Pyure MVP14[™] System

Installation and Operation Manual (IOM)

Air and Surface Purification System





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3. Scope of this Manual

This manual describes the operation and functionality of the Pyure MVP14[™] Hydroxyl Generator Air and Surface Purification System. It is specifically written for personnel responsible for ensuring the safe and proper operation of the equipment.

NOTE: Service should only be provided by a Pyure qualified service technician. Please refer to Section 14 for additional information regarding the maintenance and sustainment of the MVP14TM System.

4. Important Safety Guidelines

Throughout this manual, special references are made when conditions warrant increased attention and are paramount to personnel and equipment safety. All warnings, cautions, and notes must be thoroughly reviewed and understood prior to any attempts to operate, service, troubleshoot or repair any part of this equipment. A WARNING, CAUTION, or NOTE found in this manual will be illustrated using the following identifiers and definitions:

SIGNIFICANCE	IDENTIFIER	DEFINITION
WARNING		Used to indicate a procedure or operation which, if not executed properly, could result in serious injury or loss of life.
CAUTION		Used to indicate a procedure or operation which, if not executed properly could result in damage to the equipment.
NOTE	<i>NOTE: The word note and associated text will be in bold and italicized font.</i>	Used to indicate information deemed essential to emphasize.

5. About the Manufacturer

The Pyure Company Inc.[®] is a United States corporation (formerly HGI Industries Inc.), whose cutting-edge atmospheric hydroxyl radical generating technology has been at the forefront of high-volume air and surface decontamination for the past 20 years. Company headquarters' research, development, and custom fabrication are located in Boynton Beach, Florida, USA.

6. MVP14[™] Hydroxyl Generator System Description

6.1 System Overview

Pyure Dynamic Protection® systems feature sensor driven, interactive process controls. They are scalable to any size and offer significant economies of scale when treating large surface areas. They can be integrated into a single or multiple HVAC /air handling systems, depending on the layout and configuration.

6.2 System Components

6.2.1 00819355021345 MVP14™ Hydroxyl Generator 120V Unit w/AC [MVP1400]

00819355021369 MVP14[™] Hydroxyl Generator 230V Unit [MVP1435] (see Appendix C: 17.6)

The MVP14[™] Unit(s) contains Pyure's proprietary hydroxyl generating optics and electronics. A unit can be directly installed in-line with an existing HVAC or air handling system. The MVP14[™] Unit(s) are wired to a MVP14[™] Controller, which in turn controls optic function and Pyure's hydroxyl production.

6.2.2 00819355021376 MVP14™ Two Unit 120V Controller [MVP1461]

00819355021406 MVP14[™] Two Unit 230V Controller [MVP1460]

00819355021437 MVP14™ Five Unit 120V Controller [MVP1456]

00819355021451 MVP14[™] Five Unit 230V Controller [MVP1457] (see Appendix C: 17.1 - 14.4)

Utilizing Pyure's proprietary software and control logic, the Controller is the intelligence of the MVP14[™] system. These Controllers are designed to modulate Pyure hydroxyl production based on real-time feedback from sensors in the treatment space, thus maintaining target levels proven to be effective at reducing pathogen, air pollutant, and odor levels. The MVP14[™] Unit(s) are directly wired to a Controller, as are the Sensors (up to four Sensors can be connected to each Controller). The main electrical supply is wired to a Controller and each MVP14[™] Unit (see Appendix C for wiring instructions).

6.2.3 00819355021314 MVP™ Remote 'DR' Sensor [MVPXXMA47] (see Appendix C: 17.5)

Pyure's Remote 'DR' Sensor(s) are specified for specific applications and are integral to the MVP14[™] system. The sensors provide constant real-time feedback to the Controller. This data is collected, analyzed and utilized by the Controller to make necessary adjustments in hydroxyl production.

6.2.4 00819355022533

Pyure 'AQ' 900 Oxidant Sensor [ENS-AQ-001]] (see Appendix C: 17.6-17.7) & 00819355021185 MVP[™] Sensor Conversion Interface [MVPXX56] (see Appendix C: 17.8)

The Pyure 'AQ' 900 Oxidant Sensor(s) & MVP[™] Sensor Conversion Interface are specified for specific applications and are integral to the MVP14[™] system. The sensors provide constant real-time feedback to the Controller. This data is collected, analyzed and utilized by the Controller to make necessary adjustments in hydroxyl production.

6.2.5 0819355021482 MVP[™] Main Disconnect (optional) [MVPXX41] (see Appendix C: 17.12)

The MVP[™] Main Disconnect is an optional local power disconnect with Interlock to the MVP14[™] Unit(s).

6.3 Specifications

6.3.1 00819355021376 MVP14™ Two Unit 120V Controller [MVP1461]

> 00819355021406 MVP14™ Two Unit 230V Controller [MVP1460]

 Dimensions (LxWxD):
 16.3" x 14.55" x 8.3" (414 x 370 x 211mm)

 Weight:
 43.0 lbs (19.5 kg)

 Voltage:
 120VAC @60Hz (00819355021376) /or/ 220VAC @50/60Hz (00819355021406)

 Power:
 600 Watts (max)

 Electrical Supply:
 120V Unit -Recommend dedicated

Recommend dedicated 120V, 15A circuit 220V Unit -Recommend dedicated 208-240V, 15A circuit

6.3.2 00819355021437 MVP14™ Five Unit 120V Controller [MVP1456]

00819355021451 MVP14™ Five Unit 230V Controller [MVP1457]

Dimensions (LxWxD):	32.3" x 26.2" x 12.5"
	(818 x 665 x 316mm)
Weight:	26.0 lbs (11.8 kg)
Voltage:	120VAC @60Hz
	(00819355021437) /or/
	230VAC @50/60Hz
	(00819355021451)
Power:	600 Watts (max)
Electrical Supply:	120V Unit -
	Recommend dedicated
	120V, 15A circuit
	230V Unit -
	Recommend dedicated

208-240V, 15A circuit

6.3.3 MVP14[™] Hydroxyl Generator Unit(s) 00819355021345 MVP14[™] Hydroxyl Generator 120V Unit w/AC [MVP1400]

00819355021369 MVP14[™] Hydroxyl Generator 230V Unit [MVP1435]

Dimensions (LxWxD): Weight: Voltage: Power:	34.5" x 30.2" x 19.0" (876 x 767 x 482mm) 140.0 lbs (63.5 kg) 120VAC @60Hz (00819355021345) 230VAC @50/60Hz (00819355021369) 810 Watts (nominal)
Velocity:	Max 3,000 ft/min
Electrical Supply:	120V Unit - Recommend dedicated 120V, 15A circuit 230V Unit - Recommend dedicated 208-240V, 15A circuit
Certification:	CE, Contact Pyure for certification requirements

6.3.4 00819355021314 MVP™ Remote 'DR' Sensor [MVPXX47]

Dimensions (LxWxD):	14.7" × 7.9" × 16.0"
	(372 x 200 x 407mm)
Weight:	12.0 lbs (5.4 kg)
Voltage:	24VDC

6.3.5 00819355022533 Pyure 'AQ' 900 Oxidant Sensor

Dimensions (H x Dia):	2.5"x 5.1" (64 x 130mm)
Weight:	0.4 lbs (0.2 kg)
Voltage:	12VDC

6.3.6 00819355021185

MVP[™] Sensor Conversion Interface [MVPXX56]

Dimensions (LxWxD):	9.5" x 7.5" x 4.7"
	(242 x 191 x 119mm)
Weight:	4.3 lbs (2.0 kg)
Voltage:	24VDC

6.3.7 00819355021482 MVP™ Main Disconnect (optional) [MVPXX41]

Dimensions (LxWxD):	12.3" x 10.7" x 8.2"
	(313 x 271 x 208mm)
Weight:	5.8 lbs (2.6 kg)
Voltage:	600VAC (Max)

6.4 Safety

6.4.1 General Precautions

Pyure Technology[™] produces the same concentrations of hydroxyls and organic oxidants that are naturally present in our outdoor environment. Following Pyure's operating guidelines ensures safe application of the system. Operating personnel should be aware of equipment safety items and procedures while servicing equipment.

▲ CAUTION: Maintenance is performed by Pyure qualified technicians.

NOTE: Any damage to equipment resulting from unauthorized maintenance practices or actions taken by personnel that have NOT been qualified by The Pyure Company may nullify and void existing manufacturer warranties.

NOTE: Pyure engineers routinely customize the MVP14[™] hardware and software configurations in order to meet the customer's air purification requirements. Accessing internal components

¹Pvure Technical Services can be reached by calling The Pvure Company's

main office in Boynton Beach, Florida, at 877-735-3701.

by unauthorized personnel could result in a diminished operating capacity.

Qualified technicians performing maintenance on the MVP14[™] system must observe all safety and personal protective equipment [PPE] rules for the particular site they are working in. All operating, maintenance, and repair personnel must read and follow local operation procedures to ensure personal safety and prevent unintended equipment damage.

All personnel operating and servicing the MVP14[™] systems shall become thoroughly familiar with and frequently review the general, electrical and UV safety precautions. These precautions are in addition to the specific warnings and cautions noted throughout this manual and maintenance procedures.

6.4.2 Electrical Safety

WARNING: Service on electrical components must be conducted by a verifiably trained and certified electrician and standard Lockout/Tagout [LOTO] procedures must be followed.

The MVP14[™] system operates on a 120 Volt 60Hz /or/ 230 Volt 50/60Hz (depending on the model). Control logic between the Controller and the Sensor is 24 Volt DC. The 24V DC control circuit is backed up by an integrated, uninterruptable power supply [UPS]. The UPS only supplies power to the PLC, control circuits, and sensors in the event of a main power interruption. The user interface screen will allow control of the unit(s), or control can be done remotely (See Section 15.11). Depending on the UPS, backup power should be available for approximately 15 to 30 minutes.

Controllers have no user/operator-serviceable parts. Operators should however be aware of

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any potential electrical hazards such as loose

wiring or other electrical systems in the vicinity of the unit.

6.4.3 Ultraviolet (UV) Radiation Safety

Operators should be aware of any UV light energy escaping from inside the MVP14[™] Unit(s) optic chamber. The precautions in this section are provided for when UV energy is known to be escaping from within the enclosure, or when operator personnel may be assisting servicing personnel.

- ▲ WARNING: Damaged seals around MVP14[™] Unit(s), impacts to the enclosure or misalignment of the duct could result in the inadvertent seepage of UV energy into the immediate vicinity of the unit.
- WARNING: Direct UV energy is known to cause serious burns to exposed skin and eyes.
- WARNING: Exposed skin must be protected when working with direct UV energy. All personnel working in the vicinity of exposed UV energy must wear long sleeves and face shields that protect against UVC energy.

If direct UV energy is escaping, immediate action should be taken to block or shield the UV energy from direct view. Covering the escaping light with an opaque item such as a towel or cardboard can be done as a temporary safety measure. The unit should also be cordoned off and clearly marked as a potential UV hazard to prevent exposure to other personnel. Your qualified servicing organization or Pyure Technical Services¹ should be contacted to resolve the problem as soon as practical.

KEEP OUT OF THE REACH OF CHILDREN.

WARNING – UV radiation emitted from this device. Unintended use of the device, or damage to the housing, may result in exposure to ultraviolet radiation. Ultraviolet radiation may cause eye and skin irritation.

Avoid exposing eyes and skin to ultraviolet radiation.

The use of this device is a supplement to and not a substitute for standard infection control practices to control transmission of infections; users must continue to follow all current infection control practices, including those practices related to cleaning and disinfection of environmental surf

7. Theory of Operation

Nature's Process Outdoors

Sunlight Produces Hydroxyls & Organic Oxidants

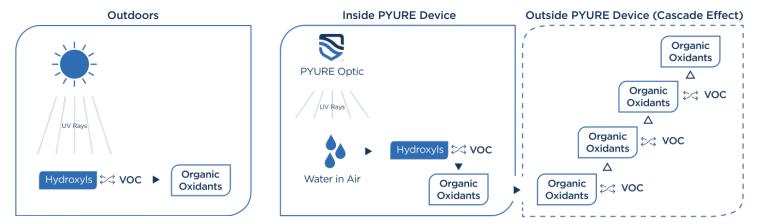
- Airborne hydroxyls are ideal sanitizing agents.
- Atmospheric hydroxyls are continuously produced by the action of the sun's ultraviolet energy on oxygen and water in our atmosphere.
- Hydroxyls react with a broader range of chemicals and are a million times more reactive than ozone.
- Hydroxyls react so fast that they are consumed within a few milliseconds and never accumulate.
- Hydroxyls react with volatile organic compounds (VOC) and produce organic oxidants, which also sanitize but are not as reactive, so they exist longer than hydroxyls.
- Hydroxyls and organic oxidants keep the air outside safe to breathe by decomposing natural and man-made pollutants and pathogens.

