

LG Charger Load Management

1. Overview : Load Management(LM) is a technology that controls charging power through communication between chargers so that multiple chargers can be used in a limited power environment.

Various restrictions such as aging grid environment, sites that cannot expand power line capacity, and requests from property owners may occur, and load management is an essential function to flexibly and safely cope with various situations.

If the chargers can communicate with each other through a solid and stable communication environment, the maximum charging current is set according to the number of chargers being charged at the same time.

Based on the limit current value entered into the master charger, the master calculates and automatically sets the charging limit value of the connected slave, and each slave controls the charging current so that it does not exceed the set limit value.

Through this, it is possible to safely install and operate the desired number of chargers without increasing the power capacity coming in from the grid.

All of these functions can be done through the Settings app provided by LG Electronics, and it is planned to support settings through OCPP in the future.

Not only will this feature allow EV drivers to have a better charging experience with more chargers installed, but it will also allow property owners who are considering installing chargers to install as many chargers as possible and gradually expand the available power.

2. How to set up load management

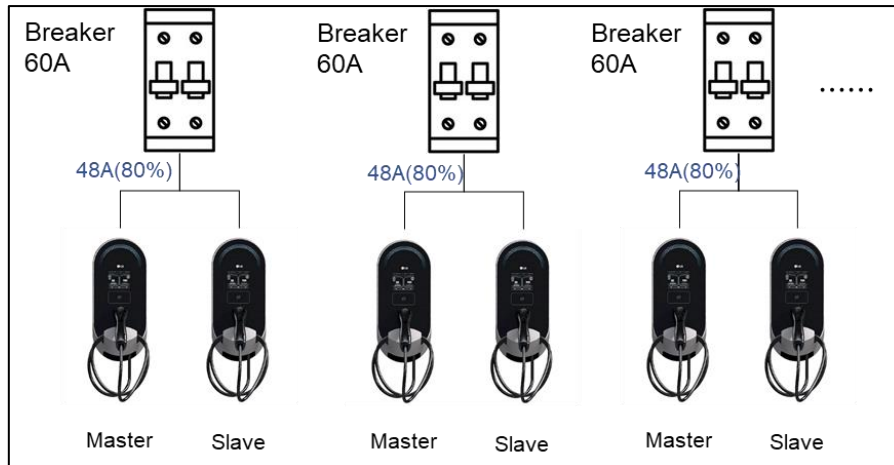
2.1. Prerequisites

The installed chargers must be connected to the same internal network environment and assigned an IP address.

Chargers must be in a status with the basic settings (enter the operating server address and charger ID).

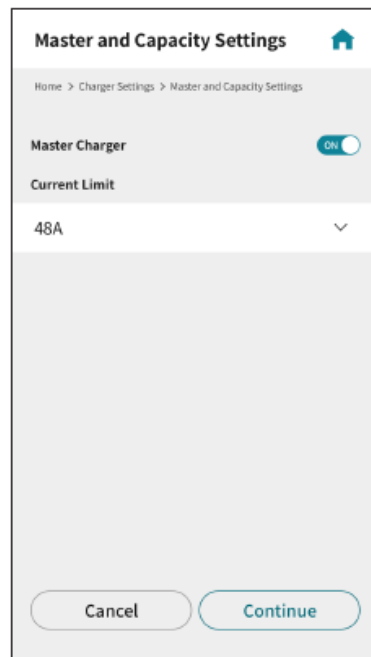
2.2 Load Management Setup Case 1

- 1) Breaker capacity : 60A, Available capacity 48A(60A x 80%)
- 2) Max. EVC output capacity per each: 48A
- 3) Limited EVC output capacity when charging two EVs : 24A



a. Set the Master and Capacity Settings menu in the charger Config Screen

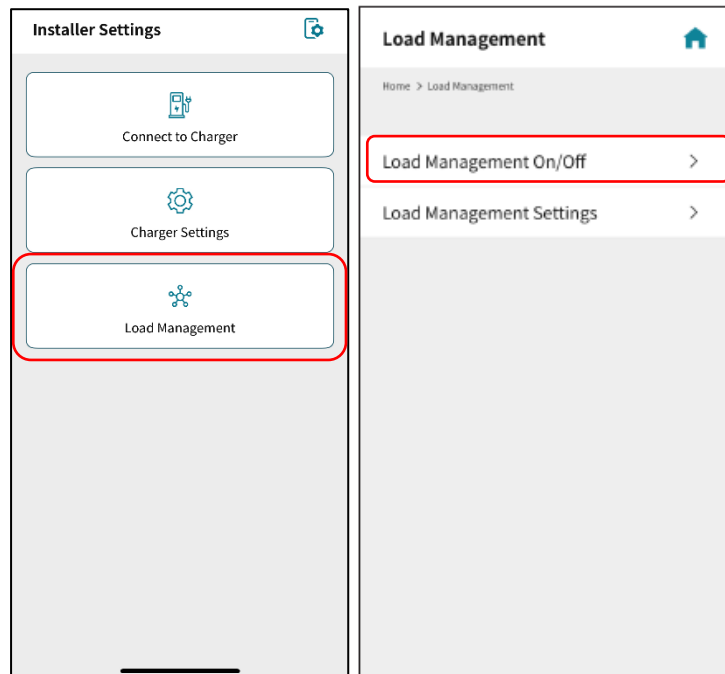
60A Capacity Of the two chargers connected to one breaker, one is set to Master and the other is set to Slave. To set the Master, set the Master Charger in the Master and Capacity Settings menu and set the maximum current to 48A. (Setting current can be 16A/24A/32A/40A/48A)



