

WL700 Ultrasonic Water Level Sensor

01-324.DOC

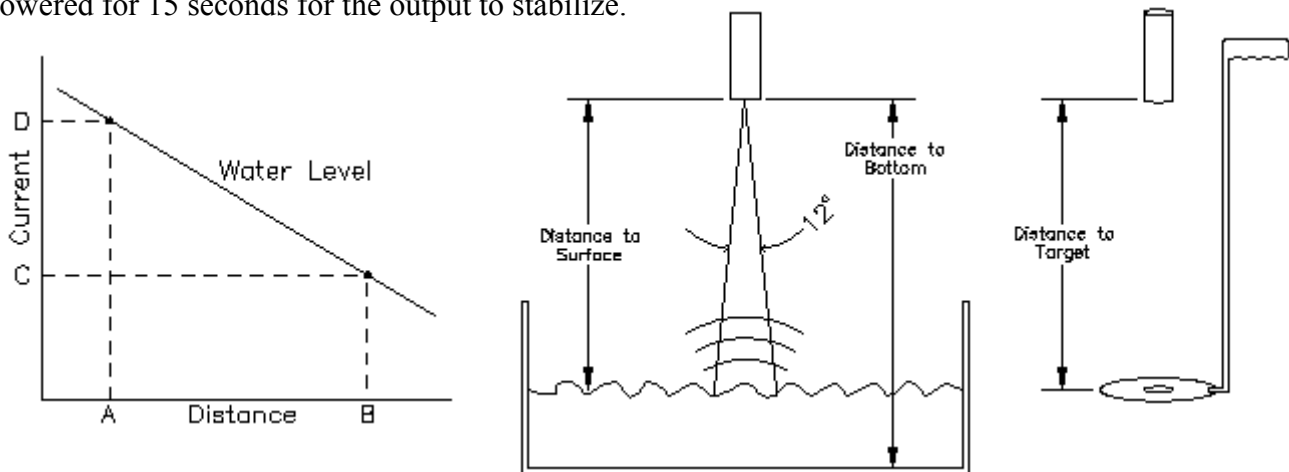
Specifications:

Sensor Range:	WL700-001	2-12"
	WL700-003	8-36"
	WL700-006	10-72"
Supply Voltage:	18-30VDC	
Supply Current:	100mA	
Averaging Time:	15 seconds	
Temperature:	-40° to +185° Fahrenheit	
Output Current:	4mA, maximum distance	
	20mA, minimum distance	
Connections:	Red	+18-30VDC
	Black	Ground
	White	4-20mA output



Operation:

The WL700 sensor uses ultrasonic sound waves to determine the distance from the face of the sensor to the surface of the water by timing how long it takes the signal to return. An internal temperature sensor automatically compensates for the temperature related variation in the speed of sound and a 15 second averaging time reduces the affects of turbulence in the water. Note that the sensor must be powered for 15 seconds for the output to stabilize.



Calibration:

The calibration procedures for recording devices vary. The process requires knowing the output current from the sensor at two different distances, as well as the distance from the sensor to the bottom of the reservoir. The sensor's output current increases as the distance between it and the target gets shorter. Thus, the current is lowest when the water level is zero. Due to the difficulty in calibrating the recording device with actual water levels, a hand held target may be used or the sensor signal can be bounced off a solid flat object at known distances. A typical calibration method might be to measure the current at two different distances within the range of the sensor. Divide the difference in the two currents by the difference in distance to get the amount of current per unit of length, then mount the sensor at a distance from the bottom that gives a zero depth reading. The 12° width of the beam means the size of the "spot" on the surface of the water gets bigger at greater distances. Maximum accuracy is attained by insuring that the beam hits a flat surface at all times and is best achieved by mounting the sensor as close as possible to the surface of the water without exceeding the measurement range.



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