Indoors with Pyure Dynamic Protection

Pyure produces the same concentrations of hydroxyls & organic oxidants as the sun generates outdoors

- By replicating the levels found outdoors, Pyure ensures safety and efficacy.
- Hydroxyls are a natural oxidant and the most important cleansing agent in our outdoor environment.
- Hydroxyls do not exist naturally indoors

 they are consumed within milliseconds when produced by sunlight.



8. Receiving and Handling

▲ CAUTION

This product is fragile and contains glass parts. Extreme caution must be taken by forklift. When removing from pallet, ensure that the shrink wrap is not tethered to any boxes.

Carefully unstack from pallet, starting at the top. Packing crate: Wooden $48' \times 40'' \times 48''$

8.1 System Crate – typical packaging

Contents of the crate include:

MVP14[™] Hydroxyl Generator Unit(s) (x1) MVP14[™] Two or Five Unit Controller(x1) Sensor package(x1-4) MVP[™] Main Disconnect (x1)

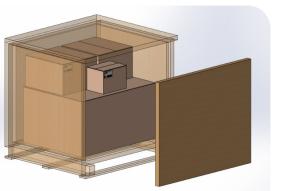
Take care when opening the crate, as boxes may have moved during transit.



Take care while removing all interior packing from around the product.

Once the packing is removed carefully lift the unit from the box.

For safety and to avoid fingerprints on optics, use protective gloves when handling optics.





DO NOT use a knife along the top of the box when opening.

Open from the side and tear back the tape.



Figure 1: MVP14[™] Unit(s) - Back



Figure 2: MVP14[™] Unit(s) - Front

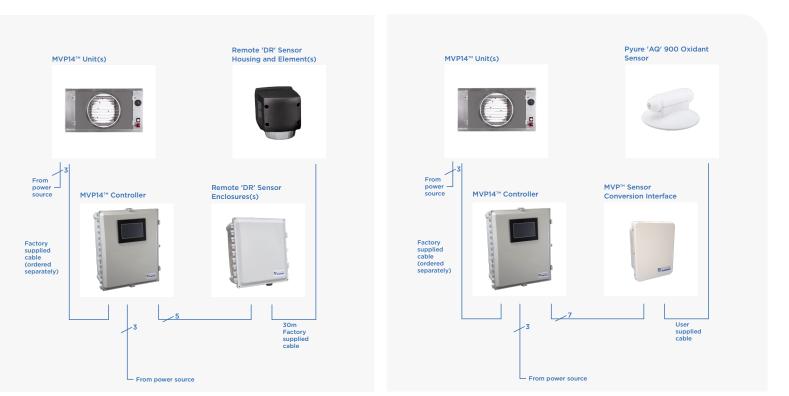
9. General Installation Information

9.1 Discussion

Pyure's MVP14[™] system has been configured and installed based on specific applications. For fixed installations, the equipment, clearances, environmental conditions, and operating parameters have been determined and are part of the license to operate the system. Any changes in the operating environment, including, but not limited to, chemical usage, volume of treated area, air flow changes, product types, operating profile, etc., need to be re-evaluated with respect to the system configuration and operation. (Installation should be done by a qualified service technician/group.)

Important

Qualified personnel: Please refer to all related electrical schematics. (Appendix C)



MVP14 System sample configuration with Remote 'DR' Sensor

MVP14 System sample configuration with Pyure 'AQ' 900 Oxidant Sensor

9.2 MVP14[™] Controller

An MVP14[™] Controller is typically installed as close as practical to the MVP14[™] Unit(s) being controlled, in an easily accessible location and at good working height for Human Machine Interface (HMI)/touch screen function (usually 54" – 60" [1371mm – 1524mm] to the center of the panel).

The main electrical supply for the MVP14[™] System is wired to the Controller (see Section 17.10-17.11) and wired to each MVP14[™] Unit(s). Sensors are supplied with electrical power (24VDC) from the Controller (see Section 17.10-17.11).

Parts included for installation options:





Controller Enclosure

Controller Mounting Brackets (x4)

9.3 Pyure MVP14[™] Interconnect Cable(s)

An MVP14[™] Interconnect Cable is required to connect every MVP14[™] Unit to the MVP14[™] Controller. The cable comes as an assembly with connectors in multiple lengths to handle different distances between the MVP14[™] Unit(s) and the MVP14[™] Controller.



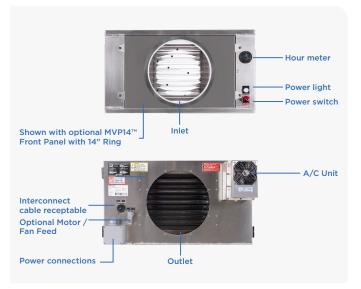
Interconnect Cable(s)

9.4 MVP14[™] Hydroxyl Generator Unit(s)

Pyure's MVP14[™] Unit(s) are typically configured to be integrated to an air distribution system (pre-determined by Pyure's technical team), providing optimal treatment of the coverage areas.

The MVP14[™] Unit(s) receives electrical power directly (see Section 17.6).

Standard MVP14[™] Unit components



NOTE: For wiring and cables see Section 9.9

9.4.1 Typical Installation of an MVP14[™] Hydroxyl Generator system includes the following steps:

- 1. Remove the MVP14[™] Unit(s) from its packaging.
- 2. Attach the optional Front Panel with 14" Ring to the MVP14[™] Unit(s) using the captive screws within the four mounting holes.
- **3.** Attach the optional Outlet Duct Ring to the MVP14[™] unit using self-tapping screws.
- **4.** Typical MVP14[™] Unit(s) installations.
 - a. Suspended option
 - MVP14[™] Unit(s) are ready for suspended installations. Raise the unit into position, supported by the skid used for shipping. The unit should be installed level, and care should be taken to avoid damage. Attach the unit according to local building codes.



Unistrut Parallel Beam Suspension Installation

b. Horizontal surface option Ensure the unit is stable and secure.



Horizontal surface installation

- 5. For serviceability and cleaning of sleeves, provide 18" clearance by use of removable or flexible duct to both outlet and inlet rings.
- 6. Install/secure the MVP14 unit ensuring a clearance of 24" minimum on each side of the unit for optic serviceability.
- 7. Attach the MVP14[™] Interconnect Cable between the MVP14[™] Unit(s). Controller Connectors have keyed connections.
- 8. Connect source power to the MVP14[™] Unit(s) as shown in Appendix C.

9.5 Typical Sensor Installation

The MVP14[™] System requires a minimum of one Sensor per Controller and can accept up to four Sensors (the number of Sensors and placement of sensor elements is determined by Pyure's technical team and a Pyure qualified technician prior to installation).

9.5.1 00819355021314 MVP[™] Remote 'DR' Sensor

The Sensor consists of a main enclosure, one remote sensor factory cable (up to 98ft. (30m) length) and one remote sensor housing complete with sensor element. The main sensor enclosure should be installed in an easily accessible location and wired to the corresponding Controller (see Section 17.10-17.11). The remote sensor housing with sensor element is installed as per Pyure's qualified technicians direction and the remote sensor factory cable connects it back to the main Controller enclosure (installed to local electrical code requirements).

Parts included for installation:







Sensor Enclosure

Sensor Cable (x1)





Sensor Element



Sensor Housing

(x1)





Mounting Brackets (x4)



Wire Grommet (x1)





Control Panel (L) Sensor Panel (R)

Mounting the Controller Enclosure and Sensor Enclosure:

Use the included hardware from each enclosure for a vertical installation. First, secure the brackets to the back of the Controller enclosure and Sensor enclosures, then secure both enclosures to a firm structure capable of sustaining the weight.

Installing the Sensor Panel:

Important -

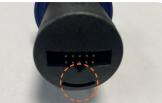
Ensure that you feed the small end of the sensor cable from the inside of the enclosure first. Push and pull the entire length through the cable gland, leaving enough length for a service loop.





1. Fit the cable grommet around sensor cable and loosely secure the cable gland.





2. On both sensor connectors, ensure that the curved tab inside the housings locate exactly into the corresponding aperture.



3. Introduce a service loop in the sensor cable which will also provide extra strain relief. Next, firmly secure cable gland.



4. Once the sensor bracket has been secured to an upright sturdy structure, angle the base of the sensor downwards to the back of the bracket and push down until there is a click and positive alignment.

To remove the sensor, push down on the front tab and pull upwards.





5. Ensure that you align the tab on the cable connector with the sensor housing connection groove. Gently screw into place (do not overtighten).

9.5.2 00819355022533 Pyure 'AQ' 900 Oxidant Sensor & 00819355021185 MVP[™] Sensor Conversion Interface

The Pyure 'AQ' 900 Oxidant Sensor consists of a sensor base complete with a sensor element and requires an MVP[™] Sensor Conversion Interface. The Sensor Conversion Interface enclosure should be installed in an easily accessible location and wired to the corresponding Controller (see Section 17.16-17.17). The 'AQ' 900 Oxidant Sensor base with sensor element is installed as per Pyure's qualified technicians direction and the user supplied cable connects it back to the Sensor Conversion Interface enclosure (installed to local electrical code requirements).

Parts included for installation:





Sensor Conversion Interface

'AQ' 900 Oxidant Sensor

Mounting the MVP[™] Sensor Conversion Interface Enclosure: Mount Sensor Conversion Interface enclosure on wall or support structure using the four 5/16" holes, keeping clearance around sides for wiring/conduit connections to be made.

The interface enclosure does not have predrilled or pre-punched holes for conduit. When drilling or punching conduit holes be sure to protect internals from machine damage and debris.

Mounting the Pyure 'AQ' 900 Oxidant Sensor:

Mount AQ sensor flush to the wall using the keyhole slots on the back of the sensor, keeping in mind wiring connections will come into the sensor via the cutout section of the base.



'AQ' 900 Oxidant Sensor rear view



'AQ' 900 Oxidant Sensor front view without sensor element

9.6 Optional Components



Outlet duct ring





Front panel with 14" ring

Light shield/filter box

External blower

9.6.1 Main Disconnect (optional)

The MVP[™] Main Disconnect is an optional local power disconnect with Interlock to the MVP14[™] Unit(s).

NOTE: Some facilities will supply a local power disconnect to the unit(s).



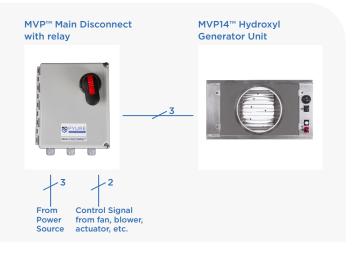
Figure 3: Main Disconnect



Figure 4: Main Disconnect relays 24VAC (x1) 24VDC (x1) 120 VAC (x1) 220-240VAC (x1)

9.7 Interlock

a. Interlock with Main Disconnect with optional relay.



b. Interlock with field supplied disconnect switch.



See Appendix C: 17.13 for schematic.

9.8 Electrical Supply (see Appendix C: 17.10- 17.11)

Each MVP14[™] Controller requires one dedicated electrical supply:

MVP14[™] Two Unit Controllers: 00819355021376: 120V, @60Hz (600 Watt max), L1/Neutral/Ground

00819355021406: 230V, @50/60Hz (600 Watt max), L1/L2/Ground

MVP14[™] Five Unit Controllers:

- 00819355021437: 120V, @60Hz (600 Watt max), L1/Neutral/Ground
- 00819355021451: 230V, @50/60Hz (600 Watt max), L1/L2/Ground

Each MVP14[™] Unit requires a dedicated electrical supply:

00819355021345: 120V, @60Hz (1,550 Watt max), L1/Neutral/Ground

00819355021352: 230V, @50/60Hz (1,550 Watt max), L1/L2/Ground

9.9 Control Wiring (see Appendix C: 17.14-17.17)

9.9.1 MVP14[™] Controller to each MVP14[™] Unit(s)

Standard Interconnect Cables:

00819355020058 MVP14™ Interconnect 50 ft Cable [MVP14DD35]

00819355020089 MVP14™ Interconnect 150 ft Cable [MVP14GG35]

NOTE: Custom lengths and types of Interconnect Cables are available upon request.

9.9.2 MVP14[™] Controller to Remote 'DR' Sensor

To each Sensor:	4 Conductors + Ground	
	(24VDC, 50mW)	
	18 AWG minimum	
	(see Appendix C: 17.10-	
	17.11)	

9.9.3 MVP14[™] Controller to MVP[™] Sensor Conversion Interface & Pyure 'AQ' 900 Oxidant Sensor

To Conversion Interface:	6 Conductors + Ground (24VDC, 50 Watts) 18 AWG minimum (see Appendix C: 17.16-17.17)
To 'AQ" 900 Oxidant Sensor:	User supplied cable (4 conductor + Ground) (see Appendix C: 17.16-17.17)

9.9.4 Remote 'DR' Sensor to Remote Sensor Housing with Sensor Element

One factory-terminated low voltage cable (supplied with the MVP[™] Remote 'DR' Sensor) needs to be installed between the Sensor Enclosure and the Remote Sensor Housing. The 'large' connector end needs to remain inside the Sensor Enclosure while the 'small' connector end needs to be routed through the large strain-relief connector in the bottom of the Sensor Enclosure. The 'large' connector plugs into the Sensor Display Module inside the Sensor Enclosure. **Caution is required as the pins in the connector base are easily damaged/bent if installed incorrectly.** The connector plugs into the Display Module in one direction only. The small connector end/cable can then be routed through to the Remote Housing and plugged into the side port (connector plugs into base in one direction only). The final step is installing the Sensor (supplied with the MVP14[™] System) into the Remote Sensor Base Station. **Caution is required as the pins in the Sensor base are easily damaged/bent if installed incorrectly.** The Sensor plugs into the Remote Sensor Base Station in one direction only.

