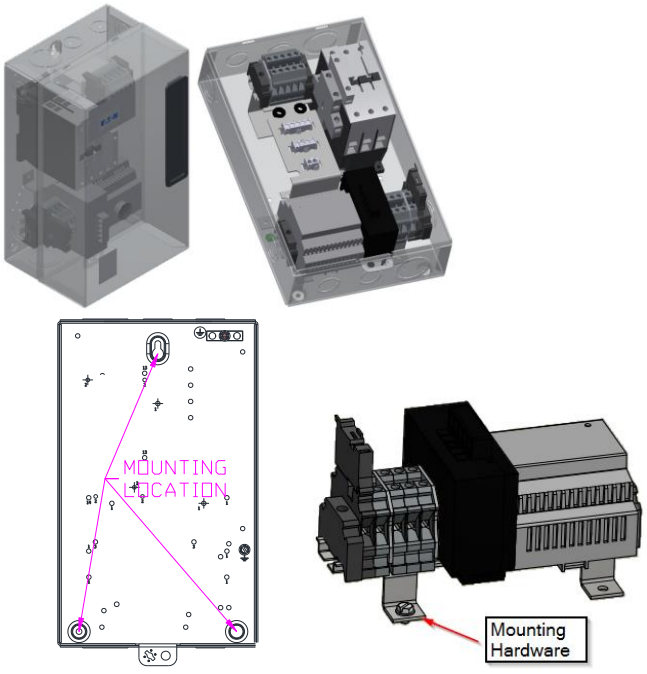
# Plug and Play Kit Installation and Wiring (Easy E4 Base Load Management unit)

Instruction Leaflet IL410-00180E Effective Apr. 2023

## General Information

This publication is for use with the Eaton enclosures Plug and Play assembly in a load management application with a focus for your home EV charging. The Eaton load management system is specifically designed manage your EV charger loading to you home panel that is at full capacity versus the need for a service upgrade.

Recharging at home has become as simple as it is convenient. Just plug in the EV and let the charger do its job, while you sleep, complete household chores, or enjoy family time. Eaton offers a simple relay base kits in combination with the Plug and Play for your load management needs. The timer base unit is design to monitor the panel load and remove a specific load from the circuit for a period of 15 min. This load management controls prevent any unwanted tripping on the main panel circuit breaker.




*Easy E4 base unit and load management kit.*

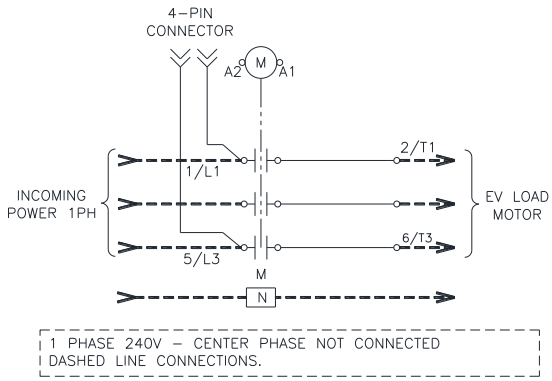
**For installation of the Units:** Locate the mounting holes in the enclosure base and install the load management kit. The kit come with installation instructions, the hardware and CTs.

Wire in the CTs from and plugs from the kit to complete the installation. Warning the CTs from the Relay base unit comes pre-calibrate for the panel rating and any adjustment to them will void the warranty.

Discard the IL that comes in the Plug and Play unit as this set of instruction is for its replacement.

## Power Wiring Diagrams: IEC contactor

### Diagram #1




### Typical Control Wiring diagrams:

*Enclosed contactor assemblies supplied from factory are pre-wired as per figure A*

### CAUTION:

***READ AND FOLLOW INSTRUCTIONS PRIOR TO WIRING OR CONNECTING POWER. THIS PRODUCT CAN BE FACTORY OR FIELD CONFIGURED FOR MULTIPLE CONTROL MODES OR CONTROL VOLTAGES. CHECK THE COVER CONTROLS AND TRANSFORMER OR THE SEPARATE SUPPLY KITS FOR PROPER VOLTAGE BEFORE APPLYING POWER.***

***A LICENSED/QUALIFIED ELECTRICIAN MUST COMPLETE ALL INSTRUCTIONS IN THIS MANUAL IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), CANADIAN ELECTRICAL CODE (CEC), STATE, AND LOCAL CODES, OR OTHER APPLICABLE COUNTRY CODES. ALL APPLICABLE LOCAL ELECTRICAL CODES SUPERSEDE THESE INSTRUCTIONS.***

