clearwater LIGHTS™

Installation Manual

BMW S1000XR with CANopener 5

Krista/Erica/Sevina LED Light Kit

Dimmable

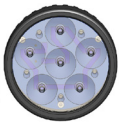
Patent Pending

Made in USA

Parts List and Bike Preparation

Please be sure to read our instructions thoroughly before attempting installation.

- Check the parts list supplied with your kit to be sure all parts are handy.
- First, park the motorcycle on hard pavement or concrete to insure the bike will be stable during the installation. If you can mount the bike on a stand with tie-down straps, this will help secure the motorcycle.
- Follow the manufacturers guidelines for disconnecting the battery. This is important to prevent damage to the electrical system.


Lights (2)


M5x25 BHCS(6)


Neo Bond Washers(6)


M10x20 BHCS (2)


XR Upper Brackets (2)


Mod Brackets (2)


M10 Washers(2)


M10 Nylocks(2)


Wiring Harness(1)


CANopener 5(1)

Zip Ties (12)


Data Cable (1)


M8x12 (4)


M8 Flat Washer (4)

Upper Beak Mount Parts List

Summary of Installation

1. Disassamble the bike.
2. Remove fuse from Clearwater Lights wiring harness
3. Mount the wiring harness to a secure location.
4. Connect the CANopener to BMW alarm connector under the passenger seat.
5. Connect the lights and CANopener to their corresponding plugs on the wiring harness.
6. Secure wires, making sure they won't get caught in the suspension or steering column.
7. Attach power lines to battery and replace the fuse.
8. Test lights.
9. Mount the lights and brackets.

Important Notes:

-The engine needs to be running for the lights to work.

-Brake light not to exceed 1AMP

Summary of CANopener features and operation.

Summary of CANopener features and operation

TSC = Turn Signal Cancel **WW** = WonderWheel (*BMW multifunction controller*)
TPM = Tire Pressure Monitor **FTP** = Flash To Pass **OBL** = Optional Brake Light

Function	Command	Modes
Darla/ Glenda dimmer	Press(*TSC*), then hold control wheel left for 2 seconds and rotate to adjust	Rotate WonderWheel to select 10 brightness levels (*10% to 100%*) To adjust brightness on High Beam Mode, turn on high beam first Dimmer control will cancel after 2 seconds or by pressing TSC
Erica/Krista dimmer	Press(*TSC*), then hold control wheel right for 2 seconds and rotate to adjust	
Erica/Krista on/off	Hold TSC for 2 seconds	Mode 1 – on and dimmable (*default*) Mode 2 – off
High Beam Mode	Hold brake lever and press & release FTP 3 times to toggle	Mode 1 – all lights on 100% with high beam or FTP, Erica/Krista must be turned on Mode 2 – Erica/Krista off with low beam, all lights on 100% with high beam or FTP (*default*)
Horn Activation Mode	Hold brake lever and press & release TSC 3 times to toggle	Mode 1 – horn does not affect lights (*default*) Mode 2 – horn activates lights 100% Mode 3 – horn strobes lights
Hazard Flasher Alert Mode	Hold hazard switch then press & release brake lever 3 times to toggle	Mode 1 – no flash (*default*) Mode 2 – lights flash while holding hazard switch
Clearwater Brake Light (*optional*)	While stationary, press & release TSC then press & release the front brake lever 5 times within 5 seconds to toggle	Mode 1 – off (*default*) Mode 2 – functions identically to BMW brake light Mode 3 – California legal strobe on brake activation (*4Hz flash*) Mode 4 – speed sensitive (*flashes faster and brighter with harder braking*)
Reset Default Settings	Hold left turn signal then press & release FTP 6 times within 6 seconds	Reset all functions to the default settings above

