

**TYRONE TOWNSHIP PLANNING COMMISSION
REGULAR MEETING AGENDA
February 8, 2022 7:00 p.m.**

This meeting will be held at the Tyrone Township Hall and via Zoom videoconferencing

CALL TO ORDER:

PLEDGE OF ALLEGIANCE:

CALL TO THE PUBLIC:

APPROVAL OF THE AGENDA:

APPROVAL OF THE MINUTES:

OLD BUSINESS:

- 1) Sultani Caregiver Special Land Use
- 2) Master Plan

NEW BUSINESS:

CALL TO THE PUBLIC:

MISCELLANEOUS BUSINESS:

ADJOURNMENT:

Tyrone Township is inviting you to a scheduled Zoom meeting.

Topic: 02/08/2022 Planning Commission Meeting

Time: Feb 8, 2022 07:00 PM Eastern Time (US and Canada)

Join Zoom Meeting

<https://us02web.zoom.us/j/82282131138>

Meeting ID: 822 8213 1138

Passcode: 123456

One tap mobile

+13017158592,,82282131138#,,,,*123456# US (Washington DC)

+13126266799,,82282131138#,,,,*123456# US (Chicago)

Dial by your location

+1 301 715 8592 US (Washington DC)

+1 312 626 6799 US (Chicago)

+1 646 558 8656 US (New York)

+1 253 215 8782 US (Tacoma)

+1 346 248 7799 US (Houston)

+1 669 900 9128 US (San Jose)

Meeting ID: 822 8213 1138

Passcode: 123456

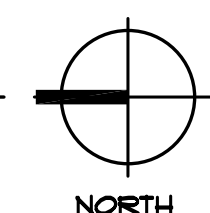
Find your local number: <https://us02web.zoom.us/j/kdTKXNAhrk>

OLD BUSINESS #1

Sultani Caregiver Special Land Use



CAREGIVER BUILDING:	4,146 SF. (GROSS)
ALL OTHER STRUCTURES ON SITE:	2,539 SF. (GROSS)
TOTAL:	6,685 SF. (GROSS)
SITE:	373,874 SF. = 8.58 ACRE
BUILDING RATIO:	1.79%



AS. 1



PROJECT:
PROPOSED
CAREGIVER
FACILITY
9165 FAUSSETT
ROAD
FENTON,
MICHIGAN 48430

ISSUED FOR:

PERMIT
01-06-2022

REVISED
01-26-2022 PR. CITY

DO NOT SCALE PRINTS -
USE FIGURED
DIMENSIONS ONLY

JOB NO.
21-088

SHEET NO.
AS.2

- NOTES:
1. ALL EXTERIOR AND INTERIOR WALLS ARE EXISTING AND TO REMAIN.

2. EXISTING FLOORING TO REMAIN.

3. EXISTING CEILING TO REMAIN.

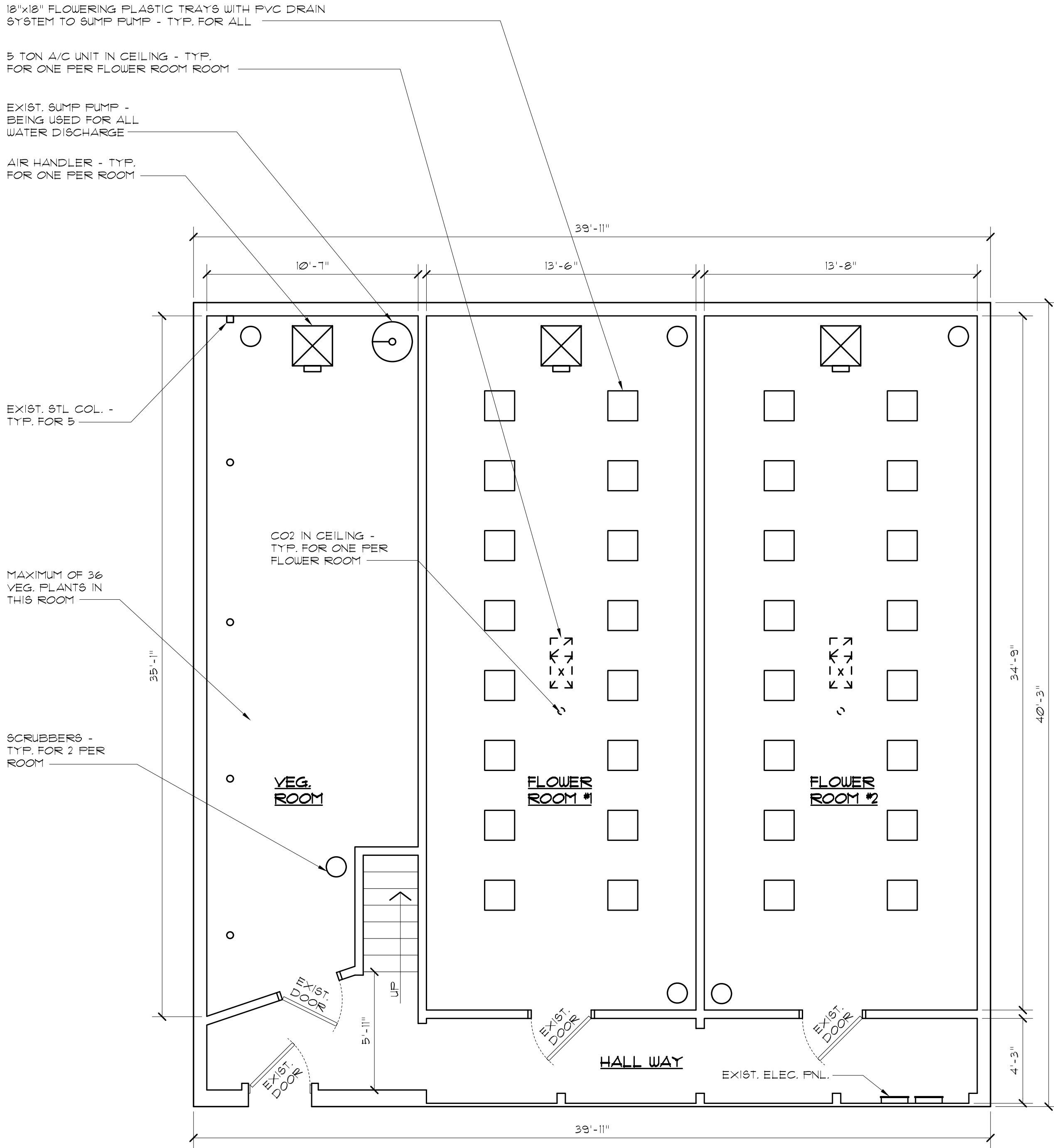
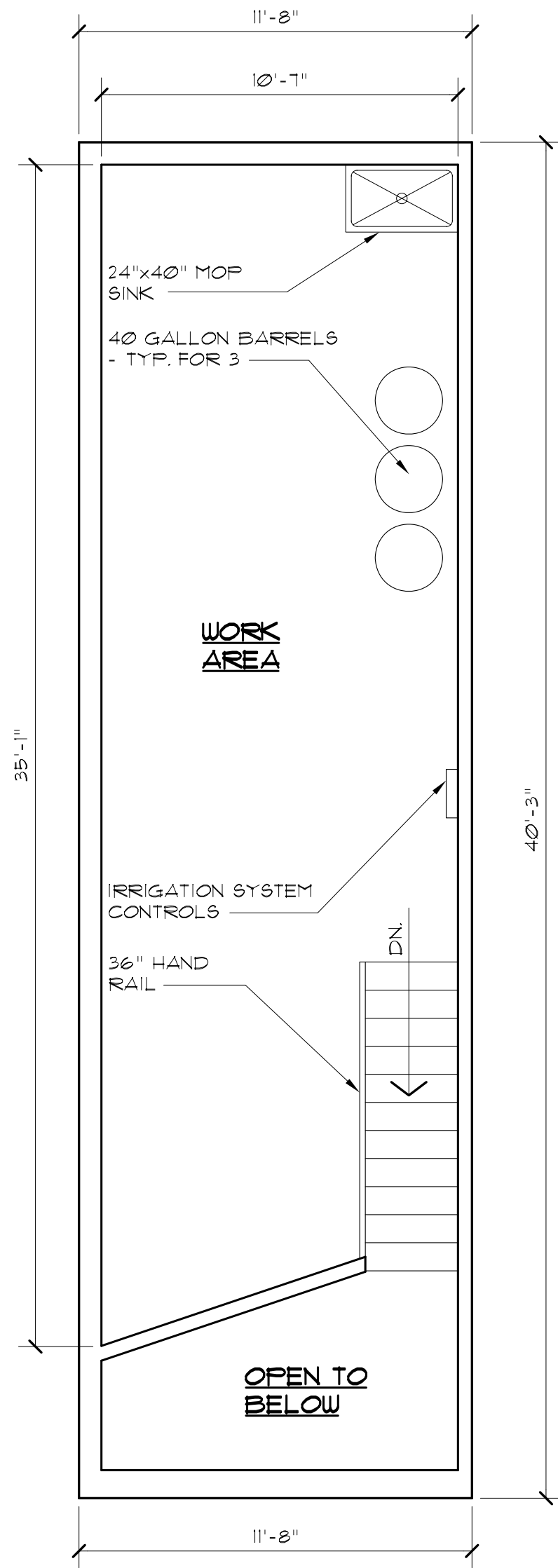
4. ALL EQUIPMENT ON PLANS ARE EXISTING AND TO REMAIN.

5. EXISTING ELECTRICAL SERVICE TO REMAIN.

6. EXISTING LIGHTING AND RECEPTACLES TO REMAIN.

SECOND LEVEL FLOOR PLAN

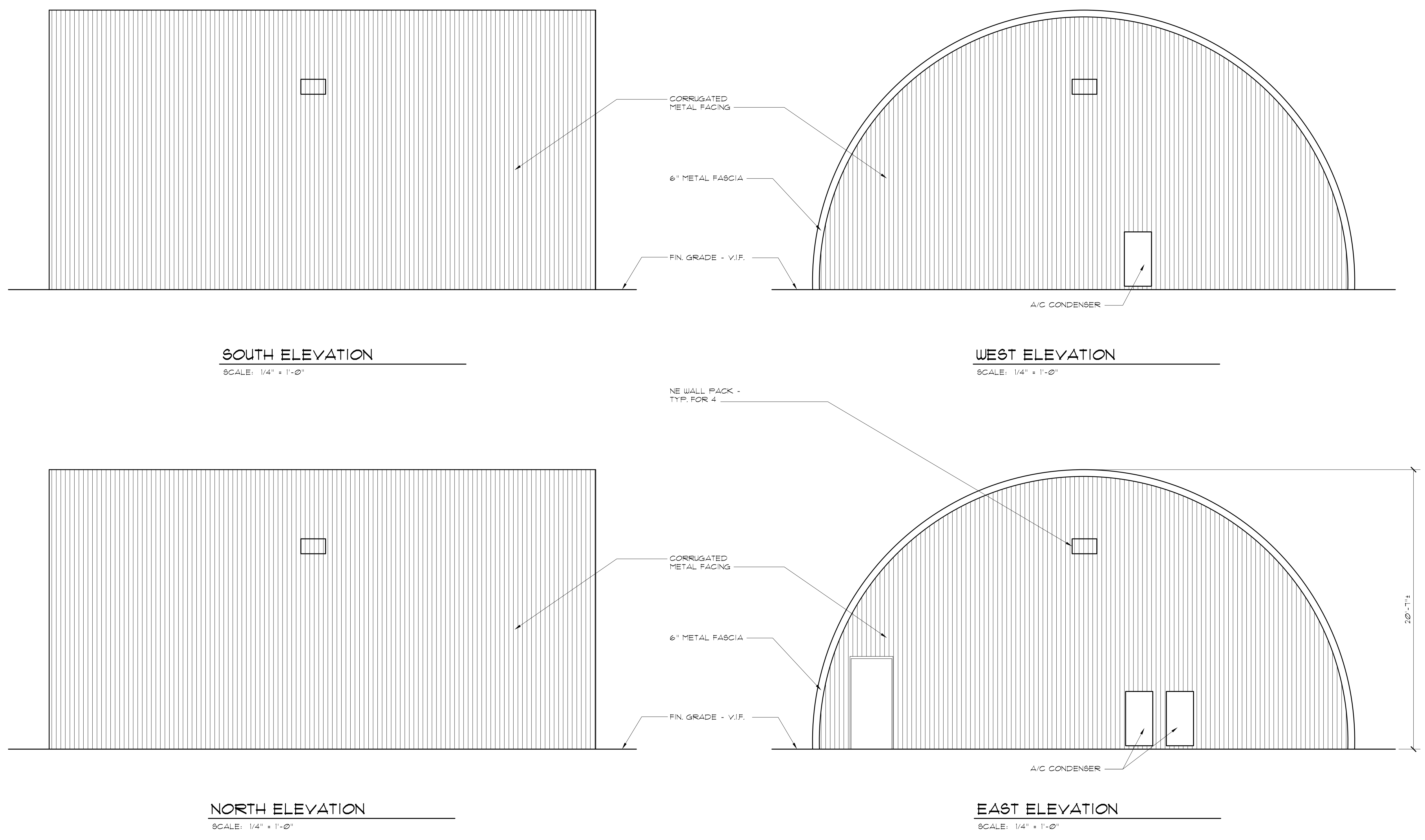
SCALE: 1/4" = 1'-0"



FIRST LEVEL FLOOR PLAN

SCALE: 1/4" = 1'-0"





USE STATEMENT REVISED
Medical Marijuana Caregiver Operation

Halim Sultani
9165 Faussett Rd
Fenton, MI 48430

To: Tyrone County Planning Commission:

I Halim Sultani the owner of 9165 Faussett Rd, Fenton, MI 48430 is requesting from the Tyrone County Planning Commission a Special Land Use to operate as a Medical Marijuana Caregiver.

