

## 1. OBJECTIVE

Details the installation of fail-safe hardware for acid pumps.

### Overview:

The Controller feed limit timers will turn OFF the acid pump if a sensor fails to respond. Controller feed limit timers cannot protect against controller failure or controllers with incorrect setpoints and/or bypassed limit timer alarms.

A redundant, independent, feed limit timer may be installed to protect the cooling water system against acid or overfeeds.

This technique is equally applicable to any chemical pump or oxidant feed.

## 2. Parts List

Description	Vendor Part #	Nominal Cost
Macromatic, Interval ON, Time Ranger Programmable Relay Mfg Part# TR60522	<b>819-0522</b>	<b>\$53.00</b>
Source: <a href="http://www.alliedelec.com">www.alliedelec.com</a> 800.433.5700	Requires Socket <b>819-7061</b>	<b>\$5.00</b>

## 3. Installation

Install the Macromatic Timer socket on the controller enclosure aluminum backplate using self-tapping sheet metal screws, if room is available.

**Note:** The timer module is nominally 4.4" high. Ensure the module clears door mounted components with the door closed.

Wire the Timer socket to the controller and to the acid pump using the table on page 2 and then install the keyed timed module in the socket.

Set the Timer ON time to greater than the maximum expected run time to meet controller ON/OFF setpoints.

Set the Timer ON time to greater than the controller feed limit timers to prevent nuisance time-outs.

Set the controller setpoint deadband to 0.02pH for short acid feed with minimum undershoot.

Typical wiring for control by Controller Relay No.3

Controller Terminal	Timer Socket Terminal	Acid Pump
<b>NO3</b>	<b>No.1 &amp; No.2</b>  Jumper No.1 & No.2 at socket	<b>120 VAC Line:</b> to Programmable Timer Terminal <b>No.3</b>  If you are using the Plug Boxes supplied with the controller, move the BLUE wire from Controller terminal NO3 to time socket terminal No.3
<b>N3- Neutral</b>	<b>No.7 - Neutral</b>	<b>Neutral:</b> to any unused Controller neutral terminal <b>N1, N4, N5...</b>  If you are using the Plug Boxes supplied with the controller, the Pump neutral is already connected to controller terminal <b>N2</b> . You still need to connect the timer neutral to any unused controller neutral.

**Optional: Monitoring of the State of the Timer Module:**

If you wish to know the Timer Module state, you can wire the second set of timer contacts to controller input 'V', labeling 'V', **Acid Timer ON**.

Timer Module Terminals **No. 11** and **No.9** will closed whenever the Acid Pump is ON.

Wire the Timer terminals **11** & **9** to Controller terminals **V+** & **V-** (Polarity does not matter on dry contacts) and Enable **V**.

**CAUTION:** Make sure the Timer is wired correctly. Wiring errors may put 120VAC into the controller 'V' terminals, destroying the controller

You can view the state of input 'V' in **Diagnostic View II** or an any View that displays 'V'. 'V' will be green whenever the acid pump is powered ON.

If the controller acid control relay is **GREEN** but 'V' is **RED**, you've timed out.

**4. Operation**

1. The Interval ON Timer module turns ON for up to the preset time every time the timer module is powered by the controller.
2. The Interval ON Timer resets every time the controller turns OFF then ON.
3. If the Timer module time's out, switch the controller relay OFF then ON by changing the ACID feed setpoints, resetting the Timer