

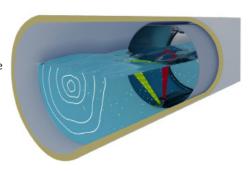


ALSONIC

Doppler Open Channel Flow Meter Model ALSONIC-DAVM Series

GENERAL

The ALSONIC-DAVM area velocity flow meter is designed for applications in full or partially full pipes 150 - 6000 mm (6-240 inches) in diameter, or open channels with flow widths 200-10000mm (8-400 inches) and depths of 20-10000 mm (3/4-400 inches). It uses advanced Doppler profiling technology to directly measure velocity profiles making it the best choice for sites with nonuniform, rapidly changing, backwatered, near zero, negative or reverse flow conditions. This eliminates the need for onsite calibration, thereby reducing significantly the cost of installation. Used in conjunction with an integral upward looking ultrasonic or a secondary external pressure sensor (optional) for determining the depth, the meter uses a numerical model for averaged velocity in the entire cross section and the continuity equation to calculate flow. Information on the level, velocity, flow, temperature, conductivity and position offset can be taken from transmitter/flow computer or directly from sensor. This meter will log up to 16GB of data. In addition the flow meter can control a sampler in a flow-proportional sampling mode by means of a pulse output.



SPECIFICATIONS







Flow computer

Transmitter:	Wall mount	Portable			
Power Supply:	AC: 85-265V, 45~63Hz	Battery: 11.1V, 6600mAh			
	DC: 12-28V, I _{max} =23mA	AC charger: 220VAC, 1-2A			
Protection:	IP66	IP67			
Fluid Temperature:	-4~140°F (-20°C~+60°C)	-4~140°F (-20°C~+60°C)			
Enclosure Material:	GFRP	ABS			
Display:	4.5" LCD	4.5" LCD			
Input:	RS485, One Wire	RS485, One Wire			
Output:	velocity, depth, temperature, conductivity, tilt	velocity, depth, temperature, conductivity, tilt			
Communication:	Std - pulse, 2x4~20mA	Std - display, 2x4~20mA			
	Opt - RS485/Modbus, datalogger, GPRS	Opt - pulse, RS485/Modbus, datalogger, GPRS			
Dimensions:	L×W×H: 4.6"x7.75"x4.5" (244×196×114 mm)	L×W×H: 10.6"x8.5"x6.9" (270×215×175 mm)			
Weight:	5.3lb (2.4 kg)	6.6lb (3 kg)			
Data Logger:	16GB	16GB			
Applications:	partially full pipe: 6"~240" (150-6000mm)	partially full pipe: 6"~240" (150-6000mm);			
	Open Channel: 8"~400" (200-10000mm)	Open Channel: 8"~400" (200-10000mm)			