9.10 Air Side Requirements

9.10.1 Duct Airflow Velocity

Pyure recommends installation of the MVP14[™] Unit to an HVAC duct with a minimum velocity of 100 feet per minute and a maximum velocity of 3,000 feet per minute .

9.10.2 Duct Bypass

Most of the time, the MVP14[™] Unit(s) are installed in bypass ducts to minimize static pressure in the duct work system.

The HVAC duct takeoffs for the duct bypass should include a scoop, one to force air through the bypass and the other to create additional suction through the bypass. Many duct takeoffs include both a scoop and damper, which will simplify the recommended requirements.

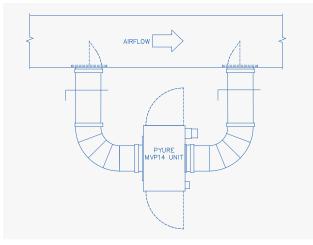


Figure 5: MVP14[™] Duct bypass

Pyure recommends 25% + relative humidity for optimal performance.

9.10.4 Interlock

The MVP14[™] Unit(s) should be interlocked with the HVAC fan where they are installed. This will ensure that when the HVAC fan is off, the MVP14[™] optics will also be turned off.

To complete this interlock, a control voltage signal must be made to the corresponding terminal blocks of the Main Disconnect powering the MVP14[™] Unit. This control signal can be either 24V (AC or DC), 120VAC or 208-240VAC depending on control relay selected in the Main Disconnect and available voltage source.* The interlock signal can come from the relevant HVAC unit, or when that is not practical, from a local airflow proving device (pressure differential switch, sail switch, etc.).

*NOTE: All wiring to be carried out according to local electrical code requirements

10. Operator Access Controls

10.1 Access Controls

The MVP14[™] system is controlled through the Controller via a touch screen display (HMI) located on the front of the enclosure. The touch screen display panel is used to configure and control the MVP14[™] System. The Controller houses all of the electronics needed for the remote control functions. Through the interface screen, the user can access system-level menus.

The MVP14[™] system can control and manage up to two (2x) /or/ five (5x) MVP14[™] Unit(s) (depending on the controller utilized) with independent control set points to implement multiple closed loop systems. The system utilizes sensors to control the operations of all Unit Banks that are configured for "Auto" processing. The system also allows the user to configure and control Unit Banks in a "Manual" operation. All Banks are monitored by the system to

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ensure that all the MVP14[™] Unit(s) are functioning properly.

NOTE: Appendix (A) provides detailed description of the menu items and operator actions available through the Control Subsystem's user interface.

10.2 System Activation

Prior to initially operating the Controller, the operator must have:

- 1. Current system activation code
- 2. Valid password code for the system-level functions being accessed

10.2.1 Activation Code

The organization that has procured or leased the system will be issued an activation code that is valid for a specific period from the date of activation. The activation code provides authorization for the organization to operate the MVP14[™] system under the terms and conditions of the licensing agreement. The licensing agreement and associated activation code must be renewed periodically based on the initial terms of the license. The Controller will automatically be deactivated if the activation code and associated licensing agreement expires.

NOTE: Activation codes enabling MVP14[™] Controller operations are valid for a specific period of time from the time of activation. Activation codes must be renewed periodically (usually annually) to prevent system deactivation and ensure continued operations.

10.2.2 Passwords

A password system is used to control access to controller functions. There are several levels of functions for which passwords are assigned. These include:

- 1. **Supervisor** this is intended to be for the person who has a need to access the most functionality available.
- 2. Maintenance this allows in-house and contractor-qualified Pyure field service technicians to view and change maintenance and troubleshooting screens.
- 3. Operator this includes multiple operator password fields so multiple operators can access the controller. Screens that are available to operators have limited functions and are intended to provide the ability for operators to view current status of the operational components of the system.
- 4. **General/Default** this is a minimum level of controller access. It allows general users to view status screens and to perform very limited control functions.

NOTE: Passwords are used to establish system-level access privileges and are intended to prevent inadvertent actions which could diminish the MVP14[™] systems intended operations.

11. System Operation

11.1 Start Up

Once the system has been activated it can be operated. The start-up of the MVP14[™] system shall only be accomplished by trained operators. The indicated regions in Figure 6 highlight the access control screen, main power switch and main power indicator light.

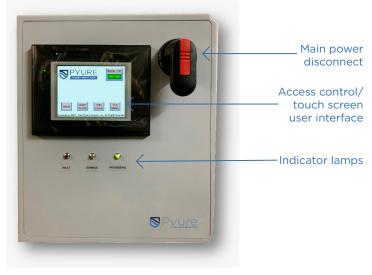


Figure 6: Controller Main Features

Standard start up and commissioning steps will include the following:

- Visually check the general conditions of the MVP14[™] System.
- 2. Confirm incoming power is available. The Access Control Screen on the Controller should be illuminated when power is available. If power is unavailable, ensure the Main Power Switch is in the ON position, and the breaker providing electrical power to the Controller is ON (Reset).
- Start the Controller at the Access Control Screen by selecting the "Master Cntrl" icon (see Section 15.5).
- Confirm that the MVP14[™] Unit(s) are energized and working properly by observing the Auto Mode Screen (see Section 15.8) and noting the green processing status light is lit.
- 5. Note any alarm codes on the Access Control Screen and note that the fault and service lights (amber/red) on the Controller are not lit. Notify servicing personnel in the event of any indicated faults or errors.
- 6. It is normal for the sensor(s) to go into a calibrate mode anytime power is cycled off/ on. This calibrate sequence may last anywhere from a few minutes to several hours, depending on several parameters, and it is normal for the MVP14™ Unit(s) to not be functioning during this time. Ensuring this calibrate mode completes and sensor(s) feedback resumes normal operation is essential to system commissioning.

11.2 Normal Operation

Under normal operating conditions, the MVP14[™] System will run with little or no operator adjustments. Indications of proper operation include the green processing status light being illuminated on the System Status Lights, no alarm codes noted on the bottom of the Access Control Screen, and the optics banks operating within specified limits.

The Control Subsystem continually monitors the MVP14[™] System status and updates system-level logs accordingly. Operators are alerted to errors, faults, or service conditions by the following:

- 1. Illumination of the associated Fault/Service indicator light on the System Status Lights.
- 2. List of alarm codes on the Access Control Screen corresponding to the alarm condition(s).

1

INDICATOR LAMP	INDICATION		
Fault (Red)	Indicates that the control system has detected an error. The specific error(s) will be displayed at the bottom of the HMI screen and also recorded in the Alarm/Message Log.		
Service (Amber/Yellow)	Indicates that the control system has detected a "Warning" condition. The specific warning(s) will be displayed on the bottom line of the HMI screen.		
Processing (Green)	Indicates that the control system is running normally (no faults or servicing requirements detected).		

Table 1: Fault/Service Light Indicators

NOTE: Appendix A provides information on the screens available to the operator for viewing on the HMI panel.

11.3 Start Up following Power Interruption

When power is interrupted to the Controller, the MVP14[™] Unit(s) will shut down. When the optics are de-energized there will be no atmospheric hydroxyl radicals produced. For critical applications, an alternate/backup power source should be part of the system design and installation. This solution should be capable of operating the entire MVP14[™] System in the event of a main power disruption or outage.

The Controller has an integrated uninterruptable power supply [UPS]. This UPS will continue to provide power to the sensor(s) and important Controller functions so that sensor calibration will not be lost during temporary power outages. The UPS should provide between 15 and 30 minutes of backup power.

If power is interrupted and restored within the time period that the UPS supplies adequate power, the optics will be re-energized when normal electrical power is restored. Under these circumstances the MVP14[™] system will be back to normal operation when power is restored.

If power is interrupted and not restored within the time period that the UPS supplies adequate backup power, the sensor(s) will shut down. Once commercial power is restored, the sensor(s) will go into calibration mode. The sensing system may take between 15 minutes and 24 hours to stabilize, depending on a number of circumstances. Control based on sensor feedback will not be functional until the sensor(s) are recalibrated. Upon restart of the system, the operator should follow the startup steps in Section 11.1 to confirm proper operation.

11.4 Operator Observations

Operators should check the Access Control Screen and Status Indicator Lights periodically to note the status of operating equipment. Operator observations include the following:

- Alarm status codes and indicator lights.
- Variations in the oxidant sensor readings and optic banks.
- Observable physical status of equipment.

Indications of alarms will be on the bottom of the Main Screen or accessible through the Alarm History menu button on the right side of the Main Screen. The operator should then note the alarm code(s), date and time of the alarm code(s), and the description (alarm details found by pressing the Details button on the bottom of the Alarm Summary Screen). These should be provided to the qualified servicing technician.

NOTE: Appendix B provides a table of alarm codes and definitions. User screens are customizable to specific customers and not all screens are available to operators.

The hour meter totals per optic/optic set can be checked by pressing the Usage Setup button from the Main Screen. The total run time per optic, or optic set, will be displayed. The hour meter provides current totals in hours and minutes.

11.5 Pre-Shut Down Checks

It is a good practice to take a minute to check the status of the equipment prior to powering down the MVP14[™] System. This is done by checking the Status Indicator Lights and looking for alarm indications on the Main Screen.

The MVP14[™] System is powered down by selecting the Master Control button on the Main Screen. This will maintain power to the Controller for sensor calibration, but will shut off the MVP14[™] Unit(s).

▲ Warning: This will not be considered a Lock Out/Tag Out (LOTO) stage because there will be live power in the controller. If power needs to be completely shut off for any reason, follow your organization's procedures for doing so.

The Controller main power shut off can be operated to de-energize the controller and all functions including the sensor unit(s). This should only be done for servicing by qualified technicians, in the event of an emergency or extended shut down of the unit.

12. General Cleaning

This section provides procedural guidance on how to clean the MVP14[™] System. It also covers how to visually inspect the vents located in the Controller. These procedures are intended to be performed on a recurring basis to ensure proper operation of the MVP14[™] equipment. The periodicity of these procedures will be dictated by the environmental conditions where the equipment resides, and minimum recurrence intervals should be determined during the system configuration process.

NOTE: Recurrence intervals may be modified over time based on operating conditions and experience gained utilizing the system.

▲ CAUTION: Due to the sensitive nature of the equipment housed inside the MVP14[™] System, the following procedures should be followed precisely and with extreme care.

12.1 Exterior

The exterior of the MVP14[™] System components may be cleaned using non-abrasive soap and water. In highly contaminated/greasy environments, a suitable degreaser may be applied first, and then removed with soap and water.

▲ CAUTION: Under no circumstances shall the equipment be hosed down with high pressure water or steam at any pressure.

12.2 Controller Enclosure Vents/Filters

The Controller enclosure has one vent on each side. These vents should remain clean and un-blocked. If filters are installed in these vents they should be checked and cleaned when necessary.

12.3 Cleaning the MVP14TM Hydroxyl Generator Unit('s) Optic Chambers and Optics

▲ CAUTION: The optics are very fragile. Extreme care must be used when working on the MVP14[™] Unit(s) while the optics are exposed. CAUTION: The approved cleansing solution for cleaning interior components of the Optics Subsystem is: <u>90% distilled water + 10%</u> <u>isopropyl alcohol</u>. The solution shall be applied using lint-free wipes while wearing latex gloves.

A CAUTION: Wear protective eye wear and latex gloves when handling optics.

The steps listed below are used to access and clean the Optic Chamber and Optics.

- 1. De-energize the MVP14[™] System
 - a. From the Main Screen, select Master Control 'On' icon (this de-activates the MVP14[™] Unit(s)). The 'On' icon will change to 'Off'.
 - b. If a local disconnect is installed on the electrical supply to the MVP14[™] Unit(s), turn to the Off position. Caution: When the Main Power Switch has been deactivated on the Controller, there still is power on the MVP14[™] Unit(s). Apply lock out/tag out (LOTO) markers in accordance with the host facility LOTO guidelines.
- Depending on the installation, the associated HVAC unit may need to be shut down. Refer to host facility guidelines prior to removing the MVP14[™] Unit from the duct.
- 3. Follow host facility protocol to confirm MVP14[™] Unit(s) are de-energized and safe to work on.
- Carefully pull the MVP14[™] Unit from the duct and have someone support the unit while work is carried out (or place the unit on a support surface if the electrical service loop is long enough).

