Installation Book

25kW Single Input Non-Redundant OptiLoad

Model Number: OLU25KNRD1

Part Number: 400022665

CHAPTERS

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Introduction

The OptiLoad is a Dielectric product intended for use as either an RF Reject Load or Station System Load for UHF broadcast transmission systems. The OLU25KNRD1 load is designed primarily as a Reject Station Load to absorb RF power (maximum of 25 kW) in UHF broadcast applications. It is intended to be located and operated in rooms with restricted access. These rooms would ideally be climate controlled with the capacity to handle the heat generated from the unit. Access to the room, and this device, should be limited to authorized personnel and managed by the local supervisor. Operating details, functionality, and maintenance will be provided in this document. The operation of this device is intended to comply with the specifications and limitations identified in this instruction booklet. All local, state, and federal safety rules and regulations must be observed in accordance with all work performed on this product for the prevention of serious and, potentially fatal, accidents.

Safety

The following safety precautions are related to the OptiLoad and these precautions may not appear elsewhere in this manual. These precautions must be understood and applied to ensure the proper operation of the system.

KEEP AWAY FROM LIVE CIRCUITS

Personnel must observe general safety precautions. To avoid personal injury, always remove power. Removal of the cover may expose live electrical terminals (240V AC maximum). Do not open equipment covers with the high voltage applied. Proper Lock Out Tag Out procedures should be observed and followed to ensure safety while servicing.

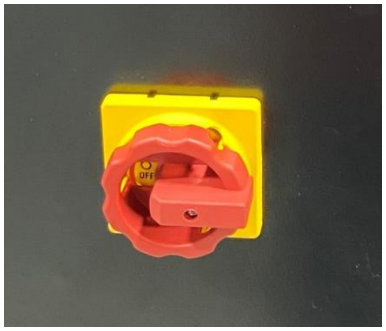

Figure 1: Main shut off switch with Lock Out Tag Out (LOTO)

DO NOT SERVICE OR ADJUST ALONE

Always be in the presence of someone who can render aid before opening the equipment for adjustment or servicing.

EARTH GROUND SAFETY

An uninterruptable earth ground must be supplied from the power source for the system. Injury or death can occur if this earth grounding is not properly supplied (See Section: Positioning, Anchoring, and Grounding, pg. 17).

RF SHOCK HAZARD

Do not service or remove RF transmission line while RF is present.

Chapter 2

Design and Characteristics

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Assembly Makeup

This section covers each component of the OptiLoad and its function. Figure 2 below shows the fully assembled 25kW OptiLoad. Out of the box, the OptiLoad is encased in black powder coated panels with access holes for filling, and slotted holes on the sides for air flow. There is an electrical box on the front to view the status of the unit, and a 3 1/8” line coming out of the top to connect the system to.

Figure 2: 25kW OptiLoad – Fully Assembled

Mechanical Design

The OptiLoad consists of four major components: A water column load, pump, heat exchanger (HEX), and the control box, as shown in Figure 3.

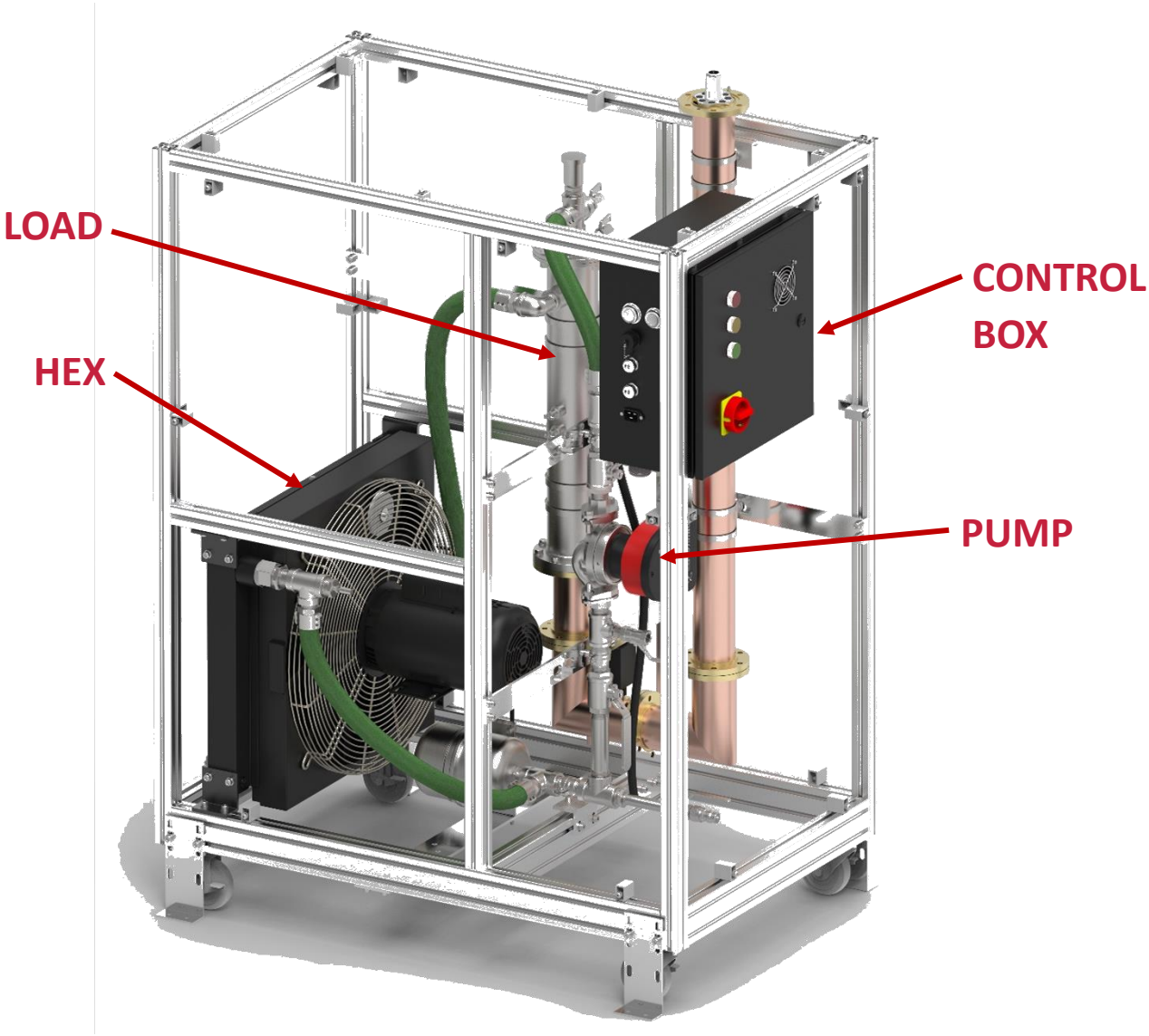


Figure 3: Major components of OptiLoad

Heat Exchanger (HEX)

The HEX is a large radiator with a fan bolted to the side to dissipate the heat. It is designed to dissipate over 25kW of power. This fan is controlled by the PLC (Programmable Logic Controller), which activates when the temperature rises to a pre-coded threshold. An IR sensor is incorporated into the unit to monitor fan rotation as a means of ensuring the unit is functioning properly.

Pump

The variable speed pump is controlled by the PLC to turn on when temperatures reach a pre-coded threshold or when sufficient power is going into the load. A relay will alert the PLC if it is not working properly and the system will adjust accordingly.

Load

The load is a Dielectric water column load capable of handling over 25kW of power if properly cooled. Included in the load assembly is a pressure sensor and temperature sensor to send data to the PLC. A temperature probe, separate from the PLC triggers the interlock if temperatures go above 210°F.

Control Box

This box houses all electronics that control the unit. The front panel has a power switch, a fan to keep the inside cool, and LEDs display the status of the unit (Normal Operation, Maintenance, or Fault mode).

Electrical Design

The OptiLoad utilizes six sensors to control the system. It has a pressure sensor, an RF sensor, a tachometer, two temperature sensors, and a dual temperature interlock switch as shown in Figure 4.

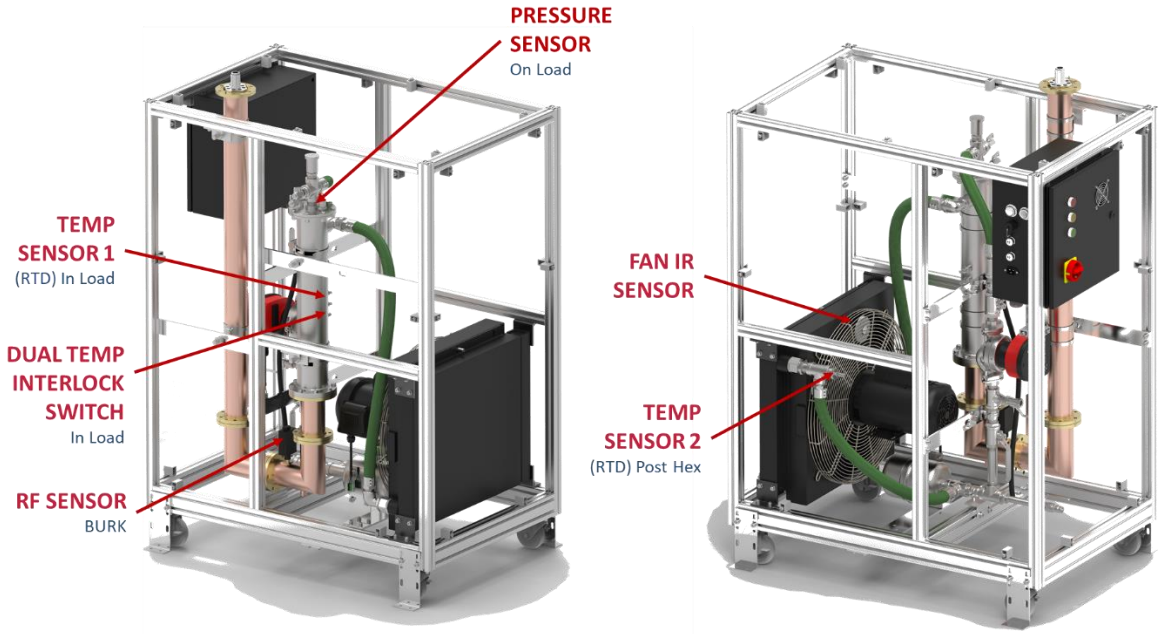


Figure 4: Placement of sensors

Figure 5 outlines the components of the electrical box. The functions of the side panel are described in the “Side Panel Controls” section on pg. 23.

