



# Alchemi Supercharger®

## User Manual 1.1 – SC35/SC70

The world's most efficient, powerful, and compact battery charger.



UPS/BATTERY



EV



INDUSTRIAL



MARINE



TELECOMMS



NETWORKING



MEDICAL



AUTOMATION



MILITARY



GOLF CART

Keep this manual in a safe place for quick reference at all times. This manual contains important safety and operation instructions for correct use of the charger.

Read through the manual and pay special attention to the markings and labels of the charger, battery and equipment connected to the battery system.

**WARNING : FAILURE TO HEED THIS WARNING MAY CAUSE INJURY TO PERSONS AND EQUIPMENT DAMAGE**

**CAUTION : FAILURE TO OBSERVE WARNINGS MAY RESULT IN EQUIPMENT DAMAGE AND MALFUNCTION**

## WARNINGS :

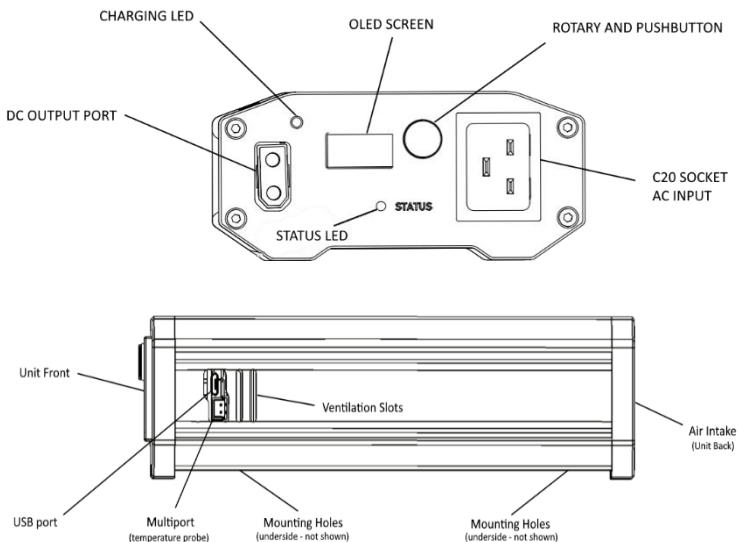
- THE CHARGER IS DESIGNED FOR IN-DOOR USE. PROTECT THE CHARGER FROM INGRESS OF WATER AND DUST.
- THIS CHARGER IS MADE TO CHARGE ONLY PROPERLY SIZED BATTERIES LARGER THAN 10AH.
- INSTALL THE CHARGER IN ACCORDANCE WITH ALL COMPLIANCE AND REGULATIONS.
- DO NOT USE THE CHARGER IF IT HAS BEEN DAMAGED.
- DO NOT REMOVE CASING OF THE CHARGER, RISK OF ELECTRIC SHOCK, WARRANTY VOIDED, AND DESTRUCTION OF UNIT.
- NEVER ATTEMPT TO CHARGE A DAMAGED BATTERY
- WEAR PROTECTIVE GOGGLES AND TURN YOUR FACE AWAY WHEN CONNECTING OR DISCONNECTING THE BATTERY.
- NEVER PLACE THE CHARGER ON TOP OF A BATTERY.
- NEVER SMOKE, USE AN OPEN FLAME, OR CREATE SPARKS NEAR BATTERY OR CHARGER DURING NORMAL CHARGING
- PAY SPECIAL ATTENTION TO THE ENCLOSURE OF BATTERIES FOR GASSING OR OTHER SIDE-EFFECTS OF CHARGING.
- **DISCONNECT THE MAINS SUPPLY BEFORE CONNECTING OR DISCONNECTING THE CABLE TO THE BATTERY.**
- IF THE CHARGER DOES NOT WORK PROPERLY OR IF IT HAS BEEN DAMAGED, UNPLUG ITS AC AND DC CONNECTION.

## CAUTIONS :

- REFER TO BATTERY MANUFACTURER'S SPECIFIC RECOMMENDED VALUES FOR CHARGER SETTINGS.
- FIX THE CHARGER TO A STABLE SURFACE USING THE MOUNTING KIT OR SCREW HOLES.
- ENSURE ALL VENTILATION PORTS ARE NOT OBSTRUCTED FOR EFFICIENT FAN COOLING, ALWAYS ENSURE 10CM SPACING BETWEEN OBJECTS IN A WELL-VENTILATED AREA.
- IF USING DIFFERENT AC CABLES, ENSURE THE CABLE RATING IS APPROPRIATE FOR THE CHARGER.
- IT IS RECOMMENDED TO UNPLUG THE CHARGER IF UNUSED FOR MORE THAN 10 HOURS.



## 1. Charger Diagram



### Box contents

1. 1x Incredibly power Supercharger
2. 1x Thermistor (temperature sensor)
3. 2x Mounting brackets
4. 4x Mounting screws
5. 1x AC cable
6. 1x DC output cable
7. 1x User manual



## 2. Charger Installation and Operation

This is one of the most powerful battery chargers in the world. Please observe the warnings & safety precautions before rushing to install and operate the charger.

