

WHELEN®

Strobe Power Supply Selection Guide

With built-in intelligence and product enhancements, Whelen's family of Remote Strobe Power Supply Series, offer the widest range of performance, features and economy in the industry with many low cost, full function models to choose from.



Designed & Manufactured in the U.S.A.

SERIES FEATURES

- **Scan-Lock™ Flash Pattern Control** provides remote control of multiple flash patterns by letting the driver select/change flash patterns according to traffic conditions by toggling through multiple flash patterns and locking in the desired pattern.
- **Fully encapsulated electronics** on Competitor™ Series & **conformal coated** circuit boards to resist moisture/vibration on the Competitor Series Plus™, UPS Series and ISP Series.
- **Competitor Series Plus™** features models available in 60 and 90 watt output versions, all with Scan-Lock flash pattern control.
- **All models have non-volatile memory** that stores the pattern you want until you want to make a change
- **Traffic Advisor™ patterns:** Left, right, split sequences and a flashing mode are available on the Universal® Series UPS690 & Intelligent™ Series ISP188.
- **Additional outlets** to choose from with two, four, six or eight outlet models depending on series.
- **Expanded outlet control** with new control formats providing greater flexibility.
- **All models have Hi/Low power** feature standard and selective switching (On/Off control of lighthouse pairs).
- **Field proven microprocessor based design** for power supplies that are stable on power-up and immune from false triggering.
- **Auto-ranging input current and output power regulation** which eliminates strobe lighthouse flash intensity variations, regardless of strobe tube design (linear/helix) and/or the number of lighthouses in operation and also input reverse polarity protection.
- **Output short circuit protection** monitors circuitry automatically and turns power supply off due to output loading conditions, preventing damage.
- **Easy to install and use** with no internal jumpers or settings to configure before using.
- **Reliability** with engineering and build quality by Whelen®, the first name in strobe light design and manufacturing.
- **Warranty** protection with two year and five year (HDP®) factory direct warranties that are the best in the business. Power supplies may be returned for service directly to the factory without prior approval saving down-time, extra cost and handling.
- **Service** with twenty-four hour turn around on repairs.



POWER SUPPLY FEATURES



Model	Input Reverse Polarity Protection	Output Short Circuit Protection	Low Power Control	Number of Outlets	Outlet Switching	Alternate/Simultan. Outlets (max)	Number of Flash Patterns ¹	Flash Pattern Control (external)	Input Current Regulation	Output Power Regulation	Warranty (Years)	Physical Data (Dimensions in inches H x W x D)
CS240 ⁹	yes	yes	latch/level	2	-	1x1	10	yes	-	yes	2	1-13/16 x 2-13/16 x 6-1/2
CS650 ⁹				6	-	3x3			yes	-		1-3/4 x 5-7/16 x 6-1/2
CSP660	yes	yes	latch/level	6	2x4	3x3	10	yes	yes	-	2	2-1/2 x 5-7/8 x 6-11/16
CSP690										-		
UPS64LXA	yes	yes	latch/level	4	2x2	2x2	10	yes	yes	yes	5 (HDP)	2-1/2 x 5-7/8 x 6-11/16
UPS690			latch ⁶	6	2x2x2 ⁷	3x3 ⁸						7 + T/A
ISP94	yes	yes	latch/level or toggle	4	2x2	2x2	8	yes	yes	yes	5 (HDP)	2-3/8 x 6-3/4 x 7
ISP188				8	2x2x4	4x4						16 + T/A

POWER SUPPLY ELECTRICAL DATA

Model	Input Voltage (volts)	Optional 24 (volts)	Input Current (amps)	Input Power (watts)	Output Energy total (joules) ²	Output Energy all lamp on (joules) ²	Output power total (watts) ²	Output power per lamp (watts) ²	Output power per lamp (watts) ³	Output power per lamp (watts) ⁴	Flash rate per outlet (FPM)	Flash Rate per alternate pair (FPM)	Impulse Rate per outlet (FPM)	Impulse Rate per alternate pair (FPM)	AMECA Certified to SAE, NFPA, CA XIII	Physical Data Weight (lbs)
CS240	12/24	standard	4.2/2.1	54	16	16 (5.8/3.4)	40	20	20	-	75	150	300	600	yes ⁵	1.5
CS650			5.2/2.6	67	17.5	5.8 (2.4/1.1)	50	8.33	25	12.5						
CSP660	12/24	standard	6/3	77	24.5	8 (2.9/1.7)	60	10	15	15	75	150	300	600	yes ⁵	2
CSP690	12	optional	9.4	120	36	12 (4.4/2.6)	90	15	15							
UPS64LXA	12/24	standard	7/4	90	30	15 (6/3)	75	18.75	18.75	18.75	75	150	300	600	yes	4
UPS690	12	optional	9	115	36	12 (6/2)	90	15	15	15						
ISP94	12	optional	9	115	36	18 (8/3.3)	90	22.5	22.5	22.5	75	150	300	600	yes	2.5
ISP188	12		18	225	76	18 (8/3.3)	180									5

¹ Scan-Lock™ Flash Patterns & model availability, see page 4.

