

# WHELEN<sup>®</sup>

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## Installation Guide: BL8140 Relay Box

### Automotive: Serial Communication

### Safety First

This document provides all the necessary information to allow your Whelen product to be properly and safely installed. Before beginning the installation and/or operation of your new product, the installation technician and operator must read this manual completely. Important information is contained herein that could prevent serious injury or damage.

- **Proper installation of this product requires the installer to have a good understanding of automotive electronics, systems and procedures.**
- **If mounting this product requires drilling holes, the installer MUST be sure that no vehicle components or other vital parts could be damaged by the drilling process. Check both sides of the mounting surface before drilling begins. Also de-burr any holes and remove any metal shards or remnants. Install grommets into all wire passage holes.**
- **If this manual states that this product may be mounted with suction cups, magnets, tape or Velcro®, clean the mounting surface with a 50/50 mix of isopropyl alcohol and water and dry thoroughly.**
- **Do not install this product or route any wires in the deployment area of your air bag. Equipment mounted or located in the air bag deployment area will damage or reduce the effectiveness of the air bag, or become a projectile that could cause serious personal injury or death. Refer to your vehicle owner's manual for the air bag deployment area. The User/Installer assumes full responsibility to determine proper mounting location, based on providing ultimate safety to all passengers inside the vehicle.**
- **For this product to operate at optimum efficiency, a good electrical connection to chassis ground must be made. The recommended procedure requires the product ground wire to be connected directly to the NEGATIVE (-) battery post.**
- **If this product uses a remote device to activate or control this product, make sure that this device is located in an area that allows both the vehicle and the device to be operated safely in any driving condition.**
- **Do not attempt to activate or control this device in a hazardous driving situation.**
- **If this product contains strobe light(s), halogen light(s) or high-intensity LEDs, do not stare directly into these lights. Momentary blindness and/or eye damage could result.**
- **Use only soap and water to clean the outer lens. Use of other chemicals could result in premature lens cracking (crazing) and discoloration. Lenses in this condition have significantly reduced effectiveness and should be replaced immediately. Inspect and operate this product regularly to confirm its proper operation and mounting condition. Do not use a pressure washer to clean this product.**
- **It is recommended that these instructions be stored in a safe place and referred to when performing maintenance and/or reinstallation of this product.**
- **FAILURE TO FOLLOW THESE SAFETY PRECAUTIONS AND INSTRUCTIONS COULD RESULT IN DAMAGE TO THE PRODUCT OR VEHICLE AND/OR SERIOUS INJURY TO YOU AND YOUR PASSENGERS!**

**For warranty information regarding this product, visit [www.whelen.com/warranty](http://www.whelen.com/warranty)**

## Selecting a mounting location...

The logical choice for a mounting area would be a trunk or similar compartment. However, due to the wide variety of vehicles onto which the BL8140 could be installed, this is not always possible. The following guidelines will help the installer select an acceptable alternative:

- A) The BL8140 should be mounted on a metal surface to aid heat dissipation. Be sure that this surface is not one that either generates or is exposed to excessive heat during normal operation of the vehicle.
- B) Do not select a location where the BL8140 will be exposed to potential damage from any unsecured or loose equipment in the vehicle.
- C) Be sure the area selected will not allow the BL8140 to be exposed to water!
- D) When routing the BL8140's wires, it is important to choose a path that will keep these wires away from excessive heat and from any vehicle equipment that could compromise the integrity of the wires (ex. trunk lids, door jams, etc.).

**WARNING! All customer supplied wires, that connect to the positive (+) terminal of the battery, must be sized to supply at least 125% of the maximum operating current, and fused "at the battery" to carry the load!**

**Note: When extending the communication wires (BLUE & GREY), similar "twisted pair" wires MUST be used!**

When the best mounting location has been determined, securely fasten the BL8140 to its mounting surface using the supplied hardware.

**Caution: As it will be necessary to drill holes into the mounting surface, the installer MUST be sure that no vehicle components or other vital parts could be damaged by the drilling process. Check both sides of the mounting surface before drilling!**

## BL8140 Dip Switches...

All BL8140's are shipped with a default dip switch configuration. These switches determine several aspects of the BL8140, including how the unit is addressed within the network. This section will offer a brief explanation of dip switch functionality. For a more detailed explanation of these switches, please refer to the "Advanced Settings" section found in the second half of this manual.

The default dip switch configuration for the BL8140 is as follows:

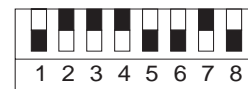
Dip Switch#	Default Position
1	DOWN
2	DOWN
3	DOWN
4	UP
5	DOWN
6	UP
7	UP
8	UP

### Settings for use with MPC01 ver 2.x



□ = "UP" position  
 ■ = "DOWN" position

### Settings for use with MPC01 ver 1.x



□ = "UP" position  
 ■ = "DOWN" position

Dip Switch 1 - This switch's position should not be changed. Doing so effectively disables the ability of the BL8140 to properly operate.

