



ARROW HUNTER *PLUS*

Energy Meter

Process Instrumentation

Portable Energy Transit-Time Flowmeter

- **Powerful portable flowmeter with BTU Energy Measurement**
- **Dual Channel Non-invasive flowmeter for clean or dirty liquids**
- **Transit-time Technology for use on all metal and plastic pipes with any liners from 0.25" to 118" diameters**
- **Dual DSP Microprocessor with digital signal for High Accuracy**
- **Easy to install clamp-on sensors**
- **Battery life > 24 hours**

The ECHO Arrow Hunter *Plus* range of non-invasive flowmeters utilize transit-time ultrasonic technology for the accurate flow measurement of clean or dirty liquids and liquefied gases in full pipes. The AH+BTU is a single source Portable Thermal Energy Meter with Class A certified insertion or clamp-on temperature sensors and precise flow measurement for a complete Energy Measurement Solution. This meter will monitor off-peak, extremely low flows down to 0.03 ft/s.

The AH+BTU is designed for portable applications where quick setup, accurate flow testing and reliable energy measurement are the primary requirements. The unit is simple, light-weight and cost-effective. It meets and exceeds the measurement performance of any competitors flowmeter on the market today.

The measurement of flow is based on the principle that sound waves are influenced by a flowing medium. Measurements are made by penetrating the pipe with ultrasound and measuring the frequency variations and phase shifts of the signals received. This measuring technique has no effect on the flowing medium. There is no pressure loss in the pipe and no wear on components of the measuring device.

The ultrasonic and temperature sensors are clamped onto the outside of the pipe, thus eliminating the need to dismantle the pipe work and interrupt the process. The AH+BTU can be applied to any type of metal or plastic pipe with or without a liner carrying clean or dirty liquids. We have several transducers to choose from depending on pipe size, process temperature and required hazardous approvals.

ECHO Process Instrumentation offers a 60 day Performance Guarantee!

Advantages

- **Certified and Highly Accurate Portable Energy Flowmeter**
- **Measurement is independent of fluid conductivity**
- **No pressure loss, no possibility of leakage**
- **Easily retrofits failed mag meters in older plants**
- **No cutting of pipes necessary, no interruption of process, no plant shut down**
- **No additional fittings for maintenance required**
- **Hygienic measurement, no risk of contamination, suitable for ultra clean liquids**
- **No contact with medium, no risk of corrosion when used with aggressive media**
- **Cost advantages when used with large diameter pipes**



***Ultrasonic Clamp-on
Portable Energy Flowmeter
Model: AH+BTU***



**XTT + LG
Transducer**

Technical Specifications: ARROW HUNTER PLUS - ENERGY METER



Process Instrumentation

General

Measuring principle: Ultrasonic Transit-time
Flow velocity range: 0.03 ... 82 ft/s (0.01 ... 25 m/s)
Resolution : 0.00082 ft/s (0.25 mm/s)
Repeatability : 0.15 % of measured value ± 0.015 m/s
Accuracy:
Volume flow : $\pm 0.5\%$ factory calibrated (process conditions can reduce accuracy) $\pm 0.5\%$ of measured value with process calibration
Flow velocity : $\pm 0.5\%$ of measured value
Turn down ratio : 1/100
Max particulates : < 10 % of volume

Flow transmitter

Enclosure : Portable
Protection rating : NEMA 12 (IP 65 according EN60529)
Operating temp. : 14 ... 140 °F (-10 ... 60 °C)
Housing material : Extruded aluminum, lids are zinc alloy
Flow channels : 2
Power supply : Internal rechargeable batteries 8 x NiMH-AA 2850 mAh or external power supply 9V DC
Operating Time : >24 hours with full charge
Display : LCD graphic display, 128 x 64, backlight
Dimensions : 10.5 H x 6.6 W x 1.5 D inch (266 H x 168 W x 37D mm)
Weight : Approx. 4.4 lbs (2 kg)
Power consumption: < 1 W in measurement mode
Signal damping : 0 ... 99 s
Measurement rate : 10 ... 1000 s⁻¹
Languages : English, German, French, Spanish
Response time : 1 s, faster rates upon request
Functions : Average/ Difference/ Sum