Transducer

Accuracy	Velocity:	Measuring Range	0.65~5.25ft/s (0.2-1.6m/s) Opt: 0.65~39ft/s (0.2-12m/s) (bi-directional)			
Depth (ultrasonic): Measuring Range		Accuracy	±1% RD			
Accuracy		Resolution	0.04 in/sec (1mm/s)			
Frequency Resolution	Depth (ultrasonic):	Measuring Range	3/4"~400" (20mm to 5000mm), (5m)			
Resolution O.04" (1mm)		Accuracy	±1% FS			
Depth (pressure): Measuring Range		Frequency	1 MHz			
Accuracy		Resolution	0.04" (1mm)			
Resolution	Depth (pressure):	Measuring Range	³ / ₄ "~400" (20mm to 10000mm), (10m)			
Temperature: Measuring Range 32 - 140°F (0 - 60°C) Accuracy		Accuracy	±1% FS			
Accuracy		Resolution	0.04" (1mm)			
Resolution 0.2°F (0.1°C) Measuring Range 0 to 200,000 µS/cm Accuracy ± 1% RD Resolution ±1 µS/cm Tilt: Measuring Range ±70°@ vertical and horizontal Accuracy ±1°@ angle < 45° Output: SDI-12 velocity, depth, temperature, conductivity, tilt Modbus velocity, depth, temperature, conductivity, tilt One wire pressure Other: Power Supply 10-24 V _{DC} ,50 µA standby, 150mA active for 1 second @12V _{DC} Operating temperature 32 ~ 140°F (0 ~ 60°C) Storage temperature -20°C ~ +60°C, 0~100% RH to 140°F (60°C) Particle concertration >50 ppm Frequency 2 MHz Protection IP68 Shock resistance up to 2g, conforms to IEC60068-2-6 Interference-resistant conforms to EN61326/A1 Cable Std 15m up to 60m for SDI-12 up to 500m for RS485 Materials Sensor enclosure - Epoxy, Installation bracket - 304SS Dimensions L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"	Temperature:	Measuring Range	32 ~ 140°F (0 ~ 60°C)			
Conductivity: Measuring Range 0 to 200,000 μS/cm Accuracy ± 1% RD Resolution ±1 μS/cm Tilt: Measuring Range ±70°@ vertical and horizontal Accuracy ±1°@ angle < 45°		Accuracy	±1°F (±0.5°C)			
Accuracy ± 1% RD Resolution ±1 μS/cm Tilt: Measuring Range ±70°@ vertical and horizontal Accuracy ±1°@ angle < 45° Output: SDI-12 velocity, depth, temperature, conductivity, tilt Modbus velocity, depth, temperature, conductivity, tilt One wire pressure Other: Power Supply 10-24 V _{pc} , 50 μA standby, 150mA active for 1 second @12V _{pc} Operating temperature 32 ~ 140°F (0 ~ 60°C) Storage temperature -20°C - +60°C, 0-100% RH to 140 °F (60°C) Particle concertration >50 ppm Frequency 2 MHz Protection IP68 Shock resistance up to 2g, conforms to IEC60068-2-6 Interference-resistant conforms to EN61326/A1 Cable Std 15m up to 60m for SDI-12 up to 500m for RS485 Materials Sensor enclosure - Epoxy, Installation bracket - 304SS Dimensions L×W×H: 135×50×20 (mm) 5.3"× 2"× 0.8"		Resolution	0.2°F (0.1°C)			
Resolution $\pm 1 \mu \text{S/cm}$ Tilt: Measuring Range $\pm 70^{\circ} \emptyset$ vertical and horizontal $\pm 1^{\circ} \emptyset$ angle < 45° Output: SDI-12 velocity, depth, temperature, conductivity, tilt Modbus velocity, depth, temperature, conductivity, tilt velocity, depth, temperature, conductivity, tilt None wire Power Supply $\pm 10^{\circ} \pm 4 \text{V}_{\text{DC}}$, $50 \mu \text{A}$ standby, 150mA active for $1 \text{second} \mathbb{G} = 12 \text{V}_{\text{DC}}$ Operating temperature $\pm 10^{\circ} \pm 4 \text{V}_{\text{DC}}$, $50 \mu \text{A}$ standby, 150mA active for $1 \text{second} \mathbb{G} = 12 \text{V}_{\text{DC}}$ Operating temperature $\pm 20^{\circ} \text{C} - 40^{\circ} \text{C}$, $0 \pm 100^{\circ} \text{RH} \text{to} 140^{\circ} \text{F} (60^{\circ} \text{C})$ Storage temperature $\pm 20^{\circ} \text{C} - 40^{\circ} \text{C}$, $0 \pm 100^{\circ} \text{RH} \text{to} 140^{\circ} \text{F} (60^{\circ} \text{C})$ Particle concertration $\pm 50 \text{ppm}$ Frequency $\pm 2 \text{MHz}$ Protection $\pm 10^{\circ} \text{C}$ IP68 Shock resistance $\pm 10^{\circ} \text{C}$ up to 20°C , 20°C storage temperature $\pm 10^{\circ} \text{C}$ and 20°C vertical and horizontal $\pm 10^{\circ} \text{C}$ second $\pm 10^{\circ} \text{C}$ vertical and horizontal $\pm 10^{\circ} \text{C}$ vertical	Conductivity:	Measuring Range	0 to 200,000 μS/cm			
