

# BUSHRANGER

4x4 GEAR

5 YEAR  
WARRANTY



## NIGHT HAWK

### VLI WIRING SYSTEM

**VLI**  
SERIES VARIABLE LIGHT INTENSITY

# BUSHRANGER

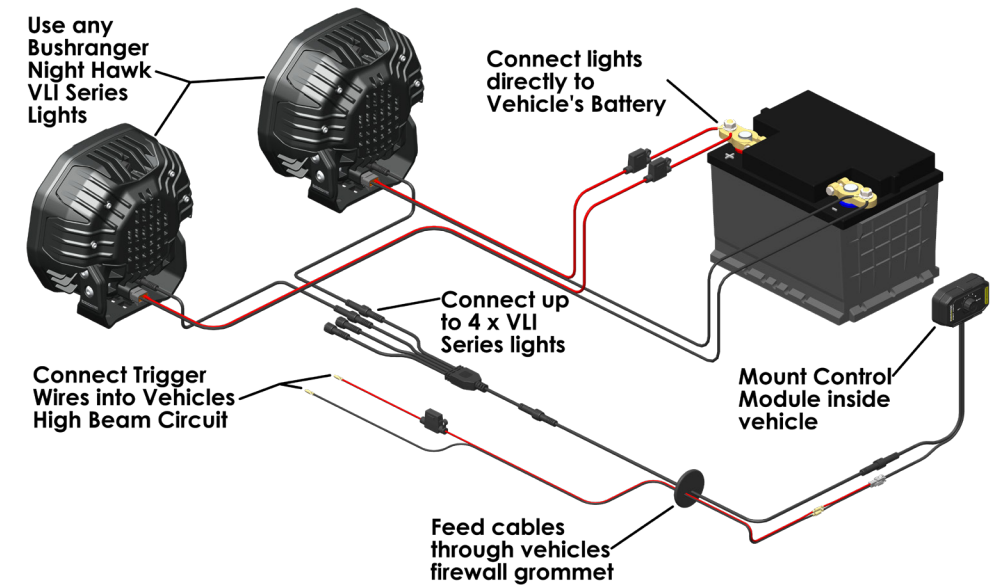
## 4x4 GEAR

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.

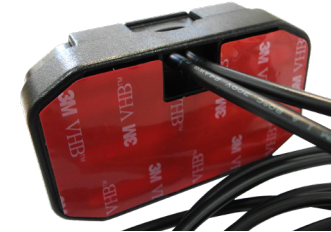


## Pivoting Lead Design

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



2 x Control Leads (1.5m)



