

WHELEN[®]

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Installation Guide: UPS690 Strobe Power Supply

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 owners 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 control is located in an area that allows both the vehicle and the control to be operated safely in any driving condition.**
- **Do not attempt to activate or control this device in a hazardous driving situation.**
- **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

Selecting a Mounting Location: The most common choice for a mounting area would be a trunk or similar compartment. However, due to the wide variety of vehicles onto which the UPS690 could be installed, this is not always possible. The following guidelines will help the installer select an acceptable alternative:

- A) The UPS690 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 UPS690 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 UPS690 to be exposed to water!
- D) When routing the UPS690'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.).
- E) When the best mounting location has been determined, securely fasten the UPS690 to its mounting surface using the supplied hardware.

WARNING: The Strobe Light Power Supply is a high voltage device. Do not touch or remove tube assembly in strobe light head assemblies while in operation. Wait 10 minutes after disconnecting the unit from its power source before starting work or troubleshooting on power supply or system.

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 begins!

Mounting your UPS690:

1. Position the UPS690 in its proposed mounting location to ensure that it fits properly. With the UPS690 in place, insert an awl or other suitable tool into the mounting screw area of the power supply and scribe the areas that are to be drilled.

2. Remove the UPS690 from its mounting area and, using a drill bit sized for a #10 sheet metal screw, drill a hole in each of the areas scribed in the previous step.
3. Return the UPS690 to its mounting location and using the supplied #10 sheet metal screws, mount the UPS690 onto its mounting surface.

Wiring your UPS690:

1. Locate the 10 position *Input Connector* included with your UPS690 and plug it into the port indicated in Fig. 1. Extend the BLACK and RED wires from the *Input Connector* towards the battery.

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 that load. DO NOT USE CIRCUIT BREAKERS WITH THIS PRODUCT!

2. Connect the RED wire to a fuse block (customer supplied) and then to the POSITIVE terminal on the battery.

NOTE! Although a 15 amp fuse (customer supplied) is required to be used in the fuse block, do not install the fuse until *all* of the wire connections are completed.

3. Connect the BLACK wire to the factory chassis ground adjacent to the battery.
4. Refer to Fig. 2 for wiring information for the remaining *Switch Control Wires* and *Pattern Control Wires*.
5. As indicated in Fig. 2, there is a provision in the *Input Connector* for a wire (VIOLET) to activate Hi / Low Power strobe operation. If this feature is desired, locate the VIOLET wire included with your power supply and, with the *Input Connector* disconnected from the power supply, insert the pinned end of the VIOLET wire into position 4 of the *Input Connector*. Refer to the Wiring Diagram on page 4 for wiring information.

Configuring your UPS690:

Although the wiring diagram illustrates the proper switch connections for the UPS690, an explanation of how the switches are configured is necessary. It is also necessary to understand how the dip switch positions will impact the operation of the unit. The following section on the next page will explain switch functions in the DEFAULT configuration (all dip switches in the OFF position and all strobe switches wired as illustrated).

Strobe Switches:

Switch #1 (SW1) - In the default configuration, switch #1 controls outlets 1 & 2. The control wire for switch #1 is the BLUE wire.

Switch #2 (SW2) - In the default configuration, switch #2 controls outlets 3 & 4. The control wire for switch #2 is the GREEN wire.

Switch #3 (SW3) - In the default configuration, switch #3 controls outlets 5 & 6. The control wire for switch #3 is the YELLOW wire.

Dip Switches:

Dip Switch #1 (Progressive Outlet Control):

OFF (Default position) - In this position, the strobe switches are configured as indicated in the "Strobe Switches" section.

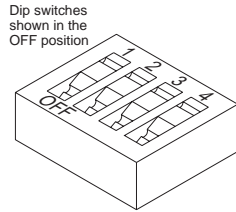
Examples:

- SW1 = Enables outlets 1 & 2
- SW2 = Enables outlets 3 & 4
- SW3 = Enables outlets 5 & 6

ON - In this position, Progressive Outlet Control is enabled.

Examples:

- SW1 = Enables outlets 1 & 2
- SW2 = Enables outlets 1 & 2 & 3 & 4
- SW3 = Enables outlets 1 & 2 & 3 & 4 & 5 & 6



Dip Switch #2 (Alternating vs. Simultaneous):

OFF (Default position) - In this position, the strobe switches are configured as follows.