Operation

- There caregiver is Halim Sultani (THE PROPERTY OWNER)
- We will be cultivating marijuana for six (6) patients. Twelve (12 plants per patient). Seventy Two (72) plants will be occupied at the location at all times. 36 in the flower stage and 36 in the vegetative stage.
- All patients are registered medical marijuana patients with the MMMP.
- Copies of the patients' cards will be provided.
- Each patients' plants will be tagged and have their own designated area within the facility.
- Patients will not be allowed at the caregiver facility.
- Delivery of the Medical Marijuana will be conducted by the primary caregiver to the patient.
- There will be no on-site transfer of medical marijuana to patients.
- Consumption of medical marijuana of the qualifying patient will not be allowed at the location.
- Sales of medical marijuana will only be permitted to the qualifying patients.
- Our site will be controlled by the owner of the home who is also the primary caregiver.
- There will be one caregiver registered at the location.
- The caregiver will be working only during normal business hours during the day. Rarely will be working late.
- The caregiver will have to hire helpers on days that require a lot of work. Example (harvest day, transplanting day, deleaf day, trimming day).
- There will be 1 Veg room where 36 plants will be grown.
- There will be 2 Flower rooms where 18 plants in each room will be grown.
- The irrigation will be held on the second floor vestibule. It will house the filtered water and nutrients for the plants.
- Both flower rooms will include the following: (specs for all have been included)
 - Flower room 1: (18) Luxx 645w LED Pro 120-277v, (18) Drain trays where each plant will be sitting on for water drainage to sub pump, (1) Quest 225 230V commercial grade dehumidifier, (1) Titan Controls Ares 8 Burner CO2 Generator, and (1) 4 Ton AC.

- Flower room 2: (18) Fluence VYPR 2p LED Lights, (18) Drain trays where each plant will be sitting on for water drainage to sub pump, (1) Quest 225 230V commercial grade dehumidifier, (1) Titan Controls Ares 8 Burner CO2 Generator, and (1) 4 Ton AC.
- The veg room will include:
 - Veg room: (10) Fluence SPYDR LED Lights 2x, (1) Mini split AC unit, 1 Dehumidifier.
- All rooms will be controlled and automated by the Trolmaster Irrigation System.
- A propane tank has been installed for the CO2 burners and hot water tank.
- Well water will go through three filtration devices for ensure safe product is grown.
- All plants will be grown organically.

Security

- There will be a 6ft link fence surrounding the buildings.
- Alarm system will be installed in the building
- Wifi will be installed.
- Security cameras with motion sensors will be installed.
- Signage outside the building stating that there shall be no trespassing and that this property is protected by an alarm service.
- Motion censored lighting will be installed outside the building.
- There will be no signage on the property that would indicate a caregiver grow is being conducted.
- All plants will be enclosed in a locked and secure facility.

Nuisance Mitigation

- The barn has been professionally insulated with 3-6 inches of foam around the entire building.
- Each room has a extra layer of foam boards for extra insulation
- Each room has two can filters (scrubbers) that dissipate the any odors that come from the plants.
- No fresh air intake/outtake
- All odors will be contained within each room within the building.
- No mechanicals installed take any fresh air intake/outtake.
- Previous odors that were caused in the past were due to none of these measures were put in place.
 - Previously the mechanicals had fresh air intake/outtake
 - Previously there was a fresh air ventilation system to suck the odors out of the building and blow it outdoors.
 - All of these issues have been corrected.
- The barn has no windows. No lighting from inside will be exposed.
- The outdoor lighting will be shielded from any adjacent properties.
- No one will be living at the house on the property. The property will be strictly used for the caregiver operation only.

- Caregiver will come and as needed.
- The house will be used for the caregiver.
- Only the caregiver and people hired by the caregiver will be allowed on the property.
- All structures on the property will be used for the caregiver only. Mainly used for storage.

Livingston County

- We are currently working with the Livingston County Building Department to get all necessary permits and approvals. We will be applying for a building permit, electrical permit, mechanical permit, and plumbing permit. We will follow all recommendations that are required from them.

LUX-645-277

LUX 645W LED PRO 120-277V TECHNICAL SPECIFICATIONS



Physical

Total Length	1244mm	49"
Total Width	1100mm	43.30"
Total Height	65mm	2.55"
Total Weight	14kg	31lbs

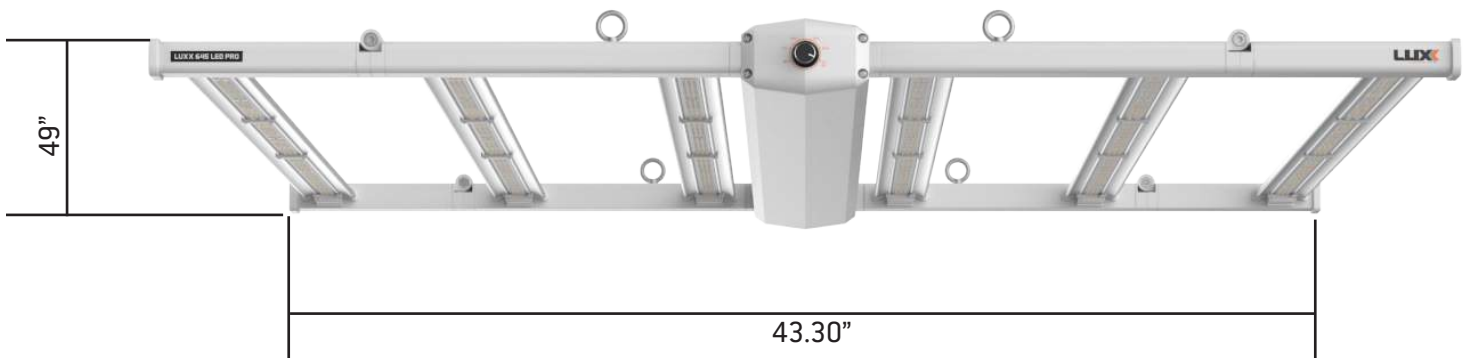
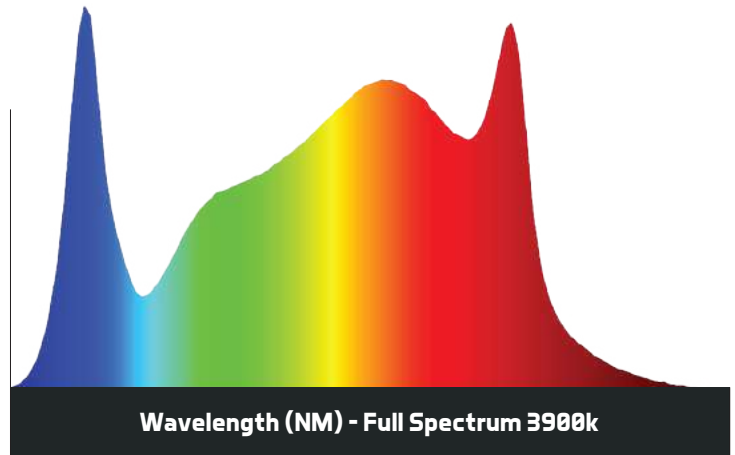
Performance

Input Voltage	120-277V
120V	5.38A
208V	3.1A
240V	2.69A
277V	2.33A
Input Current	5.38A - 2.33A
Input Power	645W
Min Power Factor	>0.95%
Thermal Managment	Passive
Lifetime	L90: >54,000 hrs
Onboard Dimming	40% - 50% - 60% - 80% -100% - EXT
Max Operation Temp	104 °F [40 °C]
Power Cord	10ft
120V	NEMA 6-15A to NEMA 5-15A Adapter
208-240V	NEMA 6-15P (10ft)
277V	NEMA L7-15P (10ft) (SOLD SEPARATELY)
Rated Mains Voltage	120-277V
Voltage Range	90-305V
Mains Frequency	50/60Hz
Operation Frequency	50/60Hz

Luxx 645w LED Pro | Distance From Canopy: 1' | 4x4 Footprint

308				653				298
	622			898				749
		985		1126		1187		
			1083	1147	1156			
460	741	938	1063	1118	1125	1062	861	529
			1110	1151	1164			
		960		1135		1087		
	661			956			686	
315				678				307

Average PPFD = 853





VYPR 2p

VYPR 2p is a full-cycle top lighting solution for high bay growing environments. VYPR 2p is ideal for greenhouse supplemental lighting or indoor sole-source lighting. VYPR 2p builds on the previous generation's VYPRx PLUS performance with nearly a 45% increase in PPF levels and a 18% increase in efficacy.



FLUENCE

BY OSRAM

SPECIFICATIONS

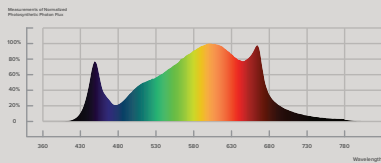
Light Source	LED
Spectrum	PhysioSpec Indoor™ PhysioSpec Greenhouse™
Light Output PPF	1700 µmol/s
Efficacy	2.7 µmol/J
AC Input Power	631W @ 277V AC
AC Input Voltage	120-277V AC, 347-480V AC, 50/60 Hz
Light Distribution	120°
Mounting Height	≥ 18" (45.7cm) Above Canopy
Thermal Management	Passive
Max. Ambient Temperature	95°F / 35°C
Dimming	10V-Source
Power Factor	> 0.97
Total Harmonic Distortion	< 10%
Lifetime	L90: > 50,000hrs
IP Rating	IP66
Certifications	UL 8800, UL 1598 Wet-Location, DLC
Warranty	5 Year Standard Warranty

NOMINAL ELECTRICAL AC INPUT*

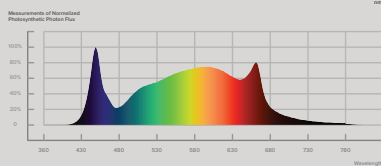
AC VOLTAGE	120V	208V	230V	277V	347V	400V	480V
AC Current	5.43 A	3.06 A	2.76 A	2.28 A	1.87 A	1.61 A	1.34 A
AC Power	652 W	636 W	635 W	631 W	648 W	645 W	644 W
Power Factor	0.997	0.99	0.99	0.98	0.995	0.99	0.97

* At 77°F (25°C) ambient temperature

SPECTRA



PhysioSpec Indoor™



PhysioSpec Greenhouse™

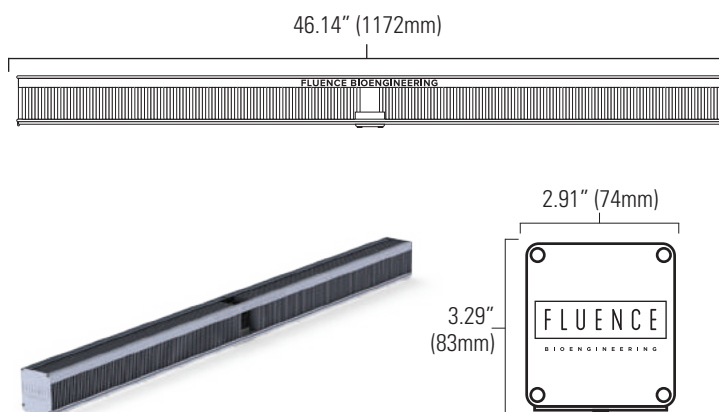
FAMILY	MODEL	SPECTRUM	INPUT VOLTAGE	AC POWER CORD
VR	VYPR 2p PLUS	I PhysioSpec Indoor™ G PhysioSpec Greenhouse™	1 120-277V 6 347-480V	06 6ft (1.83m) 15 15ft (4.57m)

AC PLUG TYPE	DC EXTENSION CORD	MOUNTING HARDWARE	PACKAGING
N5P NEMA 5-15p	03 3 ft (.91m)	S Square Brackets	S Single Pack (1set)
N6P NEMA 6-15P	06 6 ft (1.83m)	U Unistrut Brackets	B20 Bulk Pack (20 sets)
L7P NEMA L7-15P		P Pipe Brackets	
PTP Pigtales			

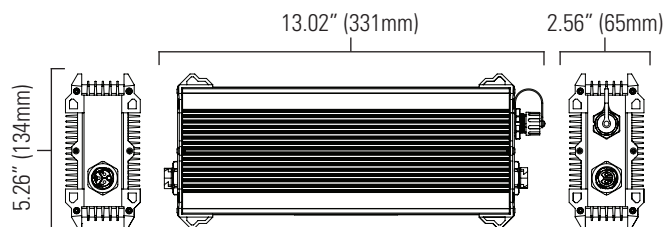
DIMENSIONS | WEIGHT

	Length	Width	Height	Weight
VYPR 2p Light Fixture SKU: VR-2P-	46.14" (1172mm)	2.91" (74mm)	3.29" (83mm)	9.25 lbs 4.2 kg
PSU 120-277V AC SKU: VR-2P-x-1	13.02" (331mm)	5.26" (134mm)	2.56" (65mm)	7.5 lbs 3.4 kg
PSU 347-480V AC SKU: VR-2P-x-6	11.47" (291mm)	6.41" (163mm)	2.47" (63mm)	7.5 lbs 3.4 kg

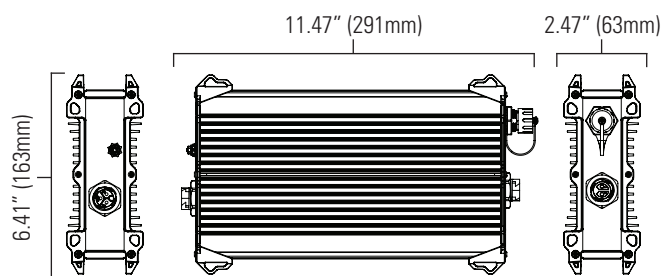
[VYPR 2p Light Fixture]



[PSU 120-277V AC]



[PSU 347-480V AC]



Contact **FLUENCE**

512.212.4544

info@fluencebioengineering.com

www.fluence.science/VYPR

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Specifications based on performance at 277V. Subject to change without notice, Tolerance ±10%

Horticultural lighting | Not suitable for household illumination.



645w LED PRO

LUX-645-277

USER MANUAL



BEFORE YOU PROCEED

Make sure to register your products by visiting www.luxxlighting.com/warranty or by scanning the QR code. Registering for warranty ensures faster service on any future unseen circumstances and keeps you connected on updates.

