VENTACITY SYSTEMS

ALWAYS HEALTHY · ALWAYS EFFICIENT

VSCM

VS1200 CMh/e
VS900 CMh/e
VS400 CMh/e
VS250 CMh/e

Installation and Operation Manual

Rev. 01.01

CE 4-118-0221

03/04/19

TABLE OF CONTENTS

1. INTRODUCTION

This manual includes the following symbols.

Symbol		Meaning
	***ATTENTION!***	Warning or notification
	***READ CAREFULLY!***	Important instructions
	***YOU WILL NEED***	Advice and practical information
	***TECHNICAL DATA***	Detailed technical information

This manual includes important instructions for safe connection of the Heat Recovery Ventilator unit (HRV). Before connecting the unit, please read carefully and follow all the instructions below! The manufacturer reserves the right to make changes, including changes in the technical documentation, without previous notification. Please keep this manual for further reference. Consider this manual a permanent part of the product.

- This manual shows manufacturer-recommended installation methods. Local codes and regulations override these recommendations.
- The installation must follow local codes and standards as approved by local permitting authorities and National Electrical Code (NEC), The National Fire Protection Agency (NFPA), and the Canadian Electrical Code (CEC) in Canada.
- Installation must be performed by qualified and accredited professional engineers and skilled tradesmen in conformance with local and national codes, standards, and licensing requirements.

EC DECLARATION OF CONFORMITY

The product was designed, manufactured, and placed on the market, and complies with all relevant provisions and requirements of the European Parliament and the Council, including amendments, which it was classified under. The product is safe under normal conditions of installation and use. The conditions are defined in the Operating Instructions. The product's safety evaluation was based on the harmonized European standards listed in the relevant EC declaration of conformity.

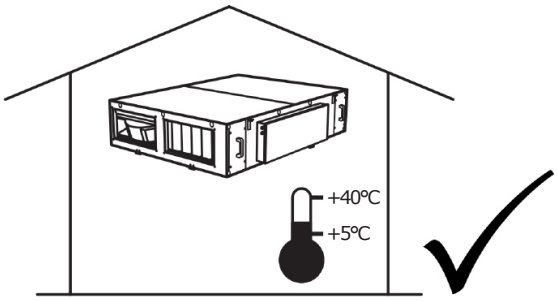
During installation it is necessary to consider the weight of the unit, including all associated peripherals. The heat recovery unit project shall be always developed by an HVAC designer.

1. INTRODUCTION

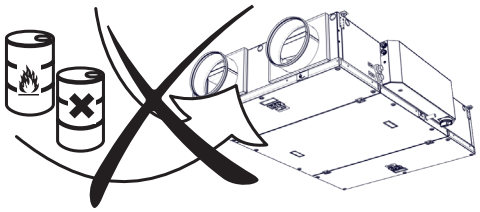
1.1 ACCEPTABLE ENVIRONMENT

TECHNICAL DATA

The unit is intended for indoor installation and must be installed in a dry environment with the temperature +41 °F to +104 °F (+5 °C to +40 °C)



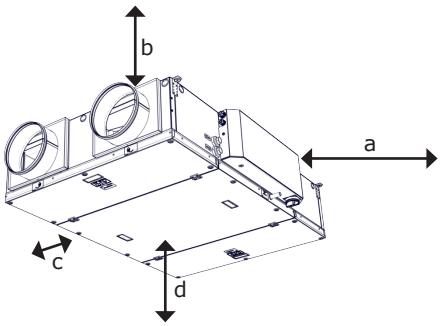
For proper operation the temperature inside the HRV should range from -4 °F to +104 °F (-20 °C to +40 °C), maximum humidity 90%. Damage to the heat exchanger structure may result if operated outside these limits.



The unit is not designed for air containing flammable or explosive mixtures, chemical vapors, heavy dust, soot, grease, toxins, pathogenic organisms, etc.

1.2 ACCESS DISTANCE

The unit should be installed so as to provide access for maintenance, service or disassembly. This includes, in particular, access to the cover of the control cabinet, to duct openings, and to the cover of the of the air filters.



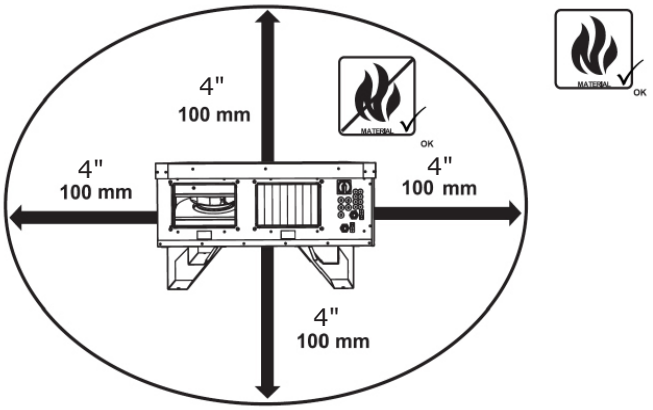
UNIT	a	b	c	d
VS250 CM	30"	0"	4"	12.5"
VS400 CM	30"	0"	4"	14.5"
VS900 CM	30"	0"	4"	18.5"
VS1200 CM	30"	0"	4"	22"

1.3 SAFE INSTALLATION DISTANCE

⚠ *ATTENTION!*

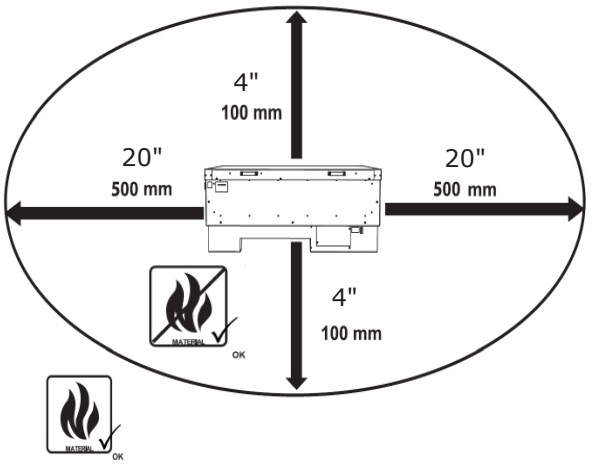
Non-flammable materials

- *All materials used within 4 inches (100 mm) of the HRV unit must be non-flammable (they do not burn, flame up, burn out) or minimally flammable (they do not burn or decompose, e.g. drywall). Moreover, these materials must not cover the unit's inlets or outlets.*



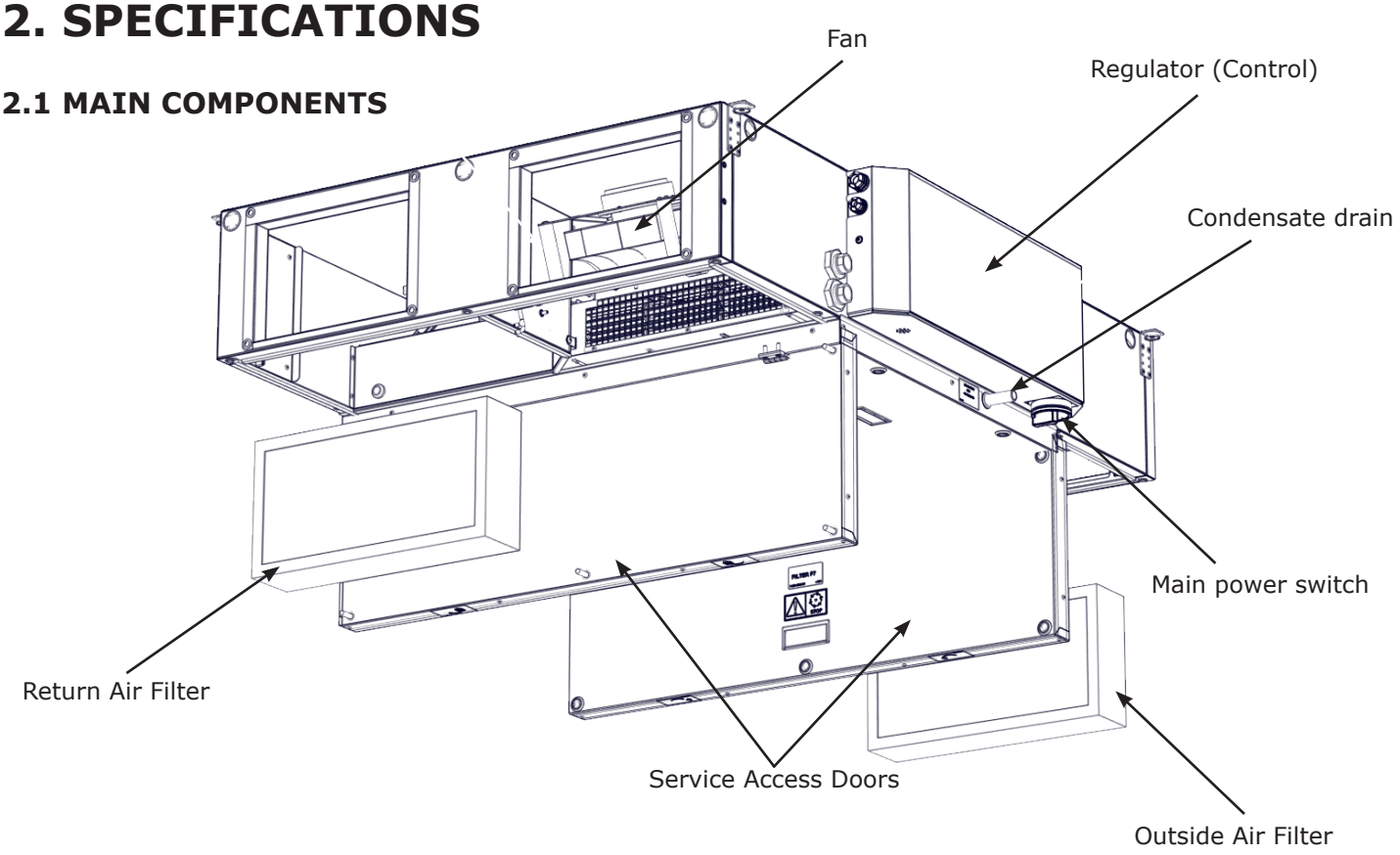
Minimally flammable materials

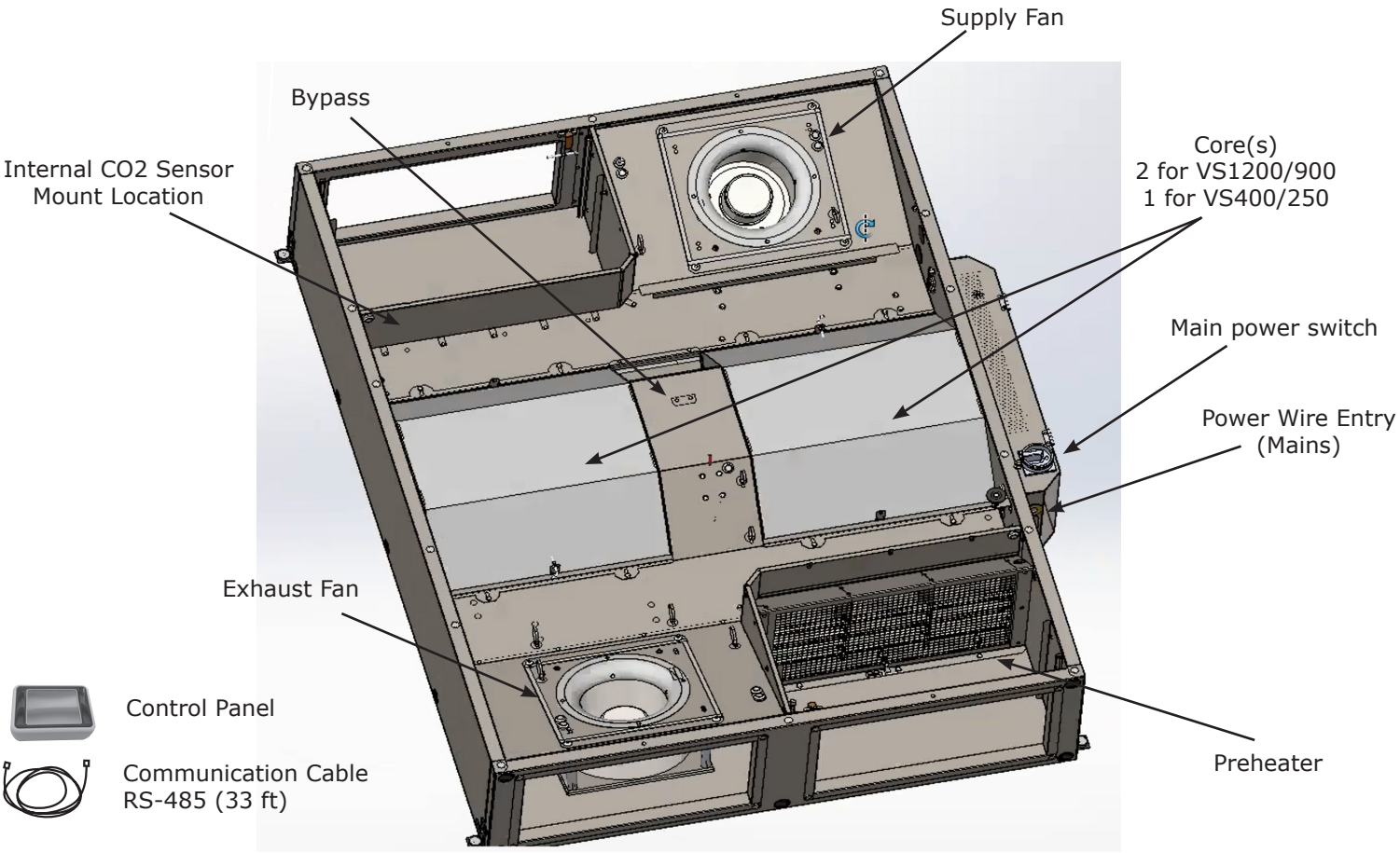
- *The minimum safe distance of flammable materials from the unit's outlets is 20 inches (500 mm).*
- *The minimum safe distance of flammable materials in other directions is 4 inches (100 mm).*