- 5. Remove existing optics following these instructions (using protective eye wear and latex gloves):
 - a. Loosen and remove the Optic Cap from the optic sleeve. With a firm grip on the upper porcelain end of the optic, use your other hand to grip the optic connector.
 - b. Gently move the connector back and forth while pulling from the optic base.
 - c. Gently pull optic from optic sleeve.
- 6. Clean the optic chamber using the approved cleansing solution (see CAUTION note above), lint-free wipes and latex gloves.
- If re-installing optics, ensure they are cleaned using the approved cleansing solution (see CAUTION note above), lint-free wipes and latex gloves.
- 8. Install clean or new optics following these instructions:
 - a. Remove new optic from packaging and gently insert into the optic sleeve.
 - b. With a firm grip on the upper porcelain end of the optic, use your other hand to grip the optic connector.
 - c. Gently connect the optic connector to the optic. *NOTE: Optic connector is keyed with the optic base and will connect in one direction only.*
 - d. Ensure optic connector and optic base are firmly pressed together.
- 9. Reinstall the MVP14[™] Unit Sleeve Cap to the optic sleeve.
- 10.Repeat Steps 5 thru 9 for each of the MVP14[™] optics.
- Remove LOTO markers and re-engage the Main Power Switch (if local disconnect was turned off, turn back to on position).

- 12. Using the Access Control Screen, press the Master Control 'Off' icon (restores power to Subsystems and icon changes to green and reads On).
- 13. From the Auto Screen (see Figure 15.8), verify that optics are energized (Set number should be bright green with no errors.
- 14. Return to the Main Screen and ensure the following:
 - a. The Master Control 'On' icon is green.
 - b. No alarms are displayed relative to the Optics Subsystem
 - c. The green status light on the front of the Controller is illuminated.
 - d. The Sensor PPM reading is updating.
- 15. Document actions using locally established service records.

END OF PROCEDURE

13. Scheduled Maintenance

13.1 MVP14[™] System Maintenance Replacement Parts and Requirements

ITEM DESCRIPTION	PART #	QTY PER SYSTEM	FREQUENCY
Straight Optic - Pink / Odor	00819355021321	Dep. On Spec	Annual
Straight Optic - Yellow / Germ	00819355021338	Dep. On Spec	Annual
Optic Sleeve	00819355022274	14 per MVP14™	Typically bi-Annual, (every other year) or as needed depending on the environment.
'DR' Sensor Element	00819355021628	1 Per Sensor	Annual
'AQ" Sensor Element	00819355022540	1 Per Sensor	Annual
Optic Sleeve Grommets	НВН-ХХ-202	28 Per MVP14™	As needed / Checked Annually
Hydroxyl Optic Generator	00819355021925	14 Per MVP14™	As Needed / On Failure
Renew Software License	N/A	1 Per Controller	Annual
Rubber Spacer Ball	HGH-XX-376	14 Per MVP14™	Annual (With Optics)

Table 2: MVP14[™] System Maintenance Requirements

Annual System Activities:

- 1. **Optic Replacement:** Each MVP14[™] Unit will require all 14 optics to be removed and replaced annually, requiring both doors to be opened fully for access, with operator space around them.
- 2. **Rubber Spacer Ball Replacement:** May be reused but should ship spares for losses during annual service. Prevents the optic end from hitting the inside of each sleeve.
- 3. Sleeve Replacement: Each MVP14[™] Unit should have its sleeves checked for cleanliness annually during optic service. With the optics out, sleeves can be removed; where excess environmental contamination is found potentially blocking optic light, sleeves should be replaced.
- 4. Oxidant Sensor Element Replacement: Each sensor features a wall mounted base station with inserted sensor element. This element must be removed and replaced with a new element.
- 5. **Software Licensing:** Each controller remains active for a 12-month period and then goes into a software lock, awaiting service.

New codes are provided during service for input to reactivate the controller for another calendar year.

As Needed Activities:

- Hydroxyl Optic Generator Replacement: Each optic is driven by a Hydroxyl Optic Generator unit. These units' lifetime depends on the working environment and frequency of unit power cycles. They are replaced as needed on failure, typically multiple years into the system's lifetime.
- 2. **Grommet Replacement:** Inspected during sleeve check/replacement. If grommets become degraded and will no longer hold sleeves in place, they should be replaced.

13.2 Important Reminders

▲ CAUTION: Only qualified technicians are authorized to remove access panels to perform component-level maintenance on the MVP14[™] system.

NOTE: Any damage to equipment resulting from unauthorized maintenance practices or by actions taken by personnel that have NOT been qualified by Pyure may nullify and void existing manufacturer warrantees.

NOTE: Pyure engineers routinely customize the MVP14[™] system hardware and software configurations in order to meet the customer's specific air purification requirements. Accessing internal components by unauthorized personnel could result in a diminished operating capacity.

Only Pyure qualified service technicians are authorized to perform maintenance tasks on these units.

Note that for coordination with maintenance activities, periodic maintenance tasks may be weekly, monthly, quarterly or some other interval.

The periodicity of these tasks depends on the operating environment and will be initiated at the time the system is specified and commissioned. As operating experience is gained, the periodicity may be adjusted based on system performance and operating conditions.

ALARM	DESCRIPTION	RESULTING EFFECTS	TROUBLESHOOTING STEPS	
LICENSE IS ABOUT TO EXPIRE	Software license is approaching expiration date.	No triggered effects, notification alarm only.	Contact Pyure to order annual maintenance parts and schedule service.	
LICENSE EXPIRED	Software license has exceeded expiration date.	Pyure system rendered inactive. Sensors will continue to monitor, and controller will log data, optics will not function.	Contact Pyure to order annual maintenance parts and schedule service.	
LICENSE INVALID / EXPIRED	Software license activation code not valid.	Software license not updated.	Double check activation code and attempt to input again minding up and lower case. If still unsuccessful contact Pyure for a fresh code.	
UNIT#(X)BANK#(X) - OPTIC LIFE EXCEEDED	The specified optic bank on this unit has surpassed its expected life based on hours of run time accrued.	No triggered effects, notification alarm only.	Replace optic(s) and reset specified channels optic life back to zero hours.	
ZONE (X): Disabled due to Sensor(s)	There is an issue with the minimum number of working sensors required to operate the specified zone.	The specified zone is disabled.	Confirm sensor(s) function with sensor troubleshooting steps.	
SENSOR #(X): Calibrating /or/ IN Error	There is an issue with the specified sensor which needs to be identified at the sensor enclosure.	No direct effects. A zone may be disabled depending on the number of	Confirm sensor monitor inside enclosure does not have a "Sensor ready in XX:XX." If so, wait for countdown to complete and sensor will return to normal.	
		sensors per zone.	If sensor is reading a numbered value and alarm persists, confirm wiring between sensor enclosure and controller and/or contact Pyure for assistance.	
			If sensor enclosure is equipped with blue conditioning module, confirm module power light is blinking, if not, contact Pyure for repairs.	

ALARM	DESCRIPTION	RESULTING EFFECTS	TROUBLESHOOTING STEPS
JNIT#(X) BANK#(X) DPTICS ERROR The specified units bank is ON but the current draw is below the expected minimum		If disconnect box enable relay is wired to HVAC system - confirm HVAC system is ON, blower is ON, and no dampers are isolating Pyure MVP14 [™] Unit(s).	
	of optics in the bank.	value for the number of optics in the bank.	Identify failing optics and confirm optic harnesses are fully connected.
			If previous step does not return optic function, replace optics with new.
			If previous step still does not activate optic function, replace Hydroxyl Generator Units for failing optics.
UNIT#(X)- MACHINE ERROR	IT#(X)- MACHINE ERROR Specified MVP14 [™] Unit is not being seen by or responding to the controller. No triggered effects		Confirm power supply to MVP14 [™] unit: Check disconnect box is ON. Check breakers inside MVP14 [™] are ON. Confirm supply breakers are ON.
			Confirm MVP14 [™] connection cable is se- cure on both controller and MVP14 [™] . unit side

Table 3: MVP14[™] System Troubleshooting Matrix

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15. Appendix A: Operator Accessible Human Machine Interface (HMI) Screens

15.1 General Information

The access control touch screen located on the front of the MVP14[™] Controller is the primary user interface for operations and control of the system. This appendix will describe the various menu items and associated displays. Additional questions regarding the operator interface should be addressed to The Pyure Company.

15.2 System Activation

Prior to normal operations, the software control subsystem must be activated. This should be accomplished by a qualified technician during the initial installation, checkout and configuring of the system.

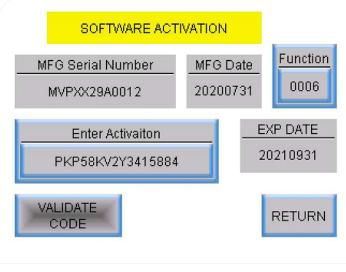


Figure 7: Activation Screen

15.3 User Access Type Definitions

Users are assigned passwords (consisting of up to 8 numerical digits) in order to access the various menu items from the MAIN display screen. The passwords are assigned via the ABOUT->ACCESS CONTROLS menu selection to arrive at the PASSWORD CONTROL screen.

It is important to remember that access to certain menu items and display screens are restricted based on the type of user. The user types are:

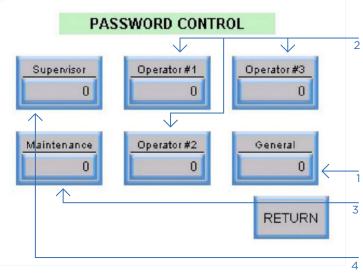


Figure 8: Password Screen

- General (ID: General):
 View access to the most common menus.
- 2. OPERATOR
 (ID: Operator#1, Operator#2, Operator#3):
 Allows access & changes to the most common menus.
- MAINTENANCE (ID: Maintenance):
 Allows for additional access to Error Logs (w/Reset capabilities).
- 4. SUPERVISOR (ID: Supervisor):
 Allows for additional access to change User Passwords.

15.4 Data Entry

Certain menu items will require the user to enter alphanumeric characters to complete an action. When this occurs, the user will be prompted for input with one of the following alphanumeric popup screens:

Enter Security Code ator DYI С em 7.06 7 8 9 5 6 4 Screen Controls 2 3 Enter 1 Software TURN Activation 0 CL Cancel

CAN

G

0

ENT

Н

P.

Х

SP

CLR

Figure 9: Security Code Entry

в

J.

С

K

D

L

Е

M.

F

N

A

Т



Figure 10: Alphanumeric Entry Screen

15.5 Main Screen

The MAIN screen available to all users. This screen is also the DEFAULT display when the system is executing normal/continuous operations.

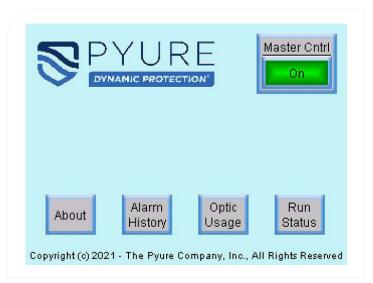


Figure 11: Main Screen

15.5.1 Master Control

The Main Power (Master Control) button is used to toggle control signals to all of the optics that are in MVP14[™] Unit(s) that are "On Line". Depressing the Main Power button does not affect the MVP14[™] Controller or attached sensors.

15.5.2 Menu Buttons

This area of the MAIN screen contains the available menu buttons. Depressing a menu button will open the associated display and/or sub-menus. If a password is required, you will be prompted for it before the system will allow access to the menu. Below is a description of the resultant displays.

MENU ITEM	DESCRIPTION
ABOUT	Displays the ABOUT screen, which contains system clock times, software/firmware version identifiers, model/serial numbers, access control and a change-password utility.
ALARM HISTORY	Displays the ALARM HISTORY screen used to view system-generated alarms detected by the Controller Subsystem.
RUN STATUS	Switches to the "RUN STATUS" Processing Screen
OPTIC USAGE	Switches to the "RUN STATUS" Processing Screen

Table 4: Main Screen Menu Buttons

15.6 ABOUT Screen

The ABOUT screen is available to all users. This screen displays the Version of the PLC and HMI Screen Software versions.

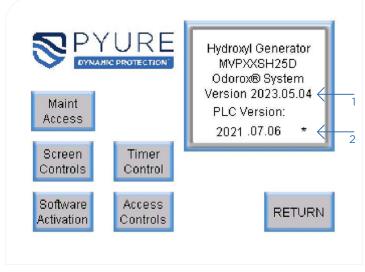


Figure 12: About Screen

15.6.1 About Information

The About screen displays:

(1) VERSION of the Screen/Panel Software. (Note: Format is "Year.Month.Day").

(2) VERSION of the PLC Software. (Note: Format is "Year.Month.Day").

