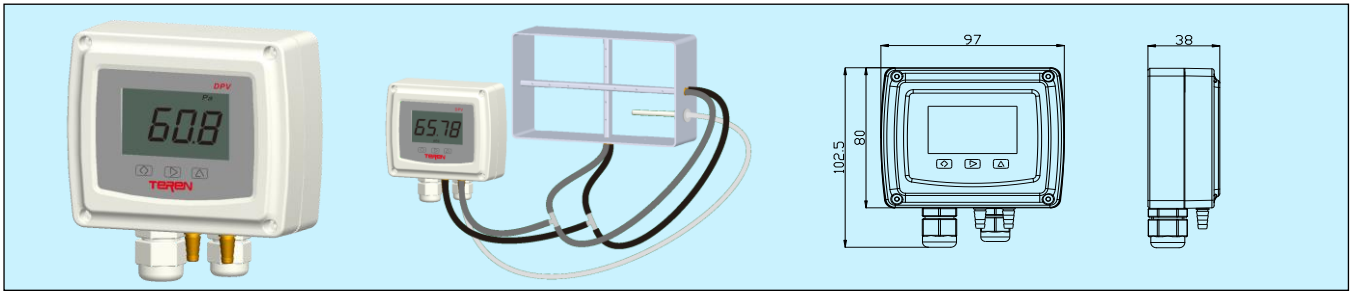# DPV Multi-function Airflow Velocity/Volume Transmitter



## Applications & Features

- Apply high accuracy MEMS sensor and digital technology, can measure air velocity/volume of various ventilation, air conditioning systems and equipment
- High accuracy, excellent temperature compensation and electromagnetic interference(EMI) ability(industrial EMI level 3), good for applications in complex EMI environments of industrial systems or equipment
- Multiple ranges and engineering units
- Multiple outputs selection, over voltage and reverse polarity protection, high reliability
- Optional remote probe for temperature measurement and compensation
- The LCD display and keys can set zero calibration, unit switching, response time, air velocity or volume mode, compensation/coefficient calibration and parameters, etc.
- High protection rate up to IP65

## Specifications

**Air velocity/volume:**

**Medium:** non-combustible, non-corrosive air, insensitive to moisture, dust, condensation and oil

**Working/Medium Temp.:** -20~70°C

**Temp. Compensation:** 0~50°C

**Range:** 0-10/30/100m/s, see models

**Working Pressure:** overload 10xFS(<1kPa)/8xFS(>1kPa) burst 20xFS(<=1kPa)/10xFS(>1kPa)

**Temperature remote probe (Optional):**

**Cable:** white PVC cable, 4*0.2mm², 2m length, -40~85°C, Rins>100MΩ (25°C)

**Digital temperature sensor:** accuracy 0.2°C@-40~100°C

**Range:** 0~50°C (others can be set)

**Accuracy:** DP±0.5%FS; velocity/volume±2%FS; temp.±0.2°C

**Long term stability:** ±0.5%FS /Year(pressure)

**Thermal effect(pressure):** <0.03%FS/°C(zero), <0.04%FS/°C (FS)

**Response Time:** 0.5-30s, can be set by keys

**Output:** 0~10V, 4~20mA (3 wires), 0-5V, 1 channel for velocity/volume; 2 channels if temperature is selected.

**Output Load:** ≤500Ω(current), ≥2kΩ(voltage)

**Communication:** 1 RS485/Modbus, R/W enable, 9600 bps, terminal resistance settable

**Display and Keys:** large LCD (with unit display and backlight (N/A for 4~20mA output)) and 3 touch keys

**Display resolution**: 0.1 m/s, 1 m³/h or 0.1°C

**Display update time:** <1s

**Power:** current 18.5~35VDC ($R_L$=500Ω), 8.5~35VDC ($R_L$=0Ω), voltage 16~28VAC/16~35VDC；power consumption 1.5VA

**Process Connection:** 5mm ID tubing

**Zero set:** easy to reset by keys

**Work Temp.:** -20~70°C, 0~95%RH (Non cond.)

**Storage Temperature:** -30~85°C, 0~95%RH (Non cond.)

**Medium Temperature:** -40~100°C

**Housing:** fire retardant PC(UL94V-0), copper nozzle

**Protection:** IP65

**Matched Sensor:** it should be applied along with the flow sensor like average flow measurement blades AFMB, L or S type pitot, refer corresponding product description