Thank you for being a part of the Luxx Lighting family. This manual will guide you through the installation and mounting process of the 645w LED Pro. Please read and understand this manual in its entirety before using the product. Only use this product as specified within the manual.

PRODUCT DESCRIPTION

The Luxx Lighting 645w LED Pro has been developed by assessing SMD [Surface Mount Device] chips and drivers from leading manufacturers in controlled test applications and cultivation facilities for 3+ years. The 645w LED Pro deploys a lens angle of 120 degrees, from a 6 bar design. Luxx Lighting is the new standard for indoor cultivation.

CONTENTS

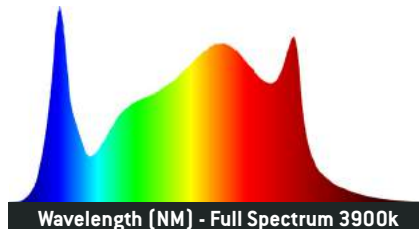
- Eyelet Bolts {2 PC}
- Lance Hanger {2PCS}
- Instruction Manual
- Bubble Level {1 PC}
- 120V Adapter
- Solid Decking Mount {4PCS}
- RJ-14 Cable {2 PC}
- Controller Splitter {1 PC}
- 240V NEMA 6-15P {10 ft} Power Cord Included.

SPECIFICATIONS

Technical Specs	
Input Power	645W
Min Power Factor	>0.95%
Rated Mains Voltage	120-277V
Voltage Range	90-305V
Mains Frequency	50/60Hz
Operation Frequency	50/60Hz
THD	<10%
Thermal Management	Passive
Power Cord	240V NEMA 6-15P {10 ft} Power Cord + 120V Adapter Included.
Dimming	40% - 50% - 60% - 80% - 100% - EXT/OFF

Input Voltage	Input Current
120V	5.38A
208V	3.1A
240V	2.69A
277V	2.33A

Size & Weight	
Total Length	1244mm 49"
Total Width	1100mm 43.30"
Total Height	65mm 2.55"
Total Weight	14kg 31lbs



INSTALLATION

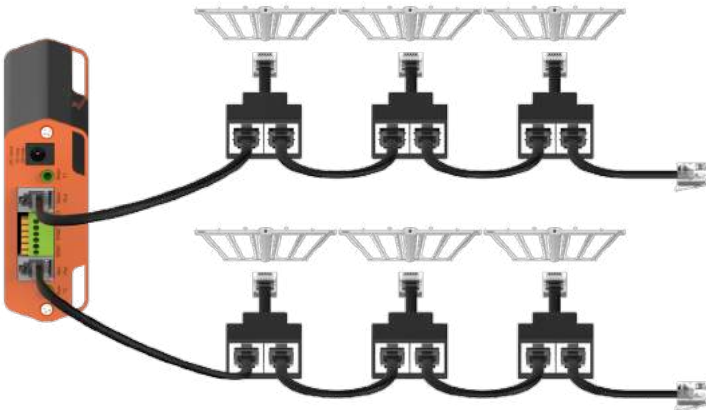
WARNING! READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE USING OR WORKING WITH THE PRODUCT. BE SURE TO MOUNT THE FIXTURE TO SOMETHING THAT CAN HOLD THE WEIGHT OF THE FIXTURE.

In order to mount the fixture properly, start by identifying a suitable support structure for the fixture to mount on. Common support structures include pallet racks, trusses, structural channels, Unistrut, and rolling tables. For optimal results, we recommend that two people mount this fixture together. Be sure to mount the fixture to something that can hold the weight of the fixture.

- The user is responsible for correct and safe installation.
- Separate your power and low voltage wires when daisy chaining your fixtures.
- Ensure that your low voltage communication cables are a minimum distance of 6" from any live power supply.
- Avoid coiled cords and keep main leads separated. This prevents electromagnetic interference.
- Please have an experienced, certified service personnel mount and install this device, in accordance with the applicable local laws and regulations.
- Ensure the existing electrical system can support the voltage and current requirements of the fixture.
- Do not open or disassemble the fixture. It contains no serviceable parts inside. Opening the fixture is dangerous and will void the warranty.
- Modification to the cords is dangerous and voids the warranty. Do not expose the fixture to the following conditions: condensing humidity, heavy mist, fog or direct spray, extreme temperatures outside of its operating range, direct sunlight while in use and dust.
- Always disconnect the fixture before performing maintenance.
- Give the fixture a cool-down period of about 30 minutes before touching the fixture.
- Do not use this fixture near anything flammable or reactive. The fixture can heat up to 185 ° F.
- Ensure when connecting the daisy chain that you're following the diagram below:

CONNECTING UP TO 80 LED FIXTURES

A group of up to 40 Luxx Lighting 645w LED Pro fixtures can be connected to both the main RJ9 port and the auxiliary RJ9 port of our NX-1 controller.



- Turn the dimming knob on all of the fixtures to "EXT" (external control).
- Plug the RJ9 end of one of the provided controller cables into the RJ9 main port of the controller.
- If a two room setup is used or if more than 40 LED fixtures have to be connected, plug a second controller cable in the RJ9 aux port.
- Plug the RJ14 end of the controller cable(s) into the input of a RJ14 splitter. Use an interconnect cable to connect one output of the RJ14 splitter to the RJ14 port of the LED fixture.
- Use an interconnect cable to connect one output of the RJ14 splitter to the input of the following RJ14 splitter.
- Repeat this process to connect up to 40 LED fixtures per group.

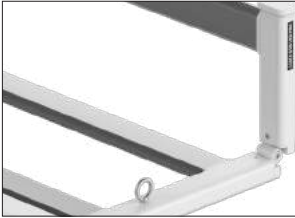
UNFOLDING THE 645W LED PRO

WARNING! ALWAYS PLACE THE 645W LED PRO ON A CLEAN, SOFT SURFACE TO AVOID DAMAGING THE LED

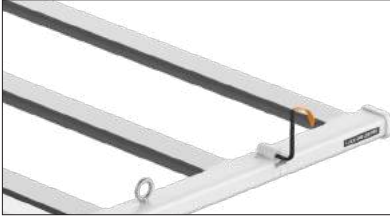
1. Loosen the bolts on all four of the hinges.
Make sure not to loosen the bolts all the way.



2. Lift up the folding section and rotate it 180 degrees.



3. Hand tighten the bolts to lock the hinge in place.
Don't over tighten the bolts.



UNISTRUT MOUNTING PART LIST

Parts list for mounting the fixture to Unistrut:

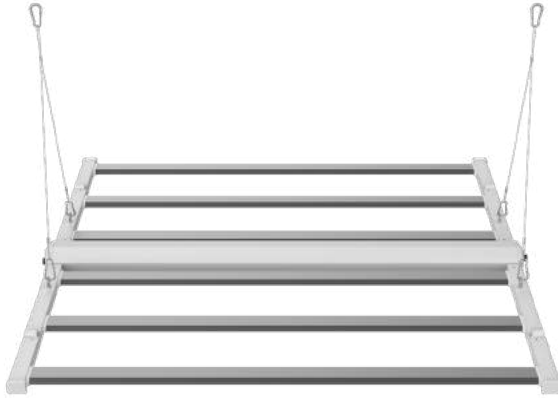
- | | |
|-------------------------------|-------------------------------|
| — •10/32" or M5-0.8 hex nut | •10/32" or M5-0.8 hex nut — |
| — •10/32" or M5 fender washer | •10/32" or M5 fender washer — |

- | | |
|--|--|
| — •10/32" or M5-0.8 x 3" long all thread rod | •10/32" or M5-0.8 x 3" long all thread rod — |
| — •10/32" or M5-0.8 hex nut | •10/32" or M5-0.8 hex nut — |



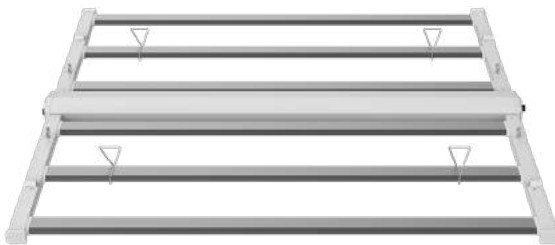
MOUNTING WITH LANCE HANGERS

- Allow an additional 25" from the top of fixture for the length of hanger.
- Locate the 4 eye bolts on the LED fixture and slide the lance hanger clips onto two opposing eye bolts.
- Be sure to hang from the center of the lance hanger.



SOLID DECKING MOUNTING

- Using the solid decking mounts, loop each mount across the crossbar above the LED light bar second from the end of either side of the fixture. Use two decking mounts on either end.
- Once all four decking mounts are in place, lift the LED fixture up and mount it on the decking mounts. You can do this by carefully prying apart the hooks until there is enough room to slide the fixture between. Release the decking mounts and they will hook around the fixture.
- Adjust the LED fixture so that each decking mount makes as much surface contact with the fixture as possible.
- Now that the fixture is secured to the decking mounts, you can adjust the position of the lights by sliding the decking mounts across the crossbars and settle it in the appropriate location for your growing operation.



GROWING WITH LED'S

BY POETRY OF PLANTS (IG @poetryofplants)

When cultivating under LED lighting, a cultivator might be tempted to execute a similar methodology to HPS cultivation. This strategy can lead to frustrating results due to the environmental differences, higher usable lighting levels and subsequent higher photosynthetic rates that stimulate growth with less room for error. The focal point of heat created by a bulb also helps burn off latent load (RH) which doesn't occur with a properly built LED fixture, which diffuses heat into the ambient environment created a more evenness to environment but also can cause higher relative humidity. Also, with LEDs more input energy goes into created light than heat (which is the case with HPS).

This increase in light will stimulate higher photosynthetic rates, leading to higher transpiration rates and a higher demand of feed solution, all of which add more water into the room. When specifying dehumidifiers it's important to match the dehumidification potential with the volume of water added. With LEDs, it is safe to assume that the peak water demand per day will be 1 gallon per sq ft of canopy. Remember this is PEAK water demand, daily water demands will in reality be less and dependent on pot size, cultivar type, and plant age. For example, a 2-week-old plant will require less water than a 6 week-old plant.

PPFD ENVIRONMENT

WEEK	1	2	3	4	5	6	7	8	9
	FLOWER	FLOWER	FLOWER	FLOWER	FLOWER	FLOWER	FLOWER	FLOWER	FLOWER
PPFD	450	550	650	750	750-850	850-950	850-950	850-950	850-950
RH	60-70%	65-70%	60-65%	60-65%	60-65%	60-65%	60-65%	50-55%	50-55%
SLT	72f-75f	72f-75f	72f-75f	75f-78f	75f-78f	78f-82f	78f-82f	68f-72f	65f-68f

Because of the higher photosynthetic and growth rates, plants that receive a higher PPFD will require more food. It is recommended when first cultivating under LEDs, for the cultivator to match PPFD levels used under HPS and make gradual increases of both light and fertilizer PPM during subsequent runs. It is also recommended that the cultivator uses a quality PAR meter that measures PPFD (umol) to understand how much light they are giving the plant.

APPROPRIATE BASELINE LIGHTING LEVELS

PHASE	MOTHERS	CLONE	PHASE 1 VEG	PHASE 2 VEG
UMOL	300-600	75-125	125-200	200-300

WEEK	1	2	3	4	5	6	7	8	9
	FLOWER	FLOWER	FLOWER	FLOWER	FLOWER	FLOWER	FLOWER	FLOWER	FLOWER
UMOL	200-300	300-500	500-600	600-700	700-750	750-850	850+	850+	850+

HOW TO ASSESS APPROPRIATE PHOTOSYNTHETIC RATES

Use a laser thermometer to measure leaf surface temperature. Under LEDs the leaf surface temperature should be at or around ambient canopy temps [2-3 degrees differential]. Transpiration generally cools the leaf surface, so if your leaf surface temp is climbing 2-3 degrees higher than ambient canopy then the light energy is not being turned into phytochemicals (which is desired) and instead is being reflected back as heat (undesired and used to cool down the plant). If the plant is heating up above the ambient temps then you need to dial down the light intensity until the stress is resolved. If this occurs for multiple days, then you should also dial down the fertilizer concentration, feeding the plant more water to help cool without leaving a buildup of salts in the media (which will choke the roots, aka osmotic root pressure). You should also perform daily pour through run off tests to make sure the media isn't becoming acidic and the EC levels are close to solution EC level].

ENVIRONMENT

- This LED fixture has an IP66 rating and is designed to be used in a high-humidity environment.
- Optimal ambient air temperature for this LED fixture is between 15°C-60° F / 26°C-80° F. This LED fixture is NOT intended to be used outdoors and should not be directly exposed to water.

MAINTENANCE

- Clean with warm water and cloth.
- Do not clean the LED fixture with detergents, abrasives or other aggressive substances.
- Please regularly check the LED fixture for dust or dirt buildup. Clean if necessary. Contamination may cause overheating and decreased performance.

