



# Product Data Sheet

## Vertical Stack AVK10N4H2

List: \$7,300

- 1,800W electric heat
- R410a
- 230V

### **SAFETY WARNING**

Only qualified professionals should install and service this equipment. Improperly installed or modifications by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the installation manual and labels attached to the equipment.



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AIO vertical stack is the ideal multi-room solution when a ceiling-mounted unit is not desired or feasible. The compact 12-inch by 25-inch compact footprint uses minimal floor space. This unit is perfect anywhere direct venting or ducting is required with up to 0.6" external static pressure. Use any grille and louvers for maximum design flexibility.

A unique feature of AIO vertical stack unit is that it can be installed on a corridor wall, enabling the unit to be fully serviced without entering the apartment or hotel room. A bathroom exhaust can connect to the dedicated stale air exhaust.

**Ephoca is constantly innovating and improving its products and reserves the right to modify product design and specifications without notice and without incurring any obligations.**

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# Key features

## ■ No outdoor unit

The single package design means no outdoor unit, freeing up space on rooftops and at ground level and enabling installations in buildings without space for an outdoor unit.

## ■ Twin rotary BLDC inverter compressor

The state-of-the-art twin rotary BLDC inverter compressor operates efficiently, quietly, and with minimal vibration. AIO is ideal for any room or area that requires between 4,000 and 11,000 BTU.

## ■ High-efficiency ECM fans with auto ESP

High-efficiency ECM fans enable efficient and quiet operation as the EC motor can ramp up or down depending on the need. Automatically adjusted external static pressure ensures correct airflow.

## ■ Cold climate heat pump

The heat pump with efficiently function down to 5°F outdoors.

## ■ 1,800 Watt electric heat

The electric heat works in conjunction with the heat pump when the heat pump has insufficient power.

## ■ Intelligent defrosting

AIO's intelligent defrosting system means more time heating and less time on reverse cycle defrost.

## ■ Coil cooling system

The condensate mister system drizzles the condensate on the outdoor heat exchanger coils, lowering the coil's temperature and increasing efficiency and performance.

## ■ Quiet

With whisper-quiet operation as low as 27 decibels, the occupant will barely notice AIO is operating.

## ■ No outside noise infiltration

AIO has the lowest STC and OITC rating among comparable units. This means less outside noise intruding into the room day and night.

## ■ Versatile on/off options

AIO's low voltage connection enables connection to any occupancy system, key-card, window sensors, fire alarms, etc.; as long as it can send a signal to AIO via low voltage, the unit can be easily turned on or off.

## ■ Corrosion protection

AIO comes standard with corrosion protection, assuring many years of trouble-free performance.

## ■ Minimal clearances and compact footprint

AIO's compact form with no line sets means there is no need to access the sides of the unit. Mount units with as little as 1/3 inch clearance on all sides. Compact footprints take up minimum space.

## ■ Leak protection

A drain alarm will activate if the drain becomes clogged, and the system will be shut off, preventing water damage.

## ■ Easy to service

AIO can be easily maintained and repaired from the front or bottom of the unit without having to remove the unit from the wall or ceiling. AIO can also be quickly swapped out with a replacement, reducing downtime.

## ■ Versatile controls

AIO includes an iOS and android app and an onboard touch controller. AIO can be used with optional wall-mounted controllers, including a TFT with 7 day program and third-party controllers from any company using the optional 3rd party kit. An optional BACnet and Modbus module enables interfacing with building management systems

## ■ 10-Year limited warranty

An industry-leading ten-year limited on-site warranty provides peace of mind. One full-year parts and labor. Nine-year parts and a full ten-year parts and labor on the sealed system, including the compressor.

# Technical requirements

## AIO Vertical stack specifications

Note: Refer to the full specifications for detailed information about the list of specifications. AVK10N4H2

- The power supply circuit is installed in accordance with the current edition of NEC (ANSI/NFPA 70) and local codes and ordinances. Note: Always consult local and national electric codes.
- Voltage rating of 60 Hz, 208V/230V single phase.
- Properly installed insulated condensate drain line with a minimum of 30% slope if an external drain. An internal drain is highly recommended. If using an external drain on a low floor, ensure that end of drain is above the maximum height of snow buildup. An internal drain is highly recommended.
- Interior clearances are only required to prevent vibrations. Leave at least 1/3" of clearance from any surface. All others clearances are only dependent on ducting.
- Approved louvers installed with best practices to ensure no water into the wall assembly.
- Correctly sized ductwork, installed properly and balanced.
- The unit must be perfectly level on the vertical and horizontal axis.
- The unit must be tight to ducts, with zero leakage between the external ducts and the unit.
- Properly affixed screws to wall studs or other supporting material.
- Unblocked vents on the exterior and no obstacles within 36".
- An access panel with adequate clearance to be able to access the entire front of the unit for servicing.

