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WARNING LAMP FLASHERS

Unique solutions for specialized vehicle warning lamp applications

EMERGENCY VEHICLES

4860GCPE Ambulance Flasher

The smallest, most cost effective flasher in the industry!

- Meets KKK-A-1822F Federal Specifications
- *Mission Critical* power driver technology
- Three 40 amp lamp outputs
- "Soft start" and over current shutdown

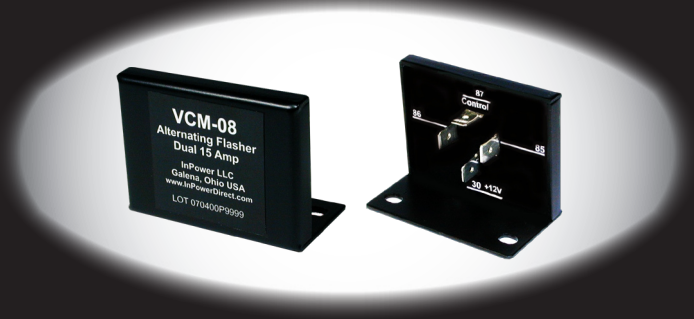
SCHOOL BUSES

SBF90/94 8-Lamp School Bus Flashers

The school bus industry standard!

- Small size
- Low cost
- High reliability
- Specified by OEMs

UNIVERSAL FLASHERS



VCM-08 Universal Dual Output Flasher

The perfect flasher for a variety of vehicle applications!

- Dual 12 volt 15 amp outputs
- Operates LED or high current lamp loads
- Compact size with panel-mount bracket
- Low cost

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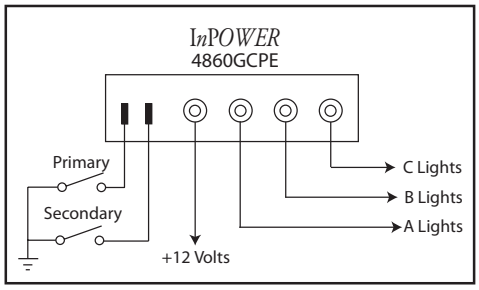
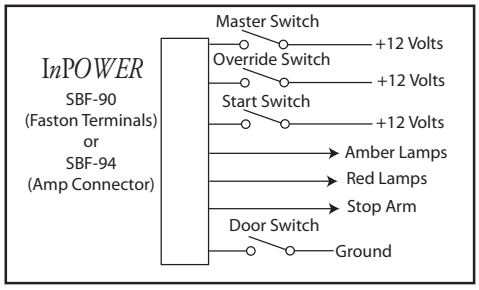
WARNING LIGHT FLASHERS

InPower's advanced power electronics technology has yielded a unique family of specialized warning lamp flasher products. A key feature includes highly efficient power switching circuits that generate very little heat. This allows smaller packaging that does not require the typical large heat sinks. Automatic fault shutdown is provided for short circuit and over current conditions. These warning light products are designed to continue operation under the most extreme operating conditions.



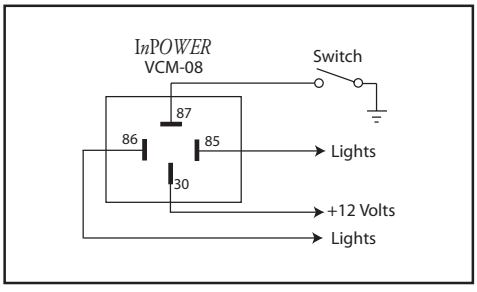
4860GCPE Ambulance Flasher

InPower has applied its advanced power electronics technology to produce an ambulance flasher that is the smallest and most cost effective in the industry. This flasher provides three 40 amp outputs that can operate low current LED lamps or high current halogen lamps, and meet the Federal ambulance specification KKK-A-1822F. A unique "soft start" lamp driver circuit reduces thermal shock to increase lamp life, and InPower's *Mission Critical* power technology keeps the flasher operating under extreme conditions.



SBF-90 (Faston) & SBF-94 (Amp Connector) School Bus Flashers

These extremely robust and cost effective 8-lamp flashers provide the school bus standard sequential and non-sequential warning light functions. The red and amber lamp outputs can operate low current LED's or high current halogen lamps. The SBF-90 flasher utilizes Faston terminals and is a drop-in replacement for Weldon 7000 and Transpec 6500 flashers. The SBF-94 flashers utilize an Amp conncector and is a drop-in replacement for the Weldon 7000-1000 flasher.



VCM-08 Universal Flasher

InPower's VCM-08 dual output alternating flasher is well suited for a variety of vehicle applications. Its dual 12 volt outputs are rated at 15 amps and provide over current protection. The flash rate is 75 cycles per minute at a 50% duty cycle. The VCM-08 flasher is small, panel mounted and utilizes the industry standard automotive relay terminal format. This product is one of a family of InPower's Vehicle Control Modules, a rapidly evolving set of "tools" for the designers of vehicle electrical systems.

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Contents

Revised April 17, 2008

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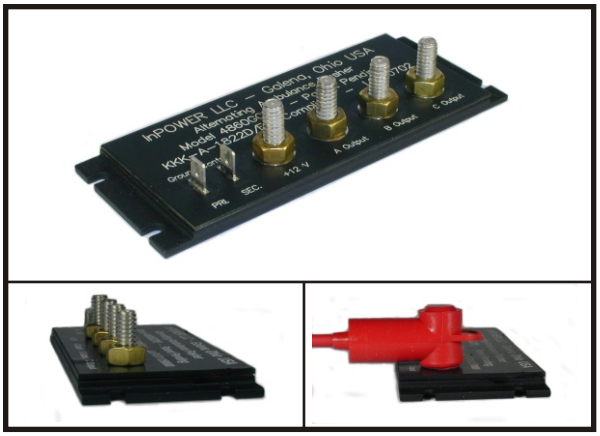
Ambulance Warning Light Flasher

4860GCPE



Key Features

- Conforms to specifications KKK-A-1822D/E/F.
- Supports LED and halogen lights.
- Low profile design with small footprint.
- *Mission Critical Technology* design keeps flasher running under extreme operating conditions.
- Automatic shutdown protection for short-circuit, over-current and high temperature conditions.
- Sealed construction is resistant to mechanical shock and vibration.
- Rubber terminal boot cover option protects power terminals from accidental shorting.

