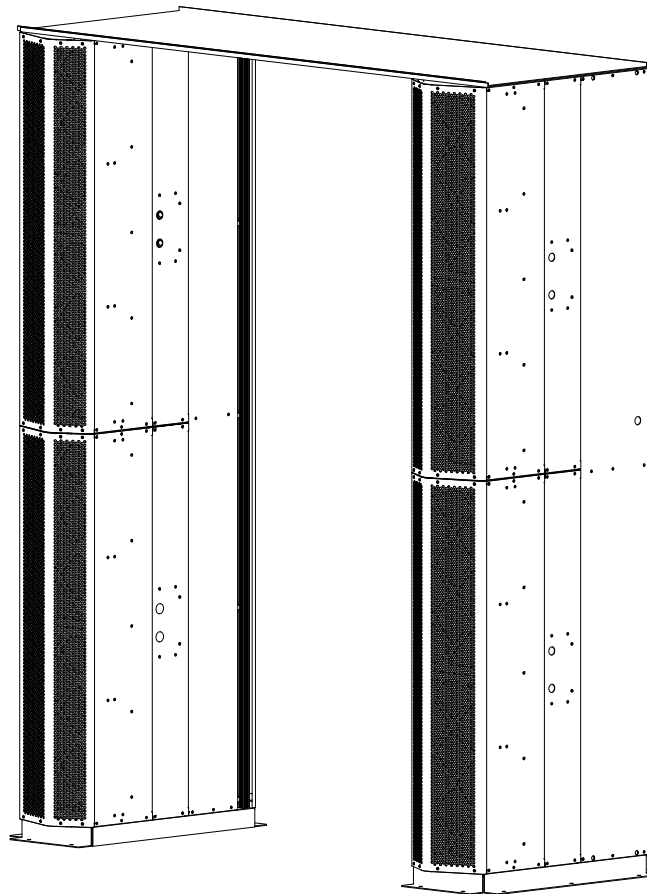**mars**

atmosphere is everything

Air Wash System (AWS)

Commercial Air Curtain
Submittal Package

Submitted by:

Mars Air Systems, LLC
14716 S. Broadway
Gardena, CA 90248

Project Name	
P.O.#	
S.Q.	
Company	
Print Name	
Signature	
Date	

(Electronic Signature Preferred)

Company Seal or Stamp

NOTE: MARS AIR SYSTEMS, LLC reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions, or replacements for previously purchased equipment.

MARS AIR SYSTEMS, LLC ● GARDENA, CA ● USA

Table of Contents

Air Wash System

(UVC, HEPAC and Ionizer Air Curtain)

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Air Wash System Data Sheet

Item No.	Description	Unit Voltage	Electrical Data (FLA)*
STD2 Series	**Packaged UV/HEPA Models**		
☐ AWS-4UA-OB-VHP	AWS, Air Wash System,(2)84",4Mtr,1/2HP,Unhtd,115v,1ø,60Hz,Galv,OB,UVC/HEPAC/Ionizer,24vCtrl,MagSw	115V/1ø	22.8
☐ AWS-4UD-OB-VHP	AWS, Air Wash System,(2)84",4Mtr,1/2HP,Unhtd,208-230v,1ø,60Hz,Galv,OB,UVC/HEPAC/Ionizer,24vCtr,MagSw	208-230V/1ø	12.4

Contact factory for additional voltages. NOTE: for ampacity, multiply FLA x 1.25

Features:

❖ UVC, HEPAC & Ionizer packaged air curtain
❖ Package includes surface mounted magnetic switch (99-018)
❖ Units equipped for vertical mount and includes bottom pedestal and safety mesh at discharge nozzle
❖ Cabinet is built with corrosion resistant paint lock metal and is powder coated Obsidian Black
❖ Low voltage (24Vac) control option standard
❖ Indoor use only (NEMA 1 location)
❖ Available only for STD2 unheated models
❖ 1-year parts only warranty against workmanship and defects
❖ Freight allowed in Continental US
❖ Proudly Made in the USA

