

# spirax/sarco

## Clamp-On Ultrasonic Flow and Energy Meter For Liquids

### Description

UTM10 ultrasonic flow and energy meters clamp onto the outside of pipes and do not contact the internal liquid. The technology has inherent advantages over alternate devices including: low-cost installation, no pressure head loss, no moving parts to maintain or replace, no fluid compatibility issue, and a large, bi-directional measuring range that ensures reliable readings even at very low and high flow rates. UTM10 is available in a variety of configurations that permit the user to select a meter with features suitable to meet particular application requirements.

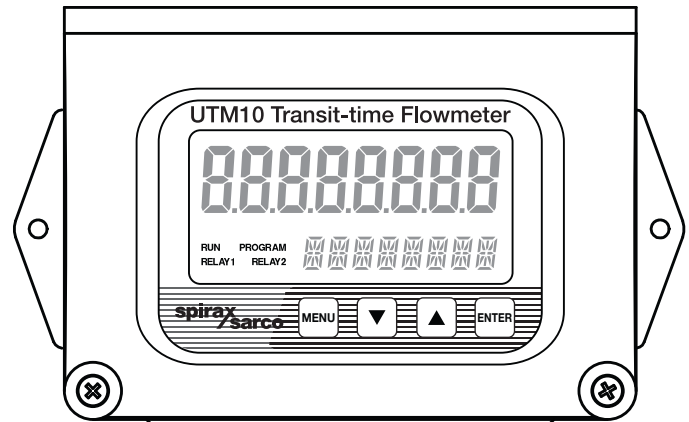
The UTM10 is available in two versions: a stand-alone flow meter, and an energy flow meter used in conjunction with dual clamp-on RTDs. The energy flow meter measures energy usage in BTU, Tons, kJ and Wh and is ideal for retrofit, chilled water and other HVAC applications.

### Features

- May be used to measure clean liquids as well as those with small amounts of suspended solids or aeration (e.g., surface water, sewage).
- Bi-directional flow measurement system. Totalizer options include forward, reverse and net total.
- Modbus RTU over RS485 communications; Ethernet connection includes BACNet®/IP, EtherNet/IP™ and Modbus TCP/IP protocols.
- Large, easy-to-read digital display.
- Rugged, aluminum enclosure ensures a long service life in harsh environments.
- Certified for hazardous area installation in North America and Europe.

### Benefits

- Reduced material costs: clamp-on sensor eliminates the need for in-line flanges, pipe fittings, strainers, and filters.
- Reduced installation time: the UTM10 may be installed and fully operational within minutes.
- Reduced maintenance costs: with no moving parts, there is nothing on the UTM10 to wear down – no repair kits or replacement parts are needed.
- No need to shut down the process for installation or maintenance due to clamp-on sensor design.



# Clamp-On Ultrasonic Flow and Energy Meter For Liquids

## Specifications

### System

|  |   |
|--|---|
| <b>Liquid Types</b>                              | Most clean liquids or liquids containing small amounts of suspended solids or gas bubbles   |
| <b>Velocity Range</b>                            | Bi-directional to 40 FPS (12 MPS)   |
| <b>Flow Accuracy</b>                             | UTT10-050S/050L/050H: $\pm 1\%$ of rate at flows $> 1$ FPS; $\pm 0.01$ FPS (0.003 MPS) at flows $< 1$ FPS (0.3 MPS)<br>UTT10-025S - UTT10-040S: $1"$ (25 mm) and larger $\pm 1\%$ of rate from 4 to 40 FPS (1.2 to 12 MPS); $\pm 0.04$ FPS (0.012 MPS) at rates $< 4$ FPS (1.2 MPS)<br>UTT10-015S - UTT10-020S: $\pm 1\%$ Full Scale  |
| <b>Temperature Accuracy (Energy Meters Only)</b> | Option 1: 32-122 °F (0-50 °C); Absolute: 0.22 °F (0.12 °C) Difference: 0.09 °F (0.05 °C)<br>Option 2: 32-212 °F (0-100 °C); Absolute: 0.45 °F (0.25 °C) Difference: 0.18 °F (0.1 °C)<br>Option 3: -40-350 °F (-40-177 °C); Absolute: 1.1 °F (0.6 °C) Difference: 0.45 °F (0.25 °C)  |
| <b>Sensitivity</b>                               | <b>Flow:</b> 0.001 FPS (0.0003 MPS)<br><b>Temperature:</b> Option 1: 0.03 °F (0.012 °C); Option 2: 0.05 °F (0.025 °C); Option 3: 0.1 °F (0.06 °C)   |
| <b>Repeatability</b>                             | 0.5% of reading   |
| <b>Installation Compliance</b>                   | General Safety: UL 61010-1, CSA C22.2 No. 61010-1 and EN 61010-1<br>Hazardous Location: Class I Division 2 Groups C,D; Class II and III, Division 2, Groups C, D, F, and G for US/CAN; ATEX II 2 G Ex nA II T4: UL 1604, CSA 22.2 No. 213, EN 60079-0 and EN 60079-15 CE: EN61326-1:2006 on meter systems with integral flow transducers, transducers constructed with twinaxial cable or remote transducers with conduit |

