# OXYGEN8

# NOVA

Low Profile ERV with 100% Outside Air

# Who We Are

Oxygen8 is reinventing how buildings provide healthy and comfortable air in an energy efficient way. We work to enhance living and working environments with 100% fresh, filtered air using smart technology for maximum comfort and value.

## [ox·y·gen·ate]

Nothing is more refreshing and essential to the human body than oxygen, which happens to be the eighth element in the periodic table. We oxygenate businesses, classrooms, senior care facilities and other buildings with 100% fresh air so people can work, live and breathe in a safe and comfortable environment.

# Why We Do What We Do

## **To Create Healthy Indoor Environments**

People are getting sick while working in offices, learning in classrooms and convalescing in senior care facilities. Traditional centralized HVAC systems that recirculate air without proper filtration and humidity control are the root cause of poor IAQ. To prevent the transmission of bacteria and viruses, improved HVAC systems must provide dedicated outdoor air and eliminate recirculation, have small zoned ventilation systems, include filtration, control humidity levels and used fixed-plate ERV technology that eliminates contaminant cross-over between outside and exhaust streams.

## **To Move Toward Building Electrification**

To reduce greenhouse gases, many North American cities are moving toward net-zero energy buildings over the next decade, which will drive demand for all-electric HVAC systems and low energy technologies. We are here to meet that demand with our all-electric heating and cooling solutions.

# For Better Building Design

Super-insulated buildings significantly reduce heating requirements, while climate change and developers' desires for large amounts of glazing will increase cooling needs. The integration of VRV with ERV helps to reduce energy consumption and meet ventilation requirements.

# **Table of Contents**

100% Outside Air Smart Solution	4
Nova ERV Overview	6
Model Sizing	8
Accessories	10
System Integrations	11
Controls by Distech	12
User Interfaces	13
Electrical	14
Unit Configurations & Bypass	15
Specifications	16
FAQ	17

# NOVA ERV 100% Outside Air Smart Solution

# **The All Electric Solution**

Nova's all-electric system with energy recovery helps to lower the carbon footprint of buildings. The unit integrates with VRV to provide heating and cooling using energy efficient heat-pump technology.

# **The High-Efficiency Solution**

The Nova Series features variable speed plenum ECM direct-driven fans with low sound levels, energy recovery and insulated panels for a high-efficiency solution.

# **The Healthy Solution**

Nova uses 100% outside air with no recirculation. The core is made of a polymer membrane with water-washability and has a mold and bacteria resistance rating of 0 under ISO-846. There is no virus cross-over: tested under ASTM F1671. EATR < 0.5% tested to AHRI 1060. The units ship with MERV 13 filters for outdoor air and MERV 8 filters for return air.

# **Intelligent Controls**

Intelligent controls communicate between the Nova Controller, Daikin VRV Outdoor Unit and EKEXV Expansion Valve Kit. Nova integrates with cloud-based third-party indoor air quality monitoring and control systems, which display equipment control information on a customizable dashboard.

# **Fresh Air That Fits**

Nova units have a 16 - 30" depth and a 325 - 8,100 cfm range. The units can be wall, ceiling or floor mounted, help free up valuable roof space by taking a decentralized ventilation approach and add floor space by eliminating vertical duct runs.

# **The Integrated Solution**

Nova integrates with Daikin VRV technology for accurate temperature and humidity control. Controllers come factory-mounted to Daikin-approved DX Coil and Electronic Expansion Valves.





# **Nova System Overview** For Indoor Applications





Fully integrated fan control by the Oxygen8 controller using  $\Delta P$  measured across the fan inlet with the fan-specific k-factor. Airflow available as a BACnet IP point to display on the building BMS

# **Nova System Overview**

## For Indoor/Outdoor Applications



## **Mounting Options**



Indoor: Horizontal (Ceiling Mount)



Indoor: Vertical (Floor Mount)



Indoor: Vertical (Wall Mount) \*Hardware and engineering for knee brace support or otherwise is by others and is not shown.

## Indoor Model Sizing

Model	Airflow Range (cfm)	ERV Dim. (W x L x H) in.	SRE*	LRE*	TRE*
A16	225 775	40 x 60 x 16	69%	54%	60%
AIO	325 - 775	40 x 00 x 10	61%	43%	50%
<b>D</b> 20	FF0 1200	40 - 72 - 20	68%	55%	60%
B20	550 - 1300	48 x 72 x 20	60%	44%	50%
c20	1200 2200	C0 x 04 x 20	68%	55%	60%
C20	1200 - 2200	60 x 84 x 20	60%	44%	50%
C24	1550 2700	C0 x 04 x 24	68%	55%	60%
C24	1550 - 2700	60 x 84 x 24	60%	44%	50%
		68%	55%	60%	
C30	2000 - 3500	60 x 84 x 30	60%	44%	50%

\*Based on AHRI 1060 Cooling Conditions and that full performance can be found in the AHRI Directory

## **Duct Locations and Orientations**



Left and right handed ducting options available for floor and wall mounted Nova applications.



