

# HRA-I-PLUS

**Vertical Stack Heat Pump**

**Enthalpy Heat Exchanger c/w Integrated ERV and 2 kW Electrical Heater**

Data Sheet VRVA50H0NUC-R - 410a, VRVB50H0NUC - R-32



**The compact unit with heat pump for heating, cooling, and air supply in nZEB houses.**

Seven functions in a single unit

- ✓ Heating
- ✓ Cooling
- ✓ Controlled mechanical ventilation
- ✓ Air purification
- ✓ Combined passive + thermodynamic heat recovery
- ✓ Dehumidification
- ✓ Free cooling

## **Authorized distributor for Canada**

Atlantic provinces

[www.curtisagencies.ca](http://www.curtisagencies.ca)

Ontario

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[www.climadesigntech.com](http://www.climadesigntech.com)

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# HRA-i-PLUS

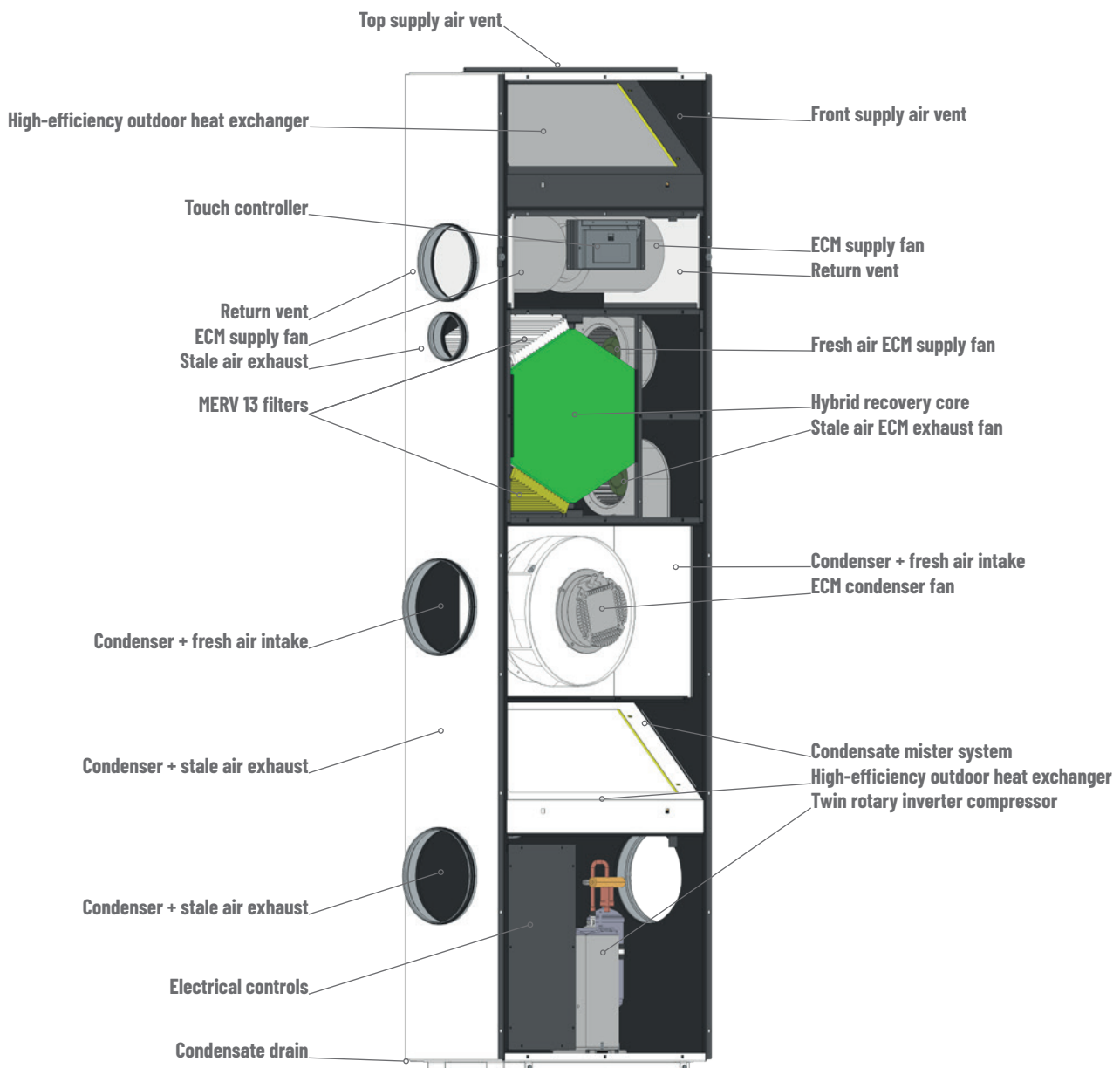
## The compact unit with heat pump for heating, cooling, and air supply in nZEB (nearly Zero Energy Building) houses.

