FORMCHARGE

OWNERS MANUAL

36V 18AMP BATTERY CHARGER

48V 15AMP BATTERY CHARGER

Customer Support: 320-373-2099

INTRODUCTION

If you have any questions, concerns, or missing parts

DO NOT RETURN UNIT TO ONLINE RETAILER:

PLEASE CALL OUR SUPPORT LINE AT 320-373-2099

EMAIL US

You can email our customer service department with questions regarding your FORM Golf Cart Battery Charger at: sales@formcharge.com

CALL US

Our customer service representatives are available Monday – Friday between 8:00 a.m. – 5:00 p.m. CST at 320-373-2099.

FREQUENTLY ASKED QUESTIONS

We have FAQs on our website to help answer all of your questions. Visit https://www.formcharge.com/ and click on “FAQs” to find an answer to your questions. FAQs are also listed on page 7 of this manual.

YOU MADE THE RIGHT DECISION!

Congratulations on receiving your FORM Battery Charger! If you find that it doesn’t meet your needs or if you have product questions, please reach out at sales@formcharge.com or call us at 320-373-2099. We want to ensure your satisfaction and that the product meets your needs. If you love your new charger, please consider leaving us a review at the online retailer you purchased from, it truly means a lot to us.

FEDERAL COMMUNICATIONS COMMISSION (FCC) STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

TABLE OF CONTENTS

QUICK START INSTRUCTIONS

Follow these quick start instructions for proper charging of your golf cart batteries.

Step 1: Plug the 3-prong connector of the input power cord into a compatible electrical outlet. The CHARGE STATUS light will start flashing Red / Green.

Step 2: Insert the output plug into the battery charging receptacle located on your golf cart. (Onboard chargers will directly connect to the battery)

Step 3: When the output plug has made a successful connection, the CHARGE STATUS light will illuminate based on the battery charge Status.

Note: When connected, the light may turn Solid red for up to 1 minute while diagnosing the battery state. If the LED's do not change when the cart is plugged in, the charger is not sensing enough voltage or has a bad connection. Please refer to the troubleshooting section if this occurs.

Color	Description	Battery Level
	Flashing Red	Charging (Below 80%)
	Flashing Yellow	Charging (80%-99%)
	Solid Green	Fully Charged / Maintenance

Step 4: Keep your battery charging until the CHARGE STATUS light turns green, indicating that it is fully charged. When the charger is unplugged from the cart, the light will remain green. The charger will reset to a flashing red/green ready state within 15 minutes.

Step 5: Disconnect the output plug from your golf cart battery and disconnect the power supply cord from the electrical outlet.

Step 6: Store your FORM Golf Cart Battery Charger in a dry environment.

***NOTE:** It is important to check the electrolyte level approximately every 30 days. Batteries should be filled after charging, and the electrolyte level should be even in all cells and below the fill well in each cell. If the battery plates are exposed before charging, add just enough water to cover the plates. If the battery is overfilled before charging, it may overflow during charging.

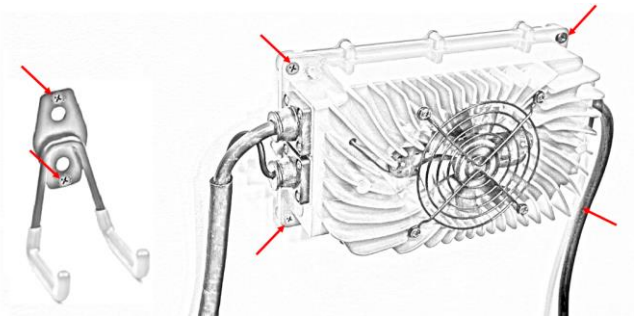
INSTALLING THE CHARGER ON THE WALL

If you choose to do so, the charger and plug holder (This does not apply to the Onboard Charger) may be mounted to the wall. Below you will find the steps to complete the installation.

Step 1: Remove the rubber feet from the bottom of the charger.

