

PROJECTA

7 STAGE AUTOMATIC
BATTERY CHARGER
HIGH FREQUENCY SWITCHMODE



WARNING

- Explosive gases may escape from the battery during charging. Prevent flames and sparks. Provide adequate ventilation.
- Before charging, read the instructions.
- For indoor use. Do not expose to rain.
- For charging 12 Volt lead acid batteries ONLY.
- Disconnect the 240V mains supply before making or breaking the connections to the battery.
- Do not attempt to charge non-rechargeable batteries.
- Never charge a frozen battery.
- If the AC cord is damaged do not attempt to use. It must be replaced or repaired by a qualified person.
- Corrosive substances may escape from the battery during charging and damage delicate surfaces. Store and charge in a suitable area.
- Ensure all vehicle accessories including lights, heaters, appliances etc are turned off prior to charging.
- This appliance is not intended for use by young children or infirm persons unless they have been adequately supervised by a responsible person to ensure that they can use the appliance safely.
- Young children should be supervised to ensure that they do not play with the appliance.

FEATURES

7-STAGE AUTOMATIC CHARGING

This is a fully automatic battery charger with 7 charge stages.

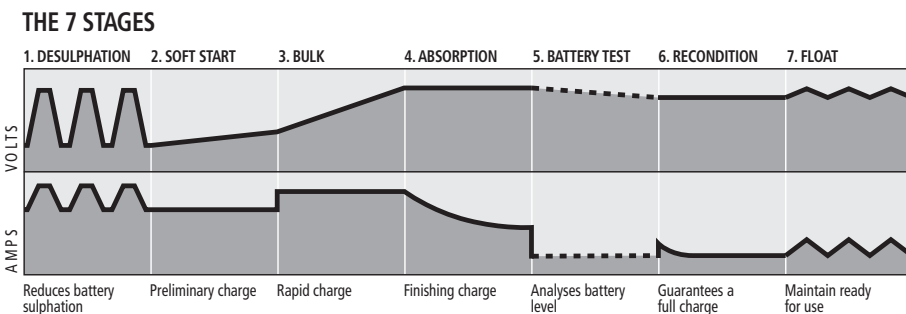
Automatic charging protects your battery from being overcharged so you can leave the charger connected to the battery indefinitely.

7-stage charging is a very comprehensive and accurate charging process that gives your battery longer life and better performance compared to using traditional chargers.

7-stage chargers are suitable for most battery types including Calcium, Gel and AGM batteries. They may also help restore drained and sulphated batteries.

The 7 stages are:

Desulphation; Soft Start; Bulk; Absorption; Battery Test; Recondition and Float.



Desulphation

The Desulphation stage may break down sulphation that occurs in batteries that have been left flat for extended periods of time, returning them back to full charge. Sulphation occurs when lead-sulphate hardens and clogs up the battery cells.

Soft Start

A preliminary charge process that gently introduces power to the battery. This protects the battery and increases battery life.

Bulk (Constant Current)

Bulk mode charges the battery at the maximum rate (constant current) putting a large amount of power into the battery in a short amount of time. This stage will charge the battery to approximately 80%, until the voltage reaches 14.4 volts.

Absorption (Constant Voltage)

The charge rate slows down so the battery can absorb more power and reach 100% charge. The voltage remains at a constant 14.4 volts while the current is gradually reduced until no more power can be added without over-charging the battery.

Battery Test

An automatic battery test is conducted immediately after the absorption stage. The test monitors the voltage for 90 seconds to determine if the charge was successful.

- If the voltage is below 13.2 volts (fail), the charger will initiate the Recondition stage.
- If the voltage is above 13.2 volts (pass), the charger will proceed to the final stage: Float

Recondition

The battery reconditioning function is initiated automatically in the case that the battery fails the battery test (stage 5). Failing the battery test indicates that the absorption stage was unable to fully charge the battery. The recondition mode will then begin to introduce a low constant current for a period of 4 hours. The battery is then re-tested.

This recondition stage can recover batteries from a deeply discharged state increasing performance and battery life.

The recondition function can also be triggered manually to perform an equalisation charge (used for periodic maintenance) or to fully charge calcium batteries.

Refer to the *"Calcium Battery Charging or Equalisation Charge"* section on page 11 of this manual for further information.

Float

The Float stage maintains the battery at 100% charge without overcharging or damaging the battery. This means the charger can be left connected to the battery indefinitely.