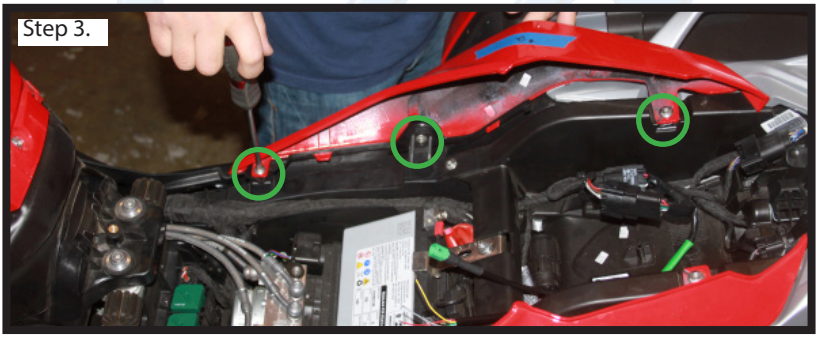
Disassembly

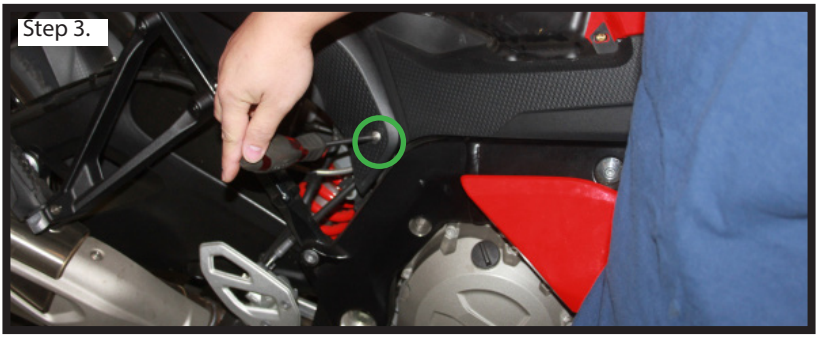
In this section we will cover which fairings must be removed in order to perform this installation, and how to easily do so.

Step 1. To start we will be removing the seat. To do this you will just insert your key into the slot on the rear of the bike.

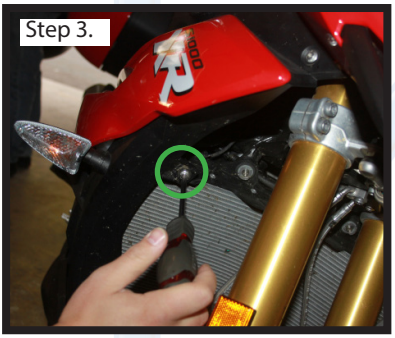
Step 2. With the seat now off we will remove the black fairing overlapping the tank cover. Remove 1 bolt then pull gently to avoid breaking the plastic tabs.

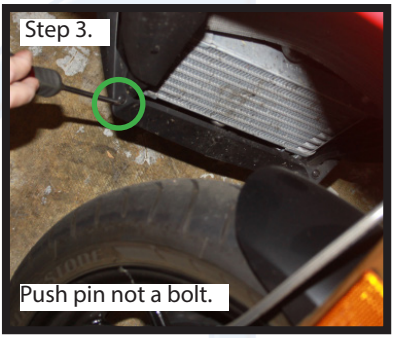
Step 3. Next we're going to remove the right side fairing, this will help us route the wires later. To do this we will remove 12 bolts.






Step 3.
S1000
XR


Step 3.

