OXYGEN 8

OPERATION & MAINTENANCE
NOVA SERIES

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1.0 General Information

This manual includes important instructions for safe installation, operations and maintenance of the Energy Recovery Ventilator (ERV). Before installing the ERV, please read carefully and follow all of the instructions below! The manufacturer reserves the right to make changes to this manual without prior notification. Please keep this manual for future reference. Consider this manual a permanent part of the product.

This manual will show the manufacturers recommended installation method. Please note that local codes and regulations may override these recommendations.

The installation must follow local codes and standards. The National Electric Code (NEC), the National Fire Protection Agency (NFPA), and the Canadian Electrical Code (CEC) must be followed.

Installation of this product must be performed by a qualified and accredited professional in conformance with local and national codes, standards and licensing requirements.

Warnings and Caution

Warnings and cautions appear at the appropriate sections throughout this manual. Please read these sections carefully.



Warning

This sign indicates a potentially hazardous situation, which could result in death or serious injury if not avoided.



Caution

This sign indicates a potentially hazardous situation, which may result in minor or moderate injury if not avoided. It may also alert against unsafe practices.

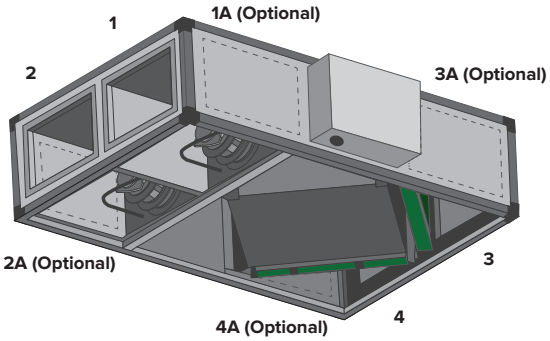
Caution

This label indicates a situation that may result in equipment or property damage only accidents.

2.0 Configuration Chart

The following is a complete description of the packaged ERV/HRV model numbers and nomenclature.

Main Code: NOVA_XXX_XXX_X_X_X_X_XX_X_XX_XX_XX_XX_XXX_XX_XX_X_X_X
NOVA_A16_ERV_B_I_R_H_S1_ND_01_02_3A_04_2401_13_08_2_1_A
Sales Drawings: NOVA_A16_ERV_B_I_R_H_S1_ND_01_02_3A_04_A



Size

A16, A18, B20, C20, C22, C24, C26, C30, C32, C40, C48, C58, C70

Heat Exchanger

Latent - ERV

Location

Indoor - I
Outdoor - O

Bypass

Bypass - B

Standard - S

Handing

Right Hand - R
Left Hand - L

Installation Orientation

Horizontal - H
Vertical - V

Fan Position

FP1 [Supply Fan - Top] - S1
FP2 [Supply Fan - Bottom] - S2

Condensate Drain Pan in Exhaust Air Path

Not Included - ND
Included - DP - Only available with Bypass & S1

Upper Outlet Air Connection

Straight - 01
Perpendicular - 1A - Not available with outdoor units
Straight-Coupled Coil - 1B - Not available with S2

Lower Outlet Air Connection

Straight - 01
Perpendicular - 1A - Not available with outdoor or vertical
Straight-Coupled Coil - 2B - Not available for outdoor or S1
Downshot - 4D - Not available for indoor units

Power

240/60/1 - 2401
208/60/1 - 2081
208/60/3 - 2083
460/60/3 - 4603

Outdoor Air Filter

MERV8 - 08
MERV11 - 11
MERV13 - 13
MERV14 - 14

Return Air Filter

MERV8 - 08
MERV11 - 11
MERV13 - 13
MERV14 - 14

Mounting Included

None - 0
Hanging Brackets - 1
Base Rails - 2

Controls Included

No - 0
Yes - 1

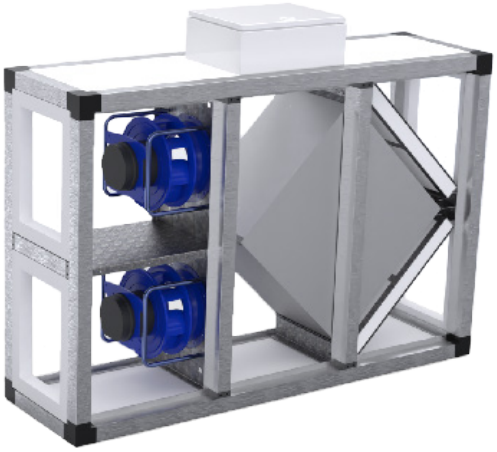
Version (Generation)

A, B, C....

3.0 Specifications

3.1 System Overview

Standard units come complete with energy recovery option, EC fans, 2" filters, fully integrated controls and casing as outlined in the spec below.



3.2 General Specifications

Standard Features

Certification

AHRI and UL Certified

Casing

Double-wall 1" insulation for compact indoor models

22 gauge galvanized steel inner panel with 20 gauge pre-painted white outer panel

Electrical and Controls

Configurable integrated controller with BACNet compatibility

Single point power

Filters

2" pleated OA MERV 13, RA MERV 8

Blowers and Motors

High-efficiency variable speed EC direct-drive motor

Backward inclined fan

Warranty

Core - 5 years from shipping

Unit - 2 years from shipping

Mounting

Ceiling, wall*, or floor-mount

*Hardware and Engineering by Others

Options

Integrated Heating and Cooling

Hydronic, Electric, DX Coils (using EEV kit) and pre-heat available

Bypass Damper

Bypass economizer, bypass defrost

Shut Off Damper

Outdoor and exhaust air dampers (unit or duct mounted)

Frost Control

Electric Preheat

Warranty

3.3 Electrical – DOAS/ERV

Model	Nom. V.	Motor kW	SA Fan FLA	SA Fan FLA	Tnsfmr FLA	MCA	MROP D	Rcmd Fuse
A16/A18	240	0.5	2.50	2.50	0.29	5.91	8.41	15A
B20/B22	240	0.78	3.90	3.90	0.29	9.06	12.96	15A
B20/B22	208	2.00	6.00	6.00	0.33	13.83	19.83	15A
B20/B22	460	2.50	4.00	4.00	0.14	9.14	13.14	15A
C20/C22	208	2.00	6.00	6.00	0.33	13.83	19.83	15A
C20/C22	460	2.50	4.00	4.00	0.14	9.14	13.14	15A
C24/C26	208	2.7	8.60	8.60	0.33	19.68	28.28	25A
C24/C26	460	3.7	5.80	5.80	0.14	13.19	18.99	15A
C30/C32	208	3	9.00	9.00	0.33	20.58	29.58	25A
C30/C32	460	3.3	5.40	5.40	0.14	12.29	17.69	15A
C40	208	2.00	6.00	6.00	0.33	27.33	39.33	35A
C40	460	2.50	4.00	4.00	0.14	18.14	26.14	25A
C48	208	2.7	8.60	8.60	0.33	39.03	56.23	50A
C48	460	3.7	5.80	5.80	0.14	26.24	37.84	35A
C58	208	2.00	6.00	6.00	0.33	40.83	58.83	50A
C58	460	2.50	4.00	4.00	0.14	27.14	39.14	35A
C70	208	2.7	8.60	8.60	0.33	58.38	84.18	80A
C70	460	3.7	5.80	5.80	0.14	39.29	56.69	50A

3.4 Fan and Core Performance

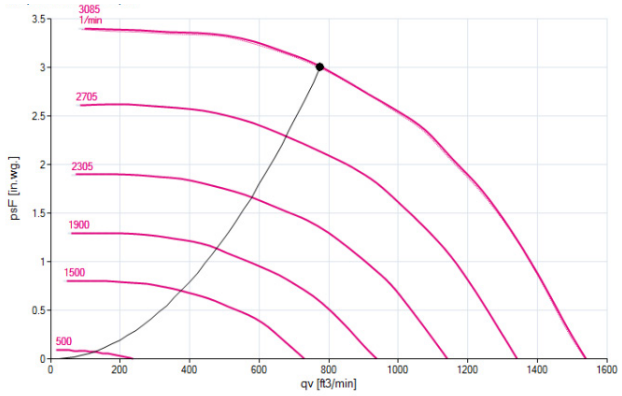
ERV Performance

Model	Airflow (cfm)	SRE	LRE	TRE	PD (Supply, Return)
1" Insulation / Indoor Units					
A16	400 775	69% 61%	54% 43%	**60%** **50%**	0.36, 0.72 0.62, 1.26
B20	700 1300	68% 60%	55% 44%	**60%** **50%**	0.33, 0.55 0.6, 1.05
C20	700 1300	68% 60%	55% 44%	**60%** **50%**	0.33, 0.55 0.6, 1.05
C24	1550 2700	68% 60%	55% 44%	**60%** **50%**	0.45, 0.79 0.86, 1.64
C30	2000 3500	68% 60%	55% 44%	**60%** **50%**	0.45, 0.79 0.87, 1.66
2" Insulation / Outdoor Units					
A18	400 775	69% 61%	54% 43%	**60%** **50%**	0.36, 0.72 0.62, 1.26
B22	700 1300	68% 60%	55% 44%	**60%** **50%**	0.33, 0.55 0.6, 1.05
C22	1225 2200	68% 60%	55% 44%	**60%** **50%**	0.44, 0.78 0.88, 1.68
C26	1550 2700	68% 60%	55% 44%	**60%** **50%**	0.45, 0.79 0.86, 1.64
C32	2000 3500	68% 60%	55% 44%	**60%** **50%**	0.45, 0.79 0.87, 1.66
C40	2450 4400	68% 60%	55% 44%	**60%** **50%**	0.44, 0.78 0.88, 1.68
C48	3100 5400	68% 60%	55% 44%	**60%** **50%**	0.45, 0.79 0.86, 1.64
C58	3675 6600	68% 60%	55% 44%	**60%** **50%**	0.44, 0.78 0.88, 1.68
C70	4650 8100	68% 60%	55% 44%	**60%** **50%**	0.45, 0.79 0.86, 1.64

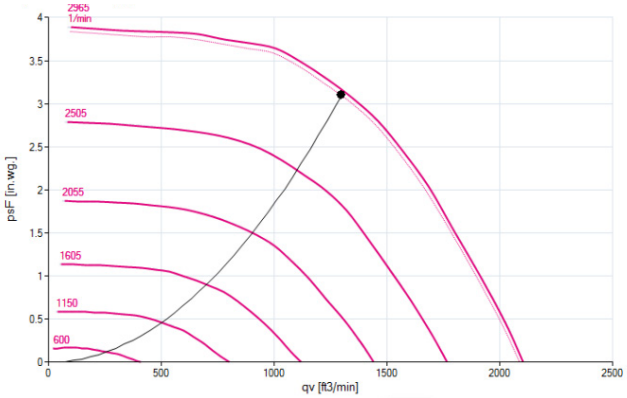
Fan Data

Model	CFM	Nominal Voltage / FLA (A)	FLA (A)	KW	SP "Wg
A16/A18	775	240/1/60 / 1.8	2.5	0.5	3
B20/B22	1300	2401/60 / 2.8	3.9	0.78	3.1
B20/B22	1300	208/3/60 / 2.8	6.0	2.0	5.9
B20/B22	1300	460/3/60 / 2.8	4.0	2.5	7.0
C20/C22	2200	208/3/60 / 5.0	6.0	2.0	5.9
C20/C22	2200	460/3/60 / 3.2	4.0	2.5	7.0
C24/C26	2700	208/3/60 / 7.2	8.6	2.7	5.4
C24/C26	2200	460/3/60 / 4.6	5.8	3.7	7.0
C30/C32	3500	208/3/60 / 7.6	9.0	3.0	4.6
C30/C32	3500	460/3/60 / 4.2	5.4	3.3	5.1
C40	4400	208/3/60 / 6.4	6.0	2.0	7.0
C40	4400	460/3/60 / 6.4	4.0	2.5	5.0
C48	5400	208/3/60 / 9.2	8.6	2.7	7.0
C48	5400	460/3/60 / 9.2	5.8	3.7	5.0
C58	6600	208/3/60 / 9.6	6.0	2.0	5.1
C58	6600	460/3/60 / 9.6	4.0	2.5	5.0
C70	8100	208/3/60 / 13.8	8.6	2.7	5.0
C70	8100	460/3/60 / 13.8	5.8	3.7	5.0