UVC Package
❖ Patented dual bulb design standard (UVC & UVV)
❖ Patented UV process deodorizes and disinfects the airstream, destroying bacteria, mold, viruses and reduces unwanted odors
❖ UVC Germicidal destroys biological contaminants
  o Sterilize up to 99.99% of airborne bio-contaminants with multiple passes
  o Perfect for test labs, hospitals, and small waiting rooms
  O Reduces accumulation of pathogens on the exposed surface of the air curtain's internal components and minimizes pathogen redistribution
❖ UVV Oxidizing destroys chemicals and odors
  o Destroy ethylene off-gassing, which is a leading cause of premature aging of fruits and vegetables
  O Ideal for food storage/processing facilities, waste areas, kitchens, and bathrooms with noxious gases
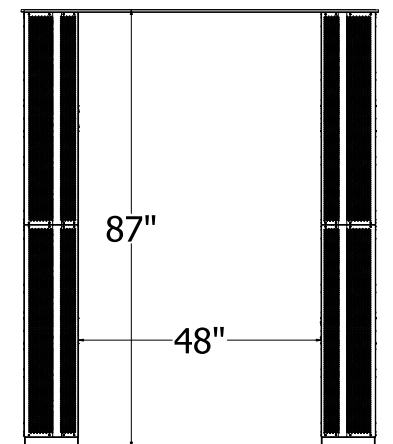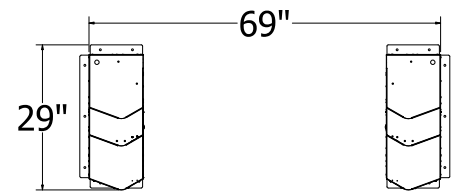 o Low levels of ozone generated

HEPAC Package
❖ HEPA® filters rated 99.99% per ASHRAE (0.3 micron) and meets UL Standard 900 for Flammability
❖ 2" pre-filters MERV (Minimum Efficiency Reporting Value) 7-8 rated standard
❖ Air curtain performance is reduced by 10-15% with clean filters. Motor are set to highest speed from the factory.

Ionizer
❖ Air Ionizer to remove particulates from the air through electrostatic attraction
❖ Fully factory assembled and wired

Options and Accessories:

❖ MERV 13 rated 2" pre-filters for extended usage applications or high particulate areas
❖ HEPA® filter, ULPA (Ultra-Low Penetration Air) rated 99.99% of particles 0.12 micron and MERV 13 rated 2" pre-filters for high particulate applications
❖ INS-UVC: 100% UVC bulb available for "no ozone" applications
❖ Custom enclosure colors and finishes (304SS, 316SS, Aluminum)

69"

29"

87"

48"

PROJECT		OPTIONS/ITEMS	
TITLE			
COMMENTS		DATE 06/01/21	PAGE
		REV. NO	1

MODEL NO. STD2-UV	DRAWING NO. STD-2UA-UV-ION-MR	DRAWN BY VM	CHECKED BY NT	FILE NAME

Model #: Generic Wiring Diagram for STD2, 2 Motor
115Vac, 1 Phase Motor, Master UVC Air Curtain with Ionizer
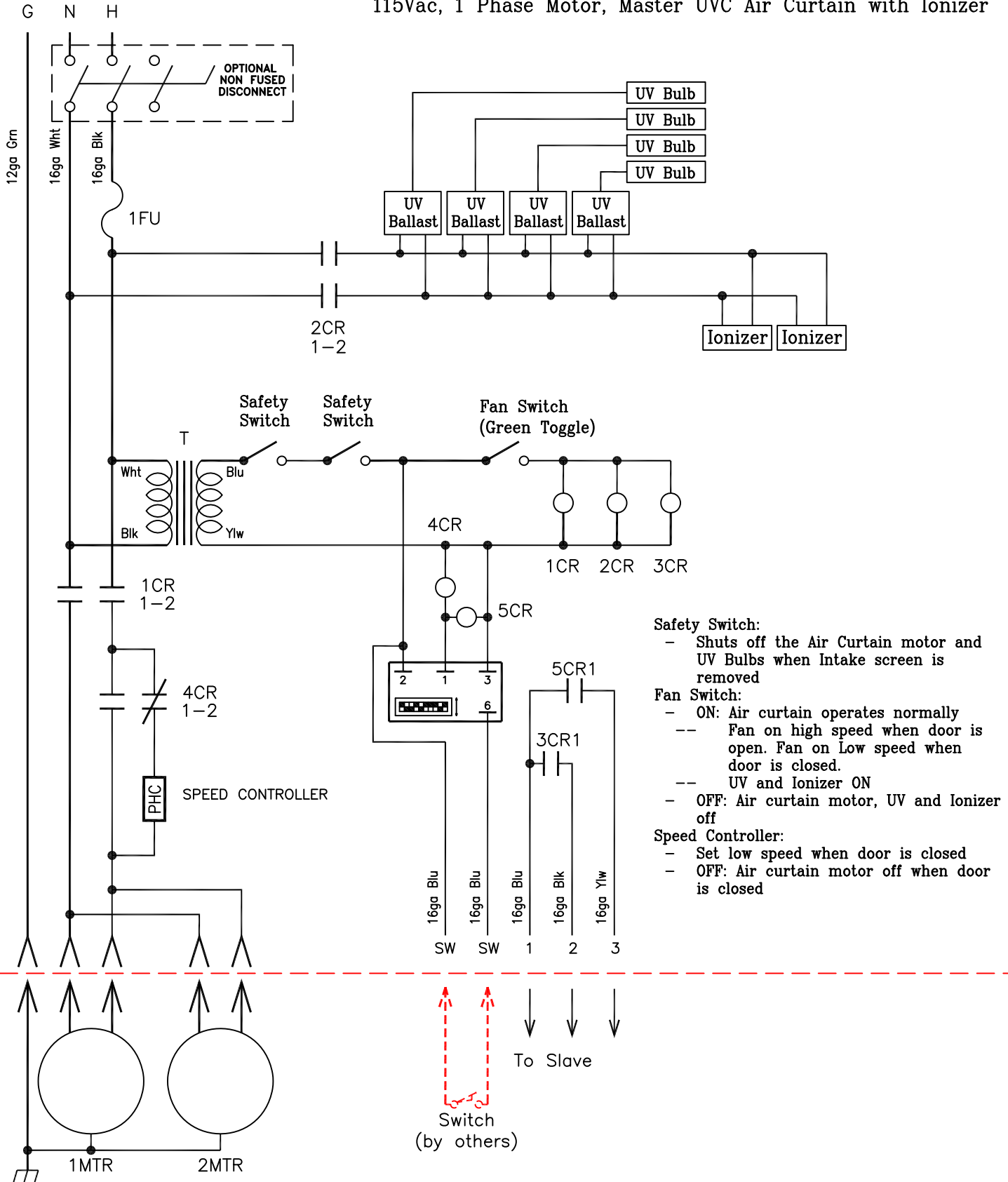
G N H

