



THERMOLEC

ELECTRIC PLENUM HEATER

The Latest In Technology for

DUAL-ENERGY HEATING

**An Easy Conversion to Clean, Convenient
and Affordable Electric Heat**



Model TU Electric Heaters Offer

Lower air flow requirements

- 40 CFM per kW

Easy to baffle for various size plenums

- Baffles are included with heater

Automatic switching to fossil fuel backup

- Dual fuel control included

Built in circuit breaker for easy isolation

- Ensure additional safety for service contractor

Center coil baffle included

- Allows for easy installation over "A" coil

Modulating units available

- Ideal for heat pumps

Thermolec Plenum Heater Features

Center coil baffle

- Easy installation over A coil

High-grade nickel-chrome open coil elements

- Only 40 cfm per kW minimum air flow

Includes baffles that attach to coil frame

- Easier to baffle for larger plenums

Automatic and manual high-limit protection

- Prevents unit from overheating

Isolation and operating relays

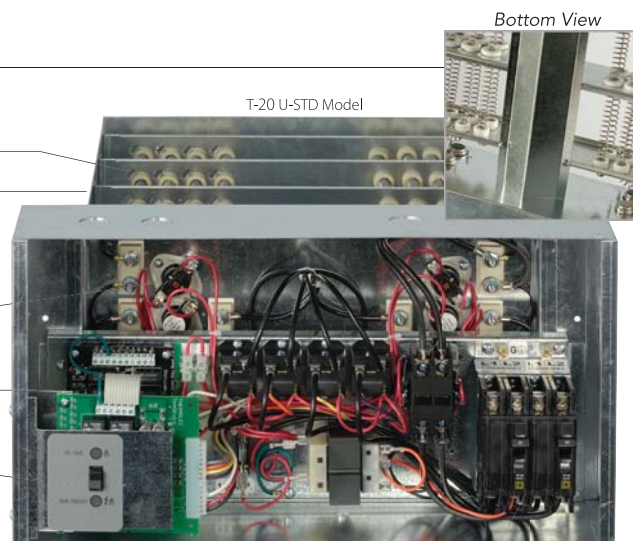
- A/C-ready, built-in interface control module

Built-in dual fuel control

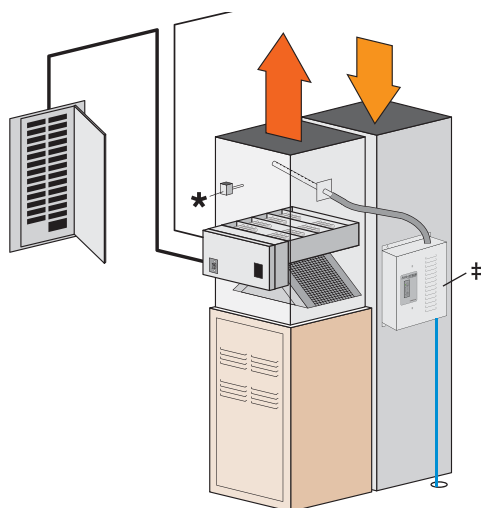
- Automatically switches to fossil fuel back-up with utility load control or can be switched manually

Circuit breakers included

- Provides safe electrical isolation for maintenance



Typical Installation



Applications

Standard Plenum Heater:

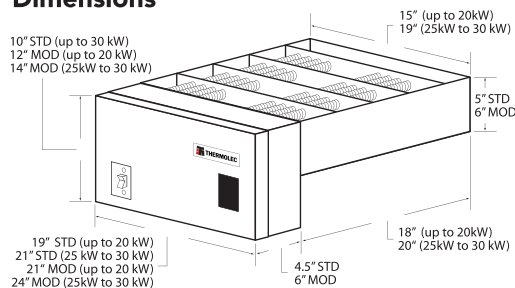
Fossil fuel furnace with or without A/C

Modulating Plenum Heater:

Fossil fuel furnace with heat pump or zoned system

For homes with 100 amp service panels, ask about our Retro models

Dimensions



Modulating Plenum Heater - Additional Features

* Plenum-mounted sensor and adjustable temperature setting on board

- Full modulation of elements to maintain plenum temperature – saves energy

All elements switched with solid state electronic relays

- Silent operation and long life

Built-in multi-purpose control module

- No additional interface or fossil fuel kit required



MODELS		KW @ 240V	BTU OUTPUT	HEATING SEQUENCES	TOTAL AMPERAGE	BREAKER (A)	
STANDARD	MODULATING					STD	MOD
T-5 U-STD	T-5 U-MOD	5	17,060	1	20.8	30	30
T-10 U-STD	T-10 U-MOD	10	34,120	2	41.6	60	60
T-15 U-STD	T-15 U-MOD	15	51,180	4 STD / 3 MOD	62.5	2 x 40	1 x 60 1 x 30
T-18 U-STD	T-18 U-MOD	18	61,416	4	75.0	2 x 50	2 x 50
T-20 U-STD	T-20 U-MOD	20	68,240	4	83.3	2 x 60	2 x 60
T-25 U-STD**	T-25 U-MOD**	25	85,300	4 STD / 5 MOD	104.0	3 x 50	2 x 60 1 x 30
T-30 U-STD**	T-30 U-MOD**	30	102,360	4 STD / 5 MOD	124.0	3 x 60	2 x 60 1 x 40

** Larger frame size required for 25/30 kW

‡ For optimum comfort, THERMOLEC recommends Acu-Steam Humidifiers.

Distributed By:



THERMOLEC

2060 Lucien-Thimens
Montreal, Quebec, Canada
H4R 1L1

Tel.: 514-336-9130 Fax.: 514-336-3270

Web Site: www.thermolec.com

HPX MODULATING PLENUM HEATER

**ADVANCED
TECHNOLOGY IN
ELECTRIC HEAT**



- *Ideal for all residential forced air heat pump applications*
- *Maximizes energy savings offered by utility's dual fuel programs*
- *Significantly increases heat pump BTU contribution during heating season*
- *Self-adjusting BTU output for maximum heating efficiency*
- *Reduces dependence on expensive LP gas and fuel oil*

The Next Generation of Dual Fuel Heating Systems

The HPX Modulating Plenum Heater (PH) from Thermolec is advanced technology ideal for dual-fuel/hybrid HVAC systems. Hybrid systems with a HPX PH provide up to a 50% savings on annual heating costs compared to conventional forced air heating systems.

HPX PHs maximize an air source heat pump's (HP) efficiency and savings by utilizing the HP's low cost BTU output. The HPX PH works with any air source HP and/or any brand/type of fossil fuel back-up forced air furnace.

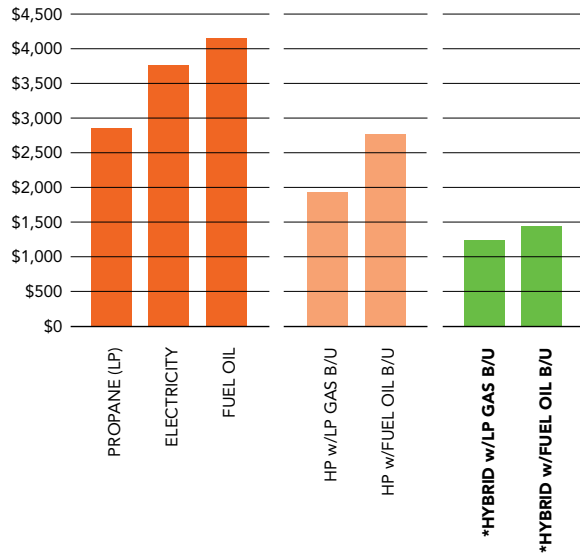


HPX Modulating Plenum Heater

Maximizes Savings

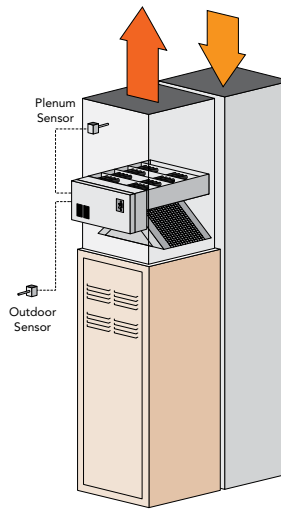
Hybrid HVAC systems can save over 50% in annual heating costs compared to high-efficiency LP or fuel oil furnaces. In a hybrid system, the HPX modulating plenum heater supplements the heat pump BTUs to provide low cost heat at outdoor temperatures down to 0°F and colder.

ANNUAL HEATING COST COMPARISON



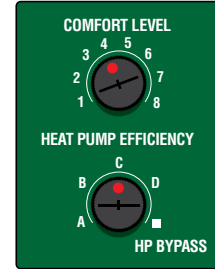
* HYBRID = HPX Modulating Plenum Heater + Air Source Heat Pump + Backup Fossil Fuel Furnace

Typical Installation

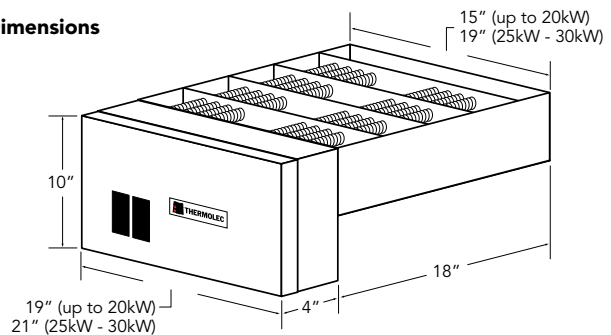


Precise Comfort/Efficiency Adjustment

The Thermolec System Controller allows you to manage the comfort and efficiency of your dual fuel heating system. Higher comfort levels are maintained by increasing the BTU output levels from the HPX modulating plenum heater in conjunction with the HP.



Dimensions



One Model for All Applications

- Multi-purpose control module requires no additional interface or fossil fuel kits
- Works with all brands/types of thermostats including 4-wire models with HP
- Works with all brands/models of HP's and gas/oil furnaces
- Same model for up-flow and down-flow applications
- Standard models in 5 through 30 kW with custom sizes available

HPX Modulating Plenum Heater Applications

- Dual Fuel / Hybrid
- Air Source Heat Pump
- Geothermal Heat Pump
- Zoned Forced Air Systems

MODEL	kW @ 240v	BTU OUTPUT	HEATING SEQUENCES	TOTAL AMPERAGE	BREAKER (AMP)
T-5 U-MOD-HPX	5	17,060	1	20.8	30
T-10 U-MOD-HPX	10	34,120	2	41.6	60
T-15 U-MOD-HPX	15	51,180	3	62.5	1 x 60 1 x 30
T-18 U-MOD-HPX	18	61,416	4	75.0	2 x 50
T-20 U-MOD-HPX	20	68,240	4	83.3	2 x 60
* T-25 U-MOD-HPX	25	85,300	5	104.0	2 x 60 1 x 30
* T-30 U-MOD-HPX	30	102,360	5	124.0	2 x 60 1 x 40

* Larger frame size. Note: custom sizes and voltages available.

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Email: sales@thermolec.com





THERMOLEC Retro Plenum Heater

Easy, low cost retrofit of gas to electric dual-fuel heat



- 34,000 btu heating capacity
- Uses low electric heat rate for majority of heating season
- Can be added to most existing 100 amp services
- Low (400 cfm) minimum airflow requirement
- Easy installation for various sized plenums

Unique features include:

- Designed for both single and variable speed blowers
- Current Sensor or utility load control compatible
- Automatically switches to fossil fuel back-up when electric cannot satisfy heat call due to ambient temperature conditions



**Current Sensor
included**

Thermolec Plenum Heater Features

Center coil baffle

- Easy installation over A coil

High-grade nickel-chrome open coil elements

- Only 40 cfm per kW minimum air flow

Includes baffles that attach to coil frame

- Easier to baffle for larger plenums

Automatic and manual high-limit protection

- Prevents unit from overheating

Isolation and operating relays

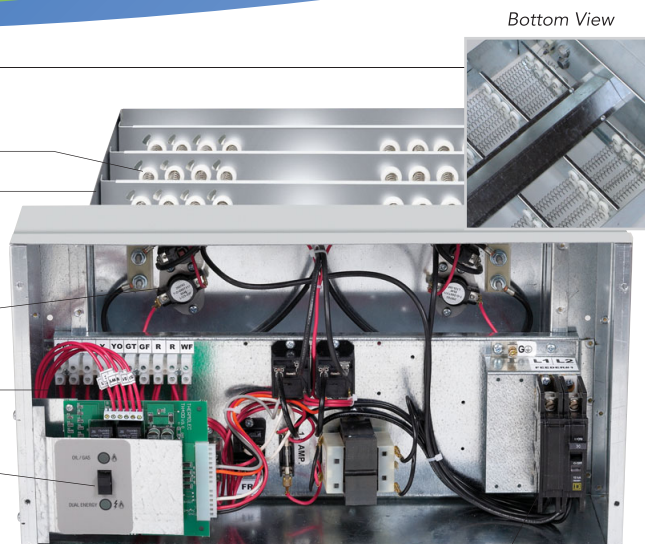
- A/C-ready, built-in interface control module

Built-in dual fuel control

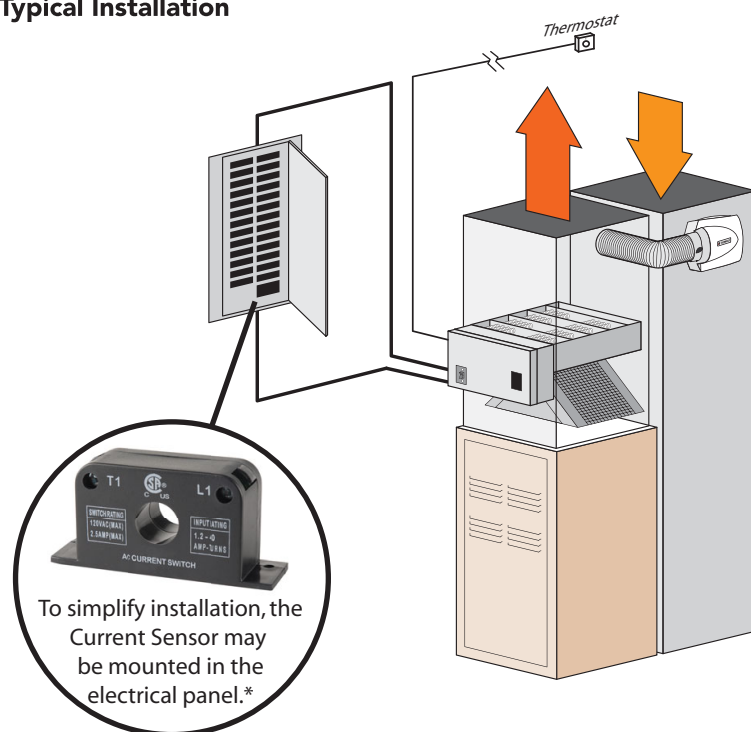
- Automatically switches to fossil fuel back-up with utility load control or can be switched manually

Circuit breakers included

- Provides safe electrical isolation for maintenance



Typical Installation

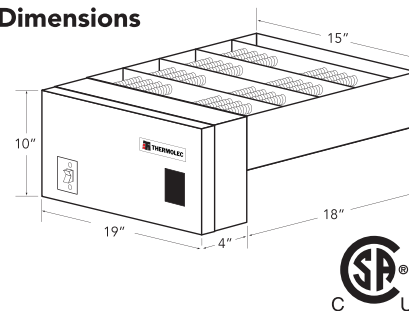


Applications

Easy and cost effective way to add electric heat to fossil fuel furnaces with or without A/C.

