



Pro Charge Ultra Lite 30A AC to DC Battery Charger

USER'S MANUAL.



Features

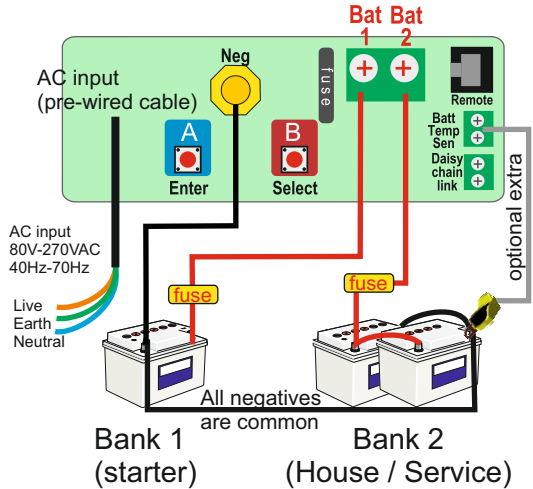
- **Global Voltage 80-270V AC 40-70 Hz**
- 6 stage progressive Battery Charger.
- Extremely efficient, up to 90%.
- Synchronised rectification.
- Fully Active PFC.
- Custom Battery Charge Selection + 8 presets.
- 2 isolated outputs.
- 18 LED front panel for user information.
- Perfect for generator use.
- Night time settings to reduce fan noise.
- Power pack mode - does not require a 12V battery to provide power.
- Daisy chain enabled (optional), temp sensors linked across multiple batteries.



Basic Installation

Reading this paragraph should be sufficient for 90% of installers. Connect the Bat 1 and Bat 2 DC outputs to the respective battery banks, use an appropriate fuse (40A fuse). Then wire up the negatives (all should be common). All DC cables should be at least AWG 10-8 (6-10 mmSq). Wire a plug to the AC Live|Earth|Neutral cable and plug it to a 80V-270VAC (40Hz-70Hz) AC supply. The charger should turn on and begin charging both Bank 1 and Bank 2 at the default charging profile of a sealed lead acid battery (14.4V abs. and 13.6V float). This profile shall be adequate for most batteries (please ensure). The charger does not need to be turned off.

If users wish to install the temperature sensor for a more accurate seasonal charging rate and for battery temperature warnings then install onto the negative terminal of the bank you wish to sensor (typically the House / Service bank - as depicted).



Optional parts available for this product

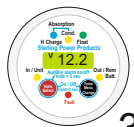
- 1) Analogue battery temperature monitor / trip with 10m off cable. **TSAY**
- 2) Digital temperature trip, can be daisy chained and available in various temperatures. **TSD50 TSD60 TSD70**
- 3) Remote control unit. **LPCUR**



1



2



3

The Pro Charge Ultra Lite (LPCU1230) is an AC to DC battery charger designed to charge up to 2 battery banks at a charging current of 30A.



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› Product Specifications

	LPCU1230
Input Voltage (V AC)	80 - 270
Input Frequency (Hz)	40 - 70
Efficiency	94.40%
Total Harmonic Distortion	2.4% voltage
Total Harmonic Distortion	2.4% current
Ripple noise (rms)	12mV
Ground Leakage	0.5 mA
Voltmeter accuracy	1%(+/-)
IP rating	IP21
Ignition Protected	Yes
Quiescent Current (W)	1
Weight (Kg)	1.5
Dimensions (LxWxD) mm	190 x 160 x 50
Generator / main power (W)	500W

Standards

Tested to CE standards

EN61000-3-2

EN61000-3-3

EN55014-1

EN 55014-2

EN60335-2-29

EN ISO 13297

EN 6100-3-2 Class

Fill with more product specs

▸ Legal and Safety

Using the Instruction Manual

This manual must be read throughout before installing this electronic device. Do not lose these instructions - keep them safe. The most up to date instructions can be found on the Sterling Power website. Please refer to the latest instruction manual before contacting Sterling. At Sterling, we endeavour to include all of the product information that we can think of into the manual.

Installation of the electronic device must be carried out by a qualified and trained personnel only. The personnel must be familiar with the locally accepted guidelines and safety measures.

Sterling Power's warranty statement

A comprehensive warranty statement is provide at the back of the instruction manual. A comprehensive warranty statement can also be found on sterling-power.com.

Copyright and plagiarism

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Liability

Sterling Power can not accept liability for:

- consequential damage due to use of this device
- possible errors in the manuals and the results thereof

Device modification

Please do not modify the device unless you have been instructed to do so by Sterling Power, directly. Product modification shall be done at Sterling, when needed. Warranty shall be voided if personal attempts are made to modify the device, without Sterling's approval.

Use the battery charger only:

- For AC to DC conversion.
- For DC charging limiting.
- With fuses protecting the DC cables.
- In a well ventilated, dry, dust-free and condensation free environment.
- When instruction manual has been read through.