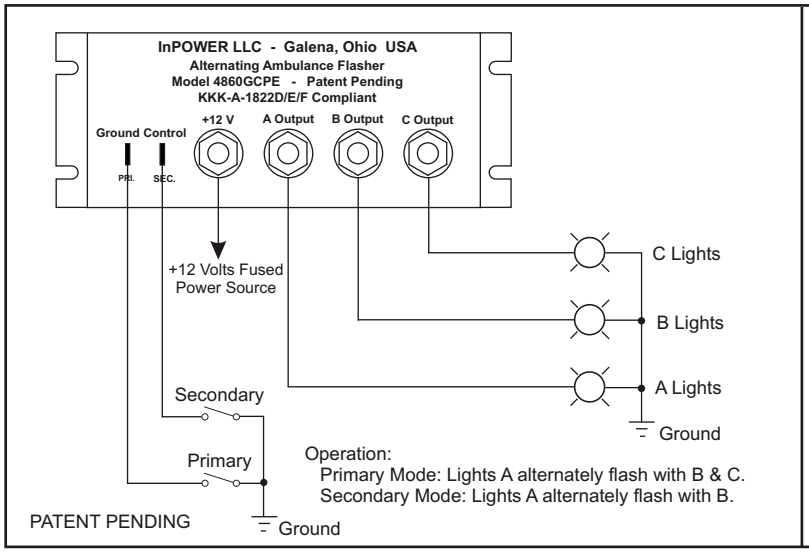
InPower's ambulance warning light flasher design represents a breakthrough in solid state flasher technology. The 4860GCPE flasher utilizes leading-edge surface mount technology (SMT) electronics and an advanced packaging design. The result is a very compact, high performance flasher with exceptional reliability and low cost.

A completely new innovation is InPower's *Mission Critical Technology* (MCT). Under extreme operating conditions such as high temperature and very high lamp loads conventional flashers will simply shut down. However, the MCT design provides automatic pulse width correction to reduce power to the lamps, thereby allowing operation under these abnormal conditions. Another MCT feature is individual lamp output over- current control. If one lamp output shuts down due to a short circuit or over-current condition the other lamp outputs remain operational.

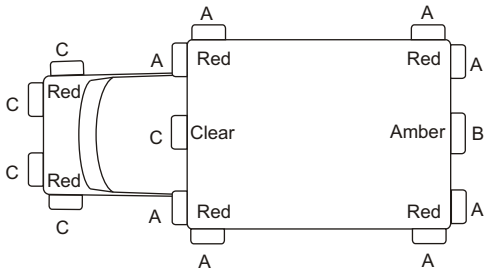
The 4860GCPE flasher incorporates a unique lamp power driver that "soft starts" the lamp loads. Halogen and incandescent lamps exhibit very low on-resistance when cold. Conventional flasher circuits apply full 12 volt power to the cold lamps resulting in an extremely high in-rush current. This creates a thermal shock to the lamp filaments which can reduce lamp life. InPower's soft start design applies power to the lamps in such a way as to reduce this high in-rush current shock condition.

The 4860GCPE is an electronic alternating warning lamp flasher for halogen and LED lights. Three lamp outputs (A, B & C) provide +12 volts @ 40 amps each, and are short circuit and over-current protected. The design complies with Federal Specification KKK-A-1822D/E/F. Power terminals are 1/4-20 threaded studs. The control terminals are 0.250 inch male Fastons. Control inputs are ground actuated. In Primary Mode lamps A are alternately flashed with the B & C lamps. In Secondary Mode the A lamps are alternately flashed with the B lamps (C lamps off).

