LGBC Wiring Diagram:

Wire Color	Function	Connect to:
Red	Input to LGBC	Supply Voltage
Black	Ground	Vehicle ground
Yellow	Charger Output	Charging Batteries
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
Blue to battery lug	Battery Temp Sensor	Positive trailer battery terminal

External Diagnostics Indicators:

The external LED/Indicators are a +12v sourced output for indicating the state of the LGBC remotely through the Deutsch DT06-3S connector.
They are short circuit and transient protected rated to 200 mA continuous draw.

Diagnostics 1 (orange wire) is a charging indicator. It will be ON if the LGBC is charging and OFF is it is not charging. To prevent the indicator from falsely flashing during other diagnostic events, there is a 10 second delay. So if you have a lamp/LED connected, the LED will only turn on 10s after the charger has begun charging and turn off 10s after it has stopped charging.

Diagnostics 2 (Blue wire): Detects minimum input voltage. If the charger has to reduce its output due to insufficient input voltage, then the Lamp will be ON. There is also a 10 second delay on this wire.

Ground: Connect this wire to the ground terminal for the indicators. It is short circuit to +12v protected so no need to worry about damaging the unit if it accidently hits a positive cable.

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 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. Sold 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.