

LAKOS MULTI-TOWER SWITCHING KIT

QUICK START GUIDE

Introduction

The LAKOS Multi-Tower Switching Kit (MTSK) provides filtration cycle switching between 2-4 individual cooling towers. The kit requires a separate single phase 120 VAC power source. Valve switching is provided and controlled directly by the Zelio Smart Relay. The MTSK can operate under either a Timed Mode or Continuous Mode and can be enabled by a selector switch. The relay comes with a factory preset program that can be modified accordingly for application.

MTSK

On board the kit there are two selector switches and an indicator light. Selector switch SW1 provides power to the kit while an indicator light will show when power is on. Selector switch SW2 provides the two modes of operation. When TIMED is selected, the MTSK will cycle through towers based on a set schedule. Selecting CONT enables tower switching uninterrupted.



Figure 1: Switches

Once powered, the MTSK will come with a factory preset time based on Pacific Standard Time (PST). The time is based on 24-hour clock and should be adjusted accordingly to meet your location (EST, CST, MST, etc....) Each of the 4 towers will initially be preset with a 120 minute (2-hr) run cycle. The cycle times as well as the number of towers operated should be modified as needed using the buttons on the Zelio Smart Relay.



Figure 2: Navigation Buttons

Settings

The settings can only be modified while program is not running. Below you will find instructions on how to navigate and adjust the settings as required.

A. Run and Stop Program

- To stop the program, press the Menu/Ok button. Once in Edit Screen scroll down to select Run/Stop.

Press the Menu/Ok button once again when Yes is selected.

- To start the program, select Run/Stop in Edit Screen. This will bring up a menu with 3 options.
 - Selecting With Nonvolatile Ini will reset timers to their initial values. Selecting No Nonvolatile Ini will run the program while keeping the values that were in the timers before program was stopped. Selecting NO will not run the program.
- B. Date and Time
- Press the Menu/Ok button to get to the Edit Screen.
 - Use the up/down arrows to navigate until reaching the CHANGE D/H option.
 - Press the Menu/Ok button to enter.
 - Use the ◀ or ▶ buttons to navigate through Date, Month, Year, and Time. Use the ▲ or ▼ buttons to change the date and time. (Time based on 24-hr clock)
 - Press the Menu/Ok button to go back to Edit Screen.



Figure 3: Date and Time

C. Tower Switching

- On Edit Screen use the ▲ or ▼ buttons until reaching PARAMETERS and press the Menu/Ok button. Each parameter is shown as R00BXXX with the last 3 digits corresponding to a different parameter.

Parameters	
040	Daily Timer
048	Tower 1
049	Tower 2
050	Tower 3
051	Tower 4

Figure 4: Parameter Outputs

- Use the ◀ or ▶ buttons to navigate between Weeks (W), Days (D), and cycle times (T) on the Daily Timer.
- Time T:00 corresponds to start time while T:01 to the stop time. Use the ◀ or ▶ buttons to select time and ▲ or ▼ buttons to change the time. To get to the stop time, press the ▲ or ▼ button while T:00 is flashing. Once T:01 is shown select the time and change the stop time as desired.

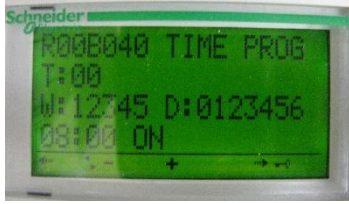


Figure 5: Daily Timer

4. Use the ▲ or ▼ buttons to enable or disable which days to operate on the Daily Timer. The days are displayed in number format 0-6 each corresponding to the days of the week, starting with Monday and ending on Sunday. The symbol – appears in place of a number when the day is disabled. For example (0 1 2 3 4 – –) shows the set schedule as Mon-Fri. Press the Menu/Ok button to set the schedule as desired. The set schedule can only function when selector switch is set to TIMED.
5. Use the ◀ or ▶ buttons until the last three digits on the parameter are flashing. Use the ▲ or ▼ buttons to navigate through each tower. For example, the Figure below shows the parameter corresponding to Tower 1.