**Weight:** 220g (without temperature sensor and cable)

**Approval:** CE, meet EN61326-1 for industrial equipment

## Models

| Model | DPV | | | | Multi-function Airflow Velocity/Volume Transmitter |
|---|---|---|---|---|---|
| **Range** | | 1 | | | 0-10m/s(0-125Pa) |
| | | 2 | | | 0-30m/s(0-1000Pa) |
| | | 3 | | | 0-100m/s(0-10000Pa) |
| **Output** | | | 1 | | 0-10VDC |
| | | | 2 | | 4-20mA(3 wires) |
| | | | E | | 0-5VDC |
| | | | 8 | | RS485/Modbus RTU |
| **Temp.*** | | | | 0 | N/A |
| | | | | 1 | Remote temperature probe |

*Temperature option is supplied with a remote temperature probe and provides the same output as velocity/volume output signal.
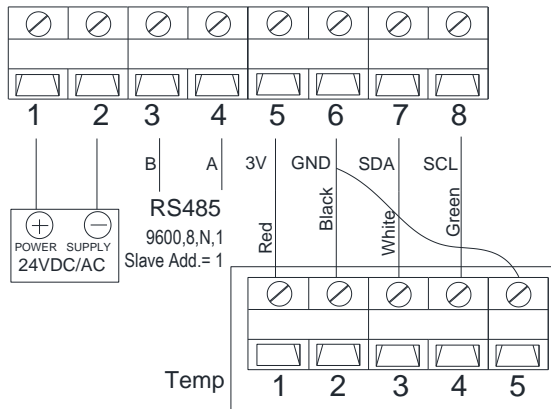
## Connection

