FITTING INSTRUCTIONS

12V PWM Dimmer

Ford Ranger · LED Grille Lights · 2A Max

These instructions cover fitting the AutoVolt 12V PWM Dimmer to a Ford Ranger using the supplied piggyback looms. Read them fully before you start.

How it works

The 3 pin loom connects directly to the Ford Ranger's headlight adjuster plug, so there is no cutting and no permanent modification. Your LED grille lights power on automatically with the ignition and stay on as long as the truck is running. When you switch your headlights on, the lights dim to whatever brightness you have set on the rotary dial.

No fusing needed

The headlight adjuster circuit is already fused by the vehicle. That is exactly why AutoVolt designed the power feed to come from this circuit, so there is nothing for you to fuse and nothing to wire into the fuse box.

Safety first

Switch the ignition off and remove the key before you begin. The LED lights being dimmed must draw no more than 2 amps in total. Keep all wiring clear of moving parts, hot surfaces and sharp edges.

IN THE KIT

- AutoVolt 12V PWM Dimmer module with rotary dial
- 3 pin piggyback loom (headlight adjuster)
- Headlight piggyback loom (dimmer signal)
- AutoVolt connector pack (to connect onto your LED light choice)

THE LED LIGHTS BEING DIMMED MUST BE 2 AMP MAX

KNOW YOUR WIRES

The dimmer has five wires. Identify every one before you connect anything. The same information is printed on the face of the module for reference after fitting.

WIRE	FUNCTION	CONNECTS TO
Red	Ignition live (+)	3 pin piggyback loom at the headlight adjuster plug
Black	Earth (–)	3 pin piggyback loom at the headlight adjuster plug
Blue	Dimmer signal (+)	Headlight piggyback loom at the headlight connector
Green	Light live (+)	Positive (red) wire of your LED lights
White	Light earth (–)	Negative (black) wire of your LED lights

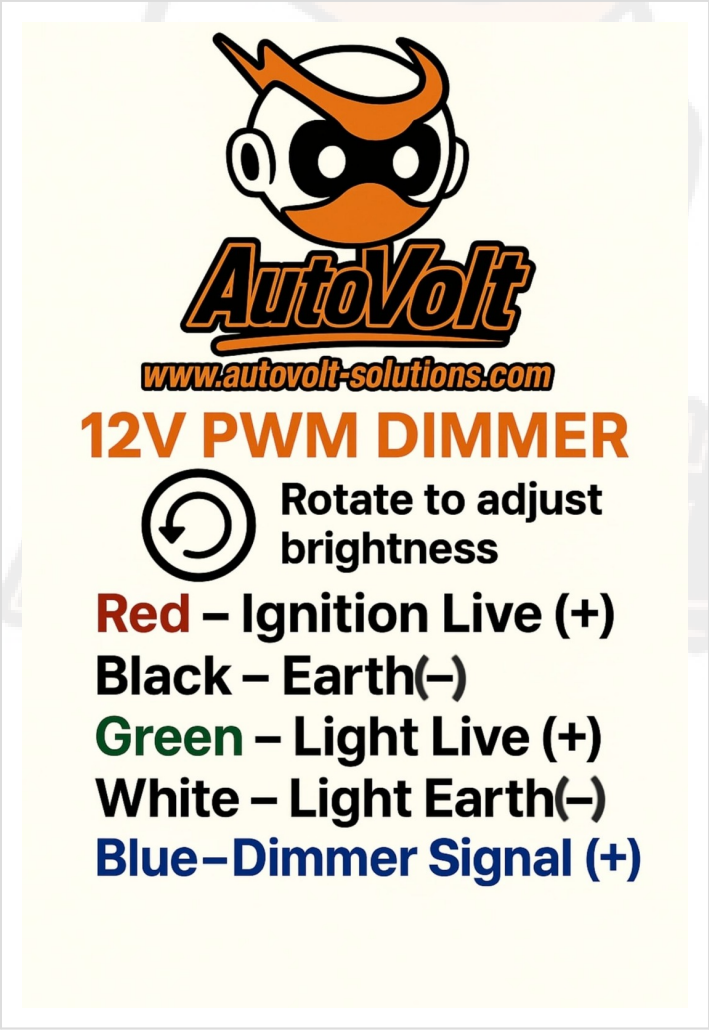


Figure 1. The wire legend printed on the face of the dimmer module.