Step 2: Choose a solid surface & correct hardware to ensure the charger is mounted correctly. Wall anchors are required if mounting to drywall.

Step 3: Using your charger as a template, hold the charger against the wall & mark the holes. The mounting locations on the charger & plug are shown below.



Step 4: Set charger & hook aside. Predrill holes on marked locations

Step 5: If you aren't mounting to drywall, skip this step. Place drywall anchors into the holes.

Step 6: Align the charger with the predrilled holes. Secure with screws.

INSTALLING ON THE ONBOARD CHARGER (Onboard Specific Charger)

Step 1: Switch the golf cart to TOW mode

Step 2: Find a suitable location on the golf cart and mount using appropriate hardware. (Example Locations: baggage well, Battery compartment, Bottom of the Seat)

Step 3: Find the ends of the electrical series on your cart batteries. Attach the Red lead (Marked with Red heat Shrink) to the battery Positive (+). Attach the Black lead (marked with Black Heat Shrink) to the battery Negative (-). Applying Dielectric grease around the connections will help prevent corrosion.

Step 4: Switch the golf cart to RUN mode

LED FAULT DIAGNOSTICS

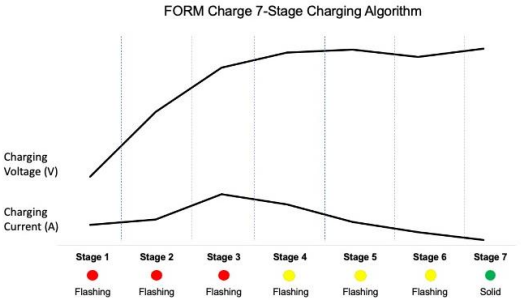
Description	Status Light
Standby / No Cart Detected	(Green, Red Flashing)
High Ambient Temperature	(Red, Green, Red, Green, 2 seconds off)
High Internal Temperature	(Red, Green, 4 seconds off)
Abnormal AC Voltage	(Red, Green, Red, Green, Red, 1 second off)
Over Voltage and Current	(red, Green, Red, 3 seconds off)
Abnormal Output Low Voltage	(Green, Red, 4 seconds off)

The LED will Flash a pattern of Green and Red to notify of a fault. The dashes represent a 1-second pause with no LED.

To Reset the charger or any LED faults, Unplug the AC wall plug for 10 seconds, and plug it in again. Temperature faults will automatically start charging operations once the temperature is returned to an normal operating temperature.

7-STAGE SMART CHARGING MODE

Designed to protect & preserve your batteries automatically. The 7-Stage Smart Charging algorithm is designed around optimal conditions for charging lead acid golf cart batteries.



PRODUCT FEATURES

- Microprocessor-controlled high-frequency power supply
- IP67 rated against dust and water intrusion
- The DC output is isolated from AC input
- Single input 120Vac
- 7 Stage Smart Charging technology
- Protections in place to help prevent short-circuiting, over-voltage, over-heating & reverse polarity
- Forced ventilation with fans to keep the unit cool while charging
- 8 Ft A/C Power Cable and 8 Ft DC golf Cart Plug (4Ft for Onboard)
- 15-hour auto shutdown timer to prevent defective batteries from overcharging
- Portable & lightweight for easy transportation

Specifications	**36 Volt Charger**	**48 Volt Charger**
Power Output	900W	900W
Input Voltage	120 ±15% Vac	120 ± 15% Vac
Input Current	<9 Amp	<9 Amp
Max Output Voltage	43.2Vdc	57.6Vdc
Output Current	18 Amp	15 Amp
Power Efficiency	≥85%	≥85%
Working Temperature	-31ºF to 170ºF	-31ºF to 170ºF