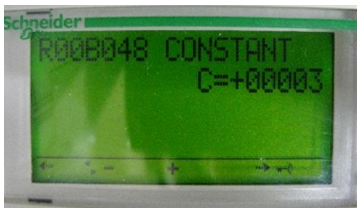


Figure 6: Tower 1

6. Use the ◀ or ▶ buttons to select time setting C. Once flashing, use the ▲ or ▼ buttons to set the time. The timer operates in minutes with a maximum cycle run time of 540 minutes (9 hrs) per tower.
7. Press the Menu/Ok button to accept the changes. Repeat for each tower that will be in operation. In the case where a tower will not be operated, set timer C to 0. This allows the selected tower to be bypassed.

Modes of Operation

Having already adjusted the MTSK settings as desired for application, the kit will now run under Timed or Continuous mode.

Continuous Mode

Turn selector switch SW2 to CONT. Under this mode the towers will cycle uninterruptedly in sequential order for the specified time set for each tower. Tower operation can be

enabled or disabled manually. Each arrow button corresponds to one of the towers. When enabled, a 0 will appear in place of the tower number on bottom right corner of display. Towers disabled will display the corresponding tower number (1,2,3,4).

On the left image in the example in Figure 7, towers 2 and 3 are enabled while towers 1 and 4 are disabled. From the display, tower 3 is operating with 2mins left in its cycle. Once the time expires, the next tower to commence operation is tower 2. In this example, pressing the ▲ button before the time expires will disable tower 3 and move to next tower. Since tower 1 and 4 are disabled, tower 2 will commence operation. The display in Figure 7, image on the right shows tower 2 in operation while towers 1,3, and 4 are disabled.



Figure 7: Tower Operation Example

Timed Mode

Turn selector switch SW2 to TIMED to operate under Timed mode. In this mode, the towers are cycled based on a set schedule. Time T:00 being the initial start time while time T:01 the ending time. Towering operation will depend on the schedule as well as which towers were enabled or disabled.

Component Wiring

The MTSK Kit comes configured and prewired for 4 towers on the terminal strip. It is essential that there is a jumper between +24 and input I4. Replace jumper with a NO (Normally Open) external contact when tower cycling occurs only when there is a pump running.

Power Supply

The 120 VAC supply voltage for the kit is connected to H1 and N1 on the terminal block. Line voltage is connected to H1 and the neutral to N1. Lastly, the ground connection of kit goes to GND on terminal block. These connections can be seen on the image on Figure 8.

Actuator Connections			
Valve	Blue (1)	White (2)	Red (3)
1 & 2	C12	N	O12
3 & 4	C34	N	O34
5 & 6	C56	N	O56
7 & 8	C78	N	O78

Table 1: Actuator Connections

Valve Actuator

- A. Connect Red wire from Actuator 1 and Actuator 2 to O12 on terminal block. This output is for opening Valve 1 and Valve 2
- B. Connect Blue wire from Actuator 1 and Actuator 2 to C12 on terminal block. This output is for closing Valve 1 and Valve 2.
- C. Connect White wire from each valve to Neutral (N) on terminal block.
- D. Repeat same process for the installation of other valves as needed. Table 1 above shows the connections from actuator to terminal strip for each valve. The wiring for actuators corresponding to 4 towers can be seen in Figure below. Make sure the Zelio Smart Relay is programmed to operate the additional valves that are added to the system as well as their respective timers.

