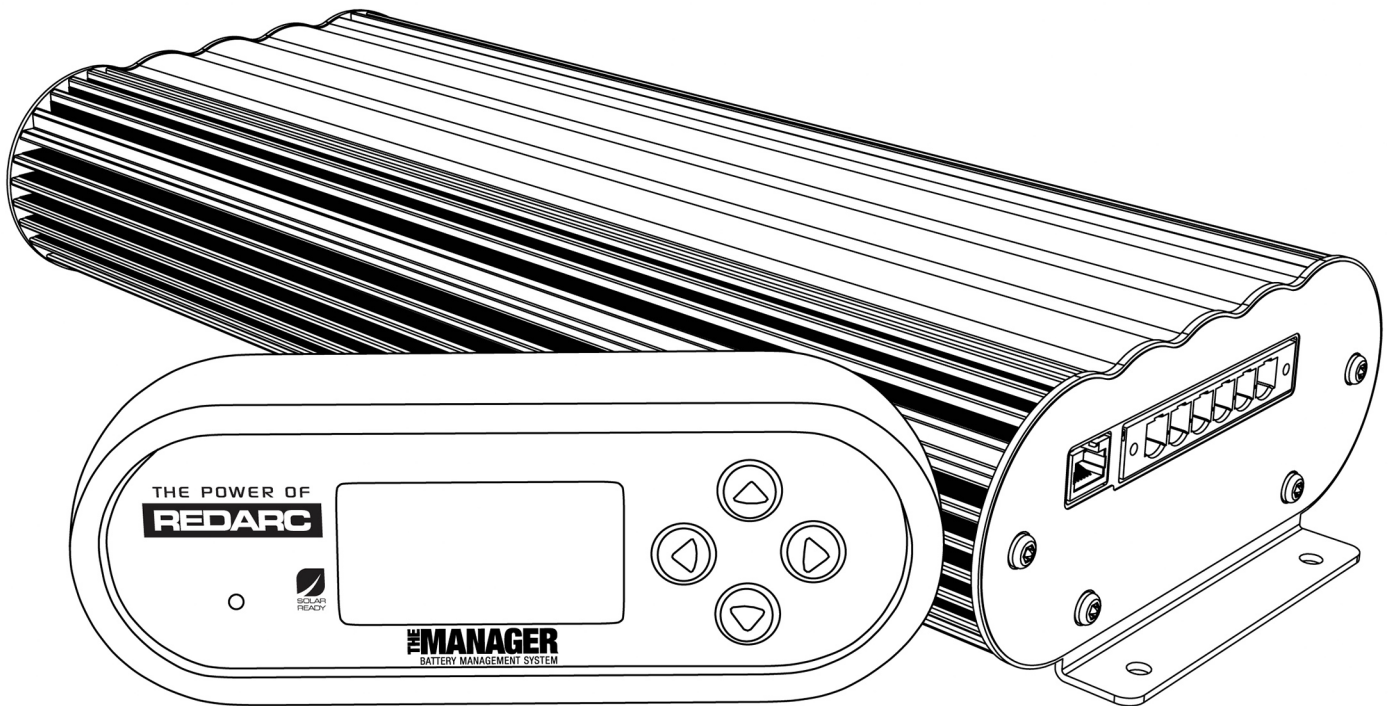


THE POWER OF
REDARC®

THE MANAGER30

Battery Management System



BMS1230S2



THE MANAGER30

The MANAGER30 (Battery Management System with Minitor)는 모든 종류의 납황산배터리와 리튬인산철 배터리를 충전하기 위한 전 세계에 하나뿐인 진정한 All-In-One 제품입니다.

1. 주행충전기 (12V & 24V)
2. 태양광충전기(MWP컨트롤러보다 125% 높은 충전효율을 자랑하는 MPPT 솔라컨트롤러 내장)
3. 가정용 전원(AC)을 사용할 수 있는 스마트 충전기
 - 배터리를 오래 사용하게 하는 황산염제거기능
 - 과충전 방지기능 / 유지관리 기능
 - 세밀충전기능 등을 모두 갖춘 스마트 충전기
4. 모니터
 - 여러개의 배터리를 균일하게 충전할 수 있는 이퀄라이저 기능
 - 배터리 자가 체크 기능
4. 모니터
 - 배터리의 상태/충전상태/충전진행사항/배터리 사용 가능시간/배터리 종류 선택 등 배터리에 관한 모든 정보를 한눈에 파악할 수 있는 모니터

WARNINGS & SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS - This manual contains IMPORTANT SAFETY INSTRUCTIONS for The Manager30 battery management system.

