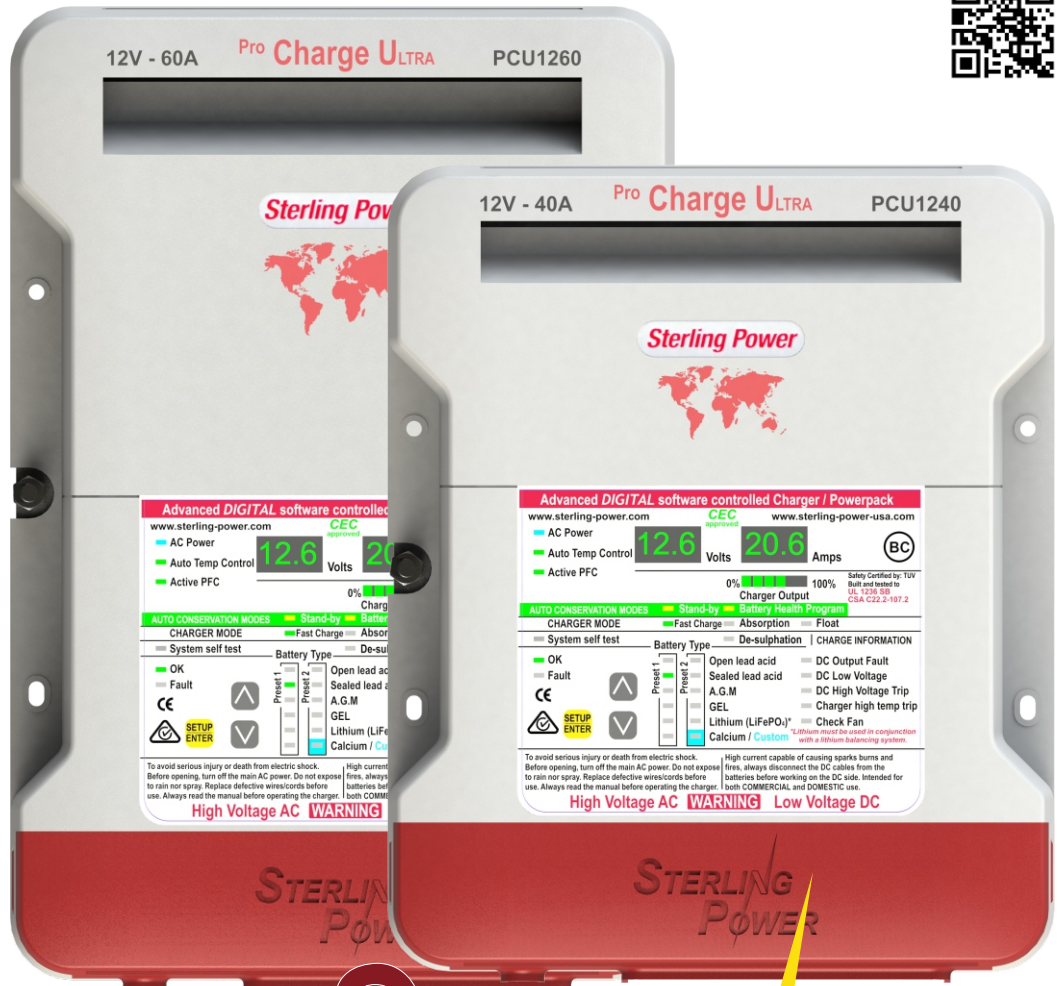




Part No:  
 PCU1210  
 PCU1220  
 PCU1230  
 PCU1240  
 PCU1250  
 PCU1260  
 PCU2420  
 PCU2430  
 PCU3620  
 PCU4815

Optional  
 Remote control  
 with 10m cable  
 (Part No PCUR)



# STERLING POWER



**To Standards:**  
 UL 1236 SB  
 CSA C22.2-107.2  
**Tested to CE standards**  
 EN 55014-1:2017  
 EN 55014-2:2015  
 EN 61000-3-2:2014  
 EN61000-3-3:2013  
 EN 60335-1:2019  
 EN 60335-2-29:2018  
 EN 62233:2008  
 EN ISO 13297  
 Small Craft Directive

## Sterling Power Products Pro Charge Ultra PCU Series Handbook

Global input AC/DC battery charger  
 Marine grade



www.sterling-power.com  
 www.sterling-power-usa.com  
**Warranty (5 years return to factory)**  
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**INTRODUCTION TABLE OF CONTENTS**

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<b>Introduction</b>		
Pg.2	01	Table of Contents
Pg.3	02	Welcome
<b>Safety and Legal</b>		
Pg.4	01	Legal Guidelines
Pg.5	02	Safety Guidelines
<b>Product Information</b>		
Pg.6	01	Understanding your PCU Pt.1
Pg.7	02	Understanding your PCU Pt.2
Pg.8	03	Installation
Pg.9	04	First Start-Up, Battery Type Select
Pg.10	05	Commands, Remote Pt.1
Pg.11	06	Remote Pt.2
Pg.12	07	Troubleshooting, Maintenance
<b>Miscellaneous</b>		
Pg.13	01	Cable Recommendations
Pg.14	02	Dimensions / Small
Pg.15	03	Dimensions / Large
Pg.16	04	Dimensions / Remote
Pg.17	05	Notes

**INTRODUCTION WELCOME**

**Welcome** Welcome to the Sterling Power Products Owners Handbook for the product series 'PCU', shorthand for 'Pro Charge Ultra'. This is our flagship global input AC/DC battery charger, with many variants available.

Please take your time to read and fully understand the contents of this Handbook. These guidelines are developed with your safety and the products performance in mind and failure to follow or understand these guidelines may lead to voiding the product warranty or even leading to damage or injury for you or your setup.

If you are unsure of any step or guideline then please consider reaching out to Sterling via our web contact form or our phone service and we shall offer our support.

Thank you for joining the Sterling family and we hope to serve your travels well.

**12V, 24V, 36V, 48V** Throughout this manual we will make reference to this PCU as a 12V unit. We have a variety of PCU voltage variants in the 24V, 32V, 36V, and 48V regions. Please ensure your charger is correct for your battery voltage, and please adjust our readings accordingly. For example, if we talk about 14.4V on our 12V unit, the equivalent at 24V will be 28.8V. The equivalent at 36V will be 43.2V. The equivalent at 48V will be 57.6V.

**Using this Handbook** 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 qualified and trained personnel only. The personnel must be familiar with the locally accepted guidelines and safety measures.

**Safety** Your safety is Sterling's top priority. Please follow all precautions to keep yourself safe. If you believe your unit requires repair then please contact Sterling or your distributor. Do not attempt to service the unit yourself.