System Diagram



Vehicle Warning Lamp Layout



Product Data Sheet

Ambulance Warning Light Flasher

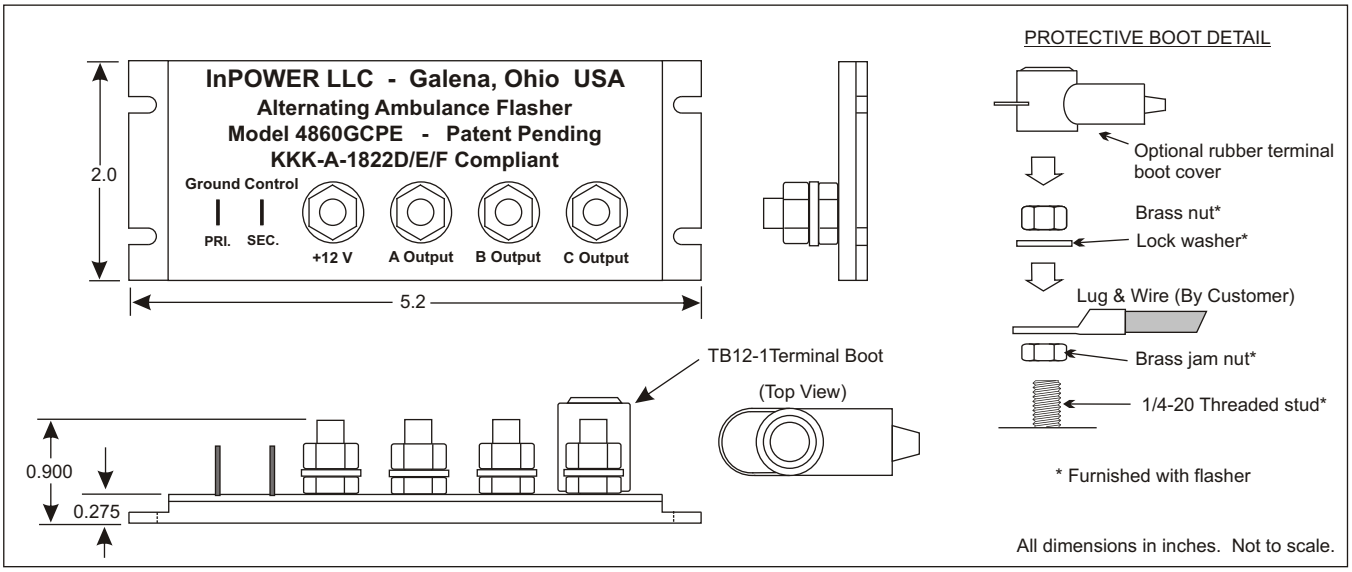
4860GCPE

Specifications

Operating Voltage Range:	+5.0 to +18.5 volts
Current Rating:	
Output A:	40 Amps
Output B:	40 Amps
Output C:	40 Amps
Flash Rate:	75 to 80 per minute, 50% duty cycle
Case Operating Temperature Range:	-40° F to +145° F (-40° C to 63° C)
Control Input:	
Connector Type:	0.250 inch faston blade terminal (two male terminals on flasher)
Control Voltage - Primary:	<+2.1 Vdc to activate
Control Voltage - Secondary:	<+2.1 Vdc to activate
Protection:	Over current, short circuit, and high temperature automatic shutdown
Weight:	0.29 lbs (0.13 kg)
Dimensions:	2.00 x 5.20 x 0.90 inches (50.8 x 132.1 x 22.9 mm)
Power Terminals:	Four (4) 1/4 - 20 threaded studs, with nuts and lock washers.
Terminal Boot Covers:	Optional red vinyl covers for wire size 18 - 10 AWG (Part no. TB12-1).
Mounting Surface:	For optimal performance a metal mounting surface should be provided.

NOTE - PATENT PENDING

Mechanical Drawing



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SBF90

Eight Lamp School Bus Electronic Flasher/Controller

The Model SBF90 is an advanced technology electronic warning light flasher designed for the school bus flasher replacement market. Its functionality, mounting hole centers, and wiring terminations are identical to the typical electronic flashers used on school buses. It is also an ideal choice for replacing the older mechanical type flashers when higher reliability is desired.

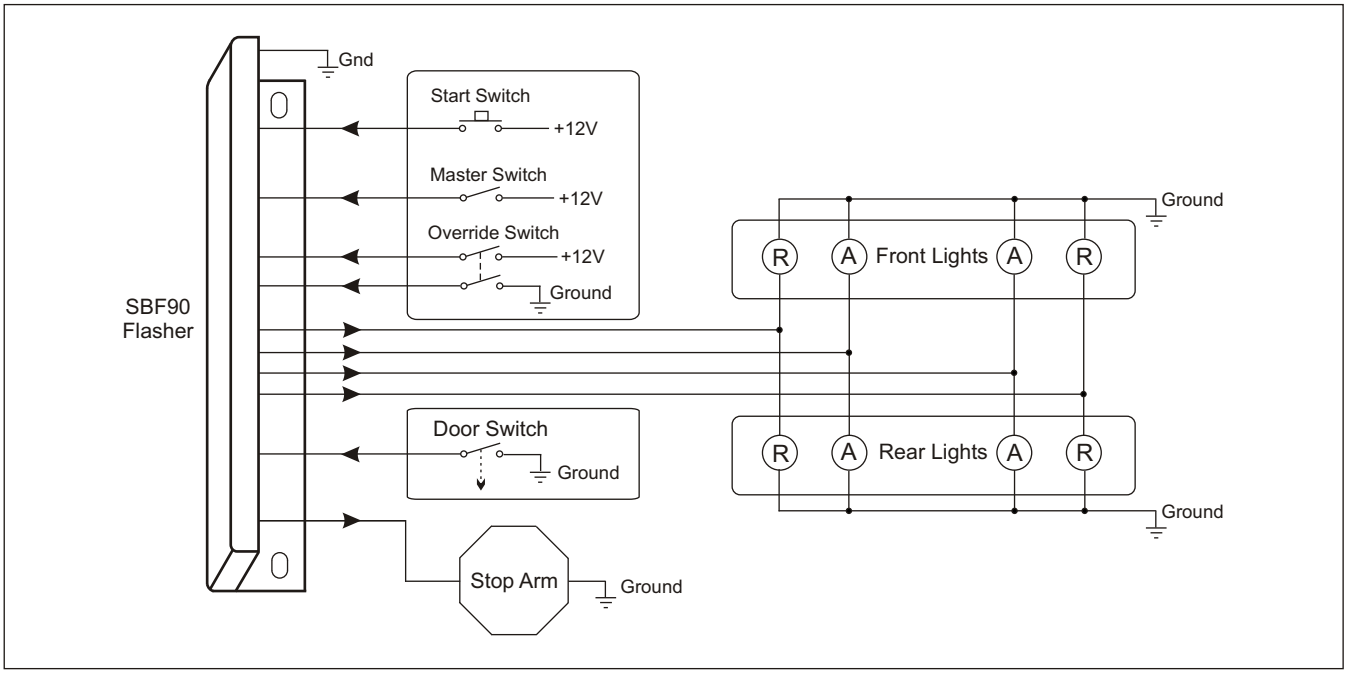
The SBF90 flasher's industry standard functionality provides for both sequential and non-sequential operation, and will accommodate 4-lamp and 8-lamp warning light configurations. Each of the lamp outputs (two red and two amber) are rated at 16 amps. The output for the stop arm is rated at 3 amps. Wires are terminated via 0.250 inch Faston blade terminals and are labeled with both terminal numbers and functions.

