OXYGEN 8

TERRA H

Installation, Operation, and Maintenance

135005-002

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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.

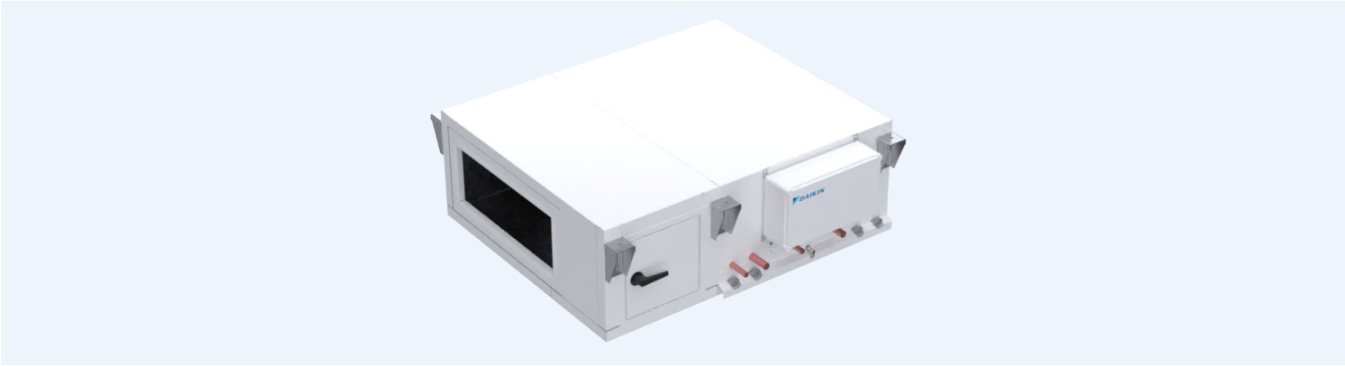
Caution: This sign indicates apotentially hazardous situation, which may result in minor or moderate injury if not avoided. It may also alert against unsafe practices.

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



Base Unit and Coupled Accessories:
TR_C_048_I_R_1_H11_22_XSXS_V_OA_R_E_3_34_SA_R_XXX_XX_E_4_X

Module	Linestring Item		Example		*
Unit	1	PRODUCT	TR	TERRA	
	2	MOUNTING	C	CEILING	
	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 CONTROL-LER QTY	D01	DX 1 CTRL	●
	8	HEAT EXCHANGER CABINET	11	C1/D1	●
	9	DUCT	XSXS	[STANDARD HORIZONTAL OPENINGS ONLY]	
	10	VOLTAGE	V	VARIES	
COUPLED OA ACC	11	OA	OA	OUTSIDE AIR	
	12	HANDING	L	LEFT	●
	13	HEATING	E	ELECTRIC	
	14	HEATING CASING	2	E2	●
	15	MIXING BOX, OPENINGS	01	SIDE/FRONT	●
COUPLED SA ACC	16	SA	SA	SUPPLY AIR	
	17	HANDING	L	LEFT	●
	18	[BLANK]	XXX	NONE	
	19	[BLANK]	XX	[NO OPTION]	
	20	HEATING	E	ELECTRIC	
	21	HEATING CASING	2	E2	●
	22	[BLANK]	X	[NO OPTION]	