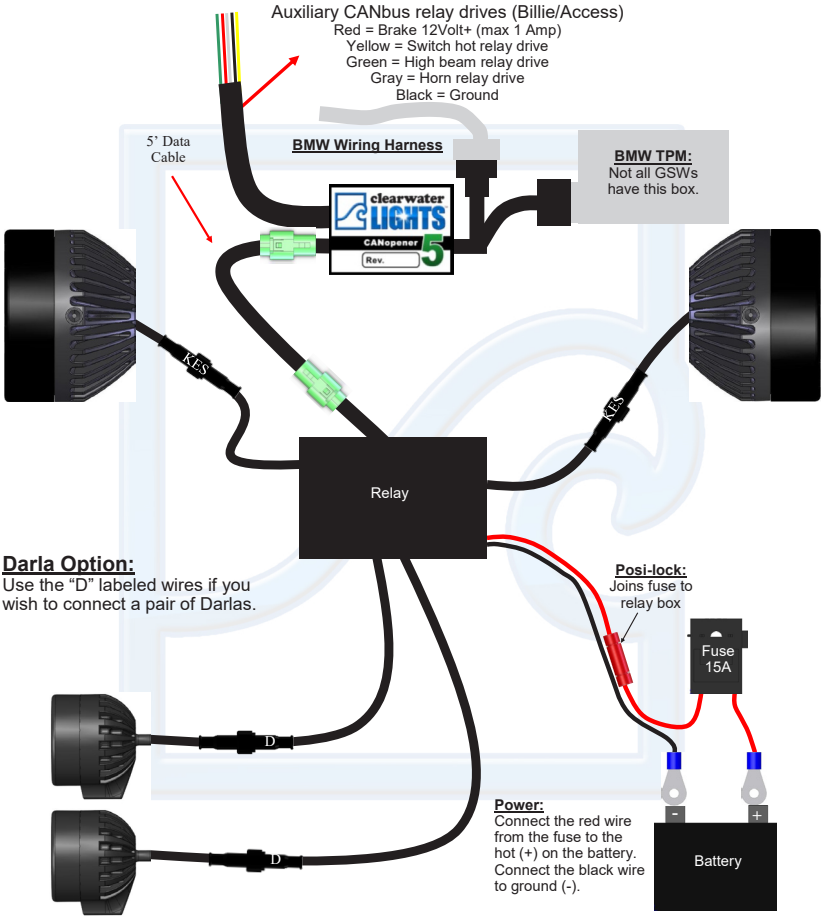

Step 3.
Push pin not a bolt.


Step 3.
BMW

Once you have removed all the bolts and tabs up to this point you will pull down the black fairing shown in Step 4 below in order to get to the bolt hidden beneath it.

Now we can gently pull back the colored right side fairing in order to get to the final bolt that is tucked away behind the fairing. We can call this Step 5.

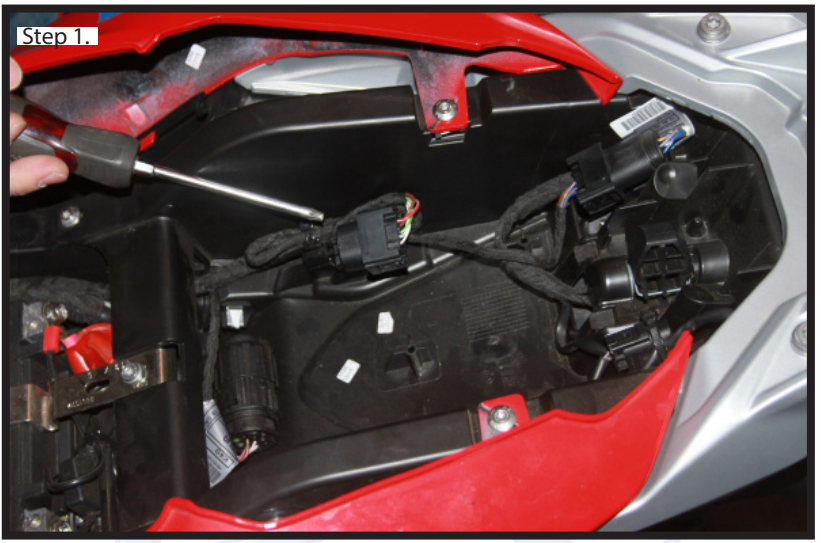
Wiring Diagram for Krista/ Erica/ Sevina



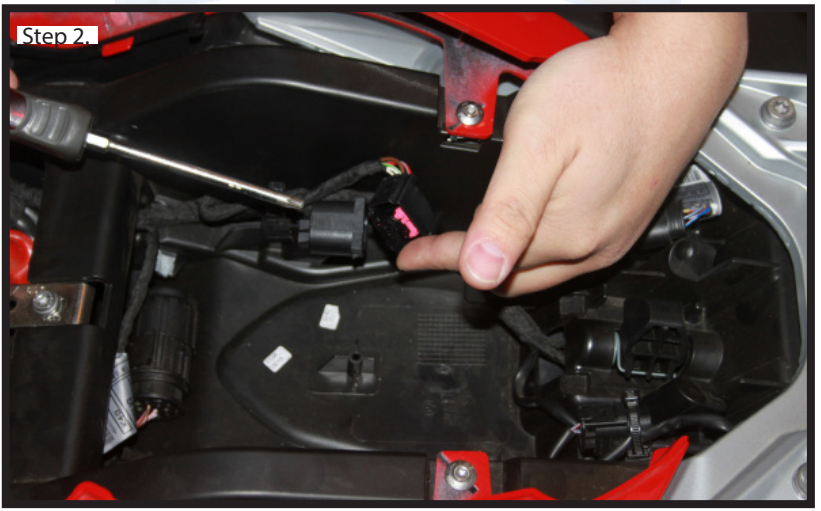
CANopener Mounting:

Step 1. Locate the BMW alarm connector which can be found under the seat.

