

## POWER SOURCE AND CONTACTOR CONNECTIONS

### Supply Voltage

The PT-ECONOMY operates from 100 - 277 V ac at 50/60 Hz. This control and its heater load should not share a circuit branch and circuit breaker with other types of equipment. A shared circuit may result in electromagnetic interference that can affect system operation. For line supply and load connections, use 10 AWG wires rated for at least 194 °F (90 °C). The connections are shown in Figure 3 and Figure 4.

### Contactors Ratings

The heater contactor provides dual Form A (DPST) contacts rated for heater loads up to 30 amps and 277 volts ac. The dual contacts on the contactor are used to control both legs of the input power (Line and Neutral).

### Manual Load Test

To manually energize the load, hold Test/Reset pushbutton for five seconds. The output will switch on and stay on for five minutes, or until Test/Reset pushbutton is pressed again. A manual load test is recommended upon installation to verify the heater function and load current.

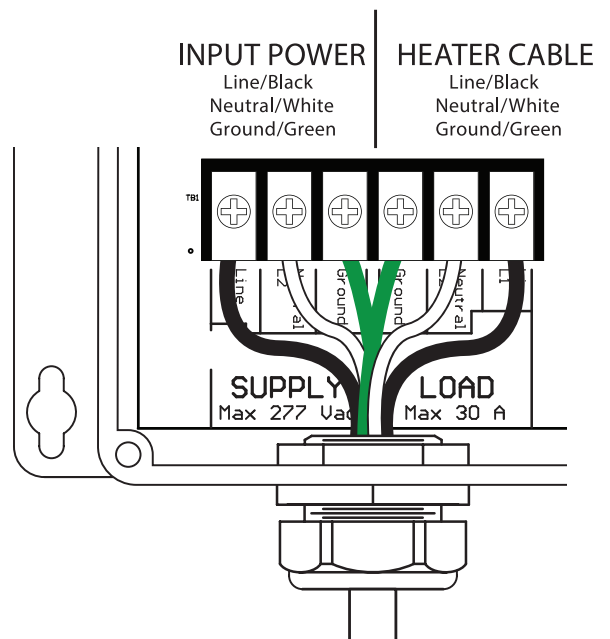


FIGURE 3. Contractor Connections

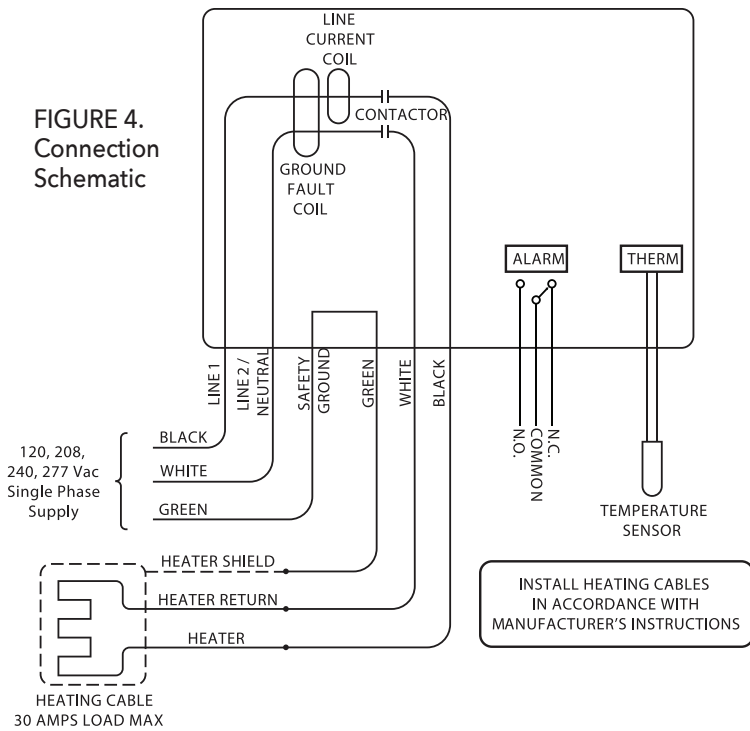


FIGURE 4. Connection Schematic

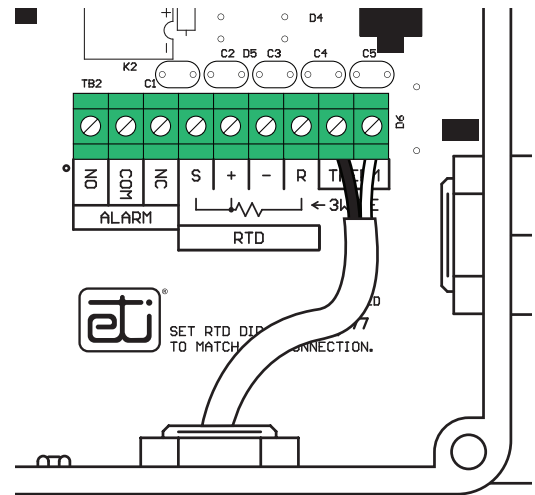