Examples:

- SW1 = Outlets 1 & 2 alternate flashing
- SW2 = Outlets 3 & 4 alternate flashing
- SW3 = Outlets 5 & 6 alternate flashing

ON - In this position, Simultaneous Outlet Control is enabled

Examples:

- SW1 = Outlets 1 & 3 flash simultaneously
- SW2 = Outlets 2 & 4 flash simultaneously
- SW3 = Outlets 5 & 6 alternate flashing (no change)

Dip Switch #3 (Hi/Lo Control):

OFF (Default position) - In this position, when the Hi/Low switch is activated, the power supply "latches" into Lo power operation. To restore normal, Hi power operation, it is necessary to turn the power supply off and then on again. In this configuration, a momentary switch is recommended for Hi/Lo activation.

ON - In this position, Hi/Lo power operation is "toggled" between Hi and Lo and it is no longer necessary to turn the power supply off to restore Hi power operation. In this configuration, a toggle switch (non-momentary) is recommended for Hi/Lo power selection.

Dip Switch #4 :

Has no function / should be left in its default, OFF position.

Flash Patterns:

The UPS690 can produce a variety of different flash patterns. They include:

Comet Flash - A burst of 4 strobe flashes.

Double Flash - A burst of 2 strobe flashes.

Rapid Random - A pattern of strobe flashes at a rate of 240 RRFPM (Rapid Random Flash Per Minute).

Sequential - A mix of three Comet Flash bursts, followed by 6 Rapid Random flashes.

Modu-Flash - With this pattern, impulse rate and energy are modulated to produce a sweeping (rising and falling) effect. In one full cycle, the impulse rate and energy change inversely from 150 fpm to 400 fpm and back to 150 fpm.]

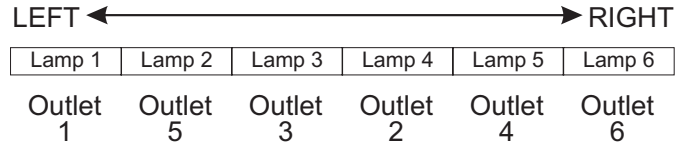
Micro-Burst II - Two, consecutive, Double Flash bursts.

Micro-Burst III - Two, consecutive, triple flash bursts.

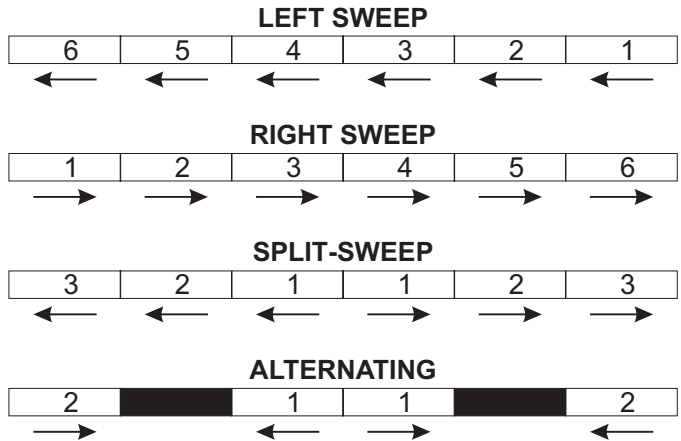
For information on enabling these patterns, refer to Table 1.

Traffic Advisor:

Important! - In order for the Traffic Advisor patterns to flash properly, it is necessary for the lamps to be connected to the UPS690 in the following pattern:



The Traffic Advisor (or TA) mode is comprised of 4 traffic control oriented flash patterns:



Section 4: Diagnostix™

The Diagnostix™ display allows the operator to confirm proper operation of not only the 8 outlets on the UPS690, but of the strobe light and strobe cable connected to these outlets as well. Each LED indicator on the Diagnostix™ display, provides diagnostic information for one outlet. For example; LED #1 monitors Outlet #1, etc. The LED's appearance indicates the condition of it's corresponding outlet. (Table 3 next page.)

