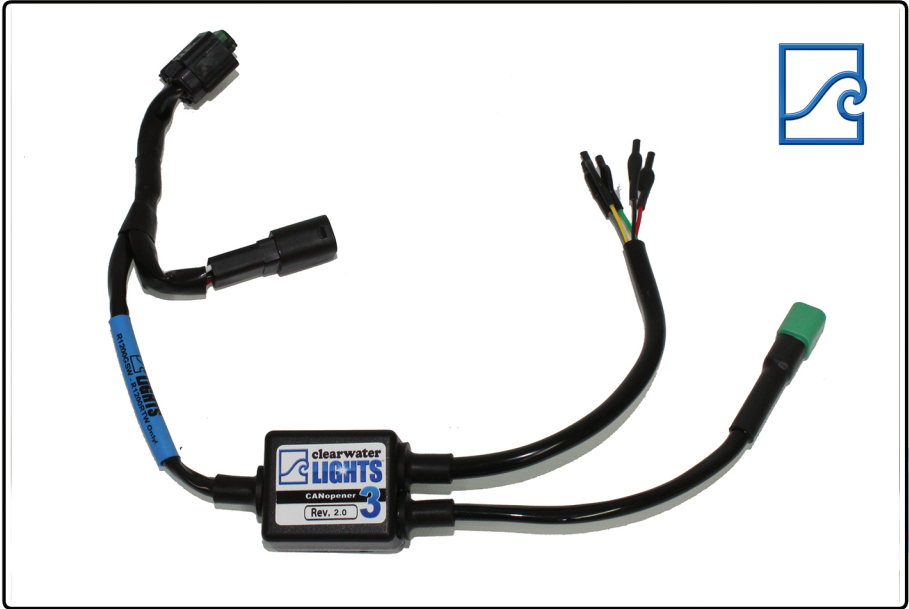




# clearwater LIGHTS™



## CANopener Manual

For Clearwater LED Lights

Dimmable

*Patent Pending*



The table below is only a quick summary guide of all the CANopener features. See the details of each feature throughout this manual.

## Summary of CANopener features and operation

### VERSION 2.0

TSC = Turn Signal Cancel    WW = Wonder Wheel (BMW multifunction controller)  
PM = Tire Pressure Monitor    FTP = Flash To Pass    OBL = Optional Brake Light  
Default setting in **RED**

| Function   | Command   | Modes  |
|--|---|--|
| <b>Darla/<br/>Glenda<br/>Dimmer<br/>[Pg. 5]</b>              | Press and release (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   |
| <b>Erica/Krista<br/>Dimmer<br/>[Pg. 5]</b>                   | Press and release (TSC), then hold control wheel right for 2 seconds And rotate to adjust                           |  |
| <b>Erica/Krista<br/>On/off</b>                               | Hold TSC for 2 seconds  | Mode 1 - on and dimmable (default)<br>Mode 2 - off   |
| <b>High Beam<br/>Mode<br/>[Pg. 7]</b>                        | Press and release (TSC), hold brake lever and press & release FTP 5 times to toggle                                 | Mode 1 - all lights on 100% with high beam or FTP, Krista/Erica must be turned on<br>Mode 2 - Same as Mode 1 except Krista/Erica lights don't have to be turned on. (default)<br>Mode 3 - Same as Mode 2 but lights will strobe for 2 seconds if FTP is pressed 3 times                                    |
| <b>Horn<br/>Activation<br/>Mode<br/>[Pg. 6]</b>              | Hold brake lever and press & release TSC 5 times to toggle  | Mode 1 - horn does not affect lights<br>Mode 2 - horn activates lights 100% (default)<br>Mode 3 - horn strobes lights  |
| <b>Hazard<br/>Flasher<br/>Alert Mode<br/>[Pg. 7]</b>         | Press and release (TSC), hold hazard switch then press & release brake lever 5 times to toggle                      | Mode 1 - no flash (default)<br>Mode 2 - lights strobe while holding hazard switch (Version 1.90 and earlier). Lights strobe when hazards are toggled on (Version 1.91)   |
| <b>Turn Signal<br/>Dimming<br/>[Pg. 6]</b>                   | Press and release (TSC), hold right turn signal then press & release front brake lever 6 times                      | Mode 1 - off (default)<br>Mode 2 - lights dim when turn signals are activated.   |
| <b>Clearwater<br/>Break Light<br/>(optional)<br/>[Pg. 8]</b> | While stationary, press & release TSC then press & release the front brake lever 5 times within 5 seconds to toggle | Mode 1 - off (default on Version 1.6 and older)<br>Mode 2 - functions identically to BMW brake light (default on Version 1.7 and later)<br>Mode 3 - California legal strobe on brake activation (4Hz flash)<br>Mode 4 - speed sensitive (flashes faster and brighter with harder braking) Can be adjusted. |
| <b>Inertial<br/>Braking<br/>[Pg. 8-9]</b>                    | Press & release TSC then press & release the foot brake lever 5 times within 5 seconds to toggle                    | Mode 1 - Inertial braking disabled<br>Mode 2 - Low sensitivity. Brake light activates when engine braking reaches .4G.<br>Mode 3 - High sensitivity. Brake light activates when engine braking reaches .3G. (default)  |
| <b>Reset<br/>Default<br/>Settings<br/>[Pg. 9]</b>            | Press and release (TSC), hold left turn signal then press & release FTP 6 times within 6 seconds.                   | Reset all functions to the default settings above.   |