OPTIONAL NON FUSED DISCONNECT

12ga Grn
16ga Wht
16ga Blk

1FU

UV Bulb
UV Bulb
UV Bulb
UV Bulb

UV Ballast
UV Ballast
UV Ballast
UV Ballast

2CR 1-2

Ionizer Ionizer

T

Wht
Blk

Blu
Ylw

Safety Switch   Safety Switch   Fan Switch (Green Toggle)

4CR

1CR 2CR 3CR

1CR 1-2

4CR 1-2

5CR

PHC   SPEED CONTROLLER

2 1 3
6

5CR1

3CR1

16ga Blu
16ga Blu
16ga Blu
16ga Blk
16ga Ylw

SW SW 1 2 3

Safety Switch:
- Shuts off the Air Curtain motor and UV Bulbs when Intake screen is removed

Fan Switch:
- ON: Air curtain operates normally
  -- Fan on high speed when door is open. Fan on Low speed when door is closed.
  -- UV and Ionizer ON
- OFF: Air curtain motor, UV and Ionizer off

Speed Controller:
- Set low speed when door is closed
- OFF: Air curtain motor off when door is closed

To Slave

Switch (by others)

1MTR   2MTR

PROJECT		OPTIONS/ITEMS	
TITLE			
COMMENTS		DATE 06/01/21	PAGE
		REV. NO 1	

MODEL NO. STD2-UV	DRAWING NO. STD-2UA-UV-ION-SL	DRAWN BY VM	CHECKED BY NT	FILE NAME

Model #: Generic Wiring Diagram for STD2, 2 Motor
115Vac, 1 Phase Motor, Slave UVC Air Curtain with Ionizer