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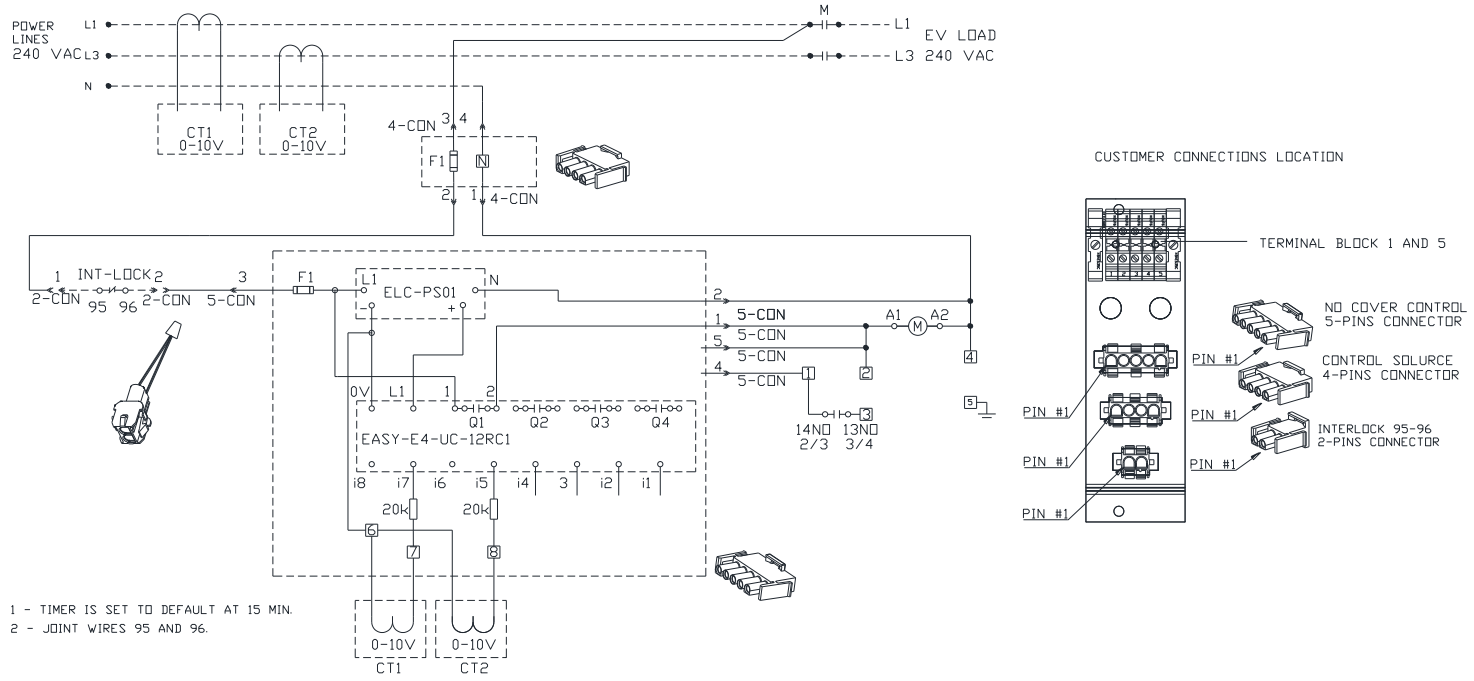
**Wiring Instructions:**

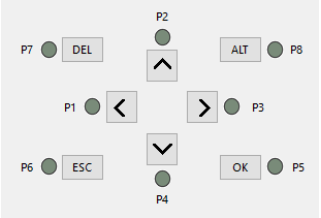
**Figure A**




***EASY E4 LOAD MANAGEMENT SYSTEM***

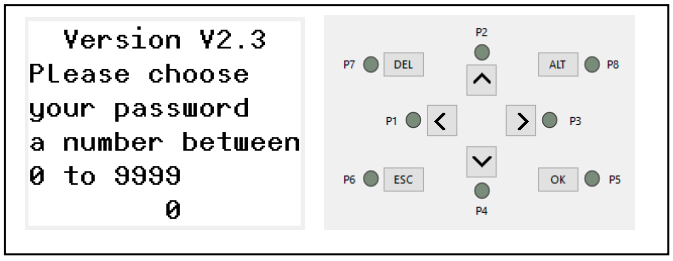
***Screen navigation.***

1- DEL = Previous page
2- ESC = to get to the Password screen or Next Page
3- ALT = put focus on the desired variable.
4- P1 or Left Arrow / P3 Right Arrow = select the digit to change value.
5- P2 or Up Arrow / P4 or Down Arrow) = increase or decrease the value of the selected digit.
6- P2 or Up Arrow can be used to accelerate the countdown timers.
7- OK accept all the values one this page.