**Specifications** Using a PCU1260 as flagship reference, all other variants pro-rata:

**12V / 60A model, all other units pro rata.**

Input voltage range	90-270V 45-65 Hz
AC Low Voltage Protection	<85V +/-5V
Power Factor at 230V	0.976
Efficiency	90.4%
Full load current (110/230V)	9.8/4.6A
Total Harmonic Distortion	2.4% voltage
Total Harmonic Distortion	2.4% current
Load Regulation (10%-100%)	3%
Ripple noise (R.M.S.)	50mV
Ground leakage	0.5 mA
Current Drain	5 mA
High DC Voltage Protection	16.2-17V

Generator/ mains power (watts), Continuous

12V 20A	approx 350W
12V 30A	approx 500W
12V 40A	approx 600W
12V 50A	approx 750W
12V 60A	approx 900W
24V 20A	approx 600W
24V 30A	approx 900W
32V 20A	approx 900W
36V 20A	approx 900W
48V 15A	approx 900W

Requested power may be up to double for startup.

Voltmeter accuracy	+/- 1%
Ammeter accuracy	+/- 1%

**SAFETY AND LEGAL    LEGAL GUIDELINES**

---

**Warranty and Terms**

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.

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 check telephone numbers on [www.sterling-power.com](http://www.sterling-power.com) or [www.sterling-power-usa.com](http://www.sterling-power-usa.com). 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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**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.

**SAFETY AND LEGAL SAFETY GUIDELINES**

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**Product Guidelines** Your Sterling Power product should only be utilised for it's designated purpose. Use the Sterling Power Pro Charge Ultra ONLY :

- For AC to DC power conversion
- With fuses protecting both the AC/DC cables
- In a well ventilated, dry, dust-free and condensation free environment
- When the Owners Handbook has been read and wholly understood

**Transport and Storage** Ensure that the mains supply and battery leads are disconnected before transporting or moving the unit. No liability can be accepted for damage in transit once equipment has been unpackaged. Store the product in a dry environment, between -20°C to 60°C.

Refer to the battery manufacturer's manual for information on transportation, stowage, charge rates, recharging and battery disposal for your battery care.

**General Maintenance** The device must be switched off during maintenance and all cables removed from the direct feed to or from the unit. 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. Unauthorised attempts to repair Sterling units will lead to the warranty being voided. Only someone with adequate understanding of electronics and the unit itself should attempt a repair.

Ensure your connections are good and clean and aim to protect your unit from humidity and water ingress.

**Safety Precautions** Electrical appliances can be heavy. Please do not lift heavy units unassisted. Ensure that your product is correct for your intent. 110V/240V, 12V/24V/48V. Incorrect use can lead to damage. Orientation is not critical to unit function, however may affect water ingress rating. Isolate AC wires during install. Connect AC to a Residual Circuit Breaker (RCD) and current overload trips. Sterling recommend Multi Core Tri Rated AC cable. Install device in a well ventilated space for cooling purposes. Do not expose the unit to snow, rain, water, spray, condensation, pollution etc, unless it is a waterproof unit. If it is a waterproof unit, only expose it to situations it is correctly rated for. Do not cover or obstruct the ventilation. Device connects to common negative. Common negatives must be earthed. In case of fire, use fire extinguisher equipment suitable for electrical fires. Avoid all possibilities of reverse polarity or short circuiting. Check cabling and connections frequently and ensure the connections are sufficient. Always protect DC and AC cabling with the appropriate fusing. Ensure the unit is adequately and safely mounted to prevent displacement and damage. Always use a professional to install electrical products. Ensure the product is correctly set up for your battery. Keep out of reach of children

**WARNING :** All electrical appliances carry the risk of electrical shock. This equipment is designed to be used in combination with a permanent energy source (the battery). Always turn the AC power off and disconnect the battery before performing any maintenance or inspection.

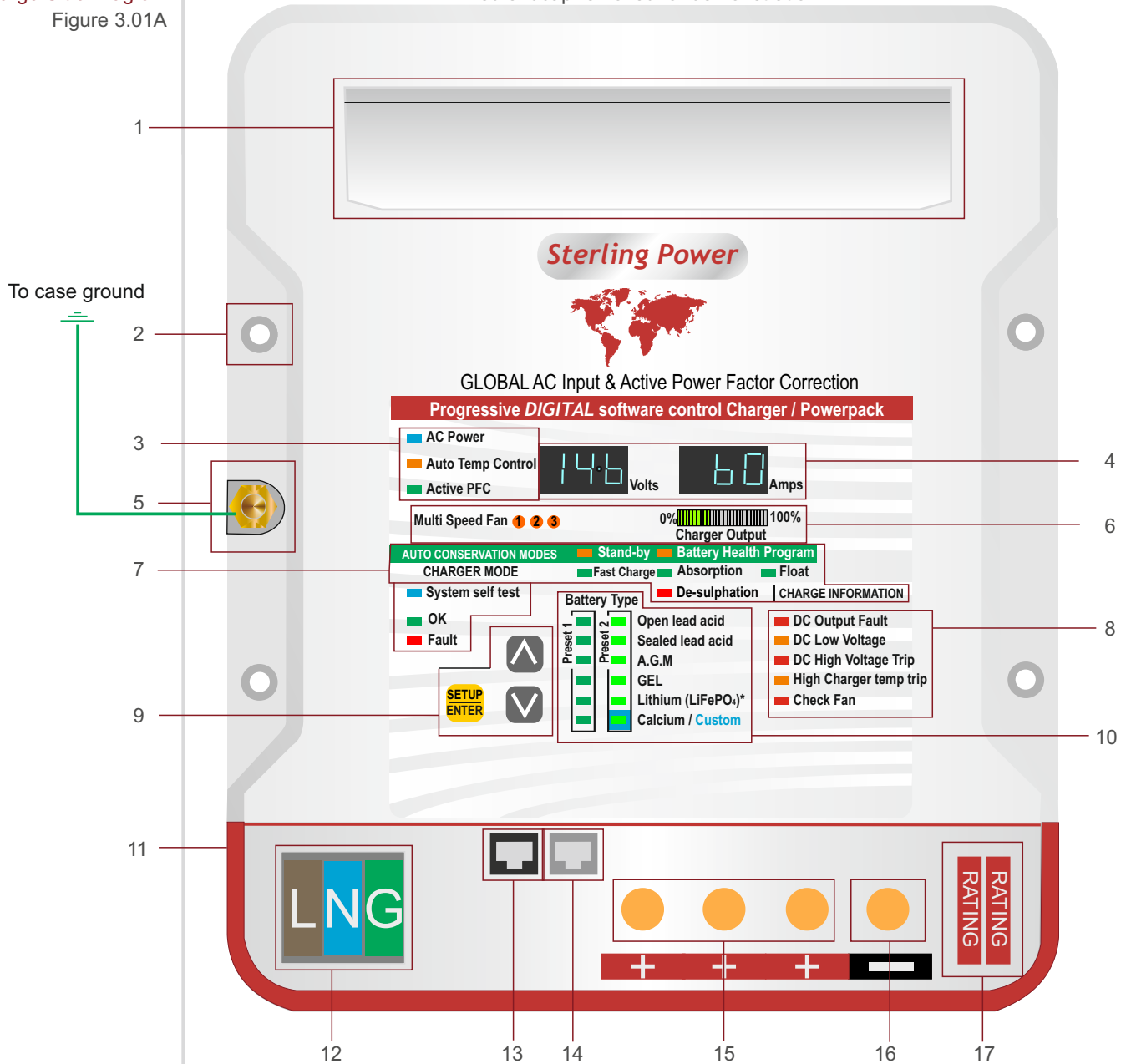
Do NOT remove the panelling to inspect the internals unless expressly told to by Sterling. This is not a product designed to be user-serviced.