FAQ

1. **How loud should the charger be?**
   The noticeable sound of rushing air from the fan is a normal part of the cooling process on your FORM rapid charger.
2. **How warm do FORM chargers get?**
   The FORM battery chargers can reach 140º F. They may get warm in an enclosed area. The maximum recommended air temperature for charging batteries is 105º F. When the charger is hot, the output current will drop to protect the charger and the battery.
3. **Will I damage my batteries if I leave the charger plugged in over long periods of non-use (like storage)?**
   No. FORM's chargers will periodically check to ensure the batteries are topped off. This will allow you to keep your battery charger plugged in for long periods of time without "boiling the battery dry." **NOTE:** It is important to check the electrolyte level approximately every 30 days. Batteries should be filled after charging, and the electrolyte level should be even in all cells and below the fill well in each cell. If the battery plates are exposed before charging, add just enough water to cover the plates. If the battery is overfilled before charging, it may overflow during charging.
4. **Why does the LED on my FORM charger stay illuminated for a period of time after unplugged from AC power?**
   This is normal and does not affect your batteries. It is simply a function of the precision charging, ensuring the charger is disconnected prior to terminating the charge cycle.
5. **What is the warranty?**
   The manufacturer's warranty is 18 months. You may return the charger up to 30 days after the date of delivery.
6. **Can this be used at an input voltage of 240Vac?**
   No, this charger is designed for 120Vac
7. **The Batteries sound like they are boiling**
   The batteries are not boiling. The sound you hear is the release of hydrogen gas bubbles during the bulk recharge phase. The release of hydrogen gas bubbles stirs up the sediment in the bottom of the batteries and helps to maintain a healthy environment
8. **The battery meter on my cart reads less than full after a charge cycle.**
   Aftermarket battery meters need to be calibrated correctly to read an accurate charge. Please consult the battery meters documentation on how to calibrate the meter.

9. **The CHARGE STATUS Light is Green / Red flashing, but nothing happens when you insert the output plug into your golf cart.**
    a. Check if the output plug is fully inserted into the golf cart.
    b. Check if there are any loose or corroded connections on your battery terminals.
10. Are your batteries completely dead? The charger must detect a minimum voltage of 18V from your batteries to begin charging; this is a safety feature to protect the health of your batteries. You may use a multimeter to check the voltage of your batteries. This can be solved by using an Automotive Trickle Charger and charging each battery individually to bring them up to the minimum voltage. Refer to the troubleshooting section “3.6 Reconditioning Golf Cart Batteries (Trickle Charging)”.

    Your cart has been charging for multiple hours, but the HARGE STATUS has not turned green.

    A 36V or 48V cart that has depleted the batteries to 50% will typically take between 7-10 hours to fully charge. This charging time can vary widely depending on the type, age, and health of your batteries.

TROUBLESHOOTING

Step 1 - VERIFY YOUR AC OUTLET IS WORKING

Symptoms:

- No LED lights are lit up when the charger is plugged into the wall

Helpful Hints:

- Garage and external home outlet issues are a common culprit of a golf cart chargers not turning on
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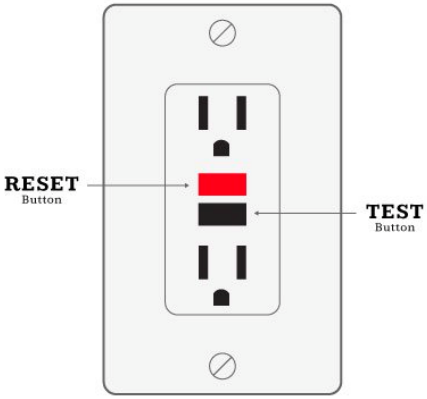
1.1 - Outlet Reset

- Check if the AC wall outlet is a GFCI outlet that has been tripped. Press the red reset button to correct the potential issue. Plug your charger back into the AC outlet and see if the problem has been corrected.



1.2 - Checking Breaker Panel

- Locate the breaker panel in your home and check for any fuses that have been tripped and show an orange indication.
- If a breaker is showing orange, turn off the break and turn it back on to reset.
- Plug your charger back into the AC outlet and see if the problem has been corrected.

1.3 - Known Working Outlet

- Plug your charger into a known working outlet inside your home to verify if the charger lights will illuminate.

