ALSONIC-DSP

Ultrasonic Flowmeter
Model Alsonic-DSP

GENERAL

The SMC Alsonic DSP series is a fixed-mount, transit-time ultrasonic flowmeter with clamp-on transducers for non-invasive liquid measurement. This device uses patented "fine time measurement technology", making use of ultrasonic beams that can measure at pico-seconds time intervals. This rapid array of measurements enables accurate, drift-free flow rate data in liquids that contain a second phase of entrained solids or gas bubbles. The use of DSP technology enables "Cross Correlation" of ideal signals to cancel extraneous noise signals, and create a three-dimensional cross section of the velocity distribution profile of the medium flowing through the pipe. DSP technology also enables the use of "FFT (Fast Fourier Transforms)" in order to generate the two signals at the same frequency; thereby increasing the signal-to-noise ratio for accurate, drift-free flow measurement in liquids.

FEATURES

- Color Graphic LCD display 128x64 for flow rate, total flow & signal shape
- 4.0 Mbytes data logger up to 200,000 data fields
- Velocities from 0.03 ~ 40 feet/sec (0.01 ~ ± 12 m/s)
- Any liquids containing ≤ 30% suspended solids, including waste water
- NIST traceable calibration certificate
- High accuracy; ±1.0% of reading with single path
  ±0.5% of reading with dual path
- Oscilloscope function for diagnostics
- AR (Anti-Round) Mode (patent pending)
- Fine Time Measurement Technology (Patented)
- Data logger function; includes date, totalizer, diagnostics
- Response time less than 1 second.

Oscilloscope Function

SPECIFICATIONS

- Measuring Principle : Transit time differential
- Pipe Size : B Type : ½" ~ 4' (15 mm ~ 100 mm)
  : C Type : 2" ~ 12" (50 mm ~ 300 mm)
  : D Type : 12" ~ 40" (200 mm ~ 1000 mm)
  E Type : 20" ~ 240" (500 mm ~ 6000 mm)
- Pipe Material : Cast Iron, Stainless Steel, Ductile Iron Copper, PVC, Aluminum, Asbestos Fiberglass
- Liner Material : Tar Epoxy, Rubber, Mortar, Polypropylene, Polystryal, Polystyrene, Polyester, Ebonite, Polyethylene, Teflon
- Display : Color Graphic LCD 128x64 with backlight
  Flowrate : 4 ½ digit
  Totalizer : 10-digit, Positive, Negative & Net values
  Engineering Units: : m^3, Liter, US Gallon, Imperial Gallon, Million Gallon, Cubic Feet, US Barrels, Imperial Barrels, Oil Barrel.
  Time Units: : Second, Minute, Hour, Day.
  Other : Oscilloscope function for diagnostics
- Accuracy : ± 1% of reading with single path
  : ± 0.5% of reading with dual path
- Repeatability : ± 0.2% of reading
- Keypad : 16 Key with tactile action
- Response Time : Less than 1 second
- Flow Velocity : 0.03 ~ ±40 feet/sec (0.01 ~ ± 12 m/s)
- Resolution : 0.003 feet/sec (0.001 m/s)
- Ambient Temperature : -4 ~ 140 °F (-20 ~ 60 °C)
- Mounting : wall mounting
- Max. Cable Length : 650' (200 M)
- Power Consumption : Less than 20W
- Power Supply : 90 ~ 260V_{AC} 50/60 Hz
- Data Storage : Operation parameters and totalization data are stored by EEPROM for more than 10 years
- Output : two analog 4-20 mA
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- Data Logger : 4.0 Mbytes,upto 200,000 bits of data
- Alarm : two relays for total, hi/low
- Communication : RS-232
- Dimensions : See page 3
- Weight : 7.25 lbs. (3.3 Kg)
- Protection -Converter NEMA 4 (IP65)
  Sensor : IP68(Submersible)

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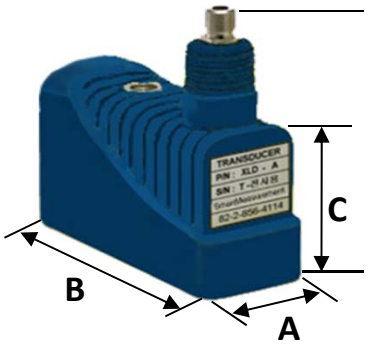
TRANSDUCER SPECIFICATION

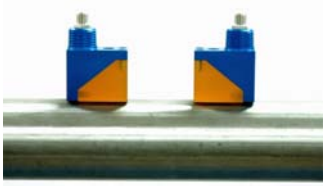
• Standard-Transducers

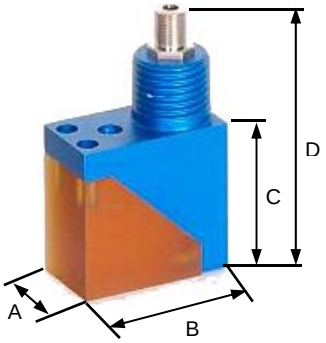
Fluid Temperature : -20 ~ +120 ℃

Model	A	B	C	D	Pipe Size
XLB	23 mm	42 mm	37 mm	63 mm	DN 15 ~ 100 mm
XLC	35 mm	60 mm	45 mm	72 mm	DN 50 ~ 300 mm
XLD	35 mm	93 mm	50 mm	86 mm	DN200~1000mm
XLE	51 mm	145 mm	76 mm	111 mm	DN500~6000mm



