



# 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, Nm<sup>3</sup>/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

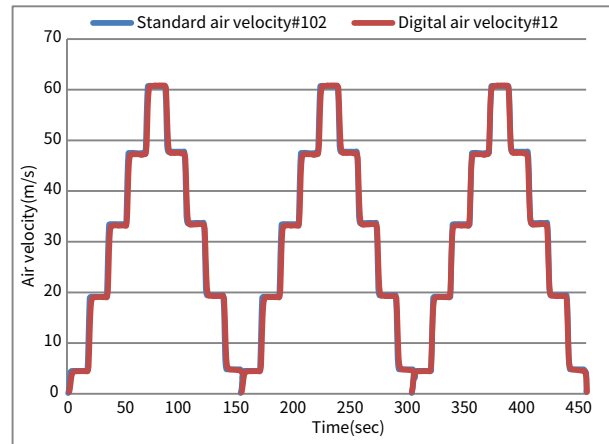
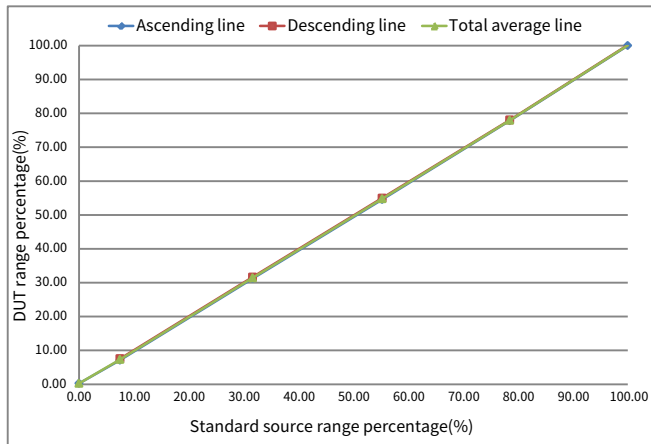


### | Specification |

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 <sup>3</sup> /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	t <sub>90</sub> <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

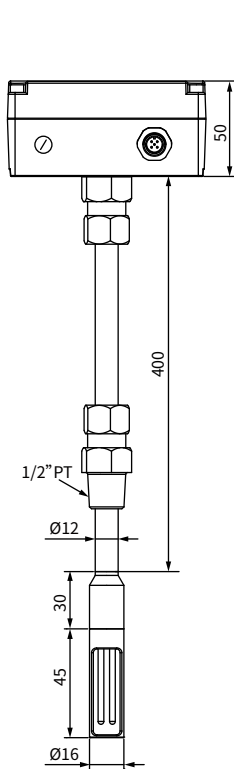
\*Please make sure the product and the device which connect with RS-485 are on common ground, avoid damaged product.

