ERMA

MC No.304708

USER MANUAL
ENERGY MANAGEMENT DEVICE
EMD 1240-40-1

Warning: Must be installed by qualified personnel/licensed electrician

Avertissement : l'installation doit être effectuée par un personnel qualifié/une lectricien diplômé.

1 Overview

1.1 Purpose of use

The EMD 1240-40-1 Multi-Load Intelligent Switching Device is designed and developed in Canada, CSA certified and produced to meet the household electrical use in Canada and the United States.

With the increasing demand of home EV charger and heat pump installations, the general household electrical service of 125A, 100A, or 60A cannot provide sufficient capacity to accommodate these two additional appliances (requires approximately an additional 50~60A capacity).

The principle of the EMD is to combine the range, dryer, and EV loads of a household onto the load side of the circuit that supplies the range. Through a priority algorithm, the EMD enables safe switching between these three loads. Then the dryer circuit is freed-up and can be used to feed the heat pump. This arrangement maintains the total house electrical load at the same level. The EV and the heat pump can be added to the house electrical load directly with no need to upgrade the house electrical service.

1.2 Usage Environment

a) For single household use

b) Ambient temperature: 1°C~40°C

c) Storage temperature: -20°C~70°C

d) Relative humidity: ≤90%

1.3 Technical Features

a) Three loads share one power supply

b) Allows 60A, 100A, and 125A service panels to supply EV charger and heat pump (heat pump uses the original dryer circuit)

c) Easy and quick installation: 45~60 minutes

d) Moderate weight and size for easy installation

e) On the front panel, four LED lights indicate the status of the power supply and the loads respectively

f) The power and range LEDs have two statuses:

ON-the power is on/the range is in use.

OFF- the power is off/the range is not in use

g) The dryer and EV charger LEDs have three statuses:

ON-the dryer/the EV charger is in use;

FLASHING-the dryer/ the EV charger is ready for use;

OFF-not in use/in cooldown cycle

h) An internal real-time monitor is configurated to maintain the load current within scale and ensure safe operation of EMD

2 Technical specifications

2.1 Power Supply

Single-phase 208/240Vac 40A, 60Hz

2.2 Weight

5kg

2.3 The control Principle

The EMD accommodates one power supply input and three load outputs (for range, dryer, and EV charger respectively).

The power input is fed from the existing range circuit in the service panel.

For the load side, the load of the range has the highest priority to be energized, the dryer has the second high priority, and the EV has the lowest priority. When the higher priority appliance cut into use, the EMD will cut out the lower priority appliance.

Load switching rules:

A) When the range or the dryer is in use, the EV load will keep off.

B) When the range is in use, the dryer will keep off / can be cut into use (when in low heat/medium heat/air dry mode), and total load current of the range and the dryer will be limited to 32A or less.

C) Only when the range and the dryer are both not in use will the EV load be allowed to cut into use.

D) The EV load current is limited to 32A. When exceeded, the power to EV charger will be cut out to protect the device and the EV.

E) When the dryer load current exceeds 30A, the power to dryer will be cut out to protect the dryer.

F) If the dryer has finished one load and stopped, or stopped by the range, the EMD will activate a 10-minute cooldown cycle. Only when the cooldown cycle is completed will the dryer be allowed to cut into use again. The same rule applies to the EV load.

Three CTs are used to measure the load current respectively, and one MCU to execute the control principle.

3 Installation

3.1) Inbox power wire Specifications

Input wire size: 8 AWG

Output wire size: 8 AWG

3.2) Device Wiring procedure

a) Turn off the main breaker of the service panel, turn off all the elements of the range, turn off the dryer, unplug the EV from the charger, and turn off the breakers for the range and dryer circuits.

b) Disconnect and remove the range and dryer circuit wires from the service panel, and reconnect the wires to the output terminals R1/T1 and R2/T2 of the EMD respectively.

c) Run an 8AWG/3C cable from the range circuit breaker to the power input terminals L1/L2/N of the EMD.

d) Reserve the dryer circuit of the service panel for the heat pump.

e) Connect the cable for EV to the corresponding terminals R3/T3 of the EMD.

f) Group and connect the bonding wires to the grounding rod in the box.

g) On the service panel, turn on the main breaker and the breaker for the EMD

h) Turn on one heating element of the range, measure the load current readings of wires connected to terminal R1/T1, make sure the higher current reading appears on the R1 wire. If not, swap the wires of R1/T1. Turn off the element.