Safety Symbols



CAUTION
WARNING



EXPLOSION

- **Example - WARNING. Never use the device in situations where there is danger of gas / dust EXPLOSION or potentially flammable products.**

General maintenance and repair

The device must be switched off during maintenance. It must also be protected against unexpected switching off. Remove battery connections and ensure unit is off. If repair is required, only use original parts.

General safety and installation precautions

- Install device in well ventilated space. Do not expose device to: Rain, snow, spray, moisture, pollution, condensation. Do not cover or obstruct ventilation openings.
- Device connects to common negative. Common negative must be earthed.
- In case of fire use a fire extinguisher.
- Ensure reverse polarity and short circuiting is avoided - to prevent damage to battery.
- Protect DC wires with the appropriate sized fuse.
- Check cabling annually- fix where needed.
- Avoid contact with device with damp hands.
- Ensure the device is adequately and securely mounted to prevent the unit from displacement.
- Use a professional to install device.

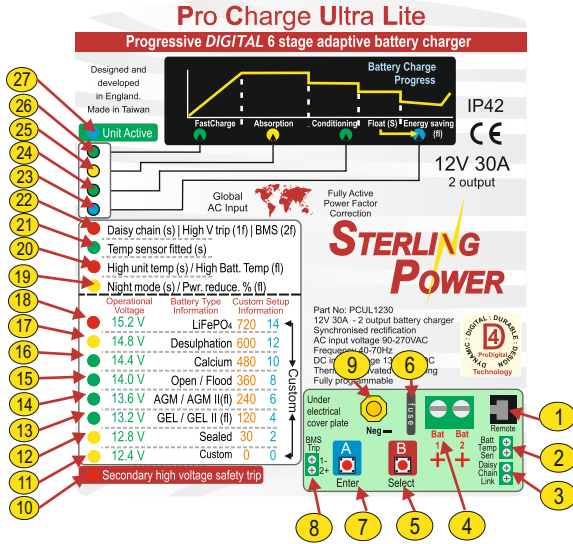
Battery safety

Excessive charge or discharge and high voltages can cause serious damage to batteries. Never exceed the recommended limits. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters the eye(s), immediately flood the eye(s) with running cold water for 20 minutes and seek medical attention.

Give extra care to not drop metal tools or jewellery on to the battery terminals as short circuiting can take place. Refrain from charging battery up to 4 hours prior of installation to avoid the formation of explosive gases.

Never smoke / generate a spark around batteries.

Front Panel

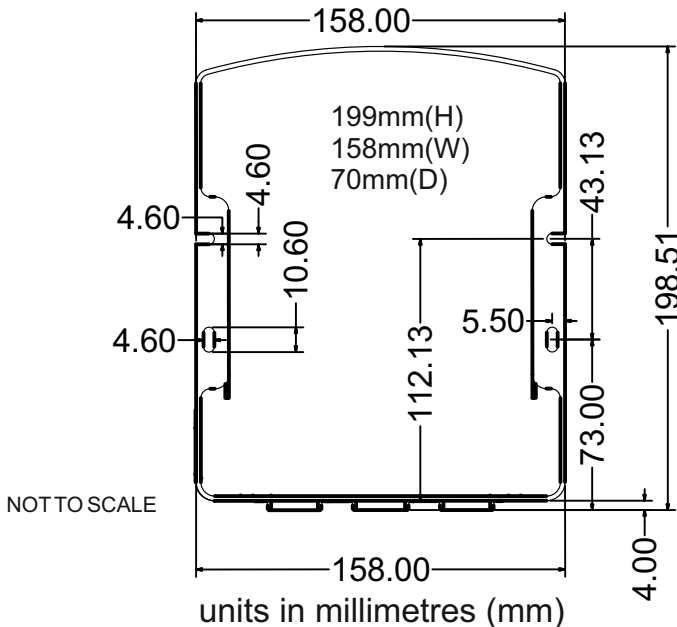


Refer to Page 10 for more information regarding these LEDs and for fault finding.

- 1) Remote control socket
- 2) Battery temperature sensor connector
- 3) Daisy chain link for multiple temp sensors
- 4) Positive DC battery outputs 1 & 2
- 5) SELECT function **button B**
- 6) Fuse 40A
- 7) Enter / select function **button A**
- 8) BMS 1 and 2 port or remote shut down
- 9) Negative DC
- 10) Secondary high voltage trip, critical fault.
- 11-18) Information LEDs
- On start up they show chosen battery type.
- After 30s these shall display DC output voltage.
- Also used during the custom voltage setup.

- 19) Solid - Night Mode, 8 hours at half power + reduced fan speed.
- Flashing - reduced power.
- 20) Solid - High unit temp. trip.
- Flashing - High battery temp trip.
- 21) Temp sense is fitted (solid) all okay.
- 22) Solid - daisy chain trip LED
- High DC Voltage trip LED (1 flash)
- BMS trip LED (2 flash)
- 23) Solid - Float mode.
- Flashing - Energy saving.
- 24) Conditioning mode.
- 25) Absorption mode.
- 26) Fast Charge / Bulk.
- 27) Unit active power to internal electronics.