- (3) Switch to Screen/Panel Controls.
- (4) Switch to Maintenance Access.
- (5) Switch to Timer Controls.
- (6) Switch to Access Controls.
- (7) Switch to Software Activation Controls.
- (8) RETURNS to the Main Menu Screen.

15.7 ALARM Screen

The ALARM screen is available to all users. This screen displays the Error/Status Messages of the system.

15.7.1 Alarm History

The Alarm List displays a list of systemgenerated alarms detected by the Controller Subsystem. Alarms are initially sorted in chronological order with the most recent alarm at the top of the text window. The Line Up /or/ Line Down buttons at the bottom of the screen allow you to scroll through the history of alarm conditions.

NOTE: Alarm indications are also indicated by the appropriate Fault/Service indicator lights on the front of the Controller enclosure.

Users recognizing a YELLOW or RED light should immediately verify the cause of the alarm by observing the entries in the Alarm List.

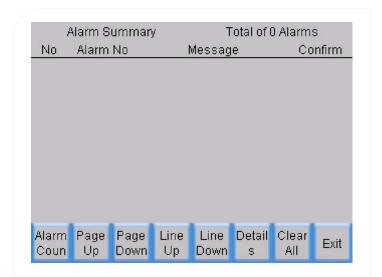


Figure 13: Alarm History Screen

NOTE: Alarm indications will remain in the window and the associated Fault/Service light will remain illuminated until the condition and alarm(s) have been cleared by a MAINTENANCE or SUPERVISOR user type.

15.8 Run Status Screen

The RUN STATUS screen is available to all users. This displays the state of the controller.

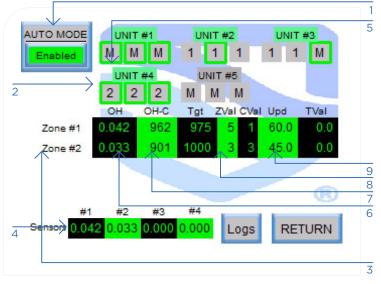


Figure 14: Auto RUN Status Screen

15.8.1 Run Status Information

The RUN STATUS screen displays:

- 1. Enable/Disable AUTO mode processing (Password Protected).
- 2. Shows Optic channel states which are either ON (green) /or/ OFF (gray).
- 3. Each Zone(s) State/Status Control Information.
- 4. Hydroxyl/Total Oxidant Sensor Levels (in ppm).
- Each Channel is assigned to a ZONE (1 to 4) /or/ in Manual (M) mode. (IF a Channel is in Manual Mode it is not controlled by the Controller). In this figure all channels are assigned to Unit #1 & Unit #5 have all its Banks in Manual Mode, Unit #2 & #3 are in zone 1 with one Bank on Unit #3 in Manual Mode, and Unit #4 assigned to zone 2.
- 6. Shows the Hydroxyl/Total Oxidant [OH] level in the Zone (in ppm). (The OH-C is an internal value of Hydroxyl/Total Oxidant in raw machine units).
- Target Hydroxyl/Total Oxidant level (internal system value in raw machine units).
- 8. Number of Optic Channels in the Zone [ZVAL] /and/ Number of Optic Channels [CVAL] required for the Control system.
- 9. AUTO mode Controller Sampling Rate [Upd] and Current Control Loop Timer Value (in Seconds).

15.8.2 Menu Buttons

This area of the AUTO screen contains the available menu buttons. Depressing a menu button will open the associated display and/ or sub-menus. Below is a description of the resultant displays.

MENU ITEM	DESCRIPTION	
VOC LOG	Switches to the VOC Logging Screen	
RETURN	Returns to the MAIN Menu	

Table 5: Run Status Screen Menu Buttons

15.9 Volatile Organic Compound (VOC) Log Screen

The VOC Log screen, which captures raw oxidant levels (in raw machine units), is available to all users. This screen displays the historical value of the Sensors of the system.

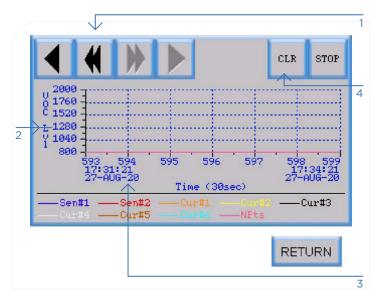


Figure 15: VOC Log Screen

15.9.1 VOC Log Information

The VOC Log screen displays:

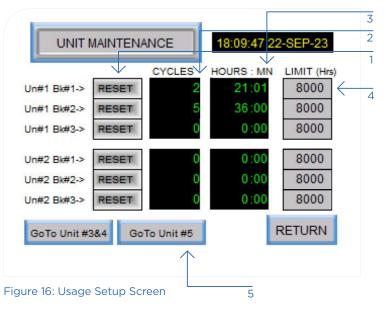
- Controlling the graph display

 moving forward/back in time.
- VOC /or/ total Oxidant Level

 raw data.
- 3. Date/time of the data sample.
- 4. Clear /or/ stop collecting the data.

15.10 Usage Setup

The Usage Setup screen is available to all user level, but only a Maintenance or Supervisor level can RESET the counters. This screen displays the number of hours and minutes that the UNIT optics have been operating.



15.10.1 Usage Setup Information

The Usage screen displays:

- 1. Maintenance RESET of Optics Hours (Password Protected).
- 2. Displays the Optical Channel Cycles.
- 3. Displays the Optical Channel Usage (Time ON or Activated) in Hours and Minutes.
- 4. Allows you to SET the Point at which a WARNING message will be displayed when the Actual Usage Hours is Greater than or Equal to this SET Point (Hours). (In this example, whenever any of the Optical Banks have been ON for more than 8000 hours, a Warning Alarm/Message will be activated. (Password Protected).
- 5. Jump to a similar screen for additional Channels.

15.11 Remote HMI Access

Steps for remote access:

 Confirm network connections. Ensure the controller is connected to the local network via its external ethernet port and that the computer you will be using to connect is on the same network.

- 2. Find/Set Controller IP
 - a. Using the HMI on the Controller, hold your finger on the screen at the top left corner for 5-10 seconds until the dialogue box appears:

	YURE		Master Critri
About	Alarm History	Optic Usage	Run Status
(Copyright (c) 2022 - The Pyure C	ompany, Inc., All Rights R	eserved

Figure 17: Main Screen

b. Tap OK to open the next menu

A System Screen Called	
Activating System Screen will stop the Panel Run Mode. Do you want to continue?	
OK Cancel	

Figure 18: System Screen Notification

Tap Setting to open the Setting C. menu

11

Memory

Information

(i)

Test Menu

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Adjust Clock

9

Adjust Touch

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Figure 19: Main Menu

d. Tap IP Address Setting IP Address Settings:

Adjust Display

Веер

Figure 20: Setting Menu



IP Address

Mouse

Ð

Main Menu

- IP Address Settings: e.
 - The default typically left after commissioning has the IP address fixed for a LAN connection with a laptop.
 - If you have credentials you would like to input to fix the HMI on your network, you may input them in the fields shown. If you would like to switch the DHCP, click the DHCP icon, exit out and restart the process so the HMI may refresh onto your network. When you return to this screen, you will see a new IP address, record this address and return your computer.

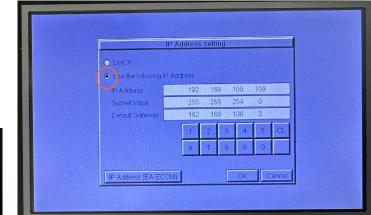


Figure 21: IP Address Setting Screen



- 3. Connect To the HMI Remotely:
- a. Open an internet browser and input the IP address recorded from the HMI into the address bar.
- b. Select "Remote Access" on the options shown in yellow.

C-more the best HMI resent × +			– ø ×
← → C ▲ Not see ure 192.168.100.109	Ŕ	•	New Chrome available
	Ver. 6:70:00 Ver. 70:00 Ver. 70:00 Ve		

Figure 22: Internet Browser Screen: Remote Access

c. Select "Built In Ethernet" from the next set of options.. This will initialize a file download. Save the file to your preferred location.

-more Practical, Powerful 🎄 🗙 +					-	٥
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1. No Firewall/Router Connection						
a. Built-in Ethernet (IP:192.168.100.109)						
b. EA.2(COM (1):0.0.0.0)						
Computer Hub/Switch or Internet Hub/Switch or Internet Hub/Switch or Internet						
2. With Firewall/Router Connection (IP:192.168.100.109)						
Packa (# Madrid) Camputer Camputer Camputer Camputer Camputer Camputer Camputer Camputer Camputer Camputer Camputer Suppose						
Mote: In order to enable the Remote Access in the panel, the Remote Server Function of the Touch Panel Network in the project file needs to be turned on. This can be done with the C-mc	re Pro	oram	ming	oftwa		
in order to change the control of the participation of the robotic rate is been work in the project the needs to be turned on. I mis can be upned with the C-ink	10 110	grann	ning :	onwai		

Figure 23: Internet Browser Screen: Built-in Ethernet

d. Open the downloaded EXE file 0151 from the location where the file was saved— File Name will be RemoteHMI_IP[YOUR IP ADDRESS HERE].EXE

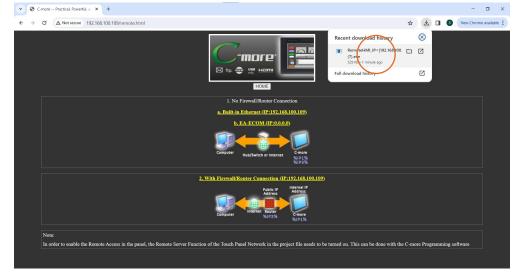


Figure 24: Internet Browser Screen: Open saved EXE file

e. Log in through remote access application: For user name input "User" and leave the password blank — Click OK.

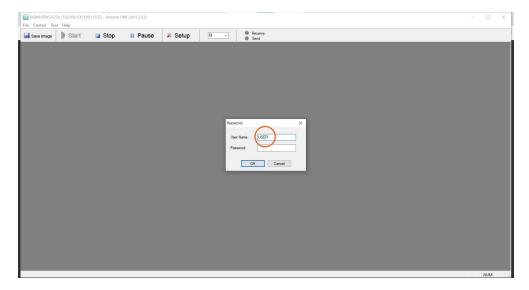


Figure 25: Remote Application Screen: Login

f. You are now remotely connected to the HMI, and can view all screens, but NOT make any changes to states of the controller.



Figure 26: Remote Application Screen: Main Menu

15.12 Panel Controls Screen

This area of the ABOUT screen contains the available menu buttons. Depressing a menu button will open the associated display and/or sub-menus. If a password is required, you will be prompted for it before the system will allow access to the menu. Below is a description of the resultant displays.

