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MEMORANDUM

To:	Wendi Y. Zheng, Andre A. Obligado, P.G., and Jane H. O'Connell. P.G., New York State Department of Environmental Conservation; Renata E. Ockerby and Scarlett E. McLaughlin, New York State Department of Health
From:	James L'Esperance, P.E., Sara Barbuto, and Keith P. Brodock, P.E.
Date:	May 20, 2024
Subject:	IRM Modifications Work Plan 135 Kent Avenue, Brooklyn, NY Former Cleaner Sales and Equipment Corp. NYSDEC Site No. C224177
Project No.:	E1022

6/24/2024

Integral Engineering, P.C. (Integral) presents this memorandum proposing modifications to the existing and approved interim remedial measures (IRMs) at 135 Kent Avenue (the Site) to the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) on behalf of 135 Kent LLC (Owner) for the Former Cleaner Sales and Equipment Corp. Site (NYSDEC Site No. C224177).

This memorandum proposes to modify the Sub-Slab Depressurization System (SSDS) Design Document, issued in March 2014 and approved in April 2014 (the "2014 Design"),[1] and the Operation, Maintenance & Monitoring (OM&M) Plan, issued in October 2015 and approved in June 2016.[2]

[1] Soderberg, J.V. 2014. Former Cleaners Sales & Equipment Corp., Sub-Slab Depressurization System, Site No. C224177, Design Document. John V. Soderberg, P.E. on behalf of 135 Kent Avenue Management Corp. March.

[2] Soderberg, J.V. 2015. Sub-Slab Depressurization System, Site No. C224177, Operation, Maintenance and Monitoring Plan. John V. Soderberg, P.E. on behalf of 135 Kent Avenue Management Corp. October.

Existing Site IRMs are engineering controls (ECs) consisting of an SSDS and air filtration units. The Owner is performing construction within the commercial space in preparation for new commercial tenants, the first of which has a lease to occupy a portion of the first floor starting on July 1, 2024. As such, we are seeking accelerated review and approval of this work plan on or around May 24, 2024, consistent with our discussion on May 13, 2024. As part of this construction, we anticipate performing the following modifications to existing Site IRMs:

- Reinstallation of one SSDS vacuum monitoring point (VMP; PV-6RR)
- Relocation of three SSDS vacuum wells (V-3, V-4, and V-5)
- Installation of two additional SSDS vacuum wells (V-7 and V-8)
- Adjustments to SSDS piping and the SSDS equipment location
- Replacement of the first floor air filtration units with in-line carbon filters within the ground floor heating, ventilation, and air conditioning (HVAC) system.

An Integral staff member working under the direction of a NYS-licensed and -registered professional engineer will observe construction of the IRM modifications and perform post-construction monitoring. Additional details regarding the planned IRM modifications are provided below.

Existing Conditions

The Site SSDS was installed in June 2014. Pilot testing to identify the zone of influence was first performed using a radon fan and then with a 3-horsepower (hp) Rotron vacuum motor (March 2014 and June 2014, respectively), as documented in the 2015 OM&M Plan and 2016 Construction Completion Report (CCR).[3] Six vertical vacuum wells were installed to a depth of 5 ft below the existing concrete floor. The vacuum wells are connected via PVC piping to a 3-hp blower and then to two vapor-phase carbon treatment units located in a room near the back hallway and elevator on the ground floor (hereafter referred to as the "SSDS Treatment Room"). The blower exhaust is routed from the SSDS Treatment Room to an exhaust stack on the roof. Ten VMPs are currently located throughout the first floor to provide access for routine pressure measurements across the first floor slab. Drawing M-100 presents a plan view of the current SSDS and first floor layout.

[3] Soderberg, J.V. 2016. Former Cleaners Sales & Equipment Corp., Sub-Slab Depressurization System Construction Completion Report, Site No. C224177, Soil Vapor Intrusion Report. John V. Soderberg, P.E. on behalf of 135 Kent Avenue Management Corp. March.

SSDS Modifications

The following presents planned modifications to the Site SSDS, including details regarding SSDS shutdown sequencing and post-construction monitoring.

VMP Location Modification

During commercial space renovations in May/June 2024, one VMP (VMP PV-6RR) will require reinstallation, as shown on Drawing M-200.

During future commercial space renovations, additional VMPs may need to be reinstalled to be flush with the finished floor slab. 135 Kent LLC will notify NYSDEC prior to reinstallation of other VMPs, and will follow the procedures in this Work Plan.

When reinstalling VMPs, rather than follow the VMP construction methods presented in the 2014 Design, flush-mount Vapor Pins will be installed, which are the current industry standard for SSDS monitoring. Vapor Pins are installed by drilling a 5/8-in hole through the building slab and hammering in the Vapor Pin barb, which creates an airtight seal. The Vapor Pin barb is covered with a silicone cap when not in use, and the slab penetration is covered with a flush-mount cover to keep dust/dirt out and to allow for easy access. If a VMP needs to be reinstalled, the new VMP will be installed within 1 ft of the current VMP location, and the new location will be documented in an updated as-built drawing.

Abandoned slab penetrations will be sealed with a waterproof grout (such as a polyurethane grout or cement grout) or a chemically-resistant sealant (e.g., bituthene liquid membrane).

Attachment 1 contains specifications for the vapor pins. Attachment 2 contains specifications for sealants that may be used to seal former VMPs and abandoned slab penetrations. Drawing M-200 contains a detail of a typical Vapor Pin installation.

SSDS Vacuum Well Location Modifications

During the first floor renovations, three SSDS vacuum wells will be moved and re-installed, as shown on Drawing M-200, and described below:

- Vacuum well V-3 will be moved approximately 10 ft to align with a proposed first floor wall;
- Vacuum well V-4 will be moved to the west to provide better vacuum coverage under the western portion of the building; and
- Vacuum well V-5 will be moved approximately 5 ft to align with a proposed first floor wall.

Two additional vacuum wells will be installed to provide better vacuum coverage under the northern portion of the building, where vacuum readings have historically been the lowest. These are shown on Drawing M-200 as locations V-7 and V-8.

The three moved vacuum wells (V-3, V-4, and V-5) and two new vacuum wells (V--7 and V-8) will be installed as follows:

1. The existing slab will be cored (approximately 4 in. in diameter) and the underlying soil (as much as practicable) will be removed by hand or trowel. Removed material will be handled as discussed in the Waste Management section of this Work Plan, below.

2. The void space will be filled with ASTM C 33 ¾-in. gravel, or as specified by the engineer.

3. A 3-in. Schedule 40 PVC pipe will be inserted directly into the void space, with the bottom of the PVC being roughly even with the bottom of the slab. The PVC pipe will be capped until it is connected to the SSDS.

4. The slab penetration will be sealed with a chemically-resistant sealant (e.g., bituthene liquid membrane, or approved equal; specifications provided in Attachment 2).

5. The riser pipes will be connected to the ceiling header pipes. Riser and ceiling header pipes will be capped until they are connected to the SSDS.

6. Riser pipes will be secured within drywall (either within building walls or column enclosures) with locked boxed-in enclosures providing access for building management and environmental professionals.

No trenching is proposed as part of this work.

By locating the PVC pipe to apply negative pressure (vacuum) directly under the slab, rather than the top 5 ft of subsurface soil as is currently constructed, the SSDS will concentrate the vacuum directly under the slab and will generate better pressure differential results across the slab. The remaining vacuum wells (V1, V-2, and V-6) are located in an area of the building where no renovations are proposed, and have provided consistent vacuum pressure since their installation. At this time, these vacuum wells will not be relocated and will continue to operate as part of the SSDS vacuum well network, as shown on Drawing M-200. During future commercial space renovations, these vacuum wells may need to be relocated. 135 Kent LLC will notify NYSDEC prior to reinstallation of other vacuum wells, and will follow the procedures in this Work Plan.

A magnehelic differential pressure gauge rated for a range of -15 to 0 inches of water column will be installed on the riser pipe of each vacuum well (including existing vacuum wells) to allow for direct-read vacuum measurements from each well. A 0.5-in. access port will be drilled into the riser pipe to allow for the insertion of a pitot tube to collect velocity measurements; this access port will be plugged when not in use. Each riser pipe will also include a butterfly valve, as originally specified in the 2014 Design. A specification for an acceptable magnehelic gauge is provided in Attachment 1.

As the goal of an SSDS is to generate a negative pressure gradient across the building slab, pressure data at each vacuum well and the VMPs should be used to assess system performance. While flow and velocity data can sometimes be helpful for system troubleshooting, high flow does not necessarily correlate to high pressure, and therefore pressure readings at each VMP and each individual vacuum well riser will be the primary data used for assessing performance going forward.

Abandoned slab penetrations will be sealed with a waterproof grout (such as a polyurethane grout or cement grout) or a chemically-resistant sealant (e.g., bituthene liquid membrane). Attachment 2 contains specifications for sealants that may be used to seal former VMPs and abandoned slab penetrations.

Piping Modifications

Aboveground SSDS piping in several locations of the ground floor commercial space will be moved during renovations to align with the revised vacuum well layout, as shown on Drawing M-200, and to reach the (new) ceiling height. During 2023 demolition activities, the Owner removed the drop ceiling throughout the ground floor commercial space, and installed batt insulation, plastic sheeting, and drywall along the ceiling joists. SSDS header piping will be raised to the (new) ceiling height on the ground floor, except the rear/southern hallway, where the ceiling was not raised. Horizontal header piping will be pitched at least 1/8-in. per foot toward the vacuum well(s) for condensate drainage. Piping will be labeled in accordance with the American Society of Mechanical Engineers (ASME) standard A13.1 by including “Soil Vent Pipe” every 10 feet, with a lettering height of at least 1.3 inches. As piping is installed and removed, piping connected to slab penetrations will be capped to limit soil vapor intrusion. Piping may be slightly adjusted during installation in the case of conflicts with other utilities or similar circumstances.

SSDS Treatment Room Adjustments

During the renovations, the size of the SSDS Treatment Room will be slightly reduced, as shown on Drawing M-200. The blower and carbon drum locations may be slightly modified to allow for egress into the room. Carbon changeout will be performed per the 2015 OM&M plan during SSDS Treatment Room modification. The SSDS alarm system, a Sensaphone 400, is currently functioning and will be tested following SSDS treatment room adjustments.

Construction Sequencing and SSDS Shut Down

The construction will be sequenced to limit the time the SSDS is shut down. Materials needed for the modification will be staged onsite prior to commencing construction.

While the existing SSDS and air filtration units continue to operate, the new/modified vacuum wells and VMPs will be installed. New PVC vertical and horizontal piping will then be installed, to the extent practicable; slab penetrations will be sealed. The SSDS is anticipated to be shut off for short periods of time over a maximum of two days to complete the new piping installation, modify the SSDS room, change the vapor-phase carbon treatment media, and connect the new vacuum wells to the SSDS blower. The six standalone air filtration units will continue to operate on the first floor. Four units will be spaced throughout the first floor, as shown on Drawing M-200, and two units will be moved to areas of the first floor where the slab is being penetrated. Once complete, the SSDS will be turned back on, and monitoring will be performed as described in the following section.

Post-Construction SSDS Monitoring

Following completion of the SSDS modifications, pressure measurements will be collected from both the VMPs and each individual vacuum well riser on a weekly basis for the first month post-construction to confirm that the system is operating in accordance with the intent of the 2014 Design. Adjustments to SSDS operation may be made at this time. Data collected during post-construction SSDS monitoring will be presented in the subsequent monthly progress report. Once adjustments to SSDS operation are complete, modifications to the 2015 OM&M plan and the 2016 CCR will be made to document the changes made.

Indoor air samples will be collected during the subsequent heating season, anticipated to be 2024-2025, for comparison to previous indoor air data collection events. Indoor air samples will be collected in six-liter, batch-certified clean SUMMA canisters, per the methods provided in the 2017 Remedial Investigation Work Plan (RIWP) and associated Quality Assurance Project Plan (QAPP) (Integral 2017).[4] Samples will be analyzed for VOCs via USEPA Method TO-15 at a NYSDOH ELAP-certified analytical laboratory, per the methods provided in the 2017 QAPP .

Air Filtration Unit Replacement with Inline HVAC Carbon Filtration

During the renovations, the Owner will replace the standalone carbon air filtration units with inline HVAC carbon filtration. Carbon air filtration units were installed on the first and second floors between January and April 2014 as a temporary solution to address indoor soil vapor

[4] Integral. 2017. Remedial Investigation Work Plan, Former Cleaner Sales and Equipment Corp. Site, 135 Kent Avenue, Brooklyn. Integral Engineering, P.C., on behalf of 135 Kent Avenue Management Corp. September.

intrusion prior to installation of the SSDS.[5] The carbon air filtration units, AirPura model C600 and R600 (rated for a maximum flow rate of 560 cubic feet per minute [cfm]), and AustinAir Healthmate 400 (rated for a maximum flow rate of 250 cfm), continued to operate after installation of the SSDS in June 2014. When the first-floor commercial spaces were occupied, eleven AirPura units were in operation. Assuming 75 percent operating efficiency, the air filtration units were processing 4,600 cubic feet of air each minute.

During the renovations, the Owner will update the first floor HVAC system. Inline activated carbon filters will be installed with dedicated inline centrifugal fans that will provide, at minimum, the same level of air processing as the standalone carbon air filtration units (approximately 4,600 cubic feet each minute). The inline carbon filters will be Vortex PRO100, AC Infinity AC-DCF8, or similar. Example specifications for the carbon system are provided in Attachment 3. Once the HVAC units are installed, the standalone carbon air filtrations units on the first floor will be removed. The inline carbon filters will be changed out annually under supervision by an environmental professional. The change-out will be documented by the environmental professional and communicated to NYSDEC and NYSDOH.

Waste Management

Waste that may be generated during vacuum well installation activities at the Site includes excavated soil, concrete, and trash.

Handling of the waste streams from generation to disposal is provided in the subsequent sections.

Excavated Soil

Excavated soil will be containerized in a roll-off box or sealable 55-gallon drums staged on Site in either a secure storage area that is not accessible to tenants (e.g., within construction area) or a secure (fenced and locked) storage area to be constructed on the sidewalk adjacent to the building.

Excavated soil will be evaluated through sampling and laboratory analysis for handling and disposal selection. Soil will be characterized in accordance with New York State hazardous waste regulations found in 6 NYCRR Part 370 Series. Representative samples will be collected from each waste stream and analyzed for corrosivity, ignitability, reactivity, and toxicity (metals [including hexavalent chromium], VOCs, SVOCs, pesticides/herbicides, cyanide, and PCBs), as appropriate. The specific analyte list may differ from what is presented above depending on the nature of the waste material and the specific profile requirements of the disposal facility.

[5] Soderberg, J.V. 2016. Former Cleaners Sales & Equipment Corp., Sub-Slab Depressurization System Construction Completion Report, Site No. C224177, Soil Vapor Intrusion Report. John V. Soderberg, P.E. on behalf of 135 Kent Avenue Management Corp. March.

Most, if not all, soils are anticipated to require management, transport, and disposal as listed hazardous waste at a licensed hazardous waste facility (anticipated U210 listing). Soil that is non-detect for tetrachloroethylene (PCE) will be not be considered a listed U210 hazardous waste. Alternatively, we may request a "contained in" determination from NYSDEC (sampling and laboratory analysis of the waste materials may be required) and dispose of certain materials as non-hazardous if approved by NYSDEC. Additional characterization sampling may be required based on disposal facility requirements or conditions encountered in the field. Excavated soils will be managed based on results of waste characterization sampling.

Concrete

Concrete waste generated during VMP and SSDS vacuum well installation. will be containerized in a roll-off box or sealable 55-gallon drums staged on Site in either a secure storage area that is not accessible to tenants (e.g., within construction area) or a secure (fenced and locked) storage area to be constructed on the sidewalk adjacent to the building. Concrete will be evaluated through sampling and laboratory analysis for handling and final disposition. Concrete may require management, transport, and disposal as listed hazardous waste at a licensed hazardous waste facility. Concrete that is non-detect for tetrachloroethylene (PCE) will be not be considered a listed U210 hazardous waste. Alternatively, we may request a "contained in" determination from NYSDEC (sampling and laboratory analysis of the waste materials may be required) and dispose of certain materials as non-hazardous if approved by NYSDEC. Additional characterization sampling may be required based on disposal facility requirements or conditions encountered in the field. Concrete waste will be managed based on results of waste characterization sampling.

Anthropogenic Debris

Used personal protective equipment (PPE) and other non-hazardous materials (demolition debris and other anthropogenic debris) will be generated during IRM modifications. Those PPE that come into contact with subslab materials will be drummed or containerized in roll-off boxes and disposed of offsite in accordance with federal, state, and local regulations. We anticipate materials that come in contact with subslab materials to be designated as U210 listed hazardous waste or, alternatively, these will be included in a "contained in" determination request to NYSDEC. PPE and other anthropogenic debris that do not come into contact with subslab materials will be disposed of in municipal trash.

Transportation and Disposal

Waste streams must be disposed at a properly permitted treatment, storage, or disposal facility (NYSDEC 2010). Drums will not be left in storage for extended periods of time—rather, they will be disposed of or stored at a permitted facility. Shipments to disposal facilities will be scheduled on a periodic basis no less than one pickup per month. Haulers transporting waste must be appropriately placarded and permitted in accordance with 6 NYCRR Part 364, and with states through which waste is hauled or disposed, including a NYC Business Integrity

Commission Trade Waste License, and if necessary, a New Jersey Department of Environmental Protection Commercial (A-901) Solid Waste Transporters registration. A manifest (in accordance with 6 NYCRR Part 372 if hazardous) must accompany the waste shipment. The manifest tracks when the waste leaves the generator's site and is accepted by the treatment, storage, or disposal facility.

Health and Safety Procedures

Modifications to the SSDS will be performed by contractors and observed by an Integral staff member working under the direction of a NYS-licensed and -registered professional engineer. IRM modifications performed under this plan will be in compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA. The parties performing the construction work are responsible for the preparation of an appropriate health and safety plan and for the appropriate performance of work according to that plan and applicable laws. Slab penetrations for well installation, where potential exposure to contaminated soils is possible, will be performed by parties with 40-hr HAZWOPER training. Above grade construction work does not require 40-hr HAZWOPER training. Integral staff observing IRM modifications will follow the protocols specified in the 2017 Site Health and Safety Plan (2017 SHSP) prepared for the 2017 RI Work Plan.[6]

Air Monitoring Procedures

Measures will be taken to mitigate soil vapor intrusion and particulates during intrusive IRM modification work (i.e., during installation of new VMPs and SSDS vacuum wells). Two individual air filtration units will be moved to the area where intrusive work is taking place. Doors and windows will be open, as feasible, during well drilling. Integral will perform air monitoring for particulate and volatile organic compounds (VOCs) per the procedures set forth in the attached Community Air Monitoring Plan (Attachment 4).

[6] The 2017 SHSP provides protocols for worker safety and air monitoring during the performance of remedial investigation activities, which included soil vapor sampling and groundwater well installation, and is appropriate for the small-scale penetrations proposed in this work plan.

Integral. 2017. Remedial Investigation Work Plan, Former Cleaner Sales and Equipment Corp. Site, 135 Kent Avenue, Brooklyn. Integral Engineering, P.C., on behalf of 135 Kent Avenue Management Corp. September.

Schedule

Given the first tenant occupation date of July 1, 2024, we are anticipating the completion of the work in May and June 2024. Below is a schedule summary for completion of the IRM modifications presented in this Work Plan.

We will notify NYSDEC at least 1 week prior to commencement of construction activities.

Task	Dates
Submit IRM Modifications Work Plan to NYSDEC and NYSDOH	April 26, 2024
NYSDEC/NYSDOH Approval of the IRM Modifications Work Plan	May 24, 2024
VMP, Vacuum Well, SSDS Piping Installation	May-June 2024
SSDS Shut Down for Piping Connection to SSDS, SSDS Carbon Treatment Drum Changeout and Relocation	Limited period (periodic shut downs) over a maximum of 2 days
Post-Construction Monitoring	Weekly basis once construction is complete
Tenant Occupies First Floor Retail Space	July 1, 2024
Modifications to OM&M and CCR Plans	October 2024
Site Management and Monthly Monitoring	Ongoing

Enclosures

Drawing M-100. Existing First Floor Conditions

Drawing M-200. Proposed First Floor Conditions

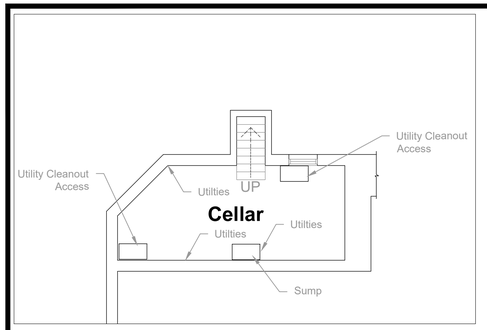
Attachment 1. SSDS Appurtenance Specifications

Attachment 2. Sealant Specifications

Attachment 3. HVAC Carbon Filtration Specifications

Attachment 4. Special Requirements Community Air Monitoring Plan

Design Drawings



North 6th Street

Kent Avenue

Former Loading Bay Area

Bilco Doors and Stairs to Cellar

DN

FUEL OIL UST LOCATION

UP

Cellar Area (see inset)

PV-6RR

PV-3

MASONRY WALL, TYP. AT EXTERIOR AROUND STAIRS, ELEVATOR, AND FORMER LOADING BAY WALLS

DN

Ramp

V-3

Bathroom

PV-11RR

Ramp

48 N 6th Deli

V-6

PV-10RR

PV-2RR

V-4

Five-story Building (58 North 6th Street)

PV-4R

MASONRY COLUMN (TYP. AT EXTERIOR)

PV-1R

PV-7RR

STEEL COLUMN (TYP. AT INTERIOR)

V-2

V-5

SSDS Treatment Room

PV-8

V-1

DN

Ramp

PV-5R

Elevator

Five-Story Building (149 Kent Avenue)

VERTICAL EXHAUST PIPE TO ROOF

SOURCES:
1. CELLAR PLAN, FIRST FLOOR PLAN AND MEZZANINE PLAN, SHEET A-2, FRANKLIN ESTRELLA R.A., MARCH 31, 2006.
2. SSDS AS-BUILT SCHEMATIC, FIGURE 4, JOHN V. SODERERG, P.E., OCTOBER 22, 2015.

NOTE:
1. BUILDING LAYOUT SHOWN AS OF MARCH 27, 2024.

LEGEND

- SSDS PVC HEADER PIPE
- SSDS DISCHARGE PVC PIPE
- SSDS VACUUM WELL
- VACUUM MONITORING POINT

0 10 20
Feet

N

REV	DATE	DESCRIPTION	APP
0	4/24/2024	IRM MODIFICATIONS WORKPLAN	JE
1	5/15/2024	REVISIONS PER COMMENTS	JE

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STATE OF NEW YORK
JAMES P. LESPERANCE
095841
LICENSED PROFESSIONAL ENGINEER
5/24/2024

JAMES P. LESPERANCE, P.E. DATE
NYSPE No. 095841

NOT FOR CONSTRUCTION

135 Kent LLC

FORMER CLEANER SALES AND EQUIPMENT CORP.
BCP NO. 224177

NEW YORK NY

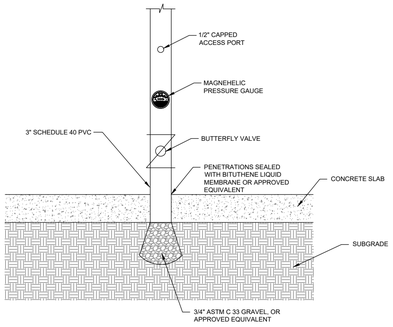
DRN AG	DATE 5/15/2024
DES JL	DATE 5/15/2024
CHK KPB	DATE 5/15/2024
SCALE 1" = 10'	PROJECT NO. E1022

EXISTING FIRST FLOOR CONDITIONS

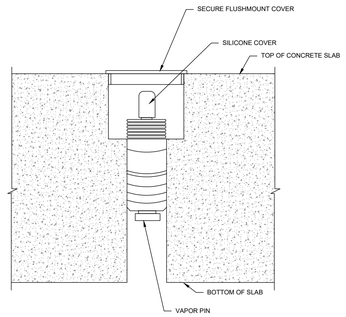
SHEET **1**

M-100

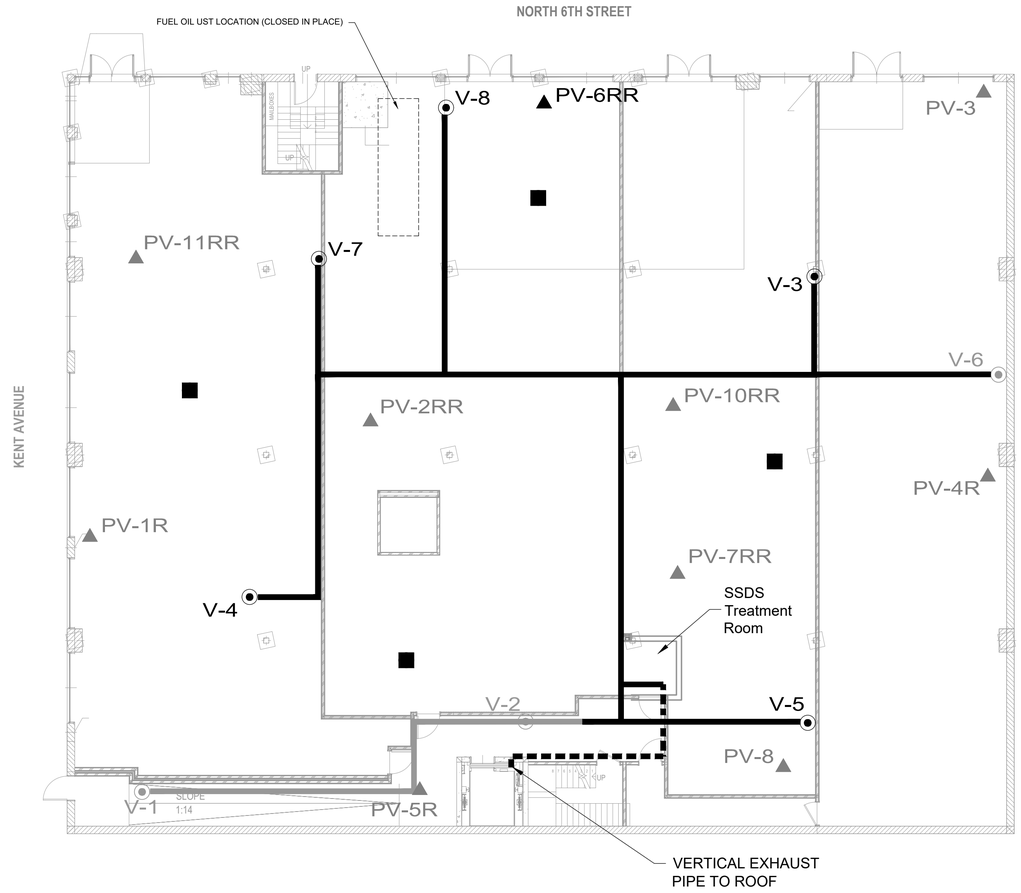
OF **2** REV



TYPICAL SSDS VACUUM WELL DETAIL
NTS



TYPICAL VAPOR MONITORING POINT DETAIL
NTS



NOTES:
1. FIRST FLOOR LAYOUT IS APPROXIMATE.
2. VMP = VACUUM MONITORING POINT
3. SSDS = SUB-SLAB DEPRESSURIZATION SYSTEM
4. EXACT LOCATIONS OF VACUUM WELLS, VAPOR MONITORING POINTS, AND ASSOCIATED PIPING TO BE FINALIZED DURING CONSTRUCTION BY INTEGRAL BASED ON ACTUAL CONDITIONS. HORIZONTAL PIPING TO BE RUN ABOVE THE SLAB. NO TRENCHING IS ALLOWED.
5. ALL PIPE AND CONDUIT PENETRATIONS THROUGH THE SLAB SHALL BE SEALED ONLY WITH APPROVED CHEMICALLY-RESISTANT SEALANT.
6. PIPING MUST BE CLEARLY LABELED "SOIL VENT PIPE" EVERY 10 FEET IN EACH ABOVE GRADE ACCESSIBLE AREA.
7. PVC CONNECTIONS SHALL BE GLUED OR THREADED.
8. ALL SOLID HORIZONTAL PIPE RUNS MUST BE PITCHED A MINIMUM OF 1/8 INCH PER FOOT TOWARDS THE VACUUM WELL.
9. CONTRACTOR SHALL PROVIDE ALL SPECIFICATIONS AND CUT SHEETS FOR INTEGRAL APPROVAL PRIOR TO COMMENCEMENT OF INSTALLATION.
10. VERTICAL VACUUM WELLS SHALL BE INSTALLED WITHIN WALLS. CONNECTING HEADER PIPING WILL BE ROUTED ALONG FIRST FLOOR CEILING.
11. CONTRACTOR SHALL INSTALL LOCKING ACCESS PANELS WITHIN WALLS TO PROVIDE ACCESS TO VACUUM WELL VALVES AND GAUGES.
12. FOUR STANDALONE CARBON AIR FILTRATION UNITS WILL REMAIN IN OPERATION DURING THE WORK IN THE LOCATIONS SHOWN. TWO STANDALONE CARBON AIR FILTRATION UNITS WILL BE MOVED DURING THE WORK TO THE AREA WHERE SLAB PENETRATION IS OCCURRING.
13. SLAB PENETRATIONS, INCLUDING PIPING EXTENDING THROUGH THE SLAB, WILL BE COVERED OR CAPPED WHEN NOT ACTIVELY BEING WORKED ON.

SOURCES:
1. GROUND FLOOR PROPOSED LAYOUT, ARCHIMAERA, MAY, 2024.

LEGEND
- EXISTING AND REMAINING SSDS PVC HEADER PIPE
- PROPOSED SSDS PVC HEADER PIPE
- SSDS DISCHARGE PVC PIPE
- EXISTING AND REMAINING SSDS VACUUM WELL
- PROPOSED SSDS VACUUM WELL
- EXISTING AND REMAINING VACUUM MONITORING POINT
- REINSTALLED VACUUM MONITORING POINT
- STANDALONE CARBON AIR FILTRATION UNIT

0 10 20 Feet

N

REV	DATE	DESCRIPTION	APP
0	4/24/2024	IRM MODIFICATIONS WORKPLAN	JE
1	5/15/2024	REVISIONS PER COMMENTS	JE

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SCALE 1" = 10'	PROJECT NO. E1022

PROPOSED FIRST FLOOR CONDITIONS

SHEET **2**

M-200

OF **2** REV

Attachment 1

SSDS Appurtenance Specifications

SERIES 2000 | MAGNEHELIC® DIFFERENTIAL PRESSURE GAGES

Standard Magnehelic® gage

High Accuracy Magnehelic® gage
Shown with optional -SS bezel

BENEFITS/FEATURES

- **Easy to read gage through undistorted plastic face permits viewing from far away**
- **Patented design provides quick response to pressure changes means no delay in assessing critical situations**
- **Durable and rugged housing and high-quality components combine to provide long service life and minimized down-time**

APPLICATIONS

- Filter monitoring
- Air velocity with Dwyer® pitot tube
- Blower vacuum monitoring
- Fan pressure indication
- Duct, room, or building pressures
- Clean room positive pressure indication

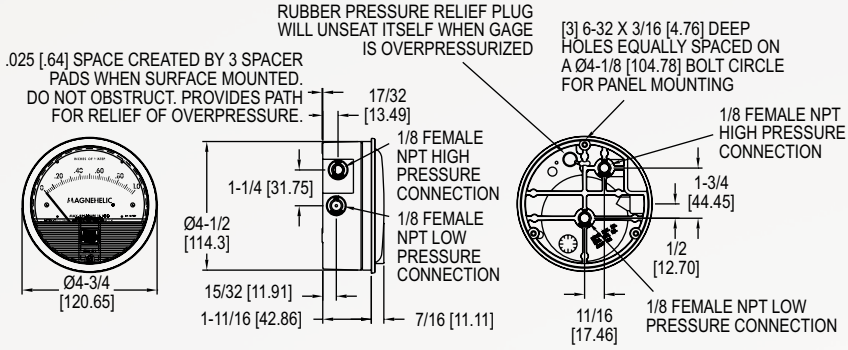
DESCRIPTION

Select the **Series 2000 Magnehelic® Differential Pressure Gages** for a versatile low differential pressure gauge with a wide choice of 81 models and 27 options to choose from. Using Dwyer's simple, frictionless Magnehelic® gage movement, it quickly indicates air or noncorrosive gas pressures - either positive, negative (vacuum) or differential. The design resists shock, vibration, over-pressures and is weatherproof to IP67.

GAGE SPECIFICATIONS

Service	Air and non-combustible, compatible gases (natural gas option available). **Note:** May be used with hydrogen. Order a Buna-N diaphragm. Pressures must be less than 35 psi.
Wetted Materials	Consult factory.
Housing	Die cast aluminum case and bezel, with acrylic cover, exterior finish is coated gray to withstand 168 hour salt spray corrosion test.
Accuracy	±2% of FS (±3% on -0, -100 Pa, -125 PA, -10 mm and ±4% on -00, -60 Pa, -6 mm ranges), throughout range at 70°F (21.1°C).
Pressure Limits	20 in Hg to 15 psig (-0.677 bar to 1.034 bar); MP option; 35 psig (2.41 bar), HP option; 80 psig (5.52 bar).
Enclosure Rating	IP67.
Overpressure	Relief plug opens at approximately 25 psig (1.72 bar), standard gages only. See Overpressure Protection note on catalog page.
Temperature Limits	20 to 140°F (-6.67 to 60°C). -20°F (-28°C) with low temperature option.
Size	4″ (101.6 mm) diameter dial face.
Mounting Orientation	Diaphragm in vertical position. Consult factory for other position orientations.
Process Connections	1/8″ female NPT duplicate high and low pressure taps - one pair side and one pair back.
Weight	1 lb 2 oz (510 g); MP and HP 2 lb 2 oz (963 g).
Standard Accessories	Two 1/8″ NPT plugs for duplicate pressure taps, two 1/8″ pipe thread to rubber tubing adapters and three flush mounting adapters with screws. (Mounting and snap ring retainer substituted for three adapters in MP and HP gage accessories).
Compliance	Meets the technical requirements of EU Directive 2011/65/EU (RoHS II). **Note:** -SP models not RoHS approved.
Note: For applications with high cycle rate within gage total pressure rating, next higher rating is recommended. See Options page.	

DIMENSIONS



HOW TO ORDER

Use the **bold** characters from the chart below to construct a product code.

2002 **-ASF**

SERIES

(in w.c./mm w.c.)
2000-00: 0-0.25 in w.c.
2000-00N: 0.5-0-0.2 in w.c.
2000-0: 0-0.5 in w.c.
2001: 0-1 in w.c.
2002: 0-2 in w.c.
2003: 0-3 in w.c.
2004: 0-4 in w.c.
2006: 0-6 in w.c.
2010: 0-10 in w.c.
2000-6MM: 0-6 mm w.c.
2000-50MM: 0-50 mm w.c.
2300-12MM: 6-0-6 mm w.c.

(Pa)
2000-60NPA: 10-0-50 Pa
2000-60PA: 0-60 Pa
2000-100PA: 0-100 Pa
2000-125PA: 0-125 Pa
2000-250PA: 0-250 Pa
2000-300PA: 0-300 Pa
2000-500PA: 0-500 Pa
2300-60PA: 30-0-30 Pa
2300-100PA: 50-0-50 Pa
2300-120PA: 60-0-60 Pa

(kPa)
2000-1KPA: 0-1 kPa
2000-1.5KPA: 0-1.5 kPa
2000-2KPA: 0-2 kPa
2000-3KPA: 0-3 kPa

OPTIONS

-ASF: Adjustable signal flag
-AHU1: Mounting plate
-AHU2: Mounting plate with A-481 accessory kit
-BUNA: Buna-N elastomers
-CB: Chrome bezel
-FC: Factory calibration
-HA: High accuracy
-M: Mirrored scale overlay
-SB: 304 SS bezel
-SS: Brushed 304 SS bezel

Note: Only our most popular models and options are listed. For additional available models, please visit:
https://www.dwyer-inst.com/Product/Pressure/DifferentialPressure/Gages/Series2000

ACCESSORIES

Model	Description
A-320-A	Enclosure for Series 2000 Magnehelic® gages, DM-2000 differential pressure transmitter, 4-9/16″ (115.89 mm)
A-464	Flush Mount kit for Magnehelic® gages
A-610	Pipe mounting kit for 1-1/4″ to 2″ pipe. 5.6″ x 4.6″ x 1.4″, 1.0 lb
A-300	Flat aluminum bracket for flush mounting Magnehelic® gage. 6.8″ x 6.0″ x .1″, .35 lb
A-299	Mounting bracket flush mount Magnehelic® gage in bracket. Bracket is then surface mounted. Steel with gray hammertone epoxy finish. 6.3″ x 7.7″ x 4.0″, 1.30 lb

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DWYER INSTRUMENTS, LLC

Printed in U.S.A. 11/22

DS-2000 Rev. 2

Standard Operating Procedure Installation and Extraction of the Vapor Pin® Sampling Device

Updated January 28, 2021

Scope:

This standard operating procedure describes the installation and extraction of the VAPOR PIN® sampling device for use in sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the VAPOR PIN® sampling device for the collection of sub-slab soil-gas samples or pressure readings.

Equipment Needed:

- Assembled VAPOR PIN® sampling device [VAPOR PIN® sampling device and silicone sleeve (Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole **must** be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® sampling device installation/extraction tool;
- Dead blow hammer;
- VAPOR PIN® sampling device flush mount cover, if desired;
- VAPOR PIN® sampling device drilling guide, if desired;
- VAPOR PIN® sampling device protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the VAPOR PIN® sampling device.

Figure 1. Assembled VAPOR PIN® sampling device

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a VAPOR PIN® sampling device drilling guide is recommended.

4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole **must** be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.
5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.

6) Place the lower end of VAPOR PIN® sampling device assembly into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the vapor pin to protect the barb fitting, and tap the vapor pin into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the vapor pin to avoid damaging the barb fitting.

Figure 2. Installing the VAPOR PIN®

During installation, the silicone sleeve will form a slight bulge between the slab and the VAPOR PIN® sampling device shoulder. Place the protective cap on VAPOR PIN® sampling device to prevent vapor loss prior to sampling (Figure 3).

Figure 3. Installed VAPOR PIN® sampling device

7) For flush mount installations, cover the vapor pin with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).

Figure 4. Secure Cover Installed

8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

9) Remove protective cap and connect sample tubing to the barb fitting of the VAPOR PIN® sampling device. This connection can be made using a short

piece of Tygon™ tubing to join the VAPOR PIN® sampling device with the Nylaflow tubing (Figure 5). Put the Nylaflow tubing as close to the VAPOR PIN® sampling device as possible to minimize contact between soil gas and Tygon™ tubing.

Figure 5. VAPOR PIN® sampling device sample connection

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the VAPOR PIN® sampling device via Mechanical Means (Figure 6). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.

Figure 6. Water dam used for leak detection

11) Collect sub-slab soil gas sample or pressure reading. When finished, replace the protective cap and flush mount cover until the next event. If the sampling is complete, extract the VAPOR PIN® sampling device.

Extraction Procedure:

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the VAPOR PIN® sampling device (Figure 7). Turn the tool clockwise continuously, don't stop turning, the VAPOR PIN® sampling device will feed into the bottom of the installation/extraction tool and will extract from the hole like a wine cork, DO NOT PULL.

2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.

Figure 7. Removing the VAPOR PIN® sampling device

- Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the VAPOR PIN®

sampling device in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes. For both steps, **STAINLESS – ½ hour, BRASS 8 minutes**

3) Replacement parts and supplies are available online.

Attachment 2

Sealant Specifications

QuicTile by daltile Grout

SAFETY DATA SHEET

Daltile QuicTile Grout D196 Mist
Revision Number 1

Revision Date: 02-Mar-2020
Supersedes Date: 02-Mar-2020

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Name DALTILE QUICTILE GROUT D196 MIST

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use Grout.
Uses advised against No information available

1.3. Details of the supplier of the safety data sheet

Responsible Party
Dal-Tile Corporation
7834 C F Hawn Fwy
Dallas, TX 75217 USA
Phone: 1-800-933-TILE (8453)
E-mail: homedepotcustomerservice@daltile.com

1.4. Emergency telephone number

Telephone: 1-800-227-0332
(Outside U.S.) 1-703-527-3887

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Not a dangerous substance or mixture according to OSHA 29 CFR 1910.1200.