FIGURE 5. Thermistor sensor connection

## TEMPERATURE SENSOR

### Thermistor (25076)

The PT-ECONOMY comes with a thermistor temperature sensor with a 20 ft. jacketed cable that has an operating range of  $-40^{\circ}\text{F}$  to  $230^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$  to  $110^{\circ}\text{C}$ ). See Figure 5 for proper wiring for the thermistor sensor.

## EXTERNAL ALARM

### Alarm Connections

An alarm or power-off condition can be communicated by either opening or closing a relay contact. It is important to make the proper alarm relay connections to achieve the desired result. The middle terminal labeled COM (Common) is used in both wiring configurations. Connect one alarm relay lead to the COM terminal.

If the system needs a contact to close to signal an alarm or power-off condition, connect the other alarm relay lead to the **NC (Normally Closed)** terminal. See Figure 6.

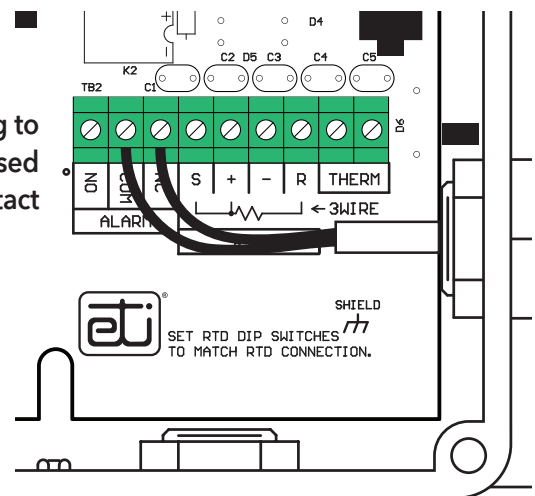


FIGURE 6. External alarm connection

Wiring to Normally Closed alarm contact

If the system needs a contact to open to signal an alarm or power-off condition, then connect the other alarm relay lead to the **NO (Normally Open)** terminal.

