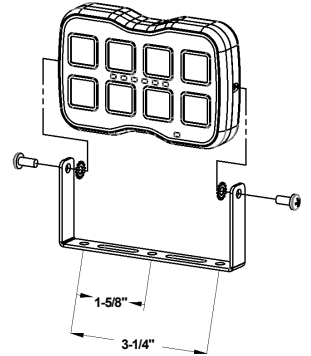




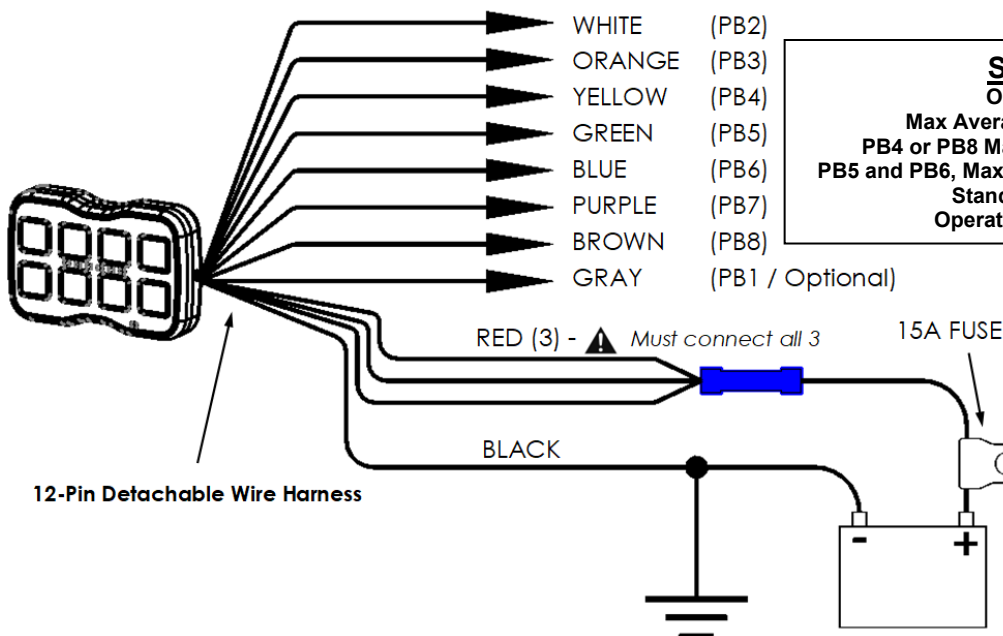
## Mounting

1. Select a place to mount your controller that is a dry location out of direct sunlight, free of dirt and dust. Under the vehicle's instrument panel is usually the best choice.
2. After identifying where your lights will be mounted, determine the path(s) the wires will take.
3. A U-bracket is included for mounting. Attach it to the controller as shown to the right. The bracket is designed such that it can be swiveled in any direction depending upon your mounting location. Use appropriate hardware (not included) to attach the U-Bracket to your mounting surface.



## Electrical Connections

<u>Wire Color</u>	<u>Button</u>	<u>Standard Function</u>	<u>Optional Function</u>
WHITE	2	Auxiliary Device +12VDC	Flashing Output
ORANGE	3	Auxiliary Device +12VDC	Flashing Output
YELLOW	4	Auxiliary Device +12VDC	Flashing Output
GREEN	5	Auxiliary Device +12VDC	Flashing Output or Traffic Director Left
BLUE	6	Auxiliary Device +12VDC	Flashing Output or Traffic Director Right
PURPLE	7	Auxiliary Device +12VDC	Flashing Output or Traffic Director Center-Out
BROWN	8	Low Current Auxiliary Device +12VDC	Flashing Output or Ground-side Switching or Traffic Director Warn
GRAY	1	N/A	Optional Output (See Advanced Programming to enable the Gray wire) or Flashing Output
BLACK	N/A	Ground/Battery Negative	N/A
RED (3)	N/A	Battery Positive (12VDC)	N/A



**SPECIFICATIONS**

**Operating Voltage:** 10-16VDC

**Max Average Total Output:** 15A

**PB4 or PB8 Max Output (each):** 2.5A avg. (5.0A peak)

**PB5 and PB6, Max Average Output:** 60mA

**Standby Current (Off):** <1mA

**Operating Temperature:** -40° to 55°C

# Standard Programming Options

These controllers have three options that can be programmed by following the instructions below.