G   N   H

12ga Grn
16ga Wht
16ga Blk

OPTIONAL
NON FUSED
DISCONNECT

1FU

UV Bulb
UV Bulb
UV Bulb
UV Bulb

UV Ballast   UV Ballast   UV Ballast   UV Ballast

2CR
1-2

Ionizer   Ionizer

Safety Switch   Safety Switch

T

Wht   Blu
Blk   Ylw

3CR

1CR   2CR

1CR
1-2

3CR
1-2

PHC   SPEED CONTROLLER
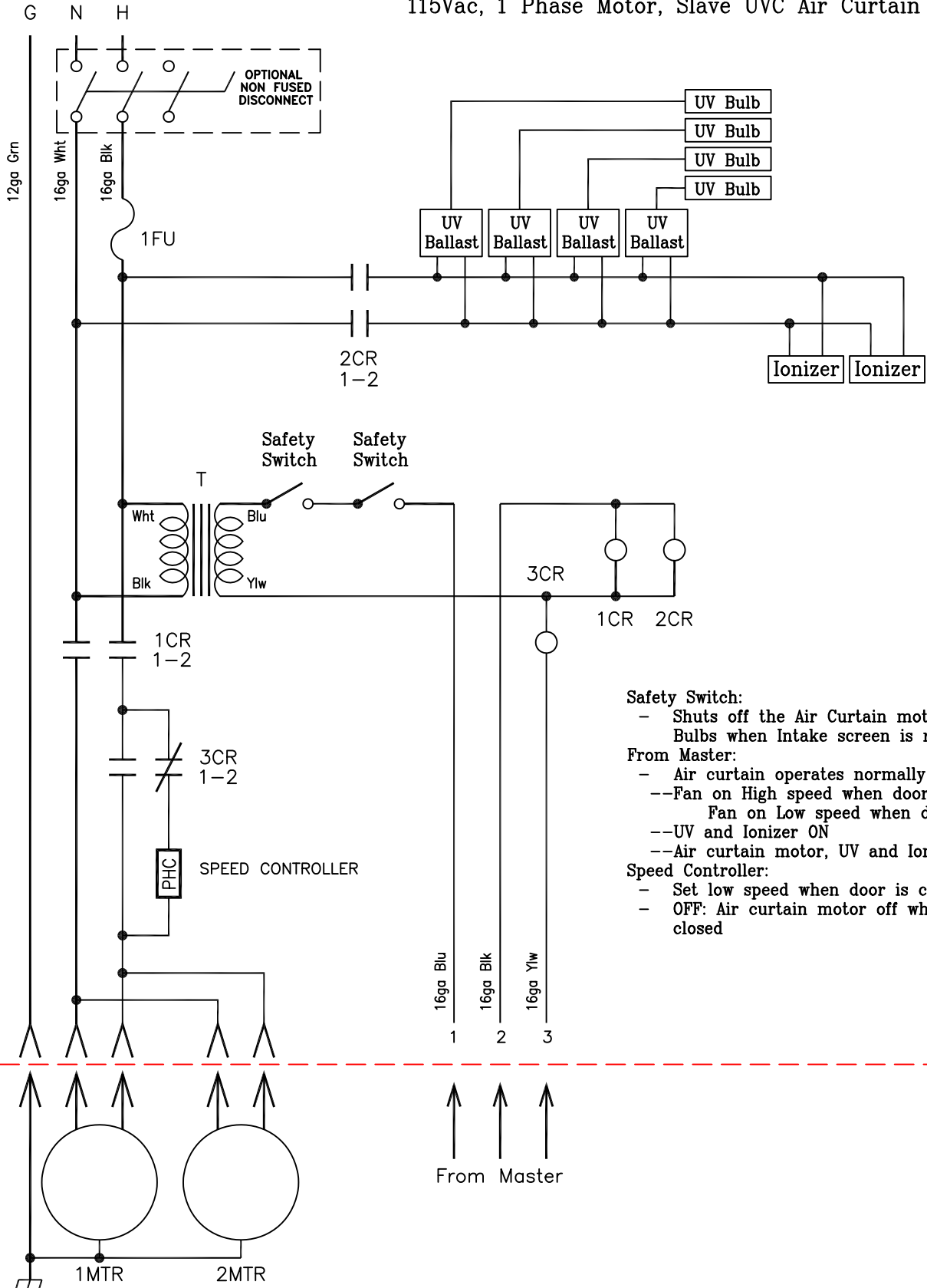
Safety Switch:
- Shuts off the Air Curtain motor and UV Bulbs when Intake screen is removed

From Master:
- Air curtain operates normally
- Fan on High speed when door is open. Fan on Low speed when door is closed.
- UV and Ionizer ON
- Air curtain motor, UV and Ionizer off

Speed Controller:
- Set low speed when door is closed
- OFF: Air curtain motor off when door is closed

16ga Blu
16ga Blk
16ga Ylw

1   2   3

From Master

1MTR   2MTR

CLEAN AIR SERIES

NOTE
Before proceeding, refer to the units specific IOM Manual for safety, installation and start information. Verify proper voltage to the product per local and NEC codes. Ensure proper rotation for units with three phase motors.

CLEAN AIR SERIES

The HEPAC (High Efficiency Particulate Air Curtain) and UVC (Ultraviolet Curtain) section is intended for localized filtering and cleaning inside a building with a NEMA1 condition. The effective area should not exceed 15 cubic feet and may be more effective when the area is enclosed. Both options are available pre-factory mounted with the corresponding air curtains with single point connection or field retrofitted and wired by others.

HEPAC SECTION

The HEPAC section is specifically designed and compatible with the STD2 models only and available in section lengths of 36", 42", 48" and 60". For longer units, multiple tandem mounted sections are used to match the unit length.

Note:
1. Factory pre-assembled HEPAC section may require the removal of the pre and HEPA filters for mounting and wiring.

The HEPAC section is not suited for outdoor use or in areas with very high and/or large particulates. The frequency of service and/or filter replacement will vary depending on the usage time and application area conditions.

