 mA and 0-10 Vdc
- Accuracy Air Velocity
  ± 5 % for 0-20 m/s
- Response time 1 second or 5 seconds
  DIP switches selectable
- 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

<u>Extra features for AVT 251 MDR2B and AVT 551 MDR2B</u>

- Modbus RS485 communication
- LCD Display
- 2 x relay outputs
- Buzzer

<u>On request :</u>

- Output 2-10 Vdc, 0-5 Vdc and 1-5 Vdc
- Output number 2 (AO2) can be supplied as
  Temperature output instead of Air Velocity output.
- Other combination AVT types on next page

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

Ordering codes

Type	Range	Air Velocity Output (AO1)	Air Velocity Output (AO2)	Options	Advanced options
AVT	2 = 0-5 m/s 0-10 m/s 0-15 m/s 0-20 m/s 5 = 0-1 m/s 0-2 m/s 0-3 m/s 0-5 m/s	0 = no output 1 = 0-10 Vdc 2 = 2-10 Vdc 3 = 0-5 Vdc 4 = 1-5 Vdc 5 = 4-20 mA	0 = no output 1 = 0-10 Vdc 2 = 2-10 Vdc 3 = 0-5 Vdc 4 = 1-5 Vdc 5 = 4-20 mA	M = Modbus RS485 D = LCD display R2 = 2 x Relay outputs B = Buzzer	P = PID out T = RTC R = Datalogger

1.. For a fine temperature measurement air velocity should be higher than 1 m/s

2.. AO1 is always for Air Velocity output

3.. AO2 is Air Velocity output as standard. On request Temperature output.

4.. Relay and Buzzer options should have be ordered with Display option

5.. For advanced options and special applications, please contact with us

---

Ordering examples

AVT 251
Air Velocity transmitter
Ranges 0-5 m/s, 0-10 m/s, 0-15 m/s or 0-20 m/s, DIP switches selectable
Output 1 (AO1) : 4-20 mA
Output 2 (AO2) : 0-10 Vdc

AVT 551
Air Velocity transmitter
Ranges 0-1 m/s, 0-2 m/s, 0-3 m/s or 0-5 m/s, DIP switches selectable
Output 1 (AO1) : 4-20 mA
Output 2 (AO2) : 0-10 Vdc

AVT 251 MDR2B
Air Velocity transmitter
Ranges 0-5 m/s, 0-10 m/s, 0-15 m/s or 0-20 m/s, DIP switches selectable
Output 1 (AO1) : 4-20 mA
Output 2 (AO2) : 0-10 Vdc
Modbus RS485 communication
LCD Display
2 x Relay outputs
Buzzer

AVT 551 MDR2B
Air Velocity transmitter
Ranges 0-1 m/s, 0-2 m/s, 0-3 m/s or 0-5 m/s, DIP switches selectable
Output 1 (AO1) : 4-20 mA
Output 2 (AO2) : 0-10 Vdc
Modbus RS485 communication
LCD Display
2 x Relay outputs
Buzzer

AVT 251, AVT 551 , AVT 251 MDR2B and AVT 551 MDR2B are standard types and can be ordered one piece if required.

Other AVT types than AVT 251, AVT 551 , AVT 251 MDR2B and AVT 251 MDR2B can be ordered in minimum 25 pcs per each type.

