

Ultrasonic Thermal Energy Meter:

This thermal energy measurement meter 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 and solar hot water system monitoring, and all other liquid-based thermal energy production/transferring applications.

Features

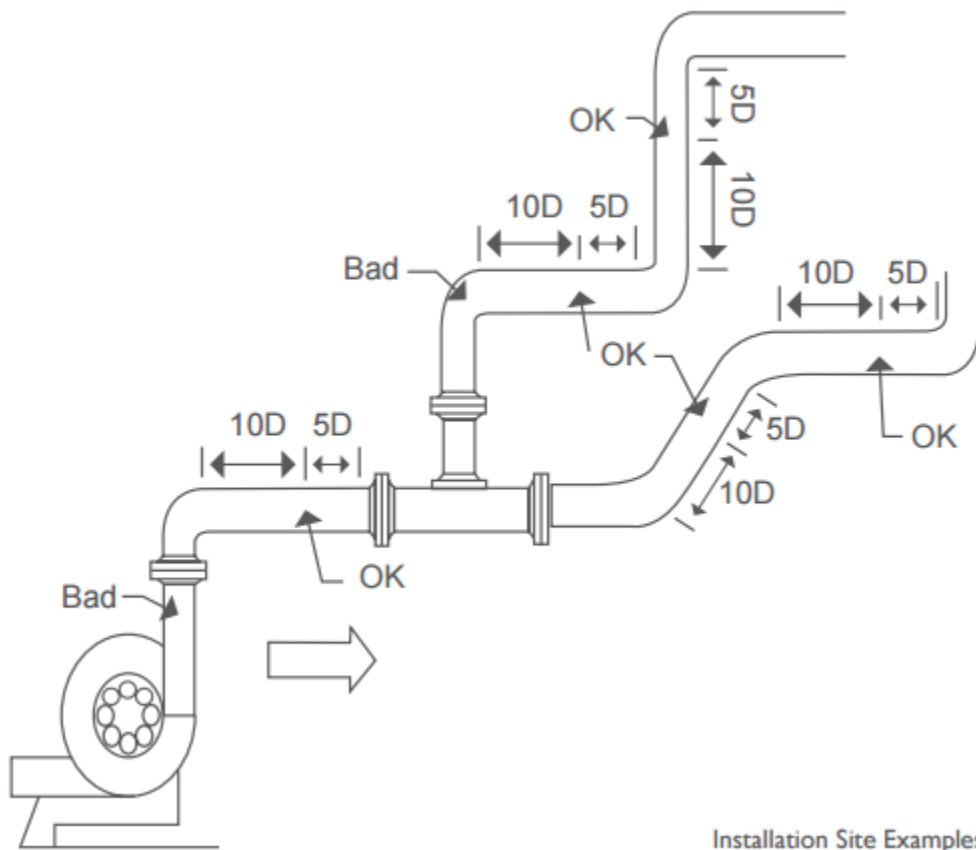
- Non-intrusive thermal energy / BTU measurement
- Clamp-on ultrasonic technology
- Easy and economical installation. No pipe work required
- No moving parts to wear and tear.
- No maintenance required
- Industrial grade temperature sensors and ultrasonic sensors for improved robustness
- Paired PT100 RTD sensors and ultrasonic transducers for improved accuracy
- NIST-traceable factory calibration
- Suitable for pure liquids and liquids with some particles.
- No dependency on conductivity
- Suitable for all commonly used pipes
- Bi-directional flow measurement
- Seamless integration of temperature and flow so to deliver a complete energy metering solution
- High-performance. Abundant input/output features, such as 4-20mA, relay, alarm, task scheduler, batch controller and more
- Totalizers for flow, energy, daily energy and monthly energy
- Large data logger for recording multiple variables (optional)
- Communication: RS485/MODBUS. Optional GPRS, GSM, RF wireless
- Compatible with uGalaxy telemetry system for centralized energy distribution management



Transducer Mounting Site Selection

The site of the ultrasonic transducer installation is very important. Here are some recommendations for selecting the right site:

- In order to achieve good accuracy, it is recommended to have 15D straight-pipe length: upstream 10D and downstream 5D, where D is pipe diameter.
- If there is a valve upstream and the valve is not fully open, it could generate flow disturbance. A longer upstream straight pipe is recommended.
- If there is a pump upstream, we recommend to have 25D straight pipe run.
- If the pipe is vertical, make sure the flow is going upward, not downward. Downward flow could have air gap if the flow is free fall.
- If the pipe is horizontal, make sure the pipe is full! The transducers should be installed on the side of the pipe, not on the top or bottom of the pipe.





