eGauge Installers Guide

Tools required for eGauge installation

- Circuit-breaker finder (ring-out tool) *** A MUST HAVE***
- #0 slotted screw driver *** A MUST HAVE***
- Voltage /Amp meter *** A MUST HAVE***
- 8ft / 10ft Ladder *** A MUST HAVE ***
- Label maker *** A MUST HAVE***
- Cordless drill and Drill Bits
- Electrician's screw drivers - small / medium / large
- Wire strippers
- Fish tape
- Gloves to handle ceiling tiles?
- Broom / Shop Vacuum- to clean up job site

Materials required for eGauge installation

- Black, red, blue, and white stranded AWG12 wire; length depending on installation location
- Electrician's tape
- Two conductor wire as need to extend CT Tail lengths
- Wire nuts- small blue ones will be fine.

Nomenclature and Symbols

In the US, residences typically receive power through split-phase power distribution which is provided through two hot legs, a neutral, and a protective ground.
Most commercial and industrial buildings receive power via 3-phase power distribution provided through 3 hot phases, a neutral and protective ground.
Throughout the rest of this document, we use the term “phase” to refer both to the phases of 3-phase power distribution as well as the two legs used in split-phase power distribution.

Symbol:	Description:
	Caution, risk of danger.

.

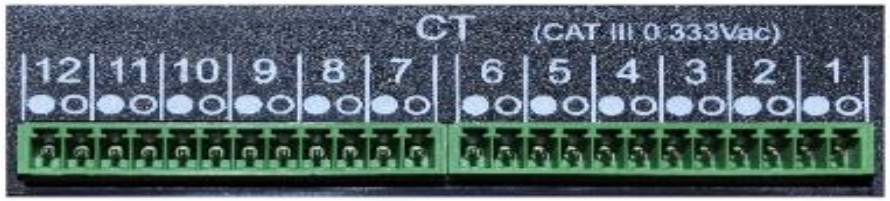
What's included in the box

• 1 eGauge device • 100' Ethernet cable • 0–12× Current Transformers (CTs) w/8ft wires & 2-position plugs (as ordered)

eGauge is pre-configured with CT assignment completed.

CT assignment as follows.

- Pin 1. Phase A Main CT (L1) QTY=1
- Pin 2. Phase B Main CT (L2) QTY=1
- Pin 3. Phase C Main CT (L3) QTY=1
- Pin 4. Phase A HVAC (L1) QTY=1
- Pin 5. Phase B HVAC (L2) QTY=1
- Pin 6. Phase C HVAC (L3) QTY=1
- Pin 7. Phase A Walk-in Refrigeration (L1) QTY=1
- Pin 8. Phase B Walk-in Refrigeration (L2) QTY=1
- Pin 9. Phase C Walk-in Refrigeration (L3) QTY=1
- Pin 10. Phase A Lighting Control Panel (L1) QTY=1
- Pin 11. Phase B Lighting Control Panel (L2) QTY=1
- Pin 12. Phase C Lighting Control Panel (L3) QTY=1



CT Connector **Pins 1 – 12 noted above- keep in order.**

This connector provides 12 positions for the CT plugs illustrated here. The pin numbers above will indicate CT location.

