

Spray Irrigation Control Panel · Smart Timer + UV

120 VAC · Single Phase · Dual Feed | Field Service Reference | Failsafe Lockout

ENGINEERED & MANUFACTURED FOR AKHA MANUFACTURING, LLC · HYDRO-ACTION® SYSTEMS

DOCUMENT VERSION 1.0

MODEL CP-001-3-0006

DERIVED FROM Master Troubleshooting Matrix v1.1
(Working Draft 3)

SYSTEM PLATFORM Hydro-Action®

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COMPANION DOCUMENTS Operation Manual v3.0 · Spec
Sheet v2.0

WEB hydro-action.com

HOW TO USE THIS GUIDE

This guide is the CP-001-3-0006 slice of the Legacy Controls Master Troubleshooting Matrix — it contains every entry for the device classes this panel actually has, and nothing else. Entries are grouped by device class; work from the class that matches the symptom. Component-specific entries name the make and model so a part can be identified without opening the manual.

IMPORTANT NOTICE — SUPPORT & WARRANTY ADMINISTRATION

This control panel is manufactured by Legacy Controls for AKHA Manufacturing, LLC and is intended for use with Hydro-Action wastewater treatment systems. **ALL technical support, warranty claims, service questions, callbacks, and customer communications must be directed to AKHA Manufacturing, LLC.**

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Legacy Controls provides manufacturing and warranty support to AKHA Manufacturing, LLC and does not accept direct inquiries or claims from end users or installers for this product line.

READ FIRST — BEFORE ANY DIAGNOSIS

This panel is fed by TWO separate 120 V circuits. **The control circuit (terminal 2) remains energized even when the main breaker is OFF — disconnect BOTH feeds and verify with a voltage tester before opening the panel.** Never bypass the air loss or UV fault lockouts under any circumstances: they exist to prevent dispersal of under-treated effluent.

PRELIMINARY CHECKS

- Confirm both feeds are live — main power at terminal 1, control power at terminal 2.
- Read the SHT-13/2 display: is it in AUTO, and is a Channel 1 program stored?
- Note which annunciation is active — air fault, UV fault, or high water. They behave differently.
- Establish whether the pump is locked out or simply not scheduled. Air and UV lock out; high water never does.
- Have Line Drawing v1.4 and Connection Diagram v1.3 to hand — both are reproduced in the Operation Manual.

PROTECTION SUMMARY Air pressure loss and UV lamp fault each lock out the spray/dose pump until corrected. The pump level float blocks short doses without alarming. High water raises the alarm only — the pump stays on schedule by design, because high water means it is not keeping up.

POWER & FEEDS

APPLIES BECAUSE THIS PANEL HAS Incoming power on two feeds — main (terminal 1) and control circuit (terminal 2)

SYMPTOM	POSSIBLE CAUSE	ACTION
No lights, no loads, no alarm	Both feeds lost · feeder breakers off · loose connections	Verify both feeder breakers and incoming voltage at terminals 1 and 2; re-torque connections to 0.79 N·m (7.0 in-lbs)
Nuisance breaker trips	Undersized feeder · short or ground fault · load fault	Verify feeder sizing per the spec sheet — 30 A main feed, 5 A control feed; inspect field wiring; isolate loads to find the fault

DUAL-FEED CONTROL CIRCUIT

APPLIES BECAUSE THIS PANEL HAS A dedicated control-circuit feed on terminal 2 that stays live when the main breaker is off

SYMPTOM	POSSIBLE CAUSE	ACTION
Shock risk with the main breaker OFF	The control circuit is a separate feed and remains energized	ALWAYS disconnect BOTH feeds (terminals 1 and 2) and verify with a voltage tester before opening the panel
Alarm live but compressor and UV dead	Main breaker tripped — control circuit still energized	Reset the main breaker and investigate the trip cause; this is the control circuit doing its job
Entire control side dead, main power present	Control circuit feed loss	Check the 5 A control feed breaker and wiring — the alarm has no power until restored

COMPRESSOR & AIR PRESSURE

APPLIES BECAUSE THIS PANEL HAS An aeration compressor supervised by a Tecmark air pressure switch (N.O.)

SYMPTOM	POSSIBLE CAUSE	ACTION
Air / compressor fault alarm, pump locked out	No air pressure · blocked or leaking airline · failed compressor · faulty pressure switch	Inspect the airline end-to-end, the compressor, and the pressure switch; the pump lockout clears automatically when pressure is restored
Compressor runs, alarm persists	Pressure switch failed, or airline restriction downstream of the tap	Verify switch actuation with a gauge; replace the switch if it fails to close at operating pressure
Compressor breaker (CB2) trips repeatedly	The ¼ HP compressor draws 5.0 FLA on a 5 A branch breaker — no headroom for a degrading motor	Measure running current; a motor drawing above nameplate is failing. Do not upsize CB2 — 5 A is the specified value

UV SYSTEM (PRI-51)

APPLIES BECAUSE THIS PANEL HAS An Elko EP PRI-51 current monitoring relay supervising a UV lamp on an ENI-T8-32-P2SC-N ballast

SYMPTOM	POSSIBLE CAUSE	ACTION
UV fault alarm, pump locked out	Lamp failed · lamp at end-of-life drawing degraded current · lamp disconnected	Replace the UV lamp; the lockout clears when normal current is restored
UV fault after a lamp or ballast replacement	PRI-51 threshold still set for the previous lamp type	Re-adjust per Section 7 of the Operation Manual — only after a lamp or ballast change, never during routine service
No UV output, PRI-51 reports fault, lamp is new	Ballast failure, or the bulb landed on the wrong terminal	Verify ballast power on terminal 9 and bulb landings: 10 = bulb common, 11 = bulb 1, 12 = bulb 2