**BACK LIGHT:** Scrolls through 14 options of brightness for the backlighting

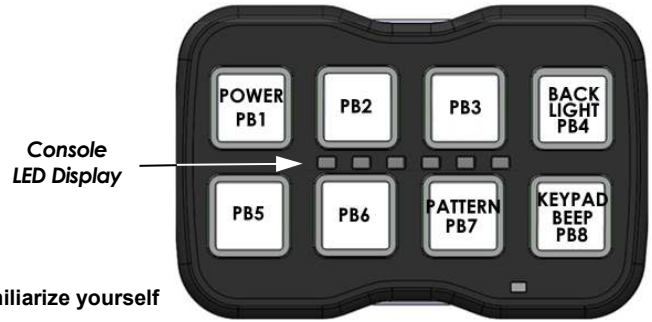
**PATTERN:** Scrolls through 10 pattern options. This option only applies if you have enabled a flashing output (see Advanced Programming)

**KEYPAD BEEP:** Toggles keypad tones On/Off (ON by default)

1	FLICKER
2	FAST DOUBLE
3	TRIPLE Phase 1
4	PSEUDO-FLICKER
5	PSU RANDOM
6	QUAD
7	QUAD W/PP
8	SINGLE
9	DOUBLE
10	DELTA OMEGA

To program any of the options listed above proceed below:

1. To enter Programming Mode, press and hold the POWER button until you hear an oscillating tone and PB2, PB5, and PB6 turn off.
2. Review the diagram to the right. While continuing to hold the POWER button, press and release the corresponding push button to toggle the option that you wish to change.
5. Once you have finished programming all of the desired options, release the POWER button.



Once your controller and lights are installed, please test all the functions to familiarize yourself with the various patterns and the operation of the controller.



**Important: This product is used to direct traffic. Improper use may result in vehicular collision, personal injury and/or death. The manufacturer, Grote, and/or its subsidiaries shall not be held responsible for damages directly or indirectly caused by improper use of this product. Always carefully consider the effect on traffic that the selected light pattern will have before engaging the lights.**

For Advanced Programming Options and instructions in French or Spanish please visit [www.grote.com](http://www.grote.com) or use the following QR code.



## LIMITED WARRANTY

Grote Industries, Inc. ("Grote") warrants its products to be free from defects in material and workmanship under normal use and service as set forth in this Limited Warranty. THIS LIMITED WARRANTY is the final, complete and exclusive expression of warranty to the purchaser and cannot be modified except in writing signed by an authorized officer of Grote.

### GENERAL ONE-YEAR LIMITED WARRANTY

Subject to the following conditions, Grote warrants to the original purchaser only (and not to anyone else) of each new product made by Grote that any part thereof which proves to be defective in material or workmanship within one year from the date of manufacture by Grote will, at Grote's option, be repaired or replaced without charge upon return to Grote of the defective product, provided any defect in the product is brought to the attention of Grote within the warranty period, who alone will be authorized to furnish or arrange for repairs or replacements within the terms of this limited warranty.

The above limited warranty does not apply, and no warranty, either expressed or implied, shall be applicable (a) to damage resulting from accident, alteration, misuse or abuse; (b) if the product is not installed, operated and maintained according to procedures recommended by Grote; (c) if the serial number, date code, or other identifying marks affixed to the product by Grote are removed, obliterated or defaced. In no case shall the warranty be extended to defects in materials, components (which includes but not limited to bulbs), or services furnished by third parties nor to the installation of the product performed by third parties, except those performed by or on behalf of Grote authorized distributors. If any repairs are made, or any other parts are replaced during the warranty period, by any distributor other than a Grote distributor, in accordance with service manuals, parts, accessories, or attachments other than authorized by Grote for use in Grote's products, the purchaser shall pay for such repairs or parts without recourse against Grote, and Grote shall be relieved of responsibility for fulfillment of the warranty with respect to parts or components of all repairs, alterations, or replacements so made.