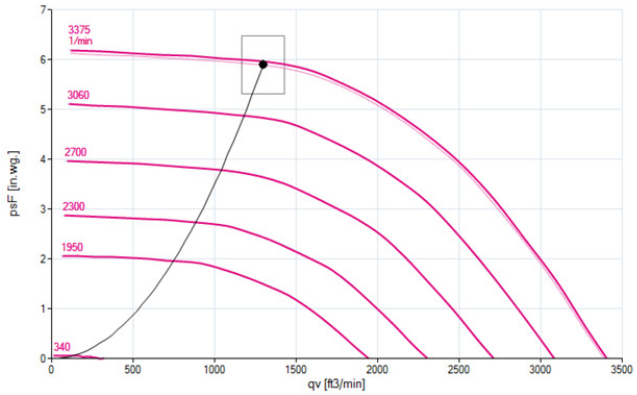
Air Performance



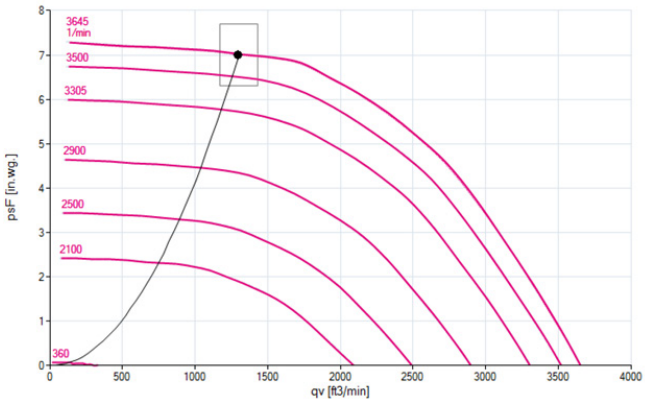
A16 – 775 cfm – 240/1



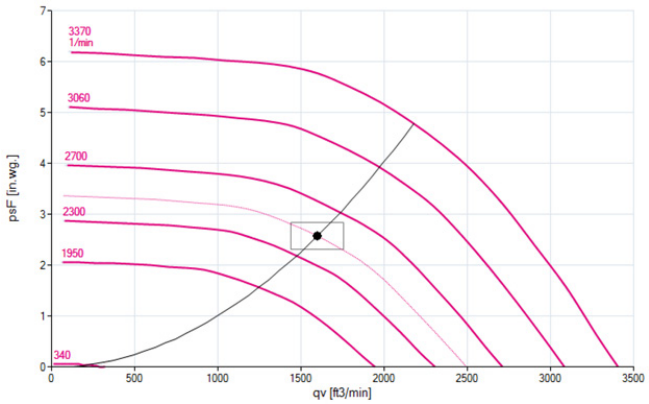
B20 – 775 cfm – 240/1



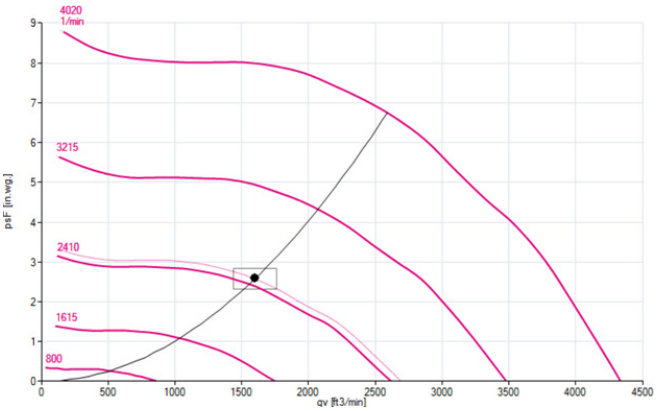
B20 – 1300 cfm – 208/3



B20 – 1300 cfm – 460/3

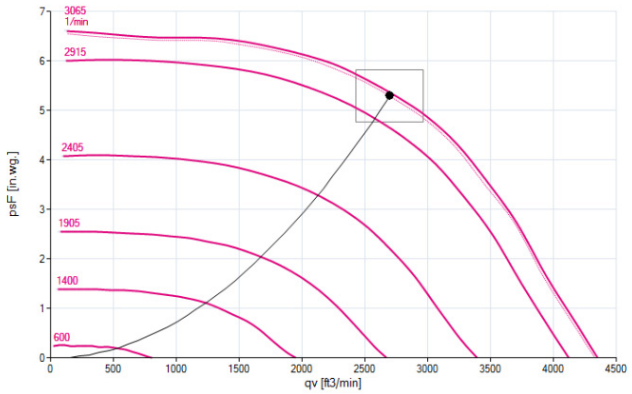


C20 – 1600 cfm – 208/3

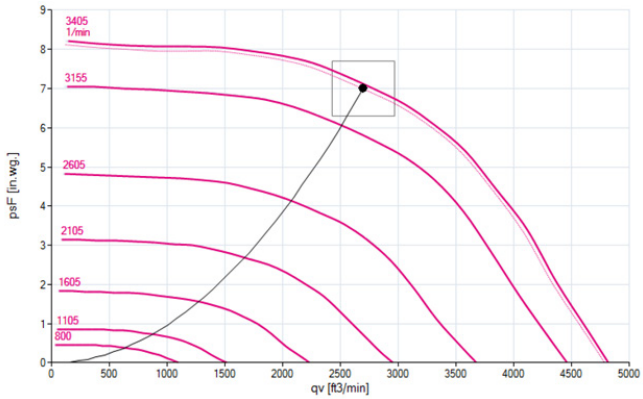


C20 – 1600 cfm – 460/3

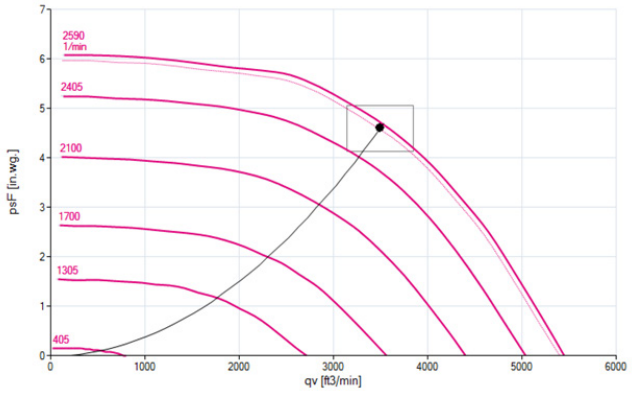
Air Performance



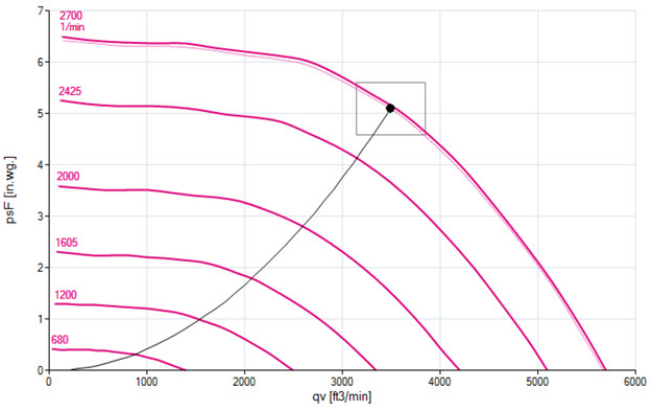
C24 – 2700 cfm – 208/3



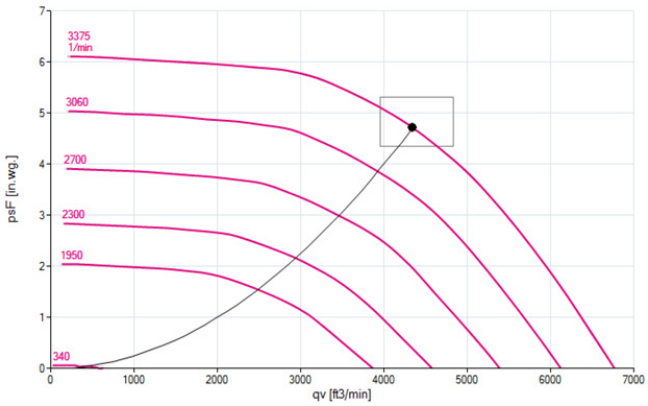
C24 – 2700 cfm – 460/3



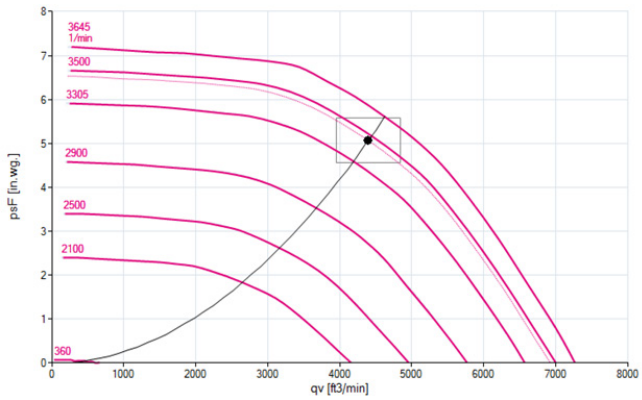
C30 – 3500 cfm – 208/3



C30 – 3500 cfm – 460/3

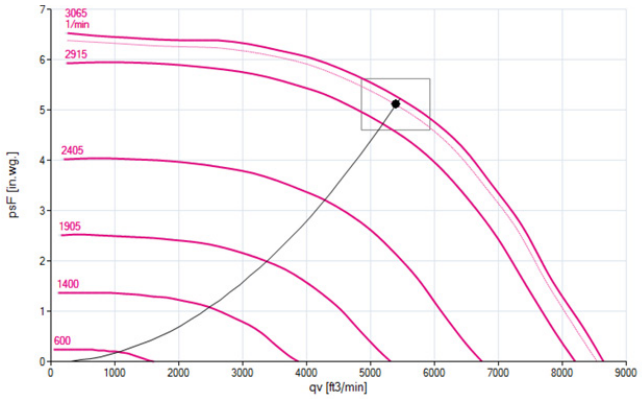


C40 – 4400 cfm – 208/3

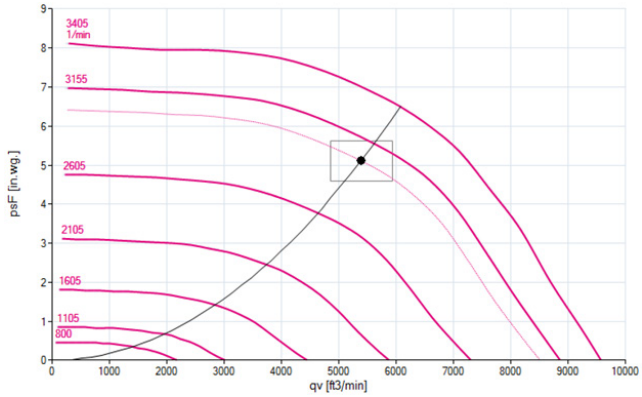


C40 – 4400 cfm – 460/3

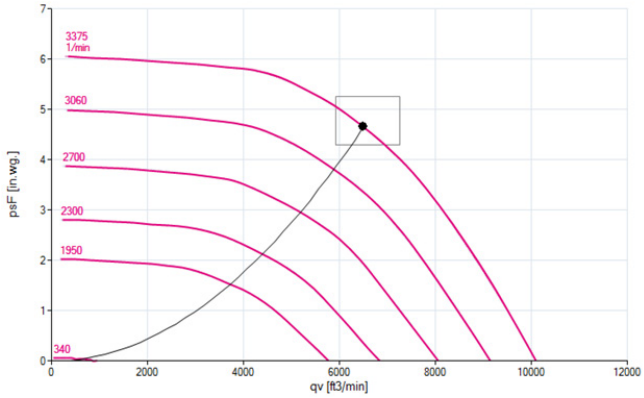
Air Performance



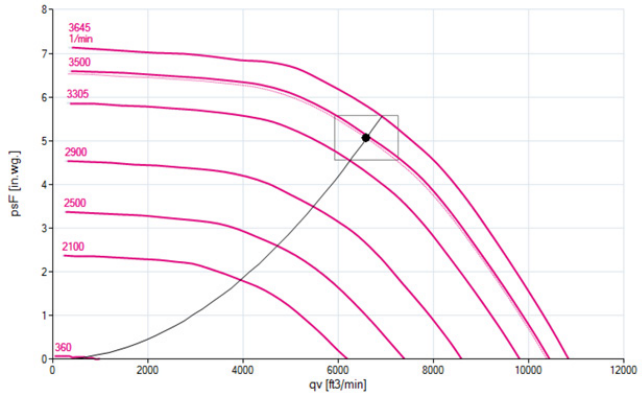
C48 – 5400 cfm – 208/3



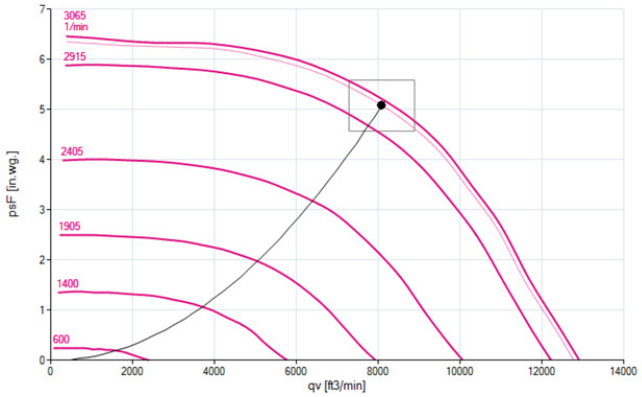
C48 – 5400 cfm – 460/3



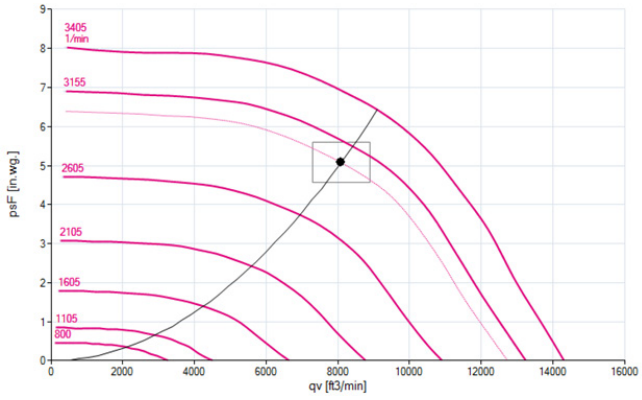
C58 – 6600 cfm – 208/3



C58 – 6600 cfm – 460/3



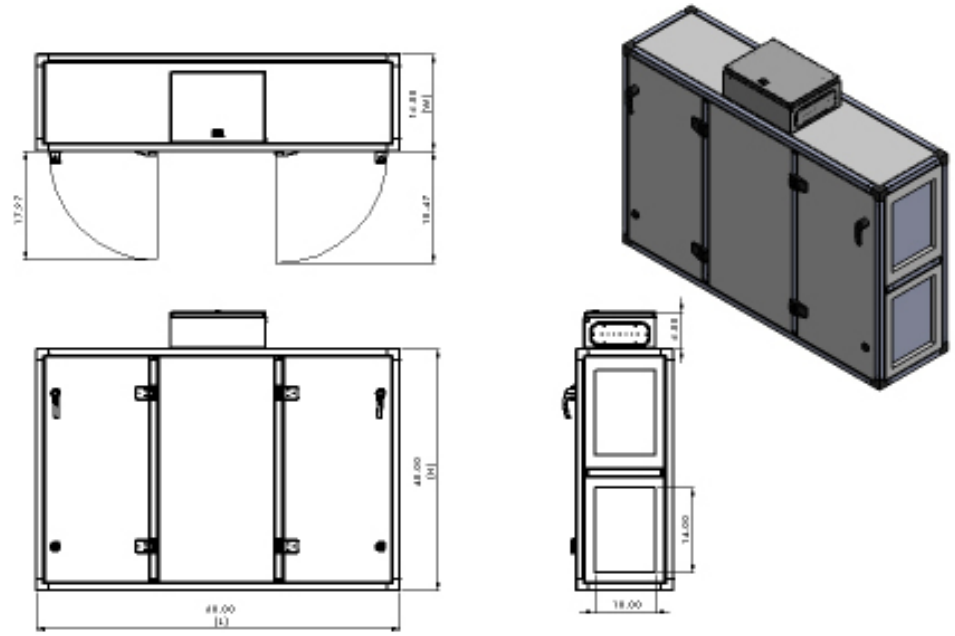
C70 – 8100 cfm – 208/3



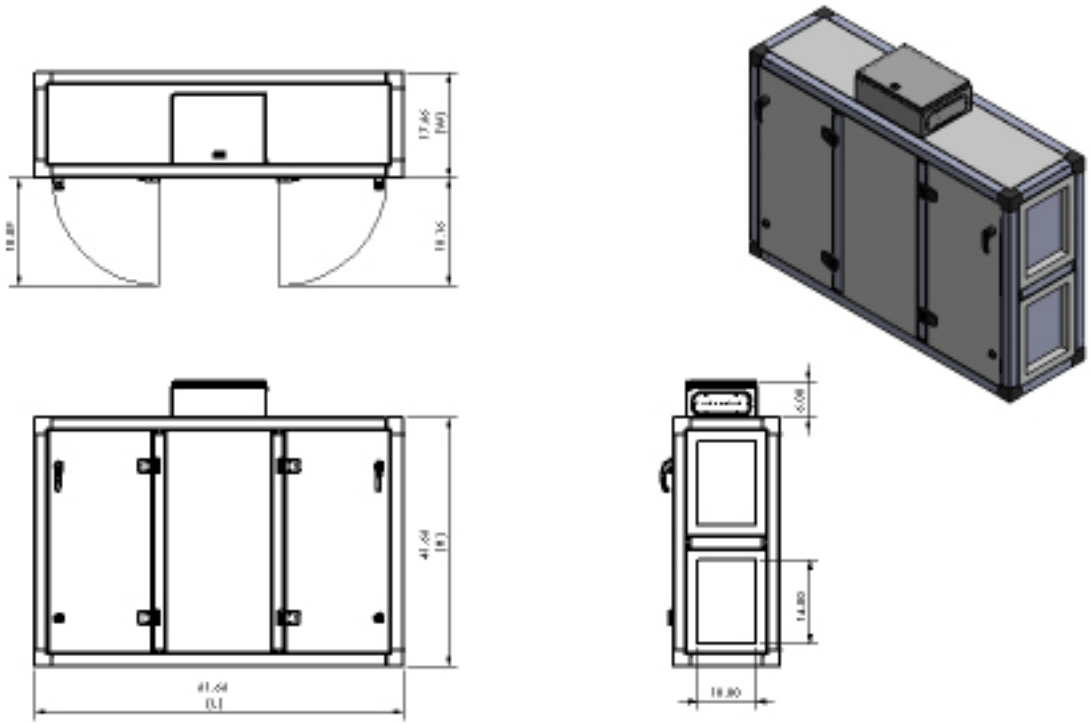
C70 – 8800 cfm – 460/3

3.5 Dimensions

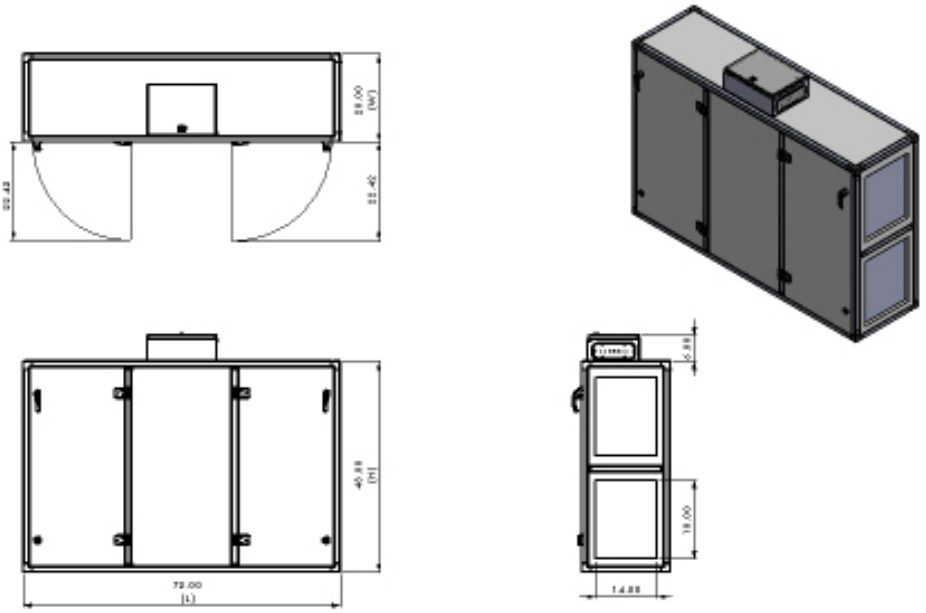
A16



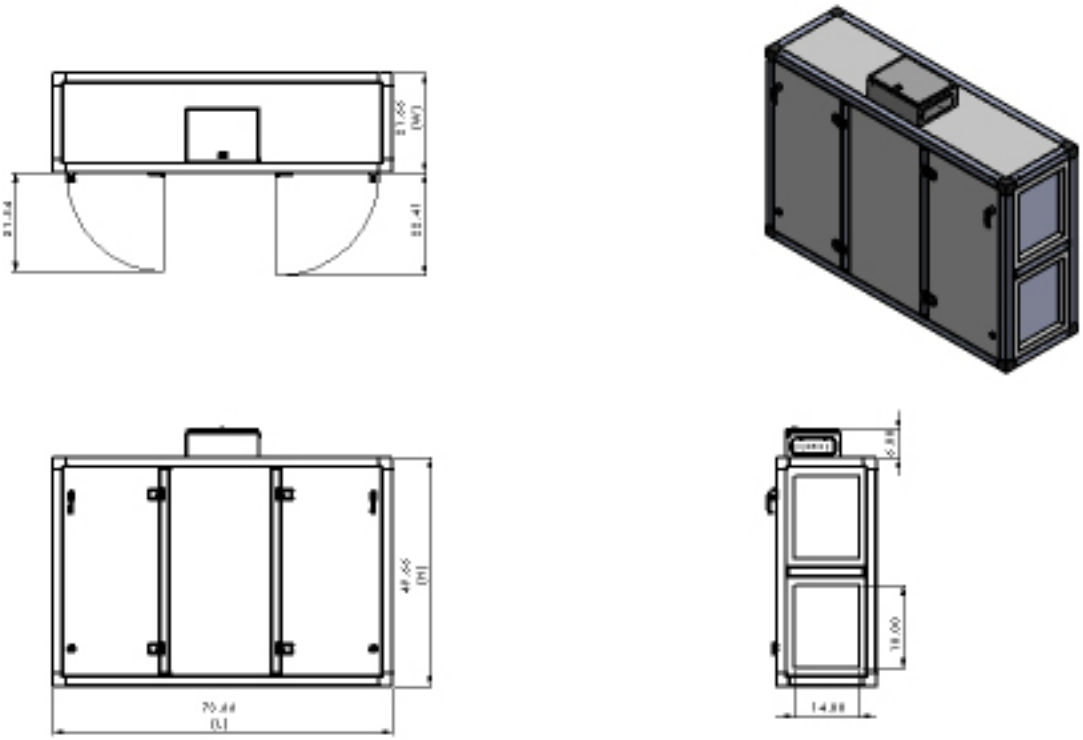
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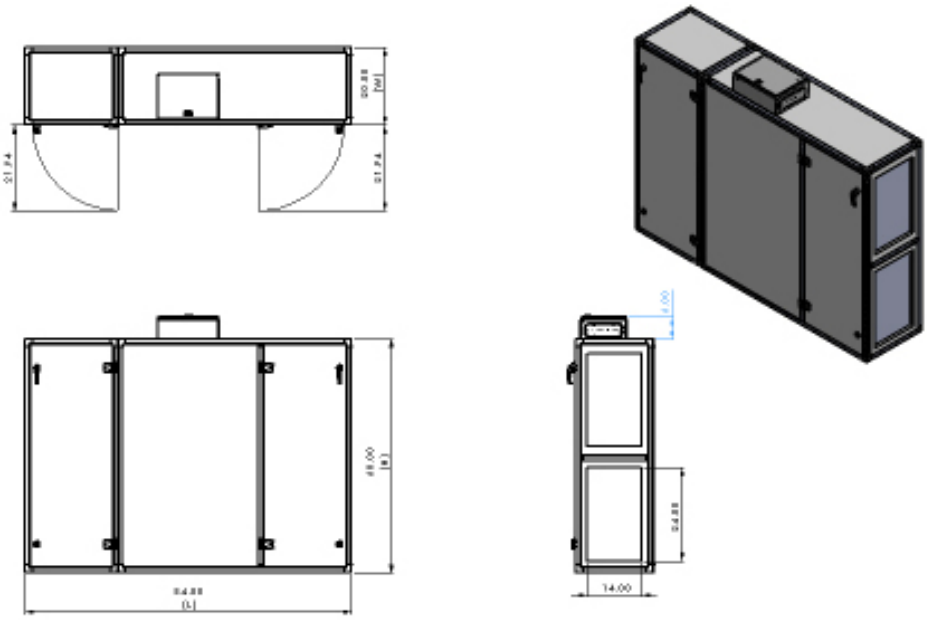
B20



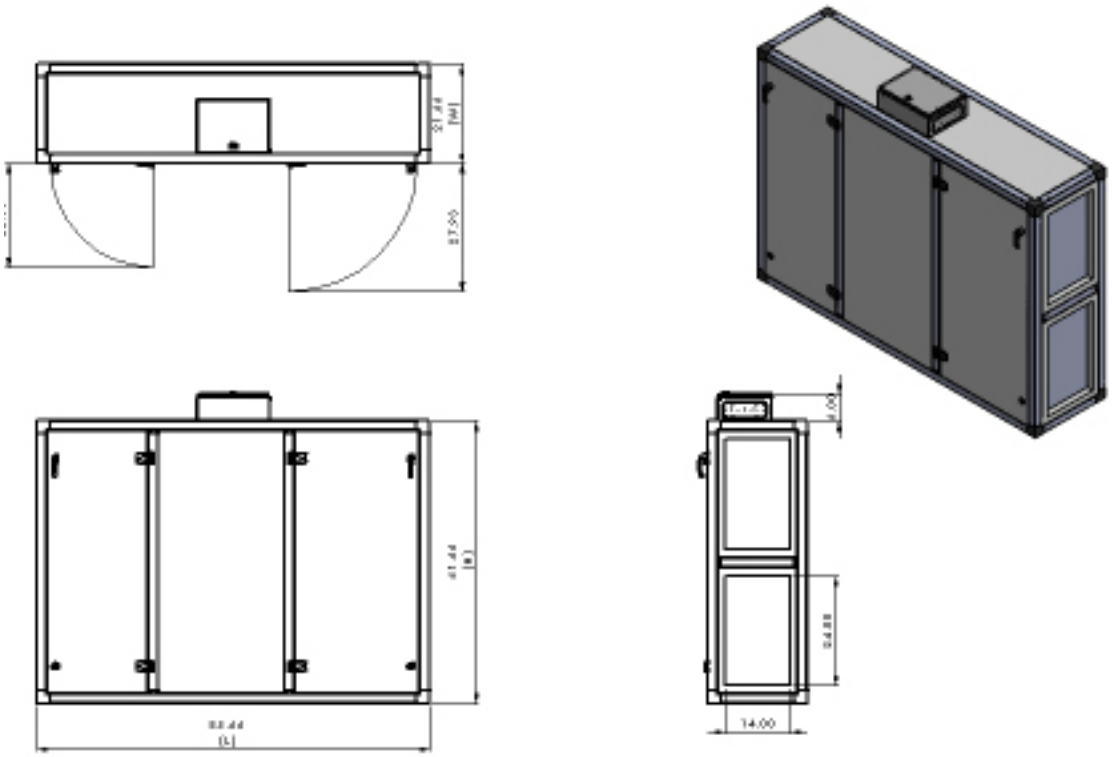
B22



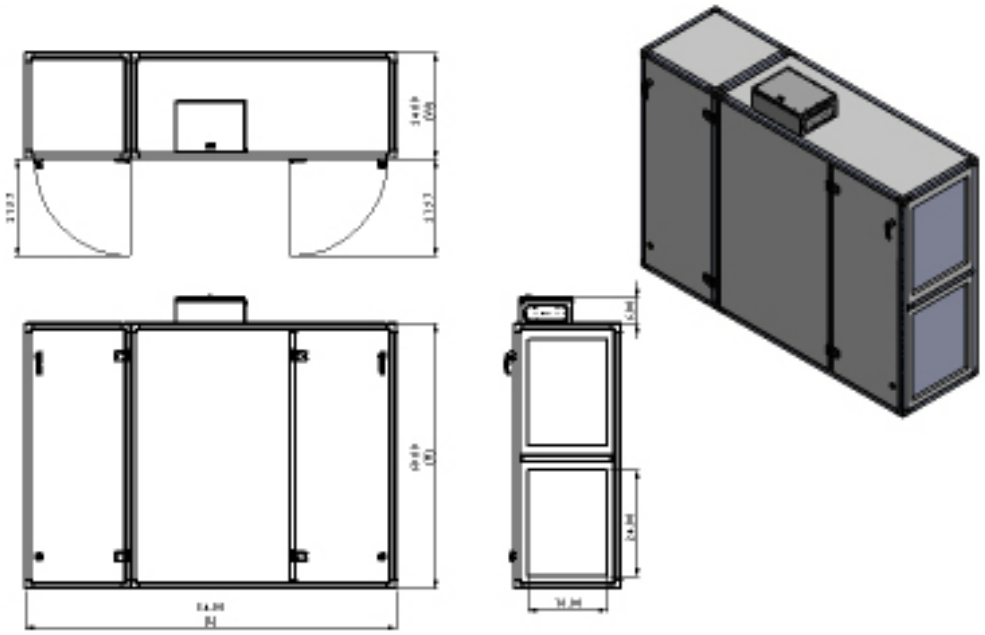
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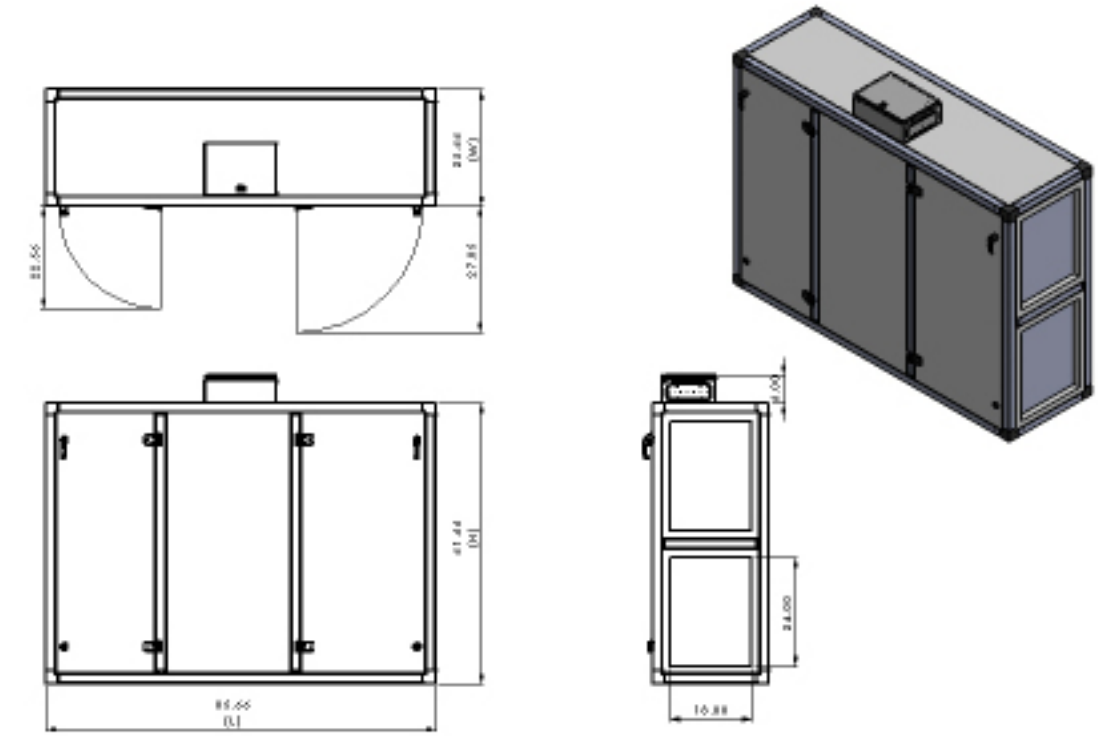
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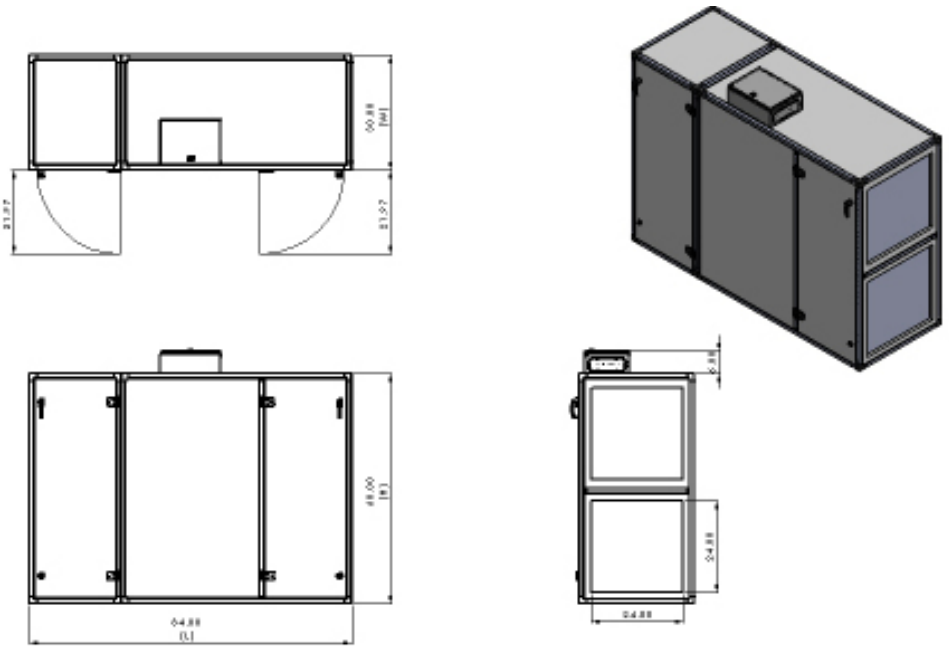
C24



