

Installation Instructions - TD3 Case Display

P/N 810-2230 (red LEDs, sealed)

P/N 810-2240 (green LEDs, sealed)

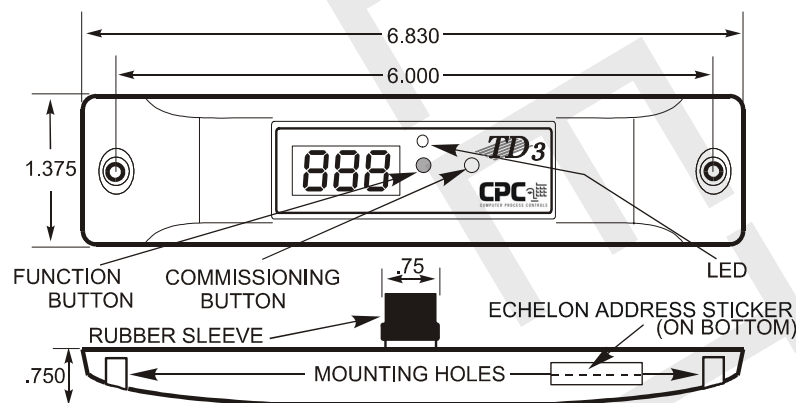
Introduction

The TD3 is a LonWorks Echelon based refrigeration case display that uses three inputs to monitor discharge air temperature, product probe temperature, and a defrost termination sensor, which can be either a temperature or digital sensor. The TD3 sends information to an Einstein RX controller (P/N 830-XXXX) via the Echelon Network. The Einstein can then change refrigeration settings according to the input data.

Installation

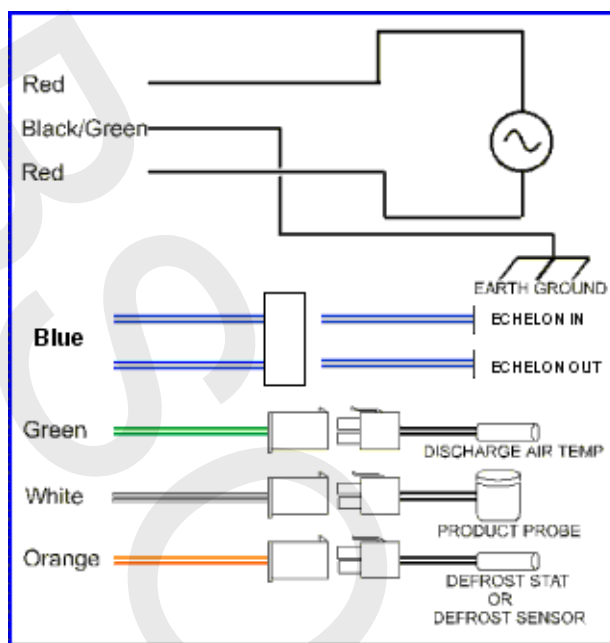
The TD3 is designed to be mounted upwardly on the face of a refrigeration display case. Since the unit is sealed, all that is needed for installation is a 1" hole for the wiring harness and two pilot holes (1/8") for #6 mounting screws. On the back of the unit is a wiring sleeve that is designed to keep moisture from entering the display unit and case through the wiring hole.

For programming purposes, be sure that **before mounting** the unit that you remove the Echelon address sticker off the bottom of the unit. Retain this sticker and record the location of the TD3 from which it came.



Wiring

There are five sets of wires that come from the back of the unit. These are to supply power, connect the unit to the network, and to connect the unit to up to three sensors.



Power

The TD3 requires **4VA** power supplied by a 24VAC Class 2 transformer. The transformer supplied with the TD3 (P/N 640-0039) is rated at 10VA and can power one TD3.

If you wish to power multiple TD3s off a single transformer, use one of the transformers listed in *Table 1*. **Do not power TD3s with the same three-board, six-board, and ten-board transformers used to power the I/O Network.**

Xformer P/N	VA Rating	Input Voltage
640-0039	10 VA	110 VAC
640-0041	50 VA	110 VAC
640-0042	50 VA	220 VAC
640-0050	75 VA	110 VAC
640-0045	75 VA	220 VAC

Table 1 - Class 2 Transformers for Echelon Devices

Connect the Red leads to 24VAC power and the Green/Black wire to earth ground.

Echelon Network

The two blue wires on the cable harness are for connecting the TD3 to the Echelon cable that leads back to its parent Einstein.

The **only** Echelon network cable to be used with CPC networks is Level IV, shielded, stranded, twisted pair 22 AWG (available from CPC, P/N 135-2300 non-plenum, P/N 135-2301 plenum).

Before attempting to wire the TD3 to the Echelon network, you should consult the chapter in the Einstein RX User's Guide (P/N 026-1601) regarding structuring an Echelon network.