Step 2 - CHECKING CONNECTIONS & COMMON ISSUES
Symptoms:

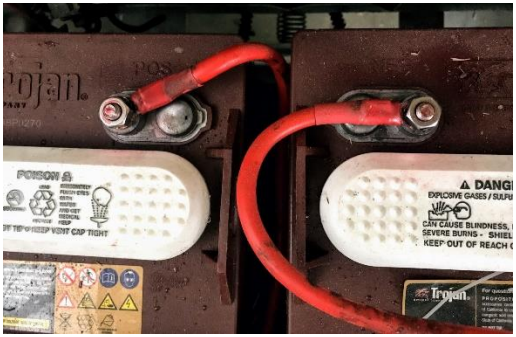
- The fan on the charger will not turn on when plugged into the golf cart
- The charger does not enter charging mode when plugged into the charging port of the golf cart

Helpful Hints:

- Battery cables can come loose over extended use.
- It is recommended that you replace your battery cables at the same time you replace your batteries. Battery cables may frey or break internally with stress over time and create a weak or broken connection

2.1 - Battery Cables

- Check that all the battery cables are tight against the battery terminals by grabbing the wire and trying to move it back and forth. If you can move the cable the connection is too loose



2.2 - Corrosion

- Check for any signs of corrosion on the battery terminals. If corrosion occurs, use a mixture of 1 tablespoon of baking soda mixed with 1 cup of water and a wire brush to clean the terminals. (We recommend performing this step outside to avoid a mess inside of your garage)

2.2 - Tow/Run Switch

- Lift your golf cart's seat and locate the Tow/Run toggle switch. Ensure your cart is in RUN mode.

2.3 - Parking Brake

- Check to ensure the parking brake has been fully engaged on your golf cart.

2.4 - Key Ignition

- Ensure that the key on the golf cart is in the off position

STEP 3 - TESTING YOUR BATTERIES

Symptoms:

- The fan on the charger will not turn on when plugged into the golf cart
- The charger does not enter charging mode when plugged into the charging port of the golf cart
- If you are receiving the error message low voltage error code on your FORM Charger

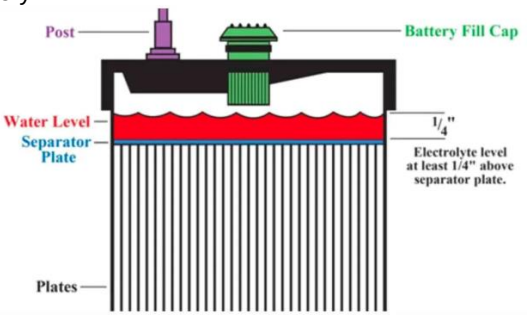
Abnormal output low Voltage	●/● – – – – (Green, Red 4 seconds off)

Helpful Hints:

- Batteries drain over time whether they are in use or not.
- If it has been longer than 30 days since you last charged your cart, your batteries are likely too low to accept a charge from a golf cart charger and an automotive trickle charger will be required to recondition your batteries.
- A 36 Volt golf cart has a safety requirement of a minimum of 18 volts for the charger to start working.
- A 48 Volt golf cart has a safety requirement of a minimum of 24 volts for the charger to start working.
- If you plan to leave your cart for more than 7 days, we recommend putting your cart in TOW mode to reduce the drain on the battery.

3.1 Proper Battery Water Level

- Check the water level on each cell of your batteries to ensure they are filled with distilled water to a maxim of ¼' above the plates inside of the battery.



3.2 Checking for Power

- Step on the throttle pedal; does it go? If not, your batteries are likely below the minimum voltage for a golf cart charger to begin safely charging.

3.3 Testing the Pack Voltage of Golf Cart Batteries

- To test your battery's voltage, you will need a multimeter.