Can be safely installed with most 100 amp service entrances* thanks to a Current Sensor which monitors the use of a large electrical appliance such as a water heater or dryer. If the appliance is in use the plenum heater is automatically put into standby mode and will wait as long as the appliance is in use. If heat is required and the plenum heater is in standby or if it cannot satisfy the heating demand, it will automatically switch to the fossil fuel furnace for auxiliary heat.

Dimensions



MODELS	kW @ 240v	HEATING SEQUENCES	CURRENT (AMPS) PLENUM HEATER	BREAKER
T-10 U-DFCT	10	2	41.6	60

* Check with local codes before installing.

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Cost Per Million Btu

Electricity 3412 BTU / kWh

	\$ / kWh	0.038	0.040	0.042	0.044	0.046	0.048	0.050	0.052	0.054	0.056	0.058	0.060	0.062	0.064	0.066	0.068	0.070	0.072	0.074	0.076	0.078	0.080	0.090	0.100
System Efficiency (C.O.P. or EF)	100%	11.14	11.72	12.31	12.90	13.48	14.07	14.65	15.24	15.83	16.41	17.00	17.58	18.17	18.76	19.34	19.93	20.52	21.10	21.69	22.27	22.86	23.45	26.38	29.31
	150%	7.42	7.82	8.21	8.60	8.99	9.38	9.77	10.16	10.55	10.94	11.33	11.72	12.11	12.50	12.90	13.29	13.68	14.07	14.46	14.85	15.24	15.63	17.58	19.54
	200%	5.57	5.86	6.15	6.45	6.74	7.03	7.33	7.62	7.91	8.21	8.50	8.79	9.09	9.38	9.67	9.96	10.26	10.55	10.84	11.14	11.43	11.72	13.19	14.65
	250%	4.45	4.69	4.92	5.16	5.39	5.63	5.86	6.10	6.33	6.57	6.80	7.03	7.27	7.50	7.74	7.97	8.21	8.44	8.68	8.91	9.14	9.38	10.55	11.72
	275%	4.05	4.26	4.48	4.69	4.90	5.12	5.33	5.54	5.76	5.97	6.18	6.39	6.61	6.82	7.03	7.25	7.46	7.67	7.89	8.10	8.31	8.53	9.59	10.66
	300%	3.71	3.91	4.10	4.30	4.49	4.69	4.88	5.08	5.28	5.47	5.67	5.86	6.06	6.25	6.45	6.64	6.84	7.03	7.23	7.42	7.62	7.82	8.79	9.77
	325%	3.43	3.61	3.79	3.97	4.15	4.33	4.51	4.69	4.87	5.05	5.23	5.41	5.59	5.77	5.95	6.13	6.31	6.49	6.67	6.85	7.03	7.21	8.12	9.02
	350%	3.18	3.35	3.52	3.68	3.85	4.02	4.19	4.35	4.52	4.69	4.86	5.02	5.19	5.36	5.53	5.69	5.86	6.03	6.20	6.36	6.53	6.70	7.54	8.37
	400%	2.78	2.93	3.08	3.22	3.37	3.52	3.66	3.81	3.96	4.10	4.25	4.40	4.54	4.69	4.84	4.98	5.13	5.28	5.42	5.57	5.72	5.86	6.59	7.33

Natural Gas 100,000 BTU / therm

	\$ / ccf	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05
System Efficiency	75%	12.00	12.67	13.33	14.00	14.67	15.33	16.00	16.67	17.33	18.00	18.67	19.33	20.00	20.67	21.33	22.00	22.67	23.33	24.00	24.67	25.33	26.00	26.67	27.33
	80%	11.25	11.88	12.50	13.13	13.75	14.38	15.00	15.63	16.25	16.88	17.50	18.13	18.75	19.38	20.00	20.63	21.25	21.88	22.50	23.13	23.75	24.38	25.00	25.63
	82%	10.98	11.59	12.20	12.80	13.41	14.02	14.63	15.24	15.85	16.46	17.07	17.68	18.29	18.90	19.51	20.12	20.73	21.34	21.95	22.56	23.17	23.78	24.39	25.00
	85%	10.59	11.18	11.76	12.35	12.94	13.53	14.12	14.71	15.29	15.88	16.47	17.06	17.65	18.24	18.82	19.41	20.00	20.59	21.18	21.76	22.35	22.94	23.53	24.12
	90%	10.00	10.56	11.11	11.67	12.22	12.78	13.33	13.89	14.44	15.00	15.56	16.11	16.67	17.22	17.78	18.33	18.89	19.44	20.00	20.56	21.11	21.67	22.22	22.78
	92%	9.78	10.33	10.87	11.41	11.96	12.50	13.04	13.59	14.13	14.67	15.22	15.76	16.30	16.85	17.39	17.93	18.48	19.02	19.57	20.11	20.65	21.20	21.74	22.28
	95%	9.47	10.00	10.53	11.05	11.58	12.11	12.63	13.16	13.68	14.21	14.74	15.26	15.79	16.32	16.84	17.37	17.89	18.42	18.95	19.47	20.00	20.53	21.05	21.58

Propane 95,500 BTU / gallon

	\$ / gal	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	2.95	3.00	3.05	3.10
System Efficiency	75%	13.96	15.36	16.75	18.15	19.55	20.94	22.34	23.73	25.13	26.53	27.92	29.32	30.72	32.11	33.51	34.90	36.30	37.70	39.09	40.49	41.19	41.88	42.58	43.28
	80%	13.09	14.40	15.71	17.02	18.32	19.63	20.94	22.25	23.56	24.87	26.18	27.49	28.80	30.10	31.41	32.72	34.03	35.34	36.65	37.96	38.61	39.27	39.92	40.58
	82%	12.77	14.05	15.32	16.60	17.88	19.15	20.43	21.71	22.99	24.26	25.54	26.82	28.09	29.37	30.65	31.92	33.20	34.48	35.76	37.03	37.67	38.31	38.95	39.59
	85%	12.32	13.55	14.78	16.01	17.25	18.48	19.71	20.94	22.17	23.41	24.64	25.87	27.10	28.33	29.57	30.80	32.03	33.26	34.49	35.73	36.34	36.96	37.57	38.19
	90%	11.63	12.80	13.96	15.13	16.29	17.45	18.62	19.78	20.94	22.11	23.27	24.43	25.60	26.76	27.92	29.09	30.25	31.41	32.58	33.74	34.32	34.90	35.49	36.07
	92%	11.38	12.52	13.66	14.80	15.93	17.07	18.21	19.35	20.49	21.63	22.76	23.90	25.04	26.18	27.32	28.45	29.59	30.73	31.87	33.01	33.58	34.15	34.71	35.28
	95%	11.02	12.12	13.23	14.33	15.43	16.53	17.64	18.74	19.84	20.94	22.04	23.15	24.25	25.35	26.45	27.56	28.66	29.76	30.86	31.96	32.52	33.07	33.62	34.17

Fuel Oil 138,900 BTU / gallon

	\$ / gal	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.55	3.60	3.65	3.70	3.80	3.90	4.00	4.10	4.20	4.30	4.40	4.50	4.60	4.70	4.80	4.90	5.00
System Efficiency	75%	30.72	31.20	31.68	32.16	32.64	33.12	33.60	34.08	34.56	35.04	35.52	36.48	37.44	38.40	39.36	40.32	41.28	42.24	43.20	44.16	45.12	46.08	47.04	48.00
	80%	28.80	29.25	29.70	30.15	30.60	31.05	31.50	31.95	32.40	32.85	33.30	34.20	35.10	36.00	36.90	37.80	38.70	39.60	40.50	41.40	42.30	43.20	44.10	45.00
	82%	28.10	28.53	28.97	29.41	29.85	30.29	30.73	31.17	31.61	32.05	32.49	33.36	34.24	35.12	36.00	36.88	37.75	38.63	39.51	40.39	41.26	42.14	43.02	43.90
	85%	27.10	27.53	27.95	28.37	28.80	29.22	29.64	30.07	30.49	30.92	31.34	32.19	33.03	33.88	34.73	35.57	36.42	37.27	38.11	38.96	39.81	40.66	41.50	42.35
	90%	25.60	26.00	26.40	26.80	27.20	27.60	28.00	28.40	28.80	29.20	29.60	30.40	31.20	32.00	32.80	33.60	34.40	35.20	36.00	36.80	37.60	38.40	39.20	40.00
	92%	25.04	25.43	25.82	26.22	26.61	27.00	27.39	27.78	28.17	28.56	28.95	29.74	30.52	31.30	32.08	32.87	33.65	34.43	35.21	36.00	36.78	37.56	38.34	39.13
	95%	24.25	24.63	25.01	25.39	25.77	26.15	26.52	26.90	27.28	27.66	28.04	28.80	29.56	30.31	31.07	31.83	32.59	33.34	34.10	34.86	35.62	36.38	37.13	37.89

Energy Efficiency Terms

Annual Fuel Utilization Efficiency (AFUE) - The measure of annual efficiency of a residential heating furnace or boiler. Accounts for operation energy losses of the heating unit
Co-efficient of Performance (C.O.P.) - The same as the efficiency stated as a ratio of work or useful energy output of a system vs. the amount of energy inputted into the system.
Energy Factor (EF) - The efficiency or measure of overall efficiency of a variety of appliances. Water heater efficiencies are rated by EF.



***Installation
instructions
for
Plenum-mounted
add-on
electric heaters***

MODEL TU

MARCH 2011
version 7

THERMOLEC PLENUM HEATER MODEL TU

BEFORE YOU START -GENERAL SAFETY AND INSTALLATION PRECAUTIONS

Please read and understand these instructions fully before you begin this installation and save them for future reference. The manufacturer will assume no responsibility and the warranty will be void if the user does not adhere to the following precautions.

1 - LIMITED WARRANTY

1.1 **THERMOLEC LTD.**, warrants the elements of its plenum heaters against all defects in material and workmanship for ten (10) years, and all other components for two (2) years after date of shipment from its factory.

1.2 **THERMOLEC LTD.**, will repair or replace, in their factory or on site, at their sole discretion, the plenum or any part thereof, which, in their opinion, is defective. Any misuse of this heater or any repair done by people other than authorized Thermolec personnel, without Thermolec's written consent, will void this warranty.

1.3 **THERMOLEC LTD.**, will not be held responsible for any accidental or consequential damage or delay, nor will Thermolec be held responsible for damages caused by the replacement of the plenum heater.

This limited warranty is granted by

Thermolec LTD., 2060 Lucien-Thimens Street, Montreal, Canada, H4R 1L1.

2 - INSTALLATION PRECAUTIONS AND SAFETY WARNINGS

2.1 This unit is designed to be used only in a **up-flow or down-flow installations** and it should be installed **only on oil or gas furnaces**. (No wood or solid fuel). For other applications, please contact the factory. **Custom units** are available for **horizontal installations**.

2.2 This unit is **not** designed to be installed side by side.

2.3 This unit must be installed by a qualified installer and Thermolec will not be held responsible for the quality of the installation.

2.4 Always check that you are not about to cut or drill into any air conditioning or electrical accessory during installation.

2.5 The installation and wiring must comply with national and local electrical, plumbing and building codes.

2.6 Electrical wiring must not come into contact with sharp edges or hot surfaces.

2.7 Please use common sense and normal safety precautions during the installation.

2.8 Please beware of sharp edges when you cut into a metal duct.

2.9 Always shut the power off before working on such installation. An electric shock could cause serious injury.

3 - DISCLAIMER

This warranty only applies if the unit is properly installed and operated according to the manufacturer's instructions provided with this product.

This limited warranty **does not** cover normal maintenance :

- replacement of fuses or breakers, filters, refrigerant, etc.,
- transportation and installation charges for the replacement part or component,
- any other service call or repair labor.

Replacement of a part or component under this limited warranty does not extend the warranty term or period.

This limited warranty does not apply to any part or component that is damaged in transit or handling; has been subject to abuse, neglect or accident; has not been installed, operated and serviced according to Thermolec's instruction booklet; has been operated beyond factory rated capacity; altered in any such way that its performance is affected. There is no warranty due to neglect, alteration, or ordinary wear and tear. Thermolec's liability is limited to replacement of defective parts or components and does not include payment of the cost of shipping charges and/or labor charges to remove or replace such defective components or parts.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the limitation of exclusion in the warranty may not apply to you.