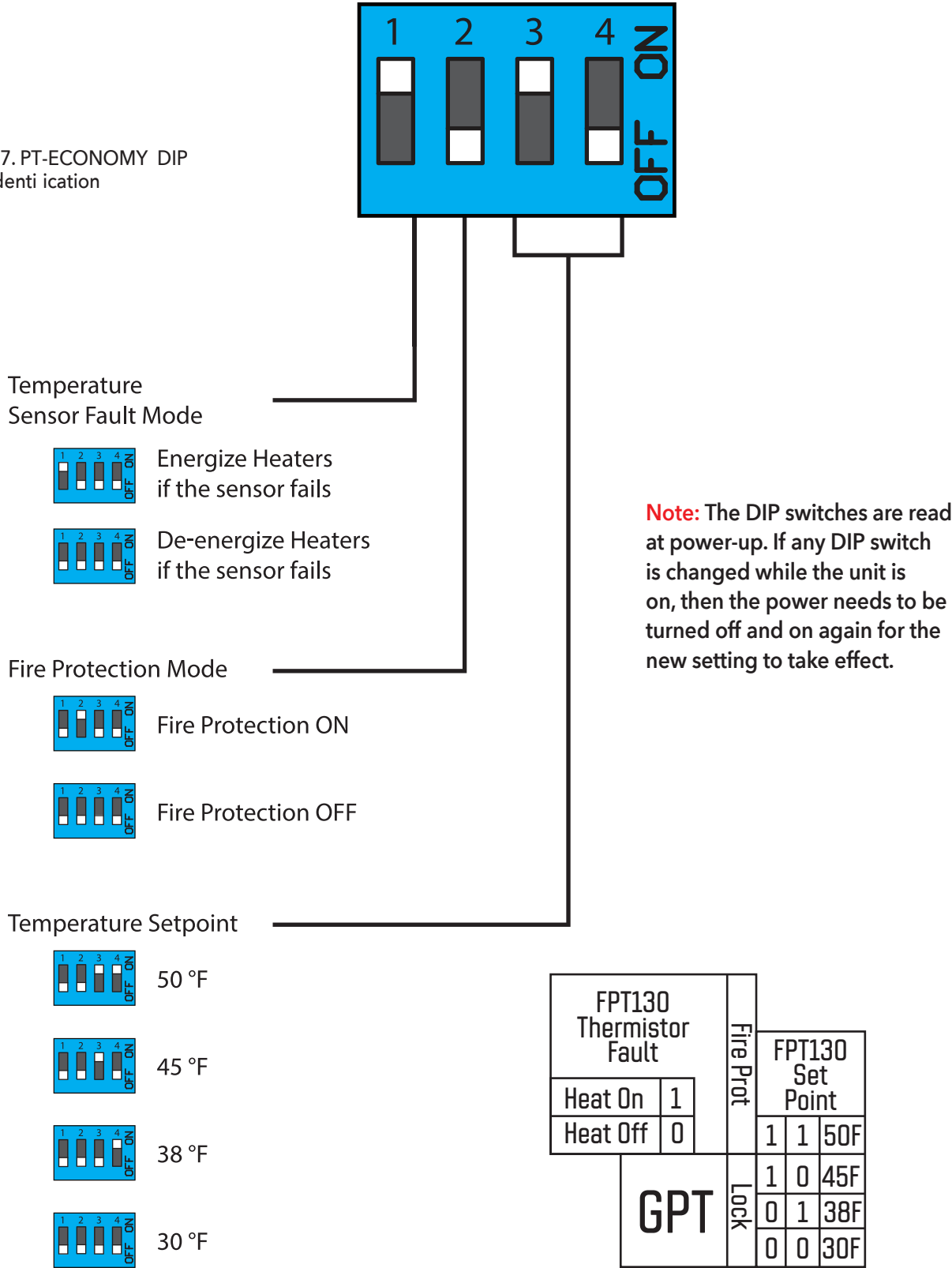
If the unit has power, and there are no alarm conditions then the NO and COM terminals will be connected. If the unit loses power or an alarm condition occurs then the NC and COM terminals will be connected.

**Note:** The “Normally” condition of the relay is the alarm condition for the unit.

# DIP SWITCH SETTINGS

# Default settings

FIGURE 7. PT-ECONOMY DIP switch identification



## OPERATION

The PT-ECONOMY can maintain temperatures at setpoints of 30 °F, 38 °F, 45 °F, or 50 °F (–1.1 °C, 3.3 °C, 7.2 °C, or 10 °C). The heater will energize when the temperature drops below the designated setpoint. The heater will de-energize when the temperature reaches 2 °F (1 °C) above the setpoint.

The PT-ECONOMY features ETI's patented self-testing GFEP, which switches the system off when it detects excessive ground current leakage (unless Fire Protection Mode is on). The GFEP eliminates the extra expenses associated with having to provide external GFEP.

The FTP 130 also features a Low Current Alarm, which switches the system off when it detects a load current below 0.1 amps (unless Fire Protection Mode is on). The load current is checked during each ground fault test, and whenever the load is on. Note: the low-current alarm takes five seconds of low current to activate.