² All lamps connected.

³ Two alternating lamps connected.

⁴ Four alternating lamps connected.

⁵ Not NFPA Certified.

⁶ Dip switch selectable for voltage sensitive, momentary low power control.

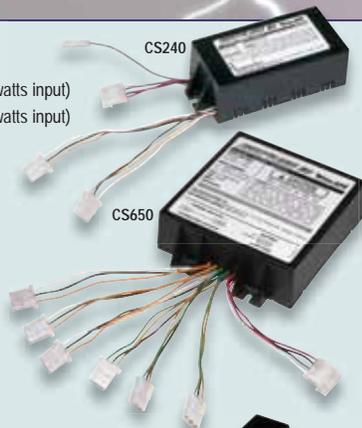
⁷ Dip switch selectable for outlet group control: 2 or 4 or 6 outlet active.

⁸ Outlet pairs flash alternately or simultaneously by dip switch selection.

⁹ Available with Deutsch® Waterproof Connectors

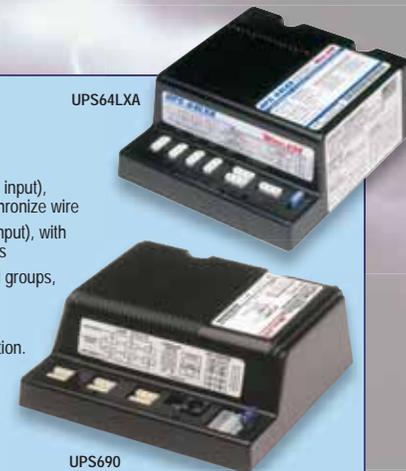
Competitor™ Series

- CS240 - 2 outlet, 40 watt output (54 watts input)
- CS650 - 6 outlet, 50 watt output (67 watts input)
- Composite housing
- Output power regulation on CS240
- 2 year warranty



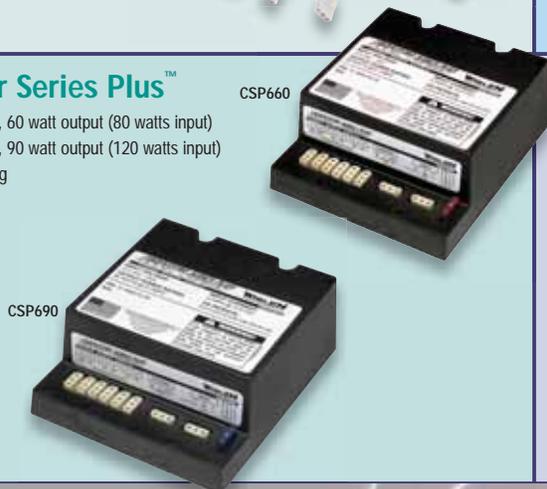
Universal® Series

- Certified as system component to SAE & California Title 13 specifications
- UPS64LXA - 4 outlet, 75 watt output (90 watt input), with 10 Scan-Lock™ flash patterns and synchronize wire
- UPS690 - 6 outlet, 90 watt output (115 watt input), with 7 flash patterns plus Traffic Advisor™ patterns
- Simultaneous or alternating flash of lighthouse groups, (2x2, 3x3, 2x2 + 2x2)
- Manual Hi/Low intensity control
- RFI suppression, with less than 1db degradation.
- Cast aluminum housing
- Five year (HDP) Heavy Duty Professional direct warranties



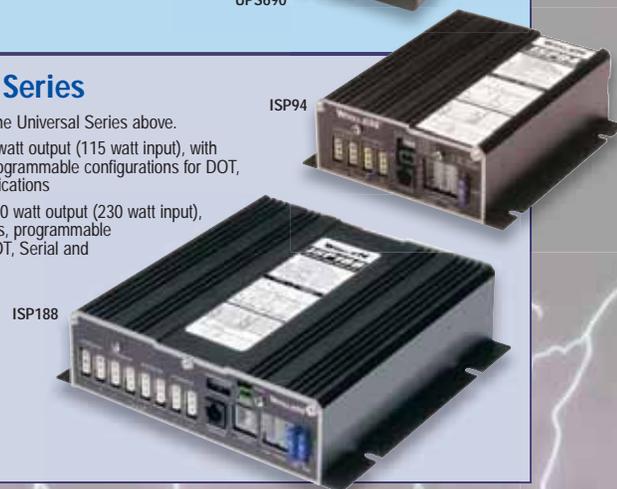
Competitor Series Plus™

- CSP660 - 6 outlet, 60 watt output (80 watts input)
- CSP690 - 6 outlet, 90 watt output (120 watts input)
- Composite housing
- 2 year warranty