## Summary of Features

- 1. Independent dimming feature**
  - Independent dimming of two sets of Clearwater lights using the BMW WonderWheel (handlebar mounted rotary dimmer is included for non-WonderWheel bikes)
  - Brightness adjustable in 10 steps from 10-100%
- 2. Automatic Dimmer**
  - Dimmer setting compensates automatically using the bike's photocell
  - Factory preset for day, night, and high beam illumination
- 3. On/off function for Erica/Krista lights**
  - No separate switch required, uses factory turn signal cancel button
- 4. Horn Activation Mode**
  - Programmable to illuminate or strobe with horn button (off road use only)
- 5. Hazard Flasher Alert Mode**
  - Programmable to pulse when switching the hazard button on/off (off road use only)
- 6. High Beam Mode**
  - Clearwater Erica/Krista lights programmable to activate or strobe (off-road use only) with flash-to-pass button
- 7. Turn Signal Dimming**
  - Clearwater Lights can be set to dim while turn signals are activated.
- 8. Clearwater Brake Light Module (optional)**
  - Programmable LED brake module includes California-legal strobe mode and speed sensitive mode
- 9. 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!
- 10. Factory Default Reset**
  - Reset all functions to the default settings

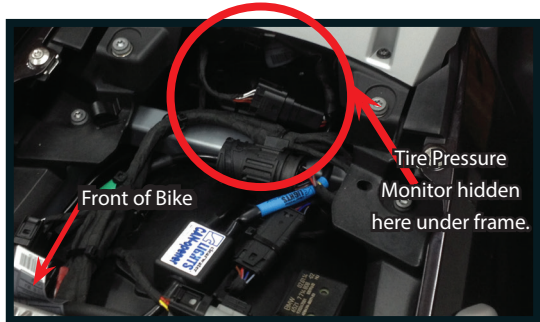


# CANopener Mounting Locations

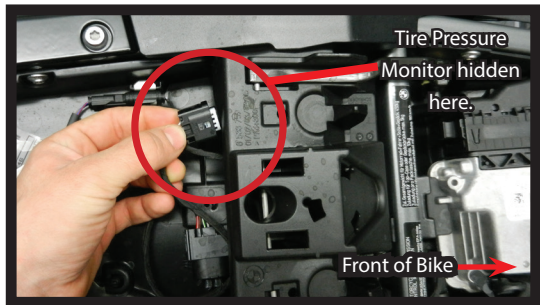
CANopener location on a K1600GT.



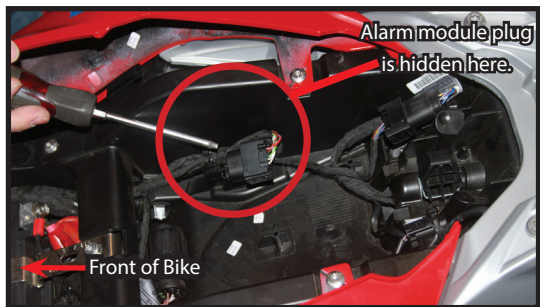
CANopener location on a R1200RTW.



CANopener location on a R1200R/RS



CANopener location on a S1000XR



# Clearwater CANopener operation and features



## 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, 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 and release the Turn Signal Cancel (TSC) switch once before tilting the Wonderwheel Left or Right for dimming (See picture above). 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 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 by pressing and releasing the TSC 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)

# Clearwater CANopener operation and features

## **\*Note\***

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

Default Settings:

| <b>Default Levels</b> | <b>Darla/Glenda</b> | <b>Erica/Krista/Sevina</b> |
|-----------------------|---------------------|----------------------------|
| Low Beam – Day        | 50%                 | 30%                        |
| Low Beam – Night      | 30%                 | 10%                        |
| High Beam             | 100%                | 100%                       |

## **TURN SIGNAL DIMMING**

The front Clearwater lights, and Billie Brake running light can be programmed to dim when the turn signals are activated. To toggle the Turn Signal Dimming mode on and off, press and release the (TSC) button, hold the right turn signal then press & release the brake lever 6 times. By default, Turn Signal Dimming mode is off.