Do NOT use the device in situations where there is danger of gas / dust / vapour explosions, or around potentially flammable produce.

**PRODUCT INFORMATION UNDERSTANDING YOUR PCU, PT.1**

Pro Charge Ultra Diagram  
Figure 3.01A

\*\*Label simplified for clarity,  
\*\*Red endcap removed for demonstration.



1. The top vent on the PCU is the hot air exhaust. The PCU is a self-cooling product with a powerful fan that keeps the internal electronics cool and safe. The flow of air enters through by the red end-cap and is exhausted out of the top vent.
2. The PCU has four screw mount positions. Use these to mount your unit securely to a stable support.
3. Section three has three LEDs. AC Power, Auto Temp Control and Active PFC.
  - The AC power LED shows when AC power is connected. The LED will be illuminated solidly when AC is live and the unit is ONLINE. The LED will flash intermittently (One second ON, one second OFF) if AC is live but the unit is OFF. Push SETUP + Enter to turn the unit ONLINE again
  - The Auto Temp Control LED will be illuminated if the battery temperature sensor is installed and correctly fitted to the PCU. If this is not illuminated, either your battery temperature sensor is not fitted or it is not fitted correctly. If no sensor is detected the unit will default to a 20 deg.C charge curve.
  - The active PFC LED will be illuminated when Power Factor Correction is enabled.

**PRODUCT INFORMATION UNDERSTANDING YOUR PCU, PT.2**

4. Section 4 is comprised of two screens. The 'Volts' screen will display the average voltage being produced by the charger, as felt on the output terminals. The 'Amps' screen will display the total current being produced by the charger.
5. This is the grounding terminal and connects to the rear grounding panel of the PCU. This should be connected to your vehicles chassis to maximise safety.
6. Section 6 covers the 'Multi Speed Fan' and the 'Charger Output' LEDs.
  - Multi Speed Fan LEDs will display to communicate the fan speed control. This will vary depending on temperature and has three speeds.
  - Charger Output LEDs will display the percentage power output of the PCU. If it is displaying at 50%, the unit is only outputting 50% of its rating. At 100% it is outputting 100% of its rating.
7. Section 7 covers the Auto Conservation Modes and Charge Modes.
  - The Stand-By LED will be illuminated when the unit has AC power input, but is not needed to charge any batteries. This may happen due to no batteries being connected for a long period of time or all of the batteries attached are sufficiently full and have been on float for long periods of time.
  - The Battery Health Program LED will illuminate if the charger is in Open Lead Acid maintenance, and will cause it to run a desulphation cycle once every 21 days.
  - The Fast Charge, Absorption, Float and De-sulphation LEDs will illuminate to display which stage of the charging cycle the PCU is presently in. These tell you what your charger is presently attempting to do.
8. Section 8 covers the Fault LED section. These LEDs will illuminate to display when a fault is ongoing with your unit, and what the likely culprit will be. Please consult the troubleshooting section of this handbook, or consider contacting Sterling support.
9. Section 9 covers the Setup/Enter, Up arrow and Down arrow buttons. This is the main user interface and these buttons are how you will control and customise your PCU.
10. Section 10 highlights the available battery types, and the battery type presently selected. This is useful for choosing battery types and to know what charge profile you are presently using. The battery types translate to the following voltages.

Battery type	Preset 1 Profiles			Preset 2 Profiles		
	High Charge V	Float Charge V	Maintenance V	High Charge V	Float Charge V	Maintenance V
Flooded/Open Lead acid	14.8	13.6	12.8	14.7	13.4	12.8
Sealed Lead acid	14.4	13.6	12.8	14.6	13.4	12.8
AGM Lead acid	14.3	13.3	13.0	14.6	13.6	13.0
GEL Lead acid	14.0	13.7	13.2	14.4	13.8	13.2
LiFePO <sub>4</sub> -Lithium	13.8	13.8	13.8	14.6	14.6	14.6
Calcium / Custom	15.1	13.6	13.2	CUSTOM		
Equalization / Desulph	15.5	15.5		15.5	15.5	

11. Section 11 indicates the PCU endcap, typically red in colour, or grey for older units. It has been 'removed' in this demonstration to help with clarity and to show you what is underneath.
12. This area is for the 3 core AC connection. Left to right is for Live, Neutral and Ground/Earth. Accessible by removing the white cover. Only connect AC wires when the AC connection is isolated. When cables are connected, replace the white cover.
13. The black port is for the Pro Charge Ultra Remote, product code : PCUR.
14. The grey port is for the TEMP1 temperature sensor. This allows the PCU to give you your battery temperature readings. It also causes the PCU output voltage to vary by 0.018V per degree Celsius either side of 20C. If your batteries are warmer, we decrease the charge voltage. If they are colder, we increase the voltage. This connects to the negative battery stud. This will also cause the PCU to trip to OFF if the battery terminal reaches 50degC.
15. This area is for the positive line DC connections.
16. This is the negative line DC connection.
17. These fuses are for the negative line of the PCU. Inspect these if the PCU is unresponsive.

**PRODUCT INFORMATION    INSTALLATION**

**Installation Preface**

All electrical installations should be carried out by a professional electrician. Electricity does have the potential to kill you. Ensure your input and output voltage needs are correct for the model you have before continuing.

Sterling do not provide, by default, the cable necessary for your installation. We are of the belief that every install is unique to the client and as such we cannot presume. Ensure that your cable thickness is sufficient and safe for the current expected to move through it and ensure that you fuse your cable, to the rating of the cable when connecting to a battery.

This product has a high heat tolerance and can be installed in an engine room. The PCU should be installed vertically for efficient convection air-flow and also to ensure that it keeps its drip-proof rating. The PCU can work from any position or angle, however the main benefits arise from vertical installs.

This product is ignition protected and can be installed near the batteries, however, always ensure general safety when in a work or power environment.

**Mounting**

Ensure, when wall mounting, that the screws are correctly sized and sufficiently strong to support the unit. Ensure the unit is firmly mounted and ensure the structure the unit is mounted to is strong enough to support the unit for extended periods of time.

