ALSONIC SERIES

Ultrasonic Flow Meter

ALSONIC Series Ultrasonic Flow Meter

SmartMeasurement™ ALSONIC product line

Model	Technology	Norminal Diameter	Fluid	Application	Transducer style
ALSONIC DSP	transit-time	15-6000 mm	liquids with <30% particles/bubbles	clean or dirty	clamp on or inline
ALSONIC DSPPL	transit-time	20-6000 mm	liquids with <30% particles/bubbles	clean or dirty	clamp on
ALSONIC AVM	transit-time	1000-40000mm	liquids with <30% particles/bubbles	multi-point open channel	submersible
ALSONIC FX	transit-time	25-1200 mm	clean liquids	economcial fixed	clamp on or inline
ALSONIC PL	transit-time	25-1200 mm	clean liquids	economical portable	clamp on or inline
ALSONIC EG	transit-time	25-1200 mm	clean liquid	industrial energy meter	clamp on or inline
ALSONIC MN	transit-time	15-40mm	clean liquid	plug and play transdunsducers	cover pipe
ALSONIC DHL	transit-time	25-1200mm	clean liquid	Hand held with SD card	clamp on
ALSONIC DDPL	doppler	20-6000mm	liquids with >1% particles/bubbles	dirty liquids only	clamp on
ALSONIC DAVM	doppler	150-10000mm	liquids with >1% particles/bubbles	transducer, open channel	submerged
ALSONIC BAWM	transit-time	15-300mm	clean water	domestic cold water	inline
ALSONIC BAEG	transit-time	15-300mm	clean water	domestic hot/ energy	inline

FUNCTIONAL SPECIFICATIONS：

Power Supply:

AC: 85~265V$_{AC}$, 45~63Hz

DC: 16~30 V$_{DC}$, draw up to 1 amp of current steady state,

   Imax=50mA

Switch-on current

AC: Maximum 26A (<5ms) at 250V$_{AC}$

DC: Maximum 30A (<5ms) at 42V$_{DC}$

Power consumption: 10W (up to 15W)

Vibration resistance: 10 to 150 Hz (Acceleration up to 1g)

Damping time: 0.2 to 100s (default 6s).

Grounding Resistance: <10Ω

Output: Pulse (0-10KHz) 4~20mA$_{DC}$

   RS485 (up to 2km at 14400bps)

AMBIENT SPECIFICATIONS：

Vibration limits: Meets IEC 68.2.6, endurance sweep,

   10 to 2000 Hz, 50 sweep cycles at 1.0g.

Ambient Temperature Limits

Operating: −20°C~+55°C

Storage: −40°C~+70°C (>35°C max. 4 weeks)

   ≤ −40°C is not recommended for long-term storage

Humidity Limits: 0–90% RH to 150°F (65°C)

Protection: IP65 – std

   IP68 – opt

Shock resistance: up to 2g, conforms to IEC60068-2-6

Interference-resistant: conforms to EN61326/A1

TRANSIT TIME DIFFERENCE PRINCIPLE

In order to measure the flow of a fluid in a pipe, ultrasonic signals are used, employing the transit time difference principle. Ultrasonic signals are emitted by a transducer installed on the pipe and received by a second transducer. These signals are emitted alternately in the flow direction and against it. As the fluid in which the signals propagate is flowing, the transit time of the ultrasonic signals in the flow direction is shorter than against the flow direction. The transit time difference, Δt, is measured and allows the flowmeter to determine the average flow velocity along the propagation path of the ultrasonic signals. A flow profile correction is then performed in order to obtain the area averaged flow velocity, which is proportional to the volumetric flow rate. Integrated microprocessors removes any external noise from each transducer enabling the transmitter to measure flow accurately.
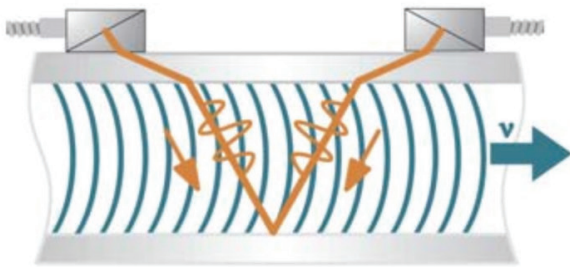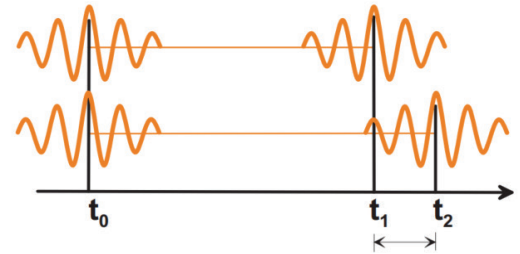
Transit time difference $\triangle t$