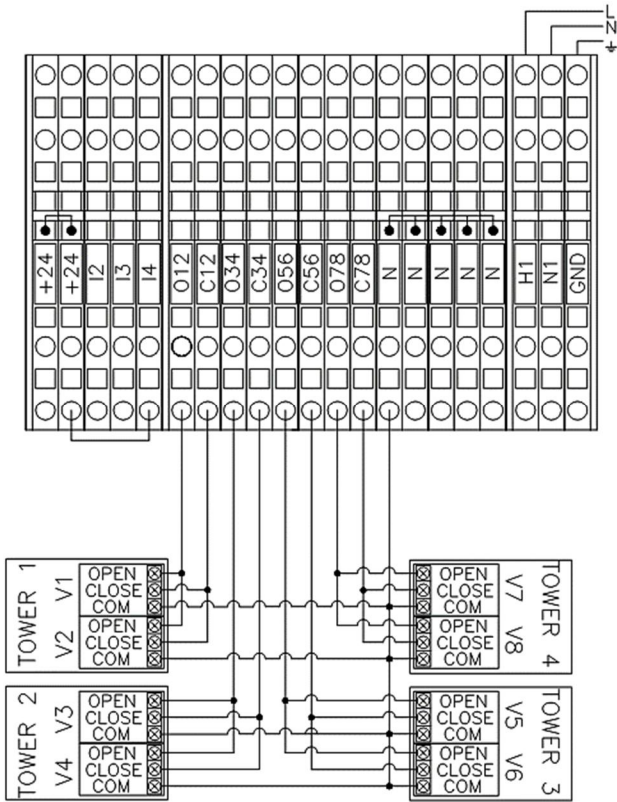
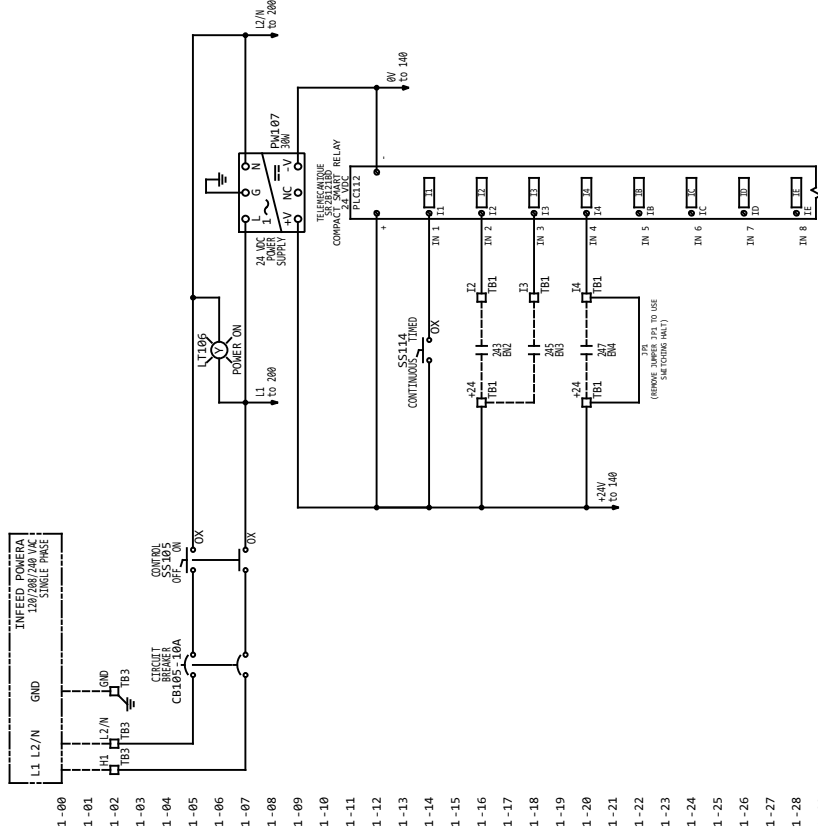
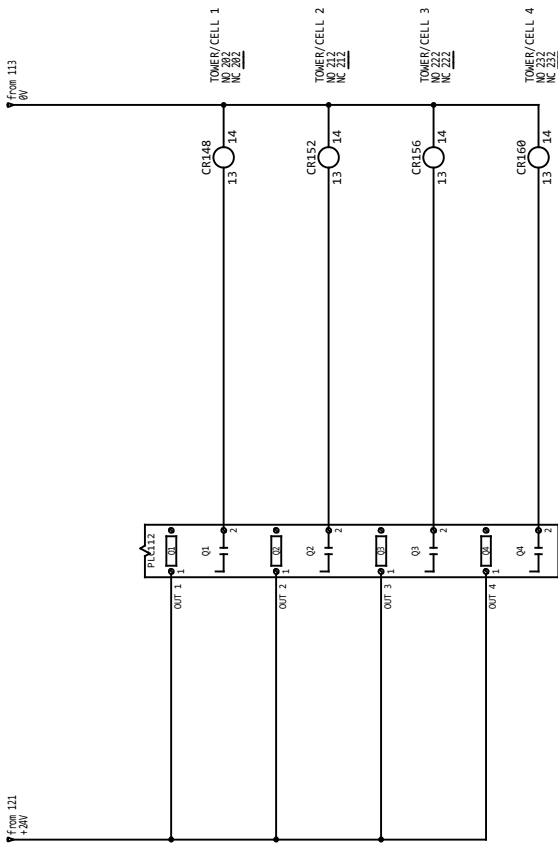


