

A Proven Instrument for Absolute Liquid Level Determination

Aquatrak® 4110 Series



Transducer



Controller

APPLICATIONS

- ◆ Tide and Sea State
- ◆ River Stage
- ◆ Groundwater
- ◆ Piezometer
- ◆ Head/Tail Water
- ◆ Tank Ullage

Technology

Unique patented means of ratiometric time comparisons of sequential sonic/pressure pulses. Environmentally protected within a small diameter tube. Aquatrak instruments reliably provide performance unequaled in the industry.

Accuracy

Self-calibrated measurement correction for ambient temperature, pressure, and gas density within the calibrated range(s), yields an accuracy of better than ± 3 mm.

Reliability

Non-mechanical implementation without bushings, bearings, gears, floats, or immersed active elements. Aquatrak sensors have a field proven reliability record of better than 1,000,000 hours MTBF.

Versatility

The all digital Aquatrak 4110 controller with its internal microcomputer relieves the host system of the liquid level measurement routines. RS-232 and SDI-12 interfaces make it compatible with the most commonly used data loggers, computers, controllers, and modems.

Battery Powered

All CMOS circuitry draws less than 40 milliamps operating, under one milliamp quiescent. These products were designed specifically for continuous long term unattended data acquisition.

Durability

The 4110 controller is enclosed in a gasketed, epoxy coated cast aluminum box, the stainless steel transducer is sealed in silicone within shock resistant PVC.

Economical

The lightweight sensor and range tube assembly is easily mounted at any angle from which the tube is immersed to the lowest significant level with minimal site preparation. Controller to transducer separation up to 1,000 feet can be accommodated.

A SMART INSTRUMENT

The Aquatrak 4110 calculates the true average level even in the presence of waves and surging liquid surfaces. The 4110 can be configured via its communication ports for virtually any site unique conditions. The sample rates, number of samples averaged, and data requested are selectable. Continuous measurements or exclusive data sets without outlier bias are standard operating routines.

WAVES AND SEA STATE

The US NOS standard averaging algorithm is used to determine the standard deviation for each data set. This value may be used in post processing to determine the average wave height during the sample period. Optionally, Aquatrak can provide specific programming for the 4110 to directly provide this information.

Technical Specifications

Measurement	Accuracy
Dynamic Range	Calibration
Standard >35 feet (10 meters)	Standard ± 0.025 %
Optional >50 feet (15 meters)	Optional ± 0.01 %
Special 75 feet (23 meters)	Nonlinearity ± 0.02 %
Rate of Change ± 10 feet (± 3 m/sec.)	Precision, Repeatability ± 0.01 %
Units English (Metric)	Stability, Drift, 1 year 0
Resolution 0.001 feet (1 mm)	Temperature Drift < 1 ppm/°C
Rate Proportionate 1.2 - 2.4 per sec.	
Rate Averaged 2 to 255: 1.0 per sec	
Interval Host determined	
Electrical	ASCII Serial Communication
Voltage, d.c. 12.5 ± 2 volts	Selectable baud rate: 300 to 9600
Operating Current < 40 ma	RS-232 N-8-1
Quiescent Current < 1 ma	SDI-12 E-7-1
Average Power 20 mW (4 sample average)	
Environmental	Physical
Operating Temperature -40 to 55 °C	Controller 4100
Storage Temperature -55 to 60 °C	Size 9 x 3.5 x 2.5 inch (23 x 9 x 6 cm)
Humidity 0 to 100%	Weight 1.5 lbs. (0.68 kg.)
	Sensor
	Size 4 inch dia. 8 inch ht. (9 cm dia. 21 cm ht.)
	Weight 2.5 lbs. (1.14 kg.)
	Shipping (1 carton) 5 lbs. (2.23 kg.)

Aquatrak Corporation is committed to maintaining the high quality levels that this product has provided. Nearly 2000 Aquatrak instruments for hydrographic, hydrologic, and industrial tank gauging applications have been delivered. They have earned a worldwide reputation as the most accurate and reliable instruments for acquiring long term level measurements for boundary determination, dredge surveys, dam safety, and hostile chemical tank control.

At the conclusion of seven years of comparative laboratory and field testing by the US National Ocean Services, the Aquatrak Series 3000 was selected by US NOAA and the Australian National Tidal Facility to be their Primary Standard Instrument for tidal programs.