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AMP**

MA22DCS



DC-DC BATTERY CHARGER WITH SOLAR INPUT



MANUAL

DC-DC BATTERY CHARGER WITH SOLAR INPUT

This MA22DCS charger is a sophisticated multi stage charger, utilising switch mode and fully automatic computerised control, designed to charge most 12 Volt AGM/Lead Acid, Gel, Calcium and LiFePO₄ batteries.

- Heavy duty aluminium case and mounting brackets
- Encapsulated and sealed to IP65 for under bonnet applications
- Microchip monitoring and control
- Fully automatic high frequency multi-stage charging
- Pulse mode technology that reduces oxidation, evens electrolyte consistency and minimises temperature equating to longer battery life
- Easy push button chemistry selection: Lead Acid/AGM (including VRLA and conventional flooded batteries), Gel, Calcium and LiFePO₄
- Internal charger temperature monitoring and power output control
- LED indicators showing stage of charge
- Over charging, short circuit and over temperature protection
- Reverse polarity protection:
 1. Input reverse polarity protection
 2. Output reverse polarity protection with alarm
- Thermal overload protection
- Solar charging with MPPT
- Power cut memory function: once selected, the charger will remain on this battery type until it is changed

SAFETY INSTRUCTIONS



WARNING

To avoid any personal injury, please read the safety instructions below.

This battery charger is not intended for use by children or infirm persons without supervision.

For automotive and recreational vehicle 12V deep cycle battery use only.

Not to be used with dry cell batteries.

- During the charging process, do not use a naked flame near a battery. Batteries generate gasses during the charging process that may explode
- Never smoke or light cigarettes near a battery
- Do not place tools on top of a battery or allow tools to fall on the battery to prevent the chance of a short circuit and sparks
- Always wear eye protection when charging batteries
- Ensure charging and testing is conducted in a well-ventilated area
- Inadequate ventilation may over-heat the charger and cause inefficient operation
- The ACID / FLUID within a battery is highly corrosive and poisonous. It can produce flammable and toxic gases when recharged and will explode if ignited. When working with batteries, always wear eye protection, remove jewellery and ensure the area is well ventilated. If spilt, it will cause severe burning to eyes, skin, clothing, and damage paintwork and corrode many metals. Ensure that power is disconnected from any appliance in the vicinity of the spill and immediately wash any area that has been affected with water. Seek medical attention.

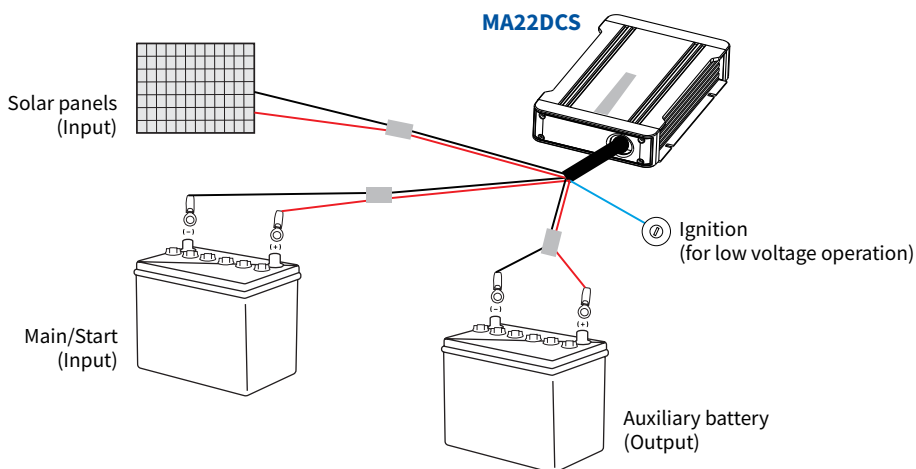
The warnings, cautions and instructions detailed in this instruction manual cannot cover all possible conditions and situations that may occur. Common sense and caution are factors which cannot be built into this product and must be supplied by the operator.