UVC SECTION

The UVC section is specifically designed and compatible with both the LPV2 and STD2 models. They are available in section lengths of 36", 42", 48", 60" and 72". For longer units, multiple tandem mounted sections are used to match the unit length.

Note:
1. Factory pre-assembled UVC Section with an Air Curtain are pre-wired and ready for field installation and single point wiring.
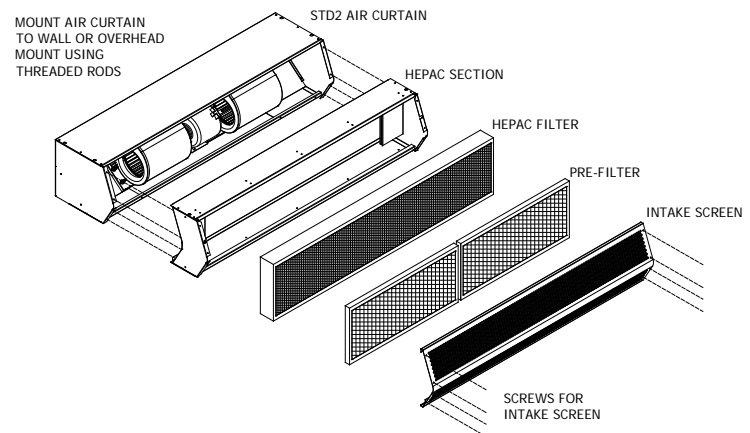
FIELD INSTALLED HEPAC AND UVC SECTION

Both the HEPAC and UVC sections may be field installed and added to an existing unheated Mars Air Curtain unit. (Available sizes previously listed). The top and bottom must be field secured to the existing units using the pre-drilled holes provided on the sections. The number of holes may vary per the length.
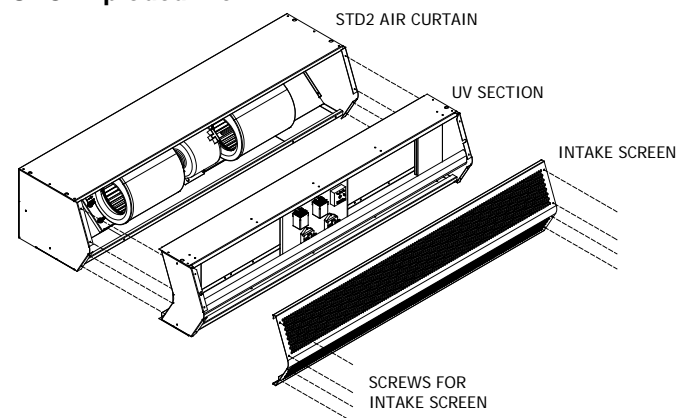
For the HEPAC section, the unit should set at the highest speed for multiple speed motors. No additional wiring is required for the HEPAC section.

UVC section will required additional field mounting and wiring with existing air curtains. Please refer to the wiring instructions and diagrams provided with the UVC Section for your existing field voltage and phase.

HEPAC Exploded View

MOUNT AIR CURTAIN TO WALL OR OVERHEAD MOUNT USING THREADED RODS

STD2 AIR CURTAIN

HEPAC SECTION

HEPAC FILTER

PRE-FILTER

INTAKE SCREEN

SCREWS FOR INTAKE SCREEN

UVC Exploded View

STD2 AIR CURTAIN

UV SECTION

INTAKE SCREEN

SCREWS FOR INTAKE SCREEN

Warning:
Disconnect and lockout main power before replacing UV bulb.

Clean Air Series Applications Guide

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Mars Air Systems offer the **Mars UVC®** and **HEPAC®** packages and sections are designed to minimize the redistribution of airborne pathogens and fine particulates, as well as eliminate unwanted odors in the local space.

We offer three design configurations to address various applications. Each sections are designed to seamlessly integrate with unheated Mars air curtains and are all Proudly Made in the USA.