2. SPECIFICATIONS

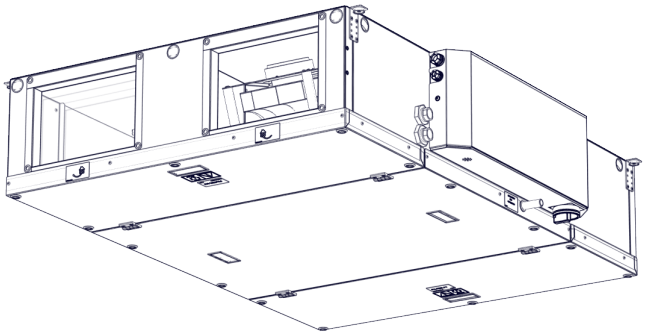
2.1 MAIN COMPONENTS

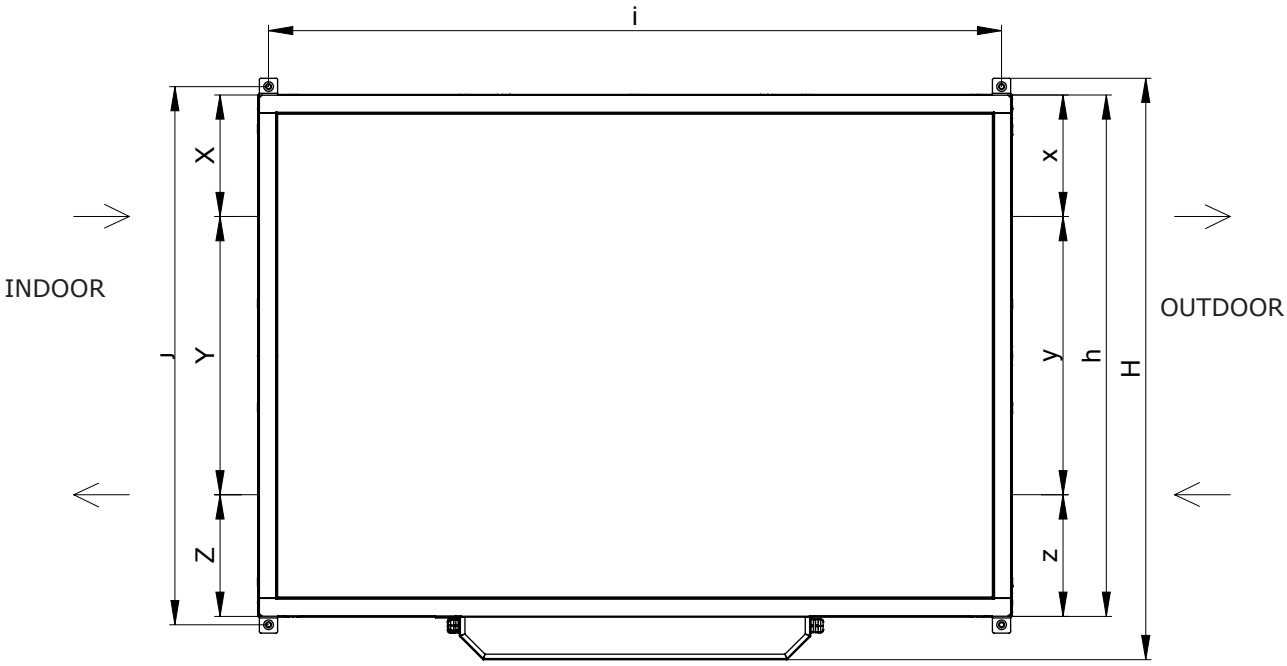


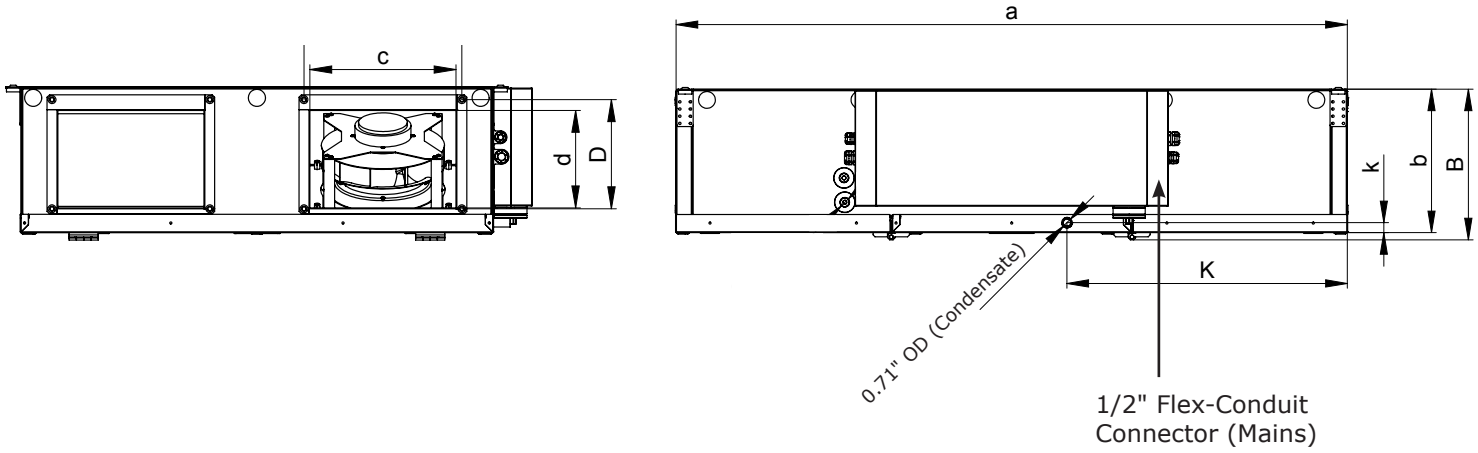


2. SPECIFICATIONS

2.2 DIMENSIONS







UNIT	H	h	a	B	b	i	j	K	k	c	d	C	D	X	x	Y	y	Z	z
VS250 CM	30.7	26.4	46.9	12.2	11.8	44.1	27.6	19.1	0.8	9.8	5.9	10.8	6.9	6.5	6.5	13.1	13.1	6.5	6.5
VS400 CM	42.5	38.2	55.1	12.2	11.8	52.4	39.4	23.2	0.8	11.8	7.9	12.8	8.8	9.5	9.5	20.4	20.4	9.5	9.5
VS900 CM	54.5	50.0	66.9	15.4	15.0	64.2	51.4	28.3	0.8	19.7	9.8	20.6	10.8	12.7	12.7	24.6	24.6	12.7	12.7
VS1200 CM	67.3	63.0	78.7	18.5	18.1	56.3	64.2	35.5	0.8	23.6	11.8	24.6	12.8	17.0	17.0	28.9	28.9	17.0	17.0

2. SPECIFICATIONS

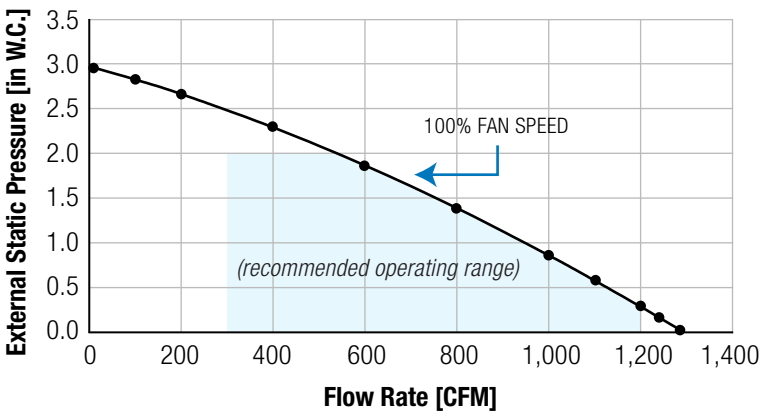
VS1200 CMh/e SPECIFICATIONS		
Flow Rate	300 - 1200 cfm / 510 - 2040 m^3/h	Increments: 50 cfm / 85 m^3/h
Max. External Static Pressure	2.0 inch W.C. / 498 Pa	
Exchanger Efficiency (AHRI 1060)	HRV: 90.6% Sensible	ERV: 86.1% Sensible; 77.9% Latent; 82.9% Total
Temperature Conditions	Outdoor: -4° to 104° F / -20° to 40° C	Ambient: 41° to 104° F / 5° to 40° C
Max. Return Air Humidity	90%	
Dimensions (L x W x D)	67.3" x 18.5" x 78.7" / 1.71 m x 0.47 m x 2 m	
Shipping Dimensions (L x W x D)	75" x 25" x 91" / 1.91 m x 0.64 m x 2.3 m	
Weight (Shipping)	HRV: 529 lbs / 240 kg (Shipping: 678 lbs / 308 kg) ERV: 547 lbs / 248 kg (Shipping: 701 lbs / 318 kg)	
Fans (EC, Variable Speed Control)	Aluminum Impeller; 1890 RPM; IP54	
Filters	Outside Air: MERV13 (29.53 x 15.55 x 3.78 in. / 750 x 395 x 96 mm) Return Air: MERV9 (29.53 x 15.55 x 3.78 in. / 750 x 395 x 96 mm)	
Preheater	Integrated Preheater for Frost Prevention	
Core Bypass	PID Bypass Damper for Temperature Control	
Insulation & Thermal Conductivity	2" Foam @ 0.042 W/mK / 0.024 BTU/(hr ft °F); 0.8mm Galvanized Steel Inner/Outer Casing	
Duct Connection	23.62" x 11.81" / 600 mm x 300 mm; Diameter 15.75" / 400 mm	
Operation Modes	CAV, DCV, VAV, BMS, Economizer (Freecooling)	
Certifications	TUV SUD (UL 1812, CSA 22.2 No. 113) Pending Passive Haus: Pending FCC Pending	
Sensors	Temperature (10Kohm NTC Thermistors): Outside Air, Supply Air, Supply Duct, Return Air, Exhaust Air Pressure: OA and RA Filter Pressure Drop Pressure Differential at Supply Fan and Exhaust Fan (CAV) Pressure Differential of Supply to Atmosphere (VAV)	
Optional Accessories (Provided by Ventacity)	External Outside Air and Exhaust Air Damper Modules External DX or WCO Postheater Modules Internally Mounted CO2 Sensor (Room CO2 Sensor Recommendations Available) External Condensate Pump	

ELECTRICAL

Voltage	240 VAC	208 VAC
Phase	1Φ	1Φ
Power Supply	7.9 kW	6.2 kW
FLA – Max	33.1 A	29.8 A
MCA	40.7 A	36.7 A
MOP	40 A	35 A
De-Ice Preheater	6.9 kW	5.2 kW
Preheater Temp Rise	10.3° C	7.7° C
Maximum Power per Fan	503 W (0.67 hp)	

FAN OPERATING RANGE

300 – 1,200 CFM
0 – 2.0" W.C. ESP



2. SPECIFICATIONS

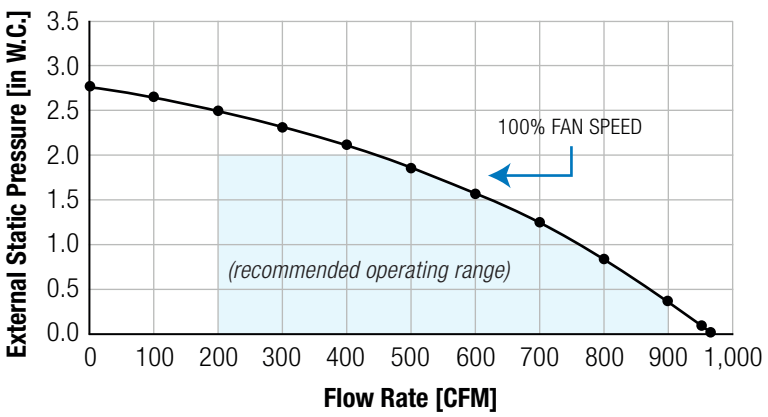
VS900 CMh/e SPECIFICATIONS		
Flow Rate	200 - 900 cfm / 340 - 1529 m³/h	Increments: 50 cfm / 85 m³/h
Max. External Static Pressure	2.0 inch W.C. / 498 Pa	
Exchanger Efficiency (AHRI 1060)	HRV: 91.2% Sensible	ERV: 86.1% Sensible; 79.2% Latent; 82.3% Total
Temperature Conditions	Outdoor: -4° to 104° F / -20° to 40° C	Ambient: 41° to 104° F / 5° to 40° C
Max. Return Air Humidity	90%	
Dimensions (H x W x D)	54.53" x 15.35" x 66.93" / 1.39 m x 0.39 m x 1.7 m	
Shipping Dimensions (H x W x D)	63" x 22" x 79" / 1.6 m x 0.56 m x 2 m	
Weight (Shipping)	HRV: 364 lbs / 165 kg (Shipping: 467 lbs / 212 kg) ERV: 375 lbs / 170 kg (Shipping: 481 lbs / 218 kg)	
Fans (EC, Variable Speed Control)	Galvanized Steel Impeller; 2600 RPM; IP54	
Filters	Outside Air: MERV13 (23.03 x 12.2 x 3.78 in. / 585 x 310 x 96 mm) Return Air: MERV9 (23.03 x 12.2 x 3.78 in. / 585 x 310 x 96 mm)	
Preheater	Integrated Preheater for Frost Prevention	
Core Bypass	PID Bypass Damper for Temperature Control	
Insulation & Thermal Conductivity	2" Foam @ 0.042 W/mK / 0.024 BTU/(hr ft °F); 0.8mm Galvanized Steel Inner/Outer Casing	
Duct Connection	19.69" x 9.84" / 500 mm x 250 mm; Diameter 12.4" / 315 mm	
Operation Modes	CAV, DCV, VAV, BMS, Economizer (Freecooling)	
Certifications	TUV SUD (UL 1812, CSA 22.2 No. 113) Pending Passive Haus: Pending FCC Pending	
Sensors	Temperature (10Kohm NTC Thermistors): Outside Air, Supply Air, Supply Duct, Return Air, Exhaust Air Pressure: OA and RA Filter Pressure Drop Pressure Differential at Supply Fan and Exhaust Fan (CAV) Pressure Differential of Supply to Atmosphere (VAV)	
Optional Accessories (Provided by Ventacity)	External Outside Air and Exhaust Air Damper Modules External DX or WCO Postheater Modules Internally Mounted CO2 Sensor (Room CO2 Sensor Recommendations Available) External Condensate Pump	

ELECTRICAL

Voltage	240 VAC	208 VAC
Phase	1Φ	1Φ
Power Supply	6.26 kW	4.95 kW
FLA – Max	26.1 A	23.8 A
MCA	32 A	29.1 A
MOP	35 A	30 A
De-Ice Preheater	5.3 kW	3.99 kW
Preheater Temp Rise	10.5° C	7.9° C
Maximum Power per Fan	470 W (0.63 hp)	

FAN OPERATING RANGE

200 – 900 CFM
0 – 2.0" W.C. ESP



2. SPECIFICATIONS

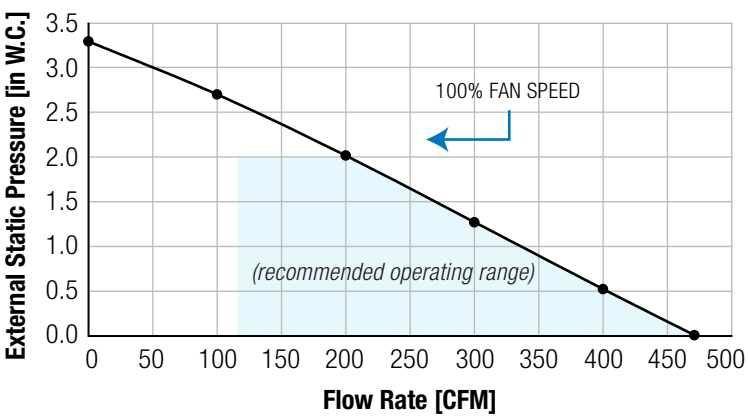
VS400 CMh/e SPECIFICATIONS		
Flow Rate	120 - 480 cfm / 204 - 816 m^3/h	Increments: 30 cfm / 51 m^3/h
Max. External Static Pressure	2.0 inch W.C. / 498 Pa	
Exchanger Efficiency (AHRI 1060)	HRV: 89.7% Sensible	ERV: 86.1% Sensible; 79.2% Latent; 82.3% Total
Temperature Conditions	Outdoor: -4° to 104° F / -20° to 40° C	Ambient: 41° to 104° F / 5° to 40° C
Max. Return Air Humidity	90%	
Dimensions (L x W x D)	42.52" x 12.2" x 55.12" / 1.08 m x 0.31 m x 1.4 m	
Shipping Dimensions (L x W x D)	51" x 18" x 67" / 1.3 m x 0.46 m x 1.7 m	
Weight (Shipping)	HRV: 198 lbs / 90 kg (Shipping: 254 lbs / 115 kg) ERV: 203 lbs / 92 kg (Shipping: 260 lbs / 118 kg)	
Fans (EC, Variable Speed Control)	Galvanized Steel Impeller; 2530 RPM; IP44	
Filters	Outside Air: MERV13 (17.9 x 9.25 x 3.78 in. / 455 x 235 x 96 mm) Return Air: MERV9 (17.9 x 9.25 x 3.78 in. / 455 x 235 x 96 mm)	
Preheater	Integrated Preheater for Frost Prevention	
Core Bypass	PID Bypass Damper for Temperature Control	
Insulation & Thermal Conductivity	2" Foam @ 0.042 W/mK / 0.024 BTU/(hr ft °F); 0.8mm Galvanized Steel Inner/Outer Casing	
Duct Connection	11.81" x 7.87" / 300 mm x 200 mm; Diameter 9.84" / 250 mm	
Operation Modes	CAV, DCV, VAV, BMS, Economizer (Freecooling)	
Certifications	TUV SUD (UL 1812, CSA 22.2 No. 113) Pending Passive Haus: Pending FCC Pending	
Sensors	Temperature (10Kohm NTC Thermistors): Outside Air, Supply Air, Supply Duct, Return Air, Exhaust Air Pressure: OA and RA Filter Pressure Drop Pressure Differential at Supply Fan and Exhaust Fan (CAV) Pressure Differential of Supply to Atmosphere (VAV)	
Optional Accessories (Provided by Ventacity)	External Outside Air and Exhaust Air Damper Modules External DX or WCO Postheater Modules Internally Mounted CO2 Sensor (Room CO2 Sensor Recommendations Available) External Condensate Pump	

