

STUF-300R1B

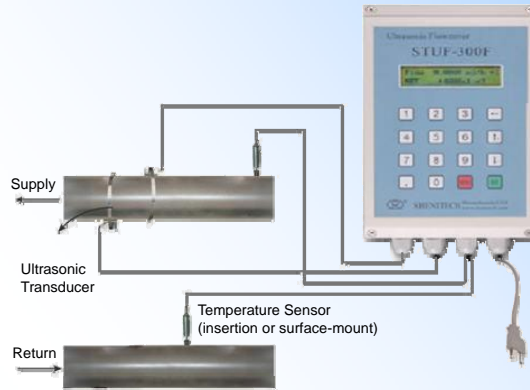


Advanced Clamp-on Transit-time Technologies

Ultrasonic Thermal Energy Meter

Features:

- Energy rate and total consumption measurement
- Non-intrusive clamp-on technology. Easy and economical installation
- No moving parts to wear out. Long-life span. No maintenance
- High accuracy. Thermal energy custody transfer performance
- Wide flow measurement range, bi-directional
- Built-in totalizers, batch controllers and task scheduler
- Isolated RS-485 interface. Supports MODBUS protocol
- Abundant inputs/outputs, such as 4-20mA output, relay output, pulse output, alarm output, etc.
- Easy to use and set up. Self-explanatory menu-driven programming
- NEMA 4X (IP65) Weather-resistant enclosure
- Low-power consumption, less than 1.5Watts
- Suitable for virtually any liquid heating/cooling systems such as HVAC, office buildings, apartment complexes, condominiums, solar heating systems and geothermal systems



The STUF-300R1B ultrasonic thermal energy meter provides abundant capabilities for accurate thermal energy measurement of a liquid-based thermal energy production / transferring system. It is the 3rd generation energy meter from Shenitech. Compared to its predecessors, the 3rd generation offers better performance and a richer feature set, all at a lower price.

The STUF-300R1B system is consisted of a high performance ultrasonic flowmeter STUF-300F1B and a pair of standard PT100 temperature sensors. The ultrasonic flowmeter is based on our cutting-edge clamp-on flow measurement technology, which is capable of measuring the flow from outside of a pipe accurately and reliably. Due to the non-intrusive nature of this technology, there is no pipe cutting, no moving parts, no pressure drop, no leaks and no risk of contamination. Besides, the installation is simple and requires no special skills or tools.

The two PT100 sensors, which could be either insertion type or surface-mounting type, are used to measure the temperature of the supply flow and the return flow. The energy consumption rate is then calculated based on the temperature difference and the measured flowrate. A built-in energy totalizer is used to accumulate the amount of energy delivered.

STUF-300R1B provides versatile input/output interfaces, such as isolated digital outputs, relay output, batch control, alarm, 4-20mA output. In addition, the built-in isolated RS-485 port with surge protection and MODBUS support makes remote energy monitoring and energy meter networking easy and reliable.

STUF-300R1B is an ideal choice for improving HVAC, energy production and building energy efficiency in terms of heating, cooling ventilation and air-conditioning.

Specifications:

Main Unit	Repeatability	Better than 0.2%
	Accuracy	For flow measurement: $\pm 1\%$ of reading, plus $\pm 0.006\text{m/s}$ ($\pm 0.02\text{ft/s}$) in velocity*
	Response Time	0.5s. Configurable between 0.5s and 99s
	Velocity	-16 ~ +16m/s (-52 ~ +52 ft/s), bi-directional
	Display / Keypad	LCD with backlight. 2x20 letters. 4x4 tactile-feedback membrane keypad. Display instantaneous energy rate, total energy (positive, negative and net), temperatures, flow rate, time, analog inputs, etc.
	Units	English (U.S.) or metric
	Signal Outputs	Current output: 4-20mA isolated output for energy rate, flowrate, velocity or sound speed. Impedance 0-1k. Accuracy 0.1%
		OCT output: isolated Open Collector Transistor output. Up to 0.5A load
		Relay output: 1A@125VAC or 2A@30VDC Can be programmed as pulse signal for energy/flow totalization; ON/OFF signal for relay drive or alarm drive; batch control
	Temperature and other Analog Inputs	RTD interface: two temperature channels able to accommodate two PT100 3-wire temperature sensors for thermal energy measurement.
		Analog input: one channel of 4-20mA input. Can be used for temperature, pressure or liquid level sensor
	Recording	Automatically record the totalizer data of the last 128 days / 64 months / 5years Optional USB data logger available upon request
	Communication Interface	Isolated RS-485 with power surge protection. Support MODBUS protocol StufManager™ PC software for real-time data acquisition (optional) GPRS / GSM module for wireless networking, remote monitoring and remote control (STUF-300RNB only)
	Enclosure	Protection Class: IP65 (NEMA 4X) weather-resistant. Dimension: 230mm x 150mm x 75mm (9" x 5.9" x 3")
Liquids	Liquid Types	Virtually all commonly used liquids (full pipe)
	Liquid Temp	-40°C ~ 100°C or -40°C ~ 155°C, depending on transducer type
	Suspension concentration	<20,000ppm, or, < 2%, particle size smaller than 100um.
Pipe	Pipe Size	DN25 ~ DN6,000mm (1" ~ 240")
	Pipe Material	All metals, most plastics, fiber glass, etc. Allow pipe liner.
	Straight Pipe Section	Longer than 15D, where D is pipe diameter. If a pump or a valve is near upstream, the straight pipe section following the pump should be > 25D.
Cable	Shielded transducer cable. Standard length 15' (5m). Can be extended to 1640' (500m). Contact the manufacturer for longer cable requirement.	
Environment	Temperature	Main unit: -10°C ~ 70°C (14°F ~ 158°F)
		Ultrasonic Transducer: -40°C ~ 100°C (-40°F ~ 212°F) for standard version -40°C ~ 155°C (-40°F ~ 312°F) for higher temperature version PT100 temperature sensor: -40°F ~ 312°F (-40°C ~ 155°C)
Humidity	Main unit: 85% RH	
	Ultrasonic Transducer: water-immersible, water depth less than 10' (3m)	
Power	DC: 12 ~ 24VDC, or, AC: 90 ~ 260VAC Power consumption: < 1.5W at 12VDC	
Weight	Main unit: 2kg (4lb) for standard version, 2.5kg (5lb) for network version	