## Louver specifications

AIO Vertical stack units can be vented through all kinds of custom and creative solutions. The possibilities are endless, from perforated panels to custom louvers.

There are two critical factors in selecting and sizing a solution that will work with AIO Vertical stack units.

- **Free area:** This area on a louver/grille is open for the air to flow through. The louver, perforated panel, or other solution must have at least the amount of free area as required in the specifications below in the plenum from the unit so that ample air can enter and exit the condenser chamber. A more restrictive solution with a smaller free area can be utilized by enlarging the louver and plenum until the required free area is achieved.

**The minimum free area required is .34 sq feet for the intake vent and .34 sq feet for the exhaust vent.**

- **Pressure drop:** Pressure drop is the resistance the louver/grille creates against the airflow. This resistance can create heat build-up inside the condenser portion, causing the compressor to overheat and shut down. A solution with a higher pressure drop than specified can be utilized by enlarging the louver and plenum until the pressure drop is within specification.

**The maximum total pressure for the intake and exhaust ducting (if any) and intake and exhaust louvers combined must be under 0.7" WC.**

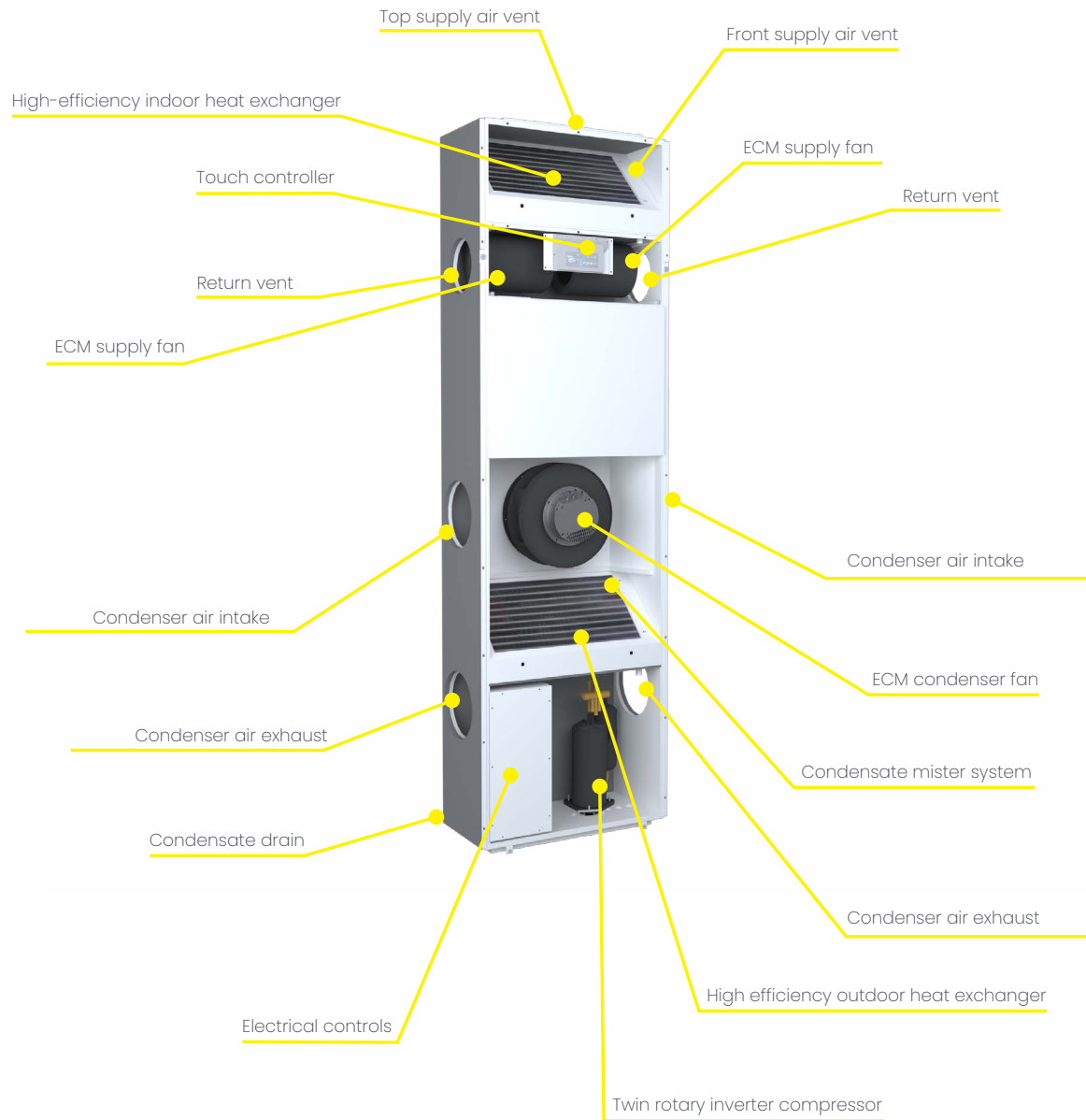
**To be clear, the entire assembly of ductwork, plenums, and louvers for the complete air circuit, in and out of the system may not exceed 0.7" WC.**