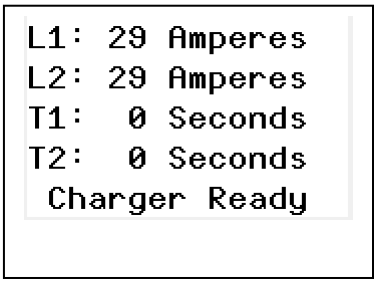

***Opening screen.***

Out of the box, you will see this screen. using the (ALT, Arrows, OK) keys enter your **User Password**.




***Monitoring screen.***

Once a password is entered it will switch automatically to the monitoring mode.

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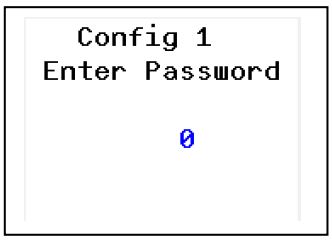
***It is pre-Configured for the most common application .***

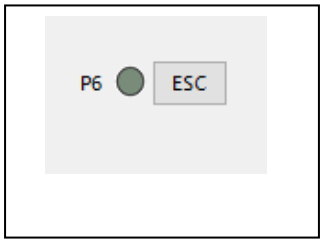
The system is pre-program for the most common configuration helping you getting the system ready.

1) The Model unit LMEZ80 is program for a single 32 amps Charger, a 100 amps service panel, and with 900 seconds ON/OFF cycle.
2) The Model unit LMEZ160 is program for a single 32 amps Charger, a 200 amps service panel, and with 900 seconds ON/OFF cycle.
3) The Model unit LMEZKIT1 works with the 2 units above and would provide a second load management capability.

***Enter the Configuration for changes enter the Password .***

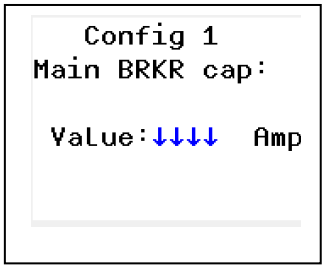
Press ESC to brings up the Configuration page 1. Enter your **User Password** using the (ALT, Arrows, and OK) keys. The screen will turn white and if untouched for **10m, it will exit the configuration**.

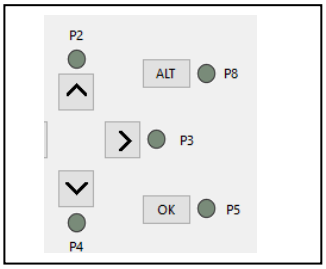



***Setting the panel main breaker.***

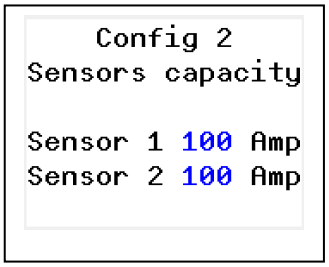
Using the (ALT, Arrows, and OK) keys to enter the amperage of the main panel breaker and ESC to bring page 2.

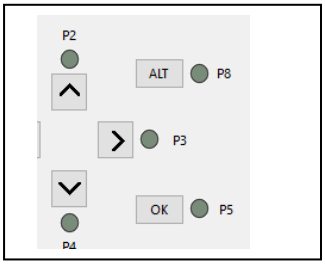



***Current transfromer settings.***

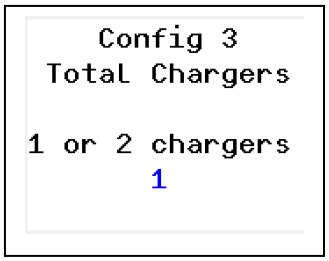
Using the (ALT, Arrows, and OK) enter the amperes for each sensor and ESC to bring page 3.

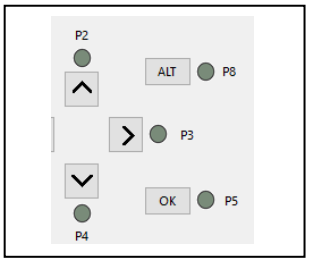



***Setting of the number of charger control by the system.***

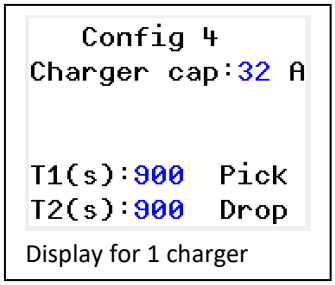
Using the (ALT, Arrows, and, OK) to enter the number of charger(s). The default is 1 charger and pressing ESC to bring page 4.



