

# 10A/20A Charge Controller Training Deck



10A Charge Controller  
SKU: 96100



20A Charge Controller  
SKU: 96110

The Goal Zero 10A/20A Charger Controller is used to connect Goal Zero Solar Panels directly to external batteries. The Charge controller connects Goal Zero Solar Panels to a 12V battery (AGM, LiFePO4, LTO, Gel, Lead Acid, and Calcium Batteries) to charge and monitor the charging of the battery. Perfect for RV'S, motorcycles, snowmobiles, tractors, watercraft, lawnmowers, cars, etc.

Boulder 100 briefcase & 10A charge controller  
SKU: 44210



Boulder 200 Briefcase & 20A charge controller  
SKU: 44220



NOTE: Kits include mounting bracket (installed), Spade to SAE (installed), SAE to Ring Terminal, and SAE to Alligator.

NOTE: Kits come pre connected to controller. To use panels directly into Yeti power stations, unplug from controller and plug into Yeti.

# Accessory Descriptions



Mounting Brackets- Used to mount Charge Controller to Boulder solar panels  
SKU: 98365



SAE to Alligator- Connects to SAE connection allows easy clip on to battery  
SKU: 98380



Spade to SAE- Output from charge controller. Used to connect charge controller to a SAE connection or to a battery using SAE to ring/alligator  
SKU: 98370



SAE to Ring- Connects to SAE connection allows for more permanent connection to battery  
SKU: 98375

\*Spade to SAE Polarity Note: Silver Pin positive. Female Plastic negative Polarity reversing adapter may be necessary for 3<sup>rd</sup> party solar ready campers

# Features

- PWM (pulse width Modulated) charge controller
- 10A built in female 8mm connection
- 20A built in HPP connection
- Colored LED's to easily indicate the operational status and battery conditions.
- Digital LCD to directly display battery voltage, charging current, charging capacity (Amp hour), battery types and fault codes.
- Used with 12V batteries (AGM, LiFePO4, LTO, Gel, Lead Acid, and Calcium Batteries)
- Prevent your battery from being overcharged
- The unit contains a special circuit which prevents current flowing back from the battery and into the solar panel.



# Display



# LCD Display Details







- You also can visually monitor your battery charging condition via an LCD bar on the top of LCD meter, if the battery is in the charging process, the LCD bar will be flashing; if the battery is fully charged, the LCD bar will turn on.
- The VOLT / AMP button can be changed at any time during charging process.
- The LCD also can be treated as an independent voltage meter. A voltage less than 11.5V Volts indicates that the battery is discharged and needs re-charging
- Press BATTERY TYPE button and hold for 3 seconds to go into your battery type selection mode, the battery types you select will be shown on the LCD meter, the default setting is AGM Battery; the controller will automatically memorize your battery type setting.
- Press VOLT / AMP button in sequence, the LCD will display in turn with Battery Voltage, Charging Current, Charged Capacity (Amp-hour)



Indicates the solar panel connected

# Indicator Lights



| The 6 LED's indicate the charging status and the battery condition |  |  |  |  |  |  |
|--|---|---|---|---|---|---|
|  | Red   | Blue  | Green   | Green   | Yellow  | Red   |
| Solar Power Present-<br>No battery connected                       | ON  | OFF   | OFF   | OFF   | OFF   | Flash   |
| Soft charging  | ON  | Flash   | OFF   | OFF   | OFF   | ON  |
| Bulk charging  | ON  | ON  | OFF   | Subject to battery voltage  |   |   |
| Absorption charging  | ON  | ON  | OFF   | ON  | OFF   | OFF   |
| Equalization charging  | ON  | ON  | OFF   | ON  | OFF   | OFF   |
| Float charging   | ON  | OFF   | ON  | OFF   | OFF   | OFF   |
| Solar panel weak   | Flash   | OFF   | OFF   | Subject to battery voltage  |   |   |
| At night no charge   | OFF   | OFF   | OFF   | Subject to battery voltage  |   |   |
| Battery Voltage below 11.5V (+/- 0.2V)                             | ON  | ON  | OFF   | OFF   | OFF   | ON  |
| Battery Voltage between 11.5V - 12.5V (+/- 0.2V)                   | ON  | ON  | OFF   | OFF   | ON  | OFF   |
| Battery Voltage above 12.5V (+/- 0.2V)                             | ON  | ON  | OFF   | ON  | OFF   | OFF   |

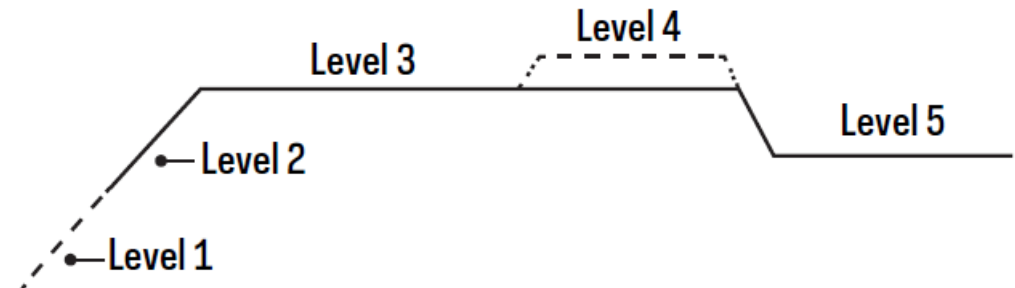
# Charging Profiles

- Soft Charge- When batteries suffer an over-discharge, the controller will softly ramp the battery voltage up to 10V.
- Bulk Charge- Maximum current charging until batteries rise to Absorption level
- Absorption Charge- Constant voltage charge and battery is over 90%.
- Equalization Charge\*- Only for WET battery or Calcium battery type, when the battery is deeply drained below 10V, it will automatically run this stage to bring the internal cells as an equal state and fully complement the loss of capacity. (LiFePO4, LTO, Gel and AGM battery do not run Equalization charge)
- Float Charge- Battery is fully charged and maintained at a safe level. A fully charged Lead acid battery (GEL, AGM, WET battery) has a voltage of more than 13.6 Volts; A fully charged LiFePO4 or LTO battery has a voltage level of 13.4V.

## CHARGING STAGES

The unit has a 5-stage charging algorithm.

Soft Charge (Level 1) - Bulk Charge (Level 2) - Absorption charge (Level 3) - Equalizing Charge\* (Level 4) - Float Mode (Level 5)





- Solar panel Amps: 10A/20A
- Normal Solar input voltage: 15-22V
- Max Solar Input Voltage: 25V
  - Don't exceed a 25v panel.
- Low Solar Input voltage: 8V
  - Power conditions or small panels like the Nomad 7 or smaller 3<sup>rd</sup> party panels.
- Fuses:
  - 10A controller: 15A / Input 25A output (spade)
    - A panel with an 8mm cable would not reach over 10A. The controller would only pull up to 10A.
  - 20A Controller: 25A input / 25A output (spade)
- Dimensions: 6.10 x 3.9 x 1.02 in (15.5 x 9.91 x 2.6 cm)
- Weight: 9.7oz (272g)
- Cable Lengths
  - Spade to HPP: 3Ft
  - Spade to 8mm: 3Ft
  - Spade to SAE: 15Ft
  - SAE to Ring: 23in
  - SAE to Alligator: 29in