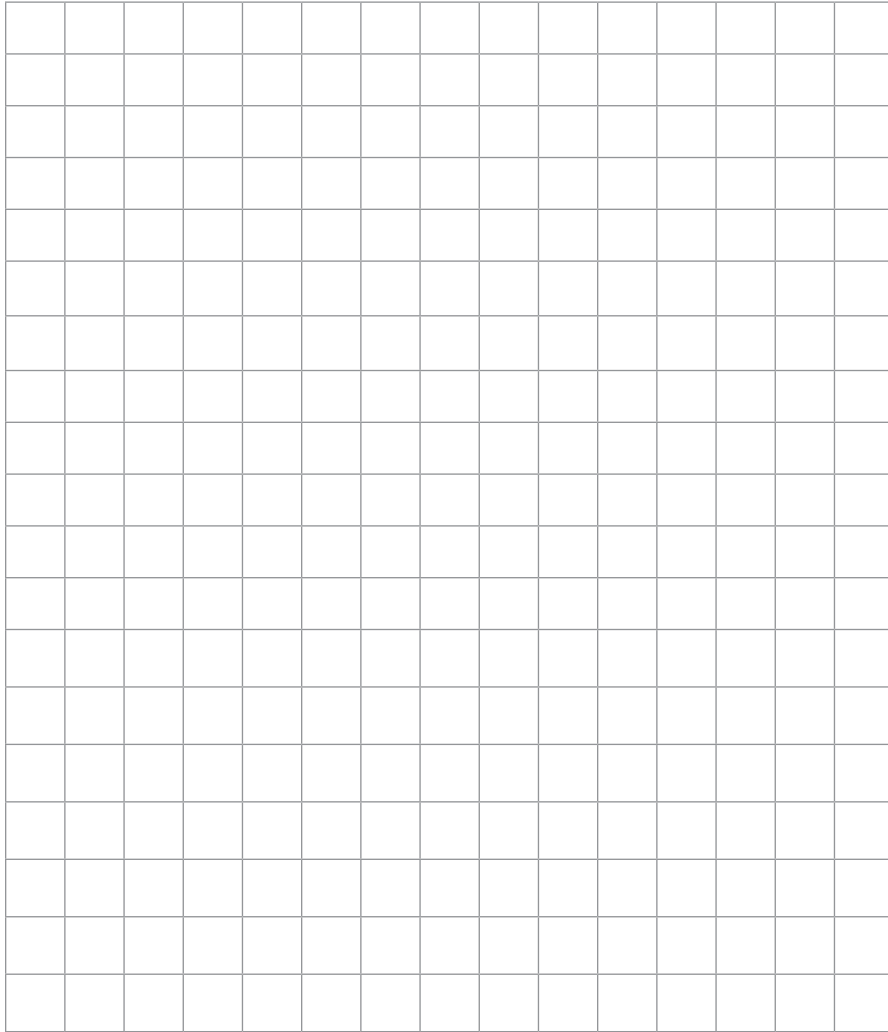
STORAGE AND DISPOSAL

- This fixture is to be stored at an ambient temperature of to 15°C-60° F / 26°C-80° F in a dry and clean environment.
- This product must not be disposed of as standard waste. It is to be collected or brought to a recycling center for proper disposal and environmental treatment.

5 YEAR WARRANTY

- Luxx Lighting warrants the mechanical and electronic components of this LED product and guarantees the materials and workmanship free of defects, if used under normal operating conditions within a period of five (5) years from the purchase date.
- All returns and claims must be presented with the original proof of purchase.
- If you find that there are any defects with this product that relate to either the workmanship or the materials but are not due to improper use or user error, Luxx Lighting shall, at its discretion, either replace or repair the product using the appropriate new or reconditioned parts.
- In the case that Luxx Lighting decides to replace the entire product, the date of the limited warranty shall apply to the replacement from the date of the purchase of the initial product for five (5) years.
- We've performed a lifetime analysis test of our LED and guarantee that at 54,000 hours they will still produce 90% output.
- All RMA's must be registered at www.luxxlighting.com/rma

1 Square = ____ Foot/Feet



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TITAN®
CONTROLS

ARES™

8 Burner Series LP/NG
Instruction Manual




www.titancontrols.net

Ares™ Series - 8 Burner

- Warnings
- Ares™ Series - CO₂ Generator Overview
- Installation
- Start Up Procedure
- Troubleshooting Notes
- **What to do if you smell gas?**
- CO₂ Generator Specifications
- Warranty Information
- Service and Repair Program

Warnings

- Read all instructions before operating your Ares™ Series – CO₂ Generator
- Do not put your CO₂ generator in an area where it can get wet or sprayed
- Mount your CO₂ generator SECURELY to the ceiling using hardware provided
- LP/NG gases can be dangerous – check all connections with soapy water before firing
- If you smell gas, unplug CO₂ generator and do NOT re-light until connections are tightened
- When using “bug bombs” in area, cover CO₂ generator completely to avoid corrosion
- There are no serviceable parts in CO₂ generator. Do not attempt to repair the unit
- Breaking “warranty” seal will void your warranty
- When CO₂ generator is NOT in use, place in sealed bag (i.e. garbage bag, etc)
- Do not put paper clips, tools, etc. into unit. Possible electrocution may occur
- Make sure to verify your power source prior to plugging CO₂ generator into outlet
- Check that all equipment that will activate this CO₂ generator is the proper voltage
- Avoid touching or handling CO₂ generator chassis while operating. You may get burned
- Use caution when operating CO₂ generator in extremely humid environments
- Operate CO₂ generator in well ventilated area
- Do NOT use Teflon tape on gas connections. All gas fittings are self sealing
- Do not use CO₂ generator for purposes other than the unit was designed to function
- Use CO₂ generator within defined environmental specifications
- Ask your Dealer for tips and techniques regarding the use of this CO₂ generator
- Be conscientious when disposing of any products

FOR WARRANTY SERVICE: Please read warranty information first.

If after reviewing the troubleshooting tips the unit will still not work, you should return it to the Dealer where you purchased the controller. They will be able to further evaluate the unit and test its various components and quite possibly will be able to identify and/or fix any problems. If the Dealer is unable to fix the unit, they will return it to us for factory repair.

If there are no Dealers in your area, you may contact us directly for technical support. If we can-not help you resolve the problem over the phone, we will issue you a RMA # (return merchandise-authorization) authorizing you to return the unit to us for factory reconditioning (if the unit is under warranty). Contact the number below for a RMA and shipping address. Complete the form below and include it with your unit. Also please write the RMA # on the outside of the box.

Please package the unit in its original packaging. If it is damaged in shipment we cannot be responsible.

Once we receive the unit back, we will repair the controller within 48 hours (business) and return it to you freight prepaid via UPS ground shipment.

Include the following if returning directly to Titan Controls®

- Proof of purchase
- This completed form
- RMA # on the outside of the box

Return Merchandise Authorization Number (Required)

Company Name: _____

Contact Name: _____

Address: _____

Phone #: _____

Email address: _____

What is the nature of the problem? _____

Shipping address will be given when the RMA # is issued.



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For technical assistance call us at 1-888-80-Titan or 1-888-808-4826.

Notes:

Ares™ Series – CO₂ Generator Overview

The Ares™ Series – CO₂ Generator is used to create and maintain the CO₂ in your growing environment. CO₂ has been proven to considerably increase the growth of plants. The normal level of CO₂ in the environment is between 300 parts per million (ppm) to 600 ppm. The recommended level of CO₂ in the grow area should be between 1000 ppm and 1500 ppm. Your plants uptake CO₂ only during day light hours, so by utilizing a CO₂ controller (Atlas® Series CO₂ Monitor/ Controller) or short cycle timer (Apollo™ Series timer) or a multi-functional controller (Kronus® Series Environmental controller) will allow you to effectively monitor and dose CO₂ in a safe and efficient method. The Ares™ Series – CO₂ Generator is easy to set up and operate (See **Installation Examples**). Products created for our industry, by our industry. Ares™ Series – CO₂ Generators are built with the highest quality components to provide the operator with years of trouble free service.

Installation

Determine the best location for the generator. It must be hung level, in an open area that is adequately ventilated.

WARNING: In spaces without proper ventilation CO₂ levels can accumulate and become toxic (levels above 5,000 PPM). Plants benefit from levels up to 1,500 PPM. Levels above 2,500 PPM can cause headaches and/or feelings of being ill.

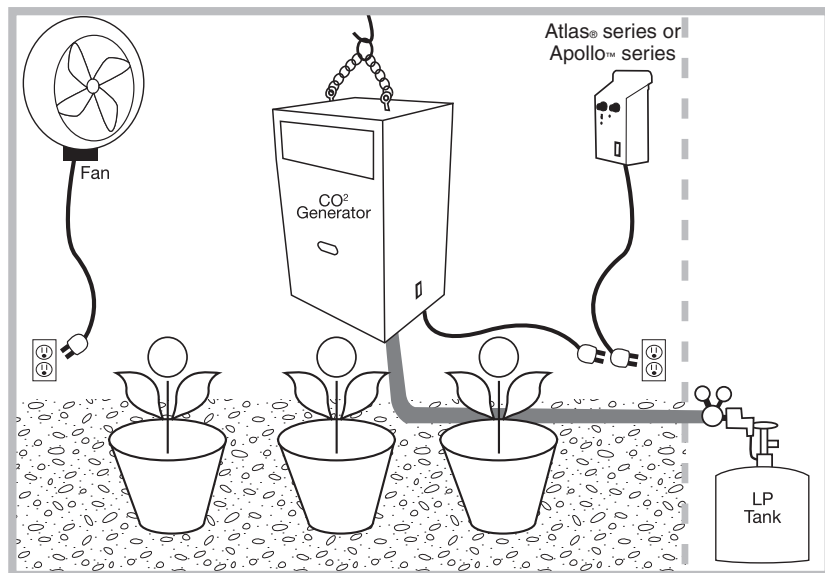
The generator requires on unrestricted flow of air through the bottom and must be hung. Select an overhead support, such as a ceiling joist, to hang the generator. The unit must have a minimum clearance of 20" of space between it and any other obstructions. Use the included hardware (20" chain, screw hook, and carabiners) to securely hang the generator.

1. Install the screw hook into the overhead support. Use the carabiners to secure the chain to the unit and the screw hook.
 2. Verify that the generator is hanging level. The generator has a safety feature (the tip over switch) that will turn off the burners if the unit tips over or falls down. The switch is like a pendulum and will turn off the unit if it is not level.
 3. Verify that the gas supply and the regulator being used match the type of CO₂ generator you're using (LP or NG).
 4. Securely tighten the gas connection with 2 wrenches using the included gas supply hose. Connect one end to the flare fitting and the other end to the provided gas regulator. Verify the connection is secured safe.
 5. Pressurize the gas line after connections are verified. Use soapy water and a spray bottle to check for leaks by spraying it onto the gas connection fittings and watch for bubbles. If bubbles appear, re-secure the connection and repeat the process.
 6. Using the included power supply, connect the unit to a controller or timer that will determine the amount of time and how frequently the generator will operate.
- Note:** This generator requires 120 VAC to 24VDC power. Use only power supply included with the CO₂ generator.
7. The ignition module and firing sequence are activated by the main power switch located on the side of the generator. The generator has power and is in operation if the green 'Power On' indicator light is on.

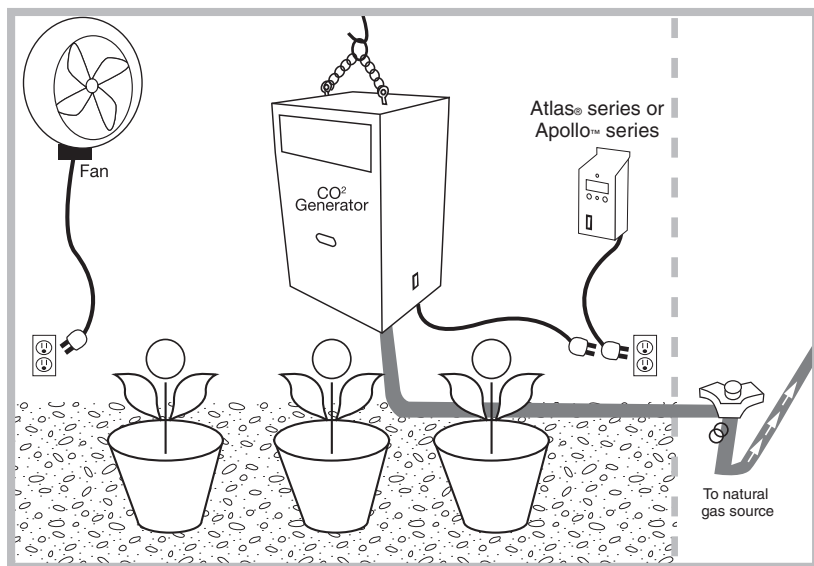
Note: DO NOT TURN ON THE GENERATOR. After the unit has been successfully installed, read the 'Start-Up Procedure' to ensure safe and proper use of the generator.

WARNING: A spark is produced from a pair of electrodes near the tip of the brass burners to ignite the gas. Keep foreign objects away from the electrodes.

CO₂ Generator using LP Tank



CO₂ Generator Using NG Supply Line



Warranty Information

Titan Controls® warrants the original purchase of this product against defects in material and workmanship under normal use for three (3) years from the date of purchase.

- During the warranty period, Titan Controls® will, at our option, and without charge, repair or replace this product if the controller or any of its components fail or malfunction.
- All returns or repairs must be accompanied by a Return Merchandise Authorization (RMA) number prior to any service of the product.
- This warranty is expressly in lieu of all other warranties, expressed or implied, including the warranties of merchantability and fitness for use and of all other obligations or liabilities on the part of the seller.
- This warranty shall not apply to this product or any part thereof which had been damaged by accident, abuse, misuse, modification, negligence, alteration or misapplication.
- Controllers with serial numbers or date tags that have been removed, altered or obliterated; broken seals or that show evidence of tampering; mismatched serial numbers or nonconforming parts; are excluded from coverage.
- Titan Controls® makes no warranty whatsoever in respect to accessories or parts not supplied by Titan Controls®.
- Monetary refunds of the warranty will not be given.
- The Buyer assumes all responsibility regarding the use & installation of this controller.
- All warranty service is provided through the factory or an authorized service representative.
- This warranty shall apply only to the United States, including Alaska, Hawaii and territories of the United States and Canada.
- Defective controllers need to be returned with the "proof of purchase" receipt.
- For additional warranty information, contact a Titan Controls® Technical Service Representative or your Dealer.
- NOTE: Titan Controls® is a controller manufacturer. All sales offerings to the public are done through a nationwide group of Dealers. No sales offerings will be made directly to the general public.

Service and Repair Program

- For all service and repairs please contact our Technical Service Representative at 888-808-4826 for a Return Merchandise Authorization (RMA) number.
- All factory service & repairs will be completed within 48 hours of receipt of controller and after authorization by customer for repairs.
- Titan Controls® will, at its discretion, repair or replace the controller.
- Factory calibration services are available for all Titan Controls®.
- Returning Units: Please contact your retail store for returns.

What To Do If You Smell Gas

- Do not try to light any appliances.
- Do not touch any electrical switches and do not use any phones within the building.
- Open doors or windows to ventilate the area.
- Immediately call your gas supplier from outdoors.
- If you cannot reach your gas supplier, call the fire department.