Pro Charge Ultra Lite Dimensions



Installation Diagram

remove the red end cap at the bottom of the PCU Lite to reveal the circuit board:

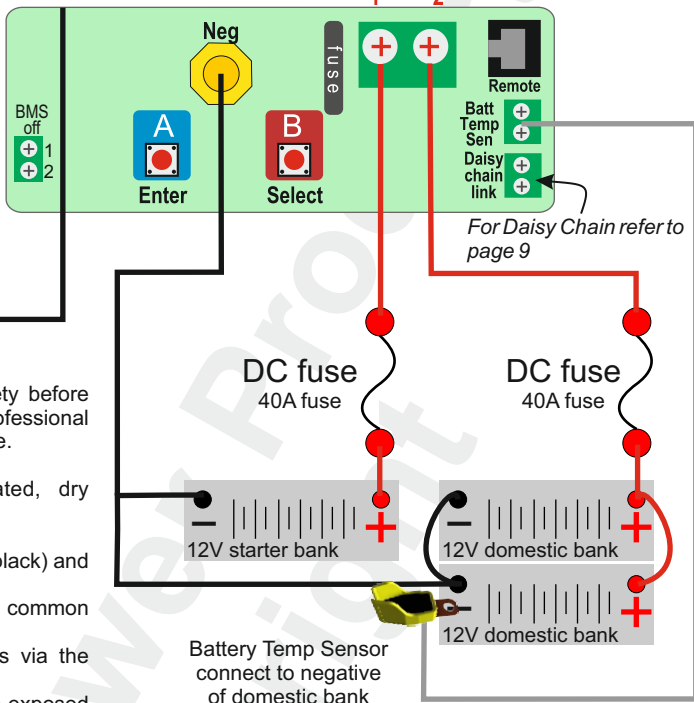
For BMS instructions refer to page 9

AC circuit breaker

AC input
80V-270VAC
40Hz-70Hz

DC of 130-320VDC

AC input
(pre-wired cable)



Installation Procedure

Ensure you read the Legal and Safety before installation. We recommend hiring a professional to fit this charger. Above is a wiring guide.

Mount vertically in a well ventilated, dry environment.

- 1) Connect DC cable to the negative (black) and the positive Bat 1 / Bat 2 output (red).
- 2) Then connect the negative to the common negative of the DC system.
- 3) Then connect the positive outputs via the relevant fuse to the battery banks.
- 4) (Temp sensor optional) connect the exposed wire end of the temperature sensor to the Batt Temp Sen. port on the circuit board (as depicted by the grey wire). Connect the yellow sensor to the negative terminal of the battery you wish to sense (typically the domestic / house bank).
- 5) Connect remote (optional) to the remote port.
- 6) Finally, connect the AC lead cable to NON-live mains / circuit breaker. Ensure 80V-270VAC (40-70Hz). Shall also run from 130VDC - 320VDC.
- 7) When AC is live, charger should turn on.

Grounding / Earthing

Ground / bonding / earthing points:

- 1) The earth wire (AC input, the ground).
- 2) The chassis / bonding ground (going to a vehicle body / boats bonding system).
- 3) The DC negative.

In most installations all these will end up at the same point. The AC power source should be connect to the boat/vehicle chassis (for safety). The chassis earth will also go there and the DC negative should also go there. In effect, bonding the total system together ensuring any fault to the chassis will blow a fuse. This could vary for steel/aluminium boats.

Drawing shows twin battery bank installation. For single bank, simply use one output. Both outputs are capable of carrying the full current, albeit, not simultaneously.

Fuses and Cabling

AC installation - use ring or captive spade connections and a proper crimping tool to attached AC cables to the breaker. Support the cable every 50cm and protect from sharp edges when passing through bulkheads. The table below is rating for cabling up to 15m.

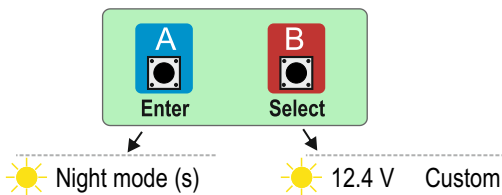
Model	110VAC Cable	Breaker Rating	230VAC Cable	Breaker Rating
LPCU12302	3 Core 1.5mm ²	11A	3 Core 1.5mm ²	7A

DC installation - each of the positive outputs from the charger must be fused. Place fuse approximately 18cm (ABYC standard) from the +ve terminal of the designated battery. Rate fuse to 20% higher than charger amp rating. Fuse protects your cabling, not the charger.