INSTALLATION OPTIONS / INSTRUCTIONS

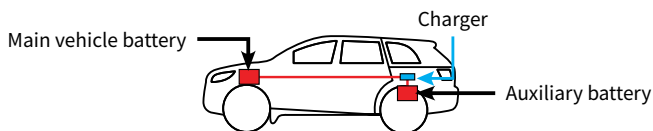
Installing the charger

This unit is supplied with 50A Anderson style connectors already connected to the battery charging output, the solar input and the battery input leads, ready to plug and play. The package includes one additional yellow connector for solar panel. More wiring and connectors will be required to connect these to your vehicle/panels etc., if they are not already fitted.

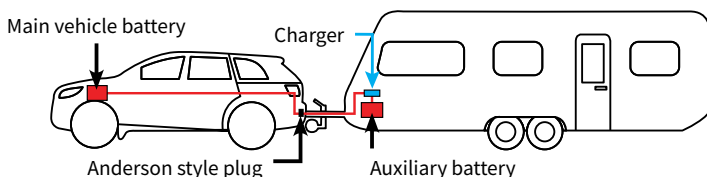
Any existing or additional cables used in the installation of this product needs to be suitable for the current and distance required. Matson recommends the use of 10mm² cable for this purpose as a minimum.



Suggested fitment to vehicle only



Suggested fitment to vehicle with caravan



DC-DC BATTERY CHARGER WITH SOLAR INPUT

- Choose a location to install the charger, ideally somewhere cool and dry for best performance. Under the bonnet will work, but try and maximise airflow around the charger, without too much water. Excessive heat will lower the charger output. It is also advisable to place the charger as close to the auxiliary battery as possible for best charging performance
- Ensure the charger is securely mounted. This can be in any orientation, inverted, vertical or horizontal, as required. If the unit is being installed in a harsh vibration area, like an engine bay, consider mounting over small rubber or high density foam pads
- Measure the distance from the starting battery to the charger; the distance between the charger and the auxiliary battery; the distance between the solar panel output and the charger. Source cable and terminations to suit. MATSON recommends a good quality twin-core cable for this application.
- Ensure ALL cabling meets specification and will not be exposed to excessive heat / moving parts or abrasion
- Connect the main battery to the charger – make sure polarities (+ & -) are correct.
- Connect the solar panels to the charger – make sure polarities (+ & -) are correct.
- Select the battery chemistry on the charger to the right one using the Battery Type Switch on the charger. Please note that, while the auxiliary battery is connected, the battery type cannot be changed.
- Connect the auxiliary battery to the charger – make sure polarities (+ & -) are correct.
- It is recommended that a 25A circuit breaker or fuse be installed between the main battery and the charger, but is not essential
- Make sure all connections are tight

Low, variable or smart alternators

If the vehicle is fitted with a low, variable or smart alternators, the ignition sensing wire will need to be connected. This will allow the charger to continue to operate when it senses much lower voltages (as low as 11.7V) from the main battery, because it can sense the engine running.

Using 2mm automotive cable, connect the small ignition cable from the back of the charger to an ignition power source. This can be complicated and may require the assistance of an auto electrician or qualified installer. Once the charger senses ignition power it will start charging.

Battery drain prevention

The charger will draw standby current when connected. For vehicles, caravans or boats, parked or stored for extended periods, MATSON recommends using a suitable low-voltage battery disconnect or an isolation method to help prevent unnecessary battery drain.

One or a combination of the following may be installed:

1. Isolate the charger from the battery using a suitable switch or battery isolator.
2. Maintain the battery using a suitable maintenance charger.
3. Use a low-voltage disconnect or battery protection device on the input supply.
4. If the charger is permanently connected to an exposed solar panel and the vehicle is parked outside in direct sunlight, solar input may help offset standby current draw.