BEFORE YOU START

1 Prepare the vehicle

Switch the ignition off and remove the key. Park on level ground with the handbrake applied. Allow the headlight units to cool if the truck has recently been running, as the housings can be hot.

2 Plan your routing

The dimmer module sits beside the headlight area rather than inside the headlight unit itself. Pick a spot alongside the headlight where the module can sit clear of moving parts and heat, then offer the cable up to check the run reaches your LED grille lights comfortably without stretching.

AT THE HEADLIGHT ADJUSTER

3 Locate the adjuster plug

Find the 3 pin headlight adjuster plug on the rear of the headlight unit. The photo below shows the passenger side, but the same plug is on the driver's side in the mirrored position.

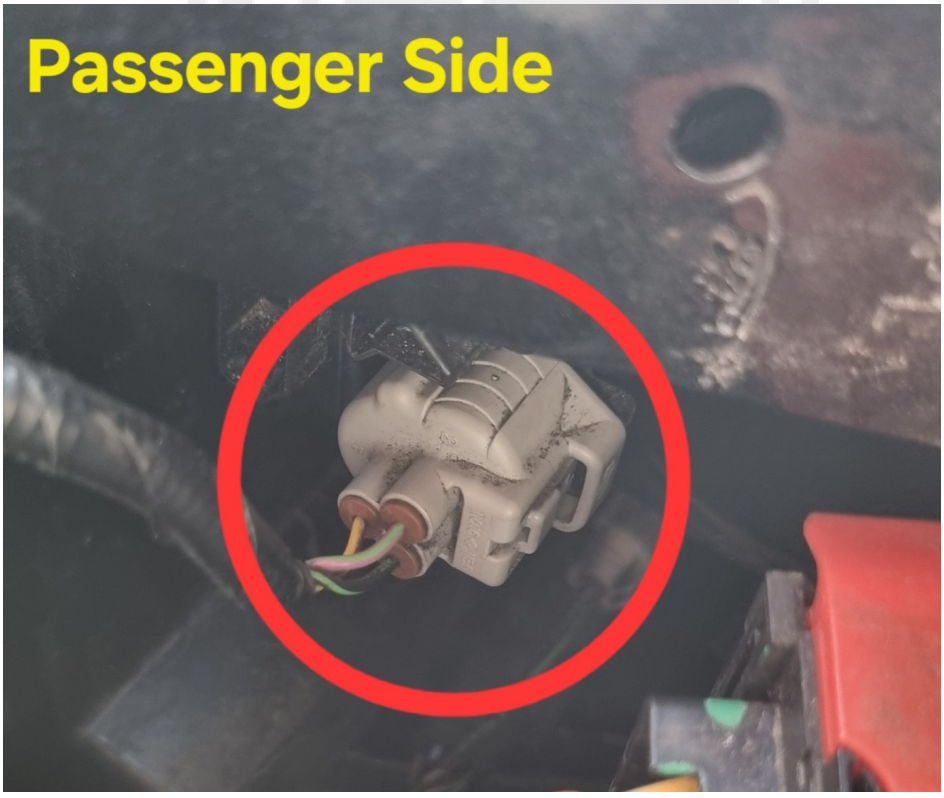


Figure 2. The 3 pin headlight adjuster plug, shown here on the passenger side.

4 Remove the 3 pin plug

Release the locking tab on the 3 pin connector and unplug it from the adjuster. Take care not to force the tab, as these connectors become brittle with age and heat.

5 Fit the AutoVolt piggyback loom

Plug the male end of the 3 pin AutoVolt piggyback loom into the adjuster, then plug the original vehicle connector into the female end of the piggyback. The adjuster continues to work exactly as before, with the dimmer now taking its feed from the same fused circuit.