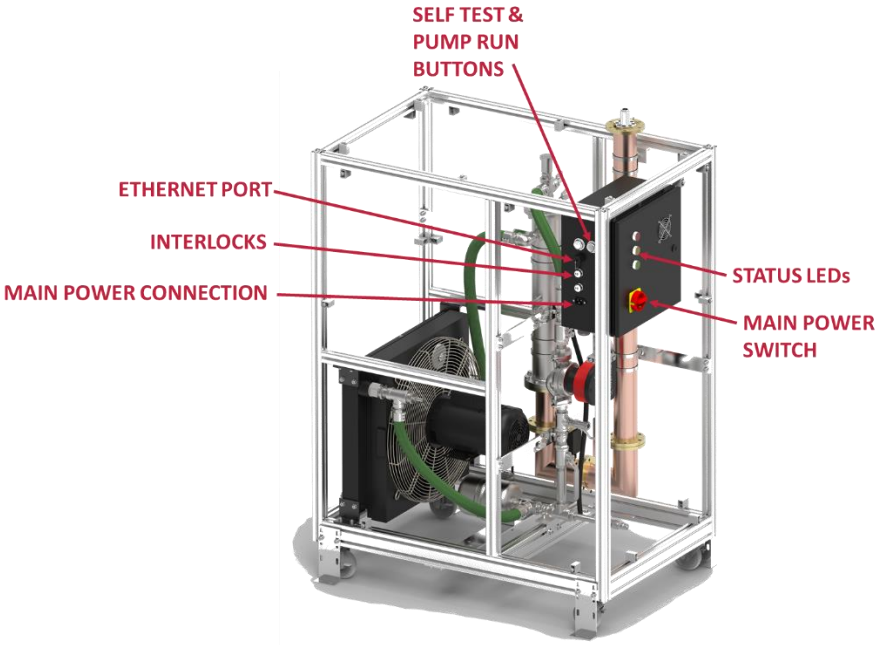


Figure 5: Components of the electrical box

- The ***Self-Test*** button can be engaged to run the pump and fan to ensure they are functioning. If they are not, then the yellow maintenance light will come on.
- The ***Pump*** button can be pushed to manually cycle the pump. This button is used during filling to get any air stuck in the system out of it through the air relief valve.

  Note: The unit is shipped with coolant installed and pressurized.
  - If for some reason, all of the air was not purged successfully at the factory, additional coolant may be required.
  - Should the system leak for any reason, additional coolant may be required.
- The ***Ethernet*** labeled port can be used to connect to a computer. Once connected you can view data and change settings of the unit using the OptiLoad Viewer program (See Section: OptiLoad Viewer Program, pg. 24).
- The ***Interlock 1 & 2*** ports both open at the same time if there is a fault with the unit. This can be connected to the transmitter to turn it off if the OptiLoad has a critical fault.
- The ***Power*** socket requires a C19 plug and 208V-240V power at 50 or 60 Hertz.

Inside the Electrical Box

Inside the electrical box has six main components. A PLC, breakers, power supply, interlock relay, fan relay and an SNMP circuit as shown in Figure 6.

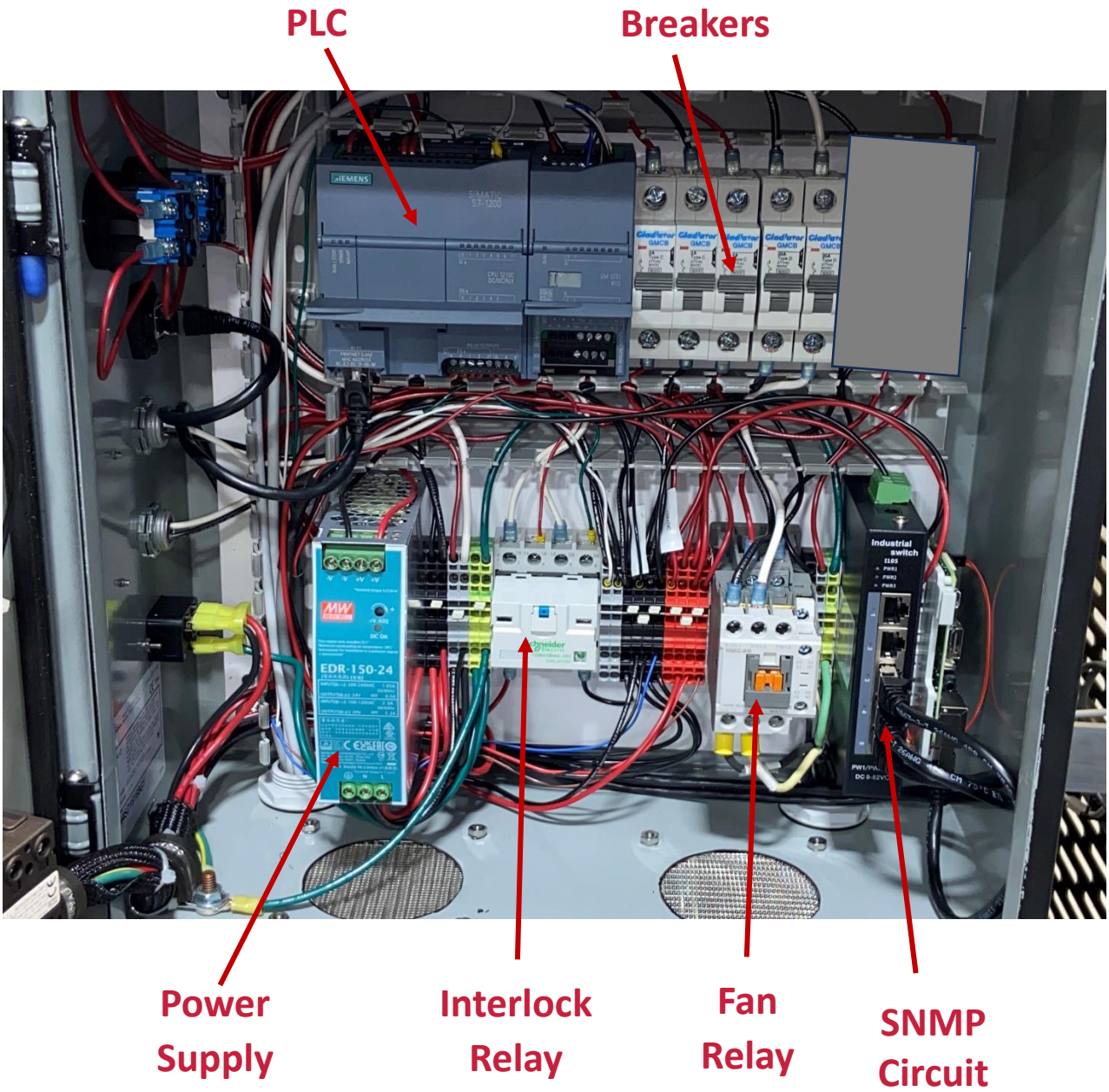
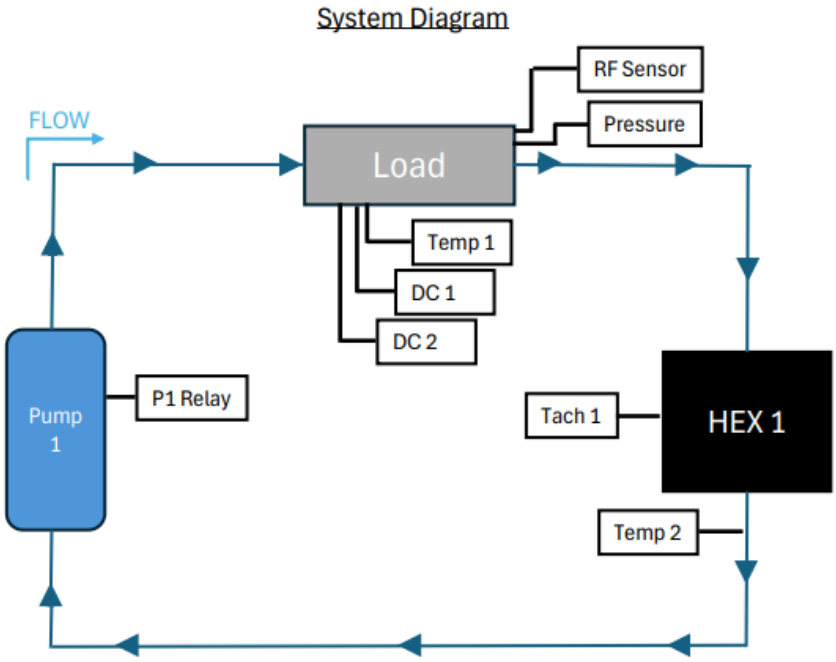


Figure 6: The breakers, from left to right, control the elements

- PLC, sensors, and LEDs
- Leg one of the pump
- Leg two of the pump
- Leg one of the fan
- Leg two of the fan

Interlocks

The OptiLoad has two ports on the side of the electrical box for interlocking connections. They trigger simultaneously if the unit has a critical failure. By default, the unit will open the interlocks if the temperature goes above 210°F or if pressure drops below 3 PSI. Figure 7 is a detailed description of the systems controls and interlocks.



Controls	
P1 Relay:	Relay connected to the PLC to monitor pump faults.
Temp 1&2:	Analog temperature sensors for the PLC.
DC 1&2:	Dry contact digital temperature switch. Opens interlock above 210F.
RF Sensor:	Measures the RF power coming into the load.
Pressure:	Analog pressure sensor for PLC.
Tach 1:	Tachometer to make sure the fans on the HEX are operational.

