# Fixed Type
# Ultrasonic Flow Meter

## Introduction

- It is a wall-mount, clamp- on type ultrasonic flow meter which uses the transfer time technology. Designed using FPGA chip and low-voltage broadband pulse transmission. Both Clamp on type sensors and Insertion type sensors are available.
- it has a 240*128 back lit LCD with 4 line menu display and also the clear, user-friendly menu selections make flow meter more simple and convenient to use.Daily, monthlyand yearly totalized flow.
- Parallel operation of positive, negative and net flowtotalizes with scale factor (span) and BTU Capacity. While the output of totalize pulse and frequency output are transmitted via relay and open collector.

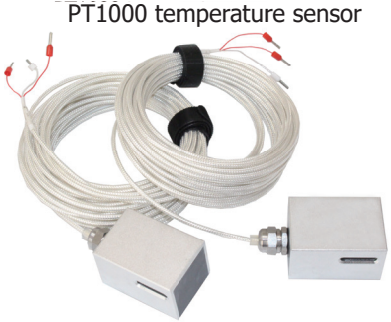
Glued Transducers

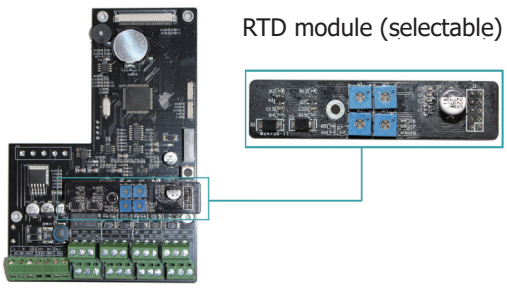

Normal Temp Transducer TT01


High Temp Transducer TT03

Clamp-on flow transducers adopt imported sealant and sealed by glue inside.
Integrated production of transducer and signal cable makes it true IP68 waterproof rating.
Matching degree between each pair of transducers is ≤ 2 nanoseconds.
Innovative hidden design of clamp fixtures is attractive and practical.

PT1000 temperature sensor





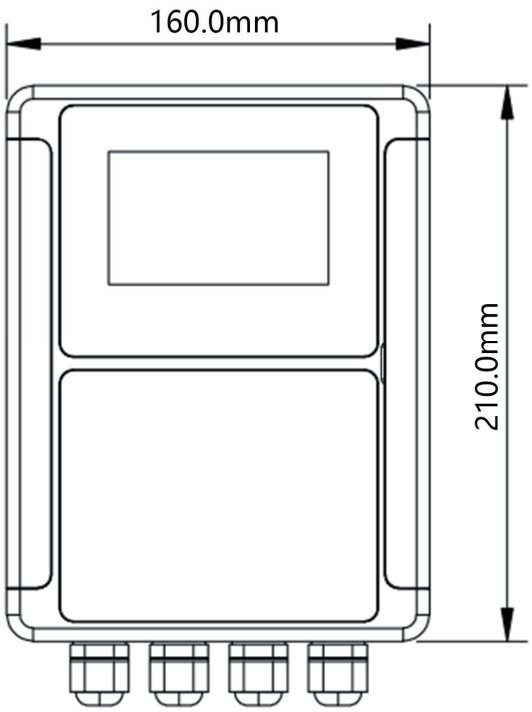

GRF-3000S can also be used in conjunction with the RTD module and the PT1000 temperature sensor to become an energy meter for measurement of heat and cold consumption of heating pipelines and air-conditioning refrigeration pipelines.
PT1000 uses high-temperature resistance cables. Sensitivity and durability are much higher than normal PT100.

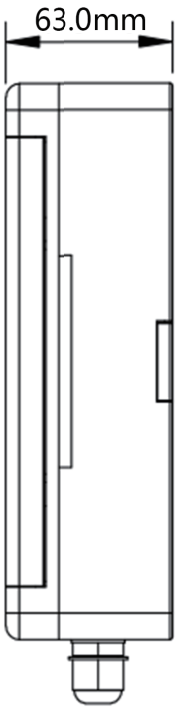
## Specification

| Performance | |
|---|---|
| Flow Range | ±0.09ft/s ~ ±39ft/s (±0.03m/s ~ ±12m/s) |
| Accuracy | ±1% of measured value |
| Repeatability | 0.2% of measured value |
| Linearity | ±1% |
| Pipe size | DN25mm~DN1200mm DN15~DN40mm (A pair of sensors) |
| **Function** | |
| Outputs | Analog output: 4~20mA, max load 750Ω.<br>Pulse output: 0~10KHz |
| Communication | RS232/RS485 Modbus |
| Power Supply | 10~36VDC/AC90~245V |
| Display | 240*128 backlit LCD |
| Temperature | Transmitter: -14°F~140°F(-20°C~60°C)<br>Transducer:-40°F~176°F(-40°C~80°C,TT01、TT02)<br>Transducer:-40°F~266°F(-40°C~130°C,TT03) |
| Humidity | Up to 99% RH,non-condensing |
| **Physical** | |
| Transmitter | PC/ABS,IP65 |
| Transducer | Encapsulated design,IP68<br>Double-shielded transducer cable<br>Standard/maximum cable length:30ft/1000ft(9m/300m) |

