

Stage Discharge Recorder (SDR)



Overview

Sutron fused our ultra-reliable SDI-12 optical encoder with our state-of-the-art SatLink2 Logger technology to create an encoder that never forgets.

Features

- ▶ Dual Sensor: Setup SDR to measure a second stage using an analog* or SDI-12 sensor
- ▶ Rating Table: Compute discharge using a rating table with up to 50 points
- ▶ Averaging: Stage can be computed by averaging multiple samples over a user-set period
- ▶ 4-20mA output:* Output stage or discharge using the 4-20mA circuit (*requires SDR w/analog: SDR-0001-4)
- ▶ With proven float-tape-counterweight technology, it's a "plug compatible" replacement for a Stevens strip chart or punched-tape recorder.
- ▶ Saves your data in ultra-reliable Flash Memory
- ▶ No back-up batteries and you never lose your data
- ▶ Incorporates standard flume and weir equations
- ▶ Computes and logs discharge totals
- ▶ Displays discharge as well as flume/weir stage
- ▶ Built-in event log tracks events such as data views, data downloads, and setup changes
- ▶ Runs up to 1 year on an industrial alkaline battery
- ▶ Data delivered in easy-to-read & -open CSV files
- ▶ All setup can be done from front panel
- ▶ Download utilities available for Pocket PC-compatible PDAs & Windows laptops
- ▶ SD Card Option

Sutron Recommends

1. Stilling well with minimum 8" diameter
2. 5/16" shaft float wheel/pulley with circumference of 12", 18", & 375mm. If the float wheel does not have an insulating hub, a PVC float must be used. (See Ordering Options)
3. Beaded wire/tape compatible with the float wheel.
4. Float/counterweights.
5. 12-volt alkaline battery with capacity of at least 20 amp-hrs. (See Ordering Accessories).



Stage Discharge Recorder Model SDR-0001-1

Displays

- ▶ Stage - Daily & Log
- ▶ Volume So Far Today
- ▶ Flow
- ▶ Discharge
- ▶ Review Discharge by Day

Applications & Benefits

- ▶ SDR is a Logging Shaft Encoder used in surface water & groundwater applications.
- ▶ Front panel programmable, it holds over one year of data, & operates for over one year on alkaline batteries.
- ▶ An SDR model is available with an SD Card Slot for log retrieval.
- ▶ SDR works with low-cost cellular data modems & Sutron's Autopoll Desktop Software to create an automatically-pollled, IP-based data collection system.
- ▶ SDRs are also SDI-12 sensors.
- ▶ SDR works for sites with or without stilling wells
- ▶ Ground Water Monitoring
- ▶ Records Discharge on Canals, Ditches, Turnouts, etc.
- ▶ Runs all year on 2 lantern batteries
- ▶ Log file does not erase.
- ▶ Simply enter flume/weir formula
- ▶ 2 years of data storage

Stage Discharge Recorder Analog Model (SDR Analog) SDR-0001-3

Applications

- ▶ 0-5 V Sensors
- ▶ Low-Level Bridge Output Sensors
- ▶ 4 to 20 mA Sensors
- ▶ SDR analog sensor input version works with ultrasonics, submersibles & other sensors.
- ▶ A switched 24-volt power supply provides everything needed to operate 4 to 20mA loop sensors.

Features

- ▶ Extremely Accurate, Low-Noise Analog Measurement System
- ▶ Removable terminal strip(s)
- ▶ 0-5 V Single Ended Analog Input
- ▶ 0 to (+/-)39 mV Differential Analog Input (for Bridge Type Pressure Sensors)
- ▶ 4-20 mA Input
- ▶ 2.5 V Precision Reference Voltage
- ▶ Switched Battery Output to power sensors and conserve battery power when not performing measurements
- ▶ 24 V Output to power 4-20 mA current loop sensors



SDR ANALOG SPECIFICATIONS	
<i>Specifications subject to change without notice</i>	
Operating Voltage	8-16 Volts
Operating Temperature Range	-40° C to +60° C
Volt Reference	2.5 volt reference, +/- 10 mv, 19 mA max
Reference Temperature Coefficient	10 ppm/° C max
A/D Number of Bits	24
Switched Battery	Short Protected
SINGLE ENDED INPUTS	2 CHANNELS*
Full Scale	0 to 5 Volts
Resolution	0.298 uV
Noise (p/p) @25° C	6.5 uV (p/p)
Noise (rms) @25° C	3.4 uV RMS
Accuracy @25° C	0.02% FS
Input Impedance	>2M Ohm
DIFFERENTIAL INPUTS	3 CHANNELS*
Full Scale	+/- 0.0390625 V
Resolution	4.657 nV
Noise (p/p) @25° C	1.6 uV (p/p)
Noise (rms) @25° C	0.38 uV
Accuracy @25° C	<.01% ratiometric
Input Impedance	>3M Ohm
4-20mA INPUT	1 CHANNEL*
Full Scale	20mA
Resolution	<1mA
Accuracy @25° C	.02% FS
24 Volt Current Loop Pwr	24 Volt +/- 5%, short protected

NOTE: Software supports only 2 total measurements: Stage & Additional Sensor. Other channels are for future use.