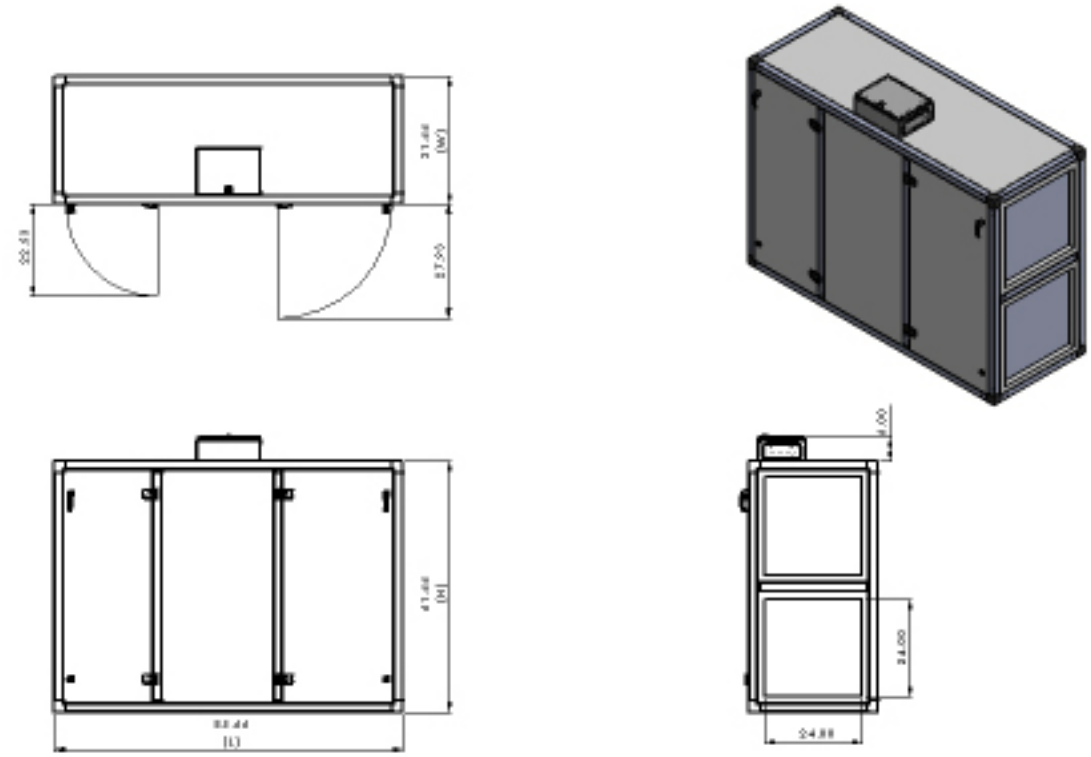
C26



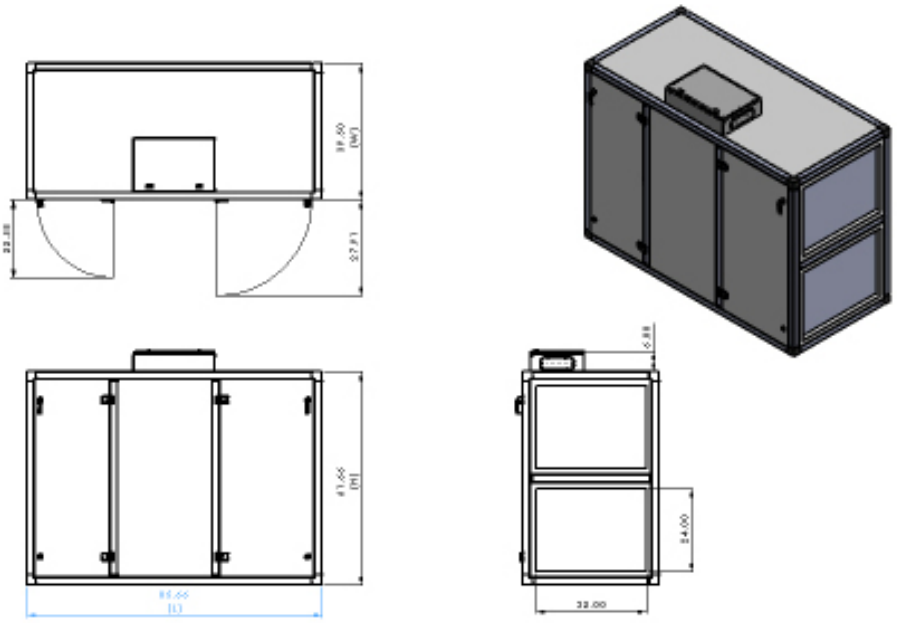
C30



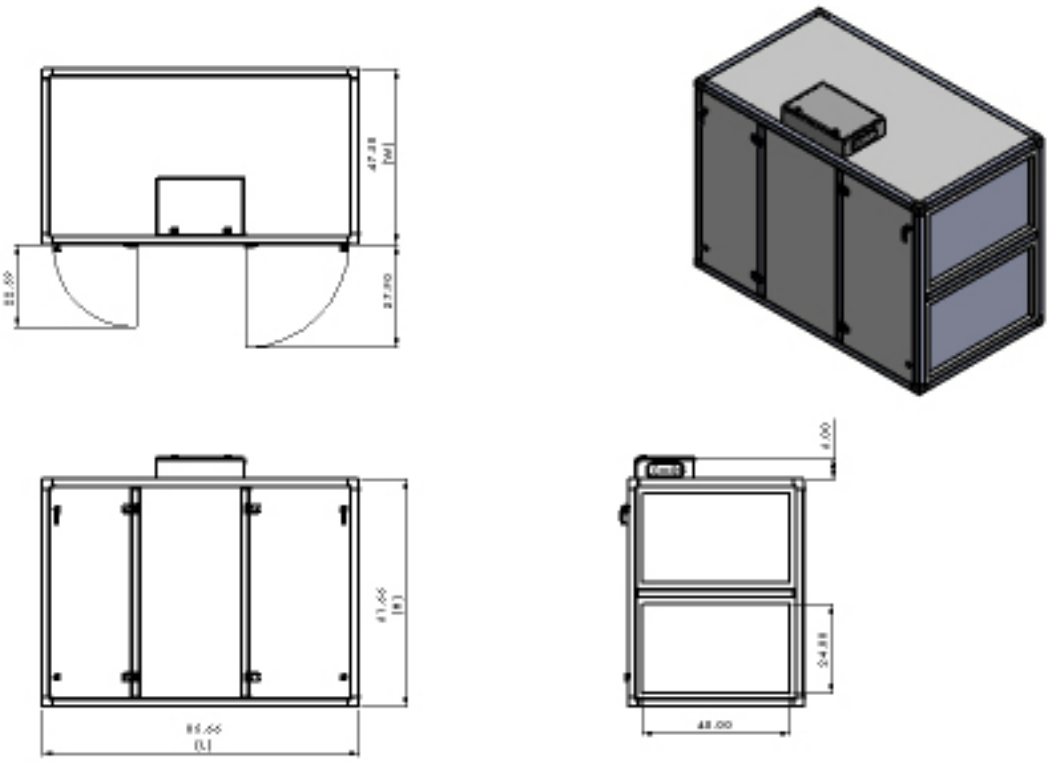
C32



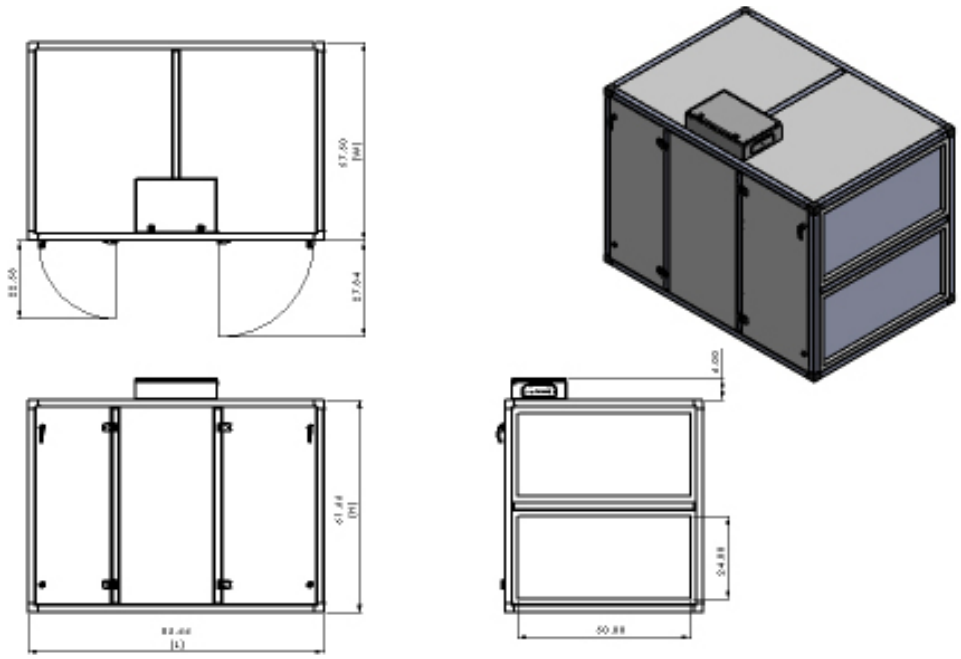
C40



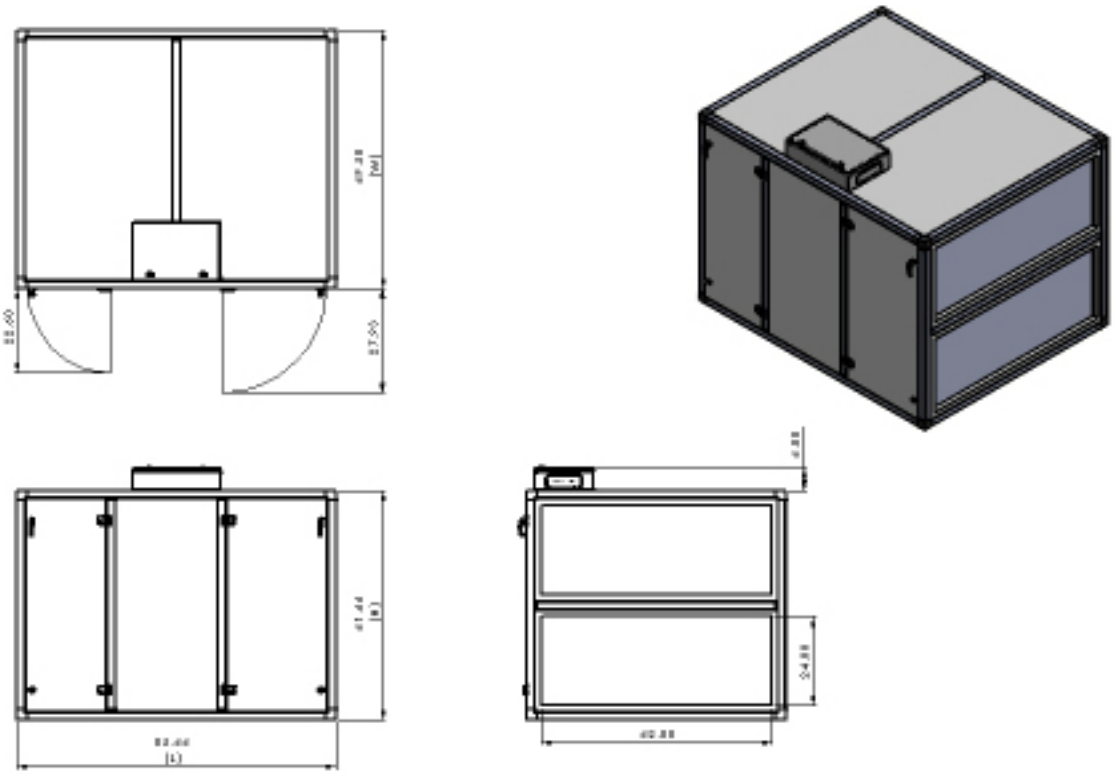
C48



C58



C70



4.0 Configuring Controls

4.1 Setting the Fan Operating Points

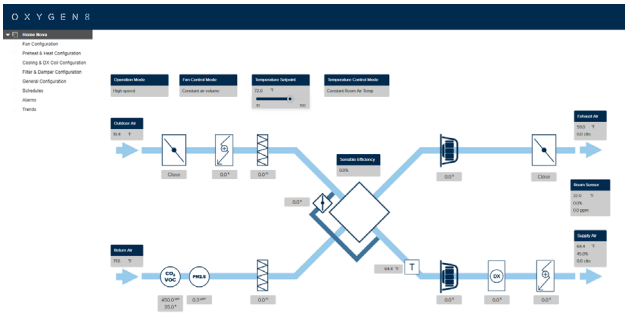
Setting Control Functions

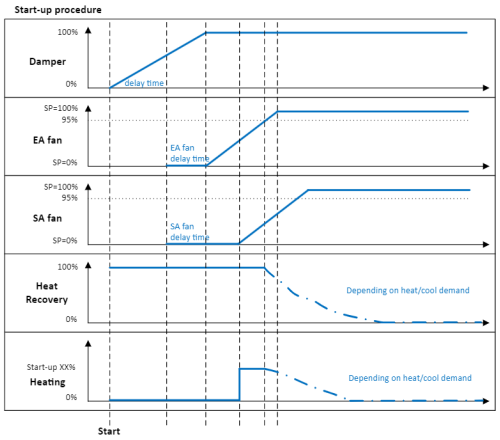
Under the “Fan Configuration" tab, you can set the way in which fans and air volumes are to be controlled and regulated.

Fans and air volumes can be controlled according to the following operating modes: see next pages.

General Information About the Start-Up Sequence

1. When the system is activated, the following start-up sequence is followed regardless of the selected control type (constant pressure, constant flow, CO2, VOC, etc.):
2. The outdoor/exhaust air dampers are opened.
3. The exhaust fan is started with the delayed time.
4. The supply fan is started with the delayed time.
5. Heat recovery is overridden to 100% (rotary, cross-flow, counter-flow or fluid coupled heat exchanger).
6. The heating valve is overridden to the value (Startup heating: default 50%) set under “Preheat & Heat Configuration” – only applies in the case of a water-based heating battery.
7. Exhaust/Supply fans speed are increased until it reaches the setpoint for air quantity/duct pressure.
8. When the exhaust or supply fan has passed 95% of the setpoint for air quantity/duct pressure, the override signals for heat recovery and heating valves are discontinued.





Constant Air Volume

- Supply and return fans are controlled in relation to flow/air volumes in the Supply and return ducts respectively.
- Air volumes are measured/calculated by measuring the difference between static and dynamic pressure across the fan.
- The difference between static and dynamic pressure is measured by means of pressure transmitters, either the pressure transmitters built into the Huba Type 699M pressure transmitters.

Constant Pressure Return Slave

- The Supply fan is controlled in relation to the pressure in the Supply duct while the return fan is controlled as a slave of the Supply fan with a freely selected offset.
- The system need only be equipped with pressure transmitters in the Supply duct.
- Pressure transmitter of Huba Type 699M is suitable.
- Pressure transmitters used to measure pressure differences across the fans cannot be omitted as these are used to control the air flow.

Constant CO2

- The system must be configured with a CO2 sensor.
- The CO2 sensor can either be positioned in the room as a room sensor or in the return duct as a duct sensor.
- Irrespective of whether the CO2 sensor is a room or duct sensor, the CO2 sensor must be configured under “Fan Configuration – Parameter 1.43”.

Constant VOC

- The system must be configured with a VOC sensor.
- The VOC sensor shall be positioned in the return duct.

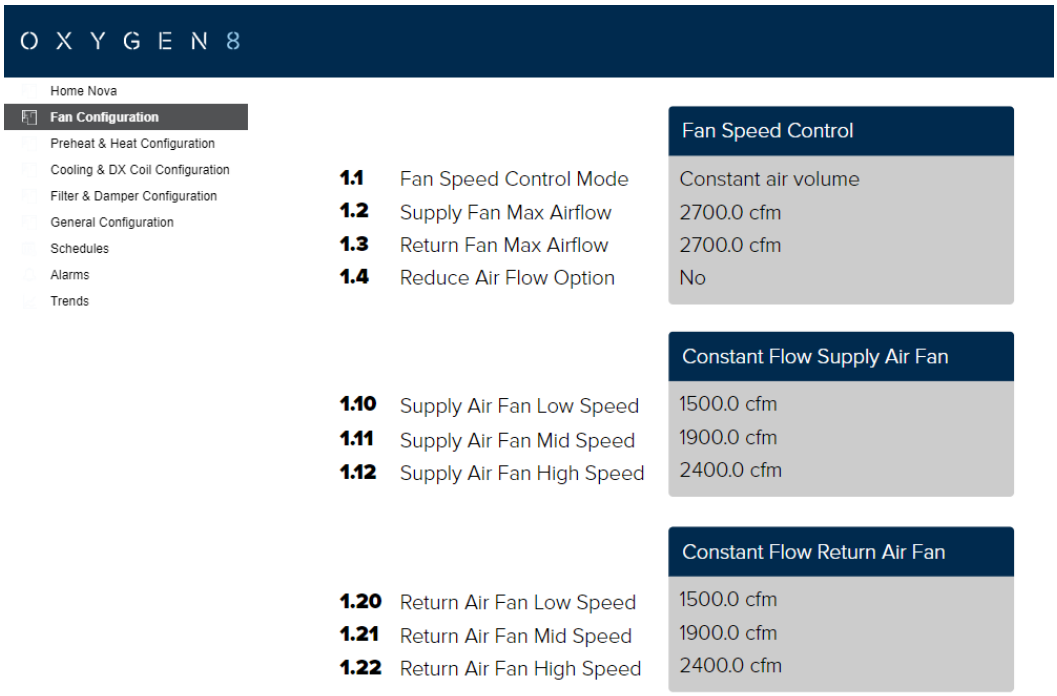
VOC/CO2 Control

- The CO2 concentration in the room is controlled by regulating air volume via fan speed.
- If the CO2 or VOC level in the room rises, fan speed is increased, thus increasing air volume/air turnover towards the return air fan high speed air volume setting “Fan Configuration – Parameter 1.22”.
- If the CO2 or VOC level in the room falls, fan speed is decreased, thus reducing air volume/air turnover towards the return air fan low speed air volume setting “Fan Configuration – Parameter 1.20”.

		Constant CO2 Mode
1.40	Return Air CO2 Setpoint	1000.0 ppm
1.41	Supply Air Fan Speed Offset	0.0%
1.42	Min. Runtime	600.0 sec
1.43	Sensor Selection	RAductCO2

		Constant VOC Mode
1.50	Return Air VOC Setpoint	70.0%
1.51	Supply Air Fan Speed Offset	0.0%
1.52	Min. Runtime	600.0 sec

4.2 Fan Control: Constant Air Volume



Supply

1.10 Supply Air Fan Low Speed

- Set the required setpoint for supply flow at "Low" speed

1.11 Supply Air Fan Mid Speed

- Set the required setpoint for supply flow at "Medium" speed

1.12 Supply Air Fan High Speed

- Set the required setpoint for supply flow at "High" speed

Return

1.20 Supply Air Fan Low Speed

- Set the required setpoint for return flow at "Low" speed

1.21 Supply Air Fan Mid Speed

- Set the required setpoint for return flow at "Medium" speed

1.22 Supply Air Fan High Speed

- Set the required setpoint for return flow at "High" speed

4.3 Fan Control: Constant Pressure Return Slave

		Fan Speed Control
1.1	Fan Speed Control Mode	Constant air volume
1.2	Supply Fan Max Airflow	2700.0 cfm
1.3	Return Fan Max Airflow	2700.0 cfm
1.4	Reduce Air Flow Option	No

		Constant Pressure Mode
1.30	Return Air Fan Speed Offset	0.0%
1.31	Supply Air Fan Low Speed	500.0 Pa
1.32	Supply Air Mid Speed	700.0 Pa
1.33	Supply Air High Speed	1000.0 Pa

Supply

1.31 Supply Air Fan Low Speed

- Set the required setpoint for Supply flow at "Low" speed

1.31 Supply Air Fan Mid Speed

- Set the required setpoint for Supply flow at "Medium" speed

1.33 Supply Air Fan High Speed

- Set the required setpoint for Supply flow at "High" speed

1.2 Supply Fan Max. Airflow

- Set the required setpoint for maximum air volume in the supply duct.

1.3 Return Fan Max. Airflow

- Set the required setpoint for maximum air volume in the return duct.
- Air volume has higher priority than the ressure setpoint, i.e., if the pressure setpoint is not achieved before the maximum air volume is reached, the air volume setting will prevent further increases in the fan speed.

Return

1.30 Return Air Fan Speed Offset

- Return air volume follows supply air volume with an offset corresponding to the value set.

4.4 Fan Control: Constant CO2

The function is used to maintain a constant/maximum CO2 level in a room or return duct.

If the CO2 level is higher than the setpoint, return volume will be increased in a modulated fashion to “Return Air Fan High Speed” – 1.22. If the CO2 level is lower than the setpoint, return volume will be decreased in a modulated fashion to “Return Air Fan Low Speed” – 1.20 (as long as the minimum run time elapsed). If the actual CO2 level is equal to the setpoint, the fan will keep actual fan speed. Supply air volume follows return air volume with an offset corresponding to the set value.

	Constant CO2 Mode
1.40 Return Air CO2 Setpoint	1000.0 ppm
1.41 Supply Air Fan Speed Offset	0.0%
1.42 Min. Runtime	600.0 sec
1.43 Sensor Selection	RAductCO2

	Constant Flow Return Air Fan
1.20 Return Air Fan Low Speed	1500.0 cfm
1.21 Return Air Fan Mid Speed	1900.0 cfm
1.22 Return Air Fan High Speed	2400.0 cfm

Return Fan

1.40 Return Air CO2 Setpoint

- Set the actual scaling factor for the actual connected VOC/CO2 sensor.

1.41 Supply Air Fan Speed Offset

- Set the required offset for Supply air volume.

1.42 Min Run Time

- Set the minimum time the fan will run at high speed (after exceeding the CO2 setpoint)

1.43 Sensor Selection

- Select the location of the CO2 sensor: Duct or Room

1.20 Return Fan Low Speed

- Set the required setpoint for return air at low speed.

1.22 Return Fan High Speed

- Set the required setpoint for return air fan at high speed.

4.5 Fan Control: Constant VOC

The function is used to maintain a constant/maximum VOC level in a return duct.

If the VOC level is higher than the setpoint, return volume will be increased in a modulated fashion “Return Air Fan High Speed” – 1.22. If the CO2 level is lower than the setpoint, return volume will be decreased in a modulated fashion to “Return Air Fan Low Speed” – 1.20 (as long as the minimum run time elapsed). If the actual VOC level is equal to the setpoint, the fan will keep actual fan speed. Supply air volume follows return air volume with an offset corresponding to the set value.

	Constant Flow Return Air Fan
1.20 Return Air Fan Low Speed	1500.0 cfm
1.21 Return Air Fan Mid Speed	1900.0 cfm
1.22 Return Air Fan High Speed	2400.0 cfm

	Constant VOC Mode
1.50 Return Air VOC Setpoint	70.0%
1.51 Supply Air Fan Speed Offset	0.0%
1.52 Min. Runtime	600.0 sec

Return Fan

1.50 Return Air VOC Setpoint

- Set the actual scaling factor for the actual connected VOC/CO2 sensor.

1.51 Supply Air Fan Speed Offset

- Set the required offset for Supply air volume.

1.52 Min Run Time

- Set the minimum time the fan will run at high speed (after exceeding the VO2 setpoint)

1.43 Sensor Selection

- Select the location of the CO2 sensor: Duct or Room

1.20 Return Fan Low Speed

- Set the required setpoint for return air at low speed.

1.22 Return Fan High Speed

- Set the required setpoint for return air fan at high speed.

4.6 Constant Room

		General Temperature Settings
5.1	Temperature Setpoint	72.0 °F
5.2	Temperature Control Mode	Constant Room Air Temp

- Temperature is controlled in relation to constant room temperature measured by the room sensor located in the room.
- The required room temperature setpoint is set under: "General Configuration > General Temperature Settings".

4.7 Cooling

The function is only available if active cooling in the form of a cooling element is installed and configured.

The function is used to ensure that active cooling can be used if certain set preconditions are met.

		Cooling Settings
3.1	Cooling Type	DX coil
3.2	Minimum Supply Air Temp.	59.0 °F
3.3	OA Temp. to Stop Cooling	32.0 °F
3.4	Forced Cooling	Disable
3.5	Forced Cooling Ramp	25.0%
3.6	PID Proportional Band	120.0
3.7	PID Integral Time	5.0 sec

Cooling Settings

3.1 Cooling Type

- Select the type of cooling coil installed.

3.2 Minimum Supply Air Temp.

- Setpoint for minimum supply tempeature when cooling is active.

3.3 OA Temperature to Stop Cooling

- Cooling is stopped at outdoor temperatures below the setpoint.

3.4 Forced Cooling

- When activated, air volume will be increased when cooling is active.

3.5 Forced Cooling Ramp

- Determines the rate of change of the air volume when Forced Cooling is active.

3.6 PID Proportional Band

- Proportional gain for cooling.

3.7 PID Integral Time

- Integral time for cooling.

4.8 Dehumidification

The function is used to lower the relative humidity in the room by dehumidification.

When dehumidification of the room is demanded, the energy content of the air (enthalpy) is measured continuously in the fresh air and exhaust air respectively. The air that is dehumidified and supplied to the room will thus always be the air that requires the least energy for dehumidification.

To obtain optimum control, an RH & Temperature sensor is needed to calculate the actual dew point. This sensor can be in SA, RA duct or Room ("Cooling & DX coil Configuration – Parameter 3.34").

Dehumidification is accomplished by the installed cooling element while the temperature is maintained according to the setpoint by subsequent heating of the supply air by the heating element.

Minimum Configuration

One RH & Temperature sensor and cooling element with post heater.

	Dehumidification Settings
3.30 Dehumidification Enable	DehumidificationOff
3.31 RH Target	70.0%
3.32 RH Target Margin	20.0%
3.33 Dehumidification Cooling Output	90.0%
3.34 RH Sensor Selection	SAductRHsensor

3.30 Dehumidification Enable

- Select whether dehumidification is to be active.