Any louver or louver or assembly must meet these requirements, as exceeding these limits can cause the unit to overheat and fail and void the warranty.

The following louvers are approved for AIO Vertical stack units:

- Sunvent: LLA/C, LLA/M, LLA/S - available through your Ephoca distributor.
- Thermaduct: RLA8- available through your Ephoca distributor.

# What's inside



# Technical specifications

## Cooling

Indoor: 80°F, W.B. 67°F; Outdoor: 95°F, W.B. 75°F

Heat Pump		
Range	Btu/h	3,400 - 15,000
Nominal		8,500
Input Power	W	708
Efficiency	EER	12.01
	SEER	15.25

## Heating 47°

Indoor: 70°F, W.B. 60°F; Outdoor: 47°F, W.B. 43°F

Heat pump		
Range	Btu/h	4,200 - 15,000 + 6,100 Electric heat
Nominal		8,400
Input power	W	690
Efficiency	COP	3.57

## Heating 13°F

Indoor: 70°F, w.B. 60°F; Outdoor: 13°F, W.B. 9°F

Heat pump		
Capacity range	Btu/h	3,200 - 7,000+ 6,100 Electric heat
Capacity		6,800
Input power	W	955
Efficiency	COP	2.09

## Heating 5°F

Indoor: 70°F, W.B. 60°F; Outdoor : 5°F, W.B. 3°F

Heat pump		
Capacity range	Btu/h	2,700 - 6,700 + 6,100 Electric heat
Capacity		6,400 + 6,100 Electric heat
Input power	W	1,025
Efficiency	COP	1.83

## Airflow

General		
Indoor	Type	ECM centrifugal
	CFM	226 - 400
	Speeds	Low, med, high, auto
	Filter	MERV 3
Outdoor	Type	ECM centrifugall
	CFM	385 - 638
	Available ESP	0.7" WC
	Intake	
	Exhaust	8" round
	Speeds	Low, med, high, auto

## Sound

General		
Indoor	dB(A)	27 - 43
	STC	40
	OITC	35
Outdoor	dB(A)	28 - 55

## Compressor

230V

Model voltage		
Type		BLDC twin rotary inverter
Refrigerant	Type	R32
	Oz.	21.87
Oil	Type	Fv50s

## Electrical

230V

General		
Volt range		207 - 251
Hz/ phase		60 Hz single phase
Power supply		Hardwire
Power factor	%	0.96
Cooling (nominal)		3.3
Cooling (max)		7.8
Heating (nominal)	A	3.2
Heating - Heat pump + Electric (max)		16.1
Input power (standby)		10.8
Input power (off mode)	W	1.7
MCA		18
MOCP	A	25