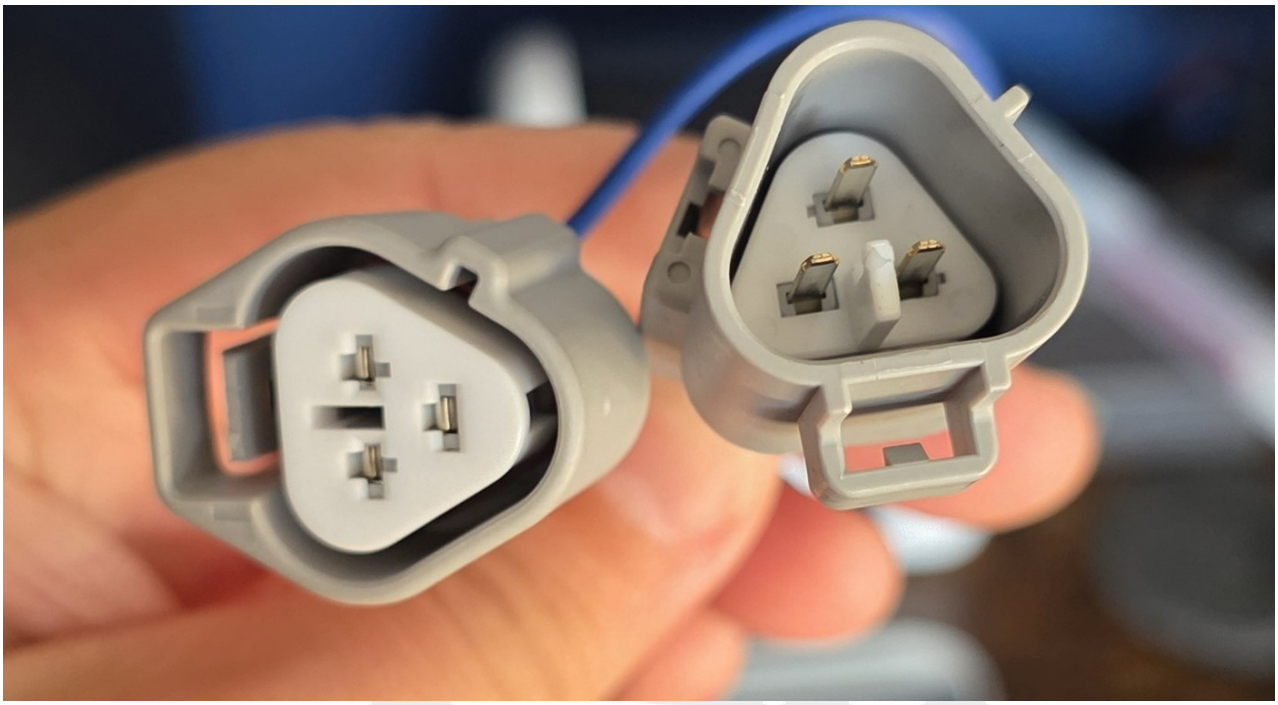


Figure 3. The 3 pin piggyback loom sits between the vehicle connector and the adjuster.

6 Connect red and black

Connect the **red** wire from the dimmer to the ignition live output on the 3 pin piggyback loom, and the **black** wire to the earth output.

> **Seat every connector fully**
>
> Push each connector home until the locking tab clicks. A connector that is only part seated will pass a bench test and then fail on the road once vibration and damp get to it. Give each one a firm tug to confirm it is locked.

AT THE HEADLIGHT CONNECTOR

7

Locate the headlight plug

Find the main headlight wiring connector, which sits below the 3 pin adjuster plug on the rear of the headlight unit. This is the connector that feeds the headlight itself.

8

Fit the headlight piggyback loom

Unplug the headlight connector and fit the AutoVolt headlight piggyback loom in the same way. The male end goes into the headlight, and the original vehicle connector plugs into the female end of the piggyback. Nothing is cut and the headlight continues to work normally.