Model	1m DC Cable	3m DC Cable	5m DC Cable	Fuse
LPCU12302	AWG10 5mm ²	AWG8 8mm ²	AWG6 14mm ²	40A

Features and Force Options

Both the Enter (A) and Select (B) buttons are required when modifying the force options on the Pro Charge Ultra Lite. The 'Night mode' LED shall flash every 1 seconds to denote the pressing of Button A. The '12.4V Custom' LED shall flash every 1 second to denote the pressing of Button B.



A + B BUTTON	
Press Length (seconds)	Action
2+	Force unit to float (mode 1)
10+	Battery type select
20+	Force unit to float (mode 2)
30+	Reset unit to default

A BUTTON	
Press Length (seconds)	Action
5 - 10	Toggle 1/2 and 1/1 (full) power
10 - 20	Energy saving mode 1 (not Lithium)
20+	Energy saving mode 2 (not Lithium)

B BUTTON	
Press Length (seconds)	Action
<1	Press to display battery type
5 - 10	Night Mode - 1/2 power for 8Hrs
10+	Display software version

Force to Float modes



Float - mode 1.

Hold both buttons down for 2-10 seconds and let go. This shall put the charger into float. The charger shall now remain in float UNTIL the charger is restarted (off and on). The charger shall then revert back bulk/abs.

Float - mode 2.

Hold both buttons down for 20-30 seconds and let go. This shall lock the charger into float, indefinitely. If the charger is restarted the charger shall go into float mode and remain there.

To get out of these modes, repeat the procedures.

Force to 1/2 power



This will reduce the units power by about 50% and reduce noise. Hold **A button only** for 5-9 seconds. To confirm, the half power LED shall flash 5 times. 1/2 power remains indefinitely. To return to full power, press the setup button again, for 5-9 seconds.



Force to Night Mode

This will reduce the unit's power by around 50% for about 8 hours and reduce fan noise. Hold **B only for 5-9 seconds**. The Night Mode LED shall come on solid. Please note that night mode has to be set every single time you wish to use it. It can **NOT** be set to come on at a certain time daily. Repeat procedure

Energy saving modes



What is Energy Saving?

Energy Saving puts the charger's DC output to that of a charged battery:

- *Gel I, Gel II, AGM I and AGM II = 12.8V.*
- *Sealed lead acid and open lead acid = 12.6V.*
- *Calcium = 12.7V.*
- *LiFePO₄ = 13.4V.*

The charger shall not go above this voltage and shall be a power supply if the voltage drops below. This is an attempt to make sure the batteries are kept topped up, yet, preserves AC power. Allows for utilization of renewable energy charging, like solar or wind and takes the burden off the charger.

Mode 1

Hold A button down for 10-19 seconds. The charger will enter 'Energy Saving' mode for the duration of the charger being turned on. Once the charger is turned off and on again the charger reverts back to bulk/absorption voltages.

Mode 2

Hold A button down for 20-29 seconds. The charger will enter 'Energy Saving' mode indefinitely. If the charger is turned off and on again the charger remains at 12.8V.

Battery type select



See overleaf.

▶ Battery Chemistry Chart

Options	Bulk / Abs. Cond.		Float	Min Abs. Max	
	Volts	Volts		Volts	Mins
1) Gel I	14.00	13.85	13.70	60	600
2) AGM I	14.10	13.75	13.40	60	480
3) Sealed	14.40	14.15	13.60	120	480
4) Gel II	14.40	14.00	13.80	720	1440
5) AGM II	14.60	14.10	13.70	60	480
6) Open	14.80	14.00	13.30	60	480
7) Calcium	15.10	14.30	13.60	60	360
8) De-sulph.	15.50			240	240
9) LiFePO ₄ *	14.40	13.80	13.80	30	30
10) Custom	Custom Charging Profile				

*Lithium profile has reverse polarity protection disabled. **All voltages shall be 0.1V higher for the first 3 minutes of the chargers operation.

Remember it is the voltages that are more important than our battery types. After installation, test the voltage from the unit is the desired voltage. **Ensure you remove at least 1 wire from the battery temperature sensor as the product voltage may be higher (if in cold climate) or lower (if in warm climate) than the preconceived voltage.** The voltage requirements of the battery company will override our recommendations as it is them who are supporting the battery warranty.

If battery temperature sensor is connected then all voltages are based on 20DegC. If sensor senses less than 20DegC = increased voltage. Higher than 20DegC = decrease voltage. The further from 20DegC in either direction leads to proportional increase or decrease in the voltage (x2 for 24V | x3 for 36V | x4 for 48V).

▶ Adjusting Battery Chemistry



●	LiFePO ₄
●	Desulphation
●	Calcium
●	Open / Flood
●	AGM / AGM II(fl)
●	GEL / GEL II (fl)
●	Sealed
●	Custom
Secondary high....	

Default profile →

Changing charging profile during startup.

While the unit is running, simply hold down the A and B buttons for 10-20 seconds and let go. All LEDs on the column shall now flash. The Sealed LED (yellow) shall come on solid. Press the **B** button to go up the column and the **A** button takes you down the column. The LED shall light up demonstrating which profile you have selected. When the LED has illuminated at your desired profile simply hold both buttons for a couple of seconds or simply just leave the charger alone for 30 seconds and it will change. The chosen profile LED shall then flash. The unit shall then restart and go through the starting cycle again.