Dip Switch 2&3 - These two switches work in conjunction with each other. Their positions determine how the output control channels are interpreted by the network. Please refer to the "Advanced Settings" section for a full explanation.

Dip Switch 4 - This switch controls the operation of push-button switch #9 on the Multi-Purpose Controller. Please refer to the Advanced Settings section for a more detailed explanation.

Dip Switch 5&6 - These two switches work in conjunction with each other. Their positions determine the network address of the BL8140s output control channel 1. The default address is 3.

Dip Switch 7&8 - These two switches work in conjunction with each other. Their positions determine the network address of the BL8140s output control channel 2. The default address is 4.

## Wiring the BL8140...

The following diagram will illustrate the necessary wiring connections needed for BL8140 operation.

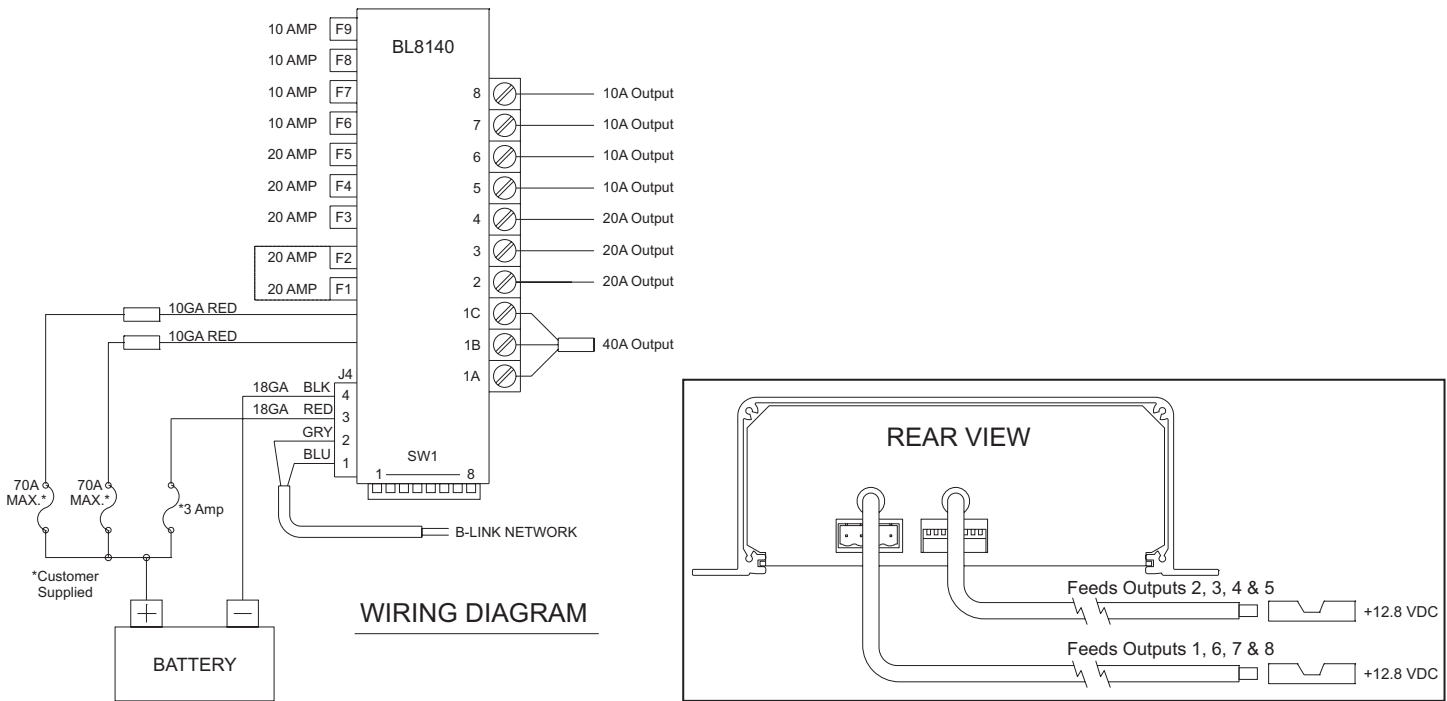
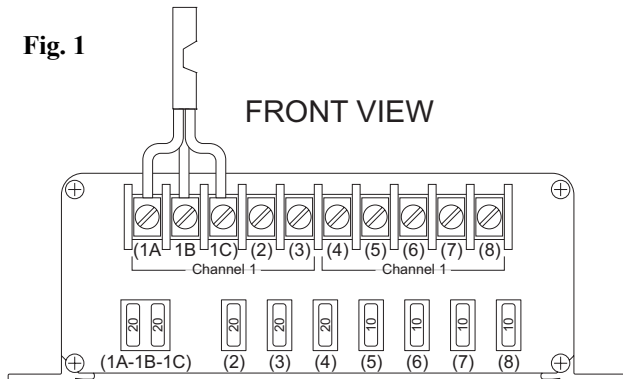


Fig. 1



### BL8140 Channels...

The BL8140 offers a total of 8 outputs located at the front of the unit (see Fig. 1). The outputs are identified in the illustration by numbers 1 through 8, counting from left to right. These outputs are grouped into "channels". Each channel is recognized by the network as either a BL405 or a BL420A, depending upon the dip switch configuration.

