


INSTRUCTION SHEET  
for: **Part No. 3101 / 3101-BULK**



APPLICATION AND MOUNTING INSTRUCTIONS

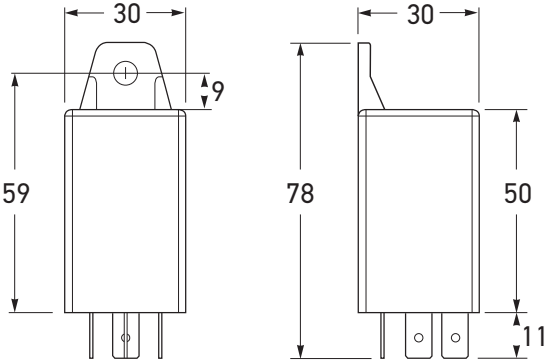
VOLTAGE SENSITIVE RELAY (VSR)  
Multivolt (Suitable for 12 and 24 volt systems)

The HELLA Voltage Sensitive Relay (VSR) is designed to automatically monitor the battery condition of your vehicle through constant voltage measurements. Then depending upon the voltage level the VSR will activate or deactivate the connected load to prevent the battery from over-discharging.

Features

- Multivolt for use on 12 and 24 Volt DC systems
- Automatically monitors battery voltage
- Protects battery from over-discharging
- Very low power consumption (5 mA @ 24V DC)
- Separate switching circuit activates or deactivates the Voltage Sensitive Relay

General Dimensions (mm)



12V or 24V DC System Detection

The VSR determines the system to be a 12V or 24V system according to the battery voltage:

Battery voltage between 9V and 18V:	System detected as 12V system.
Battery voltage between 19V and 33V:	System detected as 24V system.

**Note:** If a battery voltage is below 9V or above 33V, the outputs (Terminals 88a and 88b) will turn OFF until the battery voltage reaches a level between these limits.

Activation Circuit - Terminal 86

Terminal 86 can be used to activate / deactivate the VSR. The VSR will operate for as long as Terminal 86 is connected to the supply voltage.

If Terminal 86 is not connected (or connected to Earth), the VSR will not operate and the outputs (Terminals 88a and 88b) will turn OFF immediately.

Pre-set Voltage Limits and Operation

If the battery voltage is above the pre-set voltage limits shown in the table below, the VSR will turn the outputs (Terminals 88a and 88b) ON with a **5 second delay**.


When the outputs are ON and the battery voltage drops below the pre-set voltage limits shown in the table below, the VSR will turn the outputs OFF with a **5 second delay**.

System Voltage	VSR turns outputs ON when	VSR turns outputs OFF when
12V DC	Battery voltage is above 13.4V DC	Battery voltage is below 12.8V DC
24V DC	Battery voltage is above 26.8V DC	Battery voltage is below 25.6V DC

**Note:** The pre-set voltage values stated above may vary by +/- 3%.

HELLA-New Zealand Limited, Auckland

INSTRUCTION SHEET  
for: **Part No. 3101 / 3101-BULK**



APPLICATION AND MOUNTING INSTRUCTIONS

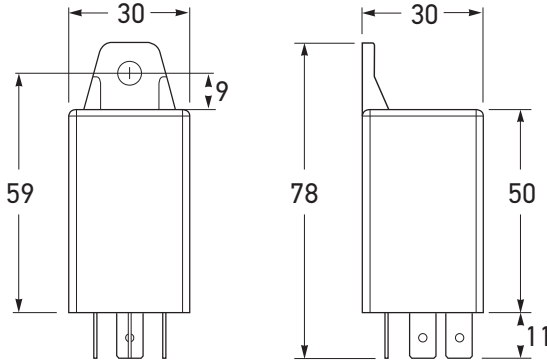
VOLTAGE SENSITIVE RELAY (VSR)  
Multivolt (Suitable for 12 and 24 volt systems)

The HELLA Voltage Sensitive Relay (VSR) is designed to automatically monitor the battery condition of your vehicle through constant voltage measurements. Then depending upon the voltage level the VSR will activate or deactivate the connected load to prevent the battery from over-discharging.

Features

- Multivolt for use on 12 and 24 Volt DC systems
- Automatically monitors battery voltage
- Protects battery from over-discharging
- Very low power consumption (5 mA @ 24V DC)
- Separate switching circuit activates or deactivates the Voltage Sensitive Relay

General Dimensions (mm)



12V or 24V DC System Detection

The VSR determines the system to be a 12V or 24V system according to the battery voltage:

Battery voltage between 9V and 18V:	System detected as 12V system.
Battery voltage between 19V and 33V:	System detected as 24V system.

**Note:** If a battery voltage is below 9V or above 33V, the outputs (Terminals 88a and 88b) will turn OFF until the battery voltage reaches a level between these limits.

Activation Circuit - Terminal 86

Terminal 86 can be used to activate / deactivate the VSR. The VSR will operate for as long as Terminal 86 is connected to the supply voltage.

If Terminal 86 is not connected (or connected to Earth), the VSR will not operate and the outputs (Terminals 88a and 88b) will turn OFF immediately.

Pre-set Voltage Limits and Operation

If the battery voltage is above the pre-set voltage limits shown in the table below, the VSR will turn the outputs (Terminals 88a and 88b) ON with a **5 second delay**.

When the outputs are ON and the battery voltage drops below the pre-set voltage limits shown in the table below, the VSR will turn the outputs OFF with a **5 second delay**.