3.31 RH Target

- Set setpoint for relative humidity.

3.32 RH Target Margin

- Dead band for the RH Target. Defines when the humidity level has been satisfied and cooling returns to normal.

3.33 Dehumidification Cooling Output

- When dehumidification is needed, this is the cooling intensity sent to the DX Coil (or other).

3.34 RH Sensor Selection

- Selects where is the Humidity Sensor installed (Supply duct, return duct, or room).

4.9 Summer/Winter Compensation

Under General Temperature Settings, it is possible to set temperature compensation parameters for summer and winter operation.

When selected, compensation offsets the temperature setpoint in relation to outdoor temperature in summer and/or winter.

General Temperature Settings	
5.1 Temperature Setpoint	72.0 °F
5.2 Temperature Control Mode	Constant Room Air Temp
5.3 Setpoint Compensation	SP CompensationOff
5.4 Winter Start Temperature	32.0 °F
5.5 Winter Max. Temperature	-4.0 °F
5.6 Winter Temperature Difference	9.0 °F
5.7 Summer Start Temperature	77.0 °F
5.8 Summer Max. Temperature	95.0 °F
5.9 Summer Temperature Difference	-9.0 °F

5.3 Setpoint Compensation

- Enables/Disables Setpoint Conversation

5.4 Winter Start Temperature

- Outdoor temp temperature for start of winter compensation

5.5 Winter Max. Temperature

- Outdoor temperature for max.winter compensation

5.6 Winter Temperature Difference

- Max. winter compensation of setpoint

5.7 Summer Start Temperature

- Outdoor temperature for start of summer compensation

5.8 Summer Max. Temperature

- Outdoor temperature for max. summer compensation

5.9 Summer Temperature Difference

- Max. summer compensation of setpoint

4.10 Locking the Fan Speed

Adjustment

On the Home screen, by clicking on any fan, a popup screen opens. Select Hand on SA Fan Mode (and on RA Fan Mode) and then enter the desired speed on Hand Speed.

The function, which is used for VAV installations, allows the installer to maintain constant air quantity during system adjustment.

The Hand Speed remains until the fans are changed to Auto.



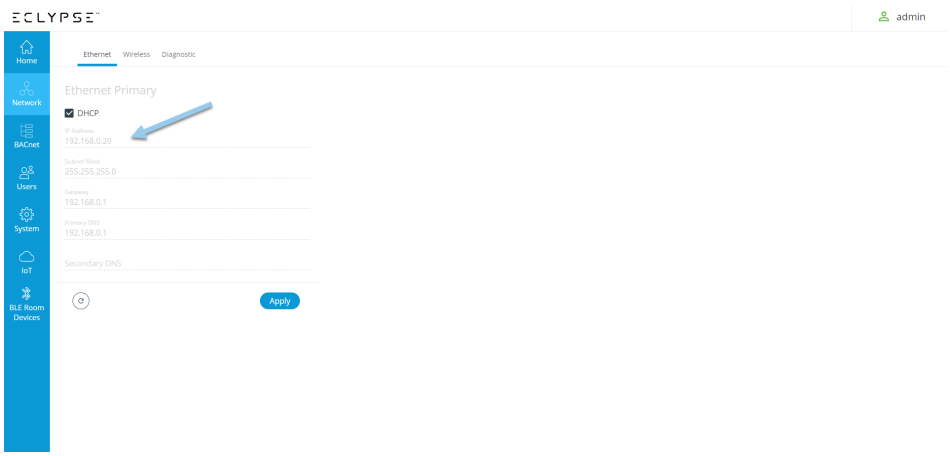
4.11 Communication Protocols External Communication

Setting communication parameters for TCP/IP, LAN, Web browser and BMS

Set Internet Connection

Static/Dynamic

- DHCP = IP address assigned from DHCP server on local network or from the Internet

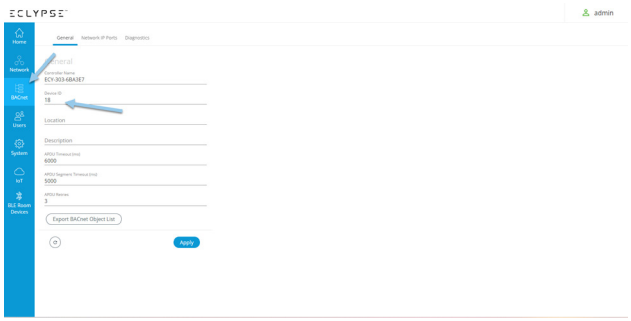


- Static = the installer must set the following communication parameters:
  - IP address
  - NetMask
  - Gateway
  - Primary DNS
  - Secondary DNS

BACnet

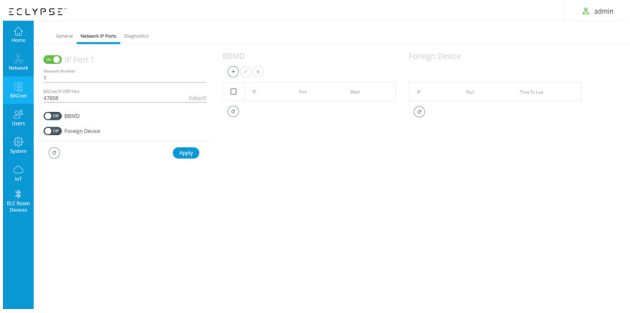
Settings for external BACnet communication

BACnet IP is enabled by default



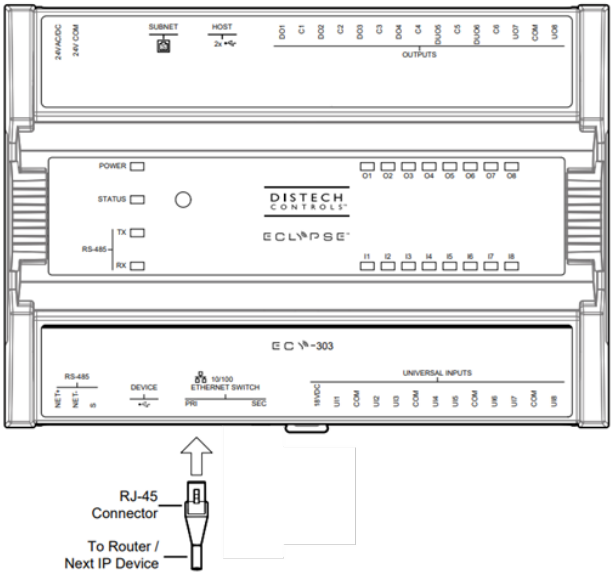
On the General Tab, it is possible to edit:

- Controller Name
- Device ID
- Location
- Description
- APDU
- APDU Segment Timeout
- APDU Retries



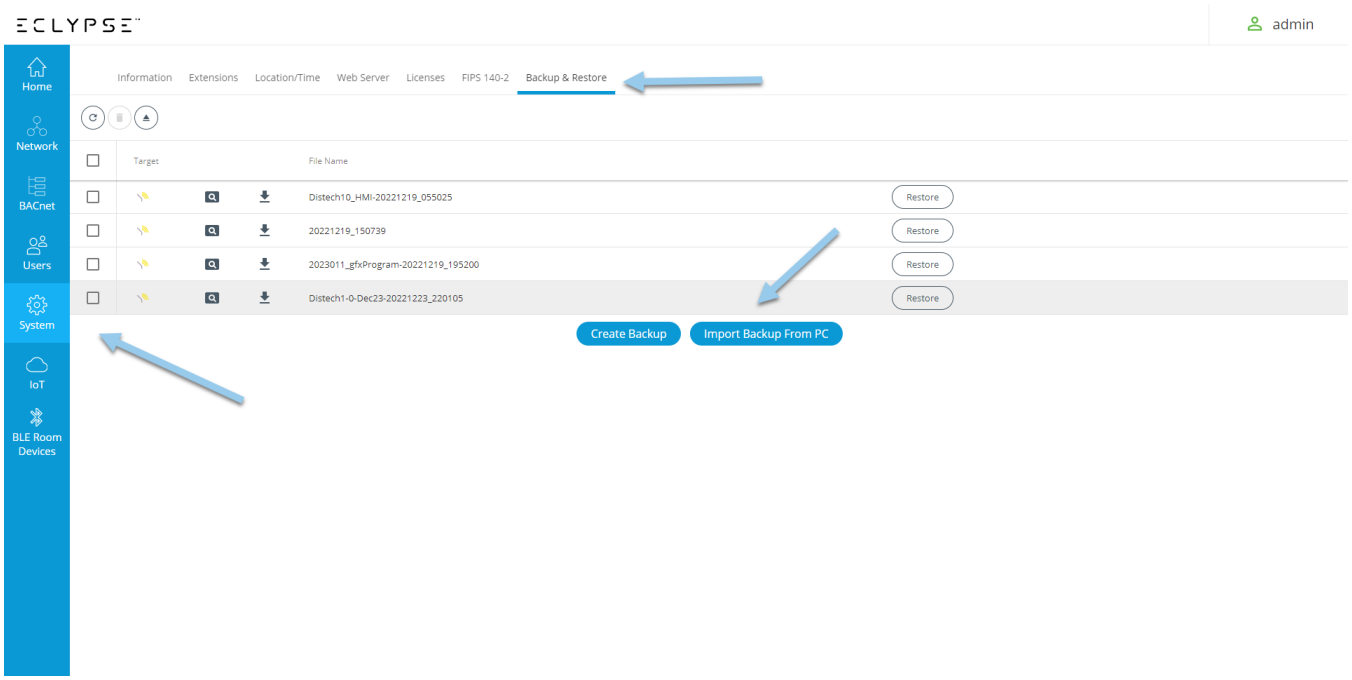
On Network IP Ports, it is possible to edit:

- Network Number
- BACnet IP UDP Port

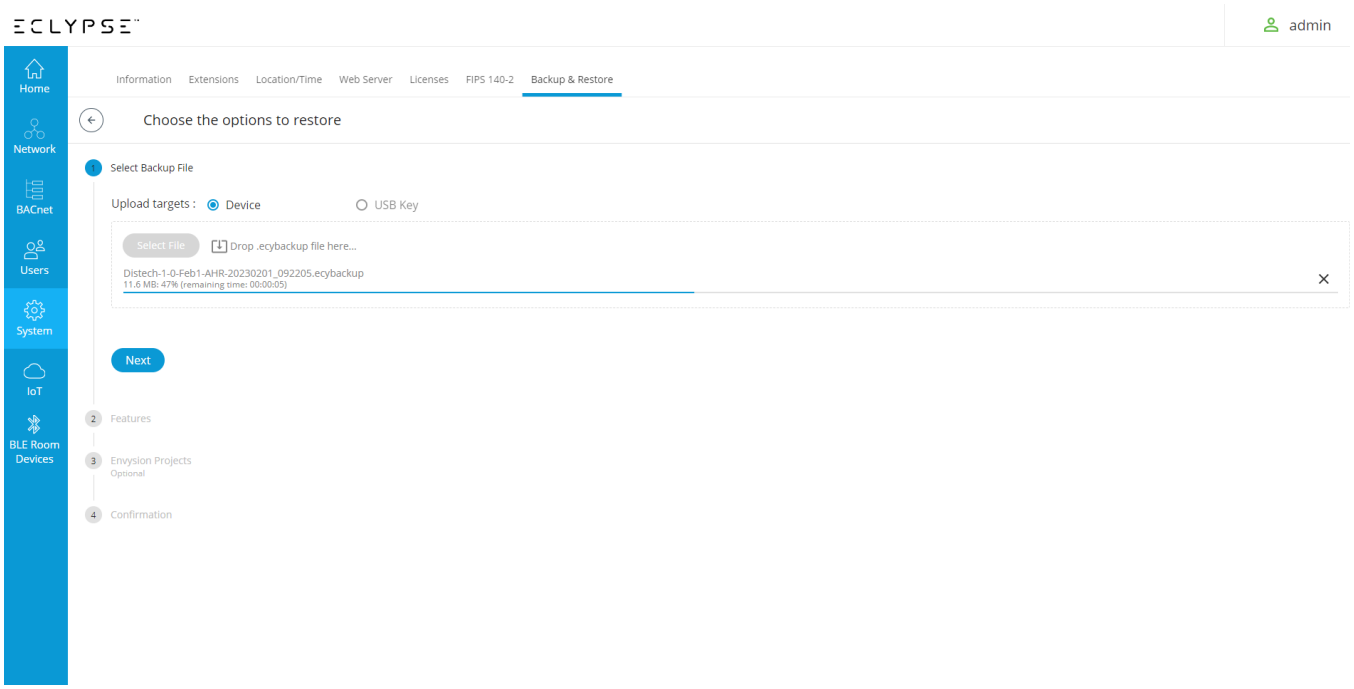


Use a standard RJ45 cable External BACnet TCP/IP connects to plug connector "TCP/IP".

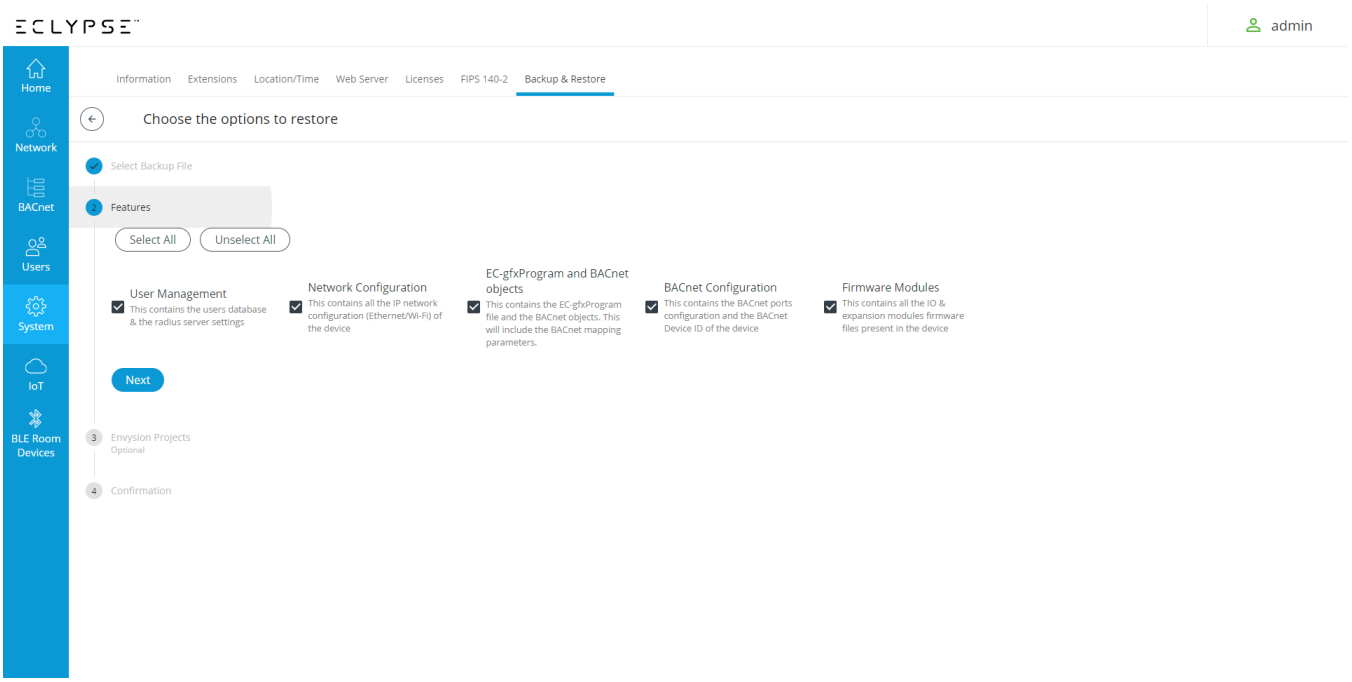
4.12 Restore/Back-up Settings



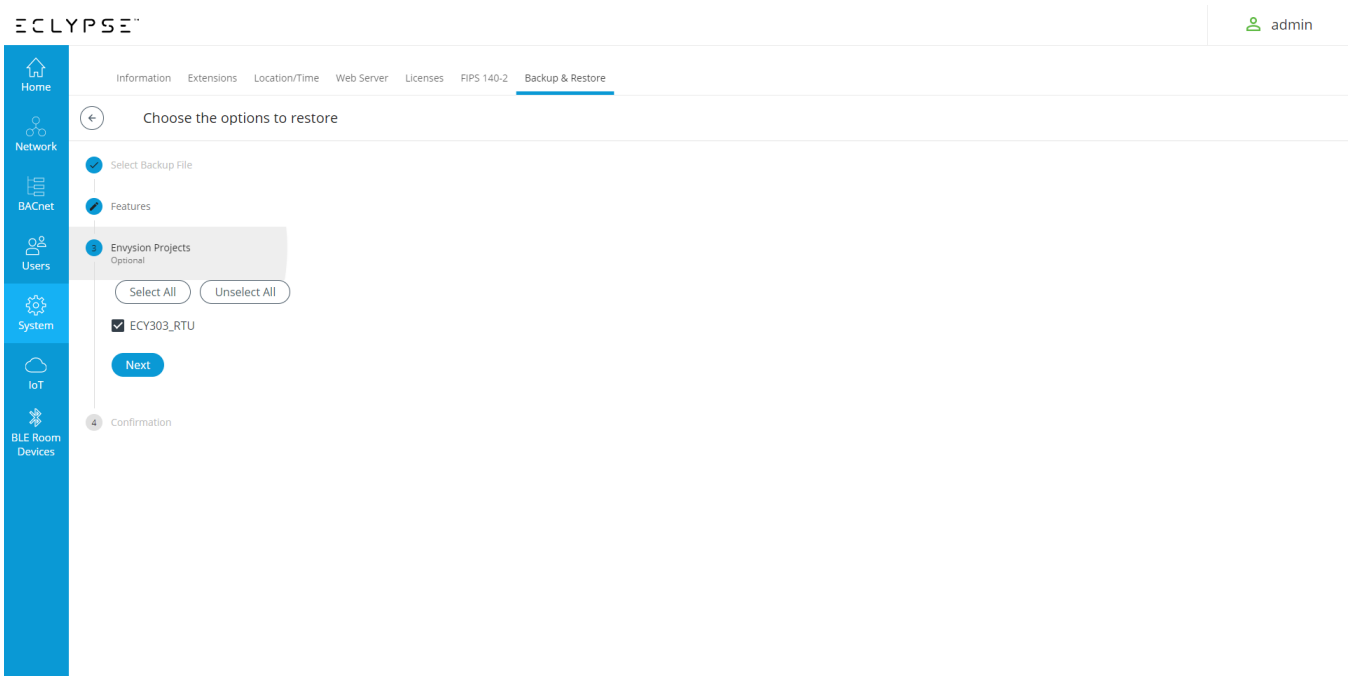
System > Backup & Restore tab > Import Backup From PC



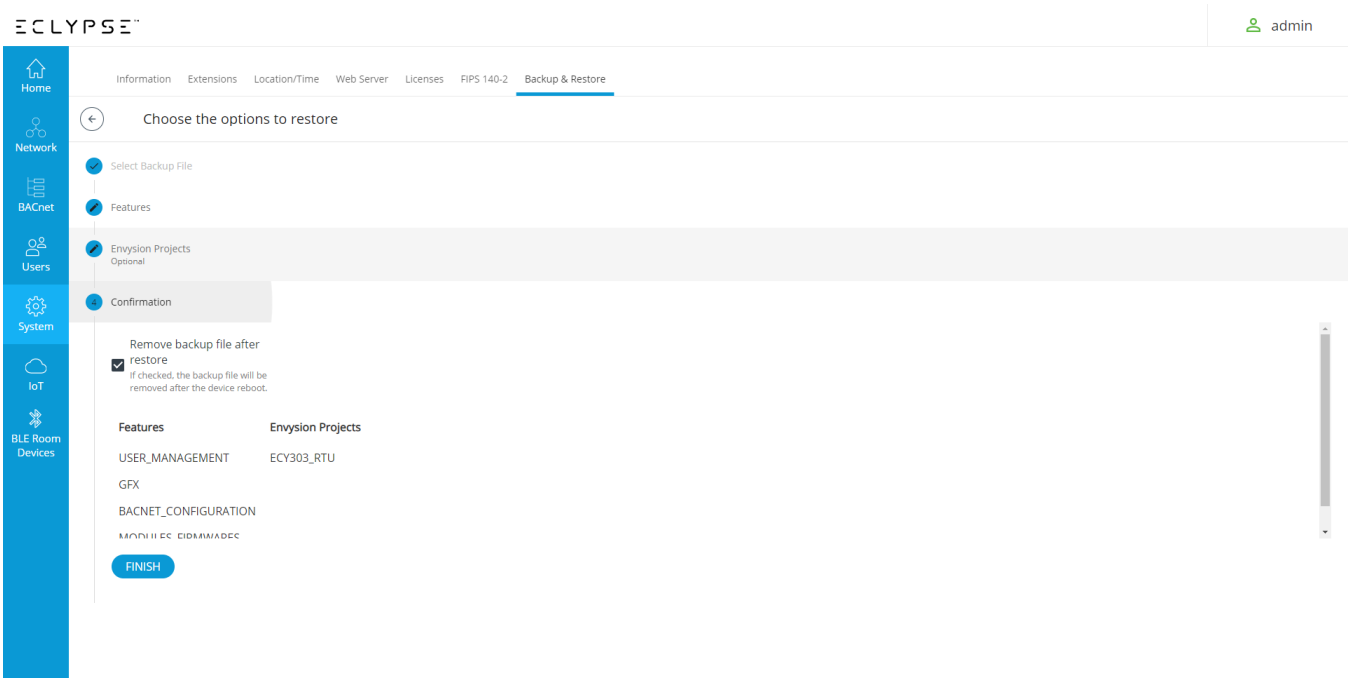
Select Backup File > Locate the saved file and select it > Next



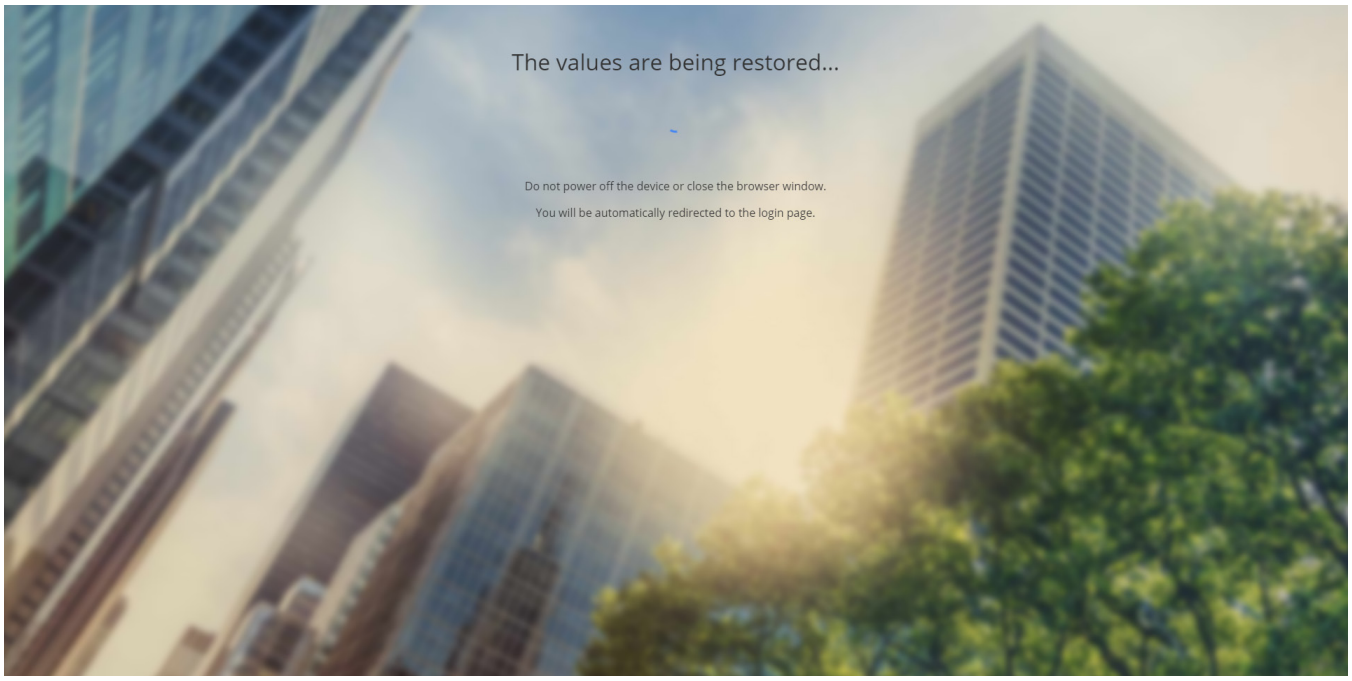
Select "User Management", "Network Configuration", "EC-gfxProgram and BACnet objects", "BACnet Configuration and Firmware Modules" boxes > Next



