OXYGEN 8

TERRA V

Installation, Operation, and Maintenance

135006-002

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1.0 GENERAL INFORMATION

This manual includes important instructions for safe connection of the air handling unit. Before connecting the unit, please read carefully and follow the instructions.

The manufacturer reserves the right to make changes, including changes in the technical documentation, without previous 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.

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

Warning: This sign indicates a situation that may result in equipment or property damage accidents.

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

2.0 CONFIGURATION CHART

2.1 Mechanical Drawing Nomenclature

TV_B_032_I_R_1_H22_11_XSXS_V_OA_R_E_3_03_SA_U_XXX_XX_E_3_X_A

Module	Linestring Item		Example		*
Unit	1	PRODUCT	TV	TERRA VERTICAL	
	2	MOUNTING	B	BASE MOUNTED	
	3	MODEL	006	600 CFM max.	●
	4	LOCATION	I	INDOOR	
	5	HANDING	L	LEFT (or RIGHT)	●
	6	FAN	1	[ONE POSITION OPTION]	
	7	HEAT EXCHANGER AND EEV CONTROLLER QTY	D01	DX 1 CTRL	●
	8	[BLANK]	11	[NO OPTION]	●
	9	DUCT	XSXS	HORIZONTAL INLET, VERTICAL DIS-CHARGE	
	10	VOLTAGE	V	VARIES	
COUPLED OA ACC	11	OA	OA	OUTSIDE AIR	
	12	ACC. HANDING	L	LEFT (or RIGHT)	●
	13	PREHEAT ACC.	E	ELECTRIC	
	14	ACC. CASING	2	E2	●
	15	MIXING BOX, OPENINGS	03	SIDE/TOP	
COUPLED SA ACC	16	SA	SA	SUPPLY AIR	
	17	ACC. HANDING	U	UP	
	18	[BLANK]	XXX	NONE	
	19	[BLANK]	XX	[NO OPTION]	
	20	HEATING ACC.	E	ELECTRIC	
	21	HEATING ACC. CASING	2	E2	●
	22	[BLANK]	X	[NO OPTION]	

*Variable options

Model	006	009	012	015	018	024	032	040	048	060	072	084	100
Max. CFM	600	900	1200	1500	1800	2400	3200	4000	4800	6000	7200	8400	10000

15 14 & 21

Mixing Box Openings		Heater Casing	
XX	NONE	X	NONE
03	SIDE/TOP	2	E2
		3	E3
		4	E4

The following table outlines the mechanical drawing nomenclature explanation for line Item 7 in Table 1 and the availability of options for the various unit model sizes.

Heat Exchanger and EEV Controller Qty.				Model (Option Availability as Standard)												
Code	Model Range	Controller Qty														
		DOAS	DX	006	009	012	015	018	024	032	040	048	060	072	084	100
D01	006-100	0	1	●	●	●	●	●	●	●	●	●	●	●	●	●
D02	024-100	0	2						●	●	●	●	●	●	●	●
D03	040-100	0	3								●	●	●	●	●	●
D04	060-100	0	4										●	●	●	●
H10	006-100	1	0	●	●	●	●	●	●	●	●	●	●	●	●	●
H11	012-100	1	1			●	●	●	●	●	●	●	●	●	●	●
H12	024-100	1	2						●	●	●	●	●	●	●	●
H13	032-100	1	3							●	●	●	●	●	●	●
H21	024-100	2	1						●	●	●	●	●	●	●	●
H22	032-100	2	2							●	●	●	●	●	●	●
CCW	006-100	CW		●	●	●	●	●	●	●	●	●	●	●	●	●
CHW	006-100	CW & HW		●	●	●	●	●	●	●	●	●	●	●	●	●

*Note: CW = Chilled Water Coil, HW = Hot Water Coil

2.2 Decoupled Outside Air Accessory Nomenclature

ACC_TV_B_060_I_L_OA_E_2_03

Accessory	ACC - Accessory
Product	TV - Terra Vertical
Accessory Mounting	B - Base Mounted
Accessory Model Size	006, 009, 012, 015, 018, 024, 032, 040, 048, 060, 072, 084, 100
Accessory Location	I - Indoor
Accessory Handing	L - Left-hand
	R - Right-hand
Accessory Airstream	OA - Outdoor Air
Accessory Preheat Type	X - N/A
	E - Electric Coil
Accessory Preheat Casing	X - N/A
	2 - (Size 1), 3 (Size 2), 4 (Size 3)
Accessory Mixing Box/Coupling	X - N/A
	03 - End/Top

3.0 SYSTEM OVERVIEW

Standard units come complete with EC fan(s), integrated conditioning coils, 2” filters, fully integrated controls and casing as outlined in the spec below.