### PT-ECONOMY Front Panel

#### Indicator Lights (See Figure 8.)

- POWER indicator - This green LED lit solid indicates that the PT-ECONOMY is receiving power.
  - Blinking indicates a calibration error.
- HEAT indicator - This yellow LED lit solid indicates when the heater is energized.
  - Blinking asymmetric (1/2 sec off × 1-1/2 sec on) - Low Current Alarm, heater relay closed.
  - Blinking asymmetric (1/2 sec on × 1-1/2 sec off) - Low Current Alarm, heater relay open.
  - Blinking fast - Stuck relay.
- LOW TEMP indicator - This blue LED lit solid indicates when the temperature falls to 32 °F (0 °C) for all setpoints except the 30 °F (-1.1 °C) setpoint. For the 30 °F (-1.1 °C) setpoint the LOW TEMP alarm will indicate when the temperature drops to 28 °F (-2.2 °C).
  - Blinking indicates sensor fault.
  - Blinking fast - indicates High Temperature alarm.

- ALARM indicator - This red LED lit solid indicates when there is a high ground fault current.
  - Blinking indicates a GFEP circuit failure (this light will also blink while system is performing a self-test).

#### Pushbuttons

- TEST/RESET pushbutton - This red pushbutton has the following functions:
  - To test the ground fault detector circuit itself AND to test for a ground fault when the heat load is not energized (the heater will energize during the test). Note: whenever the heat is on, the unit is continuously checking for a ground fault.
  - To reset the system after a ground fault. If the ground fault no longer exists, then normal operation will resume.
  - To reset the low-current alarm. If the load current is still below 0.1 amps then the alarm will recur in five seconds. Note: the low-current alarm takes five seconds of low current to activate.
  - Energizes heater for system testing or troubleshooting. Pressing this pushbutton for five seconds will energize the heater for five minutes. Pressing the push button again will de-energize the heater and resume normal operation.

**Note:** Because the unit has no ON/OFF power switch, power runs to the unit as soon as facility power is connected to it. When the unit has power, the green POWER indicator will be lit.

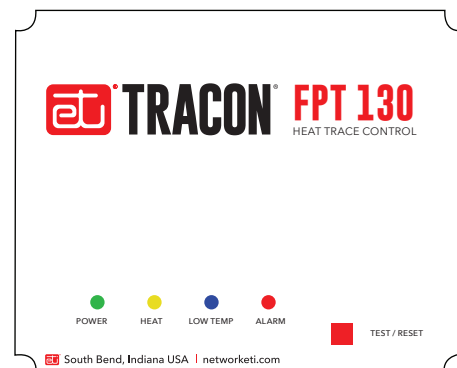


FIGURE 8. PT-ECONOMY front panel

## DISABLING THE LOW TEMP ALARM LED

The blue LOW TEMP alarm LED indicates the presence of Low Temperature, High Temperature, or a bad thermistor. When disabled this blue LED will only indicate for the presence of a bad thermistor.

### How To Disable The Low Temp Alarm LED

- Hold down the red TEST/RESET pushbutton for approximately ten seconds.
  - After the first five seconds the unit will go into Manual Mode, energizing the heater cable if it is not all ready energized.
  - After the second five seconds the unit will enter the LOW TEMP blue LED edit mode. This is indicated by the blue LED flashing rapidly. Release the button at this point. (The unit will exit Manual Mode.)

**Note:** The blue LED may flash for a couple of seconds after releasing the red TEST/RESET pushbutton.

- The blue LED will indicate whether the LOW TEMP Alarm is currently disabled or not.
  - If the blue LED remains on the LOW TEMP Alarm is currently enabled.
  - If the blue LED goes off the LOW TEMP Alarm is currently disabled.
  - To keep the setting as it is wait five seconds and the unit will resume normal operation.
  - To change this setting press the red TEST/RESET pushbutton within five seconds. The new status of this setting will show for three seconds before the unit resumes normal operation.

**Note:** The blue LED will flash rapidly before exiting the LOW TEMP blue LED editing mode and resuming normal operation.