CHARGE STATUS DISPLAY

The 'Charge Status L.E.D' flashes when charging and remains on when the battery is fully charged.

POLARITY PROTECTION

Prevents the output leads from sparking due to accidental reverse connection or short circuit making the charger safer to use around batteries.

ADJUSTABLE OUTPUT

The charger's output can be adjusted to suit the size of the battery for optimum charging.

L.E.D VOLTS & AMPS DISPLAY

The charger includes an in-built Volt and Amp meter. When the charger is initially powered up and connected to the battery, the display will show Volts. Press the Volts/Amps button to change between Volts and Amps.

The Volt display indicates the state of charge of the battery.

The Amp display indicates how much charge is going into the battery.

SWITCHMODE TECHNOLOGY

Using the latest technology in battery chargers, switchmode chargers convert 240V AC power to 12V DC power using electronic components unlike traditional battery chargers that rely on heavy transformers. This allows the charger to be lightweight and compact without sacrificing on performance.

CHECK BATTERY LED

The charger will automatically shut down and the 'Check Battery LED' will illuminate to advise you of a faulty or damaged battery. The display will show a Fault Code (F01, F03, etc).

An explanation of the fault codes can be found on page 13 of this manual.

PROTECTIVE FEATURES

Over Voltage Protection: The charger will automatically shut down if the voltage is greater than 17.5V.

Over Current Protection: The charger will automatically shut down if the maximum current exceeds 10A (for model IC1208) or 18A (for model IC1216).

Over Temperature Protection: The charger will automatically shut down if the temperature of the charger exceeds 95°C.

Spark-Free Protection: Prevents the output leads from sparking due to accidental reverse connection or short circuit making the charger safer to use around batteries.

CABLE STORAGE

The charger incorporates a storage compartment for the power and battery leads for neat and safe storage.

VOLTAGE SENSING AT BATTERY CLAMPS

Independent wires are fed through the battery leads to monitor the charge process from the battery clips. This allows for accurate monitoring and results in very precise charging.

COOLING FAN

The charger is fitted with a cooling fan to cool the onboard electronics and to maintain charging performance. The cooling fan will engage when the charge current is set higher than 2 Amps.

BATTERY METER

Tests your battery condition without using mains power. The battery meter gives a reading from 0–100%.

SPECIFICATIONS

P/No.	IC1208	IC1216
Type	7 Stage Intelligent Automatic	7 Stage Intelligent Automatic
Input (Nominal)	240VAC, 50Hz	240VAC, 50Hz
Input Power	250W	700W
Output Voltage (Nom.)	12V	12V
Output Current (Constant)	2000, 4000, 6000, 8000mA (CC – Bulk)	2000, 4000, 8000, 16000mA (CC – Bulk)
Minimum Start Voltage	2V	2V
Back drain (Battery drain by the charger when power is off)	77mA	90mA
CHARGE CONTROL		
Desulphation	Pulse charge up to 11V	Pulse charge up to 11V
Soft Start	Half the rated set current up to 12V	Half the rated set current up to 12V
Bulk	2000–8000mA (Up to 14.4V)	2000–16000mA (Up to 14.4V)
Absorption	Constant voltage 14.4V until voltage drops to the following current set points: 2 Amp setting: 0.3A 4 Amp setting: 0.6A 6 Amp setting: 1.0A 8 Amp setting: 1.2A	Constant voltage 14.4V until voltage drops to the following current set points: 2 Amp setting: 0.3A 4 Amp setting: 0.6A 8 Amp setting: 1.2A 16 Amp setting: 2.0A
Battery Test	Monitors voltage for 90 seconds	Monitors voltage for 90 seconds
Recondition	Constant current up to 16.5V for 4 hours. Current output for the following settings are: 2 Amp setting: $0.3 \pm 0.2A$ 4 Amp setting: $0.5 \pm 0.3A$ 6 Amp setting: $0.8 \pm 0.3A$ 8 Amp setting: $1 \pm 0.5A$	Constant current up to 16.5V for 4 hours. Current output for the following settings are: 2 Amp setting: $0.3 \pm 0.2A$ 4 Amp setting: $0.5 \pm 0.3A$ 8 Amp setting: $1 \pm 0.5A$ 16 Amp setting: $2 \pm 0.5A$
Float	13.8V also with pulse feature	13.8V also with pulse feature
BATTERY RANGE		
Deep Cycle	14–160 Ah	14–320 Ah
Automotive	80–1000 CCA	80–2200 CCA
Marine	110–1500 MCA	110–3000 MCA
Types of batteries	Most types of lead acid batteries including Calcium, GEL and AGM	Most types of lead acid batteries including Calcium, GEL and AGM
Size (mm)	265 x 150 x 200	265 x 150 x 200
Weight	1.8 Kg	2.1Kg

