

Smart Sonic Ultrasonic Transmitters



Instruction Manual

925-0156 Rev 1

BINMASTER®

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Table of Contents

Contact Information.....	3
General Specifications.....	4
Operation.....	5
Wiring.....	6
Calibration.....	7
Mounting.....	8
Technical Specifications.....	9



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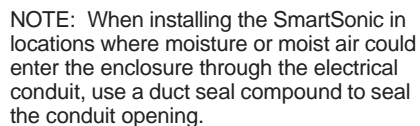
Division of Garner Industries
PO Box 29709 / Lincoln, NE 68529 / 7201 North 98th St. / Lincoln, NE 68507
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General Specifications

Conduit Entry:	1/2" NPT (PVC conduit only)
Enclosure:	PVC-94VO
Enclosure Rating:	NEMA 4X(IP65)
Temperature:	-40 to +140° F (-40 to 60° C)
Pressure:	1 bar
Approvals:	Entela—CSA/UL
Accuracy:	+/- 0.25% of maximum range
Beam Angle:	6°-12° conical at -3dB
Loss of Echo:	Hold 30 seconds, 22 mA
Temperature Compensation:	Continuous in transducer
Temperature Sensor failure:	23 mA
Calibration:	Push-button or programmable via optional communication port
Diagnostics:	Via communication port (echo profile, echo stability, operation errors)
Power AC:	AC units 115 VAC 60Hz or 230 VAC 50Hz, 1.7 VA
Power DC 3 Wire:	DC units 12 to 30 VDC, 0.07 A max @ 24 VDC
DC 2 Wire Loop Powered:	DC Loop Powered units, 12 to 28 VDC, 0.025 A max @ 24 VDC
Output:	4-20 mA, optional RS-232, RS-485, or Modbus
4 to 20 mA Max. Loop Resistance	110 VAC @ 750 Ohms (isolated) 12 VDC @ 250 Ohms 24 VDC @ 750 Ohms

The new SmartSonic transmitter features high efficiency, narrow beam design technology using a wide frequency bandwidth to enhance operation in difficult applications. The transmitter performs particularly well in harsh environments where vessel temperatures vary. SmartSonic uses smart signal processing to eliminate unwanted echoes from tank walls, standpipes, and other tank structures that often cause error readings by other ultrasonic devices. The unit's transducer uses a built-in, self-cleaning operation to eliminate buildup or condensation. SmartSonic's sensor probes are designed to adapt to the internal tank conditions, automatically adjusting power and receiver sensitivity to any distance and reflecting surface. This technology ensures the same echo is maintained over the entire operating range which enhances measurement accuracy.

The transmitter can be programmed to simply send a 4-20 mA analog output signal directly to an existing control system or send data by RS-232 or RS-485 to a PC running SmartSonic's calibration/data logging software program.



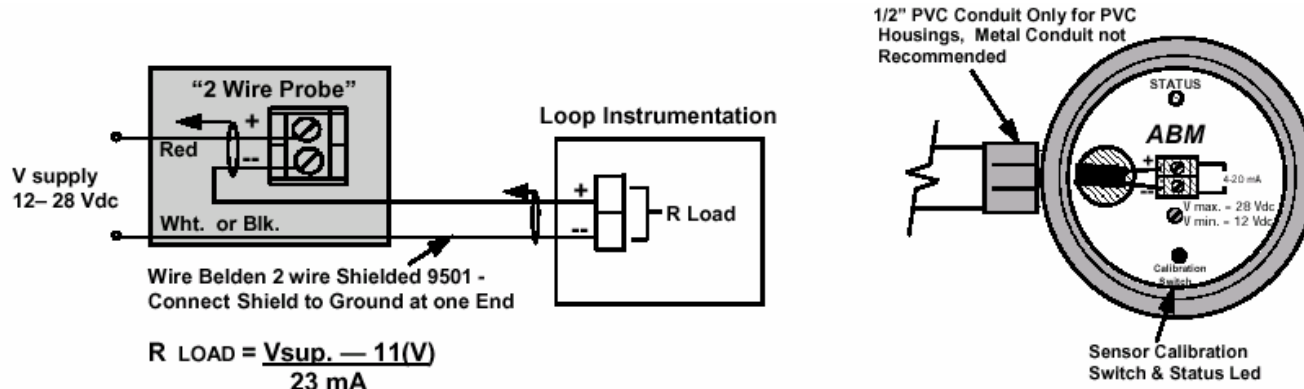
The diagram shows the rear panel of the transmitter with the following connections:

- Power Input:** L1 120 VAC and L2 Neutral.
- Ground:** Connected to the chassis ground.
- 4-20 mA Signal:** 4 to 20 mA + and 4 to 20 mA -.
- Internal Components:** A fuse is located near the power input terminals. The terminal block is labeled with pins 1 through 8. Pin 1 is B/RX, pin 2 is A/Tx, pin 3 is Shield, pin 4 is -4, pin 5 is +5, pin 6 is VAC, pin 7 is L2, and pin 8 is L1.
- Other Features:** A STATUS indicator (LED) and a Calibration Switch are also shown.

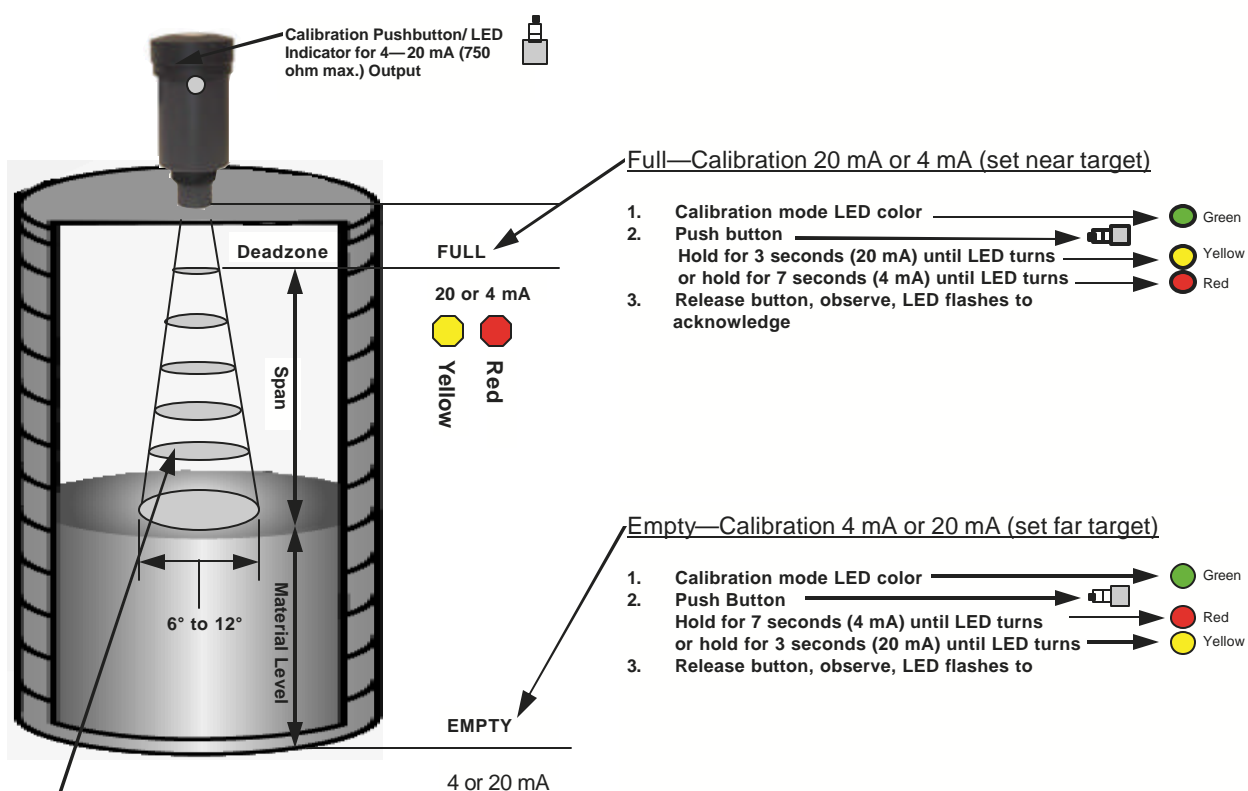
115/230 VAC.....	3 wire unshielded, 22AWG (7X30), 300V
4-20 mA.....	1 pair shielded, 24AWG (7X32), 300V

24 VDC + 4-20 mA.....3 wire shielded, 24AWG (7X32), 300V

2 Wire DC 4/20 mA Loop Powered



Calibration—4-20 or 20-4 mA Output



Operation—An acoustic pulse is transmitted from the SmartSonics sensor face. The pulse travels to the surface being monitored and is reflected off this surface back to the sensor face. The time of flight is divided by 2 and converted to an output signal directly proportional to the material level.