### Transmitter

|                                  |  |
|----------------------------------|--|
| <b>Power Requirements</b>        | AC: 95-264 VAC 47-63 Hz @ 17 VA max. DC: 10-28 VDC @ 5 VA max.<br>Protection: auto resettable fuse, reverse polarity and transient suppression   |
| <b>Display</b>                   | Two line LCD, LED backlight; Top row 0.7 inch (18mm) height, 7-segment; Bottom row 0.35 inch (9 mm) height, 14-segment<br>Icons: RUN, PROGRAM, RELAY1, RELAY2<br>Flow rate indication: 8-digit positive, 7-digit negative max.; auto decimal, lead zero blanking<br>Flow accumulator (totalizer): 8-digit positive, 7-digit negative max. (reset via keypad press, ULTRALINK, network command or momentary contact closure)  |
| <b>Enclosure</b>                 | Type 4 (IP65) Construction: powder-coated aluminum, polycarbonate, stainless steel, polyurethane, nickel-plated steel mounting brackets<br>Size (electronic enclosure only): 6.0" W x 4.4" H x 2.2" D (152 mm W x 112 mm H x 56mm D)<br>Conduit Holes: (2) ½" NPT female; (1) ¾" NPT female; Optional Cable Gland Kit  |
| <b>Temperature Configuration</b> | -40 °F to +185 °F (-40 °C to +85 °C)<br>Via optional keypad or PC running USP software (Note: not all configuration parameters are available from the keypad – i.e. flow and temperature calibration and advanced filter settings)   |
| <b>Engineering Units</b>         | <b>Flow Meter:</b> Feet, gallons, cubic feet, million gallons, barrels (liquor and oil), acre-feet, lbs., meters, cubic meters, liters, million liters, kg<br><b>Energy Meter:</b> BTU, MBTU, MMBTU, Tons, kJ, kWh, MWh and the Flow Meter list from above   |
| <b>Inputs/Outputs</b>            | <b>USB 2.0:</b> for connection of a PC running ULTRALINK™ configuration utility<br><b>RS485:</b> Modbus RTU command set<br><b>10/100 Base-T:</b> RJ45, communication via Modbus TCP/IP, EtherNet/IP™ and BACnet®/IP<br><b>4-20mA:</b> 12-bit, internal power, can span negative to positive flow/energy rates<br><b>Flow Meter Model Only:</b> 0-1,000 Hz: open-collector, 12-bit, can span negative to positive rates; square-wave or turbine meter simulation outputs<br><b>Two Alarm Outputs:</b> open-collector, configure as rate alarm, signal strength alarm or totalizer pulse |