Note: This model doesn't have the alarm box located here under the seat. If your bike does have the alarm box located here you should be able to follow the next few steps with only minor changes to the procedures. Remember the connectors fit together uniquely, so don't force any connections and this should be a piece of cake.



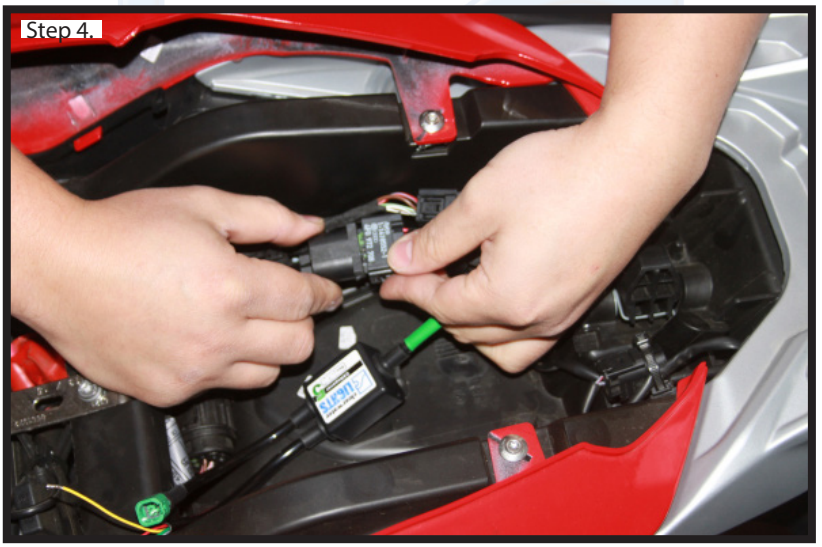
Step 2. Disconnect BMW alarm connector.



CANopener Mounting:

Step 3. Plug the connector with the pink plastic inside into the CANopener 5.

Step 4. Put the cap on the other connector attached to the CANopener 5.



Step 5. Route the wires from the CANopener along the main wiring on the right side of the bike to the front. Leave the wires hanging here for now.

Step 6. Secure the CANopener to the plastic inner fender with provided Velcro strip. Be sure to clean any dirt or dust from area before affixing the CANopener.

Wiring:

- While routing wires be sure that they cannot become tangled or caught in either suspension or steering parts. Check movement of both steering and suspension before riding the bike. See the picture on page 10 to see our recommended wire routing path.
- Mount the wiring harness relay next to the frame supports of the bike as shown in the picture on page 10.
- Connect the RED wire with the fuse holder and ring terminal to the positive battery terminal. Remove fuse from the fuse block before hooking up battery to prevent accidental shorts.
- Connect the BLACK wire ring terminal to the negative battery terminal.
- Route data cable along bike to CANopener with stock wiring harness.
- Reinstall fuse into the harness relay and start motorcycle to test lights. On low beam, you should be able to adjust the brightness with the Wonder Wheel. On high beam the lights should go to full brightness.
- Be sure all wires are tucked out of the way, securing where needed with the included zip ties.

NOTE: With this installation you will want to run the wiring prior to mounting the lights to the bike. This is because in this mounting location the lights cannot be mounted until the body panels are reassembled.

