

# MODEL 2100

## Open Stream Current Velocity Meter

SWOFFER INSTRUMENTS, INC.

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The Model 2100 is a hand held current velocity meter designed specifically for the measurement of open channel velocities.



- ☐ Efficient propeller-driven *Photo-Fiber-Optic* sensor coupled with precision quartz crystal controlled electronics provide accurate repeatable data in all flow conditions.
- ☐ The *Model 2100* Indicator reads data in feet and meters per second. A toggle switch in the battery compartment changes from one to the other.
- ☐ Powered by a single 9 volt transistor battery and there is a spare in the battery compartment too.
- ☐ Three user selectable velocity averaging times in each mode. From 5 to 90 seconds in feet per second and from 1.5 to 30 seconds in meters mode.
- ☐ Sensor components (propeller, rotor, and rotor shaft) easily and inexpensively replaceable. Carry spares into remote locations and you'll never have to return early because of a bent bucketwheel, lost sensor magnet or bent shaft.
- ☐ Wide choice of sensor carriers or "wands" to accommodate virtually any open stream velocity measuring requirement.
- ☐ Lightweight, portable system is easy to work with all day in the field. Indicator weighs a little over a pound and a half.
- ☐ A simple and *accurate* method of user-accomplished calibration is provided with the *Model 2100*. No other current meter provides the user a method of checking and changing calibrations while in the field. Calibration settings for the feet and meters selection are easily checked and changed any time.

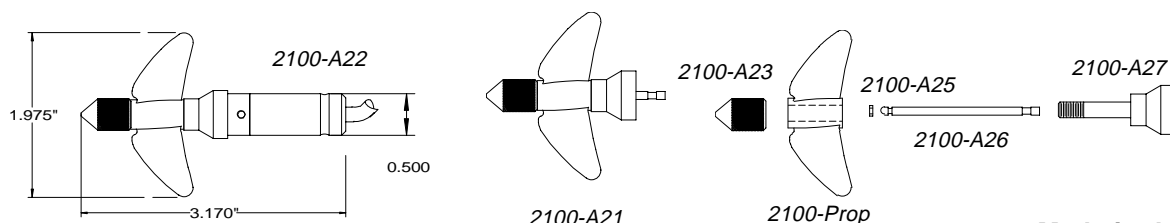
## THE SWOFFER OPTICAL-ELECTRONIC SENSOR

The basic principle of the Swoffer sensor is simple and unique: Multiple bundles of fiber-optics, assembled into a propeller driven rotor, gate a beam of infrared light from a photo diode to a photo-sensitive transistor producing electronic pulses. These pulses, generated by the propeller rotor over a precisely measured amount of time, are directly proportional to water velocity.

The Model 2100 propeller rotor requires very little energy to activate, works in nearly all water conditions and produces consistent, strong output pulses even at low velocities. The calibration curve for the rotors is linear and consistent in all naturally occurring open channel velocities. Propellers used with the Model 2100 are specifically designed for water so they do not require a shroud to protect them from the effects of turbulence. Because no shroud is used the propellers are easily able to shed the debris normally found in sewers and natural streams.

The electronic half of the sensor contains state of the art opto-electronics and is epoxy encapsulated in a ½" (12.7mm) diameter acetal resin housing for protection from chemicals and the elements. The sensor uses a two-wire signal system requiring as little as 3 volts DC for operation and generates an output signal through as much as 1000 feet of cable. Because the sensor consumes such a small amount of power, the field life of the Model 2100 battery (a standard 9 volt size) is long. The sensor emits four pulses per revolution so the resolution of the instrument is much higher than other sensors on the market. It is extremely accurate especially at very low velocities. It is also the most rugged and is extremely sturdy and reliable.

The standard version of the propeller rotor assembly (2100-A21) uses a very low friction fiberoptic rotor, a polished and hardened stainless steel shaft, and a 2" glass-filled nylon propeller. All rotor parts are easily replaceable in the field and a spare rotor assembly is provided with every new instrument.



Made in the U.S.A.



2100-1514 and 2100-1518 wands

## **MODEL 2100 CURRENT METER SPECIFICATIONS \***

### **VELOCITY RANGE**

0.1 to 25 Feet Per Second  
(0.03 to 7.5 Meters Per Second )

### **DISPLAY**

4 digit, Liquid Crystal Digital, 0.7" digits

### **RESOLUTION**

To hundredths, both feet and meters.

### **ACCURACY**

Can be held to within 1% with periodic user-  
required calibration tests and adjustments.

### **DISPLAY AVERAGING**

Three selectable averaging times:  
5, 20 and 90 seconds-FPS mode.  
1.5, 6 and 30 seconds-MPS mode.

### **OPERATING TEMPERATURE**

LCD     Min. -14° F (-25.6°C)  
           Max. 180°F (82°C) @ 15%  
           humidity  
           Max. 120°F (49°C) @ 95%  
           humidity  
Sensor   Min. 0° F (-17.8°C)  
           Max. 194° F (90°C)

### **POWER REQUIRED**

One 9 volt battery. Alkaline or rechargeable nicad.

### **INDICATOR SIZE**

4" by 6" by 2" (15.2 by 10.2 by 5.1 cm)

### **INDICATOR WEIGHT**

25 oz. (including 9 volt batteries, one spare ).

### **INDICATOR MATERIAL**

Vacuum-formed ABS with a clear acrylic viewing  
lens over the LCD.

### **INDICATOR KEYPAD & SWITCHES**

Back-printed polyester in four colors plus black.  
Two membrane pushbutton switches, one rotary  
switch with silicone boot for water seal.

### **FASTENERS**

Stainless Steel and/or Brass.

### **SENSOR WAND MATERIALS**

Aluminum = 6061-T6, Stainless Steel = #303

### **SENSOR BODY AND ROTOR**

*Acetron GP (rotor body) & Ertalyte® TX, an  
internally lubricated thermoplastic polyester that  
provides enhanced wear over all previous rotor  
materials.*

### **SENSOR PROPELLER**

Glass-filled nylon. 2" diameter is supplied. Other  
sizes are available for special applications.

### **ELECTRICAL CONNECTION**

Polyurethane jacketed, dual Aramid core, high  
strength cable. Two-conductor sensor signal  
system. Circular plastic, water resistant connector  
with twist-lock operation. Connections use gold  
plated contacts.

### **CABLE LENGTH**

Equal to wand at full extension plus five feet.  
Special lengths to 1000' are also available.

### **SENSOR TYPE**

**PHOTO-FIBER-OPTIC** two-conductor electrical  
with all electronics permanently encapsulated in  
epoxy resin.



2100-STDx, 2100-LX, 2100-12, -13, -14 wands

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\*Specifications were correct at the time of publication; however, SWOFFER INSTRUMENTS, INC. reserves the right to change design and operating specifications to further improve the instruments at any time and without notice.