

# Littelfuse

## 20 Amp DC/DC Charger For Utility Trailers

There are a lot of differences between our unit and others out there. Here are a few of them as we are waiting for a formal document from the Littelfuse marketing team.

Features	Littelfuse Lift Gate Battery Charger	Existing Competitive Solutions
Multi-Stage Charging	Yes	No
Fully Integrated Run Extender	Yes	No
Designed for High Performance with Multiple Battery Types (AGM, FLA)	Yes	No
True Battery Temperature Monitor	Yes	No
Output charging amps	20 Amps	10 Amps
Local LED Indicators	Yes - Three	None – added one external battery state of charge light
ABS Protection without Electrical Tie In	Yes	No

As far as input cables, we use a 10 AWG for the 20A version and 8 AWG for the 35A version.

### **Local LED indicators:**

There are three LEDs on the front of the unit.

1. Power status/Standby Indicator (Blue LED): Solid ON while charging, OFF when the input voltage is too low either because of too much draw on the battery or the truck has been turned off. It will also flash 100ms ON, 3 seconds off when it is in “Extended” charging mode and the input voltage is between 12.5v and 12.7v during input voltage inspection periods.
2. Diagnostic/Failure Indicator (Red/Green LED): This LED will blink based on failures below. Should be reported as an error code then 10s delay, then error code again.

Blink Code	Indication
1 Red Blink	Internal temperature is too high, will reduce output current until it has cooled down
2 Red Blink	Input voltage is too low, output will shut off
3 Red Blink	Input or output voltage is too high
4 Red Blink	Output over current/output shorted to ground
5 Red Blink	External temperature sensor has failed
6 Red Blink	Internal temperature sensor has failed
1 Amber Blink	Input voltage is getting low and causing less than maximum output current

3. Charging Mode (Blue LED):
  - a. Solid ON: Bulk Charging Stage
  - b. Rapid Flash: Absorption stage
  - c. Slow Flash: Float Stage

### **Charging Methods:**

The LGBC uses software algorithms which assume a typical response of the applied charge current to its charge mode. If connected, the external thermometer will adjust the bulk and float voltages to optimize charging and battery response. If it is not connected, the external thermometer will assume a temperature of 86°F (30°C).

For a low battery, the LGBC will operate in Bulk mode which is a constant current mode and is either 20A or 35A based on the model is being used. As the battery is charged, the internal resistance of the battery will change and the draw on the charger will become lower which moves it into Absorption mode. AGM Bulk and Absorption charging voltage will be between 15.4v and 13.9v, FLA Bulk and Absorption charging voltage will be between 15.8v and 14.4v. Again, the charging voltage is dependent on temperature.

Once the output current is less than 2.0A for the 20A version or 3.5A for the 35A version, the charger will start float mode. Float mode simply maintains the batteries while it serves minor DC electrical loads. Float mode for AGM will be 13v-14.5v and FLA will be 13.2v-14.4v. Again, this is dependent on temperature.

### **LGBC Wiring Diagram:**

<b>Wire Color</b>	<b>Function</b>	<b>Connect to:</b>
Red	Input to LGBC	Supply Voltage
Black	Ground	Vehicle ground
Yellow	Charger Output	Charging Batteries
Blue to battery lug	Blue to battery lug	Blue to battery lug
<b>External Diagnostic plug (not Using)</b>		
Orange (3-way connector)	Diagnostics 1 Output (explained below)	LED or Indicator Lamp
Blue (3-way connector)	Diagnostics 2 Output (explained below)	LED or Indicator Lamp
Black (3-way connector)	Diagnostics Ground	Ground terminals on indicator lamps

**Little Fuse 20 Amp**

**Eaton 10 Amp**