CO₂ Generator Specifications

- Power Requirements: 120 VAC - 24VDC Power Adaptor
- Number of Burners: 8
- Burner Material: Brass
- Propane Rating: 18,104 BTU's
- Natural Gas Rating: 22,163 BTU's
- Cubic Ft. CO₂ per Hour: 22
- Pressure Propane: 11" WC/2.8 kpa
- Natural Gas: 4.5" WC/1.15 kpa

Natural Gas

NG supply to the generator must be regulated to a very low pressure of 4.5" WC or 1/4 PSI. Because the incoming gas pressure from these pipelines can vary from less than 1/4 PSI to more than 5 PSI, the provided regulator MUST be used to ensure proper pressure regulation.

Please Note: WC = inches of water column, a standard measuring unit for low pressures.

WARNING: Installation and connection of gas lines must be in compliance with local and national building codes.

Liquid Propane

Liquid Propane (LP) is stored in various sized pressurized tanks. The supplied LP regulator is designed to connect directly to portable LP tanks and MUST be used. The propane gas supplied to the generator must be regulated to a very low pressure of 11" WC (water columns). Large outdoor propane tanks may be used, as long as the gas pressure is 11" WC.

Start Up Procedure

After successfully completing the installation, follow these steps...

1. Make sure the power switch is OFF and the unit is NOT plugged in.
2. Verify there are no foreign objects or loose packaging materials on the inside of the unit.
3. Look to see that nothing appears to be damaged or out of place.
4. Check and confirm the gas connections are properly connected.
5. Pressurize the gas lines by opening any of the shut off valves on the gas supply. Test for gas leaks and verify that there are none.
6. Make sure there are no objects within 20" of the surface of the unit.
7. Plug the power supply into a 120V power source. Then connect the small power cable to the power inlet jack on the generator.
8. Turn the power switch 'ON'. The green 'Power On' LED light should be illuminated.
9. The ignition module will attempt to ignite the burners. The yellow 'Pilot Valve On' LED indicator light should illuminate.
10. If the burners fire, continue to the next step. If this is the first time using this unit or the LP tank has been replaced recently, the burners may not fire on the first attempt. After a 30 second pause, the generator will attempt to re-fire the burners again for 15 seconds. This cycle will repeat a maximum of 5 times.

Note: The generator should fire before the 5th attempt. However if it does not, the generator will activate the 'Lock Out' procedure and the 'Lock Out Error' LED will illuminate. If this happens, turn off the generator and wait for 5 minutes for the gas to dissipate. After the gas has dissipated, turn the generator back on to try again.

Note: If starting the generator for the first time or after recently replacing the LP tank, make sure to purge the gas line of any air to ensure gas is flowing to the burners.

11. Once the burners fire, look into the unit and confirm the flame is blue and consistent, and resembles a 6 point star.

WARNING: Power the unit off IMMEDIATELY if the flame appears yellow, excessively large, or blue but small. If the flame appears yellow or too large, verify the correct gas supply is being used and that the supplied gas regulator is being used. High pressure or incorrect gas type may increase flames to dangerous heights.

If the flame is blue but appears small, verify the correct gas supply is being used (if LP, verify the tank level is not low) and that the supplied gas regulator is being used. Low pressure or low LP tank may cause small or "lazy" blue flames.

12. After the generator has been tested at full capacity, connect it to a compatible Titan Controls CO₂ controller or timer.

WARNING: The 8 Burner Generator produces over 23,000 BTU's of heat at full capacity. Verify that the generator is not getting too hot for the surrounding area.

WARNING: Always verify that the burners are operating correctly. Burners burning very yellow indicate a rich condition, or possibly low oxygen levels. Burners that do not consistently ignite could be dogged or may not be receiving enough gas pressure. A burner that burns almost invisibly with a clean blue-white flame is operating correctly.

ELECTRONIC IGNITION CONTROL MODULE:

For safer operation; this generator has an Electronic Ignition Control Module which eliminates the “open” pilot flame. The module creates a spark that lights the burners; providing consistent and controlled starts. The dual redundant solenoid valves are controlled by the ignition controller.

LED INDICATORS:

There are 3 LED indicator lights located on the side of the generator near the power switch.

Main Power On- When lit this LED indicates the 24V power supply is connected and the generator is powered on.

Lock Out Error- When flashing this LED indicates that the ignition controller shut off the solenoid valve and the generator is locked out and will not operate until power has been shut off and then turned back on. For more information on why this occurs review the **Start-Up Procedure** on page 5.

Pilot Valve On- When power is applied the electronic ignition module will begin to provide a spark for 15 seconds while the pilot solenoid is energized. The LED will remain lit while the solenoid is activated and should be lit during operation.

Troubleshooting Notes

Should there be a gas smell in the area?

NO. Turn off the gas supply immediately. Do not turn on any electrical devices. Ventilate the area by opening vents, doors or windows. Leave the area until the gas smell is no longer present. Once ventilated and the gas smell is gone, determine where the leak is by using soapy water. Spray the soapy solution on the gas connections and watch for bubbles. Bubbles will appear if the connection(s) are leaking. Seal the leaks. If this does not correct the problem, consult your Dealer.

The power is connected but the generator is not working and no indicator lights are on.

The “tip” over switch may have been activated. Tilt the unit to one side and listen for a clicking noise. The switch is like a pendulum and will turn off the unit if it is not level.

The burners are not lighting but the unit is trying.

If the burners do not fire during the first attempt, the CO₂ generator will try again. After a 30 second pause the unit will attempt to re-fire the burner(s) for 15 seconds. This cycle will repeat a maximum of 5 times. After 5 unsuccessful attempts, the module will lock itself. The LED light next to ‘Lock Out Error’ will be illuminated. Verify that the spark is being generated and the position of the sparking electrodes is close enough to the burner to be lit. Review the **Start-Up Procedure** on page 5 for other possible explanations.

One or more of the burners is not lighting.

Make sure the gas line is not kinked or twisted and the gas supply is adequate. Do not operate if yellow or large flames are present. If using propane, turn off the gas source for 30 seconds and then try again.

The CO₂ level is not increasing to my desired PPM level.

If all burners are operating, check for air leakage in the grow area and confirm that exhaust fans are not operating when CO₂ is being produced. Verify that your CO₂ generator is the correct size for your area.

Should the generator be buzzing and or sparking?

Yes. When the unit is firing you will hear “sparking” sounds. It will attempt this up to 5 times before going into ‘Lock Out Error’ mode.

The indicator light beside the ‘Lock Out Error’ is flashing.

The unit may be out of propane or the gas supply may have been interrupted. The or ‘Lock Out Error’ mode is an automatic built-in feature that will activate if the pilot does not fire after 5 attempts. Once the problem has been corrected, turning the power off for 30 seconds and then back on will reset this function. It will also reset itself after 20 minutes and attempt to ignite the burners.

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury, or loss of life.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

Installation and service must be performed by a qualified installer, service agency, or the gas supplier.

Using the included power supply, connect the unit to a controller or timer that will determine the amount of time, and how frequently the generator will operate. The Ares™ Series requires 24 volts DC. *The unit should be operated only with appropriate controls and/or timers.*

Quest 165 and 225 Dual

Installation, Operation and Maintenance Instructions

– Read and Save These Instructions –

This manual is provided to acquaint you with the dehumidifier so that installation, operation and maintenance can proceed successfully. Ultimate satisfaction depends on the quality of installation and a thorough understanding of this equipment. The dehumidifier is built around tested engineering principles and has passed a thorough inspection for quality of workmanship and function.

Features:

- 230V, 60Hz
- Industry-leading efficiency
- Patented, optimized air-to-air heat exchanger
- High-efficiency, long-life impeller fan
- Quiet operation
- Superior air filtration (MERV-11 standard)
- Auto-restart after power outages
- Environmentally friendly R410A refrigerant
- Low voltage control



PATENTS:
D570,988
8,069,681
9,052,132

Water Removal Rates (Pints/Day) @ 80°F 60% (RH)

Dehumidifier	Pints Removed	Gallons/Liters
165 Dual	165	20.6/78.2
225 Dual	225	28.1/106.6



Therma-Stor[®] LLC
Driven by performance. Powered by design.™

4201 Lien Rd
Madison, WI 53704
www.QuestClimate.com

Toll-Free 1-877-420-1330
info@QuestClimate.com

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Safety Precautions

Read the installation, operation and maintenance instructions carefully before installing and operating this device. Proper adherence to these instructions is essential to obtain maximum benefit from your **Quest Dual** Dehumidifier.

READ AND SAVE THESE INSTRUCTIONS

- The device is designed to be installed **INDOORS IN A SPACE THAT IS PROTECTED FROM RAIN AND FLOODING.**
- Install the unit with space to access the back or side panels for maintenance and service. **DO NOT INSTALL UNIT WITH THE SERVICE PANELS INACCESSIBLE.**
- Avoid directing the discharge air at people, or over the water in pool areas.
- If used near a pool, spa or water; be certain there is **NO** chance the unit could fall into the water, be splashed and that it is plugged into an outlet that is a **GROUND FAULT INTERRUPT** protected circuit.
- **DO NOT** use the device as a bench or table.
- **DO NOT** place the device directly on structural members. Provide vibration isolation in order to minimize operational vibration and/or noise.
- A drain pan **MUST** be placed under the unit if installed above a living area or above an area where water leakage could cause damage
- Never operate a unit with a damaged power cord. If the power cord is damaged it must be replaced by the manufacturer, its service agent, or similarly qualified person in order to avoid a hazard.
- Make all electrical connections in accordance with the current edition of the NEC ANSI/NFPA 70 and any national and local codes or ordinances that may apply.
- Maintain a minimum 1ft. (.3m) clearance to avoid obstructing the air return and supply.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

1. Intended Application for Quest Dual Dehumidifier

The Quest Dual Dehumidifier is designed to operate in temperatures between 56° and 95°F.



In order to efficiently control humidity levels, the area in which the dehumidifier is to be operated must be free of water intrusion or excessive fresh (outside) air infiltration. Before installing the Quest Dual Dehumidifier, water intrusion and air infiltration problems should be addressed or noted in calculations.

2. Registrations

The Quest Dual Dehumidifier units conform to unified standard UL 60335-2-40, CSA C22,2#60335-2-40.

US Patents: D570,988 / 8,069,681 / 9,052,132

3. Specifications @ 80°F/60% RH

Unit:	4037410 165 Dual	4035400 225 Dual
Blower: (Tested with duct collars on)	391 CFM @ 0.0" WG 363 CFM @ 0.2" WG 337 CFM @ 0.4" WG	526 CFM @ 0.0" WG 495 CFM @ 0.2" WG 458 CFM @ 0.4" WG
Power (Watts):	860	1500
Supply voltage:	220-240 VAC - 1 Phase - 60 Hz.	220-240 VAC - 1 Phase - 60 Hz.
Current Draw (Amps):	3.6	6.9
Energy Factor: (L/kWh)	3.7	2.9
Operating Temp:	56°F - 95°F	56°F - 95°F
Water Removal (Pints/Day): Efficiency (Pints/kWh):	165 7.8	225 6.1
Air Filter (MERV-11 Nominal):	Size: 16" x 20" x 2"	Size: 16" x 20" x 2"
Power Cord: 10' 14/3 SJTW	NEMA 6-15P 	NEMA 6-15P 
Drain Connection:	3/4" Threaded NPT	3/4" Threaded NPT
Refrigerant Type: Refrigerant Amount:	R410A 2lb. 0oz.	R410A 2lb. 0oz.
Dimensions: Width: Height: Length: Weight:	Unit 20.25" 21.75" 37.88" 140 lbs Shipping 25" 29" 42" 160 lbs	Unit 20.25" 21.75" 37.88" 160 lbs Shipping 25" 29" 42" 180 lbs

* Requires buck/boost transformer to run on 208V or 277V

4. Installation

4.1 Location

The Quest Dual Dehumidifier can be installed in a variety of locations to meet the owner's needs as listed below. In all cases keep the following cautions in mind:

- It is designed to be installed **INDOORS IN A SPACE THAT IS PROTECTED FROM RAIN AND FLOODING.**
- Install the unit with space to access the back and side panels for maintenance and service and also to allow easy access to the filter cover panel. **DO NOT INSTALL UNIT WITH THE FRONT PANEL OR FILTER COVER PANEL INACCESSIBLE.**
- Avoid discharging the air directly at people, or over the water in pool areas.
- Be certain there is **NO** chance the unit could fall into water or be splashed and that it is plugged into a **GROUND FAULT INTERRUPTER.**
- **DO NOT** use the Quest Dual Dehumidifier as a bench or table.
- **DO NOT** place the Quest Dual Dehumidifier directly on structural members. Provide vibration isolation in order to minimize operational vibration and/or noise.
- A drain pan **MUST** be placed under the unit if installed above an area where water leakage could cause damage.
- Maintain a minimum 1ft. (.3m) clearance to avoid obstructing the air return and supply.
- Place the Quest Dual Dehumidifier on supports that raise the base of the unit 2.5" above the drain pan to a P-trap can be installed. See Section 4.3.
- The Quest Dual Dehumidifier may be suspended with steel hanger, straps, or a suitable alternative from structural members, unit must be supported from underneath. Don't hang from sides or ends. See section 4.4

4.2 Electrical Requirements

The Quest Dual Dehumidifier plugs into NEMA rated Receptacles. The amp draws for each unit under normal operating conditions are listed on page 4. A ground fault interrupter protected circuit is required.

Install the remote control panel in a central area of the structure where it will sense the relative humidity of the structure accurately. Do not install the control panel where it may not accurately sense the relative humidity such as near HVAC supply registers, near exterior doors, or near a pool or spa. The installer must supply the wiring between the Quest Dual Dehumidifier and the control panel. Be sure to safely route the control wiring to prevent damage during installation. Be careful not to cross the wires when connecting the Quest Dual Dehumidifier and the remote control panel.