ELECTRICAL

Voltage	240 VAC	208 VAC
Phase	1Φ	1Φ
Power Supply	3.29 kW	2.57 kW
FLA – Max	13.7 A	12.2 A
MCA	16.8 A	15.1 A
MOP	20 A	15 A
De-Ice Preheater	2.93 kW	2.21 kW
Preheater Temp Rise	12.5° C	9.4° C
Maximum Power per Fan	170 W (0.23 hp)	

FAN OPERATING RANGE

120 – 480 CFM
0 – 2.0" W.C. ESP



2. SPECIFICATIONS

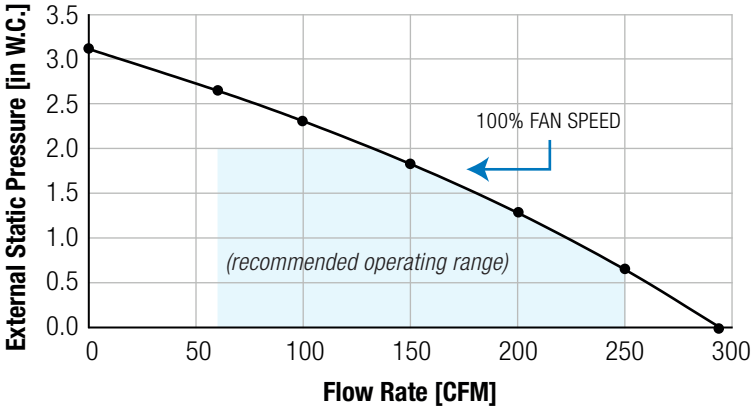
VS250 CMh/e SPECIFICATIONS		
Flow Rate	60 - 270 cfm / 102 - 459 m³/h	Increments: 15 cfm / 25.5 m³/h
Max. External Static Pressure	2.0 inch W.C. / 498 Pa	
Exchanger Efficiency (AHRI 1060)	HRV: 91.2% Sensible	ERV: 85.7% Sensible; 75.9% Latent; 82.3% Total
Temperature Conditions	Outdoor: -4° to 104° F / -20° to 40° C	Ambient: 41° to 104° F / 5° to 40° C
Max. Return Air Humidity	90%	
Dimensions (L x D x W)	30.7” x 12.2” x 46.9” / 0.780 m x 0.31 m x 1.19 m	
Shipping Dimensions (L x D x W)	39” x 18” x 59” / 0.99 m x 0.46 m x 1.5 m	
Weight (Shipping)	HRV: 154 lbs / 70 kg (Shipping: 197 lbs / 89 kg) ERV: 159 lbs / 72 kg (Shipping: 204 lbs / 93 kg)	
Fans (EC, Variable Speed Control)	Plastic Impeller; 3653 RPM; IP54	
Filters	Outside Air: MERV13 (11.2 x 9.25 x 3.78 in. / 285 x 235 x 96 mm) Return Air: MERV9 (11.2 x 9.25 x 3.78 in. / 285 x 235 x 96 mm)	
Preheater	Integrated Preheater for Frost Prevention	
Core Bypass	PID Bypass Damper for Temperature Control	
Insulation & Thermal Conductivity	2” Foam @ 0.042 W/mK / 0.024 BTU/(hr ft °F); 0.8mm Galvanized Steel Inner/Outer Casing	
Duct Connection	9.84” x 5.91” / 250 mm x 150 mm; Diameter 7.87” / 200 mm	
Operation Modes	CAV, DCV, VAV, BMS, Economizer (Freecooling)	
Certifications	TUV SUD (UL 1812, CSA 22.2 No. 113) Pending Passive Haus: Pending FCC Pending	
Sensors	Temperature (10Kohm NTC Thermistors): Outside Air, Supply Air, Supply Duct, Return Air, Exhaust Air Pressure: OA and RA Filter Pressure Drop Pressure Differential of Supply to Atmosphere (VAV)	
Optional Accessories (Provided by Ventacity)	External Outside Air and Exhaust Air Damper Modules External DX or WCO Postheater Modules Internally Mounted CO2 Sensor (Room CO2 Sensor Recommendations Available) External Condensate Pump	

ELECTRICAL

Voltage	240 VAC	208 VAC
Phase	1Φ	1Φ
Power Supply	1.78 kW	1.41 kW
FLA – Max	7.4 A	6.8 A
MCA	9 A	8.2 A
MOP	10 A	10 A
De-Ice Preheater	1.51 kW	1.14 kW
Preheater Temp Rise	11.3° C	8.5° C
Maximum Power per Fan	125 W (0.17 hp)	

FAN OPERATING RANGE

60 – 250 CFM
0 – 2.0" W.C. ESP



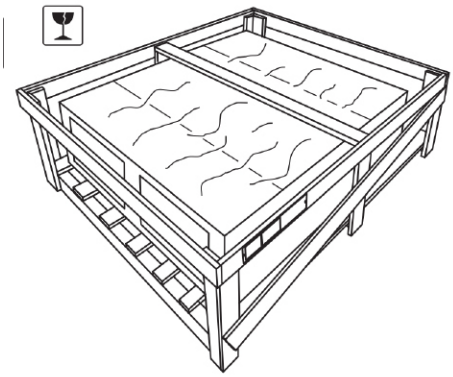
2. SPECIFICATIONS

2.4 SOUND POWER LEVEL LwA (dBA)

VS1200CM @ 1100 CFM / 0.28" W.C.									
f (Hz)	63	125	250	500	1000	2000	4000	8000	Total
Ambient	42.1	55.4	57.3	52.5	51.1	47.8	43.5	31.6	61.1
Exhaust	53.9	65.4	66.6	66.7	69.0	65.2	58.3	52.6	74.0
Supply	57.5	68.4	72.1	71.0	72.7	67.9	61.5	55.7	78.0
Return (Extract)	40.1	55.7	55.3	47.3	46.4	44.1	34.0	22.7	59.3
Outside	45.1	58.9	58.7	52.5	49.2	46.2	36.6	25.9	62.7
VS900CM @ 800 CFM / 0.34" W.C.									
f (Hz)	63	125	250	500	1000	2000	4000	8000	Total
Ambient	44.9	55.8	57.4	57.6	56.6	57.2	51.0	41.8	64.3
Exhaust	62.6	56.9	65.9	77.4	71.0	72.3	65.6	60.4	79.8
Supply	62.9	63.7	73.2	79.9	73.8	75.4	68.4	64.3	82.8
Return (Extract)	48.6	46.2	49.6	56.0	51.7	46.0	41.4	28.2	59.1
Outside	53.4	55.7	58.8	60.4	56.6	49.7	45.7	31.7	64.8
VS400CM @ 350 CFM / 0.5" W.C.									
f (Hz)	63	125	250	500	1000	2000	4000	8000	Total
Ambient	38.4	45.9	51.6	52.2	47.1	45.8	40.1	30.7	56.6
Exhaust	51.5	60.7	68.3	70.6	64.4	63.9	59.5	51.6	74.1
Supply	52.6	61.8	68.7	71.4	65.0	64.6	60.2	52.4	74.8
Return (Extract)	43.6	50.3	57.7	52.4	43.2	35.5	29.1	20.7	59.6
Outside	45.3	51.7	58.5	53.1	43.8	36.1	29.6	21.4	60.5
VS250CM @ 225 CFM / 0.5" W.C.									
f (Hz)	63	125	250	500	1000	2000	4000	8000	Total
Ambient	35.7	42.7	53.1	55.6	46.3	43.8	37.2	33.9	58.2
Exhaust	52.7	58.5	65.0	67.5	63.0	62.5	59.5	59.4	71.8
Supply	52.6	59.3	65.0	69.1	64.9	64.0	61.2	60.4	73.1
Return (Extract)	44.3	50.6	55.1	54.6	44.7	40.0	32.8	43.7	59.1
Outside	46.6	52.8	55.2	56.0	46.0	41.4	34.7	46.8	60.3

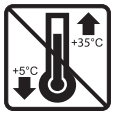
3. UNPACKING

3.1 INSPECT DELIVERY



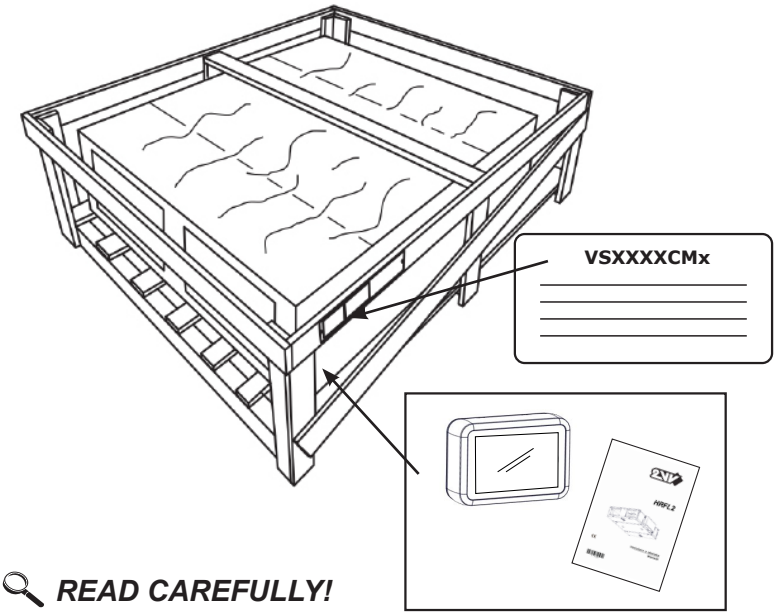
READ CAREFULLY!

- *Inspect the packaging for damages immediately upon delivery. In case of damage in the packaging, notify the carrier. If a complaint is not submitted in due time, it will be disregarded.*
- *Ensure the product corresponds to the order. If it doesn't, do not unpack it and contact the supplier immediately.*
- *After unpacking, check the condition of the unit and all the components thereof. In case of doubt, contact the supplier.*
- *Do not use a damaged unit.*
- *If the unit isn't unpacked upon delivery, store it indoors, in a dry place, at temperatures ranging from +41 °F to +104 °F.*



	The product must be disposed of pursuant to the local regulations. The product contains batteries that must be recycled or disposed of apart from the common waste. When the batteries or the product reach the end of their lifespan, contact the distributor or the local authorities for recycling. The separate collection and recycling of product and batteries contribute with the care of natural resources and ensures that they will be recycled in a health-conscious and environmentally friendly manner.	

3.2 UNPACK THE UNIT

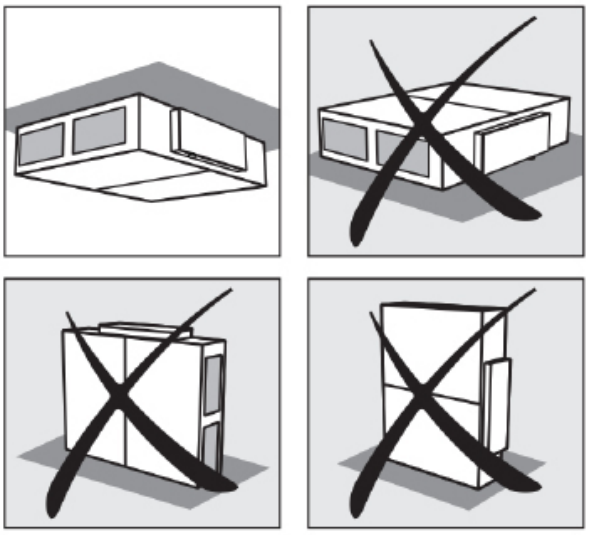


READ CAREFULLY!

- *If during transport the unit was exposed to temperatures lower than 0 °C, leave it unpacked for at least two hours at room temperature before connecting it in order to level the temperature inside the unit.*

TECHNICAL DATA

- *All the VS CM units must be placed horizontally. Any other position is forbidden.*

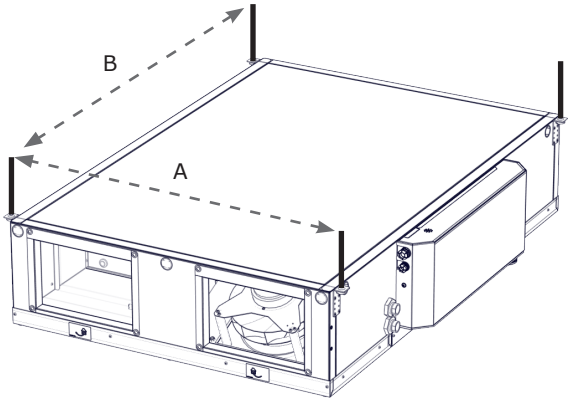


The unit must be installed so that the direction of the air exhaust corresponds to that of the distribution system. The unit should be installed so as to provide access for maintenance, service or disassembly. This includes, in particular, access to the inspection flaps and their opening, access to the cover of the control unit's cabinet, to connect side units and to the cover of the of the air filter.

4. INSTALLATION

4.1 HANGING THE UNIT

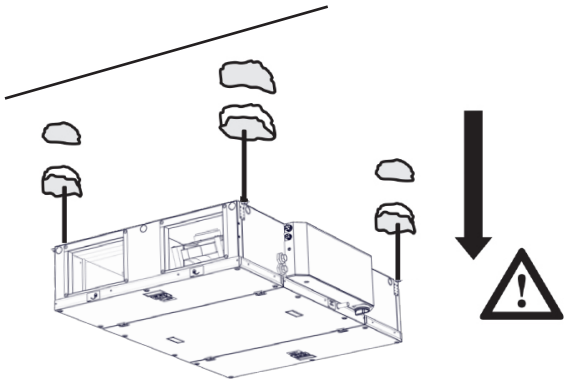
Use the drilling template below to place the anchoring points.



UNIT	A	B
VS250 CM	27.6	44.1
VS400 CM	39.4	52.4
VS900 CM	51.2	64.2
VS1200 CM	64.2	76.0

UNIT	Weight of unit (lbs)	Weight of accessories (lbs)	
	Standard	W.C.O. module	DX module
VS250 CM	154.3	56.2	52.9
VS400 CM	198.4	70.5	66.1
VS900 CM	363.8	81.6	77.2
VS1200 CM	529.1	94.8	88.2

Drill the openings in the ceiling, check the strength of the material and fasten the unit to the side brackets
with the ZTZ-M8/1,0 threaded rods.



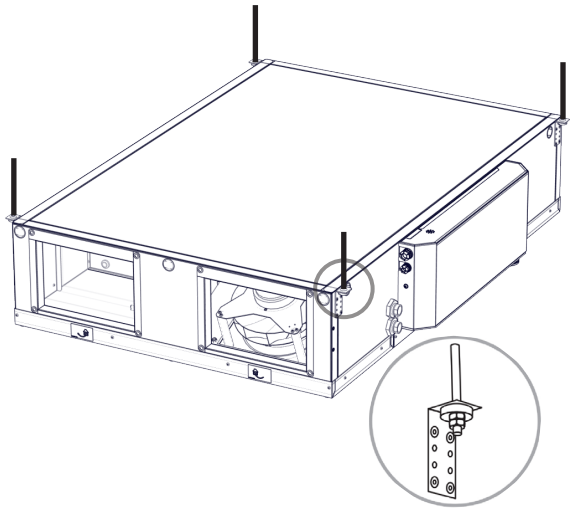
ATTENTION!

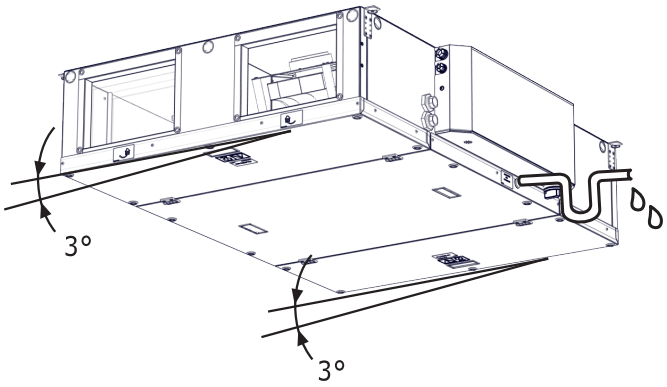
- *The support of the unit should be sufficiently strong, it must correspond to the unit's weight!*
- *Given its weight, lifting equipment will be required when installing the unit (e.g. a forklift) or at least two more people to hold it.*

YOU WILL NEED

- *4 M8 lock nuts*
- *4 threaded rods*
- *4 dowels of suitable type and size (depending on the material of the ceiling and the weight of the unit)*
- *drill with bits of suitable type and size*
- *pliers and wrenches*

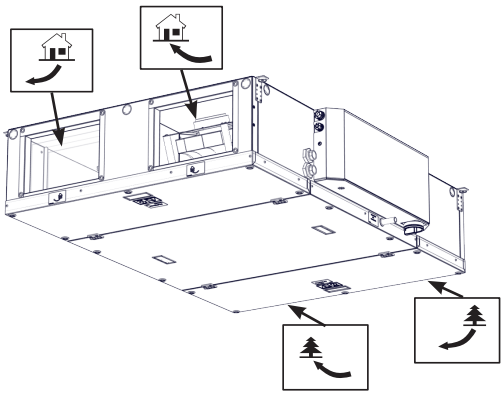
Place the unit horizontally and then tilt it 3° to drain the condensate.