We do not warranty this product suitable for the specific installation or application. It is the owner's (or installer's) responsibility for proper application. There are no other express warranties. Specification sheets and descriptions of this product are only to identify it, and are not a warranty claim that the unit fits the description. Thermolec is not bound by representatives, installers, warranties, or promises made by others beyond the terms of this express warranty. In no event shall Thermolec be responsible for any installation incidental or consequential damages.

Thermolec reserves the right to make changes in the design and material of its products without incurring any obligation to incorporate such changes in the units completed on the effective date of such changes.

THESE INSTALLATION INSTRUCTIONS COVER:

**MODEL TU
T-5 U to T-30 U
T-5 U-DFC to T-30 U-DFC
(5 Kw to 30 Kw)
T-10 U-MOD-HPX to T-30 U-MOD-HPX
(10Kw to 30 Kw)**

GENERAL NOTES

-The installation of this unit should be in accordance with the regulations of the authorities having jurisdiction.

CAUTIONS

1. Before installation, ensure that the local electrical inspection authority will accept connection of this equipment to the existing panel.
2. This equipment may only be installed and tested by qualified personnel.
3. The electrical power supply should be checked for adequacy for the proposed additional load.
4. Ensure that the heat output capacity of the installed electrical Add-on Heaters does not exceed the rated output capacity of the furnace burner.
5. This heater is for use with an in-line (hi-boy) or up-flow (lo-boy) oil or gas fired furnace.

OPERATING INSTRUCTIONS

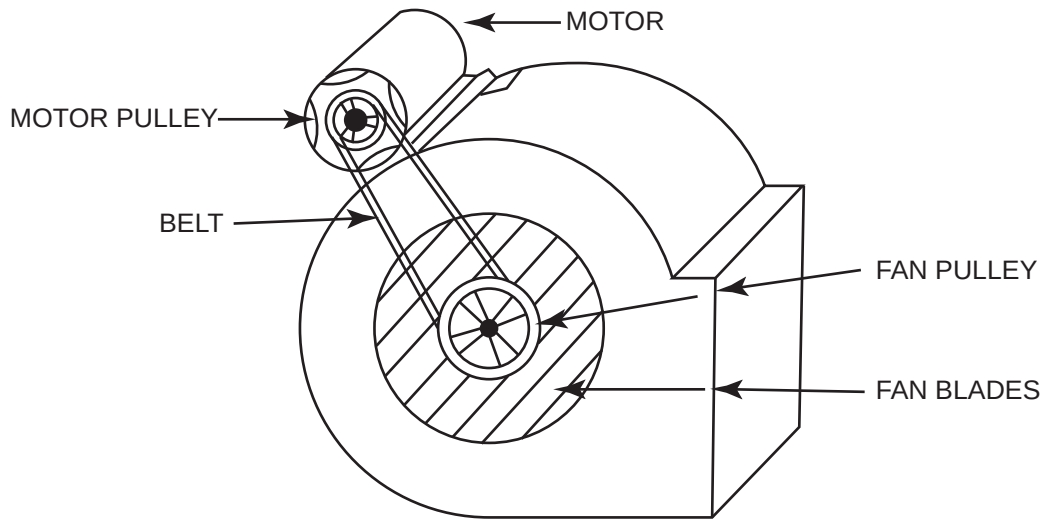
The controls provided with this unit prevent simultaneous operation of the add-on heater and the fossil fuel burner. In the case of malfunction, shut down the equipment and call a qualified electrician.

FIELD TESTS:

A. Before Installation of the Add-on Heater:

1. Ensure that the burner does not cycle due to repeated operation of the furnace's high limit control.
2. Determine whether stabilized outlet air temperature during burner operation is below 150°F (66°C) in the main outlet duct. If it does exceed 150°F (66°C) make the following adjustments to the Ventilation System in progressive steps:

Note: In most cases, only steps a) & b) will be necessary.



- a) Check if filters are clogged;
- b) Check if fan blades are clean. If not, remove the blower from its compartment and clean with a brush;
- c) Adjust the motor pulley to increase its diameter;
- d) Change the fan pulley for a smaller size;
- e) Change the motor pulley for a larger size;
- f) Change the motor and make sure that the fan control and wiring are adequate.

Note: If steps c), d) & e) are necessary, make sure that the existing motor is adequate: The current drawn must not exceed the nameplate specifications.

Important: The blower **must not** be changed. If the system cannot provide sufficient airflow after changing the motor, do not install the add-on heater in that furnace.

B. After Installation of the Add-on Heater:

1. Ensure that the burner does not cycle due to repeating operation of the furnace's high limit control.
2. Ensure that stabilized outlet air temperature during burner operation does not exceed 160°F (72°C) in the main outlet duct.
3. Run burner to ensure that the blower starts soon enough to prevent the manually resettable temperature limiting control on the Add-on Heater from tripping.
4. Operate the Add-on Heater to ensure satisfactory operation without overheating.

Note: Where a cooling coil is present, additional checks should be made to ensure adequate airflow exists for cooling system operation.

MECHANICAL SECTION

A. Product Inspection

- 1) Inspect the carton and heater and report any damage at once.

NEVER INSTALL A DAMAGED HEATER

- 2) Content of carton:

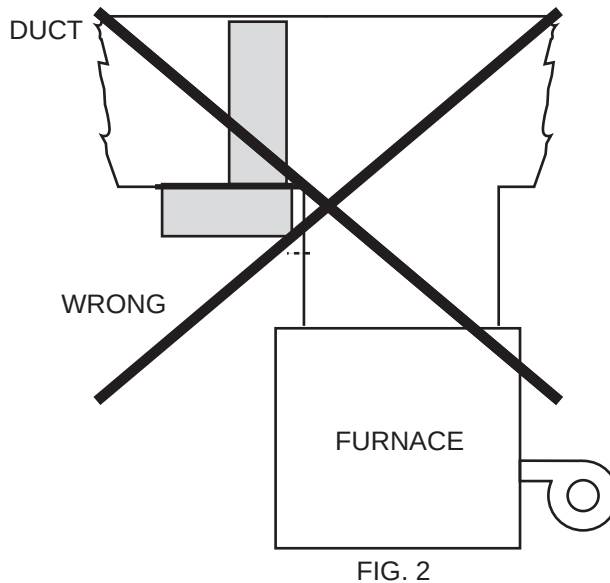
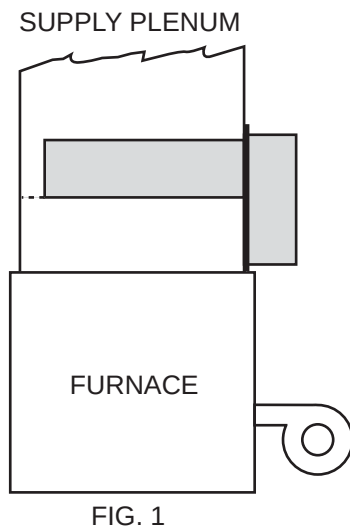
One plenum heater and baffles. Modulating models include a plenum temperature sensor and outdoor sensor.

- 3) File claim with shipping company if shipment is damaged.

B. Installation Instructions:

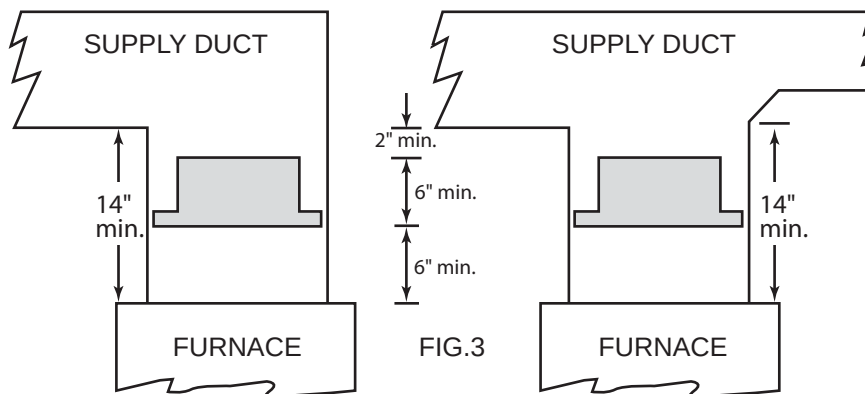
«Cautions» -The installation, location, position and orientation of the add-on heater must conform with the following:

- 1) This heater must be installed downstream of the furnace in the warm air plenum.
- 2) This heater must be installed downstream of the furnace safety limit control.
- 3) No deformation, removal or displacement of any part of the furnace is permitted.
- 4) The position of the add-on heater must be as indicated on the front of the heater control box (Please see Fig. 1).
- 5) The heater axis must be in line with the plenum axis.
- 6) Do not install heater from top or bottom of duct. (Please see Fig. 2).
- 7) Always check that you are not about to cut or drill into any air conditioning or electrical accessory during installation.



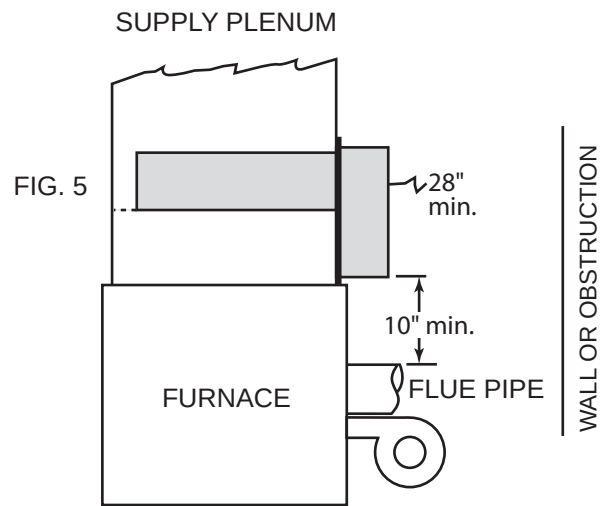
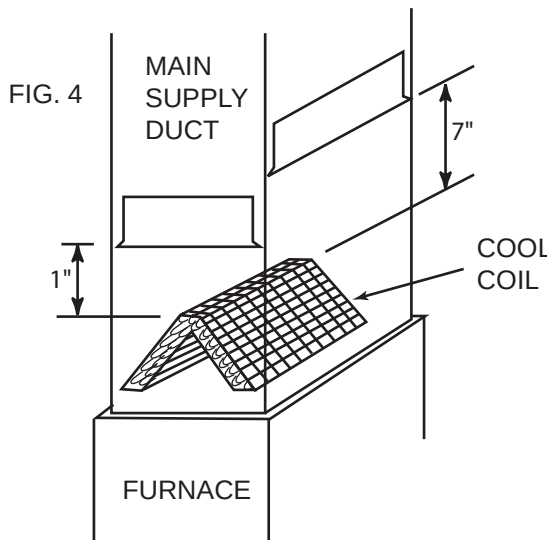
STANDARD INSTALLATION CLEARANCE

The heater must be installed in the warm air plenum. A minimum distance of 14 inches is required from the furnace to the elbow, Tee or plenum end take-off of the main supply duct (Please see Fig. 3).



If a cooling coil is installed in the warm air plenum a minimum distance of 1" or 7" is required between the top of the cooling coil and the add-on heater (depending from which side of the plenum the add-on heater is inserted). (Please see Fig. 4) d). In both cases, a minimum distance of 2" must be kept between the top of the add-on heater and the elbow, Tee or plenum-end take off of the main supply

duct. If 'N' or 'W' coils are used, a minimum of 7" is required from the top of coil to bottom of heater.



SERVICE CLEARANCE AND CLEARANCE FROM FLUE PIPE

The heater may be installed on any available side of the plenum. An installation and service clearance of 28 inches is required from the heater control box to a wall, partition or any other obstruction. If the heater is installed on the same side as the flue pipe a minimum clearance of 10 inches must be maintained between the flue pipe and the heater control box. (Please see Fig. 5) Select the plenum side, which offers the most space for installation and service.

VERY IMPORTANT

BAFFLES MUST ASSURE MAXIMUM AIR FLOW OVER THE HEATING ELEMENTS.

- Screw the baffles to bottom flanges of casing, as shown in Fig. 6.
- Cut baffles to size allowing **only** 1/8" clearance for insertion of heater.