3		7		8		15		14 & 21	
Model		**Heat Exchanger and EEV Controller Qty.**		**Heat Exchanger Cabinet**		**Mixing Box Openings**		**Heater Casing**	
006	600	D01	DX 1 CTRL	11	C1/D1	XX	NONE	X	NONE
009	900	D02	DX 2 CTRL	21	C2/D1	01	SIDE/FRONT	2	E2
012	1200	H10	HGRH 1 DOAS CTRL	22	C2/D2	02	SIDE/REAR	3	E3
015	1500	H11	HGRH 1 DOAS/1 DX CTRL	31	C3/D1	03	SIDE/TOP	4	E4
018	1800	H12	HGRH 2 DOAS/2 DX CTRL	32	C3/D2	04	SIDE/BOTTOM		
024	2400	H21	HGRH 2 DOAS/1 DX CTRL	33	C3/D3	12	FRONT/REAR		
032	3200	H13	HGRH 1 DOAS/3 DX CTRL	42	C4/D2	13	FRONT/TOP		
040	4000	H22	HGRH 2 DOAS/2 DX CTRL	43	C4/D3	14	FRONT/BOTTOM		
048	4800	CCW	CWC	C(x) Cabinet [L]		23	REAR/TOP		
max. CFM		CHW	CWC/HWC	D(x) Drain Pan [L]		24	REAR/BOTTOM		
						34	TOP/BOTTOM		

Decoupled Accessories:
ACC_TR_C_040_I_L_OA_E_2_03

Accessory	ACC - Accessory	
Product	TR - Terra Horizontal	
Accessory Mounting	C - Ceiling Hung	
Accessory Model Size	006, 009, 012, 015, 018, 024, 032, 040, 048	
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	13 - Front/Top
	01 - Side/Front	14 - Front/Bottom
	02 - Side/Rear	23 - Rear/Top
	03 - Side/Top	24 - Rear/Bottom
	04 - Side/Bottom	34 - Top/Bottom
	12 - Front/Rear	

ACC_TR_C_040_I_L_SA_E_2_XX

Accessory	ACC - Accessory
Product	TR - Terra Horizontal
Accessory Mounting	C - Ceiling Hung
Accessory Model Size	006, 009, 012, 015, 018, 024, 032, 040, 048
Accessory Location	I - Indoor
Accessory Handing	L - Left-hand
	R - Right-hand
Accessory Airstream	SA - Supply 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)

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
Ceiling mount 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 Product Data

TR_C Model	Capacity [CFM]		Cabinet Dimensions (no accessories						2" Thick MERV13 Filters		Shutoff Dampers	
			Length (in.)				Width (in)	Height (in)				
	min.	max.	Size C1	Size C2	Size C3	Size C4			Opening Size (in)	Filter Sizes LxW (in)	Width (in)	Height (in)
006	450	600	60	66			30	20	18 x 12	18 x 12	18 3/8	10
009	600	900	60	66			36	20	24 x 12	24 x12	24 3/8	10
012	900	1200	60	66			44	20	36 x 12	18 x 12 (2)	36 3/8	10
015	1200	1500	60	66			50	20	42 x 12	24 x 12, 18 x 12	42 3/8	10
018	1500	1800	60	66			50	21	40 x 14	20 x 14 (2)	40 3/8	12
024	1800	2400	60	66	82		62	21	50 x 14	25 x 14 (2)	50 3/8	12
032	2400	3200	60	66	82	100	54	30	44 x 24	24 x 24, 24 x 20	44 3/8	22
040	3200	4000	60	66	82	100	62	30	54 x 24	24 x 18 (3)	54 3/8	22
048	3900	4800	60	66	82	100	72	30	60 x 24	24 x 24 (2), 24 x 12	60 3/8	22

3.2 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, actuators, 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

Two separate transformers provide 24V power to the control circuits.

3.3 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.

3.4 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.

3.5 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.