Calculation of volumetric flow rate

$$V = K_{Re} \cdot A \cdot K_a \cdot \triangle t / (2 \cdot t_{fl})$$
Where

V	= volumetric flow rate
K_{Re}	= fluid mechanics calibration factor
A	= cross-sectional pipe area
K_a	= acoustical calibration factor
$\triangle t$	= transit time difference
t_{fl}	= transit time in the fluid

Path of the ultrasonic signal

■ **High frequency portable ALSONIC DSPPL**

- Fluid: liquid @ particulates/bubbles<30%
- Line size: DN20~DN6000
- Flow Range: 0.02~12m/s
- Temperature: -40~+120 deg C
- Accuracy: std ±1.0% of reading
        opt ±0.5% of reading
- Transducer: clamp on
- Output: Relay, 4-20mA, RS485
- Application: clean or dirty liquids with graphic display

■ **High frequency wall mount ALSONIC DSP**

- Fluid: liquid @ particulates/bubbles<30%
- Line size: DN15~DN6000
- Flow Range: 0.02~12m/s
- Temperature: -40~+120 deg C
- Accuracy: std ±1.0% of reading
        opt ±0.5% of reading
- Transducer: clamp on or inline
- Output: Relay, 4-20mA, RS485
- Application: clean or dirty liquids
        with graphic display

ALSONIC Series Ultrasonic Flow Mete

■ **Standard handhold: ALSONIC DHL**

- Fluid: clean liquid
- Line size: DN25~DN1200
- Flow Range: 0.5~12m/s
- Temperature: -10~+80 deg C
- Accuracy: ±1.0% of reading
- Transducer: clamp on
- Output: 4-20mA, Data logger
- Application: single transducer with SD card

■ **Standard wall mount: ALSONIC FX2**

- Fluid: Clean liquid
- Line size: DN25~DN1200
- Flow Velocity: 1~33ft/s (0.3~10m/s)
- Temperature: -20~+60 deg C
- Accuracy: +/-1% of reading
- Transducer: clamp on or inline
- Output: 1-9999 Hz
- Inputs: PT1000
- Application: flow and/or energy

■ **Portable ALSONIC PL**
- Fluid: Clean liquid
- Line size: DN25~DN1200
- Flow Range: ±0.01~±12m/s
- Temperature: -40~+75℃
-                     -40~+110℃
- Accuracy: ±1% of rate
- Range: ±0.01~±12 m/s standard;
- Output: Analog output: 4-20mA, Max 750 Ω.,
- Modbus: RS485
- Application: portable flow/energy meter
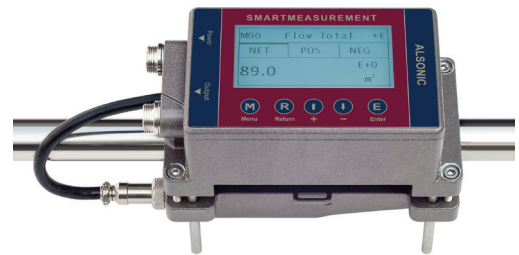
ALSONIC Series Ultrasonic Flow Meter

■ **Building Automation Water Meter: ALSONIC BAWM**

- Fluid: water
- Line size: DN15~DN300
- Flow Range: 0.5~12m/s
- Temperature: -10~+70 deg C
- Accuracy: std±2.0% of reading
  opt±1.5% of reading
- Transducer: inline
- Output: pulse, Mbus, RS485
- Application: water meter

■ **Plug and Play: ALSONIC MN**
- Fluid: clean liquid
- Pipe size: DN15~DN40
- Flow range: 0.1 m/s~5.0 m/s
- Temperature: 0~+50 deg C
- Accuracy:std ±2% RD, opt ±1%RD
- Transducer: plug and play no need for transducer alignment
- Analog output: 4~20mA, Maximum load: 600Ω
- Alarm output: OCT, Upper and lower limit alarm function (optional)
- Communication: RS485, Support modbus communication protocol
- Application: liquids with <1-2% bubble/particles