### Transducers

|                     |   |
|---------------------|---|
| <b>Type</b>         | Compression mode propagation, clamp-on  |
| <b>Construction</b> | UTT10-050S/050L: NEMA 6P (IP 67), CPVC, Ultem®, Nylon cord grip, PVC cable jacket; -40 to 250°F (-40 to 121°C)<br>UTT10-015S - UTT10-040S: NEMA 6P (IP 67), CPVC, Ultem®, Nylon cord grip, PVC cable jacket; -40 to 250°F (-40 to 121°C)<br>UTT10-050S/050L: NEMA 6P (IP 68) option, CPVC, Ultem®, Nylon cord grip, Polyethylene cable jacket; -40 to 250°F (-40 to 121°C)<br>UTT10-050H: NEMA 6P (IP 68) option, PTFE, Vespel®, Nickel plated brass cord grip, PFA cable jacket; -40 to 350°F (-40 to 176°C) |
| <b>Frequency</b>    | UTT10-015S - UTT10-040S: 2 MHz<br>UTT10-050S/050H: 1 MHz<br>UTT10-050L: 500 KHz   |
| <b>Cables</b>       | RG59 Coaxial, 75 ohm or Twinaxial, 78 ohm (optional armored conduit)  |
| <b>Cable Length</b> | 990 feet (300 meter) max. in 10 ft. (3 m) increments  |
| <b>RTDs</b>         | <b>Energy Meters Only:</b> Platinum 385, 1,000 ohm, 3-wire; PVC jacket cable  |
| <b>Installation</b> | <b>DTT10-050S (S option)/050L/050H:</b> General and Hazardous Location (see Installation Compliance)<br><b>DTT10-050S and IS Barrier (F option):</b> "Class I Div I, Groups C&D T5 Intrinsically Safe Exia,"<br>"CSA C22.2 No. 's 142 & 157, UL 913 & 916"  |

### Software Utilities

|                   |   |
|-------------------|---|
| <b>USP</b>        | Utilized to configure, calibrate and troubleshoot Flow and Energy meters. Connection via USB A/B cable; software is compatible with Windows 95, Windows 98, Windows 2000, Windows XP, Windows Vista® and Windows® 7 |
| <b>EnergyLink</b> | Utilized to monitor a network of Flow and Energy meters. Connection via RS485. Operates within Microsoft Excel®2003 and Microsoft Excel®2007.   |

# Clamp-On Ultrasonic Flow and Energy Meter For Liquids

## UTM10 Network Options

### UTM10 Network

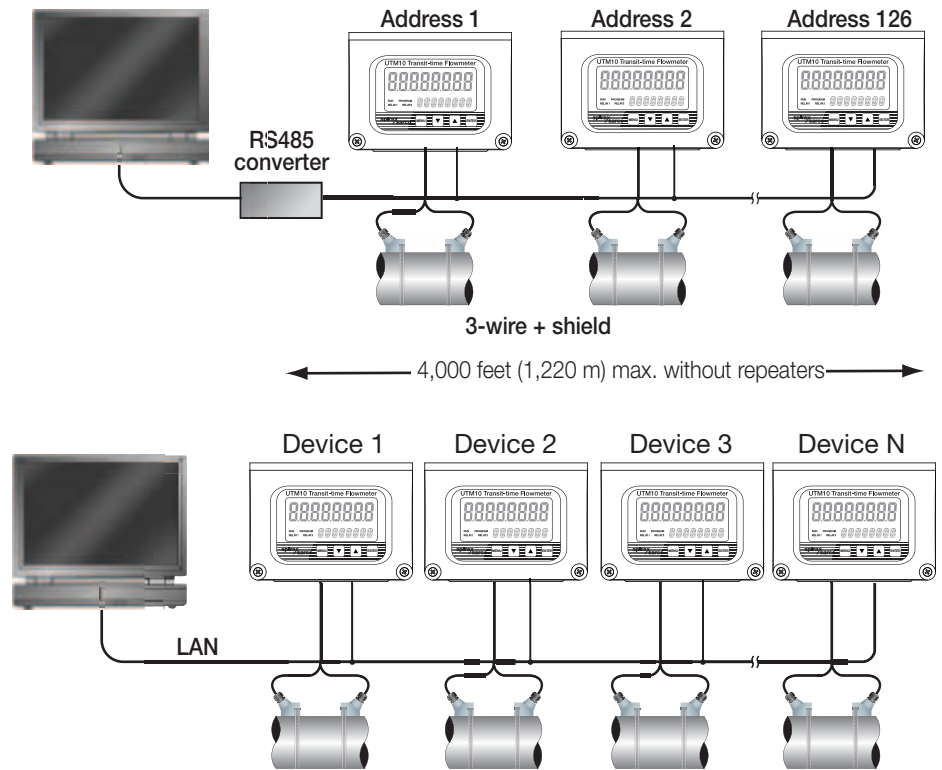
All UTM10 meters come equipped with RS485 drivers and utilize a Modbus RTU command set (data can be returned in single-precision, double-precision, integer or floating point values). Up to 126 UTM10 products can be run on a single daisy-chain network and be individually queried for flow rate, positive flow accumulator, negative flow accumulator, negative flow accumula Excel®, application detailed below.

