



# Smart Battery Charger

————— Know Batteries Better —————

**12V 3A/15A/25A AUTOMATIC**



BC0253-1

## WELCOME

Thank you for purchasing TowerTop BC-025 PRO Smart Battery Charger. Please save these instructions for future use. If any issues arise during product use, just feel free to contact us via [support.us@51towertop.com](mailto:support.us@51towertop.com)

## ABOUT TowerTop BC-025 PRO

TowerTop BC-025 PRO is a smart battery charger for 12V lithium batteries and 12V lead-acid batteries including STD, AGM, GEL, DEEP CYCLE, and CALCIUM. With intelligent 8 charging stages and multiple assist functions, it will smartly identify, charge, repair, and maintain your batteries. Fully-automatic features, manual selections, prior-setting memory, auto-stop when 100% charged, and auto-awake to pulse compensate after voltage drops enrich your pleasant charging experience.

## WARNINGS



**PLEASE READ CAREFULLY AND UNDERSTAND ALL SAFETY INFORMATION BEFORE USING THIS PRODUCT.** Failure to follow these safety instructions may lead to Electrical Shock, Explosion, and Fire, which can result in property damage, serious injury, and even death.



**Electrical Shock** - The battery charger is an electrical device that may shock and cause serious injury. Do not use the charger if the power cords are damaged. Do not submerge in water or get wet.



**Explosion** - Do not attempt to charge any frozen, damaged, incompatible batteries. Never try to charge lithium batteries with high-voltage shock. Apply the charger only to batteries with recommended voltage.



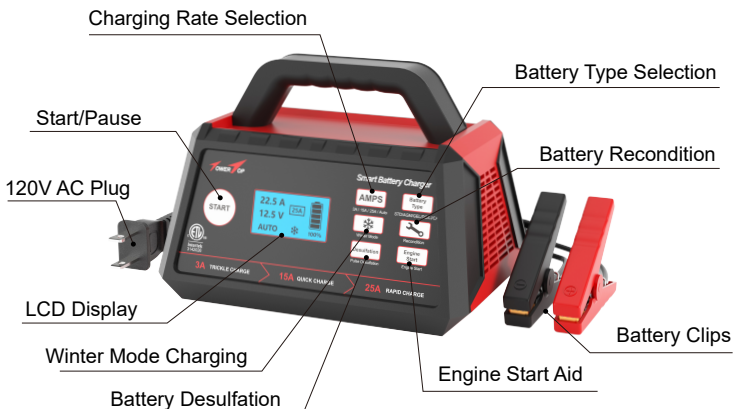
**Fire** - Use the product in well-ventilated areas. Do not cover the product. Do not smoke or use any source of electrical spark or fire when using the charger. Keep product away from flammable materials.



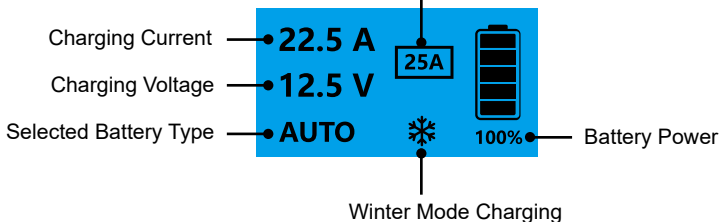
**Eye Injury** - Wearing eye protection to use the charger is recommended. Batteries can explode and cause flying debris. Battery acid can cause eye and skin irritation. If needed, flush affected areas with running clean water and contact medical aid in time.



**Explosive Gases** - Batteries may generate explosive gases during normal battery operation. Please follow all safety instructions and also those published by the battery manufacturer. Review cautionary markings on these products and on the engine.



### Selected Charging Rate



## PACKAGE OVERVIEW



One TowerTop Smart Battery Charger with Battery Clips



One Instruction Manual

## SPECIFICATIONS

Low Voltage Detection	1V
Input	AC 120V/60Hz, 9A
Output	DC 12V, 3A/15A/25A/Automatic
Efficiency	85%
Type of Batteries	12V ONLY
Charging Progress	Smart 8 Stages
Working Temperature	32°F/0°C ~ 104°F/40°C
Battery Chemistries	Wet, Gel, MF, CA, EFB, AGM, Calcium, Lithium(LiFePO4)
Battery Capacity	Up to 1000Ah; Maintain All Battery Sizes

## CHARGING TIMES

The size of the battery (Ah) and its depth of discharge (DOD) greatly affect its charging time. The estimated charging time shown below is based on an average discharge depth of 50% to a fully charged battery and is only for reference purposes. Actual data may differ due to battery conditions and temperature. **The charger has “24H Overtime Charging Protection”.**

Battery Size Ah(Amp Hour)	Approximate Time To Charge In Hours		
	12V 3A	12V 15A	12V 25A
25	8.1	1.4	0.75
50	16.2	2.8	1.5
100	32.3	5.7	3
200	—	11.3	6
500	—	28.3	15
1000	—	—	30

# OPERATING INSTRUCTIONS

## ● Automatic Charging

1. Connect the battery clips to the battery terminals. Red clip to the positive terminal (+), and black clip to the negative terminal (-).
2. Plug the battery charger into the 120V AC outlet. Without any manual selections, the smart charger will take about 30 seconds to automatically identify and charge your battery with the optimal settings (3A & Charge to 14.1V full).