■ **Threaded: ALSONIC BAEG**
- Fluid: water
- Line size: DN15~DN40 BSP threads
- Flow Range: 0.5~12m/s
- Temperature: Up to 95 deg C
- Accuracy: 2%FS
- Transducer: inline
- Output: M-Bus (default). MODBUS, AMAR compatible and many more
- Application: Energy / BTU meter

DOPPLER PRINCIPLE

Doppler ultrasonic flow meter measures flow velocity by sensing signals from reflective materials within a liquid and measuring the frequency shift due to the motion of these reflective materials. A pair of transducers outside the pipe or one transducer inside the pipe, transmits an ultrasonic signal into the moving fluid, a portion of this signal is reflected by suspended solids, entrained gases or flow turbulence back toward the transducer. Electronic circuitry compares the transmitted frequency with the received frequency. The difference, or frequency shift, is proportional to fluid velocity. If the liquid is not moving (a zero flow condition) the transmitted and received frequencies are identical.
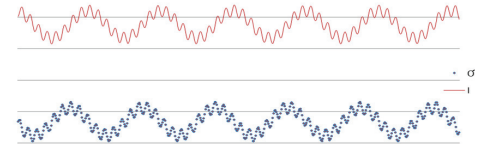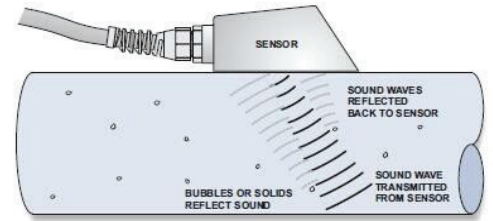
PROGRAM

Program lets you easily communicate the sensor directly, view current and download logged data. Drop-down menus allow even unexperienced users to quickly learn the program. The program communicates via a RS485 connection. Program tools is able to run on Windows computers.

■ Doppler flow meter: ALSONIC DDPL

- Fluid: dirty liquid @ particulates bubbles<40% liquids MUST have particles present
- Line size: DN15~DN6000
- Flow Range: 0.02~12m/s
- Temperature: -40~+120 deg C
- Accuracy: std ±1.0% of reading
- Transducer: clamp on
- Output: Relay, 4-20mA, RS485
- Application: flow meter

■ Doppler open channel: ALSONIC DAVM

- Fluid: dirty liquid @ particulates/bubbles <40% liquids MUST have particles present
- Line size: DN150~DN6000
- Flow Range: 0.02~12m/s
- Temperature: -40~+120 deg C
- Accuracy: std ±1.0% of reading
- Transducer: clamp on
- Output: Relay, 4-20mA, RS485
- Application: open Channel, portable and fixed sewer systems, Area Velocity system

** please refer to Alsonic product matrix for other styles

ALSONIC DAVM

Transmitter

Portable ①	P
Wall Mount ②	W
No Transmitter ③	N

Power supply

10-24V$_{DC}$ ②③	DC
85-265V, 45~63Hz ①②	AC

Output

Standard - display ①②	S
No output ①③	N
Pulse ①②	P
4-20mA ①②	I
RS485 ①②③	C
Data logger - 16GB ①②	D
GPRS ①②	G
SDI-12 ③	E

Transducer

None ①②	N
Standard sensor - 0.2-1.6m/s bi-direction ①②③	S
Extend sensor - 0.2-13m/s bi-direction ①②③	L

Singal Cable

Standard 15m	N
To be advise **m	**

Options

Program to read sensor by SDI-12/RS485 ③	SF
Installation part	IS

ALSONIC HL

Flowmeter type

Handheld - numeric pad	HL
Handheld numeric pad and data logger	DHL

Transducers

DHL clamp sensor, 25~1200mm	DTS
Small clamp sensor, 15~100mm	SCS
Middle clamp sensor, 50~600mm	SCM
Large clamp sensor, 300~6000mm	SCL
High Temperature clamp sensor (-30-+140°C), 15~100mm	SHS
High Temperature clamp sensor (-30-+140°C), 50~700mm	SHL
Mounting track Small clamp sensor, 15~100mm	MCS
Mounting track Middle clamp sensor, 50~300mm	MCM
Mounting track High Temperature clamp sensor, 15~100mm	MHS
Mounting track High Temperature clamp sensor, 50~300mm	MHL

Signal Cable Length

5M x 2 Cables	C1
10M x 2 Cables	C2
15M x 2 Cables	C3

Options

None option	NN
thickness gauge	TT
Extra single cable. 10m * 2	Cable
Mounting Belt. 6m * 2	ST