Using a "Stub" to Network the TD3

Since TD3s are typically mounted at the top of a case, the easiest way to daisy-chain TD3s on the Echelon network is to use a "stub." As demonstrated in *Figure 1*, a stub is a length of special Echelon wire with two twisted pair leads instead of one pair, leading from (1) the TD3 cable harness to (2) a terminal block on the kickplate at the bottom of the case. This will allow field technicians to (3) connect the TD3s to the Echelon network using the terminals at the kickplate.

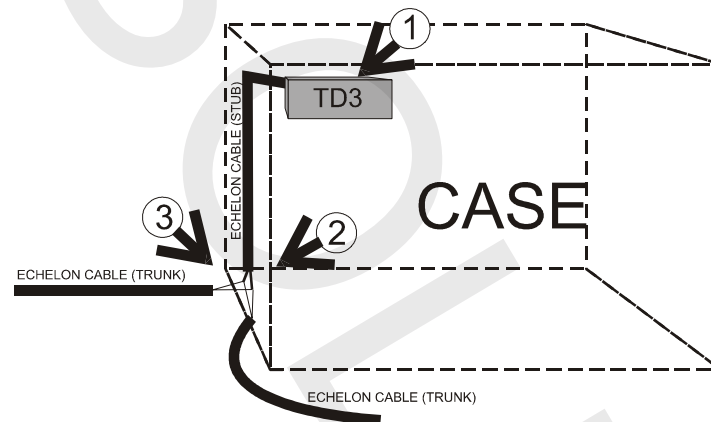


Figure 1 - Using a Stub with TD3

Stub Wire Type and Part Number

The wire type necessary for the stub is Level IV, shielded, stranded, two pair 22 AWG (CPC P/N 335-2240).

Connecting the TD3 to the Stub

The Echelon stub should have two twisted pair leads: one colored blue and white/blue, and the other colored orange and white/orange (colors may vary depending on the cable vendor). As shown in *Figure 2*, snap the connector end of the stub into the Molex connector at the end of the BLUE leads on the TD3 wiring harness.

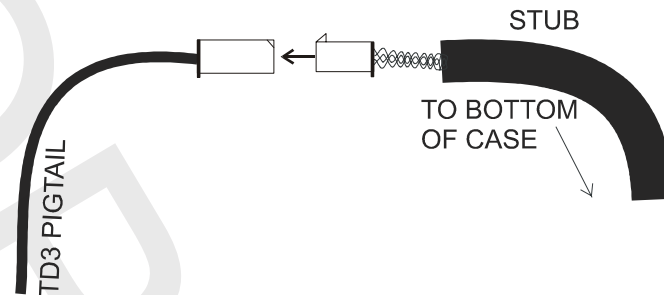


Figure 2 - Connecting the Stub to the TD3 Cable Harness

Wiring the Stub to Terminals at the Kickplate

For the other end of the Echelon wire stub, it is recommended you mount two terminal blocks with three terminals each in an accessible area near the bottom of the case (i.e. the kickplate), and then connect each twisted pair to a different set of terminals (*Figure 3*). This creates a pair of “ECHELON IN” terminals and a pair of “ECHELON OUT” terminals. These terminals may be used to field-wire the Echelon network cables.

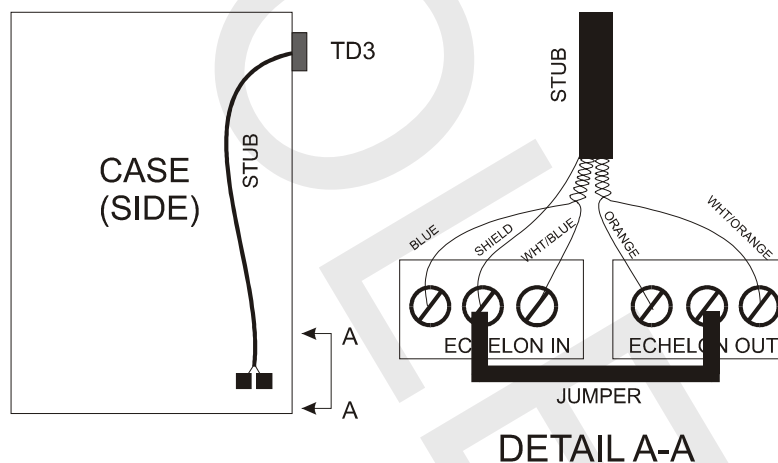


Figure 3 - Wiring Stub to Terminals at the Bottom of the Case

Connecting the TD3 to the Echelon Network in the Field

Field wiring of the TD3 to the Echelon network can now be made by connecting the main Echelon trunk cables to the terminals at the case’s kickplate. Connect one end of the cable to the ECHELON IN terminals, and continue the wire run from the ECHELON OUT terminals, as shown in Figure 4.

