

Sentry

LIQUID LEVEL CONTROLLER

MODEL 120

OPERATING MANUAL



Aquatic Sentry

CONTROLS

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1. SAFETY PRECAUTIONS

The potential for electrical shock exists whenever water is present near conductive electrical equipment. Check for sources of electricity from other nearby devices before working on this equipment. There is no possibility of serious shock from the energy levels used by this Controller. The low voltage direct current and transformer isolation provide safety when handling or opening the enclosures or the probe. Best practice, however, is to disconnect power when working on this equipment.

2. APPLICATION

The probes continuously monitor water levels, one rising (HIGH) level and one falling (LOW) level. The probe status is displayed with the tri colored LED and, if required, an audio alarm. Audio can be silenced and will auto reset when the alarm condition is corrected. The Controller also continuously monitors that all parts are operating correctly and displays any problems.

- Green heartbeat – power on and monitoring
- Red flashing – alarm condition
- Yellow / red flashing – probe not connected
- Red solid – probe wire short or reverse polarity

See section 4 for further details.

The relay LEDs are on red when the relay is energized. The Controller can be configured in one of three modes.

2.1 HIGH AND LOW LEVEL ALARM

Monitor a HIGH level and a LOW level probe in one tank or in separate tanks. The relays provide switching for remote alarms, security system, remote lights, auto dialers or control systems.

2.2 PUMP DOWN CONTROLLER

Control a pump down operation by suspending the HIGH probe at the “turn on” level and the LOW probe at the “turn off” level. The HIGH level relay is used to perform the switching to control the pump. The high relay LED indicates when the relay is energized.

2.3 FILL CONTROLLER

Control a fill valve operation by suspending the LOW probe at the “turn on” level and the HIGH probe at the “turn off” level. The low level relay controls the fill valve or pump. The low level relay LED indicates when the relay is energized.

3. INSTALLATION

3.1 GENERAL SETUP NOTES

The factory pre-set is for HIGH and LOW alarm mode with the audio on. The relays are 5 Amps, designed for low voltage AC or DC service. Relays are set for Normally Open operation. The jumper setting instructions are located inside the rear cover of the enclosure. See FIG 1



FIG 1
Jumper Settings

3.2 SETTINGS FOR HIGH AND LOW ALARM SERVICE

In normal operation the probe LEDs indicate a green heartbeat when the HIGH probe is out of the water and the LOW probe is submerged. The relay LEDs are off.

When one of the probes change state the corresponding LED will flash red, the audio pulses and the relay is energized as indicated by the relay LED. The relay operation is set for Normally Open or Normally Closed operation.

The factory settings of the jumpers inside the Controller are shown in FIG 2

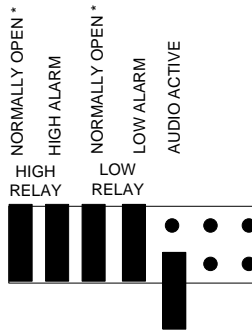


FIG 2
Jumper Settings for
High and Low Alarm Service

The jumpers are set on both pins (shorting) for the HIGH RELAY and the LOW RELAY. The relay operation is set for Normally Open. The audio jumper is set off on one pin (non-shorting) to set the audio in service.

3.3 SETTINGS FOR PUMP DOWN SERVICE

The Controller energizes the HIGH RELAY when the water rises to the HIGH PROBE. When the level falls to the LOW PROBE the relay is de-energized. During operation the HIGH and LOW PROBE LEDs have a green heartbeat to indicate that power is on and the probes are monitoring both the water level and the correct operation of the Controller.

When the level is above the HIGH probe or below the LOW probe the LEDs indicate an alarm condition, flashing red.

Pump Down Service settings are shown in FIG 3

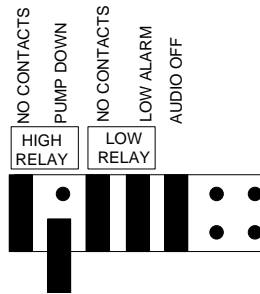


FIG 3
*Jumper Settings for
 Pump Down Controller Service*

The pump down jumper is set off one pin (non-shorting). Normally the audio is set to off (shorting) for Controller service.

3.4 SETTINGS FOR FILL OPERATION SERVICE

The Controller energizes the LOW RELAY until the water rises to the HIGH PROBE, de-energizing the LOW RELAY. The relay is re-energized when the level falls below the LOW PROBE. During operation the HIGH and LOW PROBE LEDs have a green heartbeat to indicate that power is on and the probes are monitoring both the water level and the correct operation of the Controller.

When the level is above the HIGH probe or below the LOW probe the LEDs indicate an alarm condition, flashing red.

Fill Operation Service settings are shown in FIG 4

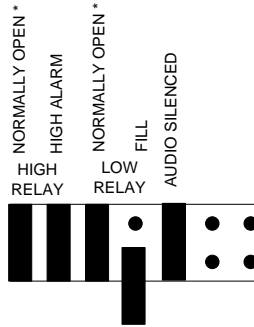


FIG 4
Jumper Settings for
Fill Controller Service

The fill jumper is set off one pin (non-shorting). Normally the audio is set to off (shorting) for Controller service.