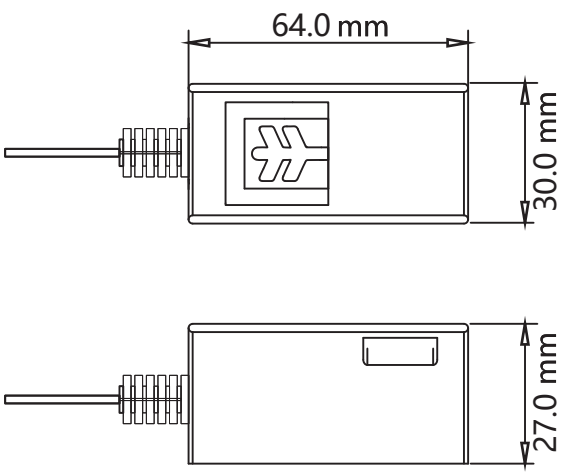
# Product Size

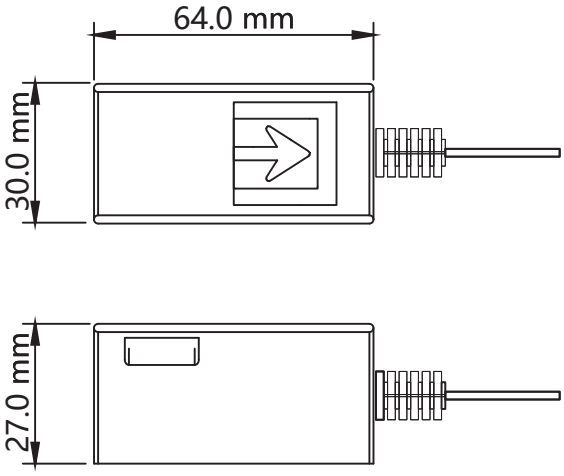
## Transmitter size




## Transducer size



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## Product Weight

- Transmitter and Transducer weight

Transducer weight
TT01 : 1.0kg

Transducer weight
TT02: 1.69kg

Transducer weight
TT03: 1.66kg

Transducer weight
TT02H： 1.66kg

Transducer weight
TT05:2.83kg

1.0 Clamp-on type

# Portable Type
# Ultrasonic Flow Meter

## Specification

### Performance specifications

| | |
|---|---|
| Flow range | ±0.03 ft/s ~ ±40 ft/s (±0.01 m/s~ ±12 m/s) |
| Accuracy | ±1% of measured value |
| Pipe size | Clamp-on:1"~48"(25mm~1200mm) |
| Fluid | Single medium liquid |
| Pipe material | Carbon steel,stainless steel,PVC and other compact material pipe |

### Function specifications

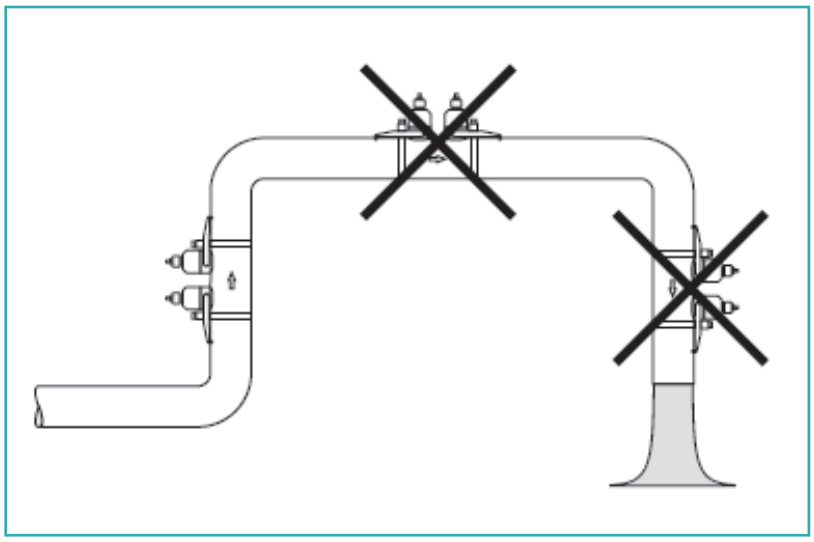
| | |
|---|---|
| Outputs | Analog output: 4~20mA, Max 750 Ω.<br>Modbus: RS485 |
| SD card | 16G |
| Interval | 1 ~ 99999seconds |
| Key broad | Digital keys |
| Display | 240*128 back lit LCD |
| Power supply | Rechargeable Lithium Battery Power，3000mAh<br>(Continuous operation of main battery 16 hours). |
| Temperature | Transmitter: -40℃~60℃<br>Transducer: -40℃~80℃ (-40℃~80℃ is standard; -40℃~130℃ is an option) |
| Humidity | Up to 99% RH,non-condensing |