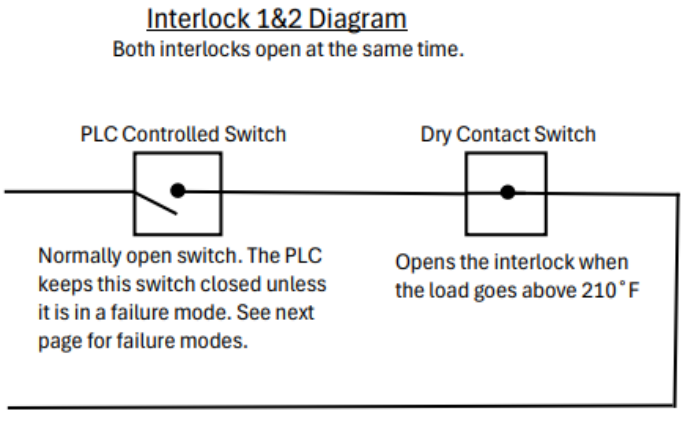


Figure 7: Controls and Interlocks

Failure Modes

Failure Mode	Interlock: DC Switch	Interlock: PLC Switch	System Status	Notes
Normal				
P1 Fail				By default this won't trigger the interlock. The program can be used to make this failure trigger the interlock.
F1 Fail (<2kW)				By default, the two fan failure scenarios will not trigger the interlock, but the program can be used to make this trigger the interlock
F1 Fail (>2kW)				
F1 Fail (T1 > 190F)				This will trip the interlock but the system will restart once it has cooled down.
Under 10 PSI				
Under 3 PSI				By default, the pressure sensor reading less than 3 PSI will trigger the interlock, but this can be turned off from the program.
PLC Fail				The PLC switch is normally open, so a PLC fail or loss of power will trigger the interlock to open.
Temp 1,2 >190ºF				
Load Temp >210ºF				

Figure 8: Failure Modes

Figure 8 describes the maintenance or failure modes. The left column is a specific failure mode. The middle column shows whether the PLC or the dry contact temperature switch is triggered. The right column shows if the system is in "Normal Operation", "Maintenance", or "Fault" mode.

Coolant Flow

This is a closed loop system. This means there is no reservoir of coolant and once it is pressurized it does not need to be filled again. All internal parts that contact the coolant are stainless steel or aluminum. Because of this, the coolant never has to be flushed and replaced.

Note: The unit is shipped with coolant factory installed and pressurized.

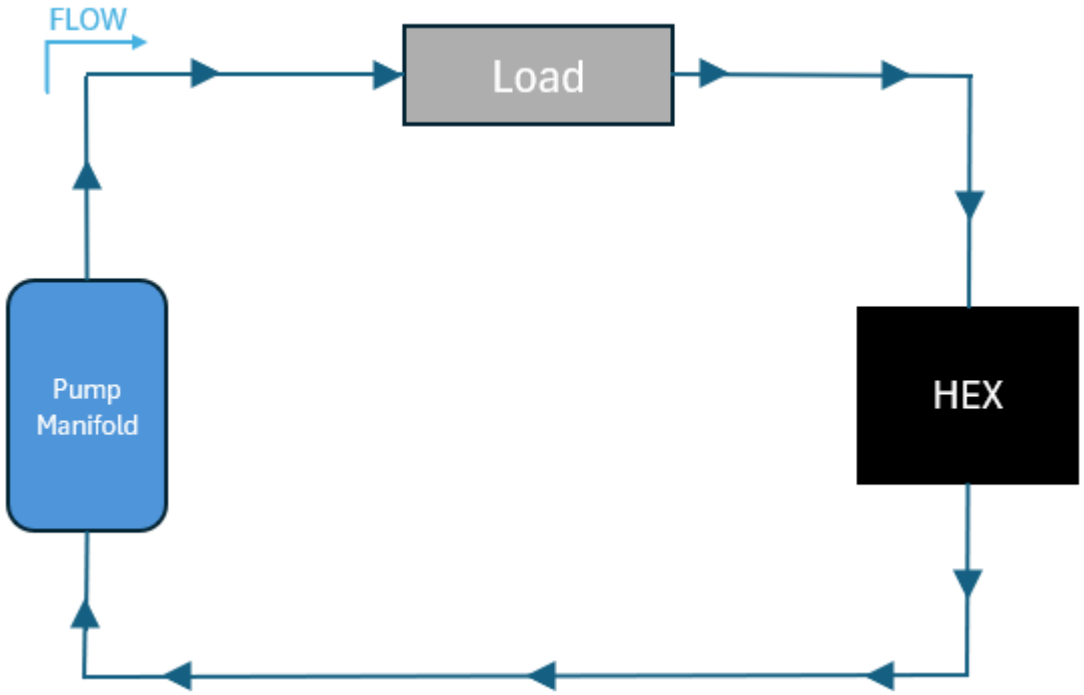


Figure 9: Direction of coolant flow through the system

Modes of Operation

The OptiLoad has three modes of operation. When operating correctly the unit is in “NORMAL OPERATION” with the green LED on. The modes of operation are further defined below.

Normal Operation

If the fan and pump are working properly, and the pressure is at an adequate level, the unit will appear in NORMAL OPERATION. The green LED on the front panel will be on, and the unit will be ready to receive RF power. The status of the unit and sensors can be viewed by connecting to the ethernet port on the side panel (See section: OptiLoad Viewer Program, pg. 24).

Maintenance Required

The unit may go into a maintenance mode if certain criteria are met. The yellow LED on the front panel will turn on. If the pressure falls between 3 and 10 PSI, or if the fan/pump is no longer operational.

Fault

When the unit detects a fault, it will go into “FAULT” mode. The red LED on the electrical panel will turn on and both the interlock loops will open. A fault can occur for several reasons. If the system loses all its pressure, or if temperatures goes above 190°F, then it will go into a “FAULT” state.

Daily Test Cycle

The OptiLoad will turn on once a day to verify the pump and fan are functioning properly. This specific time of the test cycle can be set using the OptiLoad Viewer Program (See section: Self-Test Time, pg. 26)

Chapter 3

Setup

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Positioning, Anchoring, and Grounding

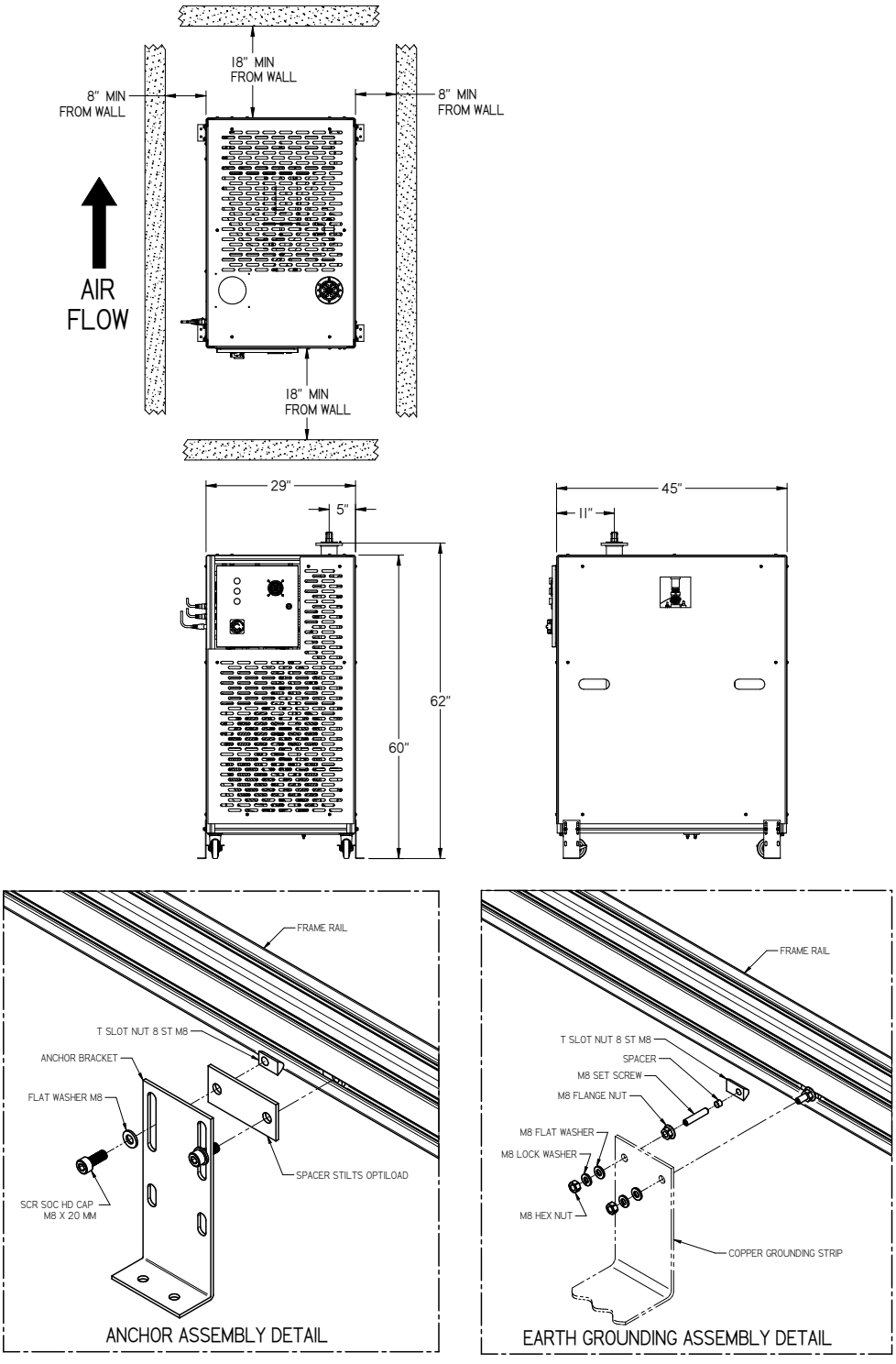

Figure 10: Positioning, anchoring, and grounding steps

Electrical Setup

Powering the OptiLoad

The OptiLoad requires 208V-240V, 50-60Hz power entering at the port on the side panel. This port labeled “POWER”, powers the unit. This is a C20 socket that requires a C19 plug. A plug with stripped wire ends is shipped with the unit.

Check Functionality

There are a few things that should be checked to make sure the OptiLoad is working properly after hooking up the system:

1). Check unit status

Use the OptiLoad Viewer program to make sure everything is green. The unit should be in “Normal Operation” and the fan/pump should be “Operational”. The pressure should be approximately 25 PSI (See Section: OptiLoad Viewer Program, pg. 24)

2). Check the buttons are operational.