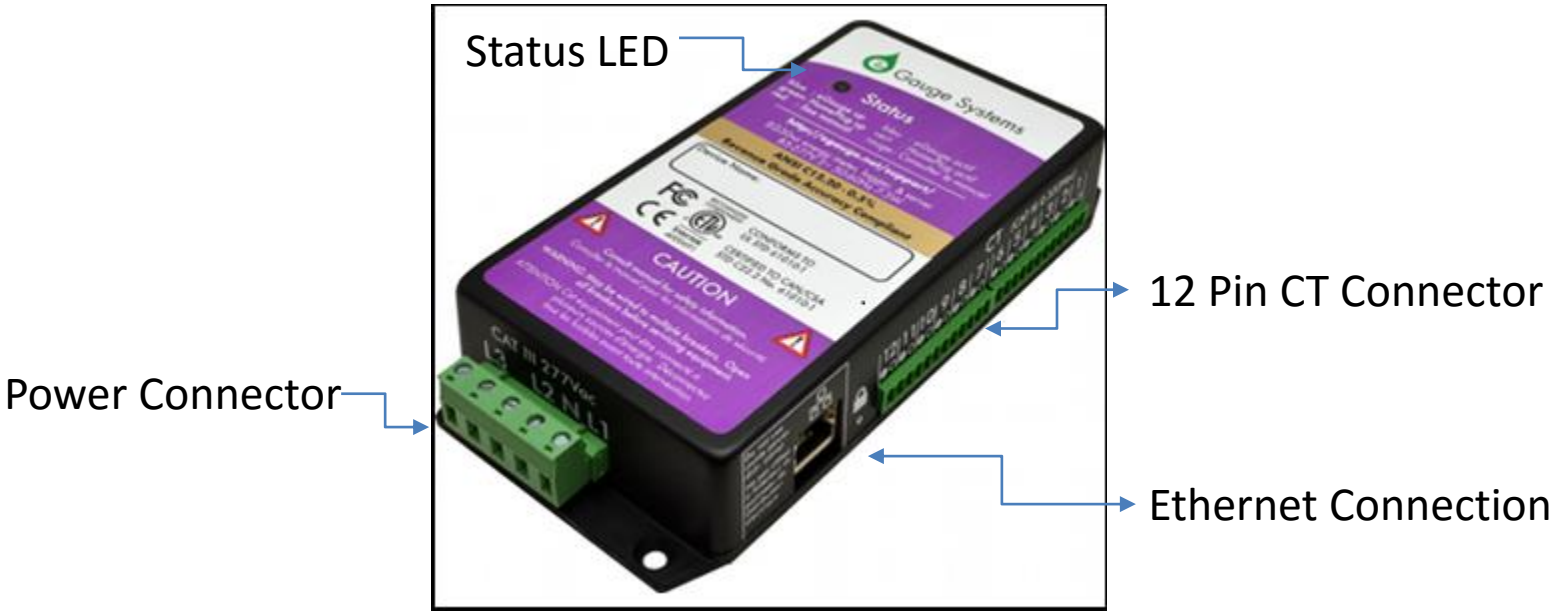
Pins that are to receive the black wire of the CTs are marked with a circle with black interior, pins for the white wires are marked with a circle with white interior.

NOTE: If CT wires need to be altered please refer to this information above in Black.

“FIRST EXPERENCE”

eGauge Installation

Installation must be performed by a licensed electrician according to all applicable local, national, and international codes



Installer Note- eGauge #_____

100 ft. Ethernet cable will be connected to the eGauge and the Client's Router.

Note: Do not attach or run in conduit with high voltage wiring.

Installer Please label Ethernet cable to clients router!

