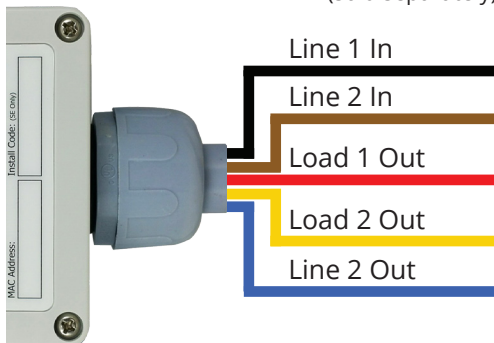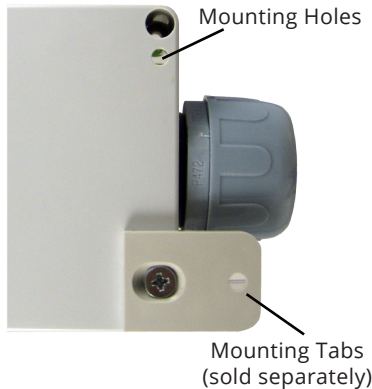SMARTENIT®
Where the smart things are ℠

Quick Start Guide - ZOE®-MLC1 Model #4040A
Smart Energy Wireless Triple-Relay Metering Demand Response Load Controller

ZigBee® Certified product

Energy

Product Brief

The ZOE-MLC1 interfaces wirelessly with an Energy Service Portal (ESP—usually a smart meter) to control high power loads (up to 240VAC at 30Amps) via demand response or price events from the electric utility.

The device measures the energy delivered to the load in Kilowatt-Hours and also responds to price events, enabling the intelligent management of large appliances to maximize energy conservation while taking advantage of the lowest rates offered by electric utilities. Two-speed appliances such as pool pump motors are handled directly with an integrated third relay.

Mounting Holes

Mounting Tabs (sold separately)

Line 1 In
Line 2 In
Load 1 Out
Load 2 Out
Line 2 Out

Installation

The ZOE-MLC1 can be mounted indoors or outdoors

Register

Register the device with your electric utility using the included installation code and the instructions provided by the utility. Each code is unique to a particular controller, so please ensure the provided numbers are entered correctly.

Mounting

Can be mounted with #6 screws through mounting holes from the inside or with optional Mounting tabs (sold separately). **For water tight operation, all four mounting holes must be used or otherwise**

Wire Connections

Wire Color	Make Connection To
Black	Line1 from Electrical Service (Hot for 120VAC or L1 for 240VAC)
Brown	Line2 from Electrical Service (Neutral for 120VAC or L2 for 240VAC)
Red	L1 to Load 1 of Appliance (High Speed if 2-speed appliance)
Blue	L2 to Load of Appliance (Neutral for 120VAC or L2 for 240VAC)

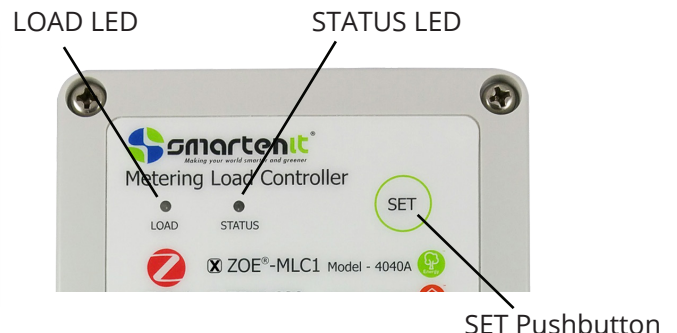** High Voltage installations should always be performed by a licensed

LOAD LED   STATUS LED

SET Pushbutton

Local Control & LED Indicators

SET Pushbutton - used to factory reset device, toggle relays opt-in/opt-out of DR events, etc (see chart on pg. 2)

Load LED - Indicates when load is energized (Green for Load 1, Red for Load 2.)

Status LED - Indicates network status, DR event status, open permit join, etc. (see chart on pg. 2)

Set up

Factory Reset

Press SET button on your ZOE-MLC1 while powering device and release. Alternatively, if the device has already joined a ZigBee network, press the SET button for at least 20 seconds and release. The Status LED will go out for 1 second and then begin flashing rapidly. The ZOE-MLC1 is now searching for an open ZigBee HA network to join to.

Attaching device to the Home Area Network (HAN)

The ZOE-MLC1 must be joined to the HAN so it can communicate with the electric utility to receive load events and price information. Ensure the device is powered and that the HAN coordinator or a router is open for joining. Then proceed as follows:

1. Once the ZOE-MLC1 is reset and connected to power, it will begin searching for a an open network.

2. After the device completes the joining process (typically within 30 seconds), the LED will be lit solid unless asked by the coordinator (ESP or Smart Meter) to open join. While joining, the Status LED's flashing rate will slow to indicate joining is in progress. The LED will remain flashing fast if the device is unable to join the HAN. (Refer to LED pattern chart below)

Operation

Utility demand response events are handled automatically to shut off the load when the device is opted in to participate in the DR event. The SET button can be double tapped to toggle between "**opt-out**" status to decline participation in a demand response event and "**opt-in**" status to participate. Event participation is **enabled** (opted in) **by default**. The status of event participation is indicated by the flashing pattern of the Status LED (refer to chart below for pattern indication).

Price events are handled automatically to shut off the load when the energy criticality level reaches the "High" usage threshold. Price event participation is **disabled by default** but can be toggled between enabled and disabled by tapping the SET button **4 times**.

Manual (local) load control is done by tapping the SET button when the device is not in a demand response event. Tapping the SET button toggles the load between LOAD 1, OFF, and LOAD 2. The Load LED will glow *green* when **Load 1** is activated and *red* when the **Load 2** is activated. When a demand response event is in progress, local control is disabled if the device is opted in for the event. To enable local control during an event, the device must be opted out of participation in demand response events.

SET Pushbutton Additional Operation		
Desired Operation	**Action on SET button**	**Device Behavior**
Open Permit Join	Press for 6 seconds (Press for 3 seconds to close)	Status LED blinks once per second while open
Get DRLC Events	Tap 3 times	Device communicates with utility to check for DRLC events
Update Price Tables	Tap 5 times	Device communicates with utility and updates price table
Request New Firmware via OTA	Tap 6 times	LED will quick blip off, once every second while in OTA progress
Soft Reset	Tap 10 times	Both LEDs will go out for about a second and then device will rejoin network
Leave Current Network	Press and hold for 15 seconds	LED will start blinking fast as it searching for a new network to join

Status LED Indication	
Pattern	**Indication**
Fastest flashing	Searching for a HAN Rejoining a HAN
Solid	HAN joined. No events in progress.
Flash Once per Second	Permit Join is open
Short blink	Opted-out for DR event or Disabled for Price Events
Long blink	Opted-in for DR event or Enabled for Price Events
Two blips per second	Device cannot find "Parent Device" and/or network it was joined to

Load LED Indication	
Pattern	**Indication**
Off	All Loads OFF
Red	Load 2 is ON
Green	Load 1 is ON