Packaged UV Models (Mars UVC® & UVP)
Ultraviolet Air Curtain Units

❖ Patented dual bulb design standard (UVC & UVV)
❖ UVC Germicidal destroys biological contaminants
❖ Sterilize up to 99.99% of airborne bio-contaminants with multiple passes
❖ Perfect for test labs, hospitals and small waiting rooms
❖ UVV Oxidizing destroys chemicals and odors
❖ Destroy ethylene off-gassing, which is a leading cause of premature aging of fruits and vegetables
❖ Ideal for food storage/processing facilities, waste areas with noxious gases
❖ Low levels of ozone generated
❖ UVC only bulb available for no ozone applications
❖ Reduces accumulation of pathogens on the exposed surface of the air curtain's internal components and minimizes pathogen redistribution
❖ 24VAC Control Circuit Standard
❖ LPV2 or STD2 air curtain required for UVC section
❖ HEPAC section and Ionizer may be used in tandem with UV for STD2 models
❖ Maximum operating temperature: 160F
❖ Indoor use only
❖ 1-year warranty on workmanship and defects
❖ Warranty does not cover normal bulb wear
❖ Proudly Made in the USA
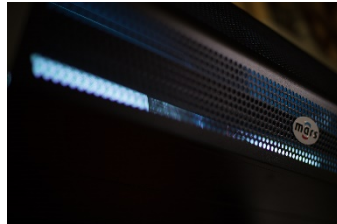
Packaged HEPAC Model (Mars HEPAC® & HCP)
High Efficiency Particulate Arrestance Air Curtain Unit

❖ HEPA® filters rated 99.99% per ASHRAE (0.3 micron) and meets UL Standard 900 for Flammability
❖ HEPA® filter has extended life, up to 3 years, under normal conditions and with regular service
❖ 2" pre-filters MERV 7-8 rated (Minimum Efficiency Reporting Value)
❖ Optional HEPA® filter, ULPA (Ultra-Low Penetration Air) rated 99.99% of particles 0.12 micron and MERV 13 rated 2" pre-filters for extended usage applications or high particulate

❖ Most viruses, including all SARS-CoV-2, are 0.12 micron as a single virion (unattached to any fluid droplet) but transmission is typically through liquid droplets, which are larger
❖ The ULPA option is best suited for hospital environments and rooms with infected patients
❖ The HEPA® does not eradicate pathogens, but instead it distributes them through the large filter surface, collects and compacts them in the filter
❖ Maintaining a consistent service regiment based on the usage for the pre-filters will increase HEPA® filter life-span and ensure the air curtain performance is not adversely affected
❖ Air curtain performance is reduced by 10-15% with clean filters. Motor are set to highest speed from the factory.
❖ 24VAC Control Circuit Standard
❖ STD2 air curtain required for HEPAC section
❖ UV section and Ionizer may be used in tandem with HEPAC
❖ Maximum operating temperature is160 ℉
❖ Indoor use only
❖ 1-year warranty on workmanship and defects
❖ Warranty does not cover filters
❖ Proudly Made in the USA

Air Wash System (AWS) for Doorways
Vertically Mounted Combination UVC, HEPAC & Ionizer System

❖ Triple sanitizing design that includes HEPAC, UVC and Ionizer combination
❖ Vertically mounted dual units includes mounting and framing kit
❖ Designed to help disperse debris on surfaces and collect airborne pathogens and debris
❖ Can assist in minimizing the introduction of pathogens and debris from cleaner areas
❖ Higher usage will require more periodic maintenance and filter and bulb replacement
❖ 24VAC Control Circuit Standard
❖ STD2 air curtain required for combination **Mars UVC®** and **Mars HEPAC®** sections
❖ Maximum operating temperature is160 ℉
❖ Indoor use only
❖ 1-year warranty on workmanship and defects
❖ Warranty does not cover filters or normal bulb wear
❖ Proudly Made in the USA

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SECTION 23 34 33

AIR CURTAINS

Important Note: This specification contains hidden text appearing in red. To show or remove hidden text in MSWord, click the "File" tab or "Office" icon on the top-left corner, select "Options," select "Display," and check or uncheck the box marked "Hidden Text."

PART 1 GENERAL

1.1   SECTION INCLUDES

       A.   Air curtains for pedestrian entrances.

       B.   Air curtains for room purification applications.

1.2   RELATED SECTIONS

       A.   Section 05 50 00 – Metal Fabrications: Concealed steel support members.

       B.   Section 06 10 00 – Rough Carpentry.

       C.   Section 05 41 00 – Structural Metal Studs.

       D.   Section 07 62 00 – Sheet metal flashing.

       E.   Section 07 92 00 – Joint Sealants.

       F.   Section 08 10 00 – Metal Doors and Frames.

       G.   Section 08 33 00 – Overhead Coiling Doors.

       H.   Section 08 42 00 – Entrance Doors.

       I.   Section 26 05 00 – Equipment Wiring: Connections to building power distribution.

1.3   REFERENCES

       A.   ASTM A240 / A240M -10 – Standard Specification for Chromium and Chromium.

B.   ASTM A879 / A879M -06 – Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Application Requiring Designation of the Coating Mass on Each Surface.