Ensure that, when mounted, you do not obstruct the cooling vents.

**Installation Instructions**

**Ensure your AC input is isolated/disconnected until the installation is complete.**

**AC Install**

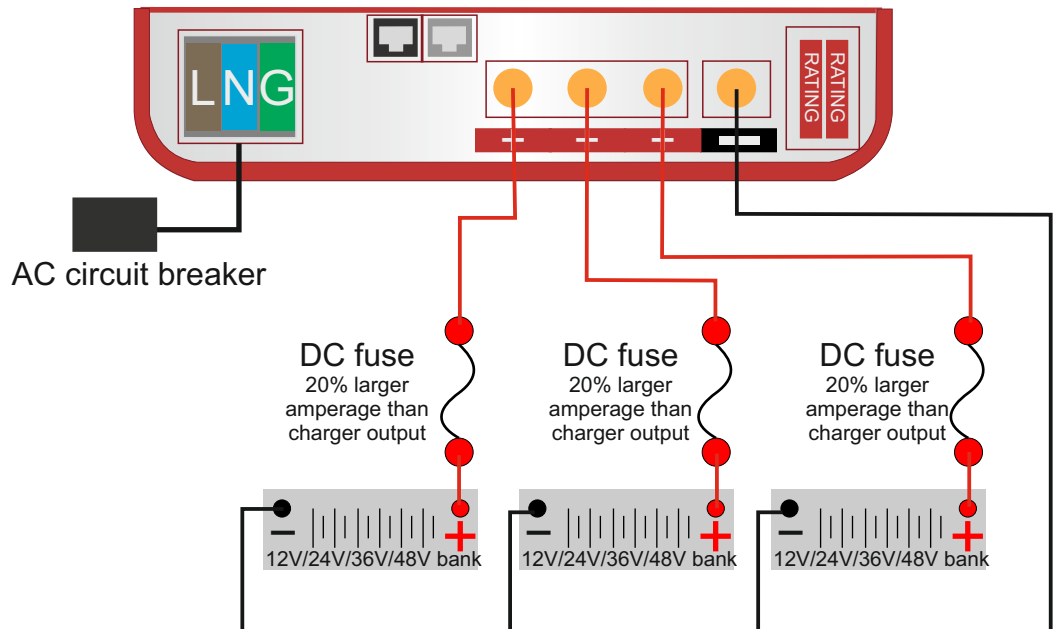
- 1) Unscrew the PCU endcap to get access to the cable connections and place aside.
- 2) Unscrew and remove the left hand side AC protection cover.
- 3) Using either ring or spade connections connect your AC cable. The live (Brown/Black) wire connects into the left hand connection point, the neutral (Blue/White) connects to the middle connection point, the ground (Green) connects to the right hand connection point.
- 4) Return the AC protection cover and screw it securely in to protect the connections and any future users from accidental AC shock.

**DC Install**

Red cable refers to positive (+) cable, black cable refers to negative (-) cable. Utilise 6mm ring terminals for these connections on the bolt terminal PCUs, ferrules or neat copper for the screw terminals on the 10A variant.

- 1) Ensure the AC input to the PCU is OFF.
- 2) Connect the positive terminals from your batteries to their chosen positive output from the PCU using correctly sized red cable.
- 3) Connect the common negative cable to the negative terminal of the PCU
- 4) Ensure all connections are firm, tight and secure. Loose connections can lead to a gradual build-up of heat and cause damage to cables or the PCU itself. A buildup of heat at a connection point is indicative of a bad connection or termination.

Figure 3.03A





**PRODUCT INFORMATION FIRST START-UP, BATTERY TYPE SELECT**

**First Start-Up** Upon powering up the Pro Charge Ultra (PCU) for the first time the default settings to take note of are:  
 1) The PCU will be in the Californian Energy Commission compliant 'bc' mode and  
 2) The PCU battery type will be set to 'Sealed Lead Acid'.

**Charge Modes**  
**bc Mode** By default the PCU will be in 'bc' mode, battery charger mode. This mode is standard as it complies with the CEC regulations on battery chargers and makes the PCU legal to be sold in California and other territories with similar rulings. The 'bc' charge mode will only output a charge voltage when a 11V DC signal is detected at the terminals.

The bc charge mode also ensures that the unit goes to sleep if the batteries it is charging are full (float stage of charging with very low, under 5A, current draws from the battery) for 72 hours, to preserve power. This should lower electricity costs and ensure healthy long term care for your batteries.

**PS Mode** The alternative is PS mode, power supply mode. Power supply mode has the output terminals consistently 'live', turning the PCU into a power pack, even without having a battery bank connected. The charger will still maintain its multi stage charge performance, even in PS mode (IE, Fast charge, absorption, float, etc).

To put the PCU into PS mode, turn the PCU on and, after displaying 888 on the displays to show that it has completed its startup sequence correctly, the screens will display 'bc'. Simply press the up or down arrow while 'bc' is shown and the screen should then show 'PS'. Press setup/enter to confirm.

**Battery Types** If the Sealed Lead Acid default charge profile is unsuitable for your batteries please consider changing the charge profile to the closest recommended charge profile, or setting up your own custom charge profile.

Our charge profiles are solely averages based on research done at the time. Not all sealed lead acid batteries will want our 'Sealed' profile. Not all AGM batteries will want our AGM profiles. Cross reference our available profiles with your battery specification sheet and choose the most suitable.

Charging a battery at an incorrect voltage could cause damage or degradation to your system. If you are unsure, please consult your battery manufacturer. If you are charging multiple battery banks that all have different chemistries and recommended charge voltages, please charge all banks at the lowest common charge voltages.

This is a lithium safe charger, HOWEVER, ensure that your lithium cells are protected by a battery management system (BMS) either internally or externally.

**Battery Type Select** To change the existing charge profile;  
 1) Press and hold the Setup/Enter button for 6 seconds before releasing the button.  
 2) The current battery type and the Voltage and Amperage displays will all flash. The Voltage screen is now displaying the High Voltage (absorption voltage) for the chosen profile, the Amperage screen is showing the Low Voltage (float voltage) for the chosen profile.  
 3) Using the up and down arrows, cycle through the available charge profiles until your target profile is selected.  
 4) To confirm this profile either press the Setup/Enter button or leave the device for 30 seconds.