Figure 8: Valve Actuator Wiring



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DATE: 8/7/23
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IFS DESCRIPTION
LIT, SCH,PNL,MULTI TOWER, LAKOS 187228

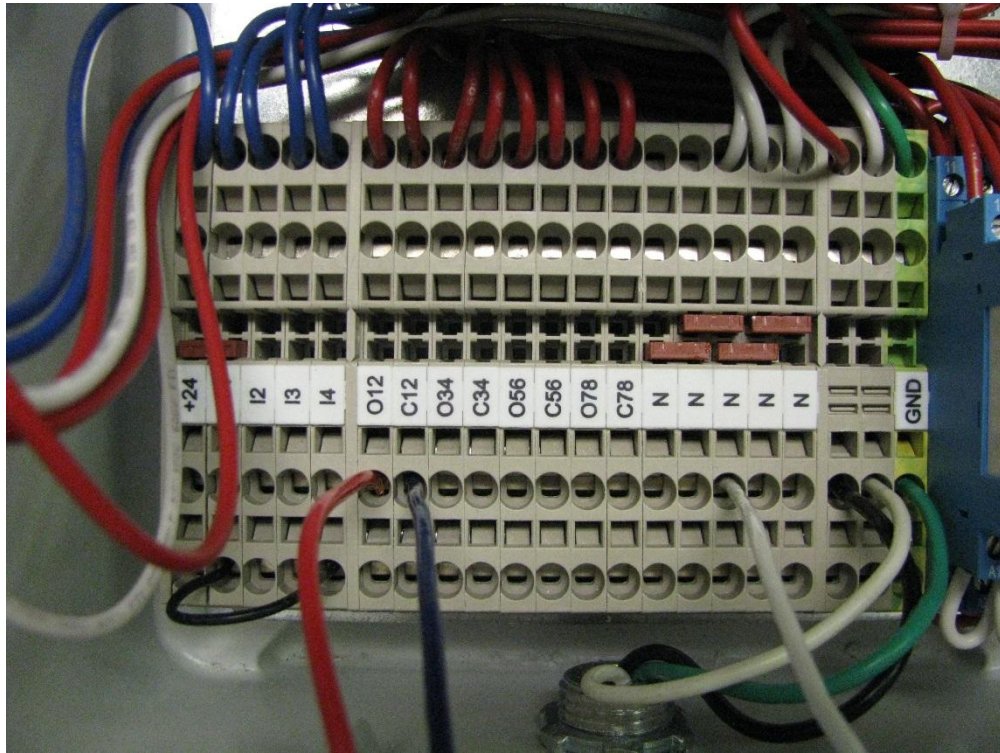
PROJECT NUMBER