HRI-I-PLUS vertical stack is the ideal multiroom solution when a ceiling-mounted unit is not desired or feasible. It combines heating, cooling, air renewal, dehumidification, free cooling (process whereby low external temperature is used as a natural cooling source), and combined passive and thermodynamic heat recovery in single machine. This system automatically monitors all the parameters of comfort in nZEB homes, optimizing energy savings at all.

The compact 300 mm by 635 mm compact footprint uses minimal floor space. This unit is perfect anywhere direct venting or ducting is required with up to 0.6 in. external static pressure. Use any grille and louvers for maximum design flexibility.

A unique feature of HRI-I-PLUS 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.

## Composition of the unit



## 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. HRI-I-PLUS is ideal for any room or area that requires between 4,000 and 11,000 BTU.

### Integrated ERV

HRI-I-PLUS integrated ERV eliminates the requirement of installing an independent ERV system, ducting, electrical work, and engineering.

### Integrated bathroom exhaust system

The integrated stale air exhaust can be used for bathrooms and kitchens, maintaining perfect air pressure and eliminating a dedicated exhaust system.

### MERV 13 clean air

Clean outdoor air is essential to well-being and safety. The MERV 13 filter ensures that all air entering the room/home is clean and safe. Additionally, stale air is passed through a second MERV 13 filter keeping the core clean.

### 2000 W electrical heating

The electrical heater works in conjunction with the heat pump to boost the heating process.

### High-efficiency ECM fans

High-efficiency ECM fans enable efficient and quiet operation as the EC motor can ramp up or down depending on the need.

### Cold climate heat pump

The heat pump with efficiently function down to  $-20^{\circ}\text{C}$  outdoors.

### Intelligent defrosting

HRI-I-PLUS's intelligent defrosting system means more time heating and less time on reverse cycle defrost.

### Quiet

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

### Versatile on/off options

HRI-I-PLUS'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 an HRI-I-PLUS via low voltage, the unit can be easily turned on or off.

### Versatile controls

HRA-i-PLUS includes Wi-Fi with iOS and Android applications and an onboard touch controller. HRA-i-PLUS can be used with an optional Modbus module that enable interfacing with building management systems.

### 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

HRA-i-PLUS can be easily maintained and repaired from the front of the unit without having to remove the unit from the wall. HRA-i-PLUS can also be quickly swapped out with a replacement, reducing downtime.

### 5-year limited warranty

**Seven-year limited on-site warranty provides peace of mind.**

- 5-year warranty on compressor
- 1-year warranty on all other components

# Technical specifications

## General

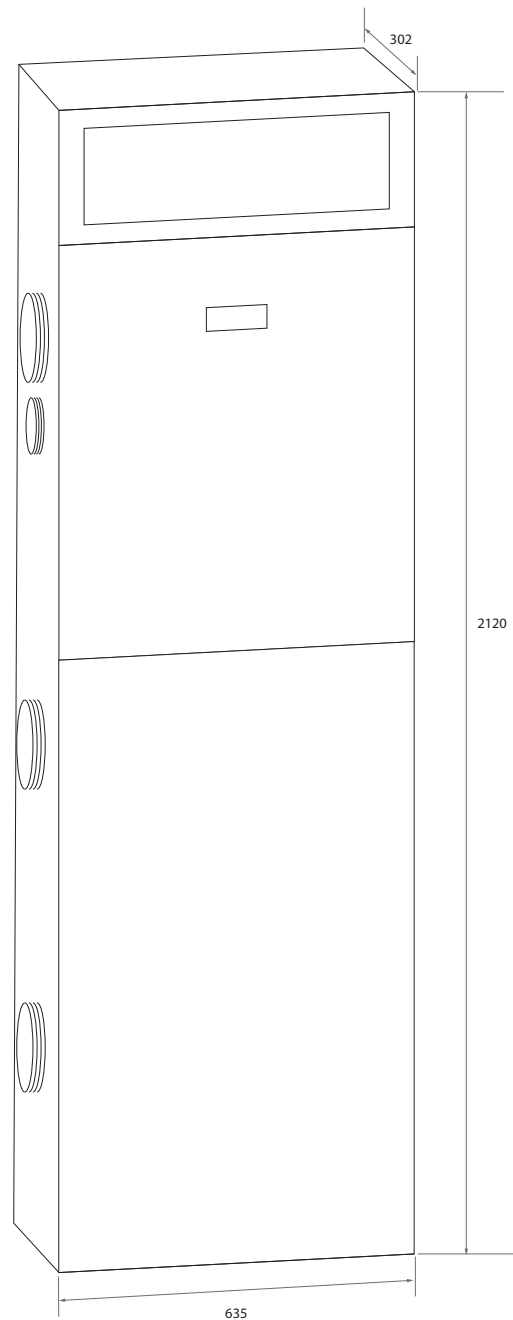
Controls	
<b>Basic functionality</b>	Dependent on controller
<b>Wi-Fi</b>	
<b>ADA compliance</b>	Yes
<b>Dry contact</b>	
<b>Power outage restart</b>	Auto. Based on last setting
Standard settings	
<b>Summer operation</b>	Cool+fresh air, fresh air only, and auto
<b>Winter operation</b>	Heat+fresh air, fresh air only, and auto
<b>Timers</b>	Dependent on controller
Condensate	
<b>Pipe size</b>	19 mm