Technical data

Electrical	Power Supply	24 Vac (± %5), 50-60 Hz 15-35 Vdc
	Power Consumption	< 2.5 W
Outputs	Current Output	4-20 mA, maximum 500 Ω
	Voltage Output	0-10 Vdc, minimum 1.000 Ω 0-5 Vdc, minimum 1.000 Ω
	Relay Output	max. rating 1A @ 220 Vac
Accuracy	Air Velocity	± 5 % for 0-20 m/s
	Temperature	0.5°C at min 1 m/s
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	Air Velocity	
	AVT 2	0-5 m/s 0-10 m/s 0-15 m/s 0-20 m/s
	AVT 5	0-1 m/s 0-2 m/s 0-3 m/s 0-5 m/s
	Temperature	-30 to +70°C and 0 to +100°C
Connections	X1-X2Terminals	Pluggable screw terminal
	X3 terminals	Fixed screw terminal
	Cable	maximum 1.5mm2
	Cable Gland	M16
Protection	Enclosure	IP65
	Probe	IP10
Standards	EMC Directive	EN 61326-1
	CE Conformity	CE1708
Dimensions	Enclosure	98.0 x 81.5 x 45.5 mm
	Probe	diameter 13 mm, length 255 mm
Packing (carton) dimensions	100 x 90 x 330 mm	
Weight Packed	270 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.

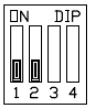
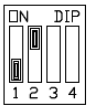
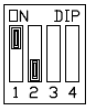
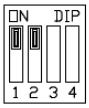
Response Time Setting

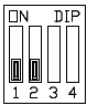
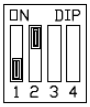
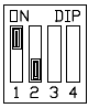
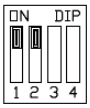
Please check if there is any special instruction on the enclosure or inside the cover

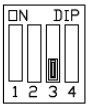
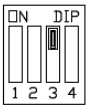
DIP	Response Time
	5 sec
	1 sec

Range Settings

Please check if there is any special instruction on the enclosure or inside the cover

DIP	AVT 5 ranges
	0…5 m/s
	0…3 m/s
	0…2 m/s
	0…1 m/s

DIP	AVT 2 ranges
	0…20 m/s
	0…15 m/s
	0…10 m/s
	0…5 m/s

DIP	Temp. Ranges
	-30 …+70°C
	0 …+100°C

On request output number 2 (AO2) can be supplied as Temperature output instead of Air Velocity output.

Electrical Connections

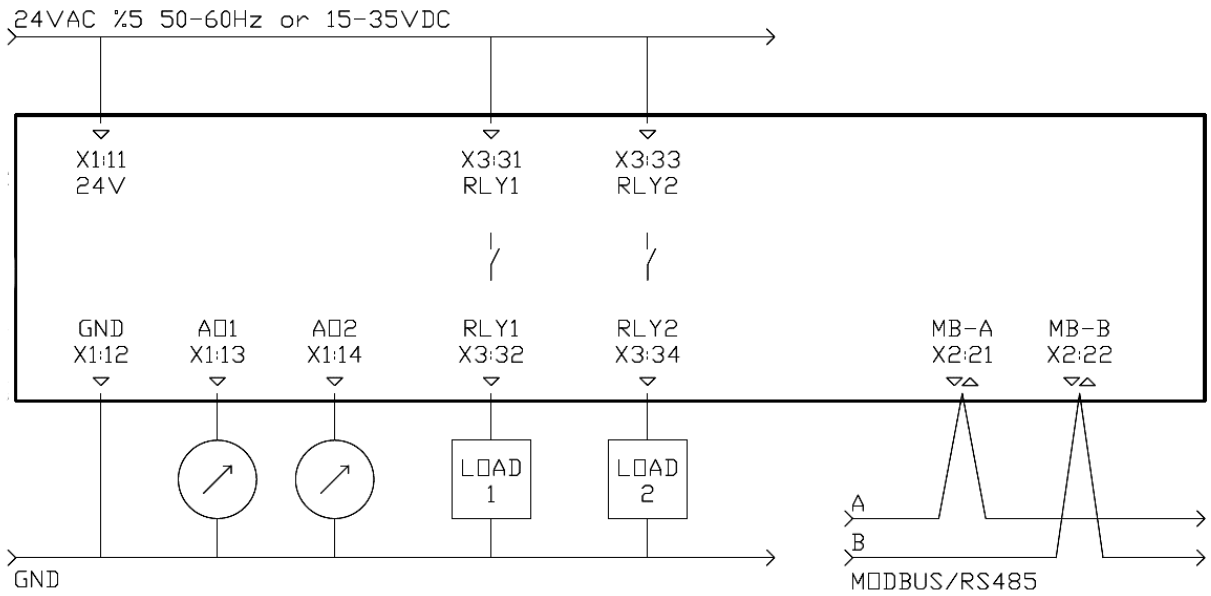
1.. Please be sure about current direction for current outputs and polarity for voltage outputs.

