



FTM94/95

Suitable for harsh environments, industrial processes flow monitoring or slightly corrosion compressed air

| Features |

- IP67 Rugged aluminum alloy case, fit in variety harsh environment
- Easy to install, imported sensing element, high accuracy, long-term stability
- Switch multifunction physical quantities: m/s, ft/s, Nm³/h, Nm/s, L/min (Air velocity & volume)
- LCD Display of air velocity and Temp.



| Introduction |

FTM94/95 Hot wire thermal air velocity transmitter working at a constant Temp. using King's law heat balance equation for:

$$e^2 = a' + b'v^n$$

e : Sensor voltage output(V)
 a' : Zero output of constant temperature hot wire anemometer, can be eliminated by circuit
 b' : Sensitivity of the sensor, related to the operating temperature
 v : Fluid flow rate
 n : 0.45 ... 0.5(Standard)

Can be calculated from the formula characteristic curve of constant Temp. hot wire anemometer, special double PT probe and full metal housing design, high accuracy, suitable for a variety of pipe diameters, widely used in industrial fields.



Applications:

Industrial process gas supply / Flow monitoring for consumption and drying / Compressed air consumption measurement / Building / Plant / Clean room / Hospital / Semiconductor / Electronics industry / Paper / Printing / Textile / Steel industry / Food / Chemical / Pharmaceutical / Biotechnology industry

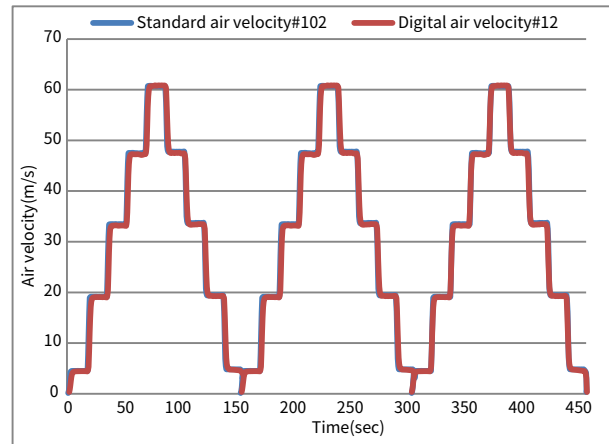
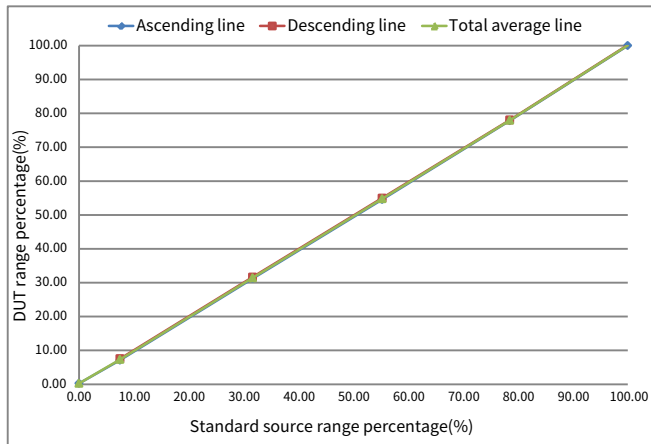


| Specification |

| Item | | Function & Parameter |
|---------------|---------------------------------|---|
| Input | Type | Pt20 / Pt300(Air velocity)·Pt1000(Temp.) |
| | Measuring range | 0 ... 120 Nm/s, N:Working condition (Definition:20°C at 1013 hPa);Units can be converted Nm/s (Flow rate) or Nm ³ /h(Flow)(Option) |
| | Minimum initial value | 0.15 Nm/s |
| Output | Installation angle effect | <3% of the measured value (When the installation angle<10°) |
| | Signal | 4 ... 20 mA / 0 ... 10 V / RS-485 / Impulse |
| | Preset output | Out1:Air velocity;Out2:Impulse |
| | Impulse range (0 ... 100 HZ) | (1)0 ... 100 Hz:4 ... 20 mA (2)0 ... 100 Hz:0 ... 10 V |
| | Signal connection | 3-wire |
| | Linear accuracy | ±1.5% |
| | Accuracy test | Test environment:at 25°C |
| | Warm-up time | <60 sec |
| | Reaction time | t90<5 sec |
| | Temp. effect | 0.05% / °C |
| | Display type | LCD Module with back light, double-row (Up air velocity, down temperature(Default: 0 ... 120°C)) |
| | Load resistance | Current output: ≤500 Ω;Voltage output: ≥10 KΩ |
| Environmental | Measuring medium | Air |
| | Operating Temp. & Humid. | With display:-20 ... +60°C / 0 ... 95%RH(Non-condensing) Without display:-20 ... +60°C / 0 ... 95%RH(Non-condensing) |
| | Probe operating Temp. | 0 ... 120°C(Air velocity has an error of 2 ... 3 m/s due to the increase of the working environment Temp.)Option:150°C |
| | Storage Temp. & Humid. | -20 ... +60°C / 0 ... 95%RH(Non-condensing) |
| Electrical | Probe pressure | 10 bar |
| | Power supply | DC 24 V±10% |
| | Current consumption | <0.3 A |
| | Overvoltage protection | DC: <40 V |
| Installation | Electrical connections | M12 metal connector / terminal IP67 |
| | Fixed seat | 1/2"PT outside thread metal connector |
| Protection | Installation | Duct type / remote type |
| | IP rating | IP67(Probe);IP65(Housing) |
| Certification | Electrical protection | ■ Polarity protection ■ Over-voltage ■ Short-circuit |
| | Safety certification | CE certification |
| Material | Housing / probe | Aluminum alloy ; SUS304 |
| Weight | Each / g | FTM94:720 g / FTM95:832 g |