Device Overview

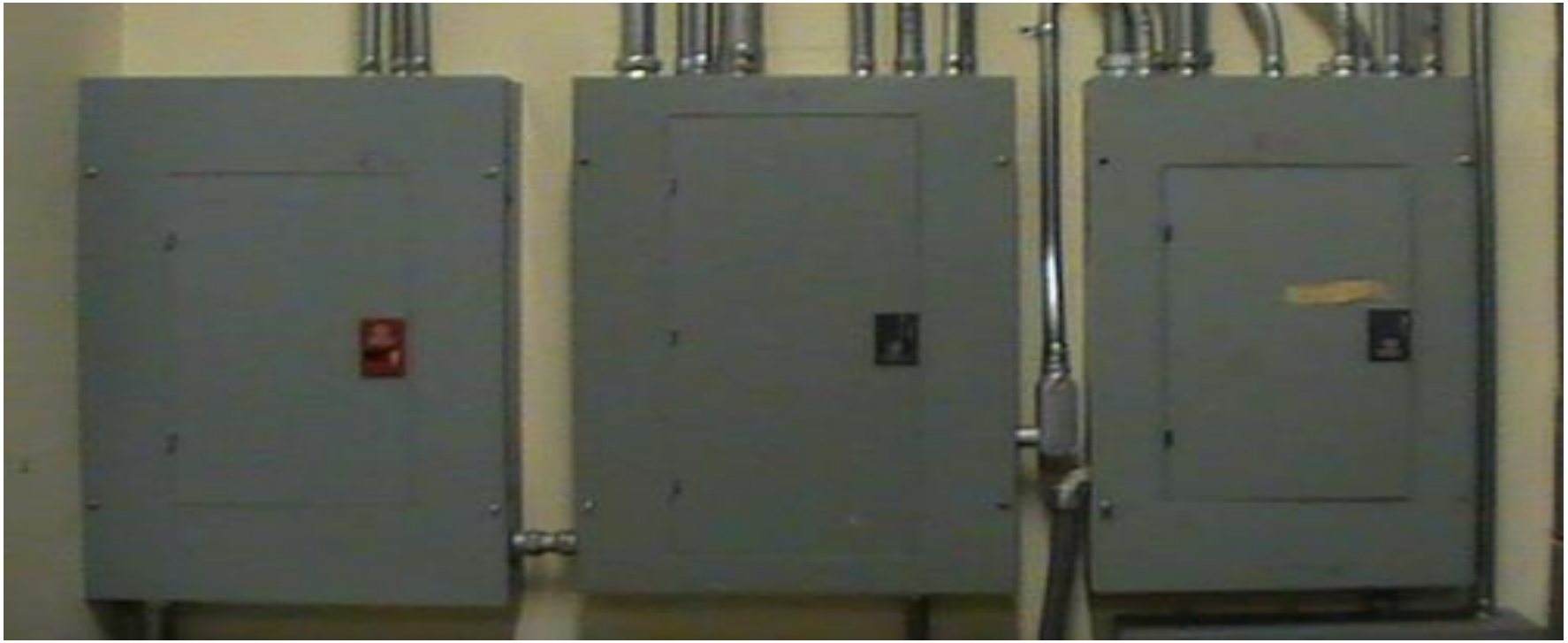
eGauge has two input connectors: the Power Connector is a 5-pin connector used to wire the device to the building supply. The CT Connector is used to connect up to 12 Current Transformers (CTs).

There are no output connections.

The Status LED is an installation aid. When powered on, the LED will briefly turn yellow, then blue. The blue color indicates that the device is powered up and recording data. When blinking blue or green, it indicates that the device is accessible from the Internet (see Section 3.2). If the LED is blinking red, the internal temperature is high. It may be necessary to let the device cool off by powering it off by turning off the circuit breakers labeled "eGauge Disconnect."

eGauge should get installed in the panel with the most CT's

DO NOT RUN CT WIRES WITH HIGH VOLTAGE OR ATTACH TO HIGH VOLTAGE WIRING!



Mount the eGauge either inside the power-distribution panel (if permitted and space is available) or inside a suitable enclosure near the power distribution panel.

Installation Location

eGauge is normally installed near the power-distribution panel of a building, where there is easy access to the power circuits to be measured.

eGauge is permanently connected equipment. A 20A circuit-breaker shall be included (one per phase) in close proximity of the device and within easy reach of the operator. The breakers shall be **labeled** as the disconnecting device for eGauge. The breakers shall be wired to the device in compliance with the NFPA 8 National Electrical Code using a conductor size of at least AWG14.

eGauge is a component and must be installed inside a suitable enclosure. The enclosure eGauge is installed in must be rated according to the environment it is used in. For example, outdoor installations require an outdoor-rated enclosure (e.g., IPX4/NEMA4).

Select an installation location that is not exposed to direct sunlight or the elements. Otherwise, the warranty may be voided.

Do not install the device in a way that would make it difficult to operate the disconnecting device (circuit breakers).

Power Connector

Pin: Name: Description:

L1 Wire to phase 1 of building supply.

N Wire to building's Neutral.

L2 Wire to phase 2 of building supply for split- and three-phase in

Unused. Leave unconnected.

L3 Wire to phase 3 of building supply for three-phase installs.

The Power Connector is CAT III rated (for measurements performed in the building installation, such as circuit breakers) It powers the device (3W typical, 7.5W Maximum), and the voltage on L1 is measured to calculate power used/generated on phase L1. The pin must by wired to the building's power supply with a voltage in the range from 85–277Vac (to neutral). In contrast, pins L2 and L3 are used purely as voltage-taps so power used/generated on phases L2 and L3 can be calculated. Wiring these pins is necessary only if there are CTs measuring current(s) on L2/L3. The voltage on these lines can be 0-277Vac or 0-277Vdc. The input impedance for L2 and L3 is approximately 927kΩ at 60Hz.