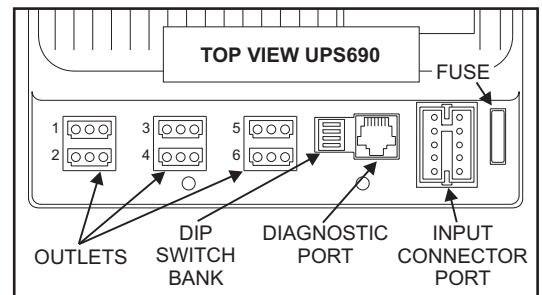
TABLE 1		OUTLETS 1 & 2	OUTLETS 3 & 4	OUTLETS 5 & 6
SWITCH CONTROL WIRES	BLUE	✓		
	GREEN		✓	
	YELLOW			✓

PATTERN CONTROL WIRES	NO PATTERN WIRES	COMET FLASH	COMET FLASH	COMET FLASH
	BROWN	DOUBLE FLASH	DOUBLE FLASH	DOUBLE FLASH
	WHITE	RAPID RANDOM	RAPID RANDOM	RAPID RANDOM
	BROWN & WHITE	ACTION FLASH	ACTION FLASH	ACTION FLASH
	GREY	MODU-FLASH	MODU-FLASH	MODU-FLASH
	BROWN & GREY	MICRO-BURST II	MICRO-BURST II	MICRO-BURST II
	WHITE & GREY	MICRO-BURST III	MICRO-BURST III	MICRO-BURST III
	BROWN & WHITE & GREY	TRAFFIC ADVISOR	TRAFFIC ADVISOR	TRAFFIC ADVISOR

TABLE 2		BLUE	GREEN	YELLOW
TRAFFIC ADVISOR	ALL PATTERN WIRES	LEFT SWEEP		
	ALL PATTERN WIRES		RIGHT SWEEP	
	ALL PATTERN WIRES	SPLIT SWEEP		
	ALL PATTERN WIRES			ALTERNATING

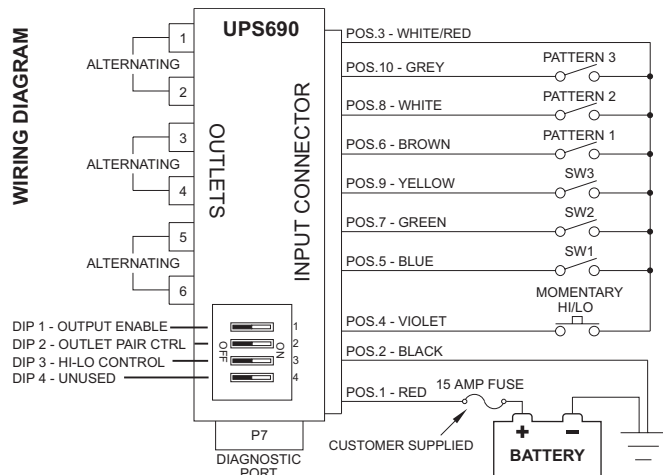
TABLE 3

IF THE LED IS...	THEN...
OFF	Either the outlet in question is not enabled, or the power supply is not turned on.
ON continuously	The outlet, strobe cable and strobe light in question are functioning properly.
FLASHING rapidly	Either the outlet, strobe cable and/or strobe light are malfunctioning. Further investigation of the components is strongly recommended
ON continuously with a single flash every few seconds	The UPS690 is operating in Lo power mode.



SPECIFICATIONS

INPUT VOLTAGE	12.8 VDC 20%
INPUT CURRENT	
@ 30 WATTS	3 AMPS
@ 60 WATTS	6 AMPS
@ 90 WATTS	9 AMPS
INPUT POWER	40 / 80 / 120 WATTS
OUTPUT POWER	30 / 60 / 90 WATTS
FLASH PATTERNS	<ul style="list-style-type: none"> COMET FLASH DOUBLE FLASH RAPID RANDOM FLASH ACTION FLASH MODU-FLASH MICRO-BURST II MICRO-BURST III TRAFFIC ADVISOR
ANODE VOLTAGE (HI POWER)	425 VDC (MAX)
ANODE VOLTAGE (LO POWER)	225 VDC (MIN)
CAPACITANCE (PER CHANNEL)	75uF @ 450 VDC
TRIGGER VOLTAGE	220 VDC +/- 5%
V (OUTLET ENABLE)	3.5 VDC (MIN)
I (OUTLET ENABLE)	20mA (TYP) @ 13.2 VDC
V (PATTERN CONTROL)	3.5 VDC (MIN)
I (PATTERN CONTROL)	20mA (TYP) @ 13.2 VDC
V (HI/LO)	3.5 VDC (MIN)
I (HI/LO)	20mA (TYP) @ 13.2 VDC



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 THAT LOAD.

NOTE! The WHITE/RED wire in the Pattern Selection Connector provides positive voltage designed to be used to supply power to your switches. This wire is internally protected to 250 ma. If a short circuit occurs, the circuit will interrupt current flow until the short has been removed.