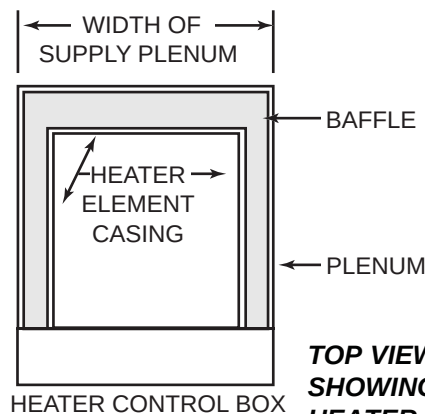
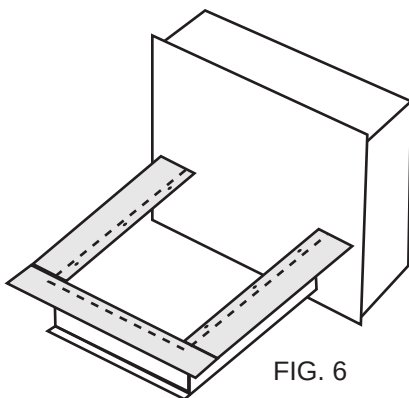


FIG. 7

**TOP VIEW OF PLENUM
SHOWING INSTALLED
HEATER AND BAFFLES.**

AIR FLOW

All the air from the furnace must pass through the heater element. If the heater element casing is smaller than the plenum the space between the plenum and the element casing must be blocked off with baffles. (Please see Fig. 7)

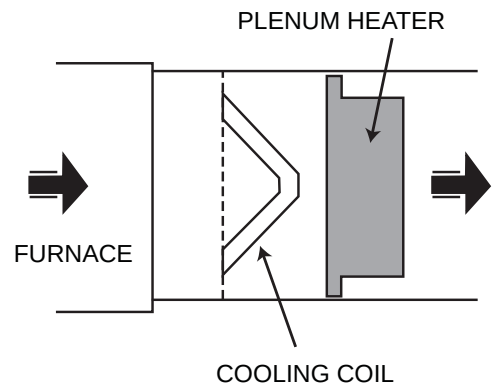
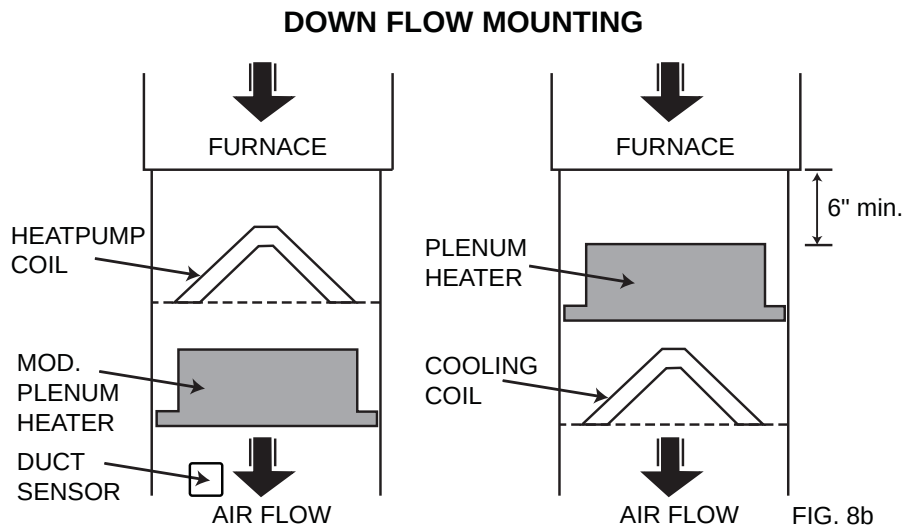
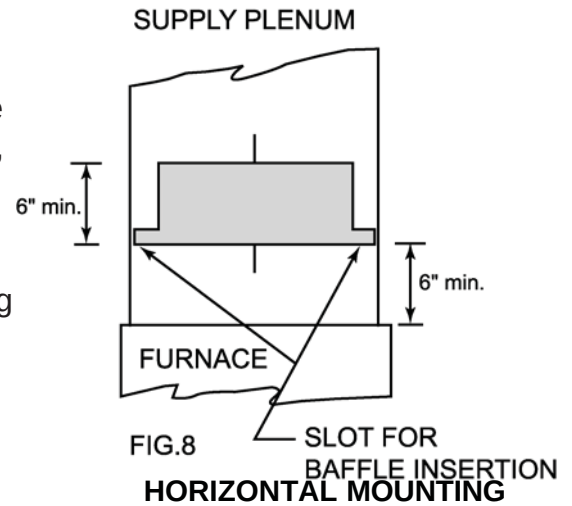
HEATER UP FLOW MOUNTING

Cut out heater opening at a minimum distance of 6 inches

from the furnace. Center the opening on the plenum. Provide slots for insertion if baffles are installed. (Please see Fig. 8).

Note: The 6 inch dimension from the top of the furnace to the heater opening in the plenum may be increased. If increased, 14 inch minimum dimensions in Fig. 3 must be increased accordingly.

Slip the heater element into the opening. Make sure that the opening and slots are entirely covered by the heater mounting flanges. Secure the heater to the plenum by means of metal screws through the pre-drilled holes. For modulating models use angle bracket supplied.

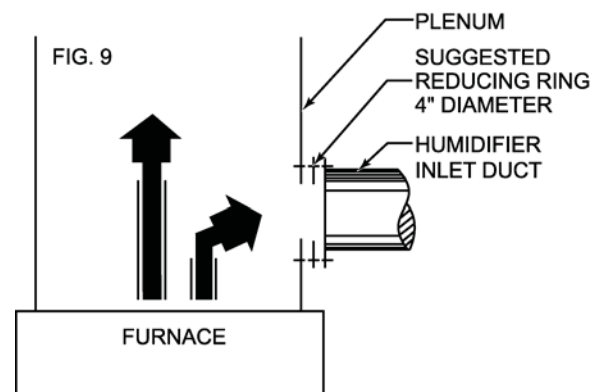


HUMIDIFIER

DO NOT USE PAN & PLATE TYPE HUMIDIFIERS WITH THE WATER RESERVOIR INSIDE THE WARM AIR SUPPLY PLENUM.

Only «Pressure Differential» type humidifiers (preferably a power or Steam humidifier) should be used. If the round inlet duct of the humidifier is connected on the hot side of the heater, it is strongly recommended to insert a reducing ring between the round inlet duct of the humidifier and the opening in the plenum such that the effective opening for the humidifier will

approximate 4" in diameter. This will reduce the volume of short-circuited air through the humidifier connection (Please see Fig. 9).



ELECTRICAL INSTALLATION INSTRUCTIONS and REQUIREMENTS for Model TU

- 1-Disconnect all power sources before opening electrical boxes and working within.
- 2-Read the nameplate and markings carefully and consult the wiring diagram before you start wiring.
- 3-Wires and protective equipment should be sized according to the National Electrical Code requirements.
- 4-Use only wires suitable for at least 75°C. Consult the table "Characteristics" to find the number of feeders required.
- 5a-Connect Thermostat wires to terminals on heater as shown on wiring diagram. Select proper wiring diagram for the application.
- 5b-Connect thermostat wires to furnace terminals per wiring diagram. Select wiring diagram based on type of furnace and fan motor.
- 6-Wire heater to furnace as shown on the wiring diagram. For two stage control and standard plenum heater, remove jumper from terminals 1 and 2 on heater and wire with isolation relay to W2 (second stage) on furnace.
- 7-Connect load management control to terminals OP and R on heater.

START-UP for Model TU

- 1-Do required fields tests after installation of the Add-on Heater as detailed on page 4.
- 2-Set the thermostat 1° above the room temperature.
- 3-Stages will sequence ON as required based on the demand for heat.
- 4-Measure the amperage drawn by the heater and compare it with the one shown on the nameplate. When the thermostat is satisfied, the stages will sequence OFF at 5 seconds interval.
- 5-Make sure the fan is ON when the heater is energized. The heater requires a minimum of 40 cfm per kW.
- 6-Set the room thermostat to the desired set point.
- 7-Your heater is now ready and functional.

OPERATING MODE SELECTION for Model TU

- 1-The heater is provided with a three-position mode selector switch, the middle position is disabled and should **not** be selected for US models. In the "gas / oil" mode the room thermostat will call upon the furnace to maintain the house temperature at the level desired by the user. The "Dual-Energy" mode gives automatic control to the load management control relay, outdoor thermostat or other switching signal for dual-energy control. When the contacts are closed, the electric mode is selected. When the load management contacts are open or when power is disconnected to the plenum heater, the "gas / oil" mode is selected. A green pilot light indicates the mode in operation.

OPERATING MODE TEST for Model TU

- 1-Do required fields tests after installation of the Add-on Heater as detailed on page 4.
- 2-The heater is supplied with a built-in 2 position mode selector switch.
 - () position - Heating by means of original furnace.
 - () position - Dual-energy mode.
- 3-Simulate a heating demand by setting the room thermostat 1° above the room temperature.
- 4-Switch the mode selector to position () and check if the burner responds to thermostat demand.

5-Switch the mode selector to the dual-energy position (). If you jump terminals OP and R the electric mode is selected. The fan will start and the heating elements will come on in sequence at 5 seconds interval. Measure the amperage drawn by the heater and compare it with the one shown on the nameplate. If you disconnect the load management control wires the “gas / oil” mode should be selected.

6-Switch the mode selector to the desired position and set the room thermostat to the desired set point.

7-Your heater is now ready and functional.

Characteristics

Models	kW @ 240V	Heating Sequences	Current (Amps)	
			Plenum Heater	Breaker
Staged Dual-energy				
T-5 U-DFC	5	1	20.8	30
T-10 U-DFC	10	2	41.6	60
T-15 U-DFC	15	4	62.5	2 x 40
T-18 U-DFC	18	4	75.0	2 x 50
T-20 U-DFC	20	4	83.3	2 x 60
T-25 U-DFC	25	4	104.0	3 x 50
T-30 U-DFC	30	4	124.0	3 x 60
Modulating Dual-energy				
T-10 U-MOD-HPX	10	3	41.6	60
T-15 U-MOD-HPX	15	4	62.5	1 x 60 1 x 30
T-18 U-MOD-HPX	18	4	75.0	2 x 50
T-20 U-MOD-HPX	20	4	83.3	2 x 60
T-25 U-MOD-HPX	25	4	104.17	2 x 60 1 x 30
T-30 U-MOD-HPX	30	4	125.0	2 x 60 1 x 40

ELECTRICAL INSTALLATION INSTRUCTIONS and REQUIREMENTS for Model TU-DFC-MOD

- Disconnect all power sources before opening electrical boxes and working within.
- Read the nameplate and markings carefully and consult the wiring diagram before you start wiring.
- Wires and protective equipment should be sized according to the National Code requirements.
- Use only wires suitable for at least 75°C consult the table “characteristics” to find the number of feeders required.
 - *** If the heat pump thermostat that was selected has a switch over Valve Selector Switch or B & O terminal, it must be placed in the cool position. Wire according to wiring diagram.
 - ** If the O output of the heat pump is active in the heating mode, move the white jumpers on the relay board to the normally open position.
- Select a wiring diagram based on the type of stat, furnace and heat pump. Connect control wiring between equipment and stat as shown on wiring diagram.
- Connect terminals OP & R to the contacts of the load management relay, outdoor thermostat or other switching signals for dual-energy control.

MECHANICAL INSTALLATION INSTRUCTIONS and REQUIREMENTS for Model TU-DFC-MOD

- The modulating plenum heater is installed per instructions and in an upflow application as shown in the diagram.
- Duct sensor is installed a minimum 8” above the modulating plenum heater in a position where it can measure true plenum temperature.

OPERATING and SETUP INSTRUCTIONS

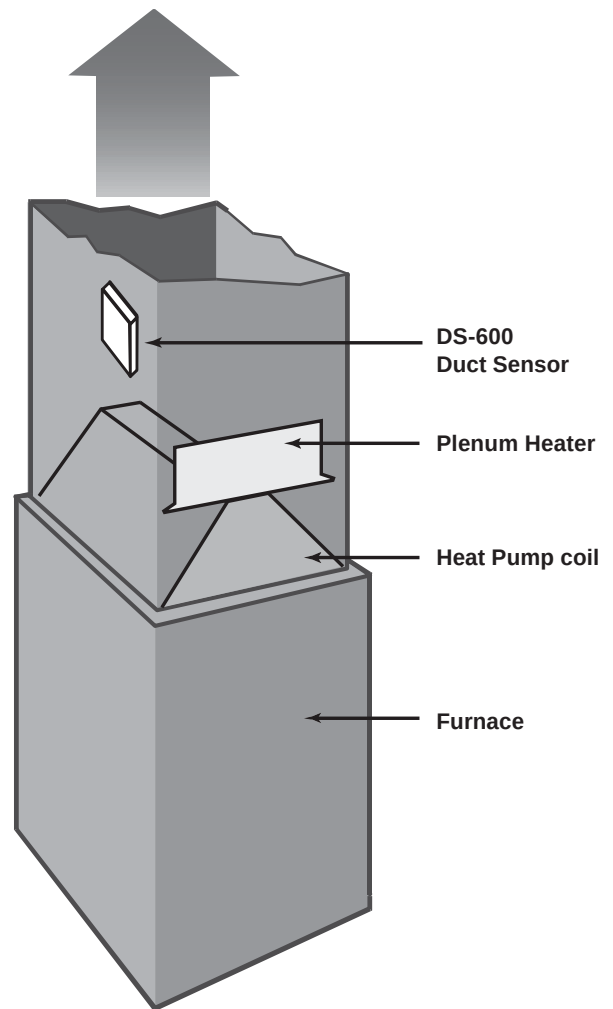
- The modulating plenum heater minimum plenum discharge temperature is selected on the COMFORT LEVEL dial on the TH600-HPX control board.



TH600-HPX Comfort Level Temperature Set Point

	1	2	3	4	5	6	7	8
°C	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0
°F	90	91	93	95	97	99	100	102

- When the plenum temperature falls below the comfort level setting, the plenum heater elements will modulate to maintain the selected discharge temperature, using the minimum amount of energy required.
- When the plenum temperature is above the comfort level setting, the plenum heater will allow the heat pump to be the primary source of heat.