N.B. if you wish to select Gel II or AGM II the respective LEDs shall flash.

▶ Return to Factory Defaults



If you have made a mistake or your charger is behaving in a way that you were not expecting, please put your charger through a factory reset.

Return to factory default: This shall irreversibly erase all previously entered settings. Press and hold both buttons for 30 seconds+ and let go. The LED columns shall alternatively flash. To confirm factory default press BOTH buttons again for 2 seconds. Once confirmed, 4 green LEDs on the left flash. The unit should then reboot with the default settings. To reject factory default settings, simply let the LED columns continue alternatively flashing.

► Customising Battery Chemistry

What can be customized?

- 1) Boost / bulk / absorption (V) _____
- 2) Conditioning (V) _____
- 3) Float (V) _____
- 4) Absorption Time Factor (0-14) _____
- 5) Absorption Minimum (0-720 minutes) _____
- 6) Absorption Maximum (0-720 minutes) _____

The bottom column of LEDs have multiple functions in the customising procedure, here is a breakdown:

- 15.2V **Setting Boost/Cond./Float voltages.**
Set voltages by using this column of LEDs. The respective LED(s) shall illuminate to denote the voltage you have chosen. If you want a voltage in between then both LEDs, either side, shall illuminate. To select 14.2V, for example, both the 14.0V LED and 14.4V LED shall come on solid. If you want 14.1V, then the 14.0V LED shall come on solid and the 14.4V LED shall flash.

- 14 **Setting Absorption Time Factor (ATF).**
ATF is simply a number (0-14) that can be used to multiply by the length of time the charger takes to reach the bulk/boost voltage from start. For example, if the bulk voltage is reached in 10 minutes with the ATF at 4, then $10\text{mins} \times (\text{ATF } 4) = 40\text{ mins of absorption}$. Like above, if you need a number in between both LEDs, either side shall illuminate solid.

- 720 **Setting Min/Max absorptions times (mins)**
Use this column of LEDs to pick the minimum and maximum absorption times. There is no in between selections, simply what is ascribed. If there is a contradiction with the absorption time factor (ATF) then the ATF value takes precedence. If ATF is set to 0 and you have set a minimum absorption time of 30 mins - 0 mins shall be the absorption time.

Operating procedure



Press and hold both A and B buttons for 10-20 seconds.

Press the A or B buttons to move LED down to custom (Yellow LED). Hold both buttons for 2 seconds to confirm. Now refer to the column of text to the right hand side --->

Opportunity to adjust Fast Charge / Bulk / Absorption voltage.

Yellow Absorption LED will flash (section 2 on graph). Adjust Fast Charge voltage by using the A and B buttons to go up and down the voltage LED column to select the correct Fast Charge voltage. Once content, wait 30 seconds, or press both buttons to confirm. The unit shall then proceed to Conditioning charge voltage (next below).

Opportunity to adjust Conditioning charge voltage

Green Conditioning LED will flash (section 2 on graph). Likewise, adjust the conditioning voltage by using the A and B buttons to go up and down the right LED column to select the correct Conditioning voltage. Once content, wait 30 seconds, or press both buttons to confirm. The unit shall then proceed to float voltage set (next below).

Opportunity to adjust float charge voltage

Blue Float LED will flash. Likewise, adjust the float voltage by using the A and B buttons to go up and down the LED column to select the correct Float voltage. Once content, wait 30 seconds, or press both buttons to confirm. The unit shall then proceed to float voltage set (next below).

Opportunity to adjust absorption time factor

Blue Float LED continues flashing. This time, adjust the time factor by using the A and B buttons to go up and down the LED column (refer to the blue scale 0-14) to select the correct time. Once content, wait 30 seconds, or press both buttons to confirm. The unit shall then proceed to minimum absorption time factor (next below).

Opportunity to adjust minimum absorption time.

Blue Float LED continues flashing. This time, adjust the minimum absorption time by using the A and B buttons to go up and down the LED column (refer to the orange scale) to select the correct time. Once content, wait 30 seconds, or press both buttons to confirm. The unit shall then proceed to maximum absorption time (next below).

Opportunity to adjust minimum absorption time.

Blue Float LED continues flashing. This time, adjust the maximum absorption time by using the A and B buttons to go up and down the LED column (refer to the orange scale) to select the correct time. Once content, wait 30 seconds, or press both buttons to confirm.

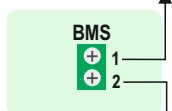
Other features

Battery Management System (BMS) / or simple Remote Trip

Battery Management System (BMS) - for lithium battery users.
Remote Trip - for any users.

Only use one of these 2 ports, **do not use both**.