Standard Features

General Specifications Standard Features Certification
Certified to UL 60335-2-40

Casing
Doubled walled, 2” insulation for protection against sweating; 18 gauge galvanized steel inner panel with 24 gauge pre-painted white outer panel

Electrical and Controls
Integrated Distech programmable controller with BACnet compatibility
Single Point Power (SPP) connection to Daikin R32 integration kits
Single circuit power from electric heaters to motor control circuit, connected in the field.

Filters
2” pleated OA MERV 13, RA MERV 8

Blowers and Motors

High-efficiency variable speed EC direct drive motor Backward inclined fan

Warranty

Unit - 2 years from shipping

Mounting
Base mounted only.
Floor mounting available per special request to Applications Team.

Options

Integrated Heating and Cooling
DX Coils (using EEV kit), HGRH Coils, Hydronic coils (Chilled water and Hot water reheat options) and Electric pre-heat, re-heat, or DX backup heat available

Shut Off Damper
Outdoor air dampers (unit or duct mounted)

Frost Control
Electric Preheat
Backup electric heat sequence for refrigerant defrost available

Warranty
5-year add-on available

3.1 Dimensions

All dimensions in this section are in inches

3.2 Base Unit Dimensions

“Unit” refers to single-module base unit and does not include any coupled or decoupled preheat, post-heat, or mixing box accessories.

Terra Vertical Models	Unit Length*	Unit Width	Unit Height	Duct Inlet L x H		Duct Oulet L x H		Coil Fin Length	Coil Fin Height	Filter Box Size L x H
006	32	30	51	18	14	18	14	15	12	20x16
009					18		18		18	20x20
012					23		23		24	20x25
015	33	44	62	30	14	30	14	29	15	32x16
018					18		18		18	32x20
024					23		23		24	32x25
032	36	48	78	34	30	40	28	33	30	36x32
040					38				36	36x40
048					43				42	36x45
060		69		55	34	61		54	33	57x36
072					38				39	57x40
084					48				45	57x50
100		77	80	63		69		62	48	65x50

*Unit Length does not include 3” filter rack.

3.3 Damper Dimensions

Dimensions or dampers represent inside of frame dimensions.

Terra Vertical Models	Shutoff Damper W x H		Mixing Box Damper W x H	
006	15.25	11.25	18	8
009	15.25	15.25		
012	15.25	20.25		
015	27.25	11.25	30	
018	27.25	15.25		
024	27.25	20.25		10
032	31.25	27.25	34	11
040	31.25	35.25		14
048	31.25	40.25		17
060	52.25	31.25	54	13
072	52.25	35.25		16
084	52.25	45.25		19
100	60.25	45.25	63	

3.4 Filter Sizes

Standard Outside Air filters are 2” pleated MERV13

Terra Vertical Models	Filter Sizes
006	20x16
009	20x20
012	20x25
015	2 x (16x16)
018	2 x (16x20)
024	2 x (16x25)
032	2 x (16 x16), 2 x (20 x16)
040	2 x (16 x20), 2 x (20 x20)
048	1 x (16 x20), 1x (20 x20), 1 x (16 x25), 1x (20 x25)
060	1 x (25 x16), 2x (16 x16), 1 x (25 x20), 2x (16 x20)
072	2 x (25 x20), 4 x (16 x20)
084	2 x (25 x25), 4 x (16 x25)
100	4 x (20 x25), 2 x (25 x25)

3.5 Electrical Ratings

The following electrical information represents the max. MCA and MOP values based on connected loads in the control power circuit that exceed 1A and may include valves and R32 EEV kit controllers. Please refer to the project-specific information and nameplate for the most accurate electrical data.