**Battery Type Profiles**

Battery type	Preset 1 Profiles			Preset 2 Profiles		
	High Charge V	Float Charge V	Maintenance V	High Charge V	Float Charge V	Maintenance V
Flooded/Open Lead acid	14.8	13.6	12.8	14.7	13.4	12.8
Sealed Lead acid	14.4	13.6	12.8	14.6	13.4	12.8
AGM Lead acid	14.3	13.3	13.0	14.6	13.6	13.0
GEL Lead acid	14.0	13.7	13.2	14.4	13.8	13.2
LiFePO4-Lithium	13.8	13.8	13.8	14.6	14.6	14.6
Calcium / Custom	15.1	13.6	13.2	CUSTOM		
Equalization / Desulph	15.5	15.5		15.5	15.5	

**Custom Battery Type** In the instance that an existing battery type profile is unsuitable;  
 1) Follow the instructions above to choose a battery type and select the Custom option as your battery type.  
 2) The fast charge and absorption LEDs will flash to indicate the unit is in adjustment mode.  
 3) The left display will flash, and the right hand display will go blank. Press the up and down arrows to adjust the displayed voltage on the left screen from 12.6V to 15.1V to choose your target high voltage/absorption voltage. Press Setup/Enter to confirm.  
 4) The left display will then go blank and the right display will begin flashing. Press the up and down arrows to adjust the displayed voltage on the right screen from 12.6V to 15.1V to choose your target low voltage/float voltage. Press Setup/Enter to confirm.

**PRODUCT INFORMATION    COMMANDS, REMOTE PT.1**

**Desulphation / Equalisation**

**WARNING, HIGH VOLTAGE**

Desulphation/Equalisation can only be activated from the open lead acid battery type. Only use this mode if your batteries are safe to be desulphated. Running this cycle on most battery types will cause serious damage.

- 1) While in the open lead acid battery type, hold Setup/Enter for five seconds and push the up/down arrows until the 'De-sulphation' LED is flashing
- 2) Once the 'De-sulphation' LED is flashing, hold the up and down arrows together for 3 seconds.
- 3) The desulphation phase will begin and will last for 240 minutes. During this phase the batteries will be charged at 15.5V. When the phase is complete it will return to the open lead acid battery type.

**Power Level Adjustment**

To adjust the output power of the PCU in increments of 25%;

- 1) Hold down the up and down arrow for >20 seconds,
  - 2) The left hand display will show 'PL' for Power Level, and the right hand display will show 100, for 100%.
  - 3) Press the up or down arrows to adjust this power level to your target, then press enter to confirm.
- If no selection is made within 15 seconds, the PCU will default to 100% power.

**Self-Test Sequence**

To run the PCU through an auto-diagnosis;

- 1) Press and hold all face buttons simultaneously for ten seconds and then release (Setup/Enter, Up, Down)
- 2) The 'System self test' LED will flash intermittently until the test is complete.
- 3) 'OK' or fault LEDs will display. Cross reference with troubleshooting section if unit displays fault.

**Factory Reset**

To return your PCU to factory default settings;

- 1) Enter the battery type select setting by holding down Setup/Enter for >6S
- 2) Press the down arrow all the way to the custom setting, and then press down once more. 'FAC DEF' will display on the two screens for Factory Default.
- 3) Press Setup/Enter to confirm. The charger will then restart.

**PCU Remote, PCUR**



Pro Charge Ultra Remote : PCUR

**PCUR**

The PCUR is the PCU remote control, allowing greater access to information and superior control over the PCU and its functions.

It is made up of four individual loose parts. 1x housing plate, 2x wing plates and 1x main remote.

It connects to the PCU via the 'Remote' port, utilising an Rj12 connector. Standard remote length of cable is 10M and can be adjusted at the users discretion.

Commands for the PCUR follow on the next page.

**PRODUCT INFORMATION REMOTE PT.2**

---

<b>PCU Remote Commands</b>	The following commands are exclusively for the PCU remote (PCUR);
First Start-up	If the PCU has valid AC input and is online, the PCUR should turn on as soon as it is connected to the PCU via the remote lead. It will then display the Sterling Power website and the PCU product code it is connected to. It will then display the Charger Status screen until changed further.
Backlight On/Off	To toggle the back-light on and off, press the On/Off button for about one second.
PCU Output On/Off	To toggle the power of the PCU on and off, hold the On/Off button for >4 seconds. While 'off', the PCU will display 0.0 and 0.0, and the PCUR will display 'Standby'.
Alarm On/Off	To toggle the audible alarm on and off, press the 'Alarm' button for one second.
<b>Screen Options</b>	By pressing the Setup/Enter button you will enter 'Screen Select', which begins with the 'Scrolling' option. Pressing the up or down arrows will allow you to cycle through these following screens. Press enter to confirm.
Scrolling	Automatically scrolls through all of the below screens, showing each screen for four seconds at a time.
Charger Name	Displays the charger product code.
Charger Status	Displays what charge mode the unit is in (Charge, Conditioning or Ready), the output voltage and the output current.
Bat Type Select	Displays the currently chosen battery type.
Time to Absorb	Displays the time left to complete the 'Absorption' stage.
Run Time	Displays the recorded run time for this charge session.
Power Level	Displays the chosen power level (25%, 50%, 75%, 100%), and the expected max current/voltage for absorption.
Bat Temperature	With a battery temperature sensor fitted (product code TEMP1), displays the battery temperature.
Charger Temp.	Displays the PCU hardware temperature, in Fahrenheit and Celsius.
Transformer Temp.	Displays the PCU transformer temperature, in Fahrenheit and Celsius.
Faults	Identifies faults, from 'Over Voltage', 'Under Voltage' or 'Battery Over Temperature'.
Company Informat	Displays the Sterling Power website, <a href="http://www.Sterling-Power.com">www.Sterling-Power.com</a> .
Total Run Time	Displays the overall unit run-time.
SoftwareRevision	Displays what software version is presently running on the unit.
Force to Float	If you wish to force the PCU into float mode, hold the down arrow for ten seconds. The charger will remain in float mode until the PCU is restarted or until the battery voltage connected drops to 12.35V, for 12V batteries.
Power Level Adjust	To adjust the power level of the PCU remotely, 1) Hold down both the up and down arrows for 15+ seconds 2) The remote will display the power level customisation screen. Press the up and down arrows to change the output level displayed and then press the Setup/Enter key to confirm. If no decision is made within 15 seconds, the PCU will return to 100% output. 3) Once confirmed, the remote will display the 'Power Level' screen from above, until changed.
System Self Test Remote	To run a PCU Self Test from the remote, hold down the Setup, Up and Down keys for over five seconds and then release. The PCUR will beep to signify the start of the test, and show the results in a few seconds.
PCU Factory Reset	To return the PCU to factory default settings, hold down the Alarm, Setup, Up and Down keys for over three seconds and release. The remote will show a confirmation and the PCU will reset to factory default settings.

**PRODUCT INFORMATION TROUBLESHOOTING, MAINTENANCE**

**Troubleshooting**

In the instance that your fault light is displaying, please cross reference the fault LED with the following list, and hopefully the problem can be isolated and ideally solved.

**DC Output Fault : RED**

This indicates a potential reverse polarity situation. Please check your DC fuses are intact and correctly installed, and ensure that the positive (RED+) and negative (BLACK-) cables are correctly installed, particularly the correct way around.