2.. Relay contact is Normally Open and rating is max. 1A at 230VAC

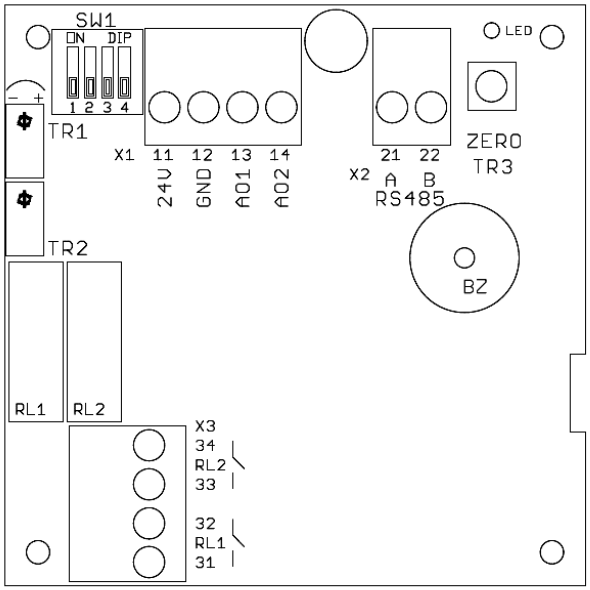
3.. We kindly advise using 24V for avoiding high voltage harmonics and external power relay for bigger loads

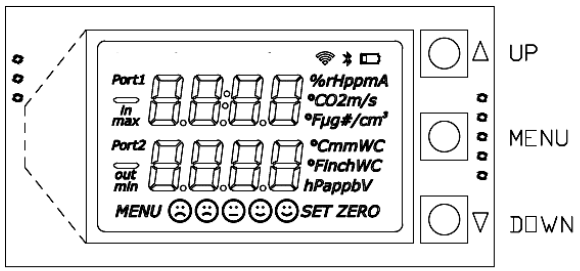
4.. Please use shielded and twisted paired cables for Modbus connections

5.. Please observe RS485 termination rules, max. 32 devices in a single Modbus line



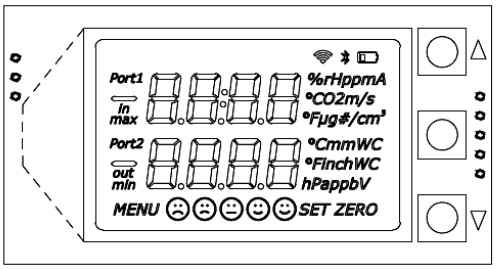
Transmitter Hardware





SW1	DIP Switch for configuration range and response time	
X1 TERMINAL		
11	24V	15…35 Vdc or 24 Vac (± %5, 50-60 Hz)
12	GND	ground for power and reference for outputs
13	AO1	analog output 1
14	AO2	analog output 2
X2 TERMINAL		
21	A / RS485	modbus communication positive pair
22	B / RS485	modbus communication negative pair
LED	bead LED, periodically lights ON and OFF modbus communication, blinks when there is a communication	
TR1	span trimmer for AV	
TR2	offset trimmer for temperature	
ZERO / TR3	zero button for AV	
RL1 & RL2	relay 1 and relay 2	
BZ	buzzer	
X3 TERMINAL		
31-32	NO - RL1	relay 1 dry contact max. rating 1A @ 220 Vac
33-34	NO - RL2	relay 2 dry contact max. rating 1A @ 220 Vac