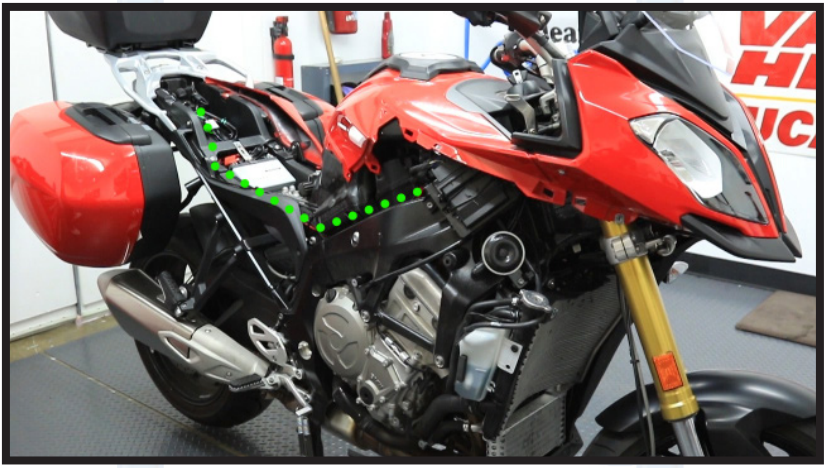
So make sure to test the lights and functions to ensure everything is wired properly before putting the body back together or else you risk having to disassemble the bike more than once.

Wiring Continued:

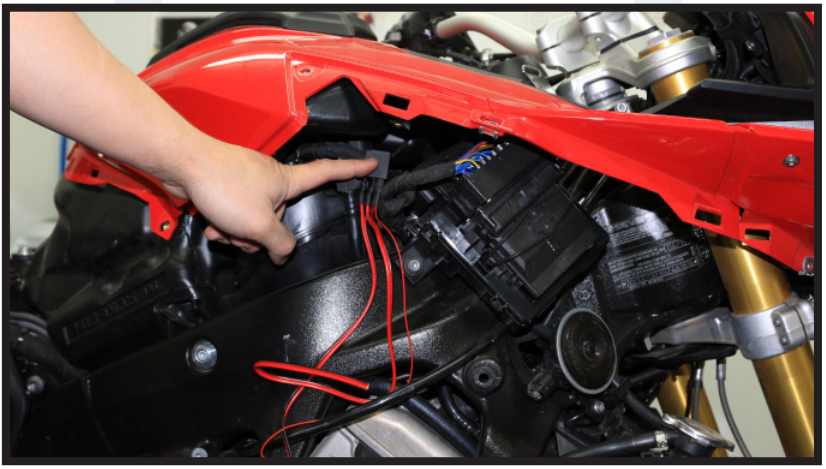
- Reinstall side and battery covers, verify that no wires interfere with the steering or suspension parts of your bike and enjoy!

Note: The YELLOW and WHITE wires coming from the trident adapter won't be used in this installation. The YELLOW wire is an optional on/off switch. The GREY wire is for bikes without the Wonder Wheel and allows for a dimmer switch to be installed in these situations.

Wire Routing Diagram



Wiring Harness Relay Mounting Location

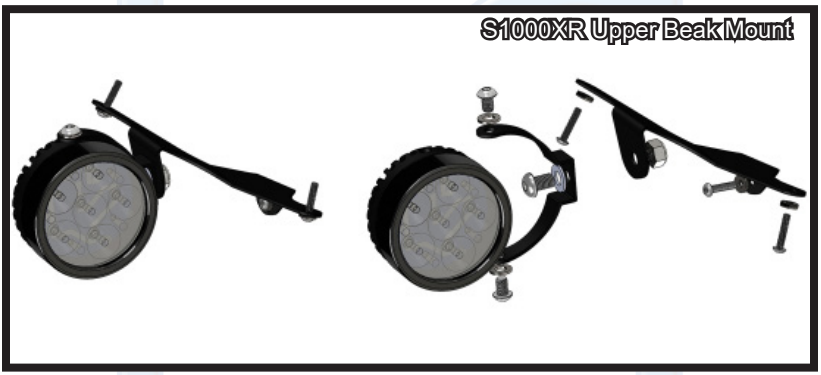


Mounting the Lights

Krista-Erica-Sevina Technical:

The Krista, Erica, and Sevina are very bright LED lights that use digital drivers to produce very efficient light from High Power LED's. By using a proprietary digital volume control, we can "dim" the lights via the factory WonderWheel (WW) controler. This sends a digital signal to our microprocessor that changes the pulses of electricity to the LED's, turning them on and off at a rate of 250 times per second.

