



## ThermoPro Series

# TP10

### WALL-MOUNT ULTRASONIC THERMAL ENERGY METER

- Paired sensors for improved accuracy
- No moving parts, no maintenance
- Non-intrusive BTU measurement
- Easy to install and commission
- Fully featured, integrated energy metering system
- Suitable for all heating/cooling liquids



TP10 is the latest addition to the ThermoPro Series for accurate flow and thermal energy measurement produced by Spire Metering Technology.

This fixed-installation unit is calibrated with NIST traceability and is designed specifically for commercial and industrial applications in order to improve operational efficiency.

**MEASURE TODAY**  
**ENSURE TOMORROW**

- HVAC/Facility Management
- District Heating & Cooling
- Geothermal /Solar Energy
- Commercial Applications
- Energy Optimization
- Metering & Verification

## FEATURES AND BENEFITS

Rising energy costs have placed unprecedented emphasis on controlling and monitoring thermal energy flow. The TPI0 combines all of the rich feature sets of our typical flowmeters but takes the next step in offering temperature measurement capabilities. Durable and accurate, the TPI0 remains ready for deployment in today's vital applications.

Fully featured and powerful, the TPI0 is perfect for challenging industrial applications. With application flexibility in mind, the unit accurately captures flow measurements using three approaches: clamp-on, flow-cell, and insertion. Durable build, weatherproof enclosure and rich communication features ensure the unit will perform at a high level in any environment.

### With SPIRE METERING's TPI0, **you can:**

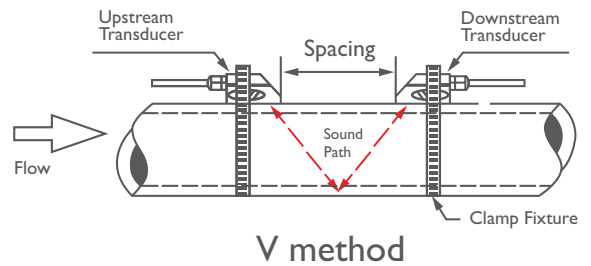
- Lower operational costs over the long run.
- Capture precise readings using ultrasonic transit-time technology.
- Detect reverse flow.
- Conduct non-invasive liquid flow measurement as well as thermal energy measurement.
- Cover an extensive pipe range from 1/2" to 120" (DN15 – DN3000).
- Reliably integrate into Spire Metering's live telemetry system.
- Combat environmental elements with a weatherproof enclosure and robust water-tight transducers.
- Control valves or pumps using batch controller and relay.
- Enjoy rich input/output features such as 4-20mA, pulse, Modbus, and wireless.
- Enjoy a seamless integration of temperature and flow so to deliver a complete energy metering solution.
- Remain confident of system accuracy with a unit calibrated to NIST standards.
- Capture daily flow and energy totals for a period of up to 512 days.



# OPERATING PRINCIPLE

Based on the transit-time principle, the TPI0 utilizes a pair of ultrasonic transducers that function as both transmitter and receiver. The transducers are installed on the pipe wall, either clamped on the outside of the pipe or inserted into the pipe. The flowmeter operates by alternately transmitting and receiving a coded burst of sound energy between the two transducers. The liquid velocity is determined by the difference in measured transit-times between beams sent into (downstream) and against (upstream) the direction of liquid flow.

Using a pair of temperature sensors, again installed on the outside of the pipe or inserted into the pipe, allows the TPI0 to capture precise temperature measurements of the liquid flow.



Surface Mount



Insertion Mount

# TECHNICAL SPECIFICATIONS

## Rated Operating Conditions

Fluid- Velocity :	± 10 m/s (± 32 ft/s). Bi-directional	
Fluid Temperature :	0°- 150°C (0°-300°F)	
Accuracy - Velocity :	±1% of reading ± 0.008m/s (± 0.03ft/s) in velocity *	
Accuracy	For Delta T: <0.1C with matched RTD sensor pair	
Temperature :	For T: < 1°C	
	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 keypad	
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 :	Energy totalizers, flow totalizers, daily totalizer, and 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%	
	Optically isolated Open Collector Transistor output (OCT). Up to 0.5A load.	
	Relay output, 1A@125VAC or 2A@30VDC.	
	Can be programmed as:	
• Digital and Relay Outputs :	-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	
• Sound Alarm :	One sound alarm, programmable to specific event such as overflow, no flow, reverse flow, leakage alarming	
Inputs :	One 4-20mA input for temperature, pressure or liquid level transmitter	
Recording :	512 points of daily flow and energy totals	
	SD data logger (Optional) for recording energy, temperature, velocity, flow, status, etc	
Communication :	Isolated RS-485 with power surge protection. Supports the MODBUS protocol.	
Interface :	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	
	Standard (TP10-x-A)	Enhanced (TP10-x-B)
Enclosure :	IP65, aluminum, power coded	IP66, Polycarbonate
	280x190x54mm3 (11"x7.5"x2.1")	305x254x102mm3 (12"x10"x4")
Environment Temp :	60°C (140°F)	60°C (140°F)
Power sources :	12-24VDC, 90-260 VAC 50/60 Hz. Less than 2W @12VDC	

\* Under reference condition and velocity should be above 0.5ft/s. Flowrate is calculated by multiplying velocity with the inner cross-section area of the pipe.

\*\* For wireless telemetry system solution, please contact solutions@spiremt.com.

## About Spire Metering Technology

Formerly Shenitech, Spire Metering is a global leader in flow and energy management solutions. Through continuous innovation, we transform complex ultrasonic technology into affordable, reliable solutions for accurate flow and energy measurement. Spire Metering offers water, heat, electricity and gas meters as well as AMR/AMI solutions. To find out how we can help today, please tell us about your application.



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