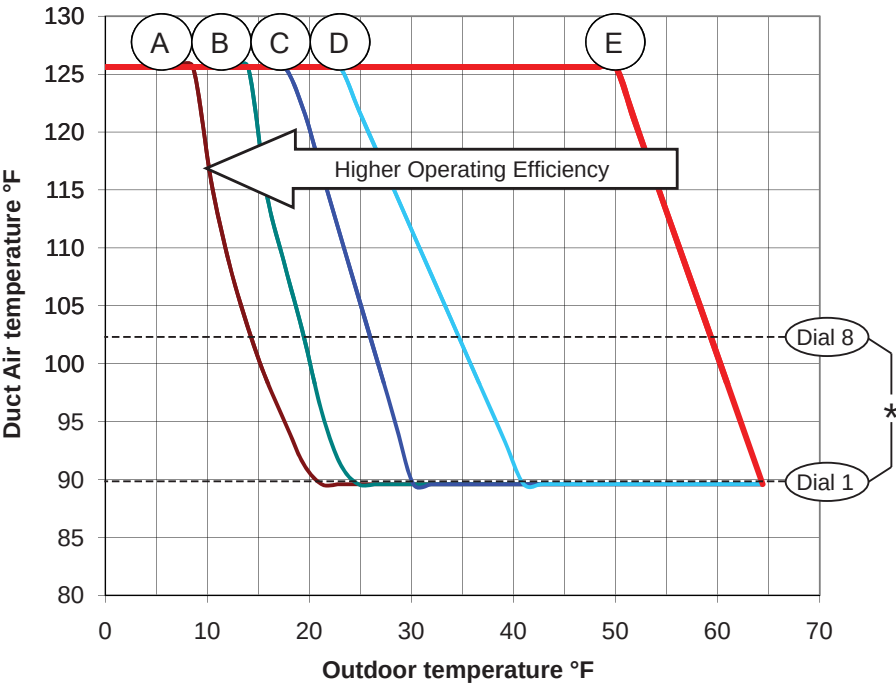


HEAT PUMP EFFICIENCY

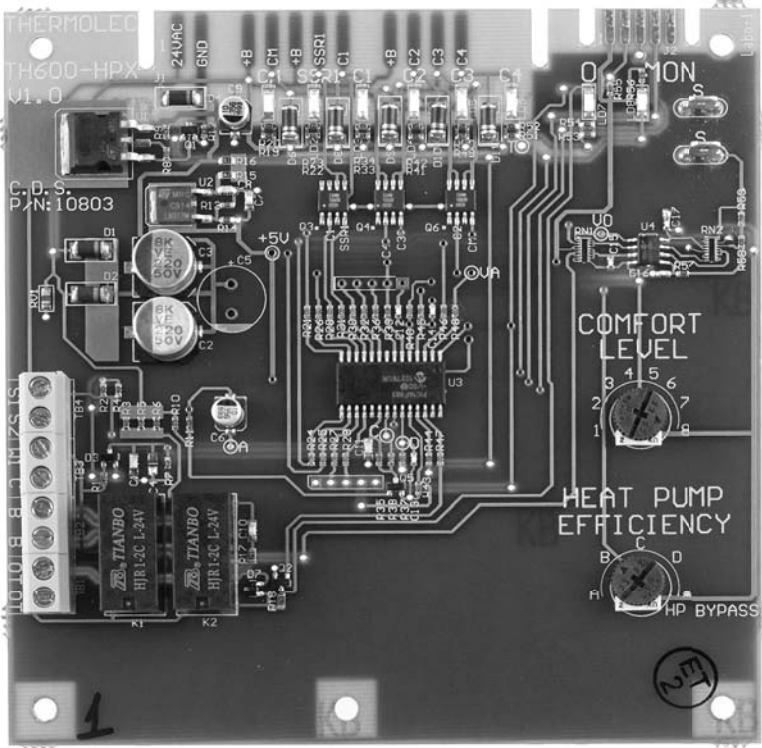
The Heat Pump Efficiency dial is used to better match the plenum heater to a heat pump based on its operating efficiency. This allows the heat pump to operate as much as possible, using the minimum amount of electricity for the plenum heater. Select 'A' on the dial for a more efficient Heatpump and 'D' for a less efficient one. In case of an emergency such as a heat pump failure, set the dial to position 'E' (* HP BYPASS) and the Thermolec plenum heater will be the main source of heat.

TH600-HPX Duct Air Temperature vs. Outdoor Temperature table					
Outdoor temp.	A	B	C	D	E
°F	°F	°F	°F	°F	°F
0	126	126	126	126	126
1	126	126	126	126	126
3	126	126	126	126	126
5	126	126	126	126	126
7	126	126	126	126	126
9	126	126	126	126	126
10	116	126	126	126	126
12	109	126	126	126	126
14	103	126	126	126	126
16	99	115	126	126	126
18	95	109	126	126	126
19	91	103	122	126	126
21	90	96	117	126	126
23	90	91	111	126	126
25	90	90	106	122	126
27	90	90	100	118	126
28	90	90	95	115	126
30	90	90	90	111	126
32	90	90	90	108	126
34	90	90	90	104	126
36	90	90	90	100	126
37	90	90	90	97	126
39	90	90	90	93	126
41	90	90	90	90	126
43	90	90	90	90	126
45	90	90	90	90	126
46	90	90	90	90	126
48	90	90	90	90	126
50	90	90	90	90	126
52	90	90	90	90	121
54	90	90	90	90	117
55	90	90	90	90	112
57	90	90	90	90	108
59	90	90	90	90	103
61	90	90	90	90	99
63	90	90	90	90	94
64	90	90	90	90	90

TH600-HPX Duct Air Temperature vs. Outdoor temperature



* The duct air temp. will never go below the 90-102 °F temperature range. This minimum temperature is selected by the Comfort Level Dial knob.



Modulating Plenum Heater Instructions

Sequence of operation, modulating plenum heater with heat pump

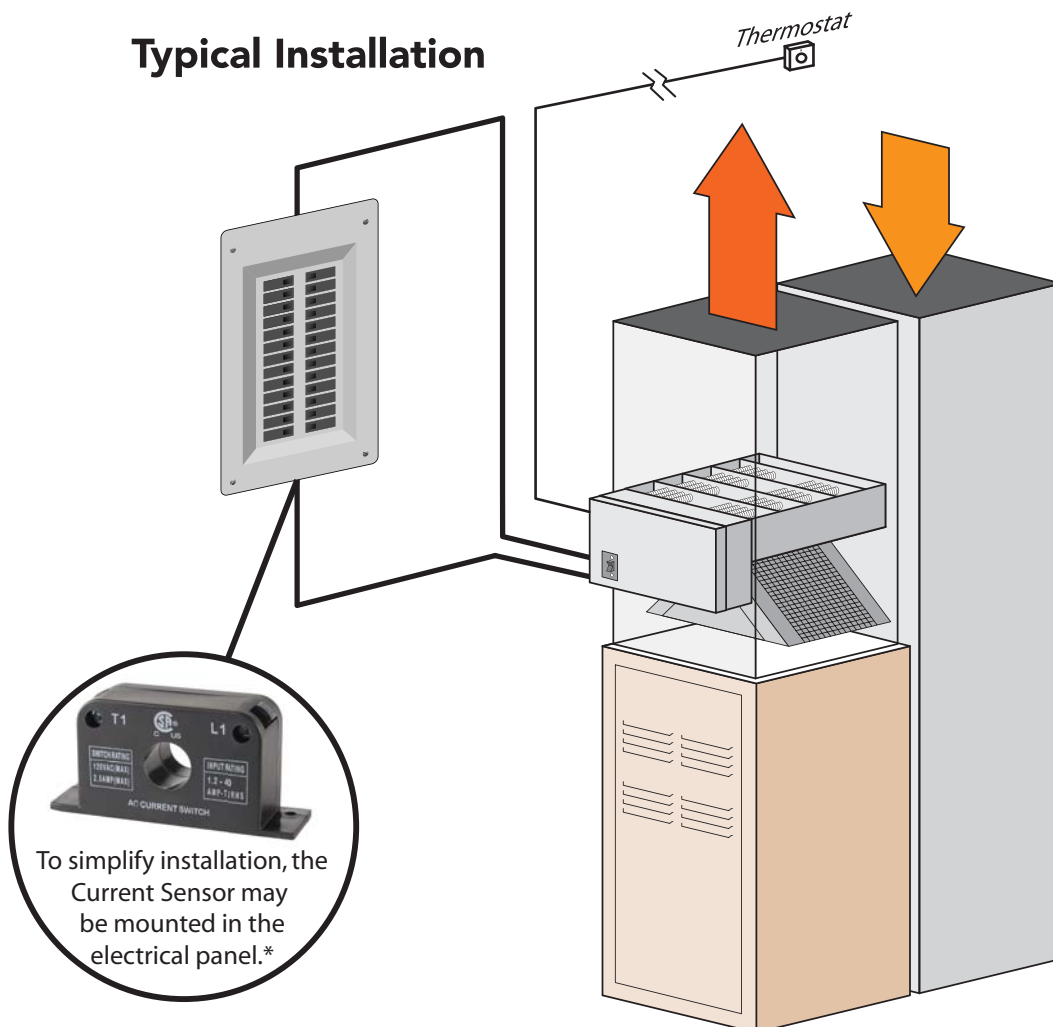
1. When the utility load management control is closed and outdoor temperature is above the set point of the heat pump lockout, heat pump / electric heat is selected as first stage. With a call for heat, the heat pump will start and provide heat. If the DS-600 temperature sensor senses plenum temperature below the comfort level set point of the dial on the plenum heater control board, the plenum heater elements will energize, supplementing the heat provided by the heat pump and modulate to maintain the desired plenum temperature. If the utility load management control is opened, the fossil fuel back up will be selected.
2. When the utility load management control is closed and outdoor temperature is below the heat pump lockout set point, the heat pump will be locked out. With a call for heat, the plenum heater will provide the full heat load and modulate the elements to maintain the desired plenum temperature. If the utility load management control is opened, the fossil fuel back up will be selected.
3. Heat pump lockout setpoint is determined by the "Heat Pump Efficiency" dial setting, A = 0 °F, B = 10 °F, C = 15 °F, D = 20 °F. If an alternative lockout temperature is desired, use an adjustable outdoor thermostat wired in series from YS on plenum heater and Y on heat pump.
4. When the heat pump switches to defrost, the fossil fuel back up will be selected and the plenum heater will be locked out. After defrost, the system will switch back to heat pump / electric heat mode.
5. When the utility load management control is open, with a call for heat, the fossil fuel back up will be selected.
6. To manually select fossil fuel mode, switch heat pump thermostat to emergency or switch plenum heater circuit breakers to off position.

Sequence of operation, modulating plenum heater with standard heating/cooling system

1. When the utility load management control is closed, with a call for heat, the plenum heater will provide the full heat load and modulate the elements to maintain the desired plenum temperature. If the utility load management control is opened, the fossil fuel back up will be selected.
2. When the utility load management control is open, with a call for heat, the fossil fuel back up will be selected.

RETRO PLENUM APPLICATION NOTES

This version of Thermolec Plenum Heater is designed specifically for installations with 100 amp service entrances*. It allows a 10kW (34,000 BTU) electric plenum heater to be added to a fossil fuel furnace without the need of upgrading the service entrance. The National Electric Code (NEC) allows up to 7 kW electric heating with typical large appliances such as a clothes dryer or hot water tank. To allow a full 10 kW of heating, Thermolec's advanced electronic controller combined with a current sensor will shut down the electric plenum heater when a large electrical appliance is in use. As soon as the current sensor detects a load, the electric plenum heater is automatically put into standby mode and will switch to the fossil fuel furnace if there is a demand for heat. When the major appliance is no longer in use and there is a demand for heat, the plenum heater will start heating again. The electrician must determine which major appliance is best suited to be used with the current sensor. If the plenum heater has been heating for more than 30 minutes and there is still a demand for heat, the electronic controller will switch to the fossil fuel furnace for auxiliary heat. This is the safest approach to ensure that the plenum heater will not overload the service entrance. For safety reasons, the electric plenum heater will not function if the current sensor is not connected or if the wire breaks by accident. For convenience there are LEDs on the front panel to indicate whether the plenum heater is in electric or fossil fuel mode. Please check the wiring diagram for proper connections.



*check with local codes before installing

Thermolec Standard Plenum Heater Troubleshooting Guide

Step	Issue	What to Check	Possible Cause/Problem
------	-------	---------------	------------------------

1	No Heat-No Fan	On Relay Board Terminal Strip Check for 24 VAC to: OP,R,WT If Not (See Possible Cause) If Yes: Continue to step 2	Furnace Transformer, Wiring to Thermostat, Off Peak Relay
2	No Heat-No Fan	On the TH400 Board: Check for continuity between C and W1, S1 and S2 If Not (See Possible Causes) If Yes Continue to step 3	Bad Relay Board
3	No Heat-No Fan	Check for 24 VAC at Plenum Heater Transformer and Fuse If No: See Cause (A) If Yes: See Cause (B)	(A): Check for Voltage at Breakers, Transformer (B): TH-400 Board Faulty
4	No Heat- Blower is on	Check for Continuity on Auto High Limits, Manual High Limits and Back Up Contactor	Air flow issues, Low CFM, not wired for variable speed blower, baffles not installed correctly, faulty back up contactor or bad high limits.
5	No Electric Heat or No A/C	Check for 24 VAC at OP terminal on Relay Board	Wired Improperly, Bad Off Peak Relay, Bad Load Control box at house or Utility is currently in a control period.
6	Insufficient Heat	Check Amp draw: If Drawing full amps: heater is operating at design spec (C). If not: Continue to step 7	(C): Airflow or Unit is Undersized
7	Insufficient Heat	Check for 24 VDC to Operating Contactor C1-C4 If No: See cause (D) If Yes: Continue to step 8	(D): Faulty TH-400 Board
8	Insufficient Heat	Are the Operating Contactor(s) closing? If Not: Cause (E) If Yes: Continue to step 9	(E) Bad Operating Contactor
9	Insufficient Heat	Ohm out Elements and Check Element Amp Draws If full open: Cause (F) If Amp Draw is incorrect: Cause (F)	(F) Bad Element

Modulating Plenum Heater Trouble Shooting Guide

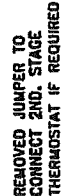
1. **Before you start:** Identify your system, make sure that you are using the appropriate wiring diagram that matches the system components:

- A. Furnace (Single Stage or Two Stage, Variable Speed or Standard Drive)
- B. Cooling (Heat Pump or A/C, 1 stage or 2 stage)
- C. Thermostat (With or Without outdoor sensor?)

2. **If Heat Pump;** does O/B energize in heating or cooling mode? Jumpers on the Relay Board are in the normally closed position, Jumpers must be put to the normally open position if you energize O/B for heating. Same at your Thermostat.

