peak

ACCELE-COOLER

User Manual - Model AC-4

English

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INTRODUCTION

Thank you for choosing model AC-4 Water Cooling System. This system is designed to provide efficient temperature regulation, ensuring optimal performance and longevity of your water-cooled accelerometers. When properly maintained, the system will deliver years of reliable service.

To ensure safe and effective operation, please read through this manual in its entirety before using the system. Pay special attention to any warnings and cautions included throughout the manual. These are critical for preventing damage to the equipment and ensuring user safety.

If you have any questions or need assistance, please contact us—we're here to help!

NEED HELP? CONTACT US!

Have questions? Need technical support? Please feel free to contact us at:

tel: 616-773-2872

email: support@peak-g.com

web: https://peak-g.com/accelerometers/accelecooler

video instructions of this manual: https://www.youtube.com/@peak-g-llc

WARNING

Read Before Use

Failure to follow these warnings may result in equipment damage, personal injury, or system failure.

Proper Installation Required – Ensure the system is installed according to the instructions provided. Incorrect setup may cause leaks, overheating, or equipment malfunction.

Use Only Approved Coolant – Using non-approved fluids may cause corrosion, blockages, or system failure. Refer to the maintenance section for approved coolant specifications.

Monitor Operating Conditions – Always operate the system within the specified limits to prevent damage.

Regular Maintenance is Essential – Periodic inspection and maintenance are required to ensure reliable performance. Neglecting maintenance may result in system failure.

Check for Leaks – Inspect all connections regularly for leaks. Water intrusion can damage sensitive equipment and create a slip hazard.

Disconnect Power Before Servicing – Always turn off and disconnect power before performing repair or maintenance to prevent electrical hazards.

Follow Safety Guidelines – Use appropriate personal protective equipment (PPE) when handling the system to prevent burns or injury.

If you experience any issues or have concerns about the system's operation, contact us immediately for assistance.

ITEM CHECKLIST

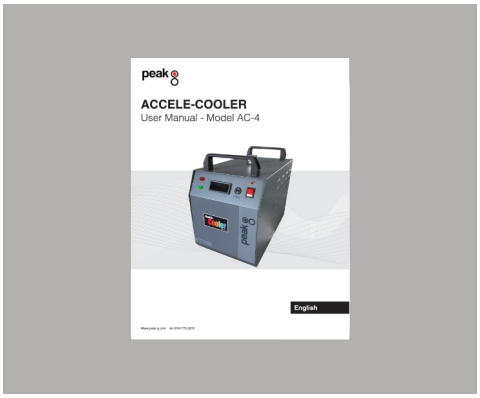
Before installation, please verify that all components are included in the package. If any items are missing or damaged, contact us immediately for assistance. Before proceeding with installation, ensure all components are present and in good condition. Do not operate the system if any part is missing or damaged.

Accele-Cooler (AC-4)

Power cord

Interlock connector

Fitting plugs



User manual

Additional Required Items (not Included):

- Coolant/Water Supply
- Hose lines
- Tools for Installation (e.g., Wrenches, Screwdrivers)
- Personal Protective Equipment (PPE) as required