The design provides safeguards for over current, over temperature, short circuit, and loss of ground. A highly efficient current switching circuit is employed that produces very little heat loss. Advanced electronic circuitry employs surface mount technology (SMT) and includes a silicone coating to protect against environmental influences such as dust and moisture. Its metal case is made of rugged anodized aluminum.

Key Features

- Industry Standard Functionality - Compatible with existing bus designs.
- Rugged Anodized Aluminum Case with Sealed Electronics.
- Industry Standard Faston Wiring Terminals and Pin Assignments.
- Ultra Compact Size - Occupies less space than conventional flashers.
- Highly Efficient Power Switching Design - Very low heat loss.

System Diagram



SBF90 School Bus Flasher/Controller

Specifications

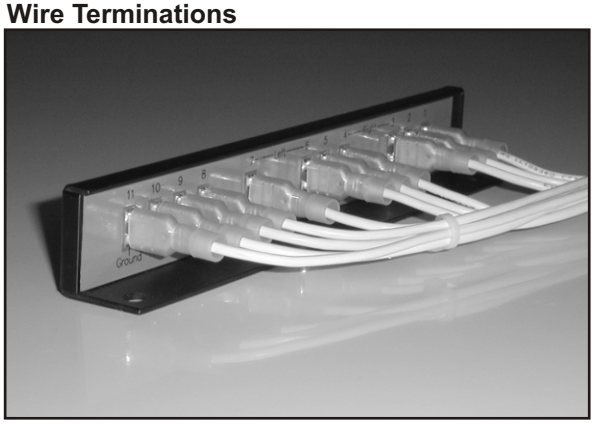
Electrical

Input Voltage:	8 to 16 volts
Output Current (Pins 3, 4, 6 & 7):	16 Amps
Output Current (Pin 5):	3 Amps

Mechanical

Weight:	0.15 lbs
Dimensions:	0.875” W x 1.00” H x 6.50” L
Case Material:	Anodized Aluminum
Operating Temperature:	-40° C to +85° C
Storage temperature:	-50° C to +85° C
Terminals:	0.250 Inch Faston (11 Total)

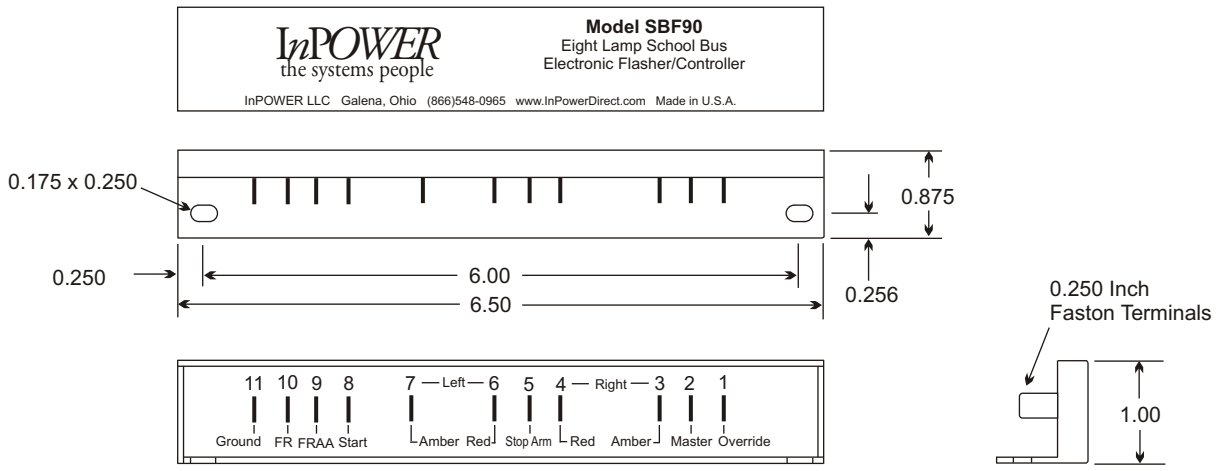
Wire Terminations



Pin Assignments

1	Override	To Override Switch (+12V)	9	FRAA	(Flash Red After Amber). To Door Switch for Sequential, or no connection for Non-Sequential operation.
2	Master	To Master Switch (+12V)			
3	Right Amber	To Right Amber Lamp			
4	Right Red	To Right Red Lamp	10	FR	(Flash Red When Door is Opened). To Override Switch for Sequential, or to Door Switch for Non-Sequential operation.
5	Stop Arm	To Stop Arm Solenoid			
6	Left Red	To Left Red Lamp			
7	Left Amber	To Left Amber Lamp	11	Ground	To Ground
8	Start	To Start Switch (+12V)			

Mechanical Drawing



All dimensions in inches. Not to scale.