CHARGER DISPLAY



1. Red LED Indicates power is on
2. Red LED Indicates the unit is charging
3. Green LED indicates the charger has completed charging and is in stand-by
4. Red LED indicates solar input is active
5. Battery type selection switch
6. The battery chemistry selected is indicated by the blue LED

DC Battery Input

Once correctly installed the MA22DCS needs the battery chemistry to be selected, then it will operate automatically with no further input.

- Start the vehicle and let it idle.
- The charger will recognise that there is charge going into the main starting battery.
- Once the main starting battery reaches 13.2V (12.2V if ignition sensor is installed), the MA22DCS will power on and begin charging the auxiliary battery.
- Change the battery chemistry setting to suit your application. The default setting is Lead Acid. Once selected, the charger will remember this as the new default setting, you do not need to change the setting again. Remember - you cannot change the chemistry setting with the auxiliary battery connected.
- When the charging cycle is complete, the Charged / Stand-by status light will illuminate. This indicates that the charger has completed the current charging cycle and is waiting for the auxiliary battery voltage to reach the restart level before charging resumes. The Charged / Stand-by light does not indicate the exact state of charge of the auxiliary battery.
- The charger will automatically resume charging when the auxiliary battery reaches the programmed restart condition.
- The charger will continue to operate until the vehicle is switched off (Ignition sensor connected) and/or the main starting battery drops to 12.7V.

Solar Input

If a solar panel input is connected to the MA22DCS, it will automatically accept power from the panels once the engine has stopped running and the main battery has dropped to 12.7V.

Minimum solar input voltage is 13.5V to start charging and maximum is 25V. No regulator is required between the charger and the panels if the panel output voltage is within those parameters. The charger will continue to operate using the solar input until the input voltage falls below 10.8V.

SPECIFICATIONS

Charge Type	Multi-Stage
Input Voltage (V) DC	Battery 10.8 - 16.0 Solar 10.5 - 25.0
Cut in/out Voltage with Ignition lead (V)DC	12.2 - 11.7
Cut in/out Voltage NO Ignition lead (V)DC	13.2 - 12.7
Output Current (A)	20
Standby Current (mA)	22
Minimum Start Voltage (V)DC	2
Soft Start Charging	Yes

Bulk charge voltages (V)DC

Gel	14.3
AGM/Lead Acid	14.7
Calcium	15.3
LiFePO	14.4
Float Charge Voltage (V)DC	13.5
Float Charge Current (mA)	100
Suits battery capacity (AH)	20 - 250
Case Construction	Aluminium
Ingress protection (IP) rating	IP65
Max operating temp (Deg C)	70
Weight (kg)	1.95
Dimensions (mm)	140 x 198 x 38

Min recommended cable length vs size, bigger is always better...

0 - 1 Metres	8 AWG or 8mm ²
1 - 5 Metres	6 AWG or 13mm ²
5 + Metres	4 AWG or 21mm ²

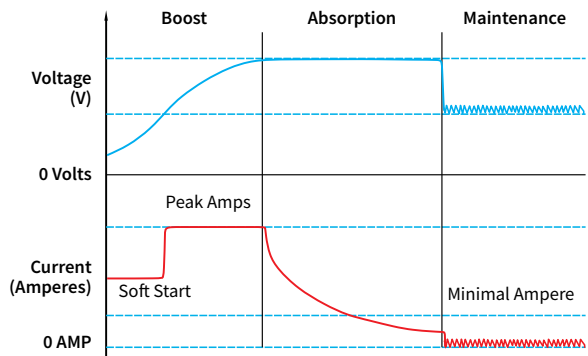
*Cable length refers to the one-way distance of the longest cable run between the start battery, DC-DC charger and auxiliary battery.



WARNING

Failure to use recommended wiring will severely impact on performance of DC to DC charger.

Charging algorithm will change according to battery type.



CHARGING VOLTAGES

Type of Charging	Gel	AGM / Lead Acid	Calcium	LiFePO ₄
Soft-start	8V	8V	8V	8V
Boost / Bulk	14.3V	14.0V	15.0V	14.0V
Absorption	14.3V	14.7V	15.3V	14.4V
Maintenance / Float	13.5V	13.5V	13.5V	-

NOTE: Battery manufacturers sometimes specify charging voltages. Not observing their charging instructions may void your battery warranty.