## SPECIFICATIONS

### General

Certifications	UL 60730-1, UL 1053, CSA E60730-1:13
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### Environmental

Area of use	Nonhazardous locations
Operating temperature range	-40 °F to 122 °F (-40 °C to 50 °C)

### Enclosure

Dimensions	8 1/8" (W) x 5 1/5" (H) x 4 3/8" (D) 207 mm (W) x 140 mm (H) x 112 mm (D)
Ingress protection	NEMA 4X, IP66
Cover attachment	Polycarbonate cover, plastite screws
Cable entries	Two liquid-tight cable glands installed for sensor and alarm leads, cable diameter 0.08" to 0.24" (2 mm to 6 mm) One 1.046" hole to accommodate a 3/4" conduit fitting for power wiring connection
Material	Polycarbonate
Weight	2.7 lb. (1.22 kg)
Mounting	Wall mount with flanges

### Wiring Terminal Ratings

Power	Barrier Strip Terminals for Line, Neutral, and Ground; use 10 AWG wires rated for at least 194 °F (90 °C)
Sensors	Terminal Block, rising cage clamp, 12-28 AWG leads
Alarm relay	Terminal Block, rising cage clamp, 12-28 AWG leads

### Parameter Settings

Temperature setpoints	30 °F, 38 °F, 45 °F, or 50 °F (-1.1 °C, 3.3 °C, 7.2 °C, or 10 °C)
Low-temperature threshold	32 °F (0 °C) for 38 °F, 45 °F, or 50 °F (3.3 °C, 7.2 °C, or 10 °C) setpoints 28 °F (-2.2 °C) for 30 °F (-1.1 °C) setpoint
High-temperature threshold	90° F above setpoint
Low-current alarm delay	5 s
Ground fault limit current	30 mA
Self-Test Interval	24 h

### User Interfaces

Pushbuttons	Test/Reset
DIP switches	Temperature setpoint Thermistor fault mode Fire protection mode

### Remote Interface

Alarm relay	Isolated SPDT 1 AMP Class 2 contact
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### Indicators

Status indicator	Power to the unit (Green solid) Calibration error (Green blinking) Call for heat (Yellow solid) Low current alarm (Yellow blinking) Stuck relay (Yellow blinking fast) Low temperature (Blue solid) High temperature (Blue Blinking-FAST) Sensor fault (Blue blinking) Ground fault (Red solid) GFEP circuit failure (Red blinking)
Summary alarm relay reporting	Low load current High ground fault current Sensor fault Internal fault

### Control Ratings

Temperature accuracy	+/- 2 °F (1 °C)
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### Temperature Sensors

Temperature inputs	(Included) Thermistor, 100k ohms at 25 °C, range -40 °F to 230 °F (-40 °C to 110 °C), 20ft Lead (25076)
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### GFEP (Ground-Fault Equipment Protection)

Threshold	30 mA
Automatic self-test range	Verifies GFEP functionality every 24 hr. and whenever the load is turned on

### Power

Supply voltage	100 - 277 V ac 50/60 Hz
Controller power consumption	5 W maximum, 2 W idle
Load rating	30 A, 100 - 277 V ac resistive

Specifications are at 77 °F (25 °C) unless otherwise stated and are subject to change without notice.

## CONTACTING CUSTOMER SERVICE

For assistance, contact Customer Service. Office hours are from 8:00 AM until 5:00 PM ET.

**Email:** [techteam@warmlyyours.com](mailto:techteam@warmlyyours.com)

**Web:** [warmlyyours.com](http://warmlyyours.com)

## RETURNS AND REPLACEMENT PART PURCHASES

Equipment cannot be returned for credit once it has been installed. ETI will repair or replace faulty equipment under warranty. Prior to removal of equipment for warranty return, please contact ETI Technical Support for troubleshooting assistance.

Before returning a unit to ETI, obtain a Return Merchandise Authorization from our Customer Service Department, available between 8:00 a.m. and 5:00 p.m. Eastern Time. If possible, use the original container and packing materials when packing the unit for shipment. It is important to mark the Return Merchandise Authorization clearly on the outside of the shipping container so that it may be correctly processed upon receipt at Environmental Technology. For more information about replacement parts or for a replacement Data Sheet or Manual, please visit [www.networketi.com](http://www.networketi.com).

## LIMITED WARRANTY

ETI's two year limited warranty covering defects in workmanship and materials applies. Contact Customer Service for complete warranty information.

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