BMS 1
status:
operational: 2-17V
trip voltage: 0V



BMS 2
status:
operational: 0V
trip voltage: 2V-17V

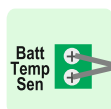
Use BMS 1 - if your BMS trips and provides a 0V (ground signal), then use BMS 1. This shall result in the BBC turning off. Once the BMS removes this trip status, i.e. the 0V signal goes back to a +ve signal, the PCUL shall start charging again. The time delay is 30 seconds.

or

Use BMS 2 - if your BMS trips to a +ve voltage (2V-17V), then use BMS 2. This shall result in the PCUL turning off when this voltage is received. Once the BMS removes this trip status, i.e. the +ve signal goes back to 0V signal, the PCUL shall start charging again. The time delay is 30 seconds.

Remote trip - the BMS connector can also be used as a basic remote trip. Simply apply the correct trip signal voltage to the relevant BMS connector for the desired effect.

Temperature Sensor



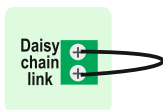
The temp sensor has two cables at the end. Place one in each of the two connectors. The polarity does not matter.



Connect the temperature sensor (TSAY) to the negative terminal of the battery bank. It is imperative that the sensor is put on the negative terminal.

The PCU Lite shall trip if the temperature sensor reads 56 Deg C or over. *The charger shall have to be turned off at the mains and turned on again to resume charge.*

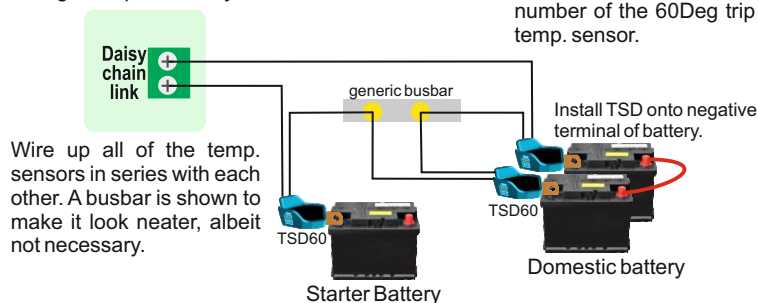
Daisy Chain Link



The Daisy chain link should come with a bridging link, as depicted. If you have no use for this feature, leave this link in place.

If this link is removed, the charger shall stop. Reconnect the link and turn off charger at the mains and turn on again to resume charging.

Wiring example for daisy chain with the PCU Lite.



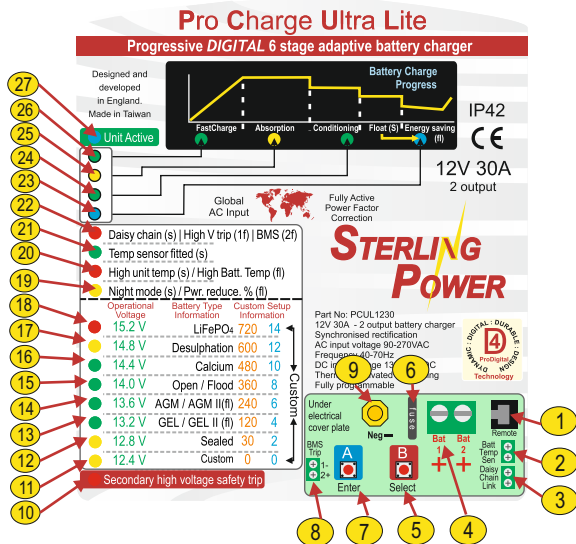
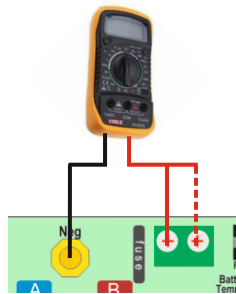
Wire up all of the temp. sensors in series with each other. A busbar is shown to make it look neater, albeit not necessary.

TSD60 is the Sterling part number of the 60Deg trip temp. sensor.

If a temp. sensor trips the circuit the charger shall turn off immediately. It shall have to be turned off at the mains and turned on again to resume charge.

► Fault Finding

The primary test the user can do before calling Sterling is to check what your AC input voltage is going into the PCUL. Ensure it is between 80-270VAC. Do the LEDs on the PCUL display then come on? If they do, then measure the DC voltage across the negative and positive terminals of the PCUL. If you are getting battery voltage (10-12V) then check the PCUL has not been turned off or put into energy saving mode (check page 6). If you are getting 0V here, please check you have got continuity between the batteries and the charger. Possible fuse blown, possible poor contact, loose cable etc.



- 1) Remote control socket - if the remote control is not working properly, check for loose connection at this port.
- 2) Battery temperature sensor connector - the temperature sensor (Sterling part number TSAY) has two wires, one wire must go into one of connector and the other wire into the remaining connect. Polarity does not matter.
- 3) Daisy chain link - ensure there is a bridge between these two slots. If there is no bridge connector, the PCUL shall not charge. If you have reconnected the bridge connection - you will need to turn off charger + on again.
- 4) Positive DC battery outputs 1 & 2 - ensure you have battery voltage at both of these terminals. If you have 0V then your batteries are either not connected or you have continuity issues between PCUL and battery. If you are using on one output, please link the other output up to it.
- 6) Fuse - 40A fuse. If blown, please replace. Ensure good contact between fuse and fuse holder.