## General

Controls	
Basic functionality	Dependent on controller
WiFi	Optional module available
ADA compliant	Dependent on controller
Dry contact	Yes
Power outage restart	Auto-on based on last setting

Modes	
Operation	Cool, heat, dehumidify, auto
Restricted modes	Heat only, cool only, temperature limiting
Timers	Dependent on controller

Condensate	
Pipe size	3/4"

Physical data		
Dimensions	Net	25" W x 83.5" H x 11.9" D
	Gross	88" L x 32" W x 22" H
Weight	Net	330 lb
	Gross	460 lb (unit is shipped crated)
Cabinet	Finish	RAL 9003 signal white
	Material	Steel

Warranty	
Year 1	On-site parts and labor
Year 2 - 10	Parts only
	On-site parts and labor on compressor

# Airflow

AIO vertical stack is extraordinarily flexible in the many ways it can be fully ducted or used with minimal or no ducting. This flexibility enables vertical stack to be placed anywhere in a dwelling with no restrictions.

## ■ Supply air

The front, rectangular 6.7" x 18" supply air connection is ideal for a supply grille. With 0.6" WC external static pressure (combined between return and supply) the top rectangular 6.7" x 18" supply air connection is ideal for ducting to one or more rooms. For added flexibility, duct part through the top and direct vent part through the front for ducting multiple rooms with minimal ductwork.

## ■ Return air

The left and right side 6" WC round connection can be ducted to one or more rooms with up to 0.6" WC external static pressure (combined between return and supply). It can also be left open as a side plenum return. Each connection is fully independent with two ECM fans, each with auto ESP. Duct both, leave both open or duct one, and leave one open to a plenum.

## ■ Outside air intake

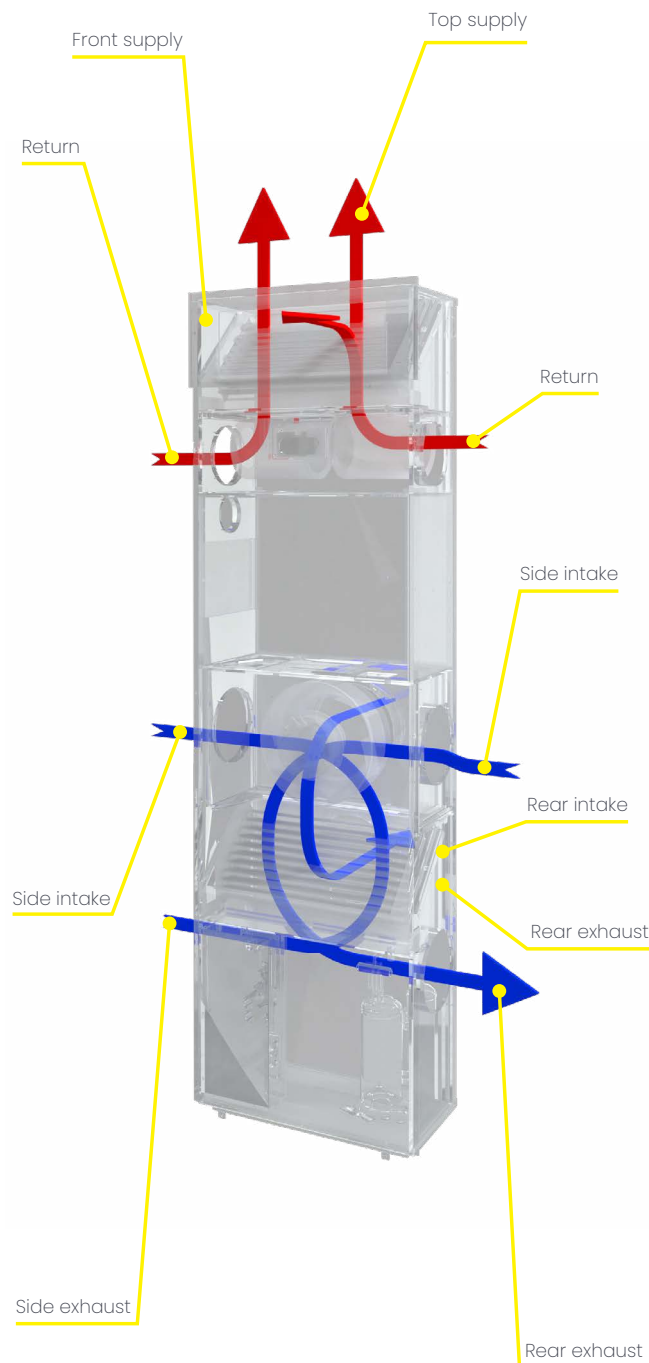
The single 8" round outside air intake connection can be accessed from the left, right, or rear and provides outside air for the condenser portion. This can be ducted with up to 0.7" WC external static pressure (combined between intake and exhaust).