ADDITIONAL INFORMATION

Deep cycle batteries

It is expected that this charger will be used to charge a deep cycle type auxiliary battery.

Deep cycle batteries are designed to provide battery power to run items like fridges and lighting in caravans and campers.

It is generally accepted that the life of a deep cycle battery can be extended if it is not discharged below 50% of its full capacity. A fully charged 100Ah battery in good condition should offer 50Ah of power without impacting on its normal life expectancy.

A compressor-style portable fridge may draw up to 3.6A while running, with an average current consumption of approximately 2A. A 100Ah lead-acid battery provides around 50Ah of usable capacity when limited to 50% depth of discharge. At 2A average consumption, this battery may power the fridge for approximately 25 hours. Therefore, if the fridge is the only load and the battery receives no additional charge, the battery should generally be recharged after approximately 24 hours.

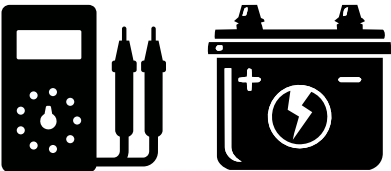
To recharge this used 50Ah from battery using a 20A DC-DC charger will require at least 4 to 5 hours of driving. The last 10-20% of battery charging is slow. The closer it gets to 100%, the slower the charging is. Undercharging a battery and discharging is below 50% can severely impact the life expectancy of most deep cycle batteries.

Approximate state-of-charge	Average specific gravity	Open circuit voltage 12V
100%	1.265	12.65
75%	1.225	12.45
50%	1.190	12.24
25%	1.155	12.06
0%	1.120	11.89

The readings are taken at room temperature of 26°C (78°F); the battery had rested for 24 hours after charge or discharge.

Voltage reading and specific gravity of electrolyte (lead acid batteries) can give an indication of your battery’s state of charge.

FAULT FINDING



Charger won’t indicate charging	Charger not connected to battery Check terminal connection Battery is not 12 V
Battery won’t charge	Verify that all wiring meets specifications Check condition of batteries Check performance of alternator
Battery won’t fully charge or hold charge	Battery that is over 3 years old; severely discharged (or previously been severely discharged); not regularly recharged; over-heated: low in electrolyte; undercharged; overcharged or sulphated may not accept or hold a charge. A good automotive store or battery outlet often offers a free or low cost in-store service to check condition of battery. Your battery may require replacement.

WARRANTY POLICY

Congratulations on the purchase of your Matson product!

Matson has been producing quality battery accessories since 1947, and we are proud of that long history. For extra peace of mind, we invite you to register your purchase with us and take advantage of our extended warranty against any manufacturing faults. This warranty entitles you to a replacement product (or equivalent) in the event there is a manufacturing fault with the product you purchased.

To claim this warranty

1. Register your product: Scan the QR code or visit tridon.com.au/products/Matson and follow the prompts (you will need your proof of purchase)
2. Call us: If you have an issue with your product, give us a call on 1300 362 263, we will troubleshoot the issue and try to resolve it for you
3. Return the product: If inspection is required, return the product to us for assessment
4. Assessment: We will assess the product and either replace or return it depending on whether a fault is found.

This warranty applies for the time period stated on the packaging of your product from the date you purchased it. A list of warranty durations is available at tridon.com.au/products/Matson

Under this warranty, you are responsible for freight costs associated with returning the item to us. We will cover the cost of returning the item to you. This warranty only applies to the product you purchased, not any other associated products or items.

This warranty is offered by Tridon Australia in addition to other rights and remedies available to you under Australian Consumer Law.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law.

You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage.

You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.



Scan here to
register your product

TRIDON ▶

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This image shows a single page of white paper with horizontal blue lines. The lines are evenly spaced and run across the width of the page, typical of notebook or ledger paper. There are no margins, text, or other markings on the page.

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