**0~10V/5V:**
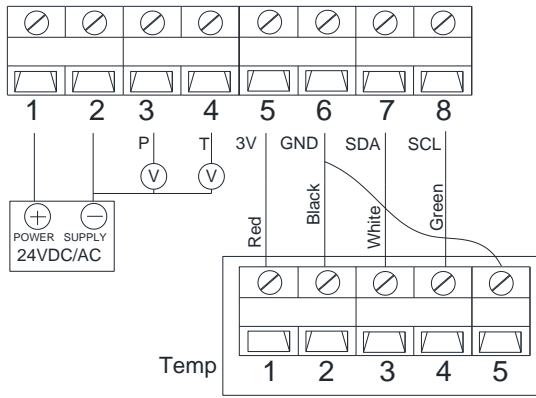


**4~20mA:**
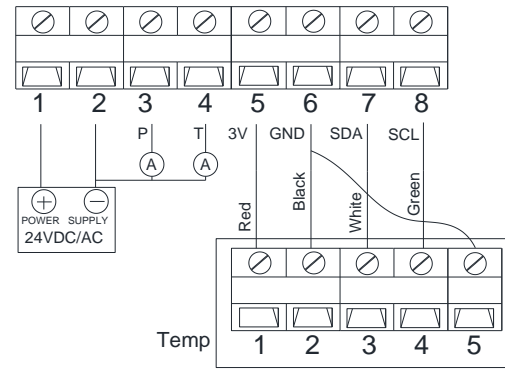


**RS485:**



## Settings

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

Terminal resistance：None（Default）

Terminal resistance：120Ω

## Installation

1. Surface mount: open the front cover and install the bottom box on the surface with 4 screws. As shown in Figure 1.
2. Installation on "86 bottom box": as shown in Figure 2 below, open the two 4.5mm diameter screw holes on the bottom, and install it with the "86 bottom box" with the 2 screws.
3. Pressure connection: according to the "+"/ "-" indication on the enclosure, finish the high/low pressure connection accordingly.
4. 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.
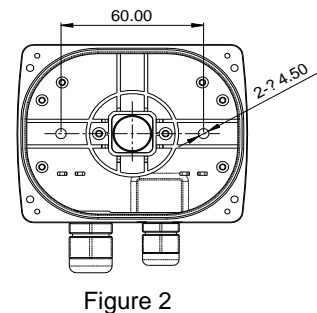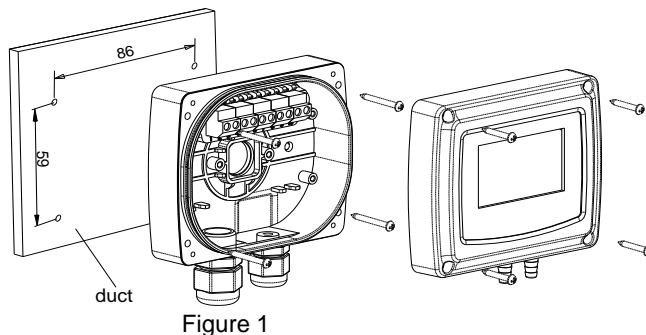


Figure 1



Figure 2

## Temperature sensor installation

It is recommended to use the attached flange for installation, as shown in the figure below, with the insertion depth adjustable. Use four screws to fix the mounting flange on the air duct. The screw on the flange can lock the inserted probe and the whole enclosure. The probe hole in the duct is Φ7mm. The opening must be sealed after the installation.
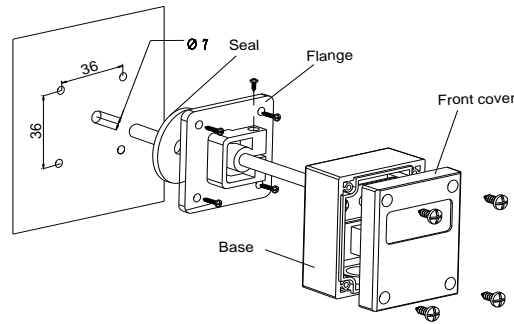
## Zero reset & Calibration

According to different environment and sensor's characteristics, for long term of using, the sensor's accuracy maybe drift. The transmitter should be zero reset after initial installed to meet the specified accuracy, and be zero reset periodically in every 6-12 months' using. It is recommended to be "zero reset" after the initial 7 days continuous working.

Zero reset: keep the high (+) /low (-) pressure ports unconnected in stable air, or directly connect them, press the button "SEL" for 5s to perform "zero reset". It means "remove the zero drift of the transmitter in order to improve the accuracy". It is recommended that this operation could be done periodically.

Initial zero reset: when initial power on, it should be zero reset after fully warm-up and stable, to meet the specified accuracy.

Long term zero drift & reset: It may have long term zero drift after continuous working; customers can reset it periodically.

Re-calibration & zero reset: when re-calibration needed, zero reset should be done first. A qualified standard manometer is needed for re-calibration operation.

## 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 (18) months after the production date.
● It does not extend to any unit that has been subjected to misuse or accident.
● It is, in any event, strictly limited to the replacement or repair of the product itself.

# DPV Multi-function Airflow Velocity/Volume Transmitter - Operation Instruction
## (need LCD to apply)

## Button definition:

"SET": Set/Confirm/Save; "SEL": Bit Select/Decrease/ Zero Reset (press for 5s); "ADJ": Adjust/Increase;

Zero reset: keep the high(+)/low(-)pressure ports unconnected in stable air, or directly connect the two, press the button "SEL" 5s to reset the actual "zero point". It means "remove the zero drift of the transmitter in order to improve the accuracy". It is recommended that this operation could be done periodically.

## Operation instruction:

**1. "P810": Reset**
SET→SEL/ADJ→P810→SET
User can restore the factory default set. Input "P810", "Pret" will blink, press button SET, all factory default set will restore.