### Normal Start (Recommended)

- 1) Clean battery poles for the DC cable and secure the battery charger in a well ventilated area, make sure the mounting surface is flat and without soft covering material or loose paper sheet. Any ventilation holes must be uncovered.
- 2) Connect the DC cables to the battery, carefully noting the polarity of the battery and cables. Ensure the AC cable is not yet plugged in, and connect the DC plug to the DC output port and make sure it is fully pushed in. Double check the battery connection is well-connected. Connect the thermistor to the Multiport.
- 3) The charger will start initialization. If set, turn off the Autostart feature by holding the pushbutton knob.
- 4) While the unit is at the "select profile" screen, connect the AC mains cable to the C20 socket.
- 5) The unit is ready to be configured and operated safely.

### Battery-less Start

Start from step 1) in the previous procedure and follow the following steps

- 2) Connect the AC mains cable to the C20 socket. Press and hold the pushbutton knob for at least 5 seconds.
- 3) The unit will startup in batteryless mode and can be configured normally. Do not attempt to connect a battery while the unit is operating in this mode, this can cause damage to the battery and charger.
- 4) To turn off the unit, unplug the AC cable and start as per the Normal Start procedure.



## Shutdown

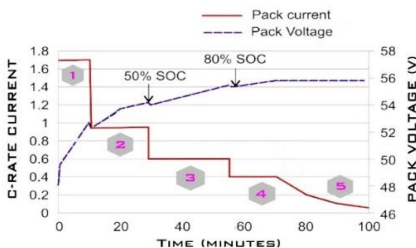
- 1) The charger will enter sleep mode if inactive for 4 hours. The red status LED will flash periodically. Press the pushbutton knob for 2 seconds to wake the unit.
- 2) To disconnect the unit, first ensure the unit is not charging by pressing and holding the pushbutton knob. Ensure that the green Charging LED is off.
- 3) Disconnect the AC mains cable and the DC cable in this order. The unit will turn off.

## 3. Battery Profile Selection

*Incorrect battery charging is the largest preventable cause of premature battery failure.* Please see the Alchemi website for list of standard charge algorithms and for more information.

The Alchemi A.I. charge algorithm is divided into up to 5 phase sequences to put energy into the battery correctly. Each phase can be terminated by 1) voltage, 2) current, or 3) a fixed duration. Every phase has a variable timer to prevent “stuck” phases where the charger does not shutdown.

An example 5-step rapid-charge Lithium profile is demonstrated below using the Alchemi A.I. charge algorithm.



## 4. Monitoring Webapp

- 1) Turn on the charger using normal start procedure.
- 2) Search for WiFi hotspot “SuperchargerAI” and use password “alchemitechnologies” to connect. Open your browser and enter “192.168.4.1” in the address bar.
- 3) Turn off any data connections on your device otherwise the “This site cannot be reached” error will appear.
- 4) The WIFI-connected Supercharger dashboard will load. Have ideas for more features? Send an email to [engineering@alchemi.tech](mailto:engineering@alchemi.tech)!

## 5. Specifications

MODEL:		SC35	SC60
OUTPUT	CURRENT OUTPUT (240VAC)	35A/35A/35A (24V/36V/48V)	35A/55A/60A (24V/36V/48V)
INPUT	VAC RANGE	85-300VAC	
	FREQ.	45-65Hz Rated: 50/60Hz	
	P.F.	≥0.990/230VAC at full load	
	EFFICIENCY	Up to 96.1%	Up to 98.1%
	CURRENT	<17A	
ENVIRONMENT	NOM. TEMP	-40°C to +75°C (with derating)	
	HUMIDITY	0-95% RH (non-condensing)	
OTHER	MTBF	≥100,000 hours	
	WEIGHT	2.7kg	3.0kg
	COOLING	Thermostatically controlled fan + heatsink enclosure	
	DC CABLE	1.2m with M8 ring connectors	
	NOISE	≤53dB at full load	
	DIMENSION	317x125x52 mm	



## 6. Troubleshooting

Problem	Solution
OLED screen does not turn on.	Follow the recommended startup procedure and double check the cabling.
A bug on the OLED or webapp.	Please contact <a href="mailto:engineering@alchemi.tech">engineering@alchemi.tech</a>
Unit turns on but does not charge.	Ensure that AC power is plugged in. Check for tripped AC breakers.
Unit skips through charging phases.	Check phase programming is correct.
Unit is very loud.	The supercharger requires increased cooling at low voltages, this is normal.
Sparks when connecting DC cables.	Incorrect connection procedure! First connect battery, then DC port, then AC.
No startup when AC connected	The pushbutton must be held for 5 seconds to start batteryless AC startup.
Who to contact for technical issues?	Contact <a href="mailto:engineering@alchemi.tech">engineering@alchemi.tech</a> with a detailed explanation.

## 7. Storage, Handling, and Maintenance

Transport the supercharger in original packaging and store in a cool, dry place. See the Alchemi SC Packing Details for more info.

### Maintenance

**CAUTION – MAKE SURE CHARGER IS UNPLUGGED FROM ELECTRICAL OUTLET BEFORE PERFORMING ANY MAINTENANCE.**



- Clean the clamps after each use. Wipe off any battery fluid that may have come in contact with the clamps to prevent corrosion.
- Once a year, apply some grease to the exposed wires on the ends of the cables to prevent corrosion.
- If needed, the case may be wiped clean with a soft cloth. There are no user-serviceable components inside the charger.

Read the full user manual at our website, plus many other technical references and guides.

[www.alchemi.tech](http://www.alchemi.tech)



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