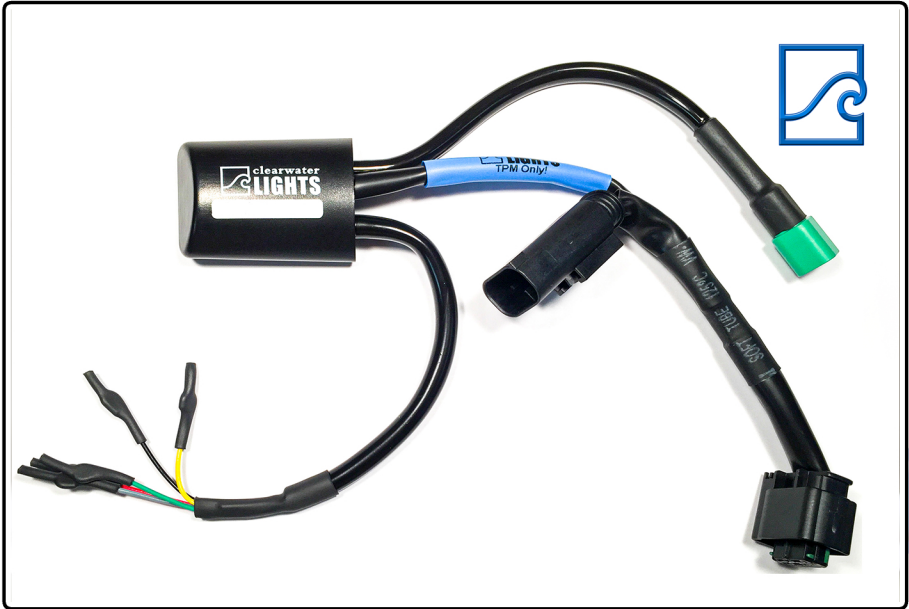




# clearwater LIGHTS™



## CANopener Manual

For Clearwater LED Lights

Dimmable

*Patent Pending*



Made in USA

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

**BIKE MUST BE RUNNING TO TOGGLE THROUGH MODES BELOW**



### CANopener Features Reference Sheet (As of 11/3/2021)

Current CANopener Version is 3.3

TSC = Turn Signal Cancel **WW** = Wonder Wheel (BMW multifunction controller)

TPM = Tire Pressure Monitor **FTP** = Flash To Pass **OBL** = Optional Brake Light

TS = Turn Signal Default setting in **RED**

Function	Command	Modes
<b>Darla/Glenda Dimmer</b> [Pg. 5]	Press and release TSC, then Hold Wonder Wheel Left for 2 seconds and rotate to adjust. Press TSC again to lock in.	Rotate Wonder Wheel 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/Sevina Dimmer</b> [Pg. 5]	Press and release TSC, then hold Wonder Wheel Right for 2 seconds and rotate to adjust. Press TSC again to lock in.	
<b>Erica/Krista/Sevina On/Off</b>	Hold TSC in for 2 seconds to toggle on/off	<b>Mode 1 - On and dimmable (default)</b> Mode 2 – Off
<b>Darla On/Off</b> (Version 2.3 and later)	Hold TS Left for 4 seconds to turn OFF Hold TS Right for 2 seconds to turn back ON	<b>Mode 1 - On and dimmable (default)</b> Mode 2 – Off
<b>High Beam Mode</b> [Pg. 7]	Press and release TSC, hold HAND brake lever and press & release FTP 5 times to cycle through modes	Mode 1 - All lights on 100% with high beam or FTP, Krista/Erica/Sevina must be turned on <b>Mode 2 - Same as Mode 1 except Krista/Erica/Sevina lights don't have to be turned on. (default)</b> Mode 3 - Same as Mode 2 but lights will strobe for 2 seconds if FTP is pressed 3 times (Version 1.91 and later)
<b>Horn Activation Mode</b> [Pg. 6]	Press and release TSC, then hold HAND brake lever and press & release TSC 5 times to cycle through modes	Mode 1 - Horn does not affect lights <b>Mode 2 - Horn activates lights 100% (default)</b> Mode 3 - Lights strobe with horn
<b>Hazard Flasher Alert Mode</b> [Pg. 7]	Press and release TSC, hold hazard switch then press & release HAND brake lever 5 times to toggle on/off	<b>Mode 1 - No flash (default)</b> 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 Dimming [Pg. 6]</b> (Starting Version 1.91)	Press and release TSC, hold TS Right then press & release HAND brake lever 5 times to toggle on/off	<b>Mode 1 - Off (default)</b> Mode 2 - Lights dim when turn signals are activated.
<b>Clearwater Brake Light (optional)</b> [Pg. 8]	While stationary, press & release TSC then casually press & release the HAND brake lever 5 times to cycle through modes	Mode 1 - Off (default on Version 1.6 and older) <b>Mode 2 - Functions identically to BMW brake light (default on Version 1.7 and later)</b> Mode 3 - California legal strobe on brake activation (4Hz flash) Mode 4 – Speed sensitive (flashes faster and brighter with harder braking) can be adjusted.
<b>Inertial Braking</b> [Pg. 8-9]	Press & release TSC then press & release the FOOT brake lever 5 times to cycle through modes	Mode 1 - Inertial braking disabled Mode 2 – Low sensitivity. Brake light activates when engine braking reaches .4G. <b>Mode 3 – High sensitivity. Brake light activates when engine braking reaches .2G. (default)</b>
<b>Brake Dimming</b>	See Billy Brake Light manual	See Billy Brake Light manual
<b>Reset Default Settings</b> [Pg. 9]	Press and release TSC, hold TS Left then press & release FTP 6 times	Reset all functions to the default settings above.