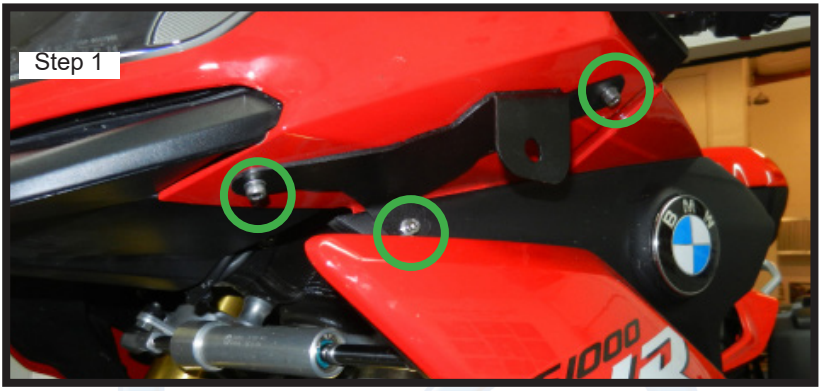
As we increase the time that the lights are "off" the human eye perceives this as dimming. Increased efficiency occurs with the dimming as well. Krista, Erica, and Sevina can be used in a "low" beam mode and a "high" beam mode. The factory handlebar high beam switch is used to select the two different modes.

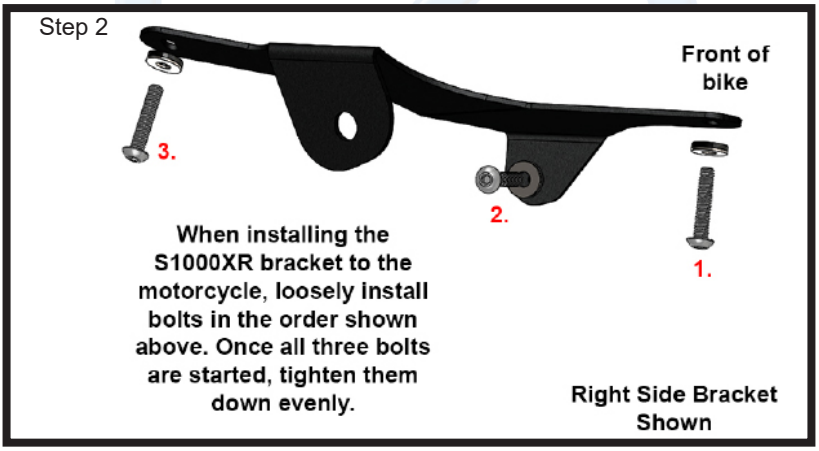


Mounting the Lights: *(Upper Beak Mount)*

Step 1: Remove the bolts from the circled locations.

Step 2: Fit the bracket to the fairing following the image below. Once you have the bracket mounted to the bike piece the assembly together with spacers and washers as shown in the exploded diagram on page 11. Hand tighten all the bolts then tighten everything once the assembly is complete.

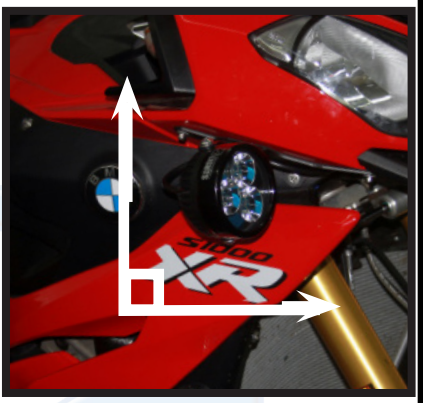




Step 3: Repeat on the other side and now you are ready to move to wiring.

Aligning the Lights:

Krista, Erica, and Sevina are designed as auxiliary lights, adjustment is up to the user depending on his needs. Ask an assistant to help you with this procedure. Make sure the bike is on level ground and have your assistant sit on the bike. With a right angle board or object, position the board on the floor and slide it up to the light.



The goal is to adjust the lights so that the light is level with the ground. Passengers and luggage may alter the alignment of the light so further adjustments may be needed. Often times it is helpful to angle the right side light toward the right side of the road. This helps with identifying road terrain, potential critters, and road hazards.

