

# BUSHRANGER

## 4x4 GEAR

**5YEAR**  
WARRANTY



## NIGHT HAWK

### VLI WIRING SYSTEM



VARIABLE LIGHT INTENSITY

# **BUSHRANGER**

## **4x4 GEAR**

Congratulations on your purchase of the Bushranger® Night Hawk® VLI Series Wiring System. To take full advantage of this product, please read this manual carefully before using. Retain this manual for future reference for installation and warranty.

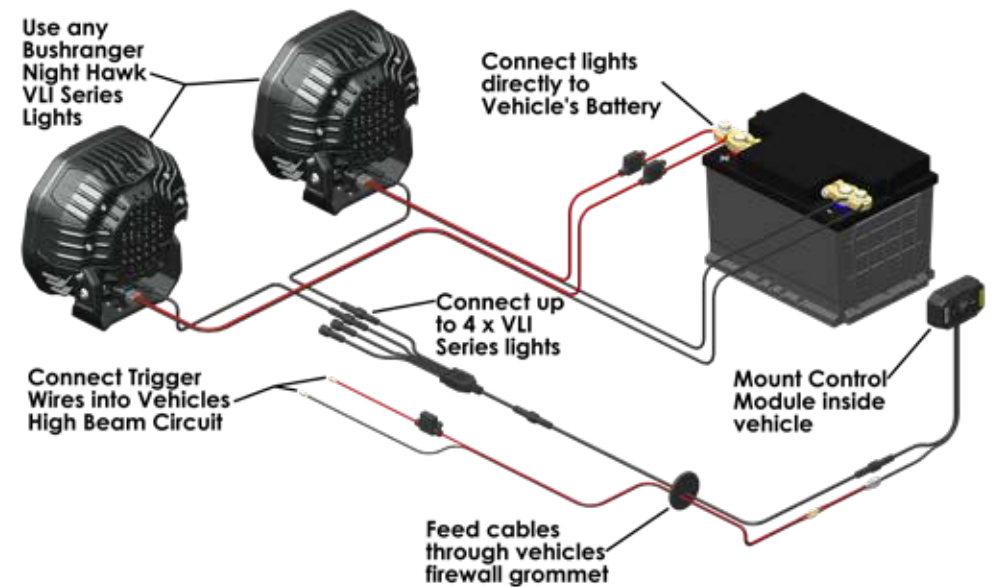
**Part No:** NHW20VLI

**Description:** Night Hawk VLI Series Wiring System

**Fitting Time:** 45 minutes (approximately)

### **Specifications:**

- Voltage Range: 10 - 30V DC
- Standby Current Draw: 20mA
- Light Capacity (as supplied): Connect and control up to 2 x VLI Series lights simultaneously
- Light Capacity (max): Connect and control up to 4 x VLI Series lights simultaneously
- Brightness Control: 7 x brightness positions + OFF position
- Trigger Wire Connections: 4mm Bullet connectors
- Compliance: CE, UNECE R10



## Wiring System Overall Features

- Modern, electronically switched wiring system offers a simpler, more reliable and smarter alternative to regular relay-based wiring harnesses.
- 'Plug & Play' modular design provides versatility to suit any vehicle and reduces installation time compared to traditional wiring harness installs.
- Works with all Bushranger Night Hawk VLI Series Lights with no limitation on power rating of each light.
- Wiring system, as supplied, controls up to 2 x lights. Capacity to control up to 4 x VLI Series lights simultaneously with the use of additional control leads (sold separately).
- PWM brightness control offers 7 x brightness settings at the turn of a dial.
- Soft Start Programming reduces eye fatigue by ramping up the brightness within the first second of operation.
- Automatic Polarity Detection simplifies connection into the high beam circuit and works on positive and negatively switched vehicles.
- Plug & Play headlight adaptors, fuse taps and additional control leads available separately.

## Detailed Features

### Plug & Play Connectors

The wiring system uses control leads with waterproof plugs which quickly and easily join together to allow plenty of flexibility when routing from the control module to the VLI lights. The male and female ends of the plugs should be orientated so the arrows align, and then pushed together and secured by tightening the integrated screw locks.

### Soft Start Programming

The soft start feature programmed into the control module gradually increases the light intensity over the first second of operation to reduce eye strain and flash blindness that commonly occurs when switching into high beam mode with high intensity LED lights fitted. It also extends the life of the electronics by reducing the sudden shock load that occurs when high output LED's change instantly from off to on.