DO NOT OPERATE THE BATTERY CHARGER UNLESS YOU HAVE READ AND UNDERSTOOD THIS MANUAL AND THE CHARGER IS INSTALLED AS PER THESE INSTALLATION INSTRUCTIONS. REDARC RECOMMENDS THAT THE CHARGER BE INSTALLED BY A SUITABLY QUALIFIED PERSON.

⚠ WARNING

RISK OF EXPLOSIVE GASES:

WORKING IN THE VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT YOU FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE CHARGER.

⚠ CAUTION

1. The Battery Charger should not be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they are supervised or have been instructed on how to use the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the Battery Charger.
2. Do NOT alter or disassemble the Battery Charger under any circumstances. All services or repairs must be returned to REDARC for repair. Incorrect handling or reassembly may result in a risk of electric shock or fire and may void the unit warranty.
3. Use of an attachment not recommended or sold by REDARC may result in a risk of fire, electric shock, or injury to persons.
4. The AC power connection must be connected to an earthed socket outlet. Do not use the AC input if the cord is damaged. Use of a non-genuine or damaged AC input cord may result in a risk of fire, electric shock, or injury to persons. (If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer or service agent).
5. Cable and fuse sizes are specified by various codes and standards which depend on the type of vehicle the Battery Charger is installed into. Selecting the wrong cable or fuse size could result in harm to the installer or user and/or damage to the Battery Charger or other equipment installed in the system. The installer is responsible for ensuring that the correct cable and fuse sizes are used when installing this Battery Charger.
6. When charging a battery, make sure the settings at the Battery Setup menu on the Remote Monitor are correct for the type of battery under charge. Charging a battery with the wrong profile may cause the Battery Charger to indicate a fault or give misleading results and cause injury to persons, damage to the Battery Charger and/or property. Noticeable oscillations between Boost and Absorption stages indicate the wrong choice of battery type. Check and adjust battery type. If you are unsure of the battery type or settings to use, set to the Gel setting.
7. Only use the Battery Charger for charging Standard Automotive Lead Acid, Calcium Content, Gel, AGM, SLI, Deep Cycle or Lithium Iron Phosphate type 12V batteries.

WARNINGS & SAFETY INSTRUCTIONS

8. When using the Battery Charger to charge a Lithium Iron Phosphate battery, only batteries that feature an inbuilt battery management system featuring inbuilt under and over voltage protection and cell balancing are suitable.
9. NEVER smoke or allow a spark or flame in vicinity of battery. This may cause the battery to explode.
10. Be extra cautious so as to reduce the risk of dropping a metal tool onto a vehicle battery. Doing so might cause the battery to spark or might short-circuit the battery or other electrical parts that may cause an explosion.
11. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
12. **A SPARK NEAR A BATTERY MAY CAUSE THE BATTERY TO EXPLODE. TO REDUCE THE RISK OF A SPARK NEAR A BATTERY WHEN CONNECTING THE BATTERY INSTALLED IN A VEHICLE TO THE BATTERY CHARGER, ALWAYS DO THE FOLLOWING:**

Always wire the Output Connector before connecting it to the Battery Charger. During connection of the unit, the Battery Output (positive) must be connected first, followed by the Ground (chassis) terminal. The chassis connection should be made away from the battery and fuel lines. DC Input (positive) should be connected last. Once all connections are wired to the Output Connector, plug the connector into the Main Unit.

When disconnecting the Battery Charger, remove the AC Connector first, followed by the CAN connection then the Output Connector from the Main Unit. The DC Input should be disconnected next, followed by the Ground (chassis) connection, then the Battery Output connection if complete removal is necessary.