In consideration of the express warranty and other terms herein contained, the purchaser agrees that purchaser's exclusive remedy and Grote's sole liability on any claim, whether in tort, contract or warranty, shall be limited to, at Grote's option, repair or replacement of a defective product. No other remedy (including but not limited to incidental or consequential damages for the lost profits, lost sales, injury to person or property; or any other incidental loss or damages) shall be available to purchaser. In no event, and for no cause whatsoever, including any breach or default by Grote, shall Grote have any monetary liability to purchaser in excess of the price paid by purchaser for the product in question.

This limited warranty is expressly in lieu of all other expressed or implied warranties, including the implied warranty of merchantability and the implied warranty of fitness for a particular purpose, and of all other obligations or liabilities on the part of Grote. No dealer, distributor or other representative of the company is authorized to change this warranty in any way or to grant any other warranty.

Any affirmation of fact or promise made by Grote shall not be deemed to create an expressed warranty that the products shall conform to the affirmation or promise. Any description of the product is for the sole purpose of identifying such product and shall not be deemed to create an express warranty that the product shall conform to the description. Any sample or product model is for illustrative purposes only and shall not be deemed to create an express warranty that the whole of the products shall conform to the sample or model. Further, no affirmation or promise, or description, sample or model shall be deemed a part of the basis of the bargain between Grote and the purchaser.

Grote assumes no responsibility that title conveyed to the purchaser is good or the transfer of title to the products is rightful, or that the products shall be delivered free from any security interest or other lien or encumbrance of any third party, or free from any rightful claim of any third party by way of infringement or otherwise.

### NON-TRANSFERABLE

This warranty shall extend only to the original purchaser and is non-transferable.

### END USER RESPONSIBILITY:

Each user bears full responsibility for making their own determination as to the suitability of Grote materials, products, recommendations, or advice for their own particular use. Each user is ultimately responsible to identify and perform tests and analyses necessary to assure that its finished parts incorporating Grote products will be safe and suitable for use under end-user conditions. Nothing in this or any other document, nor any oral recommendation or advice, shall be deemed to alter, vary, supersede, or waive any provision of this Limited Warranty or this Disclaimer, unless any such modification is specifically agreed to in writing signed by a Grote Industries Representative.

### WARRANTY RETURN AND REPLACEMENT INSTRUCTIONS

To be eligible for limited warranty consideration, either contact your Grote sales representative or call Grote customer service at 800.628.0809 (In Canada call 800.268.5612). Upon issuance of a returned goods authorization number, return the failed product, freight prepaid to: Warranty at Grote Industries, Inc., 2600 Lanier Drive, Madison, Indiana 47250. In Canada, return product, freight prepaid to: Warranty at Grote Industries Co., 230 Travail Road, Markham, Ontario L3S 3J1. Any product covered under the terms of the respective limited warranty will be replaced directly to the original consumer / purchaser only. Items received by Grote will not be returned unless accompanied by a specific written request. The product to be returned will be those items not covered under the warranty and will be returned to sender freight collect.

### CONSUMER RIGHTS IN VARIOUS STATES

This warranty gives you specific legal rights, and you may have other rights that vary from state to state. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. Further, some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you.



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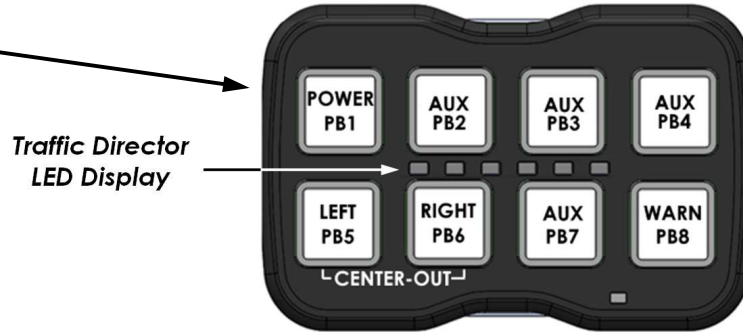
**Canada:** 230 Travail Road • Markham, Ontario L3S 3J1 • Phone: 800-268-5612 / 905-209-9744 • Fax: 800-267-9024

# Advanced Programming Options

These controllers have a wide variety of advanced programming options available:

## Advanced Programming Option Descriptions

- Remember Last State:** (OFF by default) - Normally, when power is applied to the RED wires, the controller itself will be ON (all individual functions OFF though). If you want the controller to remember whether it was ON or OFF when power was removed from the Red wires, and then return to that state when power is applied again, activate this feature by toggling this option.
- Active Beep:** (OFF by default) - Unit will produce a slow beep whenever any function is active.
- PB8 Ground Switched:** (OFF by default) - If you would like **PB8** to switch GROUND rather than POWER, activate this option. (100mA max)
- POWER = Output:** (OFF by default) - The **POWER** button (**PB1**) normally turns the controller on and off. If you would like to use the **POWER** button to control an additional output (the GRAY wire), activate this option. (60mA max)  
*Note: If you use this option, the controller will always be ON whenever power is supplied to any of the RED wires.*



- TD Functions:** (OFF by default) - Normally **PB2-PB8** are programmed to activate auxiliary devices. If you want to use this controller to operate a Traffic Director, toggle this option ON. When this option is enabled, the LED display will mimic the Traffic Director output when buttons **PB5** (Left Arrow), **PB6** (Right Arrow), and **PB5+PB6** (Center Out). This option will also turn on the "radio" functionality of these buttons which only allows one function to be active at once.
- PB7 Center-Out:** (OFF by default) - Normally, if you enable the TD Function option, the controller will activate the Center-Out Traffic Director function by pressing **PB5+PB6** (Left+Right) simultaneously. If your Traffic Director utilizes a separate Center-Out wire, and you would like to utilize **PB7** to activate the Center-Out pattern, toggle this option. When **PB7** is pressed, the LED display on the controller will mimic a Center-Out pattern and **PB5**, **PB6**, and **PB8** will automatically turn off.
- PB8 Warn:** (OFF by default) - If you enable the TD Function option and want to utilize **PB8** to activate the Warn pattern on your Traffic Director, toggle this option ON. When **PB8** is pressed, the LED display on the controller will mimic a Warning pattern and **PB5**, **PB6**, and **PB7** (if in C-O mode) will automatically turn off.

Please review the chart to the right that summarizes the programming of these options.

To program any of the Advanced Options proceed as follows:

1. Press and hold the **POWER** button until you to enter Programming Mode. You should hear an oscillating tone and **PB2**, **PB5**, and **PB6** will turn off.
2. While continuing to press the **POWER** button, also press and hold **PB5** and **PB8** until the controller emits a tone. This will place the controller into Advanced Programming Mode and you can release all of the buttons.
3. Review the chart above. Press and release the **POWER** button to scroll through the Console LED Displays until you reach the one that corresponds to the option that you wish to reprogram.
4. Use the corresponding push button to toggle the option that you wish to change.
5. Once you have finished programming all of the desired options, hold the **POWER** button down until you hear a tone.

CONSOLE LED DISPLAY	1	2	3	4	5	6	7	8
	N/A	Remember Last State	Active Beep	N/A	N/A	N/A	N/A	PB8 Ground
	N/A	N/A	POWER =Output	N/A	N/A	TD Functions	PB7 Center-Out	PB8 Warn
	N/A	Momentary PB2	Momentary PB3	Momentary PB4	Momentary PB5	Momentary PB6	Momentary PB7	Momentary PB8
	N/A	Normally Open PB2	Normally Open PB3	Normally Open PB4	Normally Open PB5	Normally Open PB6	Normally Open PB7	Normally Open PB8
	N/A	Flashing Output PB2	Flashing Output PB3	Flashing Output PB4	Flashing Output PB5	Flashing Output PB6	Flashing Output PB7	Flashing Output PB8
	N/A	N/A	PB2 ↗ PB3	PB2 ↗ PB4	PB2 ↗ PB5	PB2 ↗ PB6	PB2 ↗ PB7	PB2 ↗ PB8
	N/A	N/A	PB2 ↘ PB3	PB2 ↘ PB4	PB2 ↘ PB5	PB2 ↘ PB6	PB2 ↘ PB7	PB2 ↘ PB8
	N/A	PB2 PHASE	PB3 PHASE	PB4 PHASE	PB5 PHASE	PB6 PHASE	PB7 PHASE	PB8 PHASE
	N/A	Factory use only						



**PB# Momentary:** (OFF/LATCHED by default) - Normally each pushbutton activates its corresponding function when pressed, then de-activates when pressed again (i.e. latched). Toggle this option if you would like the corresponding function to only activate while holding the button down.

