

INSTALLATION & OPERATING INSTRUCTIONS FOR THE LW CONTROL

This document should be used by trained personnel as a guide to installing the ProtoDesign Inc. low water control. Follow necessary wiring practices as defined by the national electric code (NEC). Installation or selection of equipment should always be accompanied by trained technical personnel. Reset and probe wires runs should be separated from high voltage wire runs.

We recommend that secondary (redundant) Low Water Cut-Off controls be installed on all steam boilers with heat input greater than 400,000 BTU/hour or operating above 15 psi of steam pressure. At least two controls should be connected in series with the burner control circuit to provide safety redundancy protection should the boiler experience a low water condition. Moreover, at each annual outage, the low water cut-offs and probes should be dismantled, inspected, cleaned, and checked for proper calibration and performance. If used as a LWCO, the control must be installed in series with all other limit and operating controls.

SPECIFICATIONS:

Ambient Operation Temp: 0 to 150 deg. F.

Humidity: 85% (non condensing)

UL Approval: UL353 limit control

Supply Voltage: 120/240 VAC 50/60 Hz., 10% line variation. (240 VAC for operational control only)

Contact Ratings: SPDT, 10A, 1/3H.P. 120/240VAC. Rated 100,000 cycles rated load.

Power Consumption: 1.5VA

Wiring Terminals: Optional module socket, #6-32 screws with pressure clamps. Open board design 1/4" quick connects on high voltage and 3/16" quick connects on low voltage.

Probe wire distances: 500 feet max. using MTW or THHN #14 or #16 AWG wire.

Reset terminal wires: 50 feet max. using same wire type described above.

FEATURES:

Sensitivity: 26K ohms standard

Falling level time delay: 3 sec standard with 30 sec. Optional. (Factory Set)

OPERATION

AUTOMATIC RESET (Reset terminals not used): When the liquid rises to the electrode on terminal #6, the control energizes, changing state of the load contacts (LED will be lit). The control remains energized until the liquid level recedes below electrode on terminal #6. The control then de-energizes, (LED will not be lit) returning load contacts to original state. Unless otherwise specified, there is a three-second time delay on decreasing level. Liquid must be below probe on terminal #6 for full three seconds before control de-energizes.

MANUAL RESET (Normally closed pushbutton installed across reset terminals #7 & #8): When the liquid rises to the electrode on terminal #6, the control will remain de-energized until the pushbutton is depressed. The control will then energize, changing the state of the contacts (LED will be lit). The control remains energized until the liquid level recedes below electrode on terminal #6. The control then de-energizes, (LED will not be lit) returning load contacts to the original state. Unless otherwise specified, there is a three-second time delay on decreasing level. Liquid must be below probe on terminal #6 for full three seconds before control de-energizes.

POWER OUTAGE FEATURE:

The power outage feature is a standard feature for the LW. When using the manual reset feature, if power interruption occurs when the probes are in liquid the relay will de-energize. When power is restored if the liquid is in contact with the probe the relay will energize without a manual reset. This feature eliminates boiler lockouts due to power outages when using the reset function.

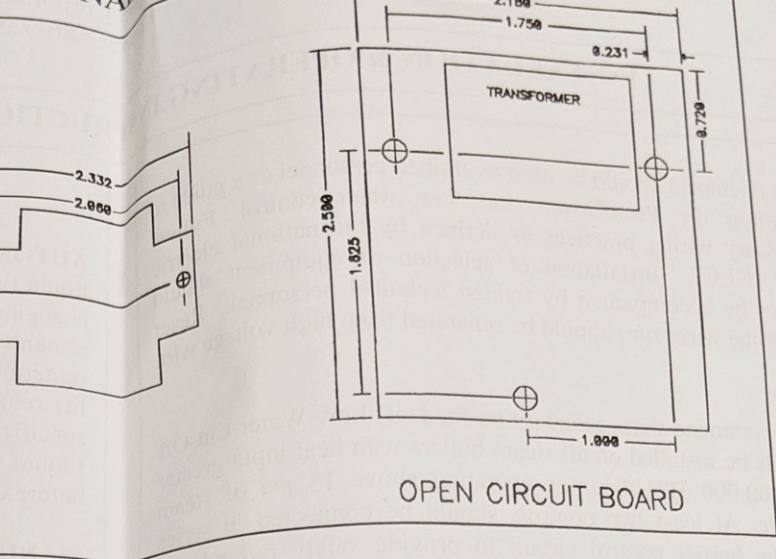
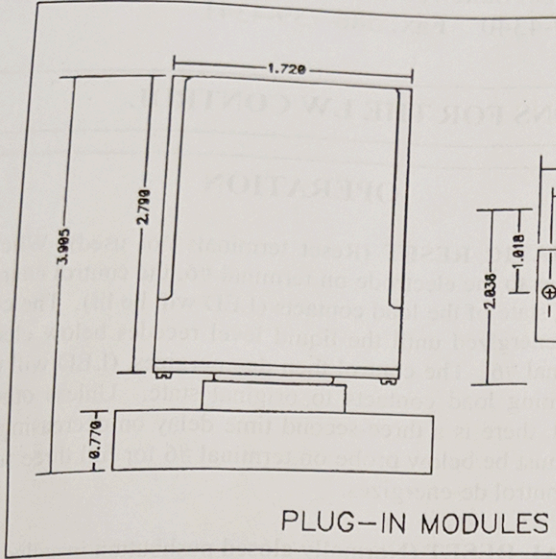
CSD-1 CODE COMPLIANCE