Channel 1 is comprised of outputs 1 - 4. Outputs 1-A, 1-B and 1-C are not individually controlled and function as a single, high-current output rated for up to 40 amps. Output's 2, 3 and 4 are individually controlled and are rated for up to 20 Amps each.

Channel 2 is comprised of outputs 5 - 8, each being individually controlled. Output 5 - 8 are rated for up to 10 Amps.

When the dip switches are configured for ver 1.x of the configuration software, channel 1 and channel 2 emulate the BL405 halogen flasher. As such, the network believes that there are actually two BL405 flashers installed; channel 1 and channel 2. The following will illustrate how the outputs of the BL8140 are controlled by the Multi-Purpose Controller.

#### Channel 1 (emulating a BL405 at address 1)

<u>BL8140 output #</u>	<u>acts as</u>	<u>BL405 output #</u>
1A, 1B & 1C		1
2		2
3		3
4		4

#### Channel 2 (emulating a BL405 at address 2)

<u>BL8140 output #</u>	<u>acts as</u>	<u>BL405 output #</u>
5		1
6		2
7		3
8		4

When the BL8140 has been installed, it will be operated as configured by the Multi-Purpose Controller configuration software. Please refer to the configuration software manual for software configuration information.

## Advanced Settings...

This section will provide advanced technicians with dip switch information that will allow the BL8140 to be configured in different ways for different needs. Please note that only experienced serial communications technicians should alter the default dip switch configuration. It is a good idea to record any changes made to the current dip switch configuration.

Dip Switch 1 - This switch is not used and should remain in the default (DOWN) position.

Dip Switch 2 & 3- These switches determine the emulation mode of the BL8140.

### DS#2 DS#3

**UP UP** In this position, the BL8140 tells the network that there are two BL405 4-outlet flashers on the network. Channel 1 is seen as a BL405 and channel 2 is seen as a BL405. Refer to the "BL8140 Channels..." section of this guide for information on output control and assignment.

**DOWN UP** In this position, the BL8140 tells the network that channel 1 is a BL420 and that channel 2 is a BL405.

**UP DOWN** In this position, the BL8140 tells the network that channel 1 is a BL405 and that channel 2 is a BL420.

**DOWN DOWN** In this position, the BL8140 tells the network that channel 1 is a BL420 and that channel 2 is a BL420. **DOWN/DOWN is the default position for these switches.**

Dip Switch 4 - This switch determines if or how the BL8140's #8 output (channel 2/output 4) is controlled.

**UP** In this position the BL8140 allows output #8 to be controlled in a manner determined by the configuration software. **UP is the default position for this switch.**

**DOWN** In this position, output 8 control is assigned to push-button switch 9 on the MPC01 control head. This momentary switch, when pressed, "latches" output 8 on. Pressing this switch again "latches" output 8 off.

Dip Switch 5 & 6- These switches determine the network address of BL8140 channel 1.

### DS#5 DS#6

**DOWN DOWN** In this position, the address of channel 1 is 1.

**UP DOWN** In this position, the address of channel 1 is 2.

**DOWN UP** In this position, the address of channel 1 is 3. **DOWN/UP is the default position for these switches.**

**UP UP** In this position, the address of channel 1 is 4.

Dip Switch 7 & 8- These switches determine the network address of BL8140 channel 2.

### DS#7 DS#8

**DOWN DOWN** In this position, the address of channel 2 is 1.

**UP DOWN** In this position, the address of channel 2 is 2.

**DOWN UP** In this position, the address of channel 2 is 3.

**UP UP** In this position, the address of channel 2 is 4. **UP/UP is the default position for these switches.**

***Important Addressing Note! Channels 1 and 2 can NEVER share a common address UNLESS the two channels are emulating different products!***

**Note:** Although the BL8140 can emulate both the BL405 and the BL420, it does not emulate all of their characteristics. Major differences include:

- The outputs of a channel emulating a BL405 or a BL420 do not share the same amperage limitations as do the outputs of the models being emulated. See the wiring diagram for output limitations.
- The BL8140 can not "flash" an output. Regardless of the flash setting within the MPC01 configuration software, the BL8140 outputs are either on or off.