# Clearwater CANopener features and operations

## Summary of Features

### 1. Independent dimming feature

- Independent dimming of two sets of Clearwater lights using the BMW Wonder Wheel (*handlebar mounted rotary dimmer is included for non-Wonder Wheel bikes*)

- The dimmer has 11 brightness levels. Starting at 3%, then increasing from 10-100% in 10% increments

### 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/Sevina/Darla lights

- No separate switch required, uses factory turn signal cancel button

### 4. Turn Signal Dimming

- Clearwater Lights can be set to dim while turn signals are activated.

### 5. Horn Activation Mode

- Programmable to illuminate or strobe with horn button (*off road use only*)

### 6. High Beam Mode

- Clearwater Erica/Krista/Sevina lights programmable to activate or strobe (*off-road use only*) with flash-to-pass button

### 7. Hazard Flasher Alert Mode

- Programmable to strobe when switching the hazard button on/off (*off road use only*)

### 8. Clearwater Brake Light Module (*optional*)

- Programmable LED brake module includes standard brake/tail California-legal strobe mode, and speed sensitive mode

### 9. Auxiliary CANopener 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

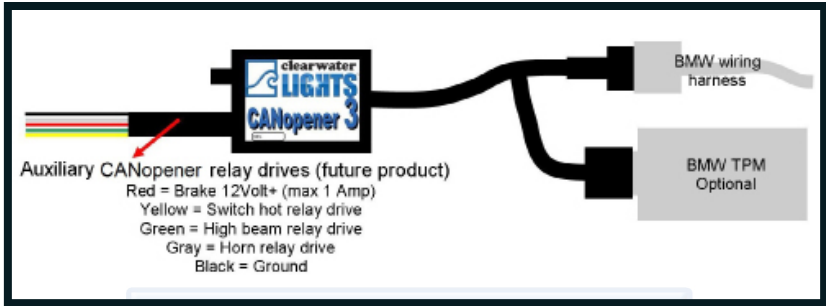
**WARNING:** Do not connect auxiliary accessories without a relay!