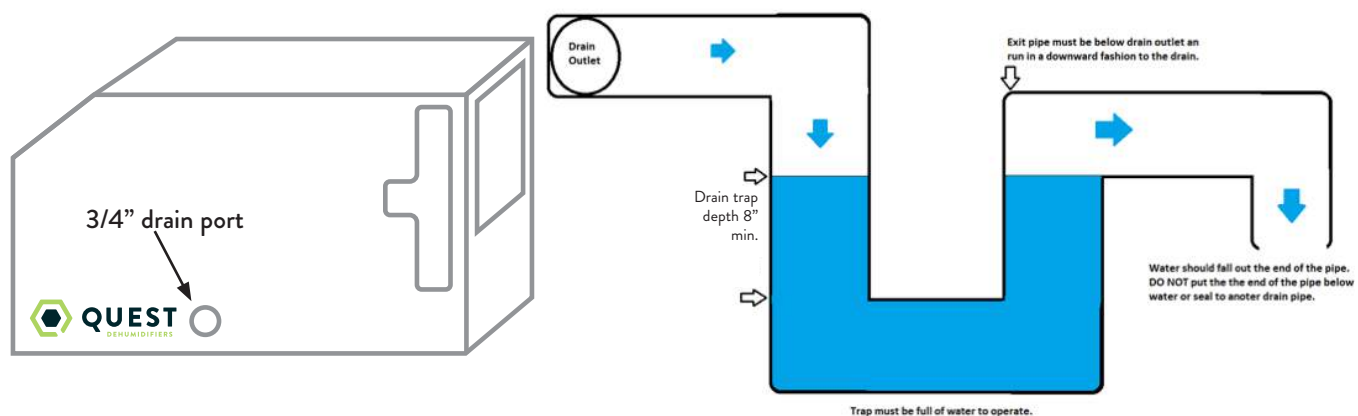
The remote controls of the Quest Dual Dehumidifier are powered by a low voltage circuit (24 VAC) and must **NEVER** contact or be connected to a high voltage circuit. The control terminals and remote control are labeled and numbered to prevent confusion. Be sure to consult the electrical schematic in this manual or inside the access panel of the Quest Dual Dehumidifier before making the control connections.

⚠ CAUTION! For proper drainage, the unit must be mounted so the drain outlet is at least 4" above the floor drain, and must be fully supported under the base.

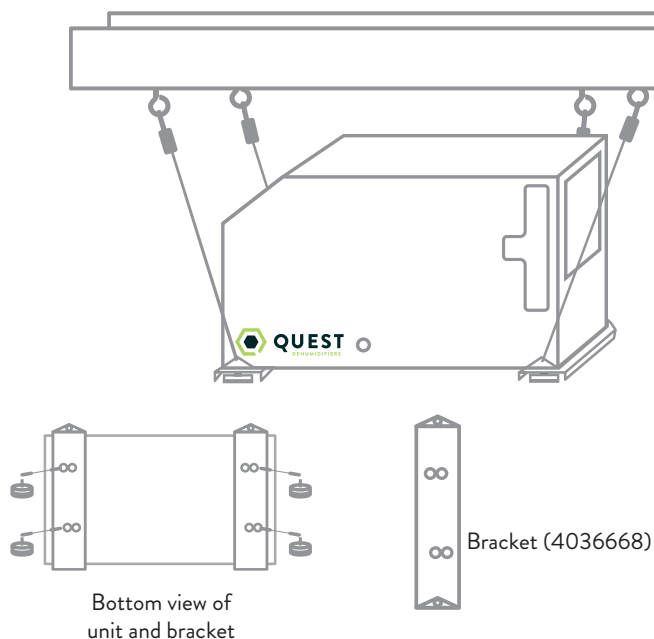
4.3 Condensate Water Removal

Condensate drains by gravity via the drain port. Use 3/4" male NPT PVC pipe. An optional condensate pump kit may be installed if a lift is required to dispose of the condensate. Optional parts list for information on the kit.

Follow Diagram



4.4 Hanging Diagram



4.5 Ducting

4.5A Supply Duct Kit (P/N 4028607)

A factory designed supply duct kit can be purchased to accept 10" ducting to both outlets of the Quest Dual. Contact your dealer or call 1-877-420-1330 to order or go to www.questclimate.com/product-category/accessories.

4.5B Return Duct Kit (P/N 4028610)

A factory designed return duct kit can be purchased to accept 12" ducting. Contact your dealer or call 1-877-420-1330 to order or go to www.questclimate.com/product-category/accessories.

*Recommended 25' max run on both supply/return ducting.

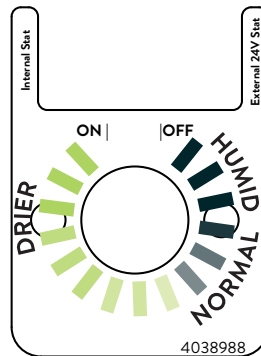
5. Control Options

The Quest Dual Dehumidifier can be controlled by its on board dehumidistat or with an external control using its low voltage terminal block.

5.1 On board dehumidistat

*Place switch into dehumidistat mode.

The humidity control is an adjustable switch that closes when the relative humidity of the air in which it is located rises to the dial set point. It opens when the RH drops 4 to 6% below the set point.



Approximate Humidity Levels Per Setting

"Dry"	20% to 30% Relative Humidity
"Normal"	50% Relative Humidity (Recommended)
"Humid"	80% to 90% Relative Humidity

The dehumidifier will run until the relative humidity (RH) is reduced to the humidity control dial setting.

5.2 External Control

*Place switch to 24V mode.

The Quest Dual Dehumidifier is controlled using five terminals.

COM = 24volt AC power transformer neutral side (common with white)

FAN = Fan control

24V = transformer high side

DEHU = Dehumidification (fan and compressor) control

FLOAT = Normally closed, external float switch can be wired to turn off unit

Between the COM and the 24V is a 40VA transformer. This low voltage power source powers the relay coils which control the fan and compressor. This 24VAC transformer can also be used to power HVAC accessories external to the dehumidifier.

- To turn on the dehumidifier make contact between 24V and DEHU terminals.
- To turn on the fan make contact between 24V and FAN terminals.
- To power a 24V HVAC accessory, connect the accessory to the COM terminal and the 24V terminal.

NOTE: 18 ga wire needed between the Quest Dual dehumidifier and the external control

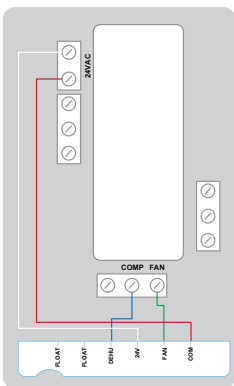
Quest offers two external control options

5.2A DEH 3000R

NOTE: 22 ga wire needed for sensor

4028531

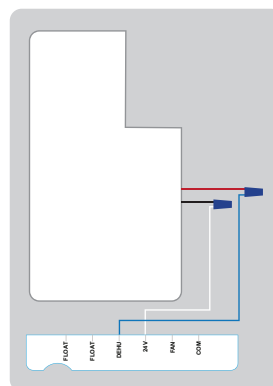
QUEST DEH 3000R CONTROL
WIRING DIAGRAM



5.2B Honeywell Remote Humidistat

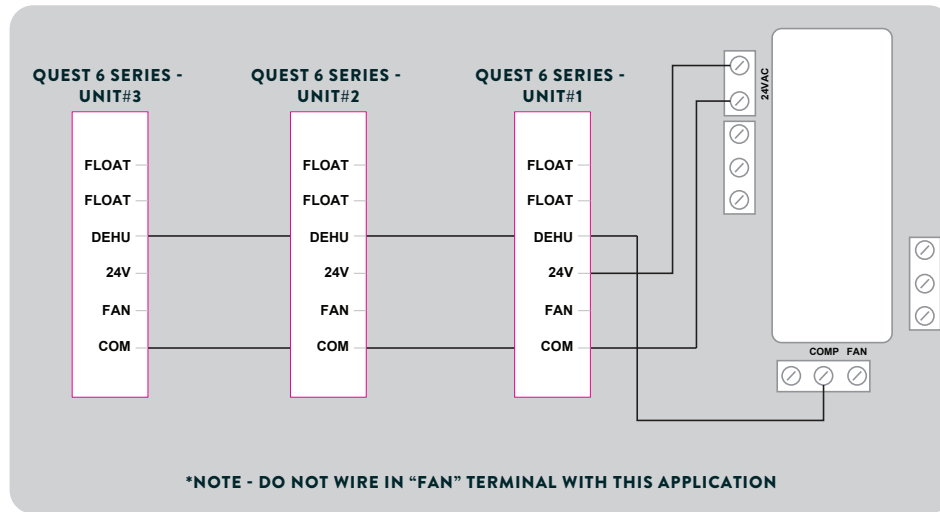
4020175

HONEYWELL REMOTE HUMIDISTAT
WIRING DIAGRAM



Contact your dealer or call 1-877-420-1330 to order or go to www.questclimate.com/product-category/accessories.

5.2C Daisy Chain



6. Maintenance

⚠ WARNING! NOTE: Do not operate the unit without the filter or with a less effective filter. The heat exchange coils inside the unit could become clogged and require disassembly to clean. Filter non-compliance invalidates the product warranty.

6.1 Standard Air Filter

The Quest Dual Dehumidifier ships with a standard MERV 11 efficient pleated fabric filter. This filter should be checked every six months. Operating the unit with a dirty filter will reduce dehumidifier capacity and efficiency and may cause the compressor to cycle off and on unnecessarily on the defrost control.

To access the air filter, remove the filter access panel from the end of the Quest Dual Dehumidifier. The filter should be readily visible and can be removed by pulling it straight out of the Quest Dual Dehumidifier.

We recommend changing the filter at least every 6 months. For agriculture we recommend changing the filter with every grow cycle.

6.2 Impeller Fan Oiling

The impeller fan motor is factory lubricated for many years of normal operation, and no further oiling is required.

7. Service

⚠ WARNING! Servicing the Quest Dual with its high pressure refrigerant system and high voltage circuitry presents a health hazard which could result in death, serious bodily injury, and/or property damage. Only qualified service people should service this unit.

7.1 Warranty

A warranty certificate has been enclosed with this unit; read it before any repair is initiated. If a warranty repair is required, call the factory first at 1-877-420-1330 for warranty claim authorization and technical assistance.

7.2 Technical Description

The Quest Dual Dehumidifier uses a refrigeration system similar to an air conditioner's to remove heat and moisture from incoming air, and add heat to the air that is discharged.

Hot, high-pressure refrigerant gas is routed from the compressor to the condenser coil. The refrigerant is cooled and condensed by giving up its heat to the air that is about to be discharged from the unit. The refrigerant liquid then passes through a filter/drier and capillary tubing which causes the refrigerant pressure and temperature to drop. It next enters the evaporator coil where it absorbs heat from the incoming air and evaporates. The evaporator operates in a flooded condition, which means that all the evaporator tubes contain liquid refrigerant during normal operation. A flooded evaporator should maintain nearly constant pressure and temperature across the entire coil, from inlet to outlet.

The mixture of gas and liquid refrigerant enter the accumulator after leaving the evaporator coil. The accumulator prevents any liquid refrigerant from reaching the compressor. The compressor evacuates the cool refrigerant gas from the accumulator and compresses it to a high pressure and temperature to repeat the process.

7.3 Troubleshooting

Neither fan nor compressor running. Dehumidification is being called for. No fan call.

1. Unit unplugged or no power to outlet.
2. Humidity control set too high.
3. Loose connection in internal or control wiring.
4. Defective Compressor relay.
5. Defective control transformer.

Compressor is not running. Dehumidification is being called for. No fan call.

1. Defective compressor run capacitor.
2. Loose connection in compressor circuit.
3. Defective compressor overload.
4. Defective compressor.
5. Defrost thermostat open.

Compressor cycles on and off. Dehumidification is being called for. No fan call.

1. Low ambient temperature and/or humidity causing unit to cycle through defrost mode.
2. Defective compressor overload.
3. Defective compressor.
4. Defrost thermostat defective.
5. Dirty air filter(s) or air flow restricted.

Fan is not running. Dehumidification or fan is being called for.

1. Loose connection in fan circuit.
2. Obstruction prevents fan impeller rotation.
3. Defective fan.
4. Defective fan relay.

Low dehumidification capacity (evaporator is frosted continuously). Dehumidification is being called for

1. Defrost thermostat loose or defective.
2. Low refrigerant charge
3. Dirty air filter(s) or air flow restricted.
4. Excessively restrictive ducting connected to unit.

No ventilation. Ventilation is being called for.

1. Loose connection in ventilation control circuit
2. Loose connection in damper power circuit.
3. Defective fresh air damper.

Unit removes some water, but not as much as expected.

1. Air temperature and/or humidity have dropped.
2. Humidity meter and or thermometer used are out of calibration.
3. Unit has entered defrost cycle.
4. Air filter dirty.
5. Defective defrost thermostat.
6. Low refrigerant charge.
7. Air leak such as loose cover or ducting leaks.
8. Defective compressor.
9. Restrictive ducting.
10. Optional Condensate Pump Safety Switch open.

Unit Test to determine problem:

1. Detach field control wiring connections from main unit.
2. Connect the 24V and FAN from the main unit together; only the impeller fan should run. Disconnect the wires.
3. Connect the 24V and DEHU from the main unit together; the compressor and impeller fan should run.
4. If these tests work, the main unit is working properly. You should check the control panel and field control wiring for problems next.
5. Remove the control panel from the mounting box and detach it from the field installed control wiring. Connect the DEHU, 24V, and FAN terminals from the control panel directly to the corresponding locations on the main unit. Leave the, FLOAT and COM terminals disconnected!
6. Turn on the fan switch; the impeller fan should run. Turn off the fan switch.
7. Turn on the humidity control; the compressor and impeller fan should run.
8. If these tests work, the problem is most likely in the field control wiring.

7.4 Refrigerant Charging

If the refrigerant charge is lost due to service or a leak, a new charge must be accurately weighed in. If any of the old charge is left in the system, it must be recovered before weighing in the new charge. Refer to the unit nameplate for the correct charge weight and refrigerant type.

7.5 Impeller Fan Replacement

The motorized impeller fan is a unitary assembly consisting of the motor and impeller fan. If defective, the complete assembly must be replaced.