CONTENTS

SPECIFICATIONS

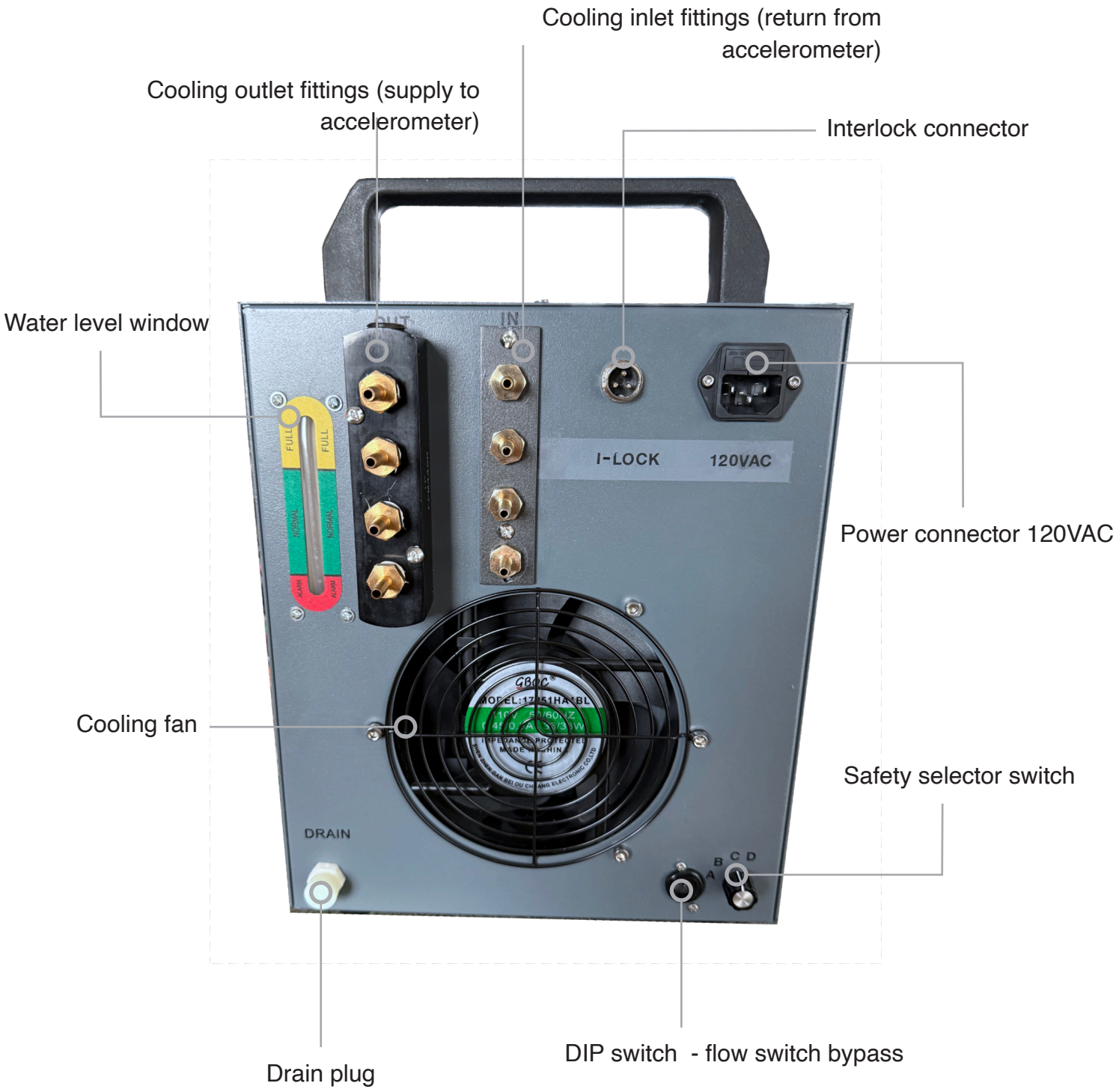
The following specifications outline the operational parameters and requirements for the water cooling system. Ensure all conditions are met for optimal performance and longevity.

Model	AC-4
Power	120VAC, 60Hz, 1ph, 90W
Ambient operating temperature	5°C to 40°C (41°F to 104°F)
Water operating temperature	5°C to 65°C (41°F to 149°F)
Cooling lines	4
Cooling medium	Filtered water or water/glycol mixture
Cooling method	Air cooled radiator coil with fan
Noise level	80dB
Tank capacity	3.2 gal (12L)
Maximum flow	3.2gal/min (12L/min total)
Flow rate vs hose size & distance	0.181” ID (4.6mm) @10 feet (includes 5 feet vertical) (6L/min total)
Pump power	30W
Interlock	One channel N.O contact (5A)
Safety features	Water over-temperature, water flow, water tank level

LAYOUT - FRONT

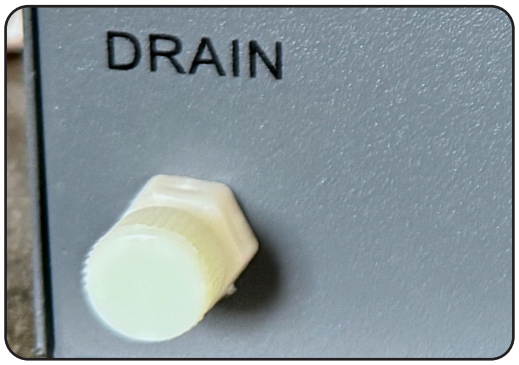
The water cooling system is designed for efficient operation and ease of maintenance. Familiarizing yourself with the system layout will help with proper installation, operation, and troubleshooting.