- 8) BMS 1 and 2 port - ensure you do not have connections to both ports. Only use one port or no ports. BMS1 must be connected to a signal that goes to ground (0V) under trip conditions. BMS2 must be connected to a signal with a positive voltage (2-19V) under trip conditions.
- 9) Negative DC - ensure your negatives are common throughout your DC circuitry.
- 10) Secondary high voltage trip, critical fault. Worth calling Sterling Power.
- 19) Power reduce. % (fl) - table:

The charger's power output reduces based on internal temperature. If your charger is not putting out full power then refer to this table.

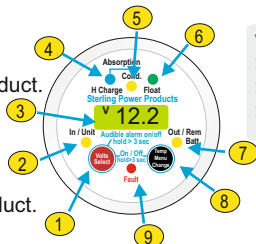
Temperature (DegC)	Power Reduction	LED flashes
75	-20%	1
80	-30%	2
85	-50%	3
88	-75%	4
90	-90%	5

- 20) Solid - High unit temp. trip. The charger's temperature has reached 96DegC+. The ambient temperature is too high for the PCUL to operate. Turn off at mains, move to cooler environment, turn on.
- High Batt. Temp (fl). This LED shall only be flashing if you have the temp sensor connected to port 2. If your battery's temperature has exceed 55DegC then this LED shall flash.

- 22) Solid LED - daisy chain trip LED - check the daisy chain link connector - you either have a trip signal from your daisy chain or the link connector has fallen out.
- 1 x Flash LED - High Voltage trip - The DC voltage across the battery has exceeded 16V. You may have solar power - it is worth getting a solar regulator to bring this voltage down.
- 2 x Flash LED - BMS trip - if you have a BMS trip cable going to the BMS connector the signal has tripped the charger. Wait for the BMS trip signal to go. BMS connector can also be used as a signal trip to an on/off style switch, ensure this switch is in the correct position.

Remote Control

- 1) Volts select button.
- 2) Voltage displayed is voltage into product.
- 3) LCD screen with backlight.
- 4) Fast charge led indicator.
- 5) Condition battery stage.
- 6) Charge complete on float.
- 7) Voltage displayed is volts out of product.
- 8) Scroll menu button.
- 9) Screen display showing a unit fault.



Volts Select Button (left)

- > 4 sec. => unit standby / unit charger.
- > 2 sec. => buzzer on/off
- > 0 sec. => change display

Volts Select

Temp Menu Change (right button)

- > 4 sec. => menu
- > 2 sec. => night mode on/off

Temp Menu Change

Both Left and Right buttons

Volts Select

Temp Menu Change

- > 2 sec. = force to float. FL1 shall appear.

- > 2 sec. = force to energy save. EN1 shall appear.

To get to energy save mode, you must go to float mode first. Then jump to EN1. Then jump to reset.

- > 2 sec. = reverts to normal. rSt shall appear

Remote Menu

Temp Menu Change

SEL

r t

press 4+ seconds

When SEL appears let go of the button

'rt' is the first option in the menu's list.

Temp Menu Change

Use this button to toggle through the options. Toggling is uni-directional only.

"rt" displays remaining absorption or conditioning time Press "select" button to see value.

"btY" displays battery profile type (0-9). This number denotes which charging profile the charger is set to. Press "select" to see value. (Ref: table labelled 'Battery Chemistry Selection' on).

"ou" displays output voltage DC.

"FL2" switches PCUL into float mode continuous mode.

"EN2" switch to energy saving continuous mode .

"ou" displays output voltage DC.

"CL" set current limit to 1/2 or 1/1 (full). Press "select" button to see actual setting. Press "change" (right) button to change setting. Press "select" to confirm setting.

"buC" turn Buzzer on / off* (default = on). Press "select" to see actual setting. Press "change" button to change between settings. Press "select" again to confirm setting.

"Asc" Autocscroll on / off (default = off). Press "select" to see actual setting. Press "change" button to change between settings. Press "select" again to confirm setting.

"con" change contrast* value from 0 to 7 (default = 3). Press "select". First the lowest and the highest value will be displayed. Then the actual value. Press "change" button to change settings. Press "select" again to confirm setting.

"bLc" change backlight colour*. off <- auto -> green -> red -> blue (default = auto). Press "select" to see actual setting. Press "change" button to change between settings. Press "select" again to confirm setting.

"bLt" change backlight time*. 1 - 600 seconds, 0 = always on, (default = 60). Press "select". First the lowest and the highest value will be displayed. Then the actual value.

