

# Dual Orifice Constant Flow Bubble Gauge/Recorder



## Overview

The Sutron Accubar® Constant Flow (CF) Dual Orifice Bubble Gauge/Recorder is a self-contained, precision device for measuring water levels, water temperature, suspended sediment & density. Ideal for rivers, streams, dams & reservoirs, oceans & industrial areas plus any area where water density changes (eg, tidal & estuary areas), it packages the following components into a single enclosure: Accubar sensor, SDI-12, RS232 & RS485 interfaces, front panel (display & keypad), pump, tanks, manifold, control board.

## Features

- ▶ Models that measure water temperature, density & suspended sediment.
- ▶ User-set measurement & logging. The -2 model makes separate measurements in 2 locations. Bubbler manages pressure on each orifice line independently so pressures in one line do not affect the other line.
- ▶ Measures parameters in separate channels or separate bodies of water or within the same area as redundant sensors (-2 version)
- ▶ Install the Bubbler orifice with a vertical separation to get an extended range measurement of up to 50 psi total on a 25 psi unit.
- ▶ The -3 model adds special ultra-accurate density sensor with more accurate measurements (0.1%) than separate stage sensors on-site would produce.
- ▶ Bubbler is both a logger & sensor, capable of working as a stand-alone or with other loggers/communications devices via SDI-12, RS232 & RS485.
- ▶ Flash Log holds <300,000 readings & records status, water level data.
- ▶ SDI-12 & RS232/RS485 interfaces provide data to loggers or communications equipment
- ▶ Dual Orifice CF Bubbler supports MODBUS protocol.
- ▶ RS232 port supports a simple command line mode compatible with HyperTerminal & other communications programs.
- ▶ RS232 port also provides full access to setup, status & Bubbler data plus easy connection to a modem or radio.
- ▶ Front panel for setting up operating parameters, monitoring performance, testing, & examining the log
- ▶ Self-contained needing only external power & orifice tubing
- ▶ Long-life desiccant (1 year depending on local humidity & user set flow rate)
- ▶ User-set bubble rate for each line accommodates variety of field conditions
- ▶ User-set configuration of single, dual orifice lines & extended range (-2 only)
- ▶ Built-in, precision Accubar® sensor, accuracy 0-20ft 0.01 ft, 20-57.5 ft. 0.05% reading. 50 psi version's accuracy 20-115.3ft. 0.05% reading.
- ▶ User-configured averaging to filter out waves.
- ▶ User-set auto purge to keep the outlet clear of debris. Sensors auto zero after purge to prevent sensor drift.
- ▶ Easy maintenance swing-out panel
- ▶ Redundant data storage when connected to an external logger



## Applications

- ▶ Meteorology
- ▶ Climatology
- ▶ Agrometeorology
- ▶ Natural Resources
- ▶ Oceanography
- ▶ Disaster Warning
- ▶ Water Level & Flow
- ▶ Water Quality
- ▶ Hydrology
- ▶ Structures
- ▶ Geotechnical
- ✓ Dam Safety
- ✓ Structural Stability

*To place an order or ask a question regarding this product, please contact Sutron Sales Administration, 703-406-2800 (particularly if ordering the Bubbler with Water Temperature & Density Measurement capabilities).*

