

New Generation 24V to 12V Reducer/ Equalizer / Charger

OPERATING INSTRUCTIONS
PLEASE READ THESE INSTRUCTIONS BEFORE USE



REDUCER EQUALIZER CHARGER

20Amp
SERIES

24VDC to 12VDC

30Amp
SERIES

24VDC to 12VDC

Operation Guide:

The REC2412-20NG and REC2412-30NG joins our NG series of units that uses the next generation topology. These chargers boast all the features of a reducer, charger and equalizer in a reduced size with increased output power.

Features:

- Extremely compact unit: just 160mm X 70mm X 30mm – fits in small places
- Fully encapsulated: enhanced resistance to vibration and humidity
- Extremely high efficiency: typically 95% - cooler operation and longer life
- Extremely low standby drain: below 0.005A
- Versatile modes: selectable as multi stage charger, equalizer or dual fixed voltage reducer
- Multi chemistry charger: selectable for sealed LA, vented LA (60AH-300AH) or Lithium batteries (40AH to 300AH)
- Built-in automatic current limit, over temperature and over voltage protections
- Remote status led indicator for easy visibility

Safety Precautions for Installation:

- The following connection sequence is to be followed: Ground, Selection wires (if used), Input, Output and Ignition. Input and ground wires should be suitable for at least 20A and output for at least 40A.
- Floating or unused wires must be insulated and secured. Ensure polarity of all wires and do not short output terminals. The unit may be damaged and warranty void if the wrong polarities, voltages or a short is applied.
- Always ensure that this unit is suitable for your specific battery. If in any doubt consult with your battery supplier or auto electrician.
- Avoid locations where heat sources or hazards are nearby e.g. exhaust or fuel lines.
- Choose a location with the best possible ventilation and lowest possible temperature.
- Ensure the wiring and unit are protected from water spray and other sources of contamination like oil or grease
- Ensure that unit is installed away from any flammable fumes, liquids or materials.
- During charging process, do not use a naked flame near a battery, due to gases emitted from the battery, which may ignite and explode.
- With Lithium batteries ensure that a BMS is installed and compatible with the charger.
- Never smoke or light cigarettes near a battery.
- Do not place tools on top of battery or allow tools to fall onto battery.
- Always wear eye protection near a charging battery.
- Ensure a “well” ventilated area is used when testing or re-charging batteries.
- If skin or clothing comes into contact with acid, flush the area(s) with water immediately. Seek medical attention if necessary.

Wiring and Installation

BROWN - Positive Input: 22V-30V 20A Maximum REC2412-30NG / 10A Maximum REC2412-20NG

BLACK - Common Ground: Ground/0V and LED Indicator Cathode(-)

RED - Positive Output: 10V to 15V, 30A Maximum REC2412-30NG / 20A Maximum REC2412-20NG

GREEN - LED Indicator Anode (+LED): 10mA Maximum

BLUE - Ignition/Control: Unit will only turn on when Ignition/Control is high (>4V) and the BROWN Positive Input is (22-30V)

We recommend that the BLUE wire is connected to a source that is turned on with the ignition of the vehicle. It can be permanently connected to the Brown wire but the drain current will increase from approx. 0.005A to 0.07A which can cause issues on infrequently used vehicles.

WHITE and ORANGE - Mode Configuration: These two wires when connected as referenced in the table below will change the operational mode of the unit from either Reducer, Equalizer or Charger as well as determining the output voltage of the unit.



WARNING!

- Always follow connection sequence in the “Safety Precautions for Installation”
- Both Mode Configuration wires **MUST** only be changed with the BLUE ignition wire disconnected. Tape up unused or floating wires. Failure on either may result in damaging the unit.

	ORANGE to GROUND	ORANGE FLOATING	ORANGE to INPUT
WHITE to GROUND	VLA Charging	SLA Charging	Lithium Charging
WHITE FLOATING	EQUALIZER Mode	Reducer Fixed 13.5V	Reducer Fixed 14.5V

For all battery types check with your battery manufacturer that charge voltages and currents are suitable for your battery size and type.