Units of Measurement

Volumetric flow rate: m³/h, m³/min, m³/s, l/h, l/min, l/s, USgal/h, USgal/min, USgal/s, USMGD, bbl/d, bbl/h, bbl/min, bbl/s
Flow velocity : m/s, ft/s, inch/s
Mass flow rate : g/s, t/h, kg/h, kg/min
Volume/ Mass : m³, l, US gal, bbl / g, kg, t
Heat flow : J, kJ, MJ, BTU, MBTU, MMBTU

Internal data logger

Storage capacity : > 100,000 samples (512 kByte)
Logging data : All measured and totalized values

Communication

Serial interface : RS 232
Data : Instantaneous measured value, parameter set and configuration, logged data

Software AH+PC Software

Functionality : Downloading of measured values/ parameter sets, graphical presentation, list format, export to third party software, on-line transfer of measured data
Operating systems : Windows 2000, NT, XP, Vista, 07

Process inputs (Galvanically Isolated)

Temperature : PT100, four-wired circuit, measuring range -50 ... 400°C, resolution 0.1K, accuracy +/- 0.2 K, Class A certified

Process outputs (Galvanically Isolated)

Current : 0/4 ... 20mA, active, 500Ω, 16 bit, U = 30V, accuracy 0.1%
Digital Pulse : Totalizer, 0.001 ... 1000/unit, width 30 (Open Collector) ... 999ms, U=24V, I_{max} = 4 mA
Relay : Alarm, fault (programmable), Form C (SPDT-CO), U=48V, I_{max} = 250mA
Serial : RS232 only

Clamp-on Sensors

Type XTT+SM-P

Pipe Diameter range: 0.25 ... 9.8 inch (6 ... 250 mm)
Dimensions : 1.7 x 0.7 x 0.8 inch (43x18x22mm)
Material : Stainless steel
Temperature range : Type XTT+SM-P:
-22 ... 266 °F (-30 ... 130 °C)
Armored Cable, ODU Connector
Protection rating : NEMA 6P (IP 68) submersible
Hazardous rating : General Purpose

Type XTT+LG-P

Pipe Diameter range: 1.96 ... 118 inch (50 ... 3000 mm)
Dimensions : 2.3 x 1.2 x 1.3in (60x30x34 mm)
Material : Stainless steel
Temperature range : Type XTT+LG-P:
-22 ... 266 °F (-30 ... 130 °C)
Armored Cable ODU Connector
Protection rating : NEMA 6P (IP 68) submersible
Hazardous rating : General Purpose

OPTIONS

XTT+CT-P : Pair of Clamp-on PT100 Temperature Sensors, 4-wire, 0...250°C, Class A accuracy, 3m cable with ODU connectors

XTT+CC - Clips & Chains

- includes a pair of both Special Stainless Steel XTT+ Transducer clips and chains for easy mounting.

XTT+CC-0.5 : Pair of both Clips and 0.5m chains
XTT+CC-1.0 : Pair of both Clips and 1.0m chains
XTT+CC-2.0 : Pair of both Clips and 2.0m chains

XTT+SS - Stainless Steel Straps & Clamps

- includes a pair of both Stainless Steel Straps & Quick Release Worm Gear for transducer mounting.

XTT+SS-0.25-4 : SS Straps for 0.25 - 4 inch pipe dia.
XTT+SS-3-18 : SS Straps for 3.0 - 18 inch pipe dia.
XTT+SS-18-38 : SS Straps for 20 - 38 inch pipe dia.
XTT+SS-38-50 : SS Straps for 38 - 50 inch pipe dia.
XTT+PS-4-100 : Pair of both Polyester Straps & Quick Release Clamps for 4 - 100 inch pipe dia.