### | 3-Cycle curve |

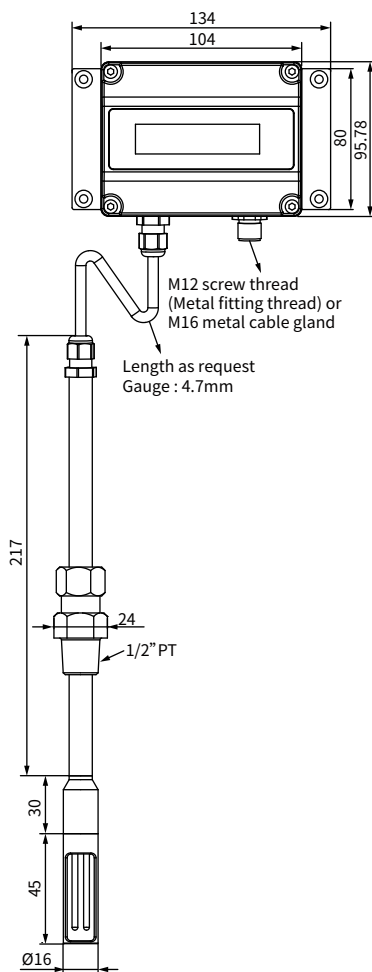


### | Dimension | Unit : mm

#### 1.FTM94(Duct)

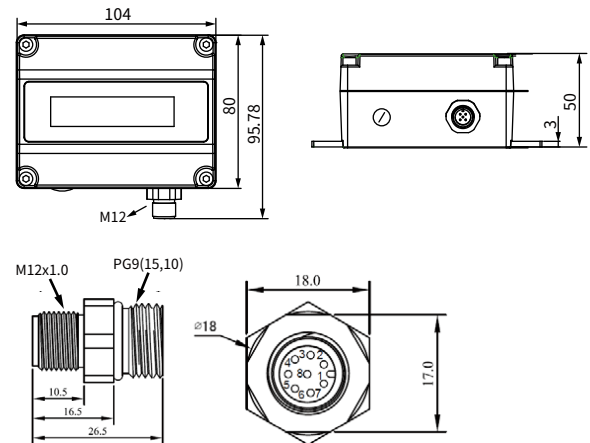


#### 2.FTM95(Remote)

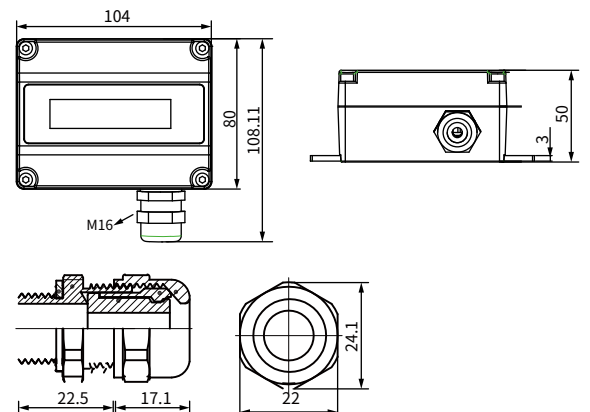


### | Electrical Connector | Unit : mm

#### 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

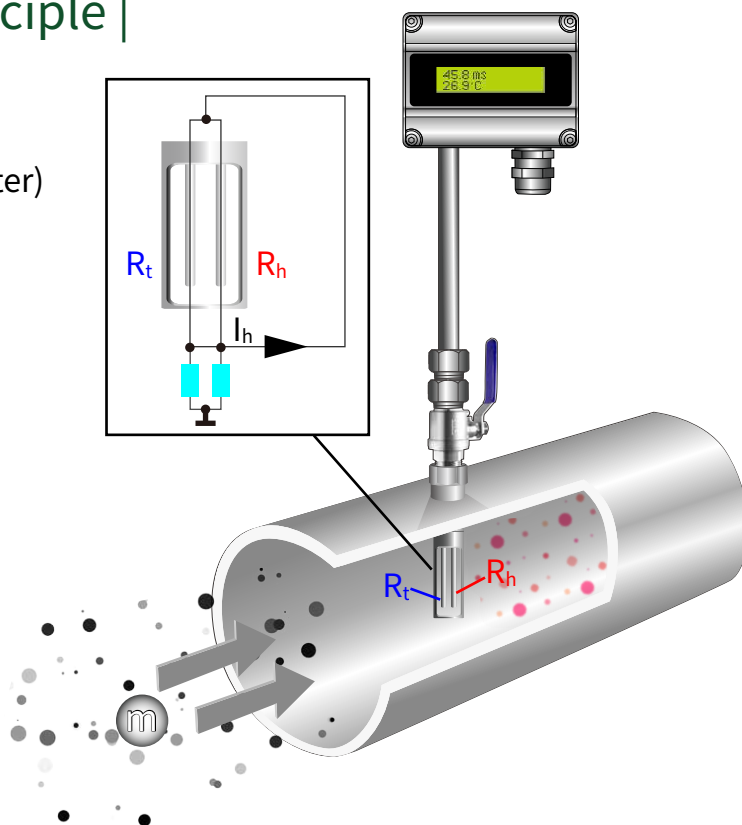
The loss of heat depends on the number of molecules that collide with  $R_h$

$m$ : Mass flow

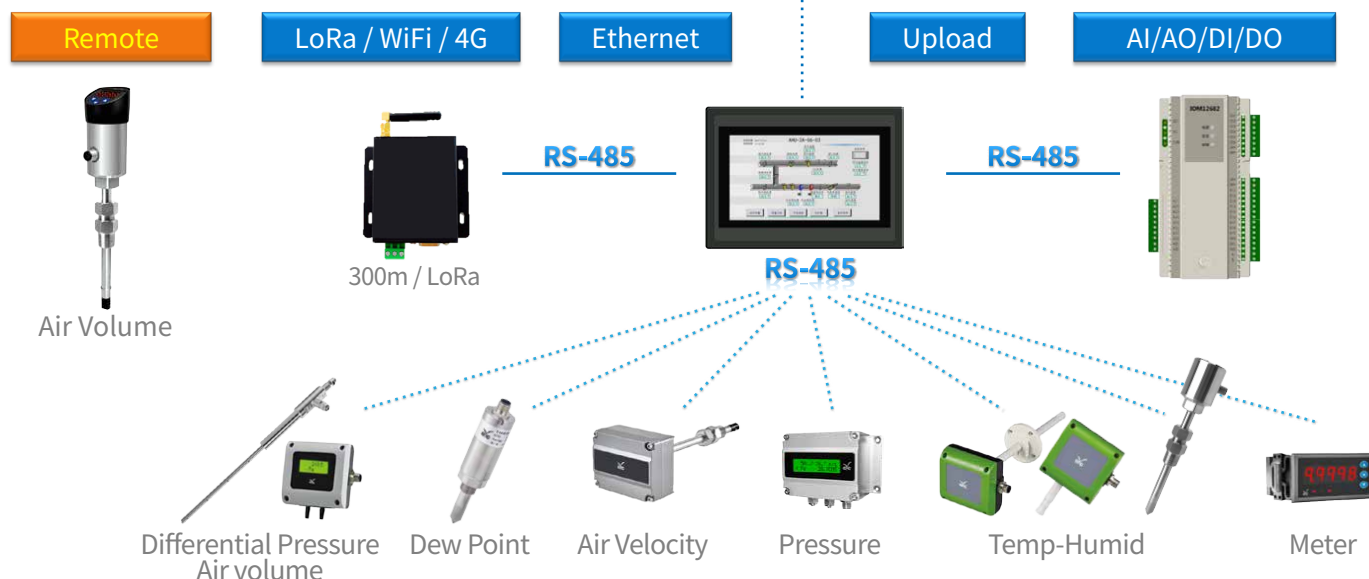
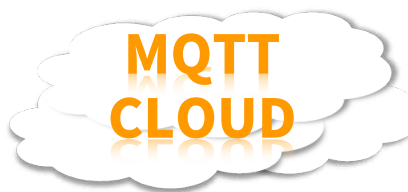
$I_h$ : Heating current