2.2. Label Elements

EMERGENCY OVERVIEW

Appearance viscous	**Physical State** Solid	**Odor** Odorless

Precautionary Statements - Prevention
Not applicable

Precautionary Statements - Response
Not applicable

Precautionary Statements - Storage
Not applicable

Precautionary Statements - Disposal
Not applicable

Hazards not otherwise classified (HNOC)
Not applicable

Unknown acute toxicity
18% of the mixture consists of ingredient(s) of unknown toxicity

2.3. Other Information

No informaiton available.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Mixture

3.2 Mixtures

Chemical name	CAS No.	Weight-%
Quartz	14808-60-7	40-70
Glass, oxide, chemicals	65997-17-3	5-10
Titanium dioxide	13463-67-7	0.1-1
Silane, diethoxymethyl[3-(oxiranylmethoxy)propyl]-	2897-60-1	0.1-1

**The exact percentage (concentration) of composition has been withheld as a trade secret.*

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Eye contact In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician.

Skin contact Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

Inhalation Remove to fresh air. If symptoms persist, call a physician.

Ingestion Rinse mouth. Drink plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. If swallowed, seek medical advice immediately and show this container or label.

Self-protection of the first aider Use personal protective equipment as required.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms No information available.

4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

4.4. Reference to Other Sections

Reference to other sections Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION
Section 11: TOXICOLOGY INFORMATION

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media
Use extinguishing agent suitable for type of surrounding fire.

Unsuitable extinguishing media
None known.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical
Thermal decomposition can lead to release of irritating and toxic gases and vapors.

Hazardous combustion productsCarbon oxides.

Explosion Data

Sensitivity to mechanical impact	None.
Sensitivity to static discharge	None.

5.3. Advice for firefighters

Special protective actions for fire-fighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Use personal protective equipment as required. Stop leak if you can do it without risk. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling.

6.2. Environmental precautions

Environmental precautions	Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up

Methods for containment	Cover with plastic sheet to prevent spreading. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13).
Methods for cleaning up	Use personal protective equipment as required. Dam up. Soak up with inert absorbent material. Take up mechanically, placing in appropriate containers for disposal. Clean contaminated surface thoroughly.

6.4. Reference to other sections

Reference to other sections	Section 7: HANDLING AND STORAGE Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION Section 13: DISPOSAL CONSIDERATIONS

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling	Use personal protective equipment as required. Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Avoid contact with skin and eyes. Wash hands thoroughly after handling. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep out of the reach of children. Keep in properly labeled containers. Keep container tightly closed in a dry and well-ventilated place. Keep from freezing.

Incompatible materials None known based on information supplied.

7.3. Specific end use(s)

Other information No information available.

7.4. References to Other Sections

Reference to other sections Section 13: DISPOSAL CONSIDERATIONS
Section 10: STABILITY AND REACTIVITY

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure Guidelines . This product contains substances which in their raw state are powder form, however in this product they are in a non-respirable form. Inhalation of powder dust particles is unlikely to occur from exposure to this product.

Chemical name	ACGIH TLV	NIOSH IDLH	OSHA PEL	Mexico
Quartz 14808-60-7	TWA: 0.025 mg/m^3 respirable particulate matter	IDLH: 50 mg/m^3 respirable dust TWA: 0.05 mg/m^3 respirable dust	TWA: 50 µg/m^3 TWA: 50 µg/m^3 excludes construction work, agricultural operations, and exposures that result from the processing of sorptive clays : (250)/(%SiO2 + 5) mppcf TWA respirable fraction : (10)/(%SiO2 + 2) mg/m ^{3} TWA respirable fraction	TWA: 0.025 mg/m^3
Glass, oxide, chemicals 65997-17-3	TWA: 1 fiber/cm3 respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination TWA: 5 mg/m3 inhalable particulate matter	-	-	TWA: 1 fiber/cm3 TWA: 5 mg/m^3

Titanium dioxide 13463-67-7	TWA: 10 mg/m³	IDLH: 5000 mg/m³ TWA: 2.4 mg/m³ CIB 63 fine TWA: 0.3 mg/m³ CIB 63 ultrafine, including engineered nanoscale	TWA: 15 mg/m³ total dust	TWA: 10 mg/m³

Chemical name	Argentina	Brazil	Chile	Venezuela
Quartz 14808-60-7	TWA: 0.05 mg/m³	TWA: 0.025 mg/m³	TWA: 0.08 mg/m³	TWA: 0.025 mg/m³
Glass, oxide, chemicals 65997-17-3	TWA: 1 fiber/cm3 TWA: 5 mg/m³	TWA: 1 fiber/cm3	-	-
Titanium dioxide 13463-67-7	TWA: 10 mg/m³	TWA: 10 mg/m³	-	TWA: 10 mg/m³

8.2. Exposure controls

Engineering controls
Showers
Eyewash stations
Ventilation systems.

Personal protective equipment [PPE]

Eye/face protection
Wear safety glasses with side shields (or goggles).

Skin and body protection
Wear suitable chemical resistant gloves. The selection of suitable gloves does not only depend on the material, but also on further marks of quality and various manufacturers.

Respiratory protection
If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General hygiene considerations
Use personal protective equipment as required. Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Wash contaminated clothing before reuse. Wash hands thoroughly after handling.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state Solid
Appearance viscous
Color Gray
Odor Odorless
Odor threshold Not applicable

Property	Values	Remarks • Method

pH	8.1
Melting point / freezing point	No data available
Boiling point / boiling range	No data available
Flash point	> 100 °C / > 212 °F
Evaporation rate	Not applicable .
Flammability (solid, gas)	No information available
Flammability Limit in Air	
Upper flammability or explosive limits	No information available
Lower flammability or explosive limits	No information available
Vapor pressure	No information available
Vapor density	No information available
Relative density	No information available
Water solubility	No information available
Solubility in Other Solvents	
Partition coefficient	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Kinematic viscosity	No information available
Dynamic viscosity	No information available
Explosive properties	No information available
Oxidizing properties	No information available

9.2. Other information

Softening Point	No information available
Molecular weight	No information available
Solvent content (%)	No information available
Solid content (%)	No information available
Density	1.74 g/cm³
VOC Content (%)	35 g/L / 2.0%

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

None under normal use conditions.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

None under normal processing.

10.4. Conditions to avoid

Extremes of temperature and direct sunlight. Keep from freezing.

10.5. Incompatible materials

None known based on information supplied.

10.6. Hazardous decomposition products

None known based on information supplied.

SECTION 11: TOXICOLOGY INFORMATION

11.1. Information on toxicological effects

Product Information No data available

Inhalation Based on available data, the classification criteria are not met.

Eye contact Based on available data, the classification criteria are not met.

Skin contact Based on available data, the classification criteria are not met.

Ingestion Based on available data, the classification criteria are not met.

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Quartz 14808-60-7	>2000 mg/kg (Rattus)	-	-
Glass, oxide, chemicals 65997-17-3	>2000 mg/Kg Rat	-	LC50 > 0.691 mg/l (Rattus) 4-Hr
Titanium dioxide 3463-67-7	>10000 mg/kg (Rattus)	-	-
Silane, diethoxymethyl[3-(oxiranylmethoxy) propyl]- 2897-60-1	LD50 (Rat, males): > 2.000 mg/kg	LD 50 Rat, males): > 2.000 mg/kg (OECD 402)	-

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Symptoms No information available.
Skin corrosion/irritation No information available.
Serious eye damage/eye irritation No information available.
Irritation No information available.
Corrosivity No information available.
Sensitization No information available.
Germ cell mutagenicity No information available.
Reproductive toxicity No information available.
Developmental toxicity No information available.
Teratogenicity No information available.
STOT - single exposure No information available.
STOT - repeated exposure No information available.
Chronic Toxicity No information available.
Target organ effects No information available.
Aspiration hazard No information available.
Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen. As Quartz (14808-60-7) is inextricably bound in the polymer matrix, it is not expected to be available as an airborne hazard (dust, mist, or spray) under normal condition of uses. As Titanium dioxide (13463-67-7) is inextricably

bound in the polymer matrix, it is not expected to be available as an airborne hazard (dust, mist, or spray) under normal condition of uses.

Chemical name	ACGIH	IARC	NTP	OSHA
Quartz 14808-60-7	A2	Group 1	Known	X
Glass, oxide, chemicals 65997-17-3	-	Group 3	-	-
Titanium dioxide 13463-67-7	-	Group 2B	-	X

ACGIH (American Conference of Governmental Industrial Hygienists)
A2 - Suspected Human Carcinogen
IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans
Group 3 - Not Classifiable as to Carcinogenicity in Humans
NTP (National Toxicology Program)
Known - Known Carcinogen
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Chemical name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Silane, diethoxymethyl[3-(oxiranylm ethoxy)propyl]- 2897-60-1	EC 50 (Daphnia magna, 48 h): 20 mg/l (OECD Test Guideline 202)	LC 50 (Rainbow Trout, 96 h): 180 mg/l (OECD-Guideline 203 (, Acute Toxicity Test))		

12.2. Persistence and degradability

No information available.

12.3. Bioaccumulative potential

There is no data for this product.

12.4. Mobility in soil

No information available.

Other adverse effects

No information available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Disposal of Wastes	It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations
Contaminated packaging	Dispose of in accordance with federal, state and local regulations

SECTION 14: TRANSPORT INFORMATION

Note:	Keep from freezing
DOT	Not regulated
IATA	Not regulated
IMDG	Not regulated

SECTION 15: REGULATORY INFORMATION

Global Inventories

TSCA	Listed
DSL	Not Listed

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL - Canadian Domestic Substances List
Listed - The components of this product are either listed or exempt from listing on inventory.
Not Listed - One or more components of this product are not listed on inventory.

United States of America

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories
Classification is shown in section 2 of this SDS

Europe

Restrictions of Use of Hazardous Substances (RoHS) Directive 2011/65/EU
This product does not contain Lead (7439-92-1), Cadmium (7440-43-9), Mercury (7439-97-6), Hexavalent chromium (7440-47-3), Polybrominated biphenyls (PBB), and Polybrominated diphenyl ethers (PBDE) above the regulated limit mentioned in this regulation

SVHC: Substances of Very High Concern for Authorization:
This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59)

SECTION 16: OTHER INFORMATION

Key or legend to abbreviations and acronyms used in the safety data sheet
No information available

Key Literature References and Sources for Data

No information available

Prepared By	Product Safety & Regulatory Affairs
Revision date	02-Mar-2020
Revision note	Not applicable.
Training Advice	No information available
Further information	No information available

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.
The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

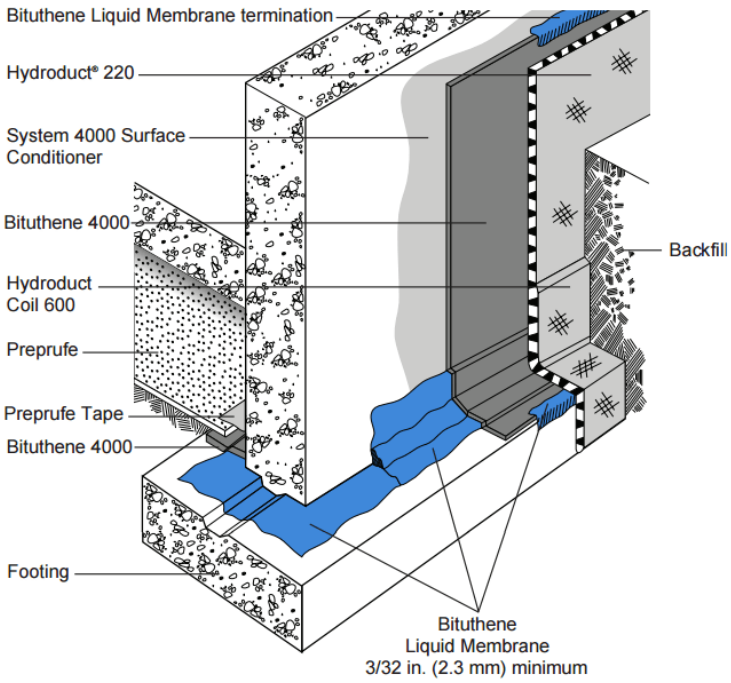
End of Safety Data Sheet

BITUTHENE® Liquid Membrane Data Sheet

Two component, elastomeric, liquid applied detailing compound for use with GCP waterproofing membranes

Product Description

BITUTHENE® Liquid Membrane is a two component, elastomeric, cold applied, trowel grade material designed for a variety of uses with the GCP waterproofing systems. The VOC (Volatile Organic Compound) content is 10 g/L. Architectural and industrial maintenance regulations limit the VOC content in products classified as architectural coatings. Refer to Technical Letters for the most current list of allowable limits.



Product Advantages

- Liquid applied
- Waterproof
- Tough, rubber-like
- Chemically cured
- Cold applied
- System compatible

Use

BITUTHENE® Liquid Membrane is ideally suited for the following uses:

- Fillet material at inside corners
- Reinforcement material at inside corners
- Flashing material around drains, protrusions, curbs and parapets
- Sealing material at terminations
- Repair material for defects on concrete surfaces
- Flashing material at corners

The two parts of BITUTHENE® Liquid Membrane are mixed on site and troweled on to provide a simple and quick waterproofing detailing aid in conjunction with BITUTHENE®, PREPRUFE® and PROCOR® systems.

Compatibility

BITUTHENE® Liquid Membrane is completely compatible with BITUTHENE®, PREPRUFE® and PROCOR®, and with existing asphalt or coal tar-based waterproofing materials. It is also compatible with cured silicone and polyurethane sealants. It is not compatible with creosote, pentachlorophenol, linseed oil or polysulfide-based sealants.

Supply

BITUTHENE® Liquid Membrane (Parts A & B)		
Unit size	1.5 gal (5.7 L)	4 gal (15.1 L)
Net weight per unit	16 lbs (8 kg)	44 lbs (20 kg)
Units per pallet	100	24

Physical Properties

PROPERTY	TYPICAL VALUE	TEST METHOD
Part A Color	Black	
Part B Color	Clear	
Mixture of Parts A and B Color	Black	
Solids content	100%	ASTM D1644
Elongation	250% minimum	ASTM D412
Peel strength	5 lbs/in. (880 N/m) minimum	ASTM D903
Flexibility, 180° bend over 1 in. (25 mm) mandrel at -25°F (-32°C)	Unaffected	ASTM D1970

Application Procedures

Safety, Storage and Handling Information

BITUTHENE® products must be handled properly. Vapors from solvent based primers and mastic are harmful and flammable. For these products, the best available information on safe handling, storage, personal protection, health and environmental considerations has been gathered. Safety Data Sheets (SDS) are available on the web site and users should acquaint themselves with this information. Carefully read detailed precaution statements on product labels and the SDS before use.

Surface Preparation

All surfaces must be dry and free from dirt, grease, oil, dust or other contaminants. BITUTHENE® Liquid Membrane may be applied at temperatures of 25°F (-4°C) or above. Store in a dry place above 40°F.

Mixing

Add the entire contents of the Part B container to Part A and mix for 3 to 5 minutes until uniform. Part A is black and Part B is clear. Take care to scrape material from the side and bottom of the containers to ensure thorough mixing. A low speed (150 rpm) mechanical mixer with flat paddle blades is required. Do not apply any material if streaks can be seen due to insufficient mixing. Once mixed, BITUTHENE® Liquid Membrane must be applied by trowel within 1.5 hours. More time is available at lower temperatures.

At high temperatures, thickening and curing will be faster. Material that has thickened must be discarded. The material will cure to a very flexible rubber-like material.

BITUTHENE® Liquid Membrane must be applied at a minimum thickness of 3⁄16 in. (2.3 mm) unless otherwise noted on details. 32 In fillet applications, the face of the fillet should be a minimum of ¾ in. (20 mm). In corner flashing application details, it should extend 6 in. (150 mm) in each direction from the corner. BITUTHENE® Liquid Membrane will adhere to primed or unprimed concrete.

BITUTHENE® Liquid Membrane should be allowed to cure at least 24 hours before flood testing.

Coverage

As a fillet material, 1 gal (3.8 L) will cover approximately 100 linear feet (30 m). As a flashing material, 1 gal (3.8 L) will cover approximately 17 f^2 (1.6 m^2). As a fillet and reinforcement, 1 gal (3.8 L) will cover approximately 14 linear feet (4.3 m).

Cleaning

Clean tools and equipment with mineral spirits before BITUTHENE® Liquid Membrane has cured. Mineral spirits is a combustible liquid and should be used only in accordance with the manufacturer's safety recommendations. Do not use solvents to clean hands or skin.

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GCP Canada, Inc., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6

Last Updated: 2024-03-13

BUILDING TRUST

PRODUCT DATA SHEET

SikaFix® HH Hydrophilic

low Viscosity, expanding, polyurethane chemical grout

PRODUCT DESCRIPTION

SikaFix® HH Hydrophilic is a nonflammable hydrophilic polyurethane resin designed to form a flexible gasket or plug joints and cracks in concrete from water infiltration. In its uncured form, SikaFix® HH Hydrophilic is a pale yellow liquid. When it comes in contact with water, the grout expands quickly and cures to a tough, flexible, adhesive, closed cell foam that is essentially unaffected by mildly corrosive environments.

USES

- Sealing leaks through concrete cracks and joints.
- Saturating backer rod to seal joints by the gasket method.

CHARACTERISTICS / ADVANTAGES

- Contains no volatile solvents.
- Non-flammable.
- Free Foam expands to 6 times its liquid volume.
- High elongation creates tight seal in moving cracks.
- Non-corrosive

PRODUCT INFORMATION

Chemical Base	100% solids polyurethane chemical grout
Packaging	5 gallon pail.
Color	Pale yellow
Shelf Life	1 year in original, unopened container.
Storage Conditions	Store in a dry area between 40–90 °F (4–32 °C) using original re-sealable containers. Low temperatures will affect viscosity. To minimize this effect, store the product at room temperature for a minimum period of 24 hours prior to use. Material must be preconditioned to between 60–90 °F (16–32 °C) before use. If site temperatures are extremely low, heat bands or heated water baths may be used on the pails, before and during use to maintain the products temperature. Immerse only the lower 2/3 of the pails. Avoid splashing water into open containers. Do not use if ambient temperature is below 40 °F (4 °C).

	Uncured (74 °F (23 °C))	Cured (ASTM D-1622)
Density	1.16	4 lbs/ft³
Flash Point	> 200 °F	
Viscosity	650 cps	(74 °F (23 °C) (ASTM D-1638))

TECHNICAL INFORMATION

Tensile Strength	*Cured* 170 psi	(ASTM D-638)
Elongation at Break	*Cured* 400 %	(ASTM D-638)
Shrinkage	< 1%	
Chemical Resistance	Unaffected by mildly corrosive environments.	
Reaction Time	**Reaction Initiation Time 1:1 with water:** 30 sed at 77F (25C)	

APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION

When the crack is contaminated at the outside, it will be necessary to clean the crack surface so that the crack can be exactly located. If the crack is wide or high water flows are encountered, it will be necessary to seal the surface of the crack with a surface sealing material (SikaSet® Plug, Sikadur® 31 Hi Mod Gel, or open cell polyurethane foam saturated with SikaFix® HH Hydrophilic). The surface sealing can be done before or after drilling the injection holes, depending on the particular situation.

MIXING

Prior to installation the material should be agitated vigorously shaking the 5 gallon pail or by mixing with a jiffy mixer, bung mixer or by hand. During injection the grout will follow the path of least resistance. When the material has stopped migrating, it will continue to expand against the confines of the crack/joint and compress within itself, forming a very dense, closed cell material and stopping the leak.

APPLICATION METHOD / TOOLS

Begin by drilling 5/8” diameter holes along the side of the crack at a 45 degree angle. Drill the hole to intersect the crack midway through the substrate. Install injection packers in the holes and tighten. Spacing of the injection ports depends on crack width, but normal varies from 6” to 36”. It is always necessary to flush the drilled holes with water to remove debris and drill dust from the holes and crack. This will also
ensure that the crack is wet enough to react with the grout when it is introduced to the crack. Begin the injection of the grout as the lowest packer installed on a vertical crack, or at the first packer flushed for a horizontal crack. During the injection, you will notice that the SikaFix® HH Hydrophilic displaces water from the crack. Continue injecting until the grout appears at the adjacent packer hole. Stop pumping and reinstall the packer in the adjacent hole. Tighten the packer and move the pump hose to the second packer and begin injection. Continue the process until 3–4 packers have been grouted. Disconnect and go back to the first packer and inject all the ports for the second time if necessary. Some ports may take additional grout, which will fill up and further densify the material in the crack. Continue process until the length of the prepared crack is injected.
Note: Injection pressure will vary from 200 psi to 2500 psi depending on the width of the crack, thickness of concrete and condition of concrete.

Tooling & Finishing

When finished with the injection process, re-inject each installed packer with a small amount of water. This will react with the resin left behind in the drill hole. After the injection, the packers or injection ports can be cut flush with the concrete surface or can be removed from the injection holes. Let SikaFix® HH Hydrophilic completely cure before removing the packers. Packer holes can be filled with Sikadur® 31 or SikaSet® Plug and troweled smooth.

Removal

Residual resin that has foamed from the crack can be removed with a scraper as long as it is not cured to a solid on the surface. If the material has cured, remove with a wire brush or hand held grinders. SikaFix® HH Hydrophilic will aggressively bond to concrete surfaces.

LIMITATIONS

- Low temperatures will significantly affect viscosity and

reaction time.
- Avoid splashing water into open containers, as material is water activated.
- Water used to activate SikaFix® HH Hydrophilic must be in a range of pH 3–10 for optimum foam quality.
- Material must be stored between 40–90 °F (4–32 °C).
- Material must be preconditioned to between 60–90 °F (16–32 °C) before use.
- Ambient temperature must be between 40–90 °F (4–32 °C) for use.
- Use only in applications where exposure to moisture is constant.

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

OTHER RESTRICTIONS

See Legal Disclaimer.

ENVIRONMENTAL, HEALTH AND SAFETY

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LEGAL DISCLAIMER

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- **KEEP OUT OF REACH OF CHILDREN**
- **NOT FOR INTERNAL CONSUMPTION**
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Prior to each use of any product of Sika Corporation, its subsidiaries or affiliates (“SIKA”), the user must always read and follow the warnings and instructions on the product’s most current product label, Product Data Sheet and Safety Data Sheet which are available at usa.sika.com or by calling SIKA’s Technical Service Department at 1-800-933-7452. Nothing contained in any SIKA literature or materials relieves the user of the obligation to read and follow the warnings and instructions for each SIKA product as set forth in the current product label, Product Data Sheet and Safety Data Sheet prior to use of the SIKA product.

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within the product’s shelf life. User determines suitability of product for intended use and assumes all risks. User’s and/or buyer’s sole remedy shall be limited to the purchase price or replacement of this product exclusive of any labor costs. **NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.**

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Phone: 52 442 2385800
Fax: 52 442 2250537

BUILDING TRUST

PRODUCT DATA SHEET

SikaGrout®-212

General Purpose cementitious grout

PRODUCT DESCRIPTION

SikaGrout®-212 is a one-component, ready to mix, free flowing, non-shrink, cementitious grout with a unique 2-stage shrinkage compensating mechanism.

USES

- General purpose grouting
- Machine and column base plates
- Anchor rods, bearing plates
- Ram in place as a dry pack
- Trowel-apply as a medium flow
- Pour or pump as high flow
- Bedding joints in pre-cast concrete sections
- Filling cavities, voids, gaps and recesses
- On grade, above and below grade
- Indoors and out

CHARACTERISTICS / ADVANTAGES

- Easy to use (ready to mix powder)
- Shrinkage compensated properties in both the plastic and hardened states
- Multiple fluidity with a single component
- Good bond to concrete
- Non-metallic, will not stain or rust
- Contains no chloride
- Blend of shrinkage-reducing and plasticizing/water-reducing agents
- Low heat build-up
- Excellent for pumping: does not segregate, even at high flow. No build-up on equipment hopper
- Superior freeze/thaw resistance
- Resistant to oil and water

APPROVALS / STANDARDS

- Meets ASTM C-1107 (Grade C)
- Shows positive expansion when tested in accordance with ASTM C-827
- SikaGrout®-212 is USDA certifiable

PRODUCT INFORMATION

Chemical Base	Cement, selected fillers and aggregates, special additives
Packaging	50 lb (22.7 kg) bag
Appearance / Color	Gray powder
Shelf Life	12 months from date of production if stored properly in original, unopened and undamaged sealed packaging
Storage Conditions	Store dry at 40–95 °F (4–35 °C) Protect from moisture. If damp, discard material

TECHNICAL INFORMATION

Compressive Strength		**Plastic**	**Flowable**	**Fluid**	(ASTM C-942) 73 °F (23 °C) 50 % R.H
	1 day	4,500 psi (31 MPa)	3,500 psi (24.1 MPa)	2,700 psi (18.6 MPa)	
	7 days	6,100 psi (42 MPa)	5,700 psi (39.3 MPa)	5,500 psi (37.9 MPa)	
	28 days	7,500 psi (51.7 MPa)	6,200 psi (42.7 MPa)	5,800 psi (40 MPa)	
Flexural Strength	28 days	1,400 psi (9.6 MPa)	1,200 psi (8.2 MPa)	1,000 psi (6.8 MPa)	(ASTM C-293) 73 °F (23 °C) 50 % R.H
Splitting Tensile Strength	28 days	600 psi (4.1 MPa)	575 psi (3.9 MPa)	500 psi (3.4 MPa)	(ASTM C-496) 73 °F (23 °C) 50 % R.H
Tensile Adhesion Strength	28 days	2,000 psi (13.7 MPa)	1,900 psi (13.1 MPa)	1,900 psi (13.1 MPa)	(ASTM C-882 modified) 73 °F (23 °C) 50 % R.H
Expansion	28 days	+0.021 %	+0.056 %	+0.027 %	(ASTM C-1090) 73 °F (23 °C) 50 % R.H.

APPLICATION INFORMATION

Mixing Ratio

Plastic	**Flowable**	**Fluid**
6 pt	6.5 pt	8.5 pt

Coverage

0.44 ft³ (0.01 m³) at fluid consistency
(Coverage figures do not include allowance for surface profile and porosity or material waste)

Layer Thickness

Min.	**Max.**
1/2" (12.7 mm)	4" (101.6 mm)

Thicker applications can be achieved. Contact Sika® Technical Services Department for further information.

Flowability

Plastic[1]	**Flowable**[1]	**Fluid**[2]	(ASTM C-1437[1] ASTM C-939[2])
100–124 %	124–145 %	20–40 sec	

Product Temperature

65–75 °F (18–24 °C)

Ambient Air Temperature

> 45 °F (7 °C)

Substrate Temperature

> 45 °F (7 °C)

Pot Life

~15 minutes

As the temperature will affect the pot life, application temperature:

- Above 73 °F (23 °C) will reduce the pot life and flow
- Below 73 °F (23 °C) will extend the pot life and flow

Set Time

	Plastic	**Flowable**	**Fluid**	(ASTM C-266) 73 °F (23 °C) 50 % R.H
Initial	3.5–4.5 h	4.0–5.0 h	4.5–6.5 h	
Final	4.5–5.5 h	5.5–6.5 h	6.0–8.0 h	

APPLICATION INSTRUCTIONS

SURFACE PREPARATION

- Remove all dirt, oil, grease, and other bond-inhibiting materials by mechanical means.
- Anchor bolts to be grouted must be de-greased with suitable solvent.
- Concrete must be sound and roughened to a CSP 4 or higher to promote mechanical adhesion.
- Prior to pouring, surface should be brought to a Saturated Surface Dry (SSD) condition.
- Steel should be cleaned and prepared thoroughly by blastcleaning to a white metal finish.
- Follow standard industry and Sika® guidelines for use as an anchoring epoxy.
- Where grout-tight form is difficult to achieve, use SikaGrout®-212 in dry pack consistency.

FORMING

- For pourable grout, construct forms to retain grout without leakage.
- Should be lined or coated with bond-breaker for easy removal.
- Should be sufficiently high to accommodate head of grout.

MIXING

- Pour the water in the recommended proportion into a suitable mixing container.
- While mixing slowly, add the powder to the water.
- Mix thoroughly for 3 minutes with low speed (< 500 rpm) hand drill mixer to avoid entraining too much air and until homogenous with no lumps.

EXTENSION WITH AGGREGATES

- For deeper applications (plastic and flowable consistancy only), 25 lbs. of 3/8" (9.5 mm) coarse aggregate can be added.
- The aggregate must be non-reactive (reference ASTM C-1260, C-227 and C-289), clean, well graded, saturated surface dry, have low absorption and high density, and comply with ASTM C-33 size number 8 per Table 2.
- Variances in aggregate may result in different strengths.
- Add pea gravel after the water and SikaGrout®-212.

APPLICATION

- Within 15 minutes after mixing, place grout into forms in normal manner to avoid air entrapment.
- Vibrate, pump, or ram grout as necessary to achieve flow or compaction. SikaGrout®-212 must be confined in either the horizontal or vertical direction leaving minimum exposed surface.
- SikaGrout®-212 is an excellent grout for pumping, even at high flow.
- For pump recommendations, contact Technical Service.
- After grout has achieved final set, remove forms, trim or shape exposed grout shoulders to designed profile.

CURING TREATMENT

Wet cure for a minimum of 3 days or apply a curing compound which complies with ASTM C-309 on exposed surfaces.

CLEANING OF TOOLS

Clean all tools and application equipment with water immediately after use.

LIMITATIONS

- Not to be used as an overlay in unconfined spaces
- Not to be used as a patch repair
- Avoid application in direct sun and/or strong wind
- Apply only to sound, prepared substrate
- Do not add additional water after application as this may cause cracking
- Protect freshly applied material from freezing and frost
- Keep exposed surfaces to a minimum
- As with all cement based materials, avoid contact with aluminum to prevent adverse chemical reaction and possible product failure. Insulate potential areas of contact by coating aluminum bars, rails, posts etc. with an appropriate epoxy such as Sikadur® Hi-Mod 32.

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

OTHER RESTRICTIONS

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ENVIRONMENTAL, HEALTH AND SAFETY

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DIRECTIVE 2004/42/CE - LIMITATION OF EMISSIONS OF VOC

0 g/L (EPA Method 24)

LEGAL DISCLAIMER

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SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within the product's shelf life. User determines suitability of product for intended use and assumes all risks. User's and/or buyer's sole remedy shall be limited to the purchase price or replacement of this product exclusive of any labor costs. **NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.**

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Attachment 3

HVAC Carbon Filtration Specifications

AC INFINITY

DUCT CARBON FILTER

PREMIUM AUSTRALIAN CHARCOAL

USER MANUAL

WELCOME

Thank you for choosing AC Infinity. We are committed to product quality and friendly customer service. If you have any questions or suggestions, please don't hesitate to contact us. Visit www.acinfinity.com and click contact for our contact information.

EMAIL
support@acinfinity.com

WEB
www.acinfinity.com

LOCATION
Los Angeles, CA

MANUAL CODE CL2208X1 (Carbon Filter)

PRODUCT	MODEL	UPC-A
DUCT CARBON FILTER, 4"	AC-DCF4	819137020665
DUCT CARBON FILTER, 6"	AC-DCF6	819137020672
DUCT CARBON FILTER, 8"	AC-DCF8	819137020689
DUCT CARBON FILTER, 10"	AC-DCF10	819137020825
DUCT CARBON FILTER, 12"	AC-DCF12	819137021617
DUCT CARBON FILTER XL, 4"	AC-DCF4-XL	819137023000
DUCT CARBON FILTER XL, 6"	AC-DCF6-XL	819137023017
DUCT CARBON FILTER XL, 8"	AC-DCF8-XL	819137023024

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PRODUCT WARNING

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

1. Check your local code restrictions for additional safety measures that may be needed for a proper code compliant installation.

2. Check local authority requirements for proper disposal of waste and residues.

3. Read all instructions before installing and using this product.

4. If you are unfamiliar or have doubts about performing this product's installation, seek the services of a qualified, trained, and licensed professional. Inappropriate installation will void this product's warranty.

5. This product must not be used in potentially hazardous locations such as flammable, explosive, chemical-laden, or wet atmospheres.

6. This product requires sufficient ventilation in order to properly function.

7. Ducted products must always be vented to outdoor areas.

8. Regular maintenance as outlined in the instructions is recommended to maintain ideal operation. Preventing dust accumulation will minimize potential hazards.

9. This product pairs with those that have rotating parts. Safety precautions should be exercised during the installation, operation, and maintenance of this product.

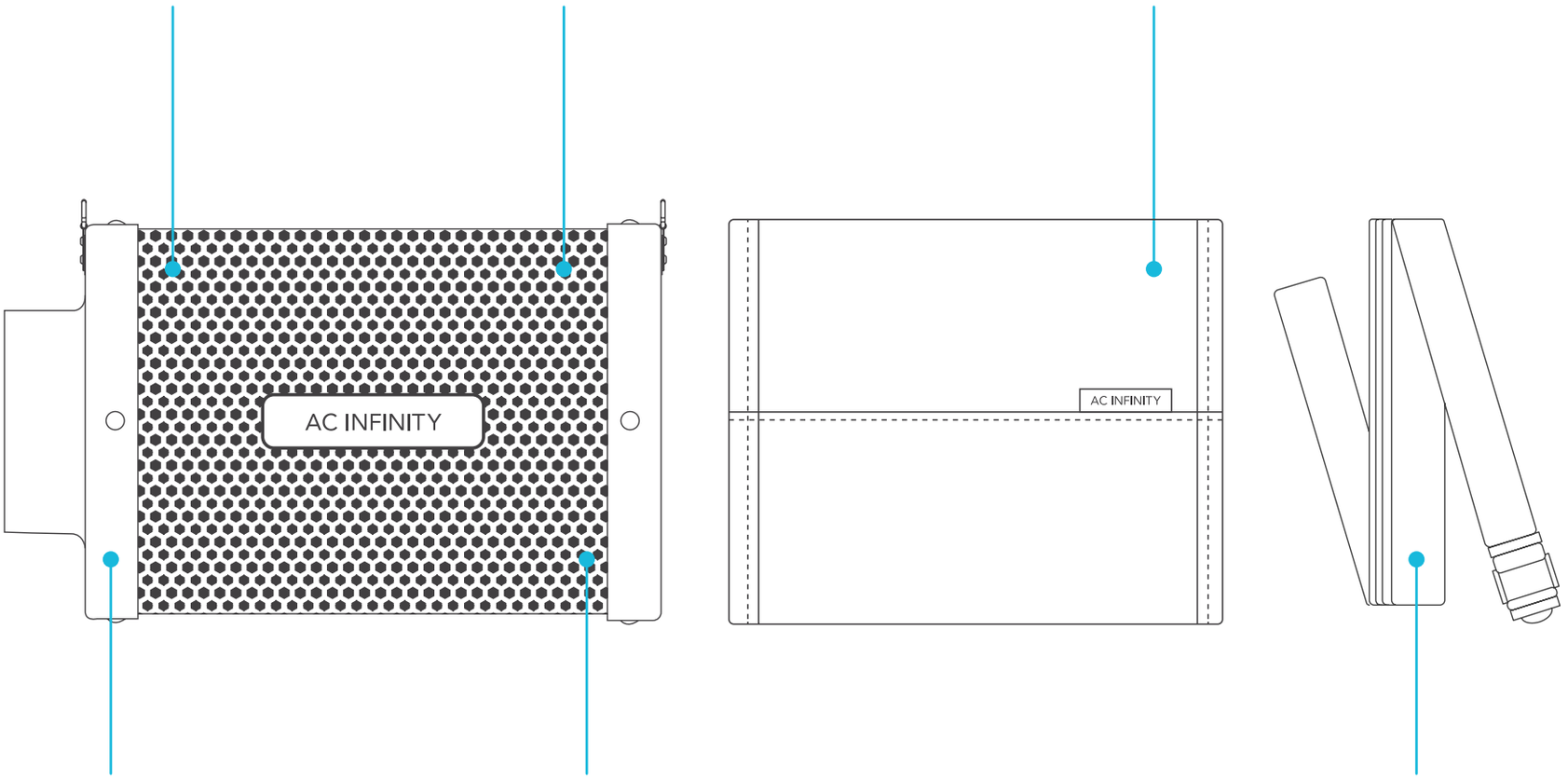
10. Ensure that safety systems are in place in case of any fire breakout.

KEY FEATURES

ALUMINUM FRAME
Features a resilient frame that resists corrosion and can be placed in high humidity settings.

MAX AIR PASSTHROUGH
Galvanized steel mesh allows complete passthrough of air suitable for both intake and exhaust applications.

CLOTH FILTER COVER
Traps particles from passing through the carbon filter. Rewash every six months to extend its lifespan.

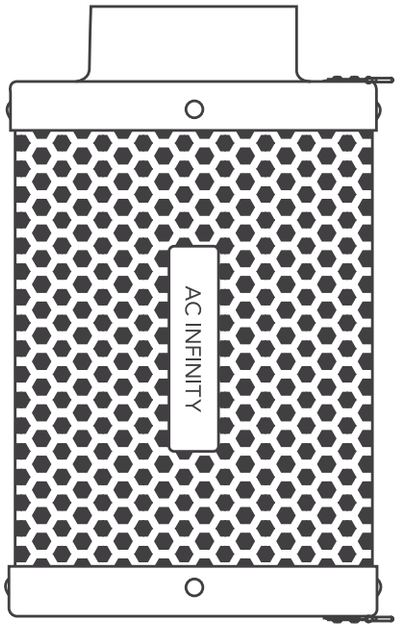


REVERSIBLE FLANGES
The flanges can be removed and placed on the opposite ends to fully utilize the carbon bed inside.

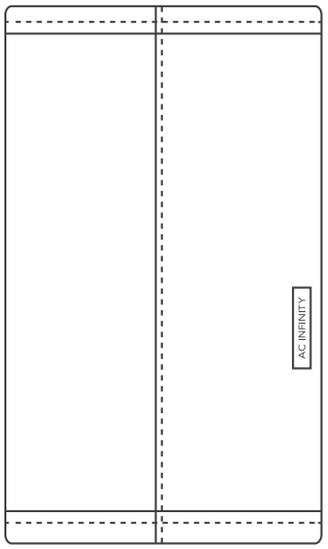
ACTIVATED CARBON
Features RC412 1200+ IAV Australian charcoal with high adsorption rate to completely block odor and scrub the air.

FILTER STRAPS
Includes two nylon straps that secures the carbon filter onto your grow tent support beams.

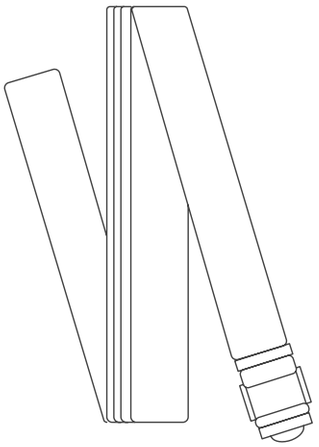
PRODUCT CONTENTS



DUCT
FILTER
(x1)



PREFILTER
CLOTH
(x2)

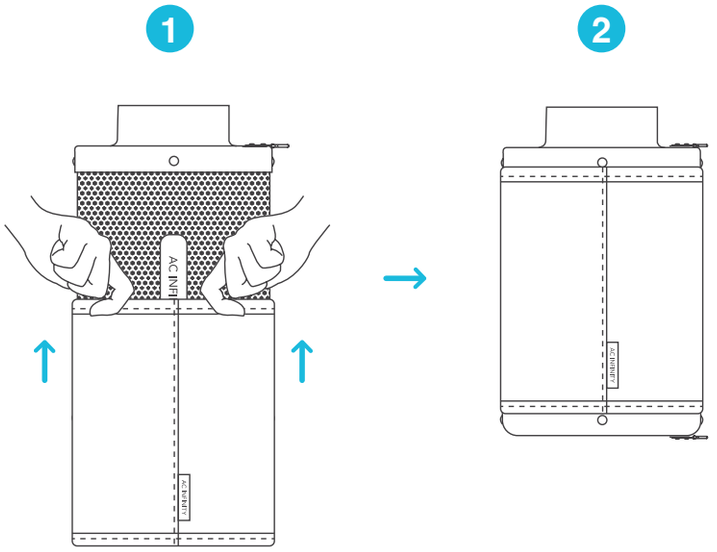


FILTER
STRAPS
(x2)

INSTALLATION

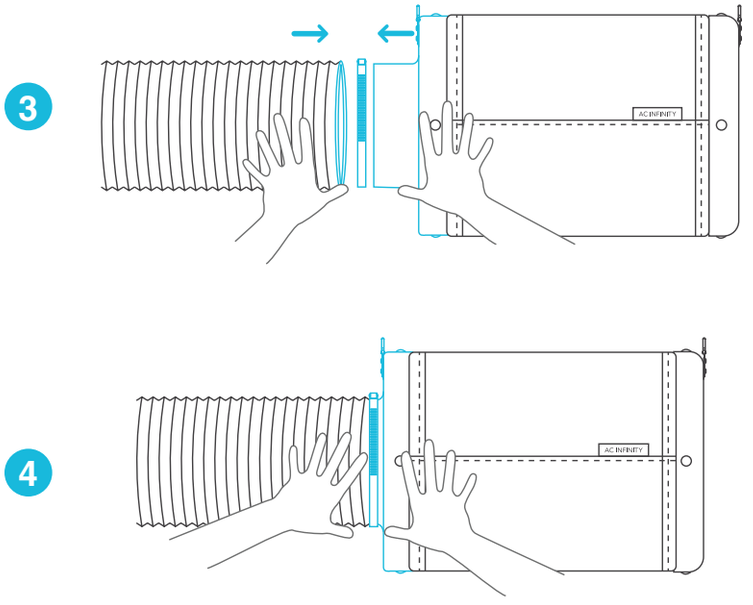
STEP 1

Slip the cloth over your filter to block dust and other particles from passing through. Make sure the entire metal mesh is covered by the cloth.



