

# Panda PUDF305 Series



## Doppler Portable Ultrasonic Flow Meter

### Summary >>>

PUDF305 doppler portable ultrasonic flow meter is designed for measuring liquid with suspended solids, air bubbles or sludge in a sealed closed pipeline. Non-invasive transducers are mounted outside surface of the pipe. It has advantage that measurement is not influenced by pipe scale or blockage. It's simple to install and calibrate due to unnecessary pipe cutting or flow stop.



### Features >>>

- Chargeable Lithium Battery Can Continuously Work For 50 Hours
- Non-invasive Installation, Unnecessary pipe cutting or flow interruption, Acceptable Media Temperature Up To 260°C
- Measuring Accuracy  $\pm 0.5\%$  to  $\pm 2.0\%$  F.S
- Signal Automatic Gain Adjustment
- Anti-interference to Frequency Converter
- Simple Operation, Only Set Inner Diameter To Realize Flow Measurement
- 2\*8 LCD Display Flow Rate, Volume, Velocity etc.

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### Specification >>>

#### • Transmitter

Measuring Principle	Doppler
Velocity	0.05- 12 m/s, Bi-directional Measurement
Repeatability	0.4%
Accuracy	±0.5% - 2.0% F.S.
Response Time	2-60s (Select by user)
Measuring Cycle	500 ms
Suitable Fluid	Liquid containing more than 100ppm of reflector (suspended solids or air bubbles), reflector >100 micron
Power Supply	AC: 85-265V Built-in lithium battery can continuously work for 50 hours
Installation	Portable
Protection Class	IP65
Operating Temperature	-40°C ~ +75°C
Enclosure Material	ABS
Display	2X8 LCD, 8 digits flow rate, volume (resettable)
Measuring Unit	Volume/mass/velocity: liter, m³, kg, meter, gallon etc Flow time unit: second, minute, hour, day; Volume Rate:E-2~E+6
Communication Output	4~20mA,OCT
Keypad	6 buttons
Size	270*246*175mm
Weight	3kg

#### • Transducer

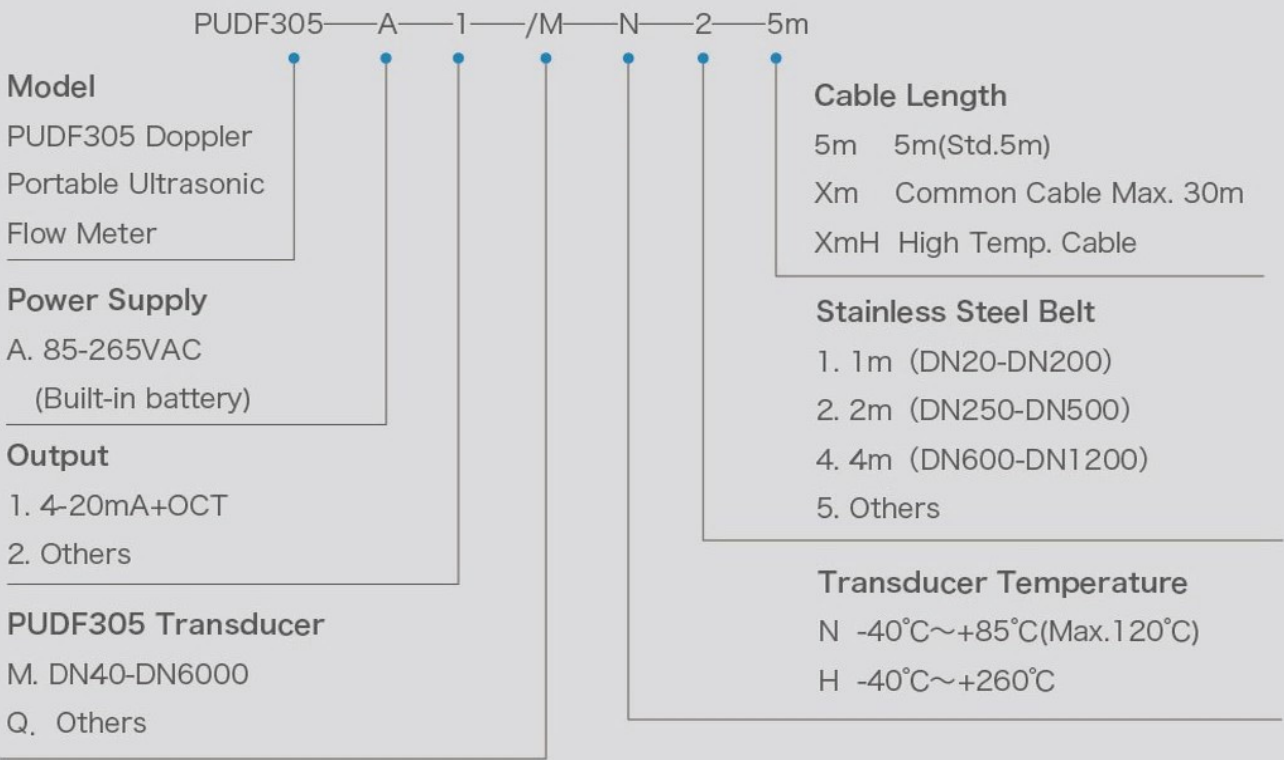
Protection Class	IP67
Fluid Temperature	Std. transducer : -40°C~85°C(Max.120°C) High Temp : -40°C~260°C
Pipe Size	40mm-6000mm
Transducer Type	General standard
Transducer Material	Std. Aluminum alloy, High Temp.(PEEK)
Cable Length	Std. 5m (customized)