**2. "P075": Set the response time (Default set: 0.7s, available range: 0.5-30.0s)**
SET→SEL/ADJ→P075→SET→SEL/ADJ→XXX→SET. (XXX means set time)

**3. "P083": Check LED display function, it will display the 4 digits one by one.**
SET→SEL/ADJ→P083→SET

**4. "P081": Set Engineering Unit (Default set: 1, for engineering unit m/s, available ranges: 1-2)**
SET→SEL/ADJ→P081→SET→SEL/ADJ→XXX→SET (XXX means the code of engineering unit), then the relevant LED on.
(Index: 1: m/s; 2: $m^3/h$)

**5. "P485": Set RS485 address(Default set: 1, available ranges 1-255, but recommend 1-32)**
SET→SEL/ADJ→P485→SET→SEL/ADJ→XXX→SET (XXX means RS485 address)
**Note**：Refer to the communication data table

**6. "P483": Set RS485 baud rate (Default set: 9600, available value: 9600 or 4800)**
SET→SEL/ADJ→P483→SET→SEL/ADJ→XXX→SET (XXX means RS485 baud rate)
Codes: 1: 9600bps; 2: 4800bps.

**7. "P482": Set RS485 parity bit (Default set: 0, available value: 0, 1 or 2)**
SET→SEL/ADJ→P482→SET→SEL/ADJ→XXX→SET (XXX means RS485 parity bit)
Codes: 0: No parity 1: Odd parity; 2: Even parity.


**8. "P126" Air velocity calculation temperature input (Default set: 20.0, available range -40.0-85.0), unit °C**
SET→SEL/ADJ→P126→SET→SEL/ADJ→XXX→SET (XXX means Setting parameters)


**9. "P127" Air velocity calculation humidity input (Default set: 50, available range 0-99) , unit %RH**
SET→SEL/ADJ→P127→SET→SEL/ADJ→XXX→SET (XXX means Setting parameters)


**10. "P128" Air velocity calculation barometric pressure input (Default set: 1013, available range 500-1100), unit mbar**
SET→SEL/ADJ→P128→SET→SEL/ADJ→XXX→SET (XXX means Setting parameters)


**11. "P129" Air velocity calculation Pitot tube coefficient input (Default set: 1, available range 0.01-99.99)**
SET→SEL/ADJ→P129→SET→SEL/ADJ→XXX→SET (XXX means Setting parameters)
This parameter is the value of the applied Pitot tube coefficient


**12. "P130" Air velocity calculation area input (Default set: 0.010, available range 0-9.000), unit $m^2$**
SET→SEL/ADJ→P130→SET→SEL/ADJ→XXX→SET (XXX means Setting parameters)


**13. "P160" Temperature compensation input (Default set: 0, available range -40.0-100.0), unit °C**
SET→SEL/ADJ→P160→SET→SEL/ADJ→XXX→SET (XXX means Setting parameters)


**14. "P001" View pressure data (display range 0-9999), unit Pa**
SET→SEL/ADJ→P001→SET View dynamic pressure, no negative pressure display.


**15. "P002" View temperature data, unit °C**
SET→SEL/ADJ→P002→SET


**16. "P003" View air velocity or volume data (air velocity range 0-100), unit m/s**
SET→SEL/ADJ→P003→SET
If air volume unit is selected, then display the air volume. If air velocity unit is selected, then display the air velocity. When the air volume exceeds 9999$m^3$/h, K is displayed on the upper left of the display screen (K stands for *1000 times.)


**17. "P093" temperature range setting (available range -85-150), unit °C**
SET→SEL/ADJ→P093→SET→SEL/ADJ→XXX(Range low limit)→SET →SEL/ADJ→XXX(Range high limit)→SET


## System Error signal:
**Er1: Instruction setting error, it means there is no such instruction.**
**Er2: The parameter setting is wrong, which means the parameter setting is wrong.**
**Er3: The temperature sensor is abnormal.**
**Er7: Communication error with sensor.**
**Er8: The connection with the sensor is wrong.**
Note: The temperature display resolution: the actual display resolution is 0.01°C in the range of -19.99~99.99°C, below -20°C and above 100°C, due to the limitation of the 4-digit LCD screen, the display resolution can only be 0.1°C.

**TEREN**

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