STEP 2

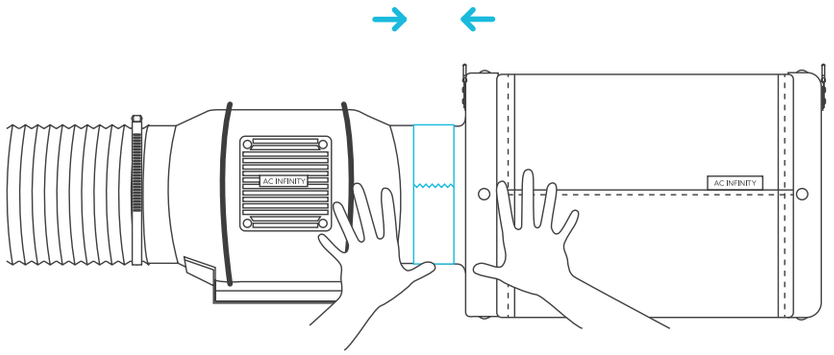
Connect your duct tube over your filter. Use duct clamps to secure the connection. You may also apply ducting tape before using the duct clamps for even further security.



INSTALLATION

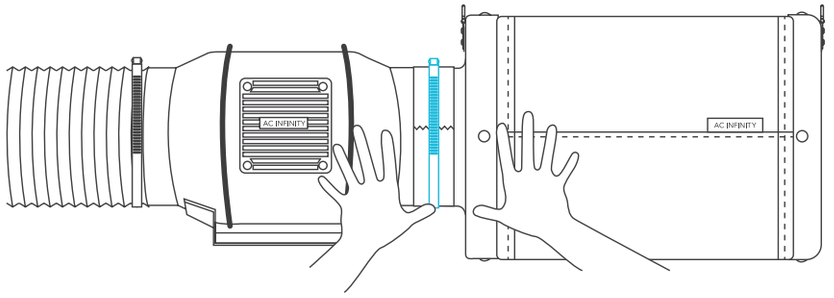
STEP 3

You may also connect your filter directly to your inline duct fan. Use ducting tape to secure them together.



STEP 4

If your filter is placed in a humid space, position it at the highest point possible.

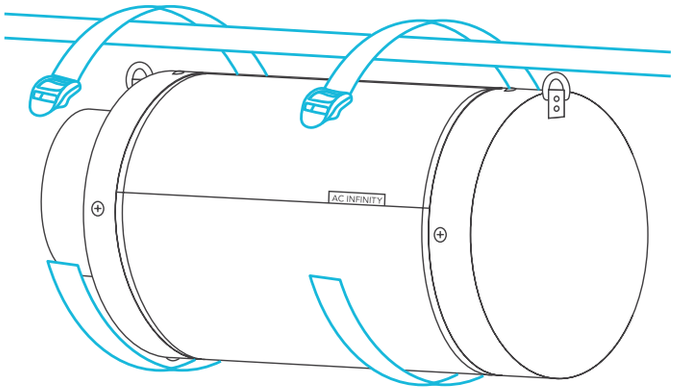


OVERHEAD HANGING

STRAPS

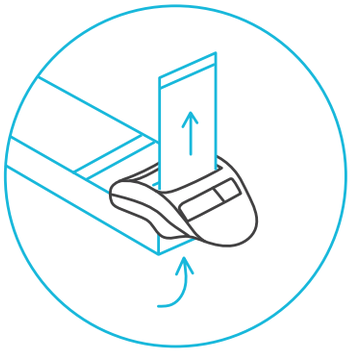
STEP 1

Loop the strap around a hanging pole.



STEP 2

Slip the strap through the inner ladder lock slot from the bottom.

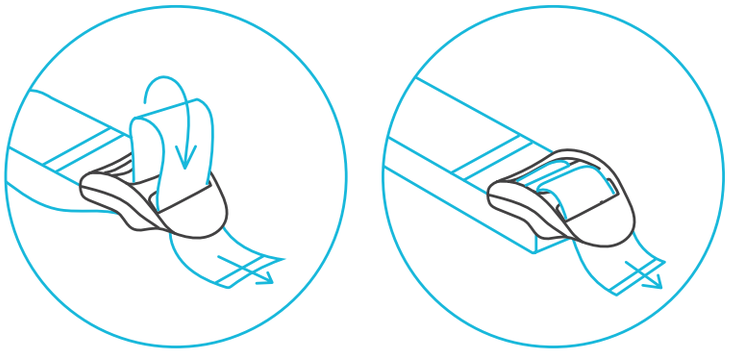


OVERHEAD HANGING

STRAPS

STEP 3

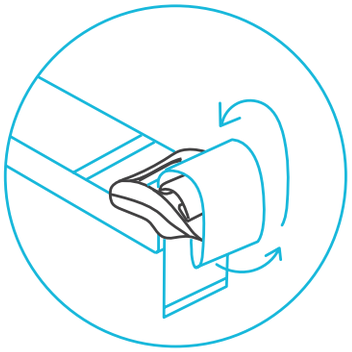
Route the strap into the outer ladder lock slot from the top. Adjust the length of the completed loop as needed.



Adjust to size

STEP 4

Tuck the loose ends through the center gap of the ladder lock to secure the loop.

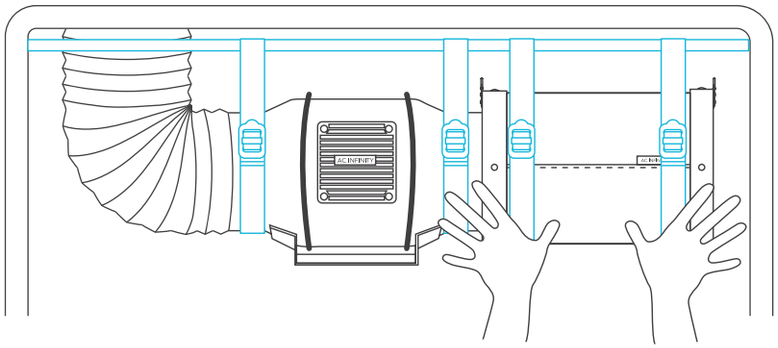


Loop through middle
to lock in place

OVERHEAD HANGING
STRAPS

STEP 5

Connect your filter to your ductwork using your preferred method, as shown on pages 9 and 10.

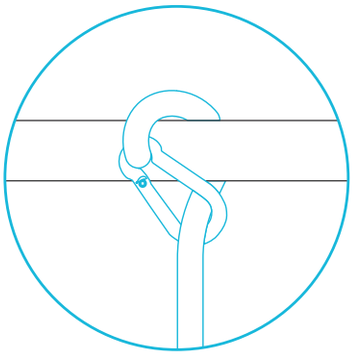


OVERHEAD HANGING

ROPE CLIPS*

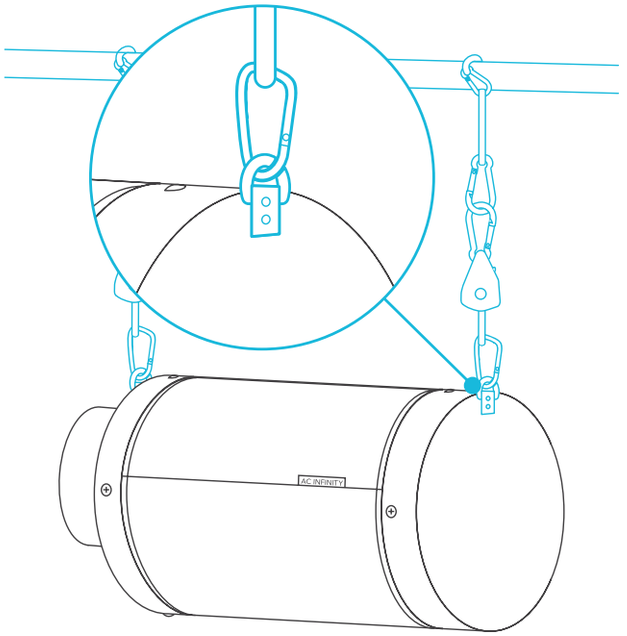
STEP 1

Loop the rope clip hangers around your grow tent's support beams.



STEP 2

Hook the carabiners into the steel hooks located on the flanges.

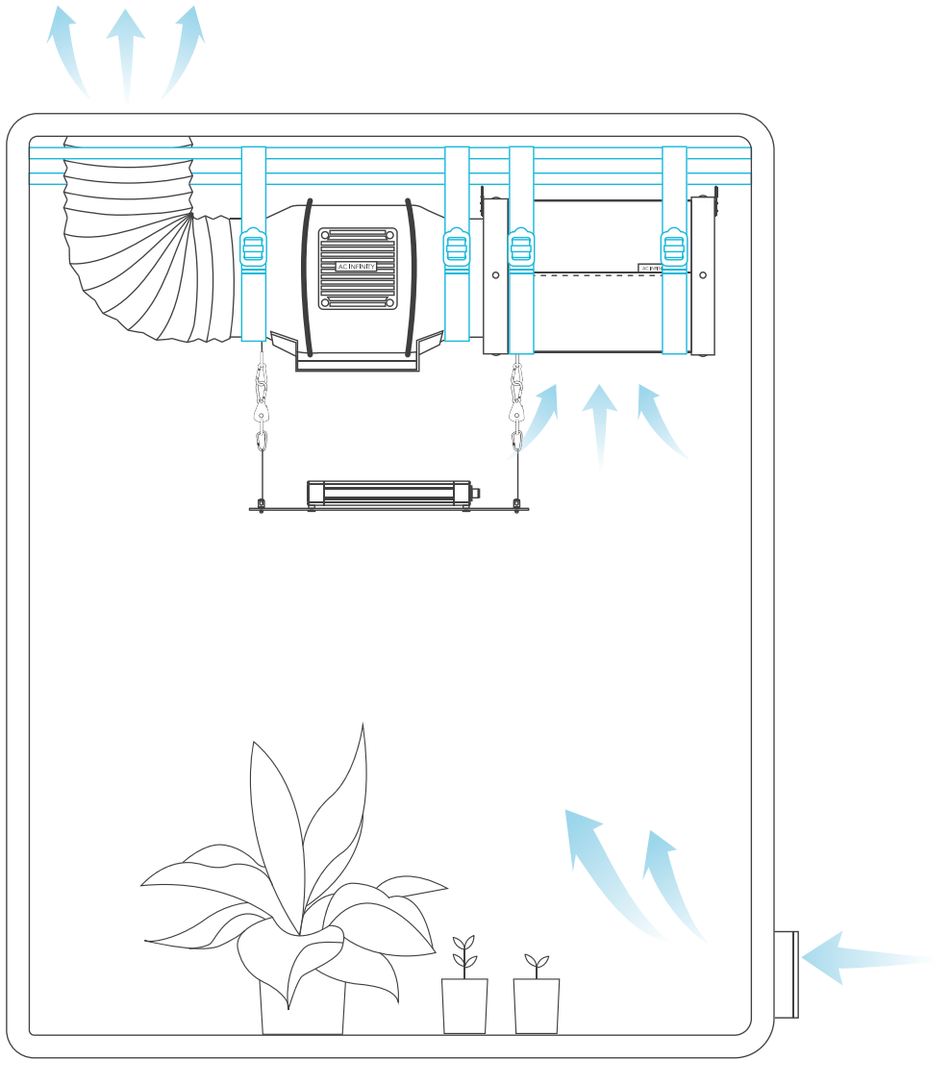


* Sold separately

INSTALLATION
CONFIGURATION SET-UP

INTERIOR HANGING

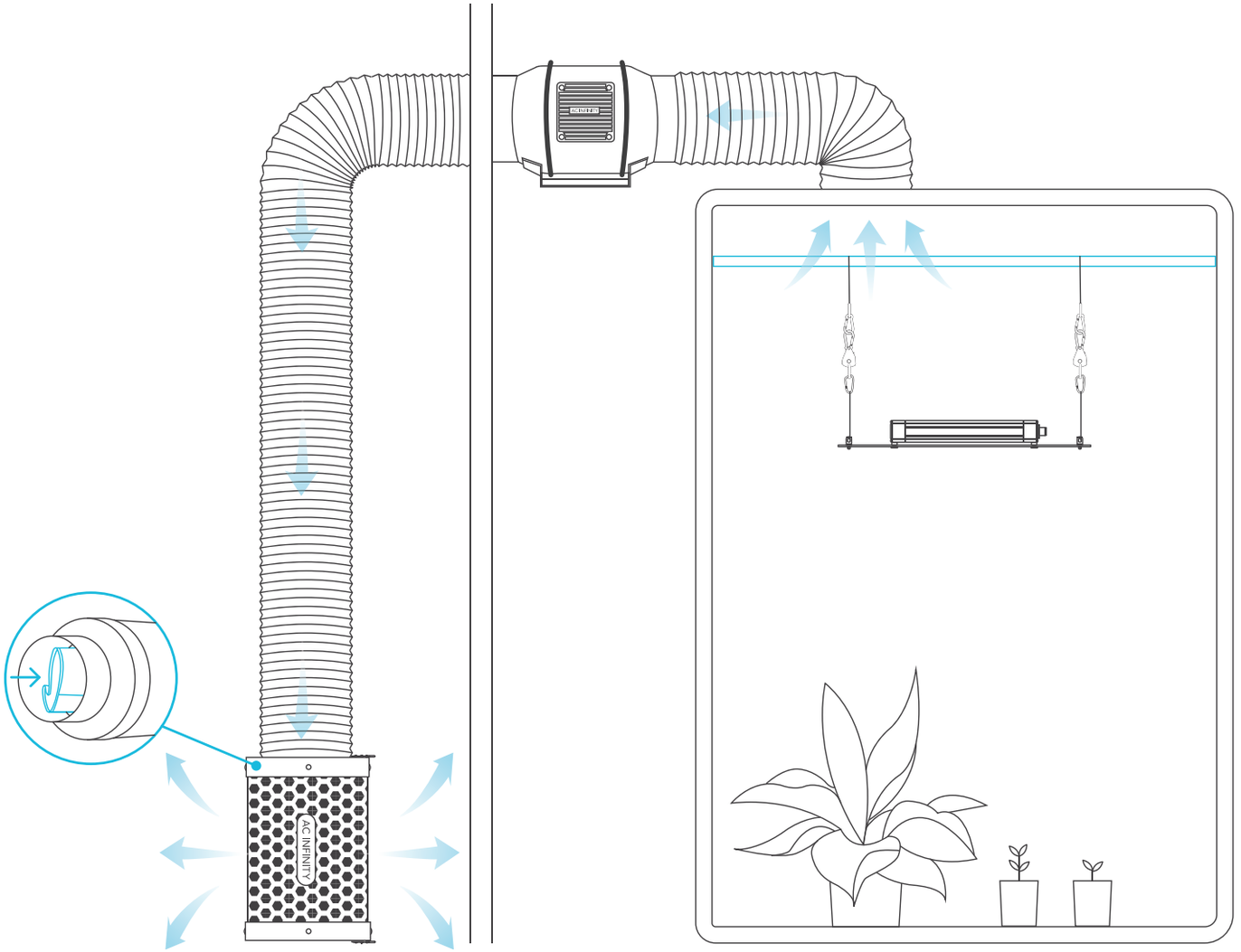
To use this filter in intake applications, place the filter inside your grow space. Make sure your filter is connected to your inline duct fan's intake end before completing the installation.



INSTALLATION
CONFIGURATION SET-UP

EXTERIOR MOUNTING

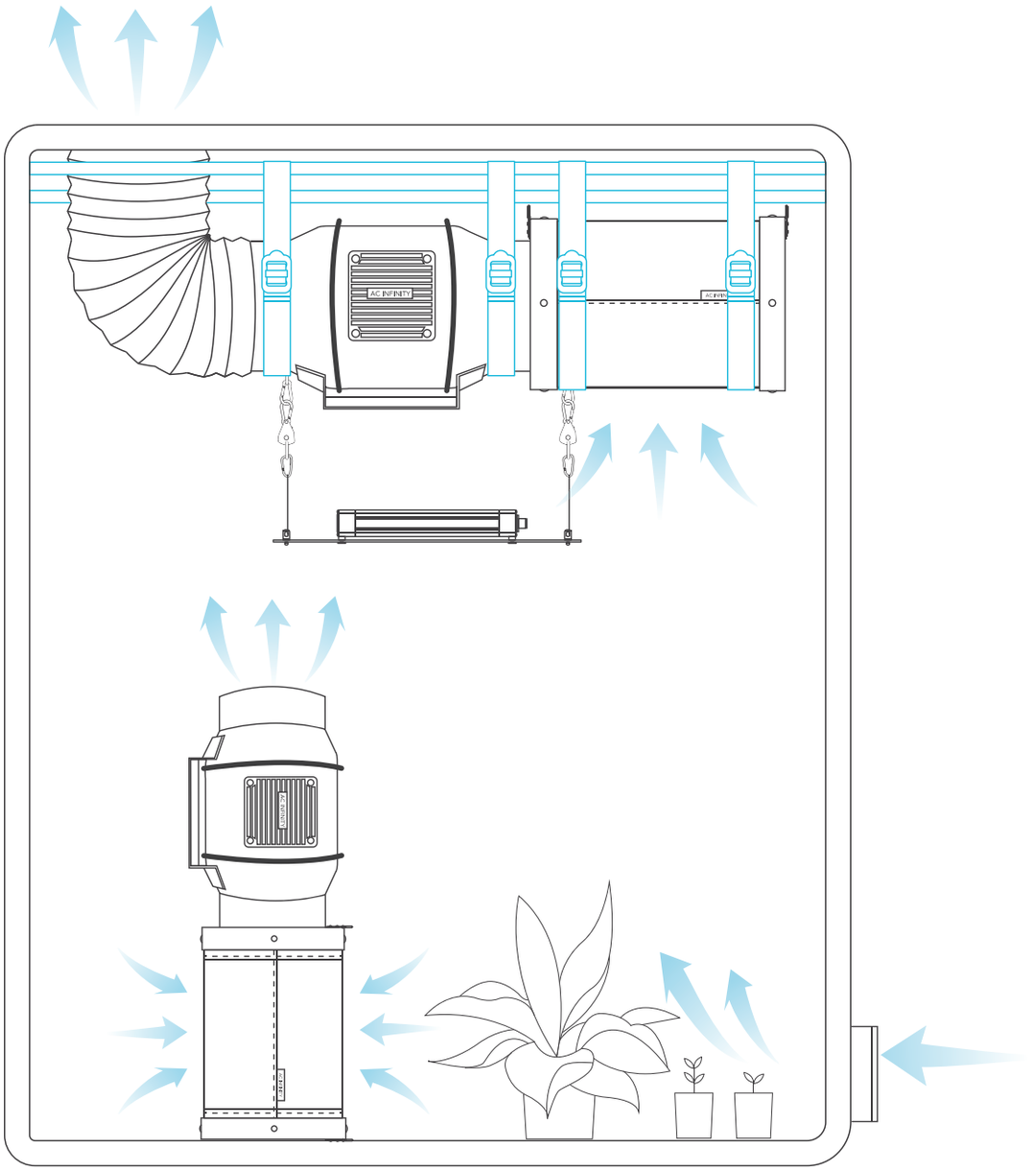
To use this filter in exhaust applications, place the filter outside of your grow space. Make sure your filter is connected to your inline duct fan's exhaust end before completing the installation. Stuff the prefilter inside of the filter to lengthen the carbon bed's lifespan.



INSTALLATION
CONFIGURATION SET-UP

OVERSIZED GROW SPACE

Use a dual fan and filter combination inside your grow space to completely scrub away odor in larger grow rooms and tents. Set the secondary filter on the floor and the inline fan on top of it so that the exhaust end points up.

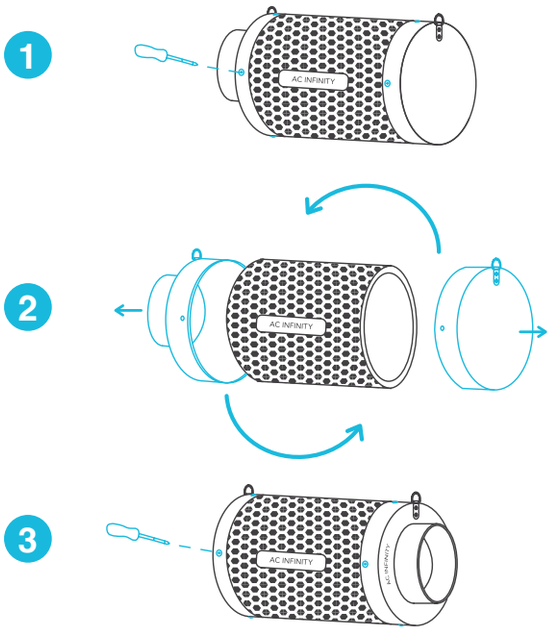


MAINTENANCE

REVERSING THE FLANGES

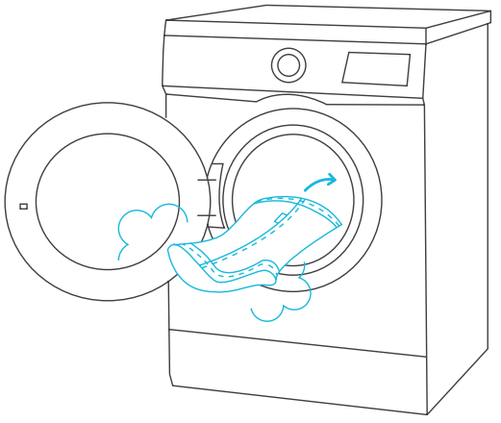
To extend the filter's lifespan and utilize its entire carbon bed, rotate the flanges from either end.

Remove the screws from the flanges to release them from the filter. Replace the flanges on the other ends and screw them back into place.



WASHING THE PREFILTER

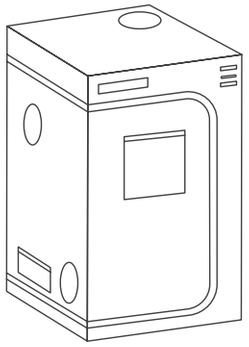
Wash the reusable cloth as needed to clear it of any dust and build-up. This will further extend the lifespan of the filter.



AC INFINITY PRODUCTS

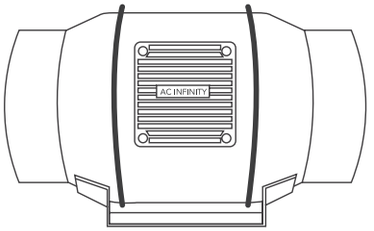
Advance Grow Tents

The CLOUDLAB series is a line of grow tents designed to create ideal growing conditions and facilitate indoor plant cultivation year-round. Features 2000D thick oxford canvas lined with inner diamond patterned mylar that maximizes grow light luminosity, and a reinforced frame with 150 lb. weight capacity. Includes a mounting plate to install your AC Infinity controller onto.



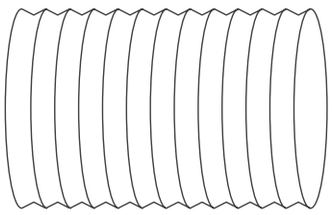
Inline Fans

The CLOUDLINE series is a line of duct fans designed to quietly ventilate AV rooms and closets, as well as various DIY air circulation and exhaust projects. Features a thermal controller with intelligent programming that will automatically adjust duct fan speeds in response to changing temperatures.



Ducting Tubes

The four-layer ducting tube is used to direct airflow, designed for ventilation systems in applications like HVAC, dryers, and grow rooms. It is highly durable and flexible, and can be used anywhere from tight spaces to wide open areas.



Discover the latest innovations in environmental controls at acinfinity.com

WARRANTY

This warranty program is our commitment to you, the product sold by AC Infinity will be free from defects in manufacturing for a period of two years from the date of purchase. If a product is found to have a defect in material or workmanship, we will take the appropriate actions defined in this warranty to resolve any issues.

The warranty program applies to any order, purchase, receipt, or use of any products sold by AC Infinity or our authorized dealerships. The program covers products that have become defective, malfunctioned, or expressively if the product becomes unusable. The warranty program goes into effect on the date of purchase. The program will expire two years from the date of purchase. If your product becomes defective during that period, AC Infinity will replace your product with a new one or issue you a full refund.

The warranty program does not cover abuse or misuse. This includes physical damage, submersion of the product in water, incorrect Installation such as wrong voltage input, and misuse for any reason other than intended purposes. AC Infinity is not responsible for consequential loss or incidental damages of any nature caused by the product. We will not warrant damage from normal wear such as scratches and dings.

Contact our dealers department at **dealers@acinfinity.com** or **(626) 838-4656** for more information about our dealers and distributors program. Contact our customer service department at **support@acinfinity.com** or **626-923-6399** for product and warranty assistance. Our business hours are Monday through Friday, 9:00 am to 5:00 pm PST.

If you have any issues with this product, contact us and we'll happily resolve your problem or issue a full refund!

www.acinfinity.com

AC INFINITY

CLOUDLINE PRO

MIXED FLOW INLINE FAN SYSTEMS

USER MANUAL

WELCOME

Thank you for choosing AC Infinity. We are committed to product quality and friendly customer service. If you have any questions or suggestions, please don't hesitate to contact us. Visit www.acinfinity.com and click contact for our contact information.

EMAIL
support@acinfinity.com

WEB
www.acinfinity.com

LOCATION
Los Angeles, CA

MANUAL CODE CL2209X1

PRODUCT	MODEL	UPC-A
CLOUDLINE PRO S4	AI-CLS4	819137020290
CLOUDLINE PRO S6	AI-CLS6	819137020306
CLOUDLINE PRO S8	AI-CLS8	819137020849
CLOUDLINE PRO S10	AI-CLS10	819137020856
CLOUDLINE PRO S12	AI-CLS12	819137021006
CLOUDLINE PRO T4	AI-CLT4	854759004785
CLOUDLINE PRO T6	AI-CLT6	854759004792
CLOUDLINE PRO T8	AI-CLT8	819137020276
CLOUDLINE PRO T10	AI-CLT10	819137020283
CLOUDLINE PRO T12	AI-CLT12	819137021013

EC models CANNOT be daisy chained with DC models. See page 32-34 for more information on daisy-chaining fans and safety precautions.

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PRODUCT WARNING

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

1. Ensure your power source conforms to the electrical requirements of this product.
2. Check your local code restrictions for additional safety measures that may be needed for a proper code compliant installation.
3. Read all instructions before installing and using this product.
4. If you are unfamiliar or have doubts about performing this product's installation, seek the services of a qualified, trained, and licensed professional. Inappropriate installation will void this product's warranty.
5. Do not attempt to hardwire this product. Performing any retrofitting actions may result in personal injury and/or electrical damage, and will void this product's warranty.
6. This product must not be used in potentially hazardous locations such as flammable, explosive, chemical-laden, or wet atmospheres.
7. Ducted products must always be vented to outdoor areas.
8. Do not cover power cords with rugs or other fabric materials.
9. This product has rotating parts. Safety precautions should be exercised during the installation, operation, and maintenance of this product.
10. Do not insert or allow fingers or foreign objects to enter any ventilation or exhaust openings as it may cause electric shock, fire, or damage to this product. Do not block or tamper with this product in any manner while it is in operation.
11. Do not depend on the on/off programming as the sole means of shutting power from this product. Unplug the power cord before installing, servicing, or moving this product.
12. Do not operate this product while its cord is damaged, or if it malfunctions, has been dropped, or is damaged in any manner.

INTERFERENCE from MH and HPS LIGHTS

Certain grow light models with HID* ballasts that do not use electromagnetic shielding will create an area of radio frequency interference (RFI). This can distort nearby frequency-sensitive components like internet lines and climate sensors. RFI can be emitted from the ballast's cords or the ballast itself.

Follow these steps to ensure proper functionality and to prevent radio frequency interference from affecting your sensor probe:

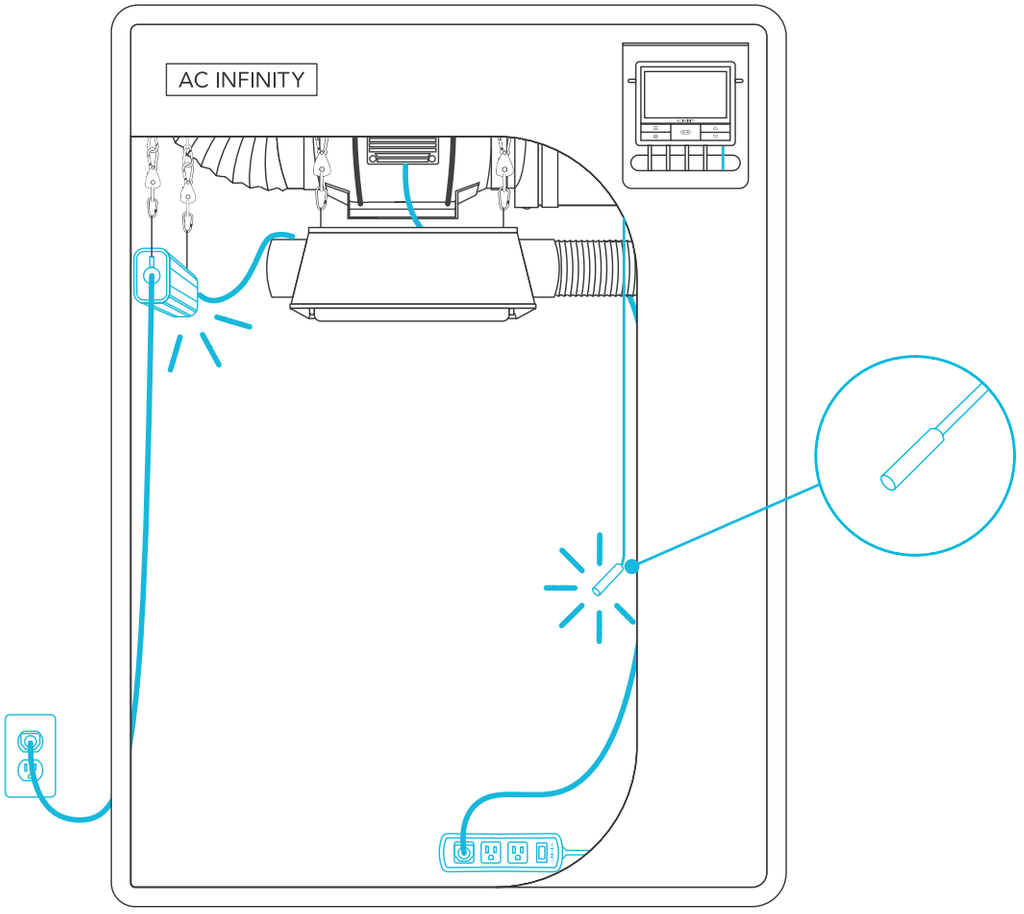
TIP 1

Keep the probe cord far away from your ballast's cords to ensure the controller properly detects climate conditions.

You may also wrap the probe cord and create a cone around the sensor head with aluminum foil tape.

TIP 2

Do NOT plug your grow light and inline fan into the same duplex outlet. Plug your grow light and inline fan into separate power strips and electrical sockets.

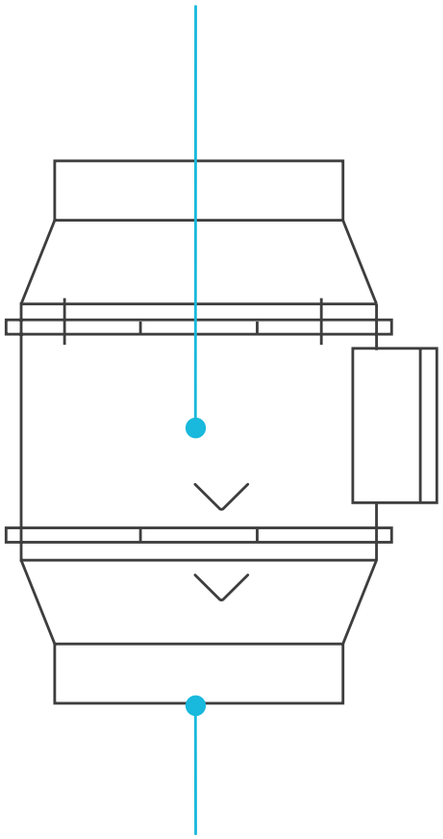


*MH, HPS, CMH, or CHPS

KEY FEATURES

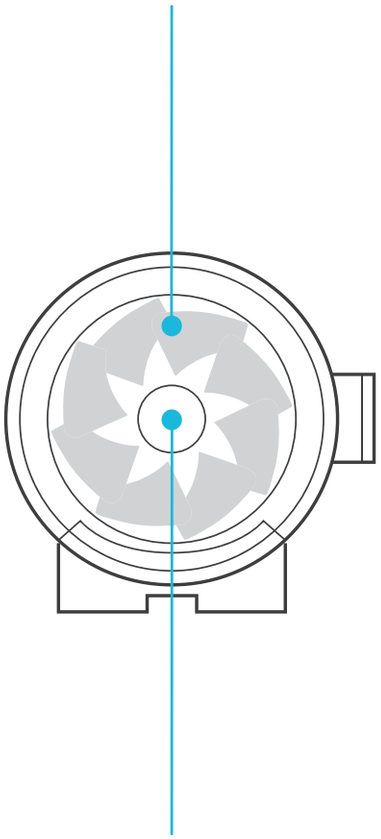
QUIET PWM MOTOR

PWM-controlled motor features precise speed control, reduced rotor noise, and energy-efficient EC voltage.



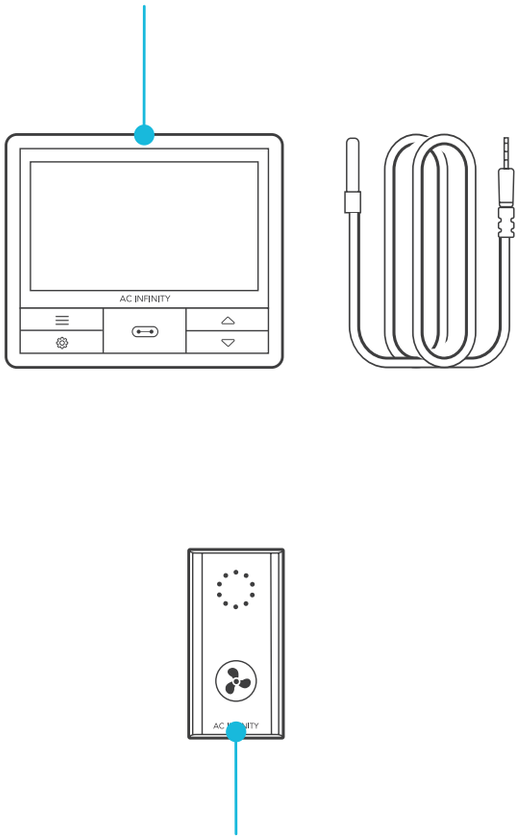
STATOR BLADE FANS

Hydro-mechanical stator blades enable efficient airflow delivery in high static pressure environments.



CONTROLLER 69 PRO

Features automation controls that activate the fan according to temperature, humidity, timer, and schedules.



IP-44 PROTECTION

The inline duct fan is sealed to Ingress Protection 44 standards, rated with high resistance to liquids and dust.

DUAL BALL BEARINGS

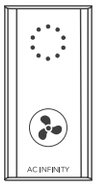
The motor contains ball bearings with an estimated 67,000 hour lifespan. Enables the fan to be mounted in any direction.

SPEED CONTROLLER

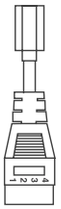
Single button controller with circular readout display that enables fan speed control in ten speeds.

PRODUCT CONTENTS

CLOUDLINE PRO S-Series



SPEED CONTROLLER (x1)



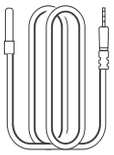
UIS F - 4PIN M ADAPTER (x1)

WOOD SCREWS (WALL MOUNT) (x1)

CONTROLLER PLATE BOLTS (x2)

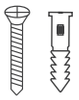
CLOUDLINE PRO T-Series

SMART CONTROLLER (x1)



SENSOR PROBE (x1)

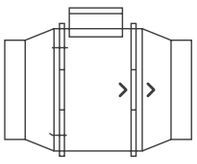
UIS M - 4PIN F ADAPTER (x2)



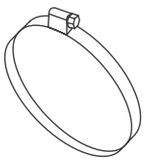
WOOD SCREWS (WALL HANG) (x2)

CONTROLLER PLATE BOLTS (x2)

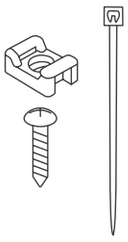
FAN UNIT (Included in both S-Series and T-Series)



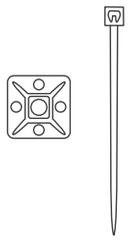
DUCT FAN SYSTEM (x1)



DUCT CLAMP (x2)



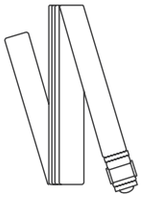
WIRE MOUNT (x6)



PROBE MOUNT (x1)

HOOK AND LOOP TIES (x4)

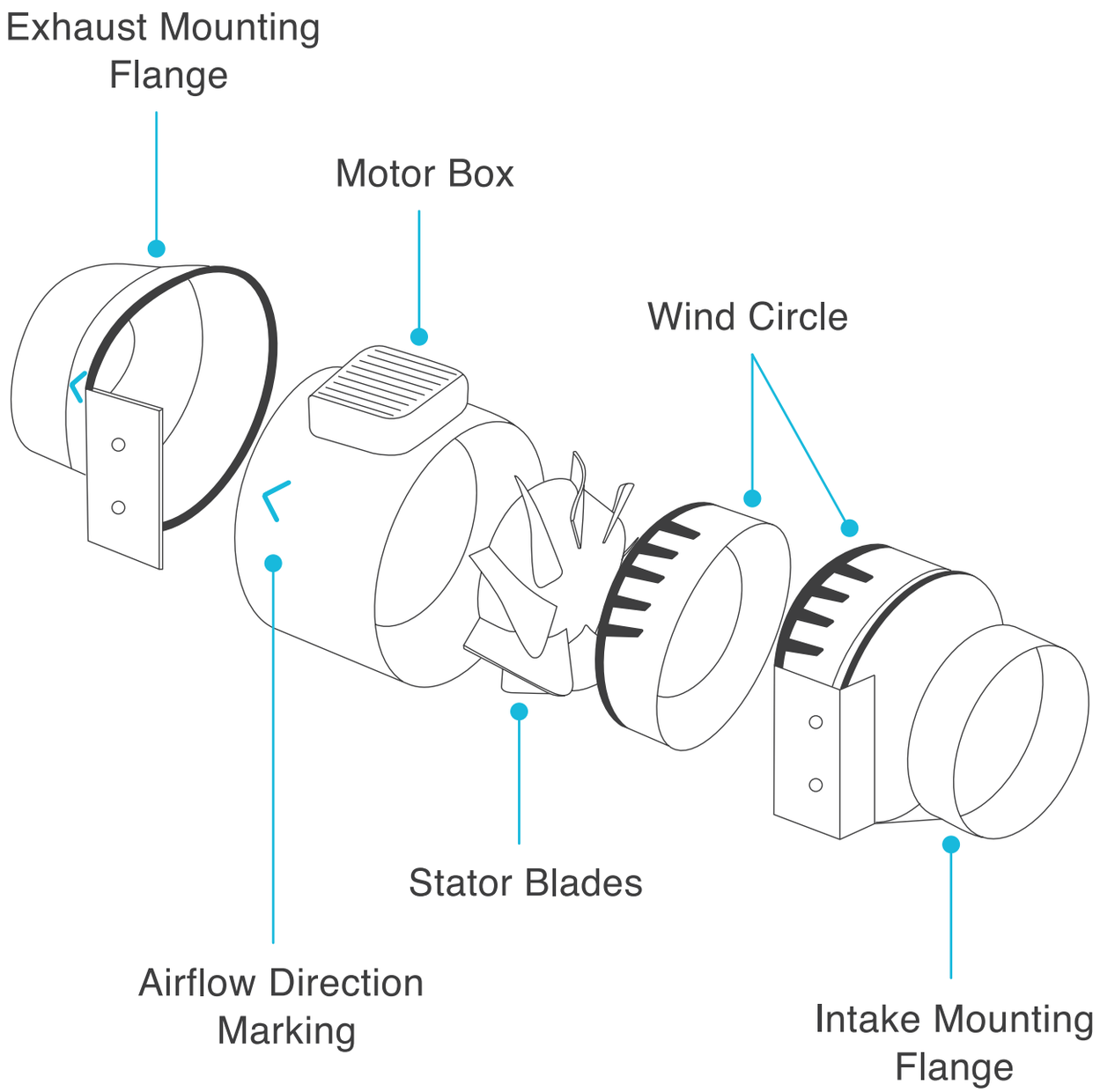
WALL ANCHOR (x4)



HANGING STRAPS (x2)

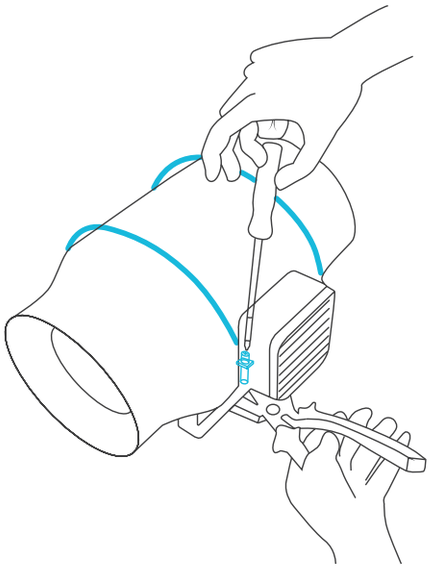
DUCT FAN SCREW SET (x4)

PRODUCT CONTENTS



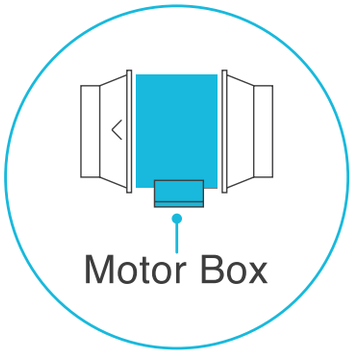
INSTALLATION
MOUNTING

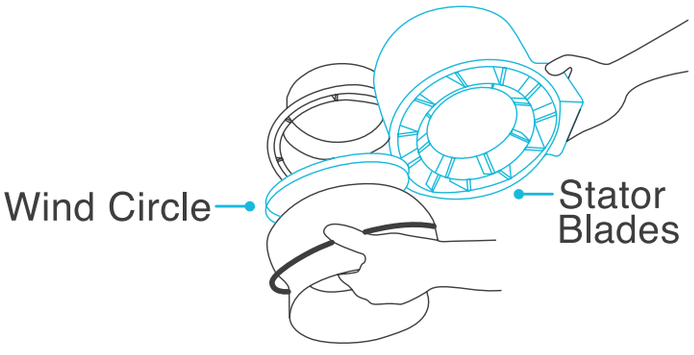
STEP 1
Unscrew and loosen the metal rings using a Phillips screwdriver and pliers.