Press the “SELF-TEST” button and make sure the fan and pump status are still “Operational” in the OptiLoad Viewer program. Hold down the “Pump” button and ensure the pump turns on.

3). Check that the pump is working

Either press the “SELF-TEST” button or hold down the “PUMP” button and make sure the pump is cycling during these inputs. When the pump is powered but not running, it will have stationary green LEDs on, and the top right of the screen will indicate “Operating mode: Stop”. When it is cycling fluid, the green LEDs will be rotating, and it will indicate “Setpoint: 100%” in the top right of the screen.

See Section: Default Pump Settings, pg. 33 if the pump is not operational or constantly on.

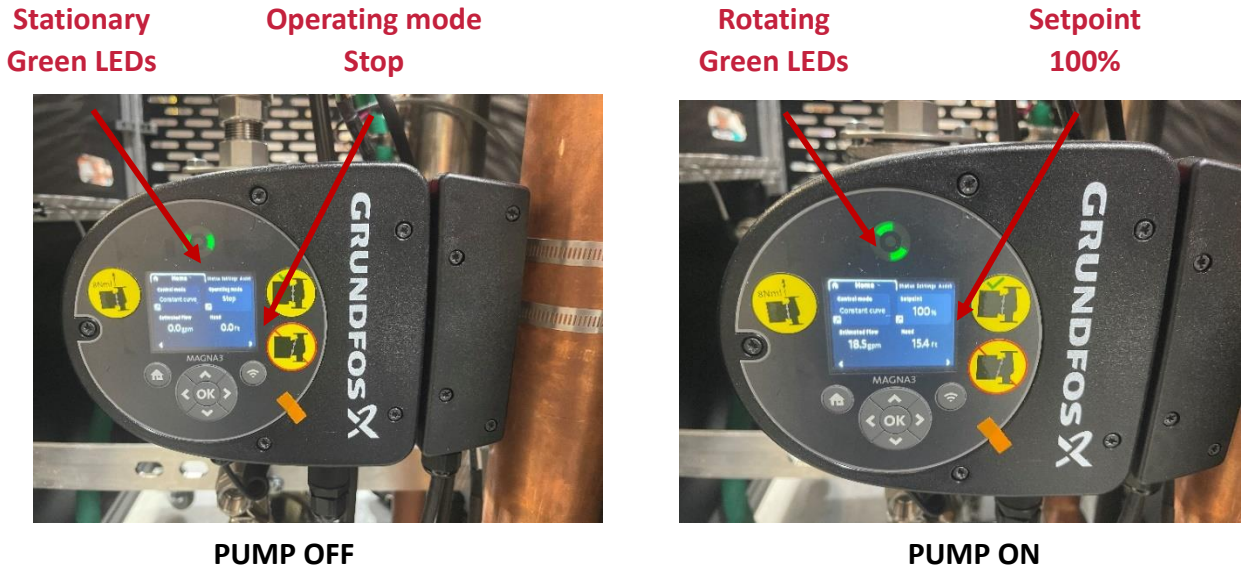

Figure 11: On – Off state of the pump

Connecting Transmission Line

Reference the “RIGID COAXIAL TRANSMISSION LINE” manual on the Dielectric website for proper transmission line installation. The link to that manual is below:

https://www.dielectric.com/wp-content/uploads/2015/11/IB-162-F-Transmission-Line-manual-8-23-2021.pdf

Fill Instructions

The unit has been filled and tested before shipment. The unit should be filled and pressurized when it arrives on site. This section is intended as a reference for those units requested to ship without coolant, if refilling is required due to maintenance, or a coolant flush.

Dielectric recommends a 60/40 ratio of distilled water to Antifrogen. The coolant input at the bottom requires a female hydraulic quick connect. The two outlets at the top of the load require 1/8 male NPT to hose fittings. A filling kit can be purchased from Dielectric with all the necessary parts to fill the unit. The link below, or the QR code, provide tutorials on filling instructions.

Link: https://www.youtube.com/watch?v=JIJJeBK286U&ab_channel=Dielectric

The filling kit should be put together first. Figure 12 shows how the kit, which can be purchased from Dielectric should be assembled.

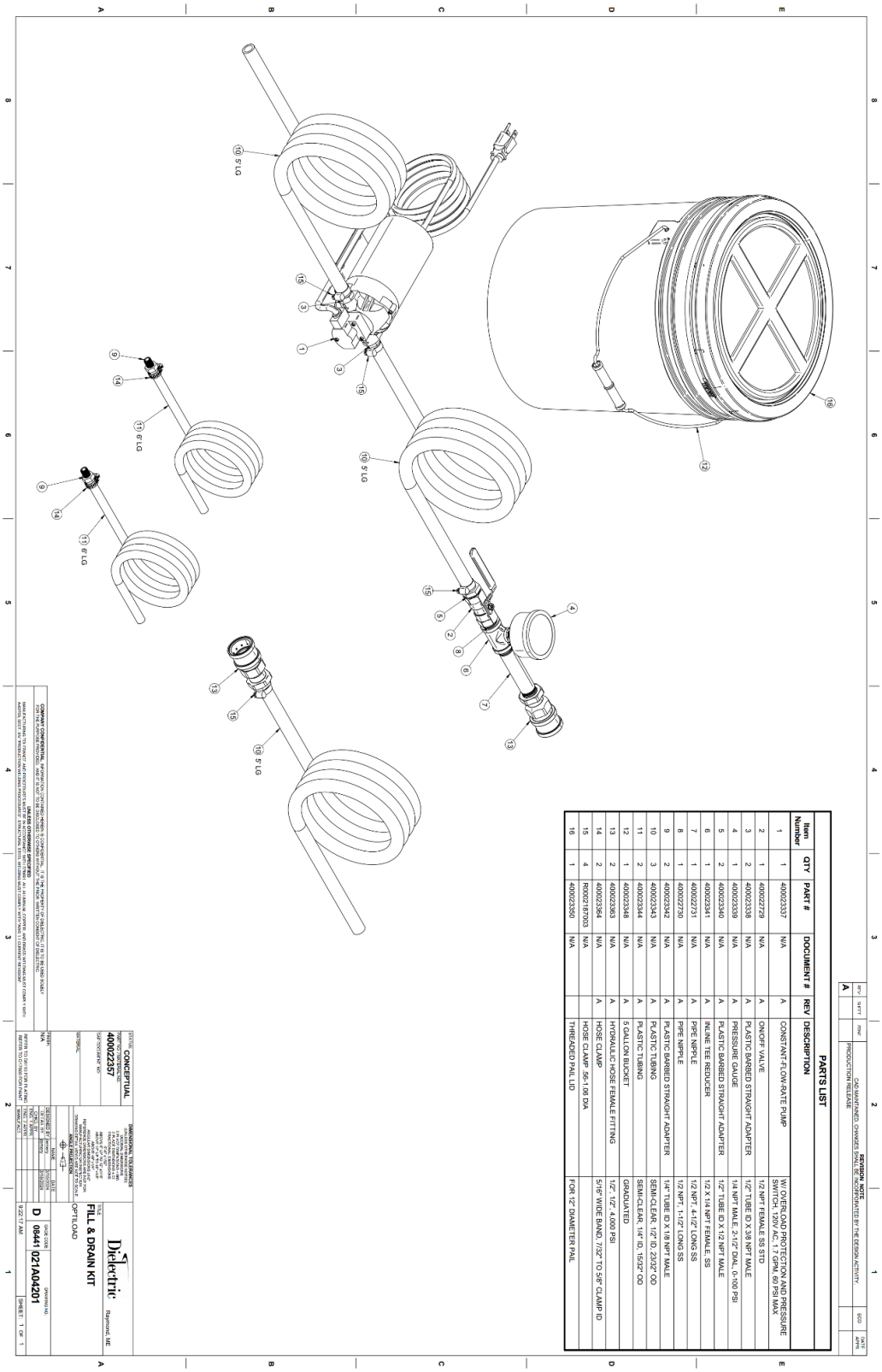

Figure 12: Filling Kit

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This section covers how to operate the OptiLoad once it has been successfully connected to the system, is turned on, and in “Normal Operation” mode. When these conditions are met, the unit is designed to run independently, but the user can connect to it and change settings or view data.

Side Panel Controls

Once the unit is powered on it will automatically run a self-test. The yellow light will blink, and the pump and fan will run for about seven seconds. If everything is working properly then the green light will come on after the self-test.

Side Panel

PUMP
This button cycles the pump when it is held down.

SELF-TEST
This button turns on the pump and fan for seven seconds to make sure everything is running properly.

ETHERNET
An ethernet cable can be used to plug in a computer to view data and change settings on the OptiLoad (See Section: OptiLoad Viewer Program, pg. 24).

INTERLOCK 1&2
These can be used to shut off anything in the transmitter room if the OptiLoad has a critical fault.

POWER
This is a C20 socket that requires a C19 plug to power it with a 208V-240V, 50-60Hz source.

Figure 13: Side panel with different controls for device

WARNING

Do not press the buttons while the unit is powered up and the device has no coolant in it. The pump could be damaged if it is turned on while dry.