### 10. Factory Default Reset

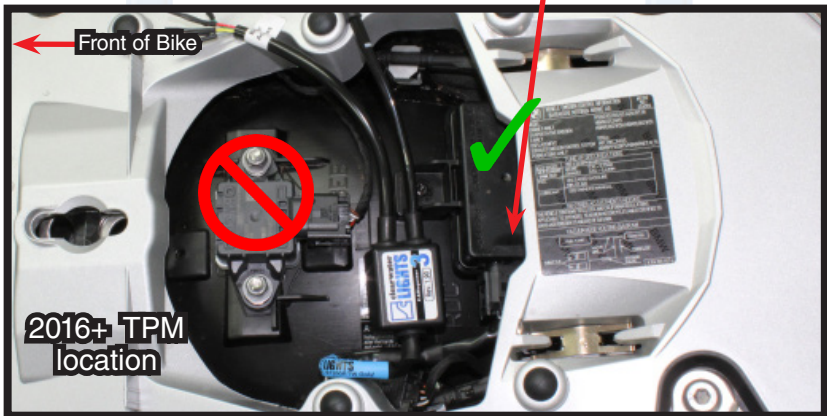
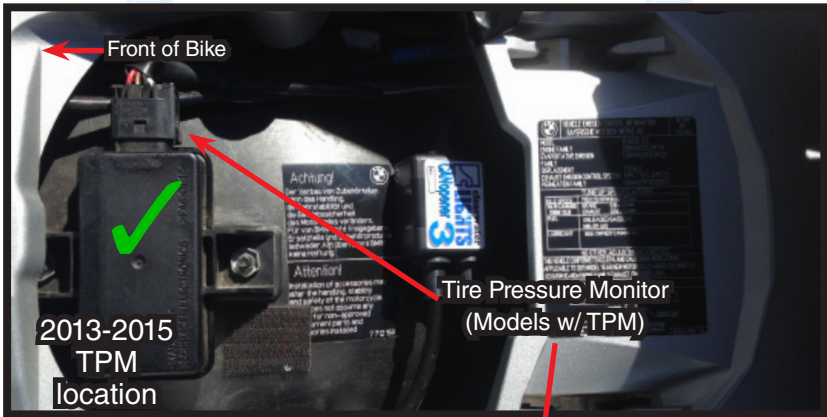
- Reset all functions to the default settings

# CANopener Mounting Locations

The CANopener module can be found mounted under the seat on most liquid cooled BMW's.



CANopener location on a R1200GSW/GSAW

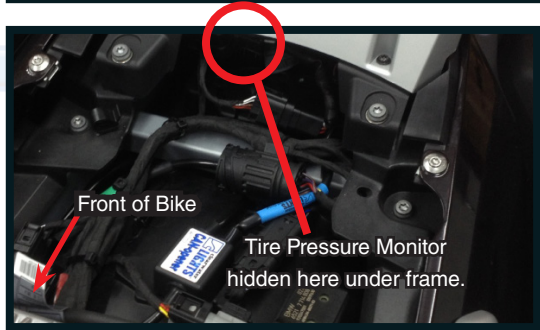


# CANopener Mounting Locations

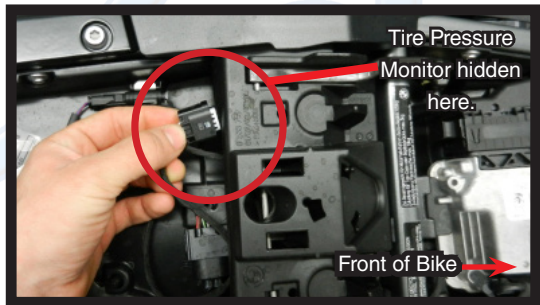
CANopener location on a K1600GT.



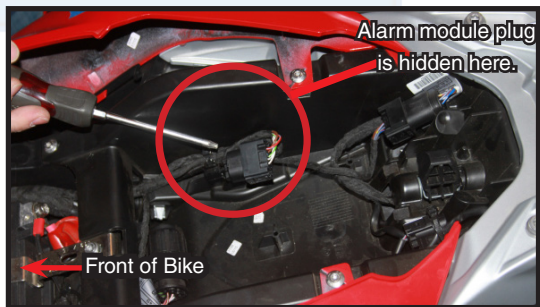
CANopener location on a R1200RTW.



CANopener location on a R1200R/RS



CANopener location on a S1000XR



# Clearwater CANopener operation and features

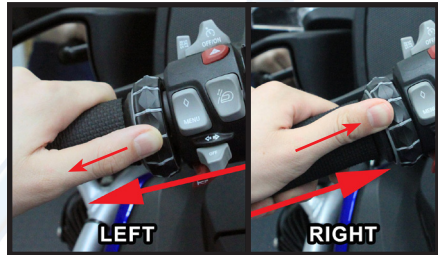
## **DIMMING CONTROL (Wonder Wheel equipped bikes)**

**Information on Dimming:** Two modulated brightness channels are adjustable using the Wonder Wheel. Each channel is programmable for (11) brightness settings (3, 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. Follow the procedure below to enter dimming mode.

