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Mobileye 8

Intelligent High-Beam Control v0.1





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Introduction

Mobileye Intelligent High-Beams Control (IHC)

Mobileye Intelligent High-Beam Control feature controls a vehicle's driving lights by automatically switching them from **low-beam** to **high-beam** on dark roads without nearby traffic.

When is IHC active?

Mobileye IHC is active at night, on dark roads (with no streetlights), without nearby traffic.

Mobileye IHC is active at speeds greater than 30 km/h (18.6 mph).

Mobileye IHC is active only if enabled during the installation.

There is no need to manually activate the HB when starting the drive.

If IHC is enabled, IHC will automatically turn the HB when required.

How does IHC work?

IHC mechanism works only at night at speeds above 25/35/45km/h on a road without streetlights when your vehicle low beams are in the ON position.

During this status a Green IHC icon will appear on the Eyewatch Display unit.

If no vehicle is detected in front (rear lights of a vehicle or front headlights of oncoming vehicle), the system will automatically turn ON the High beams.

The IHC icon on the Eyewatch Display will turn from Green to Blue to notify the driver that the Mobileye system is controlling the High beams.

If the driver thinks that the system decision is wrong, he can disable the current decision for 12 seconds by momentary pushing the HB lever from low to high (the system will sense this change only if the high beam wire is connected). The Blue icon disappears for 12 seconds and after 12 second will appear again in Green.

If a vehicle is detected in front (rear lights of a vehicle or headlights of oncoming vehicle), or we are entering a well light area, the system will automatically turn OFF the HB.

Remarks

- Mobileye IHC compatibility is subject to vehicle electrical system compatibility. Different vehicles have different electrical systems and limitation of the IHC installation is not a Mobileye system limitation but a vehicle electrical limitation.
- Locating the appropriate IHC connection point to connect the external relay that will mimic the HB lever operation is mandatory for a successful IHC installation and is subject to the technician expertise and professionalism.
- Mobileye does not supply exact connection instructions for each vehicle but a general layout explaining the connection methods (see upcoming sections).
- IHC activation is triggered by a GND (minus -) signal sent from either the Mobileye system output wire, or the Shield+ Junction Box to the external Relay.
- Mobileye recommends using at a minimum a 1.5mm (16 gauge) electrical cable or higher when connecting between External Relay and vehicle High Beam circuit.

IHC Installation

To install the Mobileye Intelligent High Beam Control, a 30 Amp Automotive Relay is required.

Relay Specifications

External Relay (standard automotive 12v SPDT relay)

Use any 30 Amp SPDT normally open automotive relay 5 terminals Bosch style relay together with appropriate Relay socket.

- 12 Volts DC
- Coil resistance: 90 Ohms



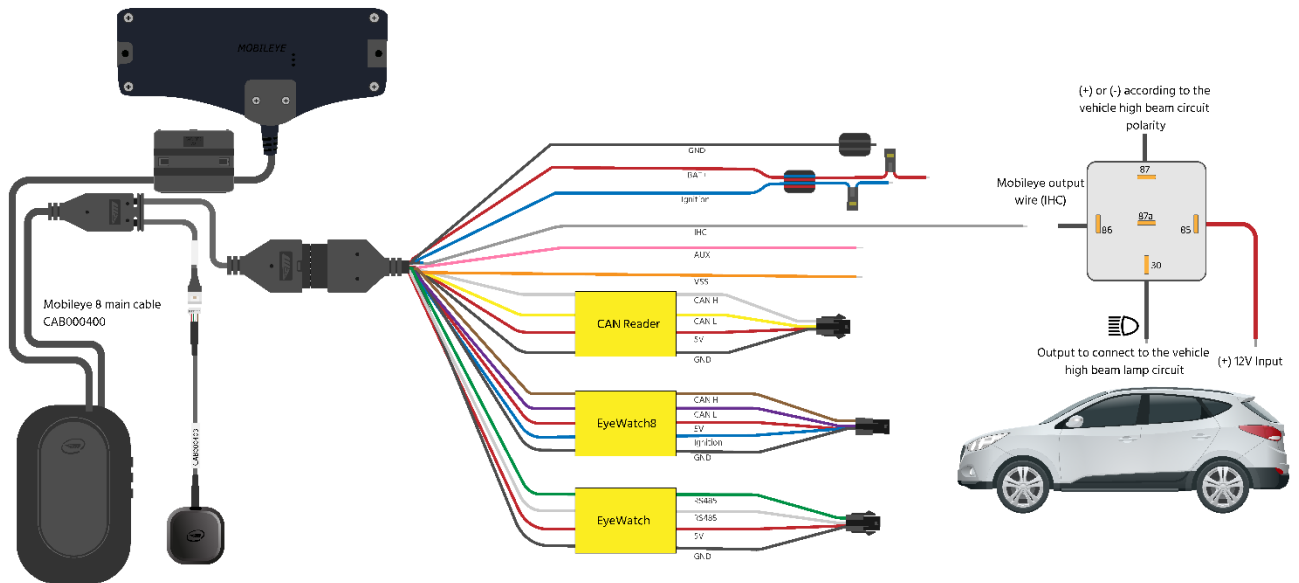
External Relay socket (such as "Delphi 12033871")