Applications:

The STUF-300R1B thermal energy measurement system is an ideal choice for a wide range of applications in HVAC, energy production, energy transfer, building management, university facility management, district heating and cooling, geothermal or solar-thermal system monitoring, and all other liquid-based thermal energy production/transferring.

Some examples are:

- Chilled water sub-metering
- Hot water sub-metering
- Condenser water
- Glycol
- Thermal storage
- Geothermal system
- Solar thermal system
- Lake source cooling
- Chemical feed, ammonia feed
- Energy meter network
- Power plants

Transducer Options:

	Type S1: Standard-S1 transducer (magnetic) for small size pipe DN25 ~ DN100mm (1" ~ 4") Temperature range -40°C ~ 100°C (-40°F ~ 212°F) <i>For pipe of 1" and below, we recommend our flow-cell transducer (Stuf-300R1G.)</i>
	Type S1HT: High-temp S1 transducer for small size pipe DN25 ~ DN100mm (1" ~ 4") Temperature range -40°C ~ 155°C (-40°F ~ 312°F)
	Type M1: Standard-M1 transducer (magnetic) for medium size pipe DN50 ~ DN700mm (2" ~ 28") Temperature range -40°C ~ 100°C (-40°F ~ 212°F)
	Type M1HT: High-temp M1 transducer for medium size pipe DN50 ~ DN700mm (2" ~ 28") Temperature range -40°C ~ 155°C (-40°F ~ 312°F)
	Type L1: Standard-L1 transducer for large size pipe DN300 ~ DN6,000mm (11" ~ 240") Temperature range -40°C ~ 100°C (-40°F ~ 212°F)
	PT100SM: surface-mount temperature sensor, 3-wire PT100 Thermal isolation around the sensor is recommended in order to get a temperature reading close to the liquid temperature
	PT100IN: insertion type temperature sensor, 3-wire PT100 Users may use their own RTD temperature sensor

Model Selection:

STUF-300R1B	-	□	-	□	-	□	-	□	-	□	-	□
Transducer: S1 – Standard S1-type for pipe 1" – 4" S1HT – High-temperature version of S1-type M1 – Standard M1-type for pipe 2" – 28" M1HT – High-temperature version of M1-type L1 – Standard L1-type for pipe 11" – 240"	←											
Temperature Sensor: PT100SM – With a pair of PT100 sensors PT100IN – With a pair of PT100 sensors NO or absent – No temperature sensor	←											
Pipe Size: DNxxx (metric) or INxxx (English)	←											
Transducer Cable Length: Mxx - Cable length in meters Fxx - Cable length in ft	←											
4-20mA Output: AI – With 4-20mA output NAI or absent – No 4-20mA output	←											
Other Options: RL – With relay DL – With data logger module SW – StufManager™ PC software	←											

Example:

Model# STUF-300R1B-M1-PT100SM-DN100-M5-AI-RL stands for standard main unit, M1-type clamp-on transducer and PT100 surface-mount sensor for pipe size DN100mm, 5 meter transducer cables, with 4-20mA and relay outputs.

Note: If you prefer to work with English system for the model number, please put "IN" (for inch) or "F" (for feet) right before the dimension values. For example, the above model# in English system will be: STUF-300R1B-M1-PT100SM-IN4-F15-AI-RL



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