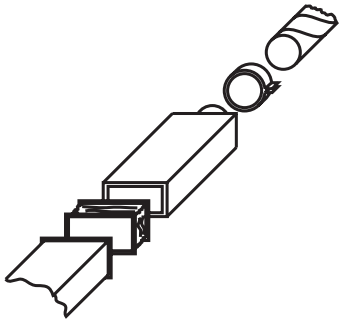
4. INSTALLATION

4.2 CONNECTING DUCTWORK



READ CAREFULLY!

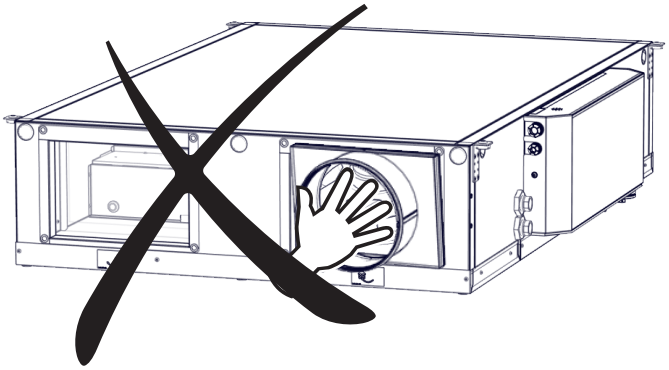
- *The connected ductwork must have the same dimensions as the intake and exhaust openings of the unit. Ducts of a smaller diameter may reduce the efficiency of the unit and, in some cases, also its lifespan.*
- *Connect the intake and exhaust openings (rectangular/circular opening) with flexible joints in order to reduce vibrations.*

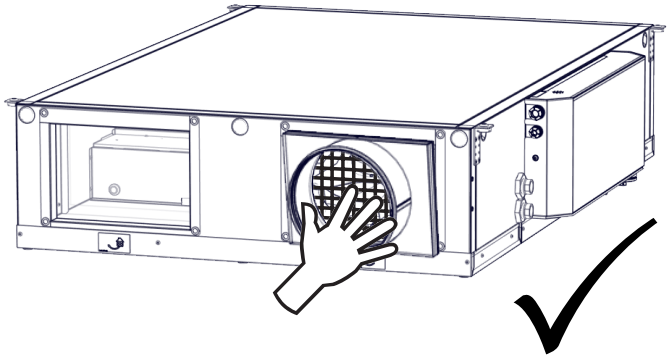


All the connections to the ductwork must be sealed with sealant or tape.
The minimum distance between bends in the ductwork or adapters and the neck of the unit is 20".

4.2-1 Protective grille for openings (not included)

If the unit's opening is not connected to the ductwork, rain blinds will be required to prevent water and moving particles coming into contact with the fan, the heating rods, etc.





4. INSTALLATION

4.3 ELECTRICAL INSTALLATION

⚠ *ATTENTION!*

- **Before beginning repair or modification of the HRV unit, make sure the main power switch is off!**
- The wiring must be done by a person authorized to perform electrical installations. It is necessary to follow all instructions in this manual and to comply with local laws and regulations.
- Before connecting the wiring, make sure that terminal indications match the diagram. If in doubt, do not connect the unit, and contact the supplier!
- The unit must be connected to the mains using a heat-protected, insulated cable with a cross-section that meets local regulations.
- To maintain electrical protection, all cables must fit in the hole on the sides of the control unit casing (1/2" flex-conduit connector).
- Any changes or modifications to the internal wiring of the unit are prohibited and will void the warranty!
- The unit's correct operation can be guaranteed only if original accessories are used.
- If it is necessary to install a sensor or control component in the unit or on its casing, consult beforehand with the unit manufacturer or representative.

4.3.1 SUPPLY WIRING

Adjacent to the main power switch is a 7/8" hole through the regulator box and a pre-installed 1/2" flex-conduit connector. If the electrical installer decides, the pre-installed connector can be removed and supplanted with an appropriate fitting rated for:

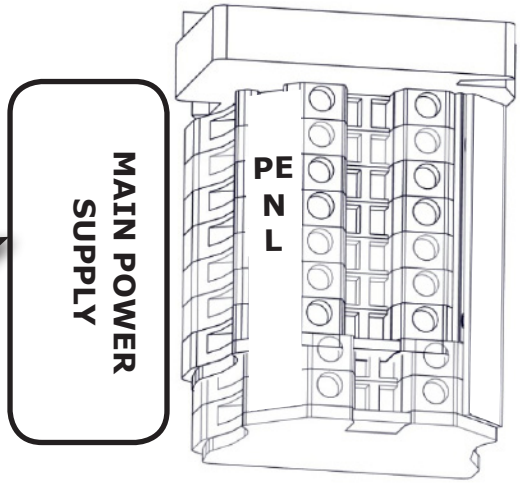
- The listed Maximum Overcurrent Protection of the device.
- The listed voltage of the device.
- 3 10AWG insulated wires: Line 1, Line 2 (Neutral), and Protective Earth Ground.
- Compliance with local laws and regulations.

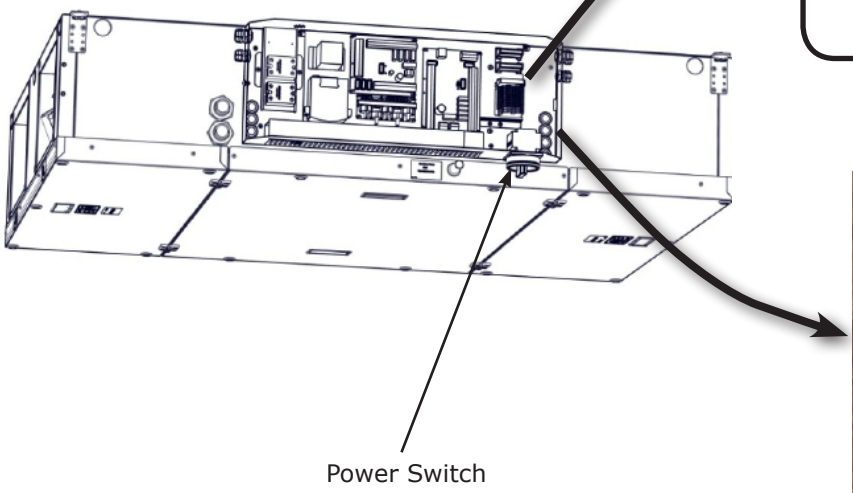
Route the power wires in an appropriate conduit from the service to the unit. Fix the conduit the the regulator box power wire entry connector. Terminate the power supply wires to the terminal blocks labeled:

"MAIN POWER SUPPLY"

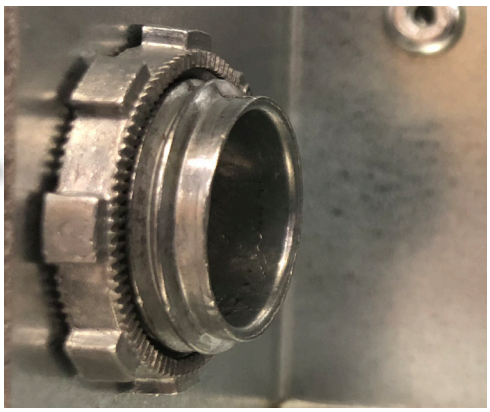
Wire the mains (PE, L1, L2) to the appropriate terminal block (PE, L, N).

Terminal Blocks





Conduit Connector

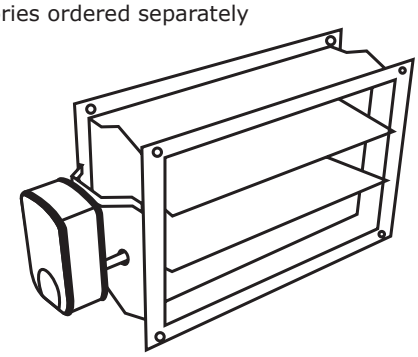


4. INSTALLATION

4.4 DAMPER MODULE INSTALL

These rectangular air flaps are used to close the air supply connected to the unit. See Specifications section for duct connection dimensions.

Accessories ordered separately

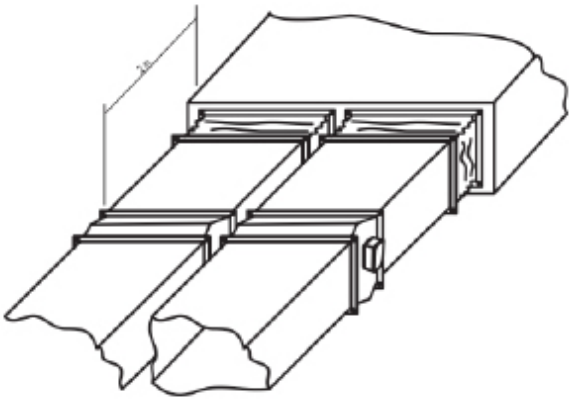


YOU WILL NEED

- *2 rectangular flaps (of suitable dimensions)*
- *2 actuators* (with one or two 230 V wires)*
- *8 M8 screws and nuts*
- *16 washers*
- *suitable wrench*
- *Flat and Phillips screwdriver, sealing tape and sealant*

**Included with Ventacity supplied damper module*

Install the flap in the ductwork at a distance of about 7 feet before the fresh air intake and at about 7 feet from the exhaust neck. Connect the actuators to the appropriate terminals in the control cabinet. See Connecting the wiring and electrical accessories



Place the flap so it will be fully closed when the unit is off and fully open when the unit is on. Any other position could damage the unit.

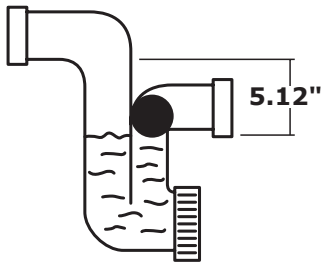
4.5 CONDENSATE DRAIN INSTALL

It is recommended to connect the condensate drain to the drainage piping. The siphon has built-in antifreeze protection.

YOU WILL NEED

- *1 siphon*
- *PVC drainage pipes*
- *sealing for the drainage piping*

Ball Siphon



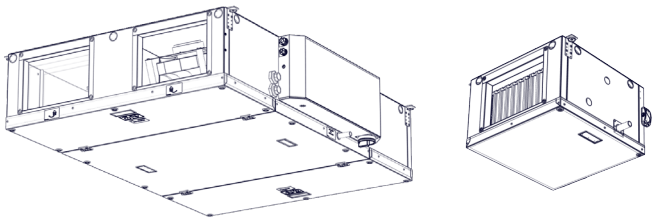
The tank's neck is located on the side/sides of the unit.
Attach to it the siphon or to a hose connected to the drainage.

- Make sure that the unit is tilted 3° in order to drain the condensate.

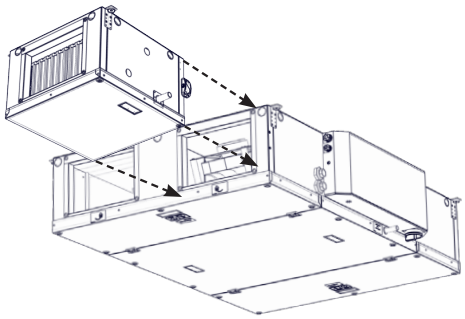
4. INSTALLATION

4.6 POSTHEATER MODULE INSTALLATIONS

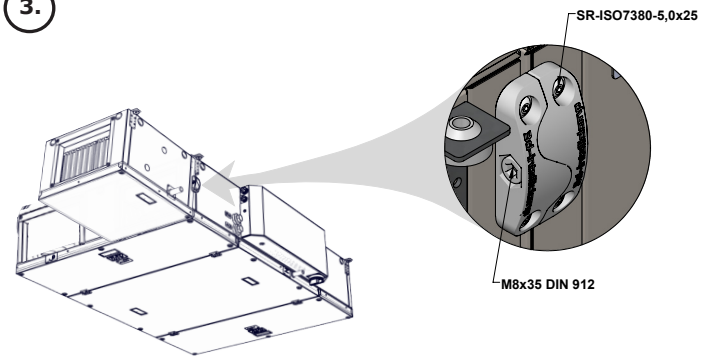
1.



2.



3.

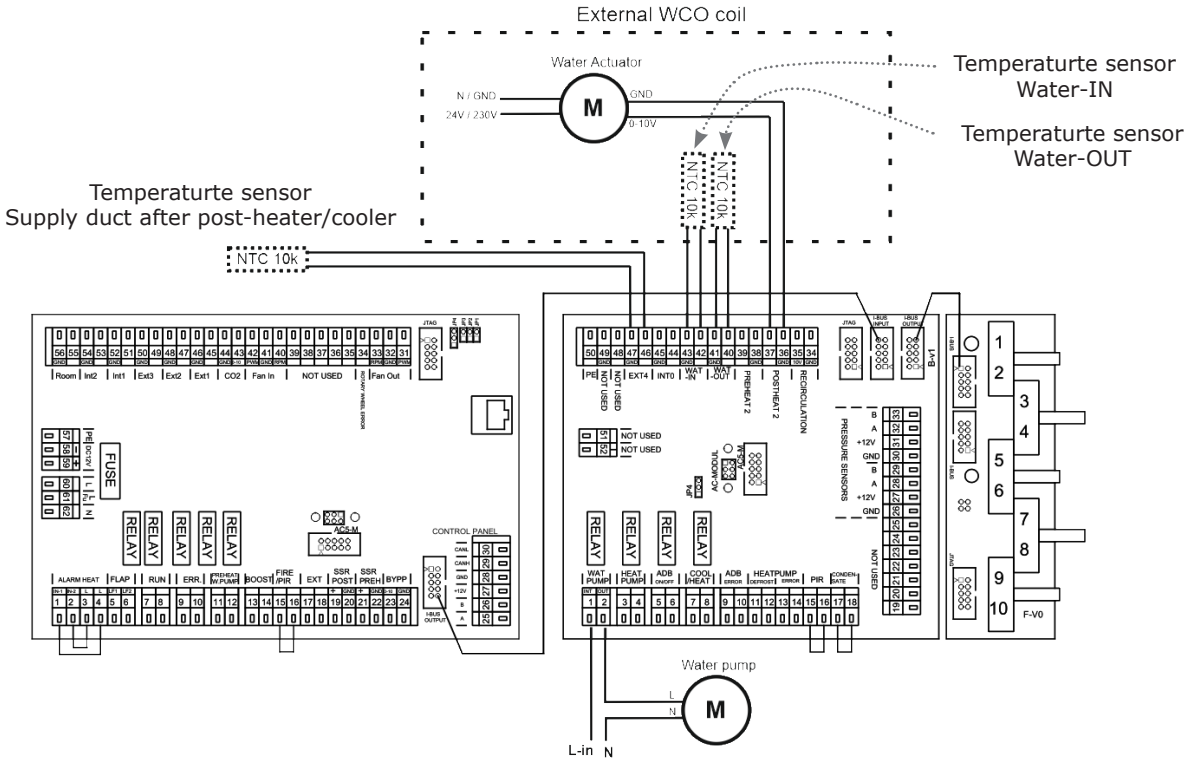


4. **Wiring**

See subsequent diagrams

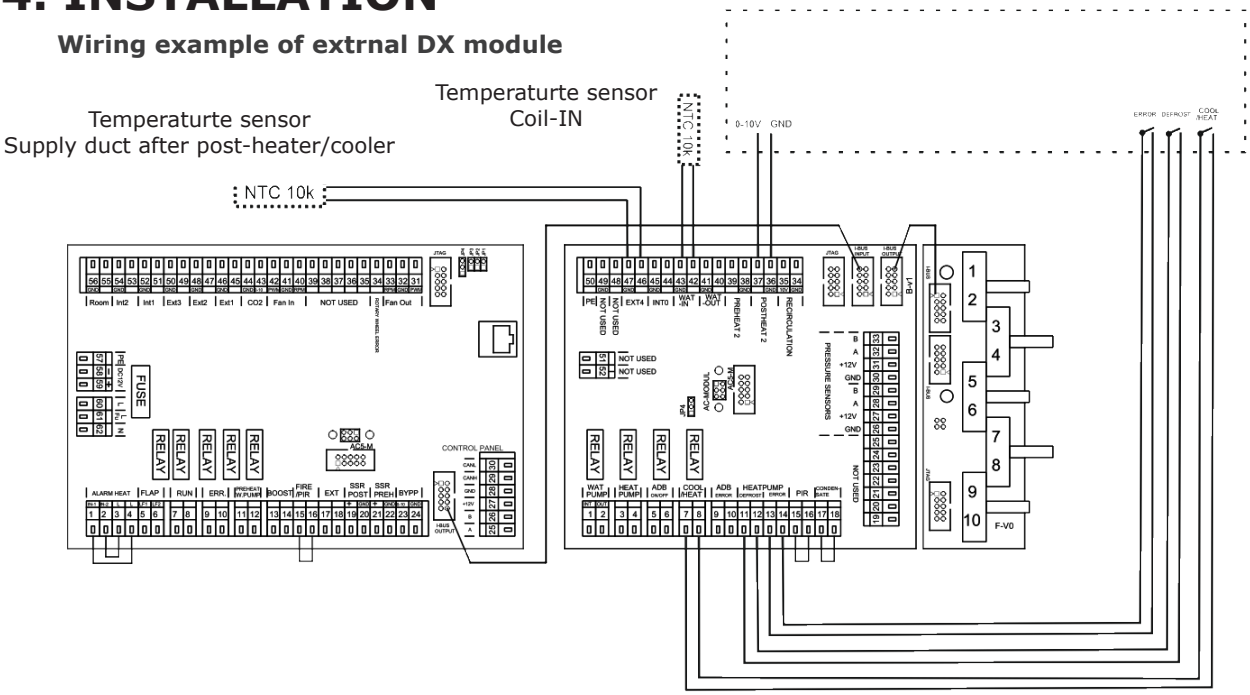
The external module includes sensors, PE grounding conductor and fasteners.

