

# Handheld Ultrasonic Flowmeter

# GTTFH

**Series GTTFH Handheld Transit Time Ultrasonic Flowmeter** is carefully designed so that it is very compact and easy to use. A user can use hand to hold as well as to operate the flow meter main unit. The user-interface is self-explanatory and very easy to follow. Besides, the unique clamp-on fixture design makes the installation very simple and no special skills or tools required. Due to the non-intrusive nature of the clamp-on technique, there is no pressure drop, no moving parts, no leaks and no contamination.



▲ Transmitter & Transducer



▲ Full set of Handheld



▲ Data logger

## Features

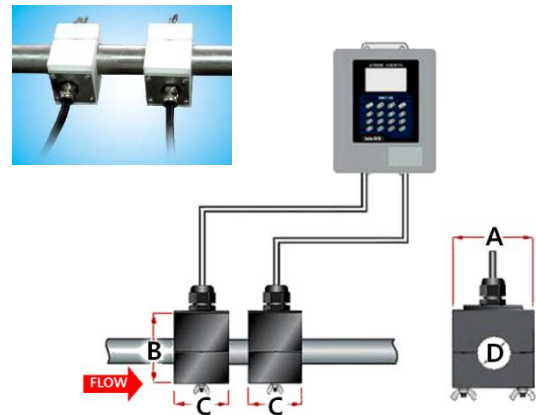
1. Compact design, light-weight and user-friendly.
2. Principle of Transit Time and MultiPulse™ Technology.
3. Can be used for mobile measurement, flow rate calibration, data comparing, meters running status checking.
4. A variety of liquid applications can be accommodated: ultra-pure liquids, potable water, chemicals, raw sewage, reclaimed water, cooling water, river water, plant effluent, etc.
5. Data Logger functions. The capacity is based on users' choice, and the maximum can reach 8GB. Users can store 5 years' data in it at least and user can read, edit and export the data for reference and analysis.

## Applications

- Water (Hot water, Cooling water, Potable water, Sea water etc.)
- Petroleum products
- Chemicals, including alcohol, acids, etc
- Beverage, food and pharmaceutical processors
- Secondary sewage, waste treatment, etc.
- Power plants, Metallurgy and mining applications
- Pipeline leak detection, inspection, tracking and collection

## K transducer

Size	A	B	C	D
K1: 3/4", 1"	55	39	42	34
K2: 3/4", 1", 1-1/4"	64	46	42	43
K3: 1-1/4", 1-3/4", 2"	80	46	42	61



**Note:** K transducers utilize the Round-Clamp method, and the transducers' transmitting and receiving sides are connected with the pipe surface thoroughly to acquire enough coupling area, better reliability, stability, etc.

## Principle of Measurement

**GTTF transit time flowmeter** utilizes two transducers that function as both ultrasonic transmitters and receivers. The transducers are clamped on the outside of a closed pipe at a specific distance from each other. The transducers can be mounted in V-method in which case the ultra sound transverses the pipe twice, or W-method in which case the ultra sound transverses the pipe four times, or in Z-method in which case the transducers are mounted on opposite sides of the pipe and the ultra sound transverses the pipe only once. The selection of mounting method depends on pipe and liquid characteristics. When the flow meter works, the two transducers transmits and receives ultrasonic signals amplified by multi beam which travels firstly downstream and then upstream (Figure 1).

Because ultra sound travels faster downstream than upstream, there will be a difference of time of flight ( $\Delta t$ ). When the flow is still, the time difference ( $\Delta t$ ) is zero. Therefore, as long as we know the time of flight both downstream and upstream, we can work out the time difference, and then the flow velocity ( $V$ ) and flow volume ( $Q$ ) via the following formula.

$$V = K * \Delta t$$

$$Q = S * V$$

Where:

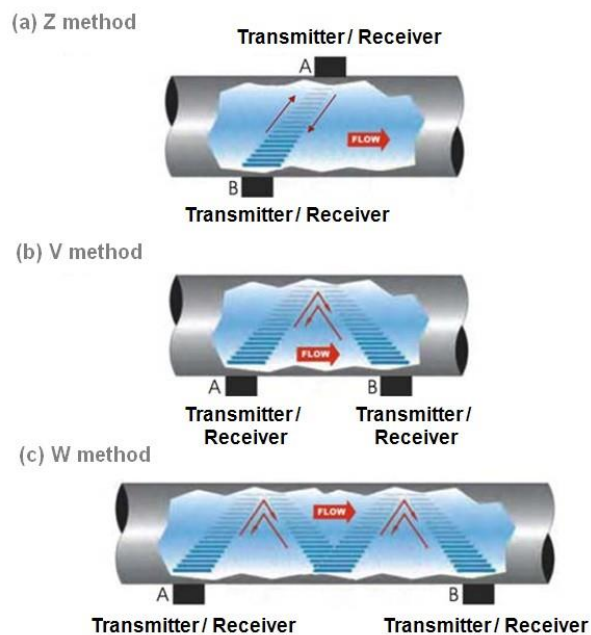
$V$ : Liquid velocity

$K$ : Constant

$\Delta t$ : Difference in time of flight

$Q$ : Flow rate

$S$ : Sectional area of pipe



▲ Figure 1

## Technical Specifications

Transmitter	
Power Supply	3 AAA Ni-H built-in batteries. When fully recharged it will last over 12 hours of operation. 100-240VAC for the charger
Velocity	0.003 to 12m/s, bi-directional
Display	4 line×16 English letters LCD, it can display total flow, flow rate, velocity and meter running status etc.
Units Rate Totalized	User Configured (English and Metric); Rate and Velocity Display; gallons, ft <sup>3</sup> , barrels, lbs, liters, m <sup>3</sup> , kg
Output	Frequency, RS232 Options: Up to 8 GB Data logger
Accuracy	±1.0%~2.0% of reading at rates > 0.5 m/s ±0.005 m/s of reading at rates < 0.5 m/s
Sensitivity	0.003m/s
Repeatability	0.2% of reading
Dimensions and Weight	100*204*34mm, Weight: < 0.5kg
Security	Keypad lockout, access code enable

Transducer	
Liquid Types Supported	Virtually most any liquid containing less than 2% total suspended solids (TSS) or aeration
Suited Liquid Temperature	Standard Temp.: -40°C ~121°C High Temp.: -40°C ~250°C
Pipe Size (mm)	Standard M transducer: DN40 -1000mm L transducer: DN1000-4500mm S transducer: DN20-50mm K-mode round transducer: DN20-50mm
Dimensions and weight	S: Size: 42*25*25mm; weight: < 0.2kg M: Size: 60*43*43mm; weight: < 0.5kg L: Size: 80*53*53mm; weight: < 1.0kg
Data Logger Software	Optional 512M to 8GB SD card Windows-based Software Utility, data logging, data report, and data curve and analyze.

## Parts Identification

- **Transmitters:**



- Handheld transmitter

- **Transducers:**



- K transducer



- High temperature transducer



- S-Transducer



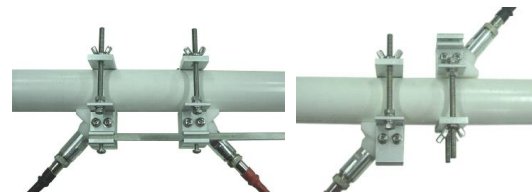
- M-Transducer



- L-Transducer



- M-Mounting Frame (V method and Z method)



- S-Mounting Frame (V method and Z method)

- **Accessories:**



- Portable Case



- Stainless Steel Strap



- Flexible belts



- Couplant

## Model Selection

Model: GTTFH		Handheld Ultrasonic Flow Meter * (Transducers)
Output Selection 1	<b>N</b>	None
	<b>1</b>	Frequency (Flow rate)
	<b>2</b>	RS232 Note: RS232 and Data logger cannot be used at the same time.
	<b>3</b>	Data Logger & Software
Output Selection 2	<b>A</b>	Same as above
Power Supply (Charger connector type)	<b>D</b>	100-240V AC

Model: DH		Handheld
Transducer type	<b>S</b>	Small (DN20-DN50)
	<b>M</b>	Medium (DN40-DN1000)
	<b>L</b>	Large (DN1000-DN4500)
	<b>Kxx</b>	K Small-Pipe Round Clamp-on (DN20-DN50), xx is inside Diameter. <i>(Above transducers material is PTFE, if you need stainless steel transducers, please contact the factory.)</i>
Mounting Frame	<b>N</b>	None
	<b>FS</b>	for DN20-DN50
	<b>FM</b>	for DN50-DN1000
Transducers Temperature	<b>N</b>	-40~121°C
	<b>H</b>	-40~250°C (Only for S, M transducer. If larger transducer, consult us.)
Mounting Type	<b>N</b>	Common
	<b>M</b>	Magnetic (suitable for pipe above DN80)
Cable Length	<b>4m</b>	4 meters straight cable (STD.)
	<b>Xm</b>	Common cable Max 300m
	<b>XmH</b>	High temp. cable Max 300m

### Parts Number Construction example:

GTTFH-1 2-D /DH-M-N-N-N-4m

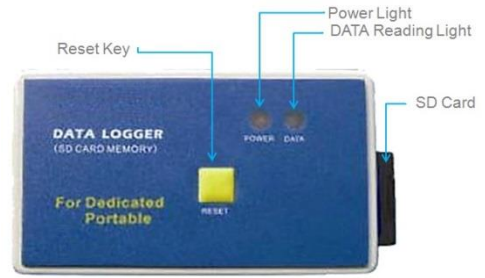
### Description:

**GTTFH Handheld ultrasonic flowmeter**, Frequency and RS232 output, with 90-240V AC power supply; Standard M type transducer, no mounting frame, standard temperature 40~121°C, common mounting type, 4m straight cable.

