

UF500 Flue Gas Ultrasonic Flowmeter

The UF500 determines gas flow velocity by measuring the transit time difference of ultrasonic signals. Ultrasonic sensor probes are installed either on one side or on both sides of the flue, positioned at a defined angle relative to the gas flow direction.



The probe connection line forms an angle (α) with the gas flow direction. The transmission times of the ultrasonic signals in the upstream and downstream paths are determined by the angle α and the gas flow velocity (v). A greater difference in transit time indicates a higher gas flow velocity.

Although fluctuations in temperature and pressure may cause variations in the propagation speed of ultrasound, such changes do not affect the accuracy of gas flow velocity calculation in this measurement method.

Instrument Technical Characteristics

- **Non-contact measurement:**

The probes do not come into contact with the flue gas (protected by an air curtain). They feature excellent corrosion resistance, high-temperature and dust tolerance, long service life, and minimal maintenance requirements.

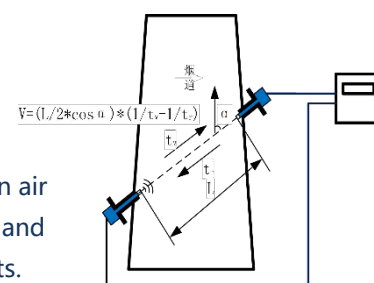
- **High-precision transducers and high reliability:** The system provides stable and accurate data even under complex operating conditions such as low flow velocity (as low as 0.1 m/s), high humidity, and varying gas compositions.

- **Wide measuring range and strong adaptability:**

Suitable for various flow velocity ranges (e.g., 0.1 m/s to 40 m/s or higher).

- **High-precision integrated circuitry:**

Ensures high measurement accuracy. Equipped with a self-diagnostic function for timely detection of sensor faults.



Specifications

- **Operating Principle:** Ultrasonic transit-time difference method
- **Measuring Range:**
 - Flow velocity: 0–40 m/s
 - Temperature: 0–300 °C (optional configuration)
 - Pressure: ± 5 kPa (optional configuration)
- **Measurement Accuracy:** ± 0.1 m/s
- **Repeatability:**
 - When $V > 2$ m/s: $\pm 1\%$
 - When $V < 2$ m/s: ± 0.02 m/s
- **Digital Output:** Two RS485 channels
- **Analog Output:** Three 4–20 mA channels
- **Power Supply:** 220 VAC, 50 Hz, 75 W
- **Ambient Temperature:** -10 °C to $+60$ °C
- **Protection Class:** IP65
- **Weight:** 7.5 kg
- **Air Supply Requirement:** 0.4–0.6 MPa compressed air, oil-free and moisture-free (dew point ≤ -40 °C)