**Step 1:** To enter into dimming mode, first press & release the TSC button shown in the figure to the right.



**Step 2:** To adjust Glenda/Darla lights, hold the Wonder Wheel to the Left for 2 seconds. To adjust Krista/Erica/Sevina lights, hold Wonder Wheel to the Right for 2 seconds. The lights should flash twice. The brightness level can then be adjusted by rotating the Wonder Wheel forward and back.



**Step 3:** To exit dimming mode, press and release the TSC button again. This will lock in the brightness setting.



**Note** - Remember that each set of lights are adjustable for day and night. 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 dash display using your hand or a towel. Activating the high beam switches the lights to 100%. If you want your high beam dimmed, simply perform the same commands (above) in high beam.

**WARNING:** When configuring the dimmer, be sure that the Wonder Wheel 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.

# Clearwater CANopener operation and features

## DIMMING CONTROL (Non-Wonder Wheel)

If the motorcycle does not have the GPS Prep Package (*Wonder Wheel*), your light kit will come equipped with a handlebar mounted knob for dimming control. Separate day/night settings, separate channel dimming, and strobe functions are not available.

### Default Settings:

Default Levels	Darla/Glenda	Erica/Krista/Sevina
Low Beam – Day	50%	30%
Low Beam – Night	30%	10%
High Beam	100%	100%

## ON/OFF FUNCTION FOR ERICA/KRISTA/SEVINA

The Krista/Erica/Sevina 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/Sevina 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.)

## TURN SIGNAL DIMMING

The front Clearwater lights, and Billie tail 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 while pressing and releasing the front (hand) brake lever 5 times.

### DIMMING CONTROL (except *non-WonderWheel* bikes)

- Mode 1 - Off (*default*)
- Mode 2 - All Clearwater lights dim to lowest setting when activating turn signals.

## HORN ACTIVATION MODE

The Clearwater lights can be programmed for three different modes when the horn button is pressed. Toggle these modes by pressing and releasing the TSC, then hold the front (hand) brake lever and press and release the TSC (5) times. The brake and Clearwater lights will 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*)

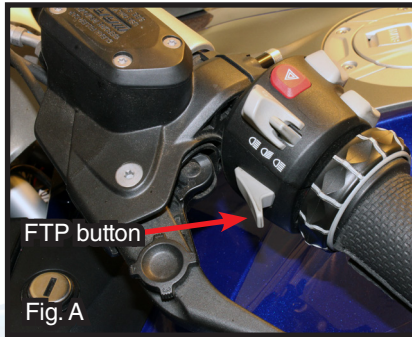
**WARNING:** Strobe mode may not be legal on public highways, check local regulations. Strobing intended for parades/escorts under certain conditions.

# Clearwater CANopener operation and features

## HIGH BEAM MODE

The Krista/Erica/Sevina lights can be programmed for three 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 FTP button (See Fig. A below) (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/Sevina 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 triggered 3 times.



## 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 (hand) 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.

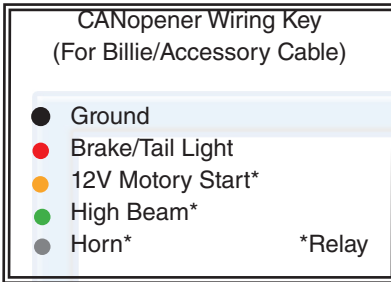


# Clearwater CANopener operation and features

## AUXILIARY CANopener 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!



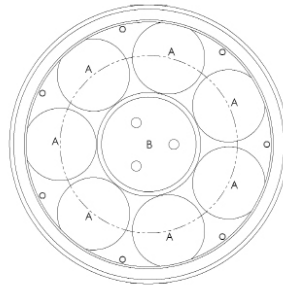
**Note: These are all 12v signals that would be used to trip a relay that is powered by the bike's battery.**

## 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 all Clearwater lights.

## DIXI FUNCTIONALITY

Dixi lights operate similarly to two sets of our lights. The Outer Ring of LEDs (A) can be turned on and off by holding in the TSC for 2 seconds just like a set of Kristas, Ericas or Sevinas.



The Inner LEDs (B) are designed to come on with the engine just like a set of Darlas but can be shut off (Version 2.3+) by holding the TSC Left for 5 seconds and turned back **on by holding the TSC to the right for 3 seconds.**

**The Inner and Outer ring of LEDs are dimmed together using the same dimming operation as the Krista/Erica/Sevina channel. Refer to Page 5, Step 2 for further dimming operation details.**





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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Revised 11/3/2021