Tilt: Measuring Range $\pm 70^\circ @$ vertical and horizontal Accuracy $\pm 1^\circ @$ angle < 45° Output: SDI-12 velocity, depth, temperature, conductivity, tilt Modbus velocity, depth, temperature, conductivity, tilt One wire pressure Other: Power Supply $10 - 24 \text{ V}_{DC}$, 50 µA standby, 150 mA active for $1 \text{ second } @12 \text{ V}_{DC}$ Operating temperature $32 \sim 140^\circ \text{F}$ ($0 \sim 60^\circ \text{C}$) Storage temperature $-20^\circ \text{C} - 460^\circ \text{C}$, $0 - 100\%$ RH to 140°F (60°C) Particle concertration $> 50 \text{ ppm}$ Frequency 2 MHz Protection IP68 Shock resistance up to 2g , conforms to IEC60068-2-6 Interference-resistant conforms to EN61326/A1 Cable Std 15m up to 60m for SDI-12 up to 500m for RS485 Materials Sensor enclosure - Epoxy, Installation bracket - 30455 Dimensions L×W×H: $135 \times 50 \times 20 \text{ (mm)}$ $5.3 \text{ "x} 2 \text{ "x} 0.8 \text{"}$		Accuracy	± 1% RD			
Accuracy ±1°@ angle < 45° Output: SDI-12 velocity, depth, temperature, conductivity, tilt velocity, tilt velocity, depth, temperature, conductivity, tilt velocity, tilt velocity, depth, temperature, conductivity, tilt velocity, tilt velocity, tilt velocity, depth, temperature, conductivity, tilt velocity, temperature, conductive, tilt velocity, tilt velocity, tilt velocity, tilt velocity, tilt velocity, tilt velocity,		Resolution	±1 μS/cm			
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Modbus One wire Power Supply Operating temperature Storage temperature Protection Frequency Interference-resistant Cable Materials Materials Dimensions Power Supply 10-24 V _{DC} ,50 μA standby, 150mA active for 1 second @12V _{DC} 32 ~ 140°F (0 ~ 60°C) -20°C - +60°C, 0-100% RH to 140 °F (60°C) >50 ppm -20°C - +60°C, 0-100% RH to 140 °F (60°C) >50 ppm Frequency 2 MHz Protection IP68 Shock resistance up to 2g, conforms to IEC60068-2-6 Interference-resistant Cable Std 15m up to 60m for SDI-12 up to 500m for RS485 Sensor enclosure - Epoxy, Installation bracket - 304SS L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"		Accuracy	±1°@ angle < 45°			
Other: Power Supply 10-24 V _{DC} ,50 μA standby, 150mA active for 1 second @12V _{DC} Operating temperature 32 ~ 140°F (0 ~ 60°C) Storage temperature -20°C - +60°C, 0-100% RH to 140 °F (60°C) Particle concertration Frequency 2 MHz Protection IP68 Shock resistance up to 2g, conforms to IEC60068-2-6 Interference-resistant Cable Std 15m up to 60m for SDI-12 up to 500m for RS485 Materials Sensor enclosure - Epoxy, Installation bracket - 304SS Dimensions L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"	Output:	SDI-12	velocity, depth, temperature, conductivity, tilt			
Other: Power Supply Operating temperature Operating temperature Storage temperature Operaticle concertration Frequency Protection Shock resistance Interference-resistant Cable Materials Dimensions 10-24 V _{DC} , 50 μA standby, 150mA active for 1 second @12V _{DC} 10-24 V _{DC} , 50 μA standby, 150mA active for 1 second @12V _{DC} 10-24 V _{DC} , 50 μA standby, 150mA active for 1 second @12V _{DC} 10-24 V _{DC} , 50 μA standby, 150mA active for 1 second @12V _{DC} 10-24 V _{DC} , 50 μA standby, 150mA active for 1 second @12V _{DC} 10-24 V _{DC} , 50 μA standby, 150mA active for 1 second @12V _{DC} 10-24 V _{DC} , 50 μA standby, 150mA active for 1 second @12V _{DC} 20-20 C - +60°C, 0-100% RH to 140 °F (60°C) 2 MHz Protection IP68 Shock resistance up to 2g, conforms to IEC60068-2-6 Interference-resistant Conforms to EN61326/A1 Std 15m up to 60m for SDI-12 up to 500m for RS485 Exw×H: 135×50×20 (mm) 5.3"x 2"x 0.8"		Modbus	velocity, depth, temperature, conductivity, tilt			
