

Nitrogen Reduction Control Panel

Timer-Based Process Control | 120 VAC · Single Phase | UL 508A Listed
ENGINEERED & MANUFACTURED FOR AKHA MANUFACTURING, LLC · HYDRO-ACTION® SYSTEMS

Product Overview

Engineered and manufactured by Legacy Controls as an automation solution for Hydro-Action wastewater treatment systems, the CP-001-1-0001 delivers precise process automation with layered protection to ensure consistent effluent quality and prevent untreated discharge. The panel manages four integrated functions — ATU aeration, timed recirculation, intermittent mixing, and demand dosing — with dual-timer recirculation supervision and current-sensing pump verification.

MODEL / PANEL REVISION CP-001-1-0001 · Rev v6.1 UL FILE NUMBER E547664
MANUFACTURED FOR AKHA Manufacturing, LLC · Plymouth, Indiana SUPPORT & WARRANTY AKHA Manufacturing · 800-370-3749
DOCUMENTATION Operation Manual v4.3 · Line Drawing v6.1 SPEC VERSION 2.2 · August 2026
· Connection Diagram v6.2

Key Features

- Four integrated functions — ATU aeration control · timed recirculation · intermittent mixing · demand dosing
- Dual-timer recirculation supervision — Elko CRM-2H asymmetric flasher (T1) paired with an Elko CRM-183J/UNI off-delay countdown (T2) that declares a failure if the next cycle never arrives
- Current-sensing pump verification — Elko EP PRI-32 (CS) supervises recirculation pump load — failure, dry run, or abnormal current triggers alarm and lockout
- Failsafe lockout — low air pressure or recirculation failure locks out the demand dose pump (M3) — untreated effluent never discharges
- High water alarm — alarm-only by design — never locks out the demand dose pump
- Float protection — recirculation (M1) and mixing (M2) pumps operate only when the enable float is up
- Isolated control circuit — factory jumper between terminals 1 and 2; removable for a separate feed

 **READ FIRST — ISOLATED CONTROL CIRCUIT**

This panel ships from the factory with the control circuit **COMBINED** with main power via a jumper installed between terminals 1 and 2. If a separate (isolated) power feed is required, remove the jumper and provide a dedicated feed — a separate feed remains energized when the main feed is off. **Disconnect ALL power sources and verify with a voltage tester before opening the panel.**

TECHNICAL SPECIFICATIONS

PARAMETER	SPECIFICATION
Model / Compliance	CP-001-1-0001 · UL 508A Listed · File E547664 · NSF/ANSI 40 & 245 compatible
Electrical	120 VAC, 60 Hz, single phase
Total FLA / SCCR	26 A · SCCR 5 kA · largest motor FLA 7.0 A
Supply Circuit	30 A minimum supply circuit ampacity · field-supplied main disconnect required
Timers	T1 — Elko CRM-2H asymmetric flasher · T2 — Elko CRM-183J/UNI off-delay
Current Sensing	Elko EP PRI-32 — recirculation pump supervision, trip set to normal running draw (~6–8 A)

PARAMETER	SPECIFICATION
Motor Contactors	M1 recirculation · M2 mixing · M3 demand dose (lockout-protected)
Alarm System	Alarm globe + buzzer · alarm circuit limited to 5 A
Overloads	Integral to the pump motors — no overload devices in this panel
Enclosure	Type 1 · weatherproof location outdoors or well-ventilated indoors
Field Wiring	Copper, 60 °C min, 26–10 AWG, 600 V · terminal torque 0.79 N·m (7.0 in-lbs)

ALARM & LOCKOUT BEHAVIOR

Only two conditions create a lockout, and the only output ever locked out is the demand dose pump (M3).

CONDITION	ALARM (GLOBE + BUZZER)	DEMAND DOSE (M3) LOCKOUT
Low air pressure	Yes	Yes
Recirculation failure (CS / T2 timeout)	Yes	Yes
High water float	Yes	No — M3 keeps running by design

PROGRAMMING REFERENCE Recirculation timer settings (T1 and T2) are calculated from daily plant capacity — full GPD tables (450 to 1,100 GPD), a field cheat sheet, and QR links to the official Elko data sheets are provided in Section 6 of the CP-001-1-0001 Operation Manual v4.3.

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. AKHA Manufacturing, LLC · 2055 Pidco Dr. / P.O. Box 640, Plymouth, Indiana 46563 · Toll Free 800-370-3749 · Phone (574) 936-2542 · Fax 574-936-2298 · hydro-action.com.** 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.

COMPLIANCE & NOTES

- **Installation** — by qualified personnel only, per NEC and UL 508A
- **Feeder** — field-supplied main disconnect required — 30 A minimum supply circuit ampacity
- **Overloads** — integral to the pump motors — no overload devices in this panel
- **Isolated control circuit** — a separate feed remains energized when the main feed is off — disconnect all sources before service
- **High water** — alarm notification only — never engages the demand dose lockout
- **Alterations** — any alteration, modification, or unauthorized repair voids the UL listing and warranty
- **Documentation** — see CP-001-1-0001 Operation Manual v4.3, Line Drawing v6.1, and Connection Diagram v6.2