

# Owner's Manual

This Owner's Manual is applicable to Resolve controllers with Firmware V3. Which all controllers sold after 1st of October 2023 have. For controllers purchased before this date they can and should be updated [here](#).

## State of Charge

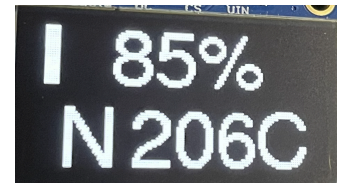
The SOC that is displayed on the display is between 0-100%. The car will limit acceleration and regen according to the Leaf BMS and will cease to drive at 0%.

## BMS errors

When the display only shows the top regen bar and temperature in Celsius above 200°C it is not temperature, it is an error code.

There are 4 different types of errors: Drive stop, Charge stop, Caution lamp and Isolation fault. Depending on how these are combined it will lead to different error codes. As can be seen in

the table below. The picture to the right is an example of an error code for: Caution lamp & Charging stop.



the table below.

Code	Comment:
201	Drive stop
202	Charging stop
203	Charging mode & drive stop
204	Caution lamp
205	Caution lamp & Drive stop
206	Caution lamp & Charging stop
207	Caution lamp & Charging stop & drive stop
21x	Isolation fault between one of the HV lines and the vehicle's ground. For example isolation fault and drive stop will be: 211. Only Isolation fault is 210.

## Isolation fault

According to the ECE R100 standard an EV with 360vdc battery should at minimum have an isolation resistance of 180kΩ (500Ω per V) between the chassis ground and HVDC.

Anything less than this will indicate isolation fault(21x). This is a critically low threshold and should immediately be fixed. The car should ideally have a 2MΩ+ of isolation resistance.

The vehicle determines if there is an isolation fault by averaging the last 50 seconds of isolation measurement. The fault code will not be reset until the controller has been power cycled. If the isolation fault is not corrected it can lead to serious consequences such as battery fires.

Possible causes of isolation faults are: high voltage cables shorting to the car Chassi, water inside the battery pack, or component failure.

### Charging stop & drive stop & caution lamp

These are all errors directly from the Nissan Leaf BMS, they are quite explanatory and should also be corrected immediately. A good solution to locate the error is to use Leafspy and look for the errors the BMS experiences. One cause for the caution lamp and charge stop error could be a disconnected BMS balancing wire. This will cause the bms to not allow charging of the battery and limit the motor to 4.5kW of power.

It is recommended to use a bluetooth dongle and to connect Leafspy to your car for specific diagnostics and to see the health of your battery.

### Discharge and charge limiting

Both regenerative braking and maximum acceleration is set by the leaf BMS and the controller. Regenerative braking will increase the lower the SOC is and maximum acceleration will decrease with SOC until 0% where it won't be possible to drive the car any more.

### Turning on the system

To turn on the controller and the drivetrain components a couple of requirements must be met. The EVSE charging cable cannot be connected. All components must be connected to the canbus network and properly connected by both high and low voltage as described in the [Wiring Diagram & Fun Facts](#) document. Because the components need to communicate to be able to turn on the HV relays and precharge properly. Continual 12V to the ignition input [pin24] is also needed.

### Brake Pedal

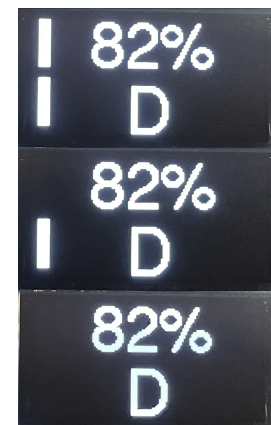
When the brake pedal is pushed down the throttle pedal is turned off. This makes it safer when braking since torque can't be applied, however this makes burnouts a lot harder.

### Shifting gears

To shift gears RPM must be near zero, the throttle pedal must be fully released and the brake pedal must be pushed down (assuming the Resolve controller is connected to the brake input). Then simply push the desired gear button.

### Regenerative braking

There are three modes of regen off, 1 and 2. To change regen strength press the drive button while in the Drive mode. Maximum regen depends on the SOC of the battery and will be almost 0 at 100% and gradually increase as SOC decreases.



## 85% max charge

There is an option to max charge the car to 85% for increased longevity of the battery pack. To turn it off or on simply push down the Neutral button during charging. After that "85% max" should be displayed like the picture to the left.