ALSONIC FX

Flow Meter

Standard wall mount flow meter with display, 4-20mA, RS485	FX-2	
Standard wall mount energy meter with display, 4-20mA, RS485	EG-2	

Transducers

Middle clamp sensor (-30~+75°C), 25~800mm	SC1	
Large clamp sensor (-30~+75°C), 500~1200mm	SC2	
High Temperature clamp sensor (-30~+110°C), 25~500mm	HC1	
Standard insertion sensor (-30~+110°C), 80~1200mm	IC1	
304SS inline sensor (-30~+110°C) with pipe size **	DN	
Other transducer	**	

Signal Cable Length

No Cables	NC	
5m x 2 Cables	C1	
**m cables up to +75 deg C	C**	
**m cables up to +110 deg C	H**	

Power Supply

Standard power supply : 10~36V$_{DC}$/1A.	DC	
Option power supply: 90~245V$_{AC}$, 50/60Hz	AC	

Options

None option	NN	
Worm gear steel mounting belt - please offer line size <DN500	SM	
thickness gauge	TT	
Clamped on PT1000 with 5m cable, a pair	RTD	
Clamped on PT1000 with **m cable, a pair	R**	
Data logger for wall mount	DL	
Ex proof chassis for wall mount transmitter	EX	

ALSONIC PL				
Flowmeter type				
Standard portable flow meter with display, 4-20mA, RS485	PL			
Standard portable energy meter with display, 4-20mA, RS485	EG-P			
Transducers				
Middle clamp sensor with single mounting track (-30~+75°C), 25~800mm		SC1		
Large clamp sensor with single mounting track (-30~+75°C), 500~1200mm		SC2		
High Temperature clamp sensor with single mounting track (-30~+110°C), 25~500mm		HC1		
Standard insertion sensor (-30~+110°C), 80~200mm		IC1		
Signal Cable Length				
No Cables			NC	
Standard 5m x 2 Cables			C1	
**m cables up to +75 deg C			C**	
**m cables up to +110 deg C			H**	
Power Supply				
Battery power: 3000mAh				BA
Options				
None option				NN
thickness gauge				TT
Dual mounting track for portable, up to DN600				DS
Clamped on PT1000 with 5m cable, a pair				RTD
Clamped on PT1000 with **m cable, a pair				R**
Data logger with 16G SD card				DL

ALSONIC BAEG						
Transmitter Type						
Standard type	ST					
Transducers						
Brass DN15	S15					
Brass DN20	S20					
Brass DN25	S25					
Brass DN32	S32					
Brass DN40	S40					
Cast iron DN50~DN300	C**					
Special type	SP					
Temperature						
Standard temperature: +2~+50°C		NN				
High temperature: +2~+95°C		HT				
Pressure						
Standard pressure: up to 1.6Mpa			NN			
High pressure: up to 2.5Mpa			HP			
Cable Length						
Standard - 1m x 2 signal cables, 1m x 2 RTD cables				NC		
(**)m x 2 signal cables, (**)m x 2 RTD cables				**		
Output						
M-Bus					MB	
RS485					485	
Wireless					WL	
Infrared rays output					IR	
Options						
Pulse output (total flow and total energy flow)						PT
M-bus to GPRS: collector (256 to 1) + concentrator						MG
Wireless to GPRS: data collector (50 m) + data concentrator						WG
M-Bus to RS232 transmitter (64 to 1)						MB
Wireless to GPRS: data collector (1 to 1)						GP
With pre-set control valve						VL
Other options						OP

ALSONIC MN					
Flowmeter type					
Flow meter -Ultrasonic clamped-on mn type, display, DC power	MN				
Energy meter - -Ultrasonic clamped-on mn type, one build-in RTD, display, DC power	EG MN				
Transducers					
Standard -DN15 to DN40, up to 50°C		N			
Special transducer		**			
Output					
Standard 4-20mA and RS485			NN		
Other output			**		
Output options					
None				NN	
OCT (Frequency)				OT	
1 Relay				OR	
Options					
Standard ±2% RD meter with 2m signal cable					NN
±1% RD meter with multiple calibrations					HA
Matched RTD for energy meter with 9m cable					RTD
Thickness gauge					TT
Other options					**