PRODUCT OVERVIEW



CHARGING INSTRUCTIONS

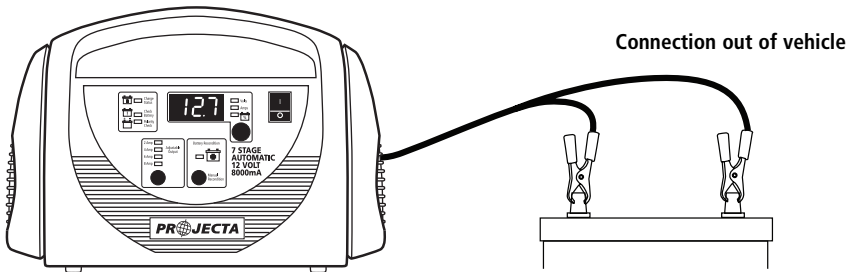
STEP 1 – CHECK THE ELECTROLYTE LEVEL

Prior to charging the battery, remove the vent caps and check the electrolyte level (not required on sealed & maintenance free batteries). The electrolyte should be 6mm (1/4") above the battery's plates. If low, top up with distilled water to the correct level and refit the vent caps.

STEP 2A – CONNECTION OUT OF THE VEHICLE

Connect the RED lead (battery clip) from the charger to the Positive (+) battery post.

Connect the BLACK lead (battery clip) from the charger to the Negative (-) battery post.



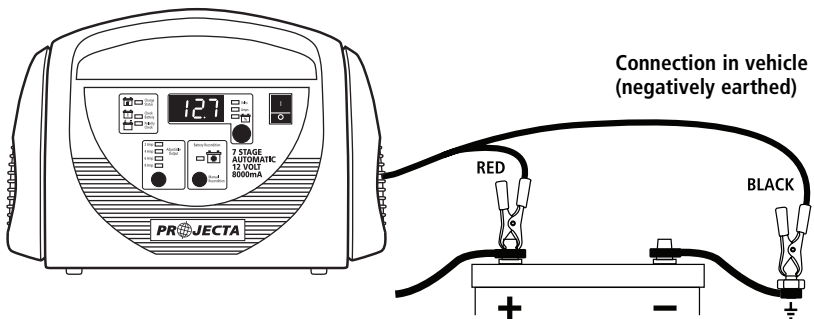
STEP 2B – CONNECTION IN VEHICLE

Determine if the vehicle is Positively (+) or Negatively (-) earthed. Negatively earthed vehicles have a cable (usually black) from the Negative battery terminal to the vehicle's chassis.

Negatively earthed (most vehicles)

Connect the RED lead (battery clip) from the charger to the Positive (+) battery terminal.

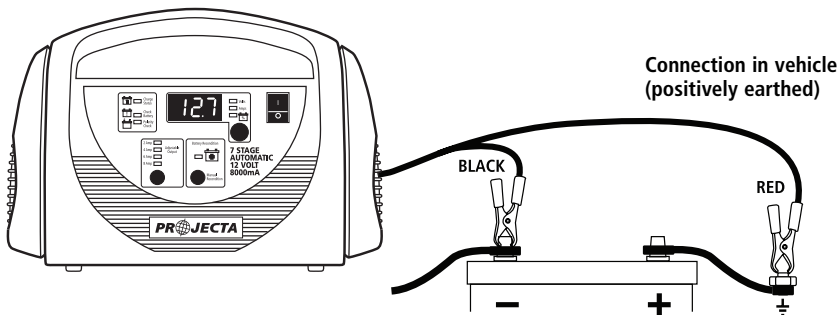
Connect the BLACK lead (battery clip) from the charger to the vehicle's chassis away from the fuel line or moving parts.



Positively earthed

Connect the BLACK lead (battery clip) from the charger to the Negative (-) battery terminal.

Connect the RED lead (battery clip) from the charger to the vehicle's chassis away from the fuel line or moving parts.