**DC Low Voltage : AMBER**

This indicates your DC system voltage is lower than the PCU requires in order to engage on BC mode. At 12V the low voltage trip is 11V. At 24V it is 22V, and so on. Please charge your batteries to over 11V using another charge source, or put the PCU into power supply mode. If your batteries refuse to hold charge, consider replacing your batteries.

**DC High Voltage Trip : RED**

This indicates a high DC voltage on the output, independent from the PCU. This could be caused by a failed alternator, solar panels, wind generators etc. A DC voltage above 16.2V (for 12V) is at risk of tripping this fault. Please use a voltmeter and the process of gradually isolating your charge sources to isolate exactly what is causing this high voltage output, and then please either remove this from your system, or repair it.

**Charger High Temp Trip : AMBER**

This indicates that the charger has shut down due to an over-temperature situation. This unit will conform and operate comfortably at up to an ambient temperature of ~50degC. Operation at higher temperatures will still occur, but at a reduced efficiency. Please ensure that the PCU cooling ventilation is unobstructed and that the fan itself is running. If the fan is obstructed, please solve the obstruction. If the fan is not running, contact Sterling. If the room is over 50degC please consider improving ventilation or cooling.

**Check Fan : RED**

This implies a potential fan failure. Please ensure that the cooling fan is unobstructed. The fan should perform a self test during the startup sequence. Persistent or recurring fan problems may indicate a servicing requirement.

**Fault : RED**

This implies general faults, including a possibility that the internal DC fuse has blown. Please contact Sterling for servicing options.

**Auto Temp Control : RED**

This LED implies that the PCU is scaling back performance due to the high internal or ambient temperature. Thermal control. Please see 'Charger High Temp Trip' above for reference on how to improve this.

**OTHER**

If the above tests do not lead to a solution, or your unit continues to display faults, please contact Sterling for a review of your unit.

**Maintenance**

This unit is solid state software controlled and designed with longevity and performance in mind, it does not require constant adjustment or attention - however - the following items should be checked in order to encourage the greatest long term performance of the unit.

**Fault Check**

On startup, ensure the front panel shows no fault LEDs.

**Fuse Check**

Occasionally and procedurally ensure that the fuses (DC fuses next to the negative terminal on the PCU, and your own installed fuses) are intact, and check their condition regarding discolouration and corrosion.

**Fan Check**

On startup, the PCU cooling fan will run a self test. Ensure that it is not obstructed or impeded by debris, the sound should be obvious if something is in the way.

**Water Check**

Occasionally check for signs of liquids that may have been running down your unit. Water stains, streaks, oil etc. If evidence of liquids are found, please find the leak and fix the leak or move the charger to a safer place away from the source of the liquid.

**Terminal Inspection**

Check the battery charger terminals and battery terminals for corrosion monthly, clean as required. Also ensure that all connections are tight and sufficient, and that there are no signs of heat-buildup over time. Loose connections lead to a heat buildup due to inefficiency of contact, and this can rapidly lead to damage or fire risks.

**Battery Maintenance**

Ensure your batteries are maintained as according to your battery manufacturers directions.

**Wire Inspection**

Check your wires for any burning, chafing or movement monthly. Degraded wires can become a fire risk, or even an electrical hazard.

**Battery Temperature Check**

During the charge process, please monitor the temperature of your batteries. They should not ever be noticeably hotter than the surrounding ambient temperature (unless they are heated batteries). If the batteries are hot to the touch, they need immediate investigation and attention. Ensure the batteries are being charged at a safe voltage. If the charge voltage is safe, the batteries are likely defective. Never walk away from warm/hot batteries until a solution has been found, as there is a major problem. Turn the charge sources OFF.

**MISCELLANEOUS CABLE RECOMMENDATIONS**

Cable Recommendations  
AC CABLE, 230V

Model	Europe AC cable size ( mm2 ) for cable length up to 15 m		230 volt fuse/breaker
	110 volt	fuse/breaker	
PCU1210	3 core 0.75 mm2	6 A	3 core 0.75 mm2 4 A
PCU1220	3 core 0.75 mm2	8 A	3 core 0.75 mm2 6 A
PCU1230	3 core 1.5 mm2	11 A	3 core 1.5 mm2 7 A
PCU1240	3 core 1.5 mm2	14 A	3 core 1.5 mm2 7 A
PCU1250	3 core 1.5 mm2	16 A	3 core 1.5 mm2 8 A
PCU1260	3 core 1.5 mm2	16 A	3 core 1.5 mm2 8 A
PCU2420	3 core 1.5 mm2	14 A	3 core 1.5 mm2 7 A
PCU2430	3 core 1.5 mm2	16 A	3 core 1.5 mm2 10 A
PCU3620	3 core 1.5 mm2	16 A	3 core 1.5 mm2 10 A
PCU4815	3 core 1.5 mm2	16 A	3 core 1.5 mm2 10 A

AC CABLE, 110V

Model	USA AC cable size ( AGM ) for cable length up to 50ft		230 volt fuse/breaker
	110 volt	fuse/breaker	
PCU1210	3 core 16 AWG	6 A	3 core 18 AWG 4 A
PCU1220	3 core 16 AWG	8 A	3 core 18 AWG 6 A
PCU1230	3 core 14 AWG	11 A	3 core 16 AWG 7 A
PCU1240	3 core 14 AWG	14 A	3 core 16 AWG 7 A
PCU1250	3 core 12 AWG	16 A	3 core 14 AWG 8 A
PCU1260	3 core 12 AWG	16 A	3 core 14 AWG 8 A
PCU2420	3 core 14 AWG	14 A	3 core 16 AWG 7 A
PCU2430	3 core 12 AWG	16 A	3 core 12 AWG 8 A
PCU3620	3 core 12 AWG	16 A	3 core 14 AWG 8 A
PCU4815	3 core 12 AWG	16 A	3 core 14 AWG 8 A

**DC CABLE** When choosing DC cable we must be aware that voltage drop is far more significant in long runs than it is with AC cable. Ensure you only use high quality fire retardant cable.

The closer you install the charger to your batteries, the better your performance. You will save money on cable and also see significantly improved charge performance, as the PCU will be able to maintain the charge voltage to a superior degree. Do not use solid cable or speaker wire.