Intelligent™ Series

- Similar features as the Universal Series above.
- ISP94 - 4 outlet, 90 watt output (115 watt input), with 16 flash patterns, programmable configurations for DOT, Serial and UPS applications
- ISP188 - 8 outlet, 180 watt output (230 watt input), with 16 flash patterns, programmable configurations for DOT, Serial and UPS Applications





CSP690 installation with CenCom™ amplifier.



ISP94 installation.



UPS64LXA installation.

GLOSSARY

Input Voltage: 12/24V: The power supply is designed to operate on both 12 volt and 24 volt automotive electrical systems (10 to 16 volts and 22 to 30 volts), without deviating from rated flashrate and output power.

12V: The power supply is designed to operate on a 12 volt automotive electrical system only, (between 10 volts and 16 volts).

Input Current: xx/yy: The xx value represents a typical input current drawn by the power supply at 12.8 volts. The yy value represents a typical input current drawn by the power supply at 25.6 volts.

Input Power: The power drawn from the battery, expressed in watts, which is the product of the battery voltage and power supply current draw.

Output Power (Total): The amount of the power, expressed in watts, delivered to all the flash lamps generated by the power supply. This is calculated as the product of total output energy times flash rate per outlet pair, per second (Ptout = Jt x FPM/60).

Output Energy (Total): The summation of energy, expressed in joules, for every impulse of light contained in the flash or flash pattern of a lamp. Example: If the pattern is CometFlash®, and the chart shows a value of 15 (6/3), the power supply will deliver an impulse pattern of 6/3/3/3 joules, the total energy is 15 joules.

Output Energy (Per Lamp): The energy delivered to each lamp, expressed in joules, when all lamps are active assuming the lamps are of the same impedance, i.e. the lamps are of same type and age.

Low Power Control: +Latch: If +12 or 24 volts (momentary or hard switched) is applied to the Hi-Lo input when the power supply is operating, it will switch to a low power mode. The power supply will remain in low power (latched) until it is turned off and +12 or 24 volts is removed from the low power control input. A momentary switch is preferred here.

Low Power Control: Level: Applying +voltage to the Violet wire for more than 1 sec. holds the power supply in low power mode until that voltage is removed. A toggle switch is preferred here.

+Toggle: Switching between power modes, from high power to low power and back from low power to high power, may be accomplished by applying +12 or 24 volts (momentary) to the Hi-Lo input each time a change is desired.

The power supply will always start in the high power mode when the low power control line is grounded or left not terminated.

Outlet Switching: If the power supply features outlet switching, and its power leads are connected to the battery, +12 volts applied to any of the Outlet Switching inputs will activate the power supply with either 2, 4, 6, or 8 lamps flashing. These inputs work independently of the flash pattern control inputs. When all outlets are turned off, no current (0 amps) will be drawn from the battery.

Impulse: A single ignition (pulse) of the strobe lamp. Multiple impulses can be grouped together to form a flash pattern, i.e. DoubleFlash™, TripleFlash™, CometFlash®, etc.

Flash: A group of impulses. A single flash pattern only has one (1) impulse. The CometFlash® pattern contains four (4) impulses.

Flash Pattern Control (external): If the power supply features flash pattern control, applying +12 volts to the appropriate control input(s) will activate one of the patterns, "see footnote 1".

Input Current Regulation: The power supply is designed with intelligence to sense how many lamps are active and automatically set the input current to provide the optimum amount of power to each lamp. This prevents input current surges and eases the load on the electrical system.

Output Regulation: Eliminates flash lamp intensity variations due to flash lamp impedance mis-matching that occurs with mixed use of lamps, i.e. linear and helix type lamps.

Scan-Lock™ Flash Pattern Control: A flash pattern control feature which lets you toggle through multiple flash patterns and lock in the one you want.

NOTICE: For optimum performance and reliability, Whelen® strobe power supplies are designed for use with Whelen flash tubes, strobe lighthead and cables only. Substitution of any of these components with non-Whelen products voids all warranties. Whelen Engineering reserves the right to upgrade and improve products without notice.

Flash Patterns

CometFlash® flash pattern displayed on a high-speed digital oscilloscope.



Scan-Lock™ pattern control which lets you toggle through ten flash patterns (marked with asterisk *) and lock in the one you want. Power supply using flash pattern is indicated in yellow.