STEP 3 – CONNECT TO 240V MAINS POWER

Connect the battery charger to the 240V mains powered socket.

Turn on the 240V mains power.

Turn on the battery charger.

The charger will start in the lowest setting with no risk of harming your battery.

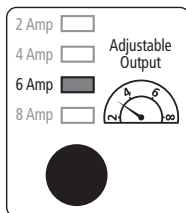
STEP 4 – SET CHARGE CURRENT (ADJUSTABLE OUTPUT)

Output should be set according to the battery size.

Output Setting	BATTERY SIZE			
	Deep Cycle (AH)	Automotive (CCA)	Marine (MCA)	Time (Hours)
2 Amp	14–40	80–240	110–330	7–24
4 Amp	40–80	240–480	330–650	10–24
6 Amp	60–120	360–720	500–1000	10–24
8 Amp	80–160	480–1000	660–1300	10–24
16 Amp*	110–320	650–1900	930–2650	10–24

* 16 Amps setting only for model IC1216

For example: N70Z 580CCA battery – the output should be set to 6A.



Adjustable output set to 6A

STEP 5 – CHARGING

The 'Charge Status LED' will flash while charging.

When fully charged the 'Charge Status LED' will remain on. This is known as the float stage and the charger can be left connected to the battery without over charging.

During the charge process, the LED display will show various numbers and patterns such as LED's scrolling up. These are normal and indicate the various charge stages.

Refer to *"How can I tell what stage the battery charger is in"* in the FAQ section.

If the 'Check Battery LED' illuminates and the display shows a fault code (F01, F03 etc), refer to the "Fault Codes" explanation on page 13 of this manual.

STEP 6 – DISCONNECTION

Ensure the power switch is turned off and the charger is disconnected from the 240V mains power.

Battery out of vehicle

Remove the BLACK lead (battery clip) from the battery.

Remove the RED lead (battery clip) from battery.

Battery in vehicle

Remove the chassis connection.

Remove the battery terminal connection.

CALCIUM BATTERY CHARGING OR EQUALIZATION CHARGE

Calcium batteries are becoming more commonly sold as they have a longer shelf life (4 times longer than a lead antimony battery). They also have a better ability to withstand higher engine bay temperatures and have increased cranking output. Consequently, they require a different charging technique when left flat or when deeply discharged.

An equalization charge should be performed periodically to optimize the battery's health and performance. The equalization charge ensures the battery cells are consistent and are operating at full capacity.

STEPS 1 – 5

Follow STEPS 1 to 5 of the *Charging Instructions* of this booklet.

Ensure that the battery is removed from the vehicle to prevent the battery's electrolyte from spilling over and damaging the car or engine bay.

STEP 6 – SET CHARGE CURRENT (ADJUSTABLE OUTPUT)

Set the output to the highest setting (8Amp for the IC1208 and 16Amp for the IC1216).

STEP 7 – PRESS MANUAL RECONDITION BUTTON

The charger will be in this mode for 4 hours. When in Recondition mode, the LED display will scroll up repeatedly and the Battery Recondition LED will flash.

Scrolling display indicates Recondition mode



STEP 8 – TEST THE BATTERY ELECTROLYTE

- Turn the battery charger off and disconnect from 240V mains power.
- Disconnect the battery charger from the battery.
- Allow the battery to settle and cool down before measuring the batteries Electrolyte. The Specific Gravity of a fully charged battery is 1.250 SG or higher.
- If the battery electrolyte reading is not high enough, run the manual recondition mode again. Be careful not to boil the battery. If the battery starts to get hot turn the charger off. Some batteries may not be able to achieve a full electrolyte reading due to their condition and age.

NOTE: Run manual recondition a maximum of 3 times with model IC1216 and a maximum of 6 times with model IC1208.

STEP 9 – CHECK THE ELECTROLYTE LEVEL

Top up the electrolyte if required.

BATTERY METER

STEP 1 – ENSURE MAINS POWER IS DISCONNECTED

STEP 2 – CONNECT BATTERY CLIPS TO THE BATTERY TERMINALS

Connect the RED lead (battery clip) from the charger to the Positive (+) battery post.

Connect the BLACK lead (battery clip) from the charger to the Negative (-) battery post.