3.6 Weights

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

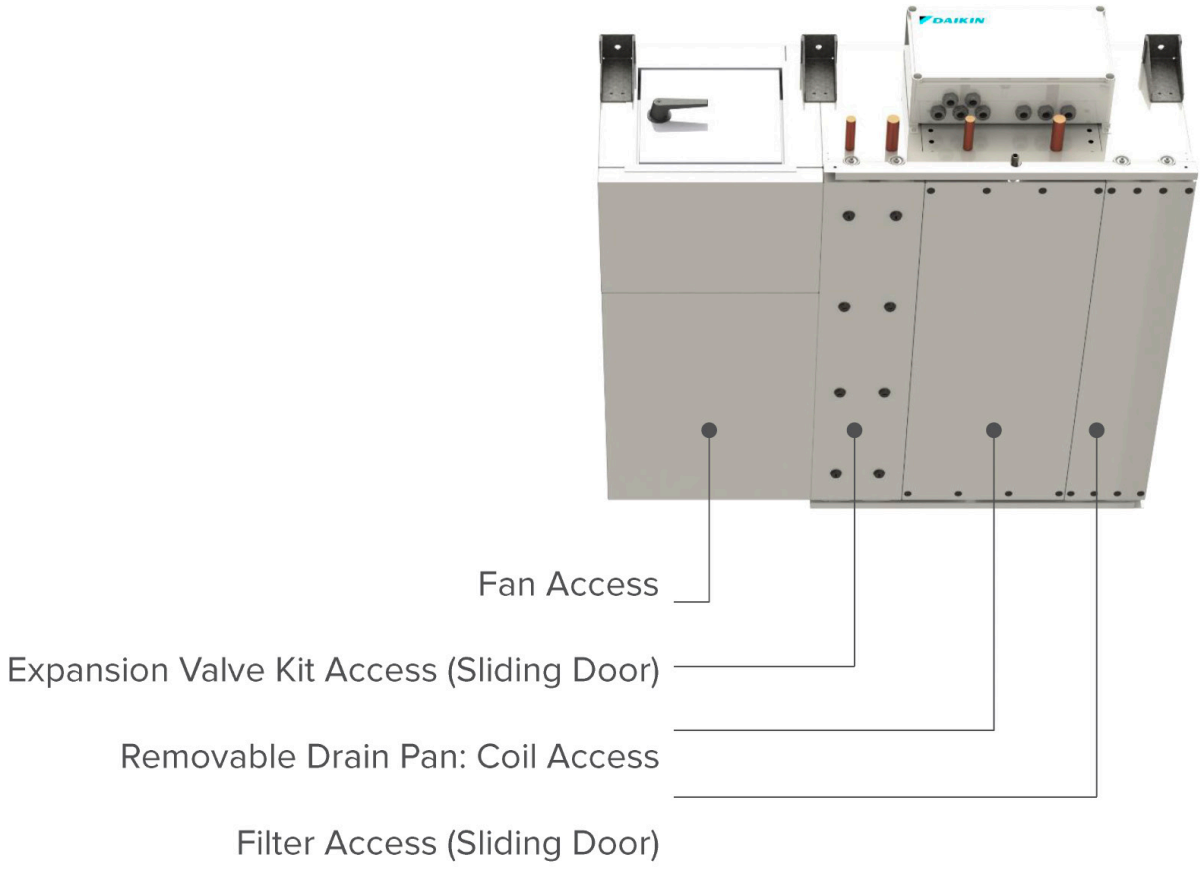
3.7 Access Requirements

Terra H units are complete with at least four bottom access doors that are either removeable or on sliders. At least three (3) inches of hard clearance is required for sliding doors to drop down and slide out of place.

The electrical cabinet is accessed through the hinged door at the front of the unit when the interlocked disconnect switch is switched off.

Fans may be accessed from underneath via removeable panels.

Filter and refrigerant valve servicing can be done through the sliding access panels.