### PWM Brightness Control

The control module uses a Pulse Width Modulation (PWM) signal to control the brightness of all VLI series lights connected to the system. It allows the option of 7 x brightness settings which can be quickly changed at the turn of a dial to suit the conditions.

### Mounting Cradle

The mounting cradle supplied with the Brightness Control Module can be secured to the vehicle using the provided screws or 3M adhesive tape. The cradle provides a solid mounting solution for the control module while still allowing quick and easy removal if required.



### Pivoting Lead Design

The Brightness Control Module incorporates a pivoting lead design which provides versatile mounting options. The leads can be orientated straight out of the control module or pivoted 90 degrees to hide them when flush mounting to a surface.



*Leads orientated straight out*



*Leads pivoted 90 degrees*

## Parts Included

1 x Brightness Control Module with mounting cradle & screws



1 x Control Module Sticker



1 x Control Lead (3m)



1 x Control Module Adaptor



1 x Trigger Wire (4m) with 2A fuse



1 x 4-Way Distribution Lead



2 x Wire Taps



5 x Cable Ties



2 x Control Leads (1.5m)



1 x 3M Adhesive Pad



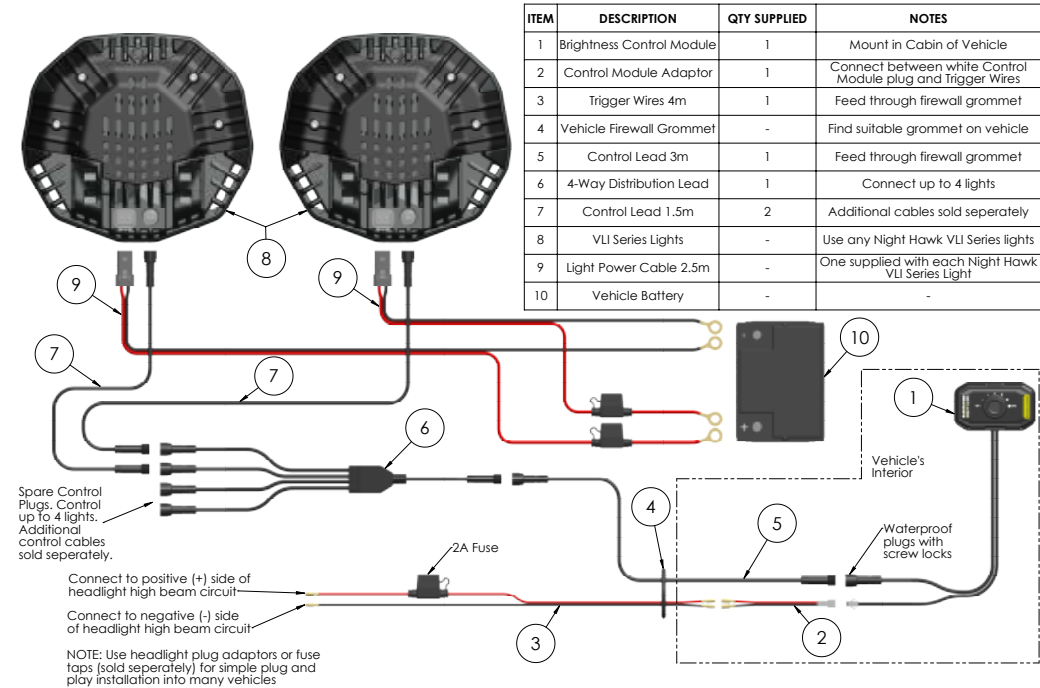
2 x Self Tapping Screws



1 x Spare 2A Fuse



## Fitting Instructions for Typical Driving Light Installation



### General Notes

- We recommend this wiring system to be fitted by a qualified automotive electrician.
- Before starting, remove the negative (-) cable of the battery to prevent short circuits.
- Refer to Wiring diagram shown above when reading through installation instructions and vehicles owner's manual if required.
- Ensure all recyclable packaging is discarded appropriately following local recycling regulations.

### 1. Mount the Control Module

- Find a suitable location for mounting the Brightness Control Module (**Item 1**) in the vehicle's cabin, then use supplied screws or 3M tape to secure the mounting cradle in position.
- Connect the control module to the Control Module Adaptor (**Item 2**) using the white 2-pin plugs, then clip the control module into the mounting cradle and run wires under the dash.
- Clean the face of the control module, then firmly apply the supplied brightness control sticker to the control module in the desired orientation.