**Normally Open PB#:** (ON/OPEN by default) - By default each PB is OPEN when the controller is powered up. When a button is pressed it CLOSSES and applies power to that output. Toggle this option if you would like the corresponding output to automatically be CLOSED when the controller is activated and OPENED when you press the button.  
*Note: This will also increase the Standby Current load to  $\approx 20\text{mA}$  plus the loads of the connected accessories.*

**Flashing Output PB#:** (OFF by default) - If you want the output tied to this PB to flash, toggle this option (typically used to flash dummy heads). Review the **Standard Programming Options** section of the manual to change the flash pattern.

**PB2 ↗ PB#:** (OFF by default) - Toggling this option will automatically activate the corresponding PB# whenever **PB2** is activated (applies to **PB3-PB8**).

**PB2 ↘ PB#:** (OFF by default) - Toggling this option will automatically de-activate the corresponding PB# whenever **PB2** is de-activated (applies to **PB3-PB8**).

**PB# PHASE:** (OFF/PHASE 1 by default) - Applies to only outputs with the Flashing Output enabled. Toggling this option will change the Phase of the flash (used to determine simultaneous or alternating flashing).

Once your controller is installed, please test all the functions to familiarize yourself with the operation of the controller.

## Reset to Defaults

You can reset this controller to the factory default setting by following these steps:

1. Hold the **POWER** button and you will hear an oscillating tone and **PB5** and **PB6** turn off.
2. While continuing to press the **POWER** button, hold **PB5** and **PB6** down until the TD LED Display flashes once, then twice, then three times.
3. Release all of the buttons to save your settings and exit Programming Mode.

## Troubleshooting

### Button Flashes Rapidly / No Output:

Individual over-current or short - If the controller detects a current greater than 4.5A (or a short) on any of the outputs, when that output is activated, the corresponding button will flash rapidly. Every few seconds the button will turn back on to check if the problem is resolved. If it still is over-current the button/output will error out again. If the over-current issue has been resolved the output will function normally.

### One Or More Outputs Deactivated:

System over-current - This controller has a maximum average output of 15 amps. If this limit is exceeded, the system will start turning off the outputs sequentially, starting with PB2, until the current is under 15 amps. Every few seconds the buttons will turn back on to check if the problem is resolved. If it has not, they will turn off again.

### Electrical Current Test:

While holding down the POWER button, the LED Display will indicate the amount of current being drawn by the currently active function.

All Off = ~ 0 amps  All On = Full Load/System Limit

If you have any questions concerning this product, please contact our Customer Solution's Group. In the US: 1-800-628-0809 and in Canada: 1-800-268-5612

If a product is to be returned for any reason, please contact our Customer Solutions Group at the numbers listed above to obtain and Return Goods Authorization number (RGA) before shipping the product back. The RGA must be clearly marked on the outside of the box/carton to ensure prompt and accurate service.

Si vous avez des questions concernant ce produit, veuillez contacter notre groupe de solutions clients. Aux États-Unis: 1-800-628-0809 et au Canada: 1-800-268-5612

Si un produit doit être retourné pour quelque raison que ce soit, veuillez contacter notre groupe de solutions client aux numéros indiqués ci-dessus pour obtenir et retourner le numéro d'autorisation de transport (RGA) avant de renvoyer le produit. Le RGA doit être clairement marqué sur l'extérieur de la boîte / carton pour assurer un service rapide et précis.

Si tiene alguna pregunta sobre este producto, contáctese con nuestro Grupo de soluciones para clientes. En los EE. UU. : 1-800-628-0809 y en Canadá: 1-800-268-5612

Si un producto debe ser devuelto por cualquier razón, comuníquese con nuestro Grupo de soluciones para clientes a los números detallados anteriormente para obtener y devolver el número de autorización de productos (RGA) antes de devolver el producto. El RGA debe estar claramente marcado en el exterior de la caja o caja de cartón para garantizar un servicio rápido y preciso.



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