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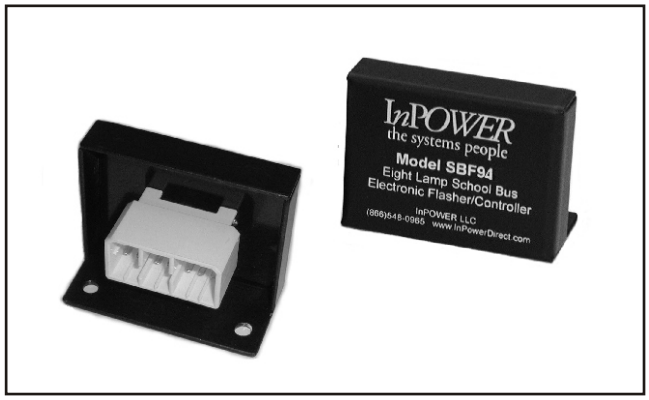
SBF94

Eight Lamp School Bus Electronic Flasher/Controller



The Model SBF94 is an advanced technology connector based warning light flasher in a very small package. Its 2.30 inch x 1.25 inch footprint and Amp Multilock connector makes it ideal for OEM applications, as well as a replacement for Amp Multilock based flashers currently on the market. The SBF94 flasher's industry standard functionality provides for both sequential and non-sequential operation, and will accommodate 4-lamp and 8-lamp warning light configurations. Each of the lamp outputs (two red and two amber) are rated at 16 amps. The output for the stop arm is rated at 3 amps.

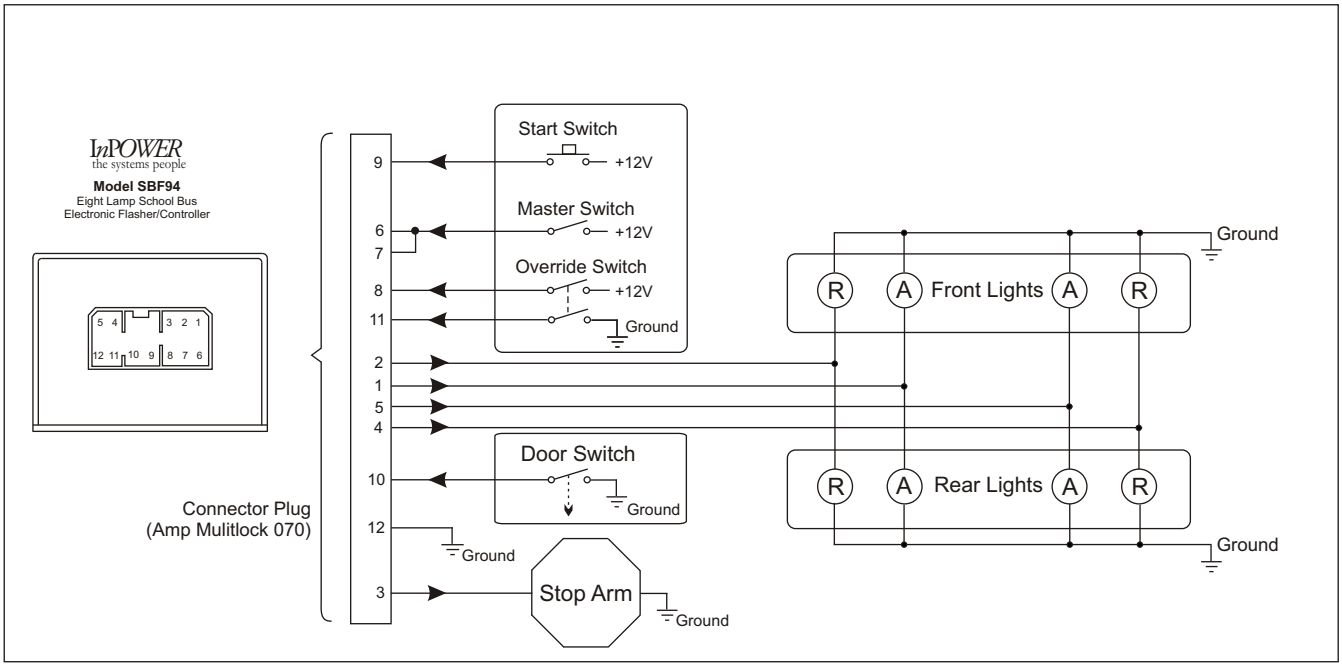
The design provides safeguards for over current, over temperature, short circuit, and loss of ground. A highly efficient current switching circuit is employed that produces very little heat loss. Advanced electronic circuitry employs surface mount technology (SMT). Its metal case is made of rugged anodized aluminum.

The SBF94 utilizes the Tyco/Amp Multilock Series 070 connector system. The 12-pin header (containing male pins) is integral to the flasher case. The 12-pin connector plug (not supplied with the flasher) uses female pins.

Key Features

- Ultra Compact Size - Occupies less space than conventional flashers.
- Connector Based Wiring Terminations - Saves manufacturing time and reduces errors.
- Industry Standard Functions - Compatible with existing bus designs.
- Highly Efficient Power Switching Design - Very low heat loss.
- Rugged Anodized Aluminum Case.

System Diagram



SBF94 School Bus Flasher/Controller

Specifications

Electrical

Input Voltage:	8 to 16 volts
Output Current (Pins 7, 9, 10 & 12):	16 Amps
Output Current (Pin 4):	3 Amps