Select "ECY303_RTU" box > Next



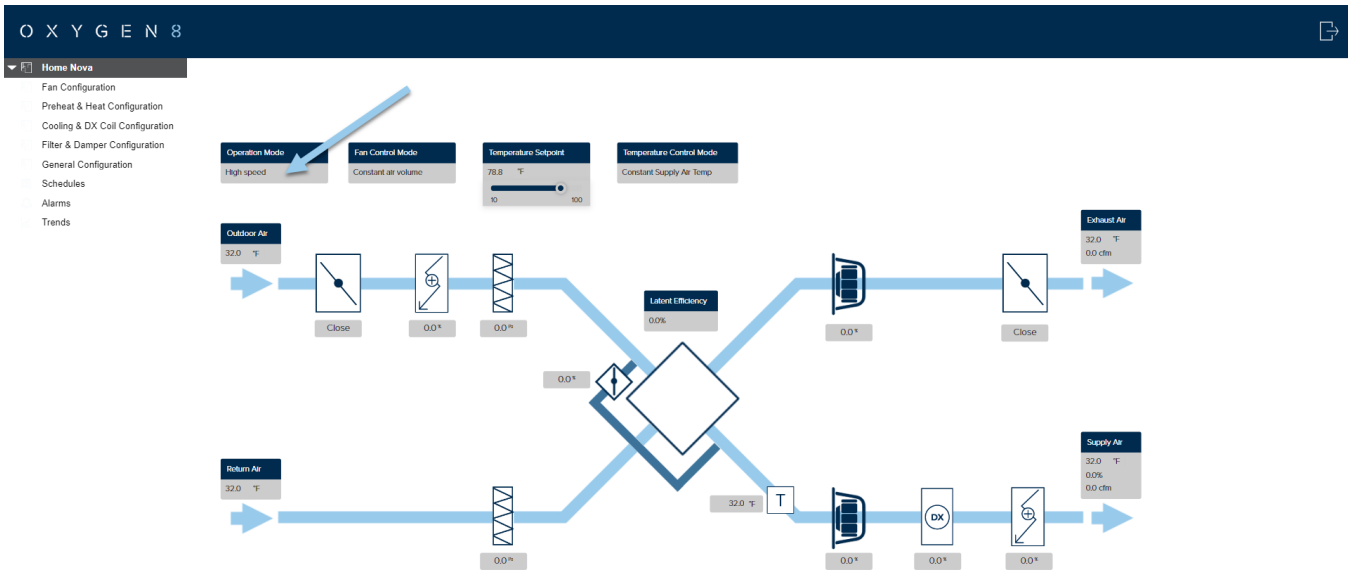
Select "Remove backup file after restore" box > Finish

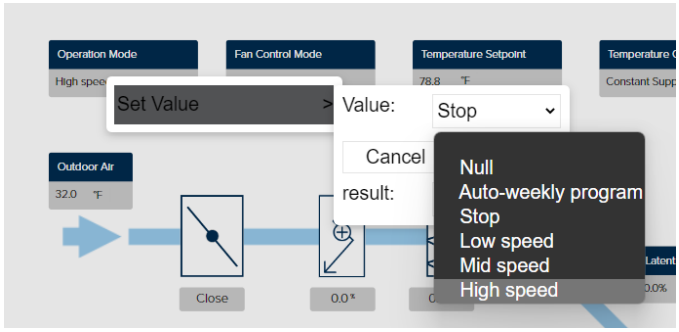


The controller is now restoring the files and rebooting. This process takes about 3 minutes.

5.0 Operation

Setting operating modes and weekly programs.





5.1 Operation mode

Select Fan Speed

"Stop" = the system is stopped

- Safety functions are active
- Outdoor and exhaust air dampers are closed

"Low speed" = the system runs constantly according to the parameter settings for low speed

- Operating times for the weekly program cannot be accessed

"High speed" = the system runs constantly according to the parameter settings for high speed

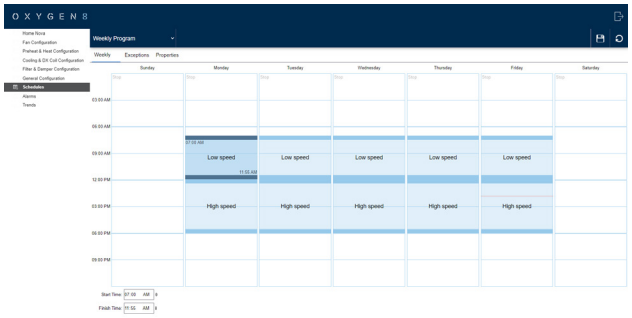
- Operating times for the weekly program cannot be accessed

"Auto-Weekly program" = the system runs according to the weekly program settings

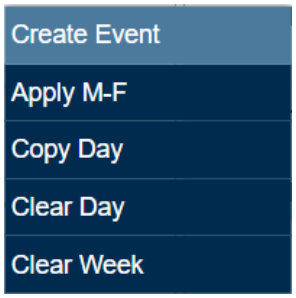
- Operating times for the weekly program cannot be accessed and set.

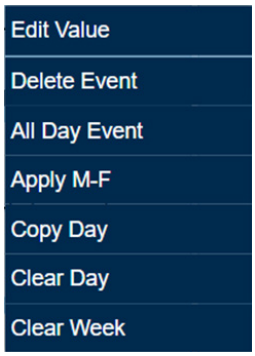
5.2 Setting Operating Times

Schedules are used to define different weekly events (weekly schedule) and special events also referred to as exceptions.



The different options used to configure a schedule are displayed by right-clicking on the Schedule. One menu is displayed when adding a new event and another menu is displayed when editing an existing event.



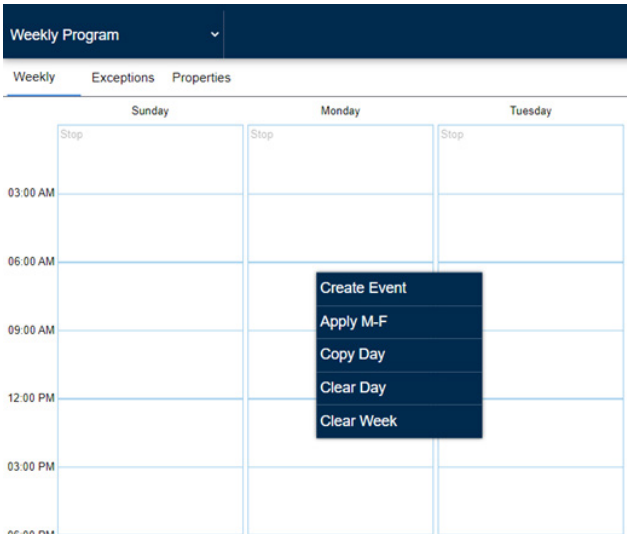


The following pop-up menu options are available:

Option	Used to
Create Event	Add a new event
Apply M-F	Copy all events in the selected day to Monday, Tuesday, Wednesday, Thursday, and Friday (and overwrites and existing events on those days)
Copy Day	Copy all events in the selected day, to use with Paste Day option, which appears only if Copy Day was used first.
Clear Day	Clear all events in the selected day.
Clear Week	Clear all events in the entire weekly schedule.
Edit Value	Edit an existing event.
Delete Event	Delete the selected event.
All Day Event	Make currently selection (or last entered) event extended to the entire day.

Adding a Schedule Event

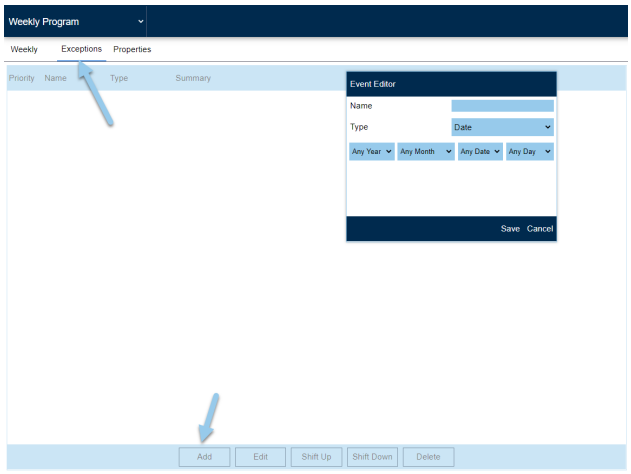
1. Drag and drop the Schedule widget into a document window.
2. In the Weekly tab (in Edit mode), right-click on the weekday in the schedule and from the pop-up menu, select Create Event. A shaded bar appears at the top of the weekday.
3. Drag the edge of the shaded bar upwards and/or downwards to obtain the exact time frame you wish to assign to that weekday or to be more precise you can also enter the exact time in the Start Time and Finish Time parameters located at the bottom of the schedule.



Adding an Exception

Exceptions are special events or special days in the currently selected schedule instance. Typically, you use them to define days with scheduling exceptions (for example, holidays).

1. In the Exceptions tab, click Add. The Event Editor pop-up is displayed.



2. In the Name, enter the name of the event (e.g., New Year's, Thanksgiving, etc.) for your schedules.

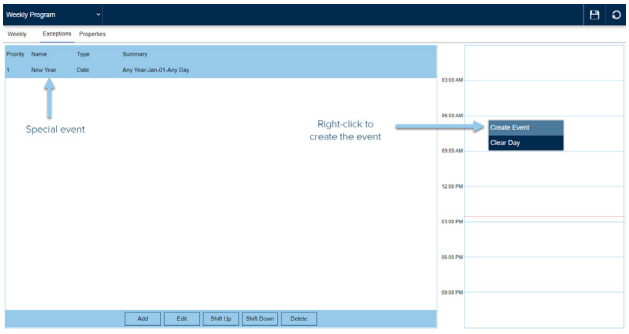
3. In Type, select the type of special event:

Date	Selects a day or a series of weekdays, dates, months, or years
Date Range	Selects a range of days
Week & Day	Selects series of weekdays, week in a calendar month or months.
Reference	Select a calendar that will be used as a 'special event reference' in this Schedule

4. Depending on your selection, related parameters will be displayed accordingly. Define the event as needed.

5. Click Save. The pop-up is closed, and the event is displayed.

6. Once the exception is created, right-click on the schedule on the right side of the window and select Create Event.



7. Drag the edge of the shaded bar upwards and/ or downwards to obtain the exact time frame you wish to assign to that special event.

8. To edit the special event, click Edit.

9. To delete the special event, click Delete.

10. To change the order of multiple events in the list, click Shift Up or Shift Down.



Once you are done setting up the schedule, hit the save button.

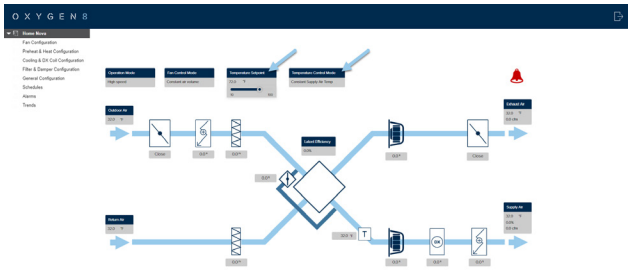
Use the reload button to refresh the schedule

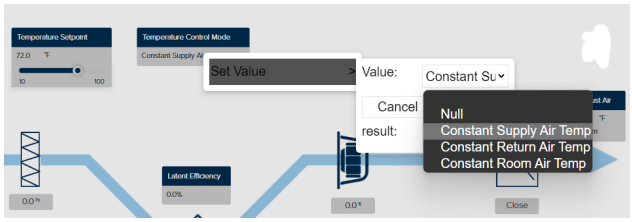
5.3 Temperature Setpoint

The setpoint described in this section is always the temperature setpoint for the control type selected.

The options are:

- Constant Supply Air Temp
- Constant Return Air Temp
- Constant Room Air Temp





The selected control type is displayed above.

Control Type is Selected Under

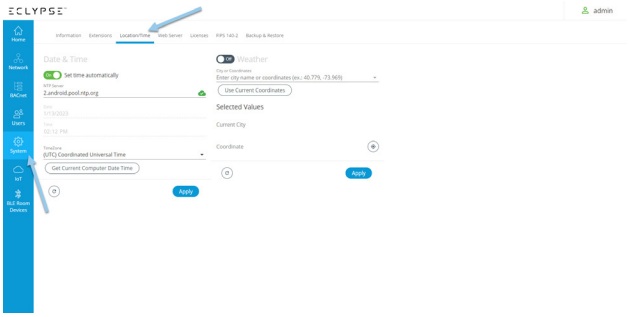
Home > Temperature Control Mode and can be selected to:

Changing the Temperature Setting (Temperature Setpoint)

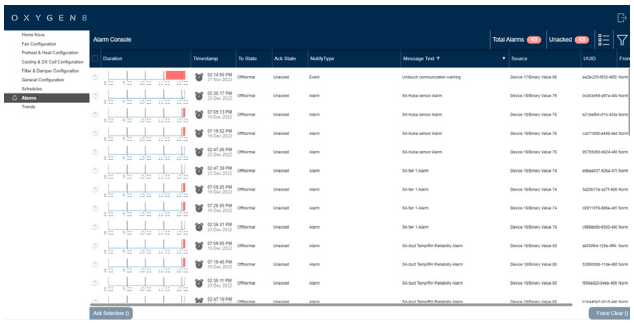
Values can be changed by entering a new value in the data-entry field or by moving the mouse onto the slider below the setpoint.

5.4 Time and Date

- Go to System and select the Locatime/Time tab .
- Set the "Set time automatically" button to ON, or enter the date and time manually.
- If you wish to use the computer time, select the "Get Current Computer Date Time" button.
- Press "Apply."

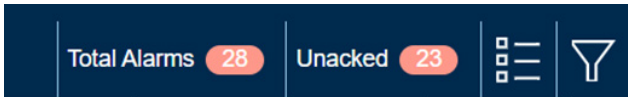


5.5 Alarm Console



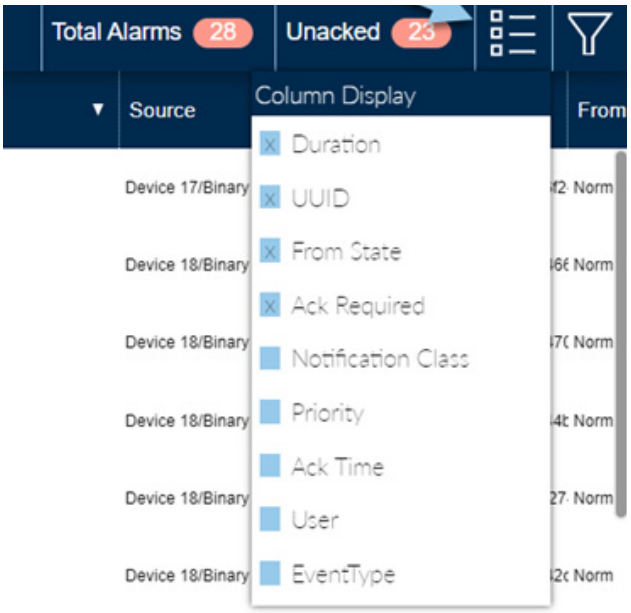
The Alarm Console allows you to view and acknowledge active alarms. The alarm information is presented in different columns. The total amount of alarms and unacknowledged alarms are available at a glance at the top right corner of the Alarm Console window. The columns that are most relevant are:

- Duration: Graph of how long the alarm has been active
- Timestamp: When the alarm occured
- Ack State: Indicates if the alarm has been acknowledged or not
- Message Text: Actual description of the alarm

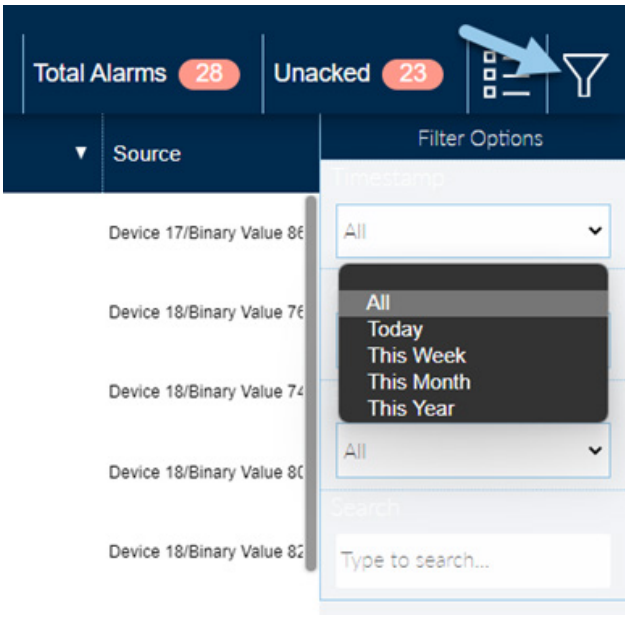


The top right has the following controls and indicators:

- Total alarms
- Total alarms that have not been unacknowledged
- Custom Display: Allows showing or hiding columns.
- Filter: Allows filtering the alarms displayed by time of occurence (Today, This Week, etc.), by acknowledge status or by priority. There is a search function as well.



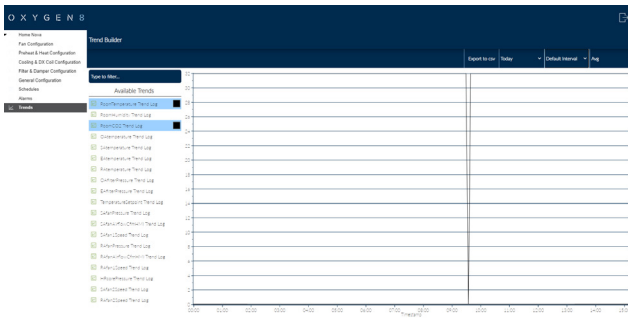
Custom Display



Filter

5.6 Trends

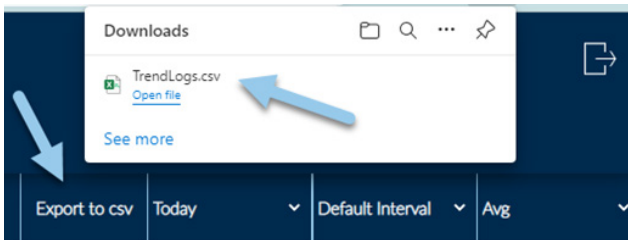
The Trends screen contains the Trend Builder, which the operator can use to view all trend log objects that reside in the data tree of the controller by plotting the data of the selected trend on the chart, along the x and y axes. A list of available trends is provided, and you can select a color for each trend that you wish to plot on the graph to facilitate the viewing of many trends at the same time.



The Trend Builder provides additional functions such as exporting to a csv file, selecting a time range, default intervals, selecting format and typing text in a filter field.

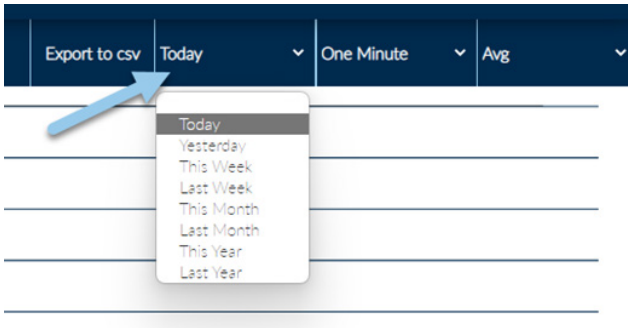
Export to .csv

Click on it and a csv file of the selected trends will be downloaded by your browser.



Time Range

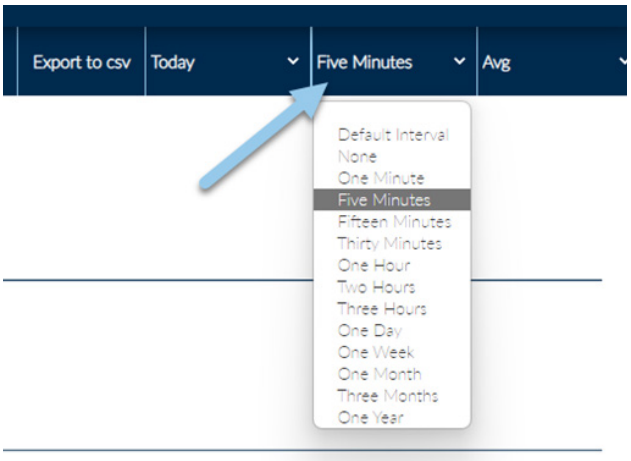
Select a time parameter option from the list (today, last week, etc.)

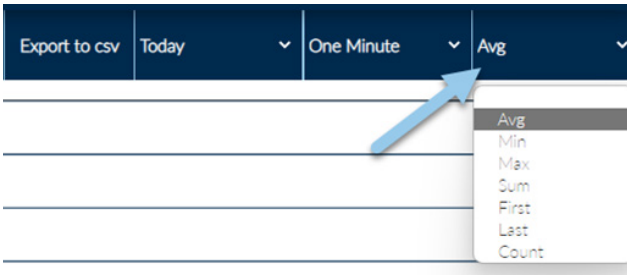


Interval

Select a default interval of time that is used to determine what and how data is presented in your trend chart. For example, an interval value of 1 hour will present data at a granularity level of every one hour, while an interval value of 15 minutes will show data for every 15 minutes of logged data.

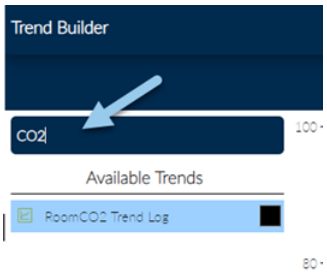
In addition, you can also select other interval options such Avg (average value for the selected interval period), Min or Max (minimum or maximum value for the selected interval period), Sum (total of the values in the selected interval period), etc.





Filter

The filter field allows you to filter through a list of trends based on the text that you typed in the field.



6.0 Maintenance

6.1 Fans



Warning

During all work on fan in the hazardous area:

- Maintenance operation is only to be performed by trained service personnel.
- Observe the safety and labor regulations (DIN EN 50110, IEC 364).
- No maintenance work on running fan!
- Open the electrical circuit and secure against being switched back on.
- Verify the absence of voltage.
- The rotor must be standing still!

Always wear the appropriate PPE (safety shoes and gloves for handling).

Regular inspection, if necessary with cleaning, is required to prevent imbalance due to ingestion of particles.



Warning

Clean the fan's flow area:

- Wet cleaning under voltage may lead to an electric shock - danger to life!
- Do not use any aggressive, paint solvent cleaning agents when cleaning.
- Never use a high-pressure cleaner or spray jet to clean.
- Avoid letting water permeate into the motor and the electrical installation.
- After cleaning, the motor must be operated for 30 minutes at 80-100% of the max. rpm to let it dry out. This will allow any possibly penetrated water to evaporate.
- Ball-bearings service life

The fan or motor is maintenance-free due to the use of ball bearings with “lifetime lubrication”. Once the grease operating life F10h has been reached, it may be necessary to replace the bearing. The bearing service life expectation may change compared to the specified value, if operating conditions such as increased vibrations or shocks, increased or too low temperatures, humidity, dirt in the ball bearing or unfavorable control modes are present. A service life calculation for special applications can be provided on request.

6.2 DX Coil

Operation and Maintenance For First Time Use

Air Distribution

1. Uniform air flow is crucial to coil performance and should not vary significantly across the coil face
2. Air velocities should be maintained between 200 and 550 feet per minute without a mist eliminator and between 200 and 700 feet per minute with a mist eliminator
3. The drain pan should be designed and installed such that there is no standing water
4. The maximum operating temperature is 350°F for any Direct Coil coils.

Cleaning

1. Coils must be cleaned periodically to obtain maximum performance. Soiled fins reduce the capacity of the coil, and demand more energy from the fan
2. Periodic inspection of the coil for signs of damage, leaks or corrosion is also recommended. Any repair or replacement of parts should be performed by a qualified professional.
3. Any fluid passing through the coil should be free of any sort of contaminants. Periodic testing and correction will enable the coil to last longer.
4. Fins can be cleaned using spray washers or using commercial cleaners. Care must be taken not to damage the coils and to not allow water to touch any electrical equipment. However, caution should be exercised when working with the fins as the sharp edges can cause serious personal injury.