3.5 INSTALLATION OF THE CONTROLLER

The indoor Controller is either wall mounted or mounted in an appropriate enclosure, depending upon the service and location. The 120VAC receptacle powering the AC adapter should be supplied from a circuit separate from any pump or equipment that is being monitored or operated by this Controller. To wall mount, install two supplied screws, 3" apart vertically and projecting 1/4" from the wall. The probes are installed into the screw terminal plug on the bottom of the Controller. See FIG 5 and 6. The HIGH RELAY and THE LOW RELAY are connected as required for the service. 18 gauge stranded conductors are recommended for low voltage AC or DC control circuits.



FIG 5
Terminal Block

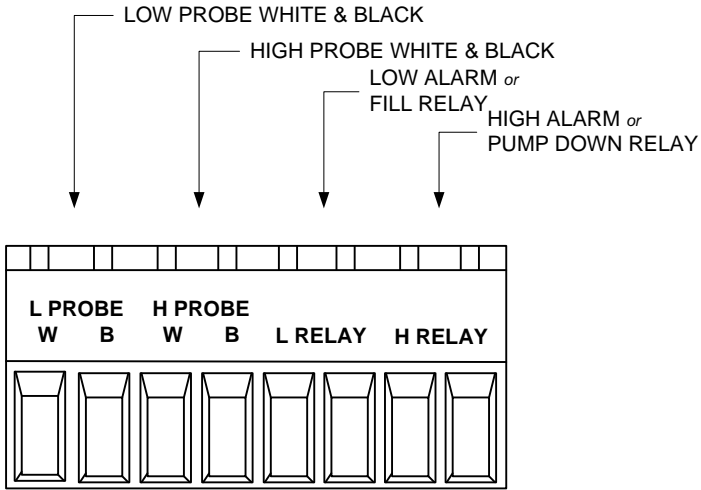


FIG 6
Terminal Block Labelling

3.6 TEST THE OPERATION

Test the operation of each probe, out of water and immersed in water, to prove the operation of the Controller.

4. OPERATION AND TROUBLESHOOTING



FIG 7
Operating Instructions

The PROBE LEDs display the water level state and the testing that the Controller is operating correctly. The RELAY LEDs display whether the relay is energized. When audio is selected, it will pulse upon a HIGH or LOW probe condition. Audio sounds continuously if the probes are disconnected or there is a short. The audio will automatically reset after the unwanted condition is corrected.

PROBE LED	AUDIO	HIGH LEVEL PROBE	LOW LEVEL PROBE	CORRECTIVE ACTION
OFF	OFF	No Power		Check breaker Check Transformer Check Controller plug
GREEN HEARTBEAT	OFF	PROBE DRY	PROBE WET	OK
RED FLASHING	PULSING	PROBE WET	PROBE DRY	OK
RED FLASHING	SILENCED	PROBE WET	PROBE DRY	OK
RED STEADY	CONTINUOUS	PROBE SHORT		Probe conductor polarity reversed Short in the probe wiring Replace probe
RED / YELLOW FLASHING	CONTINUOUS	PROBE DISCONNECTED		Connect probe wires Check probe wire for damage; make a waterproof repair
GREEN / YELLOW FLASHING	CONTINUOUS	PROBE ERROR		Replace probe

5. SPECIFICATIONS

POWER SUPPLY	120VAC~60 Hz input, 12VDC 5W output, UL listed, CSA certified, indoor unit
ENCLOSURE	flame retardant ABS
BUZZER	Solid state, 85db min @ 10 cm
PROBE	digital RF proximity probe, stainless steel, type 304 or 316, 25.4mm diameter x 100mm long, cable - 2 conductor, 18 Ga, CSA CMG, PVC jacket, 15m (50 feet) or 30m (100 feet)
RELAY	5 Amp at 30Volts, dry contacts, Normally Open or Normally Closed configurable

6. WARRANTY

Aquatic Sentry Controls Inc. warrants that this product is free from defects in materials and workmanship under normal use and service for a period of three years from the date of purchase by the initial owner. Aquatic Sentry shall be responsible only for actual loss or damage suffered and then only to the extent of Aquatic Sentry's invoiced price. Within the warranty period we shall repair, refurbish or replace, at our option, such products or components, which are returned to us with shipping charges prepaid, and which are determined by us to be defective. This warranty will not apply to any product or part thereof which has been subject to misuse, negligence, or accident; or misapplied; or modified; or repaired by unauthorized persons; or improperly installed. The provisions of the above warranty are our sole obligation and exclude all other remedies or warranties, expressed or implied, including warranties of merchantability and fitness for a particular purpose, whether or not purposes or specifications are described herein. We further disclaim any responsibility whatsoever to the customer, or to any person, for injury to person, damage to, or loss of property or value caused by any product, regardless of whether the defect is warrantable or whether the product has been subjected to misuse, negligence, accident; or modified or repaired by unauthorized persons; or improperly installed.

Under no circumstances shall the company be liable for any incidental, consequential or special damages, loss or expenses arising from the use of this product, or in connection with the use of, or inability to use, our product for any other purpose whatsoever.

Aquatic Sentry products or parts thereof assumed to be defective by the purchaser within the stipulated warranty period should be returned to the seller or local distributor for evaluation and service. If deemed necessary, the seller or distributor shall contact Aquatic Sentry Controls Inc. for a Returned Materials Authorization and then return the item for direct factory evaluation, service or replacement. No material may be returned to Aquatic Sentry Controls Inc. without proper factory authorization.

NOTES



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