On Manual Reset units, if the control is in a low-water condition (water off probe) when there is an interruption of power, the control will remain in a low-water condition when power is restored. The reset button will need to be pressed when the water level is restored to a level above the probe.

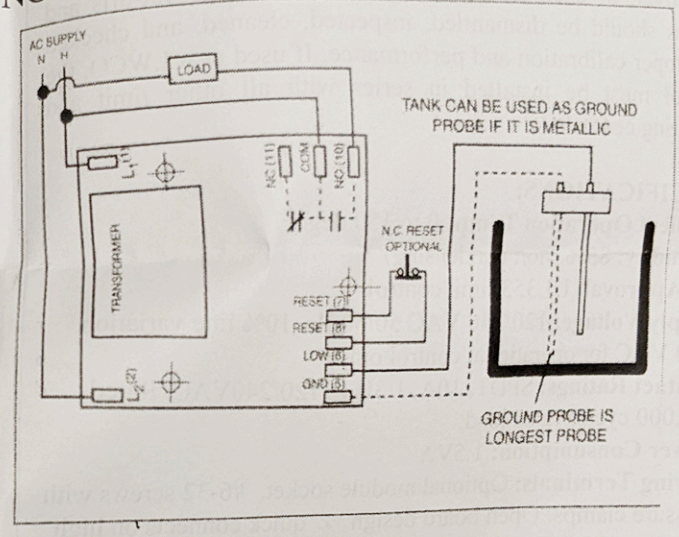
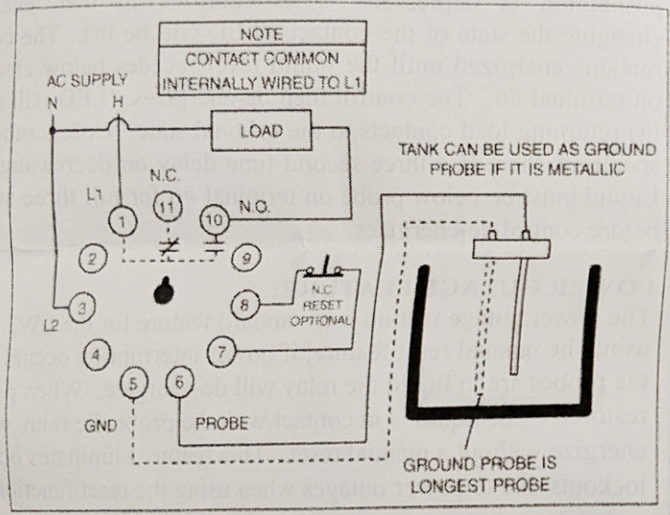
Maintenance Schedule

- Inspect probe annually for scale build-up and clean if necessary. Make certain there is no scale or build-up on the probe or its white insulator.
- Replace probe every 10 years. More frequent replacement of the probe is required if it is used in locales where significant water treatment is required, where more frequent cleaning is necessary, or in applications with high make-up water requirements.
- Replace the low water cut-off every 15 years.

DIMENSIONAL DRAWING



TYPICAL WIRING DIAGRAM



MODEL NUMBER DESIGNATION

LW - X - X - X - X - XX - X

- OPTIONAL CHARACTER:**
Blank, A = Test feature, B Module with pin-pull, or AB for both
- FALLING LEVEL TIME DELAY:**
03 = 3 sec., 30 = 30 sec. (03 is standard)
- MODE:** A = direct
- SUPPLY VOLTAGE:**
1=120VAC 2 = 240VAC (240 VAC for operational control only, not for limit control)
- SENSITIVITY:**
C = 26K (standard)
- PACKAGE:**
1 = 11 pin Module with powered contacts
2 = Open board with 1/8" panel mount standoffs
3 = Open board with 1/16" panel mount standoffs
- MODULE SOCKET:** LCS - 11 = (LW SOCKET)