Step	Issue	What to Check	Possible Cause/Problem
1	No Heat	On Relay Board Terminal Strip Check for 24 VAC to: OP,Y,R If No 24 VAC (See Possible Causes) If Yes: Continue to step 2	Off Peak Relay, Thermostat, Wiring and/or Transformer at Furnace
2	No Heat	On the TH600 Control Board: Check for continuity between C and W1, S1 and S2. If None (See Possible Causes) If Yes Continue to step 3	Bad Relay Board. O/B not correct as in "Before you Start" section.
3	No Heat	Double check main power to Plenum Heater transformer. Check Hi Limits manual and auto (Ohm or 24VAC). Reset Manual Limits (listen for click). Make sure back up contactor is pulled in. Check transformer fuse. If Yes (Continue to step 4) If Not (see possible causes)	Tripped Breaker, Bad High Limits; Auto/Manual, Bad Contactor, Blown Fuse
4	No Heat	Remove wires from duct temperature sensor at the TH-600 board. Does unit start? If yes; see possible causes (A). If no; see possible causes (B)	(A): Bad duct temperature sensor (B) Faulty TH-600 Board
5	Insuffcient Heat	Turn Dial on TH-600 board higher, check for green led lights on TH-600 board. If no lights; see possible causes. If yes; continue	Heat Pump is putting out enough bTu's to satisfy heat load on its own.
6	Insuffcient Heat	Perform an amp draw; If amperage is correct in refrence to name plate on unit; see possible causes. If not; continue	Did you use the proper diagram (variable speed?), Is kW load properly sized, Dial on the TH-600 board not in the correct setting for discharge temp. needed
7	Insuffcient Heat	Check for 24 Volts DC to SSR relays If no: see possible causes If yes; continue	TH-600 Board not functioning properly
8	Insuffcient Heat	Check the high voltage side of SSR relay contacts (Should be 0 VAC) If not; see possible causes	SSR Relay is faulty, Broken/Bad element (Ohm out to make sure)

1. The 24V source that supplies the thermostat must be grounded (terminal Co)



THERMOLEC LTD
MONTREAL - CANADA

DRAWING NO. BI-ENERGIE TH400-T15-T18-T20-US(OPR)CONT:

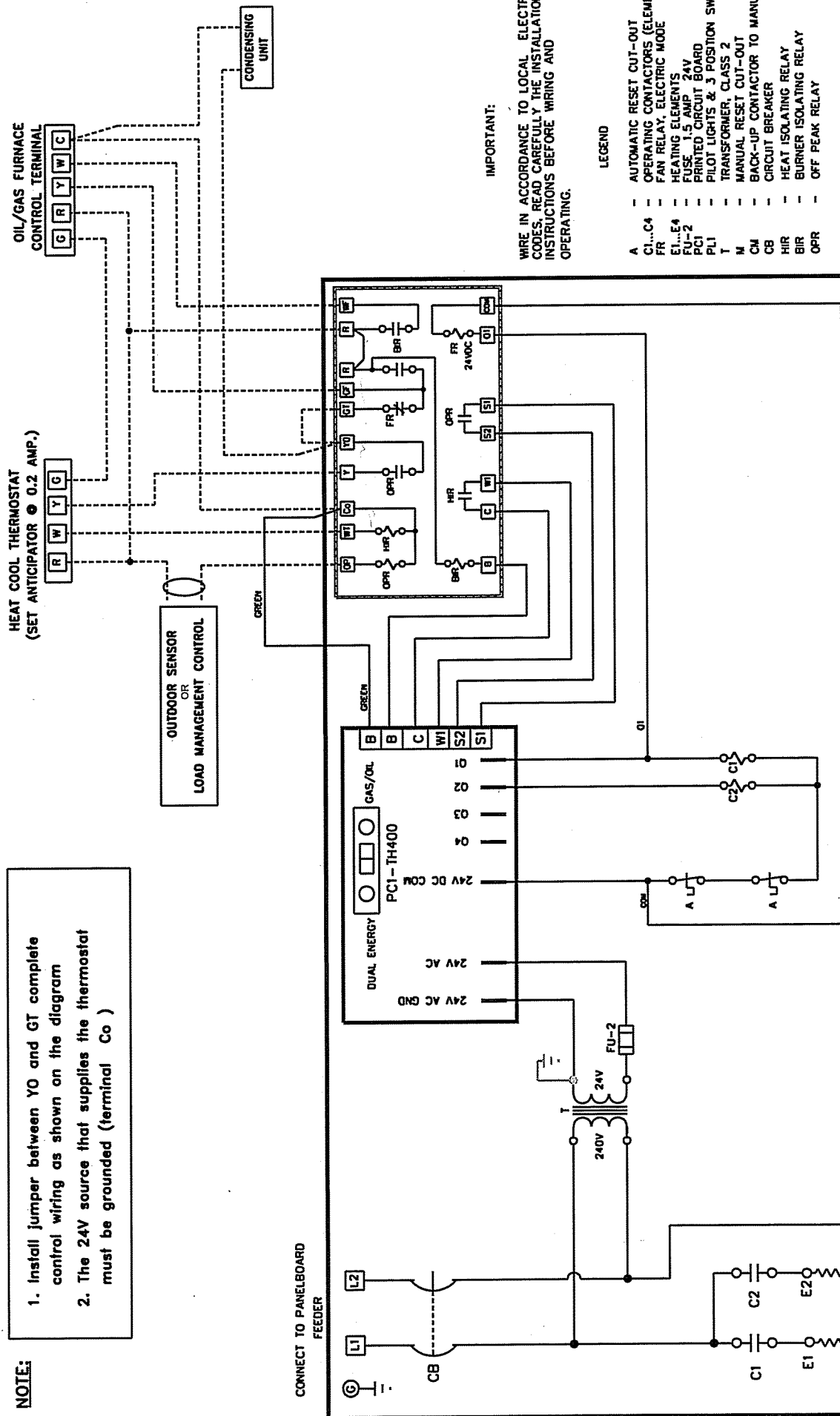
DATE _____

Standard Plenum Heater – Standard Furnace

MONTREAL - CANADA

NOTE:

1. Install jumper between YO and GT complete control wiring as shown on the diagram
2. The 24V source that supplies the thermostat must be grounded (terminal Co)



IMPORTANT:

WIRE IN ACCORDANCE TO LOCAL ELECTRIC CODES. READ CAREFULLY THE INSTALLATION INSTRUCTIONS BEFORE WIRING AND OPERATING.

LEGEND

- A - AUTOMATIC RESET CUT-OUT
- CL...C4 - OPERATING CONTACTORS (ELEMENTS)
- FR - FAN RELAY, ELECTRIC MODE
- EL...E4 - HEATING ELEMENTS
- FUS...F5 - FUSE, 5 AMP, 24V
- PC1 - PRINTED CIRCUIT BOARD
- PL1 - PILOT LIGHTS & 3 POSITION SWITCH
- T - TRANSFORMER, CLASS 2
- M - MANUAL RESET CUT-OUT
- CM - BACK-UP CONTACTOR TO MANUAL
- CB - CIRCUIT BREAKER
- HIR - HEAT ISOLATING RELAY
- BIR - BURNER ISOLATING RELAY
- OPR - OFF PEAK RELAY

TITLE/TITRE

Standard Plenum Heater - Variable speed Furnace

LTEE LTD

THERMOLEC

MONTREAL - CANADA

DRAWING NO. BI-ENERGIE TH400-T6-T10-US(OPR) var. sp

DATE

PER

22-05-08

OIL BURNER WITH FAN CENTER

NOTE:

1. The 24V source that supplies the thermostat must be grounded (terminal Co.)
2. Pre existing wires on TH400 controller terminals (B&B) must be removed for installation.

HEAT COOL THERMOSTAT
(SET ANTICIPATOR @ 0.2 AMP.)

FAN CENTER
CONTROL TERMINALS

R G W Y C

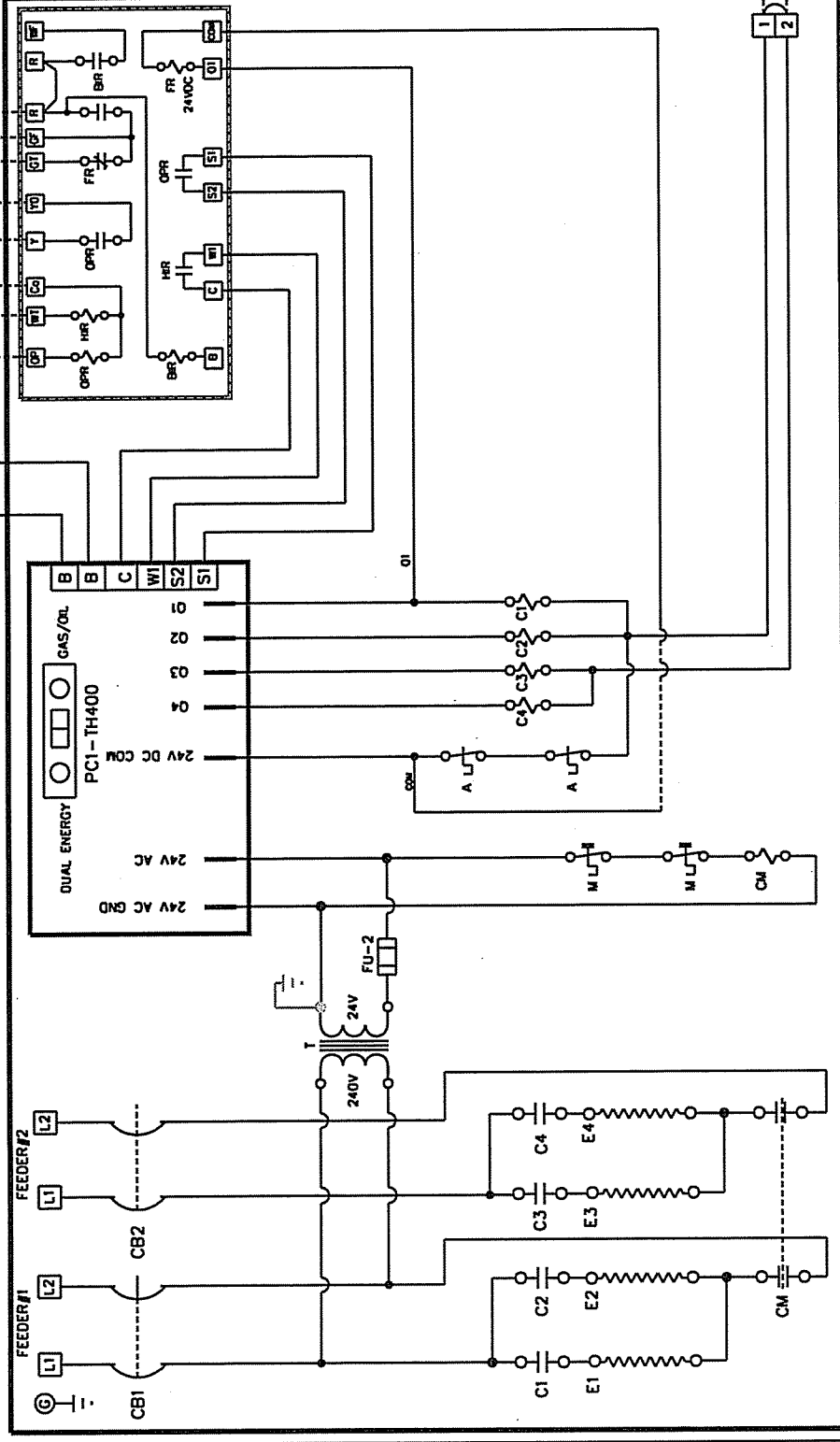
W Y R G

OUTDOOR SENSOR
OR
LOAD MANAGEMENT CONTROL

CONDENSING
UNIT

OIL BURNER

CONNECT TO PANELBOARD



IMPORTANT:

WIRE IN ACCORDANCE TO LOCAL ELECTRIC CODES. READ CAREFULLY THE INSTALLATION INSTRUCTIONS BEFORE WIRING AND OPERATING.

LEGEND

- A - AUTOMATIC RESET CUT-OUT
- CL...C4 - OPERATING CONTACTORS (ELEMENTS)
- FR - FAN RELAY, ELECTRIC MODE
- E1...E4 - HEATING ELEMENTS
- FU--2 - FUSE 1.5 AMP 24V
- PC1 - PRINTED CIRCUIT BOARD
- PL1 - PILOT LIGHTS & 3 POSITION SWITCH
- T - TRANSFORMER, CLASS 2
- M - MANUAL RESET CUT-OUT
- CM - BACK-UP CONTACTOR TO MANUAL
- CB - CIRCUIT BREAKER
- HR - HEAT ISOLATING RELAY
- BIR - BURNER ISOLATING RELAY
- OPR - OFF PEAK RELAY