Single path



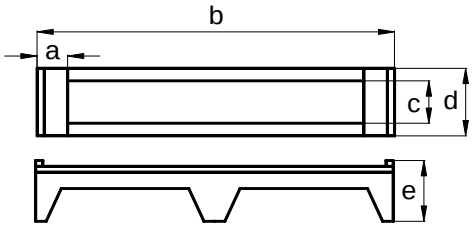


Duel Path

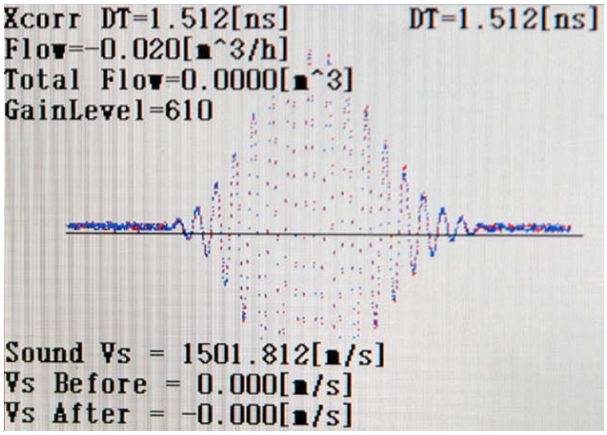
dual path or dual channel (can measure two pipe simultaneously)
(user can select dual path or dual channel in programming)

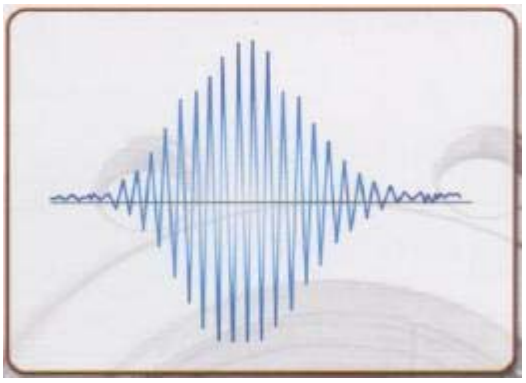
• Mounting Track Size

Model	a	b	c	d
MTB	30 mm	280 mm	23 mm	23 mm
MTC	40 mm	380 mm	35 mm	43 mm
MTD	40 mm	700 mm	35 mm	43 mm
MTE	40 mm	380 mm	51 mm	70 mm



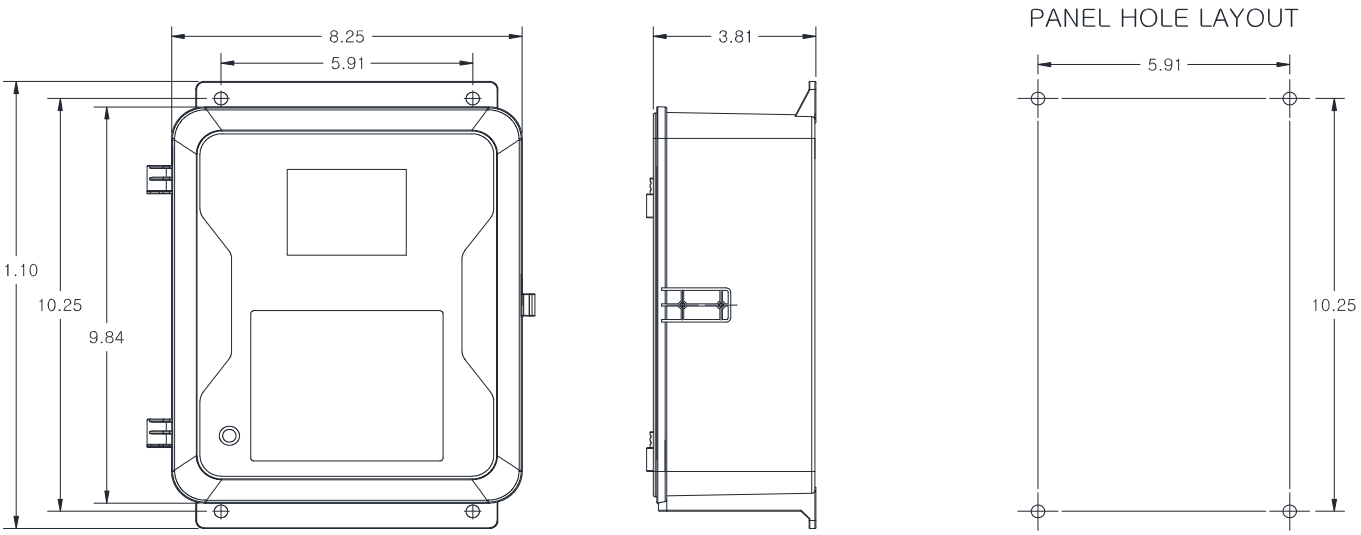
• Oscilloscope Function (Diagnostic)