C.   ASTM A653 / A653M -09a – Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

D.   UL 507 – UL Standard for Safety Electric Fans – Intertek Testing Services Listed for US and Canada.

E.   UL508A – Standard for Industrial Control Panels

F.   CEC – Approved Elec heating Coils

G.   Electrical components UL/CUL listed.

H.   NEC – National Electric Code.

1.4   SUBMITTALS

A.   Submit under provisions of Section 01 33 00.

B.   Product Data: Manufacturer's data sheets on each product to be used, including:
        1.   Preparation instructions and recommendations.
        2.   Storage and handling requirements and recommendations.
        3.   Installation methods.

C.   Shop Drawings: Include plans, elevations, sections, and details, indicating dimensions, tolerances, materials, fasteners, hardware, finish, piping, electrical wiring diagrams, options, and accessories.

D.   Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E.   Verification Samples: For each finish product specified, two samples, minimum size 6.25 inches (160 mm) square, representing actual product, color, and patterns.

F.   Manufacturer's Certificates: Certify products meet or exceed specified requirements.

G.   Operation and Maintenance Manual: Submit manufacturer's operation and maintenance manual, including operation, maintenance, adjustment, and cleaning instructions, trouble shooting guide, parts list, and electrical wiring diagrams.

1.5   QUALITY ASSURANCE

A.   Manufacturer Qualifications: Minimum five years documented experience producing the products specified in this Section

B.   Installer Qualifications: Minimum one years documented experience installing products specified in this Section

1.6   DELIVERY, STORAGE, AND HANDLING

A.   Store products in manufacturer's unopened packaging until ready for installation.

B.   Store in a dry, heated storage area until installation of products.

C.   Protect materials and finish from damage during handling and installation.

1.7   SEQUENCING

A.   Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.

B.   Coordinate the installation of wiring and control switches for air curtains with the openings and the hardware provided for such openings.

C.   Install after doors, walls, ceilings, and other adjacent surfaces are finished and painted.

1.8   WARRANTY

A.   Standard one-year limited parts warranty for units against defects in workmanship and material.

PART 2 PRODUCTS

2.1   MANUFACTURER

A.   Acceptable Manufacturer: Mars Air Systems, LLC; 14716 South Broadway St., Gardena, CA 90248. Tel: (310) 532-1555 or (800) 421-1266. Fax: (310) 324-3030. Email: info@marsair.com. Web: www.marsair.com.

B.   Delete one of the following two paragraphs: coordinate with requirements of Division 1 section on product options and substitutions.

C.   Requests for substitutions will be considered in accordance with provisions of Section 01 33 00.

2.2   AIR CURTAIN ASSEMBLIES

A.   Motor Fan Assembly: Design for easy removal, assembly, repair, and maintenance.
        1.   Motor: Totally enclosed air over (TEAO) cooled motor with sealed lifetime pre-lubricated ball bearings, motor starter and thermal overload protection.
               a.   Wired for single speed operation. (Not Applicable for Fly Insect Control Unit)

       b.   Electrical Characteristics: 115V AC, single phase; 5.7 Amp full load per motor/fan.

       c.   Electrical Characteristics: 208/230V AC, single phase; 3.1 Amp full load per motor/fan.

       d.   Meets NEC. ETL Listed to conform to UL 507 (US) and CSA22.2 (Canada) Standards (air curtain with UV Option only).

   2.   Fans: Forward curved centrifugal type, double width, and double inlet design, directly driven to an electric motor.

       a.   Provide resilient isolation dampening mountings between motor frame and motor mounting pan.

       b.   Factory balanced blower wheel assembly statically and dynamically.

B.   Housing: Self-contained one-piece type with sufficient strength for mounting from pre-punched mounting holes at both ends to adjacent walls or ceiling without intermediate support.

   1.   Size:

       a.   Unheated: 21 3/8 inches deep by 10-5/8 inches high (including discharge nozzle) by width of unit.

   2.   Mounting:

       a.   Unheated Inside Mount.

       b.   Mount Location Indicated.

   3.   Material:

       a.   Provide 18- and 20-gauge electro or hot dipped galvanized steel sheet housing conforming to ASTM A 879 and/or ASTM A 653.

       b.   Provide type 304 stainless steel housing with brushed finish. ASTM A 240/A 240M.

   4.   Air Inlet Grille and/or Filters: Provide air inlet grille.

   5.   UV irradiation

       1)   UV: UVC & UVV germicidal and odor elimination with disposable UV bulbs

       2)   UV with 100% UVC germicidal only with disposable UV bulb

   6.   Filter: HEPA filtration, 12" HEPAC section with disposable MERV 8 pre filters

   7.   Ionizer to generate charged ions for electrostatic attraction

   8.   Discharge: Provide integral discharge nozzle specified.

       a.   Safety mesh to protect from accidental contact with fan blades

   9.   Finish and Color: Provide with, no VOC, corrosion resistant polyurethane powder coated finish for sheet metal housings.

       a.   Obsidian Black.

       b.   Pearl White.

       c.   Titanium Silver.

       d.   Stainless Steel.