## ■ Outside air exhaust

The single 8" round exhaust air connection can be accessed from the left, right, or rear, and exhausts the stale and condenser air. This can be ducted with up to 0.7" WC external static pressure (combined between intake and exhaust).

## ■ Mix and match outside connections for total flexibility.

The upper outside connection (left, right, and rear) is for exhaust, and the outside lower connection (left, right and rear) is for supply. It's possible to use any combination of connections. For example: Left for intake and rear for exhaust, or rear for intake, and right for exhaust, etc.



■ Outside air

■ Recirculate air

# Airflow

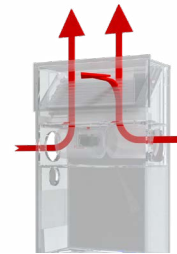
## Fan coil part



**Supply**  
Ducted top  
**Return**  
Left and right



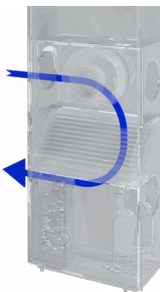
**Supply**  
Ducted top  
**Return**  
left and right



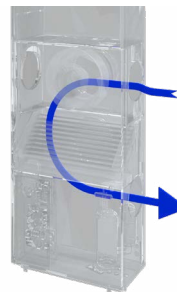
**Supply**  
Front and top  
**Return**  
left and right

■ Recirculate air

## Condenser part



**Intake**  
Left side  
**Exhaust**  
Left side



**Intake**  
Right side  
**Exhaust**  
Right side



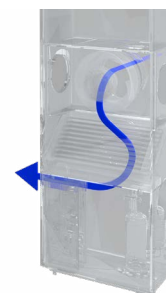
**Intake**  
Right side  
**Exhaust**  
Rear



**Intake**  
Left side  
**Exhaust**  
Right side



**Intake**  
Right side  
**Exhaust**  
Left side



**Intake**  
Rear  
**Exhaust**  
Left side



**Intake**  
Rear  
**Exhaust**  
Right side



**Intake**  
Left side  
**Exhaust**  
Rear



**Intake**  
Rear  
**Exhaust**  
Right side

■ Outside air

■ Stale air exhaust



# AIO Vertical Stack AVK10N4H2

Products are subject to continuous improvements and Ephoca reserves the right to modify product design, and specifications without notice.

Job	Reference	Construction
Location	Approval	Quote Number
Engineer	Date	Drawing Number
Submitted To	Submitted By:	P.O. Number:

## Cooling

Indoor: 80°F, W.B. 67°F; Outdoor: 95°F, W.B. 75°F

Heat Pump		
Range	Btu/h	3,400 - 15,000
Nominal		8,500
Input Power	W	708
Efficiency	EER	12.01
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	Filter	MERV 3
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	CFM	385 - 638
	Available ESP	0.7" WC
	Intake	
	Exhaust	8" round
	Speeds	Low, med, high, auto

## Compressor

General	
Type	BLDC twin rotary inverter
Refrigerant	R410a

## Sound

General		
Indoor	dB(A)	27 - 43
	STC	40
	OITC	35
Outdoor	dB(A)	28 - 55

## Electrical

General		
Volt range		207 - 251
Hz/ phase		60 Hz single phase
Power Cord		Hardwire
Power factor	%	0.96
Cooling (nominal)		3.3
Cooling (max)	A	7.8
Heating (nominal)		3.2
Heating - heat pump + electric (max)		16.1
Circuit breakers		
MCA - heat pump only		18
Recommended breaker size	A	20
MOCp		25

## Warranty

Warranty	
Year 1	On-site parts and labor
Year 2 - 10	Parts only
	On-site parts and labor on compressor