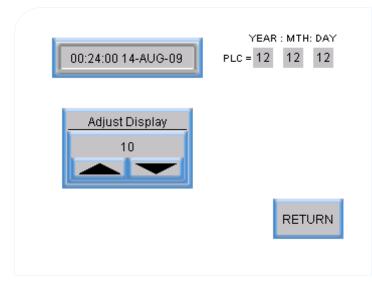


Figure 27: About Screen Menu Buttons

16. Appendix B: Alarm Codes & Definitions

ALARM Msg#	ALARM MESSAGE	ALARM/MESSAGE DESCRIPTION
1	UNIT #1 MACHINE ERROR	Unit #1 in Error - Possible Causes: (a) No Power to the Unit, (b) Door on the Unit Open, (c) Blower/Fan Unit Current Fault
2	UNIT #1 BANK#1 OPTICS FAILURE	Unit #1, Bank#1 Optics Bulb(s) or Ballast Failure - Current Set Point Error
3	UNIT #1 BANK#2 OPTICS FAILURE	Unit #1, Bank#2 Optics Bulb(s) or Ballast Failure - Current Set Point Error
4	UNIT #1 BANK#3 OPTICS FAILURE	Unit #1, Bank#3 Optics Bulb(s) or Ballast Failure - Current Set Point Error
5	UNIT #2 MACHINE ERROR	Unit #2 in Error - Possible Causes: (a) No Power to the Unit, (b) Door on the Unit Open, (c) Blower/Fan Unit Current Fault
6	UNIT #2 BANK#1 OPTICS FAILURE	Unit #2, Bank#1 Optics Bulb(s) or Ballast Failure - Current Set Point Error
7	UNIT #2 BANK#2 OPTICS FAILURE	Unit #2, Bank#2 Optics Bulb(s) or Ballast Failure - Current Set Point Error
8	UNIT #2 BANK#3 OPTICS FAILURE	Unit #2, Bank#3 Optics Bulb(s) or Ballast Failure - Current Set Point Error
9	UNIT #3 MACHINE ERROR	Unit #3 in Error - Possible Causes: (a) No Power to the Unit, (b) Door on the Unit Open, (c) Blower/Fan Unit Current Fault
10	UNIT #3 BANK#1 OPTICS FAILURE	Unit #3, Bank#1 Optics Bulb(s) or Ballast Failure - Current Set Point Error
11	UNIT #3 BANK#2 OPTICS FAILURE	Unit #3, Bank#2 Optics Bulb(s) or Ballast Failure - Current Set Point Error
12	UNIT #3 BANK#3 OPTICS FAILURE	Unit #3, Bank#3 Optics Bulb(s) or Ballast Failure - Current Set Point Error
13	UNIT #4 MACHINE ERROR	Unit #4 in Error - Possible Causes: (a) No Power to the Unit, (b) Door on the Unit Open, (c) Blower/Fan Unit Current Fault
14	UNIT #4 BANK#1 OPTICS FAILURE	Unit #4, Bank#1 Optics Bulb(s) or Ballast Failure - Current Set Point Error
15	UNIT #4 BANK#2 OPTICS FAILURE	Unit #4, Bank#2 Optics Bulb(s) or Ballast Failure - Current Set Point Error
16	UNIT #4 BANK#3 OPTICS FAILURE	Unit #4, Bank#3 Optics Bulb(s) or Ballast Failure - Current Set Point Error
17	UNIT #5 MACHINE ERROR	Unit #5 in Error - Possible Causes: (a) No Power to the Unit, (b) Door on the Unit Open, (c) Blower/Fan Unit Current Fault
18	UNIT #5 BANK#1 OPTICS FAILURE	Unit #5, Bank#1 Optics Bulb(s) or Ballast Failure - Current Set Point Error
19	UNIT #5 BANK#2 OPTICS FAILURE	Unit #5, Bank#2 Optics Bulb(s) or Ballast Failure - Current Set Point Error
20	UNIT #5 BANK#3 OPTICS FAILURE	Unit #5, Bank#3 Optics Bulb(s) or Ballast Failure - Current Set Point Error
25	SYSTEM AUTO STARTED	Logs Time/Date whenever the AUTO START Flag is Set and the Unit is Powered UP.
26	SYSTEM RESTARTED	Logs Time/Date whenever the Control Unit is Powered UP.
27	VOC SENSOR - CALIBRATING !	Logs Time/Date whenever the VOC is in its Calibration Mode (Usually when first Powered UP.)
29	UN#1 BK#1- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #1 Bank#1
30	UN#1 BK#2- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #1 Bank#2
31	UN#1 BK#3- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #1 Bank#3

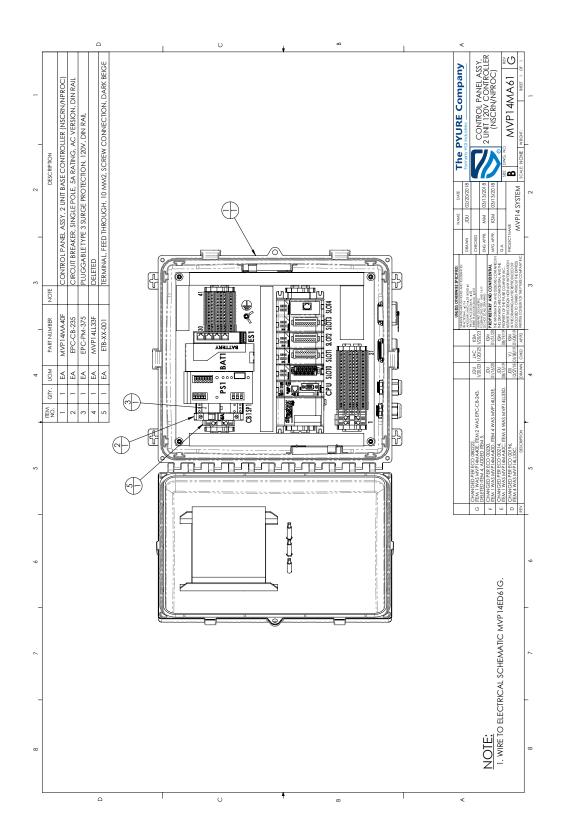
ALARM Msg#	ALARM MESSAGE	ALARM/MESSAGE DESCRIPTION
32	UN#1BK#1- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #1 Bank#1
33	UN#1BK#2- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #1 Bank#2
34	UN#1BK#3- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #1 Bank#3
36	UN#2 BK#1- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #2 Bank#1
37	UN#2 BK#2- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #2 Bank#2
38	UN#2 BK#3- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #2 Bank#3
39	UN#2BK#1- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #2 Bank#1
40	UN#2BK#2- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #2 Bank#2
41	UN#2BK#3- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #2 Bank#3
43	UN#3 BK#1- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #3 Bank#1
44	UN#3 BK#2- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #3 Bank#2
45	UN#3 BK#3- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #3 Bank#3
46	UN#3BK#1- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #3 Bank#1
47	UN#3BK#2- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #3 Bank#2
48	UN#3BK#3- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #3 Bank#3
50	UN#4 BK#1- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #4 Bank#1
51	UN#4 BK#2- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #4 Bank#2
52	UN#4 BK#3- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #4 Bank#3
53	UN#4BK#1- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #4 Bank#1
54	UN#4BK#2- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #4 Bank#2
55	UN#4BK#3- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #4 Bank#3
57	UN#5 BK#1- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #5 Bank#1
58	UN#5 BK#2- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #5 Bank#2
59	UN#5 BK#3- REPLACED OPTICS	Logs Time/Date whenever the Optics are Replaced on Unit #5 Bank#3
60	UN#5BK#1- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used a fter Resetting the Hour Counter on Unit #5 Bank#1

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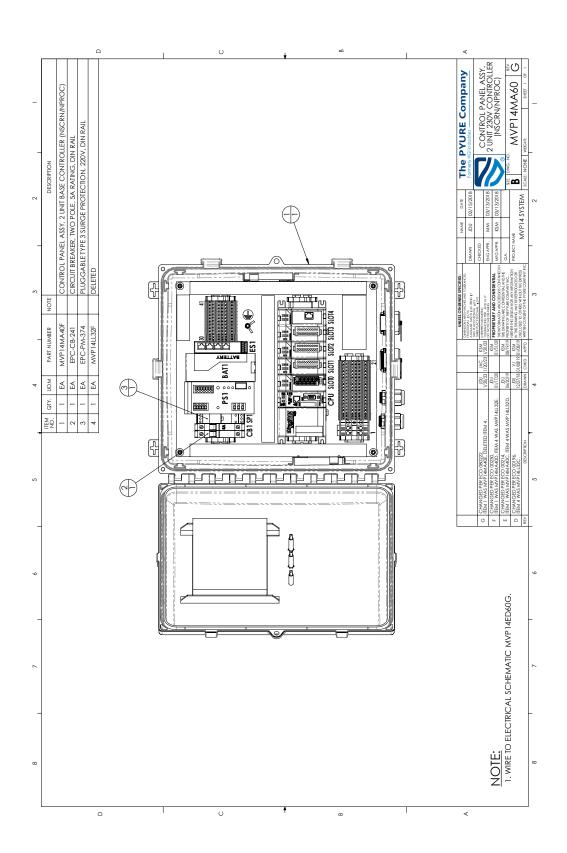
ALARM Msg#	ALARM MESSAGE	ALARM/MESSAGE DESCRIPTION
61	UN#5BK#2- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #5 Bank#2
62	UN#5BK#3- RESET USE=####Hrs	Logs Time/Date and # of Hours that Optics have been Used after Resetting the Hour Counter on Unit #5 Bank#3

17. Appendix C: Technical Documents

17.1 Appendix C: 00819355021376 MVP14[™] Two Unit 120V Controller

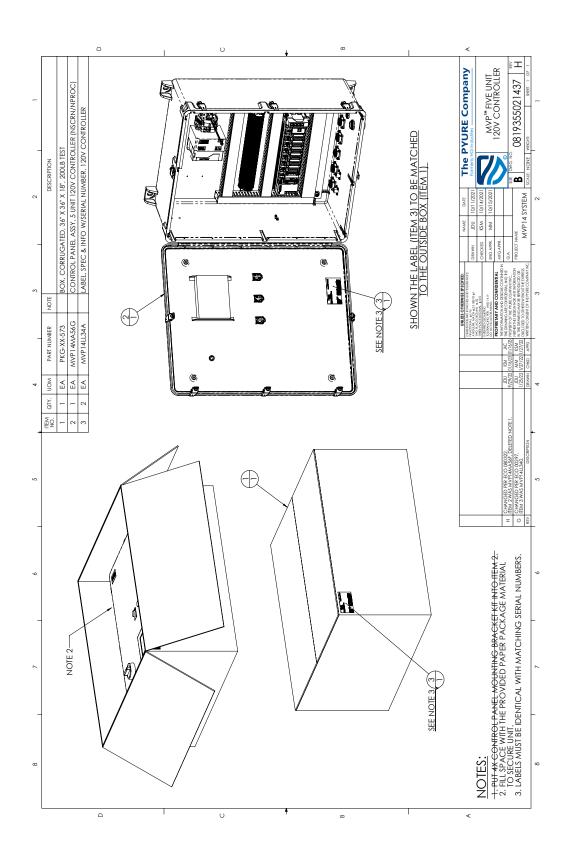




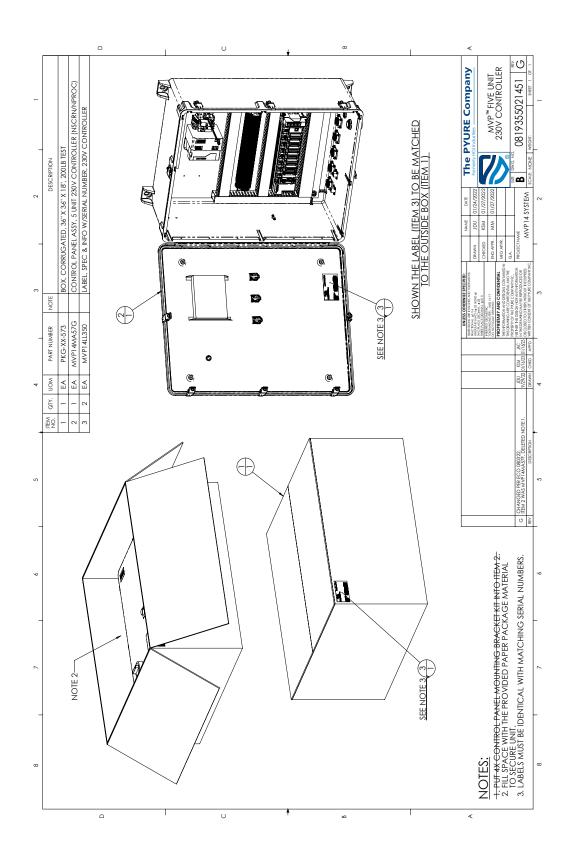


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17.3 Appendix C: 00819355021437 MVP14[™] Five Unit 120V Controller