## 2. Route the High Beam Trigger Wires

- Find a suitable high beam trigger circuit to connect the trigger wires into. Commonly this is found at the back of the headlight or the fuse box in the engine bay.
- Connect the fused end of the Trigger Wires **(Item 3)** into the high beam circuit:

### For Positively Switched Vehicles

Connect the red trigger wire to the positive (+) side of the high beam circuit; commonly the positive (+) high beam switching wire at the headlight or the high beam fuse in the fuse box.

Connect the black trigger wire to the negative (-) side of the high beam circuit; commonly an earth connection at the head lamp or on the body of the vehicle.

### For Negatively Switched Vehicles

Connect the red trigger wire to the positive (+) side of the high beam circuit; commonly a constant positive (+) wire at the headlight or positive (+) terminal of vehicles battery.

Connect the black trigger wire to the negative (-) side of the high beam circuit; commonly the negative (-) high beam switching wire at the headlight.

**Note 1: The system has automatic polarity detection and will still work correctly with trigger wires reversed, however, the fused wire (red) should always be positioned on the positive (+) side of the high beam circuit for best circuit protection.**

**Note 2: Use our headlight adaptors or fuse taps (sold separately) for a simple plug and play installation on many vehicles. Alternatively, use provided wire taps or cut and splice into the headlight wiring.**

- Find a suitable grommet **(Item 4)** in the vehicles firewall to feed wires through. Make a new hole in the grommet if necessary.
- Route the trigger wires neatly through the engine bay, through the grommet and into the cabin.

## 3. Route the Control Leads

- Feed the 3m Control Lead **(Item 5)** from the engine bay through the firewall grommet and into the cabin.

**Note: Ensure the correct end of the control lead is fed through to mate up with the control module plug in the cabin.**

- Connect the 4-way Distribution Lead **(Item 6)** to the 3m control lead plug in the engine bay and position close to the front of the vehicle, within 1.5m lead length of the lights. Ensure the plug is joined securely using the integrated screw lock.
- Move to the inside of the vehicle. Pull through the trigger wires and control lead and connect to the control module plugs. Neatly wrap and store any excess leads/wire under the dash using the supplied cable ties.

## 4. Connect the Lights

- Remove blanking caps from two of the plugs on the 4-way distribution lead. Connect 2 x 1.5m Control Leads **(Item 7)** to the 4-way distribution lead, ensuring the plugs are joined securely using the integrated screw locks. Route both leads to the front of the vehicle for connection to the lights.
- Mount VLI Series Lights **(Item 8)** securely, then connect one control plug to each light, ensuring the plugs are joined securely using the integrated screw locks.
- Connect ring terminals on the 2.5m Light Power Cable **(Item 9)** (supplied with the lights) directly to the Vehicles Battery **(Item 10)**, with the red wire connected to the positive (+) battery terminal, and the black wire connected to the negative (-) battery terminal.
- Neatly route the power wires from the battery through to the lights and connect one power plug into each light.

**Note: The lights may briefly flash when first connected to the battery. This is normal operation and is not a fault.**

## 5. Test the System

- Recheck all connections and then reconnect the negative (-) cable of the battery.
- Start vehicle and turn on headlights. Move the control module dial to the 'MAX' brightness position and check that the VLI Series Lights turn on when the headlights high beam is activated and turn off when the high beam is deactivated.

## Fitting Additional Lights

To fit additional VLI Series lights to the system, purchase 1 x control lead (1.5m or 3m) per light and connect into an unused plug on the 4-way distribution lead. Route the power cable (supplied with the light) from the light to the battery and connect the ring terminals to the battery.

## Other Applications

The wiring system can also be used for applications other than forward facing driving lights, such as work or camping light setups. Simply connect the trigger wires directly to a power source (eg. directly to the battery or an ignition switched power source) and use the control module to turn the system on and off and vary the brightness.