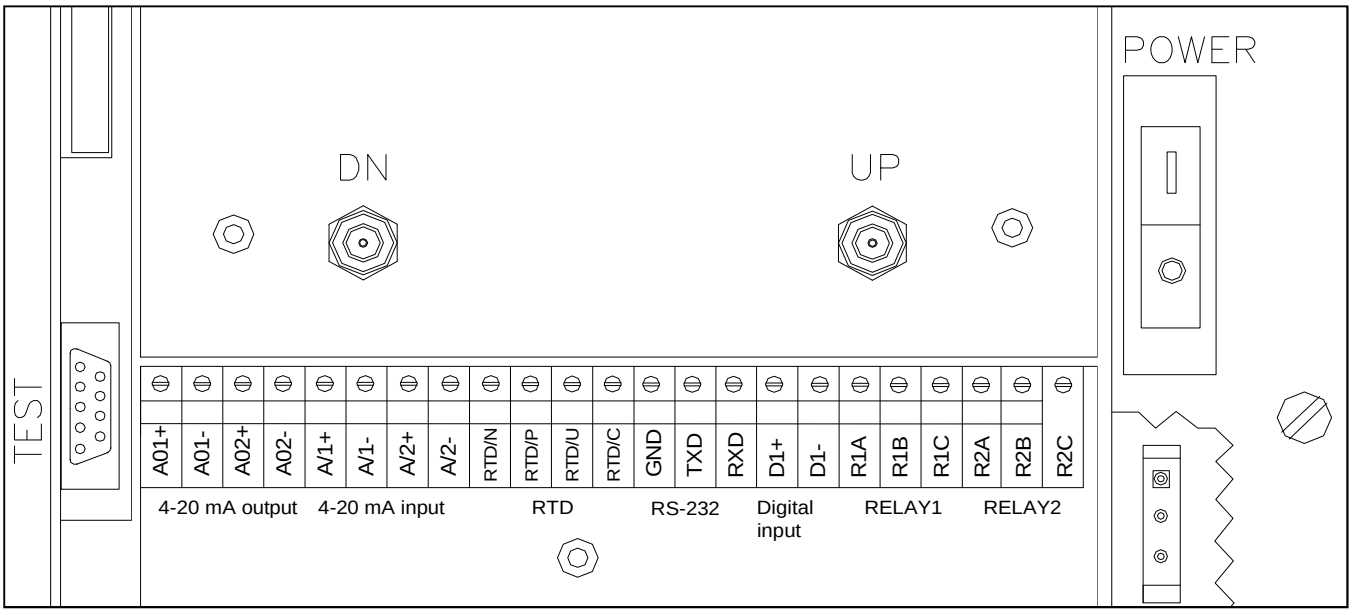
DIMENSIONS

- **Alsonic-DSP NEMA 4**



***** Consult factory for dimensions of optional Explosion-Proof enclosure

WALL MOUNTING WIRING



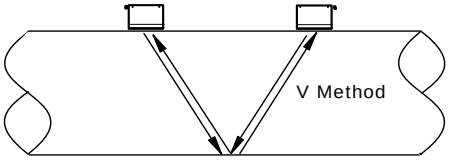
Please contact your SMC application engineer

You also need to provide the following information:

Type of Fluid	Please provide the name of your fluid, including operating density and viscosity
Line Size	Please indicate nominal pipe diameter and sensor connection type (insertion, clamp, etc..)
Process Pressure and Temperature	We will calibrate your flowmeter as close to your operating conditions as possible
Type of Electronics	Please specify output and installation type (compact, wall mount, panel mount, etc...)
Pipe name and material	Please provide pipe diameter, material, wall thickness, lining type, lining thickness
Pipe Condition	Straight pipe condition (10D upstream, 5D downstream of sensor location required)

Model Selection Guide

Alsonic-DSP							
Example 1: Alsonic-DSP-100N-XLB-C10							
Example 2: Alsonic-DSP-100DN- 2(XLB)- 2(C10)							
Alsonic-DSP-	**	**	**	**			**Description**
100L-up to 2-path/4 channel, with keypad, NEMA 4X	100L						Flow Meter
100LM-up to 4-path/8 channel, with keypad, NEMA 4X	100LM						
10L - up to 2-path/4 channel, compact type	10L						
10LX - up to 2-path, compact type w/ EX-Proof box	10LX						
½" ~ 4" (DN 15 ~ 100 mm) and mounting track		XLB					Transducers and mounting rack
2" ~ 12" (DN 50 ~ 300mm) and mounting track		XLC					
8" ~ 40" (DN 200-1000mm) and mounting track		XLD					
20" ~ 240' (DN500~6000mm) and mounting track		XLE					
* cable length is 10 meter standard, and max. cable distance 200 M			Ax				Extra Cable



* Alsonic-DSP normal installation is reflect (V) method, not direct (Z) mode
* when using single path with reflect mode, accuracy is double that of direct mode and the same as dual path
* when using dual path with reflect mode, accuracy is the same as four path