The Series TUF Ultrasonic Energy Meters are highly accurate and stable energy meters that utilize ultrasonic technology to measure heating and cooling energy consumption. The Series TUF is a compact meter with a flowmeter and energy calculator in one, making it great for installation on chillers and boilers.

**FEATURES/BENEFITS**
- Lower maintenance costs with local parameter display and no moving parts.
- Serial communication output allows for easy transfer of data.
- Flow and temperature monitor in one unit eliminates the need for multiple units.

**APPLICATIONS**
- Heat metering
- Utility billing
- Monitoring of water heating or cooling: radiators, fans coils

**INSTRUCTIONS FOR ORDERING**
- Choose 1 ultrasonic energy meter model (includes 2 BSPP pipe fittings, 2 tightening nuts, 2 O-rings, and 1 thermowell with welding collar).
- Choose 1 pipe fitting model given the appropriate fitting size if NPT or BSPT connections are required (for DN15 to DN40 only).

**Example:** TUF-150-MD, Fitting Size: A, select pipe fitting model WM-ACC-C01 or WM-ACC-C11.

**MODEL CHART**

<table>
<thead>
<tr>
<th>Ultrasonic Energy Meter Model</th>
<th>Body Size</th>
<th>Pipe Size in</th>
<th>Fitting Size in mm</th>
<th>Body Material</th>
<th>Connection</th>
<th>Meter Connection</th>
<th>Communication</th>
<th>GPM (LPM)</th>
<th>Min Flow (Ql)</th>
<th>Nominal Flow Range (Qsp)</th>
<th>Max Flow (Qs)</th>
<th>Weight (lb)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TUF-150-MD</td>
<td>DN15</td>
<td>1/2</td>
<td>15</td>
<td>A</td>
<td>Modbus®</td>
<td>G-3/4</td>
<td></td>
<td></td>
<td>0.1 (0.5)</td>
<td>6.6 (25)</td>
<td>13 (50)</td>
<td>3.1 (1.4)</td>
<td>$478.00</td>
</tr>
<tr>
<td>TUF-200-MD</td>
<td>DN20</td>
<td>3/4</td>
<td>20</td>
<td>B</td>
<td>Modbus®</td>
<td>G1</td>
<td></td>
<td></td>
<td>0.2 (0.8)</td>
<td>11 (42)</td>
<td>22 (83)</td>
<td>3.1 (1.4)</td>
<td>478.00</td>
</tr>
<tr>
<td>TUF-250-MD</td>
<td>DN25</td>
<td>1</td>
<td>25</td>
<td>C</td>
<td>Modbus®</td>
<td>G1-1/4</td>
<td></td>
<td></td>
<td>0.3 (1.2)</td>
<td>15 (58)</td>
<td>31 (117)</td>
<td>4.1 (1.8)</td>
<td>526.00</td>
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<tr>
<td>TUF-320-MD</td>
<td>DN32</td>
<td>1-1/4</td>
<td>32</td>
<td>D</td>
<td>Modbus®</td>
<td>G1-1/2</td>
<td></td>
<td></td>
<td>0.5 (2)</td>
<td>26 (100)</td>
<td>53 (200)</td>
<td>5.2 (2.3)</td>
<td>673.00</td>
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<tr>
<td>TUF-400-MD</td>
<td>DN40</td>
<td>1-1/2</td>
<td>40</td>
<td>E</td>
<td>Modbus®</td>
<td>G2</td>
<td></td>
<td></td>
<td>0.9 (3)</td>
<td>44 (167)</td>
<td>88 (333)</td>
<td>6.6 (3)</td>
<td>779.00</td>
</tr>
<tr>
<td>TUF-500-MD</td>
<td>DN50</td>
<td>2</td>
<td>50</td>
<td>Flange</td>
<td>Modbus®</td>
<td>Flange</td>
<td></td>
<td>1.3 (5)</td>
<td>526 (200)</td>
<td>132 (500)</td>
<td>8.8 (30)</td>
<td>1774.00</td>
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</tr>
<tr>
<td>TUF-650-MD</td>
<td>DN65</td>
<td>2-1/2</td>
<td>65</td>
<td>Modbus® Flange</td>
<td>Flange</td>
<td>2.2 (8.3)</td>
<td></td>
<td></td>
<td>5.2 (2.1)</td>
<td>110 (417)</td>
<td>220 (833)</td>
<td>10.1 (4.6)</td>
<td>1914.00</td>
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<td>TUF-800-MD</td>
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<td>3</td>
<td>80</td>
<td>Flange</td>
<td>Modbus®</td>
<td>3.5 (13.3)</td>
<td></td>
<td></td>
<td>8.8 (33)</td>
<td>440 (1667)</td>
<td>881 (3333)</td>
<td>21.9 (9.6)</td>
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<tr>
<td>TUF-1250-MD</td>
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<td>125</td>
<td>Flange</td>
<td>Modbus®</td>
<td>8.8 (33)</td>
<td></td>
<td></td>
<td>33.0 (89)</td>
<td>1400 (5000)</td>
<td>1700 (6000)</td>
<td>45.8 (20.6)</td>
<td>5684.00</td>
</tr>
</tbody>
</table>

**SPECIFICATIONS**

**Service:** Clean, corrosive liquids.

**Wetted Materials:** Brass and 316L SS.

**Range:** See chart.

**Display:** 8-digit LED.

**Accuracy:** BTU: EN1434/CJ128 Class 2; Flow: ±(2+(0.02 Qp / Qf)); Temperature: ±0.1°C.

**Power Requirements:** 24 VDC/VAC (model dependent) or 3.6 V ER26500 lithium metal battery, user supplied and installed, battery acts as back-up if power is lost.

**Power Consumption:** 1 W.

**Temperature Limits:** Ambient: 41 to 131°F (6 to 55°C); Process: 36 to 203°F (2 to 95°C).

**Humidity Limit:** < 93%.

**Pressure Limits:** 232 psi (16 bar) for DN15 to DN40; 382 psi (25 bar) for DN45.

**Pressure Drop:** < 1.5 psi (10 kPa).

**Process Connection:** Selectable.

**Serial Communications:** Modbus® RTU or 608 (selectable)**.

**Enclosure Rating:** IP65.

**Enclosure Material:** Plastic.

**Repeatability:** Flowmeter 1%.

**Electrical Connections:** 3´ (0.91 m) 4x0.2mm2 cable with terminal block.

**Flow Direction:** Unidirectional.

**Mounting Orientation:** Horizontal or vertical.

**Weight:** See chart.

**Agency Approvals:** CE.

**USA: California Proposition 65**

**WARNING:** Cancer and Reproductive Harm

www.P65Warnings.ca.gov

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