STEP 2
Remove the motor box from the flange bracket.

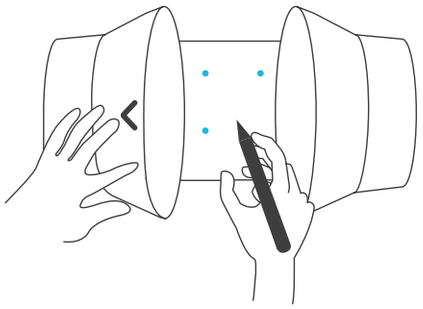
Remove the wind circle between the motor box and the intake flange.



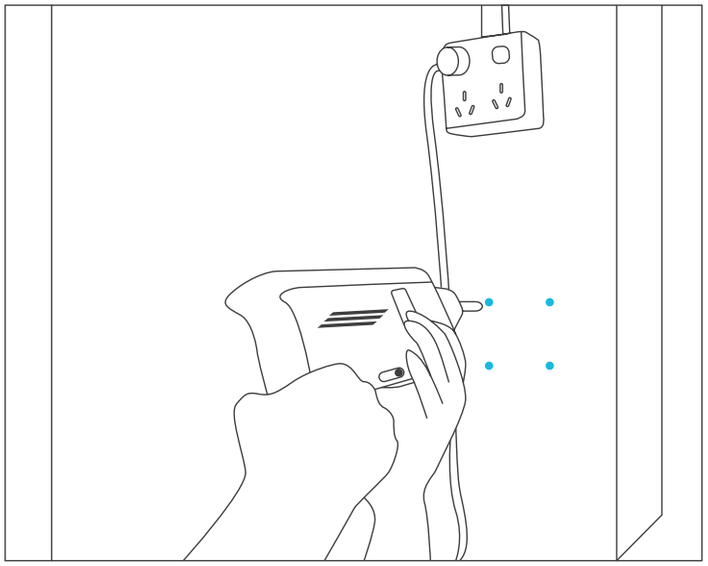


INSTALLATION
MOUNTING

STEP 3
Use the flange bracket to set your desired fan position. Mark the four mounting holes.



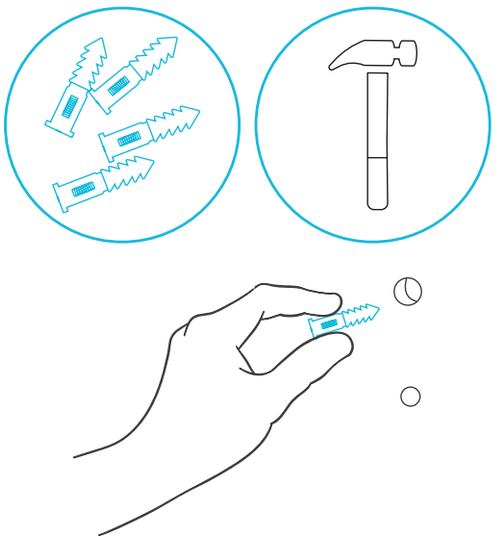
STEP 4
Drill four holes into the marked locations. Make sure your mounting area is structurally sound and free from obstruction.



INSTALLATION
MOUNTING

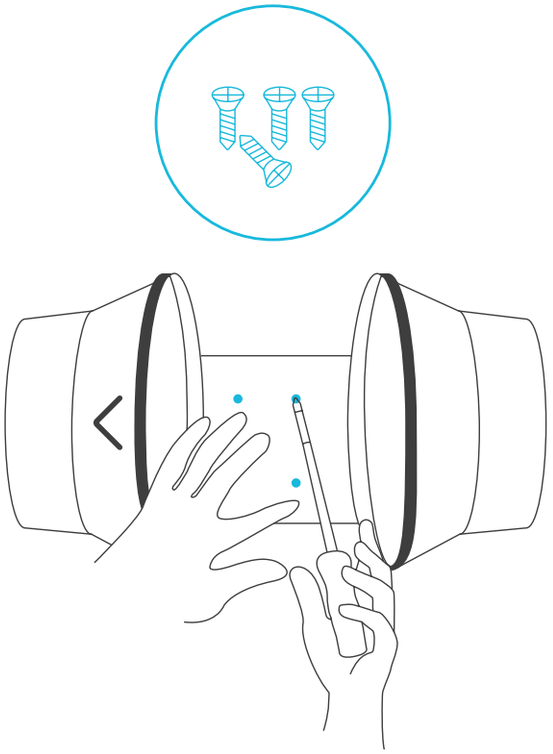
STEP 5
If you are mounting onto anything other than a wood support or stud, insert the included four wall anchors into the drilled mounting holes.

You may need to use a hammer to secure them through the holes.



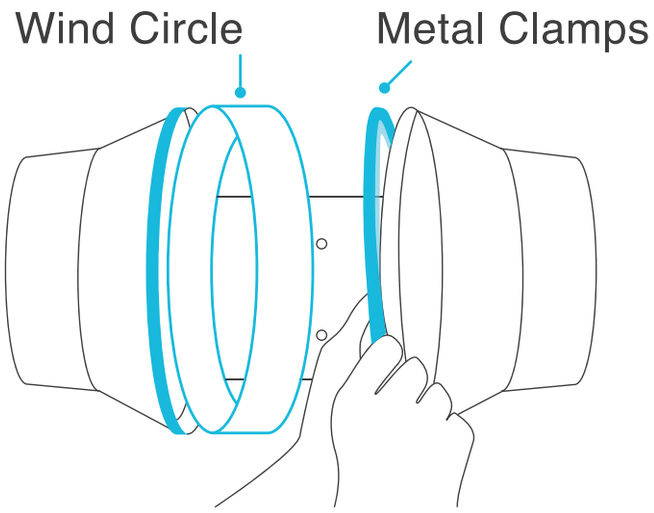
STEP 6
Align the flange bracket's holes with the wall anchors. Screw in four wood screws with a screwdriver or drill to secure the flange bracket.

Make sure its airflow arrow is pointing in your desired direction.



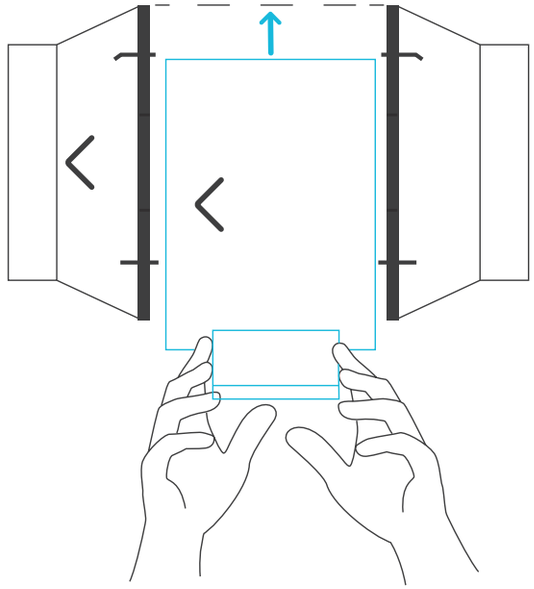
INSTALLATION
MOUNTING

STEP 7
Place the wind circle back into the intake flange and reposition the metal clamps over the flanges if applicable.



STEP 8
Slide the motor box back into the flange bracket, making sure its airflow arrow is pointing in the same direction as the flange bracket's arrow.

Tighten the metal clamps using a Phillips screwdriver and pliers to secure the motor box.

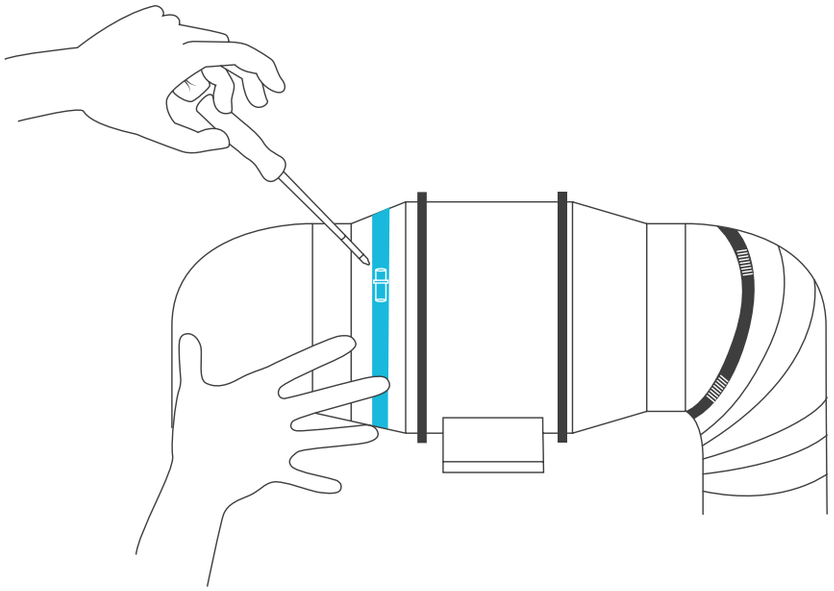


INSTALLATION
MOUNTING

STEP 9

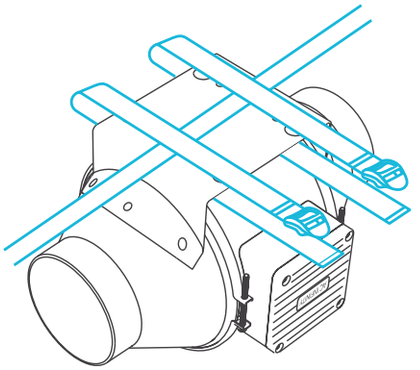
If installing ducting, use the included duct clamps to secure it to either end of the duct fan, making sure there is a tight seal.

Tighten the duct clamps using a flathead screwdriver.

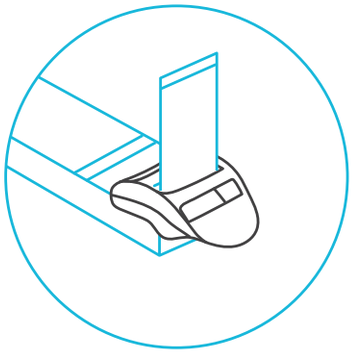


INSTALLATION
HANGING - STRAPS

STEP 1
Loop the strap around the bracket and a pole.



STEP 2
Slip the strap through the inner ladder lock slot from the bottom.

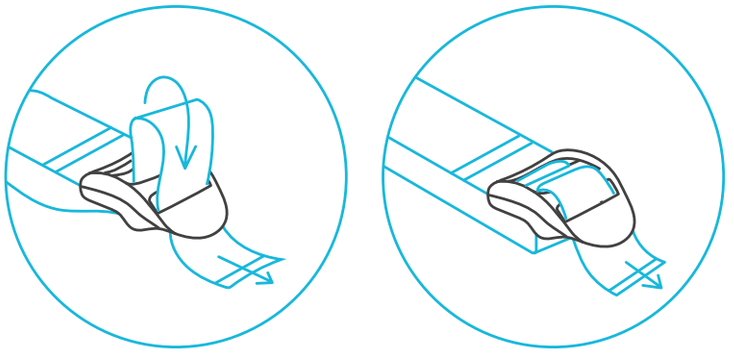


INSTALLATION

HANGING - STRAPS

STEP 3

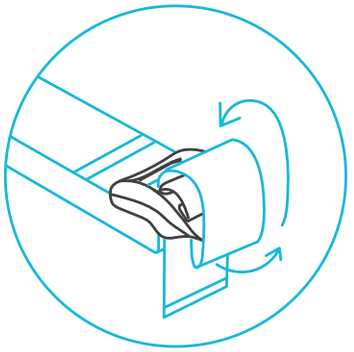
Route the strap into the outer ladder lock slot from the top. Adjust the length of the completed loop as needed.



Adjust to size

STEP 4

Tuck the loose end through the center gap of the ladder lock to secure the loop.



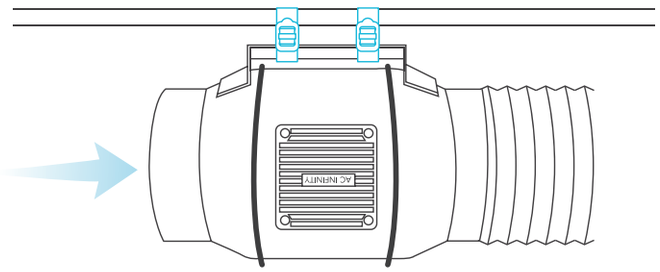
Loop through middle
to lock in place

INSTALLATION
HANGING - STRAPS

STEP 5(a) - Hanging Downward

Let the fan hang by the pole once the straps are secure.

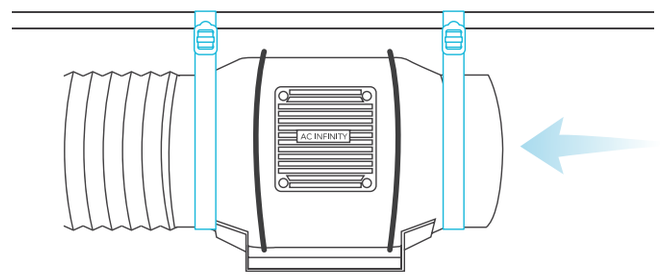
Make sure the fan's airflow arrow is pointing towards your desired direction.



STEP 5(b) - Hanging Upward

To hang the fan right-side up, loop and tighten the straps, as shown in steps 1-4, around the pole.

Hang the fan by the duct flanges to secure it.

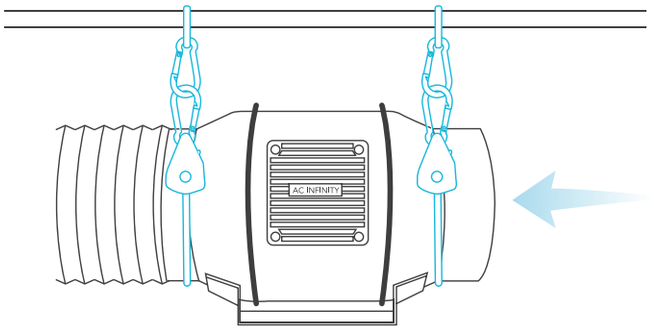


INSTALLATION

HANGING - ROPE CLIPS

HANGING UPWARD

If installing with rope hangers (sold separately), loop the ropes around the flanges and tighten the rope to secure the fan.

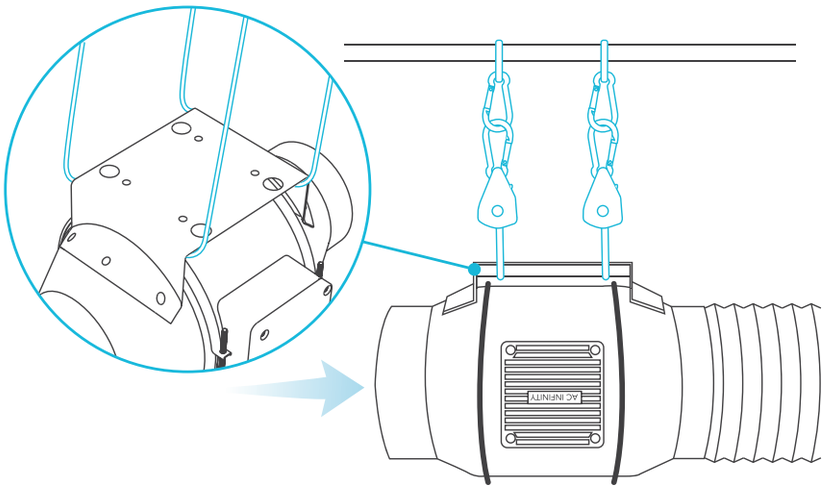


HANGING DOWNWARD

Loop the two rope hangers around a pole and the fan's bracket.

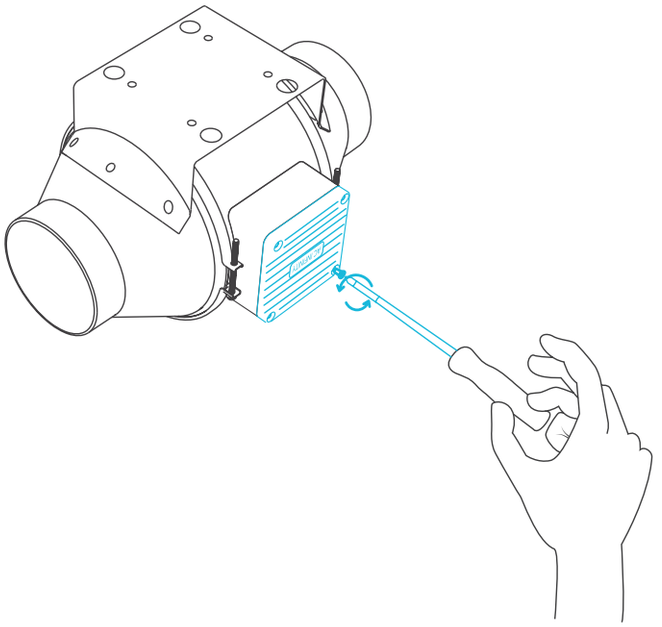
Clip the carabiners onto each other. Shorten the loops as needed.

Make sure the fan's airflow arrow is pointing towards your desired direction.

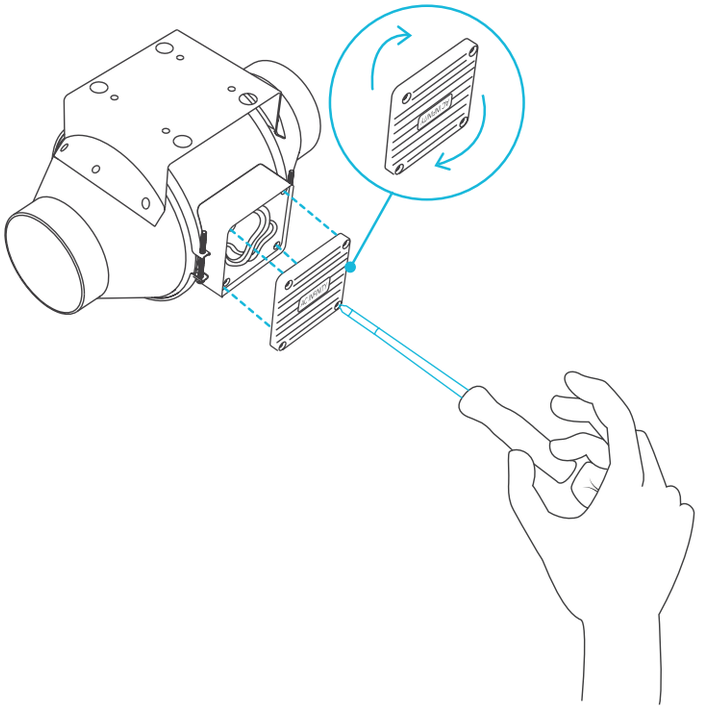


INSTALLATION
MOTOR CAP

STEP 1
Unscrew the motor cap using a screwdriver.



STEP 2
Rotate the motor cap to your desired orientation. Reapply the screws.



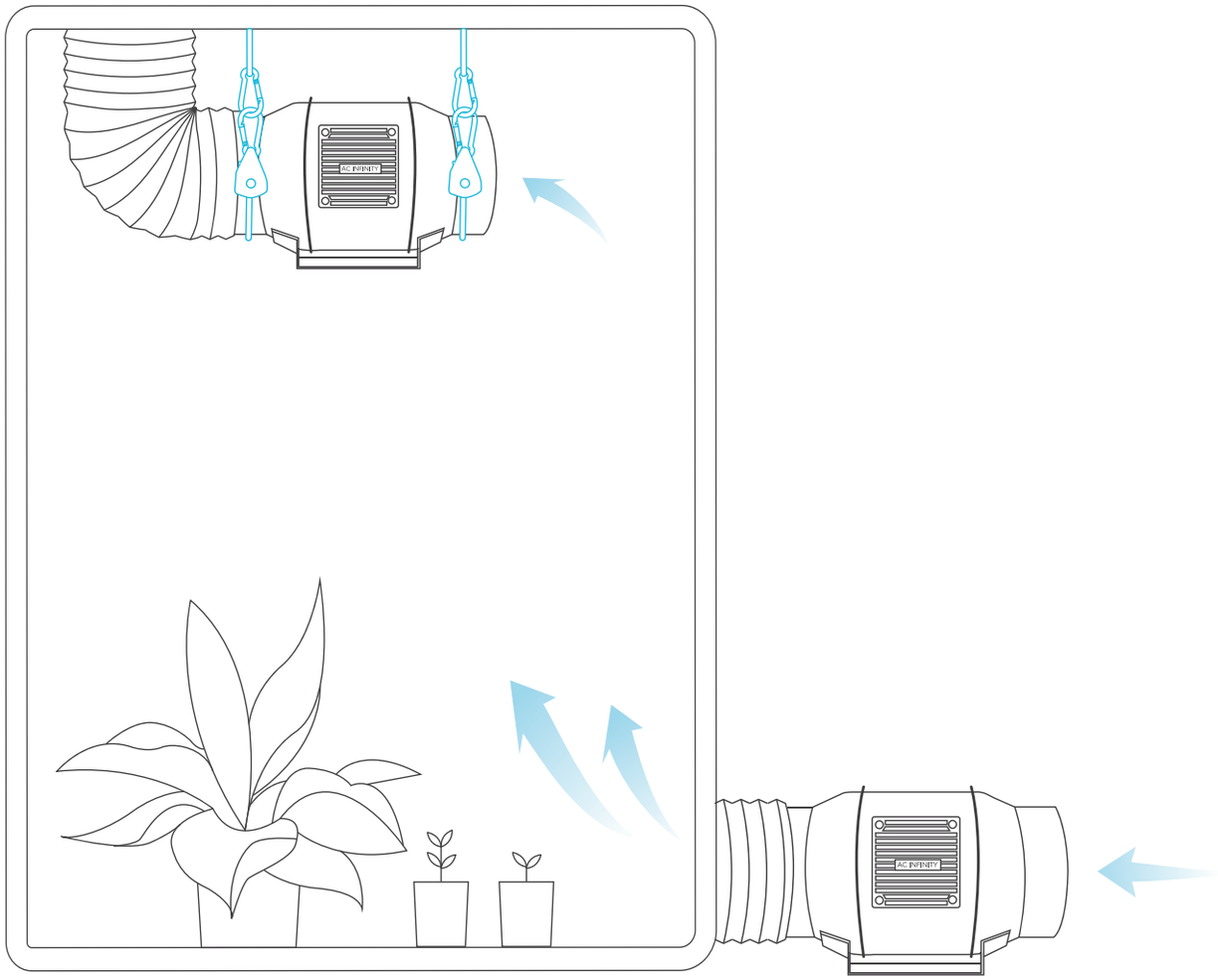
Rotating the motor cap will not void your warranty.

INSTALLATION
CONFIGURATION SETUP

Intake and Exhaust

This fan can be used as either an intake fan or an exhaust fan in grow rooms and larger grow tents. To achieve optimal whole space ventilation, the intake fan or opening - if not using a fan - must be situated at a bottom corner of your grow space. The exhaust fan must be hung (shown below) or mounted at the highest opposite corner possible.

Make sure the intake fan's airflow arrow is pointing towards your grow space and the exhaust fan's arrow pointing away from your grow space.

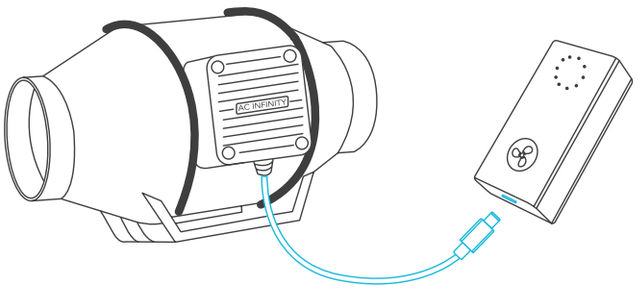


POWERING AND SETUP

S-SERIES

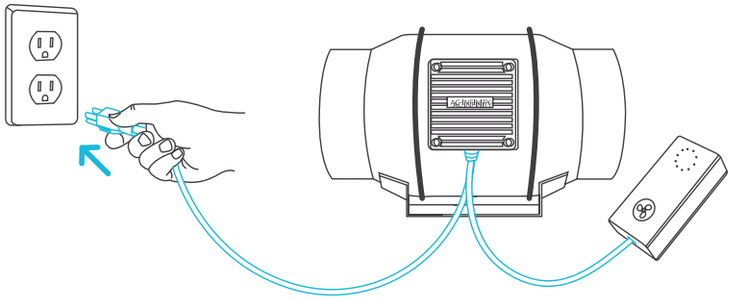
STEP 1

Plug the duct fan’s UIS connector into the speed controller’s port at the bottom.



STEP 2

Plug the fan's power cord into a wall outlet. The controller will receive power from the fan to operate. (EC Motor fans only)

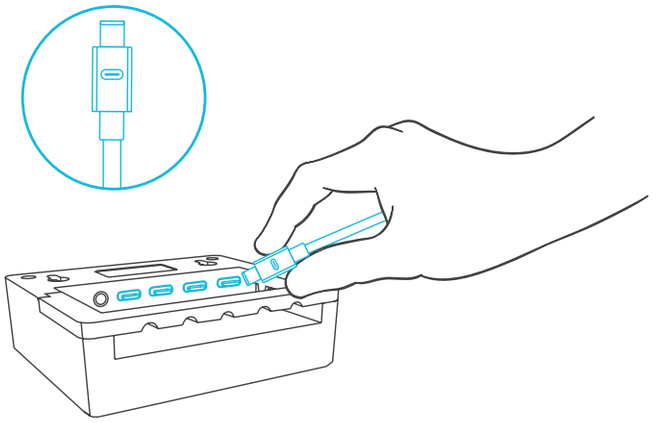


POWERING AND SETUP

T-SERIES

STEP 1

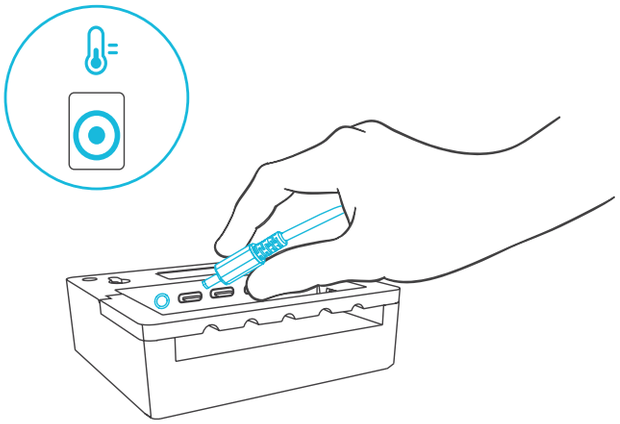
Plug your device’s UIS connector into one of the controller's ports.



STEP 2

Plug the sensor probe into the controller’s 3.5mm jack. Set the probe near your plants in your grow tent for the most accurate reading.

Keep the probe cord away from your HID* grow light ballast's power cord to ensure the controller properly detects climate conditions.



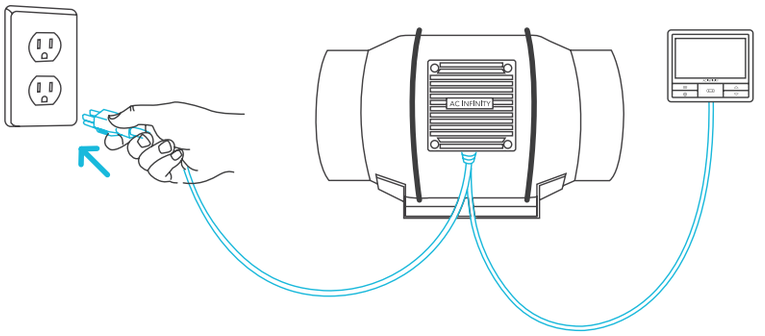
*MH, HPS, CMH, or CHPS

POWERING AND SETUP

T-SERIES

STEP 3

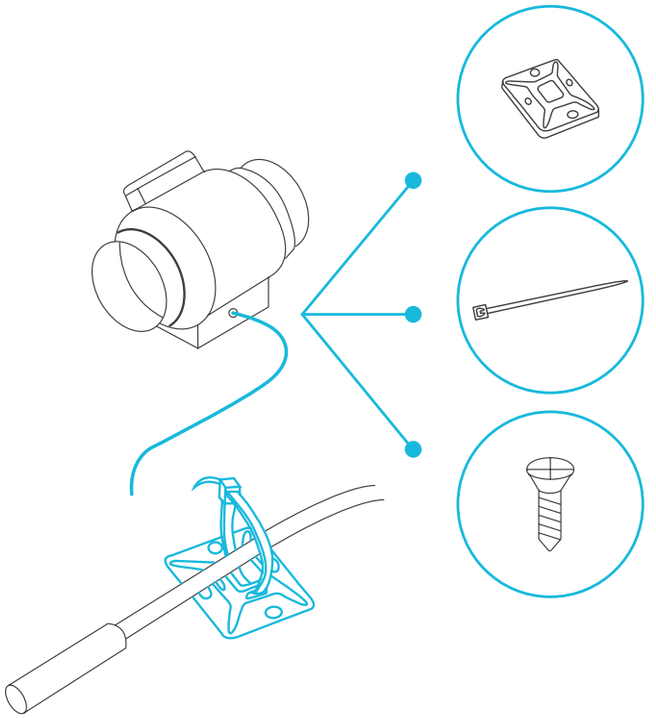
Plug your device's power cord into an AC power outlet to power it and the controller.



STEP 4

You may use the included tie mounts, wood screws, and wire ties to manage the cords.

Secure the tie mounts onto a surface using the wood screws. Loop the wire ties around the cords into the tie mounts.

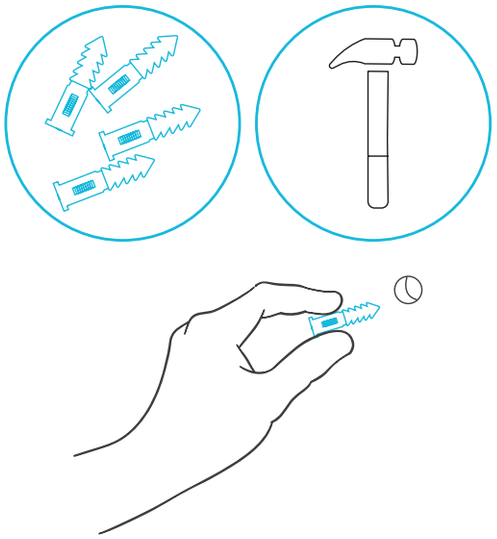


CONTROLLER MOUNTING

S-SERIES

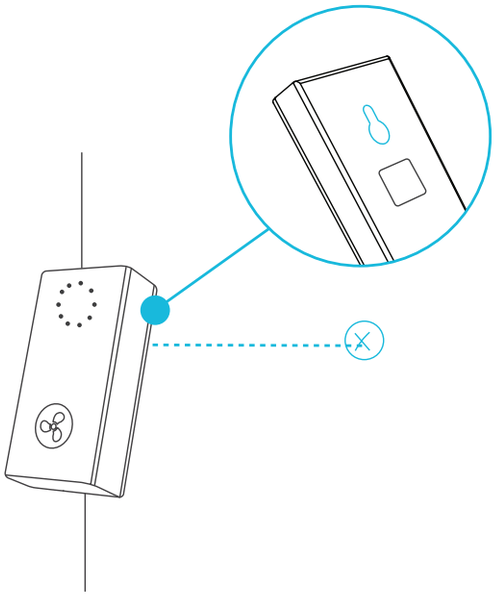
STEP 1 — WALL MOUNTING

Locate a spot free of obstruction and secure the anchor into your wall. Twist the wood screw into the anchors.



STEP 2 — WALL MOUNTING

Hang the controller by the screw using the hole on the backside.



CONTROLLER MOUNTING

S-SERIES

MAGNET MOUNTING

Mount the controller on a steel surface using the magnet located behind the label.

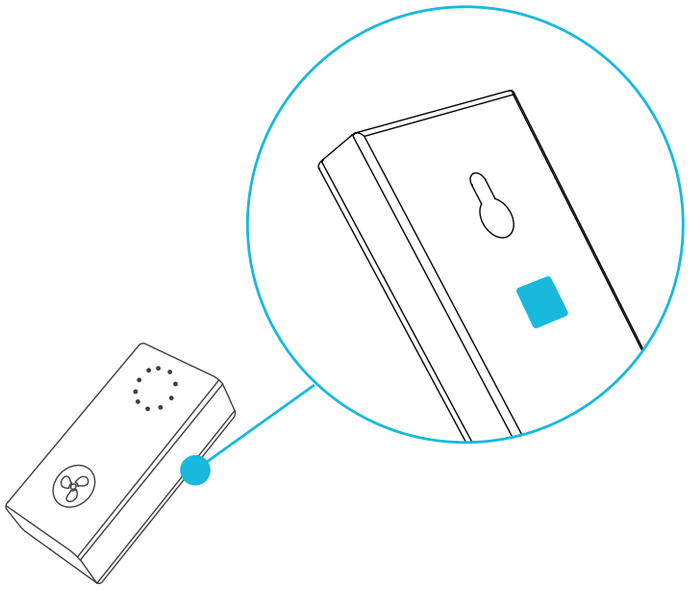
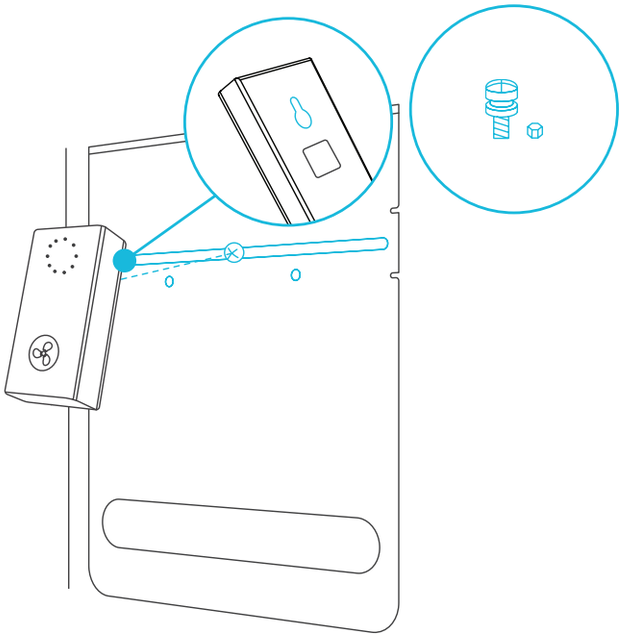


PLATE MOUNTING*

Screw the controller plate bolts into the slot or mounting holes at the upper half of the plate.

Hang the controller by the bolts using the hole on the backside.



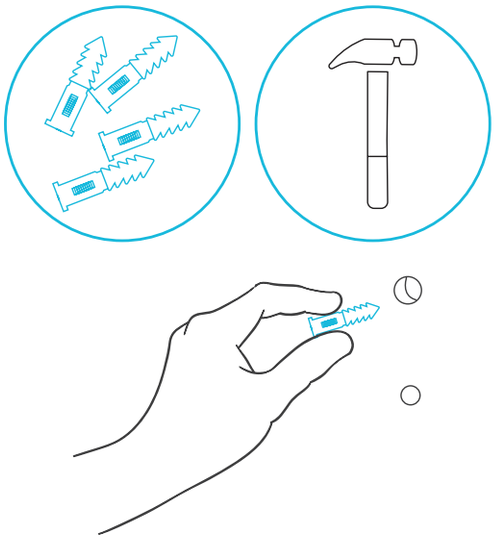
*Controller plate not included

CONTROLLER MOUNTING

T-SERIES

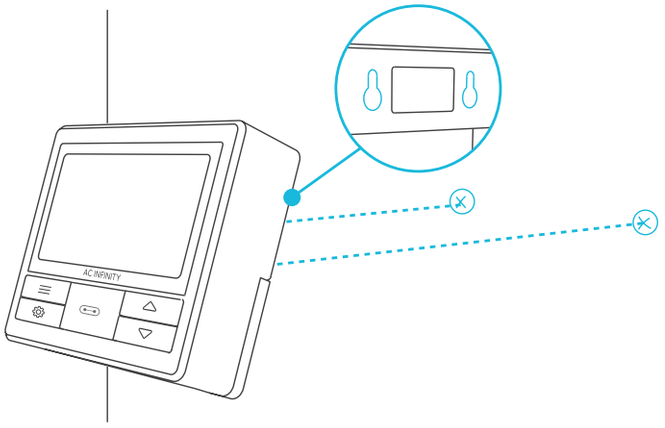
STEP 1 — WALL MOUNTING

Locate a spot free of obstruction and secure the anchors into your wall. Twist the wood screws into the anchors.



STEP 2 — WALL MOUNTING

Hang the controller by the screws using the holes on the backside.



CONTROLLER MOUNTING

T-SERIES

MAGNET MOUNTING

You may also mount the controller onto a steel surface using the magnet located behind the label.

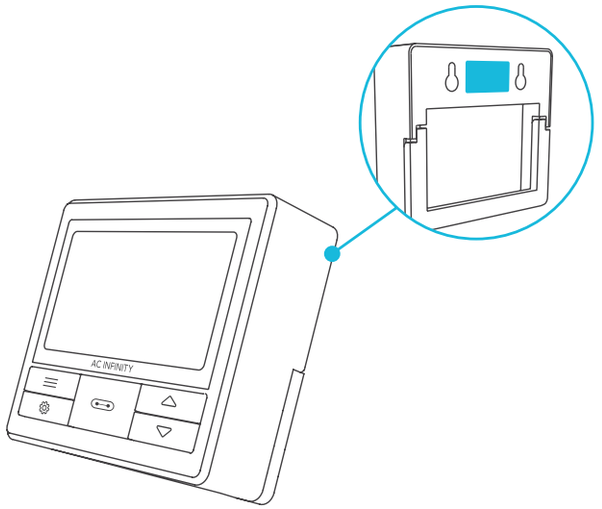
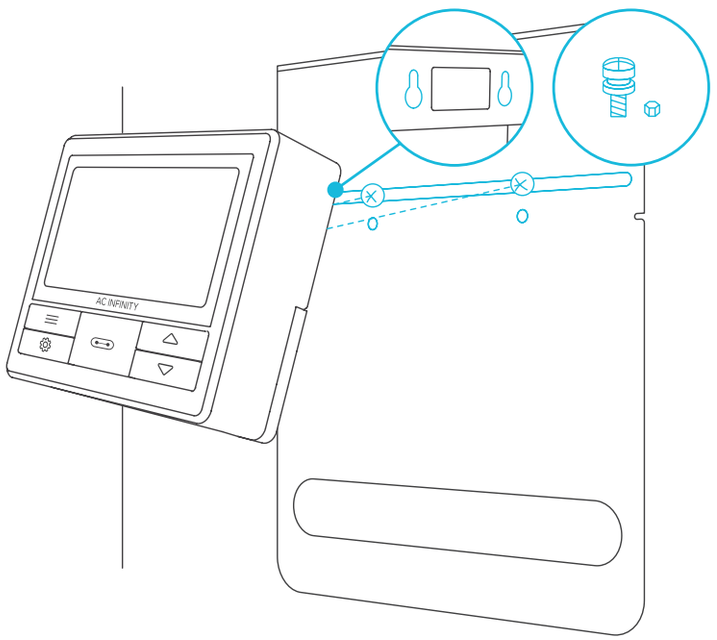


PLATE MOUNTING*

Screw the bolts into the slot or mounting holes at the upper half of the plate.