Can be used with 4 or 5 terminal Bosch style relays.



NOTE: The Relay is not supplied by Mobileye. It can be ordered directly and independently from any automotive electrical parts supplier.

External Relay Connection Scheme



High Beams signal requirements for IHC activation

What are we looking for?

1. A Positive (+) or Negative (-) High Beam Signal that will activate the vehicle's high Beam lights (according to the vehicle's electric system).

Or

2. A direct High Beam signal between the front Head Lamp and the vehicle's relay box or high beam lever.

Main challenges

1. Finding the direct High-beam signal and understanding if this High-beam signal is before or after the vehicle’s High-beam relay box. The desired signal/wire should be **After** the vehicle relay box (meaning the closest possible signal coming directly from the Headlamp before any connection to any vehicle relay).

2. Identifying the High-beam signal’s polarity (Positive or Negative).

3. The High-beam sensing signal and the output to the vehicle’s High-beams lamp (for IHC activation) should never be connected to the same wire.
 The High Beam sensing signal should be connected **Before** the vehicle’s relay box (usually at the High Beam activation lever near the steering wheel).
 The Output (IHC activation signal/wire) should be connected **After** the vehicle’s relay box (usually directly to the vehicle’s High Beam lamp).

Possible / common High beam wire locations

The required High Beam signal may be found in the following locations:

Option	Location	Remarks
1.	Front Head Lamps High Beam wire	
2.	High Beam Relay/Fuse box (Engine or Passenger compartment)	To Locate the High Beam Relay, activate the Low/High Beam repeatedly and try to hear the High Beam relay clicks to find the relay’s exact location.
3.	High Beam activation lever/switch	In steering column

Determining/Identifying High Beam polarity (positive or negative)

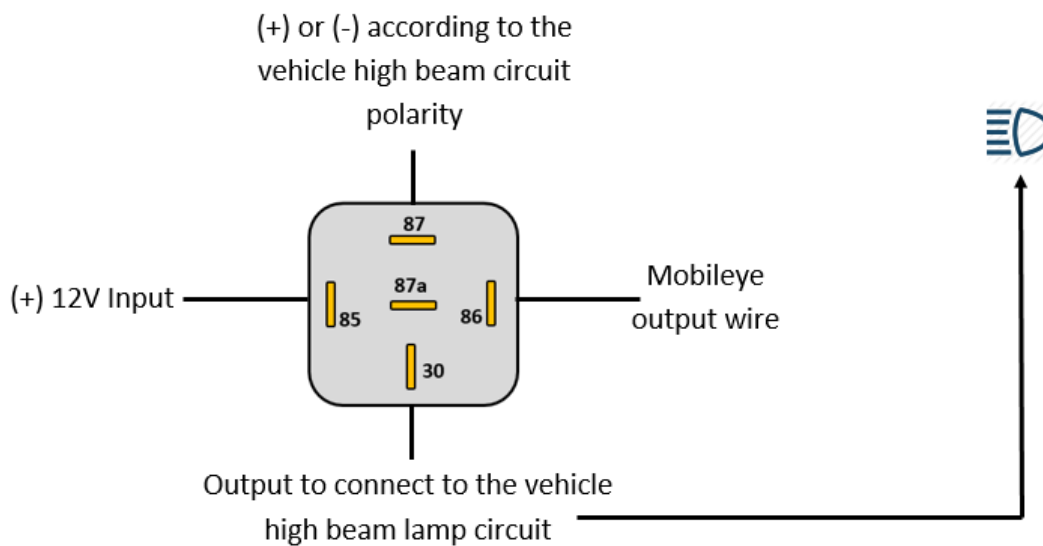
Option 1: Positive polarity [Rest in GND [0v] (-)]

When High Beam is not active, the signal will show 0V (GND) and when High Beam is activated the signal will show 12V.