OptiLoad Viewer Program

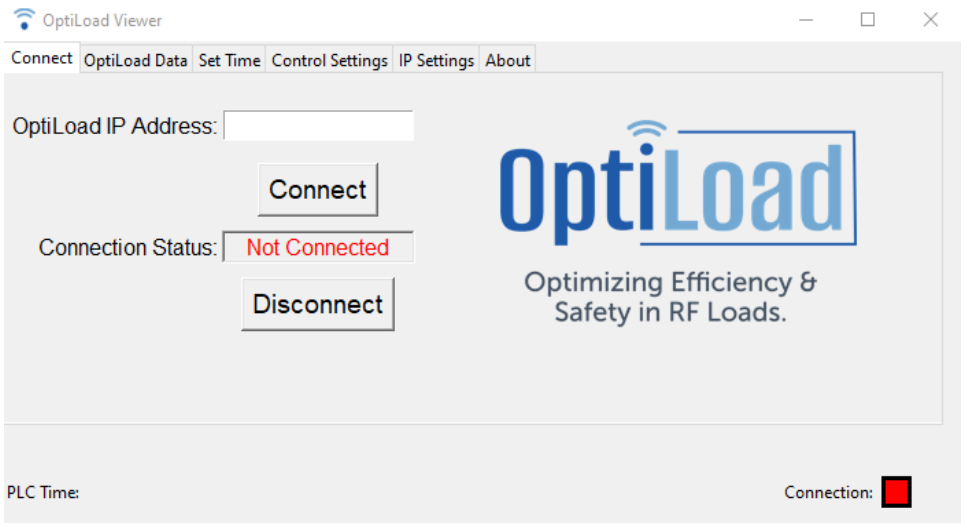
The OptiLoad Viewer program can be used to view data or change settings on the unit. The program can be downloaded from the Dielectric website. The link is below.

https://www.dielectric.com/software/

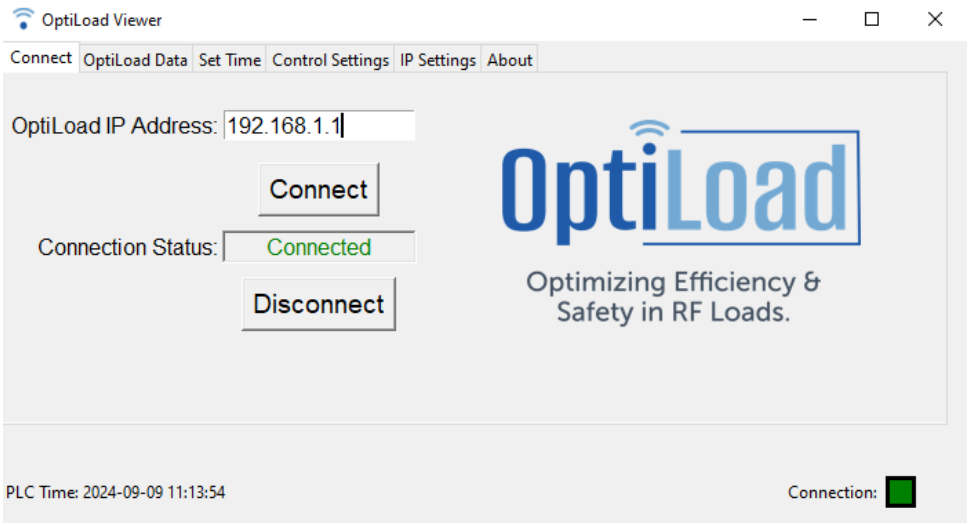
Connecting to the Unit

Connect the OptiLoad using an ethernet cable from a computer to the ethernet port on the side of the electrical box. The default IP of the unit is 192.168.1.1. When connecting to the unit for the first time, your computer must be on the subnet 192.168.1.xxx for the connection to work. Once connected the IP can be changed (See Section: Changing the IP, pg. 27).

Not Connected



Connected



Internal time of the unit

(YYYY-MM-DD hour:min:sec)

Figure 14: Screenshots of the program interface upon connection

Viewing Data

Once successfully connected to the OptiLoad, view the tabs for data and change settings.

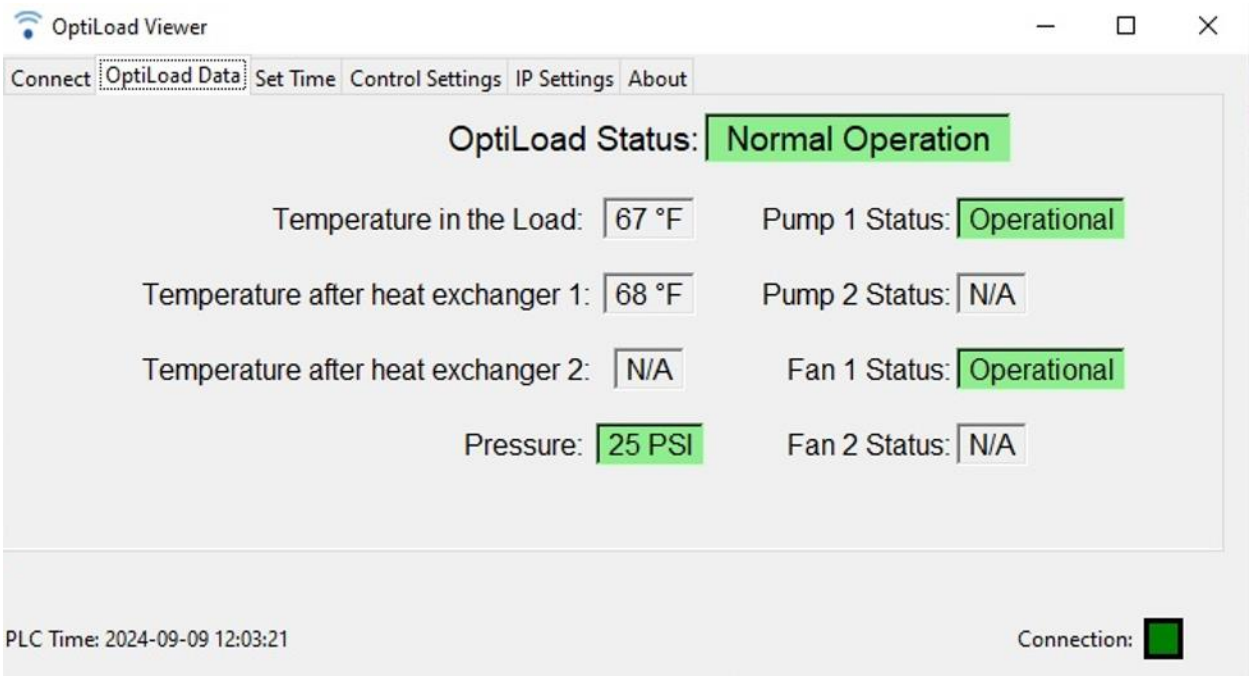


Figure 15: Screenshot of the "OptiLoad Data" tab with status of the OptiLoad and probe data

Setting Time

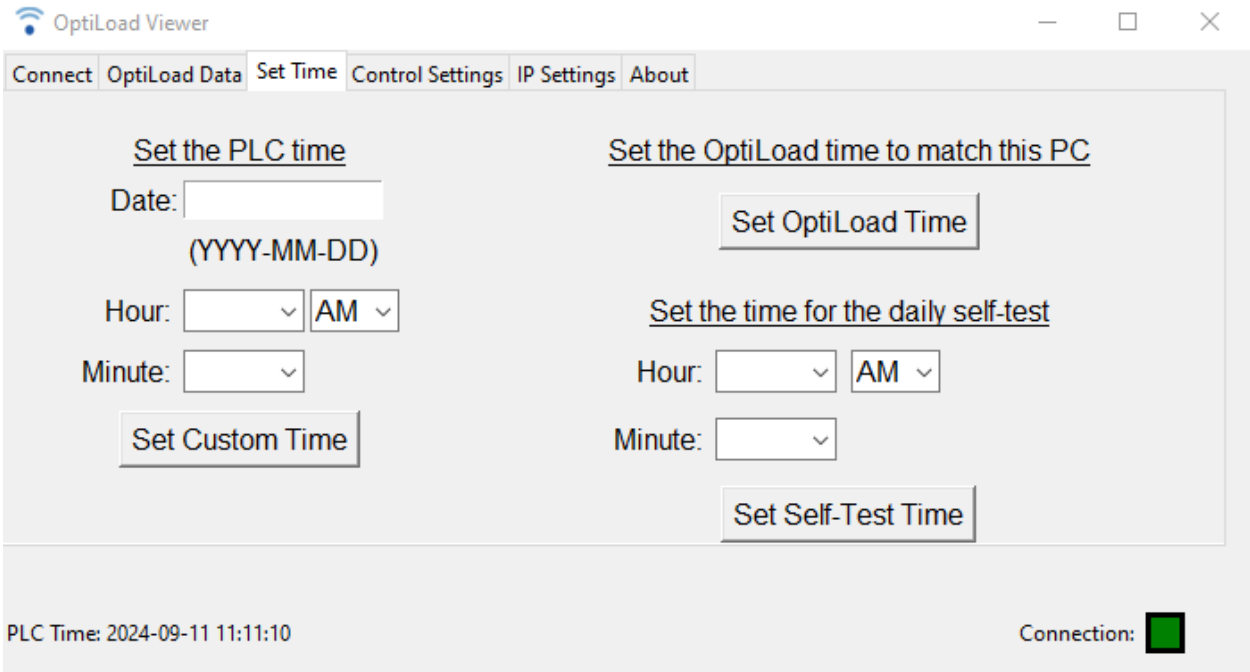


Figure 16: Screenshot of "Set Time" tab

It is important the OptiLoad's internal time is correct so that any logging has the correct time stamp. The time can be set to the PC that is connected to the OptiLoad by pressing the "Set OptiLoad Time" button in the top right. A custom time can also be set by filling in the fields on the left side and pressing the "Set Custom Time" button.

Self-Test Time

By default, the OptiLoad runs a self-test at 12:00 AM. The self-test time can be set by using the drop-down menus in the bottom right corner and pressing the "Set Self-Test Time" button. This will set the time that the unit runs the fan and pump for 10 seconds each day.

Control Settings

The "Control Settings" tab shows the interlock settings, fan and pump ON temperatures, and resetting a fault.