Left and right handed ducting options available for ceiling mounted Nova applications.

Connection	Airflow Direction
1 or 1A	Exhaust air to outside (EA)
2 or 2A	Supply air to inside (SA)
3 or 3A	Outside air into ERV (OA)
4 or 4A	Exhaust air into ERV (RA)

## Indoor/Outdoor Model Sizing

Model	Airflow Range (cfm)	ERV Dim. (W x L x H) in.	SRE*	LRE*	TRE*
٨ 10**	225 775	19 x 62 x 42	69%	54%	60%
AIO	325 - 775	10 X 02 X 42	61%	43%	50%
B33**	EE0 1200	22 x 74 x E0	68%	55%	60%
DZZ	550 - 1500	22 X 74 X 50	60%	44%	50%
C22**	1200 2200	22 4 26 4 62	68%	55%	60%
CZZ	1200 - 2200	22 X 80 X 62	60%	44%	50%
C2C**	1550 2700		68%	55%	60%
C20	1550 - 2700	26 x 86 x62	60%	44%	50%
C22**	2000 2500	32 x 86 x 62	68%	55%	60%
C32"	2000 - 3500		60%	44%	50%
040**	2500 4400	20 5 0 6 6 2	68%	55%	60%
C40***	3500 - 4400	39.5 X 86 X 62	60%	44%	50%
C40**	4400 5400		68%	55%	60%
C48	4400 - 5400	47.5 X 86 X 62	60%	44%	50%
CE0**	F400 CC00	F7 x 9C x C2	68%	55%	60%
C20.	5400 - 6600	57 X 00 X 02	60%	44%	50%
C70**		<u> </u>	68%	55%	60%
C70**	0000 - 8100	09 X 80 X 62	60%	44%	50%

\*Based on AHRI 1060 Cooling Conditions and that full performance can be found in the AHRI Directory

\*\*2" panels are required for outdoor applications

Please contact Oxygen8 for airflows over 8,100 cfm.



If the unit is horizontal ceiling-hung and not floor mounted, brackets (left) are provided. Knee-brace brackets (right) are supplied by others for wall-mounted applications.

## **Mounting Options**



Outdoor Roof Mount



Indoor Mount

## Configurations

For more configurations, see p 15.



Nova C48 with Pre-heat



DX and Hot Water Coil

# Accessories









## Access Door

The access door allows for easy maintenance of the enclosed coils.



## Hot / Chilled Water Coil

The hydronic coil includes external drain and vent connections. Coils are mounted in a rack over a stainless-steel double sloped condensate pan.

DX Coil / HGRH Coil

The Daikin-approved DX or HGRH coil with factorymounted W (DX) or D (HGRH)-Controller (EKEQ) and factorybrazed Daikin expansion valve (EKEXV) has an interlaced circuit to match the Daikin Outdoor Unit temperatures. Coils come shipped with nitrogen holding charge.

4

5

## **Electric Pre/Post-Heat**

Electric Pre- and Post-Heat are available in all voltages (see page 9), with standard sizes to match the heating requirements.

DX Coil with Access Door and Electric Heat or Hydronic or Coil

Hydronic or DX coils are available for cooling applications. DX, hydronic or electric coils are available for heating applications. The access door section allows for ease of maintenance.

# **Nova and Daikin VRV Integration**



1. Daikin VRV Outdoor Unit

Daikin's inverter based outdoor unit for either heating or cooling (Heat Pump) operations. Available as either air cooled or water cooled.

2. EKEXV (Expansion Valve Kit) Factory-Brazed to DX and/or HGRH Coil

Daikin-approved DX Coil is factory-mounted to the decoupled coil section. The expansion valve kit is factory-brazed to the DX Coil. The coil module ships separately and includes a stainless steel double sloped drain pan. The coil section comes with optional electric, hydronic, or hot gas reheat.

3. EKEQFCBAV8/ (W-Controller/D-Controller) Factory-mounted to a decoupled DX and/or HGRH coil section, the controller communicates with the Daikin VRV Outdoor unit, EKEXV Expansion Valve Kit and Nova Controller.

## 4. Nova Controller

Nova ERV Units include a factory-mounted and tested controller to integrate with Daikin's systems. The controller is BTL-Certified and has BACnet IP compatibility.

#### 5. Pre-Heat

Pre-heat can be water (glycol) or electric. Pre-heat only activates when the outdoor air temperature is below the setpoint. The pre-heater is not required when the outdoor air is  $-5^{\circ}F$  and return air is  $70^{\circ}F$  at 25% RH.