Option 2: Negative Polarity (Rest in 12v).

When High Beam is not active the signal will show 12V and when High Beam is activated the signal drops to 0V (GND).

IHC External Relay Basic Connection Scheme

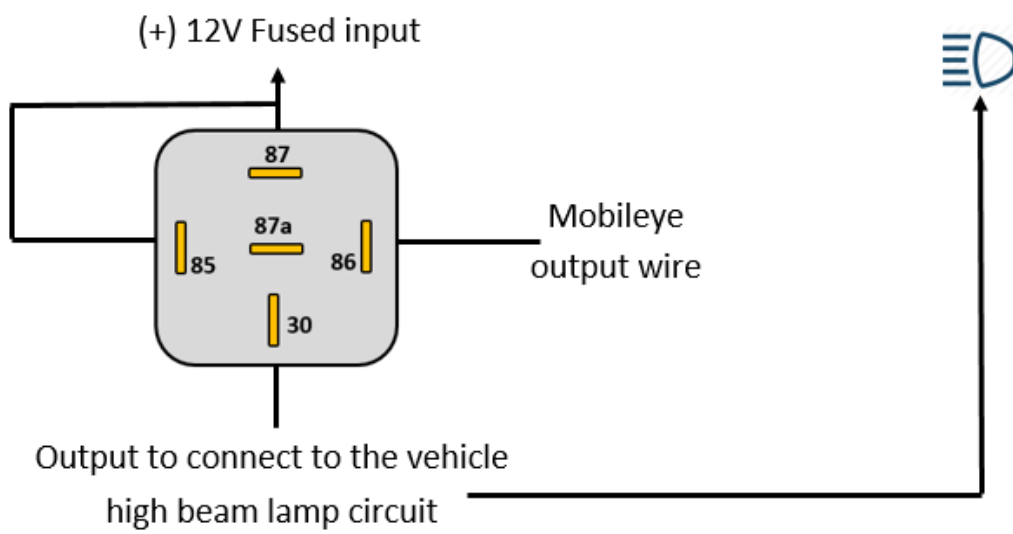


Relay Connection Options

Option 1:

Direct connection to the headlamp (if 1 wire will activate both left and right high beam lights)

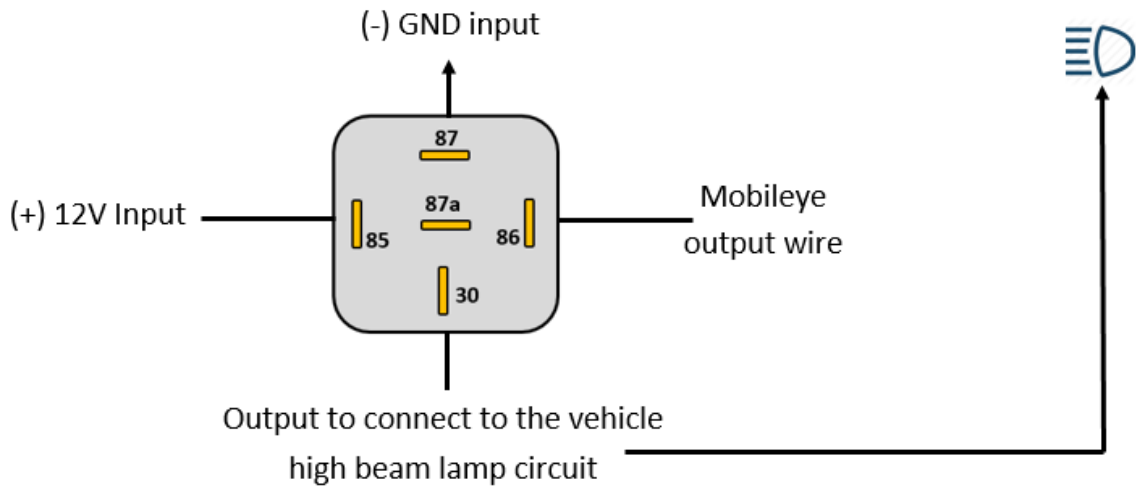
High Beam Positive polarity (most common)