   10.   Vertical mounted brackets

       a.   No more than 4" clearance at floor level

C.   Environmental Air Curtains: Models for vertical mounting on both sides of opening. Door heights of 8 feet (2438 mm) and width up to 4 feet (1219 mm) for Environmental Separation and Temperature Control

       1.   Discharge Nozzle: Wedge-shaped discharge outlet nozzle with adjustable air foil vanes with a plus/minus 40-degree sweep front to back.

       2.   Air Velocity at Nozzle:
           a.   STD284-2: 84 Inch (2133 mm) Wide Units: 1945 feet/min (9.9 m/s) two 1/2HP motor/fan assemblies.

       3.   Air Inlet Grille and Filters:
           a.   Location: Front.
           b.   Type: Fixed air intake grille.
           c.   Speed: 2550 cu ft/min (1200 L/s), minimum, per motor/fan assembly.

       4.   Sound Pressure Level At 10 feet (3 m) From Nozzle:
           a.   Two Motor/Fan Units: 68 dBA.

2.3   COMPONENTS

A.   Door-Activated Limit switch(s): Provide, field installed magnetic door switch to control air curtain(s) as follows; Automatic on/off control, activates air curtain to full speed when door is opened and turns to low speed when door is closed.
       1.   Type: Magnetic reed switch and actuator for swing and sliding doors. Industrial floor mounted or surface mounted switches for roll up doors

B.   Optional Digital Programmable Controller:
       1.   Fully programmable controller
       2.   Pre-set and fully customizable programs
       3.   Wireless WiFi control via field supplied smartphone, tablet or computer
       4.   Time delay (Passive & Adaptive)
       5.   Factory Integrated temperature control sensors. No external thermostat required.
       6.   Summer-Winter modes
       7.   24/7 timer
       8.   Maintenance schedule alerts
       9.   Status display showing date, time, temperature and air curtain mode
       10.   Multi-unit control capability
       11.   English (IP) or Metric (SI) display readings
       12.   Password protected
       13.   Auto Lock display
       14.   Emergency shut-off button
       15.   High temperature lock from fan failure
       16.   Low voltage control signal for door activation
       17.   Integrated BMS controls
       18.   VFD compatible with 0-10VDC output
       19.   Optional BACnet option
       20.   Optional adaptive fan speed control and heat control based on existing field conditions. Field mounted outdoor temperature sensors required.

C.   Provide mounting hardware as required for the opening.

PART 3 EXECUTION

3.1   EXAMINATION

      A.   Verify that required utilities are in correct location and are of correct capacities for specified products.

      B.   Verify openings to receive air curtains are plumb, level, square, accurately aligned, correctly located, and in tolerance.

      C.   Examine surfaces to receive air curtains. If surface preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2   INSTALLATION

      A.   Install air curtains in accordance with approved shop drawings and manufacturer's printed installation instructions.

      B.   Install air curtains plumb, level, square, true to line, and weathertight, without warp or rack.

      C.   Anchor air curtains securely in place to supports.

      D.   Coordinate with sheet metal flashing as specified in Section 07 62 00.

      E.   Install joint sealants as specified in Section 07 92 00.

      F.   Coordinate with electrical power as specified in Section 26 05 00.

      G.   Install door limit switches and adjust for correct operation.

      H.   Provide connection to piped services and utilities as specified in Section 22 10 00 and 23 21 00.

3.3   FIELD QUALITY CONTROL

      A.   Adjust air curtains to function properly.

      B.   Adjust air foil vanes located within the discharge nozzle as required for prevailing conditions at each opening.

      C.   Check heated air curtain performance on a calm day by measuring air temperature 6 inches off the floor. Optimal reading is halfway between the temperature inside and outside the building.

3.4   CLEANING

      A.   Clean air curtains promptly after installation in accordance with manufacturer's instructions.

B.   Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.

C.   Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

D.   Replace Pre-Filter periodically to extend the life of HEPA filter

3.5   PROTECTION

A.   Protect materials and finish from damage until substantial completion.

3.6   SCHEDULES

A.   Refer to Air Curtain Schedule appended to this section.

END OF SECTION

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Reference Links

Link	**Description**
https://marsair.com/	**Main website**
https://marsair.com/document-library	**Submittals for all Mars Air Curtains, Accessories, Installation, Brochures**
https://marsair.com/Content/Downloads/CSISpecs/Air-Wash-System-CSI-Spec.doc	**Air Wash System CSI spec (Word doc)**