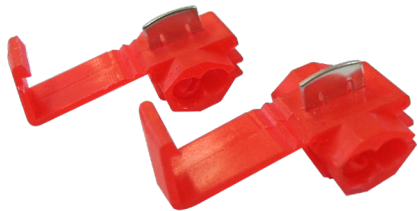
1 x 4-Way Distribution Lead



1 x 3M Adhesive Pad



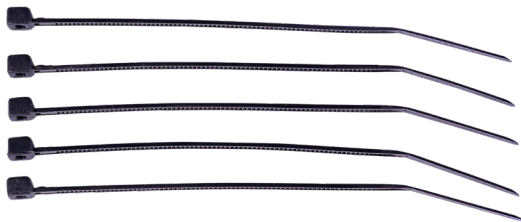
2 x Wire Taps



2 x Self Tapping Screws



5 x Cable Ties

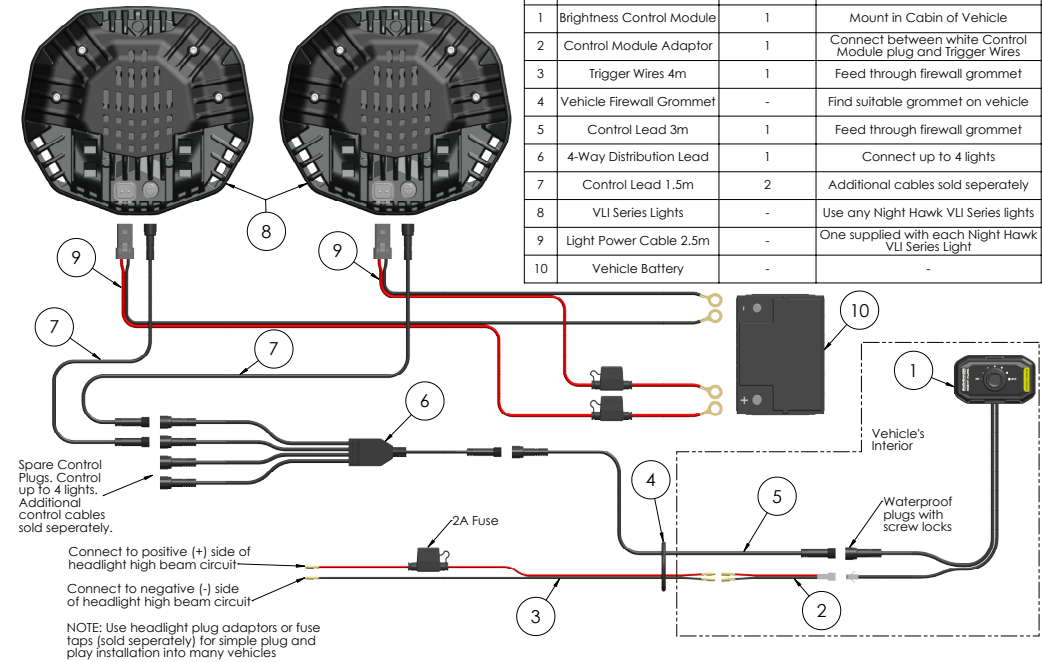


1 x Spare 2A Fuse



## Fitting Instructions for Typical Driving Light Installation

ITEM	DESCRIPTION	QTY SUPPLIED	NOTES
1	Brightness Control Module	1	Mount in Cabin of Vehicle
2	Control Module Adaptor	1	Connect between white Control Module plug and Trigger Wires
3	Trigger Wires 4m	1	Feed through firewall grommet
4	Vehicle Firewall Grommet	-	Find suitable grommet on vehicle
5	Control Lead 3m	1	Feed through firewall grommet
6	4-Way Distribution Lead	1	Connect up to 4 lights
7	Control Lead 1.5m	2	Additional cables sold separately
8	VLI Series Lights	-	Use any Night Hawk VLI Series lights
9	Light Power Cable 2.5m	-	One supplied with each Night Hawk VLI Series Light
10	Vehicle Battery	-	-



### 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		

## Warranty

Kingsley identified below (the Product) will be free from defects in materials and workmanship for the warranty period identified below commencing on the date of purchase from Kingsley ('the Warranty').

Kingsley, will rectify any defect in materials or workmanship appearing within the Warranty period by repairing or replacing the Product (at its option).

Kingsley reserves the right to determine whether the Product contains any defects in materials or workmanship covered by the Warranty.

The benefits offered by this Warranty are in addition to your rights and remedies under the Australian Consumer Law. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

### How to make a warranty claim

A claim under the Warranty must be made within the Warranty period identified below, which commences on the date of purchase from Kingsley. To make a Warranty claim, the Product must be returned to the place of purchase together with proof of purchase unless otherwise agreed by Kingsley.

Any costs incurred in making a Warranty claim or returning a Product to the place of purchase are to be borne by the person making the Warranty claim unless otherwise agreed by Kingsley.

### Exclusions

This Warranty does not cover any defect or injury caused by, or associated with improper installation or maintenance; unauthorised service, repair, modification or alteration; unsuitable physical or operating environment; electrical supply; acts of God; misuse, abuse or neglect; accidental damage, or other alterations or modifications which affect the reliability or performance of the product not attributable to a defect in materials or workmanship.

### Warranty Period

The period in which a defect must appear in a Kingsley Enterprises or Bushranger 4x4 Gear product if the customer is entitled to claim the warranty is 5 years from the date of purchase from Kingsley Enterprises Pty Ltd.

The warranty against defects contained in this document replaces any other warranty against defects or voluntary warranty given in relation to the products.

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