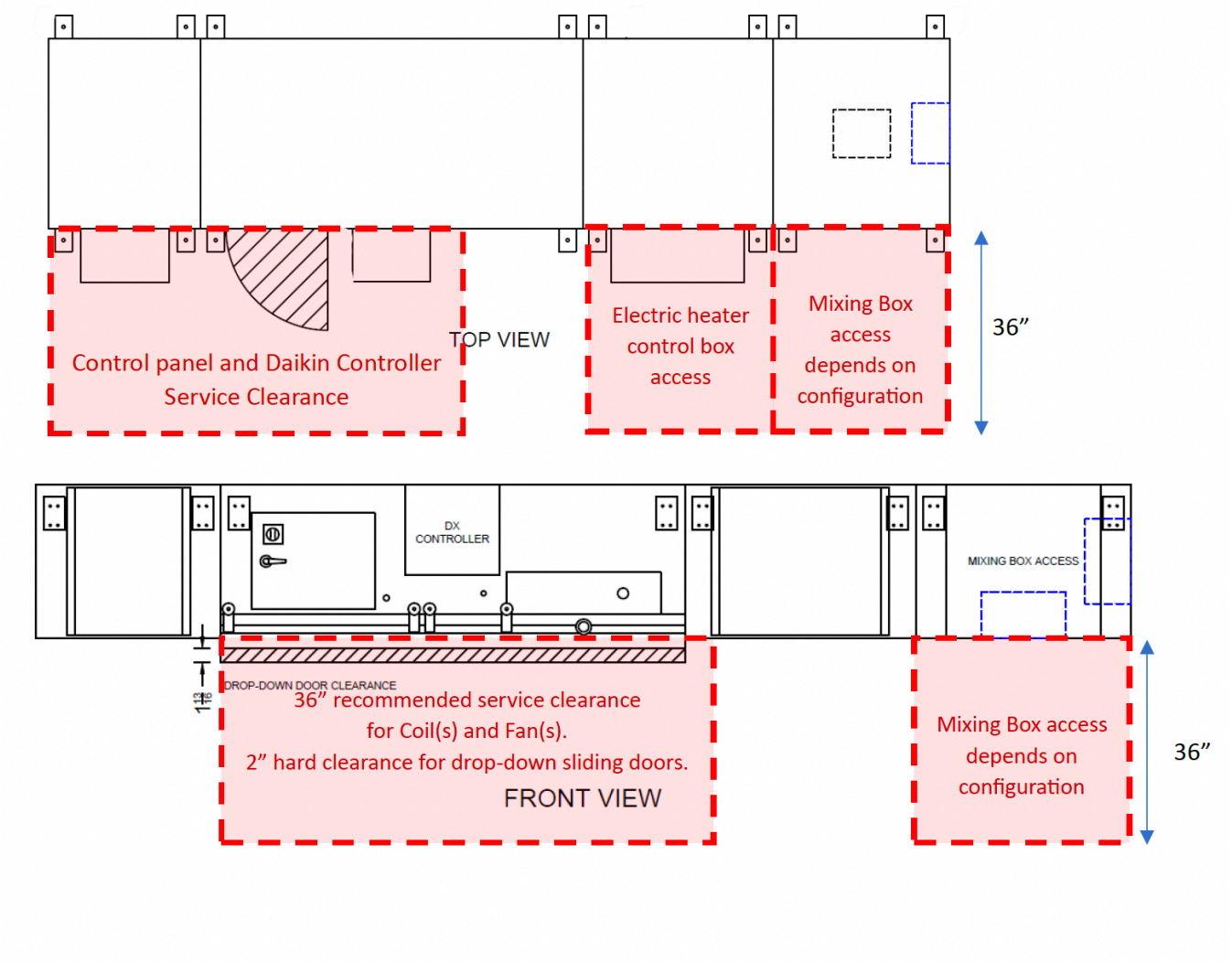


The coil drain pan may be removed altogether for improved coil access by unscrewing the front and rear edges of the drain pan panel.

The National Electrical Code (NEC) stipulates that there must be a minimum of 36 inches of clearance from an electrical connection. The installation contractor must ensure there are at least 36 inches of clearance perpendicular to the of the electrical box.