1. Unplug the power cord.
2. Remove the cabinet access panel.
3. Remove the screw attaching the impeller fan support bracket to the base.
4. Disconnect the impeller fan leads inside the electric box.
5. Remove fan/bracket assembly by removing 3 screws from the bracket and inlet ring assembly.
6. Remove the defective impeller fan from the bracket and replace with it with the new impeller fan.
7. Reassemble the new impeller fan by reversing the above procedure. Note: There are two pins on the backside of the cabinet that must align with the two holes in the impeller fan support bracket.

7.6 Compressor/Capacitor Replacement

This compressor is equipped with a two terminal external overload and a run capacitor, but no start capacitor or relay (See Figure 4).

7.6A Checking Compressor Motor Circuits

Perform the following tests if the impeller fan runs but the compressor does not with the fan switch and ventilation timer OFF and the humidity control ON.

1. Unplug the unit; remove the cabinet side and the electrical connection cover on the compressor top.
2. Plug in the unit and turn the humidity control to ON. Check for volts from compressor terminal R to overload terminal 3 using an AC voltmeter. If correct voltage is present, go to step 3. If no voltage, there may be a loose connection in the compressor circuit. Test each component for continuity. See the appropriate section if a defect is suspected.
3. Unplug the unit, and then disconnect the red and yellow wires from compressor terminals R & S. Using an ohmmeter check continuity between the points listed below.
4. Compressor terminals C and S: No continuity indicates an open start winding. The compressor must be replaced. Normal start winding resistance is 3 to 7 ohms.
5. Compressor terminals C and R: No continuity indicates an open run winding. The compressor must be replaced. Normal run winding resistance is .5 to 2 ohms.
6. Compressor terminal C and overload terminal 1: No continuity indicates a defective overload lead.
7. Overload terminals 1 and 3: If there is no continuity, the overload may be tripped. Wait 10 minutes and try again. If there is still no continuity, it is defective and must be replaced.
8. Compressor terminal C and compressor case: Continuity indicates a grounded motor. The compressor must be replaced.
9. Disconnect the wires from the run capacitor. Set the ohmmeter to the Rx1 scale. The capacitor is shorted and must be replaced if continuity exists across its terminals. If there is no needle movement with the meter set on the Rx100000 scale, the capacitor is open and must be replaced.
10. Reconnect the wires to the compressor and capacitor. Plug in and turn on the unit. If the compressor fails to start, replace the run capacitor.
11. If the unit still does not start, adding a hard-start kit (relay & capacitor) will provide greater starting torque. If this doesn't work, the compressor has an internal mechanical defect and must be replaced.

7.6B Replacing a Burned Out Compressor

The refrigerant and oil mixture in a compressor is chemically very stable under normal operating conditions. However, when an electrical short occurs in the compressor motor, the resulting high temperature arc causes a portion of the refrigerant oil mixture to break down into carbonaceous sludge, a very corrosive acid, and water. These contaminants must be carefully removed otherwise even small residues will attack replacement compressor motors and cause failures.

The following procedure is effective only if the system is monitored after replacing the compressor to insure that the clean up was complete.

1. This procedure assumes that the previously listed compressor motor circuit tests revealed a shorted or open winding.
2. Remove and properly dispose of the system charge. **DO NOT** vent the refrigerant or allow it to contact your eyes or skin.
3. Remove the burned out compressor. Use rubber gloves if there is any possibility of contacting the oil or sludge.
4. To facilitate subsequent steps, determine the type of burn out that occurred. If the discharge line shows no evidence of sludge and the suction line is also clean or perhaps has some light carbon deposits, the burn out occurred while the compressor was not rotating. Contaminants are therefore largely confined to the compressor housing. A single installation of liquid and suction line filter/driers will probably clean up the system.

If sludge is evident in the discharge line, it will likely be found in the suction line. This indicates the compressor burned out while running. Sludge and acid have been pumped throughout the system. Several changes of the liquid and suction filter/driers will probably be necessary to cleanse the system.

5. Correct the system fault that caused the burn out. Consult the factory for advice.
6. Install the replacement compressor with a new capacitor and an oversized liquid line filter.
In a running burn out, install an oversized suction line filter/drier between the accumulator and compressor. Thoroughly flush the accumulator with refrigerant to remove all trapped sludge and to prevent the oil hole from becoming plugged. A standing burn out does not require a suction line filter/drier.
7. Evacuate the system with a good vacuum pump and accurate vacuum gauge. Leave the pump on the system for at least an hour.
8. Operate the system for a short period of time, monitoring the suction pressure to determine that the suction filter is not becoming plugged. Replace the suction filter/drier if pressure drop occurs. If a severe running burn out has occurred, several filter/driers may have to be replaced to remove all of the acid and moisture.

NOTE: NEVER use the compressor to evacuate the system or any part of it.

7.6C Replacing a Compressor, Nonburn Out

Remove the refrigerant from the system. Replace the compressor and liquid line filter/drier. Charge the system to 50 PSIG and check for leaks. Remove the charge and weigh in the refrigerant quantity listed on the nameplate. Operate the system to verify performance.

7.7 Remote Controls

The Quest Dual Dehumidifier is controlled by devices mounted on a panel that is remote from the unit. You may or may not have the devices listed below depending on the model of the remote control panel you purchased. If the Quest Dual Dehumidifier fails to operate as desired, always check the settings of the controls to insure that they are correct. Check that the controls are receiving 24VAC from the Quest Dual Dehumidifier. Check the connections between the Quest Dual Dehumidifier, the control panel, and the field control wiring.

7.7A Humidity Control

The humidity control is an adjustable switch that closes when the relative humidity of the air in which it is located rises to the dial set point. It opens when the RH drops 4 to 6% below the set point. If the Quest Dual Dehumidifier does not run, try turning the humidity control clockwise until it reaches the stop and the knob pointer points at “Max Dry” (see back of control panel cover). If it still does not run, remove the stop screw from the panel and turn the knob farther. If it then runs, the humidity control is out of calibration or the RH is below 40%.

The Quest Dual Dehumidifier is equipped with an automatic defrost mechanism. If the Quest Dual Dehumidifier operates in conditions that develop frost on the evaporator, it will sense the frost build-up and automatically defrost the evaporator. The Quest Dual Dehumidifier may not appear to be operating correctly during the defrost sequence, but once the defrost sequence is completed, the Quest Dual Dehumidifier will resume dehumidifying.

7.8 Defrost Thermostat

The defrost thermostat is attached to the refrigerant suction tube between the accumulator and the compressor. It will automatically shut the compressor off if the low side refrigerant temperature drops due to excessive frost formation on the evaporator coil. The impeller fan will continue to run, causing air to flow through the evaporator coil and melt the ice. When the ice has melted, the evaporator temperature will rise and the thermostat will restart the compressor.

7.9 Electric Ventilation Damper

The electric ventilation damper is controlled by the ventilation timer. The damper will open when the ventilation timer is activated to allow fresh air into the structure through the 6” diameter fresh air inlet duct. The electric ventilation damper will remain closed when the ventilation timer is not activated to prevent over-ventilating the structure when the unit is dehumidifying or recirculating the indoor air.

The electric ventilation timer operates on 24 VAC from the control circuit. **DO NOT** connect high voltage to the damper motor or damage to the motor may result. **DO NOT** force the blade of the damper by hand or damage to the damper motor may result.

The damper opens in one direction only. The damper rotates very slowly, allow sufficient time for the damper to cycle. The damper will take approximately 1 minute to cycle from closed to open or from open to closed.

If the electric ventilation damper fails to operate:

1. Check that the wiring is correct and that voltage is present at the damper motor.
2. Check for any obstruction inside the damper. If the electric ventilation damper fails to operate after performing these checks, it must be replaced.

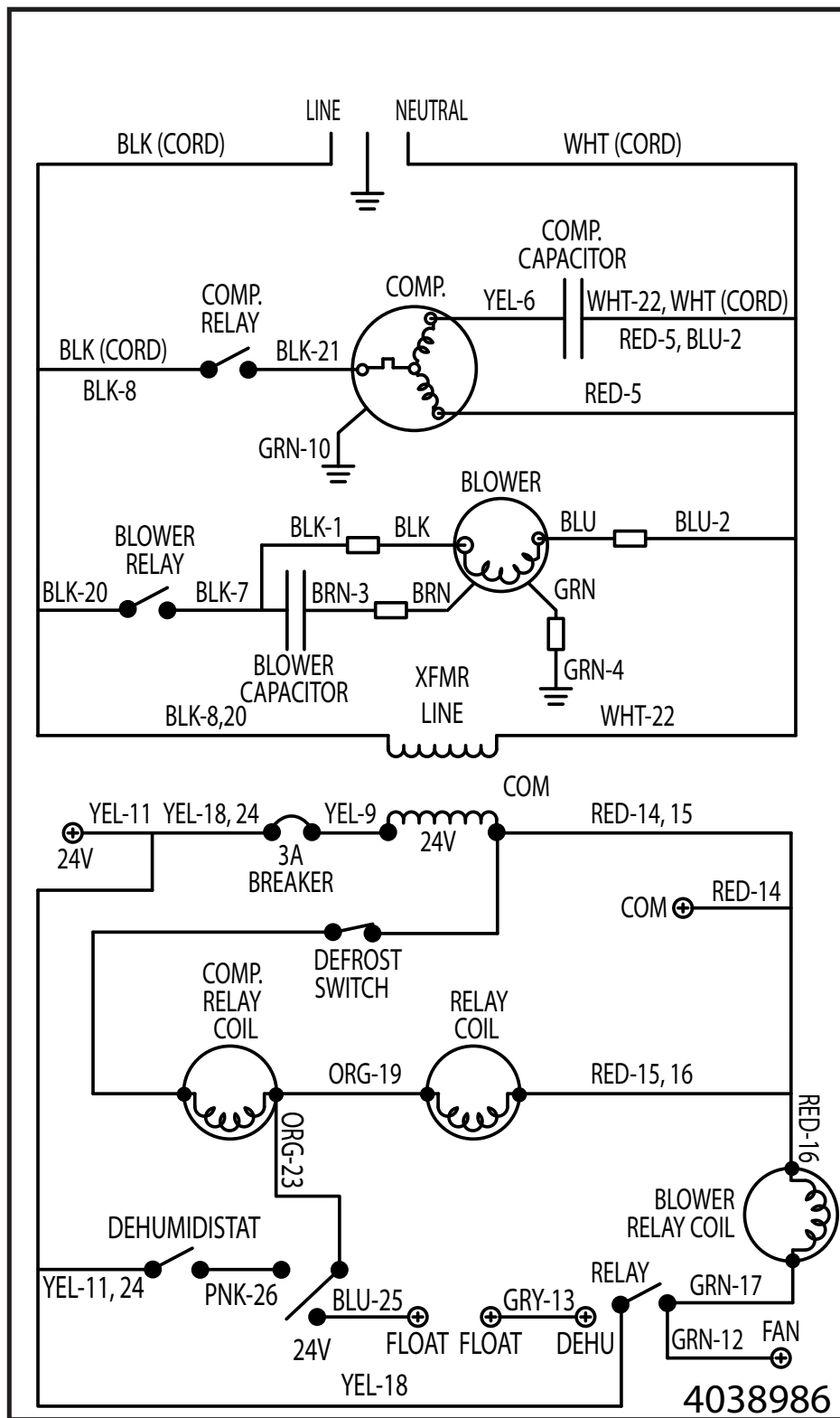
7.10 Condensate Pump Kit

An optional condensate pump kit is available from the factory for use with the Quest Dual Dehumidifier. Condensate is automatically pumped to a remote location when the water level in the pump's reservoir rises to close the float switch.

The pump also contains a safety float switch. The white leads from this switch extend from beneath the pump cover. This switch should be installed in series with the field wire that connects the 24V from the Quest Dual Dehumidifier to the control panel.

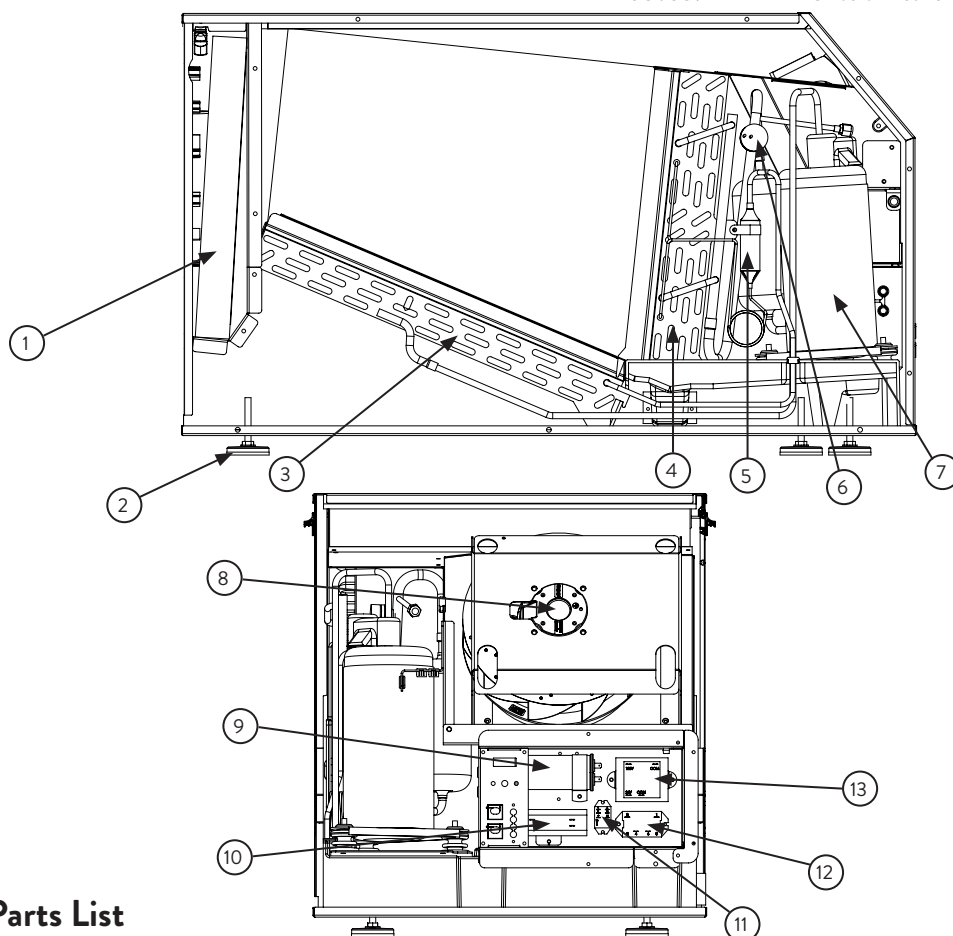
If the pump fails, this switch opens the compressor control circuit and stops water production before the reservoir overflows. The Quest Dual Dehumidifier will continue to ventilate or circulate air as normal, but will not dehumidify until this switch closes.