13. PERSONAL SAFETY PRECAUTIONS

To assist with the safe operation and use of the Battery Charger:

- a) Consider having someone close by to come to your aid when you are using the Battery Charger.
- b) Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
- c) Wear complete eye protection and clothing protection. Avoid touching eyes while working near a battery.
- d) If battery acid contacts your skin or clothing, remove the affected clothing and wash the affected area of your skin immediately with soap and water. If battery acid enters your eye, immediately flood the eye with running cold water for at least 10 minutes and seek medical assistance immediately.
- e) To improve user safety it is recommended to control the charger and monitor the charging process using the remote away from the vicinity of the battery being charged.

NOTICE

1. Do NOT connect computers or IT equipment to the Charger front panel connector or remote. Damage may occur.
2. It is recommended to leave the remote connected at all times to the base unit.
3. The Main Unit must be fixed using suitable screw mounts. Failure to adequately mount the unit, such as using adhesives to mount the unit will result in unreliable operation of the charger.
4. When using the charger in Storage mode, make sure that all loads are disconnected from the house battery under charge. Failure to do so may cause the house battery to be under charged, give false readings on the State of Charge indicator and possibly cause damage to any loads connected.
5. A partially shaded panel (or low-light conditions such as dawn or dusk) will increase the target solar panel voltage level to match the maximum power point. In this situation solar will be selected as a source however little or no current will be flowing into the battery.
6. Modification of the 'Advanced Settings' menu items affect the way the Battery Charger responds to charging situations. Modification of these settings may result in the Battery Charger not functioning at 100% of its capacity. These settings should only be modified if absolutely necessary and when the effects of the changes are 100% understood.
7. Touring mode will achieve it's best charge level if a Storage mode charge has been recently performed.
8. It is the installers responsibility to ensure their installation complies with any applicable legal and regulatory requirements. Within Australia, installers may wish to consult AS/NZS 3001 as one potentially relevant standard.

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FEATURES AND BENEFITS

1. The Manager30은 6가지 기능이 Aii-In-One된 제품으로 모든 기능들이 유기적으로 자동으로 작동됩니다.
 - 주행충전기능
 - 솔라충전 (MPPT)
 - 가정용전원(AC)스마트충전기
 - 듀얼배터리 아이소레이터
 - 부하 컨트롤러
 - Remote 배터리 모니터
2. The Manager30은 REDARC의 최신 기술과 디자인의 결합으로 FAN이 없는 조용하고 신뢰할 만한 제품입니다.
3. The Manager30은 REDARC 호주 자체공장에서 가장 최신기술과 디자인력으로 개발/생산 됩니다.
4. The Manager30은 캠핑카/오프로드의 천국인 호주의 극한환경에서도 견딜 수 있게 개발/생산 되었습니다.
5. The Manager30은 ISO9001&ISO14001인증을 가지고 있으며, 2년의 Warranty가 제공됩니다.
6. The Manager30의 최신 충전 알고리즘은 솔라충전과 주행충전시 탁월한 효율을 자랑합니다.
7. The Manager30은 시동배터리와 보조배터리의 종류가 달라도 충전이 가능하며, 얼터네이터/솔라의 전압이 낮으면 전압을 증폭시켜 배터리를 충전하고, 전압이 높으면 전압을 낮춰 배터리를 보호하며, 충전을 수행하므로 기존의 아이소레이터/릴레이 등이 할 수 없는 전압에서도 충전을 수행합니다.
8. 모니터를 통하여 SOC(충전상태)/충전종류/충전시간/사용시간/충전과 사용 전류 등의 정보를 그래픽으로 한눈에 알 수 있습니다.
9. The Manager30은 오프로드/모터홈/카라반/캠핑카 등에 쓰이는 모든 납황산배터리와 세계 최초 리튬인산철배터리를 충전할 수 있습니다.
10. The Manager30은 Short Circuit Protection 기능과 Reverse Polarity Protection 기능이 있습니다.
11. The Manager30에는 아이소레이터 기능이 내장되어있어, 시동배터리 방전에 영향이 없습니다.
12. 정교한 오류/오작동 탐지기술은 항상 충전동안 차량을안전하게 지켜줍니다.
13. The Manager30의 모니터는 Stand by 모드에서도 보조배터리의 온도/전류전압 등 모든 것을 모니터하여 알려줍니다.
14. The Manager30에는 자동 전압&온도 보상기능이 있어 충전효율을 높이고, 배터리를 보호해줍니다.