## Air flow

<b>Indoor</b>	<b>Type</b>	ECM centrifugal
	<b>CFM</b>	226 to 400
	<b>Available ESP</b>	75 Pa
	<b>Supply connection (H × W)</b>	225 mm × 560 mm (8.9 in. × 29.1 in.)
	<b>Return connection</b>	2 side 150 mm (6 in.) round
	<b>Speeds</b>	Low, med, high, auto
<b>Fresh air intake (ERV)</b>	<b>Filter</b>	MERV 3
	<b>Type</b>	ECM centrifugal
	<b>CFM</b>	20 to 85
	<b>Speeds</b>	Based on CFM
<b>Stale air intake</b>	<b>Filter</b>	MERV 13
	<b>Type</b>	ECM centrifugal
	<b>CFM</b>	20 to 85
	<b>Available ESP</b>	50 Pa
	<b>Connection</b>	127 mm round (5.0 in.)
<b>Outdoor FA and EA for outdoor fan</b>	<b>Speeds</b>	Based on CFM
	<b>Filter</b>	MERV 13
	<b>Type</b>	ECM centrifugal
	<b>CFM</b>	385 to 638
	<b>Available ESP</b>	75 Pa
	<b>Intake connection</b>	200 mm (8 in.) round
	<b>Exhaust connection</b>	
	<b>Speeds</b>	Low, med, high, auto

## Physical data

Dimensions		
<b>Net (W × D × H)</b>	<b>mm (in.)</b>	635 × 2120 × 302 (25 × 83 × 11.9)
<b>Gross (W × D × H)</b>		813 × 2235 × 559 (32 × 88 × 22)
Weight		
<b>Net</b>	<b>kg (lb)</b>	150 (330)
<b>Gross</b>		209 (460)
Cabinet		
<b>Finish</b>	RAL 9008 signal white	
<b>Material</b>	Sheet metal with black insulation	



## Electrical resistance heater

General	
Capacity	2000 W -6825 BTU/h

## ERV

General				
Flow type	Counterflow enthalpy exchanger			
Material	Mold and bacterial resistant, washable polymer membrane			
ASHRAE compliance	62.1 and 62.2, when used with ERV.			
		40 CFM	60 CFM	80 CFM
Efficiency of core in winter				
Sensible	%	86.7	85.2	88.1
Latent	%	72.5	65.1	60.3
Efficiency of core in summer				
Sensible	%	71.1	69.4	68.1
Latent	%	56.2	54.5	51.2
Filter				
Indoor air	MERV	MERV 13		
ERV FA & EA	MERV	MERV 13		
Leakage				
Internal	In w.q.	2.6% at 0.40	2.4% at 0.40	2.2% at 0.40
External	In w.q.	2.8% at 1.0	2.7% at 1.0	2.5% at 1.0

## Sound

General		
Indoor	dB(A)	27 to 43
	STC	40
	OITC	35
Speeds	dB(A)	28 to 45

## Corrosion protection

HRA-i-PLUS comes standard with corrosion protection assuring many years of trouble-free performance.

## ERV filter efficiency: ePMI 80%

The filters capture 80% of the particulate with 1 micron size.

## Electrical

General		
Voltage		208 to 240
Hz/Phase		60 Hz, single phase
Power supply		Hardwired only
Power factor	%	0.96
Cooling (rated)		3.4
Cooling (max)		7.8
Heating -heat pump only (rated)		3.2
Heating -heat pump only (max)		8.3
Input power (standby)	W	10.8
Input power (off mode)		1.7
Electric heat	kW	2.0

Motors		
Compressor	RLA	2.8
	LRA	4.7
	W (max)	180
Indoor CFM fan motor	FLA	0.8
	HP	0.24
Fresh air intake CFM fan motor	FLA	0.2
	HP	0.05
Stale air intake CFM fan motor	FLA	0.3
	HP	0.05
	W (max)	190
Outdoor CFM fan motor	FLA	0.8
	HP	0.25

Circuit breakers		
MCA -Heat pump + electric heat	A	18
Recommended breaker size	A	20
MOCP		25

Compressor		
Type	BLDC twin rotary inverter	
Refrigerant	Type	R410A (optional R32)
	Oz.	21.87
Oil	Type	Fv50s

# Cooling and heating performance

## Cooling 35 °C

Indoor 27 °C (80 °F), RH 55. Outdoor 35 °C (95 °F).