Operating temperature Storage temperature -20°C - +60°C, 0-100% RH to 140 °F (60°C) Particle concertration >50 ppm Frequency 2 MHz Protection IP68 Shock resistance up to 2g, conforms to IEC60068-2-6 Interference-resistant Cable Std 15m up to 60m for SDI-12 up to 500m for RS485 Materials Sensor enclosure - Epoxy, Installation bracket - 304SS Dimensions L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"		One wire	pressure			
Storage temperature -20°C - +60°C, 0-100% RH to 140 °F (60°C) Particle concertration >50 ppm Frequency 2 MHz Protection IP68 Shock resistance up to 2g, conforms to IEC60068-2-6 Interference-resistant Cable Std 15m up to 60m for SDI-12 up to 500m for RS485 Materials Sensor enclosure - Epoxy, Installation bracket - 304SS Dimensions L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"	Other:	Power Supply	10-24 $V^{}_{\text{DC}}$,50 μA standby, 150mA active for 1 second @12V $^{}_{\text{DC}}$			
Particle concertration >50 ppm Frequency 2 MHz Protection IP68 Shock resistance up to 2g, conforms to IEC60068-2-6 Interference-resistant conforms to EN61326/A1 Cable Std 15m up to 60m for SDI-12 up to 500m for RS485 Materials Sensor enclosure - Epoxy, Installation bracket - 304SS Dimensions L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"		Operating temperature	32 ~ 140°F (0 ~ 60°C)			
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Protection IP68 Shock resistance up to 2g, conforms to IEC60068-2-6 Interference-resistant conforms to EN61326/A1 Cable Std 15m		Particle concertration	>50 ppm			
Shock resistance up to 2g, conforms to IEC60068-2-6 Interference-resistant conforms to EN61326/A1 Cable Std 15m up to 60m for SDI-12 up to 500m for RS485 Materials Sensor enclosure - Epoxy, Installation bracket - 304SS Dimensions L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"		Frequency	2 MHz			
Interference-resistant conforms to EN61326/A1 Cable Std 15m up to 60m for SDI-12 up to 500m for RS485 Materials Sensor enclosure - Epoxy, Installation bracket - 304SS Dimensions L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"		Protection	IP68			
Cable Std 15m up to 60m for SDI-12 up to 500m for RS485 Materials Sensor enclosure - Epoxy, Installation bracket - 304SS Dimensions L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"		Shock resistance	up to 2g, conforms to IEC60068-2-6			
up to 60m for SDI-12 up to 500m for RS485 Materials Sensor enclosure - Epoxy, Installation bracket - 304SS Dimensions L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"		Interference-resistant	conforms to EN61326/A1			
up to 500m for RS485 Materials Sensor enclosure - Epoxy, Installation bracket - 304SS Dimensions L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"		Cable	Std 15m			
Materials Sensor enclosure - Epoxy, Installation bracket - 304SS Dimensions L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"			up to 60m for SDI-12			
Dimensions L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"			up to 500m for RS485			
		Materials	Sensor enclosure - Epoxy, Installation bracket - 304SS			
Weight 2.2lb (1kg) (incl. 200g sensor and 15m cable)		Dimensions	L×W×H: 135×50×20 (mm) 5.3"x 2"x 0.8"			
		Weight	2.2lb (1kg) (incl. 200g sensor and 15m cable)			