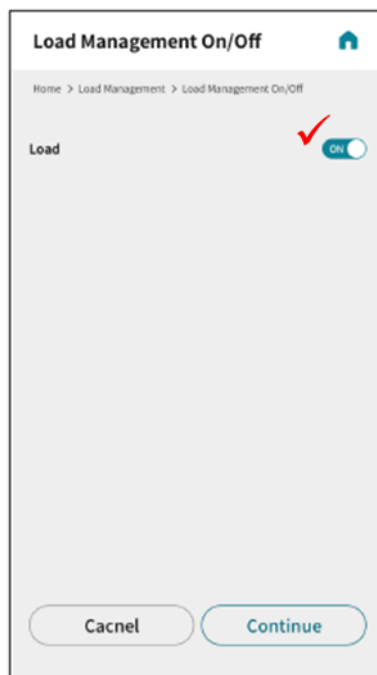
In this case, each charger is always output limited by the set Current Limit.

b. Enter the Load management menu

Once the master setting is completed, the Load Management setting is enabled in the Home menu, and detailed settings are possible.

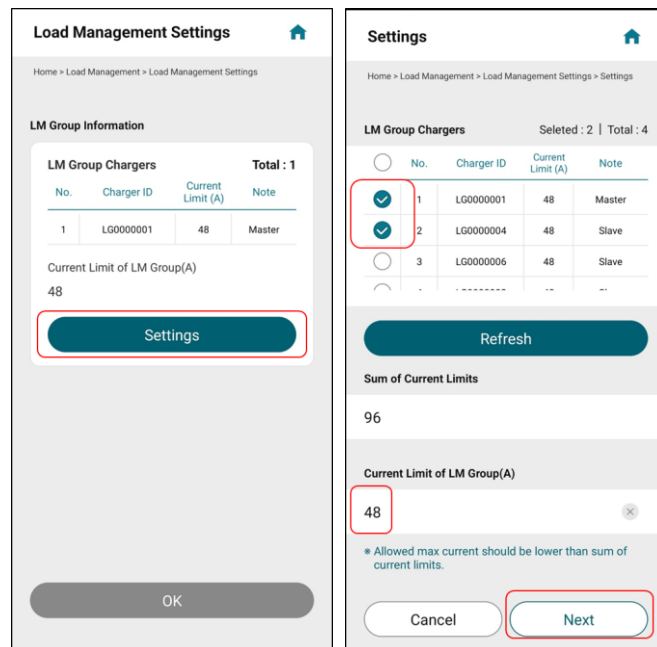


If you change it to 'On' from the Load Management On/Off menu, you can enter the Load management settings menu and set the Group.

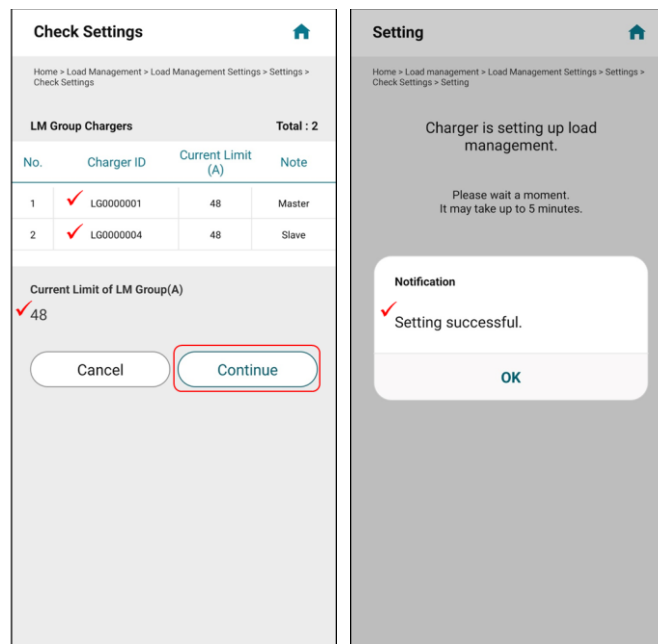


c. Group Settings

Enter Load management Settings > Settings, specify Group (Master + Slave), set the Current Limit of LM Group(A) value to 48A (60A x 80%), which is the maximum allowable capacity of the breaker, and select Next.



You can check the group and current limit values set in the Check setting menu, and you can confirm that the settings are completed by selecting continue.



The setting is complete, and the charger is calculated by the Master to operate at 48A output when charging alone and 24A each when charging two units at the same time.

d. Advanced Applications

If the output limit of the charger is set to 48A and 32A respectively in the master and capacity settings, it will operate at 48A and 32A, respectively, when charging alone, and at 28A ($\text{truncate}(48A * \frac{48A}{(48A+32A)})$) and 19A($\text{truncate}(32A * \frac{48A}{(48A+32A)})$) respectively when charging two units at the same time.

3. In case of charger network defect

Master and Slave check the network status before charging to check the communication between Master and Slave. If communication is lost, the slave who is disconnected from the master assumes that all other chargers in the group are charging and charges with limited charging current set by the master. The master also assumes that all disconnected slaves are charging, and calculates the charging current to be assigned to each charger.