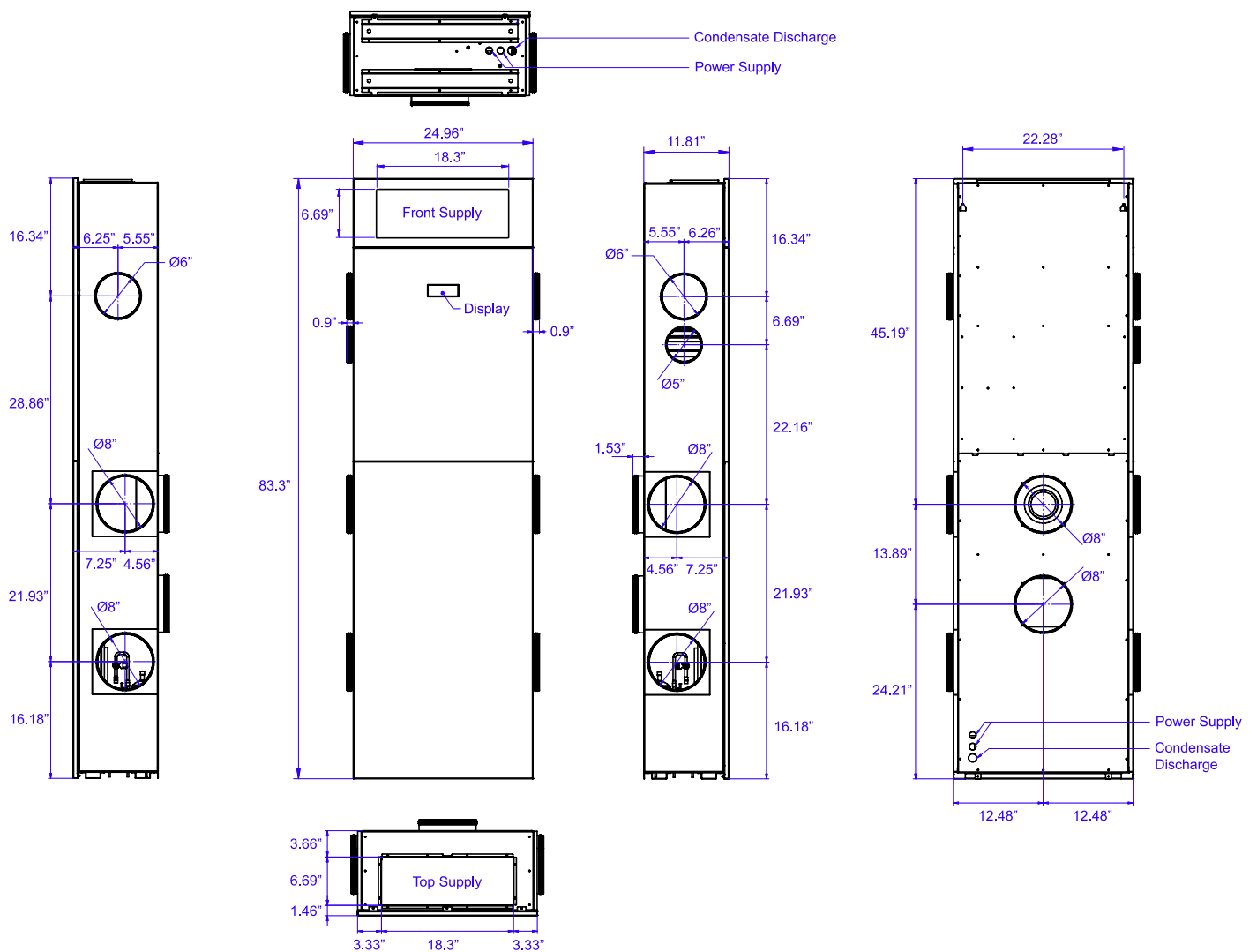
## Dimensions

General		
Dimensions	Net	25" W x 83.5" H x 11.9" D
	Gross	88" L x 32" W x 22" H
Weight	Net	330 lb
	Gross	460 lb (unit is shipped crated)
Cabinet	Finish	Steel
	Material	RAL 9003 signal white

# Dimensions

## Dimensions

For CAD and DWG files please scan or click the QR code below.



# Clearances

The AIO Vertical Stack unit's clearance will depend on how it is vented. Please carefully read the criteria below to determine the correct clearance required.