ERV		
Air flow		80 CFM
Sensible efficiency		74%
HRA-i-PLUS		
Range	BTU/h	6690 to 17 000
Capacity		11 000
Input power	W	1005
Efficiency	COP	3.24

## Heating 8 °C

Indoor 21 °C (70 °F) RH 50. Outdoor 8 °C (47 °F).

ERV		
Air flow		80 CFM
Sensible efficiency		74.3%
HRA-i-PLUS		
Range	BTU/h	6690 to 17 000
Capacity		14 256
Input power	W	1170
Efficiency	COP	3.7
Electrical resistance heater		
Capacity	BTU/h	6825

## Heating -5 °C

Indoor 21 °C (70 °F), RH 50. Outdoor -5 °C (23 °F).

ERV		
Air flow		80 CFM
Sensible efficiency		74.50%
HRA-i-PLUS		
Range	BTU/h	6690 to 17 490
Capacity		12 205
Input power	W	1140
Efficiency	COP	3.1
Electrical resistance heater		
Capacity	BTU/h	6825

## Heating -15 °C

Indoor 21 °C (70 °F), RH 50. Outdoor -15 °C (5 °F).

ERV		
Air flow		80 CFM
Sensible efficiency		75.30%
HRA-i-PLUS		
Range	BTU/h	6690 to 17 490
Capacity		9675
Input power	W	11-0
Efficiency	COP	2.57
Electrical resistance heater		
Capacity	BTU/h	6825

## Horizontal DC inverter compressor

The unit has a height of merely 26 cm and offers a broad modulation range from 15% up to 100% of the power. Furthermore, it uses proprietary drivers with advanced motor torque and control algorithms to eliminate vibrations.

## Enthalpy

Enthalpy is the sum of the sensible and latent heat in a given air-vapour mix. It is sometimes referred to as the total heat of the air.

The Enthalpy Exchanger recovers both the thermal and the latent energy from the stale air extracted from wet rooms around the home.

The additional energy, which would otherwise have been lost, is transferred into the incoming fresh air stream before being supplied to habitable rooms.

# Base functions

## Display status and alarms



Alarm indication  
Flashing with closed CP contact.  
Lit for alarm indication.



Summer mode active



Winter mode active



Unit in stand-by mode



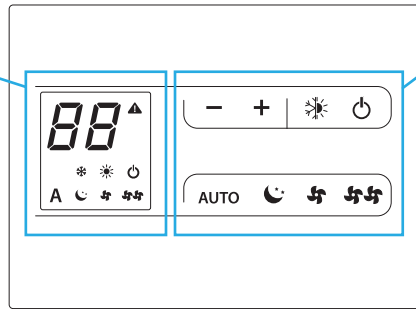
Minimum ventilation speed activated.



Rated ventilation speed activated.



Maximum ventilation speed activated.



The remote control can also be installed in a mechanical room.

The room temperature, as well as the humidity and quality of the air (VOC+CO2), are measured on the air extraction fitting of the unit.

## Keypad functions



Decrease or increase the set temperature.



Allows you to change the operating mode between summer and winter.



Allows the control panel to be switched on or put into stand-by mode.

AUTO

Makes ventilation speed adjustment fully automatic according to IAQ values is RH%.



Allows you to set the minimum ventilation speed.