REMOVED JUMPER TO
CONNECT 2ND. STAGE
THERMOSTAT IF REQUIRED

TITLE/TITRE

Standard Plenum Heater - Standard Furnace



THERMOLEC LTD
MONTREAL - CANADA

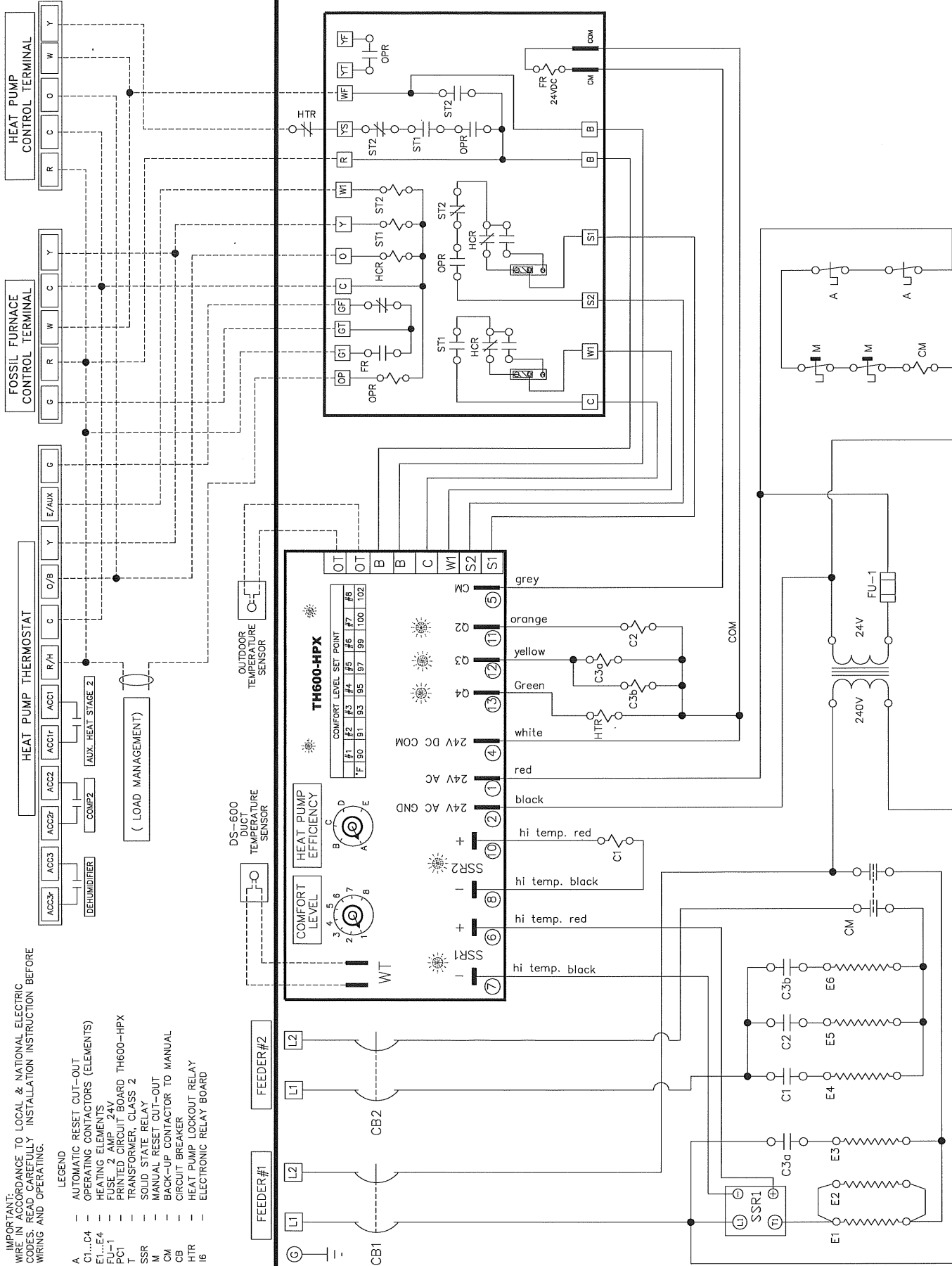
DRAWING NO. BI-ENERGIE TH400-T15-T18-T20-US(OPR)CONT:

DATE	PER
09-11-07	

IMPORTANT: WIRE IN ACCORDANCE TO LOCAL & NATIONAL ELECTRIC CODES. READ CAREFULLY INSTALLATION INSTRUCTION BEFORE WIRING AND OPERATING.

LEGEND

- AUTOMATIC RESET CUT-OUT
- OPERATING CONTACTORS (ELEMENTS)
- HEATING ELEMENTS
- FUSE, 2 AMP, 24V
- PRINTED CIRCUIT BOARD TH600-HPX
- TRANSFORMER, CLASS 2
- SOLID STATE RELAY
- MANUAL RESET CUT-OUT
- BACK-UP CONTACTOR TO MANUAL
- CIRCUIT BREAKER
- HEAT PUMP LOCKOUT RELAY
- ELECTRONIC RELAY BOARD



TITLE/TITRE
Modulating Plenum Heater with
Heat Pump



THERMOLEC
LTD

MONTREAL - CANADA

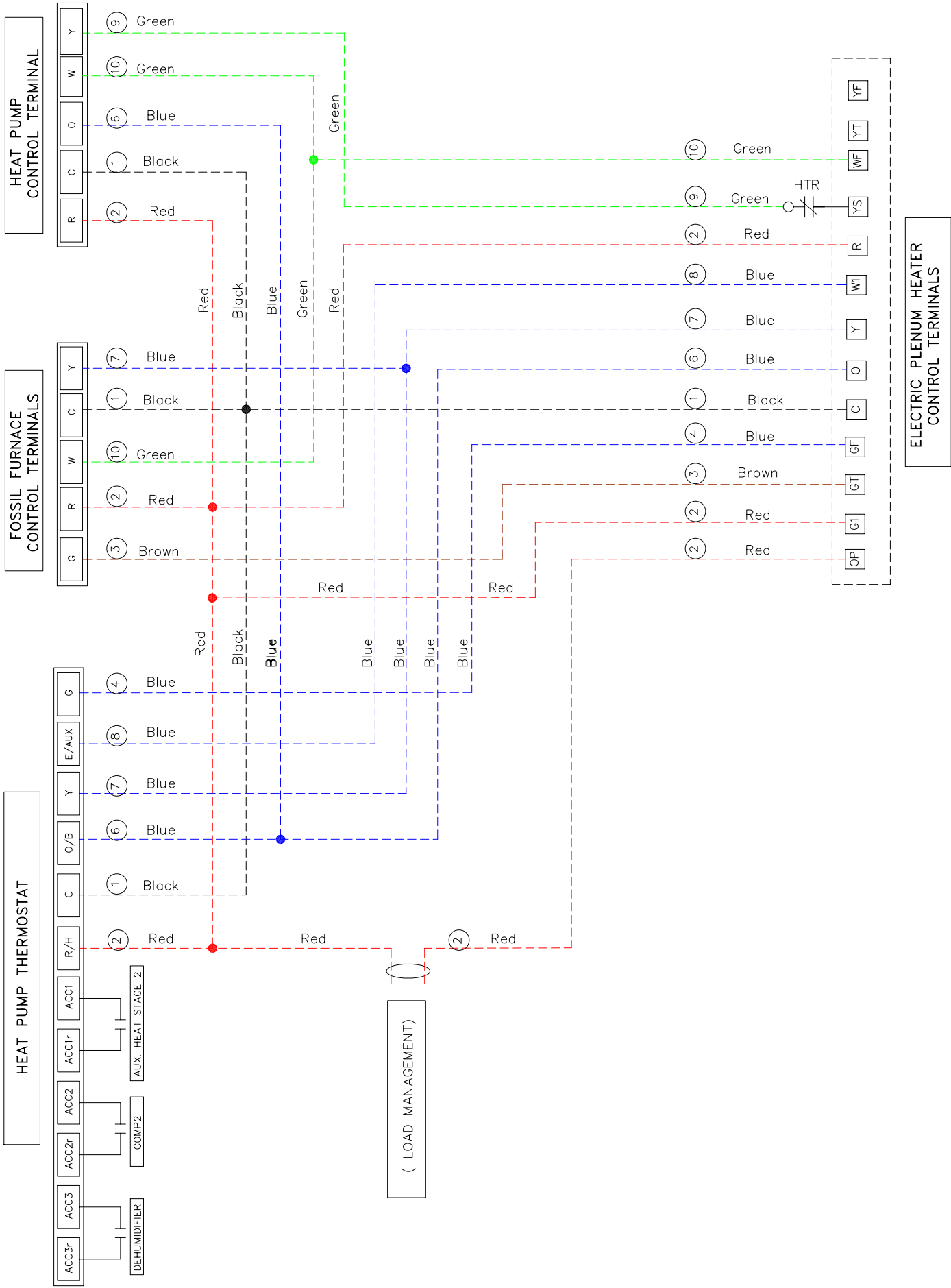
DRAWING NO. TH600-HPX T18-20-1SCR MOD USA DFC I6 4RLY

PER

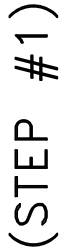
DATE

16-03-11

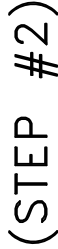
THERMOSTAT, PH, HP, FURNACE, CONTROL WIRES FROM (#1 TO #10) 23-03-11



MODULATING HPX, HEAT PUMP, GAS FURNACE

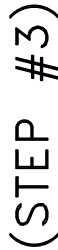


MODULATING HPX, HEAT PUMP, GAS FURNACE



NOTE: IF 2 STAGE HEAT PUMP,
CONNECT Y2 AT STAT DIRECTLY
TO Y2 AT FURNACE AND HEAT

MODULATING HPX, HEAT PUMP, GAS FURNACE

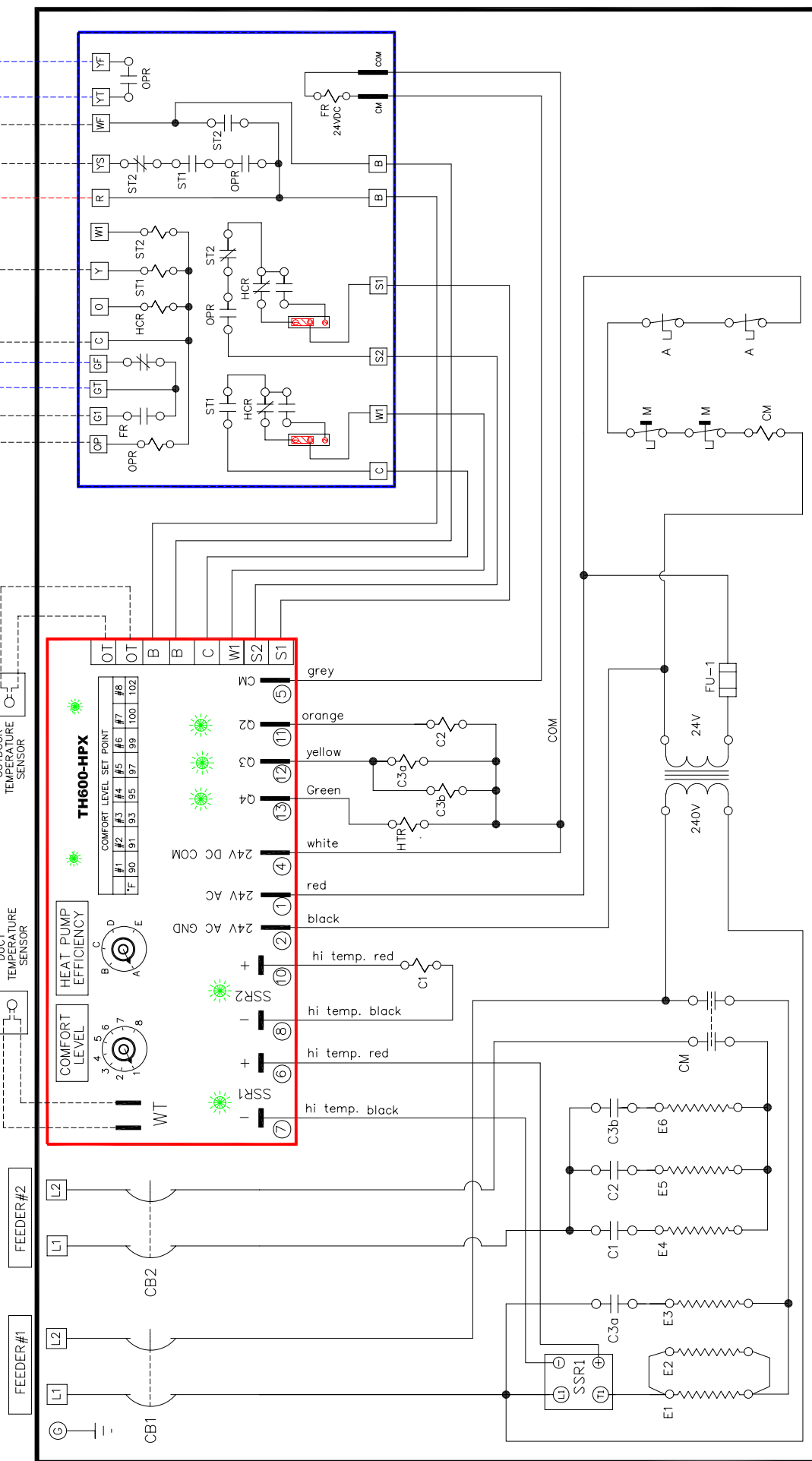


THERMOLEC MOD HPX PLENUM HEATER - HEAT PUMP - 4 WIRE STAT

IMPORTANT:
 WIRE IN ACCORDANCE TO LOCAL & NATIONAL ELECTRIC
 CODES. READ CAREFULLY INSTALLATION INSTRUCTION BEFORE
 WIRING AND OPERATING.

- LEGEND
- AUTOMATIC RESET CUT-OUT
 - OPERATING CONTACTORS (ELEMENTS)
 - HEATING ELEMENTS
 - FUSE 2 AMP 1/4" 24V
 - PRINTED CIRCUIT BOARD TH600-HPX
 - TRANSFORMER, CLASS 2
 - SSR
 - SOLID STATE RELAY
 - MANUAL RESET CUT-OUT
 - BACK-UP CONTACTOR TO MANUAL
 - CIRCUIT BREAKER
 - HEAT PUMP LOCKOUT RELAY
 - ELECTRONIC RELAY BOARD

NOTE: REMOVE WIRE TO CONTACT OF
 HTR RELAY FROM YS TERMINAL
 OR RELAY BOARD AND CONNECT
 TO YF TERMINAL.