Hang the controller by the bolts using the holes on the backside.



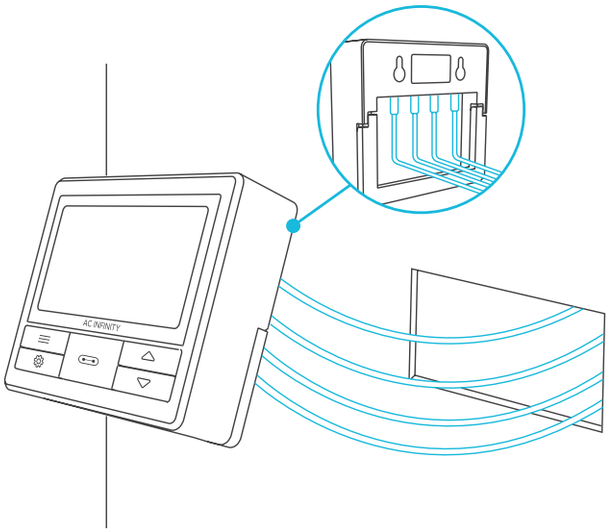
*Controller plate not included

CONTROLLER MOUNTING

T-SERIES

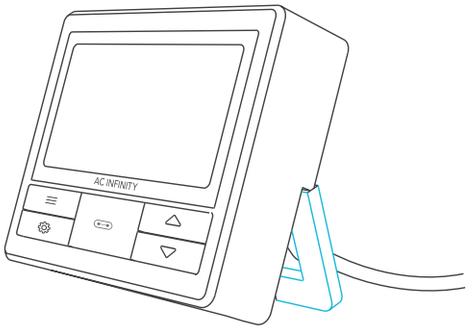
CORD ARRANGEMENT

Cords may be routed into or outside of the kickstand grooves, and through a cut hole behind the controller.



KICKSTANDING

Open the stand behind the controller to set it tilted on your desktop.

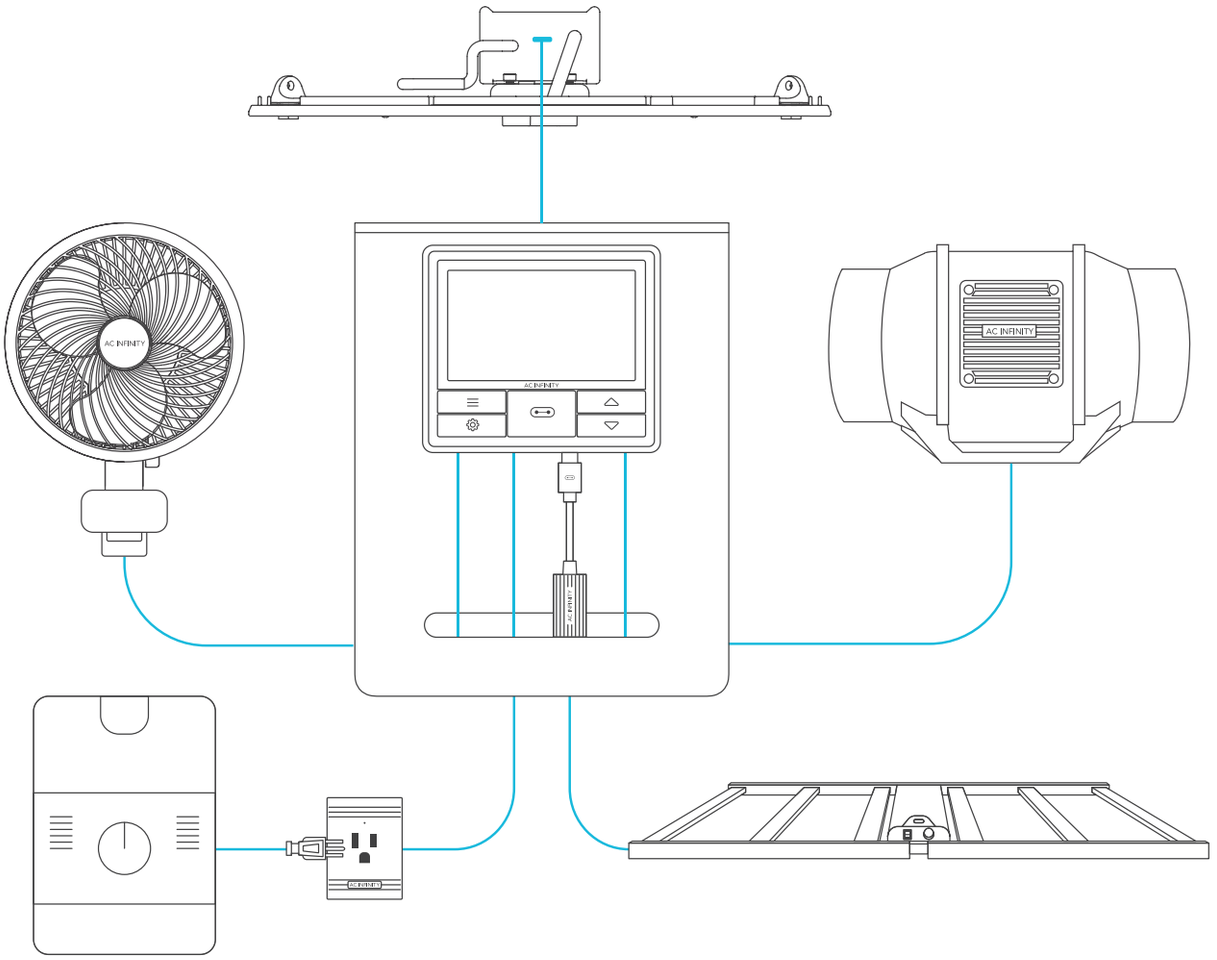


UIS™ PLATFORM

The UIS™ platform enables you to connect a single central controller with several grow devices simultaneously. By creating this fully integrated system, you can power and program all your devices together or separately for optimized grow tent management.

Your grow system can be regulated using your controller hub or remotely on the AC Infinity app (paired with compatible controllers), where you will have access to automation programming and climate data.

You can also connect your favorite grow light and outlet device to integrate them into the UIS platform using our RJ11/12 adapter and control plug module.

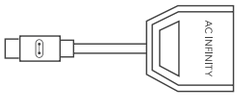


Grow devices will be sold separately and may still be in development at the time of your purchase of this product.

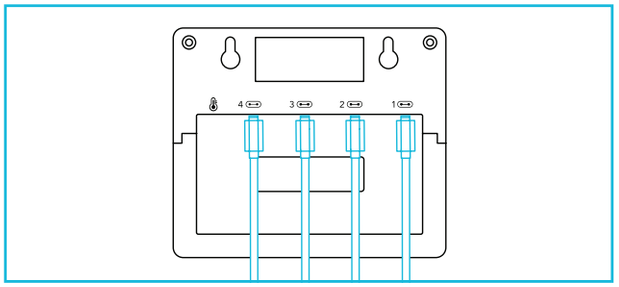
UIS™ PLATFORM

MOLEX ADAPTER

Use the included Molex adapter to plug inline fans with 4-pin Molex connectors into this controller. Plug your fan's Molex connector into the adapter. Then plug the adapter into the controller.

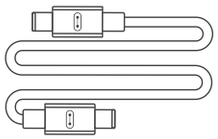


UIS M - 4PIN F
ADAPTER

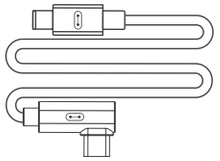


EXTENSION CABLE*

Use male-to-male UIS extension cords to connect devices with female UIS ports at an extended range from your controller.



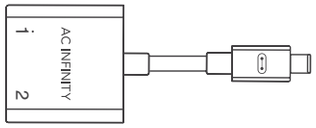
UIS M - M
CORD



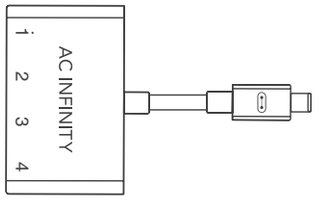
UIS M - M
CLIP FAN CORD

EXPANSION DONGLE*

The expansion dongle will allow you to connect 2 or 4 devices with a single port and can support additional dongles to create more expansion ports (up to 64 units supported with the use of 20 dongles). Intended for exclusive use with AC Infinity controllers built with UIS ports.



UIS M - M
2 PORT DONGLE

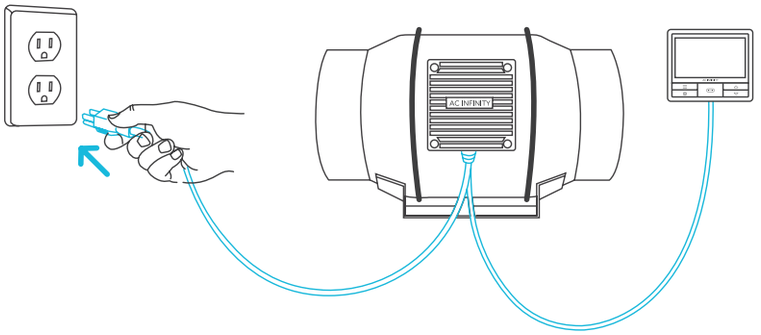


UIS M - M
4 PORT DONGLE

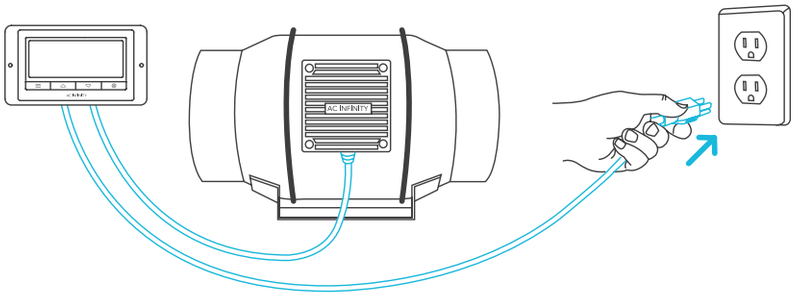
*Not included

COMPATIBILITY

Older generation models that previously used DC motors now contain EC motors in updated builds. Whereas fans that use DC motors connect to its controller to receive power, fans that use EC motors connect to electrical sockets to receive power. Neither the fan nor the controller is backwards compatible with the same product of an older generation that use DC motors and older controllers.



EC Motor - Compatible

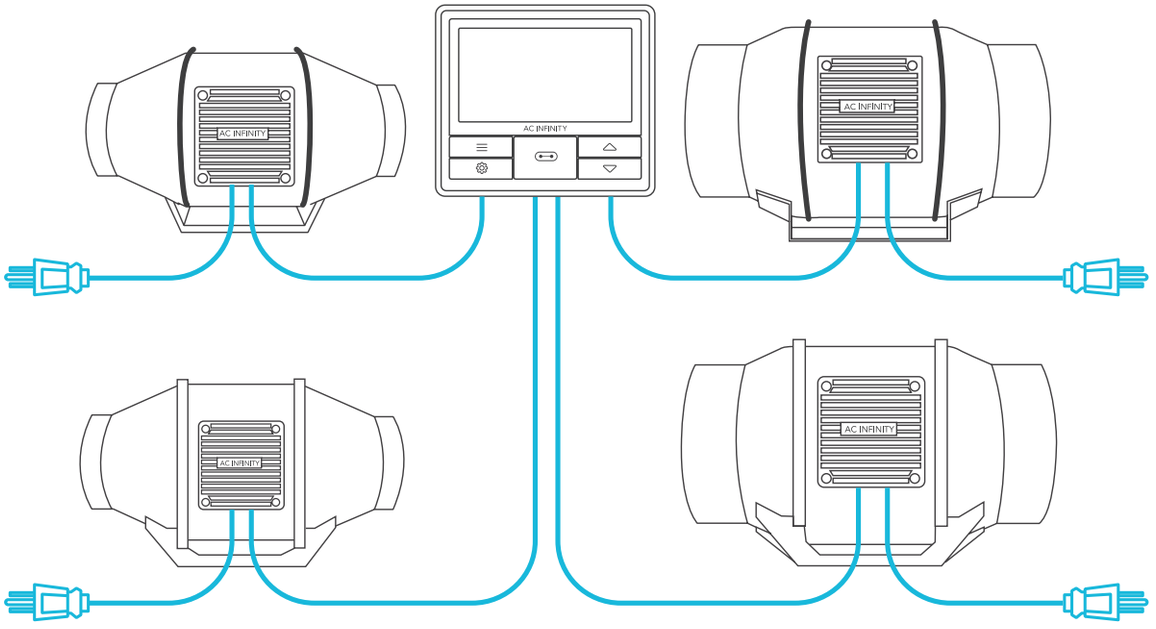


DC - NOT Compatible

ADDING MORE FANS

The CONTROLLER 69 PRO is built with four ports that enable you to power and control multiple fans at the same time. Compatible with inline fans with EC motors only. See image below for a sample configuration.

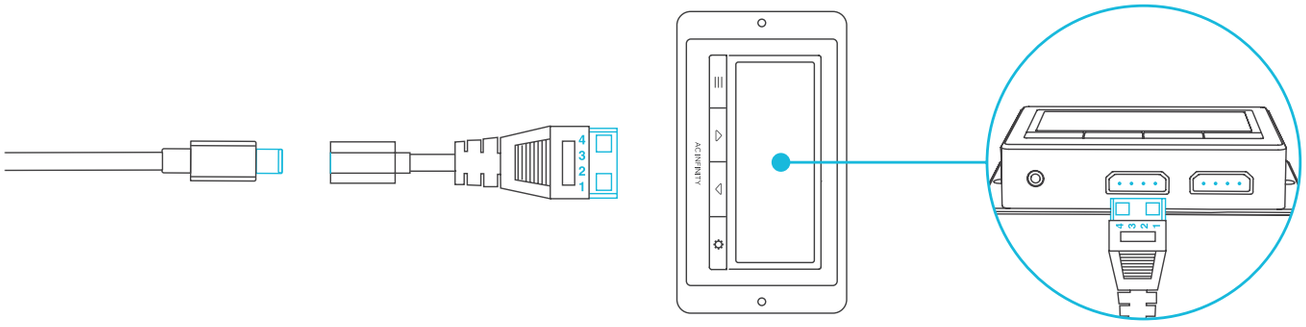
Multi-Fan Connection



INLINE FAN 4" **INLINE FAN 6"**

MOLEX ADADPTER

Use the included UIS to 4-pin Molex adapter to connect your fan to the Universal Controller (not included). Plug your fan's UIS connector into the adapter. Then plug the adapter into your controller.



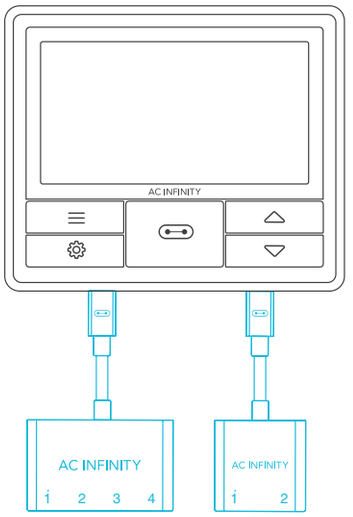
ADDING MORE DEVICES

USING THE DONGLE

Each controller port can support mix-and-matched devices regardless of their size.

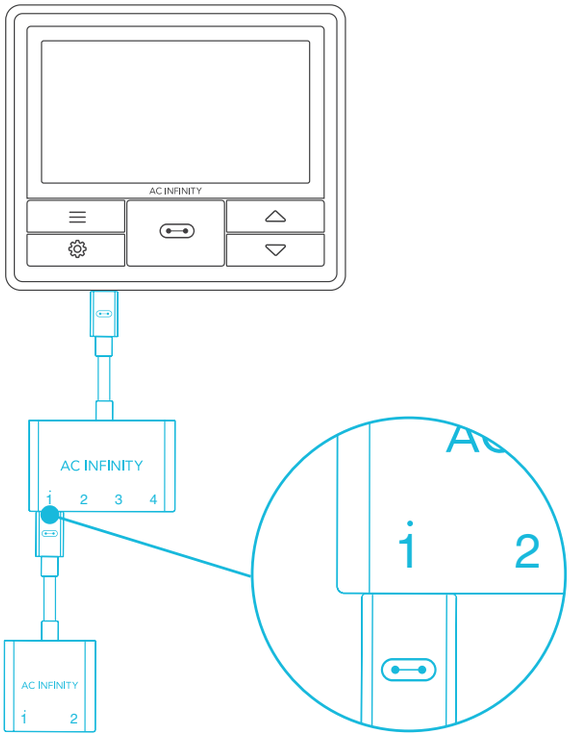
When using a 2-port or 4-port dongle, plug your first device into Port 1 for the controller to recognize as the primary device.

All other devices plugged into the dongle will follow programming intended for the device plugged into Port 1.



EXTENDING THE CHAIN

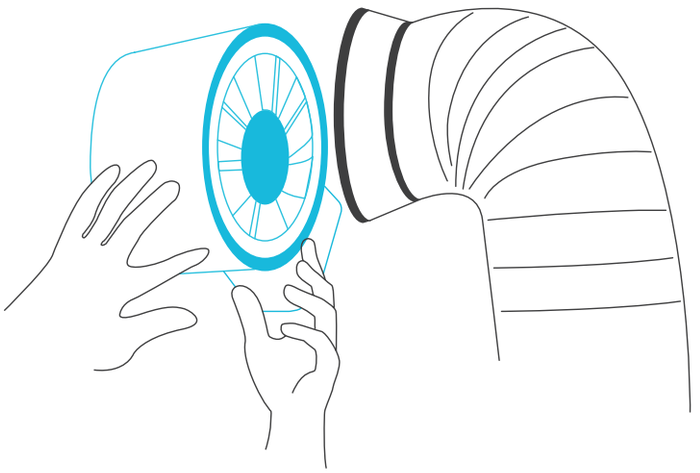
When plugging additional dongles into Port 1, all devices plugged into this chain must be of the same type (ex. grow lights of any size) regardless of the length of the dongle chain.



CLEANING

STEP 1

Remove the motor box from the mounting flange. Refer to steps 1-2 on page 11 to learn how to remove the motor box.



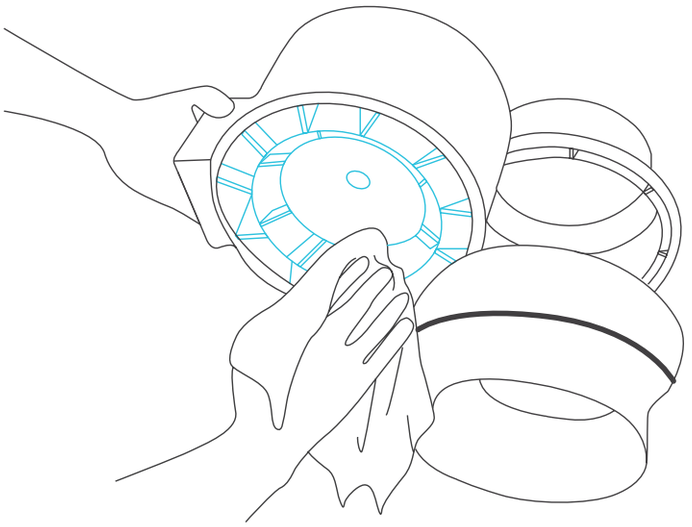
STEP 2

Use a damp cloth to clear the impeller and fan blades of any dust and debris. Remove the wind circle in between the motor box and input flange.

CLEANING

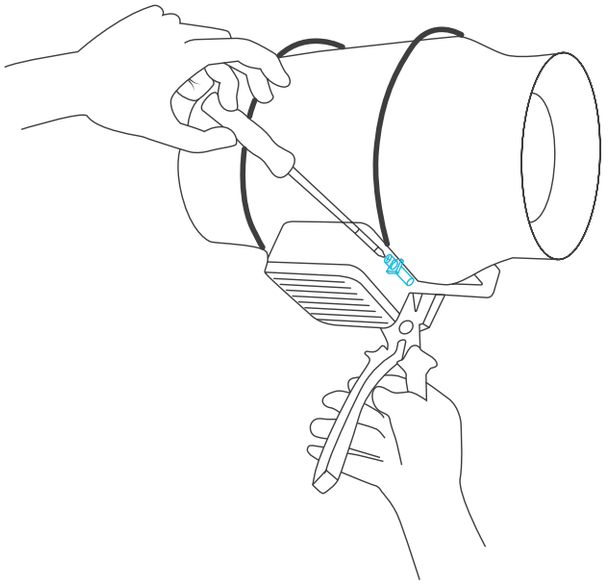
STEP 3

Clear the stator blades of any dust and debris on the opposite end. Clean the area inside the output and exhaust flanges.



STEP 4

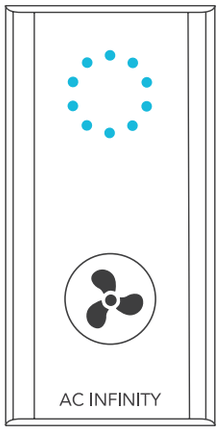
Secure the motor box onto the mounting flanges. Refer to steps 7-9 on page 14-15 to learn how to secure the motor box.

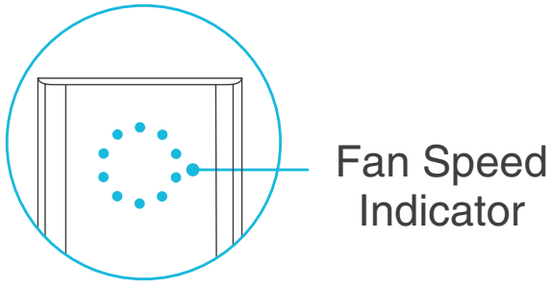


PROGRAMMING
S-SERIES

FAN SPEED ADJUSTING

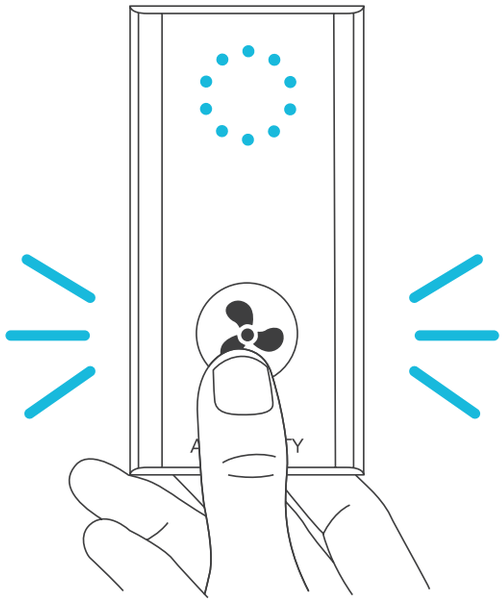
The controller features a single button that controls the fan speed from 0-10. Pressing the speed button increases the fan speed in one unit increments. Pressing the button at the 10 setting will set the fan speed back to 0.





POWERING ON/OFF

Holding the speed button for 4 seconds will turn the fan OFF. Pressing it again from OFF will turn the fan ON at its last speed setting.



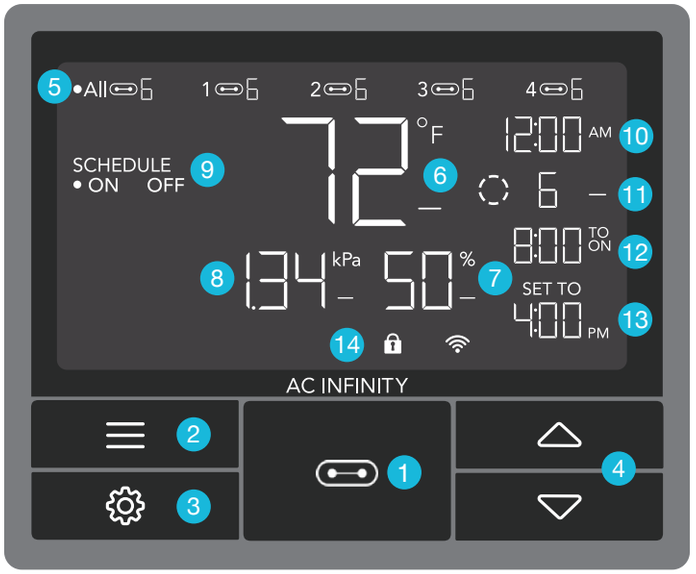
PROGRAMMING
T-SERIES

1. PORT BUTTON
Cycles through up to four connected devices. Each device is programmed independently, or together when navigating to ALL.

2. MODE BUTTON
Cycles through the controller's modes: OFF, ON, AUTO (4 triggers), VPD (2 triggers), TIMER TO ON, TIMER TO OFF, CYCLE (ON and OFF), and SCHEDULE (ON and OFF).

3. SETTING BUTTON
Cycles through the controller's settings: DISPLAY, CLOCK, °F / °C, CALIB. T° / H% / kPa, TRANS. T° / H% / kPa, BUFF. T° / H% / kPa, and LEAF OFFSET.

4. UP/DOWN BUTTONS
Adjusts the value of your current mode. The up button increases and down button decreases the setting. Hold both to reset values to OFF/Default.



5. PORTS
Displays all connected devices as well as their current level. Digits are displayed by the UIS symbol when a device is plugged into its corresponding port.

6. PROBE TEMPERATURE
Displays the current temperature that the probe is detecting. Shows "--" if no probe is plugged in. Includes a trend indicator that signals a rise, stability, or fall in temperature within the last hour.

7. PROBE HUMIDITY
Displays the current humidity that the probe is measuring. Shows "--" if no probe is plugged in. Includes a trend indicator that signals a rise, stability, or fall in humidity within the last hour.

8. PROBE VPD
Displays the current VPD that the probe is detecting (in kPa). Shows "--" if no probe is plugged in. Includes a trend indicator that signals a rise, stability, or fall in VPD within the last hour.

9. CONTROLLER MODE
Displays the controller's current mode. Pressing the mode button cycles through the available modes.

10. CURRENT TIME
Displays the current time. The internal battery sustains the clock so it does not default to 00:00 if power is cut off.

11. CURRENT LEVEL
Displays the connected devices' current setting. Includes a trend indicator that signals if the setting is currently rising, falling, or holding steady.

12. COUNTDOWN
Displays the countdown of the TIMER TO ON, TIMER TO OFF, CYCLE, or SCHEDULE mode activates or deactivates the devices. TO ON shows the amount of time left before the devices turn on. TO OFF shows the amount of time left before the device turn off.

13. USER SETTING
Displays the value of your current mode. Use the up or down buttons to adjust the value.

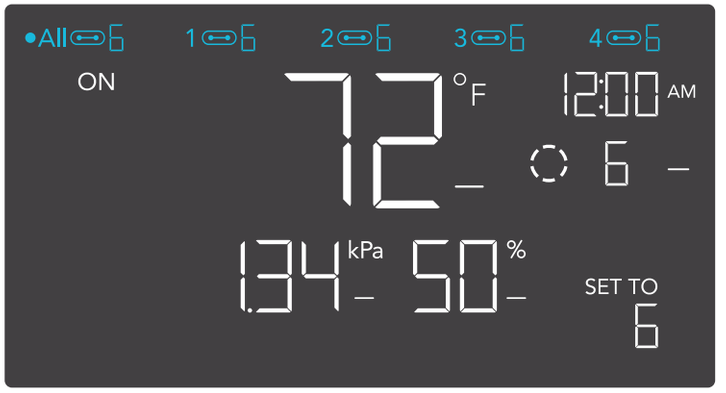
14. ALERT ICONS
Displays alerts and statuses of the controller, including the controller lock, CLIMATE alert, and TIMER alert.

PROGRAMMING
T-SERIES

PORTS
Pressing the port button will cycle through the controller's available ports: ALL, 1, 2, 3, and 4. Dot indicates the current device. No digit is displayed if a device is not plugged into the corresponding port.

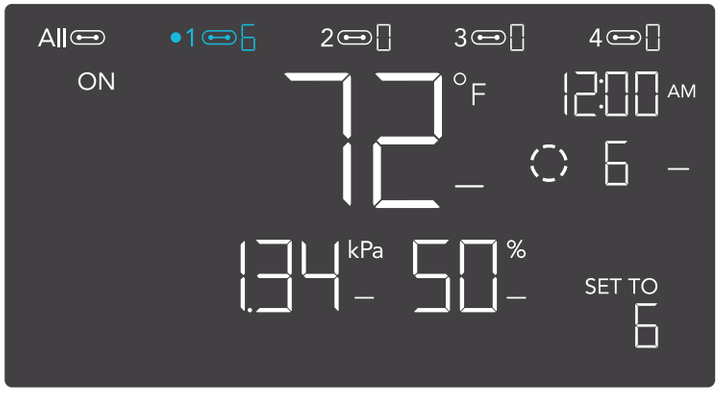
ALL PORTS
Navigate to the ALL port to set simultaneous programming for all connected devices.

Programming set in this port mode applies to all connected devices, but will not be active if you navigate to other ports. Re-entering the ALL port will resume its programming.



INDIVIDUAL PORT
Navigate to a numbered port with a connected device to set individual programming.

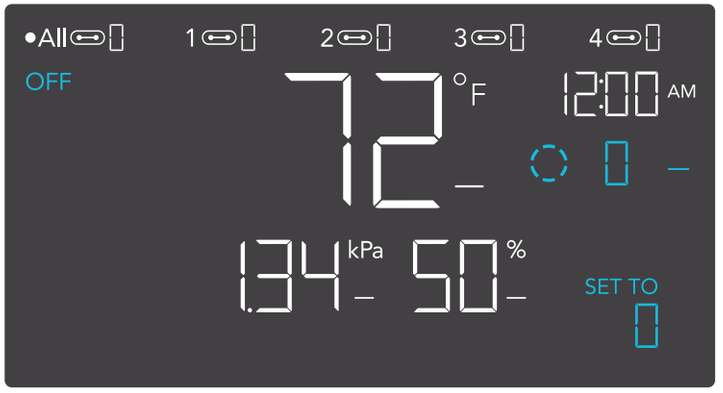
Programming will run in the background even while you navigate to other numbered ports.



PROGRAMMING
T-SERIES

CONTROLLER MODES
Pressing the mode button will cycle through the controller's available programming modes: OFF, ON, AUTO (4 triggers), VPD (2 triggers), TIMER TO ON, TIMER TO OFF, CYCLE (On and Off), and SCHEDULE (On and Off).

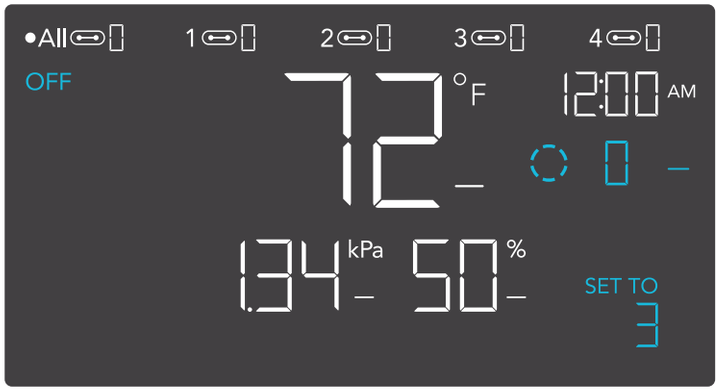
OFF MODE
Your devices will not run while in this mode. The OFF Mode setting also serves as the minimum level the other modes will run at while triggered OFF.



MINIMUM LEVEL
Your devices will run at the level set in OFF Mode, as the minimum level, when triggered to turn OFF. These other modes include the AUTO Mode, CYCLE Mode, TIMER TO ON Mode, TIMER TO OFF Mode, and SCHEDULE Mode.

They will run continuously until triggered ON, at which point they will run at the level set in ON Mode.

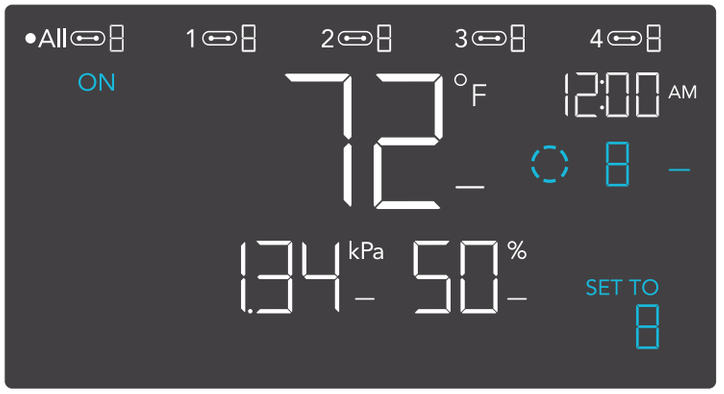
If you want your devices to turn off completely when they're triggered to be OFF, set the OFF Mode level to zero.



*Example shown

PROGRAMMING
T-SERIES

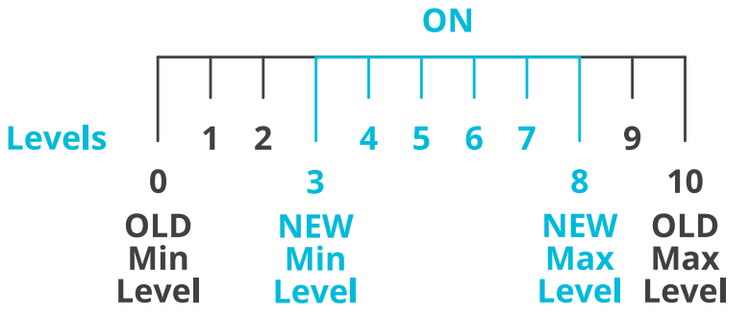
ON MODE
Your devices will actively run at the level set here, regardless of the probe's reading. The ON Mode setting also serves as the maximum level the other modes will run at.



*Example shown

MAXIMUM LEVEL
Your devices will run at the level set in ON Mode, as the maximum level, when triggered ON, as well as in the AUTO Mode, CYCLE Mode, TIMER TO ON Mode, TIMER TO OFF Mode, and SCHEDULE Mode.

Do not set the ON Mode figure to zero or your device will turn off when it's triggered ON in all modes.

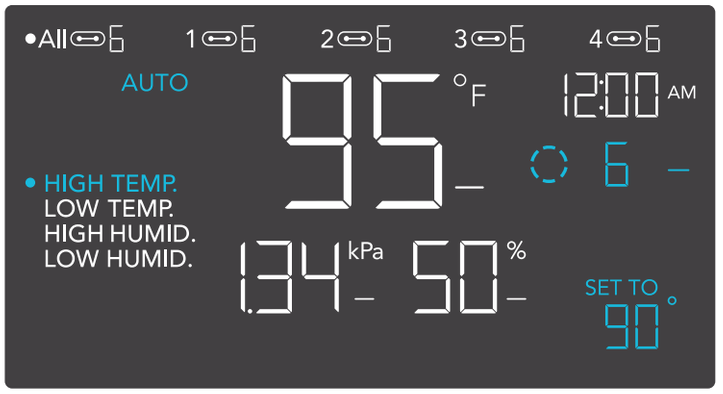


PROGRAMMING
T-SERIES

AUTO MODE (HIGH TEMPERATURE TRIGGER)

Pressing the up or down button sets the high temperature trigger. The devices will activate if the probe's reading meets or exceeds this threshold.

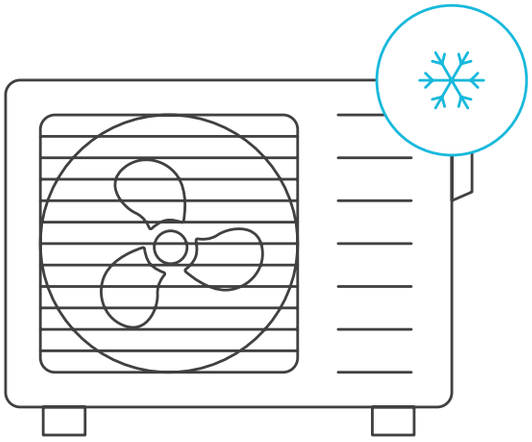
Once triggered, the devices will gradually ramp up to the level set in ON mode. If the probe's reading falls below this trigger point, the devices will gradually slow down to a stop or at the level set in OFF mode.

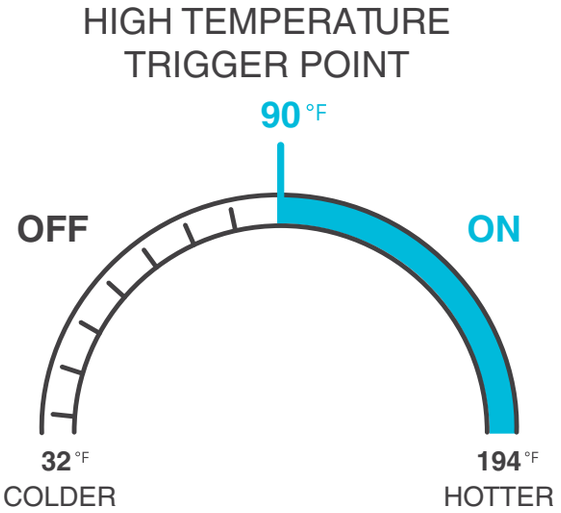


You may set this trigger below the low temperature trigger to create a specific range in which the devices are active.

This is typically used with devices like air conditioners and cooling fans to help lower the temperature when it gets too hot. For example, if you set a high temperature trigger of 90°F, then your device will activate when the temperature reaches 90°F or higher, and turn off when it falls below 90°F. Products shown here may still be in development.

Any of the four trigger points can activate while you are in AUTO Mode, even if you are viewing another trigger point. Set a trigger point to OFF if not in use, by holding down the up and down button. If there is a level set in OFF Mode other than zero the devices will run at that level when triggered to turn off.



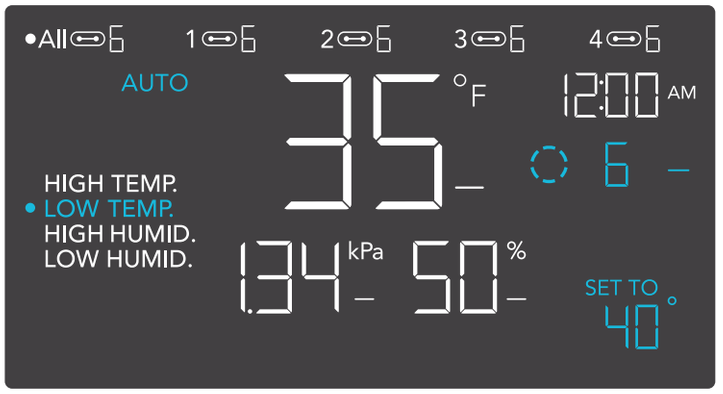


PROGRAMMING
T-SERIES

AUTO MODE (LOW TEMPERATURE TRIGGER)

Pressing the up or down button sets the low temperature trigger. The devices will activate if the probe's reading meets or falls below this threshold.

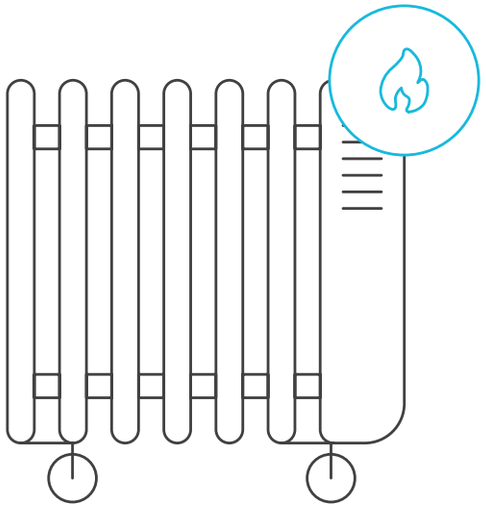
Once triggered, the devices will gradually ramp up to the level set in ON mode. If the probe's reading rises above this trigger point, the devices will gradually slow down to a stop or at the level set in OFF mode.

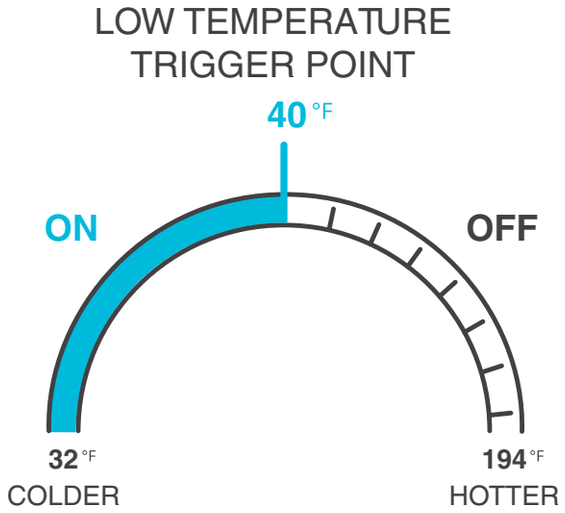


You may set this trigger above the high temperature trigger to create a specific range in which the devices are active.