System Voltage	VSR turns outputs ON when	VSR turns outputs OFF when
12V DC	Battery voltage is above 13.4V DC	Battery voltage is below 12.8V DC
24V DC	Battery voltage is above 26.8V DC	Battery voltage is below 25.6V DC

**Note:** The pre-set voltage values stated above may vary by +/- 3%.

HELLA-New Zealand Limited, Auckland

958 315-29 V02

Monitoring Load Current

The VSR constantly monitors the current drawn from the load connected to outputs (Terminals 88a and 88b). If the current draw exceeds the over current limit of around 5.5 Amps for at least 10 milliseconds, the outputs of the VSR are immediately turned OFF.

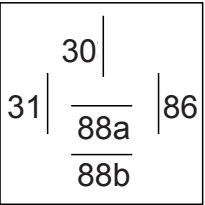
The outputs stay OFF until the power supply to the VSR is reset.

It is not recommended to connect a load with a current draw higher than 5 Amps to the VSR.

Mounting Instructions & Wiring Specification

- The VSR is polarity conscious. Reverse polarity will not damage this product but will inhibit its function.
- Choose a mounting position near the battery. Do not mount the VSR near excessive heat, such as exhaust manifold and radiators.
  - Connect the cables as per the table below. It is recommended that the Battery and Earth cables are connected directly to the battery terminals.
  - Ensure all cables are sized correctly to ensure minimal voltage drop is present in the VSR installation.

Terminal No.	Connect to
30	Battery (+)
31	Earth (-)
86	Activate (+) / Deactivate VSR (- or open)
88a & 88b	Dual Outputs (+)



**Note:** The Voltage Sensitive Relay installation must be protected by a suitably rated fuse.

Important

It is recommended that the VSR is fitted by a qualified automotive electrician. Please follow the installation instructions supplied. If the installation is not correct, the VSR may not perform correctly. If in doubt, consult your local HELLA dealer.

It is the sole responsibility of the installer to ensure the installation is correct and the use of this product in a manner that will not cause accidents, personal injury or property damage.

FIT AND FORGET - BY DESIGN

Congratulations, the product you have selected comes from **HELLA** - a world leader in LED lighting design.



Following the launch of the first LED automotive signal lamps in 1990, **HELLA** Design and Innovation continues to set new standards. **HELLA** innovative solutions have been incorporated into millions of lamps, engineered and tested to the most stringent standards, to suit the most demanding environmental conditions.

The cornerstone to the success of our products is our no compromise **Fit and Forget - by Design** philosophy which is incorporated into every step of the product life cycle.

In a world consuming finite resources at an ever faster rate, **Fit and Forget - by Design** is the right environmental choice that also makes perfect economic sense to customers that consider the total life cycle Cost of Ownership.

For general comments about HELLA's products please contact us on E-mail at [techfeedback@hella.co.nz](mailto:techfeedback@hella.co.nz)

Monitoring Load Current

The VSR constantly monitors the current drawn from the load connected to outputs (Terminals 88a and 88b). If the current draw exceeds the over current limit of around 5.5 Amps for at least 10 milliseconds, the outputs of the VSR are immediately turned OFF.

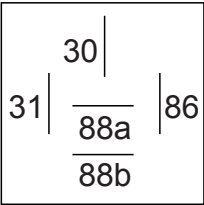
The outputs stay OFF until the power supply to the VSR is reset.

It is not recommended to connect a load with a current draw higher than 5 Amps to the VSR.

Mounting Instructions & Wiring Specification

- The VSR is polarity conscious. Reverse polarity will not damage this product but will inhibit its function.
- Choose a mounting position near the battery. Do not mount the VSR near excessive heat, such as exhaust manifold and radiators.
  - Connect the cables as per the table below. It is recommended that the Battery and Earth cables are connected directly to the battery terminals.
  - Ensure all cables are sized correctly to ensure minimal voltage drop is present in the VSR installation.

Terminal No.	Connect to
30	Battery (+)
31	Earth (-)
86	Activate (+) / Deactivate VSR (- or open)
88a & 88b	Dual Outputs (+)



**Note:** The Voltage Sensitive Relay installation must be protected by a suitably rated fuse.

Important

It is recommended that the VSR is fitted by a qualified automotive electrician. Please follow the installation instructions supplied. If the installation is not correct, the VSR may not perform correctly. If in doubt, consult your local HELLA dealer.

It is the sole responsibility of the installer to ensure the installation is correct and the use of this product in a manner that will not cause accidents, personal injury or property damage.

FIT AND FORGET - BY DESIGN

Congratulations, the product you have selected comes from **HELLA** - a world leader in LED lighting design.



Following the launch of the first LED automotive signal lamps in 1990, **HELLA** Design and Innovation continues to set new standards. **HELLA** innovative solutions have been incorporated into millions of lamps, engineered and tested to the most stringent standards, to suit the most demanding environmental conditions.

The cornerstone to the success of our products is our no compromise **Fit and Forget - by Design** philosophy which is incorporated into every step of the product life cycle.

In a world consuming finite resources at an ever faster rate, **Fit and Forget - by Design** is the right environmental choice that also makes perfect economic sense to customers that consider the total life cycle Cost of Ownership.

For general comments about HELLA's products please contact us on E-mail at [techfeedback@hella.co.nz](mailto:techfeedback@hella.co.nz)