ALSONIC DSP

Transmitter

Compact type, up to 2 path/channel, IP65, DC power, 4-20mA, RS-232C/485	10L
Explosion proof, up to 2 path/channel, IP67, DC power, 4-20mA, RS-232C/485	10LX
NEMA 4 with keyboard, up to 2 path/channel, IP65, AC power, Two 4-20mA, Two Relays, One RS-232C/485	100L

Transducers

Clamp-On, DN6~30, up to 120°C, Intrinsically Safe. 0.02 to 12 m/s	XLA
Clamp-On, DN15~80, up to 120°C, Intrinsically Safe. 0.02 to 12 m/s	XLB
Clamp-On, DN50~250, up to 120°C, Intrinsically Safe. 0.02 to 12 m/s	XLC
Clamp-On, DN200~500, up to 120°C, Intrinsically Safe. 0.02 to 12 m/s	XLD
Clamp-On, DN500~3000, up to 120°C, Intrinsically Safe. 0.02 to 12 m/s	XLE
Clamp-On, DN2000~6000, up to 120°C, Intrinsically Safe. 0.02 to 12 m/s	XLF
Inline, 1/2" flow tube, 200 mm length, 316SS, 0.5~10 LPM	XIL1
Inline, 1/2" flow tube, 400 mm length, 316SS, 0.25~5 LPM	XIL2
Inline, 3/4" flow tube, 200 mm length, 316SS, 1.0~20 LPM	XIL3
Inline, 3/4" flow tube, 400 mm length, 316SS, 0.5~10 LPM	XIL4
Insertion DN50~500, up to -40~120°C	XIS
Insertion DN500~6000, up to -40~120°C	XIL

Signal Cable

None cable	NC
10m cable (standard).	C10
cable length is **(⩽ 200m)	C**

Options

None option	NN
Mounting track for transducer XLB	MTB
Mounting track for transducer XLC	MTC
Mounting track for transducer XLD	MTD
Mounting track for transducer XLE/XLF/XLG	MTE
Portalbe easy mounting track for XLC, XLD	ETP
Portalbe magnetic mounting track for XLC, XLD, XLE	MTP
Remote control for 10L	RC

ALSONIC DSP

Transmitter

Portable type, up to 2 path/channel, IP66, AC power Two 4-20mA, Two Relays, One RS-232C/485	PL

Transducers

Clamp-On, DN6~30, up to 120°C, Intrinsically Safe. 0.02 to 12m/s	XLA
Clamp-On, DN20~80, up to 120°C, Intrinsically Safe. 0.02 to 12m/s	XLB
Clamp-On, DN50~300, up to 120°C, Intrinsically Safe. 0.02 to 12m/s	XLC
Clamp-On, DN300~900, up to 120°C, Intrinsically Safe. 0.02 to 12m/s	XLD
Clamp-On, DN500~3000, up to 120°C, Intrinsically Safe. 0.02 to 12m/s	XLE
Clamp-On, DN2000~6000, up to 120°C, Intrinsically Safe. 0.02 to 12m/s	XLF

Signal Cable

None cable	NC
10m cable (standard).	C10
cable length is **($\leqslant$ 200m)	C**

Options

None option	NN
Mounting track for transducer XLA	MTA
Mounting track for transducer XLB	MTB
Mounting track for transducer XLC	MTC
Mounting track for transducer XLD	MTD
Mounting track for transducer XLE/XLF	MTE
Portalbe easy mounting track for XLC, XLD	ETP
Portalbe magnetic mounting track for XLC, XLD, XLE	MTP
Remote control	RC

ALSONIC DSP - AVM

Transmitter

NEMA 4 with keyboard, up to 4 path/channel, IP64, AC power, Two 4-20mA, Two Relays,One RS-232C/485	100LM

Transducers

Open channel, width 1-3m	XOD
Open channel, width 3-40m	XOE

Signal Cable

None cable	NC
10m cable (standard).	C10
cable length is **(⩽ 200m)	C**

Options

None option	NN
Laser Alignment Tool	LAT
Mounting track open channel, 1 pairs	MTO
Other option1	P1
Other option2	P2

Sales and Service/Ventes et Service

Cancoppas LIMITED

Mississauga, Ontario
905.569.6246
controls@cancoppas.com

Montréal, Québec
514.697.4202
www.cancoppas.com

SmartMeasurement

10437 Innovation Drive | Suite 315 | Milwaukee, WI 53226
Tel: +1 414 299 3896 | Fax: +1 414 433 1606
sales@smartmeasurement.com | www.smartmeasurement.com

Page: 15