Option 2:

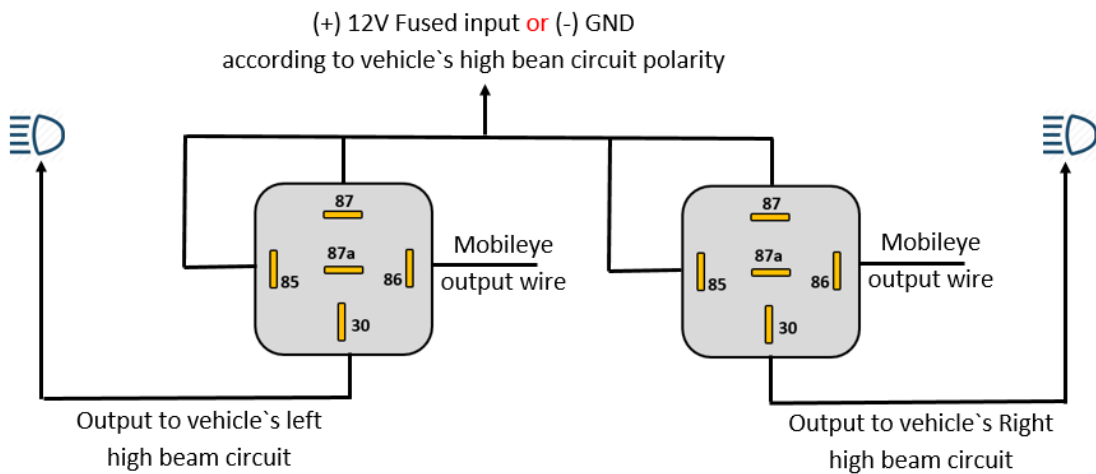
Direct connection to the headlamp (if 1 wire will activate both left and right high beam lights)

High Beam Negative polarity



Option 3:

When there are 2 different wires that each of them is activating left & right High Beam lights separately using 2 Relays

