

## BATTERY SEPARATOR UNIVERSAL AUTO DETECT 12/24V INSTALLATION GUIDE

### EN-VSR1224-140

#### Features:

The VSR is a microprocessor controlled Battery Separator for use in systems with more than one battery for example in boats, caravans and campers. It safely charges the auxiliary battery and prevents starting problems. Also the VSR can be used as a voltage dependent switch. The VSR is a microprocessor controlled high power mechanical switch. The VSR waits until the battery connected to the active charging source reaches 13.2V (26.4V) for at least 7 seconds before paralleling and charging the auxiliary batteries. Normally the accessories are connected to the auxiliary battery. The system disconnects if the battery voltage reaches 12.8V (25.6V) for at least 60 seconds. This way the starter battery stays charged.

#### Bipolar switching:

The VSR has a second unique feature. If a charger is connected to the second battery, for example in boats and campers, and the battery reaches 13.2V (26.4V) for at least 7 seconds the switch will connect the starter battery so this will be charged also. This is an advantage if you lie/stand still for a longer time. This way the starter battery also stays in optimal condition. As the charger is removed and the voltage drops to 12.8V (25.6V), for at least 60 seconds, the switch will open again.

#### Start Help:

The VSR has an extra connection for the optional start help. If this connection is connected to the starter contact, the VSR will switch on and the second battery will assist starting the engine. But be aware that large diesel engines can have very high start currents which can damage the switch. For this application, consider using a hi Amp switching contact.

#### Voltage dependent switch:

In some cases it is desirable to have a connector that is only powered when the vehicle is running. For this kind of application the VSR is also useful. Connect the primary battery connection to the starter battery and the other connection to the equipment. If now the engine is started the starter battery will reach 13.2V (26.4V) and the Battery Separator will connect the equipment to the battery.

#### Battery / Equipment / Accessories protection:

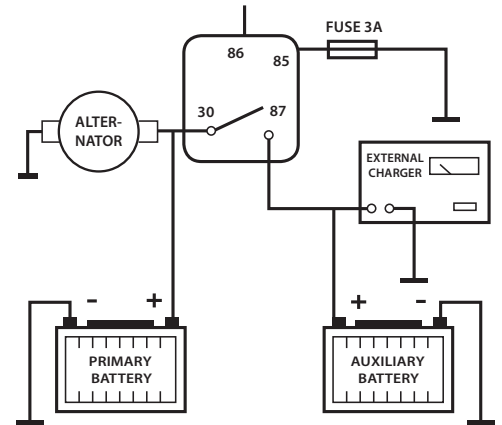
All types have a protection of the second battery and it's connected equipment of over voltage due to a damaged voltage regulator of the alternator. If the voltage will become too high the VSR switch will open immediately and connected equipment is saved.

#### Installation:

If you want to use the starting contact you can connect, via a fused wire to connection 86 that becomes 12V (24V) as long as you activate the starter.

Use suitable cables. Use heavy duty copper cable connectors and use wires of sufficient diameter and quality so no excess heat is produced. When using bad material or insufficient diameter, the Battery Separator can be damaged.

**ATTENTION!! Short-circuit of the plus and minus of the battery can damage your system! So make sure the connections are secure!**



Connections	
30	Primary/start Battery Plus connection
85	Minus. <b>Attention! This should always be connected via a fuse of 3A</b>
86	Start contact (Only when start help used)
87	Auxiliary Battery connection. If used as Voltage Dependent Switch this is the equipment connection.

Primary battery 12V (24V)	Auxiliary battery 12V (24V)
13.2V relay on (26.4V)	13.2V relay on (26.4V)
12.8V relay out (25.6V)	12.8V relay out (25.6V)

Between the on/off switching is a delay to prevent the relay from switching in a short dip or rise of the battery voltage. The relay switches off at an over Voltage of 16V (32V) to prevent damage of the battery and equipment.

Technical specifications	EN-VSR1224-140
	<b>10-bits precise µProcessor</b>
Power supply	Auto detect 12 / 24V
Connection batteries	M6
Other connections	6.3mm faston
Cable suggestion	20mm <sup>2</sup>
Current consumption in OFF state	12V 1.5mA / 24V 1.5mA
Current consumption in ON state	13.5V 360mA / 27V 160mA
Minimum Charge time	60 sec.
Fast OFF	< 11.8V (12V) / < 23.6V (24V) after 4 sec.