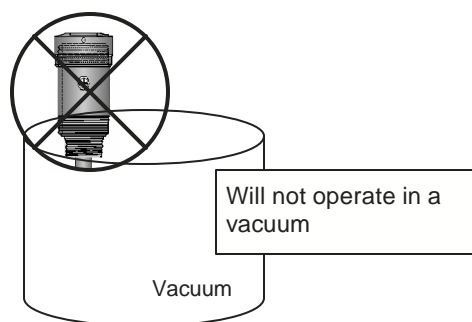
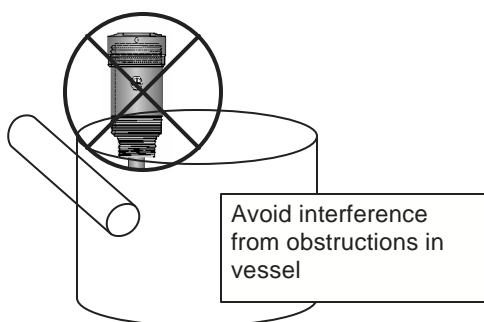
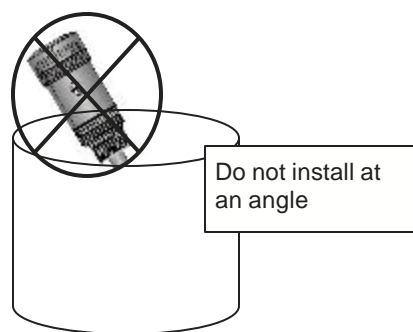
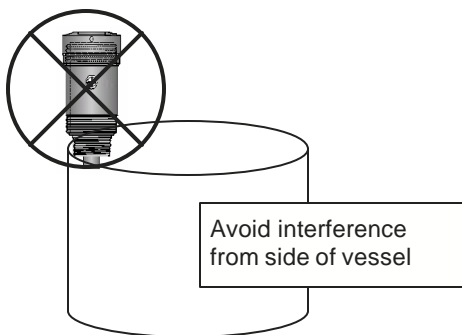


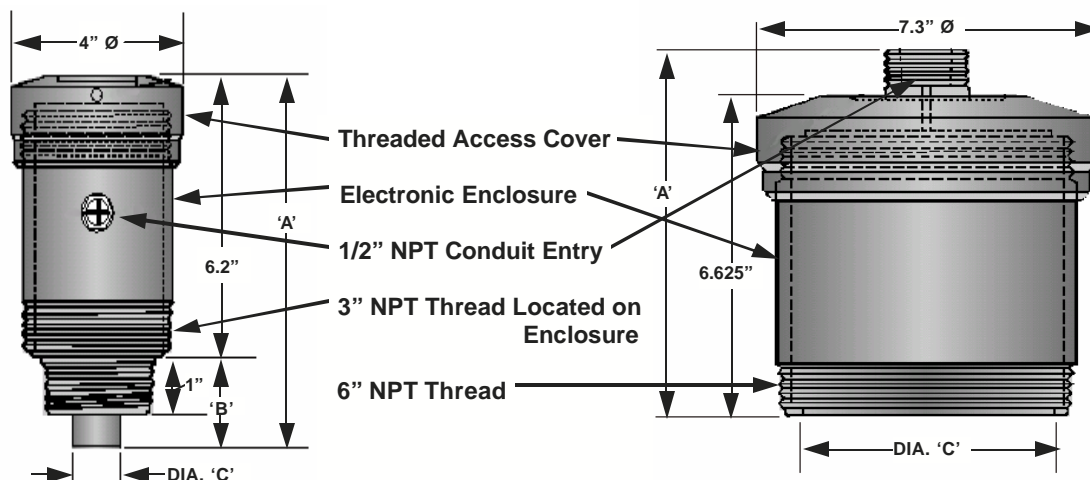
Mounting:

Mounting the SmartSonic Transmitter is critical to the proper operation of the unit. The unit can be directly mounted by simply threading the sensor directly into a metal or plastic mounting flange. If an extended standpipe is used for mounting, please consult the factory for assistance. The thread size of the unit is dependent upon the specific model (see specifications).