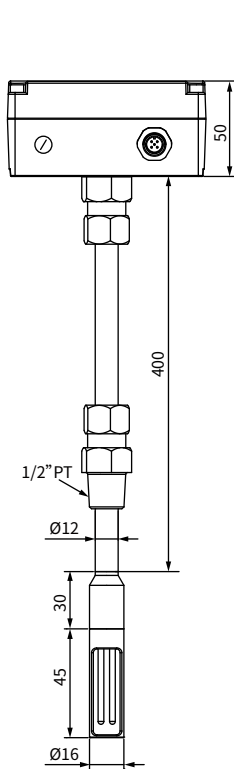
*Please make sure the product and the device which connect with RS-485 are on common ground, avoid damaged product.

| 3-Cycle curve |

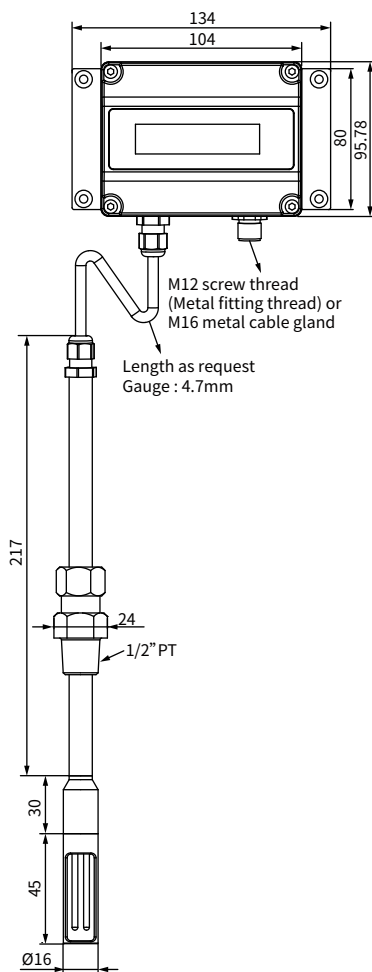


| Dimension | Unit : mm

1.FTM94(Duct)

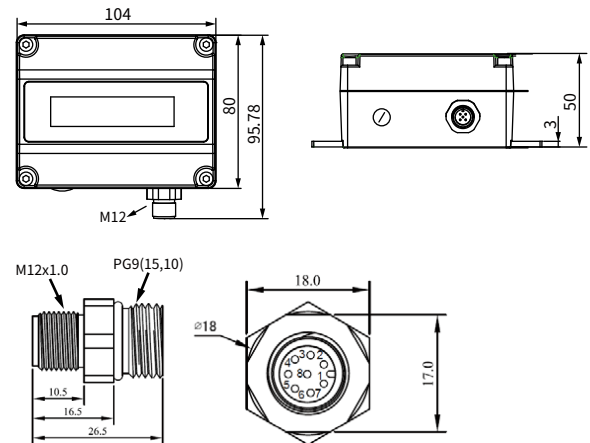


2.FTM95(Remote)

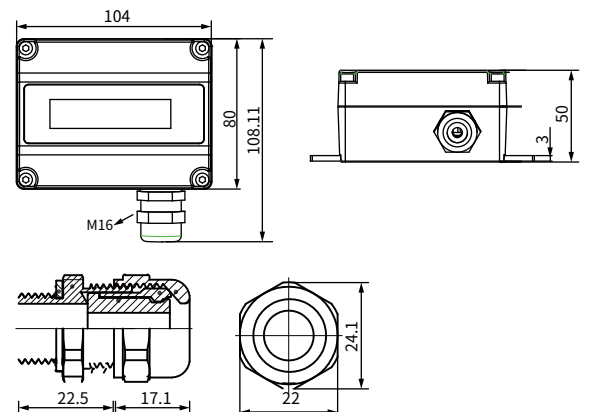


| Electrical Connector | Unit : mm

1.M type: M12-8PIN metal connector (RS-485+analog)