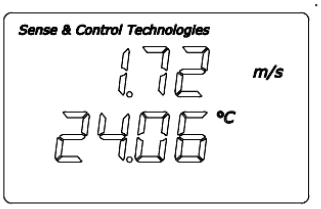
Display and Buttons



UP — *press for increasing the value or choosing the next parameter*

MENU — *press and wait to enter MENU, click to navigate between sub menus one by one*

DOWN — *press for decreasing the value or choosing the previous parameter*

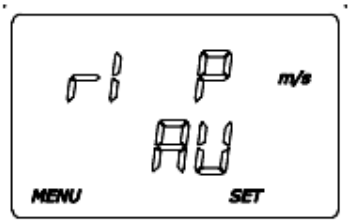


main screen
transmitter is working

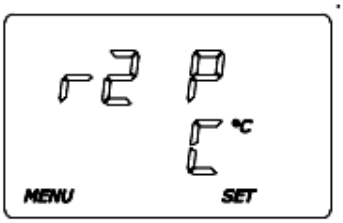
keep pressing MENU button until seeing SET
transmitter is not working in MENU mode

Parameters for Relay and Buzzer

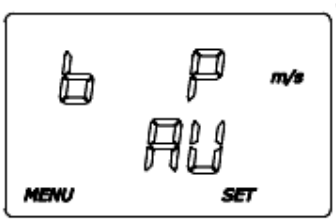
Main Screen >> r1 P >> r1 L >> r1 H >> r1 A >>
>> r2 P >> r2 L >> r2 H >> r2 A >>
>> B P >> B L >> B H >> B A >> Main Screen