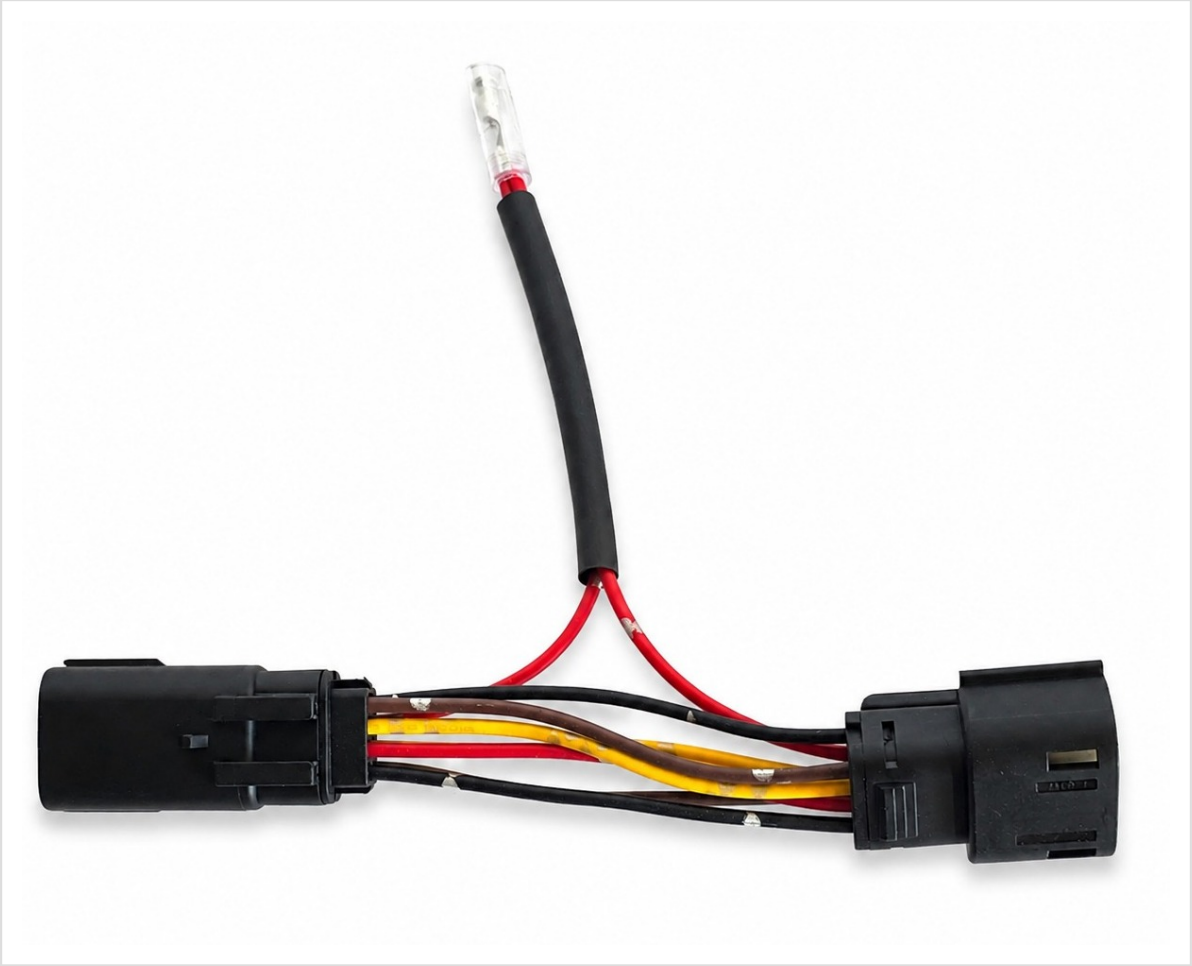


Figure 4. The AutoVolt headlight piggyback loom, with the dimmer signal tail.

9

Connect the blue signal wire

Connect the **blue** dimmer signal wire from the module to the signal tail on the headlight piggyback loom. This is what tells the dimmer that your headlights are on, so the LED lights drop to your set brightness automatically.

CONNECTING YOUR LIGHTS

10 Fit the supplied crimps

Use the crimps in the AutoVolt connector pack to join the dimmer output wires to your LED lights. Note the male and female halves as you go, and fit them so the green and white wires can only mate one way round with the matching halves on your light wiring. Crimp firmly, then give each joint a pull to confirm it is holding on the conductor and not just the insulation.

DIMMER WIRE	LED LIGHT WIRE
Green – Light live (+)	Red – LED positive
White – Light earth (–)	Black – LED negative

> **Get the polarity right**
>
> Green goes to the red wire on your LED lights, and white goes to the black wire. Both output wires must run to the lights themselves. Do not earth the white wire to the chassis, as the dimmer switches the negative side and needs that return to pass back through the module.

11 Secure the run

Cable tie the loom along its full length, keeping it clear of the radiator, exhaust, steering and suspension components. Use rubber grommets wherever the cable passes through a panel, and leave a little slack at each connector so nothing is under tension.

TESTING

12 Test before refitting trim

Start the truck up. The LED lights should come on. Switch the headlights on and check that the lights drop to the dimmed level, then rotate the dial through its full travel to set the brightness you want. Switch the headlights off again and the lights should return to full brightness.