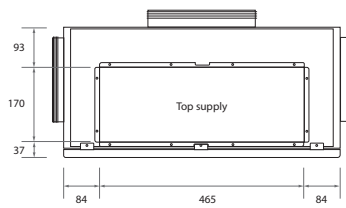
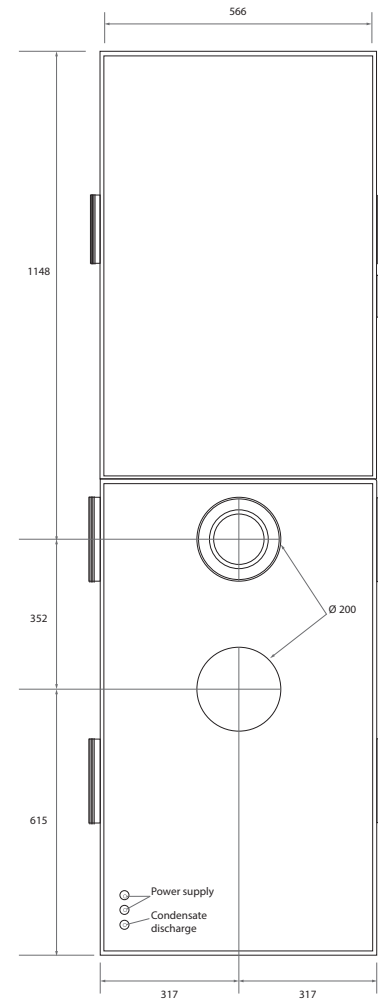
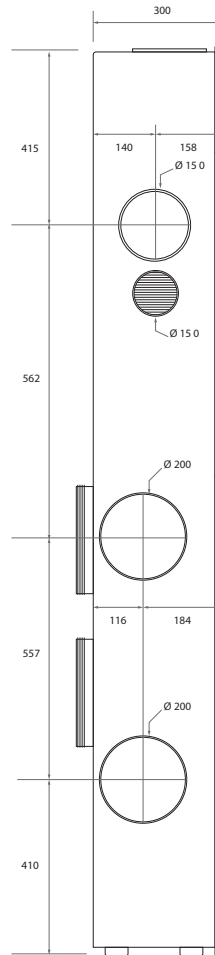
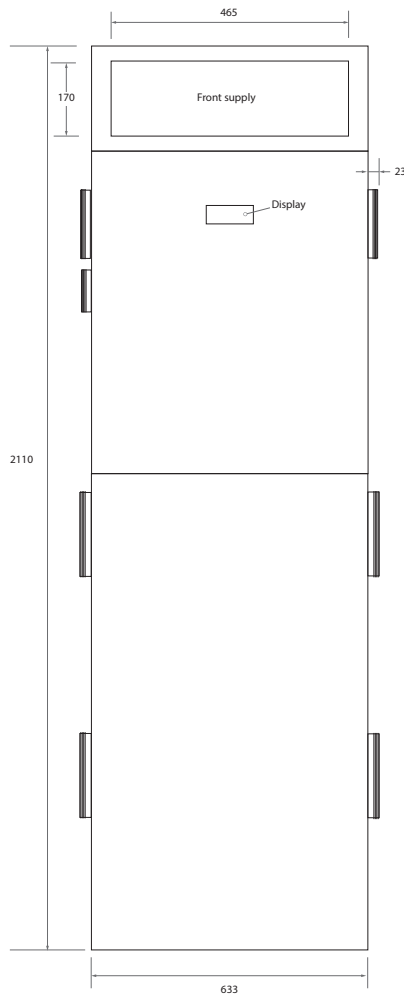
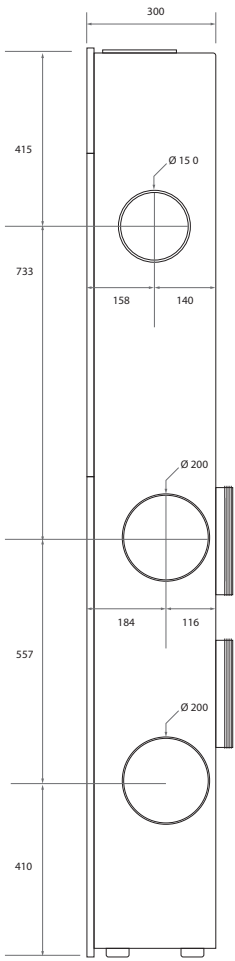
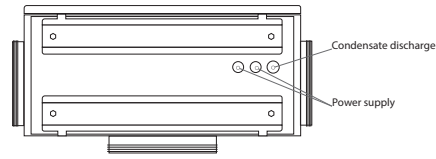


Allows you to set the rated ventilation speed.



Allows you to set the maximum ventilation speed.

# Dimensions





# Airflow

HRI-I-PLUS 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 170 mm × 455 mm supply air connection is ideal for a supply grille. With 0.6 in. WC external static pressure (combined between return and supply) the top rectangular 170 mm × 455 mm 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.

## Stale air intake

The 125 mm round stale air exhaust connection can be used as part of a plenum return without any ducting or can be ducted to a bathroom or multiple locations with up to 0.5 in. WC external static pressure.

## Return air

The left and right side 150 mm round connection can be ducted to one or more rooms with up to 0.6 in. 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