This is typically used with devices like heaters and seedling mats to help raise the temperature when it gets too cold. For example, if you set a low temperature trigger of 40°F, then your device will activate when the temperature falls to 40°F or lower, and turn off when it rises above 40°F. Products shown here may still be in development.

Any of the four trigger points can activate while you are in AUTO Mode, even if you are viewing another trigger point. Set a trigger point to OFF if not in use, by holding down the up and down button. If there is a level set in OFF Mode other than zero the devices will run at that level when triggered to turn off.



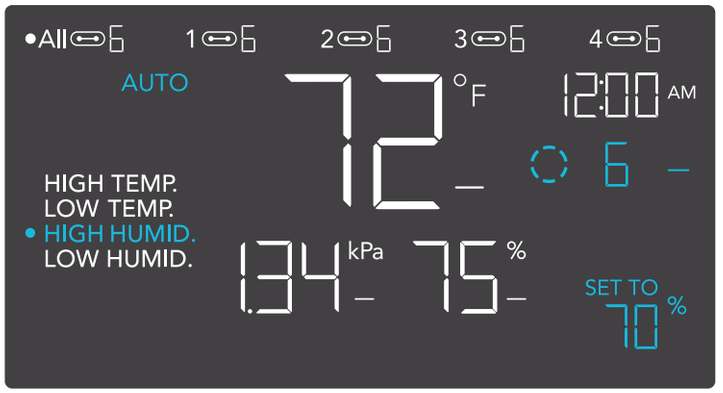


PROGRAMMING
T-SERIES

AUTO MODE (HIGH HUMIDITY TRIGGER)

Pressing the up or down button sets the high humidity trigger. The devices will activate if the probe's reading meets or exceeds this threshold.

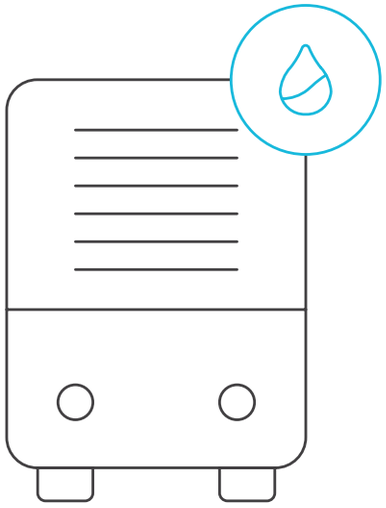
Once triggered, the devices will gradually ramp up to the level set in ON mode. If the probe's reading falls below this trigger point, the devices will gradually slow down to a stop or at the level set in OFF mode.

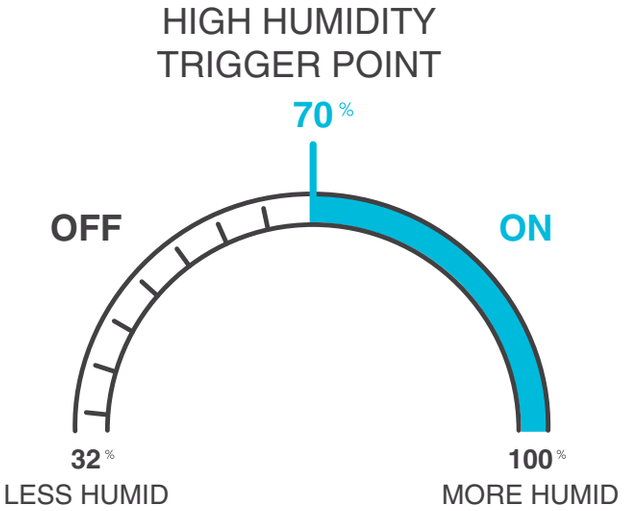


You may set this trigger below the low humidity trigger to create a specific range in which the devices are active.

This is typically used with devices like dehumidifiers to help lower the humidity when it gets too humid. For example, if you set a high humidity trigger of 70%, then your device will activate when the humidity rises to 70% or higher, and turn off when it falls below 70%. Products shown here may still be in development.

Any of the four trigger points can activate while you are in AUTO Mode, even if you are viewing another trigger point. Set a trigger point to OFF if not in use, by holding down the up and down button. If there is a level set in OFF Mode other than zero the devices will run at that level when triggered to turn off.

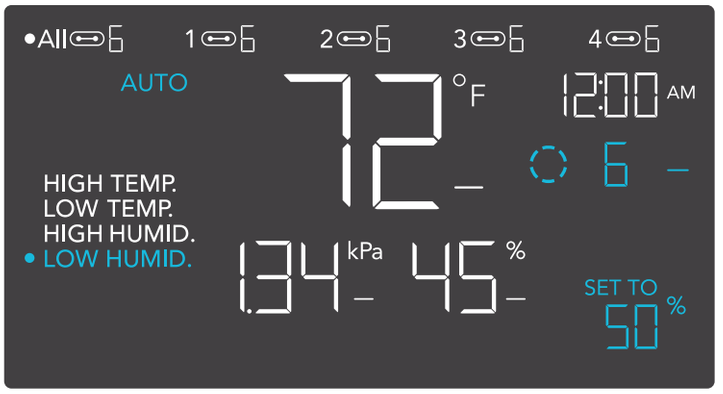




PROGRAMMING
T-SERIES

AUTO MODE (LOW HUMIDITY TRIGGER)

Pressing the up or down button sets the low humidity trigger. The devices will activate if the probe's reading meets or falls below this threshold.

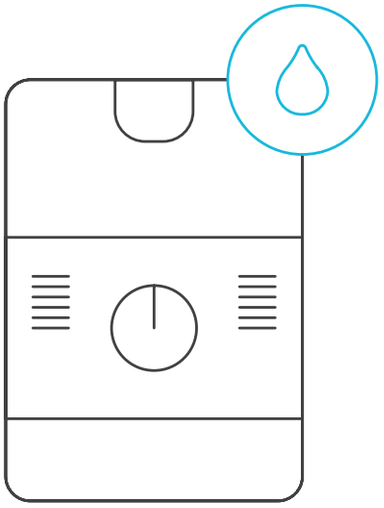


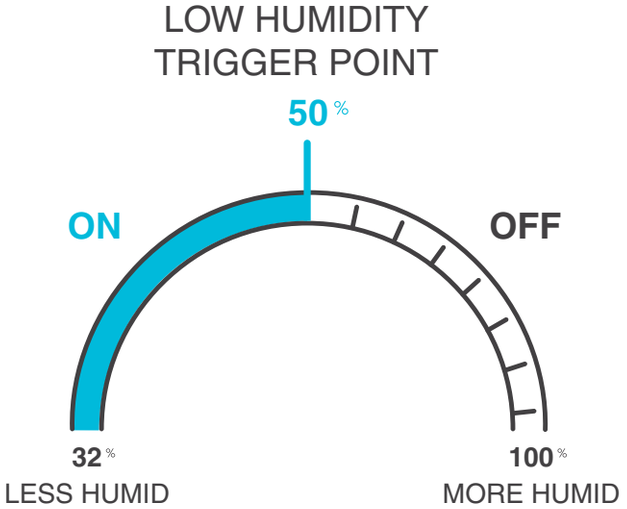
Once triggered, the devices will gradually ramp up to the level set in ON mode. If the probe's reading rises above this trigger point, the devices will gradually slow down to a stop or at the level set in OFF Mode.

You may set this trigger above the high humidity trigger to create a range in which the devices are active.

This is typically used with devices like humidifiers to help raise the humidity when it gets too dry. For example, if you set a low humidity trigger of 50%, then your device will activate when the humidity falls to 50% or lower, and turn off when it rises above 50%. Products shown here may still be in development.

Any of the four trigger points can activate while you are in AUTO Mode, even if you are viewing another trigger point. Set a trigger point to OFF if not in use, by holding down the up and down button. If there is a level set in OFF Mode other than zero the devices will run at that level when triggered to turn off.





PROGRAMMING
T-SERIES

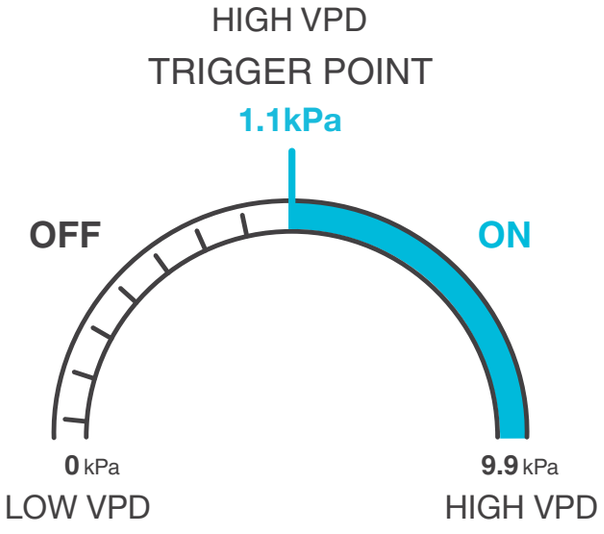
VPD MODE (HIGH VPD TRIGGER)

Pressing the up or down button sets the high VPD trigger. The devices will activate if the probe's reading meets or exceeds this threshold.

Once triggered, the devices will gradually ramp up to the level set in ON mode. If the probe's reading falls below this trigger point, the devices will gradually slow down to a stop or at the level set in OFF mode.

You may set this trigger below the low VPD trigger to create a specific range in which the devices are active.

Either of the two trigger points can activate while you are in VPD Mode, even if you are viewing another trigger point. Set a trigger point to OFF if not in use, by holding down the up and down button. If there is a level set in OFF Mode other than zero the devices will run at that level when triggered to turn off.



PROGRAMMING
T-SERIES

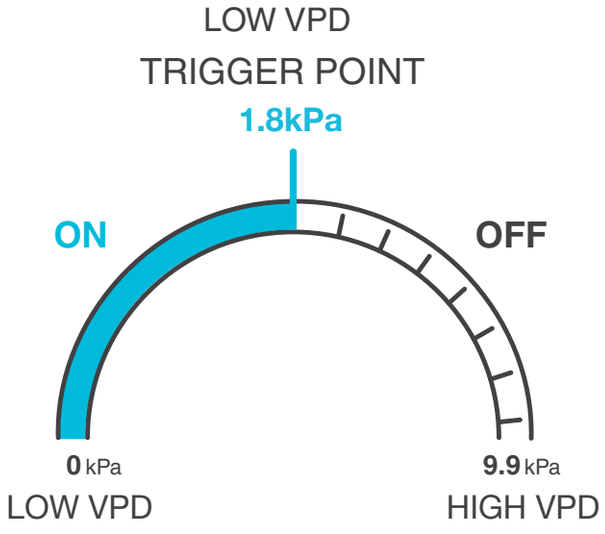
VPD MODE (LOW VPD TRIGGER)

Pressing the up or down button sets the low VPD trigger. The devices will activate if the probe's reading meets or falls below this threshold.

Once triggered, the devices will gradually ramp up to the level set in ON mode. If the probe's reading falls below this trigger point, the devices will gradually slow down to a stop or at the level set in OFF mode.

You may set this trigger below the low VPD trigger to create a specific range in which the devices are active.

Either of the two trigger points can activate while you are in VPD Mode, even if you are viewing another trigger point. Set a trigger point to OFF if not in use, by holding down the up and down button. If there is a level set in OFF Mode other than zero the devices will run at that level when triggered to turn off.

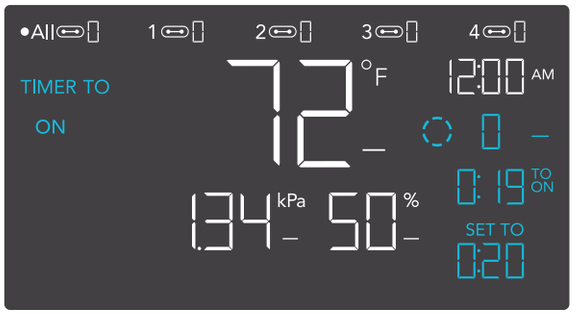


PROGRAMMING
T-SERIES

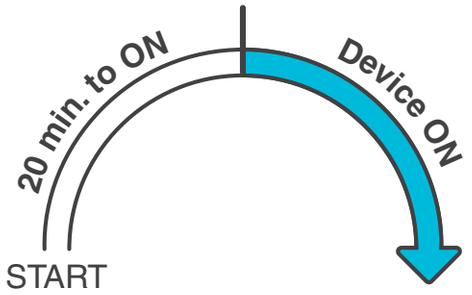
TIMER TO ON MODE

Pressing the up or down button sets a countdown time. During the countdown, your device will be set to OFF. Once the timer ends, your device will trigger to turn on. If there is a level set in OFF Mode, the devices will run at that level during the countdown and when triggered to turn off.

The countdown will begin if no buttons are pressed for 5 seconds. The time left on the countdown is shown on the lower right corner of the display above the setting. Leaving the timer mode while the countdown is running will pause it until you return to this mode.



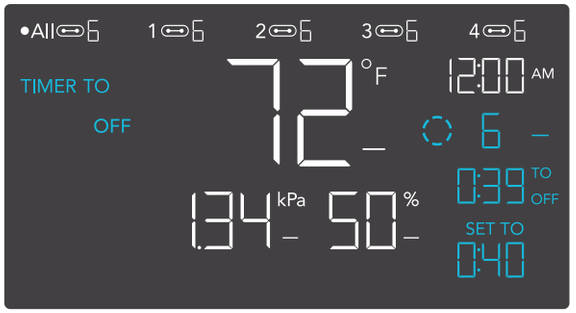
TIMER TO ON
(COUNTDOWN END POINT)



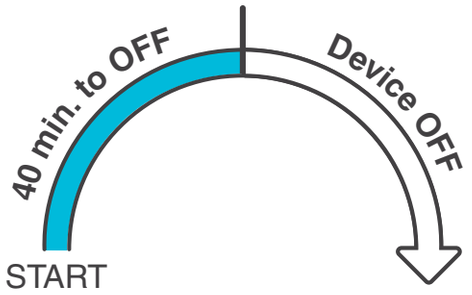
TIMER TO OFF MODE

Pressing the up or down button sets a countdown time. During the countdown, your device will be set to ON. Once the timer ends, your device will trigger to turn off. If there is a level set in OFF Mode, the devices will run at that level after the end of the countdown.

The countdown will begin if no buttons are pressed for 5 seconds. The time left on the countdown is shown on the lower right corner of the display above the setting. Leaving the timer mode while the countdown is running will pause it until you return to this mode.



TIMER TO OFF
(COUNTDOWN END POINT)



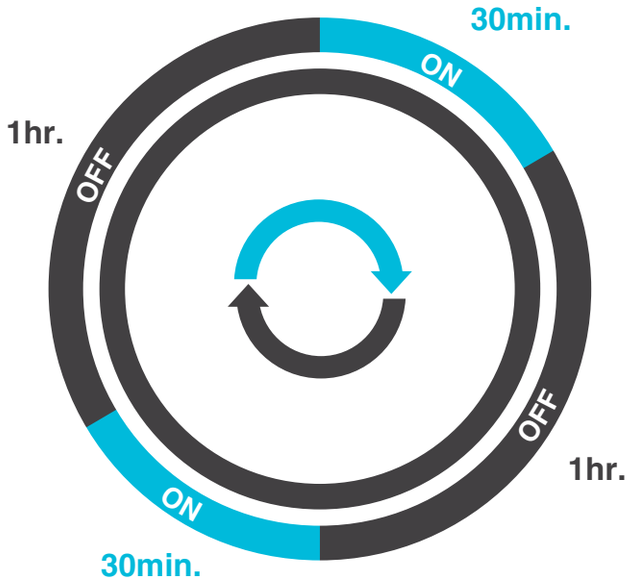
PROGRAMMING
T-SERIES

CYCLE MODE (ON AND OFF)

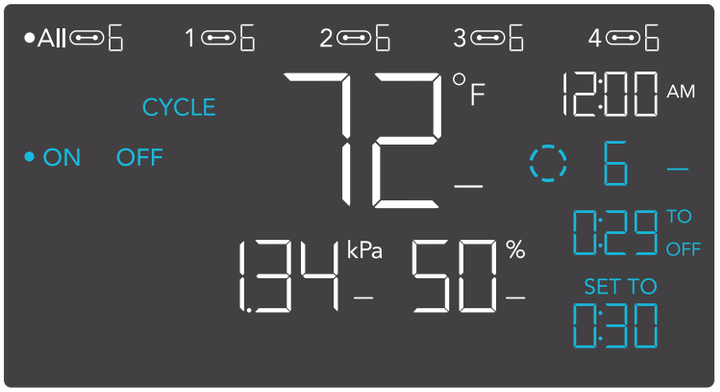
Set an on duration and an off duration for the devices to cycle through continuously. Press the up or down button to first set a duration for the devices to activate. Then press the mode button again and set a duration for the devices to deactivate.

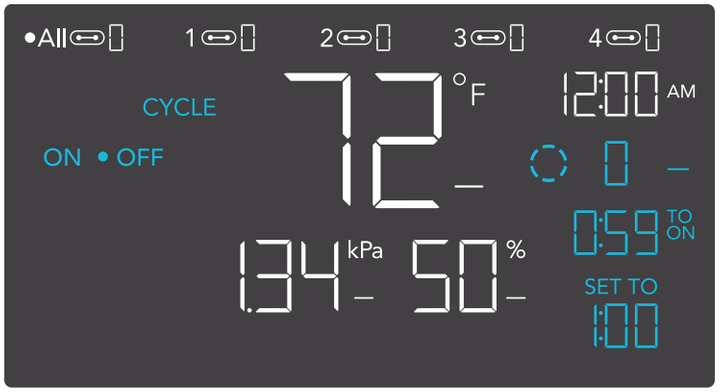
When the devices are activated, they will run at the level set in ON Mode. When the devices are deactivated, they will run at the level set in OFF Mode.

The countdown will begin if no buttons are pressed for 5 seconds. The time left on the countdown before the next ON or OFF phase is displayed below the current level. Leaving the cycle mode while the countdown is running will pause it until you return to this mode.



If there is a level set in OFF Mode other than zero, the devices will run at that level when triggered to turn off.

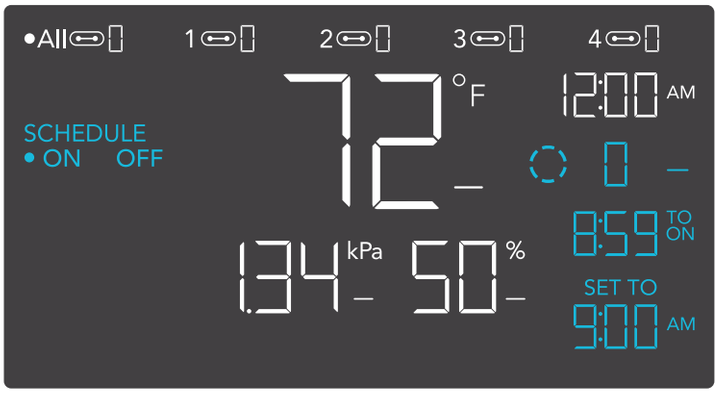




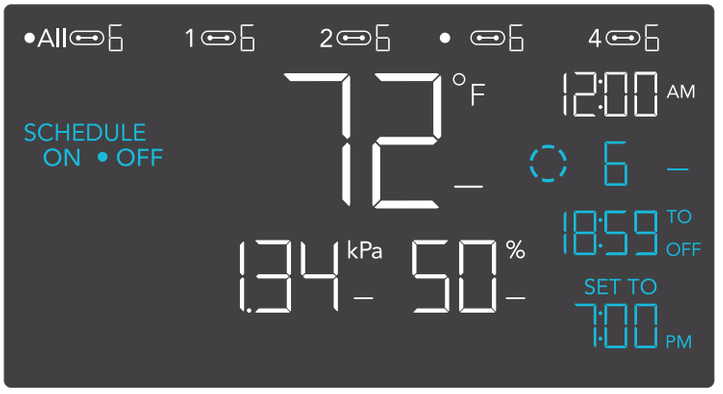
PROGRAMMING
T-SERIES

SCHEDULE MODE (ON AND OFF)

Sets an on clock-time and an off clock-time schedule for the devices to follow daily. Press the up or down button to first set up an on clock-time to trigger ON mode, then press the mode button to set an off clock-time to trigger OFF mode. Please be sure to set the current clock time under settings.

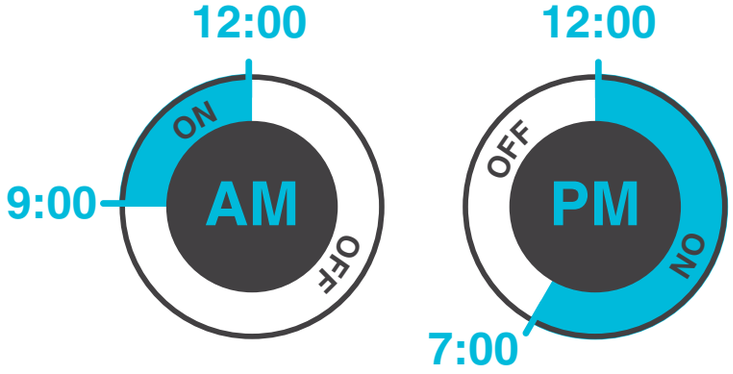


When the devices are triggered to activate, they will run at the level set in ON Mode. When the devices are triggered to deactivate, they will run at the level set in OFF Mode.



The countdown will begin if no buttons are pressed for 5 seconds. The time left on the countdown before the next on or off phase is displayed below the current level. The devices will not follow this schedule if you leave this mode. If you re-enter the Schedule Mode, they will continue to follow the latest schedule you have set.

If there is a level set in OFF Mode other than zero, the devices will run at that level when triggered to turn off.

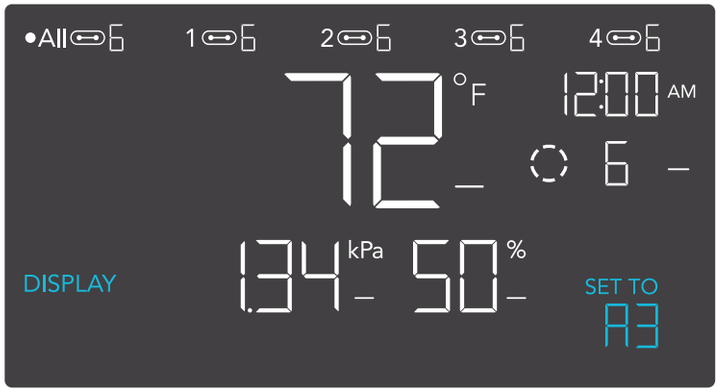


PROGRAMMING
T-SERIES

CONTROLLER SETTINGS
Pressing the setting button will cycle through the controller's available settings: DISPLAY, CLOCK, °F / °C, CALIB. T° / H% / kPa, TRANS. T° / H% / kPa, BUFF. T° / H% / kPa, and LEAF OFFSET.

DISPLAY SETTING
Adjusts the display brightness and auto-dimming. Press the up or down button to cycle through levels 1, 2, 3, A2 and A3; 3 being the highest brightness setting, while 1 is the lowest. In settings 1, 2 and 3, the display will stay at that brightness level and will not automatically dim the display.

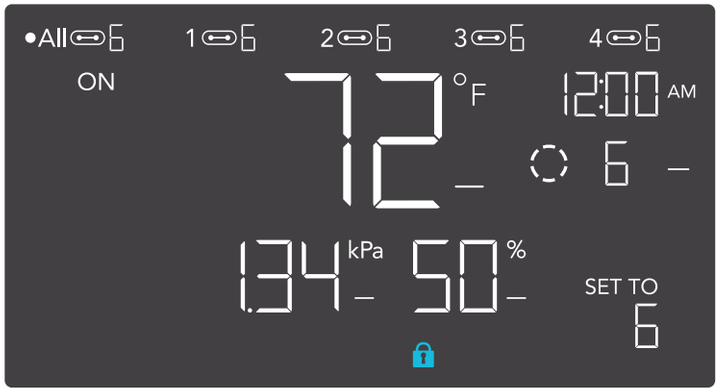
A2 and A3 will set the brightness level at 2 and 3, respectively, and will dim down the brightness level 1 when the controller is not being used after 15 seconds.



TOGGLING THE DISPLAY
Lock the controller by holding the setting button.

Press the setting button to turn the display off. Pressing the setting button again will turn the display back on.

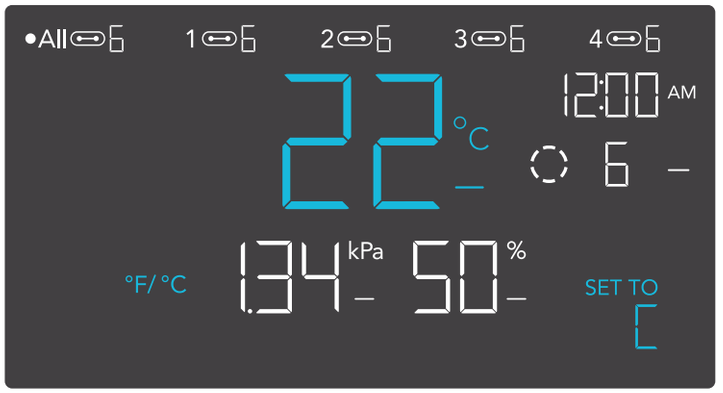
Programs will still run in the background while the LCD screen is off.



PROGRAMMING
T-SERIES

°F/°C SETTING

Changes the displayed units to Fahrenheit or Celsius. Press the up or down button to cycle through F and C. All displayed units will automatically convert when adjusting this setting.



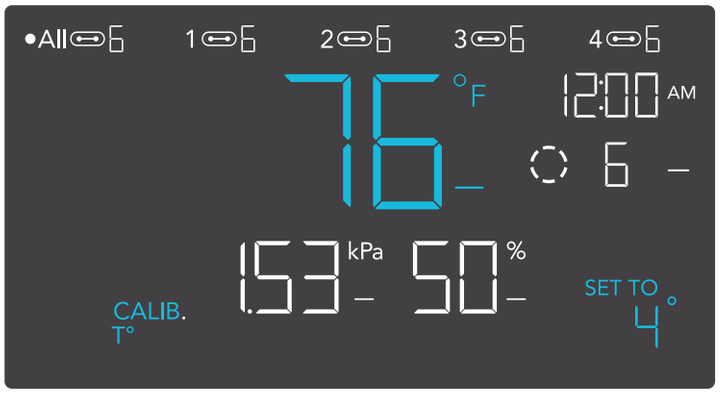
CLOCK SETTING

Adjusts the current clock time. Press the up or down button to increase or decrease the time. Once you cycle through 12:00 each time, the units will automatically change to AM or PM. The clock time is located at the top right corner of the display.

PROGRAMMING
T-SERIES

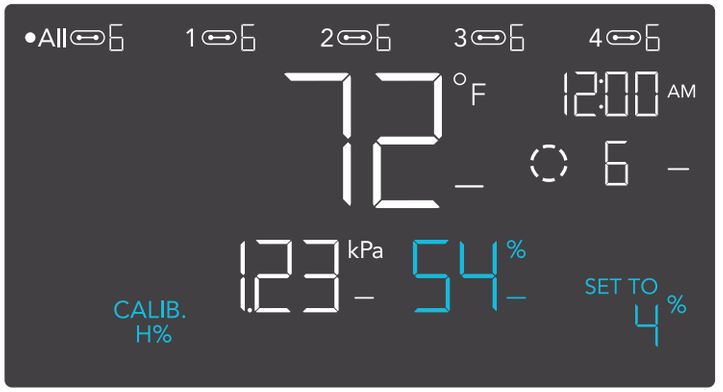
CALIBRATION TEMPERATURE SETTING

Adjusts the temperature reading the sensor probe is measuring. Press the up or down button to increase or decrease the data figure in 1° increments. The calibration cycle ranges from -20°F to 20°F (or -10°C to 10°C) and will be applied to the sensor probe's measurements.



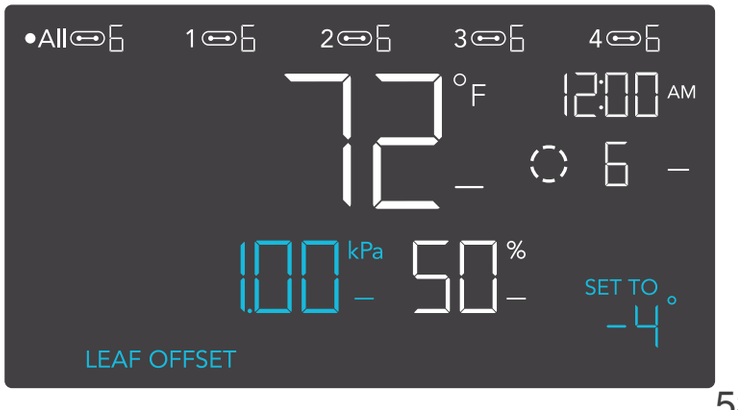
CALIBRATION HUMIDITY SETTING

Adjusts the relative humidity reading the sensor probe is measuring. Press the up or down button to increase or decrease the data figure in 1% increments. The calibration cycle ranges from -10% to 10% and will be applied to the sensor probe's measurements.



CALIBRATION LEAF OFFSET SETTING

Adjusts the VPD reading the sensor probe is measuring. Press the up or down button to increase or decrease the data figure in 1° increments. The calibration cycle ranges from -20°F to 20°F (or -10°C to 10°C) and will be applied to the sensor probe's measurements.



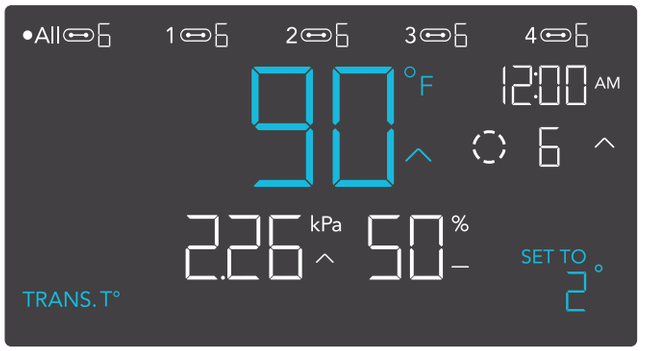
PROGRAMMING
T-SERIES

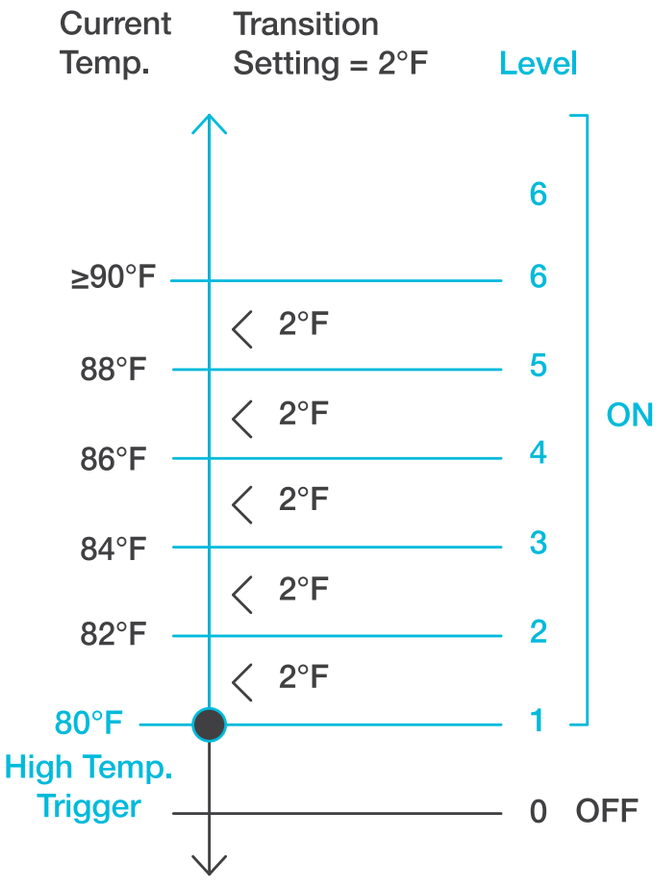
TRANSITION TEMPERATURE SETTING

Adjusts how gradually your device will shift between levels when triggered ON by the AUTO Mode's temperature trigger. This will determine how much the probe temperature needs to increase to step up to the next level setting.

The higher the transition setting is, the wider the temperature gap is between levels. The lower the transition setting is, the smaller the temperature gap is between levels. If this figure is set to zero, your device will jump to your maximum level when triggered ON.

Press the up or down button to set a transition threshold between 0°F and 20°F (0°C and 10°C). When the sensor temperature first reaches or crosses the temperature trigger point, the level will increase by one (exiting OFF Mode). Each time the threshold level is crossed, the level will ramp up by one until it reaches the level set in ON Mode.





EXAMPLE

In this example, your high temperature trigger is set at 80°F, the OFF Mode level is 0, and the ON Mode level is 6. If the transition threshold is set to 0°F, then once the sensor temperature reaches or exceeds 80°F, the devices will trigger to run at level 6. However, if the transition threshold is set to 2°F, then the devices will trigger to run at level 1 when the temperature reaches or exceeds 80°F. It will then ramp up to level 2 when the temperature reaches or exceeds 82°F, level 3 at 84°F, etc. From 90°F on, it will run at level 6, the level set in ON Mode.

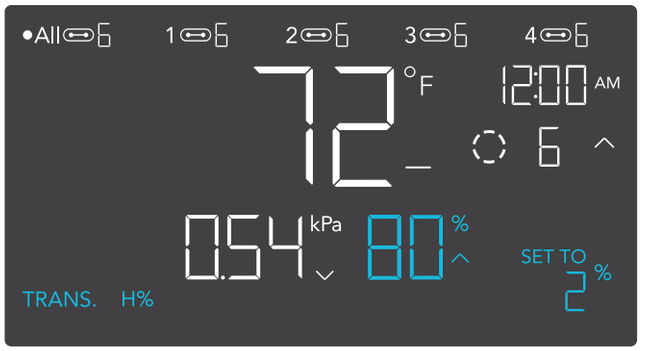
PROGRAMMING
T-SERIES

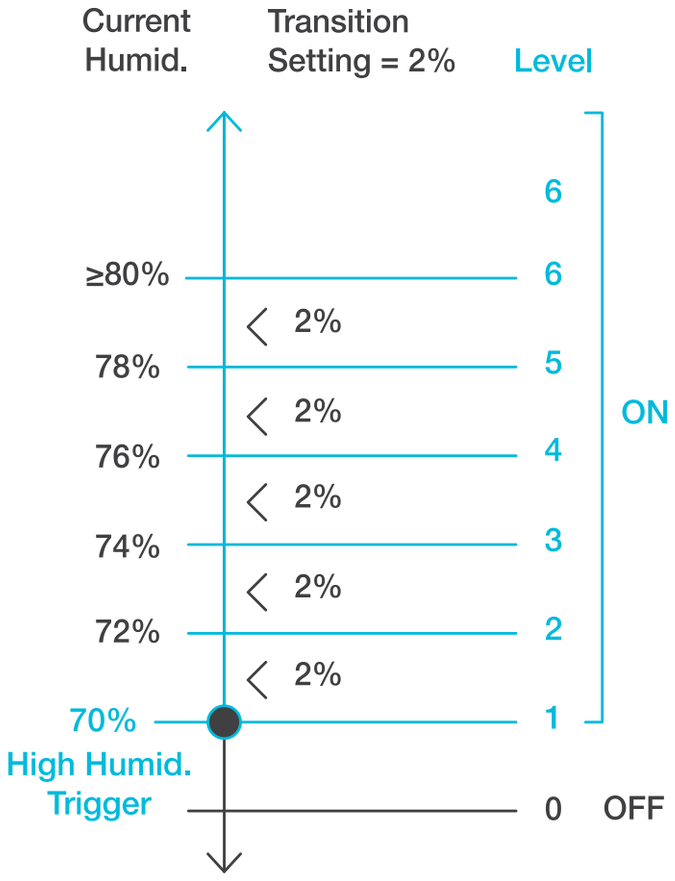
TRANSITION HUMIDITY SETTING

Adjusts how gradually your device will shift between levels when triggered ON by the AUTO Mode's humidity trigger. This will determine how much the probe humidity needs to increase to step up to the next level setting.

The higher the transition setting is, the wider the humidity gap is between levels. The lower the transition setting is, the smaller the humidity gap is between levels. If this figure is set to zero, your device will jump to your maximum level when triggered ON.

Press the up or down button to set a transition threshold between 0% and 10%. When the sensor humidity first reaches or crosses the humidity trigger point, the level will increase by one (exiting OFF Mode). Each time the threshold level is crossed, the level will ramp up by one until it reaches the level set in ON Mode.





EXAMPLE

In this example, your high humidity trigger is set at 70%, the OFF Mode level is 0, and the ON Mode level is 6. If the transition threshold is set to 0%, once the sensor humidity reaches or exceeds 70% then the devices will trigger to run at level 7. However, if the transition threshold is set to 2%, then the devices will trigger to run at level 1 when it reaches or exceeds 70%. It will then step up to level 2 when reaching or exceeding 72%, level 3 at 74%, etc. From 80% on, it will run at level 6, the level set in ON Mode.

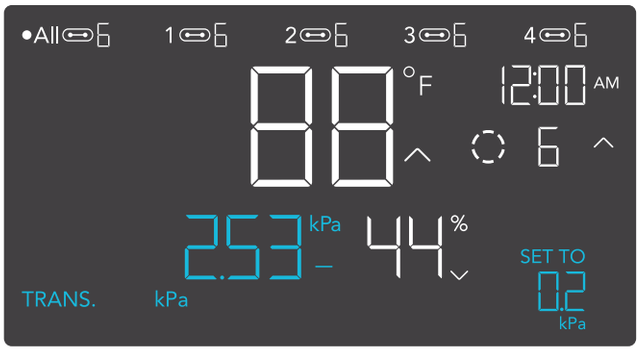
PROGRAMMING
T-SERIES

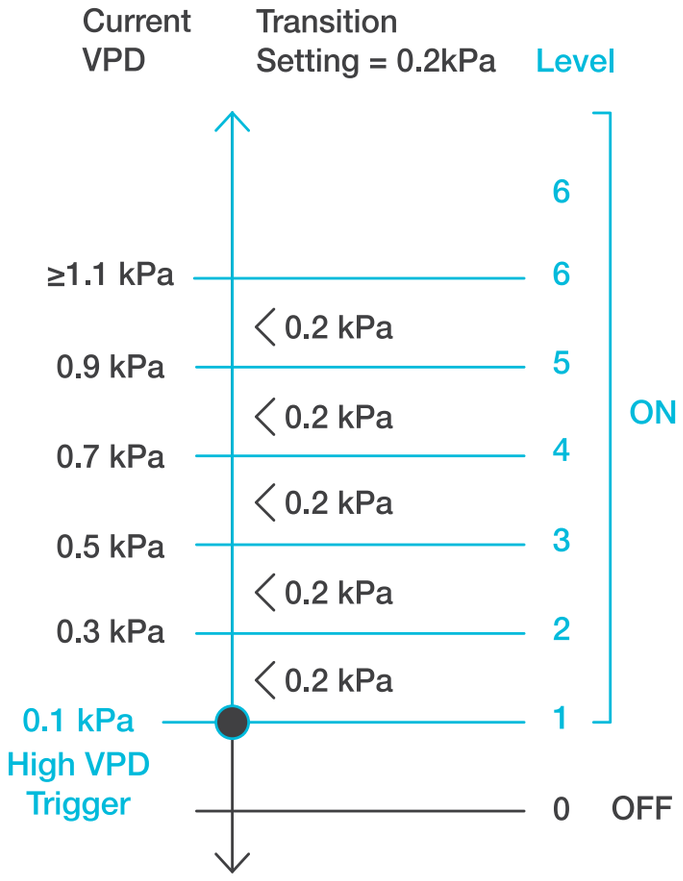
TRANSITION VPD SETTING

Adjusts how gradually your device will shift between levels when triggered ON by the VPD trigger. This will determine how much the probe VPD needs to increase to step up to the next level setting.

The higher the transition setting is, the wider the VPD gap is between levels. The lower the transition setting is, the smaller the VPD gap is between levels. If this figure is set to zero, your device will jump to your maximum level when triggered ON.

Press the up or down button to set a transition threshold between 0.1 kPa and 1.0 kPa. When the sensor VPD first reaches or crosses the VPD trigger point, the level will increase by one (exiting OFF Mode). Each time the threshold level is crossed, the level will ramp up by one until it reaches the level set in ON Mode.