1. Connect the signal-carrying wires from the incoming Echelon cable to the outer pair of terminals (the first and third terminals) of the ECHELON IN terminal block.
2. Connect the shield of the cable to the center terminal of the ECHELON IN terminal block.
3. Connect the signal-carrying wires from the outgoing Echelon cable to the outer pair of terminals (the first and third terminals) of the ECHELON OUT terminal block.

4. Connect the shield of the cable to the center terminal of the ECHELON OUT terminal block.

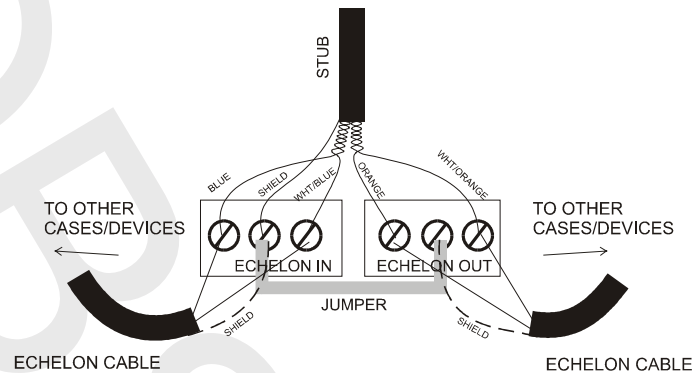


Figure 4 - Field Wiring TD3s to Echelon Network

Note: When using stubbed TD3s on an Echelon network, count the length of each stub twice when determining the total length of Echelon network cable.

Terminating a Daisy Chain (When TD3 Is On the End)

If a TD3 is at the end of a daisy chain network segment, you will need to terminate the Echelon network at the TD3. To do this, you will need a Daisy Chain Termination Block (CPC P/N 535-2715). Wire the Daisy Chain Termination Block to the ECHELON OUT terminals as shown in Figure 5.

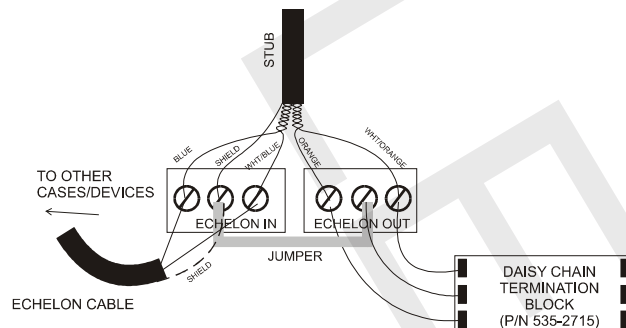


Figure 5 - Terminating the TD3 at the End of a Daisy Chain

Sensors

The three sets of wires with connector ends are for connecting sensors to the unit. The Green pair is for a standard discharge air temperature sensor (P/N 501-1129). The White pair is for a product probe sensor (P/N 508-9010). The Orange pair is for either an analog or digital defrost termination sensor. All sensors are supplied by CPC and come fitted with compatible connector ends.

Programming

Programming the unit is as simple as setting up the Einstein controller to read the unique Echelon address (see **Einstein RX Refrigeration Controller User's Guide**, P/N 026-1601) and commissioning the TD3 by pressing the Commissioning Button.

If the unit can not be commissioned at the TD3 (for instance, if the TD3 is far from the Einstein, or if you are programming alone) the Einstein controller can accept the unique Echelon address number typed in. The address number is located on the back of the unit. Make sure to either remove the address sticker or make a copy of it before mounting the unit.

For more details on how to program the TD3, see **Einstein RX Refrigeration Controller User's Guide**, P/N 026-1601.

Operation

The numeric display of the TD3 has five features:

- The TD3 by default displays discharge air temperature.
- Press the function button once ("Pr" will flash for one second) and the temperature value for the product probe is displayed. This value will be displayed for ten seconds and then go back to display the discharge air temperature.
- Press the function button again (within ten seconds of the first press) and "dF" will flash for one second. Then either the defrost termination temperature (for an analog sensor) or the defrost or the defrost status (for a digital sensor, open, closed) will be displayed. Again, after ten seconds the display will go back to discharge air temperature.
- Press the function button one more time and either "°C" or "°F" will flash, and then the discharge air temperature will display again.
- When the case is in defrost mode, "dEF" will be displayed by default. If you wish to display the discharge or product temperature instead of the "dEF" message, you may do so by changing a setting in the Einstein Standard Circuit application to which the TD3 belongs.
- If a sensor failure is detected, or a sensor is absent from and input, "—" will be displayed for that particular sensor mode.

Status LED

The LED on the front of the TD3 is a status light that is controlled by the Einstein. If the status light is green, conditions are normal. A red status light indicates an alarm condition. The TD3 sends information from the connected sensors to the Einstein controller and the Einstein compares the data to alarm parameters that have been programmed in the Einstein (see **Einstein RX Refrigeration Controller User's Guide**, P/N 026-1601).