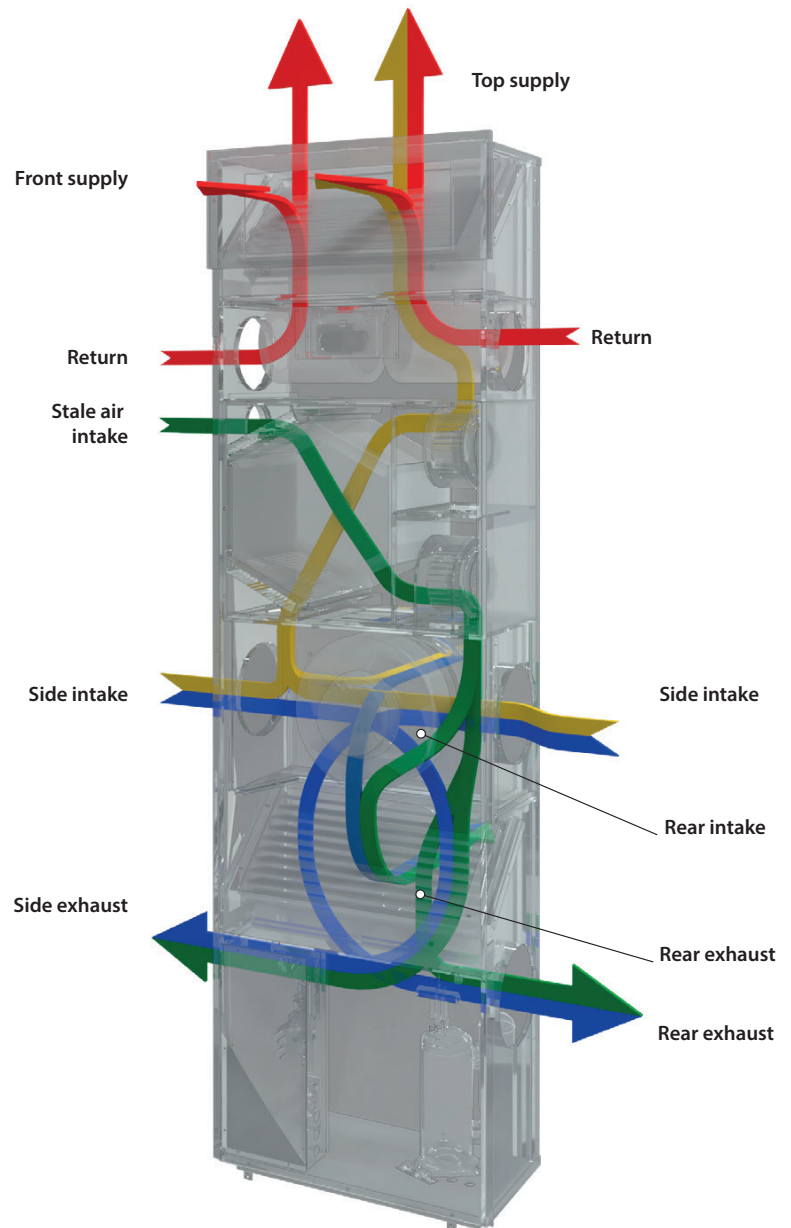
The single 200 mm round outside air intake connection can be accessed from the left, right, or rear and provides outside air for the condenser portion and fresh air. This can be ducted with up to 0.6 in. WC external static pressure (combined between intake and exhaust).

## Outside air exhaust

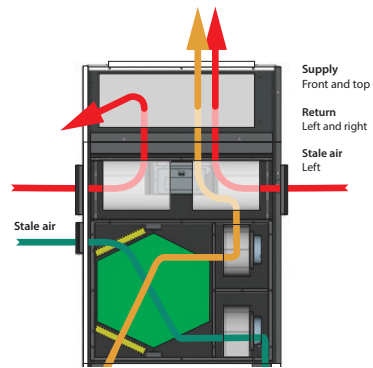
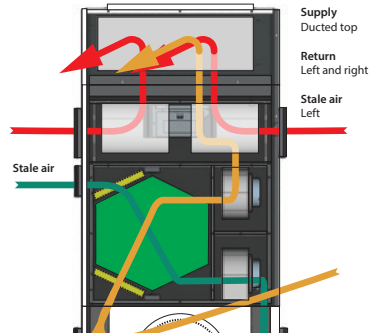
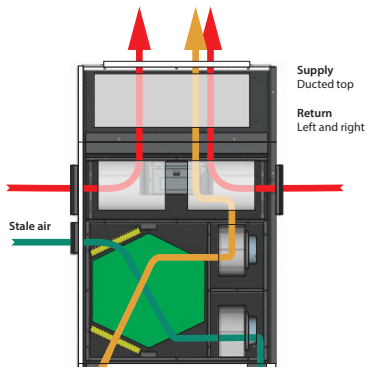
The single 200 mm round exhaust air connection can be accessed from the left, right, or rear, and exhausts the stale and condenser air. This can be ducted with up to 0.6 in. WC external static pressure (combined between intake and exhaust).