- A - CS240
- B - CS650
- C - CSP660
- D - CSP690
- E - UPS64LXA
- F - UPS690
- G - ISP94
- H - ISP188



CometFlash®* (A thru H)
Each CometFlash is a burst of four strobe impulses; the lead impulse in each burst is produced at a higher energy for emphasis.

2X CometFlash® (G,H)
Same burst as CometFlash only twice the frequency in the same time period.



DoubleFlash* (A thru H)
Each DoubleFlash is a burst of two strobe impulses, the lead impulse in each burst is produced at a higher power for emphasis.

2X DoubleFlash (G,H)
Same burst as DoubleFlash only twice the frequency in the same time period.



RapidRate™* (A thru H)
A fast, aggressive pattern of equally powered and spaced impulses operating at 240 RRFPM (RapidRate Flashes Per Minute).

2X RapidRate™ (G,H)
Same burst as RapidRate only twice the frequency in the same time period.



TripleFlash™* (A thru E, & G, H)
The TripleFlash pattern is a burst of three strobe impulses with the first impulse at higher power for added emphasis.

2x TripleFlash™ (G,H)
Same burst as TripleFlash only twice the frequency in the same time period.



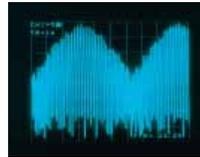
MicroBurst II™* (A thru H)
Each MicroBurst II contains two sets of DoubleFlashes. The lead impulse in each DoubleFlash is produced at higher power for emphasis.

2X MicroBurst II™ (G,H)
Same burst as MicroBurst II only twice the frequency in the same time period.



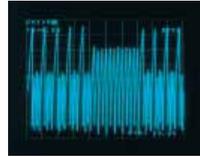
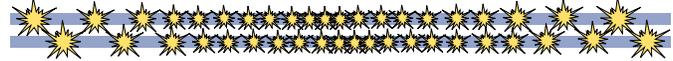
MicroBurst III™* (A thru H)
Each MicroBurst III contains two sets of TripleFlashes. The lead impulse in each TripleFlash is produced at higher power for emphasis.

2X MicroBurst III™ (G,H)
Same burst as MicroBurst III only twice the frequency in the same time period.



ModuFlash™* (A thru H)
With the ModuFlash pattern, impulse rate and intensity are modulated to produce a sweeping (rising and falling) effect. In one full cycle of this pattern, impulse rate and intensity change inversely.

2X ModuFlash™ (G,H)
Same burst as ModuFlash only twice the frequency in the same time period.

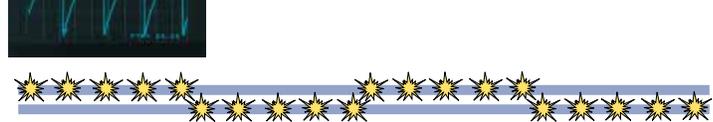


ActionFlash™* (A thru H)
A hybrid pattern that repeats a mix of three CometFlash bursts, followed by six RapidRate flashes.

2X ActionFlash™ (G,H)
Same burst as ActionFlash only twice the frequency in the same time period.

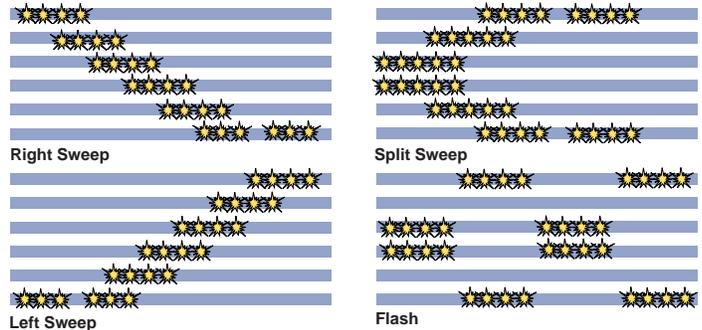


LongBurst™* (A thru E)
Each LongBurst is a burst of five strobe impulses. This provides a constant "ON" Flash Pattern when lights are alternating.



Traffic Advisor™ (F, H)
The Traffic Advisor pattern offers a subset of four lighting patterns: Left, Right and Split Sweep plus Flash.

The graphic below depicts the flash patterns moving across six lightheads.



ActionScan™* (A thru E)
Scans through all 10 Flash Patterns which are separated by a group of single flashes. (illustrations not shown)

Note: Oscilloscope displays and graphic illustrations indicate the operation of one alternating pair of outlets. Oscilloscope presentations, showing combined operation of both outlets as a single trace, vary in time base. Time base is not to scale for graphic illustrations.



Dual HA239 headlight strobes flashing.