



**Rugged,  
Low-Power**  
Ideal for long-term  
deployment in harsh  
conditions

## Overview

The CS410 is a shaft encoder that measures water level for Campbell Scientific data acquisition systems. It connects directly to our

dataloggers; a QD1 interface is not required. All of our dataloggers are compatible.

## Benefits and Features

- › Measures water level in stilling wells
- › Rugged enough for harsh environments
- › Low power consumption
- › Compatible with all Campbell Scientific dataloggers
- › Connects directly with our dataloggers (no interface required)

## Technical Details

The CS410 consists of a pulley attached to a float and counter-weight that rotates as water level rises or falls. When the pulley rotates, the CS410 sends two pulse strings to the datalogger. The datalogger records the pulse strings, and calculates water level by adding or sub-

tracting the clockwise or counter clockwise movement to a running total. The encoder's resolution is 100 counts per shaft revolution, so a 1-foot circumference pulley has a resolution of 0.01 feet.



## Complete System

A complete measurement system requires a float, pulley, float tape or beaded float line, end hooks, appropriate-sized counter weight,

and datalogger. See Ordering Information for products that are available from Campbell Scientific.

## Ordering Information

### Shaft Encoder

**CS410-L** Shaft Encoder and interface cable. Enter cable length (in feet) after the -L. Recommended cable length is 10 feet; maximum length is 100 feet. Must choose a cable termination option (see below).

### Cable Termination Options (choose one)

- PT** Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.
- PW** Cable terminates in connector for attachment to a prewired enclosure.

### Supporting Equipment

- 12221** Polyethylene float, 15.24 cm (6 in) diameter, 0.305 m (1 ft) circumference.
- 10801** Float tape, punched on 6.1 cm (2.4 in) center. The tape is sold by the foot.
- 12222** End hooks for punched tape (2 required)
- 10803** 4 oz Counter Weight that allows up to 7.5 m (25 ft) of float tape to remain taut and engaged on the pulley.
- 12225** 8 oz. Counter Weight that can counterbalance up to 15 m (50 ft) of float tape.
- 10799** Plastic pulley, 1 ft circumference (0.01 ft resolution)

## Specifications

- › Temperature Range: -25° to +50°C (not responsive if water surface freezes)
- › Length: 18 cm (7 in)
- › Width: 12.4 cm (4.875 in)
- › Depth: 10 cm (4 in)
- › Weight: 0.82 kg (1.8 lb)
- › Shaft Outer Diameter: 0.8 cm (0.3125 in)
- › Thread Count: 24 per inch
- › Resolution: 100 counts/revolution
- › Starting Torque: < 0.125 inch-ounces
- › Power Supply: 4 V to 5.6 V
- › Current Drain: 0.5 mA
- › Minimum Time Between Input Transitions: 0.75 ms
- › Output Pulse Width: 0.25 ms at 25°C
- › Signal Magnitude (Volts): 0 (low), supply voltage (high)