#### 6. Filters and Fans

Nova ships with standard MERV 13 filters for outdoor air and MERV 8 filters for return air.

The unit features variable speed, direct-drive ECM plenum fans for high-efficiency and low sound levels.

#### 7. Energy Recovery

An AHRI-Certified cross-flow enthalpy heat exchanger transfers heat and humidity. The core is made of a polymer membrane with waterwashability and has a mold and bacteria resistance rating of 0 under ISO-846. There is no virus crossover: tested under ASTM F1671. EATR <0.5% tested to AHRI 1060.



# **Control Capabilities**



## Fan Control

Constant Volume Constant Pressure Constant VOC/CO2



## **Temperature Control**

Pre-Heat / Post-Heat Cooling Coil DX Coil & HGRH Coil

# **Standard Sensors**



Dual Differential Pressure — Huba 699M

Differential Pressure for Fans and Filters

## Supply Air Temperature and Relative Humidity — Siemens QFM2150/MO

Used to control post-heat, cooling, VRV (DX and HGRH) coils

For a complete list of optional sensors, please see our Controls Brochure.

# **User Interfaces**





## **Distech Eclipse Web Interface**

A customized and branded interface that can be accessed via web or mobile browser.



## myDC Control App

Free app from Distech available on iOS and Android. myDC Control offers connectivity from tablet or mobile phone to any controller within wifi range. The app offer the same displays and graphics as the HMI, plus performance graphs.

Note: myDC Control requires a wifi dongle.



## UniTouch Room Device

Thermostat with a touch screen that displays temperature, fan speed, humidity (optional) and CO2 (optional) in the space, and allows for modification of the temperature setpoint and fan speed.



## **Distech HMI**

On-wall display with a jog-dial and a button.

# **Electrical**

Model	Nom. V	Motor (kW)	SA Fan Qty	RA Fan Qty	Unit FLA	МСА	MOP (A)
A16/18	208	0.5	1	1	5.29	5.91	15
	240	0.5	1	1	5.29	5.91	15
B20/B22	208	0.78	1	1	8.09	9.06	15
	240	0.78	1	1	8.09	9.06	15
B20/B22	208	2.00	1	1	12.33	13.83	15
B20/B22	460	2.50	1	1	8.14	9.14	15
C20/C22	208	2.00	1	1	12.33	13.83	15
C20/C22	460	2.50	1	1	8.14	9.14	15
C24/C26	208	2.7	1	1	17.53	19.68	25
C24/C26	460	3.7	1	1	11.74	13.19	15
C30/C32	208	3	1	1	18.33	20.58	25
C30/C32	460	3.3	1	1	10.94	12.29	15
C40	208	2.00	2	2	24.33	27.33	35
C40	460	2.50	2	2	16.14	18.14	25
C48	208	2.7	2	2	34.73	39.03	50
C48	460	3.7	2	2	23.34	26.24	35
C58	208	2.00	3	3	36.33	40.83	50
C58	460	2.50	3	3	24.14	27.14	35
C70	208	2.7	3	3	51.93	58.38	80
C70	460	3.7	3	3	34.94	39.29	50

MCA Minimum Circuit Ampacity

**MOP** Maximum Over Current Protective Device / Recommended Fuse Size

# **VRV** Integration Electrical

Daikin VRV Outdoor	W/D-Controller	Nova Unit	Pre-Heat
Unit	(EKEQFCBAV3/	208–240/1/60	208-240/1/60
240/1/60	EKEQDCBAV3)	208/3/60	208/3/60
208/3/60	230/1/60	460/3/60	460/3/60
460/3/60			575/3/60
575/3/60			

# **Unit Configurations**



**Nova ERV** with Preheat (Vertical)



**Nova ERV** with DX/HGRH Cooling and Heating (Vertical). Duct transition to be provided by others.



**Nova ERV** (Horizontal)



**Nova ERV** with DX/ HGRH Cooling and Heating (Horizontal). Duct transition to be provided by others.

More unit configurations are available, please contact your local Oxygen8 Sales Representative for information.

# **Bypass Capabilities**

For Economizer and Defrost applications. Available with heating and cooling accessories.