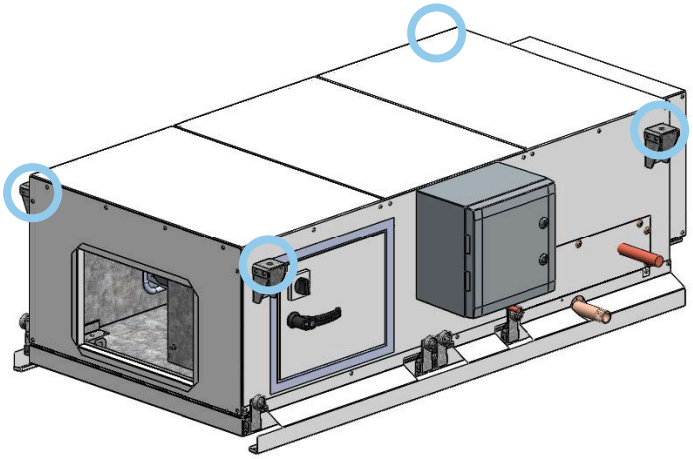
It is recommended to provide at least 3ft of clearance below the unit for maintenance staff to access for servicing.

3.8 Clearances



3.9 Lifting and Mounting Requirements

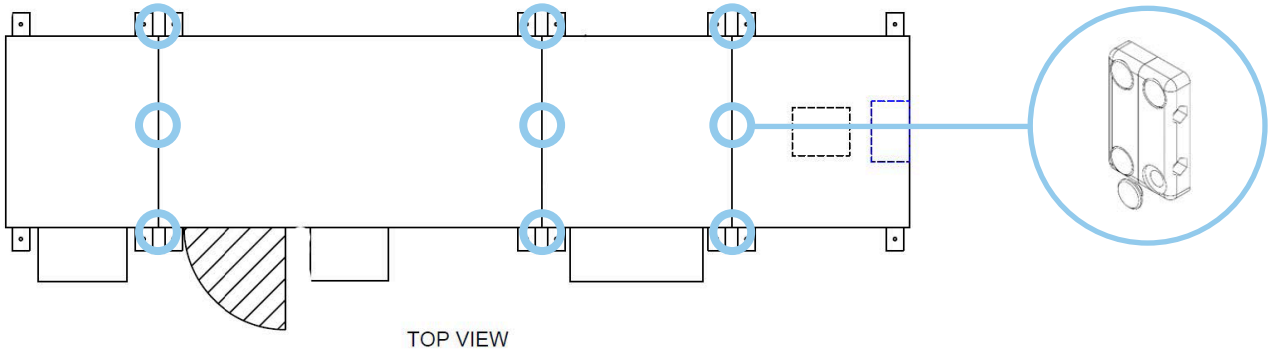
Terra units are shipped on pallets and packaged securely to the pallet. When handling, ensure that the unit is lifted by the pallet and not the top of the packaging. Once removed from the packaging, all hanging brackets must be used to lift the unit by crane. Only lift one module at a time; do not lift after connecting modules together. Take special care to protect the unit when handling outside of its factory-provided packaging. Avoid strapping around the width of the unit as this may damage the sliding door support rails.



Terra H is exclusively ceiling mounted for horizontal ducting. The hanging brackets are factory installed.

One 5/8” hole on each of the built-in hanging brackets are used for thru-bolting to hang the unit. All hanging brackets provided must be utilized to support the unit.

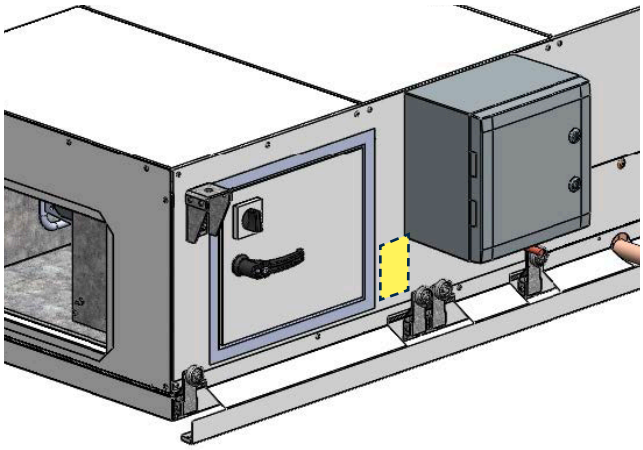
Coupled Accessories



Connecting brackets come installed at each split between the Terra H unit module and accessories. There will typically be 2 on front and rear (each) and 1 or 2 on the top, depending on unit width. Please use all available hardware to secure the modules.