LAYOUT - BACK


Cooling inlet fittings (return from accelerometer)
Cooling outlet fittings (supply to accelerometer)
Interlock connector
Water level window
Power connector 120VAC
Cooling fan
Safety selector switch
Drain plug
DIP switch - flow switch bypass
OUT
IN
I-LOCK
120VAC
FULL
NORMAL
ALARM
DRAIN
A
B
C
D

OPERATING INSTRUCTIONS

Getting Started



1. Confirm drain plug connection

Check the drain plug is securely tightened at the back of the Accele-Cooler, lower left section.

2. Connect coolant hoses

Connect cooling hoses between the Accele-Cooler fittings and your accelerometer(s). Connection should be made in pairs (OUT & IN) vertically. Secure with hose clamp or wire tie if needed. Minimum connection is one (1) cooling line pair. See Cooling Lines Not In Use section (page 11) when connecting less than all four (4) cooling line pairs.

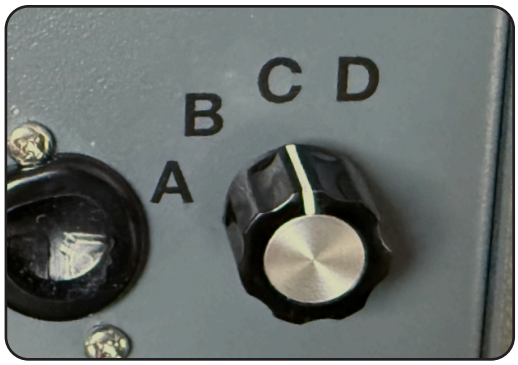
3. Fill with water/coolant

Fill with water or water/glycol mixture until water level window at back of Accele-Cooler shows level in the green zone. Do not overfill above green zone, can overflow from internal tank! Check again after starting the pump, the water level will drop after filling the lines.

4. Connect power cable

Connect the power cable to the Accele-Cooler and into a 120VAC, 60Hz outlet with supplied cable. The red power indicator light on the front panel (above Main switch) will illuminate when power is connected to the Accele-Cooler.

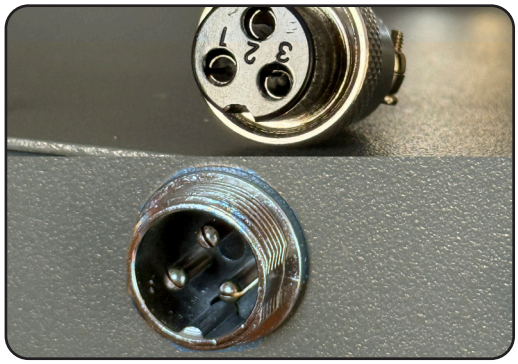
Getting Started - continued



5. Select safety switch position

Select which safety features are enabled: **A** - Flow only; **B** - Flow & water level; **C** - *ALL*; **D** - Flow & Over-temperature.

CAUTION: Position C is recommended (ALL). In some cases you may want to select a different option to maximize the Accele-Cooler operation. Doing so may risk damage to the system.

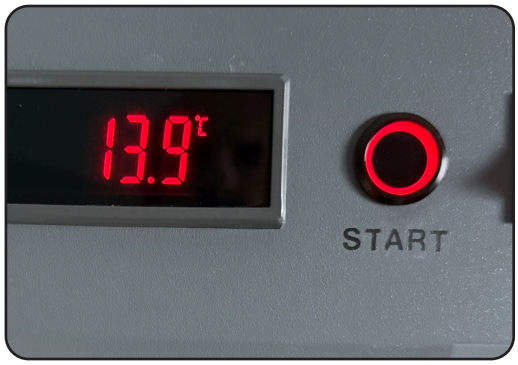


6. Connect interlock (optional)

When integrating with an external control system, you can use the interlock connection (I-LOCK) on the back of the Accele-Cooler to have a closed contact circuit when it is in operation. See interlock connection wiring on page 17 for more details.