Wiring Diagram of the Quest Dual Dehumidifier



Service Parts List

Item	Part No	Qty	Description	Item	Part No	Qty	Description
1	4021475	1	Air Filter 16x20x2" MERV-11	8	4039361	1	(165 Dual) Impeller
2	4026221	4	Foot, Leveling, 5/16-18 x 2.25	8	4036492	1	(225 Dual) Impeller
3	4031085-02	1	Condenser Coil	9	4035949-09	1	(165 Dual) Capacitor, Run, 25 MFD, 440V
4	4031086-05	1	E-Coat Evaporator Coil	9	4035949-10	1	(225 Dual) Capacitor, Run, 45 MFD, 440V
5	4029510	1	Filter/Drier	10	4037221-04	1	(165 Dual) Capacitor, Fan, 4 MFD, 440V, Dry
6	4025741	1	(165 Dual) Thermostat, Defrost Control	10	4037221-05	1	(225 Dual) Capacitor, Fan, 5 MFD, 440V, Dry
6	4032229	1	(225 Dual) Thermostat, Defrost Control	11	4020924	1	Relay, SPDT, 24V, 15A
7	4039982	1	(165 Dual) Compressor	12	4022484	1	Relay, SPST, 24V, 30A
7	4039984	1	(225 Dual) Compressor	13	4036398	1	XFMR, 240V, 50/60Hz, 24V, 40VA
	4039986	1	(165 Dual) Compressor Overload NOT SHOWN	14	4036559	1	Circuit Breaker NOT SHOWN
	4039988	1	(225 Dual) Compressor Overload NOT SHOWN				



Optional Parts List

PART NO.	QTY.	DESCRIPTION	PART NO.	QTY.	DESCRIPTION
4022220	1	Pump Kit (110-120V)	4028531	1	DEH 3000R Control, Remote
4028607	1	Supply Duct Kit	4020175	1	Controller, Humidity
4028610	1	Return Duct Kit	4036668	2	Bracket, Hanging (2 Required)

Quest Dual Dehumidifier Limited Warranty

WARRANTOR:

Therma-Stor LLC
4201 Lien Rd
Madison, WI 53704
Telephone: 1-800-533-7533

WHO IS COVERED: This warranty extends only to the original end-user of the Quest Dual Dehumidifier dehumidifier, and may not be assigned or transferred.

FIRST YEAR WARRANTY: Therma-Stor LLC warrants that, for one (1) year the Quest Dual Dehumidifier dehumidifier will operate free from any defects in materials and workmanship, or Therma-Stor LLC will, at its option, repair or replace the defective part(s), free of any charge.

SECOND THROUGH FIFTH YEAR WARRANTY: Therma-Stor LLC further warrants that for a period of five (5) years, the condenser, evaporator, and compressor of the Quest Dual Dehumidifier dehumidifier will operate free of any defects in material or workmanship, or Therma-Stor LLC, at its option, will repair or replace the defective part(s), provided that all labor and transportation charges for the part(s) shall be borne by the end-user.

END-USER RESPONSIBILITIES: Warranty service must be performed by a Servicer authorized by Therma-Stor LLC. If the end-user is unable to locate or obtain warranty service from an authorized Servicer, he should call Therma-Stor LLC at the above number and ask for the Therma-Stor LLC Service Department, which will then arrange for covered warranty service. Warranty service will be performed during normal working hours.

The End-user must present proof of purchase (lease) upon request, by use of the warranty card or other reasonable and reliable means. The end-user is responsible for normal care. This warranty does not cover any defect, malfunction, etc. resulting from misuse, abuse, lack of normal care, corrosion, freezing, tampering, modification, unauthorized or improper repair or installation, accident, acts of nature or any other cause beyond Therma-Stor LLC's reasonable control.

LIMITATIONS AND EXCLUSIONS: If any Quest Dual Dehumidifier Dehumidifier part is repaired or replaced, the new part shall be warranted for only the remainder of the original warranty period applicable thereto (but all warranty periods will be extended by the period of time, if any, that the Quest Dual Dehumidifier Dehumidifier is out of service while awaiting covered warranty service).

UPON THE EXPIRATION OF THE WRITTEN WARRANTY APPLICABLE TO THE Quest Dual Dehumidifier DEHUMIDIFIER OR ANY PART THEREOF, ALL OTHER WARRANTIES IMPLIED BY LAW, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL ALSO EXPIRE. ALL WARRANTIES MADE BY THERMA-STOR LLC ARE SET FORTH HEREIN, AND NO CLAIM MAY BE MADE AGAINST THERMA-STOR LLC BASED ON ANY ORAL WARRANTY. IN NO EVENT SHALL THERMA-STOR LLC, IN CONNECTION WITH THE SALE, INSTALLATION, USE, REPAIR OR REPLACEMENT OF ANY Quest Dual Dehumidifier DEHUMIDIFIER OR PART THEREOF BE LIABLE UNDER ANY LEGAL THEORY FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES INCLUDING WITHOUT LIMITATION WATER DAMAGE (THE END-USER SHOULD TAKE PRECAUTIONS AGAINST SAME), LOST PROFITS, DELAY, OR LOSS OF USE OR DAMAGE TO ANY REAL OR PERSONAL PROPERTY.

Some states do not allow limitations on how long an implied warranty lasts, and some do not allow the exclusion or limitation of incidental or consequential damages, so one or both of these limitation may not apply to you.

LEGAL RIGHTS: This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



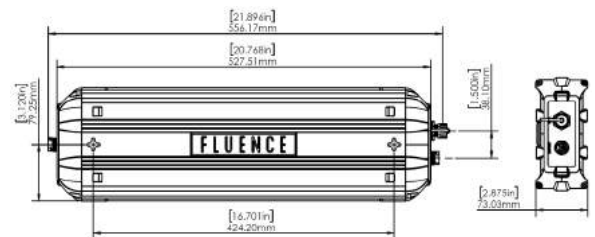
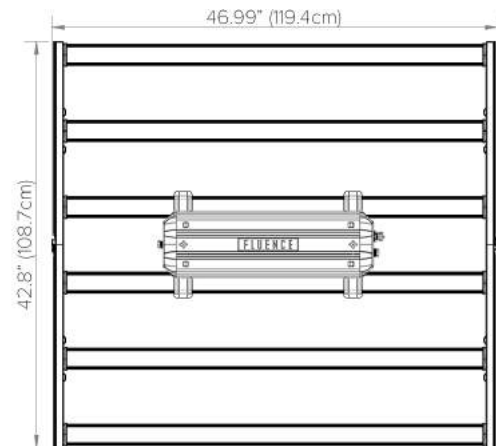
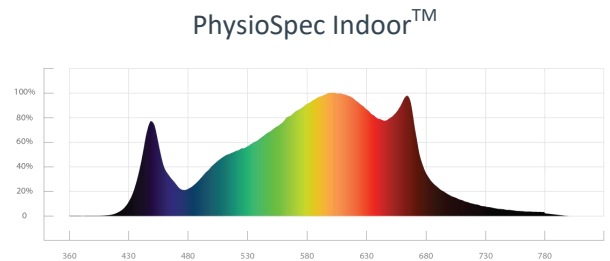
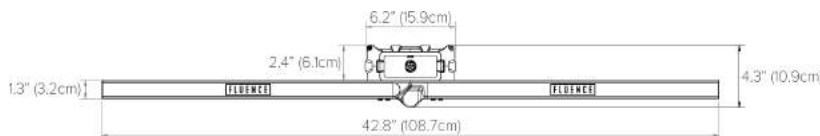
SPYDR 2x

SPECIFICATIONS

Light Source	LED
Spectrum	I
PPF	860 $\mu\text{mol/s}$
Input Power	345W
Efficacy	2.5 $\mu\text{mol/J}$
Input Voltage	Autosensing 100-277V, 347V, 400V & 480V*
Fixture Dimensions Weight	42.8" L x 46.99" W x 4.3" H 24lbs 13oz 108.7cm L x 119.4cm W x 10.9cm H 11.26kg
Mounting Height	$\geq 6"$ (15.2cm) Above Canopy
Thermal Management	Passive
Dimming	0-10V
Light Distribution	120°
Lifetime	L90: > 54,000hrs
Power Factor	> 90%
Certifications	UL 8800, UL 1598 Wet-Location Rated, IP66 & CE
Warranty	5 Year Standard Warranty

MAX AMPERAGE BY VOLTAGE SERVICE

VOLTAGE	120V	208V	240V	277V	347V
AMPERAGE	2.88A	1.66A	1.44A	1.25A	1.02A



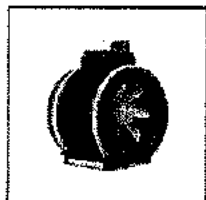
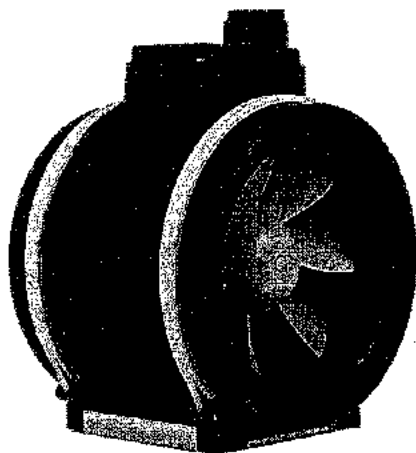
FAMILY	MODEL	SPECTRUM	INPUT VOLTAGE	AC POWER CORD	AC PLUG TYPE	DC EXTENSION CORD	MOUNTING HARDWARE
SR	SPYDR 2x X	I PhysioSpec Indoor™	1 100-277V 3 347V* 4 400V* 5 480V*	06 6 ft (1.83m) 15 15 ft (4.57m)	N5P NEMA 5-15P N6P NEMA 6-15P L7P NEMA L7-15P TFP Schuko Type F PTP Pigtails	00 None 03 3 ft (.91m) 06 6 ft (1.83m)	W Waterfall Mounts S Solid-Decking Mounts M 2-Point Hanging Lances A 2-Point Adjustable Hanging Kit



Home > Fans > Can-Fan Max-Fan Pro Series 10" 1052 CFM

Can-Fan Max-Fan Pro Series 10" 1052 CFM

SKU: 736747



Aerodynamically optimized laminar airflow and extremely high efficiency.

At a Glance

The Max-Fan® Pro Series is even more efficient and stronger than the original Max-Fan® design. The Max-Fan® Pro Series has a much more robust housing due to the fiberglass reinforced plastic compounds that meet all of the UL and CSA requirements. The fans have three control speeds for true performance. These fans run quieter than the Max-Fan®. The fans come with the EZ Mount™ bracket for easy mounting.

Details

- Fiberglass composite housing reduces noise

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- Optimized mixed flow is extremely energy efficient
- Lower operational cost than traditional centrifugal fans
- EZ Mount bracket included
- 5-year warranty
- Available in 6," 8," 10," and 16" sizes

FANS

MAX-FAN PRO SERIES

TECHNICAL DATA RECOMMENDED FILTERS**CFM:** 1052 0wg***RPM:** 3093***Max Watts:** 42***Amps:** 2.05***Weight:** 10.9 lbs**Length:** 8.47"**Max. Height:** 13.26"**Blade Design:** Mixed Flow**Housing:** Fiberglass Composite**Inlet/Outlet:** 10"

* At high speed

Exhaust:

Can 100 (speed 1)

Recirculating:

Can 75

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Call us:

(888) 478-6544

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[Home](#) > [Filters](#) > [Can-Filter 100 Without Flange 840 CFM](#)

Can-Filter 100 Without Flange 840 CFM

SKU: 700634



The best performing carbon filters on the market.

At a Glance

Each Original Can-Filter uses our thickest granular-carbon packed-bed design to deliver the best performing Can-Filter on the market. Even with the industry's thickest 2.5 in carbon bed, the Can Original maintains minimal pressure drops. This hefty granular carbon bed effectively makes the Can Original a massive sponge, soaking up VOCs and capable of holding massive amounts of contaminant. The Original Can-Filter® is designed for the control of VOCs (paint fumes, hydrocarbons, etc.), odors, and other gaseous contaminants. Rated at a conservative 0.1 sec contact time, the Original Can-Filter® provides excellent value and confidence.

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- 7 sizes from 33-150cm, largest in industry
- You pick the flange that's right for you
- Low pressure drop even on smaller sizes
- Granular carbon delivers the cleanest filter available
- 2.5" Carbon bed, thickest in industry
- Flange comes separate to fit a wide range of fans and applications

CAN-FILTER

FILTERS

TECHNICAL DATA RECOMMENDED FANS

Max Exhaust CFM: 840 CFM / 1400m³h @ 0.1 sec contact time

Max Recirculating (Scrubbing) CFM: 1660CFM / 2800m³h

Recommended Min Airflow: 420 CFM / 700m³h

Prefilter: Yes

Flange: 8" – 10" – 12"

Dimensions: (with pre-filter)

Outside Diameter: 42 cm / 16.5"

Height: 100 cm / 39.4"

Carbon Bed Depth: 6.5 cm / 2.56"

Max Operating Temp: 80°C / 176°F

Pressure drop at max CFM: 180pa / .75"wg

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Can-Fan 10" HO

Max-Fan 14"

Pro-Series 8" (speed 1, 2, 3)

Max-Fan 8" HO (speed 1, 2, 3)

Max-Fan 10"

Q-Max 10" (speed 1, 2, 3)

Can-Fan 12" HO

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(888) 478-6555

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OLD BUSINESS #2

Master Plan

No documents attached