1 INTRODUCTION

1.1 General Description

The **Manager30**은 주행충전 / 솔라충전 / AC스마트충전 / 리모트 모니터가 일체로 완벽히 조화되어, 트러블 없이 보조배터리 충전을 완벽하게 해줍니다.

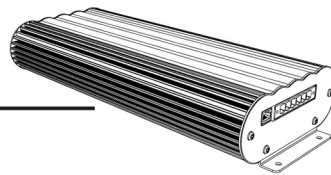
- 기존의 주행충전기 / 솔라충전 / AC스마트충전 / 모니터 기능 등을 따로따로 탑재하는 경우에는 각자의 기기가 조화되지 않아 문제가 발생하거나 충전효율이 현저히 떨어지는 경우가 많습니다.

1.2 The Remote Monitor

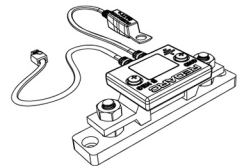
The **Manager30**은 The Remote 모니터가 일체형으로 된 Aii-In-One제품으로 모니터를 통하여 보조배터리의 모든 것을 실시간으로 확인할 수 있습니다.

1.3 The Kit Includes

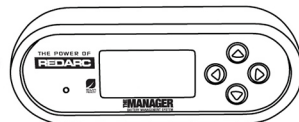
1 Main Unit _____



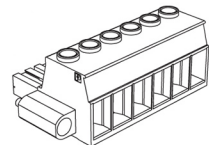
2 Battery Sensor _____



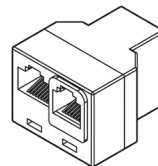
3 Remote Monitor _____



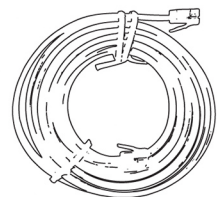
4 Output Connector _____



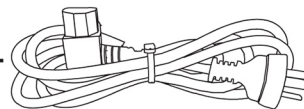
5 T-Piece (RJ45 with RJ12 insert) _____



6 CANBus Cables (1m & 5m) _____



7 Power Cable _____



RoHS
Compliant



2009/19/EC adapting to Council Directive 72/245/EEC relating to radio interference (electromagnetic Compatibility) of vehicles, clauses 6.5, 6.6, 6.8 & 6.9 only.
2004/104/EC: 14th October 2004 adapting to technical progress of Council Directive 72/245/EEC relating to radio interference (electromagnetic compatibility) of vehicles.

IEC 60335-2-29:2002 (Fourth edition) + A1:2004 in conjunction with
IEC 60335-1:2001 (Fourth edition) +A1:2004 +A2:2006
EN 60335-2-29:2004 in conjunction with
EN 60335-1:2002+A1+A2+A11+A12+A13

1 INTRODUCTION

1.4 Specifications

Electrical Specifications

Inputs

AC Input

Input Voltage Range (nominal)	220-240VAC 50Hz
Power Rating	520W
Efficiency	80% - 90%
Connection	IEC Mains Plug

DC Input

Input Voltage Range	9 - 32V
Turn ON/OFF Threshold 12V (24V)	13.2V/12.7V (26.4V/25.4V)
Power Rating	520W
Efficiency	94%
Connection	Phoenix 1967498 Connector

Solar Input

Input Voltage Range	9 - 32V
Turn ON (Open Circuit Voltage)	17.5V
Power Rating	520W
Efficiency	93%
Connection	Phoenix 1967498 Connector

Max Volts @ Battery Terminals (25°C Nominal)

	Storage Mode	Touring Mode	Float
Gel Setting	14.4V	14.4V	13.5V
AGM Setting	14.4V	14.4V	13.5V
Calcium Setting	16.0V	15.2V	13.5V
Standard Lead Acid Setting	15.5V	14.8V	13.5V
Lithium Setting	14.5V	14.5V	13.6V
Output Current (Nominal)			30A

Temperature Compensation

Standard Lead Acid, AGM, Gel or Calcium Battery	+30mV / °C < 25°C < -30mV / °C
Lithium Setting	40°C < 0.5%/°C < 60°C
Operating Temperature*	-40°C - 80°C
Over Temperature Shutdown	Yes
Total Battery Capacity	40 - 800Ah
Output Battery Volts (Nominal)	12V
Output Battery Volts (Minimum)	4V
Maximum Current on Load Disconnect Wire	1A
Memory Save on Battery Disconnect	Yes

Output Protection

Short Circuit Protection	Yes
Surge Protection	Yes
Reverse Polarity Protection	Yes
Overload Protection	Yes

Compliance

CE	2009/19/EC 2009/104/EC
Safety	IEC60335
Environmental	RoHS Compliant

General Specifications

Main Unit Dimensions	445x185x79mm
Remote Dimensions	186x74x29mm
Kit Weight	5.5kg
Warranty	2 years

* The Manager30 will only charge the battery when the battery temperature is between 0°C and 60°C in order to protect the battery from damage.