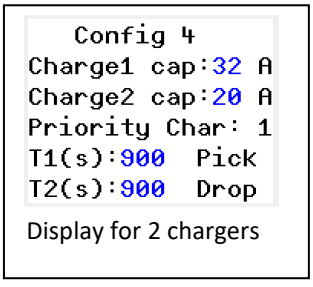




***Setting up the charger capacity and pick up/drop off timers.***

Using the (ALT, Arrows, and OK) to enter the Charger current and pickup/drop off times. ESC will bring up page 5. The defaulting is 32 amps and 900 seconds for the timers.



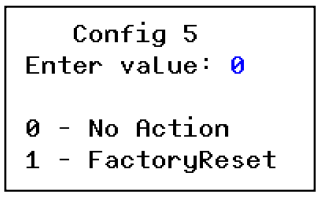

Display for 1 charger




Display for 2 chargers

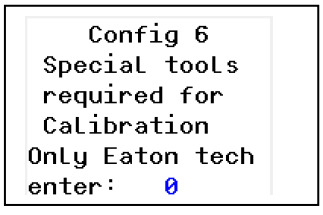
***Setting up the pick up and drop off timer .***

Using the (ALT, Arrows, and OK) enter the code below.
No Action: 0 no changes.
Factory Reset: 1 would reload the pre-configure settings.
ESC will bring up page 6.




***Config 6 is a Special calibration section.***

It is password protected and is not for field use. Press DEL until you return to the MS Monitor or cycle the power to the unit.

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***Normal operation .***

The example below is for the normal operation on a 100 amps panel. If the panel load current Combining the load and charger(s) setting are below 80 amps, it will provide power to the charger(s) and the screen will be red, indicating power to the charger(s).

```
L1: 29 Amperes
L2: 29 Amperes
T1:  0 Seconds
T2:  0 Seconds
 Charger Ready
```

Display for 1 charger

```
L1: 69 L2: 69  A
Char 1 Char 2
T1:  0 T1:  0  S
T2:  0 T2:  0  S
Ch1+Ch2 Ready
```

Display for 2 chargers

***Once the panel load excced 80 amps on a 100 panel.***

Once the set trip point is reached, a timer will count down in seconds to the opening of the charger(s) circuit. This timer is preset to 900 seconds and is in place to allow a certain amount of safe overcurrent for a short period of time.

```
L1: 80 Amperes
L2: 80 Amperes
T1:  0 Seconds
T2: 24 Seconds
   Open In T2
```

Display for 1 charger

```
L1: 82 L2: 82  A
Char 1 Char 2
T1:  0 T1: 28  S
T2: 22 T2:  0  S
Ch1 Open In T2
```

Display for 2 chargers

***Once the panel load excced 99 amps on a 100 Panel.***

If the panel load limit is reached, the display will show “Not Enough Room” indicating, it will not energize the charger panel(s). For the load management panel to energize the distribution load panel current Combining the load and charger(s) setting must fall below 80 amps.

```
L1:100 Amperes
L2:100 Amperes
T1:  0 Seconds
T2:  0 Seconds
Not Enough Room
```

Display for 1 charger

```
L1: 49 Amperes
L2: 49 Amperes
T1: 29 Seconds
T2:  0 Seconds
 Closing In T1
```

Display for 1 charger

***Normal re-energizing the charger panel(s).***

A timer will count down in seconds to the closing of the power circuit. This timer is preset to 900 seconds and is in place to allow cooling of the system preventing nuisance tripping. The safe closing condition is based on the set trip point minus the charger(s) current settings. On a system with 2 chargers the charger 1 takes priority therefore charger 2 would de-energize first and re-energize second.

```
L1: 49 Amperes
L2: 49 Amperes
T1: 29 Seconds
T2:  0 Seconds
 Closing In T1
```

Display for 1 charger

```
L1: 81 L2: 81  I
Char 1 Char 2
T1:  0 T3:  0  S
T2:  0 T4: 38  S
CH2 Open in T4
```

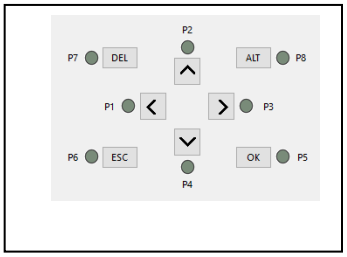
Display for 2

***Set or make changes to the system.***

Enter the Password that was previously set (ALT, Arrows, and OK) than scroll using ECS or DEL keys until you get to the desired config screen. The system will remain in this config mode allowing the operator time to perform tasks for 10 min. At the end it will return to the monitoring screen, or the operator can cycle power to rest the system to bypass the 10 min wait.

```
Config 1
Enter Password

0
```