7. Turn Main switch ON

Turn the main switch to the ON position. The switch will illuminate and the water tank temperature display will turn on and display the current water temperature (in C).

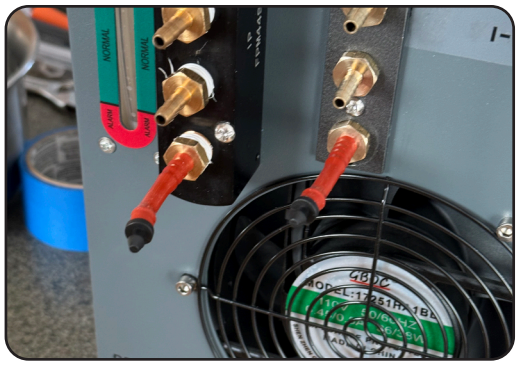


8. Press ‘Start’ button

Press the ‘Start’ button to start the pump. The system will cycle the pump up to three (3) times until the cooling lines are filled and proper flow is achieved. In some cases you may need to manually restart the start-up sequence if proper flow is not achieved on the first attempt. In this case depress the ‘Start’ button, then press again to restart the startup process.

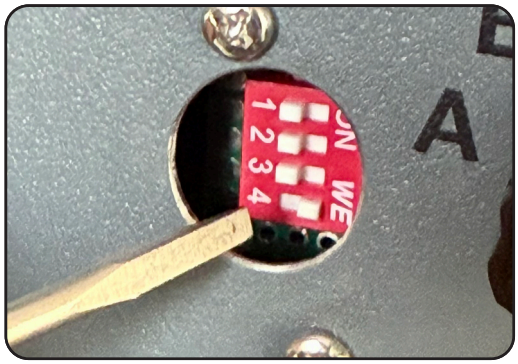
OPERATING INSTRUCTIONS

Cooling Lines Not In Use



1. Connect hose plugs

For cooling lines that are not in use connect a pair of hose plugs (supplied) into both the IN and OUT fittings.



2. Flow switch bypass

Turn ON (push switch to the right) the related bypass DIP switch found behind the rubber plug at the back lower right section of the Accele-Cooler. The DIP switches are matched to the cooling line IN/OUT fitting pairs from top to bottom (positions 1 to 4).

In this example the bottom-most cooling line fitting pair have the hose plugs connected while position 4 DIP switch is turned ON.

CAUTION: remember to turn OFF the bypass switch when putting the cooling line back in use.

MAINTENANCE & TROUBLESHOOTING

Maintenance

BEFORE EACH TEST:

1. Coolant Level Inspection and Refilling

- Check coolant level window on back of unit.
- If the level is low, top off with more water/coolant mixture.
- Avoid overfilling.

2. Checking for Leaks and Loose Connections

- Inspect all tubing, fittings, and connections for any signs of cracking, moisture or leaks.
- If a crack or leak is detected, shut down the system immediately and repair the affected area before resuming operation.

ONCE A YEAR:

1. Coolant Replacement and System Flushing

- Drain the old coolant completely.
- Fill and flush the system with a mix of water and vinegar (60% water/40% vinegar) by running the system for 10-15 minutes. This can be performed either with jumper hoses connected between IN and OUT paired fittings or with the hoses connected to the accelerometers.
- Drain the flushing mixture and refill with fresh water. Run the system for 5-10 minutes.
- Drain the water.
- Refill with new water/coolant mixture.

Important Maintenance Tips

- When transporting the system, or if the system is not in use for an extended period, drain the coolant completely.

For further assistance, please contact us with any questions or concerns.