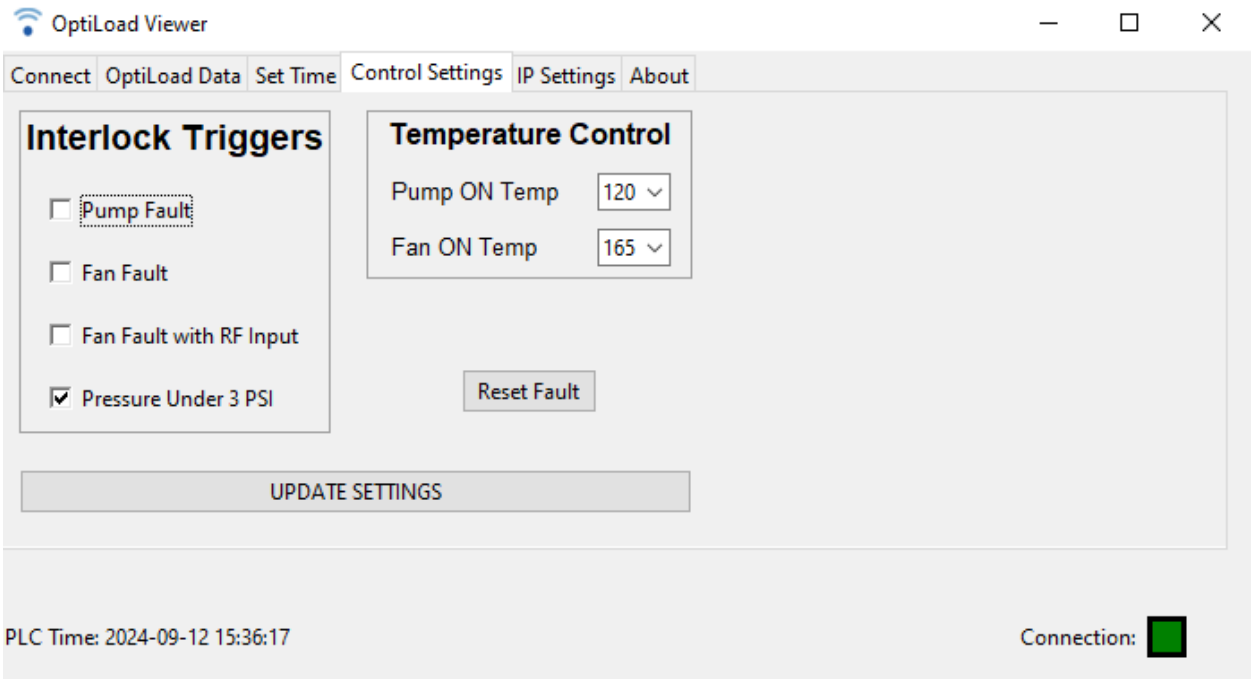


Figure 17: Screenshot of "Control Settings" tab

Interlock parameters can be changed in the "Interlock Triggers" box. When the box is selected, the "Pump Fault" opens the interlock loop when the pump no longer works. The "Fan Fault" or "Fan Fault with RF Input" box can be checked to have a fan fault, or fan fault with high enough RF presence, trigger the interlock to open.

The "Temperature Control" box can be used to set when the pump and fan turn on. By default, the pump turns on at 120°F, and the fan turns on at 150°F.

The "Reset Fault" button resets the unit out of a fault state and run a self-test to make sure the unit is still operational. If the fault condition has been corrected, then the unit will go back to either "Maintenance" mode or "Normal Operation" depending on the status of the unit.

Changing the IP

The IP can be changed using the “IP Settings” tab shown in Figure 18. The IP can be changed to put the OptiLoad onto a specific network. The unit does not have DHCP so a static IP must be set up on the router. Once a static IP has been set at the router, the IP of the unit can be changed. Each step of this process is listed below.

1). Connect to the unit

Use a laptop to connect directly to the unit with an ethernet cable. The default IP for the OptiLoad is 192.168.1.1 so the computer that you are connecting to it must be on the subnet 192.168.1.xxx.

2). Set the IP

In this example, a static IP of 10.132.233.199 has been setup for this OptiLoad. The figure below shows what was typed in to change the IP of the unit to get it onto that network.

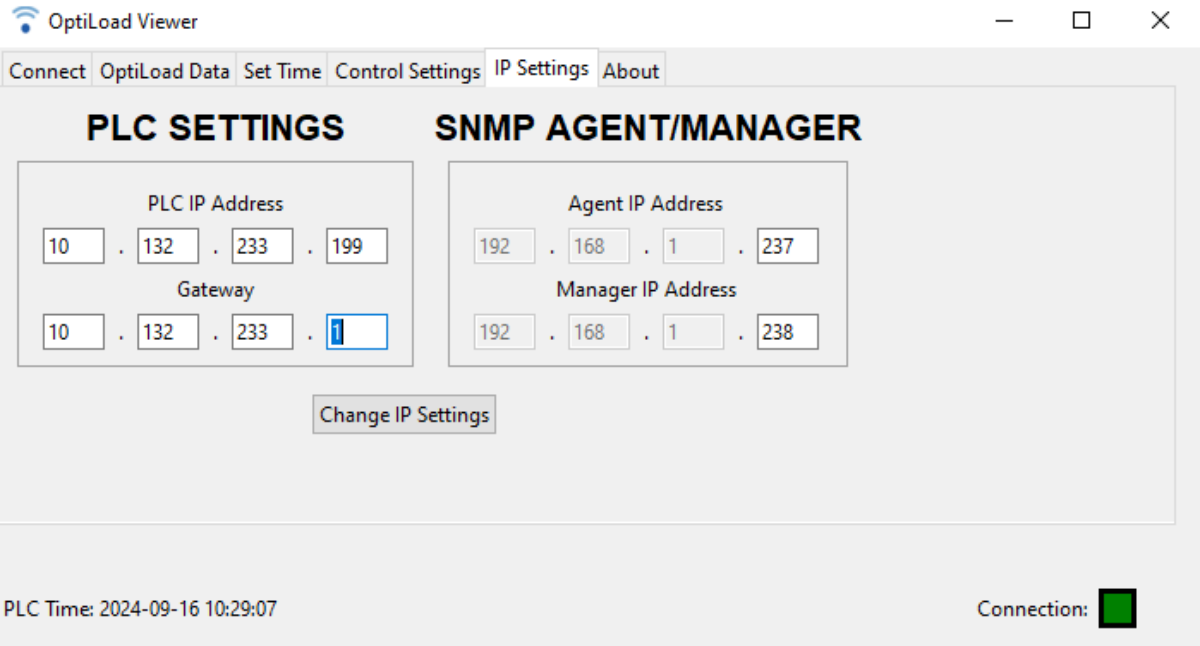


Figure 18: Screenshot of IP setting and modification

Once those numbers are typed in correctly, press the “Change IP Settings” button at the bottom. Check that the numbers are correct and click “Yes” at the prompt.

3). Hold the “PUMP” button for three seconds

The program will prompt you to hold the “PUMP” button to initialize the change. After you hold the button for three seconds, the computer you have plugged in will lose connection because the IP has changed.

4). Connect through the network

Move the ethernet cable from the computer that was used to change the IP, to the router or switch that is part of the network you are connecting to. You will now be able to connect to the OptiLoad over the network that it was just added to.

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Maintenance

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Maintenance Intervals

The PLC is programmed to activate the pump and heat exchanger fans once a day to confirm normal operation of the unit. This will occur at a set time every day and will last for a short amount of time before turning back off. The default time for this test to run is 12:00AM daily (See "Setting Time of the Device and Daily Self-Test"). If any issues are seen with the pump or heat exchanger fans, the unit will adjust accordingly and display the issue.

In addition to the daily self-test, it is recommended that the OptiLoad unit be inspected on a routine basis. Recommended inspections are provided, but not limited, as follows:

Daily:

-Check health status using the daily self-test via LED indicators or log review

Monthly:

-Verify device is clear of debris
-Verify good air flow around and through device by cycling fans
-Verify no indication of coolant leaks in and around device

Quarterly:

-Verify the fins of the radiator are clean and dust free and clean accordingly

Annually:

-Check basic functionality by pressing test button
-Check unit pressure via OptiLoad Viewer
-Check for dust on IR reflectors and clean accordingly
-Verify radiator fins are free of dust/debris
-Verify no sign of coolant leaks in and around device
-Verify grounding cable is attached
-Verify anchor points are tight

Coolant does not need to be flushed annually; however, it is recommended that the coolant be checked annually to verify there are no signs of degradation. Check for "off odor" and/or color when compared to new coolant.

Maintenance Mode & Fault Mode Causes

If the yellow or red LED is illuminated on the front panel, then the unit is in a "Maintenance Mode" or "Fault Mode". Below are tables displaying what the possible causes and solutions that each mode could have. If the problem is not listed in the table or the solution does not work, contact customer support to assist with diagnosing the problem (See Section: Customer Support, pg. 44)

Maintenance Mode Causes/Solutions

The OptiLoad Viewer can also be used to help determine why the maintenance light is on.

Reason	Possible Cause	Troubleshoot
Pressure dropped below 10 PSI.	The unit is leaking.	If pressure is low, the first thing that should be checked is if it is leaking. Look under the unit to see if there is coolant on the floor.
	The air vent has released enough air from the system to drop the pressure below 10 PSI.	If the pressure has dropped below 10 PSI over some time since filling it, and there is no coolant on the floor, it is possible that enough air has left the system through the air relief valve to cause this. Follow the fill procedure again to bring the system to an adequate level (25 PSI).
PLC thinks the fan is no longer operational.	The fan has stopped working.	Hit the "Self-Test" button and see if the fan spins. It should spin for about 10 seconds when that button is pressed. If it does not spin, then the motor is broken/blocked or an interruption in power has occurred. Check the 8A breakers in the electrical box to make sure they are turned on. **Warning: Turn off the unit and unplug it before opening the door to the electrical box.**
	If the fan is spinning, then the tachometer on the HEX is no longer working.	The PLC knows that the fan is spinning by getting data from a tachometer at the top of the HEX. There is also a reflector in the cage of the HEX opposite the tachometer. Either it is not reflecting anymore, the tachometer is broken, or the wire from the tach to the PLC is broken somewhere along the way. Make sure the reflector is cleaned off. If that doesn't fix it, make sure the tachometer is getting power and it is connected to the PLC (Contact Dielectric on how to troubleshoot this problem)
PLC thinks the pump is no longer operational	The pump is not getting power.	Check the front panel on the pump. Make sure it has lights that are on. If no lights are on it is not getting power. Make sure the 2A breakers inside the electrical box are

		switched on. **Warning: Turn off the unit and unplug it before opening the door to the electrical box.**
Reason	**Possible Cause**	**Troubleshoot**
PLC thinks the fan is no longer operational.	The motor on the pump is bad.	If the pump is getting power, and the front panel/screen is powered on, the motor on the pump may be broken. Contact Dielectric to troubleshoot this cause and potentially send a replacement pump.
	If the pump is getting power and the motor is operational, then the "Pump Status" interlock loop from the pump to the PLC may be broken somewhere along the line.	There is a power loop from the 24VDC terminal to the pump and back to the PLC that lets the PLC know the pump is operational. If this loop gets broken somewhere the PLC will think the pump is broken even if it is not. Contact Dielectric to troubleshoot this problem.