### UTM10 Base-T Network

If equipped with the optional Ethernet communications module, the UTM10 can be plugged into a LAN and queried for flow rate, positive flow accumulator, negative flow accumulator, supply temperature, return temperature and signal strength. The module contains Modbus TCP/IP, EtherNet/IP™ and BACnet®/IP network compatibility.

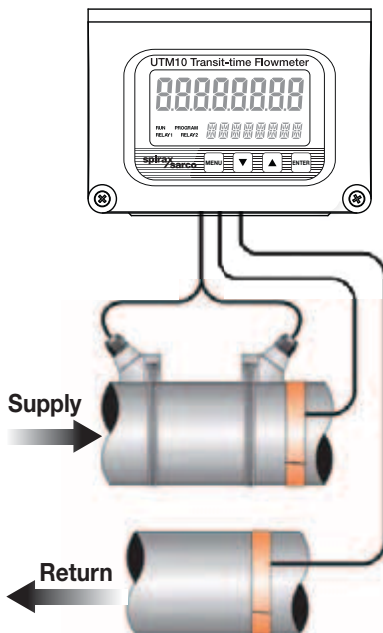
## EnergyLink Software

Operating from a standard, low-cost PC, EnergyLink software operates within Microsoft® Excel® and provides an efficient method of monitoring and archiving data from a network of UTM10 Energy meters. Energy Link automatically backs up accumulated energy data every hour, day, month, quarter and year into convenient spreadsheet formats suitable for input into invoicing systems. The Current Readings screen provides real time measurements from all UTM10 meters on the network (up to 126 meters can be connected on a single RS485 network). Data displayed includes: Location name, Room Number, UTM10 address, a good/bad communication indicator, the time and date of the last reading, flow signal level, energy flow rate, energy accumulation, supply temperature and return temperature. The software can be configured to "auto run" should PC power be interrupted or the PC be turned off. The software can also be configured to reset the energy accumulators on all network meters at the beginning of every month or quarter.

