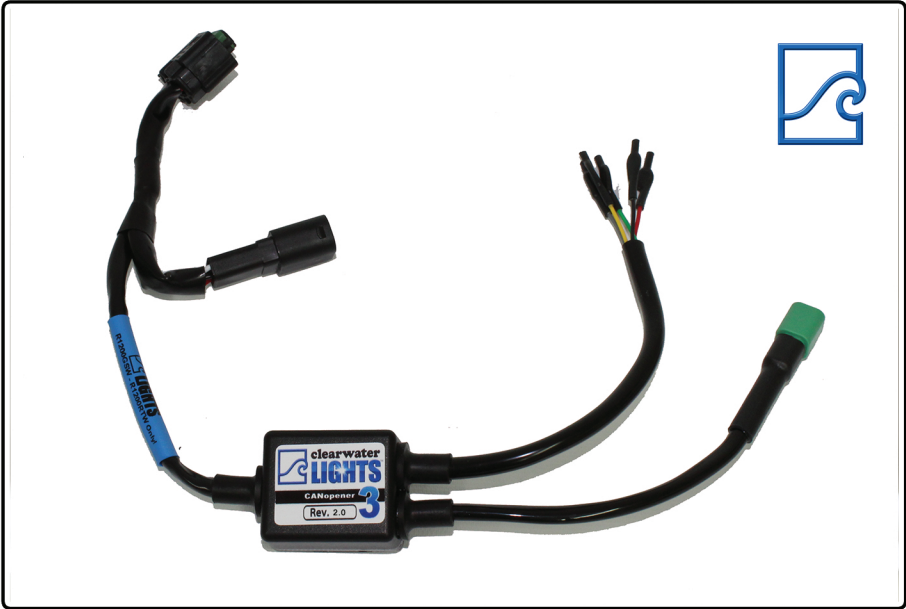




clearwater
LIGHTS™



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 2.1

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

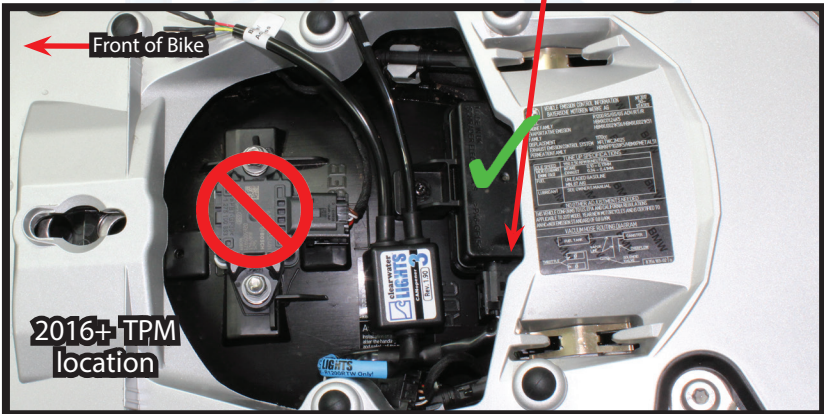
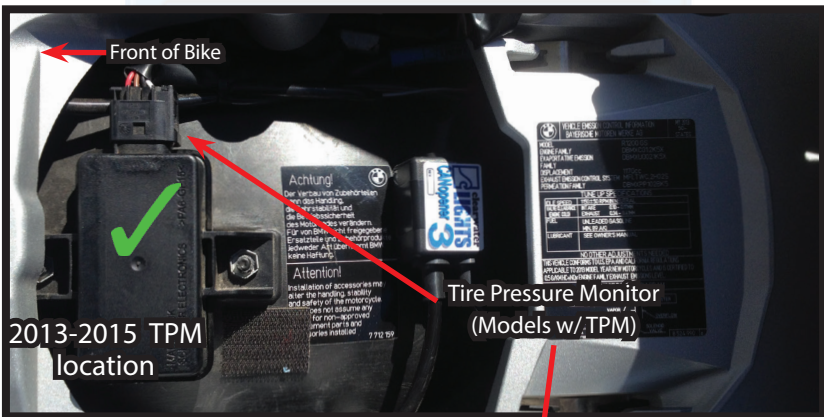
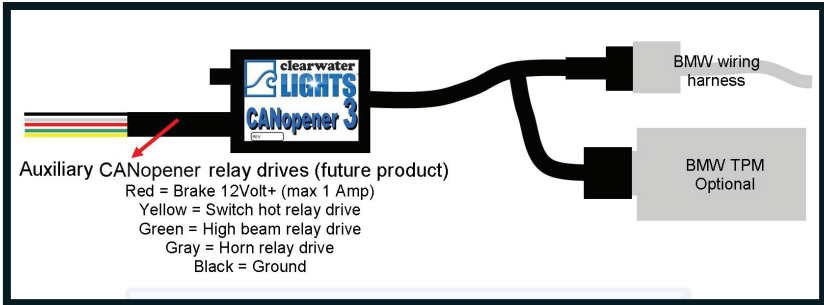
Summary of Features

1. Independent dimming feature
 - Independent dimming of two sets of Clearwater lights using the BMW 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 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 pulse when switching the hazard button on/off (off road use only)
8. Clearwater Brake Light Module (optional)
 - Programmable LED brake module includes 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.