Summary of Features:

1. Clearwater Lights dimming feature
   - Independent dimming of two sets of Clearwater lights using BMW WonderWheel (handlebar mounted rotary dimmer included for non-WonderWheel bikes)
   - Brightness adjustable in 10 steps from 10-100%
2. Automatic Dimmer
   - Programmable Clearwater lights dimmer setting compensates automatically using the bike's photocell
   - Factory preset and programmable dimmers for day, night, and high beam illumination
3. On/off function for Erica/Krista/Sevina lights
   - No separate switch required, uses factory turn signal cancel button
4. Horn Activation Mode
   - Clearwater lights programmable to illuminate or strobe with horn button (off road use only)
5. Hazard Flasher Alert Mode
   - Clearwater lights programmable to strobe when holding the hazard flasher button (off road use only)
6. High Beam Mode
   - Clearwater Erica/Krista/Sevina lights programmable to activate with high beam or flash-to-pass button
7. Clearwater Brake Light Module (optional)
   - Programmable LED brake module includes California-legal strobe mode and speed sensitive mode
8. Auxiliary CANbus relay drives
   - Auxiliary turn on (1/4 amp maximum) -YELLOW wire
   - Auxiliary horn (1/4 amp maximum) - GRAY wire
   - Auxiliary high beam relay drive (1/4 amp maximum) - GREEN wire

   WARNING: Do not connect auxiliary accessories without a relay!
9. Factory Default Reset
   - Reset all functions to the default settings

DIMMING CONTROL: (WonderWheel equipped bikes)

Two modulated brightness channels are adjustable using the WonderWheel:

- Each channel is programmable for ten brightness settings (10-100%) in three different modes (day, night, and high beam). Settings are stored in non-volatile memory, and will be remembered when restarting the bike or disconnecting the battery. The dimmer is programmed at the factory for the most useful day/night settings.
- To enter dimmer program, you now must first press the Turn Signal Cancel (TSC) switch once before tilting the Wonderwheel Left or Right for dimming. Press the WonderWheel to the LEFT for two seconds to engage the Darla/Glenda channel dimmer, or press it to the RIGHT for two seconds to engage the Erica/Krista/Sevina channel dimmer. The lights being adjusted will flash twice to confirm programming mode. Adjust the output by rotating the WonderWheel.
- While adjusting the brightness mode, the second set of lights (if installed) will automatically dim to their lowest setting in order to easily observe the adjustment.
- Exit programming mode either by waiting for approximately two seconds or pressing the turn signal cancel button. The lights will flash once to confirm.
- Remember that each set of lights is adjustable for day, night and high beam. Day and night settings are automatically selected by the ambient light level reaching the bike's photocell. To adjust the night dimmer, simply cover the photocell at the top right corner of the dash display using your hand or a piece of tape. Activate the high beam to adjust the high beam setting.

WARNING: When configuring the dimmer, be sure that the WonderWheel is not making adjustments to other functions of the onboard systems. Turn off the entertainment system to prevent volume adjustment or unwanted channel changes, and select the home screen on the GPS.

DIMMING CONTROL: (non-WonderWheel bikes)

If the motorcycle does not have the GPS Prep Package (WonderWheel), your light kit will come equipped with a handlebar mounted analog/digital encoder knob for dimming control. Separate day and night settings and the dual intensity dimmer will not be available.

ON/OFF FUNCTION FOR ERICA/KRISTA/SEVINA

The Erica/Krista/Sevina lights can be manually deactivated. Toggle these modes by holding the turn signal cancel button for two seconds.

- Mode 1 – on and dimmable (default)
- Mode 2 – off

HORN ACTIVATION MODE:

The Clearwater lights can be programmed for three different modes when the horn button is pressed. Toggle these modes by holding the brake lever and pressing the Turn Signal Cancel button three times. The brake and Clearwater lights flash to indicate the mode selected:

- Mode 1 – horn does not affect lights (default)
- Mode 2 – horn activates lights 100%
- Mode 3 – horn strobes lights (if two sets of Clearwater lights are installed, they will alternate flashing)

WARNING: The use of strobe mode may not be legal on public highways. Check your local regulations. This mode is intended for parades and escorts under certain conditions.

HAZARD FLASHER ALERT MODE:

The Clearwater lights can be programmed to strobe when the hazard flasher button on the left grip is held down. Toggle these modes by holding down the hazard flasher button and pressing the brake lever three times:

- Mode 1 – OFF, no flash with emergency flasher button (default)
- Mode 2 – strobe with emergency flasher button held down (if two sets of Clearwater lights are installed, they will alternate flashing)

NOTE: Pressing the hazard flasher button activates the turn signal flashers. Cancel the flashers with another short press of the button.