When the coil surface itself needs cleaning, ensure an appropriate solution and equipment are selected to avoid damage to the coil and/or enabling any health hazards. Cleaning should be done inwards from the airflow exit so any contaminant will later be pushed out of the coil. Follow the manufacturer's instructions with any cleaning solution or equipment

6.3 Hydronic Coil

Operation and Maintenance

First Use Recommendation

1. The air vent (at the uppermost point on the assembly) should be opened during set-up to exhaust any air from the coil. To maintain heat transfer capacity, periodically vent the air in the coil.

Air Distribution

1. Uniform air flow is crucial to coil performance and should not vary significantly across the coil face
2. The drain pan and its piping should be arranged such that there is not still water in the pan to be blown by the passing flow of air
3. The fluid and air velocity should be kept to near the specifications for the coil
4. The maximum operating temperature is 350°F for any Direct Coil coils

Cleaning

1. Coils must be cleaned periodically to obtain maximum performance. Soiled fins reduce the capacity of the coil, and demand more energy from the fan
2. Periodic inspection of the coil for signs of damage, leaks or corrosion is also recommended. Any repair or replacement of parts should be performed by a qualified professional.
3. Any fluid passing through the coil should be free of any sort of contaminants. Periodic testing and correction will enable the coil to last longer.
4. Fins can be cleaned using spray washers or using commercial cleaners. Care must be taken not to damage the coils and to not allow water to touch any electrical equipment. However, caution should be exercised when working with the fins as the sharp edges can cause serious personal injury.

5. When the coil surface itself needs cleaning, ensure an appropriate solution and equipment are selected to avoid damage to the coil and/or enabling any health hazards. Cleaning should be done inwards from the airflow exit so any contaminants will later be pushed out of the coil. Follow the manufacturer's instructions with any cleaning solution or equipment
6. Drain-pans in any air conditioning unit contain moisture and must be cleaned regularly

Winterizing Coils

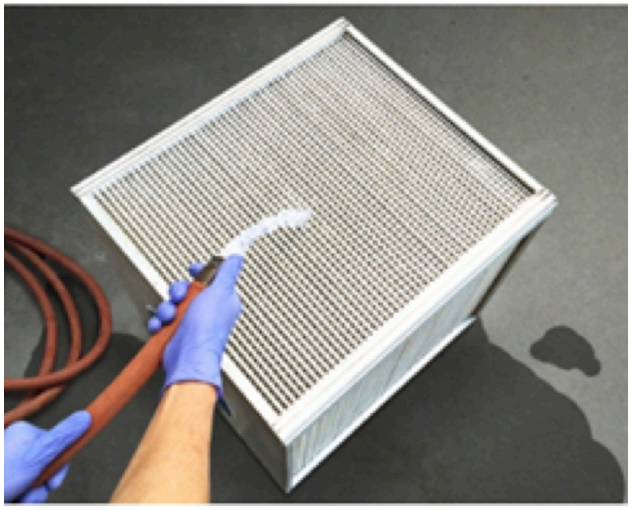
During the winter, if the coil is not in use all water should be drained from the coil. The coil should then be thoroughly flushed with a glycol solution.

6.4 Core

We recommend washing our exchanger at least once per year, using tap water. If the exchanger becomes heavily soiled, a mild detergent such as Dawn®, Palmolive® or equivalent dish soap may be used.

While cleaning other adjacent components in the HVAC system, it is possible for our exchanger to come in contact with harsher detergents. The following is a list of coil cleaners and all-purpose cleaners that have been tested with our exchangers and their compatibility.

Generally, contact with any coil cleaning product is not recommended and specifically hydroxide-based cleaners should be avoided. If contact does occur, our exchanger should be rinsed immediately as it may void the warranty.



Core Cleaning Instructions

1. Obtain access to a source of regular tap water. Do not use a high-pressure water source (pressure washer).
2. Remove our exchanger from the system if possible, to facilitate access to all exchanger faces, otherwise wash in place. Ensure adequate drainage is available for wastewater.
3. ONLY if the exchanger is heavily soiled, prepare a solution of less than 1:100 parts water to dish soap. Otherwise, clean water is sufficient.
4. Orient the plates vertically for drainage and pour solution (or clean water) through our exchanger, both supply and exhaust paths, ensuring exposure of all layers.
5. Thoroughly rinse with clean tap water if a soapy solution was used until no more bubbles appear in the exiting water.
6. Allow our exchanger to dry (with plates still oriented vertically) until there is no more water dripping out, then return to service.

CLEANER	RECOMMENDATION
Viper Expanding Foam	OK
CalSpray–nu-Brite	Avoid Contact
CalSpray–evap foam	OK
HD CalClean 1:40	OK
HD CalClean 1:5	Avoid Contact
Fantastik w/ Bleach	Avoid Contact
Fantastik Original	Avoid Contact

6.5 Filters

After dirty filter alarm has been initiated, check filter for obstructions. If there are no obstructions than the filter high limit pressure has been reach and the filter is considered to have reached the end of life and needs to be replaced.

Filter Sizing

Size	Airstream	Thickness (in)	Width (in)	Height (in)	Quantity	MERV Rating
A16/A18	RA	2	13.5	21.375	1	8
A16/A18	OA	2	13.5	21.375	1	13
B20/B22	RA	2	17.5	26.625	1	8
B20/B22	OA	2	17.5	26.625	1	13
C20/22	RA	2	17.375	17.375	2	8
C20/22	OA	2	17.375	17.375	2	13
C24/C26	RA	2	17.375	21.375	2	8
C24/C26	OA	2	17.375	21.375	2	13
C30/C32/ C20 Bypass/ C22 Bypass	RA	2	17.375	27.375	2	8
C30/C32/ C20 Bypass/ C22 Bypass	OA	2	17.375	27.375	2	13
C40/C26 Bypass	RA	2	17.375	17.375	4	8
C40/C26 Bypass	OA	2	17.375	17.375	4	13
C48/C32 Bypass	RA	2	17.375	21.375	4	8
C48/C32 Bypass	OA	2	17.375	21.375	4	13
C58/C40 Bypass	RA	2	17.375	17.375	6	8
C58/C40 Bypass	OA	2	17.375	17.375	6	13
C70/C48 Bypass	RA	2	17.375	21.375	6	8
C70/C48 Bypass	OA	2	17.375	21.375	6	13

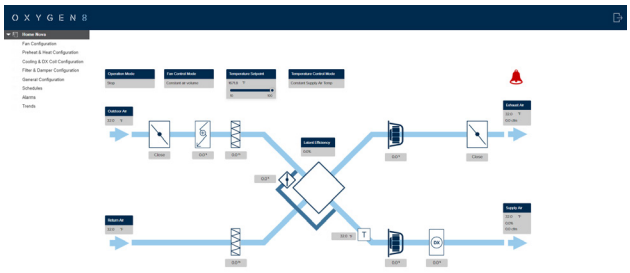
6.6 Fuse Replacement

Size	240/60/1	208/60/3	460/60/3	Quantity
A16-ERV	3/10 or 3/4	-	-	1
A-18 ERV	3/10 or 3/4	-	-	1
B20-ERV	3/10 or 3/4	4/10	3/16 or 3/4	1 for 3/16 or 3/4; 2 for remainder
B22-ERV	3/10 or 3/4	4/10	3/16 or 3/4	1 for 3/16 or 3/4; 2 for remainder
C20-ERV	-	4/10	3/16 or 3/4	2
C22-ERV	-	4/10	3/16 or 3/4	2
C24-ERV	-	4/10	3/16 or 3/4	2
C26-ERV	-	4/10	3/16 or 3/4	2
C30-ERV	-	4/10	3/16 or 3/4	2
C32-ERV	-	4/10	3/16 or 3/4	2
C40-ERV	-	4/10	3/16 or 3/4	2
C48-ERV	-	4/10	3/16 or 3/4	2
C58-ERV	-	4/10	3/16 or 3/4	2
C70-ERV	-	4/10	3/16 or 3/4	2

3/10 and 3/16 available depending on stock levels, both will be replaced with 3/4 once stock is depleted.

6.7 Control Unit Status Display

The display shows an overview of the system's actual status and operating conditions.



The menu on the left allows navigation to the different screens:

- Home Nova (System Overview)
- Configuration screens (more details on section 6.8)
- Schedules
- Alarms
- Trends

There are 4 control options at the top left:

- Operation Mode
- Fan Control Mode
- Temperature Setpoint and
- Temperature Control Mode

If there is an active alarm, a red bell appears on the top right. Click on it to navigate to the Alarm Console.

If there is an active warning, a yellow bell appears on the top right. Click on it to navigate to the Alarm Console.

Clicking on the system components (fans, heaters, dampers) opens a pop-up screen with dedicated controls and more information.

Values in the grey boxes below the system components indicate their current status (i.e. 76.2% below the Supply Air fan indicates its current speed).

There are fields indicating the current system values such as temperatures, air flow, relative humidity, etc.

Hand Mode Operation

Setting equipment in Hand Mode can be used during service and maintenance to test that the outputs work as intended.

To use Hand Mode, from the Home screen, click on the desired system component and in the pop up screen that opens, select Hand Mode.

Note: after maintenance and testing, make sure to set all components back to Auto for proper operation. Use the Master Auto button on General Configuration.

The examples below illustrate the Hand Mode Operation of the supply fan speed.

1. On the Home Nova screen, click on the Supply Air Fan icon.
2. Set SA Fan Mode to “Hand”
3. Then below on Supply Air Fan Hand Speed, enter the desired speed in %.
4. The SA Fan will now operate at the speed set.
5. Set SA Fan Mode back to “Auto” for normal operation.



6.8 Configuration Screens

The Configuration screens display and allow modification of all the program settings. They are organized into groups: Fan Configuration, Preheat and Heat Configuration, Cooling and DX Coil Configuration and General Configuration.

6.8.1 Fan Configuration

This screen allows configuration of the fans with the following settings:



1.1 Fan Speed Control Mode

- Selects the fan speed control strategy: Constant Air Volume, Constant Pressure RA Slave, Constant CO2, or Constant VOC

1.2 Supply Fan Max Airflow

- Sets the absolute maximum Supply Fan flow for safety. This only applies to Constant Pressure RA control mode.

1.3 Return Fan Max Airflow

- Sets the absolute maximum Return Fan flow for safety. This only applies to Constant Pressure RA control mode.

1.4 Reduced Air Flow Option

- Safety feature to reduce fan flow if the temperature is below setpoint for 10 minutes. Select if no fan, Supply Air fan or both fans should react to the feature.

1.10 Supply Air Fan Low Speed

- Set the required setpoint for Supply flow at "Low" speed during Constant Air Volume control.

1.11 Supply Air Fan Mid Speed

- Set the required setpoint for Supply flow at "Medium" speed during Constant Air Volume control.

1.12 Supply Air Fan High Speed

- Set the required setpoint for Supply flow at "High" speed during Constant Air Volume control.

1.20 Return Air Fan Low Speed

- Set the required setpoint for Return flow at "Low" speed during Constant Air Volume control.

1.21 Return Air Fan Mid Speed

- Set the required setpoint for Return flow at "Medium" speed during Constant Air Volume control.

1.22 Return Air Fan High Speed

- Set the required setpoint for Return flow at "High" speed during Constant Air Volume control.

1.30 Return Air Fan Speed Offset

- Return air fan follows Supply Fan speed with an offset corresponding to the value set during Constant Pressure-RA Slave.

1.31 Supply Air Fan Low Speed

- Set the required setpoint for Return flow at "Low" speed during Constant Pressure-RA Slave control,

1.32 Supply Air Fan Mid Speed

- Set the required setpoint for Return flow at "Medium" speed during Pressure-RA Slave control.

1.33 Supply Air Fan High Speed

- Set the required setpoint for Return flow at "High" speed during Pressure-RA Slave control.

1.40 Return Air CO2 Setpoint

- Set the required setpoint for return duct CO2 concentration to run Return Air Fan at the speed set on parameter 1.22.

1.41 Supply Air Fan Speed Offset

- Set the required offset for the Supply Air Fan.

1.42 Minimum Runtime

- Set the minimum time the fan stays at high speed once it exceeds the setpoint (1.40), once this time elapses and the CO2 concentration is below 1.40, the fan resumes operation at the speed set on 1.20.

1.43 Sensor Selection

- Select what sensor is used to measure CO2: RAductCO2 (in the duct) or RoomCO2.

1.50 Return Air VOC Setpoint

- Set the required setpoint for return duct VOC concentration to run Return Air Fan at the speed set on parameter 1.22.

1.51 Supply Air Fan Speed Offset

- Set the required offset for the Supply Air Fan.

1.52 Minimum Runtime

- Set the minimum time the fan stays at high speed once it exceeds the setpoint (1.50), once this time elapses and the VOC concentration is below 1.50, the fan resumes operation at the speed set on 1.20.

1.60 Supply Air Fan Enable

- Determines if the Supply Fan is present or not.

1.61 Supply Air Fan Start Delay

- Set delayed start time for the fan. The set time is used for damper opening.

1.62 Supply Air Fan K Factor

- Set the fan k-factor.
- Fan k-factor is specified by the fan manufacturer and is used to calculate air volume (CFM) according to the following formula:

$$V=\sqrt{\Delta P}\cdot k$$

ΔP = difference between stationary pressure and dynamic pressure across the fan; k= fan k-factor

1.63 Supply Air Fan PID Proportional Gain

- Set the fan PID proportional gain.

1.64 Supply Air Fan PID Integral Time

- Set the fan PID integral time.

1.70 Return Air Fan Enable

- Determines if the Return Fan is present or not.

1.71 Return Air Fan Start Delay

- Set delayed start time for the fan. The set time is used for damper opening.

1.72 Return Air Fan K Factor

- Set the fan k-factor.
- Fan k-factor is specified by the fan manufacturer and is used to calculate air volume (CFM) according to the following formula:

$$V=\sqrt{\Delta P}\cdot k$$

ΔP = difference between stationary pressure and dynamic pressure across the fan; k= fan k-factor

1.73 Return Air Fan PID Proportional Gain

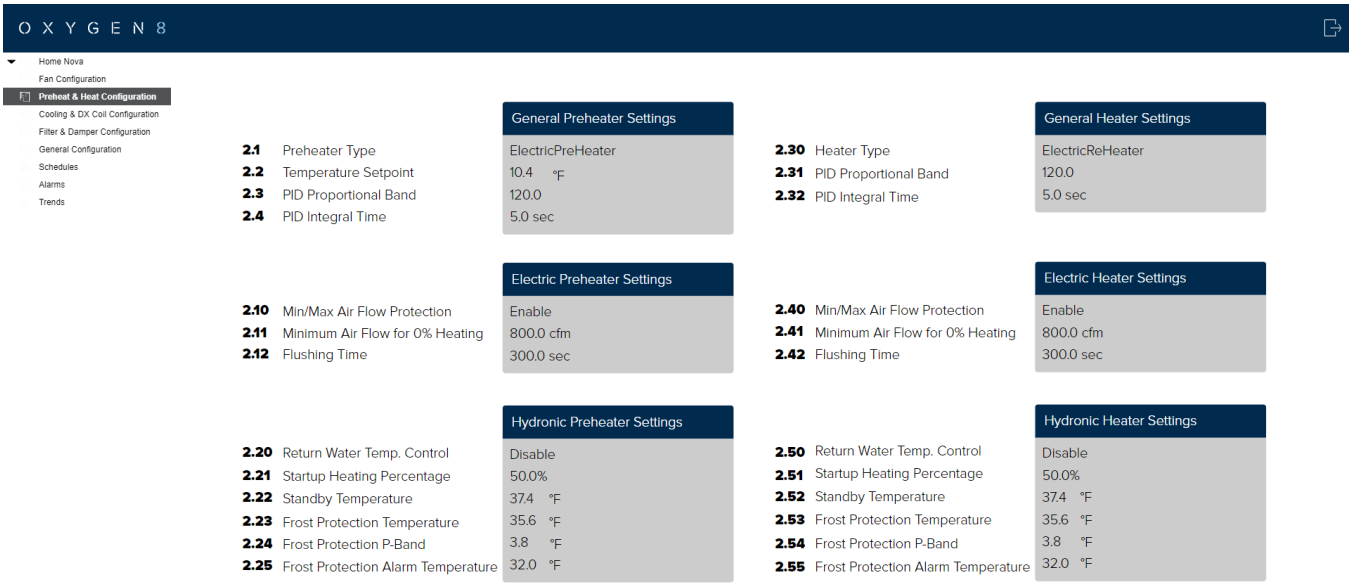
- Set the fan PID proportional gain.

1.74 Return Air Fan PID Integral Time

- Set the fan PID integral time.

6.8.2 Preheat & Post Heat Configuration

This screen allows configuration of the heating coils (pre and post).



2.1 Preheater Type

- Selects whether there is no preheater installed or if it is electric or hydronic.

2.2 Temperature Setpoint

- Sets the preheater temperature setpoint.

2.3 PID Proportional Band

- Set the preheater PID proportional gain.

2.4 PID Integral Time

- Set the preheater PID integral time.

2.10 Min Air Flow Protection

- Enables or disables flow monitoring to protect the preheater.

2.11 Minimum Air Flow for 0% Heating

- If 2.10 is set to Enable, sets the minimum supply flow to engage the preheater.

2.12 Flushing Time

- Minimum time to run the fan after the preheater is disengaged to flush any remnant heat.

2.20 Return Water Temp. Control

- Enables or disables return water frost protection of the hydronic preheater.

2.21 Startup Heating Percentage

- During the system start-up, sets the hydronic preheater output after starting the supply air fan.

2.22 Standby Temperature

- When the system is stopped and 2.20 is enabled, if the water temperature falls below this setpoint, heating will be modulated to maintain the temperature above this setpoint.

2.23 Frost Protection Temperature

- When the system is running and 2.20 is enabled, frost protection activates on a linear relationship defined by parameters 2.23 & 2.24. This setpoint represents the return water temperature at which the heating will be activated at 100%.

2.24 Frost Protection P-Band

- When the system is running and 2.20 is enabled, frost protection activates on a linear relationship defined by parameters 2.23 & 2.24. This setpoint represents the return water temperature at which the heating will be activated at 0%.

2.25 Frost Protection Alarm Temperature

- Sets the hydronic return water temperature frost protection alarm setpoint. This alarm stops the unit.

2.30 Post Heater Type

- Selects whether there is no post heater installed or if it is electric or hydronic.

2.31 PID Proportional Band

- Set the post heater PID proportional gain.

2.32 PID Integral Time

- Set the post heater PID integral time.

2.40 Min Air Flow Protection

- Enables or disables flow monitoring to protect the post heater.

2.41 Minimum Air Flow for 0% Heating

- If 2.40 is set to Enable, sets the minimum supply flow to engage the post heater.

2.42 Flushing Time

- Minimum time to run the fan after the preheater is disengaged to flush any remnant heat.

2.50 Return Water Temp. Control

- Enables or disables return water frost protection of the hydronic preheater.

2.51 Startup Heating Percentage

- During the system start-up, sets the hydronic preheater output after starting the supply air fan.

2.52 Stanby Temperature

- When the system is stopped and 2.50 is enabled, if the water temperature falls below this setpoint, heating will be modulated to maintain the temperature above this setpoint.

2.53 Frost Protection Temperature

- When the system is running and 2.50 is enabled, frost protection activates on a linear relationship defined by parameters 2.53 & 2.54. This setpoint represents the return water temperature at which the heating will be activated at 100%.

2.54 Frost Protection P-Band

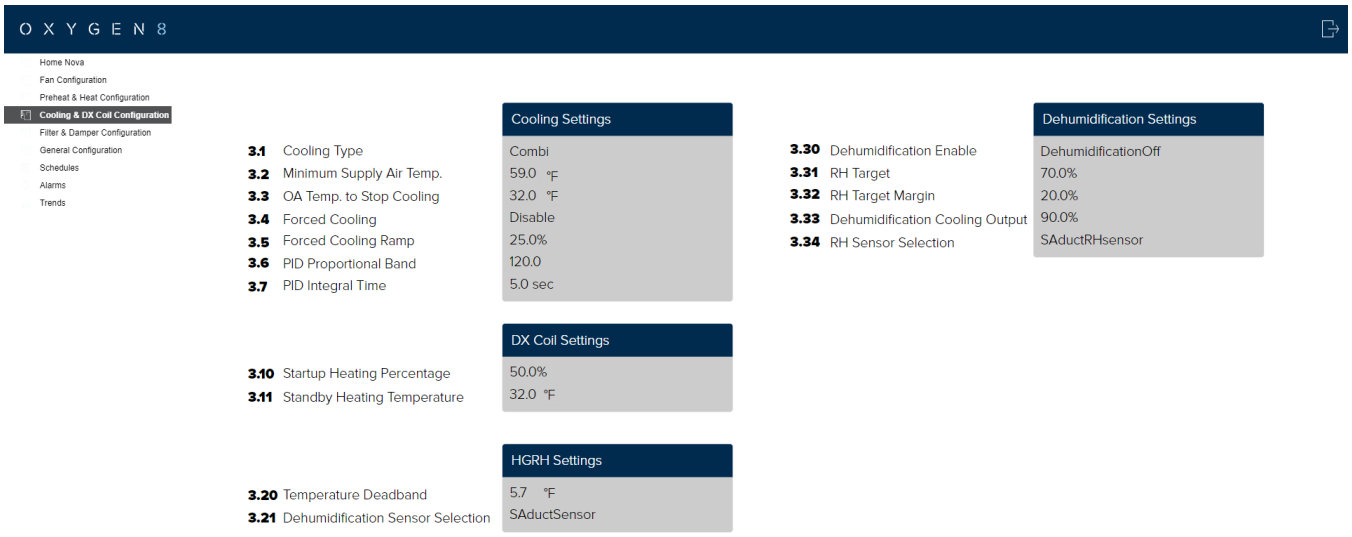
- When the system is running and 2.50 is enabled, frost protection activates on a linear relationship defined by parameters 2.53 & 2.54. This setpoint represents the return water temperature at which the heating will be activated at 0%.

2.55 Frost Protection Alarm Temperature

- Sets the hydronic return water temperature frost protection alarm setpoint. This alarm stops the unit.

6.8.3 Cooling & DX Configuration

This screen allows configuration of the cooling & DX Coils (Heat Pump) and HGRH



3.1 Cooling Type

- Selects whether there is no cooling coil installed or if it is a DX coil, Hydronic or HGRH.

3.2 Minimum Supply Air Temp.

- Setpoint for minimum supply temperature when cooling is active.

3.3 OA Temp. to Stop Cooling

- Cooling is stopped at outdoor temperatures below the setpoint.

3.4 Forced Cooling

- When activated, air volume will be increased when cooling is active.

3.5 Forced Cooling Ramp

- When Forced Cooling is Active, the total air volume increases at this rate. If the max. air flow is reached, it will be maintained while cooling is active.

3.6 PID Proportional Band

- Set the cooling coil PID proportional gain.

3.7 PID Integral Time

- Set the cooling coil PID integral time.

3.10 Startup Heating Percentage

- During the start-up sequence of the ventilation system, the heating valve will be overridden to the value set. Heating valve override will be terminated once the start-up sequence has been completed and the inlet fan has reached its air volume setting.of the hydronic preheater.

3.20 Temperature Deadband

- Sets the deadband to switch from heating to cooling and vice versa when operating DX and HGRH coils.

3.21 Dehumidification Sensor Selection

- Selects the sensor to use as reference for dehumidification when operating DX and HGRH coils.

3.30 Dehumidification Enable

- Select whether dehumidification is to be active.

3.31 RH Target

- Sets the desire Relative Humidity target. Above this value the dehumidification sequence starts.

3.32 RH Target Margin

- Dead band for the RH Target. Defines when the humidity level has been satisfied and cooling returns to normal.