DC CABLE, m TO mm2

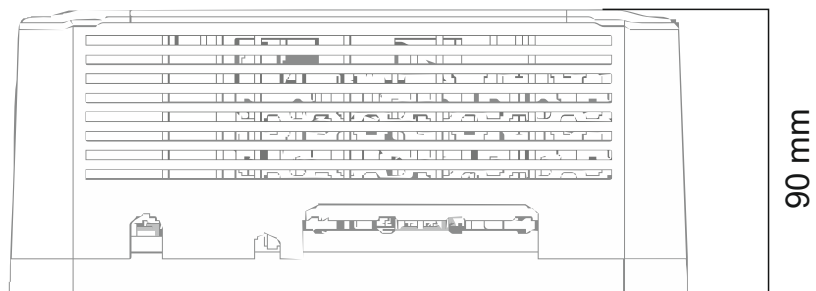
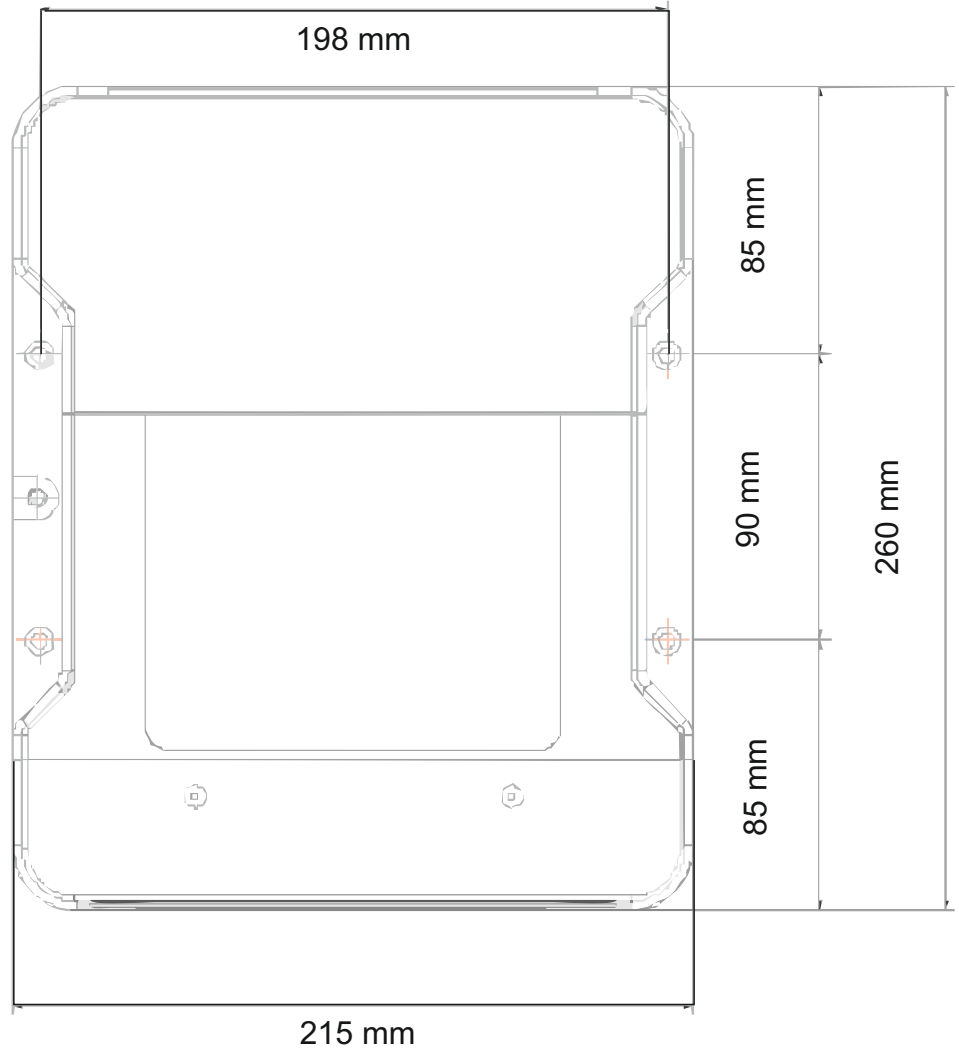
Model	Europe DC Charge cable size ( mm2 ) for cable length						Fuse
	1m	2m	3m	4m	5m	6m	
PCU1210	2.5 mm2	4 mm2	6 mm2	10 mm2	10 mm2	16 mm2	15A
PCU1220	4 mm2	10 mm2	16 mm2	16 mm2	25 mm2	25 mm2	30A
PCU1230	6 mm2	6 mm2	25 mm2	35 mm2	50 mm2	50 mm2	40A
PCU1240	10 mm2	16 mm2	25 mm2	35 mm2	50 mm2	50 mm2	50A
PCU1250	10 mm2	25 mm2	35 mm2	50 mm2	50 mm2	n/a	60A
PCU1260	16 mm2	25 mm2	50 mm2	50 mm2	n/a	n/a	80A
PCU2420	4 mm2	10 mm2	16 mm2	16 mm2	25 mm2	25 mm2	30A
PCU2430	6 mm2	6 mm2	25 mm2	35 mm2	50 mm2	50 mm2	40A
PCU3620	4 mm2	10 mm2	16 mm2	16 mm2	25 mm2	25 mm2	30A
PCU4815	4 mm2	10 mm2	16 mm2	16 mm2	25 mm2	25 mm2	20A

DC CABLE, ft TO AWG

Model	USA DC Charge cable size ( AWG ) for cable length						Fuse
	5 ft	10 ft	15 ft	20 ft	25 ft	30 ft	
PCU1210	16 AWG	14 AWG	12 AWG	10 AWG	10 AWG	10 AWG	15A
PCU1220	14 AWG	10 AWG	10 AWG	8 AWG	6 AWG	6 AWG	30A
PCU1230	12 AWG	10 AWG	8 AWG	6 AWG	6 AWG	4 AWG	40A
PCU1240	10 AWG	8 AWG	6 AWG	6 AWG	4 AWG	4 AWG	50A
PCU1250	8 AWG	6 AWG	6 AWG	6 AWG	4 AWG	2 AWG	60A
PCU1260	8 AWG	6 AWG	4 AWG	4 AWG	2 AWG	2 AWG	80A
PCU2420	14 AWG	10 AWG	10 AWG	8 AWG	6 AWG	6 AWG	30A
PCU2430	12 AWG	10 AWG	8 AWG	6 AWG	6 AWG	4 AWG	40A
PCU3620	14 AWG	10 AWG	10 AWG	8 AWG	6 AWG	6 AWG	30A
PCU4815	16 AWG	14 AWG	12 AWG	8 AWG	6 AWG	6 AWG	20A

