

Daikin Integration Design Guidelines

VRV Integration

W-Controller

DX Heating and Cooling
Supply Air Temperature Control

Requires minimum **34 mbh** cooling capacity at summer design conditions

Rough minimum airflow requirements:
(EAT/LAT dependent*)

H/ERV: Minimum 700 – 1,200 cfm
(due to pre-cooling)

Terra DOAS: Minimum 700 – 1,000 cfm

1:1 ventilation unit to Daikin HP ODU

D-Controller

DX Heating, Cooling, and Hot Gas Reheat
Supply Air Temperature and Moisture Control

Requires minimum **50.4 mbh** cooling capacity at summer design conditions

Rough minimum airflow requirements:
(EAT/LAT dependent)

H/ERV: Minimum 1,500 – 1,800 cfm
(due to pre-cooling)

Terra DOAS: Minimum 1,000 – 1,400 cfm

Up to 10:1 ventilation unit to Daikin HP ODU

Note: You can combine ventilation unit cooling capacities to meet the 50.4 mbh requirement when connected to the same ODU.

If you are combining units, the smallest unit in the system requires minimum **34 mbh** cooling capacity at summer design conditions.

*Based off standard design conditions, airflows may vary depending on project.

Rev: 10/15/2024

Supplemental Heat for Daikin ODU Defrost Mode

ODU defrost mode duration:
Approximately 8 - 10 minutes

Can you shut off the ventilation air during defrost? If not...

Heat Pump (W-Controller)

Switches DX coil in the ventilation unit into cooling (cools the air 8–10F)

ERV

For example; 50F air off the ERV heat exchanger means 38 - 42F supply air temperature

Terra DOAS

Supply air temperature = OA minus 8–10F

Heat Recovery (D-Controller)

Single compressor heat recovery
8–10F cooling on indoor DX coil

Multi-Module Heat Recovery:
Reduced or no heat but also no cooling

ERV with Multi-Module Heat Recovery
For example; 50F off heat exchanger equals 50F SAT

Terra DOAS with Multi-Module Heat Recovery
Supply air temperature = OA

Supply Air Temp Range

Typically 52 – 55F

Can go as low as 48F in cooling and as high as 110F in heating

Using a low supply air temperature helps reach minimum summer design cooling capacity requirements (34 mbh W-Controller, 53 mbh D-Controller) for low airflow units.

VAV Operation

VAV operation is always possible since Oxygen8 commercial units all have ECM fans as standard.

Daikin VRV Airflow Rule

No more than 30% turndown in airflow design from cfm

So: If the design airflow is 1,000 cfm, the lowest airflow allowed during VRV operation is 700 cfm

Design airflow: 2,000 cfm, lowest allowed airflow: 1,400 cfm

Design airflow: 4,000 cfm, lowest allowed airflow: 2,800 cfm

Winter Operation DX Coil Minimum Entering Air Temperature

W-Controller with Daikin Heat Pump System:
Minimum EAT = 23F

D-Controller with Daikin Heat Recovery System and HGRH: Minimum EAT = 17F

If the winter design outdoor air temperature is below the above minimum values, depending upon system type, the selection software will automatically add an SCR preheater to Terra units. The Distech DDC controller uses the OA temperature sensor downstream of the preheater, and a preheat setpoint depending on system type (17F or 23F), to ensure air entering the DX coil is not below the minimum allowed by Daikin.

For more information on Daikin Integration Guidelines please contact your Regional Sales Manager or the Oxygen8 Applications Team.

oxygen8.ca | @oxygen8canada