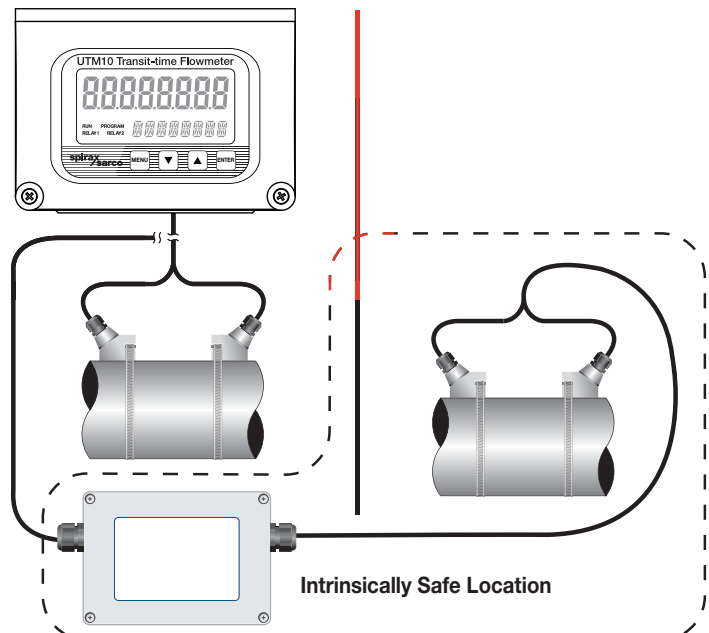


## Compliance

### General Safety



### Hazardous Location Installation

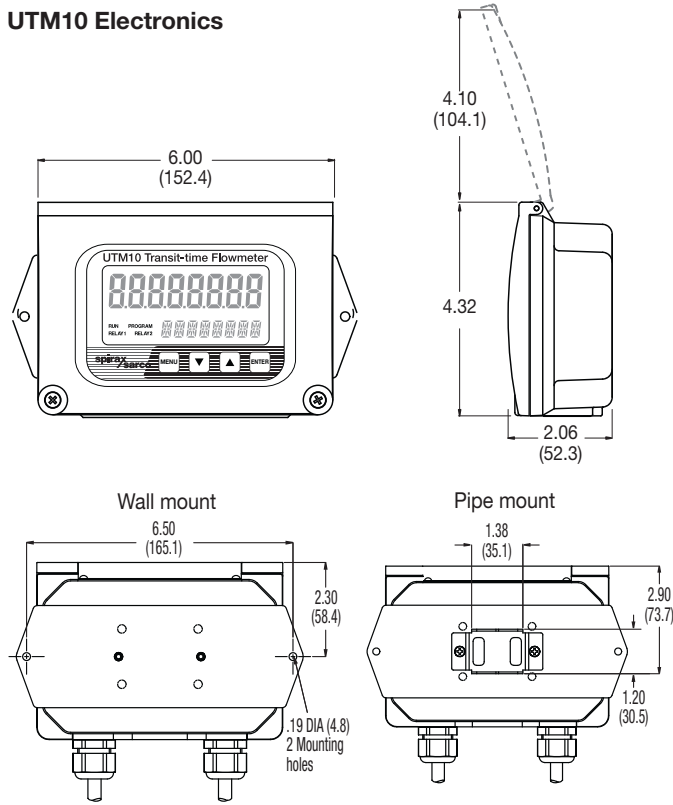


# Clamp-On Ultrasonic Flow and Energy Meter For Liquids

## Dimensional Specifications

Mechanical Dimensions: Inches (mm)

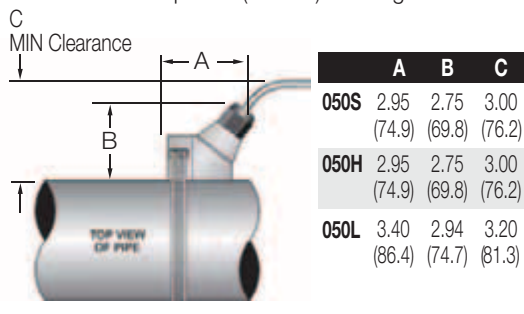
### UTM10 Electronics



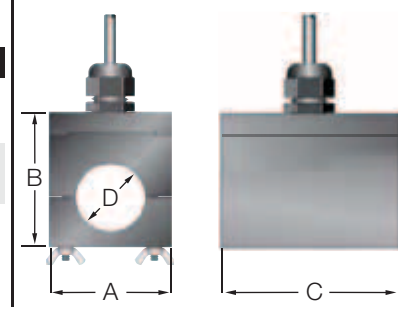
## UTT10 Transducer Dimensions: Inches (mm)

| Pipe Size | Pipe Material | A           | B           | C            | D           | Measuring Range               |
|-----------|---------------|-------------|-------------|--------------|-------------|-------------------------------|
| 1/2"      | Metal         | 2.46 (62.5) | 2.36 (59.9) | 2.66 (67.6)  | 0.84 (21.3) | 2 - 38 GPM<br>8 - 144 LPM     |
|           | Copper        | 2.46 (62.5) | 2.36 (59.9) | 3.33 (84.6)  | 0.63 (15.9) | 1.8 - 27 GPM<br>7 - 102 LPM   |
|           | Plastic       | 2.46 (62.5) | 2.28 (57.9) | 3.72 (94.5)  | 0.50 (12.7) | 1.5 - 18 GPM<br>6 - 68 LPM    |
| 3/4"      | Metal         | 2.46 (62.5) | 2.57 (65.3) | 2.66 (67.6)  | 1.05 (26.7) | 2.75 - 66 GPM<br>10 - 250 LPM |
|           | Copper        | 2.46 (62.5) | 2.50 (63.5) | 3.56 (90.4)  | 0.88 (22.2) | 2.5 - 54 GPM<br>10 - 204 LPM  |
|           | Plastic       | 2.46 (62.5) | 2.50 (63.5) | 3.56 (90.4)  | 0.75 (19.0) | 2.5 - 45 GPM<br>10 - 170 LPM  |
| 1"        | Metal         | 2.46 (62.5) | 2.92 (74.2) | 2.86 (72.6)  | 1.32 (33.4) | 3.5 - 108 GPM<br>13 - 409 LPM |
|           | Copper        | 2.46 (62.5) | 2.87 (72.9) | 3.80 (96.5)  | 1.13 (28.6) | 3.5 - 95 GPM<br>13 - 360 LPM  |
|           | Plastic       | 2.46 (62.5) | 2.75 (69.9) | 3.80 (96.5)  | 1.00 (25.4) | 3.5 - 85 GPM<br>13 - 320 LPM  |
| 1-1/4"    | Metal         | 2.80 (71.0) | 3.18 (80.8) | 3.14 (79.8)  | 1.66 (42.2) | 5 - 186 GPM<br>19 - 704 LPM   |
|           | Copper        | 2.46 (62.5) | 3.00 (76.2) | 4.04 (102.6) | 1.38 (34.9) | 4.5 - 152 GPM<br>17 - 575 LPM |
|           | Plastic       | 2.46 (62.5) | 3.00 (76.2) | 4.04 (102.6) | 1.25 (31.8) | 4 - 136 GPM<br>15 - 514 GPM   |
| 1-1/2"    | Metal         | 3.02 (76.7) | 3.42 (86.9) | 3.33 (84.6)  | 1.90 (48.3) | 6 - 250 GPM<br>23 - 946 LPM   |
|           | Copper        | 2.71 (68.8) | 2.86 (72.6) | 4.28 (108.7) | 1.63 (41.3) | 5 - 215 GPM<br>19 - 814 LPM   |
|           | Plastic       | 2.71 (68.8) | 3.31 (84.1) | 4.28 (108.7) | 1.50 (38.1) | 5 - 200 GPM<br>19 - 757 LPM   |