Note: Inspect the gasketing on the connecting surfaces of the modules; there should be a layer on one of the two faces as seen in the adjacent image. If any gasket is damaged, please contact Oxygen8 for replacement. Repair any damage prior to assembly.

3.10 Electrical Connections

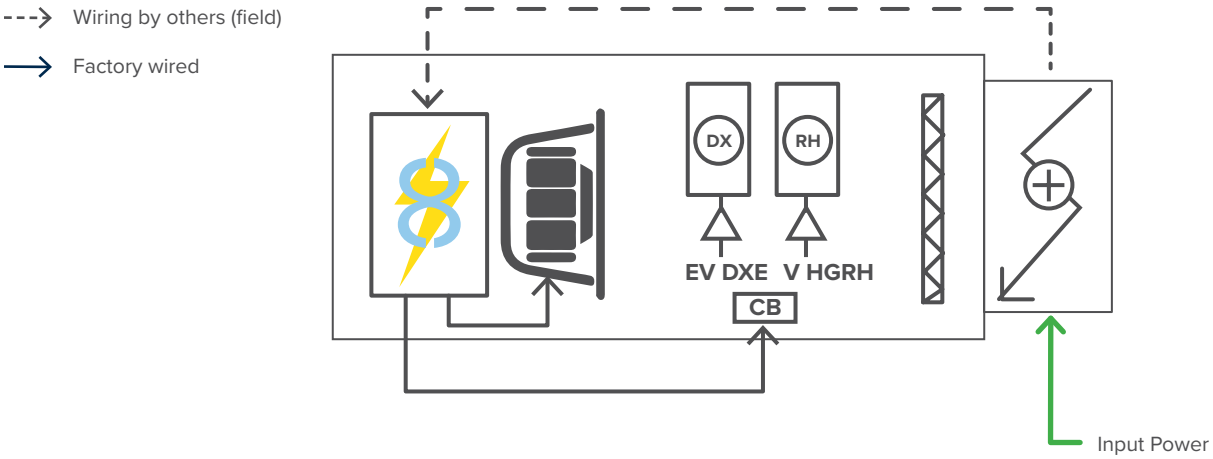


Terra H units may include pre-cut 1/8” pilot holes in the panels adjacent to the electrical enclosure access door that may be used to field modify units to allow cable penetrations to access cable glands of the electrical enclosure internal to the unit. See highlighted area in the adjacent image.

If pilot holes are unavailable or insufficient, ensure any holes made are high enough to clear the bottom access door rollers and low enough to clear the Daikin kit doors.

3.11 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.



3.12 Performance Data

Model	Capacity [CFM]						
	Min.	Max.	Fan Qty	Fan Size [mm]	Voltage Phase	Total Static Pressure [in.WC]	Min. External Static Pressure [in.WC]
T06	450	600	1	250	208-1	3.25	1.09
T09	600	900	1	280	208-1	3.69	1.77
T12	900	1200	1	280	208-1	3.34	1.19
T15	1200	1500	2	280	208-1	3.76	1.56
T18	1500	1800	2	280	208-1	3.69	1.80
			1	310	208-3	5.48	3.60
			1	310	460-3	6.68	4.80
T24	1800	2400	2	280	208-1	3.34	1.14
			1	310	208-3	4.24	2.04
			1	310	460-3	5.52	3.31
T32	2400	3200	1	350	208-3	4.43	2.50
			1	350	460-3	6.32	4.40
T40	3200	4000	1	400	208-3	3.96	2.26
			1	400	460-3	4.40	2.71
T48	3900	4800	2	310	208-3	4.24	2.70
			2	310	460-3	5.52	3.97

A dirty filter pressure drop of 1 in.WG was used to determine the minimum external static pressure. This value can increase based on the specific conditions of the unit.

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