WARNING: The use of strobe mode may not be legal on public highways. Check your local regulations. This mode is intended for parades and escorts under certain conditions.

HIGH BEAM MODE:

The Erica/Krista/Sevina lights can be programmed for two modes of operation in conjunction with high beams. Toggle these modes by holding the brake lever and pressing flash-to-pass three times:

- Mode 1 – all Clearwater lights turn on 100% when high beam or flash-to-pass is pressed. Erica/Krista/Sevina use the day/night dimmed setting on low beam. Lights must be turned on. (default on ver 1.5)
- Mode 2 – HIGH BEAM ACTIVATION. All Clearwater lights turn on 100% when high beam or flash-to-pass is pressed. Erica/Krista/Sevina are turned off with the low beam. Erica/Krista/Sevina do NOT need to be turned on. (default on ver 1.6 or greater)

CLEARWATER BRAKE LIGHT MODULE: (OPTIONAL)

A 1 AMP driver is provided for the optional Clearwater auxiliary brake light license plate frame. There are four modes available. Toggle these modes by pressing the front brake lever five times while the bike is stationary. The engine may be on or off. The brake lights will flash one, two, three or four times to indicate the mode selected.

- Mode 1 – off (default).
- Mode 2 – functions identically to BMW brake light, no flash.
- Mode 3 – California legal strobe on brake activation (4Hz flash), then continuous on as long as the brake is held.
- Mode 4 – speed sensitive mode. Bike speed and braking data is used to modulate the flash rate.

NOTE: The auxiliary brake light is configured as an "always on" running light at a reduced light level. When either the front or rear brake is activated, it activates at 100% brightness. All flashing light modes are deactivated below 5mph.

AUXILIARY CANBUS RELAY DRIVES:

- Auxiliary turn on (1/4 amp maximum) Useful for turning on aux fuse boxes or a PDM-60.
- Auxiliary horn (1/4 amp maximum) Useful for adding and aux air horn. MUST use relay.
- Auxiliary high beam relay drive (1/4 amp maximum) Useful for adding an aux high beam.

WARNING: Do not connect auxiliary accessories without a relay!

FACTORY DEFAULT RESET:

To reset the CANopener to the factory settings, hold the left turn signal switch and press the flash-to-pass button six times within six seconds. All factory preset dimmer levels and modes will be selected. A successful reset is indicated by five flashes of the Clearwater lights.

Inertial Braking Mode (CANopener Version 1.82 and up):

There is an additional braking feature provided by the CANopener in which the brake lights automatically engage when the deceleration of the bike reaches a threshold value, even when the brakes are not engaged (engine braking).

There are three inertial braking modes. Switching between each mode requires the bike to be not moving and 5 consecutive presses of the rear brake foot lever (front brake released). Each mode will be signaled by a corresponding number of flashes by the brake light was well as by any forward running lights, if they are also installed.

- Inertial Brake Mode 1: Inertial braking disabled. The front and/or back brake lever must be engaged for the brake light to activate.

-Inertial Brake Mode 2: Low sensitivity mode. The brake light will activate when the engine braking level reaches 0.4G.

-Inertial Brake Mode 3: High sensitivity mode. The brake light will activate when the engine braking level reaches 0.2G. This will make the activation of the brake light during engine braking happen more frequently, under less deceleration. Inertial braking is disabled during standard brake light mirror mode (Brake Mode 2) but works equally well using the California 4-flash (Brake Mode 3) or variable flashing (Brake Mode 4) modes. In either of these modes, the brake light will appear just as if the rider had engaged the brake, including the programmed flashing and automatic brightness control. Adding mechanical braking at some point during the engine braking process provides seamless, uninterrupted action of the brake light.

Notes:

Notes:

Thank you for purchasing your **Clearwater Lights**. We hope this product will help make you a safer rider. Please feel free to send us comments or suggestions at any time. We learn from you. Visit our website for more exciting products to help you see better at night.

Ride safe!

Sincerely,

Glenn and the team at Clearwater.

clearwater LIGHTS™

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As of 7/30/20