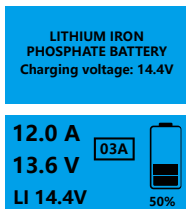
**NOTE:** The battery charger has prior-setting memory function. If you have already charged a battery before and have not reset new modes for a new charging, it will automatically adopt your initial settings for the new charging.

## ● Manual Charging

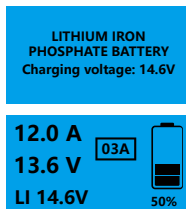
1. Connect the battery clips to the battery terminals. Red clip to the positive terminal (+), and black clip to the negative terminal (-). Plug the battery charger into the 120V AC outlet.
2. Select your desired charging rate, compatible battery and press "START" button to start charging. All the data will be shown on the LCD screen.

### Two Selectable Charging Types For Lithium Batteries

#### Lithium Battery - Option One



#### Lithium Battery - Option Two



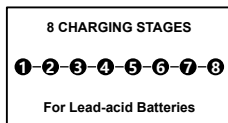
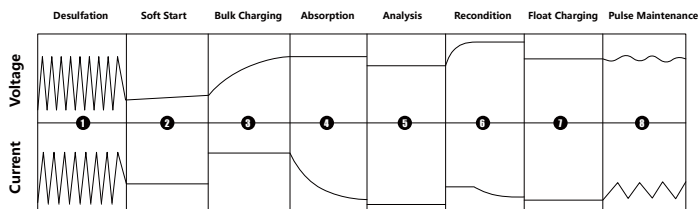
**NOTE:** 1. Select the Prompt Interface. 2. Wait For 3 Seconds To The Main Interface. 3. Press the "START" button to begin charging.

3. During the charging, you can press "Recondition" button to check the smart 8 charging stages. It will automatically switch back to the main interface in 5 seconds.
4. If you would like to reset the charger during the charging, first press "START" button to pause charging, reset your desired modes, and then press "START" button again to continue charging.

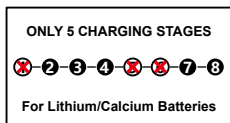
5. The battery power percentage on LCD display will be 100% once your battery is fully charged. Then the charger will auto-stop charging in this case.

6. Regarding a long-term connection and charging, the smart charger will auto-restart to pulse maintain battery to 100% full again when it detects voltage dropping. Auto-stop charging when it is 100% full again.

### Smart 8-Stage Charging Program



- 1. Battery Desulfation** - Adopt 15.8V pulse voltage for electrolytic removal of sulfated crystals. Automatically skip when not needed.
- 2. Soft Start** - A slow and steady buildup of the charging process that limits the power input to protect your battery.
- 3. Bulk Charging** - The main part of the whole charging process where the battery power will reach about 80% full.
- 4. Absorption** - Fully charge the battery by slowly reducing the charging rate to allow your battery to absorb more power.
- 5. Battery Analysis** - Auto-test the battery state after charging. Abnormal - enter the repair stage; Normal - turn to the next stage.
- 6. Battery Recondition** - Restore over-discharged batteries. After repair, return to the "Bulk" stage. If it fails, an error will be reported.
- 7. Float Charging** - Keep battery at 100% without overcharging or damages; Leave smart charger 24/7 plugged without worry.
- 8. Pulse Maintenance** - Auto-wake up and pulse compensate to 100% full again when the voltage drops, with battery more durable.



**IMPORTANT:** “Desulfation”, “Recondition”, and “Engine Start/Jump Start” functions are not applicable due to the lithium/calcium battery's characteristics, for all these three functions adopt up to 15.8V high voltage during use, which can damage lithium/calcium batteries and even cause the batteries to explode.

1. **Soft Start** - A slow and steady buildup of the charging process that limits the power input to protect your battery.
2. **Bulk Charging** - The main part of the whole charging process where the battery power will reach about 80% full.
3. **Absorption** - Fully charge the battery by slowly reducing the charging rate to allow your battery to absorb more power.
4. **Float Charging** - Keep battery at 100% without overcharging or damages; Leave smart charger 24/7 plugged without worry.
5. **Pulse Maintenance** - Auto-wake up and pulse compensate to 100% full again when the voltage drops, with battery more durable.

### ■ Winter Mode Charging

TowerTop smart battery charger, adding 0.2v more on the basis of the initial charging voltage, better boosts your battery activity and charges more thoroughly in low-temperature situations.