### UTT10-050S/050L/050H Pipes 2" (50 mm) and larger



### UTT10-015S to UTT10-040S Pipes 1/2" to 1.5" (12 mm to 40 mm)



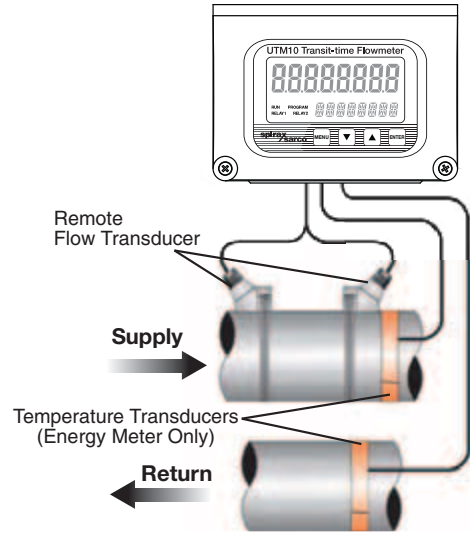
# Clamp-On Ultrasonic Flow and Energy Meter For Liquids

## Meter with Remote Flow Transducer

UTM10 is available with remote mounted transducers that permit separation of up to 990 feet (300 m) using coaxial or twinaxial cable. This design is utilized when pipes are located in areas that are not convenient for viewing, or on piping systems with severe vibration. PVC constructed transducers are rated to 185 °F (85 °C), CPVC are rated to 250 °F (121 °C) and PTFE are rated to 350 °F (176 °C).

### Common Features:

- Rate-Total backlit display
- 4-20mA Output
- 0-1,000 Hz Rate Pulse and Dual Alarm Outputs (Flow Meter Model Only)
- USB Programming Port
- RS485 Modbus Network Connection
- Remote Totalizer Reset



## How To Order

### Ultrasonic Transit-time Meter

| Category                 | Description                                       | Suffix codes |   |    |   |
|--------------------------|---|--------------|---|----|---|
| Model_                   | Velocity Meter                                    | UTM10-S_     |   |    |   |
|                          | Energy Meter                                      | UTM10-E_     |   |    |   |
| Electrical Power         | DC, 10-28 VDC @ 5 watts maximum                   |              | D |    |   |
|                          | AC, 95-264 VAC, 47 to 63 Hz @ 17 VA maximum       |              | A |    |   |
| Digital Communications   | STD   |              |   | 00 |   |
|                          | 10-100 Base T, (Modbus TCP/IP, BACnet/IP, TCP/IP) |              |   | 10 |   |
| Energy Temperature Range | None, if selected Electronics Model S             |              |   |    | 0 |
|                          | 32 to 122 °F (0 to 50°C)                          |              |   |    | 1 |
|                          | 32 to 212 °F (0 to 100°C)                         |              |   |    | 2 |
|                          | -40 to 350 °F (-40 to 176°C)                      |              |   |    | 3 |
| Example                  |   | UTM10-EA001  |   |    |   |