Wiring example of extrnal water change-over (WCO) module



4. INSTALLATION

Wiring example of extrnal DX module

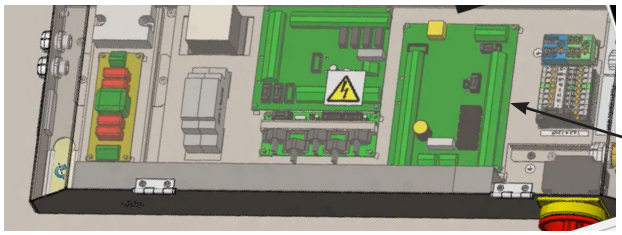


5. Enable external coil module in service menu (more info in Commissioning)

4.7 SBC100 INSTALLATION

Route cat5e/6 cable from the SBC100 (ETH1) through the building and into the regulator box via the grommet. Terminate the cat5e/6 cable at the ethernet port on the Module A board.

Regulator Box

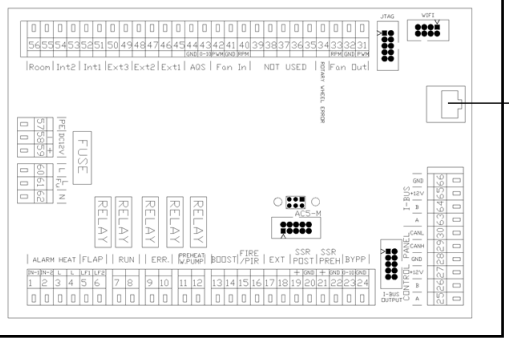


Module A Board

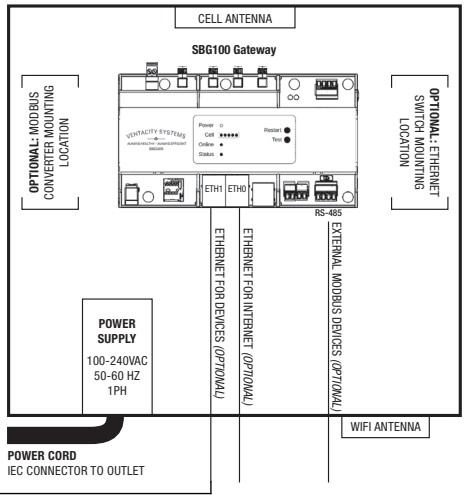
SCHEMATIC

VENTILATOR

Module A



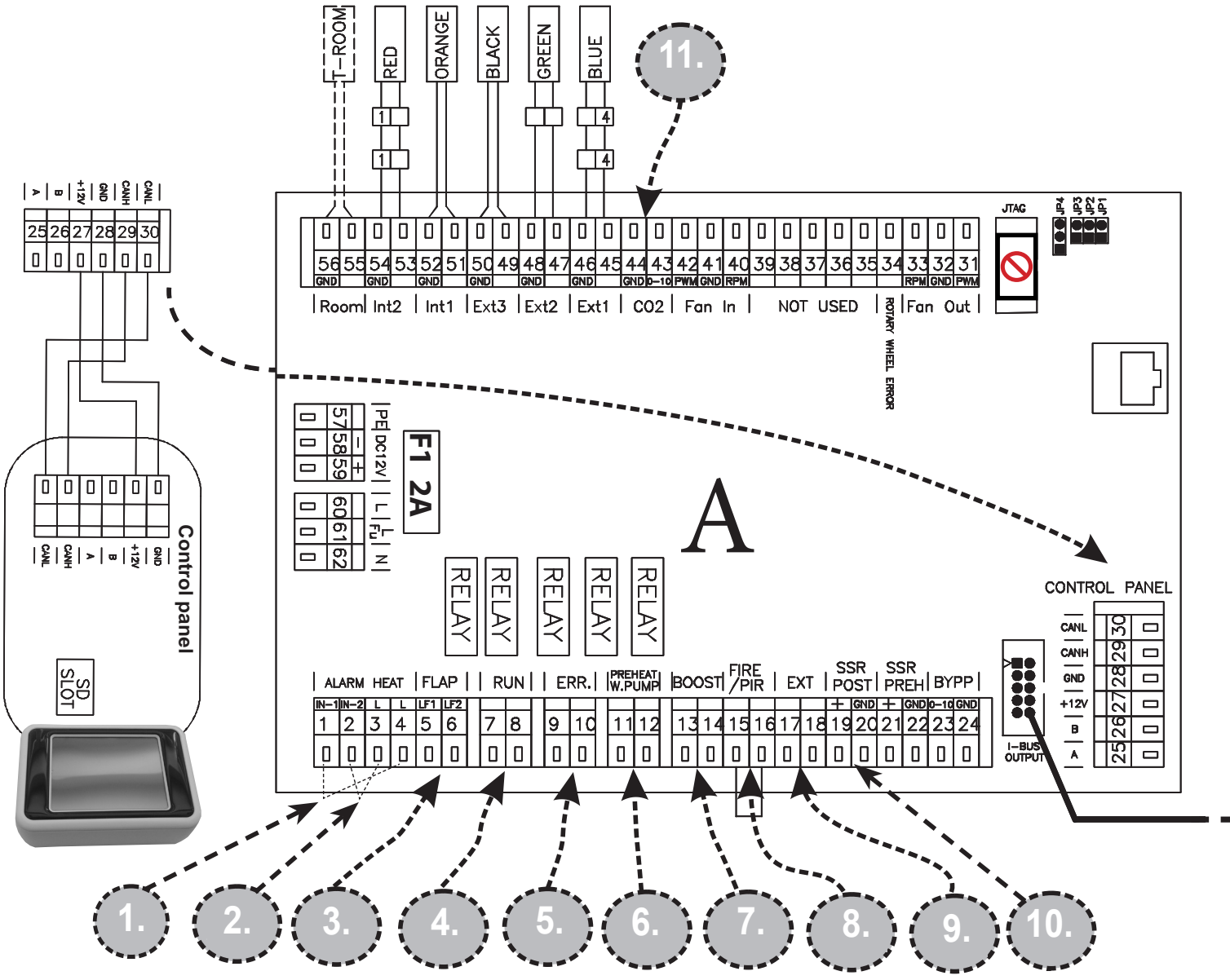
SBC100



4. INSTALLATION

4.8 ELECTRICAL ACCESSORIES

Electrical accessories must be connected to the terminals located in the control cabinet according to the wiring diagram and the markings on the terminals.

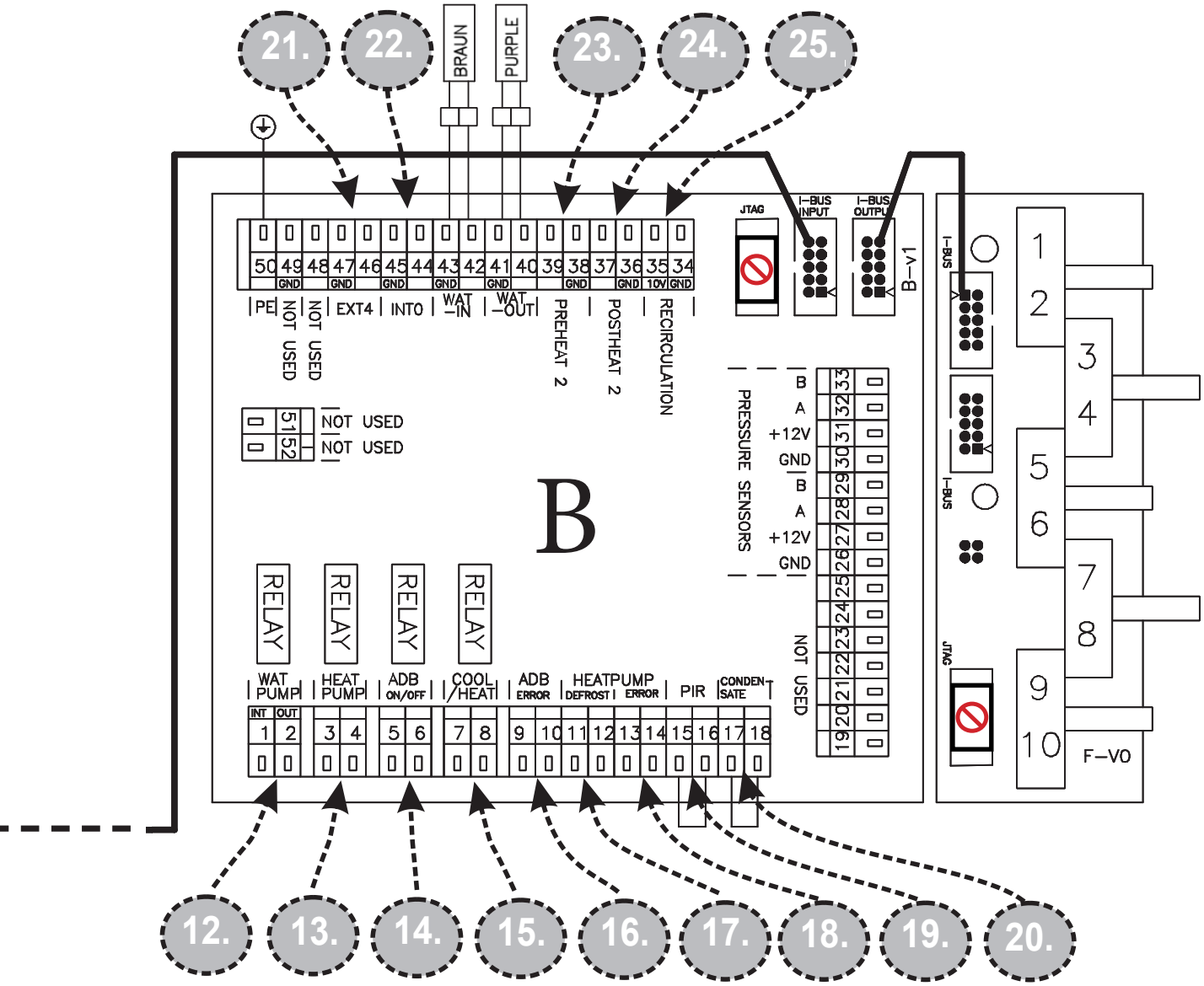


1.	**A** (1,4)	SAFETY THERMOSTAT POSTHEATING
2.	**A** (2,3)	SAFETY PREHEATING THERMOSTAT
3.	**A** (5-6)	LF1 - FLAP INLET (output L-open), LF2 - FLAP OUTLET (output L-open)
4.	**A** (7-8)	RUN CONTACT (output -NO/NC settable)
5.	**A** (9-10)	ERROR CONTACT (output NO)
6.	**A** (11-12)	PREHEATER WATER PUMP (11 - Lint, 12 - Lout)
7.	**A** (13-14)	BOOST (input NO)
8.	**A** (15-16)	FIRE (input NC)
9.	**A** (17-18)	EXTERNAL CONTROL ON/OFF (input NC)
10.	A (19,20)	OUTPUT PERFORMANCE OF POSTHEATING (0-10V OR PWM)
11.	A (43,44)	AQS SENSOR 0-10V (input)

4. INSTALLATION

READ CAREFULLY!

- *Wiring diagram is located on the inside of the removable cover of the control.*
- *Accessories must be connected with a cable we provide or with a cable appropriate to the specifications of the component.*

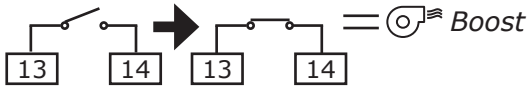


12.	**B** (1-2)	WATER PUMP (1 - Lint, 2 - Lout)
13.	**B** (3-4)	HEAT PUMP CONTROL settable (output - ON/OFF)
14.	**B** (5-6)	ADIABATIC MODULE (output - ON/OFF)
15.	**B** (7-8)	COOL / HEAT settable (CO = NC/NO - DX = output settable)
16.	**B** (9-10)	ADIABATIC MODULE ERROR (input NO)
17.	**B** (11-12)	HEAT PUMP DEFROST settable (input NC/NO)
18.	**B** (13-14)	HEAT PUMP ERROR settable (input NC/NO)
19.	**B** (15-16)	PIR (input NC)
20.	**B** (17-18)	CONDENSATE OVERFLOW (input NC)
21.	**B** (46-47)	EXTERNAL TEMPERATURE SENSOR (external postheater - input)
22.	**B** (44-45)	EXTERNAL TEMPERATURE SENSOR (adiabatic module / recirc. chamber - input)
23.	**B** (38-39)	EXTERNAL PREHEATER (output - Water= 0-10V)
24.	**B** (36-37)	EXTERNAL POSTHEATER (output - Water= 0-10V)
25.	**B** (34-35)	RECIRCULATION CHAMBER (output 0-10V)

4. INSTALLATION

4.8.1A BOOST BUTTON (Module A)

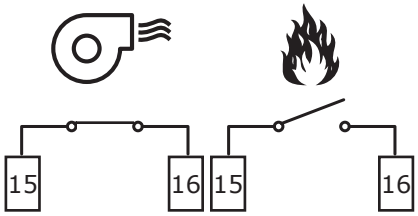
- *Low voltage switching contact: maximum possible contact load 12 V, 0.4 A.*
- *Cable: two conductors with a minimum cross-section of 20 AWG [0.5 mm²] and maximum length of 164 ft [50 m].*
- *The contact is normally open. Unit reacts to rising edge of signal. Boost button can activate but not deactivate boost mode.*



4.8.1B FIRE CONTACT (Module A)

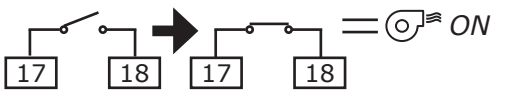
- *Low voltage switching contact: maximum possible contact load 12 V, 0.4 A.*
- *Cable: two conductors with a minimum cross-section of 20 AWG [0.5 mm²] and maximum length of 164 ft [50 m].*
- *The contact is normally closed. When disconnected, the HRV unit operates according to the pre-set output.*

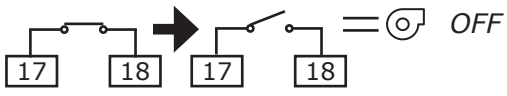
The required output can be set in the service menu. See page 32.