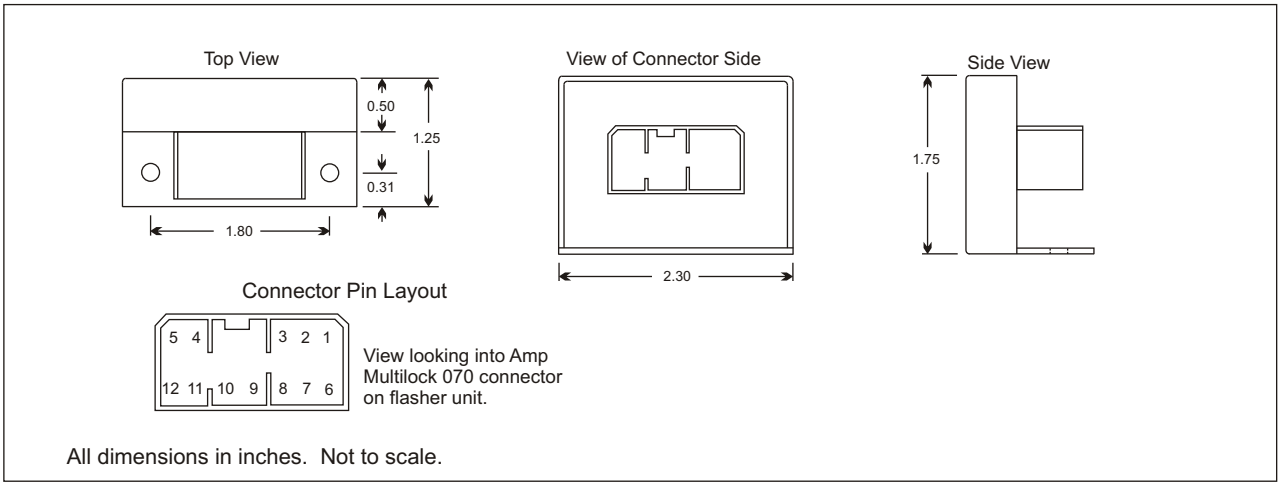
Mechanical

Weight:	0.15 lbs
Case Material:	Anodized Aluminum
Operating Temperature:	-40° C to +85° C
Storage temperature:	-50° C to +85° C
Connector System:	Tyco/Amp Multilock Series 070
Cap (On Flasher):	12-pin (Amp p/n 174957)
Plug Housing:	12-pin (Amp p/n 173851 or 176116)
Cap Contacts:	Male Pins (supplied with flasher)
Plug Housing Contacts:	Female Socket (Amp p/n 173631-1 or 175027-1)
Reference:	Tyco/Amp Catalog 65839

Pin Assignments

1	Left Amber	To Left Amber Lamp
2	Left Red	To Left Red Lamp
3	Stop Arm	To Stop Arm Solenoid
4	Right Red	To Right Red Lamp
5	Right Amber	To Right Amber Lamp
6, 7	Master	To Master Switch (+12V)
8	Override	To Override Switch (+12V)
9	Start	To Start Switch (+12V)
10	FRAA	(Flash Red After Amber). To Door Sw. for Sequential, or no connection for Non-Sequential.
11	FR	(Flash Red When Door is Opened). To Override Sw. for Sequential, or Door Sw. (Gnd) for Non-Sequential.
12	Ground	To Ground

Mechanical Drawing



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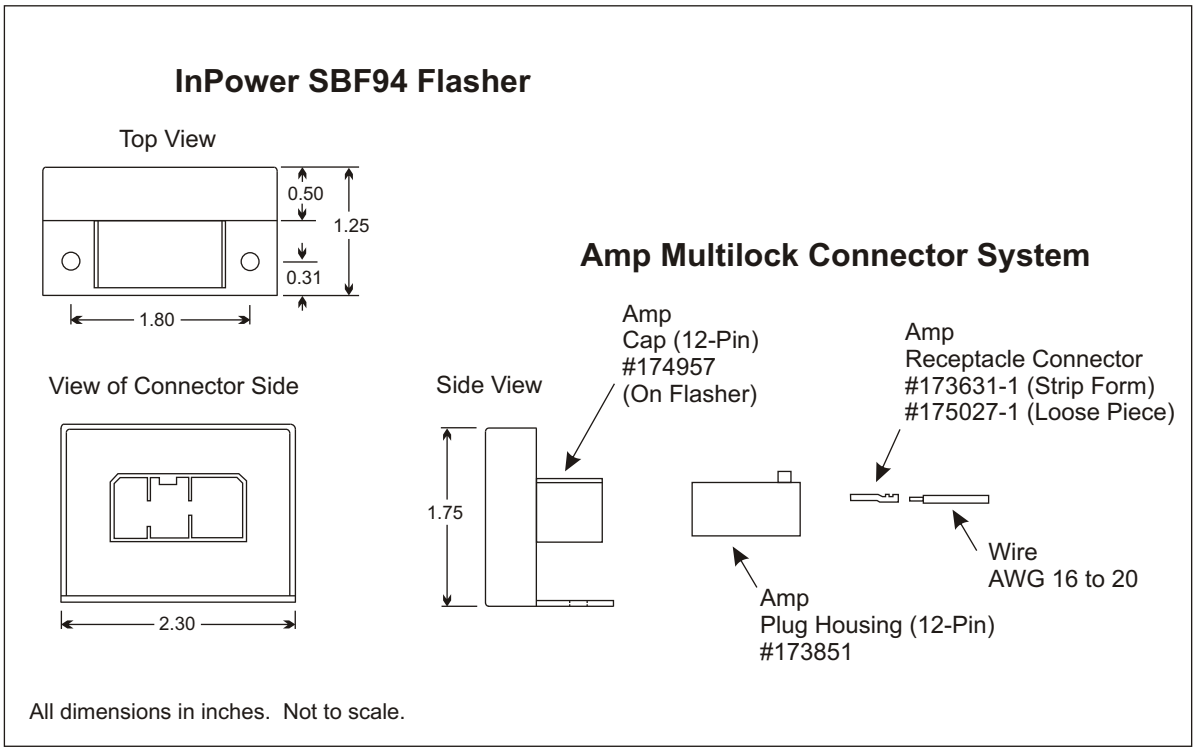
InPower Model SBF94 Flasher
Mating Connector Reference Information



AMP Multilock Series 070 Connector Reference

Purchasing Source:

Tyco Electronics Corporation
Harrisburg, PA 14105
800-522-6752
www.tycoelectronics.com

Connector parts:

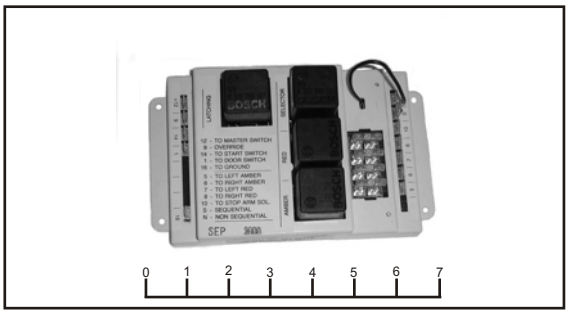
Part Description	Part Number
Plug housing, 12-pin	173851-1
Receptacle Connector (16-20 AWG)	173631-1 (Strip Form)
	175027-1 (Loose Piece)
Crimping tool	911788-2

Reference: Tyco Electronics Catalog 65839

FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
AEROFLASH Model 165-0018
To
InPOWER Model SBF90

AEROFLASH Model 165-0018



InPOWER Model SBF90

Wiring Conversion chart

Wire On Aeroflash Model 165-0018 Terminal	Description	Goes to InPower Model SBF90 Terminal	Description
For Sequential Operation:			
1	Door Switch (wire to Door Sw.)	9	Flash Red Only After Amber
1	Door Switch (wire to Override Switch)	10	Flash Red When Door is Opened
2,3,4	Not Used		
5	Amber Light – Left	7	Left Amber Lights
6	Amber Light – Right	3	Right Amber Lights
7	Red Light – Left	6	Left Red Lights
8	Red Light – Right	4	Right Red Lights
9	“Fail Safe” Switch	1	Override Switch
10	Stop Arm Solenoid	5	Stop Arm
11	Not Used		
12	Master Switch +12V	2	Master Switch
13	Not Used Most Installations		
14	Start Switch	8	Start Switch
15	Not Used		
16	Ground	11	Ground
For Non-Sequential Operation:			
1	Door Switch (wire to Door Sw.)	10	Flash Red When Door is Opened
1	Door Switch (wire to Override Switch)	-	(No wire)
2,3,4	Not Used		
5	Amber Light – Left	7	Left Amber Lights
6	Amber Light – Right	3	Right Amber Lights
7	Red Light – Left	6	Left Red Lights
8	Red Light – Right	4	Right Red Lights
9	“Fail Safe” Switch	1	Override Switch
10	Stop Arm Solenoid	5	Stop Arm
11	Not Used		
12	Master Switch +12V	2	Master Switch
13	Not Used Most Installations		
14	Start Switch	8	Start Switch
15	Not Used		
16	Ground	11	Ground

Note - See Figure 1 & 2 for wiring details.

FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
AEROFLASH Model 165-0018
To
InPOWER Model SBF90