## Mix and match outside connections for total flexibility.

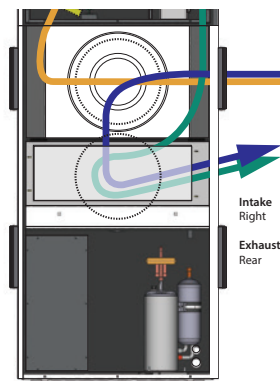
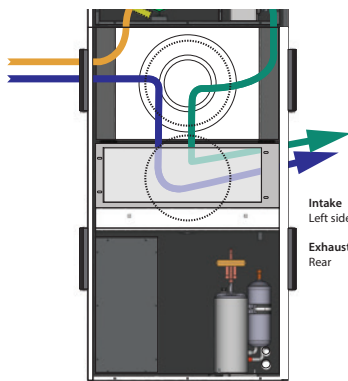
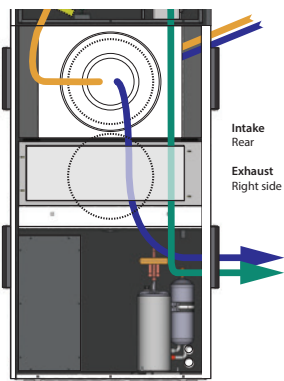
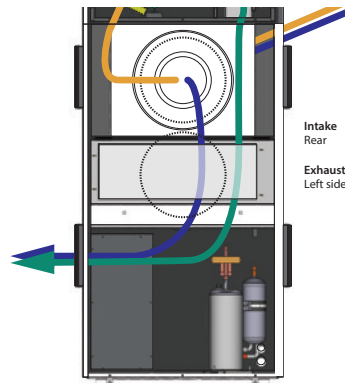
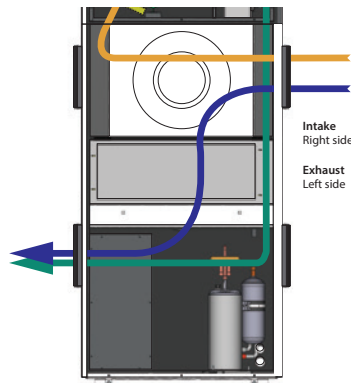
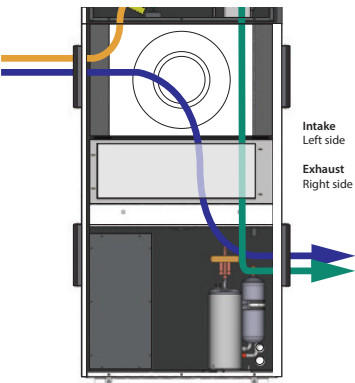
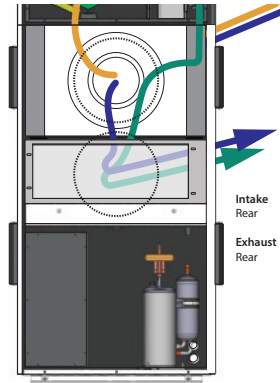
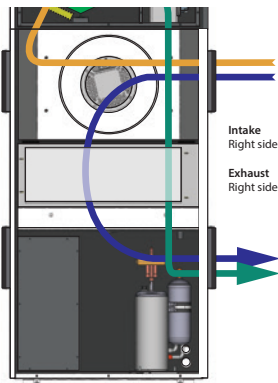
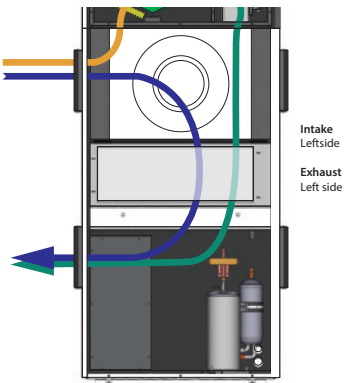
The upper outside connection (left, right, and rear) is for exhaust, and the outside lower connection (left, right and rear) is for supply. It's possible to use any combination of connections. For example: Left for intake and rear for exhaust, or rear for intake, and right for exhaust, etc.



# Fan coil part



# Condenser part



■ Outside air

■ Recirculate air

■ Fresh air intake

■ Stale air exhaust

# Clearances

The HRI-I-PLUS 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 25 mm 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 15 mm clearance between the unit and floor to minimize noise from vibrations. The unit sits on adjustable levelling legs, which can be removed and the unit wall hung.

## Access Panel

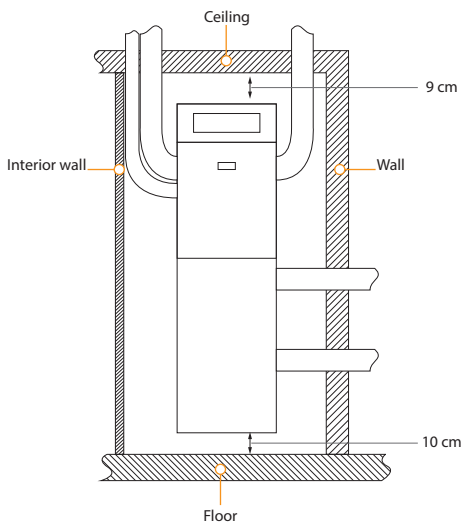
There must be an access panel of at least the size of the unit plus 12 mm all around. The recommended size is 220 cm × 68 cm. The minimum size is 215 cm × 66 cm. You can integrate a return and supply grille into the access panel door.

## Sides

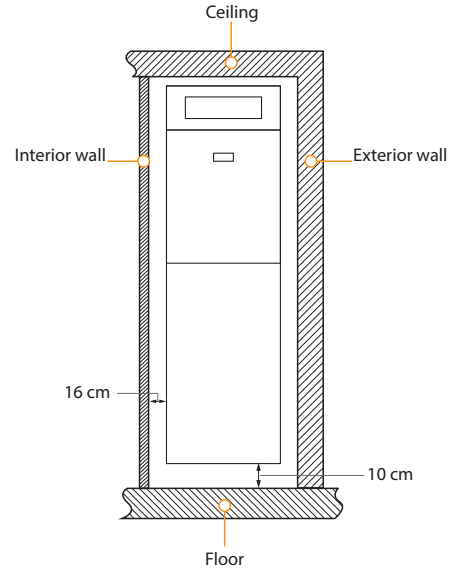
The clearance required on the sides is dependent on how the unit is configured for return and stale exhaust air.