Table 1: Maintenance mode possible causes and solutions

Fault Mode Causes/Solutions

Reason	**Possible Cause**	**Troubleshoot**
Pressure dropped below 3 PSI.	The unit is leaking.	If the unit has lost all its pressure, the first thing that should be checked is if it is leaking. Look under the unit to see if there is coolant on the floor.
	The air vent has released enough air from the system to drop the pressure below 1 PSI.	If the pressure has dropped below 1 PSI over some time since filling it, and there is no coolant on the floor, it is possible that enough air has left the system through the air relief valve to cause this. Follow the fill procedure again to bring the system to an adequate level (25 PSI). Be sure the system is not leaking before attempting to refill.
Reason	**Possible Cause**	**Troubleshoot**
PLC thinks the pump is no longer operational	The pump is not getting power.	Check the front panel on the pump. Make sure it has lights that are on. If no lights are on it is not getting power. Make sure the 2A breakers inside the electrical box are switched on. **Warning: Turn off the unit and unplug it before opening the door to the electrical box.**
	The motor on the pump is bad.	If the pump is getting power, and the front panel/screen is powered on, the motor on the pump may be broken. Contact Dielectric to troubleshoot this cause and potentially send a replacement pump.
	If the pump is getting power and the motor is operational,	There is a power loop from the 24VDC terminal to the pump and back to the PLC

	then the “Pump Status” interlock loop from the pump to the PLC may be broken somewhere along the line.	that lets the PLC know the pump is operational. If this loop gets broken somewhere the PLC will think the pump is broken even if it is not. Contact Dielectric to troubleshoot this problem.

Table 2: Failure mode possible causes and solutions

Default Pump Settings

If the pump is not turning on when the buttons are pressed, these steps can be taken to verify the correct settings:

- Select the home button to start on the home page.
- Press the right arrow twice to go to the “Settings” tab.
- Press the down arrow eight times until you are on the “Relay outputs” option.
- Make sure “Relay output 1” is set to “Alarm”.
- Press the left arrow to go back and go to the “Relay output 2” option.
- Make sure “Relay Output 2” is set to “Ready”.
- Press the left arrow twice to go back to the “Settings” tab.
- Press the down arrow until the “General settings” is highlighted. Press the right arrow.
- Press the down arrow until you are at the bottom on “Run start-up guide” and press the right arrow
- Go down to the “Yes” option and press “OK” to run the start-up guide.
- Make sure “English US” is selected and hit the right arrow.
- Press the right arrow again.
- For the “Date format” select whichever format is desired and hit the right arrow.
- Set the date by pressing the “OK” button and using the arrow keys to change the date and time to the correct values. Once it is correct, press “OK” and hit the right arrow.
- Pick a time format and do the same process. Press “OK” and hit the right arrow once the time is correct.
- In the “Setting of pump” window, use the down arrow to highlight “External speed control”. Once it is highlighted, press the “OK” button.
- In the “External speed control” window, highlight over the “0-10 V Input” option and press “OK”
- In the “0-10 V Input” window, highlight over the “Linear with stop” option and press “OK”.
- In the “Summary” tab, press “OK” and the setup should be correct.

After going through this setup, the pump should be functioning correctly with the PLC in the control box. Test the functionality by holding down the pump button. If it is working correctly then the “Operating mode: stop” should change to “Setpoint: 100%” and the estimated flow/head should go above 0.

Chapter 6

Storage and Shipping

The OptiLoad assembly will be packaged and shipped in its own dedicated crate.

Figure 19: Typical packaging

The crate dimensions are approximately 48” X 34” X 68”. The weight will vary depending on the model type with approximate weights as follows:

Model Type	Part Number	Approximate Weight
OLU25KNRD1	400022665	750 lbs
OLU25KNRD2	400022666	850 lbs
OLU80KNRD1	400022667	850 lbs

While the OptiLoad is largely constructed of non-corrosive materials, the unit and the packaging should be properly stored under shelter in a relatively dry environment. 0˚C to 50˚C (32˚F - 122˚F) with less than 90% humidity (non-condensing) is preferred.

The packaging has been designed to accommodate most fork truck models as well as a range of pallet jack models and can be lifted from any side of the crate.

Figure 20: Proper positioning of forks when using a powered forklift

It is important to make sure the forks of the lift are long enough to fully support the crate from at least two sides (front/back or side/side) as shown in the photos above.

When unpackaging the OptiLoad from the crate, remove the steel straps first. A pair of tinsnips will be required for this step.

Figure 21: Recommended location when cutting strapping

Warning: It is important to note that the steel strapping could be under tension. Therefore, it is important to stand out of the way of harm when straps are cut, and it is recommended that the strap be cut towards the top of the crate to minimize recoil of the strap and risking injury.

The crate is designed for ease of access to the unit. Three sides of the unit are nailed together with the front panel intended to be the side that is removable. The front panel is typically held on with Qty 4 #2-Philipps head screws down each side (typically circled with a marker) and 2 screws along the bottom of the front panel as shown in the following photos.

Figure 22: Screws to be removed from the front panel of the crate

There may be a 2X4 support that sits on the top of the OptiLoad unit inside the crate that will need to be removed as well. The screws are typically circled on the front and rear panel of the crate as well.

Figure 23: Screws to be removed on the front and rear panels of crate to remove internal cross support

Once all these screws are removed, the front panel may drop about 4” to the floor. The panel can be removed to access the unit inside.

Figure 24: OptiLoad with from panel removed

At this point the brace across the top can be removed.

There should be a cleat across the bottom of the until that will need to be removed as well (typically by removing a screw on either end of the block.

Figure 25: Bottom cleat to be removed

There may be additional packaging material and/or blocking used to brace/secure the unit in the crate as well. This can be removed at this time.

Figure 26: Additional blocking to be removed (on control panel side of crate)

There should be a box containing the ship list items located at the bottom of the crate.

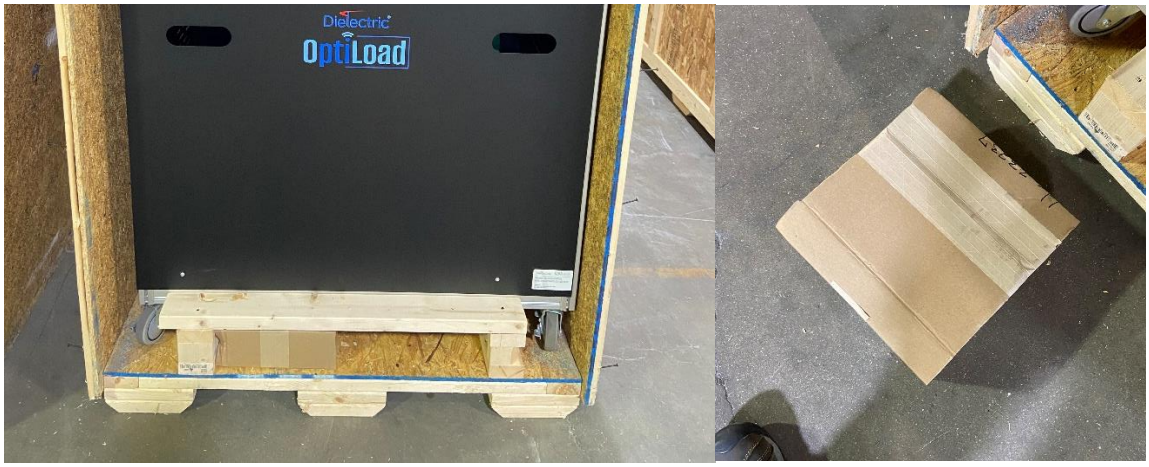

Figure 27: Box containing shipping list items

Items in Packaging	
OptiLoad Assembly	46” X 30” X 62” (116.84cm X 76.2cm X 157.48cm)
Interlock Cable	PN-400022055 ZP-S1-2MP-2M ZIPPORT CONNECTION CABLE 6.5'
Power Cord w/o Plug	POWER CORD, 12AWG IEC320/C19-CBL 8.2' (2.5m)
IB	Envelope
Anchor/Grounding Kit Assemblies	PN-400023237 STILTS ASSY OPTILOAD 25kW SINGLE AND DUAL, 80kW

Figure 28: Typical items packed in Ship List box

Once all items have been removed, the OptiLoad can be removed from the crate. A fork truck can be used to lift the OptiLoad from the crate. Be cautious not to set the forks on any of the casters, caster hardware, or hardware to the lower support bar holding the expansion tank attached to the bottom rail.

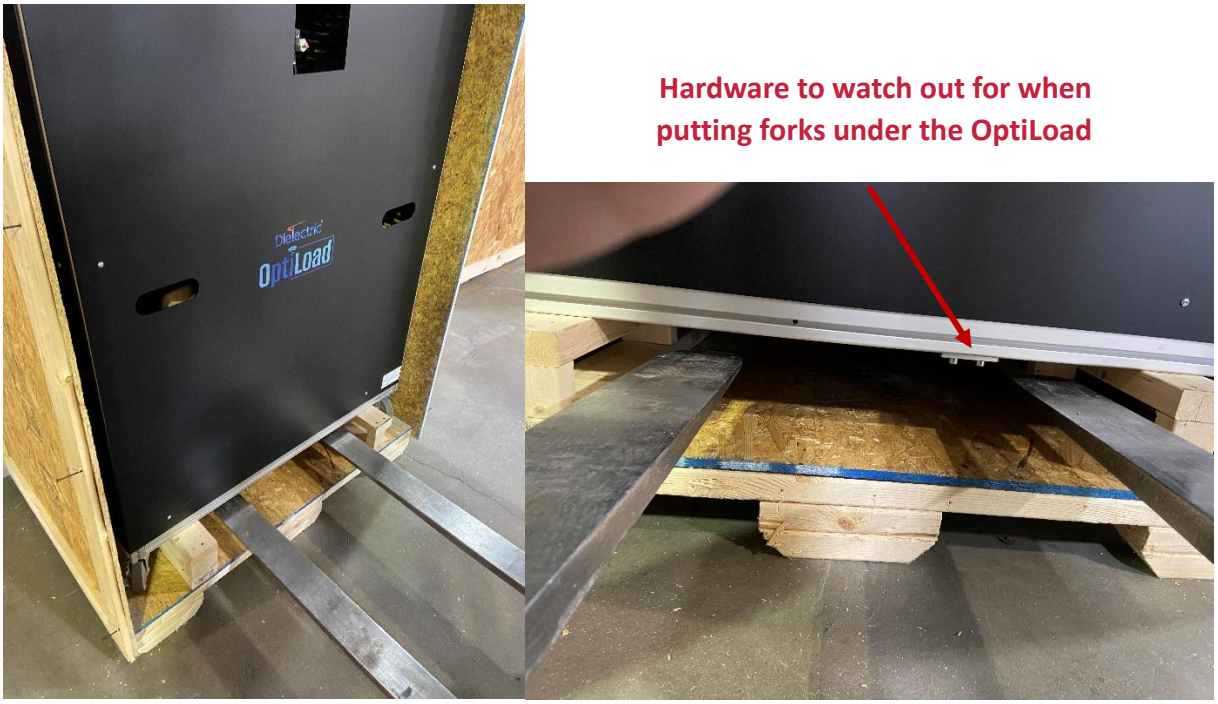

Figure 29: Recommended placement for forks to lift OptiLoad from crate

Figure 30: Recommended placement for forks to lift OptiLoad from crate

As with the crate, make sure the forks of the fork truck properly support the frame of the OptiLoad on at least two rails for the assembly. One way to verify this is to drive the forks in until they reach the back wall of the crate (prior to hitting the front of the unit with the lift).