Safety Warnings

Please follow installation instructions in this manual for wiring diagram and proper selection of CTs.

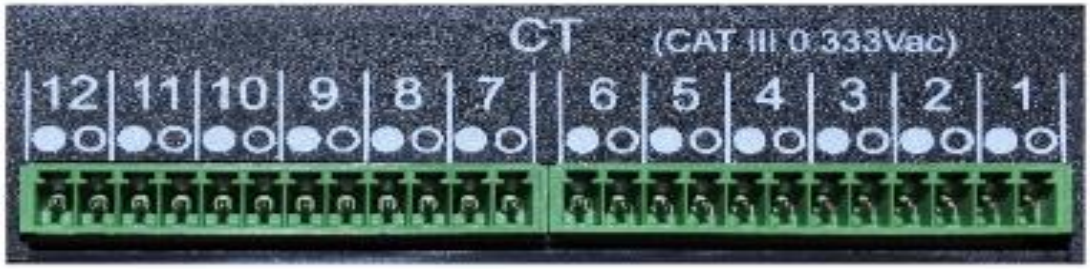
To reduce the risk of electric shock:

- Do not connect device to a circuit operating at more than 277 Volts to ground.

CT Connector

CT's wires can be extended up to 100 feet.)

This CT connector, It provides 12 positions for the CT plugs illustrated below. The silk-screened numbers indicate which CT should be connected to which pair of pins. Pins that are to receive the black wire of the CTs are marked with a circle with black interior, pins for the white wires are marked with a circle with white interior.



CAUTION: The pins of the CT Connector are at a potential of 2.5V relative to Neutral (pin N on the Power Connector). Do not connect these pins to any of the Power Connector pins or the device may be damaged!

NOTE: There is no risk of damage if a CT plug is accidentally inserted such that it straddles the pins for two different CTs. If this happens, eGauge will not be able to measure power properly but otherwise there are no ill effects. To correct the problem, simply remove and re-insert the plug at the right position.

CT Connector

Please do not leave loose wiring showing, as seen in this example.

Correct wiring for 2-pin CT plug

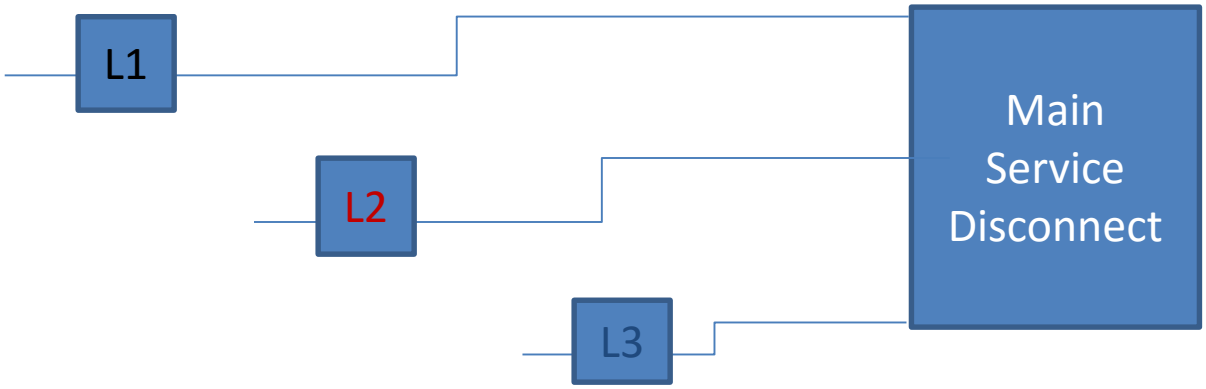
If you have to cut or lengthen the CT wires, ensure that the CT wires are connected as shown.