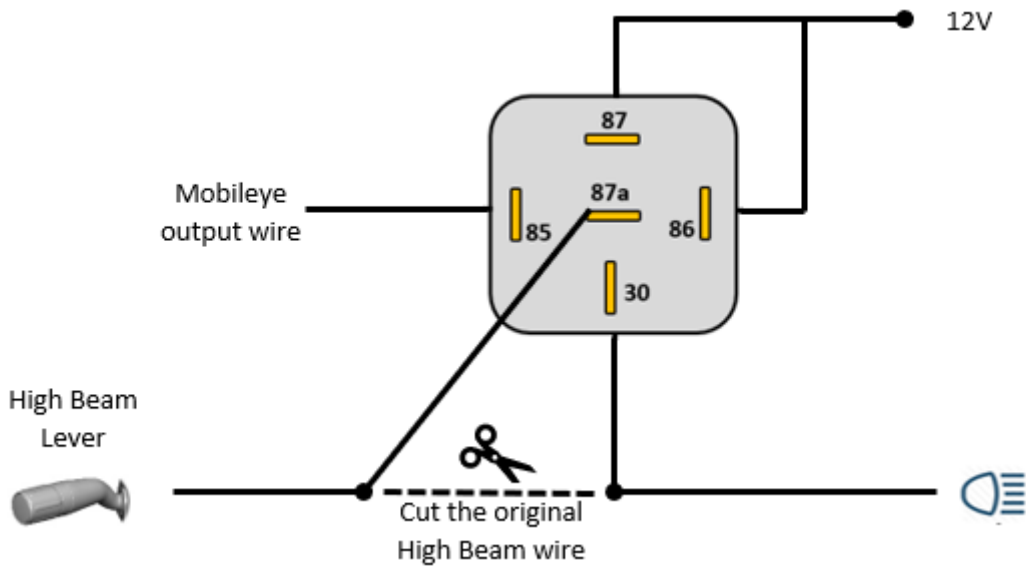


Option 4: Special connection scheme

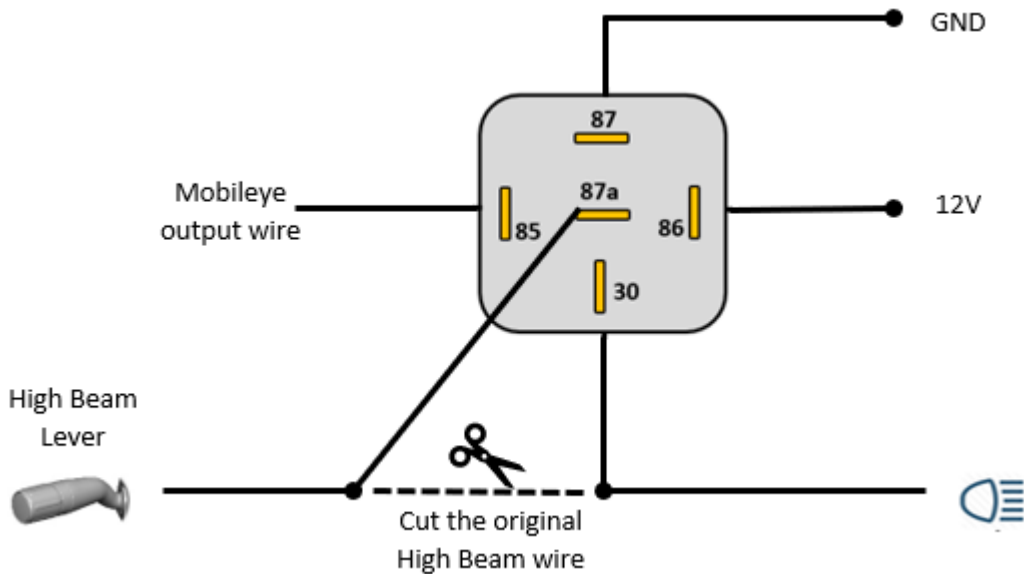
The following connection method is for Special cases in which the High Beam circuit is driven directly from the lever without any relay.

Note: cutting the vehicle wires is not recommended and must be carried out as last option at installer`s discretion.