Troubleshooting

FAULT	CAUSE	SOLUTION
The system is connected to confirmed power but the Power Indicator light is not illuminated	The fuse is blown The LED is defective	Check and replace fuse at power cable connector (top of connector). Replace LED indicator.
The Safety Fault red light is illuminated	Check the Safety Selector Switch position If in Position A, one or more flow switches are detecting low flow	Check hose lines &accelerometer for possible restrictions. Check pump operation - remove hose from one OUT fitting & place container underneath the open fitting. Turn START button ON and check for water flow into container. If no flow replace pump. If water flow good, check which cooling line has low flow. Turn ON all four bypass DIP switches. Turn START button ON. During operation turn OFF one bypass DIP switch at a time until system shuts down. Once the suspect line(s) are identified, manually check flow in suspect line(s). Turn START button OFF. Remove hose from IN fitting & place hose plug in it's place. Place hose into a container and turn START button ON. If flow not present/low, check for restrictions in line. If flow is good, flow switch is defective, replace with new one.

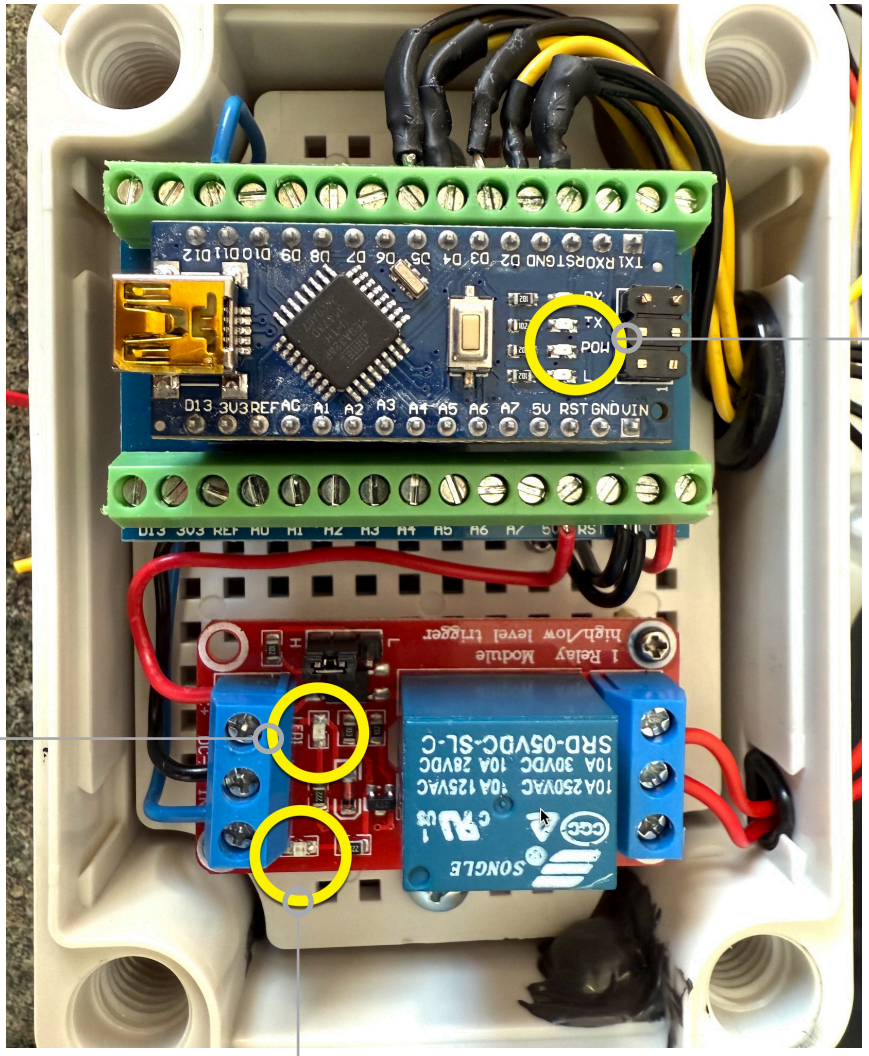
Troubleshooting continued…

FAULT	CAUSE	SOLUTION
The Safety Fault red light is illuminated continued	continued…	If all bypass DIP switches are in ON position, and START button ON, and Safety Fault indicator is still illuminated, check Water Flow Safety Circuit section on page 15.
	If in Position B (same as Position A + water tank level low)	Same as Position A solution, plus check water level window at back of system. If water level is good the water level switch is stuck or defective. Remove system cover by removing 20 cover screws (9 on each side, 2 on top). Remove tank cover and check if level switch float moves freely. If moves freely contact technical support team for further instructions.
	If in Position C (same as Position A & B + water/coolant over-temperature)	Same as Position A & B, plus check temperature readout on from panel display. If over 65 deg the over-temperature safety switch has opened. Let system cool down and when possible check cooling fan operation (START button ON) and airflow at back of system. If cooling fan is not working replace with new one. If cooling fan is working confirm ambient temperature does not exceed 40 deg C (104 deg F). If ambient temperature is within range contact technical support team for further instructions.