# Data Logger and Software Utility

## Features

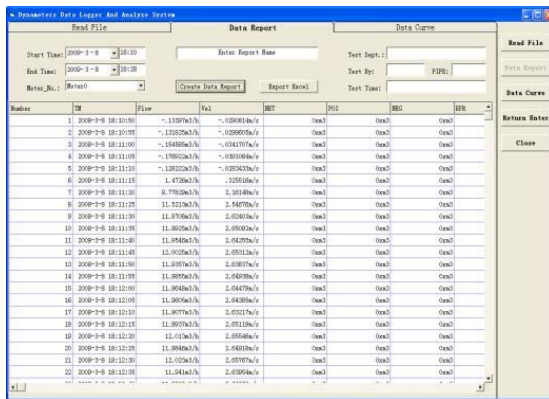
1. Provides data logging, based on SD card data memory, The memory capacity can be 512M, 1GB, 2GB, 4GB, 8GB. Normally, 1GB can store 5 years data with 5 minutes logging interval.



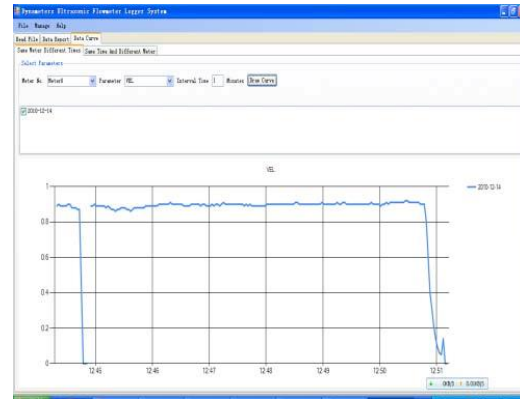
▲ Data logger

2. Very easy to read data from SD card (just plug it out from Data Logger, and run Data Logging and Analyze software, browse the SD card file).

3. Data report and Data Curve functions (▲ Figure2, ▲ Figure3)



▲ Figure 2

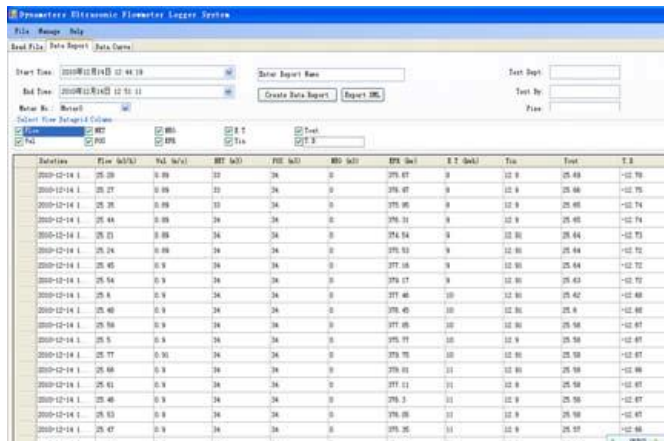


▲ Figure 3

4. User can edit, generate Excel report and print it on PC (Figure 4).

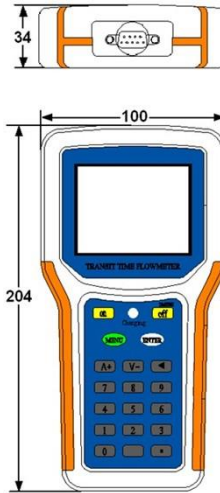
5. Logging Parameters: Date and Time, Flow Rate, Velocity, Positive total flow, Negative total flow, Net total flow, Total Heat flow, Temperature in, Temperature out, Temperature difference and Heat flow rate.

If user is interested in other parameters, please consult us. Users can delete the unnecessary parameters from Excel Table and then print the data table.

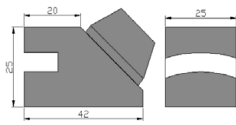


▲ Figure 4

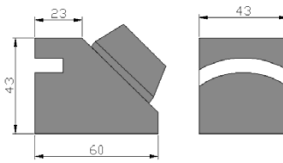
## Parts & Dimension



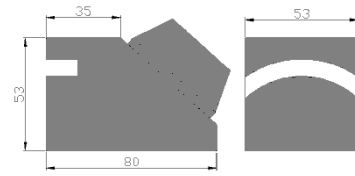
• Handheld Transmitter



• S Transducer



• Std. M Transducer



• L Transducer