## SPECIFICATIONS

<b>Measurements (2) Stage/Level/Pressure</b>	Internal Temp, Battery. -3 model makes 1 stage/level/pressure measurement & 1 density measurement. Optional water temperature port.		
<b>Automeasure Interval</b>	1 sec to 24 hours		
<b>Stage/Level/Pressure Accuracy</b>	Pressure/stage/Level: 0.05% reading with minimum of 0.01 ft.		
<b>Measurement Technique Constant flow with user-programmable bubble rate</b>	-2 models: dual, independent Accubars measure 2 levels. -3 models: 1 Accubar for level & 1 for density		
<b>Stage/Level/Pressure Range</b>	25 psi, 57 ft, 17 m; 50 psi, 115 ft, 35 m		
<b>Density Accuracy</b>	0.1% (excluding orifice spacing error, -3 only)		
<b>Water Temperature (Optional on -2 model. Standard on -3 model.)</b>			
<b>Types Supported</b>	Platinum 385, Platinum 392, Thermistor, Custom		
<b>Sensor Operational Range</b>	-40°C to +60°C		
<b>Accuracy</b>	0.1°C (-5°C to +45°C)		
<b>Resolution</b>	0.01°C		
<b>Suspended Sediment</b>			
<b>Operational Range</b>	0 to 1,000,000 mg/L		
<b>Accuracy 2 ft. separation</b>	±500 mg/L		
	>10,000 mg/L = 10.0 % accuracy		
	>50,000 mg/L = 2.0 % accuracy		
	>100,000 mg/L = 1.0 % accuracy		
<b>Maximum Purge Pressure</b>	50 psi or 70 psi based on model		
<b>Desiccant</b>	Silica Gel, lasts up to a year		
<b>Pressure Outlet</b>	4/6mm tube or 3/8" tube based on model		
<b>Enclosure</b>	Fiberglass NEMA-4, IP64, lockable		
<b>Communication Ports</b>	SDI-12, RS232, RS485		
<b>Communication Protocols</b>	MODBUS (RS232 only), SDI-12, command line		
<b>Operating Temperature</b>	-25°C to +60°C standard -40°C to +60°C optional (Part #BBL-ET)		
<b>Display Type</b>	2x20 LCD with backlight		
<b>Keypad Type</b>	6 button		
<b>Memory</b>			
<b>Built-In Flash</b>	>300,000 readings		
<b>SD/MMC Card</b>	yes		
<b>USB</b>	no		
<b>Ethernet</b>	no		
<b>Programming</b>	via front panel, commandline or SDI-12		
<b>Power Requirements</b>			
<b>Average Current</b>	<15mA for 3 second measurement every 15 minutes, no purge <30 mA @12V for 120 sec. measurement every 5 min with 30 sec. purge daily.		
<b>Pump-on Current (Max)</b>	4 amp max, 2.5 amp typ, (8 amp max for 50 psi)		
<b>Quiescent current</b>	<1 mA		
<b>Dimensions</b>			
<b>Standard</b>		<b>Shipping</b>	
<b>Height</b>	15" (38.1 cm)	<b>Shipping Height</b>	20 in. (51 cm)
<b>Length</b>	15" (38.1 cm)	<b>Shipping Length</b>	15 in. (38.1 cm)
<b>Width</b>	7.5" (19.1 cm)	<b>Shipping Width</b>	10 in. (25.4 cm)
<b>Weight</b>	20 lbs. (9.1 kg)	<b>Shipping Weight</b>	22 lbs. (10 Kg)

## ORDERING\*

PART NUMBER	DESCRIPTION
56-0134-25-2	Constant Flow, Dual Orifice Bubble Gauge & Recorder, 25 PSI max, dual sensors, 3/8 in. orifice
56-0134-25-2C	Constant Flow, Dual Orifice Bubble Gauge & Recorder, 25 PSI max, dual sensors, 6mm orifice* (Canadian Users)
56-0134-50-2	Constant Flow, Dual Orifice Bubble Gauge & Recorder, 50 PSI max, dual sensors, 3/8 in. orifice
56-0134-50-2C	Constant Flow, Dual Orifice Bubble Gauge & Recorder, 50 PSI max, dual sensor, 6mm orifice* (Canadian Users)
<b>w/WATER TEMPERATURE &amp; SUSPENDED SEDIMENT</b>	
56-0134-25-2-T	Constant Flow, Dual Orifice Bubble Gauge & Recorder, 25 PSI max, dual sensors, with water temperature & suspended sediment measurement capabilities
56-0134-50-2-T	Constant Flow, Dual Orifice Bubble Gauge & Recorder, 50 PSI max, dual sensors, with water temperature & suspended sediment measurement capabilities
56-0134-25-2C-T	Constant Flow, Dual Orifice Bubble Gauge & Recorder, 25 PSI max, dual sensors, 6mm orifice*, with water temperature & suspended sediment measurement capabilities
56-0134-50-2C-T	Constant Flow, Dual Orifice Bubble Gauge & Recorder, 50 PSI max, dual sensors, 6mm orifice*, with water temperature & suspended sediment measurement capabilities
56-0134-25-3-T	Constant Flow, Dual Orifice Bubble Gauge & Recorder, 25 PSI max, dual sensors, with density, water temperature, & suspended sediment measurement capabilities
<b>ACCESSORIES</b>	
5600-0100-100	Platinum 385 Water Temperature Sensor w/100 ft. cable
5600-0030-1-050	Thermistor Water Temperature Sensor w/50ft cable
2911-1279-1	Replacement Desiccant, full canister
2911-1183	Polyurethane, Black Orifice Tubing - 3/8" OD tubing, order by the foot (up to 2000')
6661-1314-1	Orifice Termination, fits 2" rigid pipe

\* References to ft based on USGS conversion factor of 2.3073 ft water per psi (pure water @ 50° F. Specifications are subject to change without notice.

\*Canadian models are provided with 6mm O.D. orifice line connections. All other models have a 3/8 in. orifice connection.