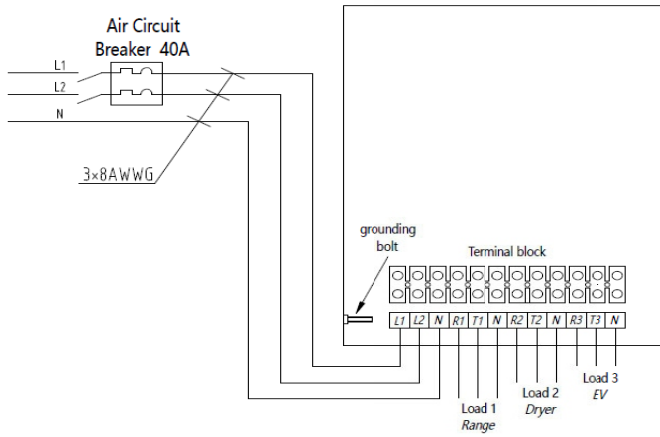
i) Turn the dryer on, measure the load current readings of wires connected to terminal R2/T2, make sure the higher reading appears on the R2 wire. If not, swap the wires of R2/T2. Turn off the dryer.

j) Set up the maximum charging current to 32A or less in the EV charger app or in the

electric vehicle Centre Console.

k) The EMD is set up and ready for use.

l) Wiring diagram

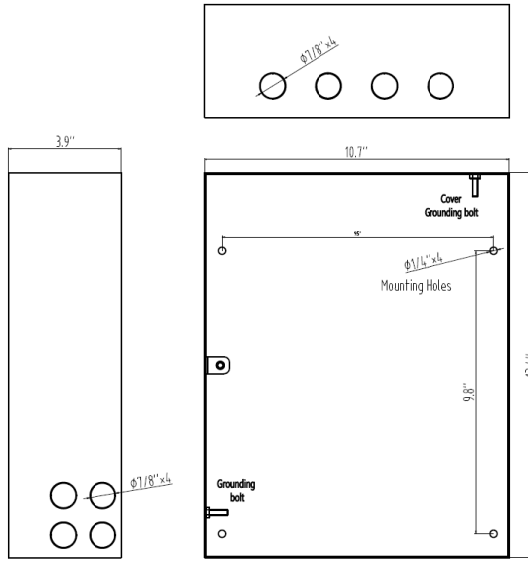


3.3) Installation Location

It is recommended to be installedadjacent to the service panel, or on other desired locations indoor.

Fix to the wall using the proper plastic anchors and screws shown in the following picture (or similar product).

3.4)Product installation dimension diagram



3.5) Maintenance

In case of malfunction, turn off the supply circuit breaker on the service panel, remove the EMD and send to the manufacturer for repairs.

The EMD must be installed by a qualified and licensed electrician. During installation, please follow the instructions in the manual. Install the EMD in a suitable area near the service panel, and comply with local electrical code/regulations.

WarningA: Copper wires only

B: Choose the proper wiresize for the load in accordance of the local Electrical Code

LIMITED WARRANTY:

- ERMA Warrants the integrated controls of any defects for one year from the shipping date, The Warranty is limited to EMD 12401-40-1 equipment and components only.
- Warranty voids with incorrect installation, misuse or unauthorized repairs.
- ERMA will repair or replace defective material or workmanship, subject to evaluation by a factory representative.
- ERMA isn't responsible for damages, delays or transportation costs for a claimed defective EMD1401-40-1.
- ERMA isn't liable for indirect damages. No indemnity for repairs, replacements or modifications without prior written consent.
- Components supplied for repair are guaranteed for the remaining warranty period or 90days, whichever is longer. Repairs at the ERMA plant are guaranteed for 60days.

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