Data Sheet

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Specifications Main Unit

Fluid- Velocity	± 10 m/s (± 32 ft/s)
Fluid Temperature	0 – 150°C (0 – 300°F)
Accuracy - Velocity	±1% of reading ± 0.008m/s (± 0.03ft/s) in velocity *
Accuracy – Temperature	For Delta T: <0.1C with matched RTD sensor pair For T: <1 °C (33.8 °F) Sensor Type: PT100. 4-wire
Repeatability	0.2%
Response Time	0.5s. Configurable between 0.5s and 99s
Display/Keypad	LCD with backlight. 2 x 20 letters. 4 x 4 tactile-feedback membrane keypad. Displays instantaneous energy rate, energy total, flow rate, flow total, velocity, time, temperature, analog outputs/inputs
Units	English (U.S.) or metric. BTU, KWH, GJ, etc.
Physical Quantity	Energy rate, total energy, volumetric flow rate, total flow, velocity, analog inputs
Totalizers	Positive totalizer, negative totalizer, net totalizer, daily totalizer, monthly totalizer, yearly totalizer, manual totalizer
Security	Keypad can be locked with password
Outputs	
• Current Output	0/4-20mA isolated output for energy rate, flowrate, velocity or sound speed. Impedance 0-1k. Accuracy 0.1%
• Digital Output	Optically isolated Open Collector Transistor output (OCT). Up to 0.5A load. Can be programmed as: • Pulse signal for flow/energy totalization • ON/OFF signal for special event such as overflow, no flow, reverse flow, leakage alarming, etc. • START/STOP signal for batch control Can be used to drive pulse counter, external relay, alarm, PLC counter
• Relay Output	1A@125VAC or 2A@30VDC. Can be programmed as: • Pulse signal for flow/energy totalization • ON/OFF signal for special event such as overflow, no flow, reverse flow, leakage alarming, etc. • START/STOP signal for batch control Can be used to drive pulse counter, external relay, alarm, PLC counter, or, to control pump, valve, lights
• Sound Alarm	One sound alarm, programmable to specific event such as overflow, no flow, reverse flow, leakage alarming



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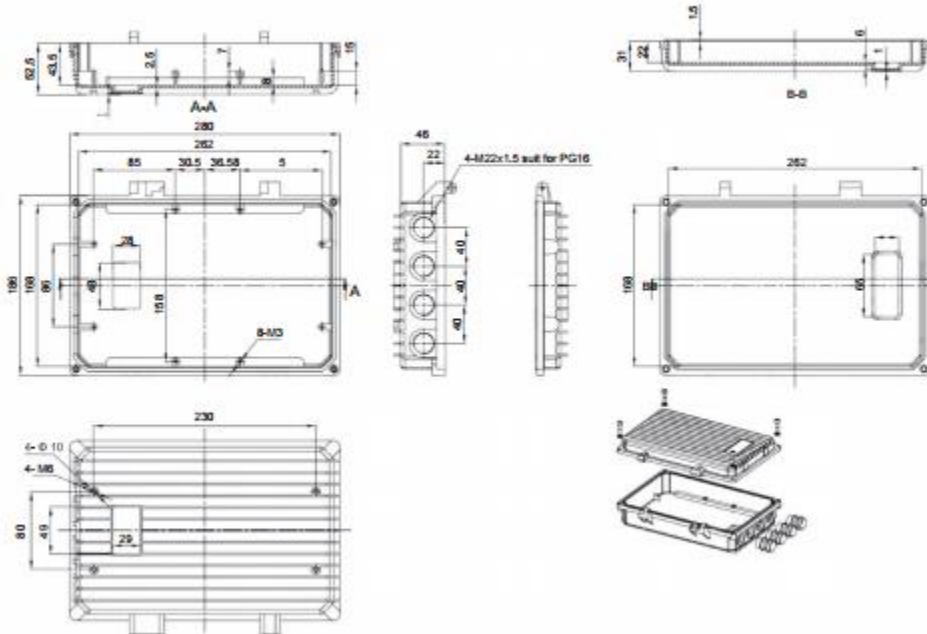
Inputs	One 4-20mA input for temperature, pressure or liquid level transmitter	
Recording	Automatically records the daily total of the last 512 days and the monthly total of the last 128 months SD data logger (Optional) for recording energy, temperature, velocity, flow, status, etc	
Communication Interface	Isolated RS-485 with power surge protection. Supports the MODBUS protocol. Optional RF / GPRS / GSM module for wireless networking, remote monitoring and remote control	
Software	Optional StuffManager PC software for real-time data acquisition and remote meter control	
Telemetry	uGalaxy_GPRS and uGalaxy_GSM wireless telemetry systems are available upon request **	
Enclosure	Standard (TP10-x-A)	Enhanced (TP10-x-B)
• Protection	IP65	IP66 (NEMA 4X)
• Dimensions	280mm x 190mm x 54mm (11" x 7.5" x 2.1")	305mm x 254mm x 102mm (12" x 10" x 4")
• Features	Weather-proof. Aluminum, power coded.	Weather-proof. Polycarbonate. High-impact, UV resistant. UL-50/c-UL Listed.
Weight	5kg (10lbs)	7.5kg (15lbs)
Environment Temp	60°C (140°F)	
Power sources	12-24 VDC, 90-260 VAC 50/60 Hz <2W @12VDC	12-24 VDC, 90-260 VAC 50/60 Hz <2W @12VDC



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Standard Enclosure (TP10-x-A)





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Enhanced Enclosure (TP10-x-B)