1 INTRODUCTION

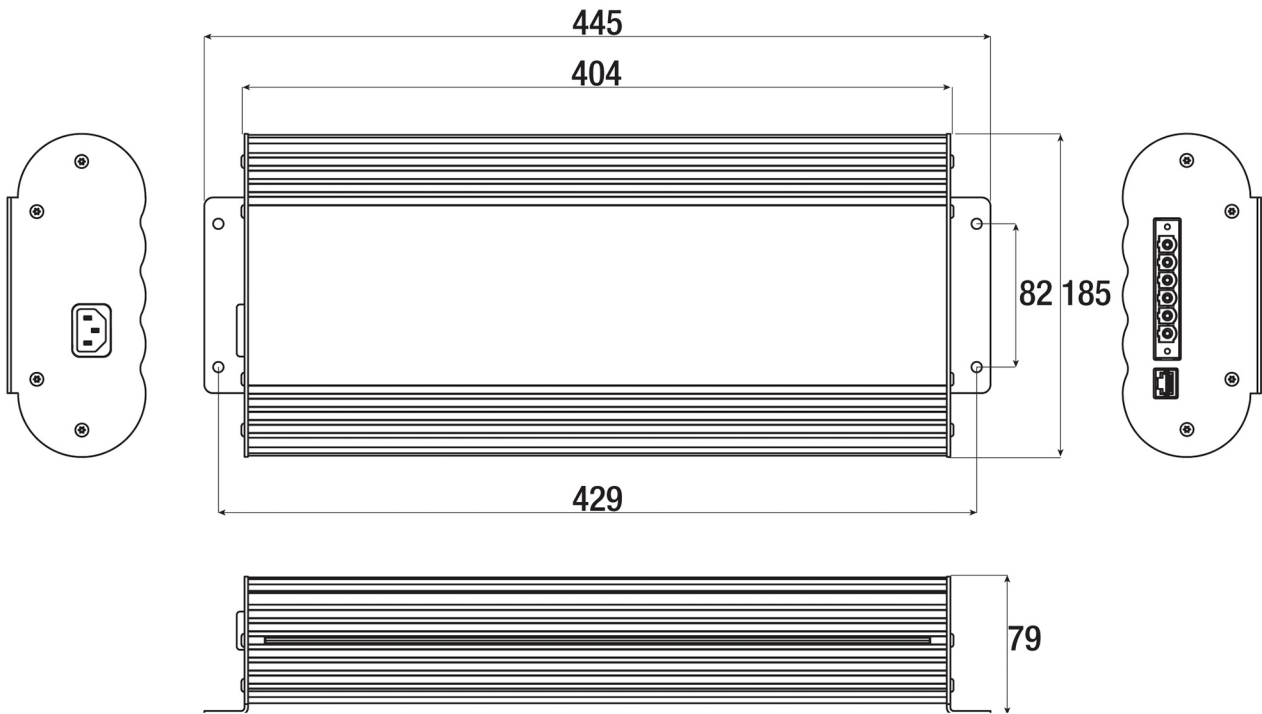


Figure 1.4.1 - Main Unit Dimensions

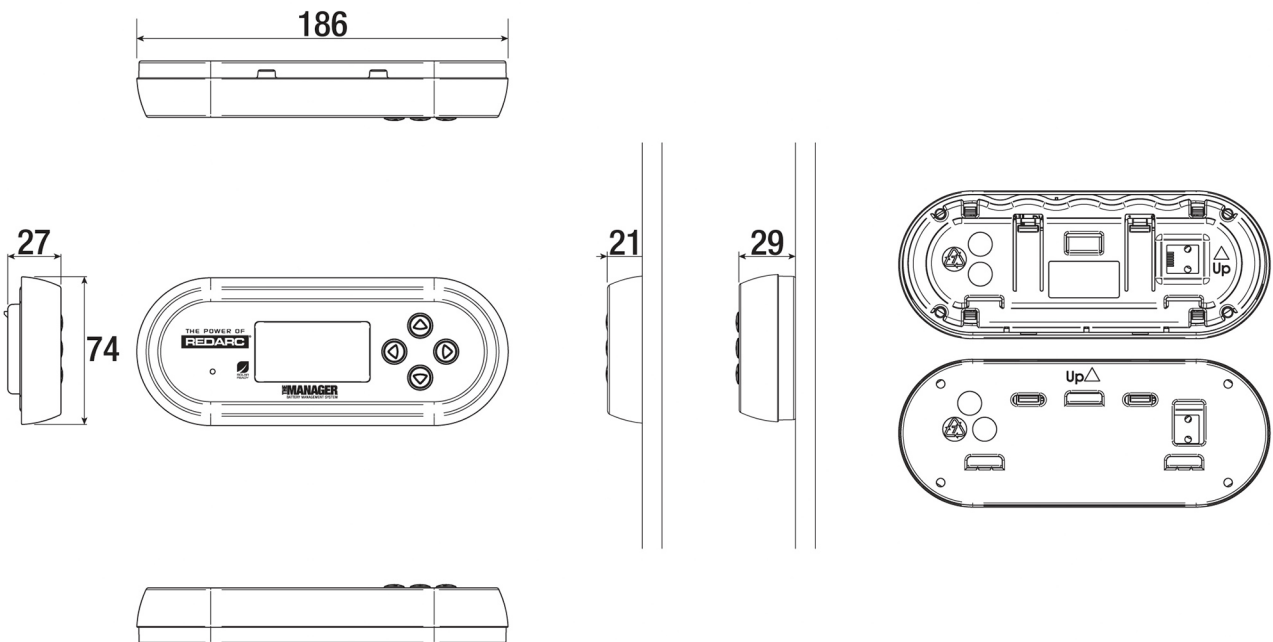


Figure 1.4.2 - Remote Monitor Dimensions

1 INTRODUCTION

1.5 Multi-stage Charging Process

The Manager30은 2가지 충전모드가 있으며, 모드는 모니터에서 선택하실 수 있습니다.

1. Touring Mode : 주행충전 및 솔라충전으로 3단계로 충전이 진행됩니다.

※ 캠핑장 등에서 전원을 사용하며 AC충전을 동시에 하는 경우는 Touring Mode에서 하셔야 합니다.

2. Storage Mode : AC 스마트충전모드로 총 8단계로 충전이 진행되며

※ 운행이 없을 시 사용하며, Storage Mode에서도 Solar 충전은 자동으로 이루어집니다.

▶ 배터리를 오래 사용하게 하는 황산염제거기능

▶ 여러개의 배터리를 균일하게 충전할 수 있는 이퀄라이저 기능

◆ 과충전 방지기능 / 유지관리 기능

◆ 배터리 자가 체크 기능

◆ 세밀충전기능 등을 갖추고 있습니다.

● The Manager30은 초기에 Storage Mode로 셋팅되어 있으며, 차량이 작동 하면 자동으로 Touring Mode로 변경됩니다.

● Storage Mode에서 충전과 사용을 동시에 하면 방전 / 인식오류 / 전기기기의 손상이 발생할 수 도 있습니다.

NOTICE

Touring mode will achieve its best charge level if a Storage mode charge has been recently performed.