Model	Voltage [V]	Phase	Fan Qty.	Fan FLA	MCA [A]	MOP [A]	SCCR [kA]
006	208	1	1	2.5	3.13	15	5
009	208	1	1	3.9	4.88	15	5
012	208	1	1	3.9	4.88	15	5
015	208	1	2	3.9	8.78	15	5
	208	3	1	6	7.50	15	5
	460	3	1	4	5.00	15	5
018	208	1	2	3.9	8.78	15	5
	208	3	1	6	7.50	15	5
	460	3	1	4	5.00	15	5
024	208	1	2	3.9	10.22	15	5
	208	3	1	6	9.17	15	5
	460	3	1	4	5.00	15	5
032	208	3	1	8.6	12.42	15	5
	460	3	1	5.8	7.25	15	5
040	208	3	1	9	12.92	20	5
	460	3	1	5.4	6.75	15	5
048	208	3	2	6	15.17	20	5
	460	3	2	4	9.00	15	5
060	208	3	2	8.6	21.02	25	5
	460	3	2	5.8	13.05	15	5
072	208	3	2	9	21.92	30	5
	460	3	2	5.4	12.15	15	5
084	208	3	2	13.3	31.59	40	5
	460	3	2	8.4	18.90	25	5
100	208	3	3	9	30.92	35	5
	460	3	3	5.4	17.55	20	5

3.6 DDC Data

Controller	Voltage	VA	FLA
ECY-400	24	100	4.17

Ensure the Distech controller is protected with appropriate fusing on the primary and secondary side of the toroidal transformer that provides 24V power to the Distech controller. Regardless of damper, hydronic valve, and sensor loads, the main control circuit transformer is 150VA.

3.7 R32 EEV Controllers

Controller Type	Daikin Part Number	Voltage	VA	FLA	Fuse
DOAS	EKEADAAA3U	24	91	3.79	7
DX	EKEAXAAA3U	24	53	2.21	4

Daikin EEV controllers are to be connected in a SELV rated circuit with a dedicated transformer. This connection is typically single-point power and made in the factory for Terra units. For any field wiring of Daikin R32 integration kit controllers, ensure that protections are in place to maintain the SELV rating of the circuit. Depending on the quantity of EEV controllers, the dedicated 24V transformer can be either 60VA, 150VA, or 300VA. Be sure to check the nameplate for the correct information.

3.8 Hydronic Valves

Model Number	Voltage	VA	FLA
SAS61.33U	24	7.2	0.30
SKD62U	24	14	0.58

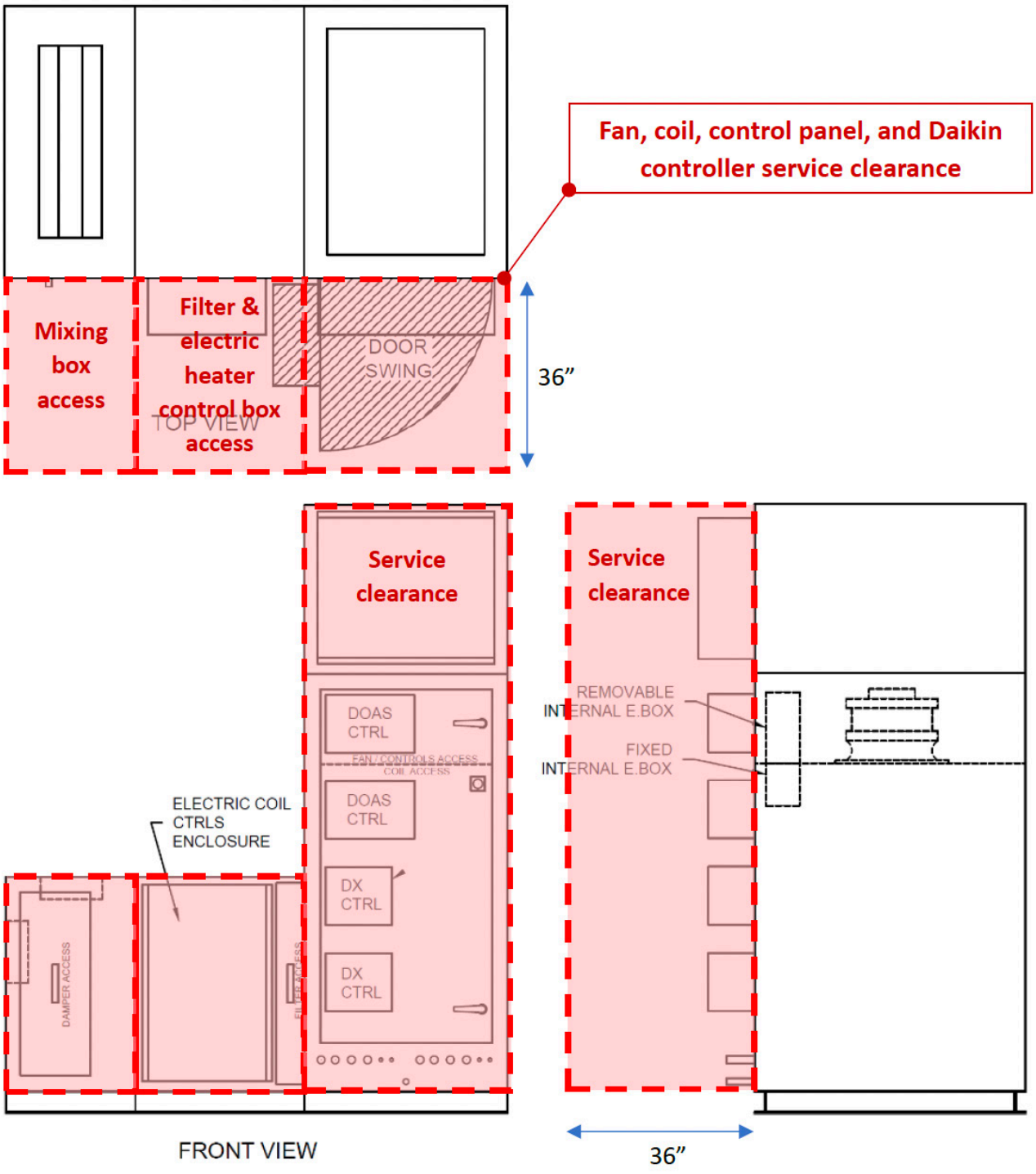
For Terra units with hydronic coils instead of DX, power to the hydronic valves is provided by the unit. Hydronic valves are shipped loose and installed and connected in the field via wiring quick connects for power and communications.