## ■ Ceiling

There must be 1" minimum clearance between the unit and ceiling to minimize noise from vibrations and for removing panels. If ducting through the top, ensure sufficient clearance to attach ductwork to the vent.

## ■ Bottom

There must be a minimum of 1" clearance between the unit and floor to minimize noise from vibrations. The unit sits on adjustable leveling legs, which can be removed and the unit wall hung.

## ■ Access Panel

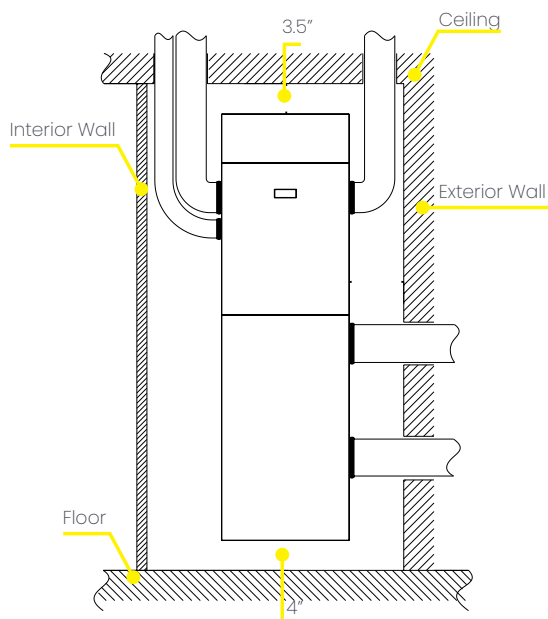
There must be an access panel of at least the size of the unit plus 1/2 inch all around. The recommended size is 86 x 27. The minimum size is 84.5 x 26. You can integrate a return and supply grille into the access panel door.

## ■ Sides

The clearance required on the sides is dependent on how the unit is configured for return and stale exhaust air.

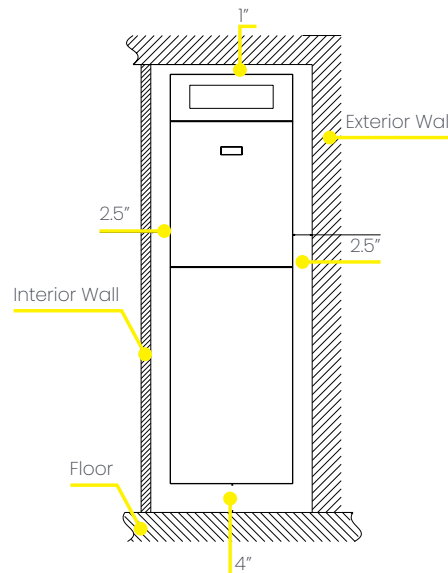
## ■ Side ducted return configuration

The clearance required is based solely on ductwork design. Ensure sufficient clearance to be able to attach the ductwork to the side return.



## ■ Side plenum return configuration

A minimum of 2.5" should be free for airflow on each side to allow the air to flow into the returns.