## 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



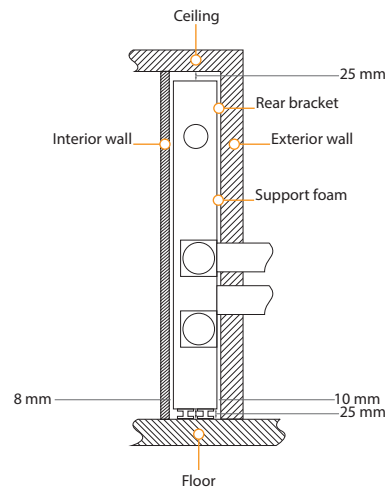
A minimum of 160 mm should be free for airflow on each side to allow the air to flow into the returns.

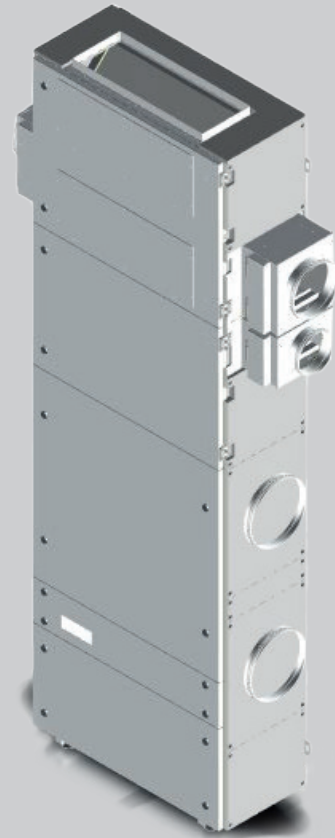
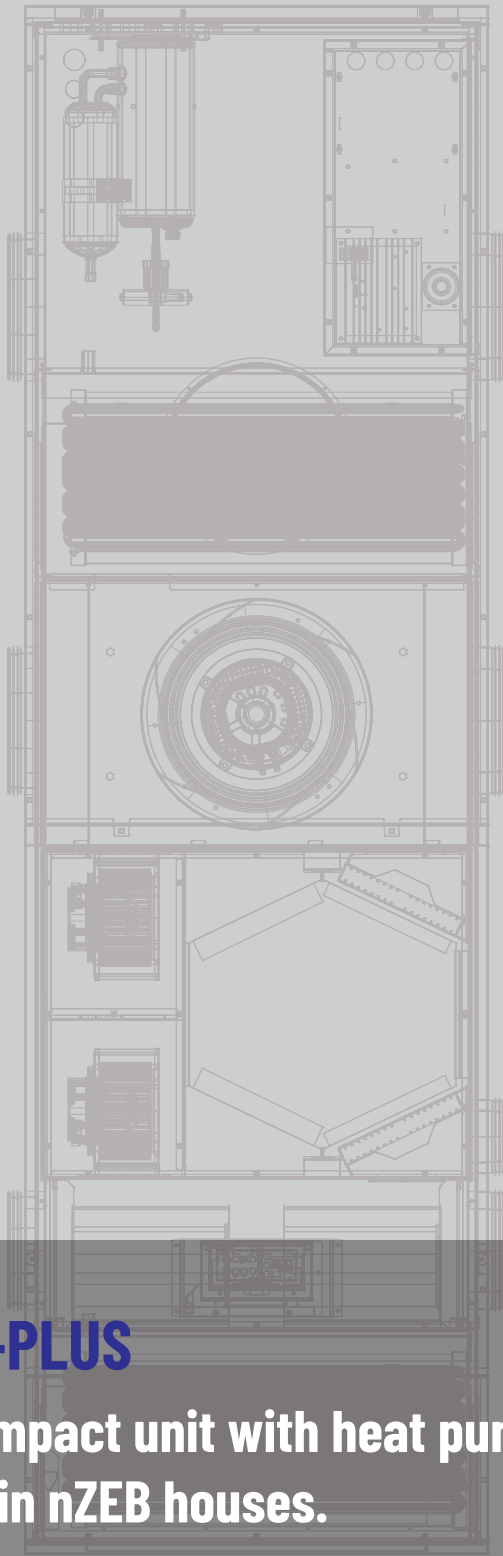
## Front

The clearance required in front of the unit to the access panel is 8 mm to minimize noise from vibrations.

## Rear

There must be 8 mm 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 100 cm.





## HRA-I-PLUS

The compact unit with heat pump for heating, cooling, and air supply in nZEB houses.



Importer - Canada

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