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### Model Selection >>>



For example: PUDF305-A-1/M-N-2-5m

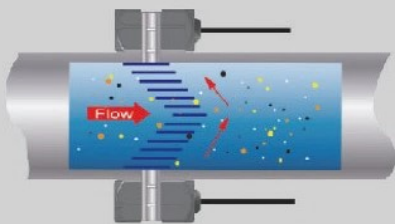
Stands for: PUDF305 Doppler Portable Ultrasonic Flow Meter, 220VAC power supply,4-20mA+OCT, standard transducer, transducer temperature is -40~85°C, stainless steel belt 2m, cable length 5m.



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## Doppler Ultrasonic Flow Meter

### Working Principle >>>



#### Formula:

$$Q_v = \frac{AC_1}{2K \cos \alpha} \frac{\Delta f}{f_1}$$

Doppler ultrasonic flow meter operates by transmitting an ultrasonic sound from its transmitting transducer, the sound will be reflected by useful sonic reflectors suspended within the liquid and recorded by the receiving transducer. Take clamp-on doppler ultrasonic flow meter as an example, the sound wave from a transmitting transducer goes through the pipe wall and into the moving liquid. The sound wave is reflected by suspended particles or bubbles moving with the liquid and ultimately gathered by receiving transducer. A frequency shift (Doppler effect) will occur that is directly proportional to the speed of the moving particles and bubbles. This shift in frequency is interpreted by the digital signal processor (DSP) and converted to a fluid velocity measurement. If the liquid is not moving, transmitting and receiving signal is equal, there is no frequency shift.

$Q_v$ =Volume flow,  $c_1$ =sound velocity,  $\alpha$ =signal angle,  $K$ =calibration factor,  $\Delta f$ =Doppler Shift,  $A$ =Profile Area,  $f_1$ =frequency

### Features >>>

- Excellent low flow rate measurement ability, low to 0.05m/s
- A wide range of flow measurement, high flow rate can reach 12m/s
- Signal Automatic Gain Adjustment
- Regardless of clamp-on or insertion type, unnecessary to cut pipe or stop flow
- Simple Operation, only input inner diameter to realize flow measurement
- Pulse Output Flow Rate, Total flow and Alarm
- Suitable for measuring raw sewage in large size pipeline

### Application >>>

Widely applied in municipal sewage settlement, drainage pumping station, environmental Monitoring and measuring drainage, industrial effluent, residential waste water, slurry, paper slurries, oil-water mixture etc in coal, metallurgy, mining, refinery, chemical, paper mill, food fields.