

## SONARtrac™ Flow Monitoring System

## Model VF-100

CiDRA's SONARtrac Flow Monitoring System is a breakthrough in full-bore, non-invasive flow measurement technology. By installing on existing process lines, SONARtrac clamp-on flow monitoring systems eliminate the process disruptions associated with installing other types of flowmeters.

The SONARtrac Flow Monitoring System is not an ultrasonic meter; it utilizes patented array processing techniques to listen to, and interpret, acoustic fields generated by pipe flows. This passive listening approach enables the SONARtrac flow monitoring system to measure single phase and multiphase flows as well as slurries, with the same level of accuracy and performance.

### Sonar Technology

CiDRA's SONARtrac flow technology represents an innovative new class of industrial flowmeters. This "sonar" flow technology utilizes array processing techniques related to those used in the field of sonar processing. CiDRA's proprietary "sonar" flow technology was initially developed for flow measurement in one of the world's most demanding environments: downhole, offshore oil and gas production.

CiDRA has taken the proven reliability of its SONARtrac flow technology to address the challenging flow measurement needs of industrial processes.

The SONARtrac Flow Monitoring System utilizes an array of sensors that are clamped onto the pipe. Flow rate is determined using CiDRA's array processing techniques to measure the speed at which turbulent "eddies" inherent in virtually all industrial process flows, convect past the array of sensors. The flow rate is calculated directly from the speed of the turbulent eddies.

The advantages and features of CiDRA's SONARtrac flow monitoring system enable the industry to realize the following measurable benefits:

- Low installation and life cycle costs
- Increased process uptime
- Increased equipment utilization
- Lower operating costs
- Increased product quality

### Applications:

- Oil & Gas
- Oil Sands Processing
- Minerals Processing
- Chemical
- Pulp and Paper
- Consumer Products
- Water and Wastewater Treatment
- Power Generation
- Pharmaceutical
- Food and Beverage



### Features:

- Entirely non-intrusive, full bore clamp-on design enables:
  - Installation without process shutdown
  - No pressure drop
  - No potential for leaks
  - No wetted parts to corrode or fail
  - No flow obstruction, no clogging
  - No moving parts
- Accurate and reliable operation for single phase and multiphase flows as well as slurries
- Economic flow measurement for a wide variety of pipe sizes
- Compatible with a wide variety of pipe materials and schedules
- Simple, quick installation, minimal surface preparation, no gel required, light weight
- Compact, low profile design



CiDRA Corporation  
50 Barnes Park North  
Wallingford, CT 06492  
Tel. 203.265.0035  
[www.cidra.com](http://www.cidra.com)

# SONARtrac™ Flow Monitoring System Specifications

Parameter	Specifications	Comments
Pipe diameters	2" to 36"	Metric and Custom Sizes Available <sup>(a)</sup>
Flow velocity range	Liquid: 3 to 30 ft/s (1 to 10 m/s) <sup>(b)</sup> Gas: >20 ft/sec (>6 m/s) <sup>(b)</sup>	
Flow rate accuracy	±1.0% of reading <sup>(c)</sup>	
Repeatability	±0.3% of reading	
Sensor head	Clamp-mounted onto the existing pipe section; designed for single, permanent installation	Sensor head length 30" (76 cm) Height within flange diameter of pipe Lightweight (22 lbs./10 kg for 8" meter)
Transmitter with integrated flow processor	Programmable by keypad or PC interface Self-diagnostics capability	
Operating Temperature Range:		
Transmitter	-4°F to +140°F (-20°C to +60°C)	
Sensor head process temp.	-40°F to +212°F (-40°C to +100°C)	Inquire with CiDRA for temperatures outside these specified ranges.
Sensor head ambient temp.	-40°F to +140°F (-40°C to +60°C)	
Storage Temperature Range:		
Transmitter	-22°F to +176°F (-30°C to +80°C)	
Sensor head	-40°F to +185°F (-40°C to +85°C)	
Cable between Transmitter and Sensor Head	PLTC or armored cable with one end connectorized	Cable lengths up to 300ft (90m)
Analog Input	Two (2) 4-20 mA	Enables internal logging of optional process parameters
Analog output	Two (2) isolated 4-20 mA current outputs	One (1) with HART protocol
Digital outputs	Pulse/Frequency Output Alarm Serial Output: RS232 or RS485	
Transmitter Local display	LCD with backlight	Provides flow rate, system status, system diagnostics
Data logging capability	Yes	
Transmitter Enclosure	NEMA 4X	
Power requirements	AC version: 100 to 240 VAC, 50/60 Hz, 25 watts DC version: 18 to 36 VDC, 25 watts	
Area Classification	Standard: General Purpose Optional: Class 1 Division 2, Groups A, B, C and D	

<sup>(a)</sup>Inquire with CiDRA for availability on sizes greater than 36".

<sup>(b)</sup>Minimum flow can be application dependent.

<sup>(c)</sup>For Gas, overall accuracy may be application dependent.

## Contact CiDRA

To speak with a CiDRA applications engineer about the SONARtrac Flow Monitoring System, or for information on this or other CiDRA flow solutions, call (877) cidra77 or visit our web site at [www.cidra.com](http://www.cidra.com). SONARtrac is a trademark of CiDRA Corporation.

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