TECHNICAL INFORMATION

INDEPENDENT OUTPUT SENSOR

The sensor sends output independently to the control system or PC directly (with our program). For velocity, flow, level, temperature, conductivity, and position offset RS-485/Modbus is used. For velocity and flow, SDI-12 is used. One wire barometric is used for pressure. The power supply is $12V_{\rm DC}$. The sensor is standard IP68, and the cable is up to 500m.

PROGRAM

The software lets you easily communicate directly with the sensor to 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 and is able to run on Windows computers.

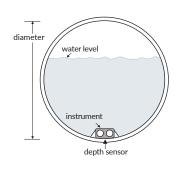
Conductivity Sensor Ultrasonic Depth Sensor Pressure Depth Sensor

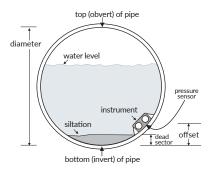
MOUNTING SYSTEMS

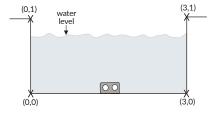
Mounting Plate, Spring Ring and Scissors Rings

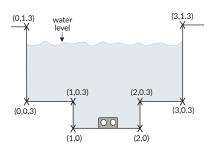
All sensors can be attached to a mounting plate or spring or scissors rings to install the sensors in minutes thereby reducing time in the manhole. The sensor is first attached to a carrier and can than slide onto any of the compatible mounting systems. This maintains a height suitable for measuring flow rates and velocities at very low water levels. To install the sensors in rectangular, trapezoidal or earthen channels, we recommend the sensor mounting plate. Stainless steel spring rings simplify sensor installation in cylindrical pipes. Standard diameter sizes ranging from 150 mm (6 inches) to 600 mm (24 inches) are available. You can install the sensor and fasten the cable to the downstream edge of the ring in place before you enter the manhole. The self-expanding device is tightened by expanding the band for a friction fit inside the pipe. The adjustable scissors ring is installed in large diameter pipes from 500 mm (20 inches) to 1800 mm (72 inches) in diameter. It consists of a base section, one or more pairs of extensions to fit the size of the pipe, and a scissors mechanism.

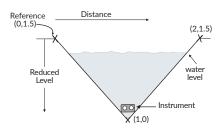


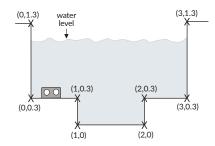












ALSONIC

Doppler Open Channel Flow Meter ALSONIC-DAVM Series

** Please contact your local SmartMeasurement application engineer You also need to provide the following information:

TYPE OF FLUID
CHANNEL GEOMETRY
PROCESS TEMPERATURE
TYPE OF ELECTRONICS
LEVEL INSTRUMENT

Please provide the name of your fluid, including operating density and viscosity.

Please specify the type of channel (rectangular, circular, trapezoidal)

We will calibrate your flowmeter as close to your operating conditions as possible.

Please specify output and installation type (wall mount, panel mount, etc.)

Please provide a make & model for the level transmitter that will be used.

ALSONIC DAVM									
ALSONIC DAVM	**_	*_	**	**_	*	*	DESCRIPTION		
Portable ①	Р								
Wall Mount ② W							Transmitter		
No Transmitter ③ N									
10-24V _{DC} 23 DC									
85-265V _{AC} , 45~63Hz ①② AC							Power supply		
Standard - display ①②			S						
No output ①③			N						
Pulse ①②			Р				Output		
4-20mA ①②			ı						
RS485 ①②③			С						
Data logger - 16GB ①②			D						
GPRS ①②			G						
SDI-12 ③			Е						
None 1 2				N					
Standard sensor - 0.65~5.25 ft/s (0.2-1.6m/s) bi-directional 10			23	S			Transducer		
Extend sensor - 0.65~39 ft/s (0.2-12m/s) bi-directional ①②③				L					
Standard 50' (15m)					N		Cinnal Cabla		
To be advised **m					**		Signal Cable		
Program to read sensor via SDI-12/RS485 ③						SF			
Installation Kit						IS	Options		