## Troubleshooting

SYMPTOM	POSSIBLE CAUSE	REMEDY
The VLI lights are constantly on, even when controller is set to off position	Control Lead is not connected to the lights correctly	Check connections
	Control Leads are not connected to each other correctly	Check connections
	Control Leads are damaged	Check for damage and replace
	Control module is faulty	Replace control module
	Fault in the VLI light/s	Replace light/s
The VLI lights are not turning on	The control module is set to OFF position	Turn dial on control module to MAX position
	The lights are not connected to the battery	Check for any damage to the power cable or connectors
		Check connections at the battery terminals
	The fuse on the power cable for the light has blown	Check for any damage or shorting on the power cable, then replace fuse
	The fuse on the Trigger Wire has blown	Check for any damage or shorting on the trigger wires, then replace fuse
	The Trigger Wires are not connected into vehicles high beam circuit correctly	Check correct circuit / wires have been selected for acquiring high beam signal
		Check connections made at high beam circuit
	The Trigger Wires are not connected correctly	Check connections at both ends of trigger wires
		Check for any damage to the trigger wires and replace if necessary
		Check for secure connection of white 2-pin plug at control module end
	Faulty VLI light/s	Unplug control lead and check if light turns on. If it turns on, check control module and trigger wires as outlined above
		Replace light/s

## Kingsley Products - Warranty Policy

- Our Warranty**  
We warrant to you that the Kingsley product is free from defects in workmanship and materials for the warranty period.
- Fitting and use**  
Please ensure you:  
a. fit the Kingsley product in accordance with the product information and all relevant vehicle safety and compliance laws  
b. use the Kingsley product for the purpose for which it was originally designed and in accordance with the product information and all relevant vehicle safety and compliance laws
- Exclusions**  
Our warranty doesn't cover:  
a. normal wear and tear  
b. wear from the use of synthetic or wire ropes.  
c. surface finish from use  
d. fitting the Kingsley product other than in accordance with the product information and any relevant vehicle safety and compliance laws, including incorrect fitting  
e. using the Kingsley product other than for the purpose for which it was originally designed or other than in accordance with the product information and any relevant vehicle safety and compliance laws, including unusual, improper or negligent use or misuse or overloading  
f. misuse or neglect of the Kingsley product, including improper repair or maintenance or failing to repair or maintain  
g. alteration, abuse, acts of nature, terrorism, vandalism, collision, road hazards or adverse conditions  
h. removal or re-installation of the winch
- Making a claim**  
Please immediately contact us as soon as you become aware of a possible defect in the Kingsley product. We'll arrange for you to either attend a Kingsley outlet (at your cost) for a Kingsley representative to inspect the Kingsley product (as fitted to your vehicle) or for you to return the Kingsley product to us. We'll also request you to provide the purchase receipt and complete a warranty claim form. In order to ensure our warranty is not voided, please keep the purchase receipt as proof of purchase and don't remove the fitted Kingsley product from your vehicle before contacting us. Note: Non-transferable warranty. The original purchaser can only claim warranty. If your claim's in order, we'll notify you and (at our sole discretion) either repair or replace the defective workmanship or materials (at our cost) or refund to you the purchase price you paid for the defective Kingsley product. If further information or investigation is required or if the claim does not meet the requirements under our warranty, we'll let you know.
- Australian Consumer Law**  
The Kingsley product comes with guarantees that can't be excluded under the Australian Customer Law. You're entitled to a replacement or refund if there's a major failure and compensation for any other reasonably foreseeable loss or damage. You're also entitled to have the Kingsley product repaired or replaced if it fails to be of acceptable quality and the failure doesn't amount to a major failure.
- Other consumer rights**  
The benefits to you under our warranty are in addition to any other rights and remedies you are entitled to under relevant consumer laws. Our warranty replaces any other warranty given by Kingsley or it's supplier in respect of the Kingsley product.
- Terms**  
The following terms have the following meanings:

Term	Meaning
Product information	information about the Kingsley product which may be contained in any of the documentation provided with the Kingsley product, including safety instructions, installation instructions, operating instructions, owner's manual, service manual, labels and packaging
Purchase date	the date you purchased the Kingsley product from a Kingsley outlet, as specified in the purchase receipt
Kingsley outlet	an outlet authorised by Kingsley to sell Kingsley products
Kingsley products	products or components which Kingsley manufacturers or sells through Kingsley outlets
Warranty period	commences on and from the purchase date and ends as follows: <b>Night Hawk VLI Wiring System - 5 Year Warranty</b>
We/Us	Kingsley Enterprises Pty Ltd (ABN 23 001 592 749) E: sales@kingsleyenterprises.com.au A: 6A Brooks Road, Ingleburn NSW 2565 P: 1800 654 767 W: www.kingsleyenterprises.com.au
You	the purchaser of the Kingsley product from a Kingsley outlet

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