VLA - 12V Vented Lead Acid Battery: 60AH-300AH, 14.5V Absorption 13.5V Float

SLA - 12V Sealed Lead Acid Battery: 60AH-300AH, 14.2V Absorption 13.5V Float

Lithium - 12V Rechargeable Lithium Battery: 40AH-300AH, 14.8V Absorption 13.8V Maintenance

Equalizer Mode: Used to charge the lower 12V battery on a 24V system when the lower battery is subjected to uneven discharge due to a significant 12V load on a single 12V battery in a 2 battery 24V system. The charge on the lower battery is equalized with a voltage equal to half the charge voltage on the 24V battery system.

LED Connection: Via the GREEN wire the unit will give a indication via a LED to the output and the operation of the unit.

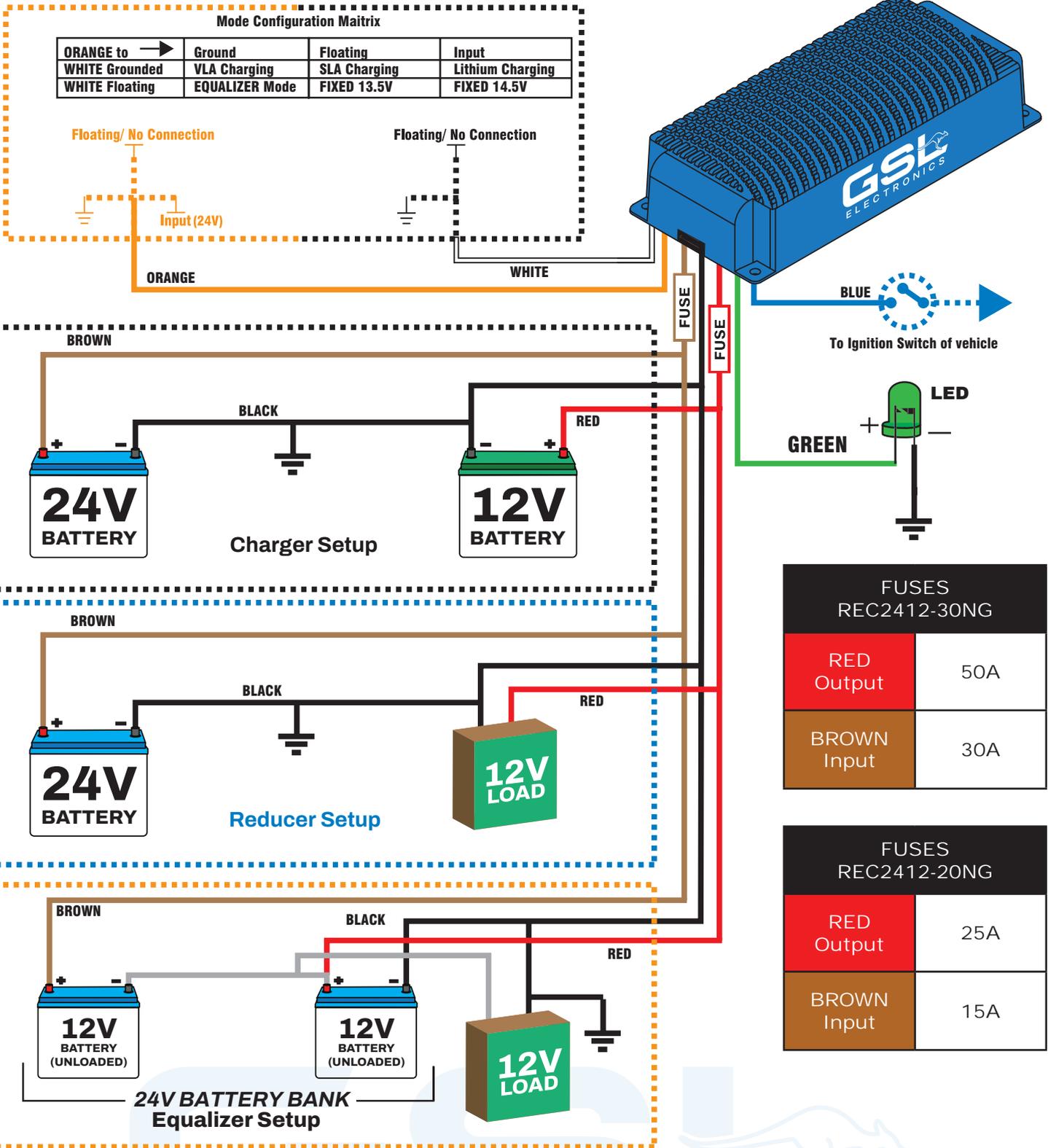
LED Operation: LED OFF - Indicates that there is no output voltage. This can be either that there is no ignition/control present or that there is a protection that is active and shutting down the unit. The Over Temperature protection is self-resettable and the unit will restart automatically when the unit has cooled.