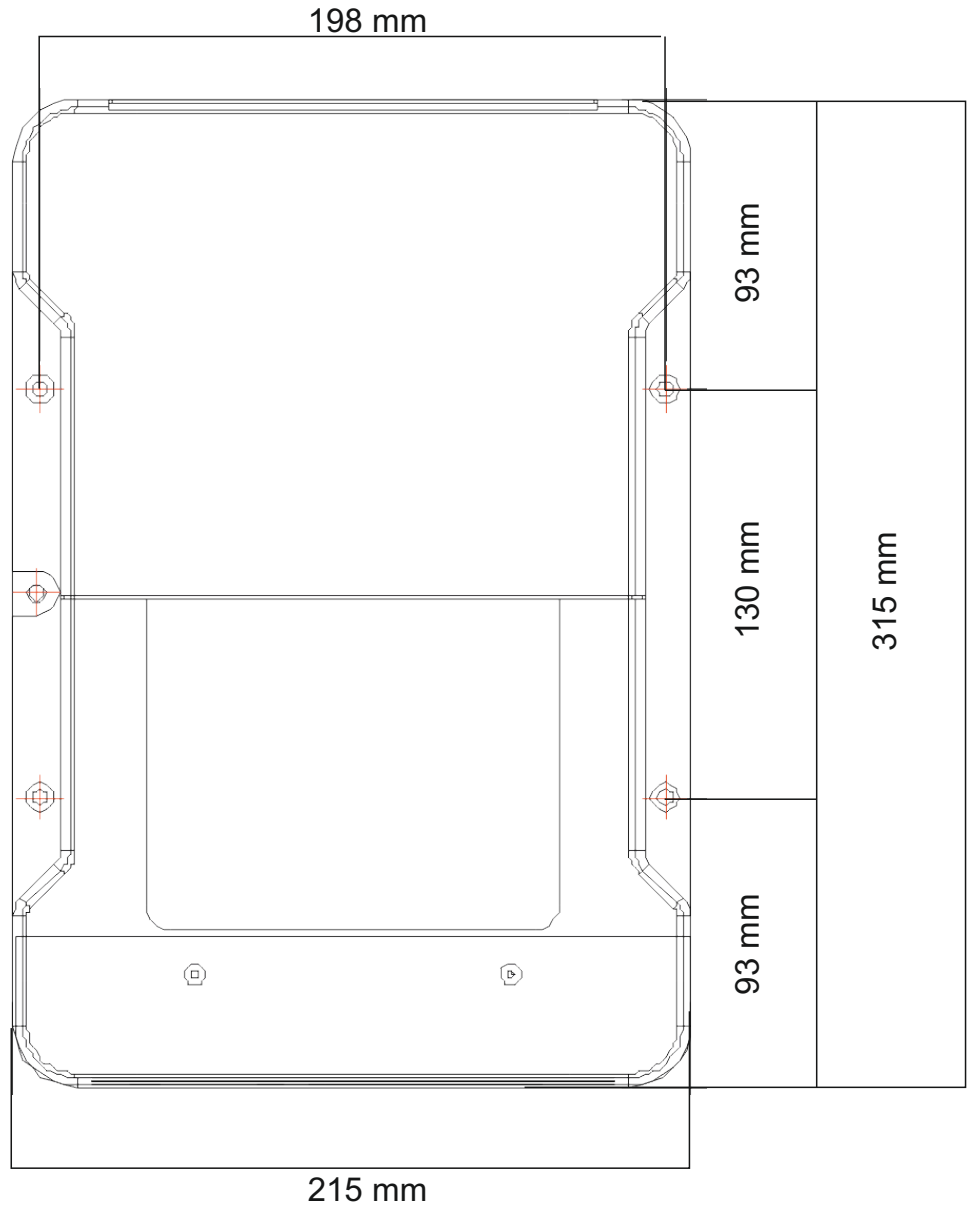
MISCELLANEOUS DIMENSIONS / SMALL

Unit Dimensions  
 PCU1210  
 PCU1220  
 PCU1230  
 PCU1240  
 PCU2420



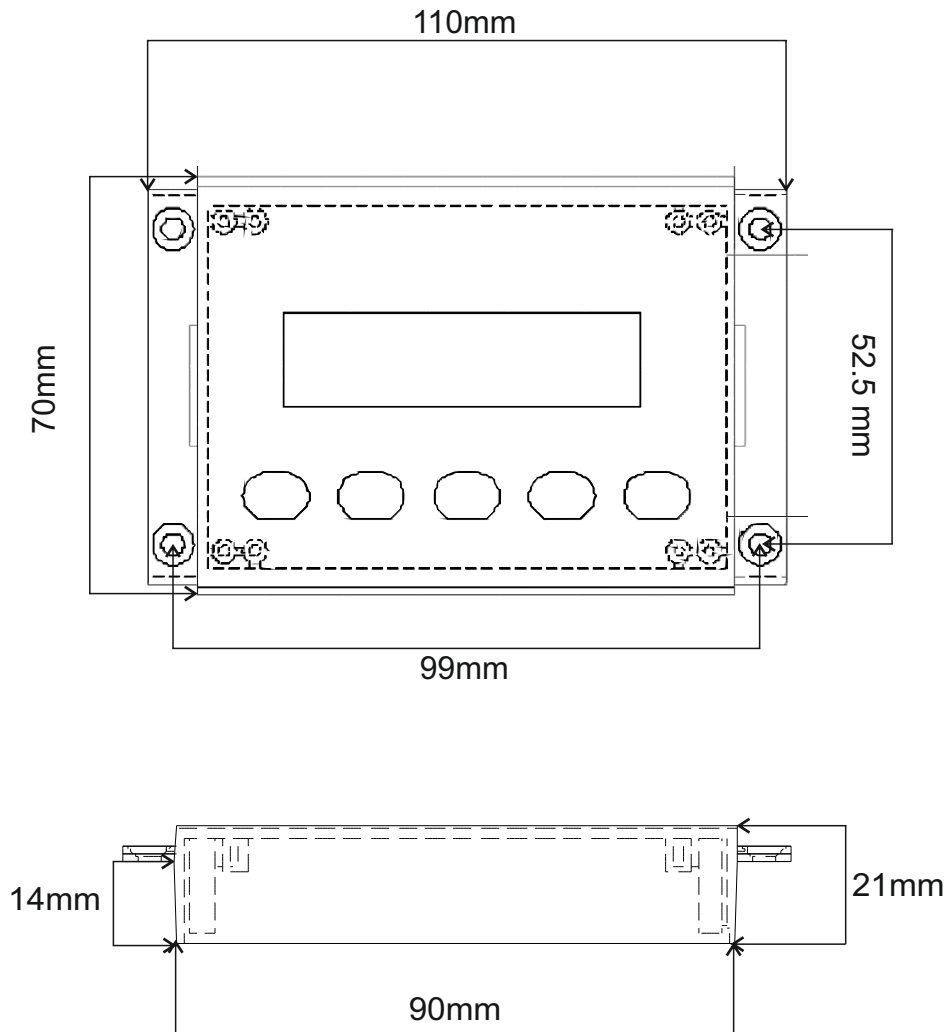
**MISCELLANEOUS DIMENSIONS / LARGE**

Unit Dimensions  
 PCU1250  
 PCU1260  
 PCU2430  
 PCU3220  
 PCU3620  
 PCU4815



MISCELLANEOUS DIMENSIONS / REMOTE

Unit Dimensions  
PCUR







MISCELLANEOUS NOTES

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