4.8.1C EXTERNAL CONTROL (Module A)

- *Low voltage switching contact: maximum possible contact load 12 V, 0.4 A.*
- *Cable: two conductors with a minimum cross-section of 20 AWG [0.5 mm²] and maximum length of 164 ft [50 m].*
- *The unit responds to the rising/falling edge of the signal (opening / closing)*
- *Transition from open to closed turns unit on*
- *Transition from closed to open turns unit off*

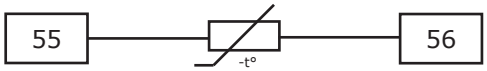




4.8.1D ROOM TEMPERATURE SENSOR (Module A)

- *Low voltage input: 10k NTC thermistor*
- *Cable: Two conductors with a minimum cross-section of 20 AWG [0.5 mm²] and maximum length of 164 ft [50 m].*
- *Use: Control HRV set point temperature to ambient temperature in room.*

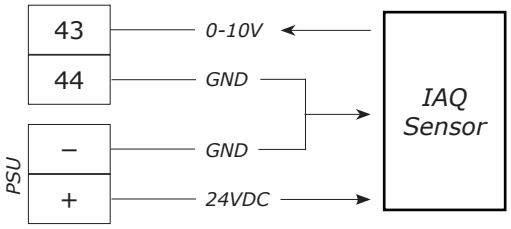
Configure from main menu. See page 31 for details



4.8.1E INDOOR AIR QUALITY SENSOR

- *Low voltage input: 0-10V DC*
- *Cable: two conductors with a minimum cross-section of 20 AWG [0.5 mm²] and maximum length of 164 ft [50 m].*
- *Any 0-10V sensor supported. Advanced configuration available for CO_2 , RH, VOC.*

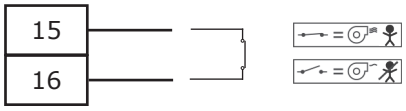
Configure from service menu. See page 31 for details



4.8.1F PIR/OCCUPANCY SENSOR (Module B)

- *Low voltage switching contact: maximum possible contact load 12 V, 0.4 A.*
- *Cable: two conductors with a minimum cross-section of 20 AWG [0.5 mm²] and maximum length of 164 ft [50 m].*
- *The contact is normally closed. When opened, the HRV unit operates according to the pre-set ventilation output.*

Configure from service menu. See page 33 for details



4. INSTALLATION

4.8.3 CONTROL PANEL CONNECTION

To activate the unit, it is necessary to connect the control panel and the unit using the communication cable (data cable).

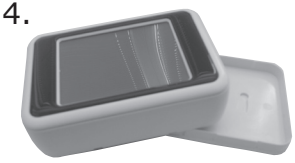
- Loosen the screw on the bottom of the control panel.
- Open the control panel case.
- Connect the control cable conductors as shown below.
- Attach the user interface panel to the wall.
- Close and tighten the control panel case.

1.

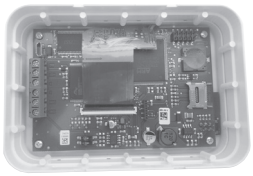
2.

3.

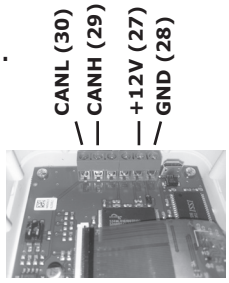
4.



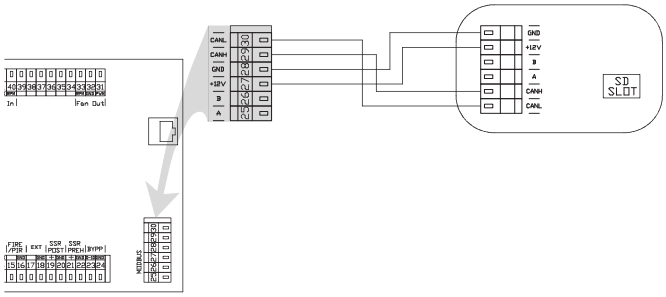
5.



6.



- *Insert the other end of the cable to one of the connectors on the control computer board.*

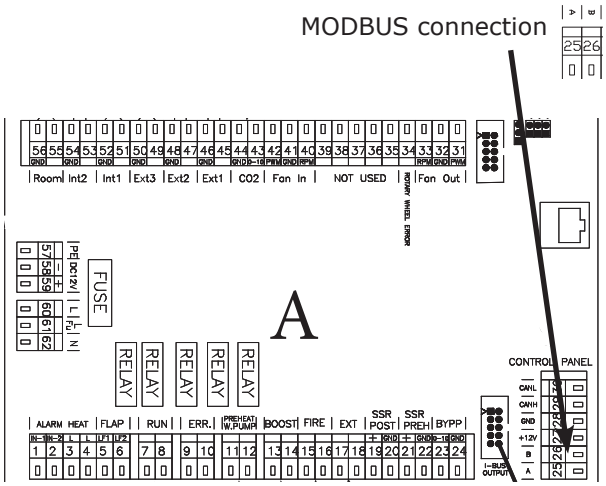


READ CAREFULLY!

- *The supply and the control cable should be as far apart from each other as possible.*
- *Make sure that the cable has been properly connected at screw terminals.*
- *Be careful not to damage cable insulation when fixing the control panel to the wall or to other surface.*
- *If you do not connect cables directly during the unit's installation, protect them against mechanical damage or short circuit with insulating tape.*
- *Cable connectors must not come into contact with water or other liquid.*

4.8.4 CONNECTING UNIT TO BMS CONTROL SYSTEM

The HRV unit's control includes the RS-485 interface. Connect the HRV computer control with a standard Cat6, RJ45 communication cable. Insert the cable BMS end into one of the connectors on the HRV unit's computer control board. Connect the other end to the main BMS end computer control.



5. COMMISSIONING

Programming The Controls

READ CAREFULLY

Verify the following points before putting the unit into operation:

- The HRV is securely attached to the supporting structure.
- The unit is closed correctly (ducts, etc.) and no rotating or heating component is exposed to human contact.
- The wiring is connected properly, including grounding and protection against external activation.
- All accessories are connected correctly.
- The condensation drain is properly connected to the discharge piping and the drain is filled with water.
- All connections comply with instructions in this manual.
- No tools or other objects have been left inside the unit as this could result in damage to the unit.

⚠ *ATTENTION!*

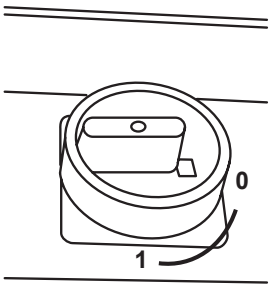
- *Any changes or modifications to unit wiring are prohibited and may void the warranty!*
- *We recommend using only accessories supplied by our company. If you have questions, please contact Ventacity Systems.*

READ CAREFULLY

- *Read the entire commissioning section before programming the HRV.*

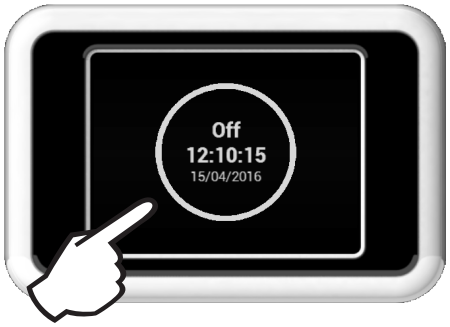
5.1 ACTIVATION

Put the unit into operation (Stand-by) by turning the main switch to position 1 (ON). When the main switch is turned on, the control panel's display lights up and the service data loads. The unit is ready to start once the service data has loaded.



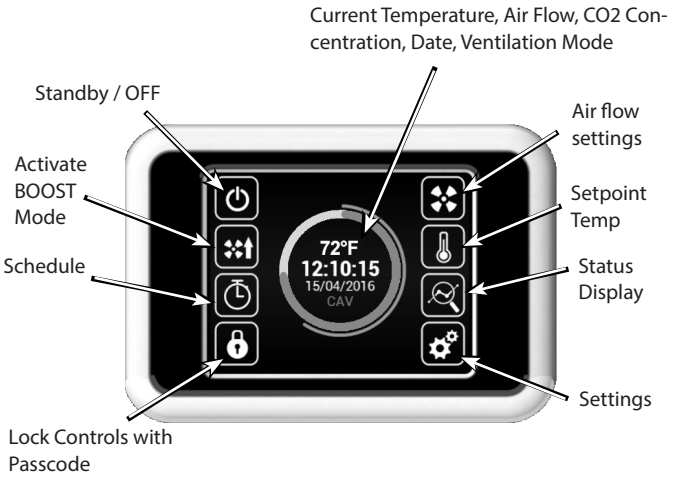
The control panel is provided with a touch sensitive display–the unit is controlled by touching symbols on the display.

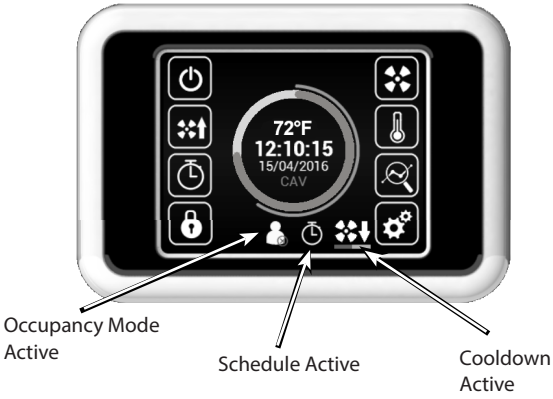
Activate



5. COMMISSIONING

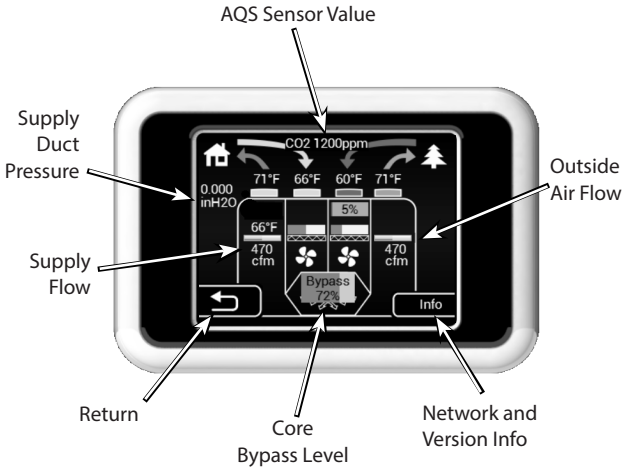
5.2 MAIN DISPLAY - RUNNING

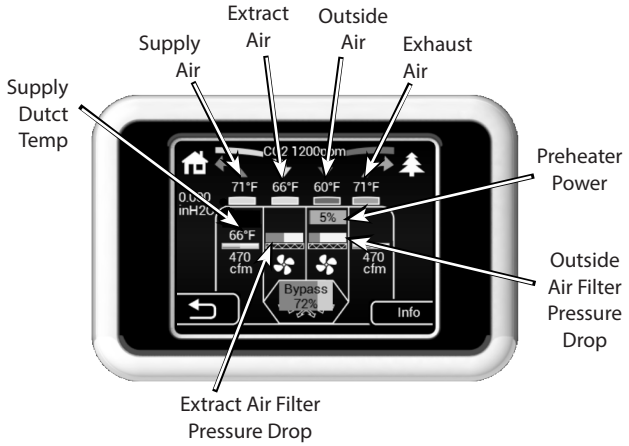




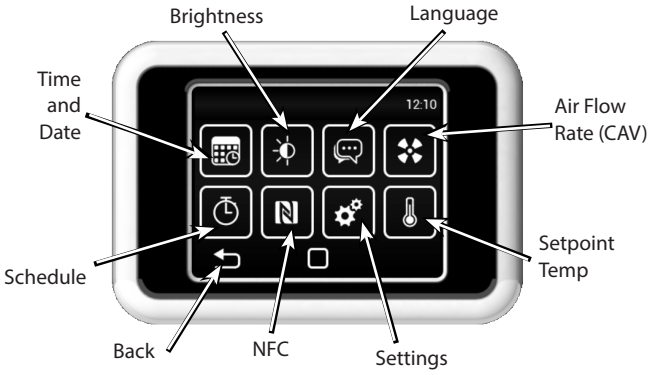
STATUS DISPLAY

This screen shows the status of the unit and present sensor values





5.3 MAIN MENU



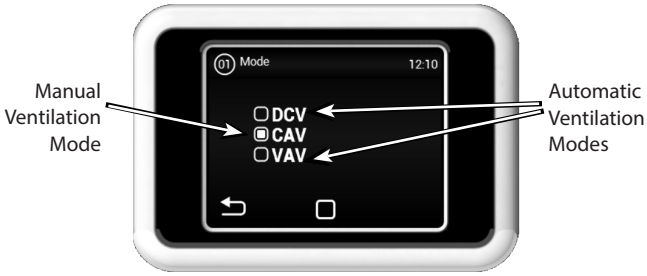
5.4 SERVICE MENU

Enter code 1616 to access the service menu.

5. COMMISSIONING

Navigate the menu by scrolling up and down on the touch screen.

MENU 01 - MODE



Manual CAV *(Constant Air Volume)* Temperature controlled fresh outside air is supplied to the building at a constant rate as set on the control panel.

Auto DCV *(Demand Controlled Ventilation)* Airflow into the building is modulated in response to readings from a variety of Indoor Air Quality (IAQ) sensors. When properly configured, this mode can provide significant energy savings by not over-ventilating while also ensuring no areas suffer from poor IAQ as a result of under-ventilation. Sensor types available from Ventacity Systems include CO_2, Relative Humidity (RH), and Volatile Organic Compounds (VOC). The VS3000 RT also features support for any other external 0-10V IAQ sensor.

Auto VAV *(Variable Air Volume)* Airflow is automatically controlled to maintain a constant pressure in the supply duct. As such, total flow will be reduced if the inlet to a ventilated room is closed off and increased if an inlet is opened. Through the use of flow control dampers, whether manually or electronically actuated, airflow can be precisely and efficiently tailored to the ventilation needs of multiple zones.

MENU 02 - HW SETTING

This menu lets you select the logic using with the digital input and the RUN output.
Input (7-8) - The logic of the connected RUN contact can be set as follows: as N. Close (normally closed) or N. Open (normally open)

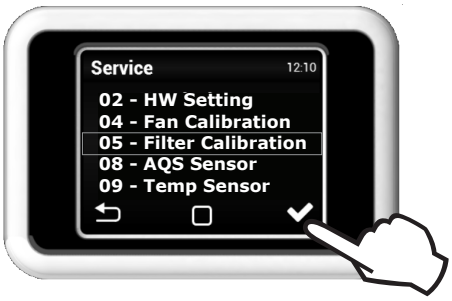
MENU 04 - FAN CALIBRATION

5. COMMISSIONING

The calibration takes several minutes. Do not disconnect the unit, wait until it's completed. During the calibration the unit determines the maximum pressure loss, when the fan runs at full rate.

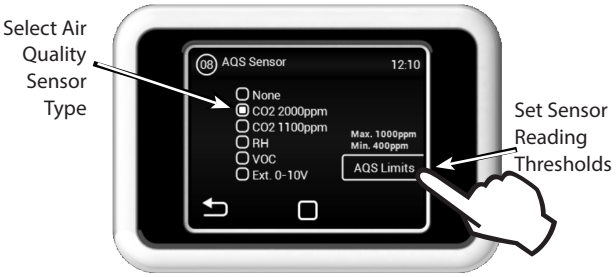
⚠ *READ CAREFULLY! The unit will not work properly if, during calibration, the distribution network is not complete, the flaps or valves are not closed, etc.*

MENU 05 - FILTER CALIBRATION



The calibration has to be carried out during the first commissioning and when switching to a new type of filter.

MENU 08 - AQS SENSOR



READ CAREFULLY!

Select the type of sensor connected to the unit. Select NO if no sensor is connected. If the correct parameters are not set, the unit may give an error message and not operate properly.

Select the minimum and maximum threshold values for Air Quality Sensor.

The HRV will run at the minimum flow rate when the sensor reading is at or below the minimum threshold. Airflow is increased in a linear fashion as the reading increases until maximum system flow rate is reached at the max threshold.

Breathing in DCV

When enabled, the flow rate is set to 0 CFM until the sensor reading is above the minimum threshold. To obtain an accurate reading of air quality, the unit will periodically run at an increased flow rate for a short period of time to circulate air through the system.