$R_h$ : Platinum thin-film resistor – electrically heated

$R_t$ : Platinum thin-film resistor – gas temperature

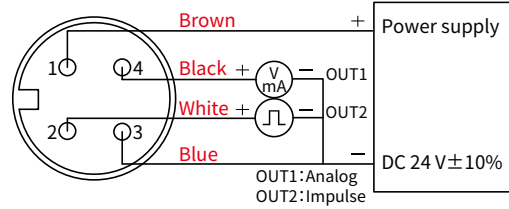
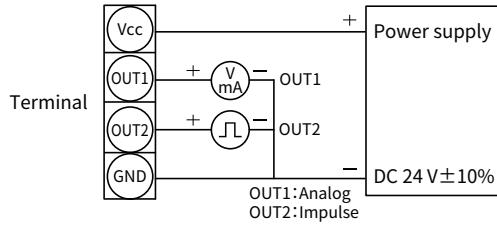


### | Product application |

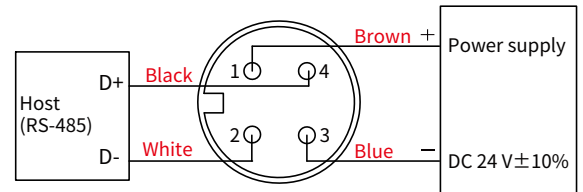
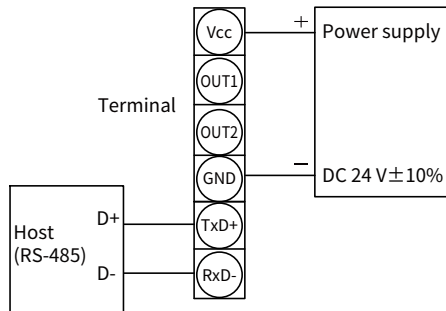


## Connection Diagram

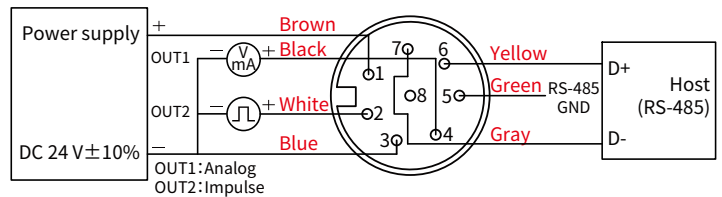
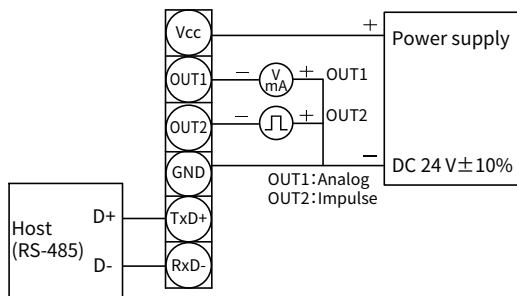
### 1. Analog & Impulse



### 2. RS-485



### 3. Analog+RS-485 & Impulse



## Ordering Guide

Installation	Measuring range	Output	Modbus	Cable	Display	Option
FTM 94	20	1	1	X	D	N
94: Duct type 95: Remote type	02: 20 Nm/s 04: 40 Nm/s 06: 60 Nm/s 09: 90 Nm/s 12: 120 Nm/s	1: 4 ... 20 mA+impulse 2: 0 ... 10 V+impulse 3: No	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

## 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)