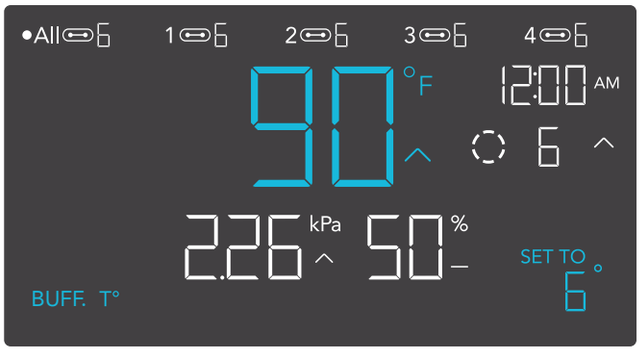
EXAMPLE

In this example, your high VPD trigger is set at 0.1 kPa, the OFF Mode level is 0, and the ON Mode level is 6. If the transition threshold is set to 0 kPa, then once the sensor temperature reaches or exceeds 0.1 kPa, the devices will trigger to run at level 6. However, if the transition threshold is set to 0.2 kPa, then the devices will trigger to run at level 1 when the VPD reaches or exceeds 0.1 kPa. It will then ramp up to level 2 when the VPD reaches or crosses 0.3 kPa, level 3 at 0.5 kPa, etc. From 1.1 kPa on, it will run at level 6, the level set in ON Mode.

PROGRAMMING
T-SERIES

BUFFER TEMPERATURE SETTING

The buffer figure will create a trigger-off point below your set trigger point to prevent your device from shutting off too quickly. Press the up or down button to cycle through buffer range from 0°F to 8°F (or 0°C to 4°C).

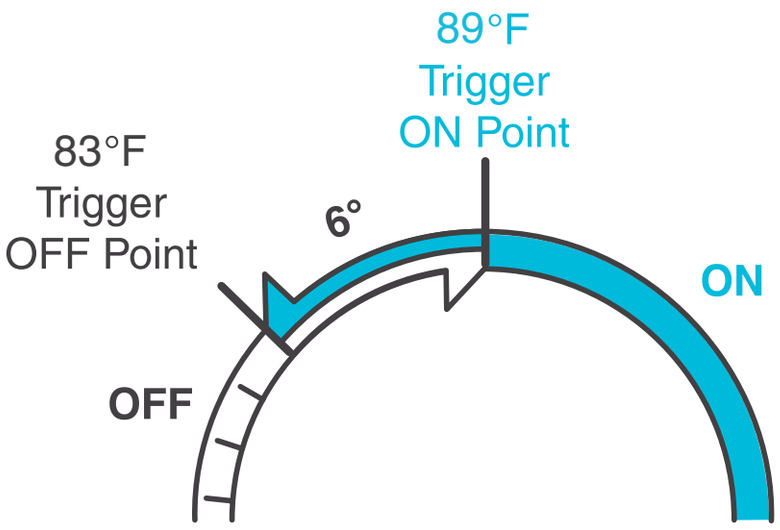


In high temperature triggers, your device will turn on, only turning off when the temperature falls below your buffer setting.

In low temperature triggers, your device will turn on, only turning off when the temperature rises above your set buffer setting.

EXAMPLE

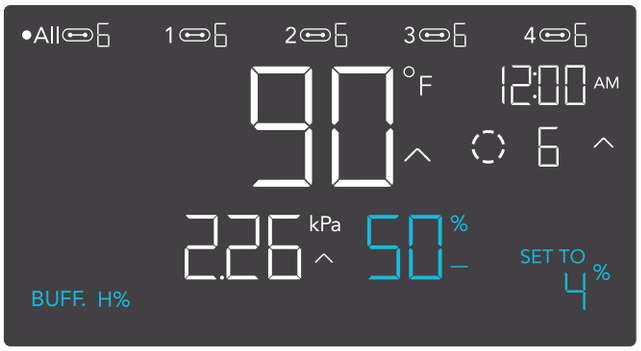
In this example, your High Temperature Trigger is set at 89°F and your Temperature Buffer is set at 6°F. Your device will trigger on when it meets or rises above 89°F, and only trigger off when it falls below 83°F. The 83°F figure is obtained by taking your High Temperature Trigger of 89°F and subtracting your Temperature Buffer of 6°F.



PROGRAMMING
T-SERIES

BUFFER HUMIDITY SETTING

The buffer figure will create a trigger-off point below your set trigger point to prevent your device from shutting off too quickly. Press the up or down button to cycle through buffer range from 0% to 10%.

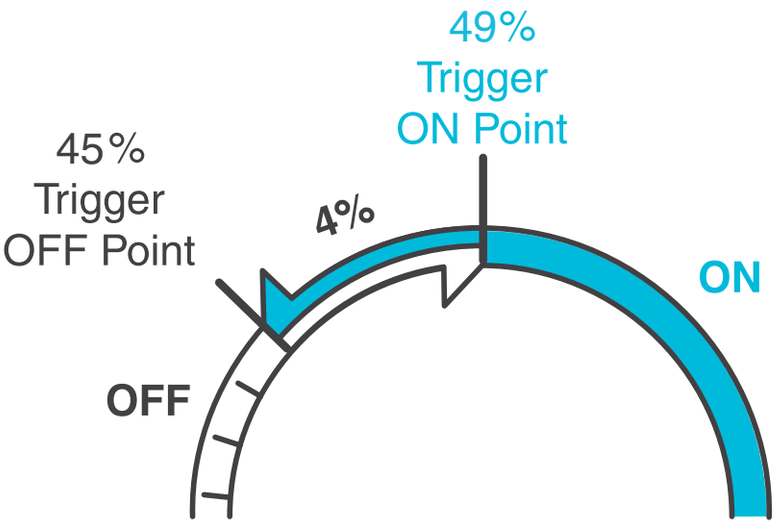


In high humidity triggers, your device will turn on, only turning off when the humidity falls below your buffer setting.

In low humidity triggers, your device will turn on, only turning off when the humidity rises above your set buffer setting.

EXAMPLE

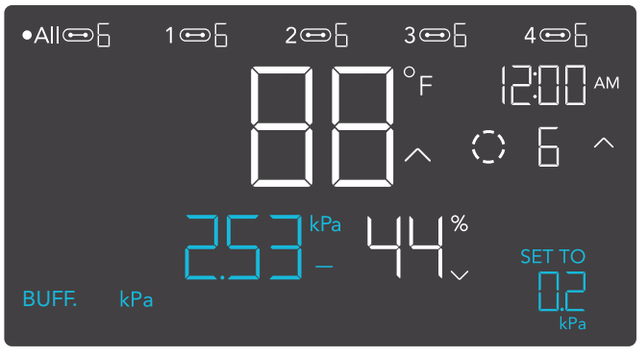
In this example, your High Humidity Trigger is set at 49% and your Humidity Buffer is set at 4%. Your device will trigger on when it meets or rises above 49%, and only trigger off when it falls below 45%. The 45% figure is obtained by taking your High Humidity Trigger of 49% and subtracting your Humidity Buffer of 4%.



PROGRAMMING
T-SERIES

BUFFER VPD SETTING

The buffer figure will create a trigger-off point below your set trigger point to prevent your device from shutting off too quickly. Press the up or down button to cycle through buffer range from 0.1 kPa and 1.0 kPa.

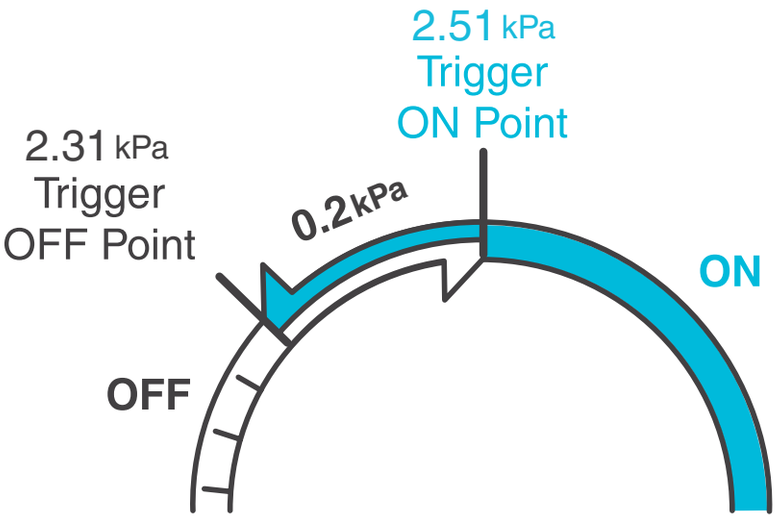


In high VPD triggers, your device will turn on, only turning off when the VPD falls below your buffer setting.

In low VPD triggers, your device will turn on, only turning off when the VPD rises above your set buffer setting.

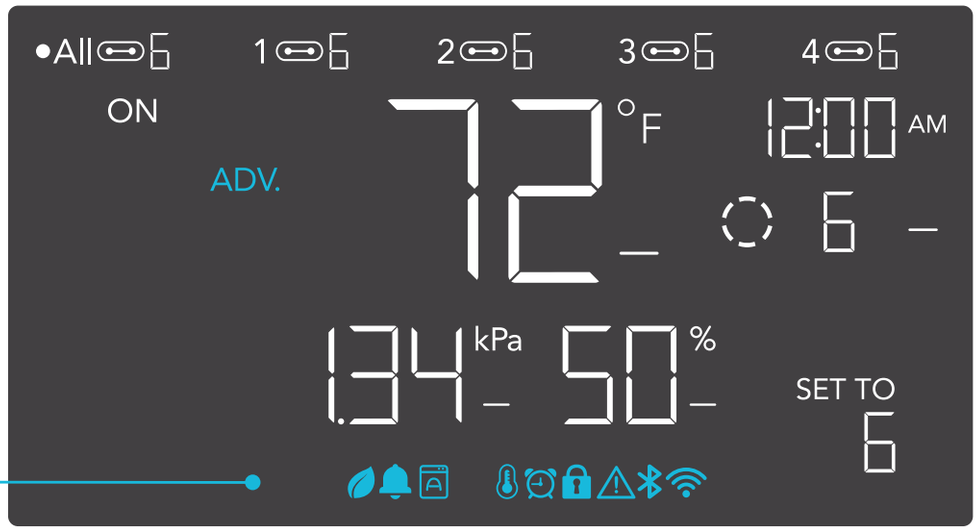
EXAMPLE

In this example, your High VPD Trigger is set at 2.51 kPa and your VPD Buffer is set at 0.2 kPa. Your device will trigger on when it meets or rises above 2.51 kPa, and only trigger off when it falls below 2.31 kPa%. The 2.51 kPa figure is obtained by taking your High VPD Trigger of 2.51% and subtracting your VPD Buffer of 0.2 kPa.



PROGRAMMING
T-SERIES

ALERT ICONS
The alert icons are displayed at the top of the screen. Icons may flash when the controller signals an alert to notify you of any triggered function or alarm.



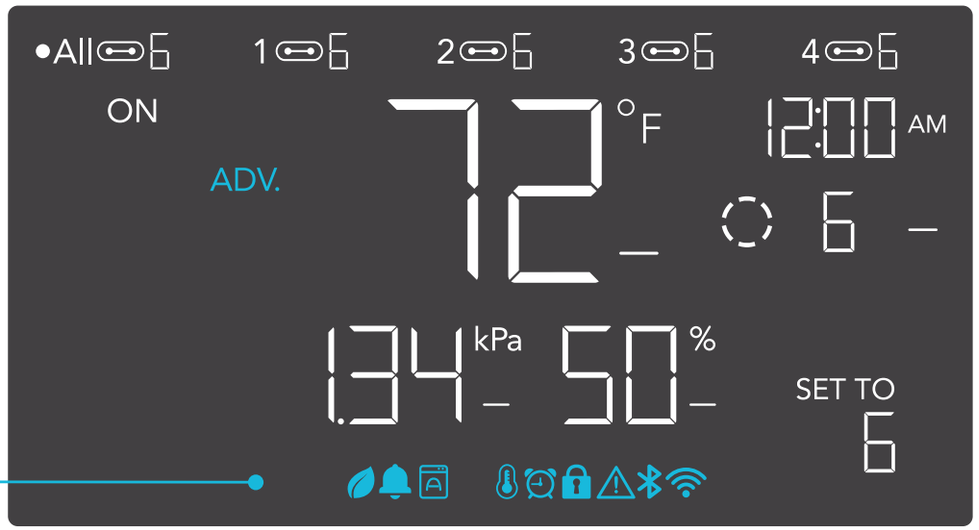
ADVANCE PROGRAMMING
Displays when an advance program set in the app is active. "ADV." will appear and override the controller if an automation program is in use.

AUTO MODE ALERT
Flashes whenever any of the auto mode triggers (high temperature, low temperature, high humidity, or low humidity) activate your devices.

TIMER ALERT
Flashes when a countdown has completed for TIMER TO ON, TIMER TO OFF, CYCLE, or SCHEDULE Mode.

VPD ALERT
Flashes whenever either VPD mode triggers (high VPD or low VPD) activate your devices.

PROGRAMMING
T-SERIES



WI-FI
Appears when the physical controller is connected to the app via Wi-Fi.

DISPLAY LOCK ALERT
Displays when you lock the controller. The icon will flash and beep if you attempt to adjust the controller while it is still locked.

ALERT
Flashes and beeps with an alert whenever a plugged-in device experiences interference to its functioning. Check your devices for possible issues.

ALARM
Flashes and beeps with an alert if the temperature/humidity/VPD meet the trigger point set in the app.

OTHER SETTINGS

FACTORY RESET

Holding the mode, up, and down buttons together for 5 seconds will reset your controller and restore factory settings. This clears all user parameters in each controller mode and setting.

HOLD + 

CONTROLLER LOCK

Holding the setting button will lock the controller in your current mode. While your controller is locked, no parameters may be adjusted, nor will you be able to switch modes. Holding the setting button again will unlock the controller.

HOLD + 

HIDE SCREEN

Lock the controller so no settings can be adjusted. See above. Then press the setting button to turn the display off. Pressing it again will turn the display back on. Programs will still run in the background while the LCD screen is off.

PRESS + 

JUMP TO OFF MODE

Holding the mode button for 3 seconds while in any mode or setting will automatically jump to OFF Mode. This function is disabled if the controller is locked.

HOLD + 

RESET TO OFF/DEFAULT

Holding the up and down buttons together for 2 seconds will reset the value of your current mode or controller setting to OFF/ Default. Pressing either the up or down button will return to the previous value.

HOLD + 

AUTO INCREASING OR DECREASING

Holding the up or down button will increase or decrease the user setting automatically until you release them.

HOLD + 

HOLD + 

DOWNLOAD THE APP

THE AC INFINITY APP

The AC Infinity app enables you to connect with the next generation of our intelligent controllers, giving you access to advance programs and environmental data*.

1

Download the AC Infinity app from the App Store or Play Store by searching “AC Infinity”.

Download on the App Store

GET IT ON Google Play

2

Open the AC Infinity app and follow the instructions on page 64-70 to pair your controller with the app.

HOW TO USE THE APP

Visit our website at www.acinfinity.com or open your smartphone camera and scan the QR code below for more information on the AC Infinity app.

*Appearance and features subject to change.

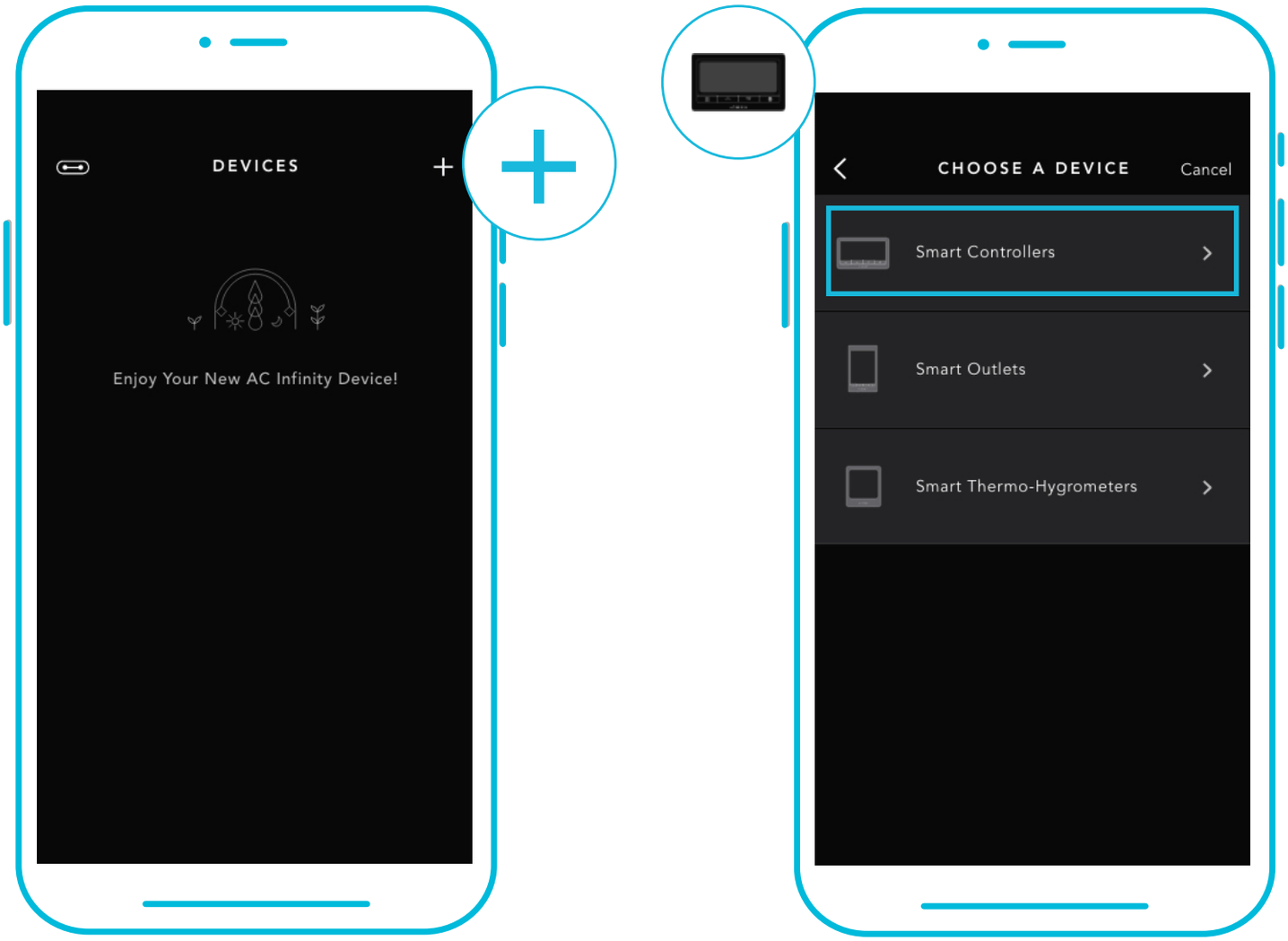
ADD A DEVICE
BLUETOOTH

SETUP AND PAIRING

Power your device on before pairing your controller with the app. Logging in or creating an account beforehand will expedite the pairing process. Have your Wi-Fi network's name and password ready.

1. Tap on the “+” tab to add your smart device.

2. Select "Smart Controllers".



Wi-Fi and location permissions must be enabled on your mobile device before starting the pairing process.

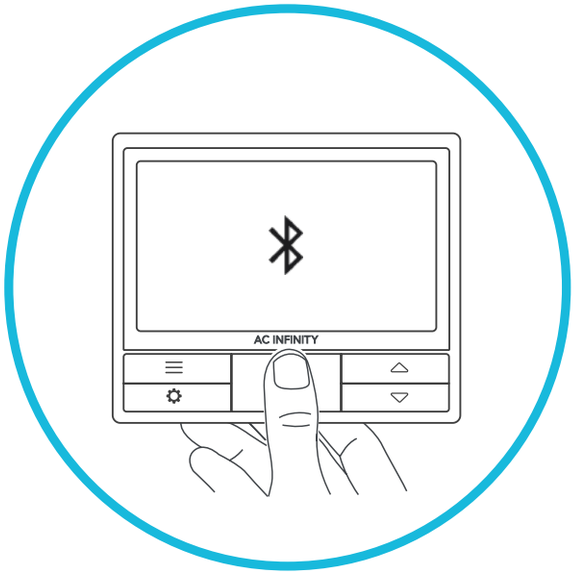
ADD A DEVICE
BLUETOOTH

3

Select CONTROLLER 69 PRO.

4

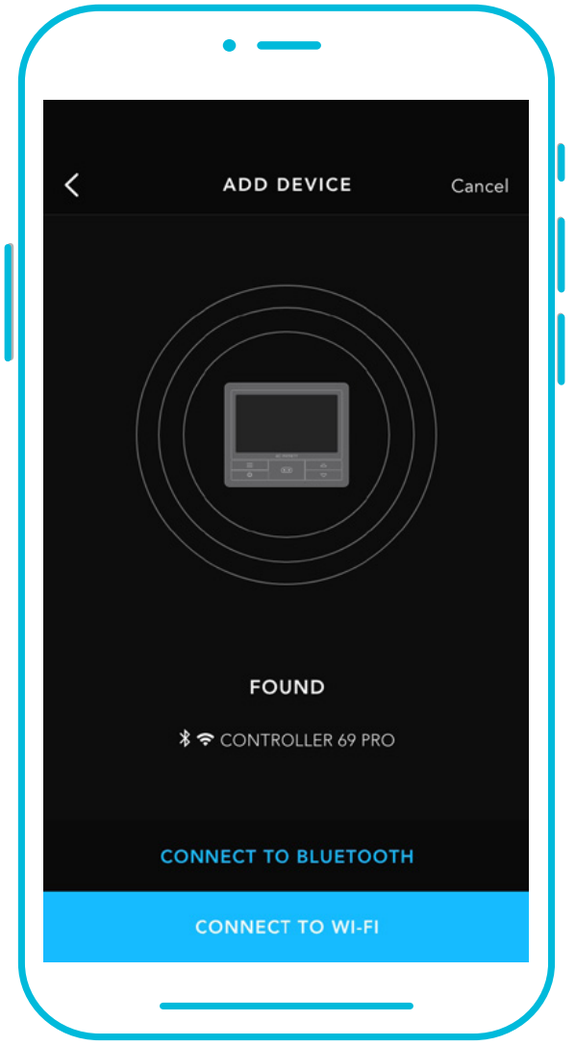
Hold the port button for 5 seconds to activate Bluetooth. Wait for the Bluetooth icon to start flashing on your controller's screen to release the button.



ADD A DEVICE
BLUETOOTH

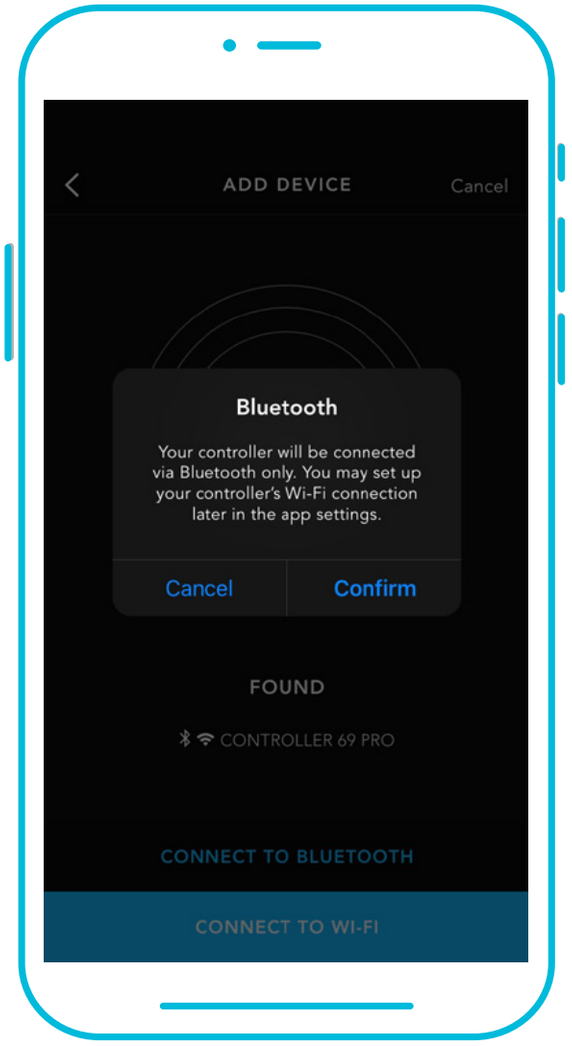
5

Connect using Bluetooth. To connect using Wi-Fi, skip to step 8.



6

Connecting with Bluetooth will disable Wi-Fi functionality. Go to the app settings page to re-enable and connect using Wi-Fi.

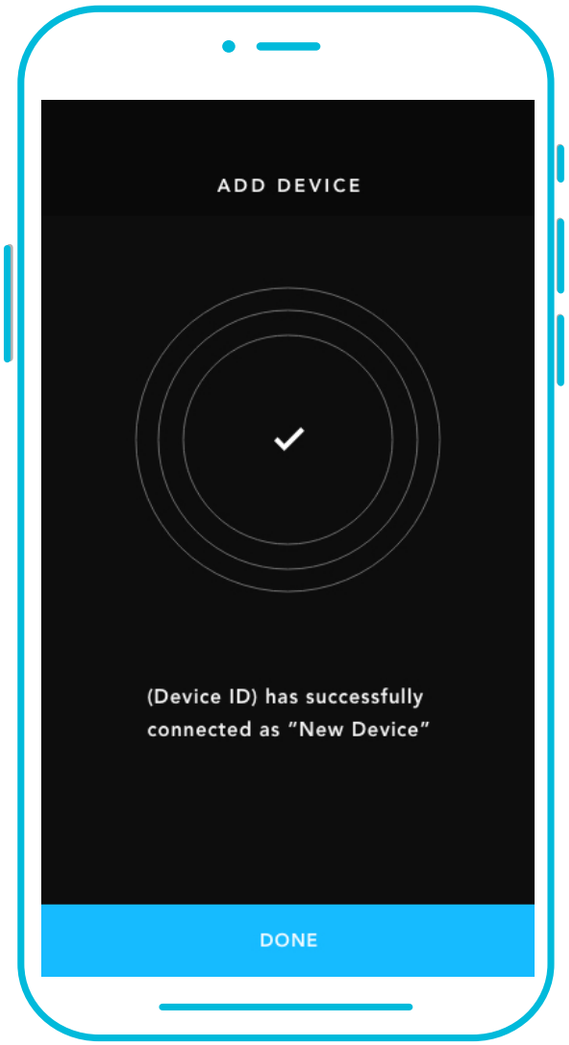


When pairing the app around multiple controllers, move your mobile device closer to your desired controller.

ADD A DEVICE
BLUETOOTH

7

Tap the DONE button to complete the pairing process.

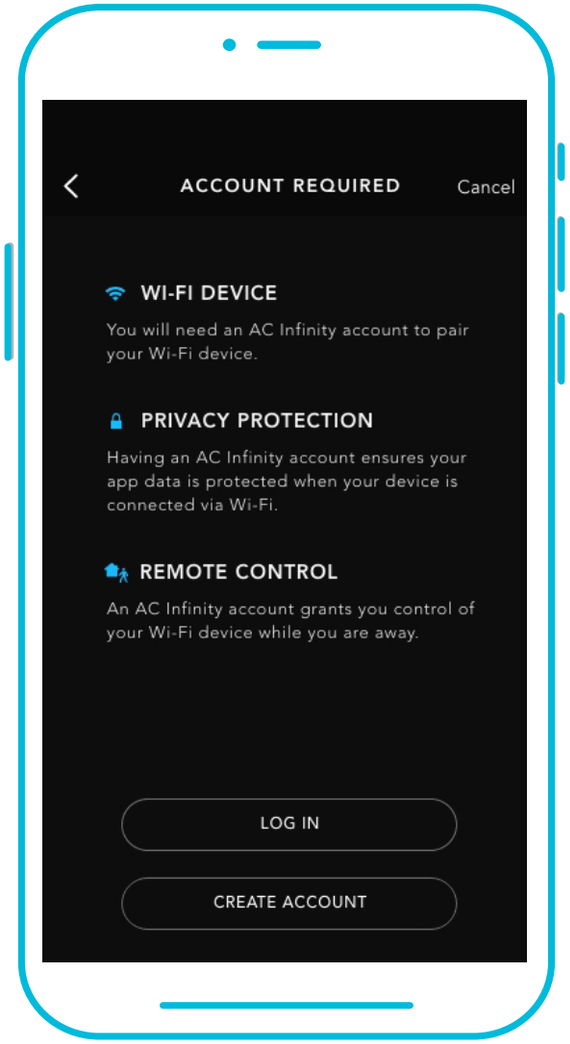


ADD A DEVICE

WI-FI

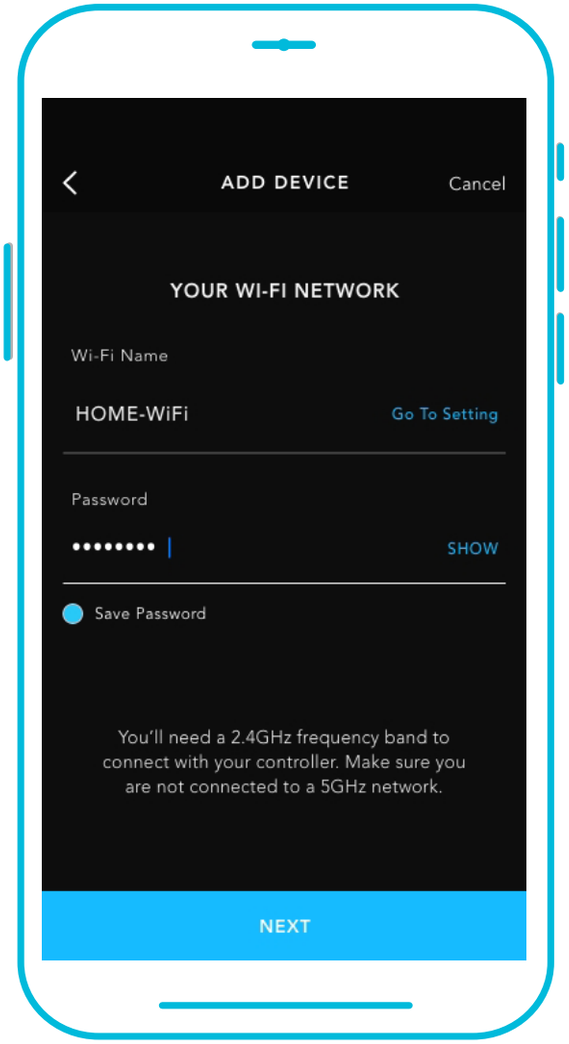
8

Repeat steps 1-5. Log in or create an account to continue.



9

Enter your Wi-Fi network's password. You may also connect to an alternate 2.4 GHz router*.



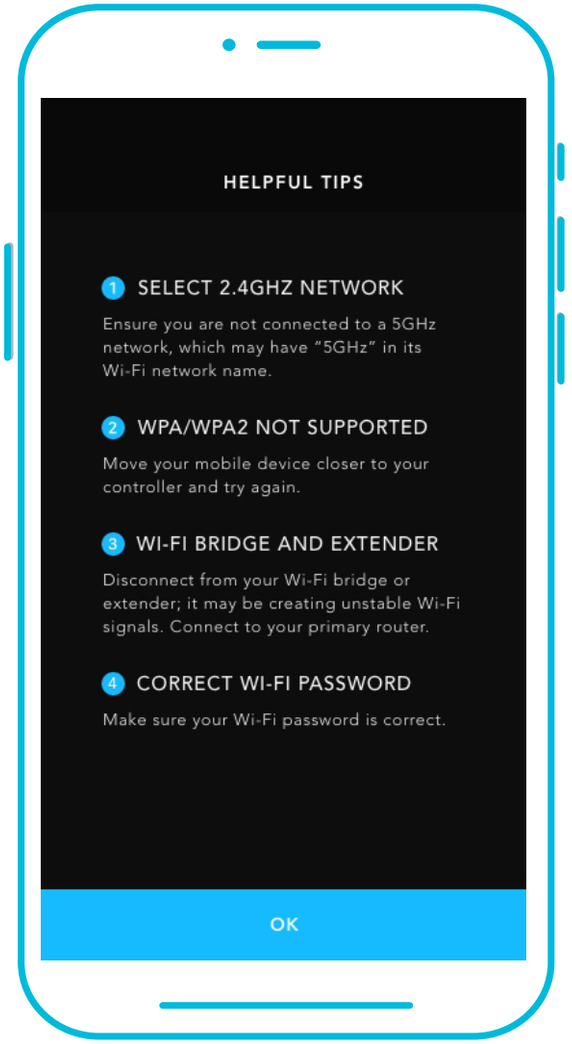
When pairing the app around multiple controllers, move your mobile device closer to your desired controller.

ADD A DEVICE

WI-FI

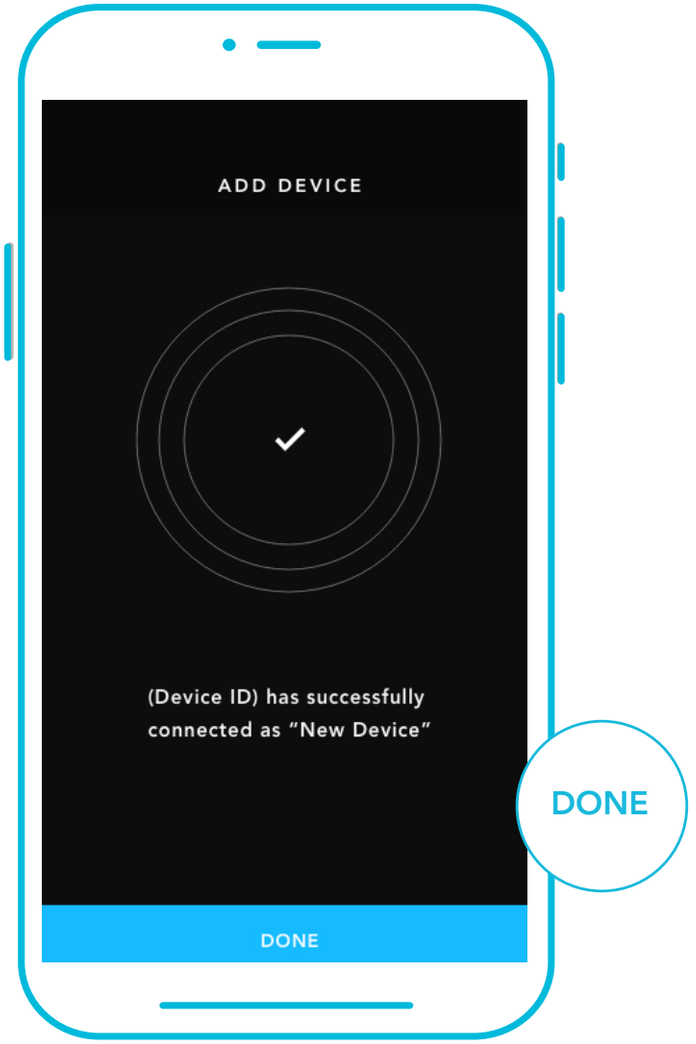
10

Follow these tips if the pairing process is unsuccessful.



11

Tap the DONE button to complete the pairing process.



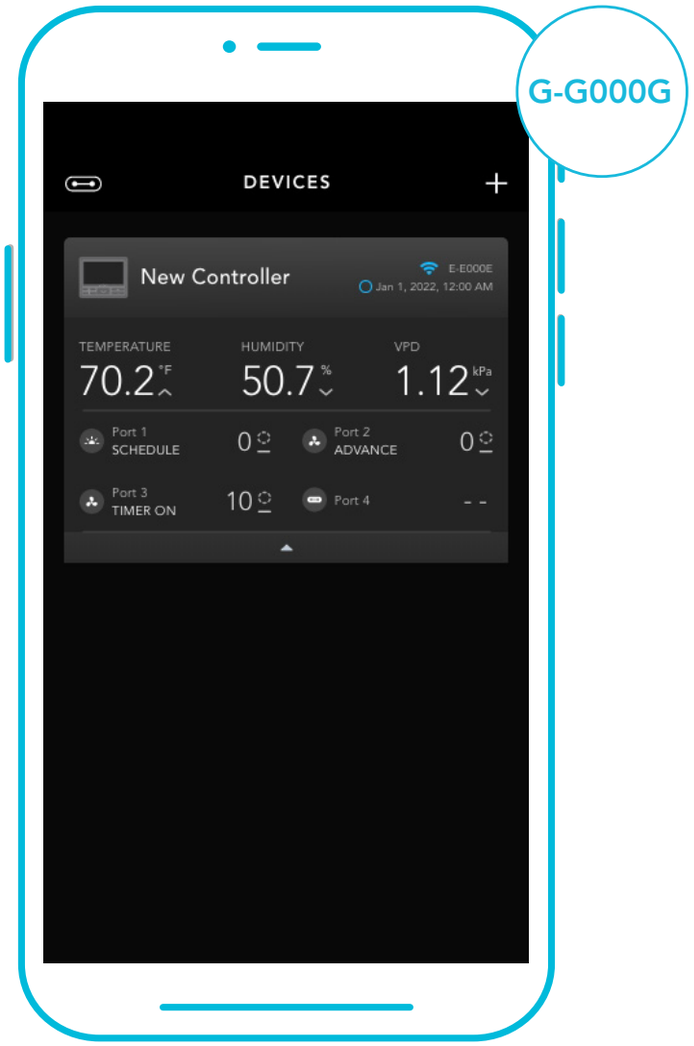
*This controller is only compatible with 2.4 GHz frequency band routers. When connecting using Wi-Fi, make sure your mobile device is not connected to a 5 GHz frequency band network.

ADD A DEVICE

WI-FI

12

Your controller will appear in your smart device with a unique ID.



CONTROLLER 69 PRO FAQ

Q: What devices are compatible with the CONTROLLER 69 PRO?
A: All AC Infinity devices that contain a UIS connector are compatible. If your AC Infinity device has a 4-pin Molex connector and an EC motor, it may still be compatible with the use of a UIS adapter to convert its connector to fit with the controller.

Q: What does “level” refer to in the controller and app?
A: The level represents the intensity the device is running at. This is represented by a digit 0 to 10. Zero means the device is off, and 10 represents its running at its maximum. For fan devices, the level would be referring to their speed. For light devices, the level would be referring to its brightness. Note that on and off devices do not have a level setting.

Q: Why is my device is not turning off when the programming is triggering it to be off?
A: The figure set in OFF Mode determines the device’s level when it’s triggered to be OFF in all other modes. Set this figure to zero if you want the device to turn off when triggered OFF.

If this is occurring in AUTO Mode, check the points of your high and low triggers, which can all activate concurrently. Turn off any triggers that are not in use. If you are using the app, check to see if any ADVANCE programming is active, which can override any control programming.

Q: Why does my device not run or run at low levels when the programming is triggering it to be on?
A: The figure set in ON Mode determines the device’s level when it’s triggered to be ON in all other modes. Make sure this figure is not set to zero or the device will not run when triggered to be ON.

If this is occurring in AUTO Mode, check the points of your high and low triggers, which can all activate concurrently. Turn off any triggers that are not in use. If you are using the app, check to see if any ADVANCE programming is active, which can override any control programming.

CONTROLLER 69 PRO FAQ

Q: How do I stop my device from turning on and off too quickly in AUTO Mode?
A: The figure set in the TRANSITION under SETTINGS will determine how the device ramps up in levels when triggered to run in AUTO Mode. Set a transition threshold X. For every multiple of X that has surpassed your trigger point, the device will increase by one level. The lower the transition threshold is set to, the easier it will be for the device to ramp up in levels. If set to zero, the device will jump to the max set speed without ramping when triggered. This may cause the device to turn on and off quickly if the climate fluctuates back and forth. Increase the transition threshold number to help smooth out the transitions. Check the points of your high and low triggers, which can all activate concurrently. Turn off any triggers that are not in use.

Q: How do I set a minimum speed for constant ventilation, that would ramp up when triggered?
A: If a fan device is connected, the figure set in OFF Mode determines the fan speed when it's triggered to be OFF in all other modes. When the fan isn't triggered ON, it will be considered OFF and so it will run at that minimum speed continuously. Once triggered ON, it will change its speed to the figure set under ON Mode.

Q: Where is the best place to position the sensor probe?
A: Place the sensor probe as close as possible to the hottest or most humid spot in your space.

Q: Do I need to remove the plastic cap from the probe?
A: Yes. You will need to remove the plastic cap so the probe can accurately read climate conditions.

Q: Can I connect different-sized fans to the same controller?
A: Please refer to pages 32-34 for details on adding more fan units.

CONTROLLER 69 PRO FAQ

Q: Will I be able to use this controller with my own devices?
A: The CONTROLLER 69 PRO is only compatible with devices in the UIS ecosystem. Look for our logo on your AC Infinity device's packaging for UIS compatibility.

Q: Does the controller retain its settings after power is shut off?
A: Yes. If the controller's power is cut off and is powered on afterward, your settings will remain.

Q: My controller isn't pairing with the app. How do I fix this?
A: If the pairing process isn't successful, press any button to return to the normal screen. Then hold the port button for 5 seconds to try again. When starting the pairing process around multiple Wi-Fi controllers, move your smart device closer to the controller you wish to connect the app with.