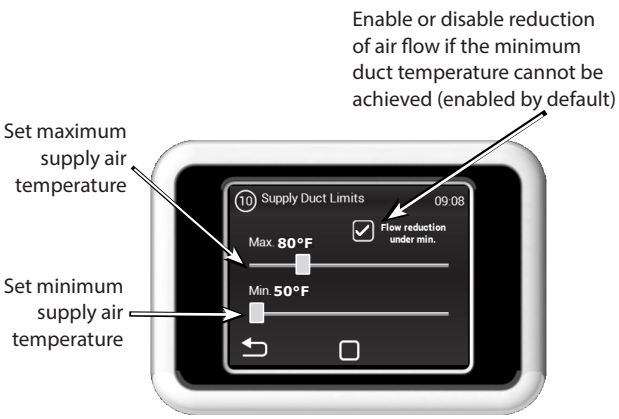
MENU 09 - TEMPERATURE PROBE

Choose the sensor to be used for maintaining the set point temperature

⚠ *Note: Enabling room temperature requires an additional accessory sensor*

5. COMMISSIONING

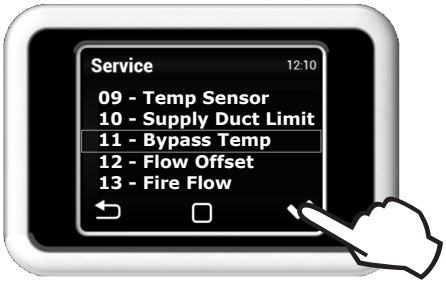
MENU 10 - SUPPLY DUCT LIMITS

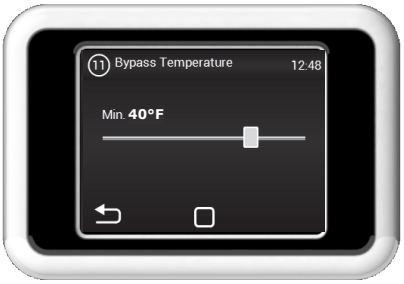


It is recommend to leave flow reduction enabled.

⚠ If the sensor in the supply ventilation shaft is set, the maximum temperature in the duct can not be configured

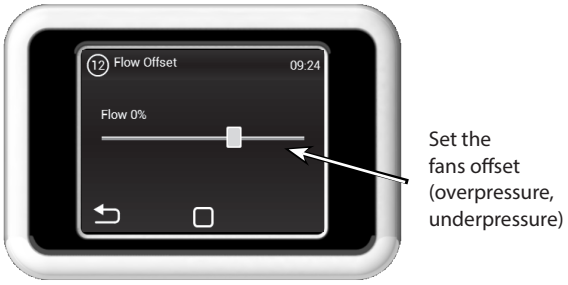
MENU 11 BYPASS TEMPERATURE





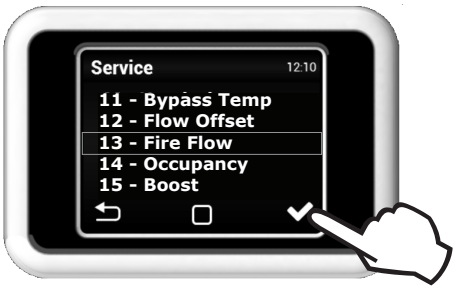
Minimum external air temperature at which the BY-PASS opening is authorised.
Range 32-68°F.

MENU 12 - FLOW OFFSET



If you need over- or under-pressure ventilation, you can set a constant difference of speeds between the supply and the exhaust fan. These settings and schemes relate to the air flow at high fan speeds.

MENU 13 - FIRE FLOW



5. COMMISSIONING

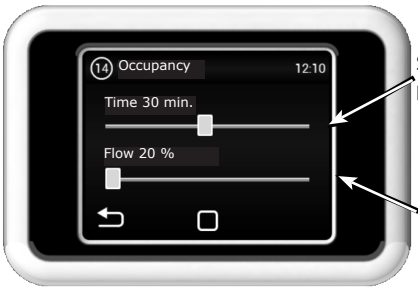
Setting the unit's rate when the FIRE contact opens (input terminals 15-16)

Fire flow modes:

- Flow off
- Flow supply + exhaust
- Flow only supply
- Flow only exhaust

⚠ The FIRE input has the highest priority (it disables all the other modes, including anti-freeze protection)

MENU 13 - OCCUPANCY



Set delay period

Set the required flow

While presence is detected, the scheduled settings will run as normal. After no presence has been detected for the specified amount of time, the system will run at the flow rate set here until presence is detected again.

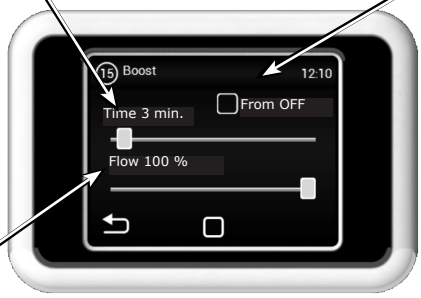
In the occupancy sensor mode the temperature cannot be regulated.

Note: The occupancy sensor available as an accessory from Ventacity Systems is preset. Therefore, it is not necessary to set the delay.

MENU 15 - BOOST

Time interval for which the mode is activated after the BOOST contact is activated

Allow to activation of BOOST mode with the unit in stand-by mode



Set the required flow

⚠ Boost can be activated with the button connected to the input 13/14, or with the Boost button on the main screen

Note: BOOST mode is not compatible with the Multizone mode.

After activation of the Boost mode (the mode can be activated on main display or optional external trigger), the unit operates in pre-set speed for pre-set time period. (Maximum duration is 60 min.)

5. COMMISSIONING

MENU 16 - FREECOOLING

The Freecooling function is designed to utilize cool night air during warmer months to "pre-cool" the building prior to occupancy. In this mode, the heat exchanger core is bypassed fully (recuperation is undesirable at this time) and the HRV runs at the predetermined flow rate.

For the HRV to enter Freecooling mode, all of the following conditions must be met:

- Freecooling enabled
- Time and date within permitted range
- T-EXT1< T-INT1 - 4°F
- T-EXT1 > Min. Bypass Temp

In order to accurately assess these conditions, a Pre-Freecooling mode will activate:

- If within the permitted Freecool time frame
- If there is no airflow through the unit
- In this mode, fan speed is increased for ten (10) minutes each hour to circulate air through the ducts and obtain an accurate measurement of environmental conditions.

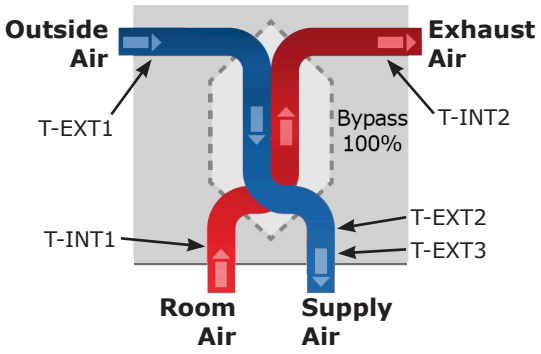
While functioning in Freecooling Mode, the HRV:

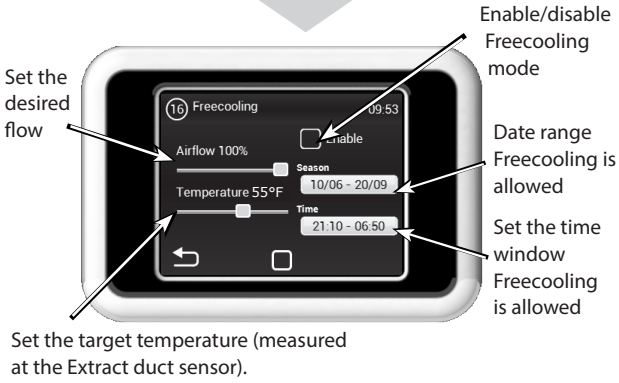
- Runs fans at rate specified in settings menu
- Varies bypass damper as necessary to maintain minimum duct temperature

If during Freecooling functionality, any of the following conditions are met, the mode will terminate.

- Current time no longer within permitted window
- T-INT1 ≤ T-EXT1
  (Building is same temp as ambient)
- T-INT1 ≤ Temp in Freecooling settings
- User Intervention
  (Resumes after 10 min inactivity if all Freecooling conditions still met)

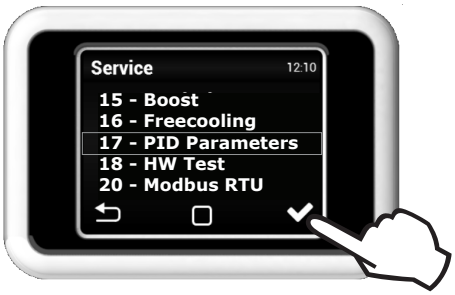
Thermistor Location





⚠ Freecooling is assessed also if the unit is in stand-by (at a selected time and date the unit starts-up and assesses if the freecooling may be activated - see Pre-freecooling above)

MENU 17 - PID PARAMETERS



Setting control features. If the control is unsteady or variable, this configuration can be done only after consulting the manufacturer.

5. COMMISSIONING

MENU 18 - HW TEST

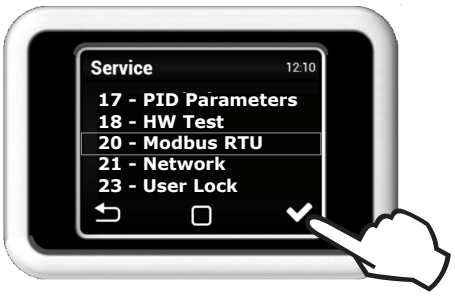
The HW TEST menu is used to test all the connected components and accessories. These parameters are not stored and the HRV will return to normal operation upon exiting this screen

⚠ **Warning**: This mode allows explicit control of the components in the HRV. There are no protections in place to stop a user from operating the unit in a potentially hazardous manner.

The heater(s) should not be manually operated with the dampers closed nor without adequate airflow through the HRV.

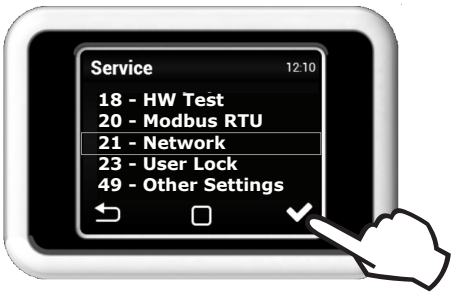
F in	Supply Fan
F out	Exhaust Fan
Pre 1	Preheater 1 Power
By/Ro	Core Bypass
Ext 1	Outside Air
Ext 2	Supply Air (Post Heat Exchanger)
Ext 3	SA (In-Duct)
Int 1	Extract Air
Int 2	Exhaust Air

MENU 20 - MODBUS RTU



The MODBUS menu is used to set the Modbus communication.

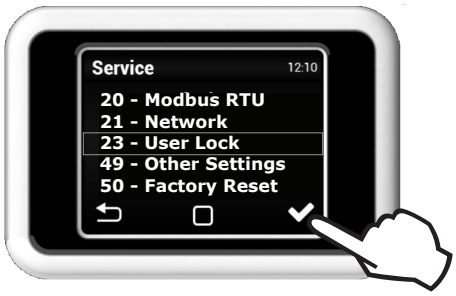
MENU 21 - NETWORK PARAMETERS



The NETWORK is used to set the unit's IPv4 configuration for ModBus TCP.

5. COMMISSIONING

MENU 23 - USER LOCK



Several security levels can be chosen:

ON/OFF
The unit can be turned on or off without password.

ON/OFF, Temp, Flow
Allows unit to be turned on or off, set the required temperature and air flow without password.

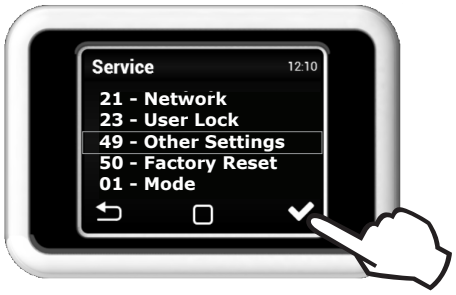
Temp, Flow
Allows to set the required temperature and air flow without password.

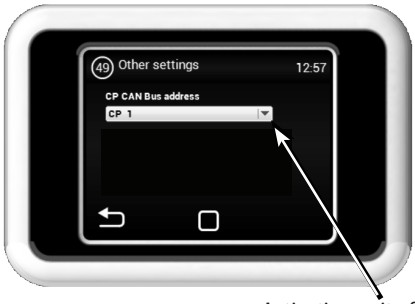
Full
Does not allow any settings without password.

User Mode
The unit can be turned on or off and the required temperature and air flow can be set without password.

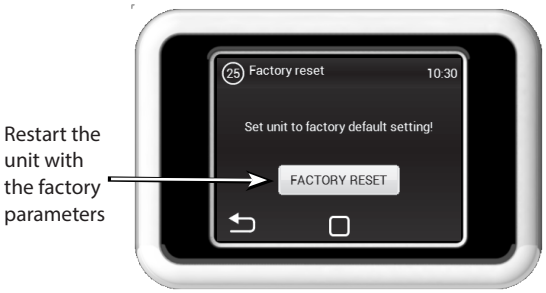
⚠ After entering the password, the unit can be fully controlled and set.

MENU 49 - OTHER SETTINGS





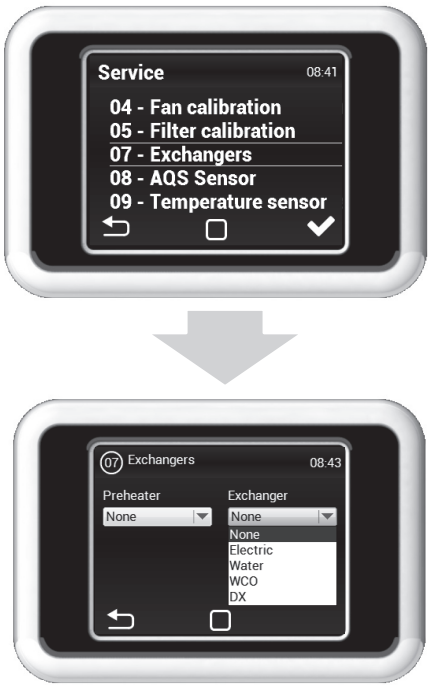
MENU 50 - FACTORY RESET



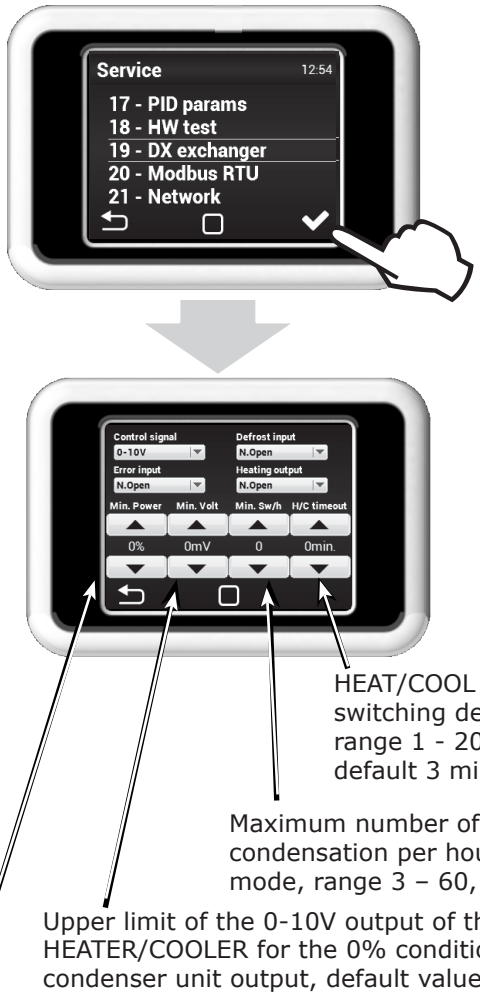
⚠ It does not change
- Settings like AQS
- Ventilation mode
- HW settings
- Temperature sensor
- ModBus settings

6. REFERENCE

MENU 07 - EXCHANGERS



MENU 19 - DX EXCHANGER



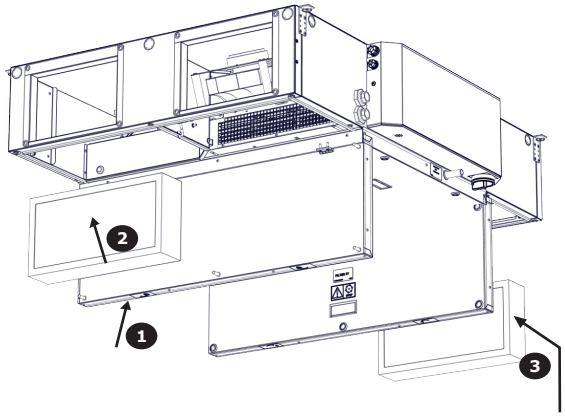
HEAT/COOL output switching delay, range 1 - 20 minutes, default 3 minutes

Maximum number of starts of the condensation per hour in ON/OFF mode, range 3 – 60, default 6.