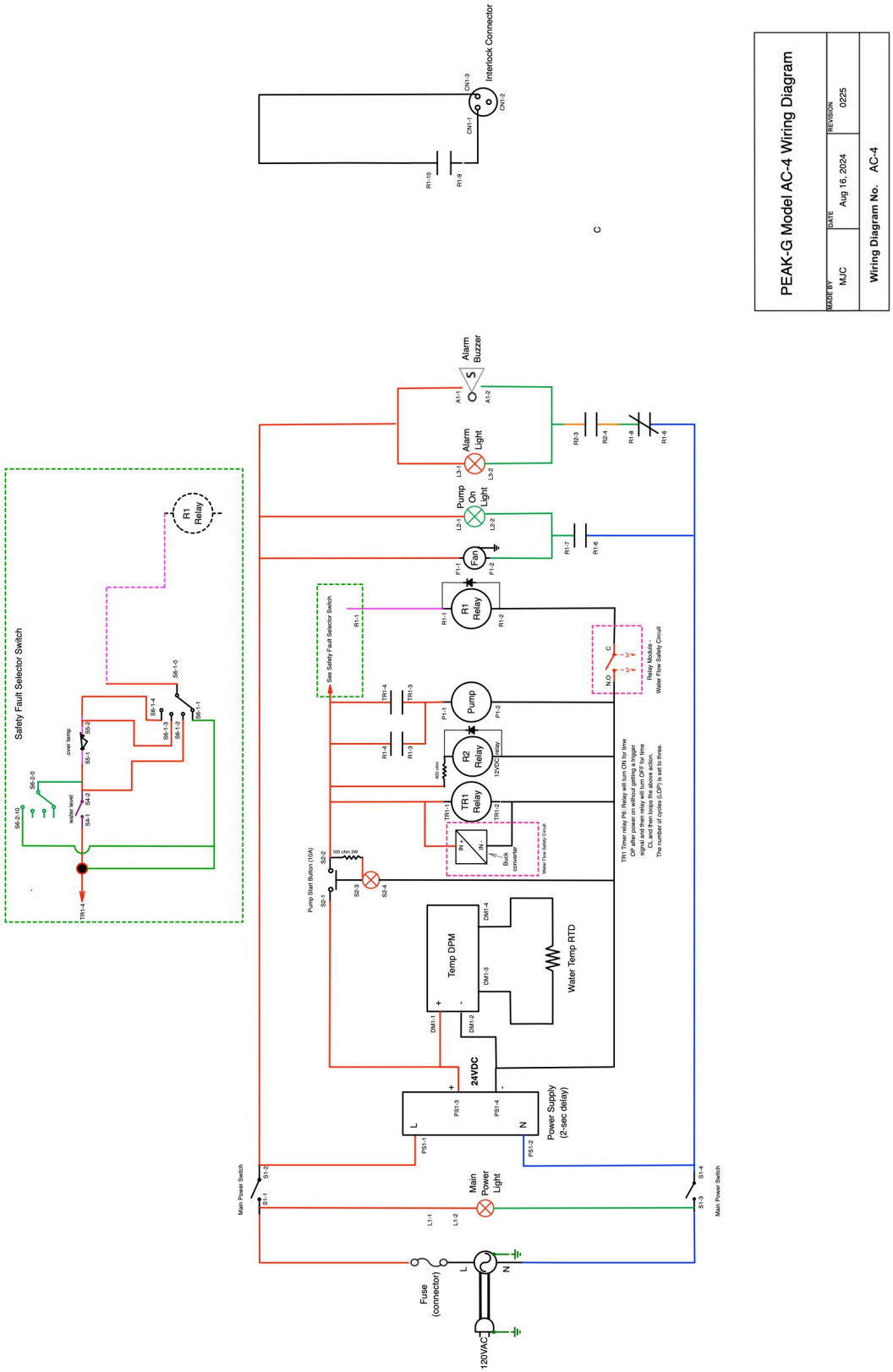
Troubleshooting continued…

FAULT	CAUSE	SOLUTION
The Safety Fault red light is illuminated continued	If in Position D (same as Position A + water/coolant over-temperature)	Same as Position A solution, plus check temperature readout on from panel display. If over 65 deg the over-temperature safety switch has opened. Let system cool down and when possible check cooling fan operation (START button ON) and airflow at back of system. If cooling fan is not working replace with new one. If cooling fan is working confirm ambient temperature does not exceed 40 deg C (104 deg F). If ambient temperature is within range contact technical support team for further instructions.
Water Flow Safety Circuit fault	DC-DC buck converter, microprocessor board or relay module is defective.	Check Water Flow Safety Circuit junction box located inside system next to water tank. Remove system cover by removing 20 cover screws (9 on each side, 2 on top). Press START button ON : - Check if Nano V3.0 microprocessor power LED illuminated - if not, buck converter or microprocessor defective. If yes, continue. - Check if relay module board power LED illuminated - If not, relay module defective. If yes, continue. - Check if relay module board LED1 is illuminated (with no faults). If not, contact technical support team.

Troubleshooting - Water Flow Safety Circuit



Wiring Diagram