3.9 Weights

Refer to mechanical drawing of project-specific configuration for weight(s) of module(s).

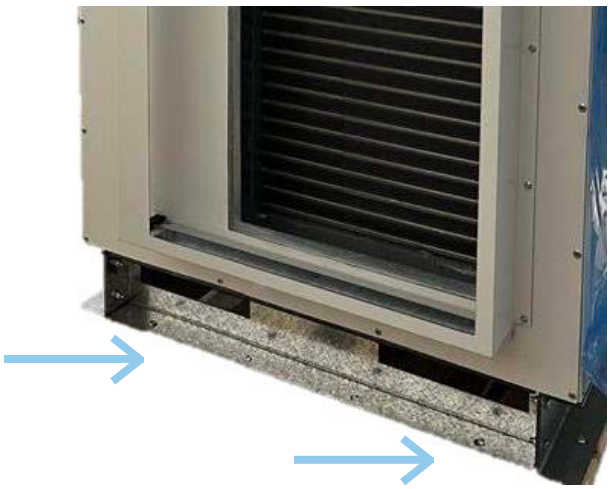
3.10 Clearances

Please follow recommended clearances outlined below for the air handler and coupled accessories. Similar clearance requirements must be applied to decoupled accessories.



3.11 Handing

Terra V units are shipped on a pallet and shall be handled using a pump truck or forklift. When removing from the packaging and placing in final position, cutouts in the baseframe can be utilized to allow forklift access. Ensure the forklift is sufficiently supporting the base of the unit prior to lifting.



Accessory modules are shipped as a separate piece from the base unit. In some cases, a mixing box may ship coupled to the electric preheater or base unit and shall be lifted together only if a forklift can support the full length of both modules together.

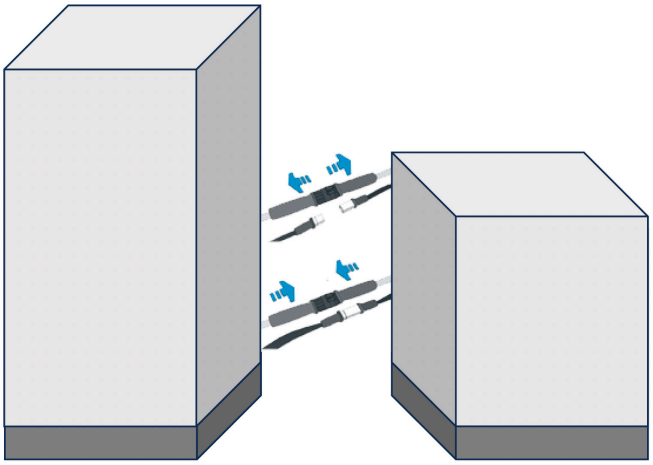
Inspect the gasketing on the faces of the modules to be joined in the field; there should be a layer on one of the two adjoining faces.

