



Process Instrumentation

# ARROW HUNTER PLUS

Fixed Flowmeter

## Fixed Transit-Time Flowmeter

- **Non-invasive flow measurement for clean or dirty liquids**
- **Ultrasonic Transit-Time Technology**
- **Measures accurately for all metal and plastic pipes with any liners from 0.25" to 118" diameters**
- **Dual DSP Microprocessor with digital signal for High Accuracy**
- **Complete BTU Energy Measurement and 2 Flow Channels with the Full Spec Version**



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 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 **Arrow Hunter Plus - FIXED (AH+FX)** is designed for 1 channel permanent flow metering applications where advanced options and configurations are required. The **Arrow Hunter Plus - FULL SPEC (AH+FS)** is a 2 channel permanent flowmeter with BTU Energy Measurement capability.

**ECHO Process Instrumentation offers a 60 day Performance Guarantee!**

### Advantages

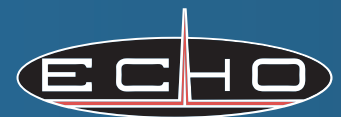
- **Low installation effort and costs**
- **Measurement is independent of fluid conductivity**
- **No pressure loss, no possibility of leakage**
- **No cutting of pipes necessary, no interruption of process, no plant shut down**
- **No additional fittings for maintenance required**
- **Hygienic measurement, 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, high pressure systems, etc.**

**Ultrasonic Clamp-on  
Permanent Mount Flowmeter  
Model: AH+FX  
Model: AH+FS (Full Spec)**



**XTT + LG  
Transducer**

# Technical Specifications: ARROW HUNTER PLUS - FIXED FLOWMETER ARROW HUNTER PLUS - FULL SPEC



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  $\pm 0.015$  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 : Wall mounted housing  
Protection rating : NEMA 4X (IP 66 according EN60529)  
Operating temp. : 14 ... 140 °F (-10 ... 60 °C)  
Housing material : Plastic, ABS Polycarbonate (transparent front door only)  
Flow channels : 1 (Standard AH+FX)  
2 (Full Spec AH+FS- Optional)  
Power supply : 100 ... 240 VAC 50/60 Hz, 9 ... 36 VDC  
Display : LCD graphic display, 128 x 64, backlight  
Dimensions : 9.3 H x 10.1 W x 5.7 D inch (237 H x 258 W x 146 D mm)  
Weight : Approx. 5 lbs (2.3 kg)  
Power consumption: < 5 W  
Signal damping : 0 ... 99 s  
Measurement rate : 10... 1000 s<sup>-1</sup>  
Languages : English, German, French, Spanish  
Response time : 1 s, faster rates upon request  
Dual Mode : Average/ Difference/ Sum

## Units of Measurement

Volumetric flow rate: m<sup>3</sup>/h, m<sup>3</sup>/min, m<sup>3</sup>/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 : m<sup>3</sup>, l, US gal, bbl / g, kg, t  
Energy : BTU, MBTU, MMBTU, W, kW, MW, J, kJ, MJ (only with Full Spec option)

## Internal data logger

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

## Communication

Serial interface : RS 232, RS 485 (optional)  
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)

### Full Spec Only

Temperature : PT 100, range - 50 ... 400 °C  
Current : 0 ... 20 mA active or 4 ... 20 mA passive, U = 30V, Ri = 50Ω, accuracy 0.1% MV

## Process Outputs (Galvanically isolated)

Current : 0/4 ... 20 mA, active (R<sub>Load</sub> < 500 Ω), 16 (1 per channel) bit resolution, U=30V, accuracy = 0.1%  
Voltage : Optional 0 ... 10V, Ri = 500Ω  
Digital (pulse) : 1 Open Collector per channel, width 30 ... 999 ms, U = 24 V, I<sub>max</sub> = 4mA  
Digital (relay) : 2 Form "C" SPDT, U=48V I<sub>max</sub>=250mA, as Alarm or Fault (programmable)

## Clamp-on Sensors

### Type XTT+SM

Pipe Diameter range: 0.25 ... 9.8 inch (6 ... 250 mm)  
Dimensions : 1.7 x 0.7 x 0.8 inch (43x18x22mm)  
Material/ Cable : Stainless steel/ 5m length coax cable  
Temperature range : Type XTT+SM-F: -22 ... 266 °F (-30 ... 130 °C)  
Type XTT+SM-EX: -4 ... 248 °F (-20 ... 120 °C)

Protection rating : NEMA 6P (IP 68) submersible  
Hazardous rating : Type XTT+SM = General Purpose  
Type XTT+SM-EX (3m cable):  
ATEX Approved Ex mb IIC T4 - T6  
Sensors are suitable for Zone 1 & 2.  
Transmitter must be located in safe area.

### Type XTT+LG

Pipe Diameter range: 1.96 ... 118 inch (50 ... 3000 mm)  
Dimensions : 2.3 x 1.2 x 1.3inch (60x30x34 mm)  
Material/ Cable : Stainless steel/ 5m length coax cable  
Temperature range : Type XTT+LG-F: -22 ... 266 °F (-30 ... 130 °C)  
Type XTT+LG-EX: -4 ... 248 °F (-20 ... 120 °C)

Protection rating : NEMA 6P (IP 68) submersible  
Hazardous rating : Type XTT+LG = General Purpose  
Type XTT+LG-EX (3m cable):  
ATEX Approved Ex mb IIC T4 - T6  
Sensors are suitable for Zone 1 & 2.  
Transmitter must be located in safe area.

## Options

XTT+CT : Clamp-on Temp Sensors, 0...250°C

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 : Polyester Straps for 4-100 in pipe dia.

XTT+JBOX : Jbox with terminal strips  
XTT+JBOX-EX : Explosion Proof Jbox, Class 1, Grp D