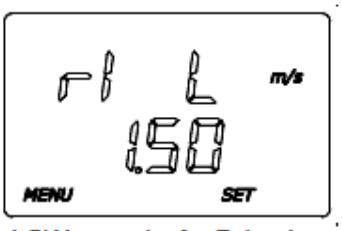
PARAMETER selection for Relay 1



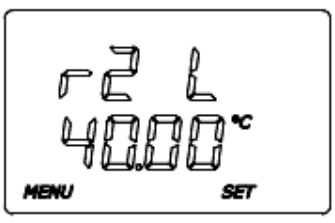
PARAMETER selection for Relay 2



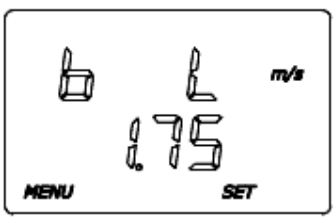
PARAMETER selection for Buzzer



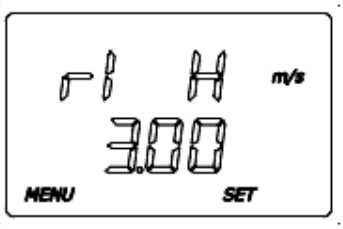
LOW set point for Relay 1



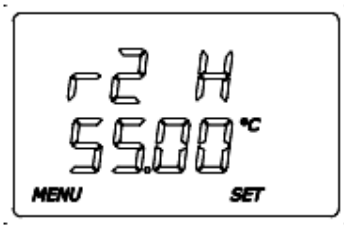
LOW set point for Relay 2



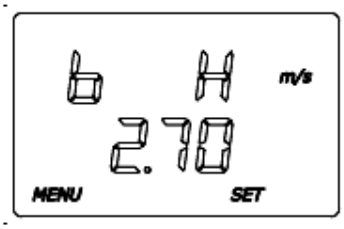
LOW set point for Buzzer



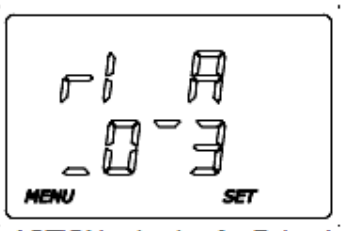
HIGH set point for Relay 1



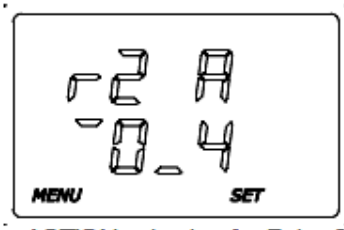
HIGH set point for Relay 2



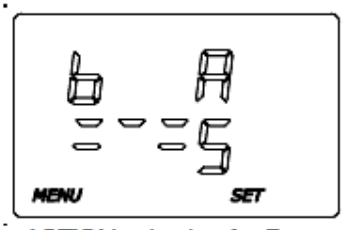
HIGH set point for Buzzer



ACTION selection for Relay 1



ACTION selection for Relay 2

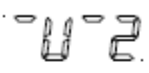


ACTION selection for Buzzer

Actions for Relay and Buzzer

action 0, valid for relays and buzzer,
relay contact is always OPEN
buzzer is always SILENCE

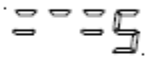
action 1, valid for relays and buzzer,
relay contact is CLOSED between points, OPEN under LOWpoint and OPEN over HIGHpoint
buzzer is WARNING between points, SILENCE under LOWpoint and SILENCE over HIGHpoint



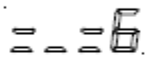
action 2, valid for relays and buzzer,
relay contact is OPEN between points, CLOSED under LOWpoint and OPEN over HIGHpoint
buzzer is SILENCE between points, WARNING under LOWpoint and SILENCE over HIGHpoint

action 3, valid for relays and buzzer,
relay contact is CLOSED over HIGHpoint, OPEN under LOWpoint, hysterisis between points
buzzer is WARNING over HIGHpoint, SILENCE under LOWpoint, hysterisis between points

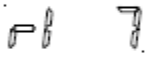
action 4, valid for relays and buzzer,
relay contact is OPEN over HIGHpoint, CLOSED under LOWpoint, hysterisis between points
buzzer is SILENCE over HIGHpoint, WARNING under LOWpoint, hysterisis between points



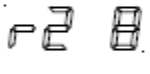
action 5, valid only for buzzer,
buzzer is WARNING over HIGHpoint, SILENCE under LOWpoint,
buzzer is WARNING intermittently between points,



action 6, valid only for buzzer,
buzzer is WARNING under LOWpoint, SILENCE over HIGHpoint,
buzzer is WARNING intermittently between points,



action 7, valid only for buzzer,
buzzer is following relay 1 contact,
buzzer is WARNING when relay 1 contact is CLOSED, SILENCE when the contact is OPEN



action 8, valid only for buzzer,
buzzer is following relay 2 contact,
buzzer is WARNING when relay 2 contact is CLOSED, SILENCE when the contact is OPEN

ACTIONS	under LOW	between LOW & HIGH	over HIGH
0 : 0.0.0	Open / Silence	Open / Silence	Open / Silence
1 : 0.I.0	Open / Silence	Closed / Warning	Open / Silence
2 : I.0.I	Closed / Warning	Open / Silence	Closed / Warning
3 : 0.X.I	Open / Silence	Hysteresis	Closed / Warning
4 : I.X.0	Closed / Warning	Hysteresis	Open / Silence
5 : 0.-.I	Silence	Pre Alarm	Warning
6 : I.-.0	Warning	Pre Alarm	Silence
7 : =r1	Silence when RL1 is Open, Warning when RL1 is Closed		
8 : = r2	Silence when RL2 is Open, Warning when RL2 is Closed		

0 : Relay Contact is OPEN, Buzzer is in Silent mode
I : Relay Contact is CLOSED, Buzzer is in Warning mode
X : Relay Contact is at HYSTERESIS position, OPEN if previous position open, CLOSED if previous position closed
: Buzzer is in HYSTERESIS mode, Silent if previous mode is silent, Warning if previous mode is warning
- : Buzzer is in PRE ALARM mode, Buzzer is warning intermittently