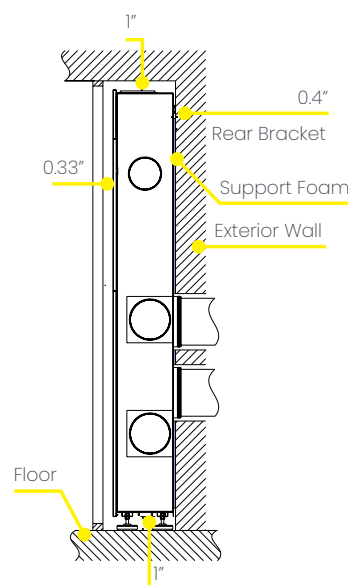


## ■ Front

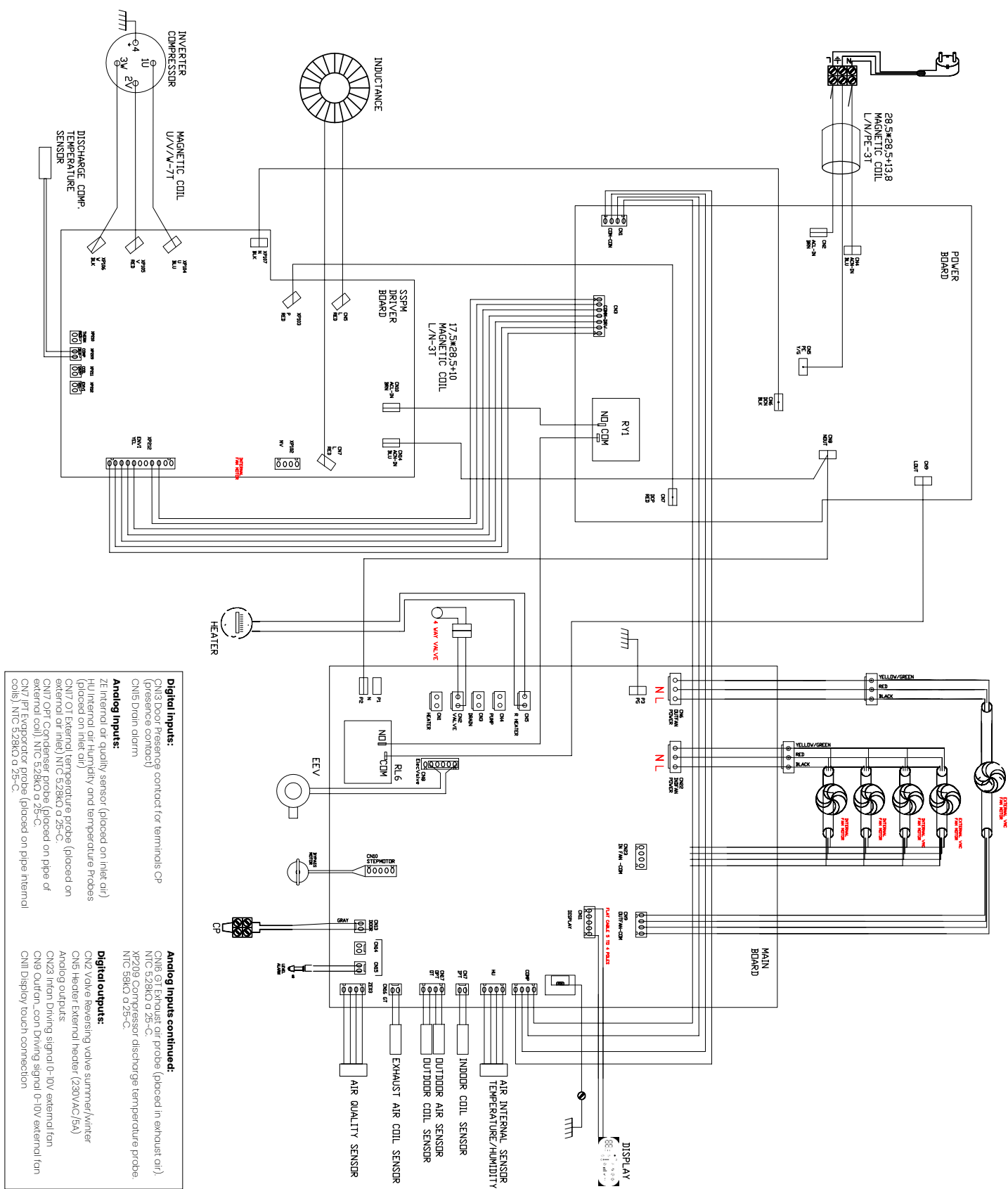
The clearance required in front of the unit to the access panel is 1/3" to minimize noise from vibrations.

## ■ Rear

There must be 1/3" minimum clearance between the unit and wall to minimize noise from vibrations. If ducting the intake and exhaust from the rear, ensure sufficient clearance to attach the ductwork to the rear vents. Ensure that rear external vents do not have any barrier or wall for at least 40".



# Wiring diagram





With over 15 years of experience in the climate comfort sector, we have a clear goal: growth through innovation. Our team is laser-focused on the conception, development, and production of innovative heating, ventilation, and air conditioning solutions. This mission has developed through bringing together technical skills, creativity, technology, design, Italian passion, and a global vision to achieve the best energy efficiency and performance.

Ephoca is the US subsidiary of Innova SRL - Via 1° Maggio, 8 - 38089 Storo (TN) Italy.

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