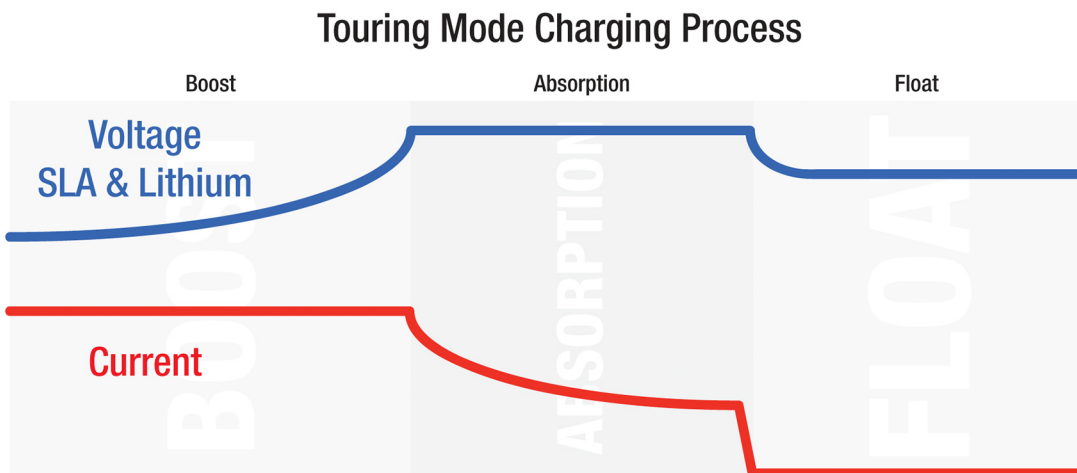


Figure 1.4.1 - Touring Mode Charging Process

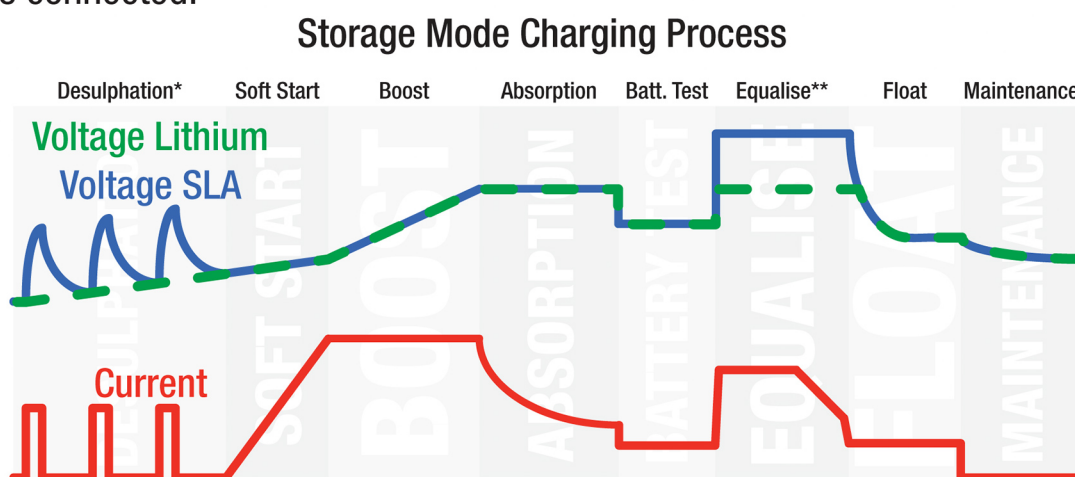
Storage Mode

Storage mode is designed to charge the house battery to its optimal level and maintain that level while your caravan is in storage. This mode requires all loads to be switched off or disconnected from the house battery before charging. It uses a 8-stage* charging profile consisting of Desulphation*, Soft Start, Boost, Absorption, Battery Test, Equalise*, Float and Maintenance stages (see Figure 1.4.2). Storage mode is designed to detect a wide range of battery fault conditions, for more information on these fault conditions, please refer to the Troubleshooting section of this manual. Unlike Touring mode, Storage mode does not cycle. This means that when the charging process is completed, The Manager30 will always remain in either Float or Maintenance stages. Float stage will provide the house battery with a 'trickle' charge whenever the house battery voltage drops below a predetermined threshold to ensure the battery stays charged. Maintenance stage turns The Manager30 output off, but continues to monitor the house battery and will revert to Float stage when necessary.

NOTE: If The Manager30 is set to Storage mode and the vehicle is started The Manager30 will automatically switch to Touring mode once it senses an increase in input voltage from the alternator.

NOTICE

When using the charger in Storage mode, make sure that all loads are disconnected from the house battery under charge. Failure to do so may cause the house battery to be under charged, give false readings on the State of Charge indicator and possibly cause damage to any loads connected.



*The Lithium profile does NOT incorporate a Desulphation stage.

**The Lithium, AGM and Gel profiles do NOT incorporate an Equalise stage