## Indoor Only Model Sizes and Airflow Ranges

Model	Airflow Range (cfm)	ERV Dim. (W x L x H) in.	Orientation
C20 with Bypass	1300 – 2200	30 x 84 x 60	Vertical

## Indoor/Outdoor Model Sizes and Airflow Ranges

Model	Airflow Range (cfm)	ERV Dim. (W x L x H) in.	Orientation
C22 with Bypass	1300 – 2200	32 x 86 x 62	Vertical
C26 with Bypass	2200 – 2700	39.5 x 86 x 62	Vertical
C32 with Bypass	2700 – 3500	47.5 x 86 x 62	Vertical
C40 with Bypass	3500 – 4400	57 x 86 x 62	Vertical
C48 with Bypass	4400 – 5400	69 x 86 x 62	Vertical

# **Specifications**

## **System Overview**

Oxygen8's Nova series is a modular design with a base ERV unit and optional coil modules for heating, cooling and Daikin VRV integration.

## **Standard Features**

- □ High-efficiency variable speed EC direct-drive motor
- □ Backward inclined fans
- □ 4 standard temperature sensors (OA, RA, EA and SA temperature sensors)
- □ Integrated controls with BACnet IP and BTL-certification
- □ Non-fused disconnect switch
- □ 1" foam-injected double-wall panels (6.5)
- □ 2" foam-injected double-wall panels (R13)
- □ Pre-painted white exterior casing
- □ 22-gauge galvanized steel exterior
- □ 20-gauge galvanized steel interior panel
- □ Filter alarms: Signaled by factory mounted pressure sensors to measure filter pressure drop across filter
- □ 2" pleated MERV 8 return air filter, 2" MERV 13 supply air filter
- □ Removable hinge pins for limited access
- □ AHRI-certified cross-flow core
- □ DAT sensor for dehumidification control
- □ Hydronic 2-way valves and actuators for field installation

## 2 Electric Coil Specifications

- □ SCR Controlled
- Non-Fused Disconnect Switch
- □ Single-Point Power Connection (with limitations)

## Installation Options

- □ Horizontal (Ceiling Mount) Brackets included
- □ Vertical (Base and Wall Mount) Base Rail Included (3.5" high, 2.5" wide)
- □ Orientation: Right Hand or Left Hand
- □ Unit can be Completely Mirrored with Access Doors on Either Side

## Warranty

- □ 18 Months from Shipment on Unit
- □ 5 years from Shipment on CORE

## **VRV** Integration

- □ Factory Mounted DX Coil and Factory Brazed Expansion Valve Kit to the Coil
- □ Factory Mounted and Wired W- or D-Controller to the Coil Section (W- or D-Controller requires a separate electrical connection)
- □ Factory Mounted Hot Gas Reheat Coils and Factory-Brazed Expansion Valve kit to the coil

## Options

- □ Bypass for Economizer (Available as a standard configuration for C20/C22-C48)
- □ Extended 5-Year Warranty
- □ Optional Sensors: CO<sub>2</sub>/VOC, Humidity, Pressure

# FAQ

## General

#### What material is the Oxygen8 casing made of? Painted exterior with galvanized interior.

#### Who manufacturers the ECM fans? Ziehl Abegg or EBM Papst.

Can you provide 18-gauge casing as a special? No.

Our standard casing is 22Ga, painted with a 20Ga galvanized internal panel.

# Can the electrical/control box be mounted on a different location than the ERV?

Yes, please provide Oxygen8 with the distance from the unit to calculate the wire harness length.

**Does the W/D-Controller require a separate power supply and what is the amp draw?** Yes, a 230V/1ph power supply, 1/4 A each.

## Do you offer non-fused disconnect?

Yes, it is standard. We use a switch disconnect with motor circuit breakers.

**Is the damper powered by the unit?** Yes.

## How are the dampers controlled?

Damper control is automatic based on the operation of the unit. The Nova BTL-Certified BACnet controller will provide an on/off output signal to the dampers. Dampers can be provided in matching casing or loose.

## Where is the damper actuator located?

It is located outside of the air stream.

## Is a filter sensor provided with the unit?

Yes. Dirty filter sensors are standard - an alert will be sent when filters need to be changed.

# Is your controller standard on all units, and native BACnet IP, or do we need to add a card?

Yes, integrated, programmable controls come standard with every unit. They are BTL-Certified for BACnet IP. The card is native BACnet IP.

## Are your controls MSTP compatible?

Yes, but a gateway would be required by the controls contractor.

#### How is the Daikin VRV controlled?

The preferred operation is through the W-Controller with a 0-10v signal. Oxygen8 provides a DAT sensor downstream of the coils to control leaving air temperature.

# How is the Daikin VRV controlled with Hot Gas Reheat?

The preferred operation is through the D-Controller via Modbus from the Oxygen8 controller (standard). Oxygen8 provides a DAT sensor downstream of the coils to control leaving air temperature when controller is provided.

## What sensors come integral to the unit?

There are 4 internal temperature sensors for the unit and 1 for the electric pre-heat that are included.

#### Do you provide mounting brackets?

No. Mounting brackets are provided for wall-mounted applications and engineering for this solutions is by others.

# Notes


# Notes


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