High Beam lever **Positive** polarity



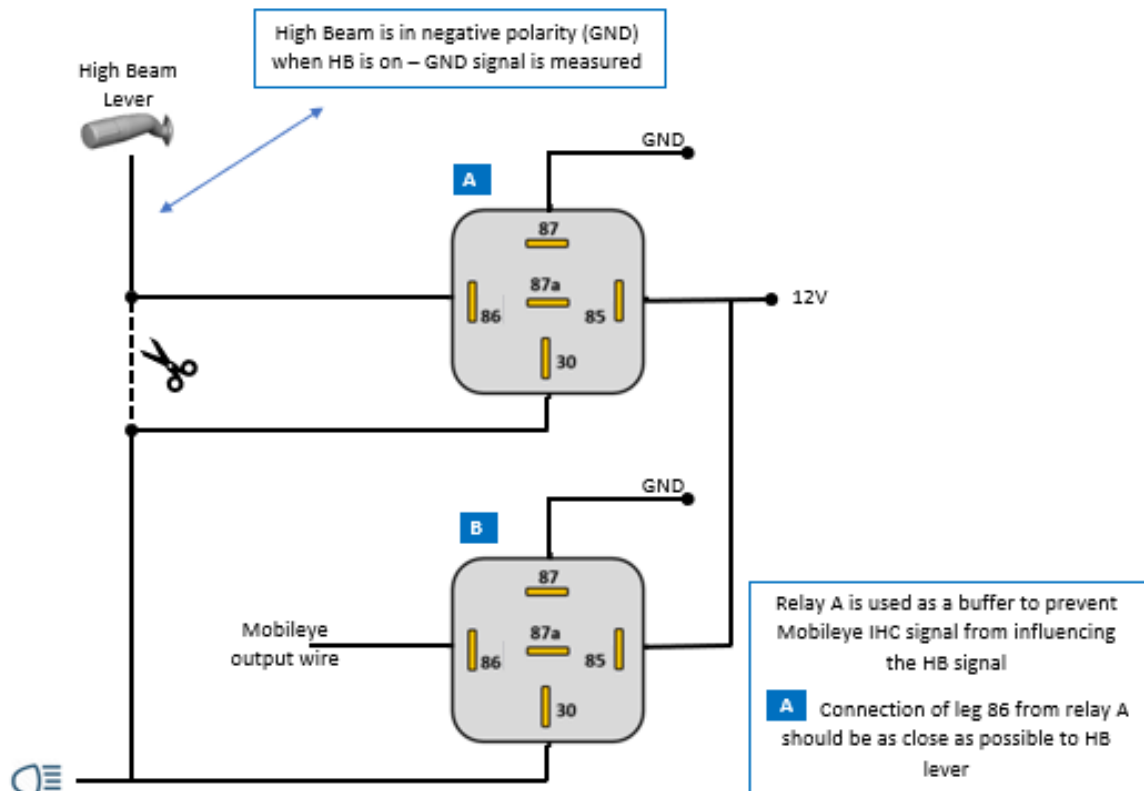
High Beam lever **Negative** polarity



Option 4a - Special connection scheme for Analog Installation

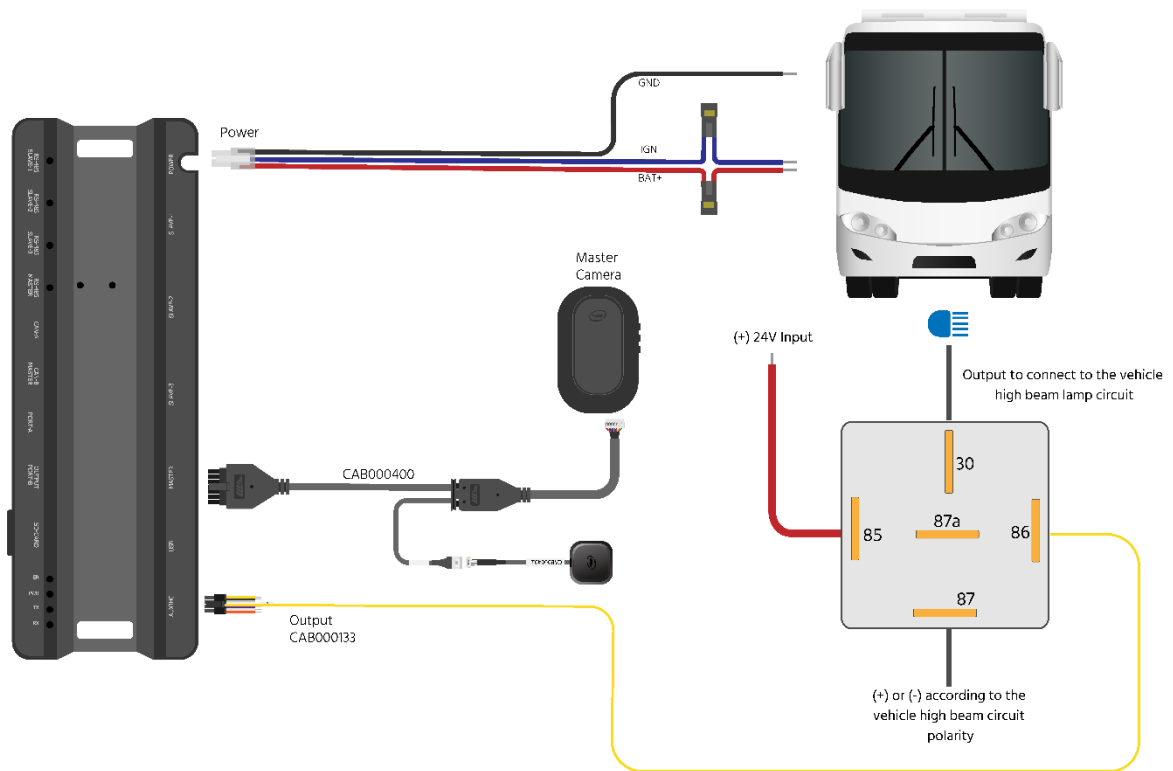
The following connection method is for special cases in which the High Beam circuit is driven directly from the HB lever.

Note: cutting the vehicle wires is not recommended and must be carried out as last option.