### Notes:

- All electronics have a 4 button keypad, remote mounted transducers, Class 1 Division 2 and CE Approvals, 4-20mA output, Modbus RTU output, USB connection, and cable gland connections
- Velocity meter has two 0-1000 Hz open control outputs
- Energy, connection for Dual 3 wire 1000 Ohm RTDs

# Clamp-On Ultrasonic Flow and Energy Meter For Liquids

## How To Order

### Ultrasonic Transit-time Transducer

| Category                   | Description   | Suffix codes |      |   |     |   |     |
|----------------------------|---|--------------|------|---|-----|---|-----|
| <b>Model</b>               | Transducers, all rated to 121°C (250°F) (CPVC, Ultem®)                                  | UTT10-       |      |   |     |   |     |
| <b>Line Size (nominal)</b> | 15mm (1/2") 2.0 MHz transducers, maximum temperature 121°C (250°F)                      |              | 015S |   |     |   |     |
|                            | 20mm (3/4") 2.0 MHz transducers, maximum temperature 121°C (250°F)                      |              | 020S |   |     |   |     |
|                            | 25mm (1") 2.0 MHz transducers, maximum temperature 121°C (250°F)                        |              | 025S |   |     |   |     |
|                            | 32mm (1 1/4") 2.0 MHz transducers, maximum temperature 121°C (250°F)                    |              | 032S |   |     |   |     |
|                            | 40mm (1 1/2") 2.0 MHz transducers, maximum temperature 121°C (250°F)                    |              | 040S |   |     |   |     |
|                            | Standard, 2" and larger, 1.0 MHz transducers, maximum temperature 121°C (250°F)         |              | 050S |   |     |   |     |
|                            | Large pipe, 24" and larger, 0.5 MHz transducers, maximum temperature 121°C (250°F)      |              | 050L |   |     |   |     |
|                            | High Temperature, 2" and larger, 1.0 MHz transducers, maximum temperature 177°C (350°F) |              | 050H |   |     |   |     |
| <b>Pipe Material</b>       | 050S, 050L, 050H transducers  |              |      | X |     |   |     |
|                            | Metal (carbon steel, stainless steel, aluminum)   |              |      | M |     |   |     |
|                            | Copper  |              |      | C |     |   |     |
|                            | Plastic   |              |      | P |     |   |     |
| <b>Cable Length</b>        | 20 ft (6M)  |              |      |   | 020 |   |     |
|                            | 50 ft (15m)   |              |      |   | 050 |   |     |
|                            | 100 ft (30M)  |              |      |   | 100 |   |     |
|                            | Custom in 10 ft (3m) increments greater than 100 feet (30m)                             |              |      |   | C00 |   |     |
| <b>Conduit</b>             | None  |              |      |   |     | N |     |
|                            | Armored Flex  |              |      |   |     | A |     |
| <b>Conduit Length</b>      | None  |              |      |   |     |   | 000 |
|                            | 20 ft (6M)  |              |      |   |     |   | 020 |
|                            | 50 ft (15m)   |              |      |   |     |   | 050 |
|                            | 100 ft (30M)  |              |      |   |     |   | 100 |
|                            | Custom in 10 ft (3m) increments greater than 100 feet (30m)                             |              |      |   |     |   | C00 |
| <b>Approvals</b>           | Standard, Class 1, Division 2, CE   |              |      |   |     |   | S   |
|                            | Class 1 Division 1 Groups C & D, 050S transducers only                                  |              |      |   |     |   | F   |
| <b>Example</b>             | UTT10-050SX020N000F   |              |      |   |     |   |     |

| Accessories  | P/N        | Description                                   |
|--|------------|---|
| <b>RTD Kit</b>   | URTD-C-20  | Clamp on RTD 20 ft cables                     |
|  | URTD-C-50  | Clamp on RTD 50 ft cables                     |
|  | URTD-C-100 | Clamp on RTD 100 ft cables                    |
| Note: RTD Kit includes 2 RTD, heat sink compound, and installation tape. RTDs are 1000 ohm, 400 F. |            |   |
| <b>Mounting Tracks</b>   | UTMT-10    | 10" Scaled Transducer Mounting Track Assembly |
|  | UTMT-16    | 16" Scaled Transducer Mounting Track Assembly |
| Note: For UTT-10050S transducers only  |            |   |

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