Modbus RS485 Protocol

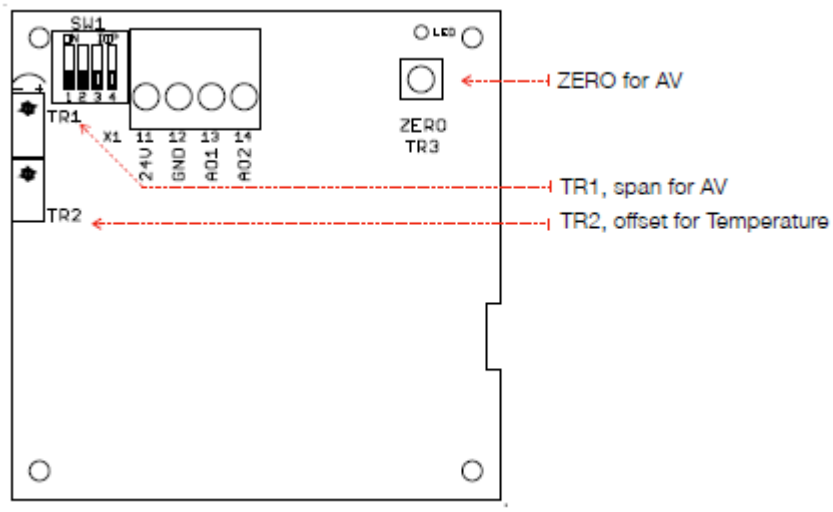
Default Settings: Modbus ID:1, 9600, 8bit, None, 1. Register Table starts from Base 1.

Use Function 3 for Reading and Function 6 for Writing Holding Registers. Whenever writing to any Modbus Parameter, new parameter is activated instantly and you should have to configure 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 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...2.000	AV as m/s x100, divide by 100 for exact value
5	R	-3.000...10.000	TEMP as C x100, divide by 100 for exact value
6	R	0 or 1	Relay 1, contact position, 0: OFF - Contact is Open, 1: ON - Contact is Closed
7	R	0...1.000	Relay 1, LOW point
8	R	0...1.000	Relay 1, HIGH point
9	R	0...4	Relay 1, ACTION
10	R	0 or 1	Relay 2, contact position, 0: OFF - Contact is Open, 1: ON - Contact is Closed
11	R	0...1.000	Relay 2, LOW point
12	R	0...1.000	Relay 2, HIGH point
13	R	0...4	Relay 2, ACTION
14	R	0 or 1	Buzzer, 0: OK-Silence, 1: PreAlarm - warning intermittently, 2: WARNING continuously
15	R	0...1.000	Buzzer, LOW point
16	R	0...1.000	Buzzer, HIGH point
17	R	0...4	Buzzer, ACTION
18-28			set-up parameters, never use, never change..!
29	R	0...2.000	AV as m/s x100, divide by 100 for exact value
30	R	0...3.937	AV as feet/min
31	R	-3.000...10.000	TEMP as C x100, divide by 100 for exact value
32	R	-30...100	TEMP as C
33	R	-2.200...21.200	TEMP as F x100, divide by 100 for exact value
34	R	-22...212	TEMP as F

Calibration



General Data

1.. Typical characteristic is set at the factory

2.. Please check air flow direction before any calibration

3.. Temperature measurement needs min. 1 m/sec air flow

4.. Adjust the response time to 1 sec.

5.. Please use a precision multimeter.

ZERO for Air Flow

1.. Close the probe with protection cover or you should have to be sure that air flow is 0 m/sec.

2.. Keep pressing ZERO button for min. 5 seconds

3.. ZERO (0 m/sec) calibration is done

SPAN for Air Flow

1.. Apply %50 air flow of range set by DIP switch

2.. Adjust the TR1 trimmer while reading analog out or display

OFFSET for Temperature

1.. Apply air flow min. 1 m/sec

2.. Adjust the TR2 trimmer while reading analog out or display

Drawing / Dimensions