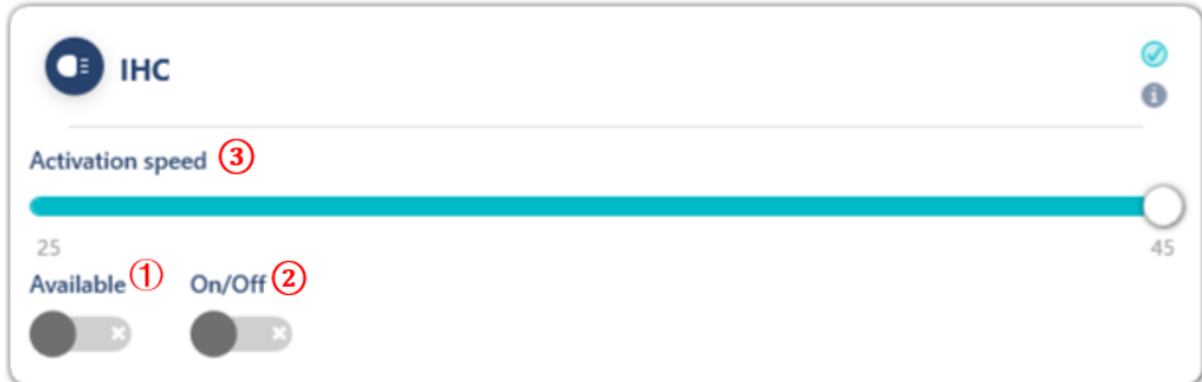
Basic connection scheme with JB

Connecting IHC via junction box output wire with a 24V power source (bus / truck)



IHC Activation via Installation Center – Alert config app

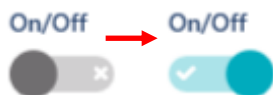
To activate IHC feature, go to “**Alerts configuration**” app, and follow the below instructions:



- ① By default, IHC is set to disable. Turn on to enable IHC feature.



- ② Turn on to activate the IHC feature. This option is also available to the driver using the advanced menu in the EyeWatch display unit.



- ③ Move the scroll bar and choose the IHC activation speed.

IHC activation speed is available at 25km/h, 35km/h, or 45km/h

- Click “Burn new configurations” to save and burn the changes.

Verifying IHC operation

To verify connections and operation of the IHC feature, please follow the instructions below:

- 1) Finalize system installation including IHC external relay.
- 2) Turn off the ignition switch.
- 3) Cover the camera from the outside using a small cardboard plate with black isolation tape.
- 4) Turn on ignition switch.
- 5) Turn on IHC feature via the EyeWatch menu or via the alert config app.
- 6) Make sure the system has switched to night mode by verifying the green IHC icon is on.
- 7) Drive at a speed greater than the speed threshold configured via the alert config app.
- 8) If the green IHC icon turned to blue and the vehicle's High Beam lights switch on independently, the installation has been done correctly.

NOTE: IHC is active only at Night when No vehicles are in proximity to you and when there are no visible Road/Street light).



IHC Troubleshooting

Problem	Cause	Possible Solution
<p>The vehicle's High Beam will switch on and immediately off.</p>	<p>1) The IHC signal output and the High Beam sense wire are connected to the same electrical circuit.</p> <p>2) Conflict between CAN BUS signal and output to the vehicle's high beam wire.</p> <p>3) The output to the vehicle's high beam lamp is not between the lamp and the vehicle's High Beam relay box.</p>	<p>1) <u>When high beam signal is via analog connection:</u> Find a different High-Beam signal wire that is not influenced by the IHC relay and connect it to the High-Beam signal wire.</p> <p>2) <u>When high beam signal is via CAN-Bus connection:</u> The CAN message that is used for sensing High beam status is influenced by the IHC relay. Switch high beam signal from CAN to AUX and find a different High-Beam signal wire that is not influenced by the IHC relay and connect it to the High-Beam signal wire.</p> <p>3) Connect the IHC relay output to the vehicle's High Beam circuit, directly to the headlamps (as close to head lamps as possible).</p>
<p>IHC activating signal can't be found.</p>	<p>The high beam of the vehicle will not switch on when injecting (+) or (-) to the suspected wires.</p>	<p>IHC can't be installed in this vehicle. (Can happen in HID or xenon lamps- equipped vehicles)</p>
<p>When activating the high beam suspected wire, only one head lamp will switch on.</p>	<p>The suspected wire will only activate one of the head lamps' high beams.</p>	<p>Refer to option "2" in the connection options section.</p>
<p>Green IHC icon will not show up on the Eyewatch.</p>	<p>1) The IHC function has not been switched on.</p> <p>2) The system is not in night agenda (night mode)</p>	<p>1) Switch the feature on through the Eye Watch menu.</p> <p>2) Cover the lens with a dark isolation tape to simulate night mode.</p>