Note: If any gasket is damaged, please contact Oxygen8 for replacement. Repair any damage prior to assembly.

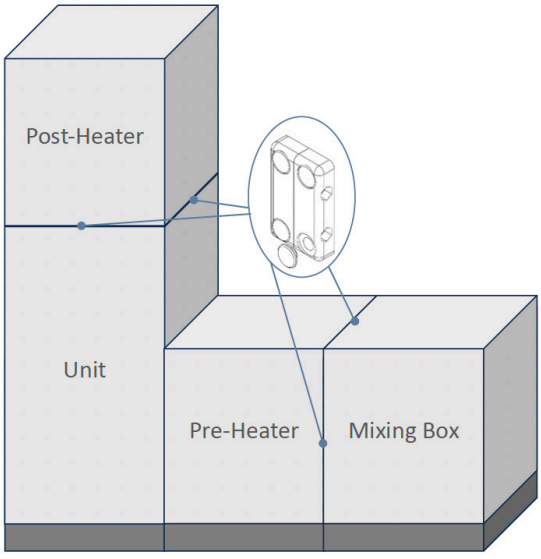
3.12 Wiring Connections

Wire connections and bolted cabinet connections must be completed one module at a time.

Do not pull wiring taught when connecting quick connects – if this cannot be achieved, move the modules closer together and try again. Ensure all wiring connections are fully secured.



For unit-accessory configurations with either a post-heater and/or a mixing box + pre-heater combination, rear external connecting brackets are required to lock the split connections in place after initial joining has been completed. These external connectors shall not be used to close a gap between modules.



REAR VIEW

3.13 Electrical Connections

Air handlers may include pre-cut 1/8” pilot holes in the panels adjacent to the electrical enclosure access door that may be used to field modify units to allow cable penetrations to access cable glands of the electrical enclosure internal to the unit. If pilot holes are unavailable or insufficient, ensure any holes made clear the Daikin kit door swing path.

3.14 Electrical Heater Single Circuit Power Wiring

* Using a second heater in a single-circuit power configuration is selected as a special only. Electrical ratings are not readily available. Single-heater in a single-circuit power selection is a standard offering.

3.15 Performance Data

Terra Vertical Models	Min. Airflow [CFM]	Max. Airflow [CFM]	Max Airflow [CFM] @ 425 FPM	Voltage Phase	Fan Qty.	Fan Size (mm)	TSP [in WC]	Minimum ESP [in WC]
006	450	600	531	208-1	1	250	3.246	1.121
009	600	900	797	208-1	1	280	3.687	1.562
012	900	1200	1063	208-1	1	280	3.343	1.218
015	1200	1500	1284	208-1	2	280	3.756	1.631
				208-3	1	310	5.841	5.716
				460-3	1	310	6.942	6.817
018	1500	1800	1541	208-1	2	280	3.687	1.562
				208-3	1	310	5.483	5.358
				460-3	1	310	6.684	6.559
024	1800	2400	2054	208-1	2	280	3.343	1.218
				208-3	1	310	4.244	4.119
				460-3	1	310	5.516	5.391
032	2400	3200	2922	208-3	1	350	4.425	2.3
				460-3	1	350	6.320	6.195
040	3200	4000	3506	208-3	1	400	3.958	1.833
				460-3	1	400	4.403	4.278
048	4000	4800	4091	208-3	2	310	4.244	2.119
				460-3	2	310	5.516	5.391
060	4800	6000	5259	208-3	2	350	4.845	2.72
				460-3	2	350	6.649	6.524
072	6000	7200	6216	208-3	2	400	4.600	2.475
				460-3	2	400	5.041	4.916
084	7200	8400	7172	208-3	2	450	4.571	2.446
				460-3	2	450	6.334	6.209
100	8400	10000	8783	208-3	3	400	4.924	2.799
				460-3	3	400	5.356	5.231

TSP = Total Static Pressure available from the fans
Minimum ESP = External Static Pressure accounting for 1” static pressure drop under dirty filter conditions and 1.25” combined static pressure drop across cooling and reheat coils.

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