"br9" change remote display colour red to green voltage threshold.* 8.0V-13.3V (default 12.4V). When below 12.4V display is red and when 12.4V or above the remote goes green. When Press "select". First the lowest and the highest value will be displayed. Then the actual value. Press "change" button to increase value. Hold "change" button to accelerate.

When max. value reached it will start with lowest value. Press "select" again to confirm setting. Press "change" button to increase value. Hold "change" button to accelerate. When max. value reached it will start with lowest value. Press "select" again to confirm setting.

"b9b" change voltage from green to blue backlight* 12.4 - 16.0V (default 13.4V). Press "select". First the lowest and the highest value will be displayed. Then the actual value. Press "change" button to increase value. Hold "change" button to accelerate. When max. value reached it will start with lowest value. Press "select" again to confirm setting.

"Led" change LED on time 1 - 600 seconds, 0 = always on, (default = 60). Press "select". First the lowest and the highest value will be displayed. Then the actual value. Press "change" button to increase value. Hold "change" button to accelerate. When max. value reached it will start with lowest value. Press "select" again to confirm setting.

"uld" display Unit ID. Press "select". Value will be displayed for 5 sec.

"uSW" display unit software version. Press "select". Value will be displayed for 5 sec.

"rSW" display remote software version. Press "select". Value will be displayed for 5 sec.

"Loc" Unit lock code = 1 to 999 (default = 00 = unlocked). **WARNING** This mode shall lock menu setting options of the unit by virtue of a pass code, be careful. Press "select" to enter "Loc" setting. Press "change" button to increase value, hold to accelerate. Stop when on the number you require and press "select" button to confirm. The software shall store this number, then the display shall read: **loc** -> on -> #. # = number you have stored. To remove **loc**, return to **loc** and re-enter the number, Press "select" button and the display should read: **loc** -> off (green back light). **Please make a note of this loc code here:** _____.

"rSt" Resets remote to default values*. Press "select". "NO" will be displayed. Press "change" to toggle between "YES" and "NO". Confirm by pressing "select". rSt will display if resetting.

"rSu" Resets the battery charger to default settings. Press "select". "NO" will be displayed. Press "change" to toggle between "YES" and "NO". Confirm by pressing "select". rSt will display if resetting.

Remote Error Codes

- E00 = high case temp. E03 = BMS shutdown.
- E01 = high batt. temp. E04 = High output voltage.
- E02 = daisy chain trip. E05 = Unit failure.



Customer Service & Warranty

Your 100 % satisfaction is our goal. We realise that every customer and circumstance is unique. If you have a problem, question, or comment please do not hesitate to contact us. We welcome you to contact us even after the warranty and return time has passed.

Product Warranty:

Each product manufactured by Sterling Power comes with at least a 2 year limited factory warranty. Certain Products have a warranty period of time greater than 2 years. Each product is guaranteed against defects in material or workmanship from the date of purchase. At our discretion, we will repair or replace free of charge any defects in material or workmanship that fall within the warranty period of the Sterling Power product. The following conditions do apply:

- **The original receipt or proof of purchase must be submitted to claim warranty. If proof cannot be located a warranty is calculated from the date of manufacture.**
- **Our warranty covers manufacture and material defects. Damages caused by abuse, neglect, accident, alterations and improper use are not covered under our warranty.**
- **Warranty is null and void if damage occurs due to negligent repairs.**
- **Customer is responsible for inbound shipping costs of the product to Sterling Power either in the USA or England.**
- **Sterling Power will ship the repaired or warranty replacement product back to the purchaser at their cost.**

If your order was damaged in transit or arrives with an error, please contact us ASAP so we may take care of the matter promptly and at no expense to you. This only applies for shipping which was undertaken by our company and does not apply for shipping organised by yourself. Please do not throw out any shipping or packaging materials.

All returns for any reason will require a proof of purchase with the purchase date. The proof of purchase must be sent with the returned shipment. If you have no proof of purchase call the vendor who supplied you and acquire the appropriate documentation.

To make a claim under warranty, call our customer care line at (USA 1-(207)-226-3500, England 01905 771771). We will make the best effort to repair or replace the product, if found to be defective within the terms of the warranty. Sterling Power will ship the repaired or warranty replacement product back to the purchaser, if purchased from us.

Please review the documentation included with your purchase. Our warranty only covers orders purchased from Sterling Power. We cannot accept warranty claims from any other Sterling Power distributor. Purchase or other acceptance of the product shall be on the condition and agreement that Sterling Power USA LLC and Sterling Power LTD shall not be liable for incidental or consequential damages of any kind. Some states may not allow the exclusion or limitation of consequential damages, so, the above limitations may not apply to you. Additionally, Sterling Power USA and Sterling Power LTD neither assumes nor authorizes any person for any obligation or liability in connection with the sale of this product. This warranty is made in lieu of all other obligations or liabilities. This warranty provides you specific legal rights and you may also have other rights, which vary from state to state. This warranty is in lieu of all other, expressed or implied.

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