17.4 Appendix C: 00819355021451 MVP14[™] Five Unit 230V Controller

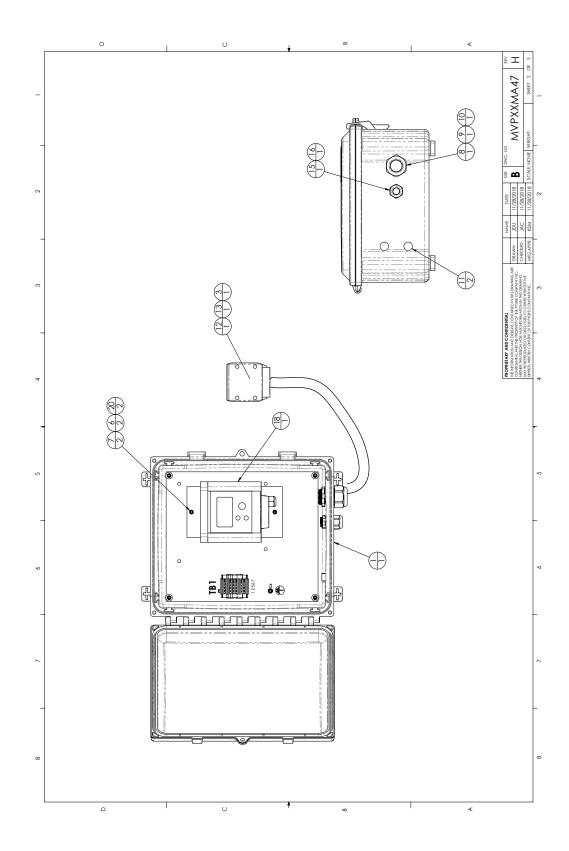


17.5 Appendix C: 00819355021314 Remote 'DR' Sensor

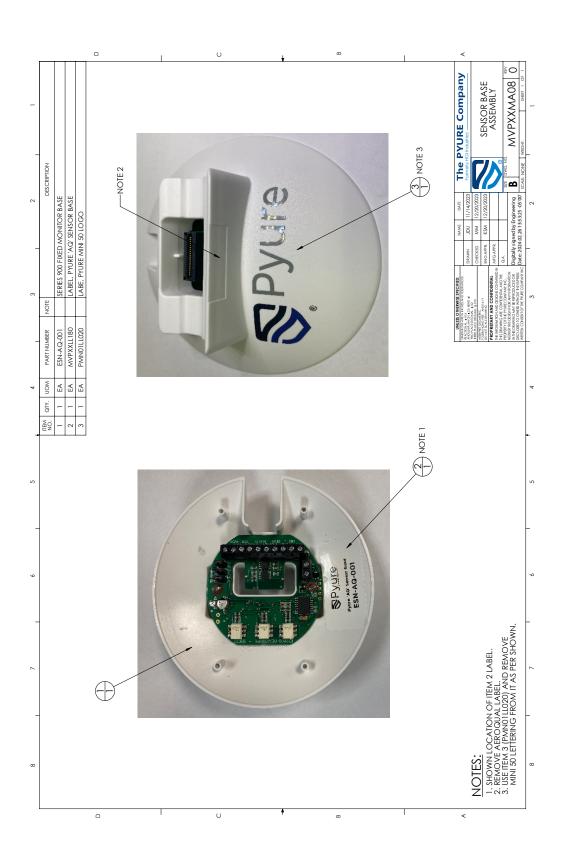
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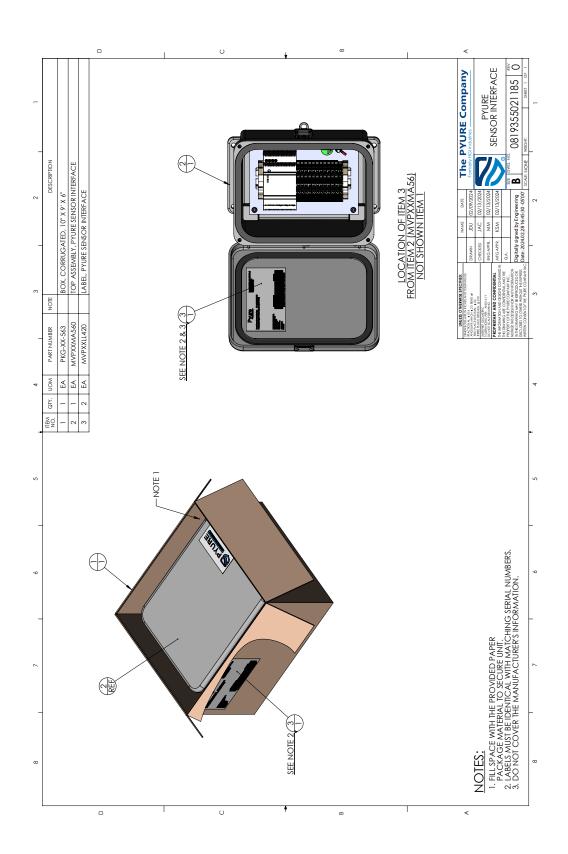
17.6 Appendix C: 00819355022533 Pyure 'AQ' 900 Oxidant Sensor Base



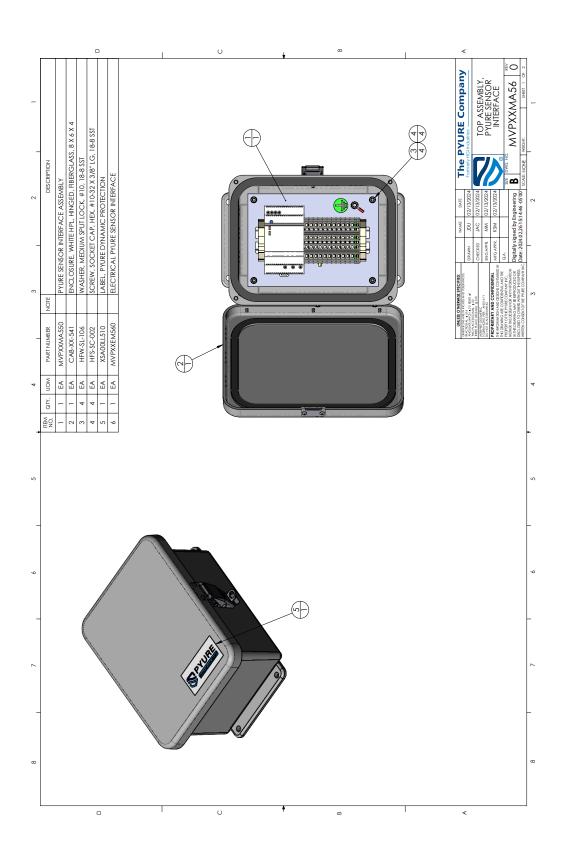
17.7 Appendix C: 00819355022540 Pyure 'AQ' 900 Oxidant Sensor Element



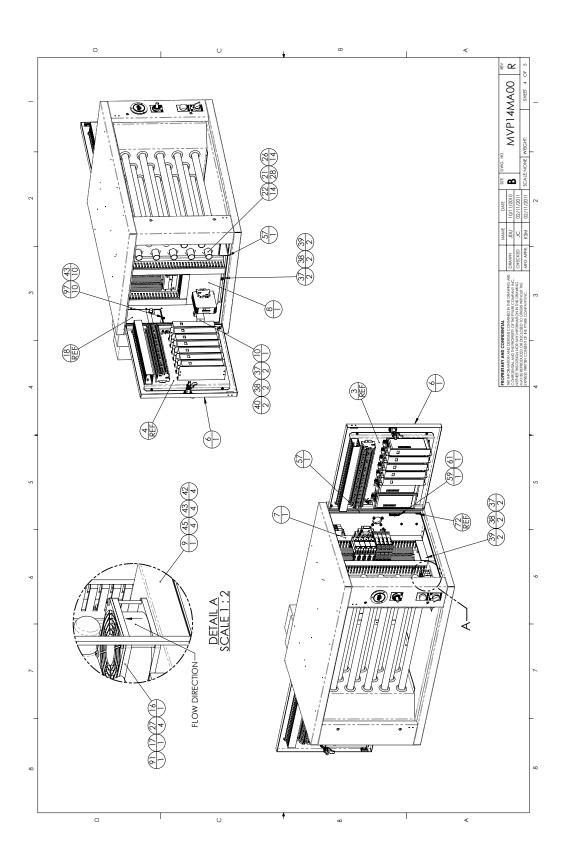
17.8 Appendix C: 00819355021185 MVP[™] Sensor Conversion Interface



17.8 Appendix C: 00819355021185 MVP™ Sensor Conversion Interface (cont)

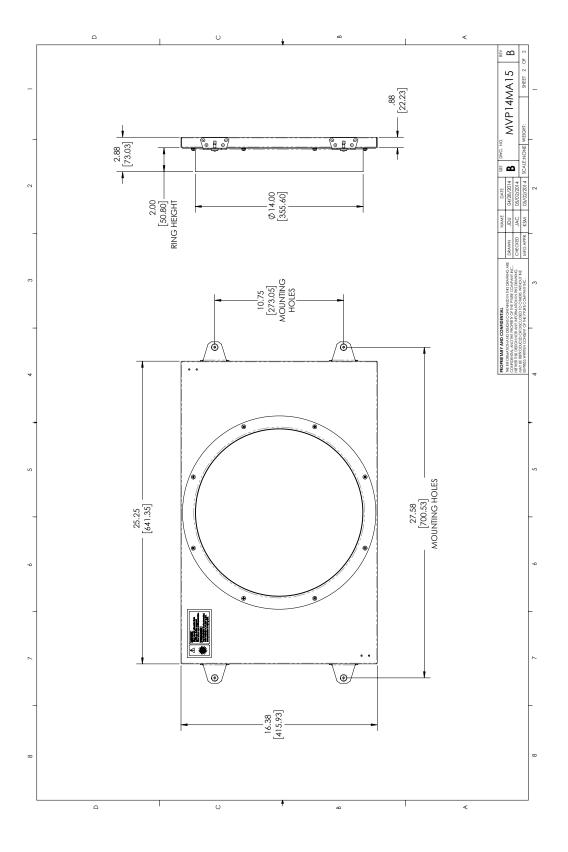


17.9 Appendix C: 008193550213 MVP14[™] Hydroxyl Generator Unit

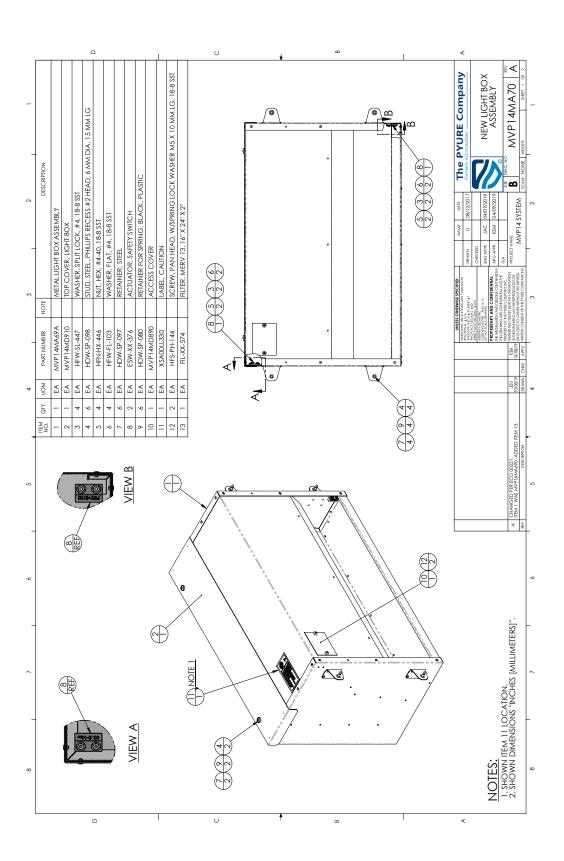


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17.10 Appendix C: 00819355021529 MVP14™ Front Panel w/14″ Ring



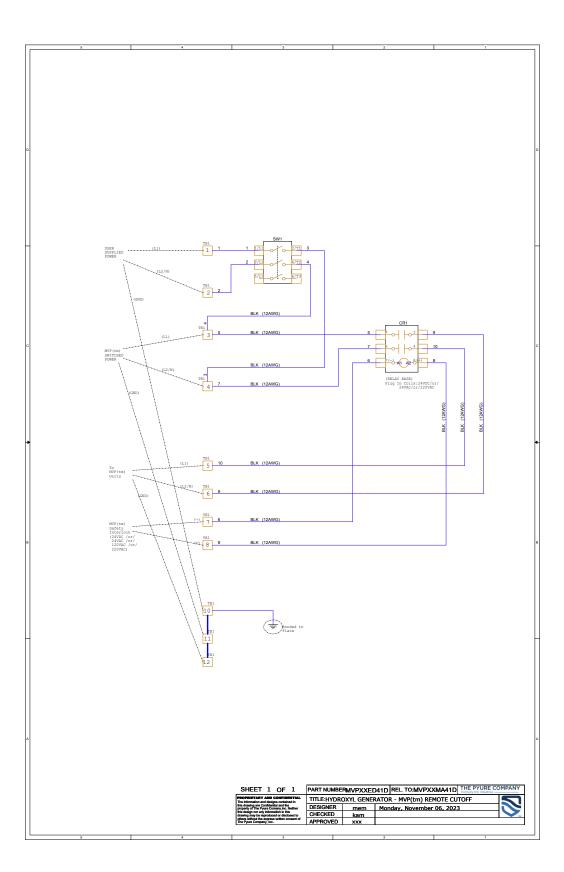
17.11 Appendix C: 00819355021512 MVP14[™] Light Shield/ Filter Box