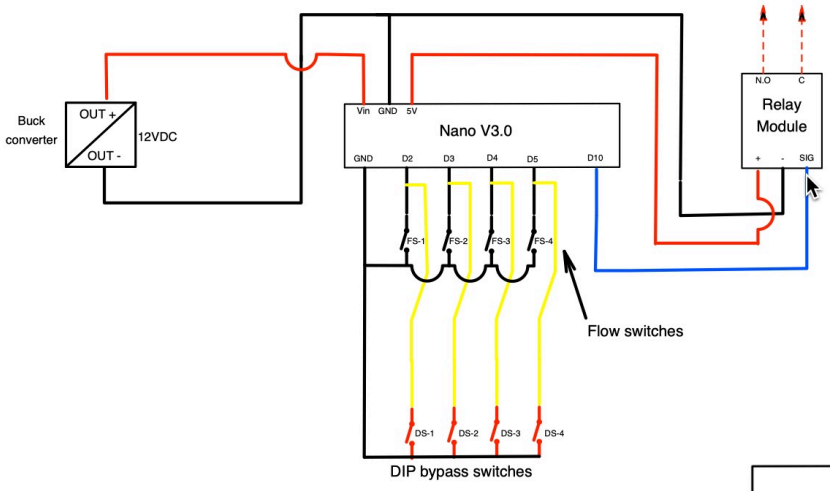


Wiring Diagram

Water Flow Safety Circuit

For Nano program details see Sketch file:

FlowSwitchCircuit_AcceleCooler_2SEC_delay_rev0225.ino



PEAK-G Model AC-4 Wiring Diagram		
MADE BY	DATE	REVISION
MJC	Aug 16, 2024	0225
Wiring Diagram No. AC-4-WFSC		

SAFETY WARNING

- Do not operate the Accele-Cooler without water/coolant at any time.
- The system operates under pressure. Always ensure all connections are secure before operating.
- Electrical Hazard – The system contains electrical components. Disconnect power before performing any maintenance or repair. Only qualified personnel should access internal wiring.
- The Accele-Cooler should be placed in a well ventilated, dry environment, away from any heat sources.
- Do not tip the Accele-Cooler when the tank is filled with water/coolant. The internal tank lid is not fully sealed and will leak out water/coolant if tipped to it's side.
- Leak Risk – regularly inspect hoses and fittings for leaks. A coolant leak may impact system performance and pose a slip hazard.
- Allow ample room between the back of the Accele-Cooler and any objects to allow proper air flow and ventilation from the device.
- When transporting the system, or if the system is not in use for an extended period, drain the coolant completely.

Technical support

PEAK-G LLC

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