STEP 3 – PRESS THE VOLTS / AMPS FUNCTION BUTTON

STEP 4 – READ THE DISPLAY

The display will show the battery's state of charge as a percentage:

Display (State of Charge)	Voltage (Battery Capacity)
100%	12.6 or higher
80%	12.5
60%	12.4
40%	12.3
20%	12.2
0%	12.0 and below
No display	Less than 6V

FAULT CODES

There are five error codes that may be displayed:

Error Code	Battery Check LED	Cause	Solution
F01 Faulty Battery	Yes	The battery has less than 10V after being charged for 10 minutes.	Battery is faulty and may need to be replaced.
F02 Over Voltage	Yes	The battery voltage is above 17.5V.	Disconnect the charger and check the battery voltage. This charger is suitable for 12V Batteries only .
F03 Over Current	Yes	The current draw from the charger is exceeding: 10A for the IC1208 and 18A for the IC1216.	Disconnect the charger and check the battery. Battery may be faulty.
F04 Over Temperature	Yes	The charger temperature is higher than 95°C	Turn the power off to the battery charger and allow the charger to cool.
F05 Faulty Battery	Yes	The battery will not go into float status after being charged for 24 hours.	Battery is faulty and may need to be replaced.

FREQUENTLY ASKED QUESTIONS

Q. How do I know if the battery is charged?

- A. The charger's 'Charge Status L.E.D' will remain on. Alternatively use a Battery Hydrometer (Projecta Part No. BH100). A reading of 1.250 or more in each cell indicates a fully charged battery.

Q. Why does the 'Check Battery L.E.D' come on and a Fault Code appear?

- A. The 'Check Battery LED' will come on if the charger detects a fault in the battery. The displayed fault code indicates the cause for the fault. An explanation of the fault codes can be found on page 13 of this manual.

If the charger displays fault codes F01 or F05, you should test the cells using a hydrometer. If one reading is lower than the rest it indicates a faulty cell. It is pointless to try and charge this battery as it cannot be charged and may require replacing.

Q. I have connected the charger properly but the 'Charge Status L.E.D' does not come on?

- A. In some cases batteries can be flattened to the point where they have very little or no voltage. This can occur if a small amount of power is used for a long time, for example a map reading light is left on for a week or more. Projecta 7 Stage chargers are designed to charge from as little as 2 Volts.

If the voltage is lower than 2.0V use a pair of booster cables to connect between two batteries to provide more than 2 Volts to the battery being charged. The charger can then start to charge the battery and the booster cables can be removed.

Q. Can I use the charger as a power supply?

- A. Projecta 7 Stage chargers are designed to only supply power to the battery clips when they are connected correctly to a battery. This is to prevent sparks during connection to the battery or if connected incorrectly by mistake. This safety feature prevents the charger from being used as a 'Power Supply'. No Voltage will be present at the clips until connected to the battery.

Q. What are Volts and Amps?

VOLTS






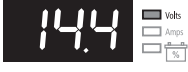





Volts represent how much power is in the battery and is commonly used to measure the state of charge of a battery. For example, a "12 Volt" battery at 100% capacity will measure 12.6V or higher; at 40% capacity 12.3V; and at 0% capacity 12.0V.

AMPS

The term AMPS is the unit of measure used for current, which can be described as the flow of electric charge in a circuit. For example if the current is reading 16Amps then this is the rate of energy going into the battery. A higher current will result in a faster charge time.

Q. How can I tell what stage the battery charger is in?

Below are the conditions that are displayed for each of the stages.

Stage	Conditions	Display
Desulphation Mode	Display defaults to Amps. The Amps display moves up and down. (e.g. 3.4 – 3.5) The Voltage display will be less than 11 Volts.	
Soft Start	The charger outputs half the set current. E.g. If the charger is set on 4 Amps the display will show 2 Amps. The Voltage display will be less than 12 Volts.	
Bulk Mode	The Amps display shows the set current (2, 4, 6, 8 or 16). The Amp display will remain constant. The Voltage display will be increasing.	  Constant Current ↑ Increasing
Absorption	The Amps display shows the current decreasing. The Voltage display will remain constant at 14.4V.	  Decreasing ↓ Constant Voltage
Battery test	There will be 0 Amps displayed. The Voltage display will decrease. The charger will stay in this mode for 90 seconds.	
Recondition	The LED display shows a scrolling image and the Battery Recondition LED is flashing.	 
Float	The Voltage display shows a voltage reading between 13.3 and 14 Volts. The 'Charge Status LED' will remain on.	 

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