13 Refit and finish

Once you are happy with the operation, refit any trim or covers you removed. Check the loom one last time for chafe points and confirm every cable tie is secure.

USING THE MODE SWITCH

The mode switch sets how the dimmer responds. In its normal position the dimmer waits for the 12 volt signal from the headlight circuit and dims automatically when that trigger is active. Flick it to manual and you take full control with the rotary knob regardless of the headlights.

TROUBLESHOOTING

SYMPTOM	LIKELY CAUSE
Lights do not work at all	Check the fuse for the vehicle's headlight level adjuster motor, shown below, then check all your connections and make sure every connector is fully seated.
Lights never dim with the headlights	Check the mode switch is not set to the wrong mode, and check the dimmer is not turned fully down.

Check this fuse first

If there is no power to the lights at all, check the headlight level sensor fuse. Many customers do not realise theirs has already blown until they come to fit this kit. It is fuse **F20, 10A, red**.

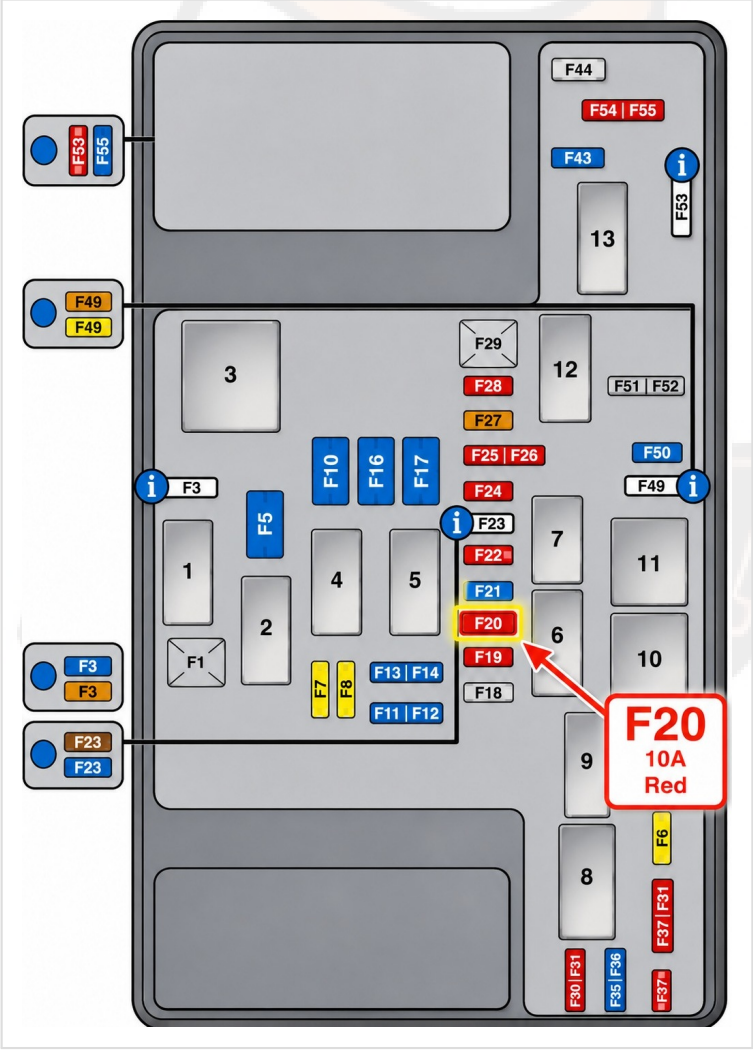


Figure 5. Fuse F20 (10A, red) for the headlight level sensor.

SPECIFICATION

Operating voltage	12V DC nominal
Maximum load	2 amp max total across the LED lights being dimmed
Control method	Pulse width modulation, rotary potentiometer
Trigger	Positive 12 volt signal from the headlight circuit
Mode switch	Automatic dimming or full manual control
Connection	Plug in piggyback looms, no cutting of factory wiring

Warranty and returns

Your dimmer carries a 12 month limited warranty covering manufacturing and design defects under normal use. The warranty is void if the unit is modified, and it excludes labour, consequential loss and any adjoining parts. Every AutoVolt module is tested before it leaves us.

Thank you for choosing AutoVolt

autovoltsolutions@yahoo.com · 07849 860623 · autovolt-solutions.com

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