2.N type: M16-8PIN metal connector (RS-485+analog)



| Hot-wire measurement principle |

The thermal measuring principle

Abstraction of heat from a heated body by an enveloping gas flow(Hot-film Anemometer)

T between R_h and R_t = constant

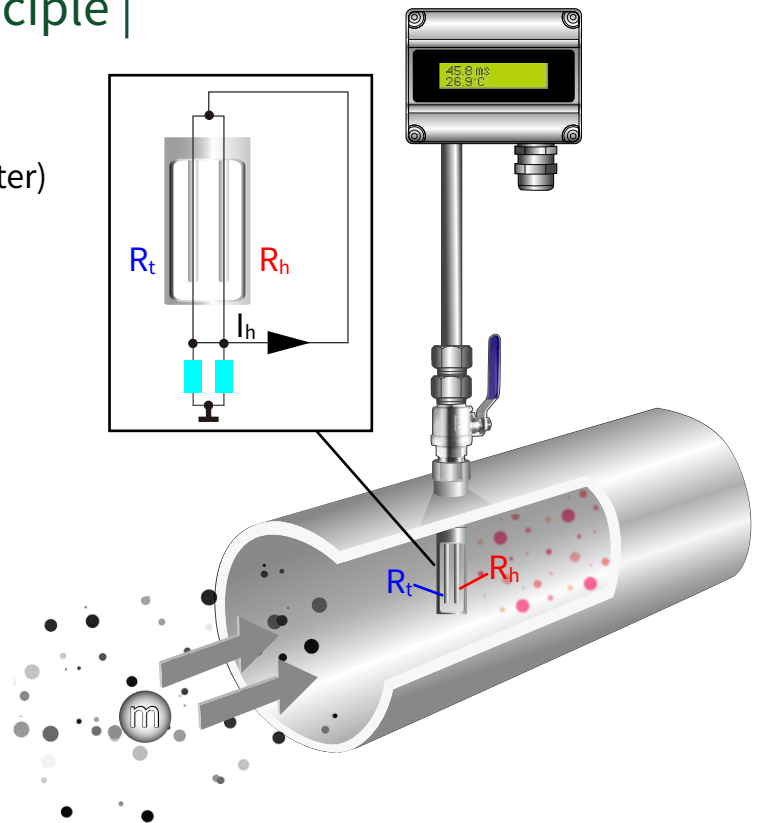
The loss of heat depends on the number of molecules that collide with R_h

m : Mass flow

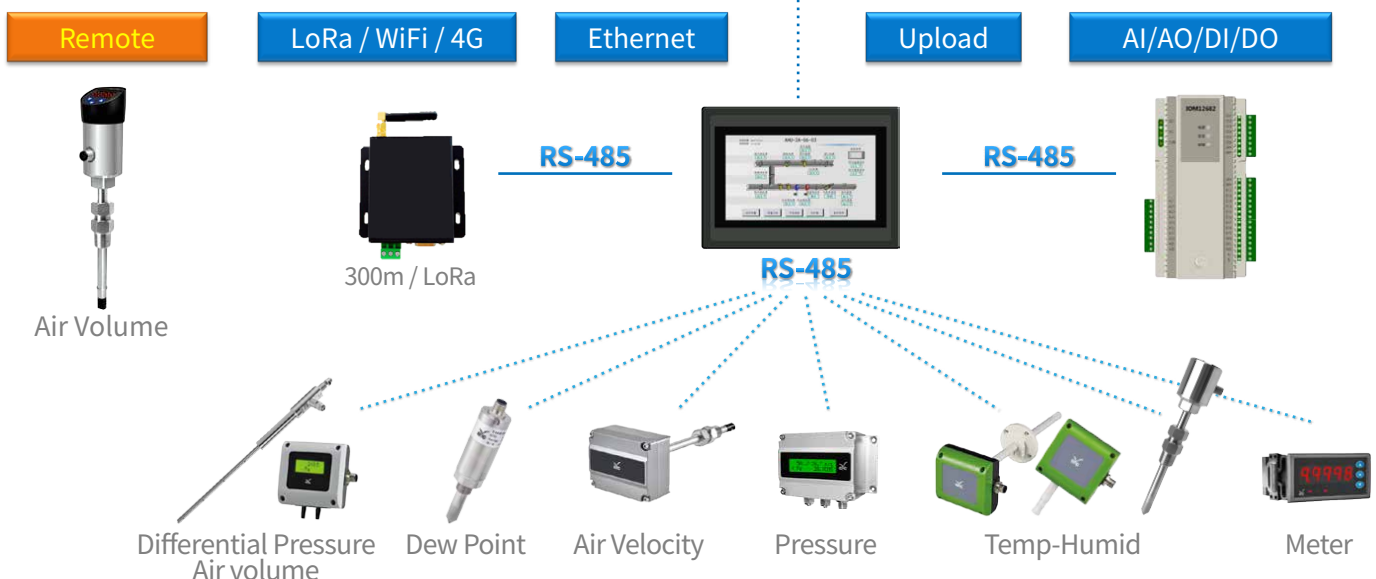
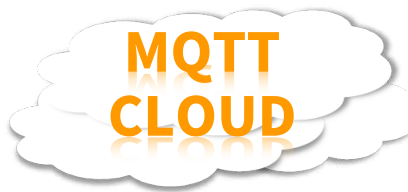
I_h : Heating current