LED Solid - REDUCER/EQUALIZER : Normal Operation , **CHARGER :** Battery Charged and in Float Mode
LED Blinking - CHARGER only: Charging Battery

Wiring Guide:

Mode Configuration Matrix

ORANGE to	Ground	Floating	Input
WHITE Grounded	VLA Charging	SLA Charging	Lithium Charging
WHITE Floating	EQUALIZER Mode	FIXED 13.5V	FIXED 14.5V



FUSES REC2412-30NG	
RED Output	50A
BROWN Input	30A

FUSES REC2412-20NG	
RED Output	25A
BROWN Input	15A

NOTE:

- Use only one setup listed above. It cannot be wired for multiple setups simultaneously there can be only one
- Floating and unused wires should be taped and isolated
- Fuses must be installed - not supplied

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Specifications	REC2412-20NG	REC2412-30NG
Input Voltage (V_{DC})	22 V_{DC} to 30 V_{DC}	
Charger Mode		
VLA and SLA Float Voltage	13.5 $V_{DC} \pm 1\%$	
VLA Absorption Voltage	14.5 $V_{DC} \pm 1\%$	
SLA Absorption Voltage	14.2 $V_{DC} \pm 1\%$	
Lithium Maintenance Voltage	13.8 $V_{DC} \pm 1\%$	
Lithium Absorption Voltage	14.8 $V_{DC} \pm 1\%$	
Maximum Bulk Charge Current	20 $A_{DC} \pm 10\%$	30 $A_{DC} \pm 10\%$
Equalizer Mode		
Output Voltage	$\frac{1}{2}$ Input Voltage $V_{DC} \pm 2\%$	
Reducer Mode		
Output Voltage	Fixed 13.5 V_{DC} or 14.5 $V_{DC} \pm 5\%$	
General		
Typical Efficiency	Approx. 95%	
Max Output Current (A_{DC})	20 $A_{DC} \pm 10\%$	30 $A_{DC} \pm 10\%$
Stand-By Current (mA_{DC})	5 $mA_{DC} \pm 5\%$	
Features	Over Voltage Protection Over Current Protection Over Temperature Protection	
Dimensions (L x W x H)	162mm x 71mm x 32 mm	
Weight	0.56Kg	

Warranty Conditions: Our products come with guarantees that cannot be excluded under the Australian Consumer Law. The customer is entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. The customer is also entitled to have the products repaired or replaced if the products fail to be of acceptable quality and the failure does not amount to a major failure.

GSL Electronics (GSL) warrants that its products will, under normal use and service, be free of defects in material and workmanship for a period of two (2) years from the date of the original purchase by the customer as marked on the customer's original invoice. Please refer to our website for full warranty and return information which can be found at <http://www.gsl.com.au/faq.html>