The OptiLoad comes with factory installed casters at each corner for ease of moving it about a building. **These casters are not intended for rough or loose terrain and should not be used on gravel surfaces.** The casters can be removed if desired, however anchor/grounding kits are provided in the ship list package to alleviate the need to remove casters. See “Grounding” and “Anchoring” under the “Set-up” section of this instruction booklet on Page 17.

Appendix of Replacement Parts

Replacement Parts List for PN-400022665 OPTILOAD 25KW SINGLE INPUT LOAD W/ INTERNAL HEAT EXCHANGER			
Component Drawing Number	**Component**	**Component Description**	**Quantity**
REV-E 003A10801	R0019785501	ELBOW, 3-50, 90^0 EQUAL LEG, 6" X 6" CU	1
REV-A 020A15601	400015969	RF POWER SENSOR TYPE-N STANDARD, BURK PRF-1 FM/VHF/UHF LOW & HIGH POWER	1
N/A	400021483	90 DEGREE ADAPTER 1 NPT FEMALE X MALE STAINLESS STEEL	1
REV-D 020A88001	400021545	WATER COLUMN LOAD 3-50, FOR OptiLOAD 25kW SINGLE INPUT FULLY REDUNDANT	1
REV-B1 020A88010	400021751	ELBOW ASSY 3-50, 6X6 W/ DRAIN HOLE & BAFFLE COPPER NON REINFORCED	1
REV-B 020A88020	400021814	TRANSMISSION LINE 3-50 EIA 44.25 LG	1
REV-B 020A88504	400022331	HEAT EXCHANGER ASSY 25kW RADIATOR AND FAN AKG AR-30	1
REV-A1 020A97904	400022788	PUMP MANIFOLD ASSY SINGLE PUMP, NON-REDUNDANT, SS MAGNA3 32-60 F	1
REV-A 020A97931	400022841	HOSE ASSY 1 MANIFOLD OUT - LOAD IN 25kW SINGLE / DUAL	1
REV-A 020A97933	400022844	HOSE ASSY 3 LOAD OUT - HEAT EX IN 25 kW DUAL AND SINGLE	1
REV-A 020A97934	400022845	HOSE ASSY 4 HEAT EX OUT - MANIFOLD IN 25kW DUAL AND SINGLE	1
REV-B 020A97925	400022895	BACK PLATE VENTILATED FOR 25 kW OPTI LOAD	1
REV-B 020A97926	400022896	FRONT PLATE VENTILATED WITH CUTOUT FOR CONTROL BOX FOR 25 kW OPTI LOAD	1
REV-A1 020A97927	400022899	SIDE PLATE FOR 25 kW OPTI LOAD	1
REV-B 020A97928	400022900	SIDE PLATE CONTROL BOX SIDE FOR 25 kW OPTI LOAD	1
REV-B 020A97929	400022901	TOP PLATE FOR 25 kW OPTI LOAD	1
REV-A 020A97972	400023237	STILTS ASSY OPTILOAD 25kW SINGLE AND DUAL, 80kW	4

Replacement Parts List for PN-400022666 OPTILOAD 25KW DUAL INPUT LOAD W/ INTERNAL HEAT EXCHANGER			
Component Drawing Number	**Component**	**Component Description**	**Quantity**
REV-E 003A10801	R0019785501	ELBOW, 3-50, 90^0 EQUAL LEG, 6" X 6" CU	2
REV-A 020A15601	400015969	RF POWER SENSOR TYPE-N STANDARD, BURK PRF-1 FM/VHF/UHF LOW & HIGH POWER	2
N/A	400021483	90 DEGREE ADAPTER 1 NPT FEMALE X MALE STAINLESS STEEL	1
REV-D 020A88001	400021545	WATER COLUMN LOAD 3-50, FOR OptiLOAD 25kW SINGLE INPUT FULLY REDUNDANT	2
REV-B1 020A88010	400021751	ELBOW ASSY 3-50, 6X6 W/ DRAIN HOLE & BAFFLE COPPER NON REINFORCED	2
REV-B 020A88020	400021814	TRANSMISSION LINE 3-50 EIA 44.25 LG	2
REV-B 020A88504	400022331	HEAT EXCHANGER ASSY 25kW RADIATOR AND FAN AKG AR-30	1
REV-A1 020A97904	400022788	PUMP MANIFOLD ASSY SINGLE PUMP, NON-REDUNDANT, SS MAGNA3 32-60 F	1
REV-A 020A97931	400022841	HOSE ASSY 1 MANIFOLD OUT - LOAD IN 25kW SINGLE / DUAL	1
REV-A 020A97932	400022842	HOSE ASSY 2 LOAD OUT - LOAD IN 25 kW DUAL	1
REV-A 020A97933	400022844	HOSE ASSY 3 LOAD OUT - HEAT EX IN 25 kW DUAL AND SINGLE	1
REV-A 020A97934	400022845	HOSE ASSY 4 HEAT EX OUT - MANIFOLD IN 25kW DUAL AND SINGLE	1
REV-B 020A97925	400022895	BACK PLATE VENTILATED FOR 25 kW OPTI LOAD	1
REV-B 020A97926	400022896	FRONT PLATE VENTILATED WITH CUTOUT FOR CONTROL BOX FOR 25 kW OPTI LOAD	1
REV-A1 020A97927	400022899	SIDE PLATE FOR 25 kW OPTI LOAD	1
REV-B 020A97928	400022900	SIDE PLATE CONTROL BOX SIDE FOR 25 kW OPTI LOAD	1
REV-B 020A97929	400022901	TOP PLATE FOR 25 kW OPTI LOAD	1
REV-A 020A97942	400023010	FRAME, 25kW DUAL INPUT OPTILOAD, ITEM BRAND	1
REV-A 020A97972	400023237	STILTS ASSY OPTILOAD 25kW SINGLE AND DUAL, 80kW	4

Replacement Parts List for PN-400022667 OPTILOAD 80KW SINGLE INPUT LOAD W/ INTERNAL HEAT EXCHANGER			
REV-B 004A54201	R16142	ELBOW 6-50 EIA 5.50 X 5.50 CU	1
REV-A 020A15601	400015969	RF POWER SENSOR TYPE-N STANDARD, BURK PRF-1 FM/VHF/UHF LOW & HIGH POWER	1
N/A	400021483	90 DEGREE ADAPTER 1 NPT FEMALE X MALE STAINLESS STEEL	2
REV-C 020A94450	400022270	WATER COLUMN LOAD 6-50, FOR OptiLOAD 80kW STATION LOAD	1
REV-B 020A94435	400022401	TRANSMISSION LINE 6-50 FOR 80 kW OPTI LOAD	1
REV-A1 020A97904	400022787	PUMP MANIFOLD ASSY SINGLE PUMP, NON-REDUNDANT, SS MAGNA1 32-60 F N	1
REV-A1 021A00404	400022818	HEAT EXCHANGER ASSY 80kW RADIATOR AND FAN AKG AR90-1-AD	1
REV-A 021A00431	400022848	HOSE ASSY 1 MANIFOLD OUT - LOAD IN 80kW	1
REV-A 021A00432	400022849	HOSE ASSY 2 LOAD OUT - HEAT EX IN 80kW	1
REV-A 021A00433	400022850	HOSE ASSY 3 HEAT EX OUT - MANIFOLD IN 80kW	1
REV-B 021A00425	400022902	SIDE PLATE VENTILATED ON CONTROL BOX SIDE FOR 80 kW OPTI LOAD	1
REV-B 021A00426	400022903	SIDE PLATE VENTILATED FOR 80 kW OPTI LOAD	1
REV-A1 021A00427	400022904	FRONT PLATE WITH CUTOUT FOR CONTROL BOX FOR 80 kW OPTI LOAD	1
REV-A 021A00428	400022905	BACK PLATE FOR 80 kW OPTI LOAD	1
REV-B 021A00429	400022906	TOP PLATE FOR 80 kW OPTI LOAD	1
REV-A 020A94471	400022928	ELBOW DRAINABLE 6-50 EIA 5.50 X 5.50 CU FOR 80kW OPTI LOAD	1
REV-A 020A97943	400023017	FRAME, 80kW OPTILOAD, ITEM BRAND	1
REV-A 020A97972	400023237	STILTS ASSY OPTILOAD 25kW SINGLE AND DUAL, 80kW	4

Customer Support

For customer support please visit WWW.DIELECTRIC.COM and click on “Contact” or call us at: 1.800.341.9678

Additional resources available:

OptiLoad Cut Sheets:

https://www.dielectric.com/technical-resources/

OptiLoad Viewer Download:

https://www.dielectric.com/software/

OptiLoad Viewer “How To” Video:

https://youtu.be/y29HijRF64Y

General OptiLoad Intro Video:

https://youtu.be/Ss8DHyQlObM

OptiLoad fill/drain video:

https://youtu.be/JIJJeBK286U