

SONARtrac® Total Air Monitor

Model TAM-100

The SONARtrac Total Air Monitor is a break-through in process monitoring technology. This system provides a highly accurate, real-time measurement of the total gas (entrained and dissolved) present in any liquid or continuous process fluid. Using no moving parts, the SONARtrac Total Air Monitor simulates the process by which air is liberated from a pulp suspension at a paper machine "wire". By continuously diverting a small amount of process fluid through a sample tap to a vertical chamber, the process fluid is expanded to atmospheric pressure. Exposing the process fluid to ambient pressure allows dissolved gases to come out of solution. Thus, by measuring the precise amount of free gas within the vertical chamber, the SONARtrac Total Air Monitor measures the amount of total air present in the process fluid in the approach lines to the headbox. The SONARtrac Total Air Monitor joins the SONARtrac Gas Volume Fraction (GVF-100) meter as part of a family of monitoring solutions for entrained and dissolved gases, important to a wide range of industrial processes.

The SONARtrac Total Air Monitor does not utilize ultrasonics; it utilizes patented array processing techniques to listen to, and interpret, acoustic fields generated by the machinery, piping and flow present in virtually all industrial processes. This passive listening approach results in an in-situ measurement of the amount of entrained air/gas present at ambient pressure in the process flow with a high degree of accuracy and repeatability.

Sonar Technology

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

CiDRA has taken the proven reliability of its SONARtrac technology to provide new measurements and insight into the monitoring and optimization of industrial processes.

The SONARtrac Total Air Monitor utilizes proprietary technology developed by CiDRA. The amount of entrained gas at ambient pressure is monitored by using CiDRA's array processing techniques to measure the sound speed, or speed at which sound propagates, through the process medium. The total air percentage is then calculated directly from the measured sound speed.

The advantages and features of CiDRA's SONARtrac Total Air Monitoring System enable users to realize the following measurable benefits:

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

Features:

- Entirely non-intrusive design enables:
 - Installation without shutting down the process
 - No wetted parts to corrode or fail
 - No moving parts
- Real time measurement of total entrained gas at ambient pressure resulting in ability to monitor and/or assess effect of defoamer dosing and process changes and on process efficiency and quality.
- Optimize deaerating chemical additive usage.
- On-line monitoring of the effectiveness of mechanical deaeration systems.
- Detect changes in process operation due to gas leaks caused by pump, pump/valve packing or flange/pipe problems.
- Accurate and reliable operation over a wide range of process flows.
- Simple, quick installation.



SONARtrac[®] Total Air Monitor System Specifications

| Parameter | Specifications | Comments |
|--|---|---|
| Supply tap | Sample tap size 1" or greater | Minimum of 20 GPM |
| Total air/gas range | 0 to 20 % | By volume |
| Total air/gas accuracy | ±5% of reading, 0.01% to 20% ^(c) | |
| Total air/gas repeatability | ±1% of reading, 0.01% to 20% | |
| 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) ^(e) | |
| Sensor head process temp. | -40°F to +185°F (-40°C to +85°C) | |
| 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 300 ft (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 ^(d) |
| Digital outputs | Pulse/Frequency Output: Alarm Serial Output: RS232 or RS485 | |
| Digital interfaces | 10Base-T Ethernet USB/Memory Stick RS232 serial | |
| Communication interfaces | Standard: RS232/485 Optional: MODBUS RTU/ASCII Optional: FOUNDATION Fieldbus™ Optional: PROFIBUS PA | |
| Transmitter local display | LCD with backlight ^(f) | Provides entrained air/gas, system status, system diagnostics |
| Data logging capability | Yes | |
| Transmitter enclosure | NEMA 4X , IP55 | |
| Power requirements | AC version: 100 to 240 VAC, 50/60 Hz, 25 watts DC version: 18 to 36 VDC, 25 watts | |
| Area classification | Standard: Ordinary Location Optional: Class I Division 2, Groups A-D Optional: Class I Zone 2, Group IIC ATEX | |

^(c)For Gas, overall accuracy may be application dependent.

^(d)Certain restrictions apply for Zone 2 applications.

^(e)For Zone 2: -4°F to +134°F (-20°C to +57°C).

^(f)For Zone 2: No transmitter window for display.

Contact CiDRA

To speak with a CiDRA applications engineer about the SONARtrac Total Air Monitor, or for information on this or other CiDRA industrial process measurement solutions, call +1.203.265.0035 or visit our web site at www.cidra.com.

All information contained herein is believed to be accurate and is subject to change without notice. No responsibility is assumed for its use. Specifications are preliminary and CiDRA reserves the right to make changes, without notice to product designs, specifications, functions, components and manufacturing methods.

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