3.33 Dehumidification Cooling Output

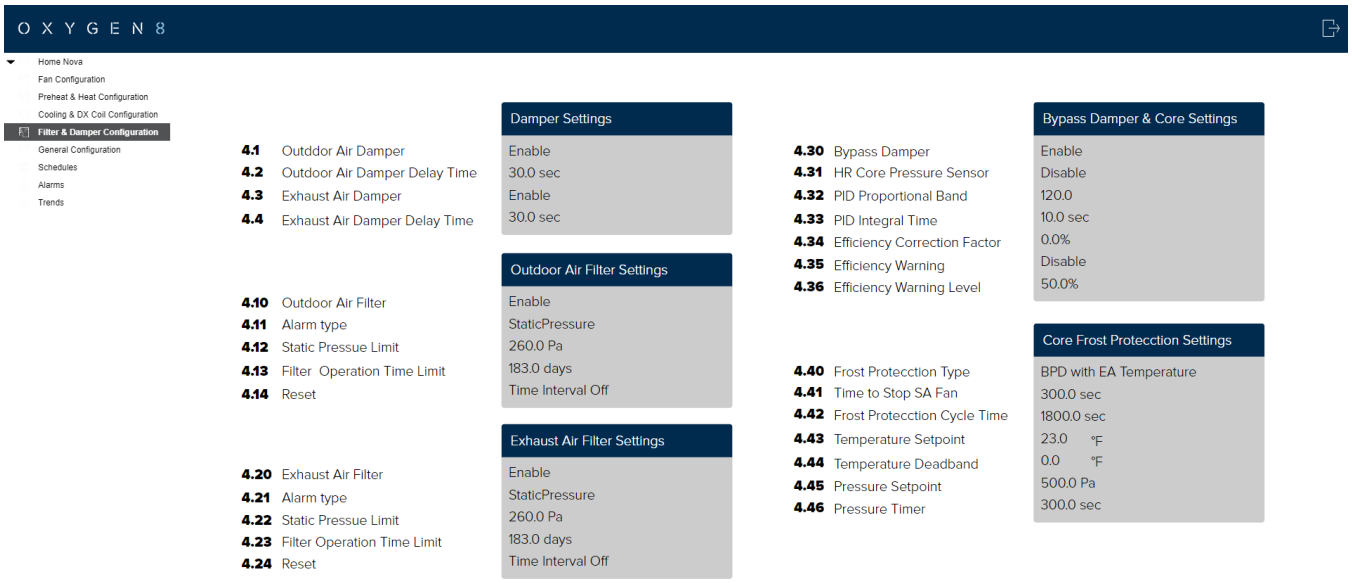
- Sets the cooling output during dehumidification.

3.34 RH Sensor Selection

- Selects what sensor to use for dehumidification: SA Duct, RA Duct or Room.

6.8.4 Filter & Damper Configuration

This screen allows configuration of the filters and dampers.



4.1 Outdoor Air Damper

- Selects whether the outdoor damper is present or not.

4.2 Outdoor Air Damper Delay Time

- Set the time the damper takes to open.

4.3 Exhaust Air Damper

- Selects whether the outdoor damper is present or not.

4.4 Exhaust Air Damper Delay Time

- Set the time the damper takes to open.

4.10 Outdoor Air Filter

- Selects whether the outdoor air filter is present or not.

4.11 Alarm Type

- Select Static Pressure or Time Based for the outdoor air filter.
- Static Pressure: A filter warning is activated if the Static Pressure Limit (4.12) is exceeded.
- Time Based: A filter warning is activated when the filter operation time limit (4.13) is exceeded.

4.12 Static Pressure Limit

- Set the static pressure limit for pressure drops across the outdoor air filter. Alarm Type must be set to “Static Pressure”.

4.13 Filter Operation Time Limit

- Set the operation time limit for the outdoor air filter. Alarm Type must be set to “Time Based”.

4.14 Reset

- Set the method to reset the outdoor air filter operation time.
- Time Interval Off: Time based alarm (set by 4.13) is disregarded.
- Time Interval ON: Resets the alarm timer.

4.20 Exhaust Air Filter

- Selects whether the exhaust air filter is present or not.

4.21 Alarm Type

- Select Static Pressure or Time Based for the exhaust air filter.
- Static Pressure: A filter warning is activated if the Static Pressure Limit (4.12) is exceeded.
- Time Based: A filter warning is activated when the filter operation time limit (4.13) is exceeded.

4.22 Frost Protection Alarm Temperature

- Set the static pressure limit for pressure drop across the exhaust air filter. Alarm Type must be set to “Static Pressure”.

4.23 Filter Operation Time Limit

- Set the operation time limit for the exhaust air filter. Alarm Type must be set to “Time Based”.

4.24 Reset

- Set the method to reset the exhaust air filter operation time.
- Time Interval Off: Time based alarm (set by 4.13) is disregarded.
- Time Interval ON: Resets the alarm timer.

4.30 Bypass Damper

- Selects whether the bypass damper is present or not.

4.31 HR Core Pressure Sensor

- Selects if a pressure sensor is installed across the core.

4.32 PID Proportional Band

- Set the bypass damper PID proportional gain.

4.33 PID Integral Time

- Set the bypass damper PID integral time.

4.34 Efficiency Correction Factor

- Sensible efficiency percent correction between ±5%.

4.35 Efficiency Warning

- Enables or disables monitoring of core sensible efficiency.

4.36 Efficiency Warning Level

- Sets the sensible efficiency setpoint under which a warning is issued. 4.35 has to be set to Enable.

4.40 Frost Protection Type

- Selects what methodology of frost protection is used.
- “No Selection”: There is no frost protection.
- “Only EA Temperature”: Use exhaust temperature to trigger frost protection, when it drops below 4.43.
- “BPD with EA Temperature”: Use exhaust temperature to trigger frost protection (when it drops below 4.44 + 4.45) and the bypass damper to modulate.
- “BPD with HR Core Pressure”: Use core pressure to trigger frost protection (when it climbs above 4.46) and the bypass damper to modulate.

4.41 Time to Stop SA Fan

- When the frost protection is active this is the time the SA Fan stops while the EA Fan runs to pass warm air through the core. Parameter 4.40 must be set to “Only EA Temperature”.

4.42 Frost Protection Cycle Time

- Sets the time to wait to check again the SA temperature after the SA fan completed the stop time determined by 4.43 above. Parameter 4.40 must be set to “Only EA Temperature”.

4.43 Temperature Setpoint

- Sets the exhaust air temperature to trigger frost protection, when it falls below this value the sequence set by parameters 4.41 & 4.42 begins. Parameter 4.40 must be set to “Only EA Temperature”.

4.44 Ice Protection Temperature

- Sets the exhaust air temperature to trigger ice protection.
- When the exhaust air temperature falls below this setpoint plus Deadband (parameter 4.45). The bypass damper is open at 100%.
- If the exhaust air temperature remains below this setpoint for 10 minutes, the “HR core defrost” alarm is triggered, and the unit stops.
- Parameter 4.40 must be set to “Only EA Temperature”.

4.45 Ice Protection Deadband

- Adding temperature with 4.44, before the reaching frost alarm limit, starting frost protection active. 4.40 “BPD with EA Temperature” option.

4.46 Pressure Setpoint

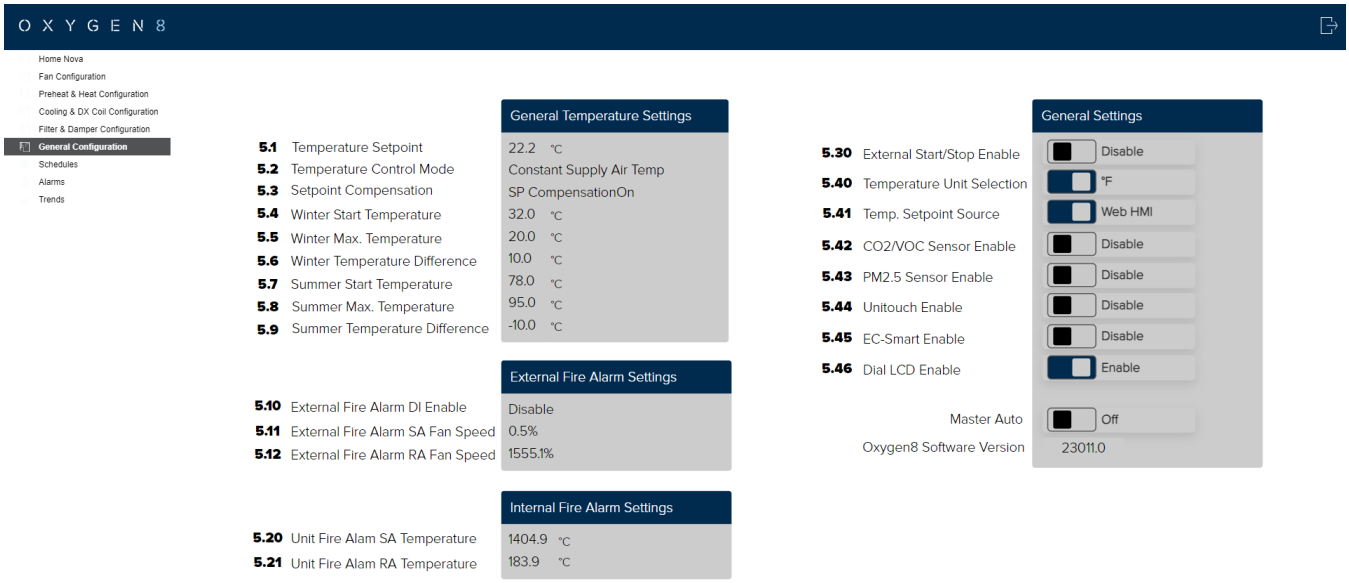
- Sets the core pressure to trigger frost protection, when the pressure exceeds this value, the bypass damper is open at 100% for the duration specified by 4.47 below. Parameter 4.40 must be set to “BPD with HR Core Pressure” option.

4.47 Pressure Timer

- Sets the time the bypass damper is kept open at 100% when frost protection is triggered due to high core pressure (see parameter 4.46). Parameter 4.40 must be set to “BPD with HR Core Pressure” option.

6.8.5 General Configuration

This screen allows configuration of general settings including fire alarms and temperature settings.



5.1 Temperature Setpoint

- Sets the required temperature setpoint.

5.2 Temperature Control Mode

- Selects the temperature control mode, depending on the location of the temperature sensor used for control: Constant Supply Air Temp, Constant Return Air Temp or Constant Room Air Temp.

5.3 Setpoint Compensation

- When Setpoint Compensation is ON, it offsets the temperature setpoint in relation to outdoor temperature in summer and/or winter.
- Settings 5.4 to 5.9 only apply when Setpoint Compensation is set to ON.

5.4 Winter Start Temperature

- Outdoor temperature for start of winter compensation.

5.5 Winter Max. Temperature

- Outdoor temperature for max. winter compensation.

5.6 Winter Temperature Difference

- Max. winter compensation of setpoint.

5.7 Summer Start Temperature

- Outdoor temperature for start of summer compensation.

5.8 Summer Max. Temperature

- Outdoor temperature for max. summer compensation.

5.9 Summer Temperature Difference

- Max. summer compensation of setpoint.

5.10 External Fire Alarm DI Enable

- Enables/Disables the option to monitor an external fire alarm input (NC contact on UI1). When active the fans will run at the speeds specified on 5.11 & 5.12 and keep the dampers open. If the speeds entered on 5.1 & 5.12 are zero, the ERV will stop the fans, close the dampers and heating and cooling systems are shut down.

5.11 External Fire Alarm SA Fan Speed

- Set the speed the SA Fan runs at when the External Fire alarm input is active.
- 5.10 has to be set to Enable.
- If set to zero (and 5.12 is zero as well) the ERV will stop the fans, the dampers are closed, and heating and cooling systems are shut down.

5.12 External Fire Alarm SA Fan Speed

- Set the speed the RA Fan runs at when the External Fire alarm input is active.
- 5.10 has to be set to Enable.
- If set to zero (and 5.11 is zero as well) the ERV will stop the fans, the dampers are closed.

5.20 Unit Fire Alarm SA Temperature

- Set the internal fire Supply Air Temperature. If the temperature exceeds this value, the ERV triggers an alarm, fans stop, dampers are closed, and heating and cooling systems are shut down.

5.21 Unit Fire Alarm RA Temperature

- Set the internal fire Return Air Temperature. If the temperature exceeds this value, the ERV triggers an alarm, fans stop, dampers are closed, and heating and cooling systems are shut down.

5.30 External Start/Stop Enable

- Enables/Disabled monitoring of the external start/stop digital input (UI2). When enabled and the input is active (NO contact) the unit will start. When the input is inactive, the unit will stop.
- If disabled, the digital input is ignored.

5.40 Temperature Unit Selection

- Set the desired temperature units: C° or F°.
- Note: Units can only be changed when the system is stopped.

5.41 Temperature Setpoint Source

- Select what device determines the Temperature Setpoint: the controller (through its web HMI or myDC Control App) or a Unitouch wall thermostat.

5.42 CO2/VOC Sensor Enable

- Determines if the CO2/VOC sensor (Siemens QPM2102/MO) is present or not.
- If the Fan Speed Control Mode (1.1) is set to Constant CO2 or VOC this sensor is mandatory
- If the Fans Speed Mode is another option, the sensor can still be used for the IAQ dashboard.

5.43 PM2.5 Sensor Enable

- Determines if the PM2.5 sensor (Siemens QSM2100) is present or not.
- This sensor is used for the IAQ dashboard.

5.44 Unitouch Enable

- Determines if a Unitouch (Thermostat/room sensor) is present or not.

5.45 EC-Smart Enable

- Determines if an EC-Smart (room sensor) is present or not.

5.46 Dial LCD Enable

- Determines if a Distech dial HMI is present or not.
- If enabled and the HMI is not connected the controller will issue a communication alarm.

5.47 Single/Dual Fan

- Determines if the unit has is single or dual fan.
- Note: Single fan is used only for specific models, contact Oxygen8 if you need that option.

Master Auto Button

- Setting this button to ON changes the mode of every element to AUTO (Fans, Dampers, Heater, Cooling, HGRH).
- Use it if during commissioning some elements were tested in HAND to ensure full auto operation.

Oxygen8 Software Version

- Indicates the software version installed.

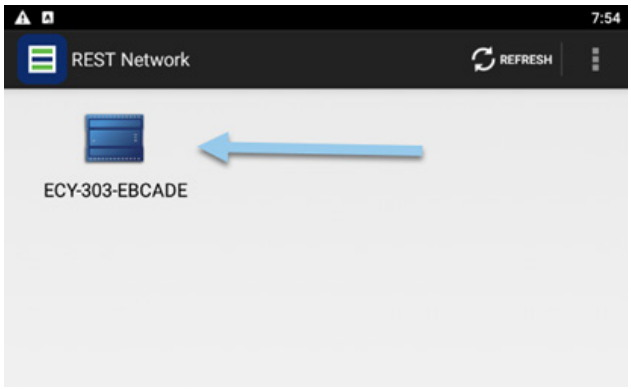
6.8.6 myDC Control App

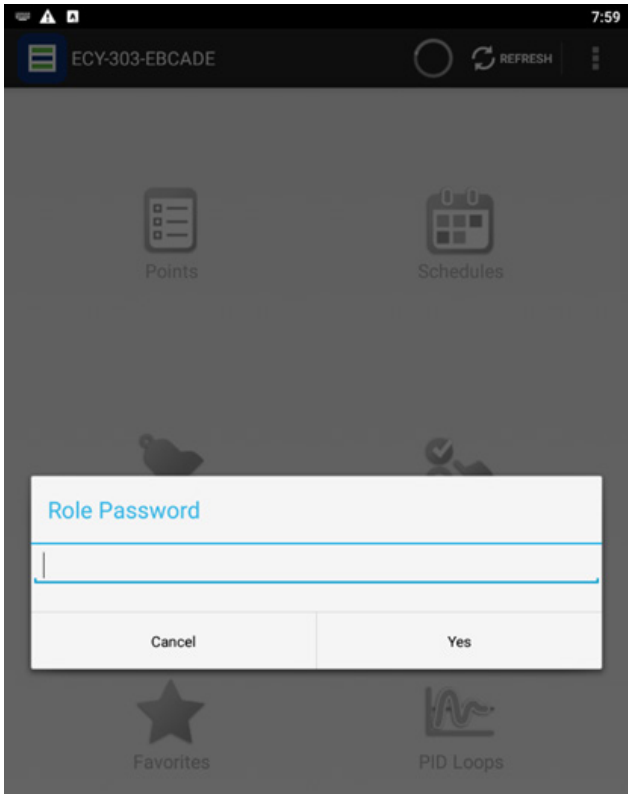
The myDC Control App from Distech allows control and monitoring of the unit from a mobile phone or tablet.

Connecting the Controller

Once connected to the controller via WiFi (see Controls Manual for instructions on how to connect), open the App and on the REST Network screen, click on the controller icon to open the main menu.

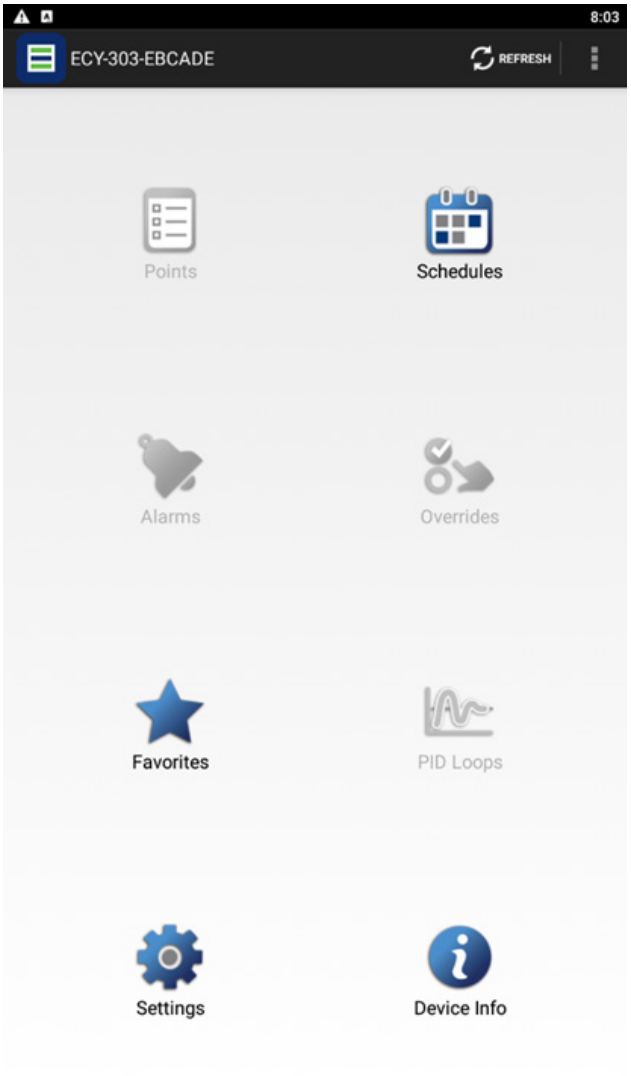
Enter the Role Password: 1111





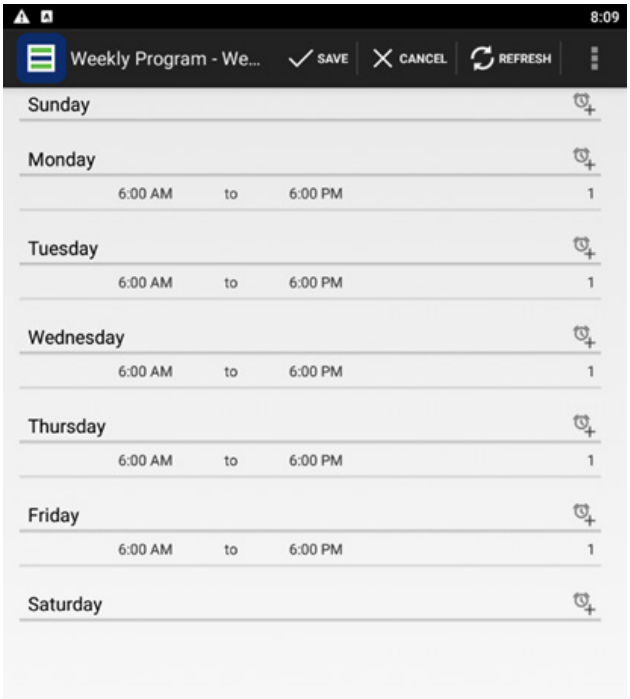
Main Menu

The main menu of the controller appears with the following options: Schedules, Favorites, Settings and Device Info.



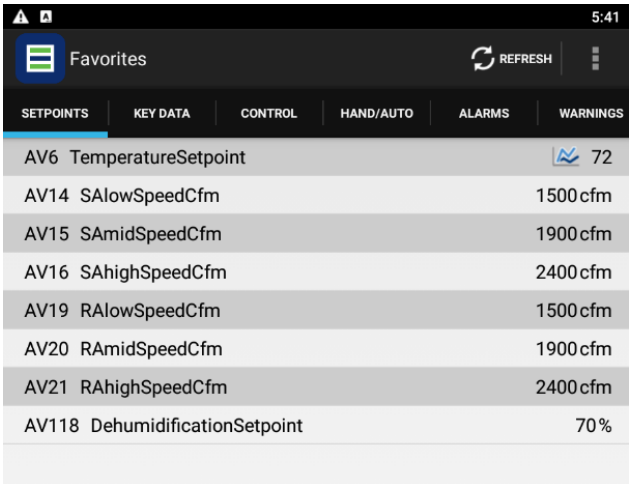
Schedules

Schedules are used to define different weekly events (weekly schedule) and special events also referred to as exceptions. The app allows review or modification of the schedules set on the web HMI. Refer to section 5.2.



Favorites

The favorites screen allows quick access to the most important settings and data. It has 6 sections: Setpoints, Key Data, Control, Hand/Auto, Alarms and Warnings.



Setpoints

TemperatureSetpoint

- Set the required temperature setpoint.

SAlowSpeedCfm

- Set the required setpoint for Supply flow at "Low" speed for Constant Volume control.

SAmidSpeedCfm

- Set the required setpoint for Supply flow at "Medium" speed for Constant Volume control.

SAhighSpeedCfm

- Set the required setpoint for Supply flow at "High" speed for Constant Volume control.

RAlowSpeedCfm

- Set the required setpoint for Return flow at "Low" speed for Constant Volume control.

RAmidSpeedCfm

- Set the required setpoint for Return flow at "Medium" speed for Constant Volume control.

RAhighSpeedCfm

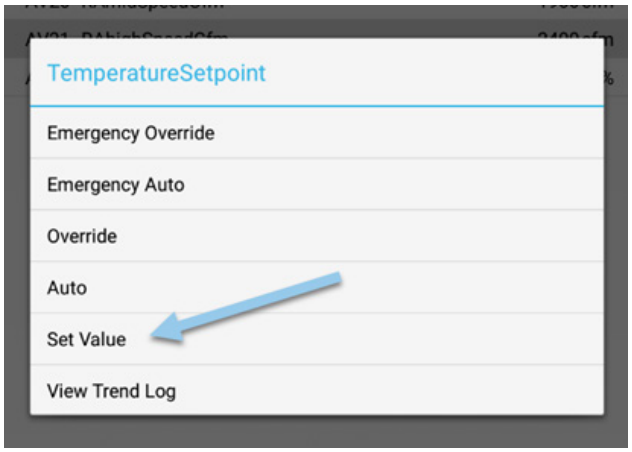
- Set the required setpoint for Return flow at "High" speed for Constant Volume control.

DehumidificationSetpoint

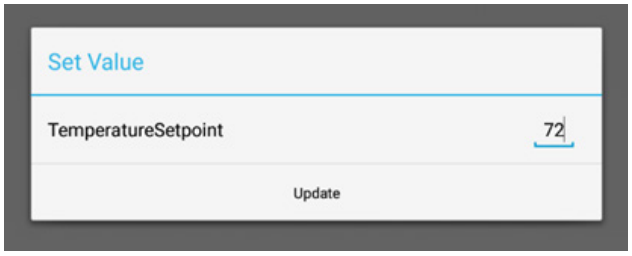
- Sets the desire Relative Humidity target. Above this value the dehumidification sequence starts. Note: Parameter 3.30 on the web HMI (or BV29 DehumidificationEnable on the Control section) must be set to Enable and the required cooling and post heat coils be configured

Modifying Setpoints

To modify a setpoint, select one and from the popup menu, select "Set Value".



Then enter the desired value, and select "Update".



Key Data

SAfanAirdlowCfmHMI

- Current Supply Air Fan flow in CFM.

RAfanAirflowCfmHMI

- Current Return Air Fan flow in CFM.

OAtemperature

- Current Outdoor Air temperature in the selected units (parameter 5.40).