1094887

SHEET NUMBER
1 OF 2

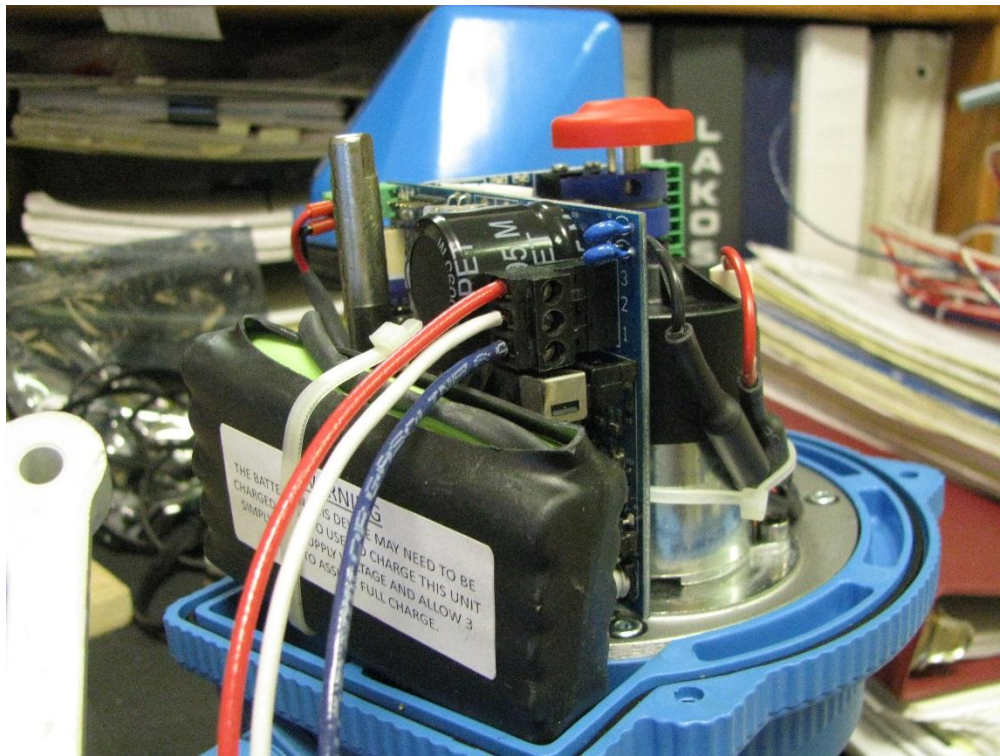
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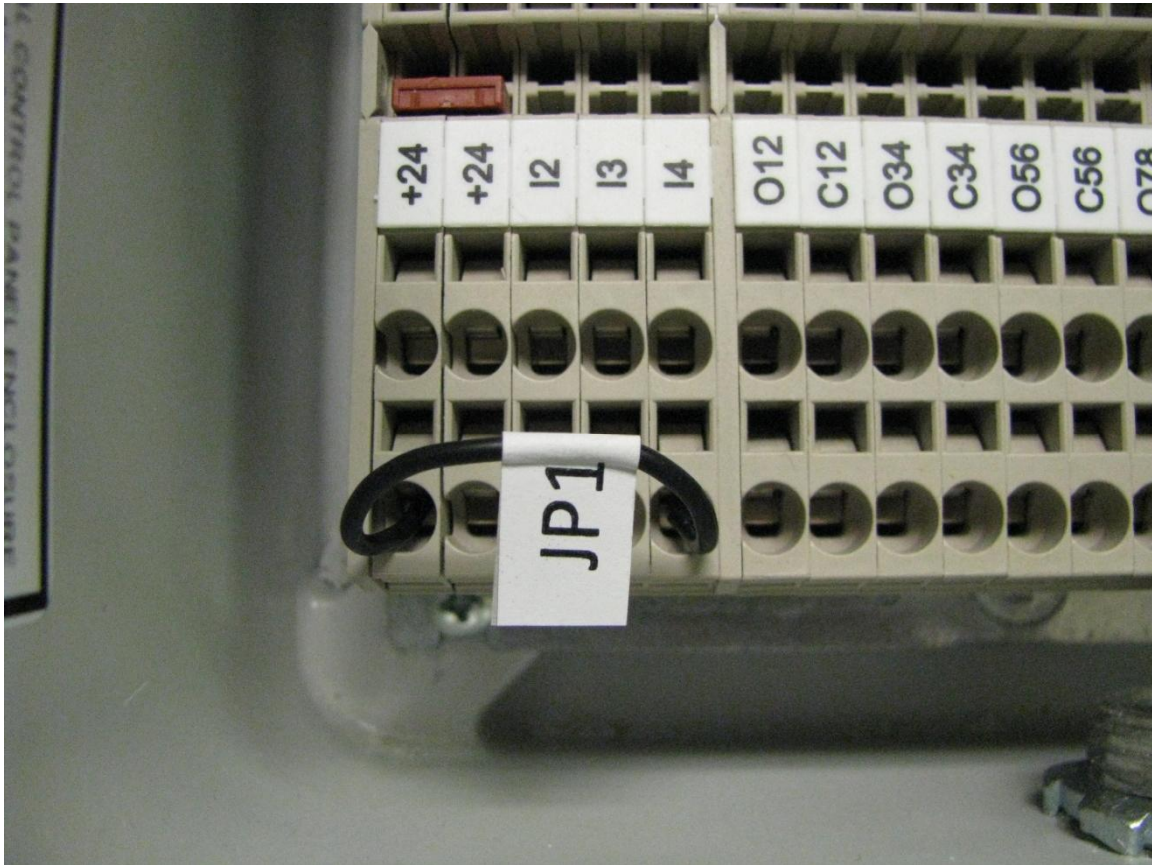
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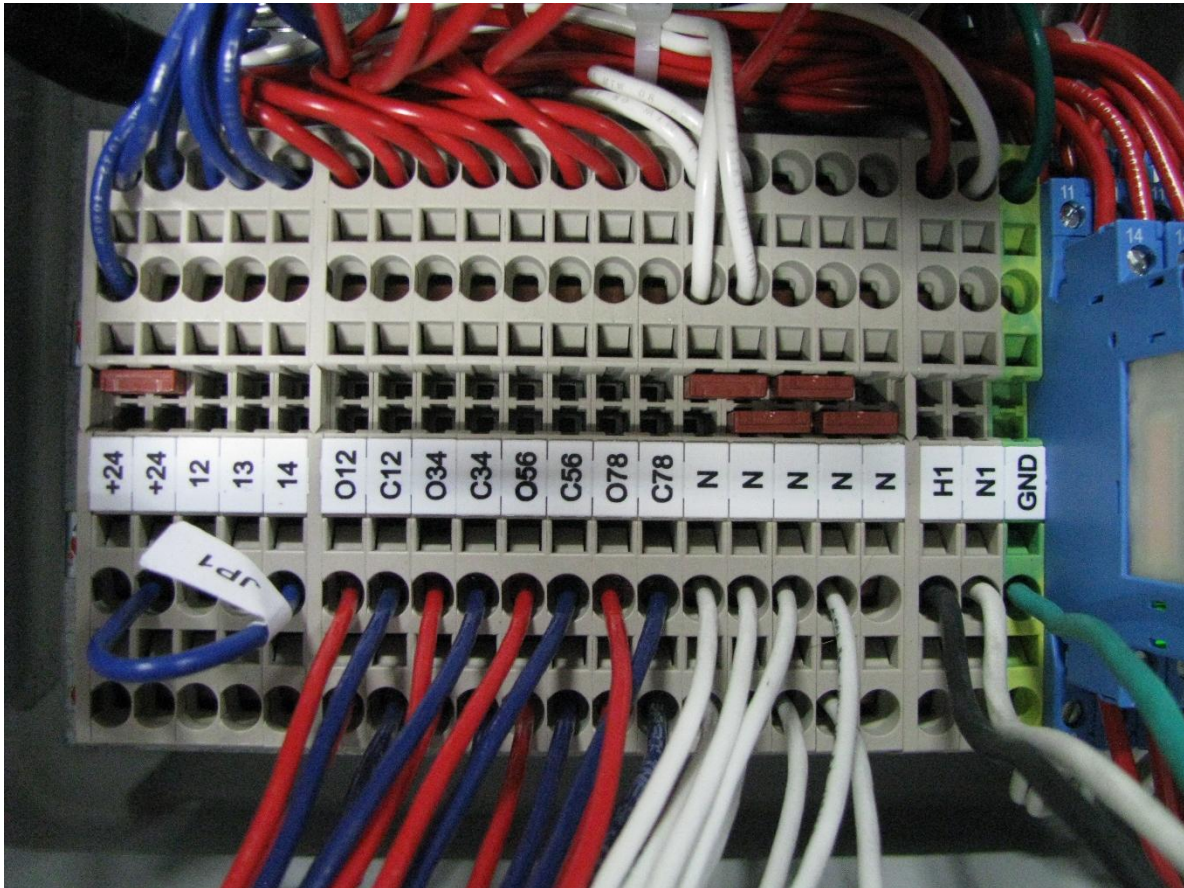


1. Tower 1 Inlet Valve - RED to open O12. BLUE to close C12. WHITE to neutral.
2. Tower 1 Outlet Valve - The second set of wires goes below in O12 and C12.





Do not remove JP1 unless you are hooking up to a remote switch



Complete 4 tower system