SPECIFICATIONS	
<i>Specifications subject to change without notice</i>	
Measurements	Stage/Level measurements, Internal Temp, Battery. Note: a second stage can be measured via SDI-12 or via optional analog interface.
Automeasure Interval	15-minute default, 1, 5, & 10 minutes user selectable. 30 & 60 minute intervals also available.
Stage/Level Resolution	Shaft encoder has 400 count/revolution. SDR-0001-3 supports analog input in place of the encoder. The analog input can measure a 0-5V sensor, 4-20ma sensor or resistive bridge sensor.
Shaft	5/16" diameter
Supported Wheels	1ft, 0.375 meter, 0.5 meter and custom
Stage/Level Range	+/-80 ft of calibration point
Calculations	Discharge using Parshall Flume, Broad Crested Weir equations, Dual Sensor, Rating Table or general purpose equation with user entered constants. Calculation of daily volume and daily average stage.
Recording intervals	15-minute default, 1, 5, & 10 minutes user selectable. 30 & 60 minute intervals also available.
Available data	Station name, date/time, current stage, current discharge, current total, battery voltage & logged values of the stage & discharge, daily average stage, average discharge & total discharge.
Enclosure	NEMA 3, IP63 resists dripping water & spray
Comm. Ports	SDI-12, RS232
Operating Temp	-40°C to +60°C
Display Type	2x20 LCD with backlight
Keypad Type	6 button
Memory	
Built-In Flash	>300,000 readings
SD	yes
USB	no
Ethernet	no
Clock Accuracy (at 0°C - 40°C)	2 minutes per month, optional RS232 GPS sync
Power Requirements	5.5 to 16 VDC
Current Drain	<3.5mA @12 VDC
Communication Protocols	MODBUS Slave. SCP, SDI-12
Programming	via front panel or SDR communicator program
Log capacity	Over one (1) year of 15-minute stage data with accompanying daily average of discharge and midnight battery voltage
Log wrapping	PERMANENT LOG wraps when full (oldest data replaced by newest data). There is NO mechanism to erase the log.
Data downloads	Compatible with Pocket PC, PDA or laptop/desktop Windows PC
Event log	Any stage or setup changes written to the event log.
Download time	Less than 6 minutes, even for a 6-month log
Download	Comma-separated variable (CSV)
Graphing data	PDA and laptop utilities provide data graphing
Status lights	2 on front panel show "heartbeat" & run/error status

Device Dimensions	
Height	4.5" (11.5 cm)
Length	4" (10.2 cm)
Width	7" (17.8 cm)
ORDERING	
SDR-0001-1	Stage Discharge Recorder, Standard Unit, with shaft encoder only. Battery cable included.
SDR-0001-1SD	SDR-0001-1 with SD Card
SDR-0001-3	SDR w/Analog Input & 4-20mA outputs The Analog Stage Discharge Recorder does not include a shaft encoder. Order separately.
SDR-0001-3SD	SDR-0001-3 with SD Card
SDR-0001-4	SDR w/Analog Input, 4-20mA outputs,. Includes a shaft encoder
SDR-0001-4SD	SDR-0001-4 with SD Card
ACCESSORIES	
5100-0040	Battery, 12VDC, 24 AH, sealed, rechargeable lead-acid
5100-0530-2	Float, 6" PVC
5100-0118-1	Float Wheel, 375mm/revolution for beaded cable and 5/16" shaft
5100-0581	Chain, Beaded, 12.5cm, 1 Meter Length Increments
5100-0550	Counterweight, 8 oz.
6661-1213	2 GB SD Card
SHIPPING	
Shipping Height	14 in. (35.6 cm)
Shipping Length	10 in. (25.4 cm)
Shipping Width	6 in. (15.3 cm)
Shipping Weight	5 lbs. (2.3 Kg)
Batteries not Included: Use lead acid or alkaline batteries providing 12 volts or use two 6 volt lantern batteries (Eveready 528 or 529) connected in series. In most applications this will provide 12 months of operation.	