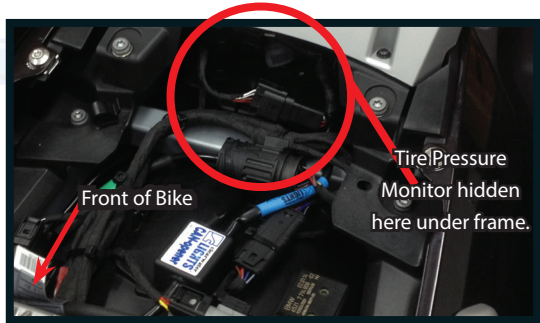
CANopener location on a R1200GSW/GSAW

CANopener Mounting Locations

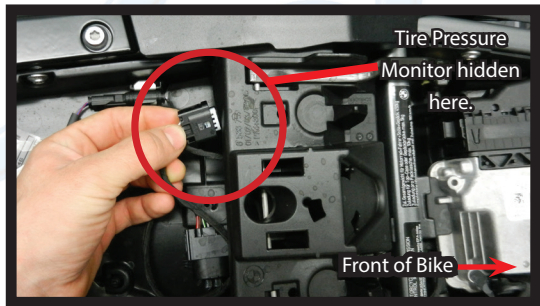
CANopener location on a K1600GT.



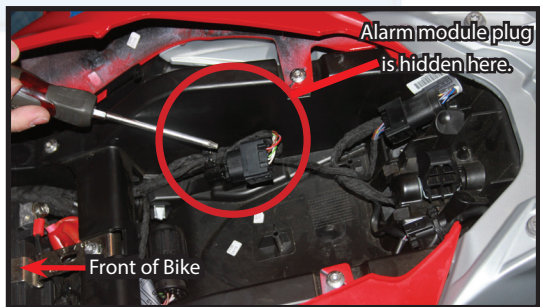
CANopener location on a R1200RTW.



CANopener location on a R1200R/RS



CANopener location on a S1000XR



Clearwater CANopener operation and features

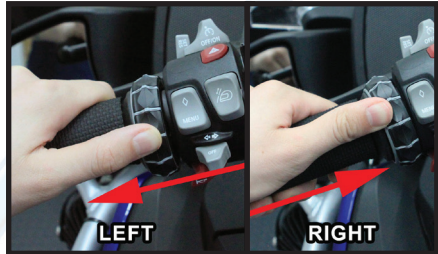
DIMMING CONTROL (Wonder Wheel equipped bikes)

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 wheel.



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 is adjustable for day, 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 photocell at the top right corner of the dash display using your hand or a piece of tape. Activate the high beam switches the lights to 100%

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 and night settings and the dual intensity dimmer will not be 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 then press & release the brake lever 5 times.

DIMMING CONTROL (except non-WonderWheel bikes)

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

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 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)

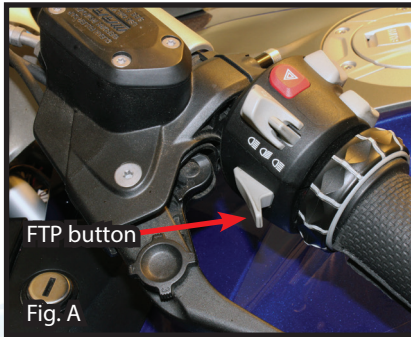
WARNING: The use of strobe mode may not be legal on public highways. Check your local regulations. This mode is intended for parades and escorts under certain conditions.

Clearwater CANopener operation and features

HIGH BEAM MODE

The 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 pressed 3 times. (Version 1.91 or later).



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 and tail light (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.

Default Brightness Levels	Tail	Brake
Day	20%	70%
Night	10%	60%

Dimming Control of the Brake Light:

- The brightness of the brake light and running light can be adjusted separately with the Wonder Wheel. This brightness level can be adjusted in 10% increments (10 - 100%). Settings are stored, and will be remembered when restarting the bike or disconnecting the battery.
- Entering Dimmer Program - Hold down the front brake, press and release the TSC button, then hold the Wonder Wheel to the right. The lights will flash twice indicating you have entered the brake dimming mode. Continue to hold the front brake down to adjust the brake brightness level. Release the front brake to adjust the running light brightness level. Adjust the output by rotating the WonderWheel.
- Exiting Dimmer Program - Press and release 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 braking).

Clearwater CANopener operation and features

There are three sensitivities of inertial braking modes. Switching between each mode requires the bike to be stationary. To change the sensitivity, press and release the TSC button, then press the rear brake foot lever 5 times (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 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!

CANopener Wiring Key (For Billie/Accessory Cable)	
● Ground	
● Brake/Tail Light	
● 12V Motory Start*	
● High Beam*	
● Horn*	*Relay Drive

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.



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.



The Clearwater Company - 11305 Sunrise Gold Circle, Suite D
Rancho Cordova, CA 95742
Phone: (916) 852-7029 | Fax: (916) 852-9410 | www.clearwaterlights.com

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