Threaded Mounting Flange (1", 1 1/2", 2", or 3" NPT)

Positioning



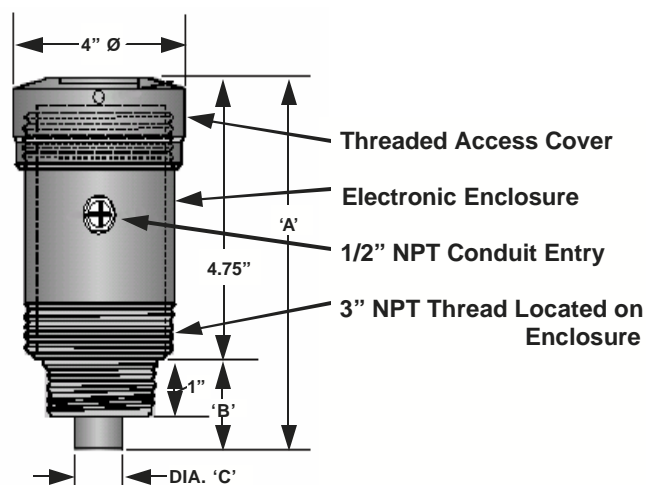


Models SS300/400-45U,52U,70U,80U,81U,and 148U

Model SS300/400-25U Only

	MODEL	RANGE	RESOLUTION	OPERATING FREQUENCY	MOUNTING	DIMENSION 'A'	DIMENSION 'B'	DIMENSION 'C'
110/230 VAC—4 Wire	SS400-25U	1.4-90 ft 0.40-27.4 m	0.41" 10 mm	25 KHz	6.0"/1.0" NPT	7.625"	N/A	5.75"
	SS400-45U	1.0-60 ft 0.30-18.2 m	0.19" 5 mm	45 KHz	3.0" NPT	8.9"	3.0"	3.0"
	SS400-52U	0.9-50 ft 0.27-15.2 m	0.16" 4 mm	52 KHz	3.0" or 2.0" NPT	9.3"	3.05"	2.2"
	SS400-70U	0.8-30 ft 0.24-9.1 m	0.12" 3 mm	70 KHz	3.0" or 2.0" NPT	8.5"	2.25"	1.8"
	SS400-80U	0.7-20 ft 0.21-6.1 m	0.08" 2 mm	80 KHz	3.0" or 2.0" NPT	8.5"	2.25"	1.8"
	SS400-81U	0.6-16 ft 0.18-4.9 m	0.08" 2 mm	81 KHz	3.0" or 1.5" NPT	8.4"	2.1"	1.5"
	SS400-148U	0.4-9 ft 0.12-2.7 m	0.04" 1 mm	148 KHz	3.0" or 1.0" NPT	8.25"	2.0"	1.1"
12 to 30 VDC—3 Wire	SS300-25U	1.4-90 ft 0.40-27.4 m	0.41" 10 mm	25 KHz	6.0"/1.0" NPT	7.625"	N/A	5.75"
	SS300-45U	1.0-60 ft 0.30-18.2 m	0.19" 5 mm	45 KHz	3.0" NPT	8.9"	3.0"	3.0"
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	SS300-148U	0.4-9 ft 0.12-2.7 m	0.04" 1 mm	148 KHz	3.0" or 1.0" NPT	8.25"	2.0"	1.1"

2 Wire - 4/20mA Loop Powered



Models SS200-70U,80U,81U,and 148U

MODEL	RANGE	RESOLUTION	OPERATING FREQUENCY	MOUNTING	DIMENSION 'A'	DIMENSION 'B'	DIMENSION 'C'
SS200-70U	0.8—30 ft 0.24—9.1 m	0.12" 3 mm	70 KHz	3.0" or 2.0" NPT	7.05"	2.25"	1.8"
SS200-80U	0.7—20 ft 0.21—6.1 m	0.08" 2 mm	80 KHz	3.0" or 2.0" NPT	7.05"	2.25"	1.8"
SS200-81U	0.6—16 ft 0.18—4.9 m	0.08" 2 mm	81 KHz	3.0" or 1.5" NPT	6.95"	2.1"	1.5"
SS200-148U	0.4—9 ft 0.12—2.7 m	0.04" 1 mm	148 KHz	3.0" or 1.0" NPT	6.8"	2.0"	1.1"

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