### Physical specifications

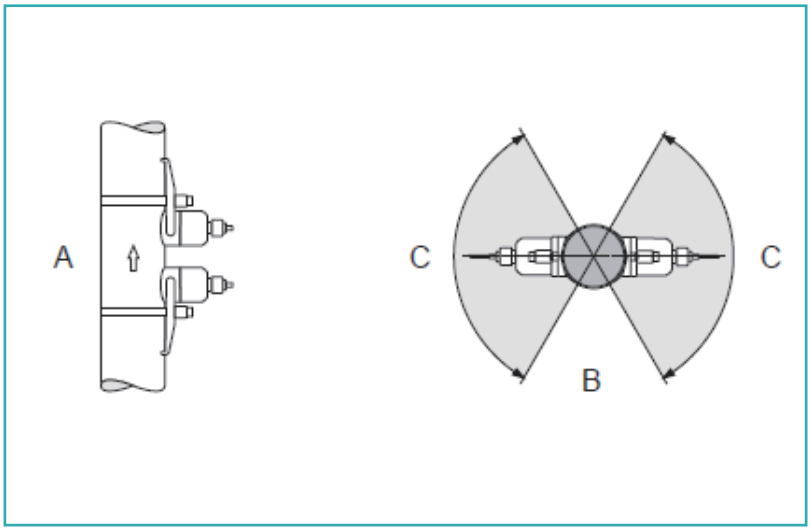
| | |
|---|---|
| Transmitter | NEMA13,IP54. |
| Transducer | Encapsulated design,IP68 |
| Transducer cable | Standard cable length: 5m (16ft). |

## Installation Site selection

The first condition for ultrasonic flow meter is the pipe must be full of liquid, the bubbles will greatly influence the accuracy of the measurement, please avoid the follow installation position:



The suggestion installation area is as following:




- A is for upright pipeline, please notice the water direction is from the bottom to top.
- B is for horizontal pipeline, the transducers need to be installed inside the C area, angle for area C, max 120°.

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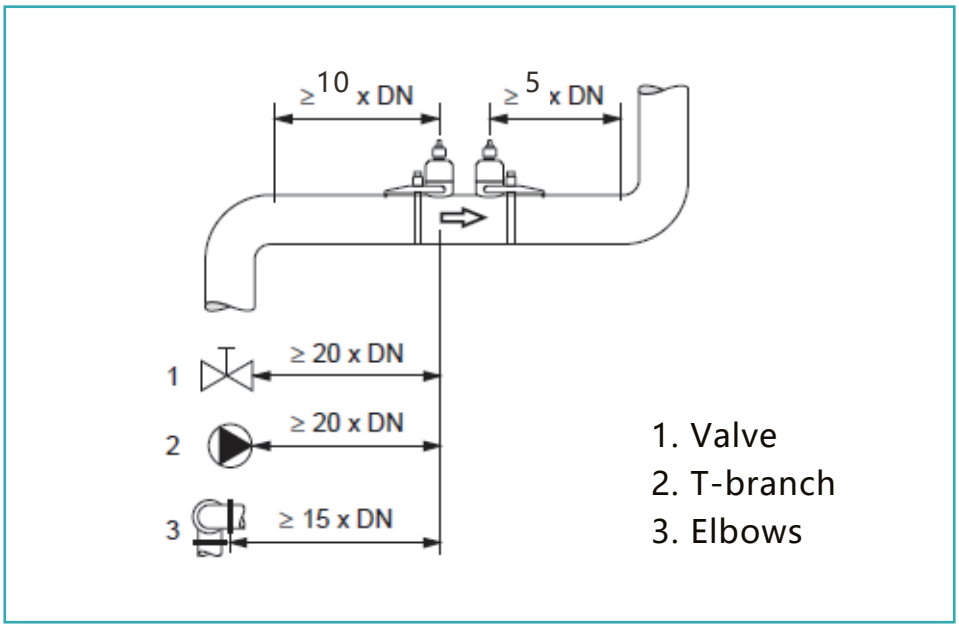
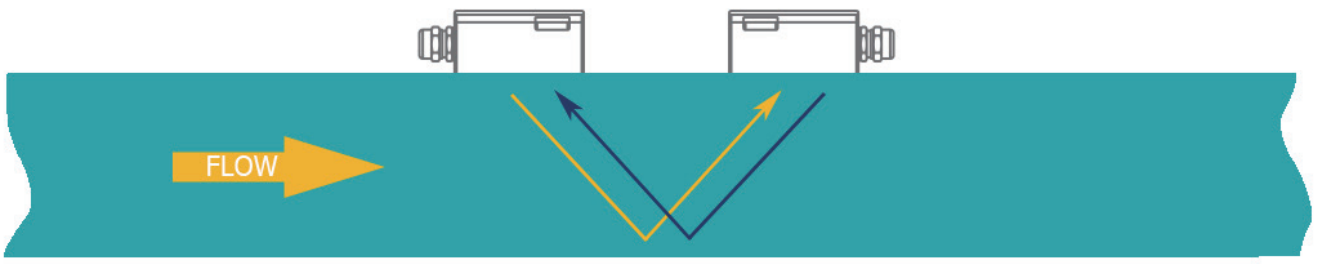
## Straight Pipe Demand