R_h : Platinum thin-film resistor – electrically heated

R_t : Platinum thin-film resistor – gas temperature

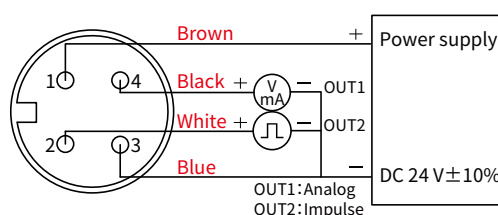
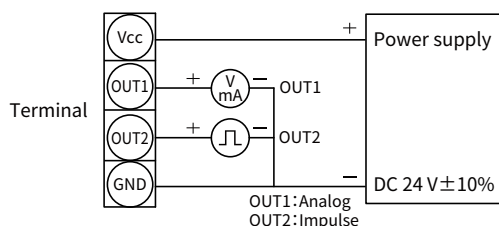


| Product application |

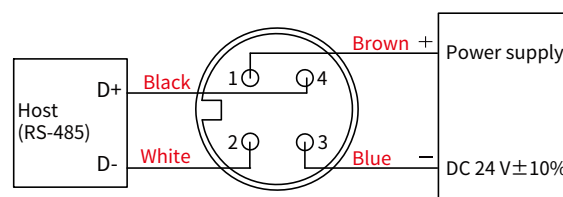
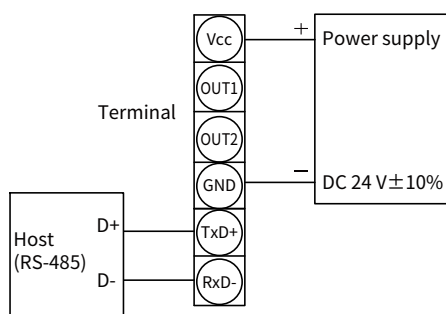


Connection Diagram

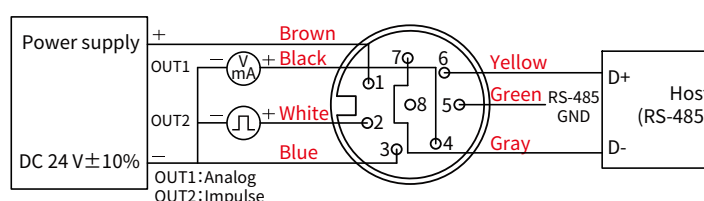
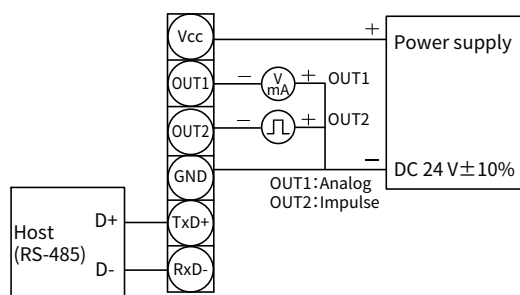
1. Analog & Impulse



2. RS-485



3. Analog+RS-485 & Impulse



Ordering Guide

| Installation | Measuring range | Output | Modbus | Cable | Display | Option |
|----------------------------------|--|--|--------|---|-------------------------|--|
| FTM 94 — 20 | 02: 20 Nm/s 04: 40 Nm/s 06: 60 Nm/s 09: 90 Nm/s 12: 120 Nm/s | 1 | 1 | X | D | N |
| 94: Duct type 95: Remote type | | 0: No 1: RS-485 | | 2: 2 m cable 5: 5 m cable W: Other lengths X: No | D: LCD display N: No | M: M12 metal connector (with 2 m electrical cable) N: Metal cable gland W: Other request |
| | | 1: 4 ... 20 mA+impulse 2: 0 ... 10 V+impulse 3: No | | | | |

Additional Option (ILAC / TAF) Test Report



Additional option: (ILAC / TAF) Test report - Standard calibration laboratory (TAF accreditation: 3032, complying with ISO / IEC 17025)
TAF has mutual recognition arrangement with ILAC MRA

| Project | Measurand level or range |
|------------|---|
| Anemometer | 0.2 ... 60 m/s (8 basic points on average or specified by customer) |