Q: Why does the app ask me for location permissions?
A: The app requires location permissions to find the relative position of your smart controller and communicate with existing Bluetooth devices already paired with the app. All Android devices prior to system version 12.0 will require location permissions to be turned on for the Bluetooth scan to be successful.

Q: Why do the port’s level digits on the screen occasionally flash when I unplug a device?
A: The controller may have received electronic interference during the disconnection. To fix this, completely cut off power from the controller by unplugging all connected devices. Then plug them back into their previous ports and resume normal use.

CLOUDLINE PRO FAQ

Q: Can I mount this inline duct fan vertically?
A: Yes. The CLOUDLINE PRO can be mounted in any orientation, including vertically.

Q: Will I be able to hardwire this fan to my own controller or thermostat?
A: We do not recommend hardwiring or splicing our fan's power wires. Such modifications may compromise electrical safety and will void this product's warranty.

Q: Do I need to use a power converter if I'm outside the US?
A: This product's voltage range is 100-240V AC. You may need a simple travel adapter to plug it into a foreign socket, or a power converter if your country uses a different voltage.

Q: What is the CFM of each of the different fan speeds?
A: Please refer to your CLOUDLINE PRO model's product listing for its CFM specification.

Q: I'm not getting enough airflow even after setting the fan speed to 10. What can I do?
A: Bends in ducting will reduce your fan's CFM performance. To retain airflow, you may straighten the ducting and eliminate as many bends as possible.

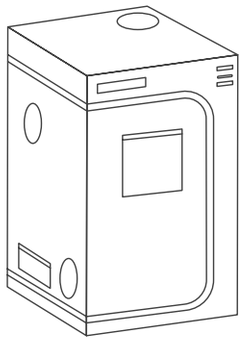
Q: Should I use this inline duct fan as an intake or an exhaust fan?
A: The CLOUDLINE PRO is primarily used as an exhaust fan, but can be used as an intake fan as well. You may use this fan as an intake fan if you need fresh air into your space.

Q: I'm hanging my fan upside down in my grow tent, can I rotate its motor box plate?
A: Yes. Use a screwdriver to unscrew the motor cap. Rotate it to your desired orientation and reapply the screws.

AC INFINITY PRODUCTS

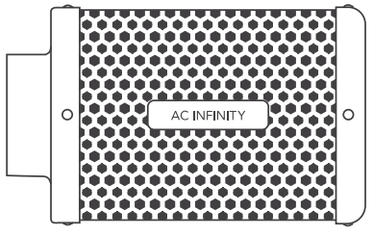
Advance Grow Tents

The CLOUDLAB series is a line of grow tents designed to create ideal growing conditions and facilitate indoor plant cultivation year-round. Features 2000D thick oxford canvas lined with inner diamond patterned mylar that maximizes grow light luminosity, and a reinforced frame with 150 lb. weight capacity. Includes a mounting plate to install your AC Infinity controller onto.



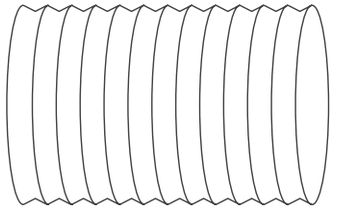
Carbon Filters

The duct carbon filter is designed to eliminate odors and chemicals for grow tents and hydroponic spaces. It utilizes premium grade Australian charcoal that features greater absorption power and a longer lifespan. Enables maximum airflow pass through as part of an intake or an exhaust system.



Ducting Tubes

The four-layer ducting tube is used to direct airflow, designed for ventilation systems in applications like HVAC, dryers, and grow rooms. It is highly durable and flexible, and can be used anywhere from tight spaces to wide open areas.



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This warranty program is our commitment to you, the product sold by AC Infinity will be free from defects in manufacturing for a period of two years from the date of purchase. If a product is found to have a defect in material or workmanship, we will take the appropriate actions defined in this warranty to resolve any issues.

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The warranty program does not cover abuse or misuse. This includes physical damage, submersion of the product in water, incorrect Installation such as wrong voltage input, and misuse for any reason other than intended purposes. AC Infinity is not responsible for consequential loss or incidental damages of any nature caused by the product. We will not warrant damage from normal wear such as scratches and dings.

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VORTEX PROFILTER

Reversible Activated Carbon Filter

Industrial Activated Carbon Filter for Heavy Duty Applications

REVOLUTIONARY !

PRO50
CFM **450** at 0.1 sec.
Height **20** in. (**50** cm)
Recommended fan :
VTX600 & **S**-600

PRO75
CFM **640** at 0.1 sec.
Height **30** in. (**75** cm)
Recommended fan :
VTX600 & **S**-600

PRO100
CFM **900** at 0.1 sec.
Height **40** in. (**100** cm)
Recommended fan :
VTX600, **VTX**800,
S-600 & **S**-800

PRO125
CFM **1140** at 0.1 sec.
Height **50** in. (**125** cm)
Recommended fan :
VTX800, **VTX**1000,
S-800 & **S**-1000

PRO150
CFM **1300** at 0.1 sec.
Height **60** in. (**150** cm)
Recommended fan :
VTX1000, **VTX**1200,
& **S**-1000

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Differential static pressure across filters will cause differential contaminent accumulation in the media. Vortex PROfilter reversible carbon filter is the only filter to offer a solution with the twist lock flange and end cap allowing to reverse the filter and equalize contaminent distribution in the media.

Most cylindrical-type air filters utilize 65% of the carbon available by only filtering through the top section of the carbon filter, leaving the bottom section unused. Vortex PROfilter's innovative patented design allows reversal of the filter, benefitting of 100% of the carbon available and extending the units' life span. Manufactured with only the finest high porosity activated carbon, Vortex PROfilter effectively removes 99.5% of odors. Rated for a continuous worry-free operation and available in many different sizes and CFM ratings, Vortex PRO-filter can be used for industrial, commercial or residential applications.

Rubber gasket to ensure air tight fitting.

Twist lock Flange. No tools required.

Parts made of high impact resistant polycarbonate. High quality galvanized steel.

High capacity prefilter
- 20mm thickness
- Low air resistance
- Antibacterial
- High capacity: 670g / M²
- Flame retardant

High porosity virgin granular activated carbon. Specially designed to remove VOC. 66mm bed thickness.

Convenient elastic band easing installation of the prefilter.

Twist lock End Cap. No tools required.

MODEL	Recommended Maximum CFM	Flange	Outside Diameter	Height	Weight	Carbon Bed Width	Recommended Fan	Pressure Drop at Max CFM
PRO50	450 at 0.1 sec	6"	15.4"	20in. 50cm	41.3 lbs.	2.6" (66mm)	VTX600 & S-600	180pa/.75wg
PRO75	640 at 0.1 sec	6"	15.4"	30in. 75cm	62.0 lbs.	2.6" (66mm)	VTX600 & S-600	180pa/.75wg
PRO100	900 at 0.1 sec	6" or 8"	15.4"	40in. 100cm	82.6 lbs.	2.6" (66mm)	VTX600, VTX800, S-600 & S-800	180pa/.75wg
PRO125	1140 at 0.1 sec	8" or 10"	15.4"	50in. 125cm	103.3 lbs.	2.6" (66mm)	VTX800, VTX1000, S-800 & S-1000	180pa/.75wg
PRO150	1300 at 0.1 sec	10" or 12"	15.4"	60in. 150cm	124 lbs.	2.6" (66mm)	VTX1000, VTX1200 & S-1000	180pa/.75wg

*All Vortex **PRO**filter products come with a **PRE**filter included*

*All Vortex **PRO**filters have a Max Operating Temperature of 175°F*

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VORTEX® POWERFANS

High Performance Inline Duct Blowers

S-line

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FOR QUIET OPERATIONS

VORTEX® POWERFANS

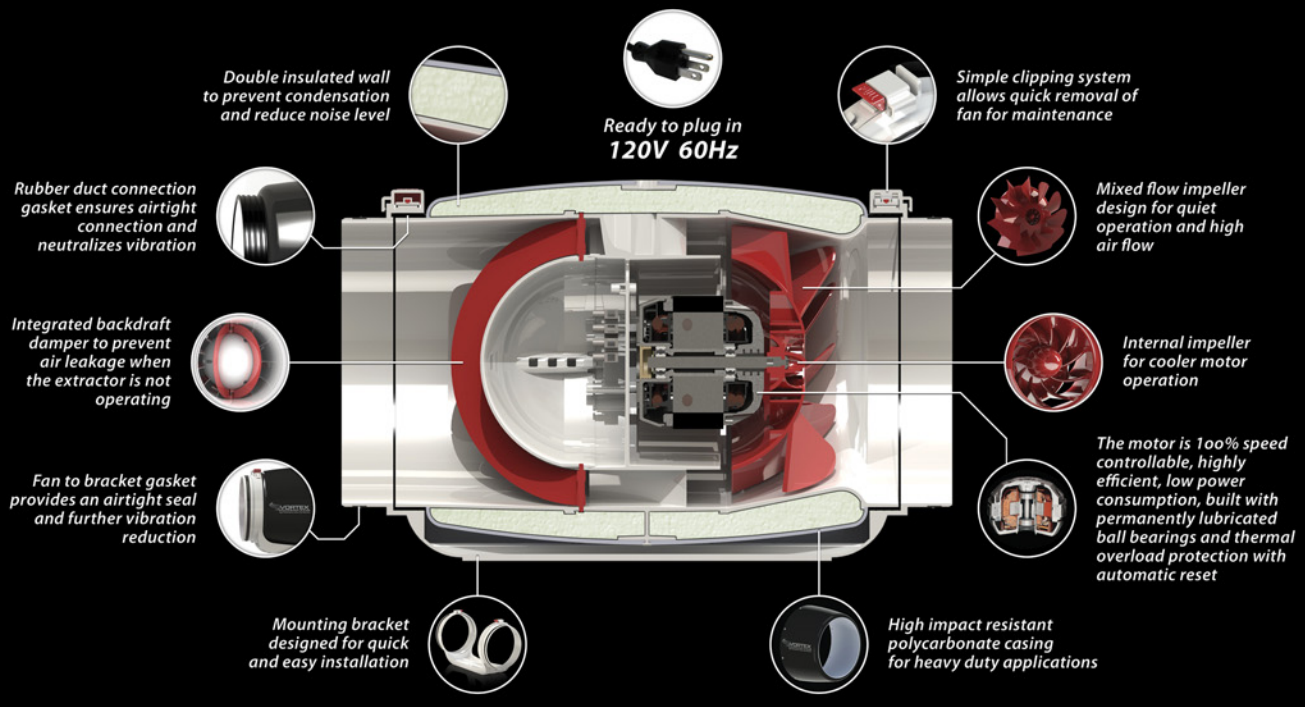
High Performance Inline Duct Blowers

S-line *Mixed Flow Fans are designed for residential and light commercial ventilation applications. These compact, powerful, and quiet fans are available in 6", 8" & 10" duct diameters and are ideally suited for either supply or exhaust ventilation systems.*

Design Features

- *Powerful, compact and quiet mixed flow impeller*
- *Easy to install - mounting brackets included*
- *100% speed controllable*
- *May be mounted in any position*
- *Suitable for airstream temperatures up to 140°F (60°C)*
- *Prewired with 120V power cord*
- *Energy efficient variable speed motor*
- *Fan and motor are precisely balanced for a quiet and vibration-free operation*
- *ETL listed*
- *AMCA air listed*
- *10 year warranty*

TO FIND OUT WHAT SEPARATES THE *S-LINE* FROM OTHER FANS, YOU HAVE TO GET INSIDE IT.

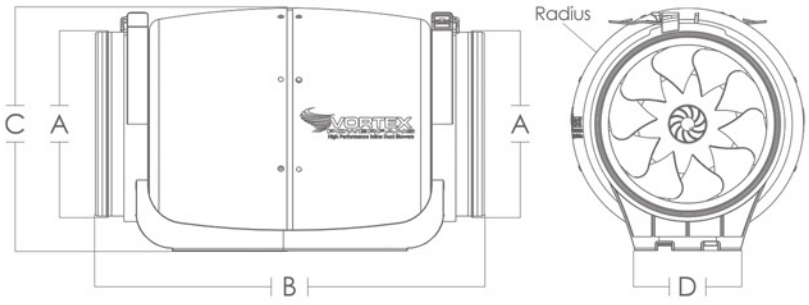


S-line View & Sizes

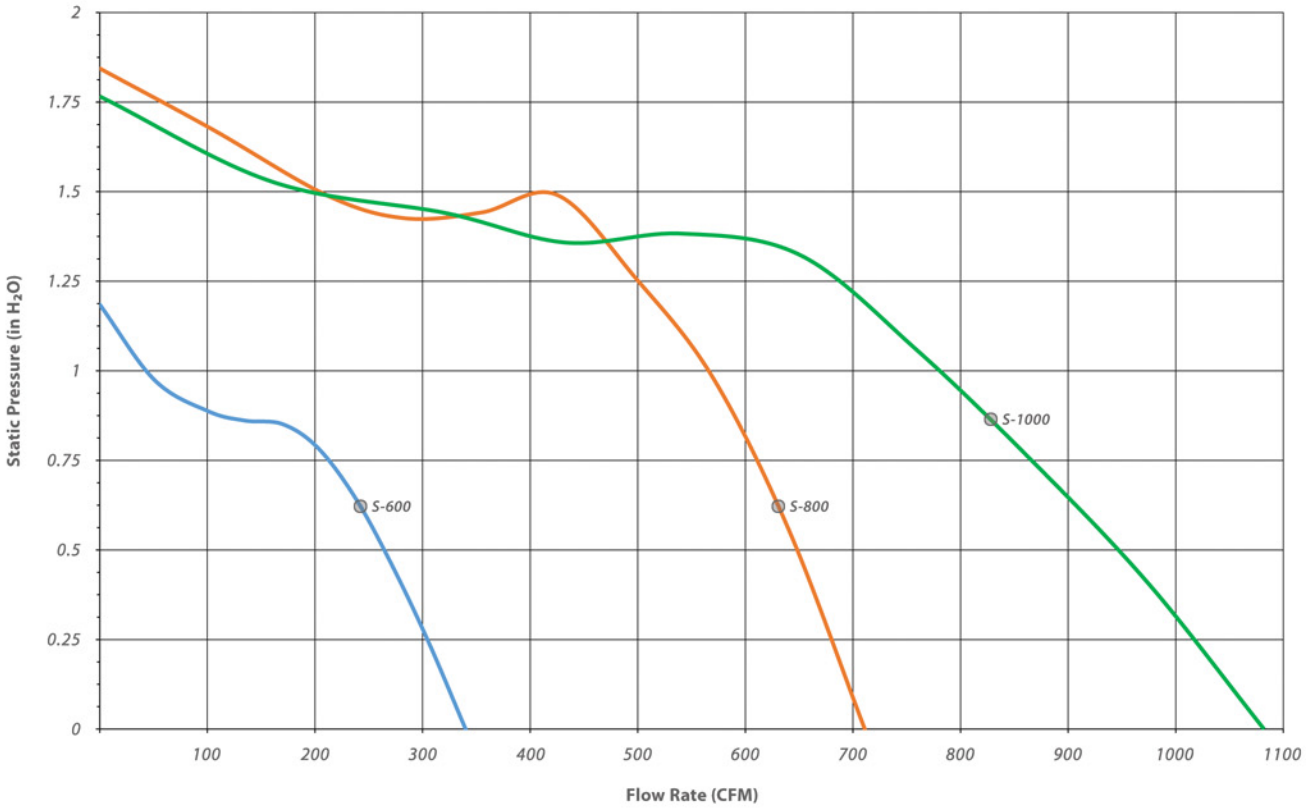
All dimensions in inches

FAN MODEL	Weight (lbs)**	A*	B	C	D	Radius
S-600	6.8	6.0	15.37	9.02	3.94	4.20
S-800	10.4	8.0	16.64	10.38	4.57	4.97
S-1000	13.2	10.0	17.394	13.613	5.709	6.014

*** Mounting Brackets included* ** Represents Duct Dimensions*



S-line Air Performance Graph



S-line Performance Data

*ALL **S-LINE** FANS INCORPORATE MOTORS SUITABLE FOR 120 Volts AC 60Hz ELECTRICAL SUPPLY ONLY*

FAN MODEL	Duct Dia.	RPM	Volts	Rated Watts	Max Amps	Static Pressure in Inches W.G. 0″	.125″	.2″	.25″	.375″	.5″	.75″	1.0″	1.25″	1.5″	Max Ps
S-600	6″	2720	120	72	0,68	340	323	312	305	285	265	215	39	---	---	1.185
S-800	8″	3150	120	232	1,99	711	697	688	682	666	649	612	570	501	204	1.844
S-1000	10″	2970	120	232	2,12	1082	1051	1032	1019	984	946	866	781	687	197	1.766

Performance certified is for installation type D - Ducted inlet, Ducted outlet. Speed (RPM) shown is nominal. Performance is based on actual speed of test. Performance ratings include the effects of appurtenances (accessories) Inlet Duct, Inlet Bell, Outlet Duct

Atmosphere Inc. certify that the models shown herein are licensed to bear the AMCA Seal. The ratings are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.

Intertek

CONFORMS TO UL 507 and CSA C22.2 no.113

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FEBRUARY 2016
Item #: QMS-CAT-SLINE-001

Attachment 4

Special Requirements Community Air Monitoring Plan

Special Requirements Community Air Monitoring Plan

Prepared for
135 Kent LLC
135 Kent Avenue
Brooklyn, NY 11249-3154

Prepared by

31 West 34th Street
Suite 7196
New York, NY 10001

May 2024

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Attachment A. Product Specifications

ACRONYMS AND ABBREVIATIONS

ACH	air change per hour
BMP	best management practice
CAMP	community air monitoring plan
CFR	Code of Federal Regulations
DER-10	Division of Environmental Remediation *Technical Guidance for Site Investigation and Remediation*
GAC	granular activated carbon
HAZWOPER	hazardous waste operations and emergency response
HEPA	high-efficiency particulate air
Integral	Integral Engineering, P.C.
IRM	Interim Remedial Measure
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit
PPE	personal protective equipment
ppm	part per million
QAPP	quality assurance project plan
RIWP	remedial investigation work plan
STEL	short-term exposure limit
SVE	soil vapor extraction
VOC	volatile organic compound

1 INTRODUCTION

This special requirements Community Air Monitoring Plan (CAMP) provides air monitoring procedures and safety provisions to protect tenants and the community from potential hazards during field activities performed under the May 2024 Interim Remedial Measure Modifications Work Plan[1] and the May 2024 Engineering Control Modifications Work Plan[2] (collectively, the May 2024 work plans) for the property located at 135 Kent Avenue, Brooklyn, New York (hereafter referred to as the "site"). This CAMP provides those details required by NYSDEC Division of Environmental Remediation *Technical Guidance for Site Investigation and Remediation* (DER-10) and includes special requirements for indoor work with co-located residences or facilities. Air monitoring procedures, instrumentation, community and tenant air monitoring locations, action levels, and other pertinent information are provided below. A copy of this CAMP must be in the custody of the field crew during field activities.

The site is approximately 12,500 square feet in area and is currently developed with a two-story commercial/residential building (measuring approximately 125 × 100 ft). The first floor of the building is in the process of renovations to be divided into individual commercial tenant spaces. One existing tenant space is currently occupied by a convenience store, but will be vacant at the time construction commences, and the remaining spaces are vacant or used for storage by the Owner. A small utility room measuring approximately 20 × 10 ft exists beneath a portion of the first floor (cellar). The second floor consists of approximately nine residential units.

The proposed IRM and engineering control modifications presented in the May 2024 work plans will function to prepare the first floor for commercial tenants and provide upgrades to the existing subslab depressurization system (SSDS). Construction activities will include:

- Site preparation
- Slab removal and limited excavation of subsurface soils
- Slab replacement
- Probing for an underground storage tank (UST)
- Installation of below-slab sub-slab depressurization system (SSDS) components
- Installation of above-slab SSDS components.

Tenant and community protections will vary depending on the field activity and engineering controls in place and are described in the sections below.

[1] Integral. 2024. Interim Remedial Measure Modifications Work Plan, Former Cleaner Sales and Equipment Corp. Site, 135 Kent Avenue, Brooklyn. Integral Engineering, P.C., on behalf of 135 Kent LLC. May.
[2] Integral. 2024. Engineering Control Modifications Work Plan, Former Cleaner Sales and Equipment Corp. Site, 135 Kent Avenue, Brooklyn. Integral Engineering, P.C., on behalf of 135 Kent LLC. May.

The CAMP may be modified by the NYSDEC and NYSDOH, based on review of activities, subsequent CAMP data, and tenant concerns. Modifications may include, but are not limited to, changing the number of CAMP monitoring stations, revising action levels, and implementing corrective measures. Any modification will be presented to the onsite team during a safety briefing and will be recorded in the field logbook.

2 WORK ZONES

Work zones are defined as follows:

Contamination reduction zone	Area between the exclusion and support zones that provides a transition between contaminated and clean zones
Exclusion zone	Any area of the site where hazardous substances are present, or are reasonably suspected to be present, and pose an exposure hazard to personnel
Support zone	Any area of the site, so designated, that is outside the exclusion and contamination reduction zones

Site control measures in each work zone are described below for each type of field activity

The work zones will not affect tenant egress pathways (e.g., stairs, elevator) to the first floor.

2.1 NON-INTRUSIVE SITE ACTIVITIES

The control measures listed below are specific non-intrusive activities and includes:

- Site preparation
- Installation of carbon filtration in first floor HVAC system(s)
- Installation of above-slab SSDS components.

Contamination reduction zone	All decontamination activities, though not anticipated during non-intrusive Site activities, will occur inside the exclusion zone.
Exclusion zone	The perimeter of the exclusion zone (area in which site preparation is taking place, and/or area where SSDS components are being installed, and/or area where carbon filtration is being installed in the HVAC system) will be marked with orange traffic safety cones or caution tape. Only properly equipped and trained personnel will be allowed in this area.
Support zone	All areas outside the exclusion and contaminant reduction zones. No unauthorized personnel will be allowed into the exclusion/contaminant reduction zones.

2.2 SUBSURFACE-INTRUSIVE WORK NOT REQUIRING NEGATIVE PRESSURE ZONE

The control measures listed below are specific to subsurface-intrusive work performed at the site that will affect less than a 100 square ft portion of the slab, or those that will not result in exposure of subsurface soil, and include:

- Probing for the UST beneath the 48 N 6th Deli via small (e.g., 3-in or less) boreholes
- Installation of vacuum monitoring points (VMPs)
- Installation of SSDS suction wells
- Limited trenching (less than 100 square ft of slab affected) for utility installation
- Slab modifications above the existing cellar level utility room (no exposure to subsurface soil).

Contamination reduction zone	Decontamination activities will occur inside the exclusion zone though decontamination is not anticipated during this above-slab phase.
Exclusion zone	The perimeter of the exclusion zone (area in which subsurface-intrusive activities are taking place) will be marked with orange traffic safety cones or caution tape. Only properly equipped and trained personnel will be allowed in this area.
Support zone	All areas outside the exclusion and contaminant reduction zones. No unauthorized personnel will be allowed into the exclusion/contaminant reduction zones.

2.3 SUBSURFACE-INTRUSIVE WORK REQUIRING NEGATIVE PRESSURE ZONE

The control measures listed below are specific to subsurface-intrusive work performed at the site that requires a negative pressure zone. These activities are those that will require a slab breach of greater than 100 square feet and will result in exposure to subsurface soil, and include:

- Trenching greater than 100 square ft for installation of utilities
- Slab modifications greater than 100 square ft for installation of ADA compliant entrances.

These measures also apply to site activities performed when there is no structural slab in place at the site.

Contamination reduction zone	The contamination reduction zone will be a constructed negative pressure zone of plastic sheeting, as described further below. The exterior of the negative pressure zone will be marked with orange traffic safety cones or caution tape. Only properly equipped and trained personnel will be allowed in this area.
Exclusion zone	The exclusion zone will be part of the negative pressure zone described further below. Decontamination activities will occur inside the exclusion zone.
Support zone	Any space outside of the negative pressure zone. Support zone may contain additional equipment staging areas. The support zone will be kept orderly. No unauthorized personnel will be allowed into the exclusion/contaminant reduction zones.

Prior to the start of work for ground-intrusive activities, a negative pressure zone consisting of a containment tent, negative air blowers, and effluent treatment system will be constructed. The negative pressure zone will create a physical barrier to limit airborne contaminants in the contaminant reduction zone and exclusion zone from migrating to adjacent spaces. To further mitigate volatilization of contaminants, a sprayfoam (Rusmar Long Duration Foam AC-645 or equivalent, specifications provided in Attachment A) and/or polyethylene sheeting will be used to cover exposed soils, as needed.

2.4 NEGATIVE PRESSURE ZONE

The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, and special ventilation devices will be employed to prevent exposures related to the work activities and to control dust and odors. For slab modification areas larger than 100 square ft with potential for subsurface soil exposure, a self-contained, negative-pressure enclosure, or "containment tent" will encompass the work area. All individuals not directly involved with the planned work must be absent from the room in which the work will occur.

Prior to the start of work for ground-intrusive activities, the negative pressure zone consisting of a containment tent, negative air blowers, and effluent treatment system will be constructed. The purpose of the negative pressure zone is to limit VOCs from being released to the Site building, neighboring buildings, and sidewalk/street. Sufficient isolation will be evaluated through air monitoring at predetermined locations outside of the negative pressure zone

The containment tent will consist of an external framework, such as galvanized pipe, that will support containment sheeting, 14-oz PVC laminate, or similar. The containment sheeting will be overlapped at a minimum of 6 in. and sealed to limit air infiltration or escape. Double-stitched zippers sealed with Velcro flaps will be located at the entrance to the containment tent. The areas of the containment and exclusion zones will be delineated, and the volume will be calculated to allow for sizing of blowers and effluent treatment vessels. Additional height will be added to this calculation based on anticipated excavation depth for field activities involving excavation.

Negative pressure will be induced in the containment tent through the use of negative air blowers or an air scrubber. Multiple negative air blowers may be required depending on the size of the containment tent. Visually, the PVC laminate (or similar) lining of the containment tent should cave in slightly. A TRI/MON or equivalent digital recording manometer will be used to monitor air pressure continuously inside the negative pressure zone. The manometer will be field checked (i.e., zeroed) daily in accordance with manufacturer's specifications. Pressure will be monitored and recorded via telemetry with an operating alarm, to see if the pressure is within the desired range: readings should be at a minimum pressure of -0.02 in. water column (in. wc) for the space to be considered sufficiently isolated from the surrounding area. If the pressure rises above the threshold, work must stop and the seal of the space should be inspected. Once -0.02 in. wc pressure is restored, work may continue.

To limit tenant and community exposure to VOCs, the negative air pressure blowers will be discharged to vapor-phase granular activated carbon (GAC) vessels or equivalent treatment. Two GAC vessels will be installed in a lead-lag configuration; two additional GAC vessels will be stored onsite to allow continuous air scrubbing and limit interruption to work. The lead drum will be fitted with a clear acrylic breakthrough detector. The breakthrough detector changes from violet to dark brown or black when the activated carbon bed shows free organic material. When the lead drum indicates breakthrough, the lag vessel will be placed in the lead position, and a fresh GAC vessel will be installed behind it. The effluent risers will be fitted with sample ports for monitoring during the remediation. If the ambient air in the work zone shows a consistent 15-minute average below the action level of 5 ppm, the scrubbing system may be turned off; however, the scrubbing system shall be restarted prior to initiating a new or more intrusive phase of work.

The purpose of the negative pressure zone is to limit VOCs from being released to the neighboring buildings and street. Sufficient isolation will be evaluated through air monitoring at predetermined locations outside of the negative pressure zone. These locations and action limits are outlined in the community air monitoring plan (CAMP), provided in Section 3, below.

3 COMMUNITY AIR MONITORING PLAN

Air monitoring will be conducted to identify potentially hazardous environments and will provide data for reference or background concentrations. Air monitoring for chemical compounds and airborne dust will be conducted during the field activities associated with the May 2024 work plans.

3.1 AIR MONITORING PROCEDURES

Air monitoring procedures will be adjusted based on the work activities. Real time, continuous monitoring for chemical compounds and airborne dust will be performed during ground-intrusive activities and from the time the current slab is removed until the new slab is installed. Continuous CAMP air monitoring will be conducted for a period of 2 days prior to site activities to provide data regarding ambient conditions. Periodic monitoring may be performed during other non-intrusive construction activities such as above-slab SSDS component installation. The following table summarizes the applicable field activities for continuous or periodic air monitoring.

Type of Monitoring	Activities
Continuous Monitoring	Subsurface-intrusive activities, or those activities with potential for subsurface soil exposure, including but not limited to: • Probing for the UST beneath the 48 N 6th Deli via small (e.g., 3-in or less) boreholes • Installation of VMPs • Installation of SSDS suction wells • Trenching for utility installation • Slab modifications • Slab replacement • Decontamination during activities listed above
Periodic Monitoring	Non-ground intrusive activities • Site preparation • Installation of carbon filtration in first floor HVAC system(s) • Installation of above-slab SSDS components.

3.1.1 Continuous Monitoring

Continuous monitoring will occur throughout each work day associated with field activities applicable to this form of monitoring. Monitoring for VOCs and dust will take place outside of the work zone. For those subsurface-intrusive activities to be performed within a negative pressure zone (described in Section 2), VOC and dust monitoring will take place outside of the negative pressure zone and downwind of the exhaust of the negative pressure machines. When work areas will be within 20 feet of potentially exposed populations or occupied structures, the

continuous monitoring locations for VOCs and particulates will reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby occupied rooms and structures. It is anticipated that tenant/community air monitoring locations for VOCs and dust will be located outside of the work zone on the first floor and within the second floor hallway:

- One monitoring station will be located on the first floor outside of the work zone, or containment tent when the tent is required (see Section 2.3 above).
- One monitoring station will be located on the first floor within the tenant egress area closest to the work (front or rear stairwell).
- One monitoring station will be located in the second floor hallway outside of the elevator.

Upwind monitoring for VOCs and dust will take place on the sidewalk upwind of the treated effluent from the negative pressure zone, or at the exit door when monitoring occurs there, at the beginning of each work day and periodically (once every 2 hours throughout the work day) to establish background concentrations, particularly if wind direction changes. Upwind monitoring may also be conducted continuously.

Signage will also be posted with the contact information of building management and the construction lead so that if a tenant observes odor or dust, the construction team can be notified immediately and action can be taken.

If additional monitoring zones are identified during field activities, monitoring points may be added to the CAMP.

3.1.2 Periodic Monitoring

Periodic monitoring will consist of dust and VOC measurements in the breathing zone upon construction personnel and environmental professional arrival at the sample or activity location, hourly monitoring while work is conducted, and prior to construction personnel and environmental professional leaving the location. Periodic monitoring measurements may be collected using continuous meters for ease of operations.

3.2 DUST CONTROLS

Subsurface intrusive work (e.g., installation of SSDS suction wells, concrete removal, excavation, and backfill work) has the potential to generate airborne dust. Engineering controls shall be used during construction (e.g., wetting or covering exposed soil), as necessary, to meet NYSDOH Community Air Monitoring requirements to mitigate the offsite (and internal building) transport of airborne particulates. If wetting is employed, care shall be taken to apply

the appropriate amount of water to prevent dust only. Visual monitoring shall take place and water application shall cease if over-saturation is noted (i.e., puddling, surface runoff). In addition, street sweeping shall be performed, as necessary, to comply with New York City Department of Transportation Building Operations/Construction Activity Permits. As described in Section 2.2.1, prior to the start of work for ground-intrusive activities, a negative pressure zone consisting of a containment tent, negative air blowers, and effluent treatment system will be constructed; the negative pressure zone will create a physical barrier to limit airborne contaminants and also will serve to mitigate dust migration.

3.3 NOISE AND VIBRATION CONTROLS

Construction noise will be generated by a variety of construction equipment, potentially including truck engines, backup alarms, generators, other small engines, or earthmoving equipment. Work associated with the May 2024 work plans shall be performed during 7 a.m. and 6 p.m. on weekdays as stated in the New York City Department of Environmental Protection Noise Code. An after-hours authorization application will be submitted if work is to be conducted outside of these hours.

3.4 INSTRUMENTATION

Breathing zone air can be monitored to test if dust and chemicals exceed a regulatory or project-specific action level (generally 50 percent of the PEL). Integral commonly uses PIDs and dust meters (e.g., MINIRAM [Miniature Real-time Aerosol Monitor]) for monitoring VOCs and particle constituents, respectively. In practice, the air directly in the field personnel's breathing zone is monitored with the PID or dust meter for 10–15 seconds. The highest reading is recorded in the project logbook and checked against the site-specific action level presented in Section 3.6, below. If any of the constituents exceed the action levels presented in Section 3.6, immediate action is required (e.g., don respirators, leave site, etc.) as designated below.[3]

The following sections provide general guidance on the selection and calibration of air monitoring equipment that is typically used for Integral field projects. Additional battery packs and CAMP monitors will be available on Site in case of power or other equipment issues so that instrumentation can be quickly swapped out and CAMP monitoring can continue with limited interruption.

[3] Note that neither the PID nor the MINIRAM can identify chemicals. The PID detects total ionizable VOCs and the MINIRAM detects total particles of sufficient diameter to be detected.

3.4.1 Photoionization Detector

A PID with a detector lamp with the appropriate ionization energy to detect chemicals of interest at the site will be necessary to perform air monitoring (anticipated to be 10.6 eV for this project). The ionization energy of the lamp must be greater than the ionization potential of the chemicals of interest, which are:

- Tetrachloroethylene (PCE) – ionization potential of 9.32 electron volts (eV)
- Trichloroethylene (TCE) – ionization potential of 9.45 eV
- cis-1,2-dichloroethylene (DCE) – ionization potential of 9.65 eV.

Additional ionization potentials are listed in the National Institute of Occupational Safety and Health pocket guide to chemicals. Be sure that the meter arrives at least a day prior to the start of the fieldwork so field personnel can familiarize themselves with the operation of the meter and confirm that it was not damaged during shipping. Field personnel must also read the operation manual to become familiar with operation of the PID prior to use in the field. Note that moisture may damage the detector lamp and/or provide erroneous readings, so a moisture filter is used on the probe. Also note that the PID will only accurately quantitate the material used in the calibration process. A response factor is used to measure the sensitivity of the PID to a particular chemical present at the site. Response factors are normally presented in the operation manual for the PID.

The PID must be calibrated daily in accordance with the manufacturer's specifications, which are provided in the operation manual. The calibration typically requires the use of a span gas (generally 100 ppm isobutylene) and zero gas via an external zero filter. Be sure that all the required calibration equipment/supplies are provided with the PID (e.g., span gas cylinder, regulator, tubing, and Tedlar bag). Record calibration data in the field logbook.

3.4.2 Dust Meter

An MIE Inc. DataRAM or equivalent dust meter with a latching alarm capable of measuring particulate matter less than 10 micrometers in size (PM-10) will be used. The instrument will be fitted with an omnidirectional sampling inlet to obtain representative samples under a variety of wind speeds and directions. A RAM-TCH inlet heater may also be used in humid conditions to remove water vapor from the sampling stream.

The dust meter will be field checked (i.e., zeroed) daily in accordance with the manufacture's specifications provided in the operation manual. The dust meter field check typically involves zeroing the meter with ambient or filtered air. The required zeroing and operational equipment/supplies should be provided with the dust meter. Field check data will be recorded in the field logbook.

A dust meter will be set up at the locations indicated in Section 3.1.1 to verify that dust control methods are adequate. The telemetry notification system will be set at 150 mg/m^3 above background levels to alert site personnel that the action level has been exceeded. When the system is activated, the work area will be wetted to control dust.

3.5 VAPOR AND ODOR MANAGEMENT PLAN

Vapor releases and odors within the building footprint are a potential health and safety concern during ground-intrusive activities. This plan addresses worker safety by delineating work zones and addresses tenant and community protection by sealing and ventilating the work zones through negative air pressure induction, as described in Section 2, above. Proper ventilation of the work zones will mitigate fugitive construction dust and odors, as well as potentially contaminated soil vapor.

3.6 ACTION LEVELS

3.6.1 VOC Monitoring, Response Levels, and Actions

VOCs will be monitored at the locations indicated in Section 3.1.1 on a continuous basis for ground-intrusive work or as otherwise specified for non-intrusive work. Upwind VOC concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. Unusual background readings will be discussed with NYSDOH prior to commencement of the work.

The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below:

- If the ambient air concentration of total organic vapors at a monitoring station exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at a monitoring station persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be temporarily halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 20 ft from the nearest potential receptor outside of the exclusion zone or tenant egress area/stairwell is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at a monitoring station, work activities will be shut down.

Exceedances of the above thresholds and related corrective measures shall be reported to the NYSDEC and NYSDOH Project Managers as soon as possible.

Fifteen-minute readings will be recorded and presented to NYSDEC and NYSDOH in daily communications and summarized in weekly reports. Instantaneous readings, if any, used for decision purposes will also be documented and recorded in the daily reports.

3.6.2 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored on a continuous basis for ground-intrusive work or as otherwise specified for non-intrusive work, at the stations indicated in Section 3.1.1. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with a visual or text/email telemetric notification system to alert staff of an exceedance of the action level. In addition, fugitive dust migration will be visually assessed during work activities:

- If the recorded PM-10 particulate level is 100 $\mu g/m^3$ greater than background (upwind location) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed.[4] Work will continue with dust suppression techniques provided that PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the background level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, PM-10 particulate levels are greater than 150 $\mu g/m^3$ above the background level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $\mu g/m^3$ of the background level and in preventing visible dust migration.

Fifteen-minute readings will be recorded and presented to NYSDEC and NYSDOH in weekly reports. Instantaneous readings, if any, used for decision purposes will also be documented and provided to NYSDEC and NYSDOH.

[4] DER-10 / Technical Guidance for Site Investigation and Remediation. New York State Department of Environmental Conservation. May 3, 2010.

3.7 SPECIAL REQUIREMENTS FOR INDOOR WORK WITH CO-LOCATED RESIDENCES OR FACILITIES

This CAMP has been designed to meet special requirements for indoor work with co-located residences or facilities. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, and special ventilation devices will be employed to limit exposures related to the work activities and to control dust and odors. As discussed in Section 2.2 above, a self-contained, negative-pressure enclosure with emission controls will encompass the work area. Individuals not directly involved with the planned work must be absent from the enclosure in which the work will occur.

The particulate and VOC action levels presented above meet the special requirements for indoor work with co-located residences or facilities.

To the extent possible, planned work will be implemented during hours when building occupancy is at a minimum (i.e., weekdays).

The CAMP may be modified by the NYSDEC and NYSDOH, based on review of remedial activities, subsequent CAMP data, and tenant concerns. Modifications may include, but are not limited to, changing the number of CAMP monitoring stations, revising action levels, collecting indoor air data, and implementing corrective measures. Indoor air samples, if necessary, will be collected in six-liter, batch-certified clean SUMMA canisters, per the methods provided in the 2017 Remedial Investigation Work Plan (RIWP) and associated Quality Assurance Project Plan (QAPP) (Integral 2017).[5] Samples will be analyzed for VOCs via USEPA Method TO-15 at a NYSDOH ELAP-certified analytical laboratory, per the methods provided in the 2017 QAPP .

[5] Integral. 2017. Remedial Investigation Work Plan, Former Cleaner Sales and Equipment Corp. Site, 135 Kent Avenue, Brooklyn. Integral Engineering, P.C., on behalf of 135 Kent Avenue Management Corp. September.

4 HEALTH AND SAFETY PROCEDURES

Modifications to the SSDS and intrusive activities will be performed by contractors and observed by an Integral staff member working under the direction of a NYS-licensed and -registered professional engineer. Work performed under this plan will be in compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA. The parties performing the construction work are responsible for the preparation of an appropriate health and safety plan and for the appropriate performance of work according to that plan and applicable laws. Sub-surface intrusive activities where potential exposure to contaminated soils is possible will be performed by parties with 40-hr HAZWOPER training. Above grade construction work does not require 40-hr HAZWOPER training. Integral staff observing site work will follow the protocols specified in the 2017 Site Health and Safety Plan (2017 SHSP) prepared for the 2017 RIWP.[6]

[6] The 2017 SHSP provides protocols for worker safety and air monitoring during the performance of remedial investigation activities, which included soil vapor sampling and groundwater well installation, and is appropriate for the small-scale penetrations and slab modifications proposed in the May 2024 work plans.

Integral. 2017. Remedial Investigation Work Plan, Former Cleaner Sales and Equipment Corp. Site, 135 Kent Avenue, Brooklyn. Integral Engineering, P.C., on behalf of 135 Kent Avenue Management Corp. September.

5 PROJECT CONTACT LIST

The following table provides the key contacts for the site work discussed in the May 2024 work plans:

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Sara Barbuto	Integral	Project Manager / Quality Assurance Officer	(207) 800-3803	sbarbuto@integral-corp.com
Dominic Morales	Integral	Field Lead/SSO	(415) 787-6309	dmorales@integral-corp.com
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Notes:
NYSDEC = New York State Department of Environmental Conservation
NYSDOH = New York State Department of Health