We suggest avoiding the valve, T-branchpipe and elbows if the condition allow. Please satisfied the hardest position installation requirements when you face more than one interfering resource.




## Measuring Principle

Transfer time technical means the ultrasonic signal from the transducer is transmitted and received through the moving liquid, there will be a difference between the upstream and downstream transit time, which can be used to calculate flow and velocity.



# Fixed Type
# Ultrasonic Flow Meter

| Model | Transmitter |
|---|---|
| | Ultrasonic flow Meter<br>Fxied Wall Mounted type<br>Flow range：±0.09ft/s ~ ±39ft/s (±0.03m/s ~ ±12m/s)<br>Accuracy ：±1% of the measure value<br>Repeatability：0.2% of the measure value<br>Display：240*128 backlit LCD<br>Power supply： 10~36VDC/AC90~245V<br>Transmitter enclosure: IP65, PC+ABS (Temperature: -20°C~50°C)Output:<br>OCT pulse output 0-10KHz, Relay output, 4-20mA optional<br>Communication: RS232/RS485, Modbus Protocol |
| **Code** | **Output** |
| 1 | OCT，Relay，RS232/RS485，4-20mA |
| 2 | OCT，Relay，RS232/RS485，4-20mA，RTD |
| **Code** | **Transducer** |
| TT01 | Clamp-on, IP68. Operating Temperature:<br>-40 °F ~ +176 °F(-40°C ~ +80 °C) |
| TT02 | Clamp-on, IP68. Operating temperature:<br>-40 °F ~ +176 °F(-40°C ~ +80 °C) |
| TT03 | Clamp-on, IP68. Operating Temperature: -<br>40 °F ~ +266°F(-40°C ~ +130 °C) |
| TT02H | Clamp-on, IP68. Operating Temperature:<br>-40 °F ~ +356 °F(-40°C ~ +180 °C) |
| **XXX** | **Transducer Cable Length** |
| 030 | Standard length 30ft (9m) |
| XXX | Max length to 1000ft (300m) |
| **Code** | **Temperature Sensor** |
| PT1000 | Pt1000 temperature sensor+RTD module(selectable) |
| **Code** | **Memory** |
| SD | SD card(32G)+ SD card module(selectable) |

Standard model: Flow Meter - 1 - TT01 - 030

Description: Standard clamp-on type ultrasonic flowmeter, OCT, Relay, RS485, 4-20mA, 30ft cable.

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## Optional Transducers（DN25-DN1200mm）

Clamp-on ： GRF-3000S-TT01
（Operating Temperature： -40℃ ~ +80℃）

Clamp-on ： GRF-3000S-TT02
（Operating temperature： -40℃ ~ +80℃）

Clamp-on ： GRF-3000S-TT03
（Operating Temperature： -40℃ ~ +130℃）

Clamp-on ： GRF-3000S-TT02H
（Operating Temperature： -40℃ ~ +180℃）

Insertion-type：GRF-3000S-TT05
（Operating Temperature： -40℃ ~ +130℃）

Clamp-on Ultrasonic Heatmeter：
TT03-PT1000

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Insertion Type Ultrasonic Heatmeter：
TT05-PT1000

## Optional Transducers（DN15-DN40mm）


Clamp-on . GRF-3000S TT02S
（Operating Temperature：Within 70 ℃）

Double Guide Bracket

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