SAtemperature

- Current Supply Air temperature in the selected units (parameter 5.40).

RAtemperature

- Current Return Air temperature in the selected units (parameter 5.40).

EAtemperature

- Current Exhaust Air temperature in the selected units (parameter 5.40).

OAfilterPressure

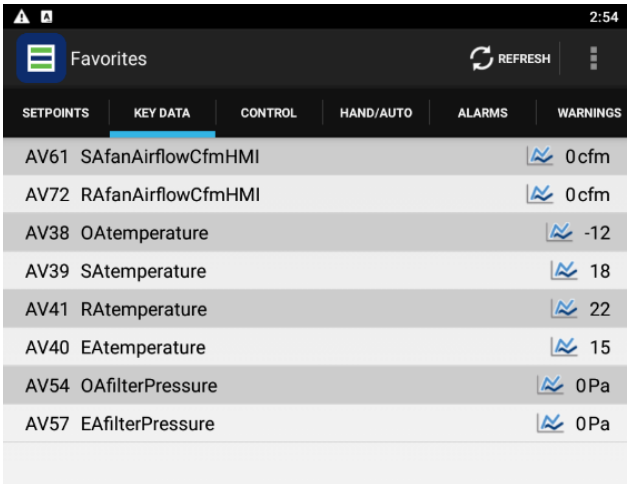
- Current Outdoor Air Filter pressure in Pascals.

EAtemperature

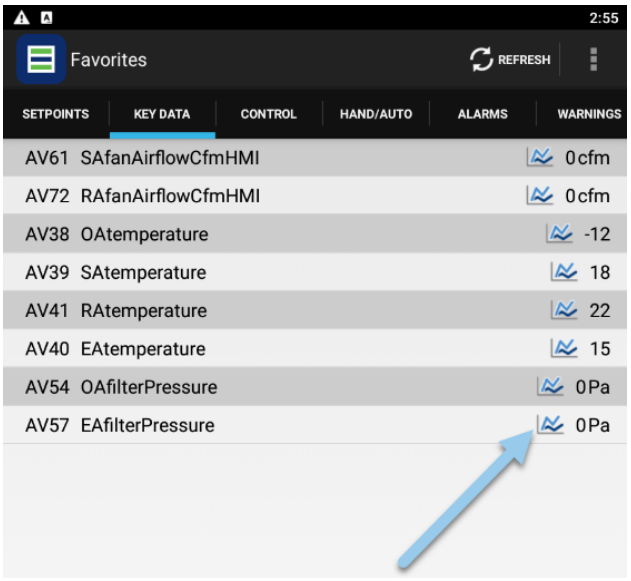
- Current Exhaust Air temperature in the selected units (parameter 5.40).

EAfilterPressure

- Current Exhaust Air Filter pressure in Pascals.



To view trends of each value, tap on the trend icon.



Control

OperationModeSelection

- Stop: The system is stopped
- Low speed: The system runs constantly according to the parameter settings for low speed.
- Mid speed: The system runs constantly according to the parameter settings for mid speed.
- High speed: The system runs constantly according to the parameter settings for high speed.
- Auto-weekly program: The system runs according to the weekly program settings.

TemperatureControlMode

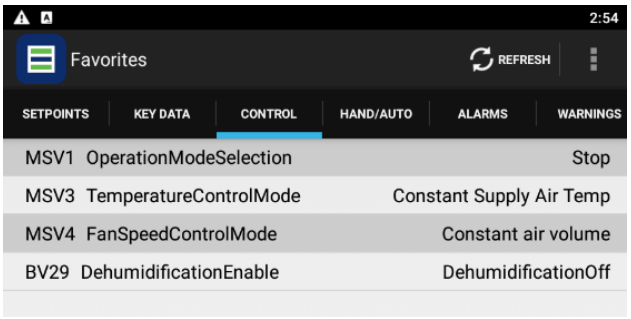
- Constant Supply Air Temp: The system maintains Supply Air temperature.
- Constant Return Air Temp: The system maintains Return Air temperature.
- Constant Room Air Temp: The system maintains room temperature.

FanSpeedControlMode

- Constant air volume: Supply and return fans are controlled in relation to flow/air volumes in the Supply and return ducts respectively. Note: see section 4.2.
- Constant pressure-RA slave: The Supply fan is controlled in relation to the pressure in the Supply duct while the return fan is controlled as a slave of the Supply fan with a freely selected offset. Note: see section 4.3.
- Constant CO2: If the CO2 level in the room rises, fan speed is increased, thus increasing air volume/air turnover towards the max. air volume setting. When the CO2 level falls fan speed is decreased. Note: see section 4.4.
- Constant VOC: If the VOC level in the room rises, fan speed is increased, thus increasing air volume/air turnover towards the max. air volume setting. When the VOC level falls fan speed is decreased. Note: see section 4.5.

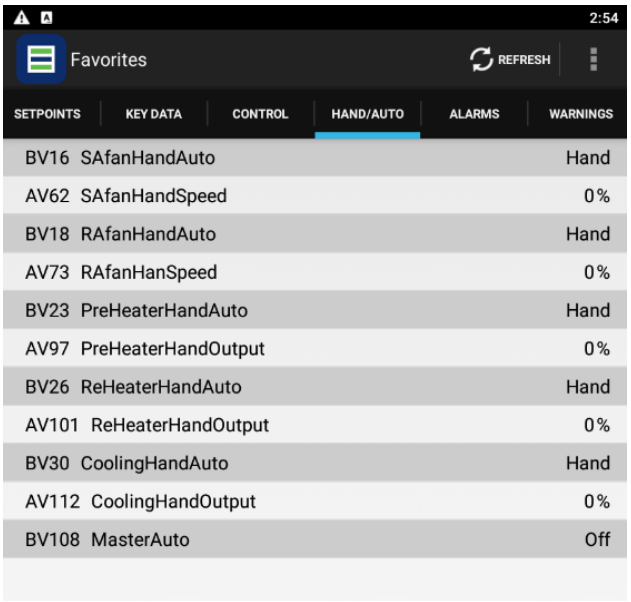
DehumidificationEnable

- DehumidificationOff: Dehumidification function is turned off. Note: see section 4.8
- DehumidificationOn: Dehumidification function is turned on. Note: see section 4.8



HAND/AUTO

This screen allows selecting the operation mode of the unit's elements. In Auto they follow the controller algorithms, in Hand they allow manual commands for commissioning and testing purposes.

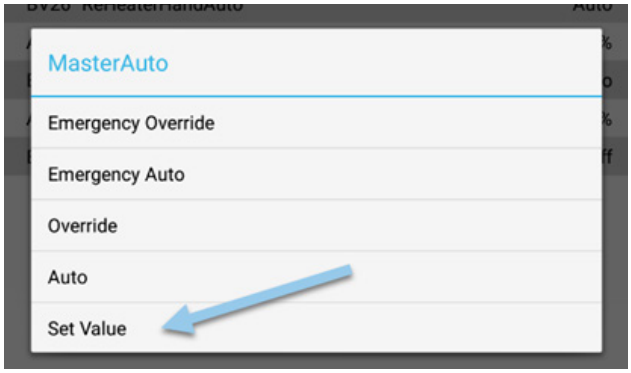


The elements are the following:

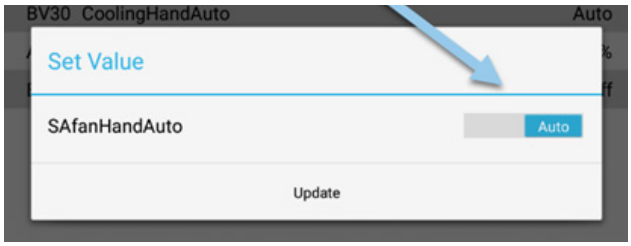
- SAfanHandAuto: Supply Air Fan mode
- SAfanHandSpeed: Supply Air Fan speed when in Hand Mode
- RAfanHandAuto: Return Air Fan mode
- RAfanHandSpeed: Return Air Fan speed when in Hand mode

- PreheaterHandAuto: Preheater mode
- PreHeaterHandOutput: Preheater output (in percentage) when in Hand mode
- ReHeaterHandAuto: Post heater mode
- ReHeaterHandOutput: Post heater output (in percentage) when in Hand mode
- CoolingHandAuto: Cooling coil or DX coil mode
- CoolingHandOutput: Cooling coil or DX coil output (in percentage) when in Hand mode
- MasterAuto: Toggle On and Off to set all elements in Auto

To change the mode of an element, select it and from the popup menu, select "Set Value".



Then select "Auto" or "Hand" and select "Update".



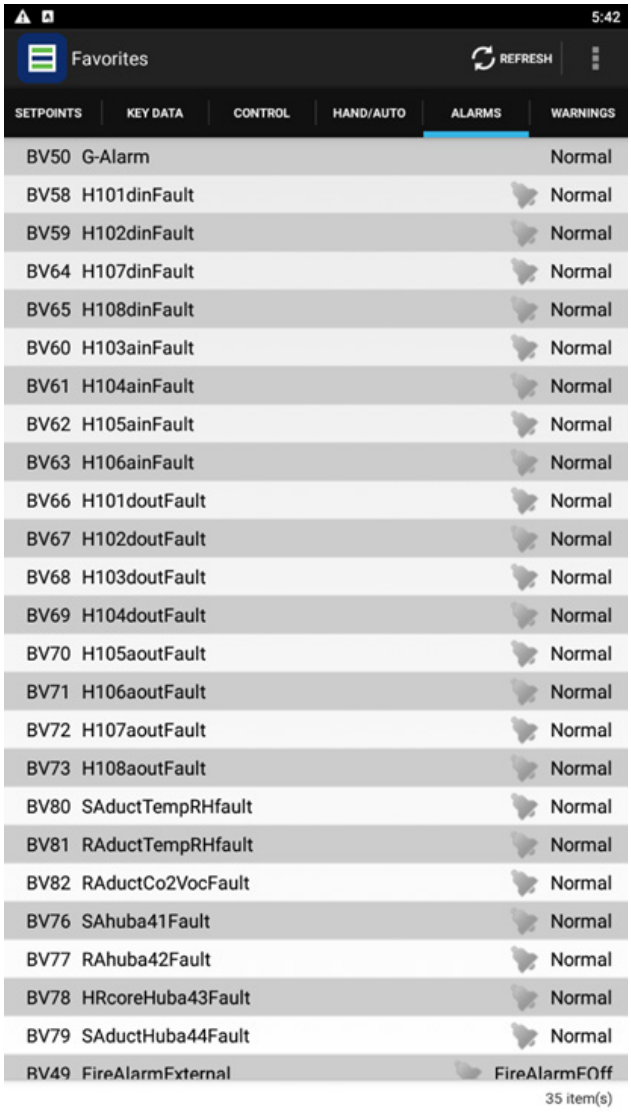
Alarms

This screen shows the list of the most critical alarms and their state.

- G-Alarm: General Alarm. This shows "Alarm" when there is any alarm in the system or "Normal" when there are no alarms.
- H101dinFault: Universal Input 1 fault (assigned as Digital Input)
- H102dinFault: Universal Input 2 fault (assigned as Digital Input)
- H107dinFault: Universal Input 7 fault (assigned as Digital Input)
- H108dinFault: Universal Input 8 fault (assigned as Digital Input)
- H103ainFault: Universal Input 3 fault (assigned as Analog Input)
- H104ainFault: Universal Input 4 fault (assigned as Analog Input)
- H105ainFault: Universal Input 5 fault (assigned as Analog Input)
- H106ainFault: Universal Input 6 fault (assigned as Analog Input)
- H101doutFault: Digital Output 1 fault
- H102doutFault: Digital Output 2 fault
- H103doutFault: Digital Output 3 fault
- H104doutFault: Digital Output 5 fault
- H106aoutFault: Analog Output 6 fault
- H107aoutFault: Analog Output 7 fault
- H108aoutFault: Analog Output 8 fault
- SAductTempRHfault: Supply Air Temperature/RH sensor fault
- RAductTempRHfault: Return Air Temperatire/RH sensor fault
- RAductCo2VocFault: Return Air CO2/VOC sensor fault
- SAhuba41Fault: Supply Air Huba Sensor fault
- SAhuba42Fault: Return Air Huba Sensor fault
- FireAlarmExternal: External Fire alarm
- FireAlarmIndise: Internal Fire alarm
- WaterPreHeaterReturnFrostAlarm: Hydronic preheater frost protection alarm
- WaterReHeater1ReturnFrostAlarm: Hydronic post heater frost protection alarm
- SAfan1Fault: Supply Air Fan fault

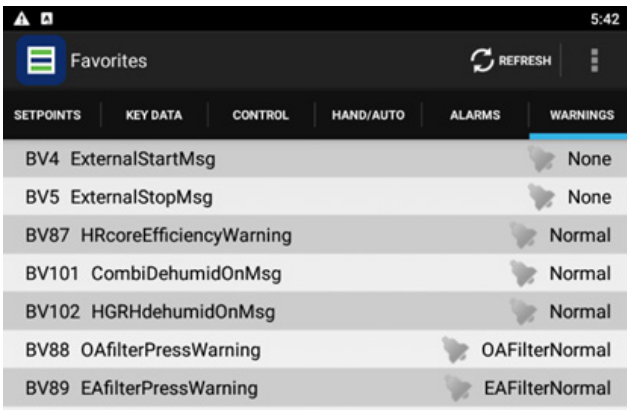
- SAfan2Fault: Supply Air Fan 2 fault (for systems with 4 fans)
- RAfan1Fault: Return Air Fan fault
- RAfan2Fault: Return Air Fan 2 fault (for systems with 4 fans)
- HRcoreDefrostBPDEAalarmFault: Heat Recovery core frost protection alarm
- LowSAtemperatureAlarm: Low Supply Air temperature alarm
- HighSAPressureAlarm: High Supply Air temperature alarm

Warnings



This screen shows the list of the most critical warnings and their state.

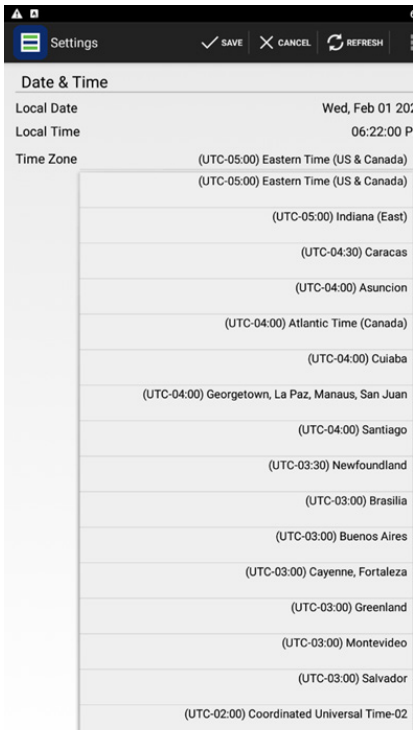
- ExternalStartMsg: External Start signal status
- ExternalStopMsg: External Stop signal status
- HRcoreEfficiencyWarning: Heat Recovery core efficiency lower than expected warning
- CombiDehumidOnMsg: DX Coil dehumidification status
- HGRHDehumidOnMsg: HGRH dehumidification status
- OAfilterPressWarning: Outdoor Air filter high pressure warning
- EAfilterPressWarning: Exhaust Air filter high pressure warning
- HighSAtemperatureWarning: Supply Air high temperature warning
- LowRAtemperatureWarning: Return Air low temperature warning
- HighCO2Warning: High CO2 level warning
- HighIAQWarning: High VOC level warning
- LowSAflowWarning: Supply Air fan low flow warning
- LowRAflowWarning: Return Air fan low flow warning
- HighSAflowWarning: Supply Air fan high flow warning
- HighRAflowWarning: Return Air fan high flow warning
- LowSApressureWarning: Supply Air fan low pressure warning
- HGRH1systemFault: HGRH 1 Fault
- HGRH2systemFault: HGRH 2 Fault
- HGRH3systemFault: HGRH 3 Fault

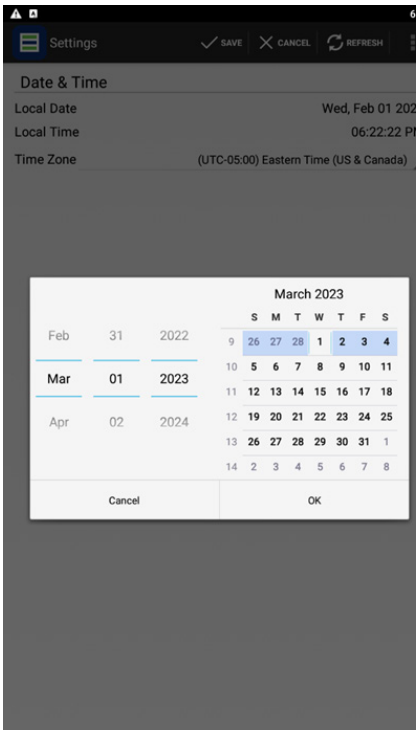


Settings

This screen allows setup of the date, time and time zone.

Touch each section, and use the popup to set the desired date, time and zone.







Device Info

Contains information about the controller. The most relevant information is:

- Version: This is the firmware installed on the controller. Consult with Oxygen8 for the recommended firmware.
- IP Address: IP address of the Ethernet adapter for wired communication with the controller.
- Wi-Fi IP Address: Wi-Fi IP address
- Device ID: BACnet Device ID



7.0 Alarm List

Alarm list, SW version: 23011.0

Alarm number	Alarm type	Alarm-delay sec.	Alarm Limit	Auto reset	Unit stop	Alarm/Warning Text	Description	Alarm number
1	A	10	N/A			Inside fire alarm	Internal fire alarm	Alarm 1
2	A	10	N/A		X	External fire alarm	External fire alarm	Alarm 2
3	A	600	N/A		X	HR core defrost alarm	Core defrost alarm-bypass damper with EA temperature	Alarm 3
4	W		N/A	X		HR core defrost - SA fan stop	Core defrost active - EA temperature	Warning 1
5	W		N/A	X		HR core defrost - bypass damper open	Core defrost active-core pressure	Warning 2
6	A	10	N/A		X	Water PreHeater Return water frost alarm	Hydronic preheater return water frost alarm	Alarm 4
7	A	10	N/A		X	Water ReHeater Return water frost alarm	Hydronic post heater return water frost alarm	Alarm 5
8	A	600	SP+10%		X	High supply air pressure alarm	Over 10% of pressure setpoint	Alarm 6
9	A	600	SP-5°C		X	Low supply air temperature alarm	Post heater exist: Less 5°Cof temperature setpoint Post heater no exist: Less 10°C of temperature setpoint	Alarm 7
10	A	10	N/A	X	X	Hardware Input 101 Alarm	Universal input 1 fault	Alarm 8
11	A	10	N/A	X	X	Hardware Input 102 Alarm	Universal input 2 fault	Alarm 9
12	A	10	N/A	X	X	Hardware Input 103 Alarm	Universal input 3 fault	Alarm 10
13	A	10	N/A	X	X	Harware Input 104 Alarm	Universal input 4 fault	Alarm 11
14	A	10	N/A	X	X	Hardware Input 105 Alarm	Universal input 5 fault	Alarm 12
15	A	10	N/A	X	X	Hardware Input 106 Alarm	Universal input 6 fault	Alarm 13
16	A	10	N/A	X	X	Hardware Input 107 Alarm	Universal input 7 fault	Alarm 14
17	A	10	N/A	X	X	Hardware Input 108 Alarm	Universal input 8 fault	Alarm 15
18	A	10	N/A	X	X	Hardware Output 101 Alarm	Digital Output 1 fault	Alarm 16
19	A	10	N/A	X	X	Hardware Output 102 Alarm	Digital Output 2 fault	Alarm 17
20	A	10	N/A	X	X	Hardware Output 103 Alarm	Digital Output 3 fault	Alarm 18
21	A	10	N/A	X	X	Hardware Ouput 104 Alarm	Digital Output 4 fault	Alarm 19
22	A	10	N/A	X	X	Hardware Output 105 Alarm	Universal Output 5 fault	Alarm 20

23	A	10	N/A	X	X	Hardware Output 106 Alarm	Universal Output 6 fault	Alarm 21
24	A	10	N/A	X	X	Hardware Output 107 Alarm	Universal Output 7 fault	Alarm 22
25	A	10	N/A	X	X	Hardware Output 108 Alarm	Universal Output 8 fault	Alarm 23
26	A	30	N/A	X	X	SA fan 1 Alarm	Supply air fan 1 Modbus communication fault	Alarm 24
27	A	30	N/A	X	X	RA fan 1 Alarm	Return air fan 1 Modbus communication fault	Alarm 25
28	A	30	N/A	X	X	SA fan 2 Alarm	Supply air fan 2 Modbus communication fault	Alarm 26
29	A	30	N/A	X	X	RA fan 2 Alarm	Return air fan 2 Modbus communication fault	Alarm 27
30	A	30	N/A	X	X	SA fan 3 Alarm	Supply air fan 3 Modbus communication fault	Alarm 28
31	A	30	N/A	X	X	RA fan 3 Alarm	Return air fan 3 Modbus communication fault	Alarm 29
32	A	10	N/A	X	X	SA Huba sensor Alarm	SA fan pressure sensor reliability or Modbus communication fault	Alarm 30
33	A	10	N/A	X	X	RA Huba sensor Alarm	RA fan pressure sensor reliability or Modbus communication fault	Alarm 31
34	A	100	N/A	X	X	HR Huba sensor Alarm	HR core pressure sensor reliability or Modbus communication fault	Alarm 32
35	A	10	N/A	X	X	SA duct Huba sensor Alarm	SAduct pressure sensor reliability or Modbus communication Fault	Alarm 33
36	A	10	N/A	X	X	SA duct Temp/RH Reliability Alarm	SA duct temperature/ RH sensor reliability or Modbus communication fault	Alarm 34
37	A	10	N/A	X	X	RA duct Temp/ RH Reliability Alarm	RA duct temperature / RH sensor reliability or Modbus communication fault	Alarm 35
38	A	10	N/A	X	X	RA duct CO2/ VOC Reliability Alarm	RA duct CO2/ VOC sensor reliability or Modbus communication fault	Alarm 36
39	W	30	N/A	X		HGRH 1 Fault	Daikin D-controller 1 fault	Warning 3
40	w	30	N/A	X		HGRH 2 Fault	Daikin D-controller 2 fault	Warning 4
41	W	30	N/A	X		HGRH 3 Fault	Daikin D-controller 3 fault	Warning 5
42	W	30	N/A	X		HGRH 4 Fault	Daikin C-controller 4 fault	Warning 6
43	W	60	N/A	X		HMI communication warning	Dial LCD communication fault	Warning 7
44	W	30	N/A	X		EC Smart communication warning	EC Smart room sensor communication fault	Warning 8
45	W	30	N/A	X		Unitouch communication warning	Unitouch room sensor communication fault	Warning 9
46	W	300	N/A	X		Low efficiency level warning	Core sensible efficiency lower than setpoint	Warning 10

47	W	10	N/A	X		After cooling mode	Electric post heater remnant heat flushing before unit stop	Warning 11
48	W	10	N/A	X		Dehumidification mode	DX coil/ HGRH dehumidification active	Warning 12
49	W	600	N/A	X		Outdoor air filter pressure warning	OA filter pressure higher than setpoint	Warning 13
50	W	600	N/A	X		Exhaust air filter pressure warning	EA filter pressure higher than setpoint	Warning 14
51	W	600	SP+ 5°C	X		High supply air temperature warning	Supply air temperature higher than SP+ 5°C	Warning 15
52	W	1200	SP-5°C	X		Low return air temperature warning	Return air temperature lower than SP-5°C	Warning 16
53	W	1200	SP+5°C	X		High return air temperature warning	Return air temperature higher than SP+ 5°C	Warning 17
54	W	600	SP+10%	X		High return air CO2 warning	Return air CO2 level high than SP+10%	Warning 18
55	W	600	SP+10%	X		High return air VOC warning	Return air VOC level higher than SP+10%	Warning 19
56	W	600	SP-10%	X		Low supply airflow warning	Supply airflow lower than SP-10%	Warning 20
57	W	600	SP-10%	X		Low return airflow warning	Return airflow lower than SP-10%	Warning 21
58	W	600	SP+10%	X		High supply airflow warning	Supply airflow higher than SP+10%	Warning 22
59	W	600	SP-10%	X		Low supply air pressure warning	Supply air pressure lower than SP-10%	Warning 23