Upper limit of the 0-10V output of the HEATER/COOLER for the 0% condition of the condenser unit output, default value 1V

Minimum output to switch the heat pump.

6.1.1 FILTER CHANGE



1) Unscrew and open the air filter cover
2) Replace the filter
3) Marking of spare filter types

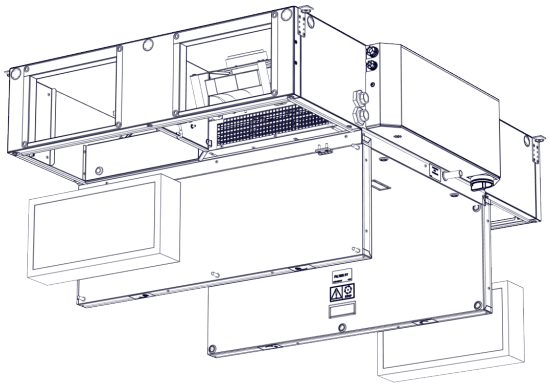
6.1.2 CLEANING SCHEDULE

YOU WILL NEED

- *6 mm Allen wrench*
- *vacuum cleaner*
- *brush*
- *cloth*
- *non aggressive cleanser (soapy water)*

We recommend checking and cleaning the unit every six months, though this interval should be adapted to the operating conditions. It is recommended to thoroughly clean the unit once a year.
If it's not used for a longer period, we recommend turning the unit on for one hour every six months.

Unscrew the inspection cover(s). Bear in mind the cover's weight before removing itin order to prevent possible injury if dropped.
Clean the unit with a vacuum cleaner, a brush and a cloth with a soapy solution.



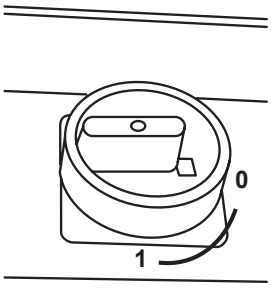
Clean the unit with a vacuum cleaner, a brush and a cloth with soapy water.
Do not use sharp objects, aggressive chemicals, solvents, abrasive cleaning products, pressurised water, air or steam to clean the unit.

6. REFERENCE

6.2 TROUBLESHOOTING

⚠ *ATTENTION!*

- *Before starting the maintenance and repair works, the unit must be disconnected from the power sources, the supply voltage must be locked, and the service switches must be in position 0 (off).*
- *Do not attempt repairs if you are not familiar with the exact procedure. Contact a qualified service provider.*



⚙ *TECHNICAL DATA*

An error is usually indicated by a message on the display. See the table below.

Description	Behavior	Likely problem	Solution
4 – Supply fan error	Unit is not working	Overheated fan or defect on thermal contact of inlet fan	Determine the cause of the overheating (defective bearing, short-circuit...) or replace the engine.
5 – Exhaust fan error	Unit is not working	Overheated fan or defect on thermal contact of inlet fan	Determine the cause of the overheating (defective bearing, short-circuit...) or replace the engine.
6 – Inlet filter clogged	Unit is ventilating	Clogged filter	Check the condition of the filter, or replace it. If the unit does not have a pressure sensor for the filter, RESET the clogged filter according to the manual.
7 – Exhaust filter clogged	Unit is ventilating	Clogged filter	Check the condition of the filter, or replace it. If the unit does not have a pressure sensor for the filter, RESET the clogged filter according to the manual.
8 - Failure in preheating 1	Unit is ventilating	Overheated electric exchanger or damaged sensor Open the exchanger thermostat.	Check that air can flow freely through the unit, electric heat exchanger is not cooling sufficiently. Check the safety thermostat on the electric preheating for damages.
9 - Failure in exchanger 1	Unit is ventilating	Overheated electric exchanger or damaged sensor Open the exchanger thermostat.	Check that air can flow freely through the unit, electric heat exchanger is not cooling sufficiently. Check the safety thermostat on the electric reheating for damages.
10 - Failure in exchanger 2	Unit is ventilating	Overheated electric exchanger or damaged sensor Open the exchanger thermostat.	Check that air can flow freely through the unit, electric heat exchanger is not cooling sufficiently. Check the safety thermostat on the electric reheating for damages.
11 - Failure in preheating 2	Unit is ventilating	Overheated electric exchanger or damaged sensor Open the exchanger thermostat.	Check that air can flow freely through the unit, electric heat exchanger is not cooling sufficiently. Check the safety thermostat on the electric preheating for damages.

6. REFERENCE

Description	Behavior	Likely problem	Solution
12 – CO2 sensor failure	Unit is ventilating	Defective air quality sensor	Check that the CO2 sensor is connected correctly or check that it is operating correctly (output signal value)
13 - Failure of rotary heat exchanger	Unit is not working	Failure of rotary heat exchanger	Check that the input error is correctly connected to the electronics or check what type of error the heat exchanger is indicating.
14 - ADB module error	Unit is ventilating	Failure of adiabatic module	Check that the input error is correctly connected to the electronics or, if necessary, that the adiabatic module is operating correctly
15 - Heat pump error	Unit is ventilating	Heat pump failure	Check that the input error is correctly connected to the electronics or, if necessary, that the heat pump is operating correctly (according to the instructions of its manufacturer)
16 – Inlet – External temperature sensor failure (T-EXT1)	Unit is not working	Room temperature sensor failure	Check that the sensor is correctly connected to the electronics or test it measuring its resistance (the resistance value at +68°F is around 10kΩ)
17 – Inlet – Failure of the temperature sensor behind the exchanger (T-EXT2)	Unit is not working	Room temperature sensor failure	Check that the sensor is correctly connected to the electronics or test it measuring its resistance (the resistance value at +68°F is around 10kΩ)
18 – Inlet – Temperature sensor failure in the supply canal (T-EXT3)	Unit is not working	Room temperature sensor failure	Check that the sensor is correctly connected to the electronics or test it measuring its resistance (the resistance value at +68°F is around 10kΩ)
19 - Inlet - Temperature sensor failure after the second exchanger (T-EXT4)	Unit is not working	Room temperature sensor failure	Check that the sensor is correctly connected to the electronics or test it measuring its resistance (the resistance value at +68°F is around 10kΩ)
20 - Exhaust – Temperature sensor failure in the exhaust canal (T-INT0)	Unit is not working	Room temperature sensor failure	Check that the sensor is correctly connected to the electronics or test it measuring its resistance (the resistance value at +68°F is around 10kΩ)
21 – Exhaust – Temperature sensor failure in the exhaust canal (T-INT1)	Unit is not working	Room temperature sensor failure	Check that the sensor is correctly connected to the electronics or test it measuring its resistance (the resistance value at +68°F is around 10kΩ)
22 – Exhaust – Failure of the temperature sensor of the exchanger's anti-freeze protection (T-INT2)	Unit is not working	Room temperature sensor failure	Check that the sensor is correctly connected to the electronics or test it measuring its resistance (the resistance value at +68°F is around 10kΩ)
23 - Temperature sensor failure of the exchanger's water supply (T_WATER_IN)	Unit is not working	Room temperature sensor failure	Check that the sensor is correctly connected to the electronics or test it measuring its resistance (the resistance value at +68°F is around 10kΩ)
24 - Failure in the return water sensor of exchanger (T_WATER_OUT)	Unit is not working	Room temperature sensor failure	Check that the sensor is correctly connected to the electronics or test it measuring its resistance (the resistance value at +68°F is around 10kΩ)
25 - Room temperature sensor failure (T_ROOM)	Unit is ventilating	Room temperature sensor failure	Check that the sensor is correctly connected to the electronics or test it measuring its resistance (the resistance value at +68°F is around 10kΩ)

6. REFERENCE

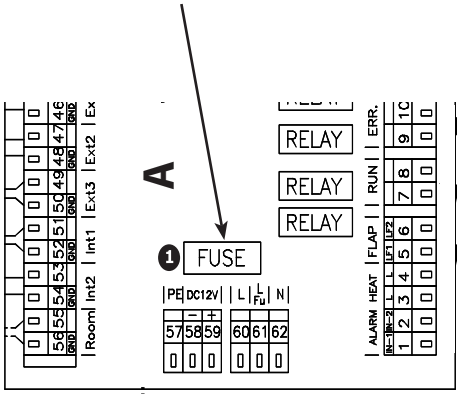
Description	Behavior	Likely problem	Solution
26 - Failure in the pressure sensor of the exhaust filter.	Unit is ventilating	Pressure sensor failure	Check the supply point for mechanical damage or whether it is clogged by dirt, or whether the supply hoses are free. The pressure sensor will likely need to be replaced
27 - Failure in the pressure sensor of the inlet filter	Unit is ventilating	Pressure sensor failure	Check the supply point for mechanical damage or whether it is clogged by dirt, or whether the supply hoses are free. The pressure sensor will likely need to be replaced
28 - Failure in the pressure sensor of the inlet fan	Unit is not working correctly	Pressure sensor failure	Check the supply point for mechanical damage or whether it is clogged by dirt, or whether the supply hoses are free. The pressure sensor will likely need to be replaced
29 - Failure in the pressure sensor of the exhaust fan	Unit is not working correctly	Pressure sensor failure	Check the supply point for mechanical damage or whether it is clogged by dirt, or whether the supply hoses are free. The pressure sensor will likely need to be replaced
30 - Failure in the pressure sensor of the VAV supply channel	Unit is not working correctly	Pressure sensor failure	Check the supply point for mechanical damage or whether it is clogged by dirt, or whether the supply hoses are free. The pressure sensor will likely need to be replaced
31 - Failure in the pressure sensor of the VAV C4 exhaust channel	Unit is not working correctly	Pressure sensor failure	Check the supply point for mechanical damage or whether it is clogged by dirt, or whether the supply hoses are free. The pressure sensor will likely need to be replaced
32 - Air quality sensor failure	Unit is ventilating	Defective air quality sensor	Check that the quality sensor is connected correctly or check that it is operating correctly (output signal value)
33 - Failure in the recirculation relative humidity sensor	Unit is ventilating	Defective relative humidity sensor	Check that the humidity sensor is connected correctly or check that it is operating correctly (output signal value)
34 - Failure in the sensor of external temperature from BMS	Unit is ventilating	Defective sensor in BMS or incorrectly received data	Check that the address and values of the sensor in the BMS system are correct. Check that the sensor in the BMS system is working.
35 - Failure in the REK antifreeze protection relative humidity sensor	The unit is ventilating th	Defective relative humidity sensor	The communication cable to the relative humidity sensor is damaged or disconnected. The humidity has exceeded the permitted limit and the sensor may temporarily read incorrect values. Check the connection of the sensor. Set its address and check that it is not flooded. Replace if necessary.
36 - Module B error	Unit is not working	The unit cannot control the peripherals connected to Module B	Unable to communicate with module B. Check whether the communication cable between control boards A and B is damaged. If necessary, replace module B.
37 - Condensate pan overflow	Unit is not working	The level sensor has detected an extremely high level of water in the condensate pan	Check that the level sensor is connected correctly or check that it is operating correctly, or whether the condensate drain is clogged, preventing the condensate from draining properly.
50 - Inlet filter clogged > 80%	Unit is ventilating	Clogged filter	Filter change recommended
51 - Exhaust filter clogged > 80%	Unit is ventilating	Clogged filter	Filter change recommended
70 - Anti-freeze protection of the water heat exchanger	Unit is ventilating	The anti-freeze protection of the water heat exchanger is active	The automatic protection of the water exchanger has been activated in order to prevent damages due to low temperature. This is an autonomous function and will be terminated once the risk of frost disappears.

6. REFERENCE

Description	Behavior	Likely problem	Solution
71 - Water heater - waiting for water temperature	Unit is ventilating	The unit controls the temperature of the liquid in the exchanger	The automatic process that assesses the water temperature in the exchanger to activate the next steps is in progress
72 - Water heater - waiting for supply air temperature	Unit is ventilating	The unit controls the temperature of the air flowing through the exchanger	The automatic process that assesses the temperature of the air flowing through the exchanger to activate the next steps is in progress
73 - WCO detects temperature of the water supply (cold/hot)	Unit is ventilating	The unit controls the temperature of the liquid in the exchanger	The automatic process that assesses the water temperature in the exchanger to activate the next steps is in progress
73 - Pre-Freecooling active	Unit is ventilating	Temperature evaluation for freecooling mode is in progress	Preparation for freecooling mode is in progress. it evaluates the temperature and the conditions necessary to activate this mode.
74 - Flow reduction, minimum temperature in the duct not reached	Unit operates in a restricted mode	The unit is trying to reach the set values of the duct min temp	The temperature of the air flowing into the inlet branch of the building has not been reached. The performance of the unit is being automatically corrected to reach this minimum level. Automatic process.
75 - Passive house protection	Unit is not working	The unit is operating in order to meet the Passive House specifications	The temperature of the air flowing into the inlet branch of the building is not within the Passive House specifications. The performance of the unit is being automatically corrected to reach this minimum level. Automatic process.
76 - Heat pump defrost	Unit operates in a restricted mode	The unit is waiting until the heat pump defrosts	The heat pump is reporting that it is defrosting. The unit is operating in defrost-waiting mode. Automatic process.

6. REFERENCE

Location of fuses on the "A" control board



Fuses on the cont board:

T2A 5x20mm 250V

Fuses engine:

information is placed on the label next to the fuse box, or directly on the fuse

READ CAREFULLY!

In case of power failure and subsequent recovery of the power supply, the unit returns to its state before the failure. The unit always remembers its operating status and configuration.

If you fail to find or remove the cause of the error, or if the repair requires intervention in the unit, contact an authorized service provider.

6.3 SERVICE

6.3.1 If The Error Persists

If you cannot resolve the error, please contact the supplier.

READ CAREFULLY!

Provide the following information to facilitate correcting the error:

- *Product type*
- *Serial number*
- *Operating time*
- *Used accessories*
- *Unit location*
- *Connection conditions (including electrical conditions)*
- *Detailed description of the error and steps taken to remove it.*

6.3.2 Decommissioning and Product Disposal

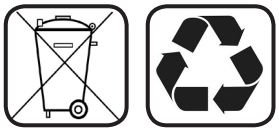
Please make sure the unit is inoperative before disposal. Older units also include reusable materials. Take them to a waste separation site.

The product should be dismantled in a specialized center so that the recyclable materials can be reused. Parts that cannot be recycled should be taken to a legal waste disposal site.

Materials must be disposed of in accordance with applicable national regulations and directives.

This product must be disposed of in accordance with local laws and regulations.

The product contains batteries and therefore it must be recycled or disposed of separately from household waste. When the battery or the product reaches the end of its service life, contact your dealer or local authorities and ask about recycling options. The separate collection and recycling of your product and its battery will help to preserve natural resources and ensure that the product will be recycled in a manner that protects human health and the environment.

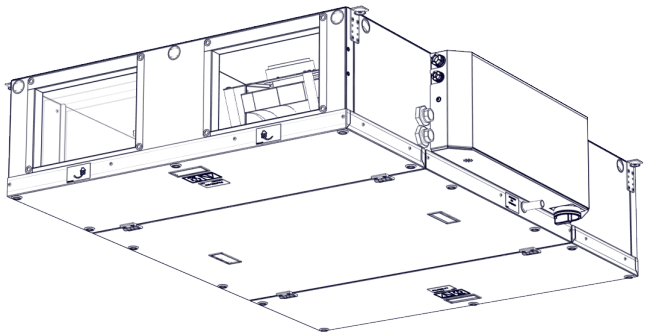


6. REFERENCE

6.4 CONCLUSION

Please read this manual carefully and follow its instructions to ensure correct and safe operation of the Heat Recovery Ventilator unit.

Should you have any questions or require some additional explanation, please do not hesitate to contact our sales department or technical support.



Contact information:

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