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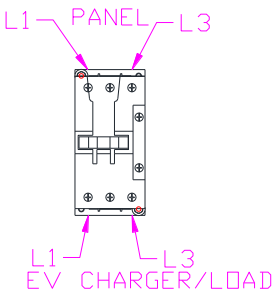
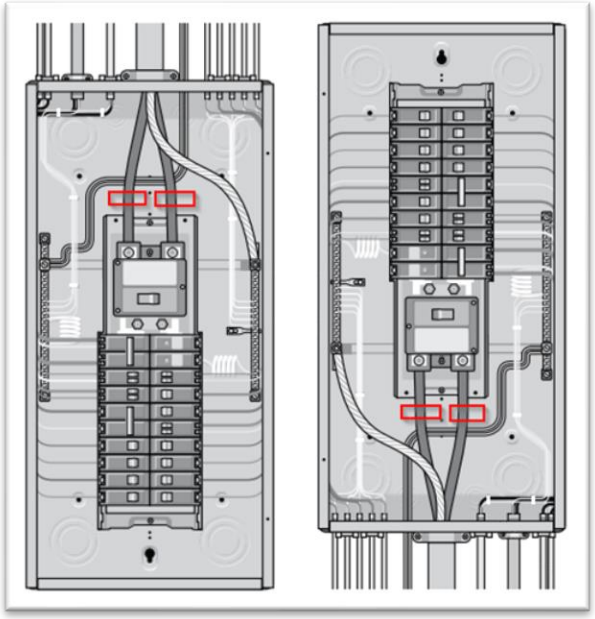
**Panel circuit breaker**


*Install the panel circuit breaker and run the power lines to L1, L3 and neutral of the Plug and Play unit. Label the circuit breaker.*

**Power/Load connections and panel mounting.**

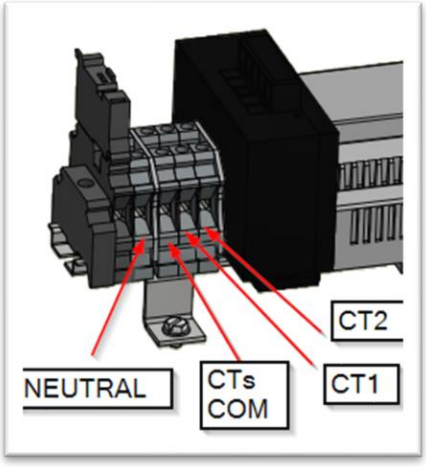



**CTs installation**



*Install the split core CTs on the incoming power lines of the Panel, L1 and L2. The CTs can be bolded down or cable tie in place. Run the sensing wires from the CTs to the Plug and Play load management panel. For long distance applications use twisted pair of wires or shielded wires.*

**CTs connections.**

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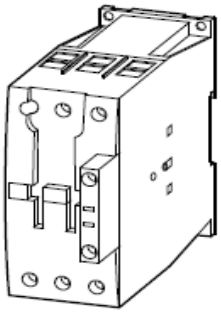
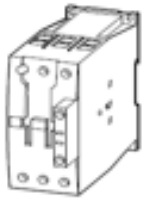
## Application specific ratings for the Plug and Play load management system

**Level 2 chargers (L2)** operate at 208-240 V (1-ph) and output anywhere from 3 kW to 19.2 kW of AC power. All Level 2 chargers use 240V but charging speed will differ based on a charger's amperage, or electrical current. Your need for speed will vary based on your EV's range, your commute and driving style: a car with less range, a long commute or always driving at top speed may mean you could benefit from a faster charge at home. Most EVs can take in about 32 amps, adding around 25 miles of Range Per Hour of charging, so a 32-amp charging station is a good choice for many vehicles. You may also want to increase your speed or get ready for your next vehicle with a faster 50-amp charger that can add about 37 miles of range in an hour.



| Contactor Size (Amps) | UL General Purpose Ampere Rating Single Phase (AC) | | |
|---|---|---|---|
| | Circuit Breaker | Charger Ampsrage | Unit Max. Amps |
| 50 (per CSA file & non-comb ass'y) | 20 | 16 | 80 |
| | 30 | 24 | 80 |
| | 40 | 32 | 80 |
| | 50 | 40 | 80 |
| | 60 | 48 | 80 |
| | 70/80 | 50 | 80 |
| | 80 | 63 | 80 |

## Termination Torque specifications

| | | | | |
|---|---|---|---|---|
|  | D | 040, 050 | 14 -2 (single)<br>14 - 6 (double) | 29/(3.16) |