TITLE/TITRE
 Modulating Plenum Heater with
 Heat Pump



DRAWING NO. TH600-HPX T18-20-1SCR MOD USA DFC I6 4RLY
 DATE
 16-03-11
 PER

NOTE:

1. The 24V source that supplies the thermostat must be grounded (terminal C or Co)
2. If the 24V source that supplies the thermostat is not grounded, connect a jumper wire from the open B on the Plenum Heater control board to the Co terminal on the relay board

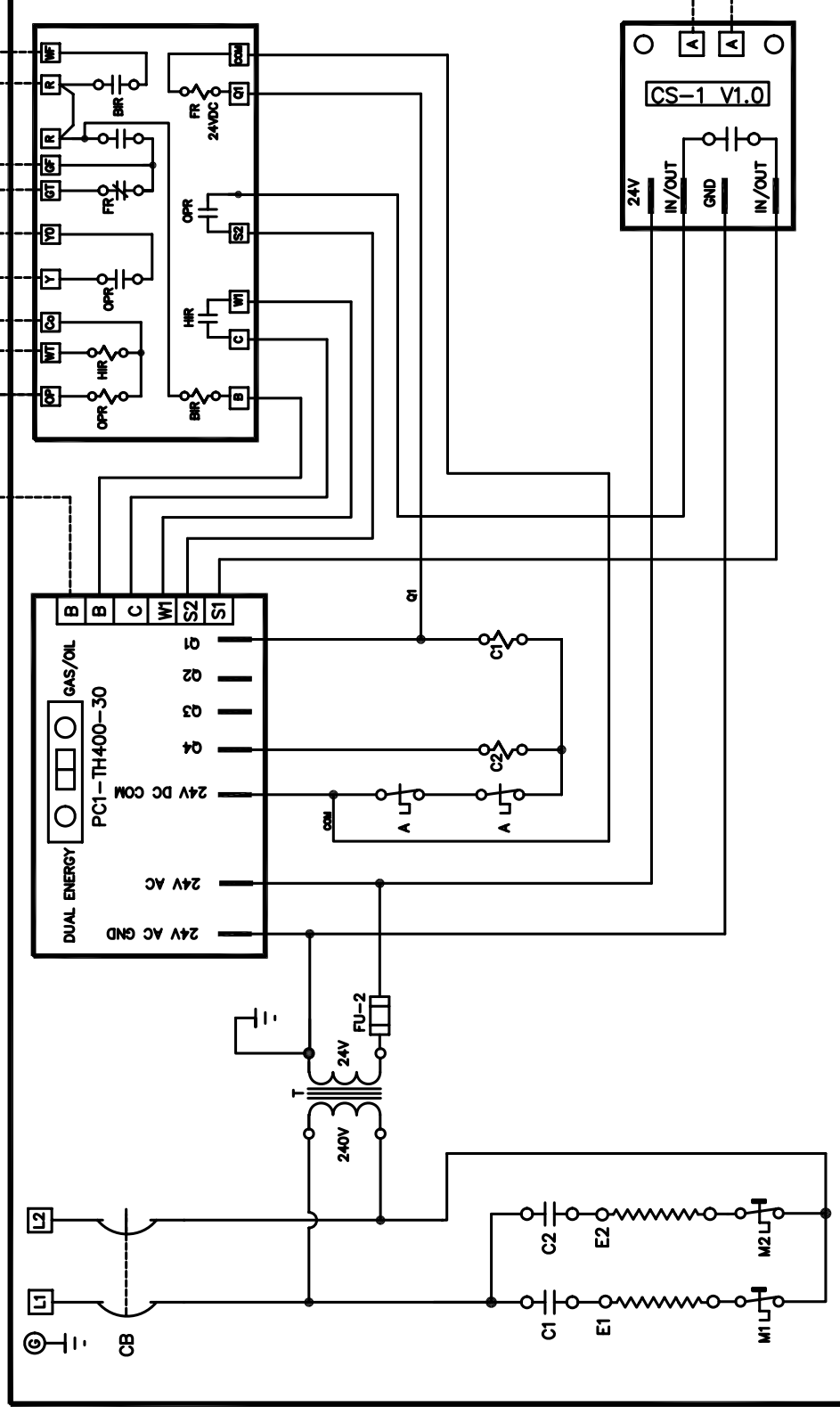
HEAT COOL THERMOSTAT
(SET ANTICIPATOR @ 0.2 AMP.)

GAS FURNACE
CONTROL TERMINAL

OUTDOOR SENSOR
OR
LOAD MANAGEMENT CONTROL

CONDENSING
UNIT

CONNECT TO PANELBOARD
FEEDER



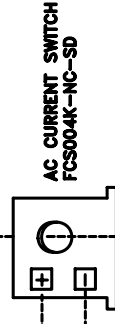
IMPORTANT:

WIRE IN ACCORDANCE TO LOCAL ELECTRIC
CODES, READ CAREFULLY THE INSTALLATION
INSTRUCTIONS BEFORE WIRING AND
OPERATING.

LEGEND

- AUTOMATIC RESET CUT-OUT
- C1...C4 OPERATING CONTACTORS (ELEMENTS)
- FR FAN RELAY, ELECTRIC MODE
- E1...E4 HEATING ELEMENTS
- FUSE 1.5 AMP 24V
- PC1-2 PRINTED CIRCUIT BOARD
- PL1 PILOT LIGHTS & 3 POSITION SWITCH
- T TRANSFORMER, CLASS 2
- M MANUAL RESET CUT-OUT
- CM BACK-UP CONTACTOR TO MANUAL
- CB CIRCUIT BREAKER
- HIR HEAT ISOLATING RELAY
- BIR BURNER ISOLATING RELAY
- LOR LOAD CONTROL RELAY

Power wire (in)



Power wire (out)

TITLE/TITRE

T-10U Retro Plenum Heater



MONTREAL - CANADA

LTEE
LTD

DRAWING NO. RETRO T10-U-DFCT

DATE
14-11-07

PER

***** MOD Plenum Heater with Honeywell Vision Pro IAQ with Outdoor Sensor:**

Installer Set-Up Number	Installer Set-up Name	Settings	Notes:
172	System Selection	2	Heat Pump
174	Number of Cool / Compressor Stages (Installer Selects)	?	1 or 2 depending on HP
176	Number of Conventional Heat or Heat Pump Aux Stages	2	Choose 2
190	Reversing Valve O/B (Installer Selects)	0	O/B terminal energized in cooling
		1	O/B terminal energized in heating
200	Back-Up Heat Source Applies to both Aux and EmHeat	1	Fossil Fuel Backup Heat
210	External Fossil Fuel Kit	0	Thermostat Controls Backup Heat
342	Outdoor Temp Sensor	1	Yes
345	Dual Fuel Heat Pump Control	1	Balance Point plus 2° droop
350	Heat Pump Balance Point (also compressor lockout Temperature) (Installer Selects)	5	5° F
		10	10° F
		15	15° F
		20	20° F
		25	25° F
		30	30° F

See IAQ manual for further options

Note: Use separate outdoor thermostat to lock out compressor (heat pump) based on outdoor temperature and heat with plenum heater only.

***** MOD-HPX Plenum Heater with Honeywell Vision Pro IAQ with Outdoor Sensor:**

Same as set-ups above with the following exception:

Set-up number 350 – Heat Pump Balance Point: Select 0, “no heat pump compressor lockout”

***** MOD Plenum Heater with Honeywell Vision Pro 8000 with outdoor sensor:**

Installer Set-Up Number	Installer Set-Up Name	Setting	Notes
170	System Selection	7	2 heat/1 cool heat pump
190	Reversing valve O/B operation	0/1	0 if O energized in cooling 1 if O energized in heating
340	Remote temperature sensor	1	Remote temperature sensor for display only
350	Heat Pump Lockout	Various	This is an installer temperature option
360	AUX Lockout	Various	This is an installer temperature option

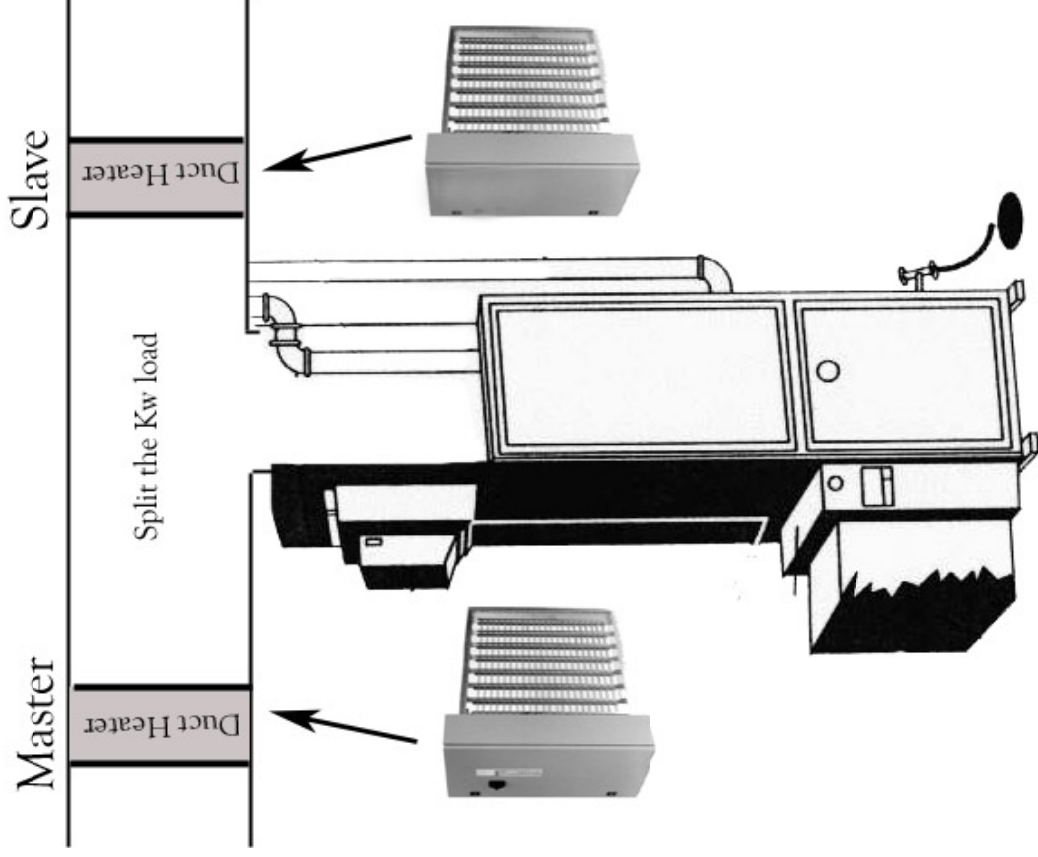
***** MOD Plenum Heater with Honeywell Vision Pro 8000 without outdoor sensor:**

Installer Set-Up Number	Installer Set-Up Name	Setting	Notes
170	System Selection	7	2 heat/1 cool heat pump
190	Reversing valve O/B operation	0/1	0 if O energized in cooling 1 if O energized in heating
340	Remote temperature sensor	0	No remote temperature sensor

***** MOD-HPX Plenum Heater with Honeywell Vision Pro 8000 with outdoor sensor:**

Installer Set-Up Number	Installer Set-Up Name	Setting	Notes
170	System Selection	7	2 heat/1 cool heat pump
190	Reversing valve O/B operation	0/1	0 if O energized in cooling 1 if O energized in heating
200	Backup heat source (Aux heat)	1	Heat pump backup heat source is fossil fuel
340	Remote temperature sensor	1	Remote temperature sensor for display only

Note: Actual setup numbers may change with model of thermostat.
It is important to know your stat as well as when and why it transfers voltage!



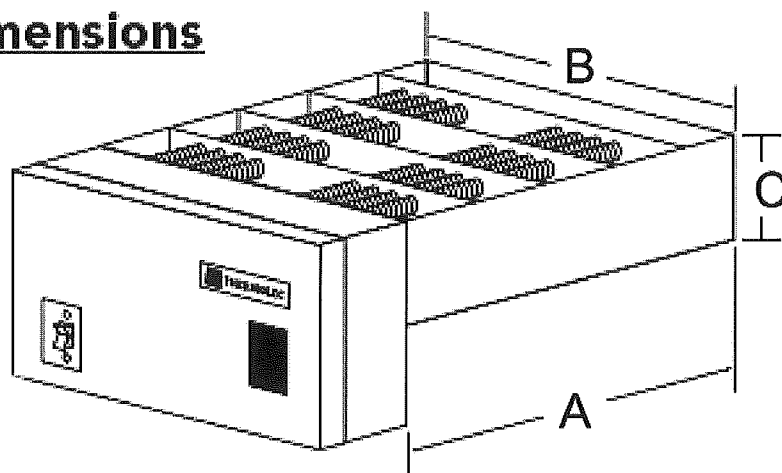
Thermolec can also build custom plenum heaters to solve almost any system set-up problem you may encounter.

Example: Master Slave Set-up

Can be used in a situation where there is not enough room in the plenum area for standard plenum heaters

CUSTOM DIMENSIONS

Dimensions



A _____

B _____

C _____



7878 12th Ave. South
Bloomington, MN 55425
Phone: (952) 854-4400
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Representing the following quality manufacturers:



Aire Technologies: Fire , Smoke and Air Dampers, Ceiling Radiation Dampers, Enclosures and Accessories. www.airetechnologies.com



Dimplex: Residential, Commercial and Industrial electric heat products. Electric Thermal Storage units. www.dimplexheating.com



Ecobee: Web connected Smart Thermostats and Energy Management Systems for residential and commercial applications. (In Stock) www.ecobee.com



EPS Make-up Air: Systems up to 1360 cfm with electric pre-heat. Custom sizes also available. (In Stock) www.epsalesinc.com



FAMCO: Motorized dampers, back draft dampers, metal or plastic wall and roof vents and other products. (In Stock) www.famcomfg.com



Precision Boiler: Commercial and Industrial Boilers and Boiler room products. www.precisionboilers.com



Premier One: Residential and Commercial Germicidal & Ozone products, HEPA Filtration and Polarized Media filtration. www.premieroneproducts.com



Salo Manufacturing: Residential and Commercial fiberglass bathing systems for new construction, remodel and ADA compliant applications. www.salomfg.com



Soler & Palau: Residential and Commercial Fans, Louvers, Dampers and Energy Recovery Ventilators (In Stock) www.solerpalau-usa.com



Summerraire: Residential and Light Commercial air-to-air heat recovery ventilators and accessories. (In Stock) www.summerraire.com



Thermolec: Electric heating products including boilers, plenum heaters , packaged make up air and duct heaters. (In Stock) www.thermolec.com



Trion: Air Bear media air cleaners, electronic air cleaners, humidifiers and dehumidifiers. www.trioninc.com

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