17.12 Appendix C: 00819355021512 MVP14[™] Main Disconnect (optional) -

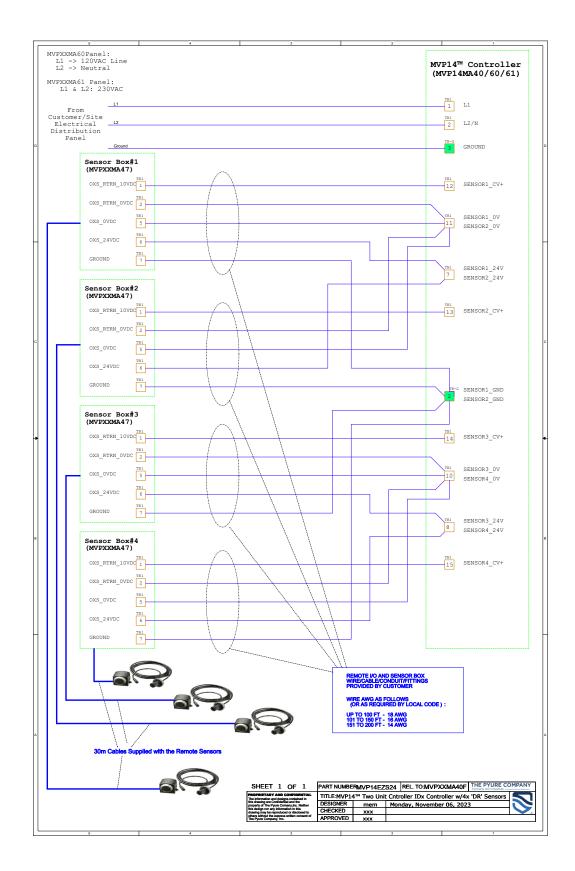
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3 2 1	NOTE DESCRIPTION	MODIFICATION, MAIN DISCONNECT ENCLOSURE	PANEL, MAIN DISCONNECT ENCLOSURE	RELAY, SOCKET, LY 1 & 2 POLE, DIN RAIL/SCREW RELAY, CLIP	DISCONNECT SWITCH, NON-FUSED, PNL/BASE MNT, 25A, 3 POLES BLK	TERMINAL LUG, 4STR-14SOL-2/BG	WASHER, FLAT, #10, 18-8 SST	WASHER, MEDIUM SPLIT LOCK, #10, 18-8 SST	SCREW, SOCKET CAP, HEX, #10-32 X 1/2" LG, 18-8 SST	SCREW, PAN HEAD, PHILLIPS, #8-18 X 5/16" LG, 18-8 SS1	GLAND, STR. THRU, 1/2 NPT HUB, LIQUID TIGHT CORDGRIP, NYLON, GRAY CODEW BUITTON LIEAD SOCKET CAD SST #10 32 V 1/2/10	Rail: 35 MM X 7.5 MM SLOTTED. STEEL. GALVANIZED	TERMINAL, END BRACKET	DOUBLE-TIER TERMINAL, SCREW CONNECTION, DARK BEIGE (WDK 4N V)	TERMINAL, END PLATE, DARK BEIGE	ILENVILIYAL, GROUND, GRIY IEL WASHER FLAT #10 2031D 438 OD 18-8 SST	LOCKNUT, NYLON, 1/2 NPT, GRAY, STR. NPS THREAD	WASHER, SPLIT LOCK, #8, 18-8 SST	SCREW, SOCKET CAP, HEX, #8-32 X 1/2' LG, 316 SST	MARKER, TERMINAL, 5 X 6 mm. POLYAMIDE, WHITE (1-50), HOR. DEK 6 I ARFI PYLIRE DYNAMIC PROTECTION					0))			 MAKE DAILE DAILE <thd< td=""><td>CHECKED KSM 01/20/2017</td><td>MIDENIAL PROPERTY OF A DISTRICT OF A DISTRUCT OF A DISTRUC</td><td>IECT NAME MVPXX</td></thd<>	CHECKED KSM 01/20/2017	MIDENIAL PROPERTY OF A DISTRICT OF A DISTRUCT OF A DISTRUC	IECT NAME MVPXX
_	PART NUMBER	MVPXXMD83A	MVPXXMD84A	EPC-RY-035 FPC-RY-036	ESW-CS-005	ETB-TG-548	HFW-FL-105	HFW-SL-106	HFS-SC-318	HFS-PH-128	CON-NX-583	WMG-DR-068	ETB-XX-031	ETB-XX-241	ETB-XX-494	HFW-FI-145	CON-NX-584	HFW-SL-141	HFS-SC-006	ETB-MK-414 XSA001510	VALVORED IO			A					DMB48 FRACTIC FRACTIC	9/30/21 9/30/21 muture 9/30/21 9/30/21 muture KCM MM DUR		2/18/19 2/20/19 2/20/19 NETHER THS 2/18/19 2/20/19 NETHER THS NETHER THS DECOMPOSITION OF COMPANY
4	WON	EA	₹	A A	í₫	Æ	EA	Ę	₹.	≴ :	3 S	S Z	Ł	EA	A S	5 4	бă	æ	Ł	EA EA	5									1DU 9/30/21	9/29/21 JDU 4/11/19	2/18/12
	ITEM QTY. NO.	-	-	- ~	-	-	4	5	4 (~ ~	- n	13 3.75	-	15 9	- 0		- m	7	2	4 -	-									QTY WAS 5	XXLL260.	SHT 2}
		i	1																										- 1		V 3	20
5		5, 18-8 SST	FE, BLACK						GREEN			E C	Ð				Ø					△,										C CHANGED PER ECO 00201, ADDED NOTE 4, 5, ITEM 30 AND 31, LABELS (SHT 2) FOR OLD REVISION, SEE PREVIOUS PRINT
6 1 5		ILLIPS, #8-18 X 1/2" LG, 18-8 SST	/G, 19/25 STRAND, PTFE, BLACK		, #6, 16-14 AWG				(G, 19/25, .012 PFTE, GREEN			E)	Ð		K															ш. 1		U
_	NO	PAN HEAD, PHILLIPS, #8-18 X 1/2" LG, 18-8 SST	ook-up, 12 awg, 19/25 strand, ptfe, black		FORK TERMINAL, #6, 16-14 AWG		GROUND		OOK-UP, 12 AWG, 19/25, .012 PFTE, GREEN			(3	Ð		Ċ													XXM A 41		ш. 1		U
_	NOTE DESCRIPTION	SCREW, PAN HEAD, PHILLIPS, #8-18 X 1/2" LG, 18-8 SST	š	DELETED	RK		LABEL, GROUND		WIRE, HOOK-UP, 12 AWG, 19/25, 012 PFTE, GREEN		E	Ret S	Ð		Č								Ż					e lengih uf 21 and Mypxxma41		ш. 1		U
6 I	PART NUMBER NOTE DESCRIPTION		WIRE, HOOK-	EPC-RY-037 DELETED EPC-RY-038 DELETED	BLOCK FORK	0 3 RELAY KIT	LABEL, GROL				¢		Ð		K K					2			ð S			KEN		2 FOR CUTTHE LENGTH OF MITTEM 5. N DISCORDS.		ш. 1		U
6 I	NOTE	SCREW, PAN	WIR-XX-443 WIRE, HOOK-		ETC-XX-026 BLOCK FORK	MVPXXKT000 3 RELAY KIT	LABEL, GROL	DELETED	WIRE, HOOK-		¢		Ð		L L					NOTE 2			To the second seco		<i>"</i>	C		Sheel z pok cul he lengih Of verrem tien 5. Er man Disconnect and Mvpxxma41		ш. 1		U
6 I 6 I	PART NUMBER NOTE	HFS-PH-134 SCREW, PAN	600 IN WIR-XX-443 WIRE, HOOK-	EPC-RY-037 FPC-RY-038	ETC-XX-026 BLOCK FORK	1 EA MVPXXKT000 3 RELAY KIT	XSA00LL070 LABEL, GROL	MVPXXLL260 DELETED	WIR-XX-276 WIRE, HOOK-		e	(TE)	Ð		L L					NOTE 2			S S		<i>"</i>	C	NOIES:	I. SEE SHEFI Z FOR CUTTHE LENGTH OF SHAFI FROM ITEM S 2. LABEL MAIN DISCONNECT AND MVPXXMA41		ш. 1		U

17.13 Appendix C: MVP™ Remote Cutoff Schematic



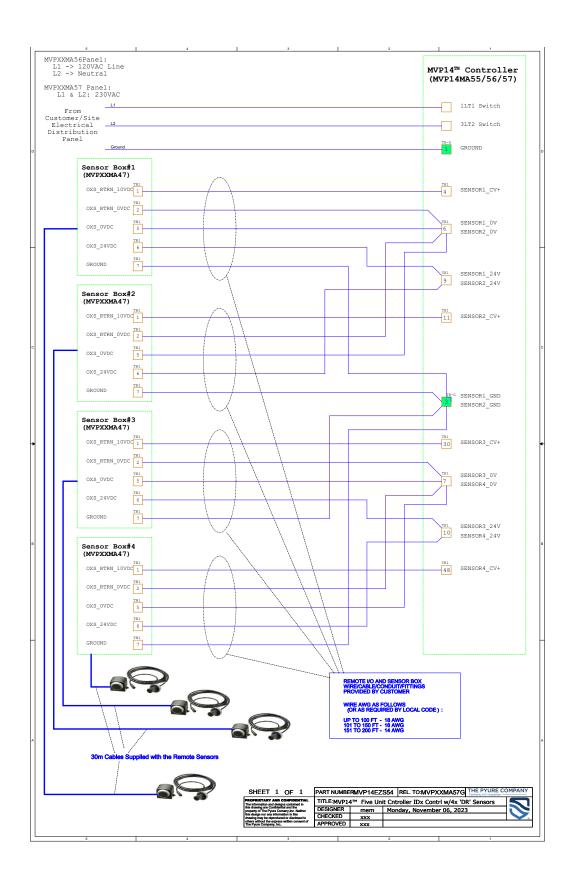
17.14 Appendix C: 00819355021376 MVP14[™] Two Unit 120V Controller

00819355021403 MVP14[™] Two Unit 230V Controller with Four Remote 'DR' Sensors Schematic



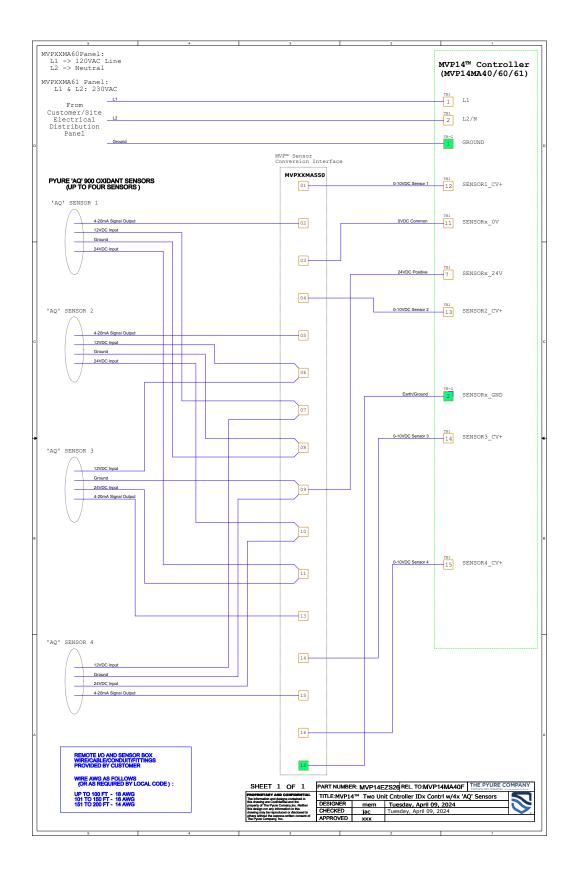
17.15 Appendix C: 00819355021437 MVP14[™] Five Unit 120V Controller

00819355021451 MVP14[™] Five Unit 230V Controller with Four Remote 'DR' Sensors Schematic



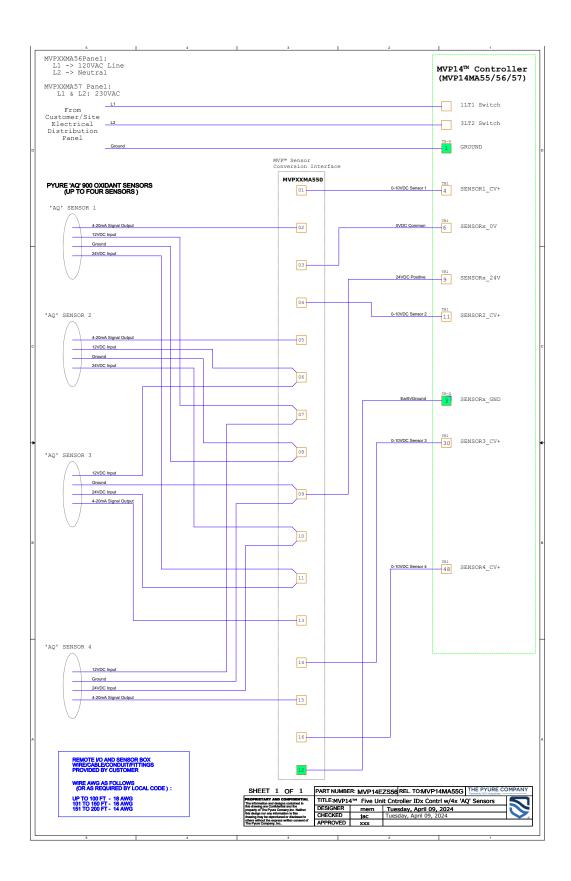
17.16 Appendix C: 00819355021376 MVP14[™] Two Unit 120V Controller

00819355021403 MVP14[™] Two Unit 230V Controller with Four Pyure 'AQ' 900 Oxidant Sensors & MVP[™] Sensor Conversion Interface Schematic



17.17 Appendix C: 00819355021437 MVP14[™] Five Unit 120V Controller

00819355021451 MVP14[™] Five Unit 230V Controller with Four Pyure 'AQ' 900 Oxidant Sensors & MVP[™] Sensor Conversion Interface Schematic



18. Appendix D - Limited Warranty

Limited Warranty

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19. Appendix E - Limited Use End-User License Agreement

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