DIMMING CONTROL (except non-WonderWheel bikes)

- Mode 1 - Off (default)
- Mode 2 - Front and Brake lights (Clearwater) dim when turn signals are activated.

ON/OFF FUNCTION FOR ERICA/KRISTA

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

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

(Krista/Erica lights can automatically be shut off if the TSC button is pressed and released 3 times. This is great if the rider forgets if the lights are on or off.)

## **HORN ACTIVATION MODE**

The Clearwater lights can be programmed for three different modes when the horn button is pressed and released. Toggle these modes by holding the front brake lever and pressing and releasing the Turn Signal Cancel button (5) times. The brake and Clearwater lights flash to indicate the mode selected:

- Mode 1 – horn does not affect lights
- Mode 2 – horn activates lights 100% (default)
- 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.

# Clearwater CANopener operation and features

## HIGH BEAM MODE

The Erica/Krista lights can be programmed for two modes of operation in conjunction with high beams. Toggle these modes by pressing and releasing the (TSC) button, holding the front brake lever then pressing and releasing the flash-to-pass (5) times:

- Mode 1 – All Clearwater lights turn on 100% when high beam or flash-to-pass is pressed. Krista/Erica/Sevina lights will not turn on with high beam or flash-to-pass if Krista/Erica/Sevina lights are switched off.
- Mode 2 – HIGH BEAM ACTIVATION. All Clearwater lights turn on 100% when high beam or flash-to-pass is pressed. Krista/Erica/Sevina lights will turn on when High beam or flash-to-pass is pressed, even when Krista/Erica lights are switched off (default on Version 1.6 or greater).
- Mode 3 - HIGH BEAM FLASH MODE: Same as Mode 2, but lights will flash for 2 seconds when the flash-to-pass button is pressed 3 times. (Version

## HAZARD FLASHER ALERT MODE

The Clearwater lights can be programmed to strobe when the hazard flasher button is toggled on. Toggle these modes by pressing and releasing the (TSC) button, holding down the hazard flasher button, then press and release the brake lever (5) times:

- Mode 1 – OFF, no flash with emergency flasher button (default)
- Mode 2 – strobe with emergency flasher when button is held down (Version 1.90 or earlier), or toggled on (Version 1.91 and later). 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.

# Clearwater CANopener operation and features

## **CLEARWATER BRAKE LIGHT MODULE (OPTIONAL)**

The CANopener can also drive an optional Clearwater auxiliary brake light with license plate frame.

There are four modes available. For the brake light, toggle these modes by pressing and releasing the TSC button then pressing and releasing the front brake lever five times while the bike is stationary. The brake lights will flash one, two, three or four times to indicate the mode selected.

- Mode 1 – off
- Mode 2 – functions identically to BMW brake light, no flash. (default)
- Mode 3 – California legal strobe on brake activation (4Hz flash), then continuous on as long as the brake is held.
- Mode 4 – Active brake light; flash rate depends on deceleration rate.

### **Dimming Control of the Brake Light:**

- The Brightness of the brake light and running light can be adjusted with the WonderWheel sperately. The brightness can be adjusted in 10% increments (10-100%)Settings are stored, and will be remembered when restarting the bike or disconnecting the battery.
- To enter the dimmer program, hold down the front brake, press and release the TSC button then hold the WonderWheel to the right. The lights will flash twice indicating you've entered the brake dimming mode. Continue to hold the front brake down to adjust the brake level. Release to the front brake to adjust the the running light level. Adjust the output by rotating the WonderWheel.
- Exit programming mode by pressing and releasing the TSC button. The lights will flash once to confirm.

### **Inertial Braking Mode Sensitivity (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

# Clearwater CANopener operation and features

There are three sensitivities of inertial braking modes. Switching between each mode requires the bike to be not moving, press and release the TSC button, then 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 as well as by any forward running lights, if they are also installed.

- Inertial Brake Mode 1: Inertial braking disabled. (Default Version 1.90 and earlier)  
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 (Default Version 1.91 and later).  
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. (Default)

Adding mechanical braking at some point during the engine braking process provides seamless, uninterrupted action of the brake light.

**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, or at customer set brake light 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 an 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, press and release the (TSC) button, hold the left turn signal switch and press and release the flash-to-pass button (6) times. All factory preset dimmer levels and modes will be selected. A successful reset is indicated by five flashes of the Clearwater

### CANopener Wiring Key (For Billie/Accessory Cable)

- Ground
- Brake/Tail Light
- 12V Motory Start\*
- High Beam\*
- Horn\*                      \*Relay Drive



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.*



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