Close the newly installed breakers. This should cause eGauge to power up and within a few seconds, the Status LED should turn blue. The LED will turn green if communication with the HomePlug adapter is sufficiently fast (≥ 5Mbps). If the Status LED fails to turn green after 30 seconds, see trouble-shooting instructions in Appendix C. The Status LED will start to blink when the device is able to connect to egauge.net. At that point, the device can be found in the device-list at **http://egauge.net/devices/.** Note that the Status LED may blink blue or green, depending on whether or not the HomePlug adapter speed is above or below 5Mbps. We recommend to always install the device such that the LED turns green, but in some cases (e.g., long cable-runs), this may not be possible. When this happens, a blue blinking LED may be sufficient, though we would recommend accessing the device's web page and verifying that everything works reliably and speedily.

Label the newly installed breakers as **"eGauge Disconnect"** so the customer can readily find them if it becomes necessary to power-cycle or turn off the eGauge device for any reason.

IMPORTANT: Labeling the breaker(s) is essential. Do not skip that step. From time to time, it may be necessary to power-cycle the device. The breaker(s) provide the only safe way to do that, so for safety-reasons, it is important that the end-customer is able to identify the eGauge breaker(s) without having to open any enclosures.

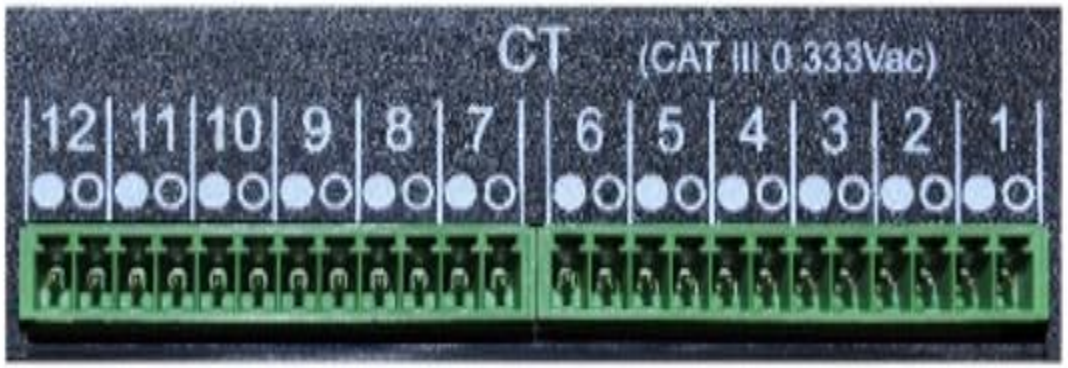
MAIN BREAKERS – 1200A CT's



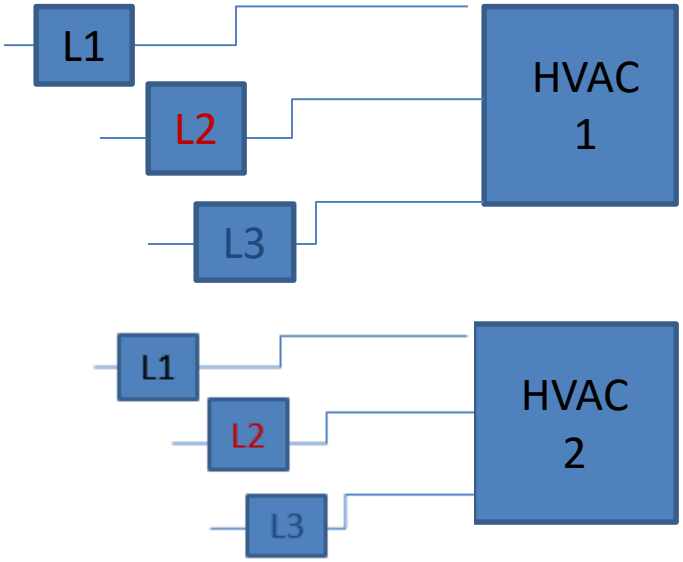
L1- Goes to Pin 1

L2- Goes to Pin 2

L3-Goes to Pin 3



HVAC – 100A CT's



L1- Goes to Pin 4

L2- Goes to Pin 5

L3- Goes to Pin 6

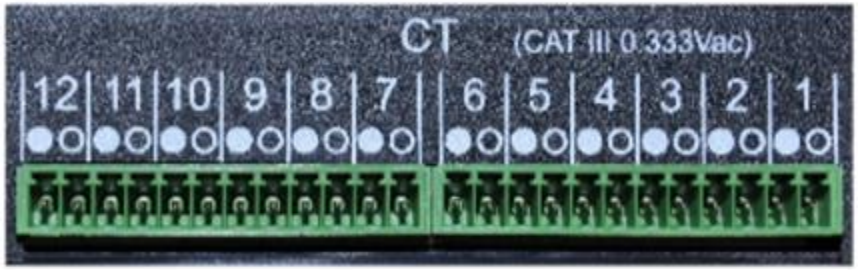
L1- Goes to Pin 4

L2- Goes to Pin 5

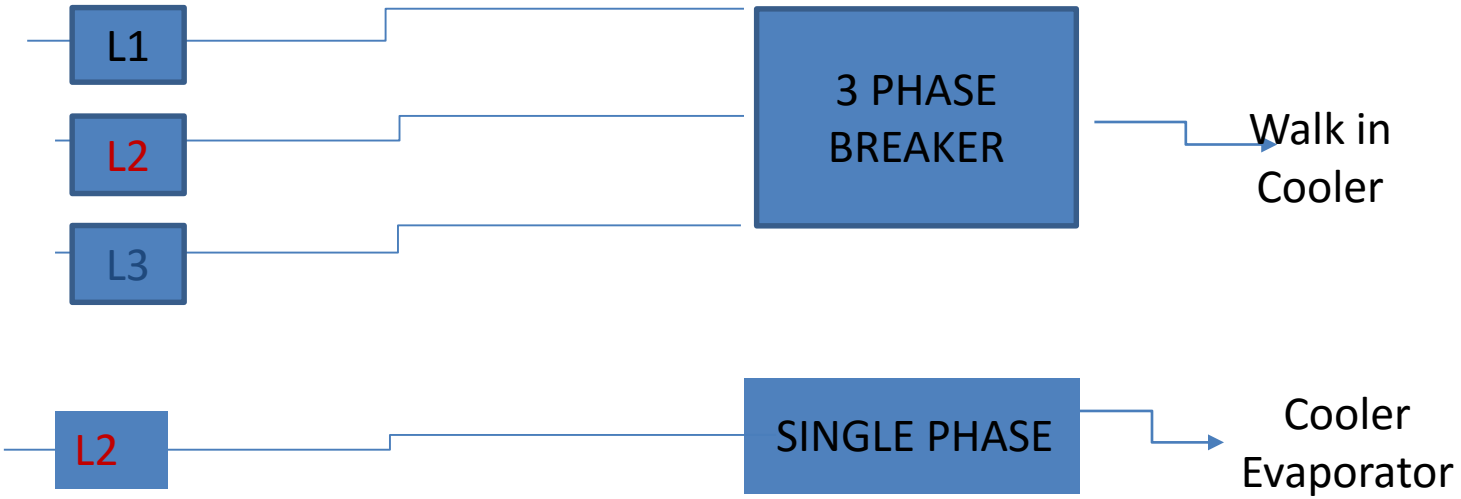
L3- Goes to Pin 6

For example – Take both Black wires from CT's (L1) and tie together to the 2 pin connector and do the same for White wires. Then connect to Pin 4.

Do this for all Phase's that share same type system.
In this case HVAC



REFRIGERATION 50A CT's



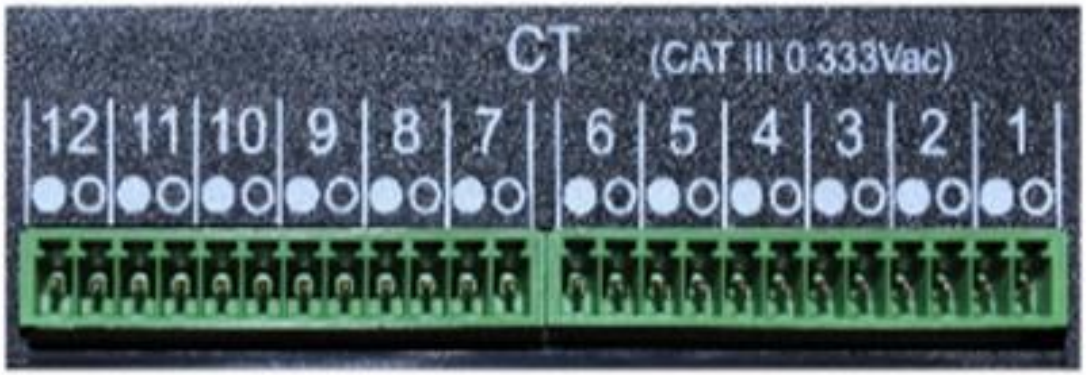
For example – Take both Black wires from CT's (L2) and tie together to the 2 pin connector and do the same for White wires. Then connect to Pin 8.