After connecting the battery charger to both your battery and the AC outlet, press "AMPS" button to select your desired charging rate, press "Battery Type" button to choose the compatible battery, then press "Snowflake Symbol" to select winter mode charging, and press "START" button to start charging. All the data will be shown on the LCD screen.

### ■ **Battery Recondition** (Not Applicable To Lithium/Calcium Batteries)

The "Recondition" function is for recovering idled or unused batteries that are deeply discharged, thus helping the battery last longer. Battery repair time up to 4 hours and "Battery Failure" will be reported if it fails to repair in 4 hours.



With the repair completed, you can directly press "START" button to start charging. Or you just wait for about 30 seconds, the battery charger will automatically switch to the charging status.

### ■ **Battery Desulfation** (Not Applicable To Lithium/Calcium Batteries)

The smart battery charger will identify and restore severely-sulfated battery terminals to rehabilitate the lost performance. Battery desulfation time up to 24 hours and "Battery Failure" will be reported if it fails after 24 hours. This mode will automatically skip and switch to the next stage if your battery does not need to be desulfated.



With the desulfation completed, you can directly press "START" button to start charging. Or you just wait for about 30 seconds, the battery charger will automatically switch to the charging status.


### ■ **Engine Start Aid** (Not Applicable To Lithium/Calcium Batteries)

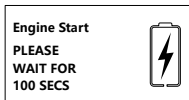
Engine start aid helps in activating your car battery with insufficient power to emergently start your vehicle in 100 seconds. You need to grasp the prompt in the picture below and start your car synchronously. If you miss this interface, you may not be able to start normally.



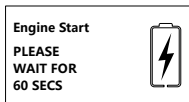


## Operation Details:

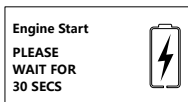
1. Select your battery type, press "Engine Start" button, the LCD screen will show  and then press "START" button. LCD screen shows as follows. It switches to the 100s-count-down interface. You need to wait.



2. In the 60-second interface, it will immediately show the prompt picture below. Now you need to simultaneously start your car.



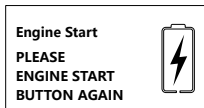
3. If you fail to start your car for the first time, you need to wait for the 30S interface for a second attempt. Now you also need to seize the moment and simultaneously start your car.







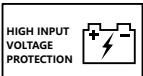
4. If you fail to start your car for the second time, you need to wait until the count-down is over and show the prompt picture again for a third attempt.




If you fail to start your car in the three attempts above, the LCD display will show as follows. This is the whole working cycle for the "Engine Start" function. In this case, if you still want to have a try again, press "Engine Start" and "START" buttons again, then repeat previous steps.



## TROUBLESHOOTING

Failure	Possible Cause	Corrective Action
	<ol style="list-style-type: none"> <li>1. The desulfurization stage exceeds 4h.</li> <li>2. Abnormal battery charging in soft start stage.</li> <li>3. Charging timeout in constant voltage phase(24H)</li> <li>4. Timeout in the repair phase(4H)</li> <li>5. Repair mode Repair timeout(4H)</li> <li>6. Desulphurization mode Desulphurization timeout(24H)</li> </ol>	<p>Please replace the battery.</p>
	<ol style="list-style-type: none"> <li>1. Selected charging rate is too small for big-size battery;</li> <li>2. The battery condition is not good.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select higher charging rate and recharge;</li> <li>2. Battery may be dead, check the battery condition. Replace battery if needed</li> </ol>
	<p>Clamps connected to wrong polarity</p>	<p>Correct the polarity to the right connection.</p>
	<p>The temperature of the charger is too high or the internal temperature sensor of the charger fails.</p>	<p>Make sure the vents are unblocked. The charger will recharge automatically after cooling down. If the charger has been unable to restore charging, the temperature sensor failure, by a professional maintenance personnel to check</p>
	<p>Abnormal battery voltage.</p>	<p>Disconnect the AC power supply of the charger, let the battery stand for a period of time and then charge it again. If the same error occurs again, replace the battery</p>

	<p>Abnormal charging current.</p>	<p>Disconnect the AC power supply of the charger, let the battery stand for a period of time and then charge it again. If the same error occurs again, replace the battery.</p>
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## LIMITED WARRANTY

TowerTop brand series products are covered with a 30-day hassle-free return and an 18-month replacement on Amazon (With no man-made damage). For the defects reported during the warranty period, TowerTop will repair or replace the defective parts or items after technical analysis and confirmation.

TowerTop shall not be liable for any incidental or consequential damages arising from the disassembling, misuse, or modification of the device. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

The limited warranty is void under the following conditions:

- Misused, disassembled, altered, or repaired by unauthorized stores or technicians.
- Careless handling and violation of operation.

Notice: All information in this manual is based on the latest information available at the time of publication and no warranty can be made for its accuracy or completeness. TowerTop reserves the right to make changes at any time without notice.