Example Multimeter

- Set the multimeter to DC Voltage (Symbol for DC Voltage below). Make sure it is set for at least 2 place values

- Place the red multimeter probe on the positive terminal of battery 1 of your golf cart. Battery 1 can be identified by the battery that has the primary positive lead coming from the cart.
- Place the black multimeter probe on the negative terminal of battery 6 for carts with 6 batteries or battery 8 for carts that have 8 batteries. This battery can be identified by the battery with the primary negative lead coming from the cart
- You should be reading a minimum of 18 volts for 36 volt golf carts or a minimum of 24 volts for 48 volt golf carts. If you do not have the minimum voltage please proceed to **Step 3.6 Reconditioning Golf Cart Batteries**

3.4 Testing Individual Battery Voltage

- Utilize the same multimeter settings from **Step 3.3**
- Test each individual battery and record the results
- If any of the batteries have a voltage difference from each other greater than 1 volt, it will need to be checked by a golf cart mechanic for a dead cell.

3.5 Testing the Golf Cart Receptacle for Voltage

- With the multimeter on the same setting now test the voltage at the receptacle, it should be the same voltage that the main battery pack reads.
- If the voltage is not reading at the receptacle, or the voltage is different, there may be a wire connected incorrectly, or loose.

36 Volt Receptacles

48 Volt Receptacles

3.6 Reconditioning Golf Cart Batteries (Trickle Charging)

- Disconnect the golf cart charger from your cart
- Start by connecting the positive and negative leads of an automotive trickle charger to battery 1 in your golf cart. (The wires between each battery do not need to be disconnected)
- Turn on the trickle charger and let it charge for approximately 30 minutes. Repeat this step for each of your batteries
- After you have charged each battery individually repeat "*3.3 Testing the Pack Voltage of Golf Cart Batteries*"
- If your pack voltage is testing above 18 volts for 36-volt carts or 24 volts for 48 volt carts you may resume charging with your golf cart charger. If your pack voltage remains under the minimum, please repeat charging each battery individually with the trickle charger

Example Trickle Charger

IMPORTANT SAFETY INSTRUCTIONS 

Before using your battery charger, read all safety instructions.

1. Always use the charger in well-ventilated environments.
2. This charger is designed to charge lead acid or silicon batteries ONLY.
3. Due to the high current, sparking is normal when connecting the charger to the battery.
4. Avoid charging the wrong type of battery.
5. DO NOT cover the aluminum case; this can cause your charger to overheat while charging.
6. DO NOT disassemble the charger.
7. Batteries produce hydrogen gas, which can explode if ignited, never smoke, use an open flame, or create sparks near the battery. Proper ventilation is required when charging
8. Risk of electrical shock. DO NOT touch the uninsulated portion of AC or DC connectors or the uninsulated battery terminal
9. To prevent electrical shock, make sure all electrical connectors are in good working condition. DO NOT use connectors that are cracked, corroded, or do not make adequate electrical contact. Use of a damaged or defective connector may result in a risk of overheating or electrical shock.
10. DANGER – Never alter AC cord or plug provided if it will not fit the outlet installed by a qualified electrician. Improper connection can result in risk of an electric shock.
11. DANGER – Do no attempt to repair or service the charger yourself. Opening the charger may expose you to high voltages, the risk of electric shock, and other hazards.
12. DANGER – Do not splice the AC power cord.
13. DANGER – Damaged cords and plugs can cause electric shock or electrocution.
14. CAUTION – When using an extension cord, make the AC connection to the charger outside of the battery compartment as far away as practical to reduce the risk of a spark igniting gasses in the compartment.

15. CAUTION – Even though the FORM charger is capable of operating in a high ambient temperature environment, a minimum of six inches of unobstructed area should be allowed on all sides of the unit for proper air circulation and cooling. Adequate cooling and circulation will allow the charger to operate at peak efficiency.
16. CAUTION – Always wear protective eye shields and clothing when working with batteries containing acids which can cause bodily harm. Do not put wrenches or other metal objects across the battery terminal or battery top. Arcing or explosion of the battery can result.
17. CAUTION – Always use a GFCI-protected outlet when using a charger in wet / moist environments to prevent electrical shock.