FLOAT SWITCHES

APPLIES BECAUSE THIS PANEL HAS A pump level float (terminals 5–6) and a high water alarm float (across terminals 7–8)

SYMPTOM	POSSIBLE CAUSE	ACTION
Pump will not start	Float failed, tangled, or miswired	Test each float by manual actuation; check terminal landings against Connection Diagram v1.3

SYMPTOM	POSSIBLE CAUSE	ACTION
Pump runs continuously	Float stuck closed · wiring short	Inspect and test both floats; check for wiring shorts
No dose despite the schedule	Pump level float down or failed — insufficient water for a full dose	Verify tank level and the level float; if the level is genuinely low this is the float doing its job
High water float does nothing when lifted	Float landed on the wrong pair — there is no dedicated high water float pair on this panel	The high water float lands ACROSS terminal 7 (alarm power) and terminal 8 (alarm signal). The alarm device takes terminal 8 and neutral
False or nuisance high water alarms	Float positioned too low or affected by turbulence · cable damage causing intermittent shorts	Reposition the float; inspect the cable for chafing or water intrusion

TIMERS & SCHEDULERS

APPLIES BECAUSE THIS PANEL HAS An Elko EP SHT-13/2 Wi-Fi smart timer driving the spray/dose pump on Channel 1 (contacts 15/18)

SYMPTOM	POSSIBLE CAUSE	ACTION
Pump never runs on schedule	Timer not in AUTO · no program stored · wrong settings	Set the timer to AUTO and verify the Channel 1 program per Section 6 of the Operation Manual
Program created but the pump never doses	Program written to Channel 2 — Channel 2 is SPARE and drives nothing on this panel	Program Channel 1 only (contacts 15/18). Channel 2 is reserved and unwired
Doses at the wrong times	Clock, time format, or daylight-saving setting	Reset date/time; verify DST mode; confirm from the phone browser if Wi-Fi is enabled
Timing drifts or resets after an outage	CR2032 backup battery depleted	Replace the battery (positive side up, behind the front cover) and reset the clock
Cannot reach the timer from a phone	Wi-Fi not activated, or a 5 GHz network was offered	Menu → WiFi → Activation → On → Config Device; join SSID SHT-13-XXXX (default password elkoep13), browse 192.168.4.1, supply 2.4 GHz credentials. Wi-Fi is optional — the panel runs fully without it

MOTOR CONTACTORS

APPLIES BECAUSE THIS PANEL HAS An Elko EP VS220-20 UL installation contactor (M1) switching the spray/dose pump

SYMPTOM	POSSIBLE CAUSE	ACTION
Alarm and controls fine, pump dead	Contactor coil failure · coil circuit wiring	Inspect the contactor, verify coil voltage from the control circuit, and check wiring per the schematic
Chattering contactor	Low coil voltage · control circuit fault	Measure coil voltage under load; trace the control wiring

MOTOR-INTEGRAL OVERLOADS

APPLIES BECAUSE THIS PANEL HAS Overload protection built into the motors — there are NO overload devices inside this panel

SYMPTOM	POSSIBLE CAUSE	ACTION
Pump or compressor stops, restarts after cooling	The motor's integral overload tripped	Let the motor cool; investigate supply voltage, impeller binding, and run conditions — there is no overload device in the panel to reset

FAILSAFE LOCKOUTS

APPLIES BECAUSE THIS PANEL HAS Lockout-class protection on air pressure loss and UV fault

SYMPTOM	POSSIBLE CAUSE	ACTION
Pump will not run, alarm active	Air loss or UV fault lockout active	Clear the fault condition — the lockout releases automatically. Never bypass a lockout

SYMPTOM	POSSIBLE CAUSE	ACTION
Pump locked out but no obvious fault	Both lockout paths are in series with the timer output — either air or UV will hold the pump off	Check the pressure switch AND the PRI-51 before suspecting the timer or contactor. High water is NEVER the cause — it does not lock out

ALARM CIRCUITS

APPLIES BECAUSE THIS PANEL HAS A beacon and horn with silence provision, powered by the control circuit

SYMPTOM	POSSIBLE CAUSE	ACTION
Alarm will not activate	High water float or alarm circuit fault	Manually lift the high water float; verify continuity across terminals 7 and 8
Horn will not silence	Silence switch wiring · alarm relay failure	Inspect the switch circuit and alarm relay; contact AKHA Manufacturing if the fault persists
High water alarm active	Inflow exceeding the dose schedule · restricted discharge · pump issue	The pump is NEVER interrupted by high water — verify it is dosing on schedule, then investigate inflow and discharge

CLASSES NOT APPLICABLE TO THIS PANEL

The following Matrix device classes are deliberately excluded. If a symptom seems to match one of them, the fault is elsewhere — this panel does not contain the device.

EXCLUDED CLASS	WHY IT DOES NOT APPLY
120/240 Grouping Pin	This panel is 120 V only — there is no voltage-selection pin
Alternating Relay (E1ZMLA10)	Simplex panel — there is no second pump to alternate
Internal Overloads	There are NO overload devices in this panel — protection is integral to the motors
Current Monitoring (PRI-32)	No recirculation current supervision on this panel — the PRI-51 supervises the UV lamp only
Dual Independent Alarms	Single alarm circuit — one beacon and one horn

IF ISSUES PERSIST Contact AKHA Manufacturing, LLC with the model and serial number — Toll Free 800-370-3749 · Phone (574) 936-2542 · hydro-action.com

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