.

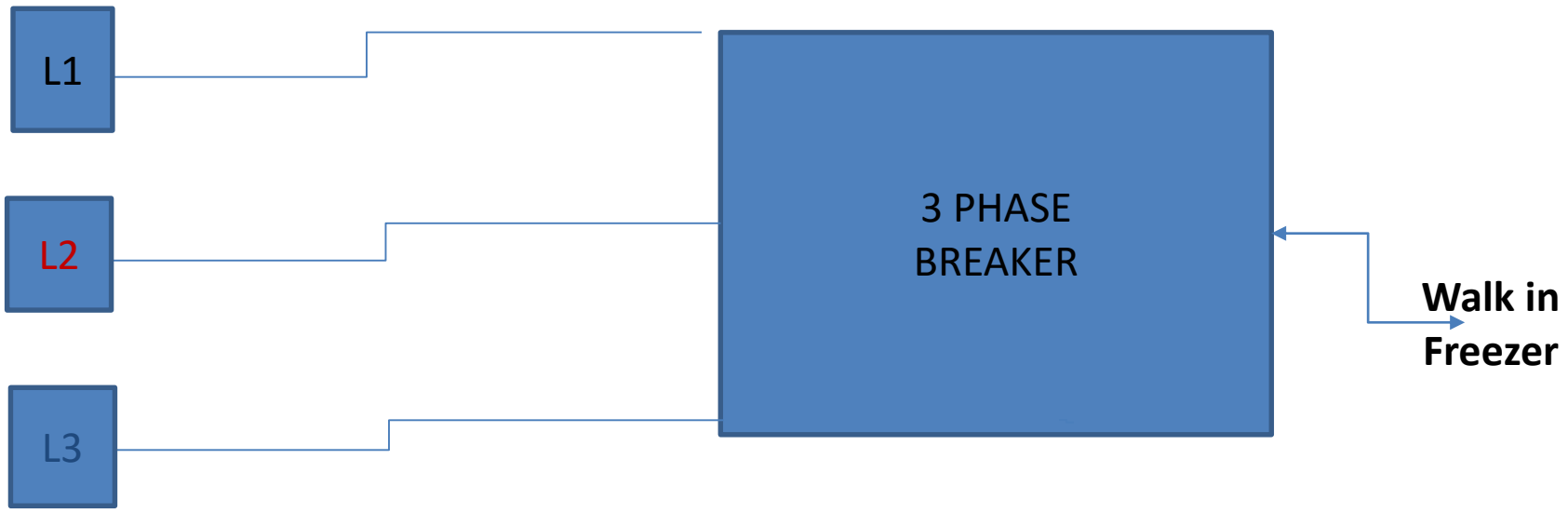
L1- Goes to Pin 7

L2- Goes to Pin 8

L3- Goes to Pin 9



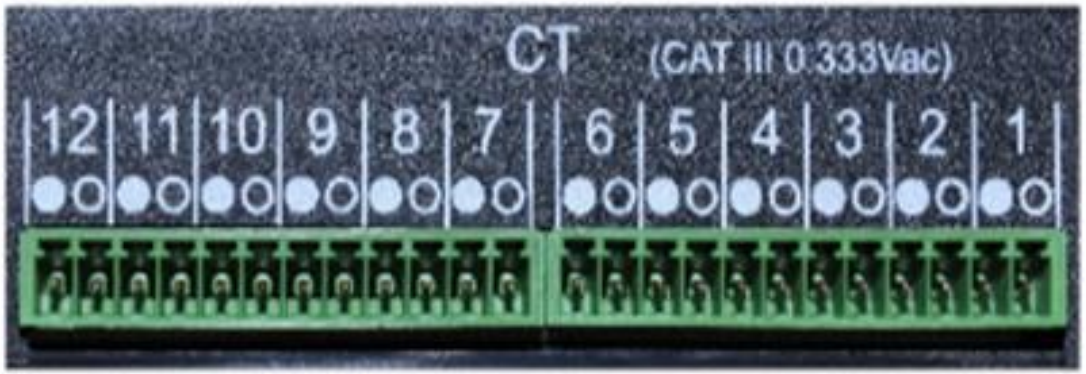
REFRIGERATION 50A CT's



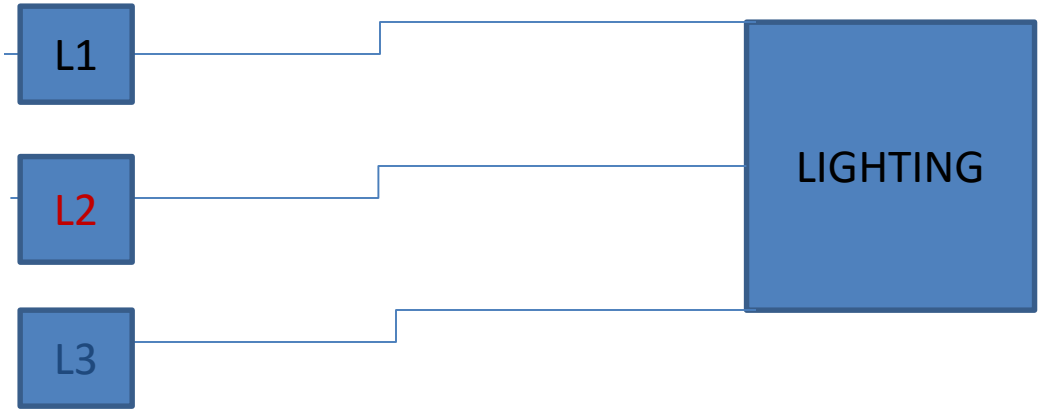
L1- Goes to Pin 7

L2- Goes to Pin 8

L3- Goes to Pin 9



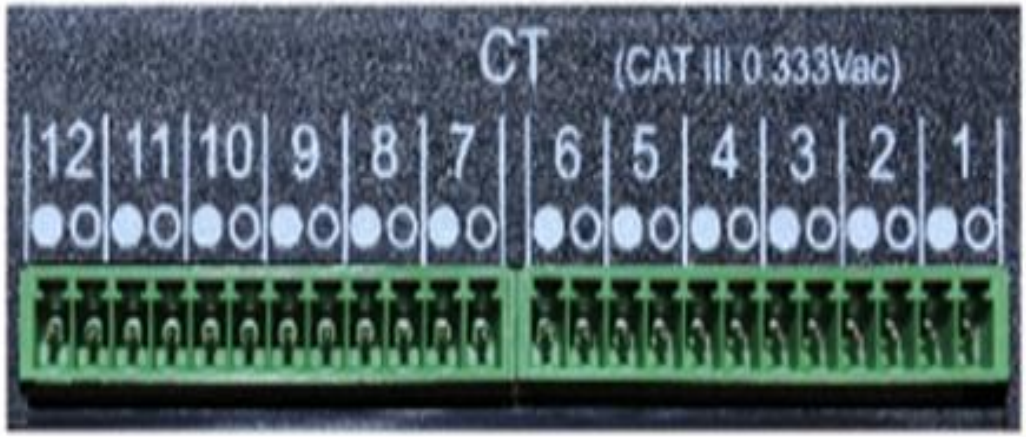
LIGHTING – 250A CT's



L1- Goes to Pin 10

L2- Goes to Pin 11

L3- Goes to Pin 12



Note: Installer Please contact

Lonnie Werth 480 524-5075 Small Box Energy
For any support needed for the eGauge Install.

2165 W. Pecos Rd., Suite 3 | Chandler, AZ

Lonnie Werth
Deployment Success Manager
D: (480) 524-5075 | TF: (855) 825-0123
www.smallboxenergy.com