Figure 1 Wiring Before Flasher Conversion

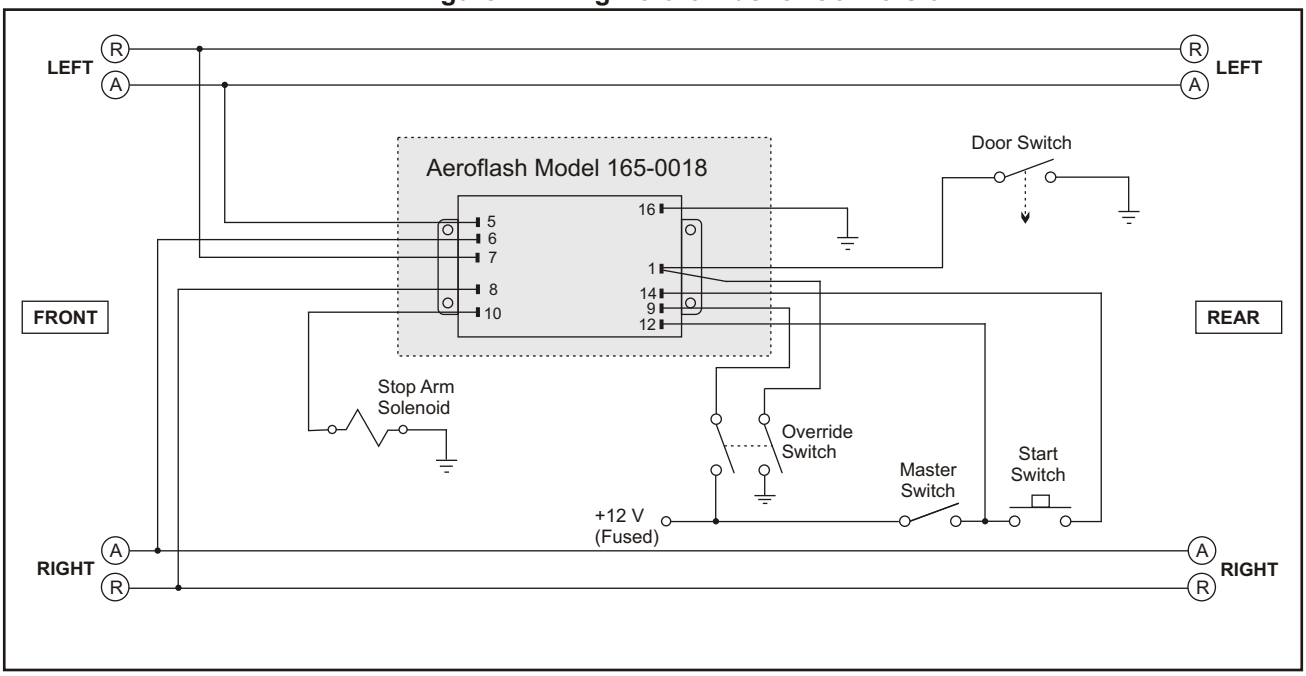
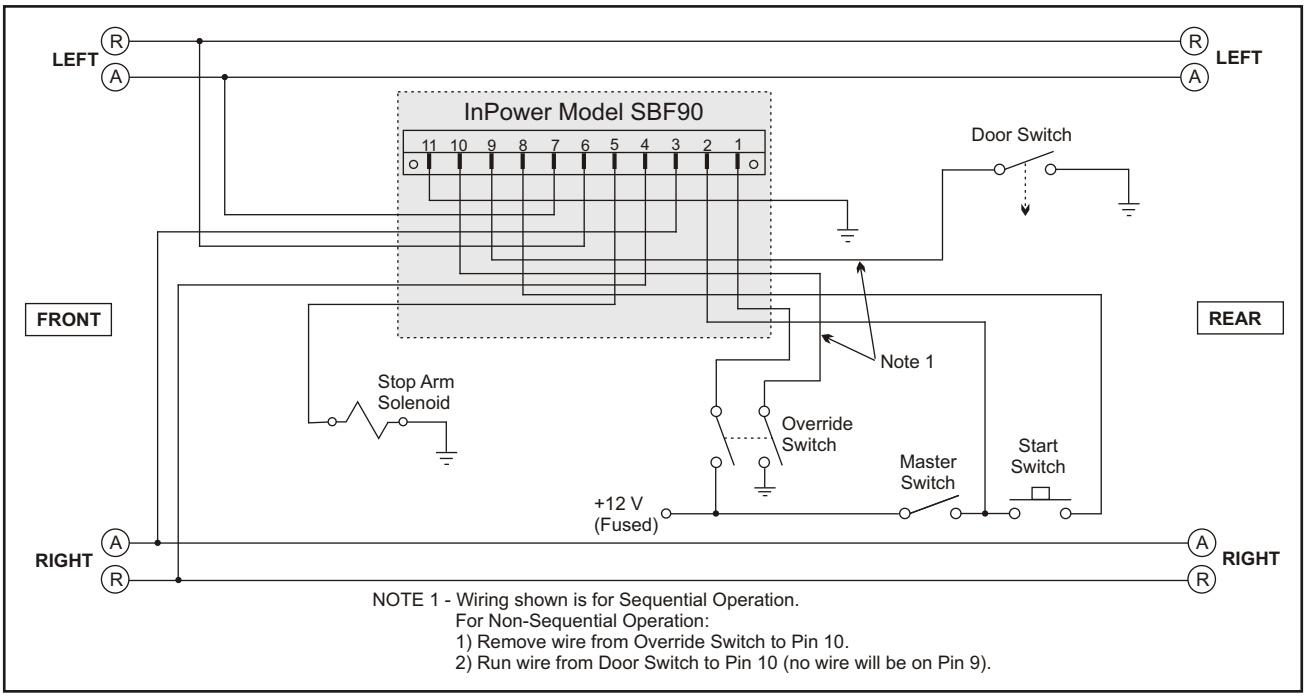


Figure 2 Wiring After Flasher Conversion

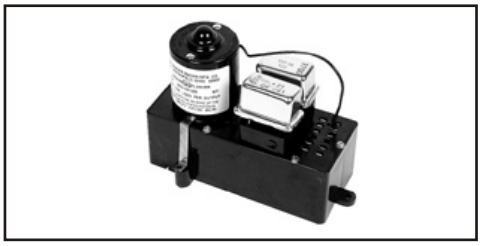


NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 10.
2) Run wire from Door Switch to Pin 10 (no wire will be on Pin 9).

FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
BAADER-BROWN Models
To
InPOWER Model SBF90

Baader-Brown 6404-1125 & 6404-1920



InPOWER Model SBF90

Wiring Conversion Chart

Wire On Baader-Brown Terminal	Description	Goes to InPower Model SBF90 Terminal	Description	Comments
For Sequential Operation:				
1	Red Light – Right	4	Right Red Lights	
2	Not Used			
3	Stop Arm Solenoid	5	Stop Arm	
4	Not Used			
5	Not Used			
6	Amber Light – Right	3	Right Amber Lights	
7	Red Light – Left	6	Left Red Lights	
8	Door Switch	9	Flash Red Only After Amber	
		*10	Flash Red When Door is Opened	
9	Master Switch +12V	2	Master Switch	
10	Not Used			
11	Start Switch	8	Start Switch	
12	Amber Light – Left	7	Left Amber Lights	
-	Ground	11	Ground	
		1	Override Switch(If Used, run wire from Override Sw. to terminal 1)	
For Non-Sequential Operation:				
1	Red Light – Right	4	Right Red Lights	
2	Not Used			
3	Stop Arm Solenoid	5	Stop Arm	
4	Not Used			
5	Not Used			
6	Amber Light – Right	3	Right Amber Lights	
7	Red Light – Left	6	Left Red Lights	
8	Door Switch	10	Flash Red When	For Non-Sequential Operation*
9	Master Switch +12V	2	Master Switch	
10	Not Used			
11	Start Switch	8	Start Switch	
12	Amber Light – Left	7	Left Amber Lights	
-	Ground	11	Ground	
		1	Override Switch(If Used, run wire from Override Sw. to terminal 1)	

Note - See Figure 1 & 2 for wiring details.
* If Override Switch is used run wire from terminal 10 to Override Switch (See Fig. 2).

FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
Baader-Brown Models 6404-1125 & 6404-1920
To
InPOWER Model SBF90

Figure 1 Wiring Before Flasher Conversion

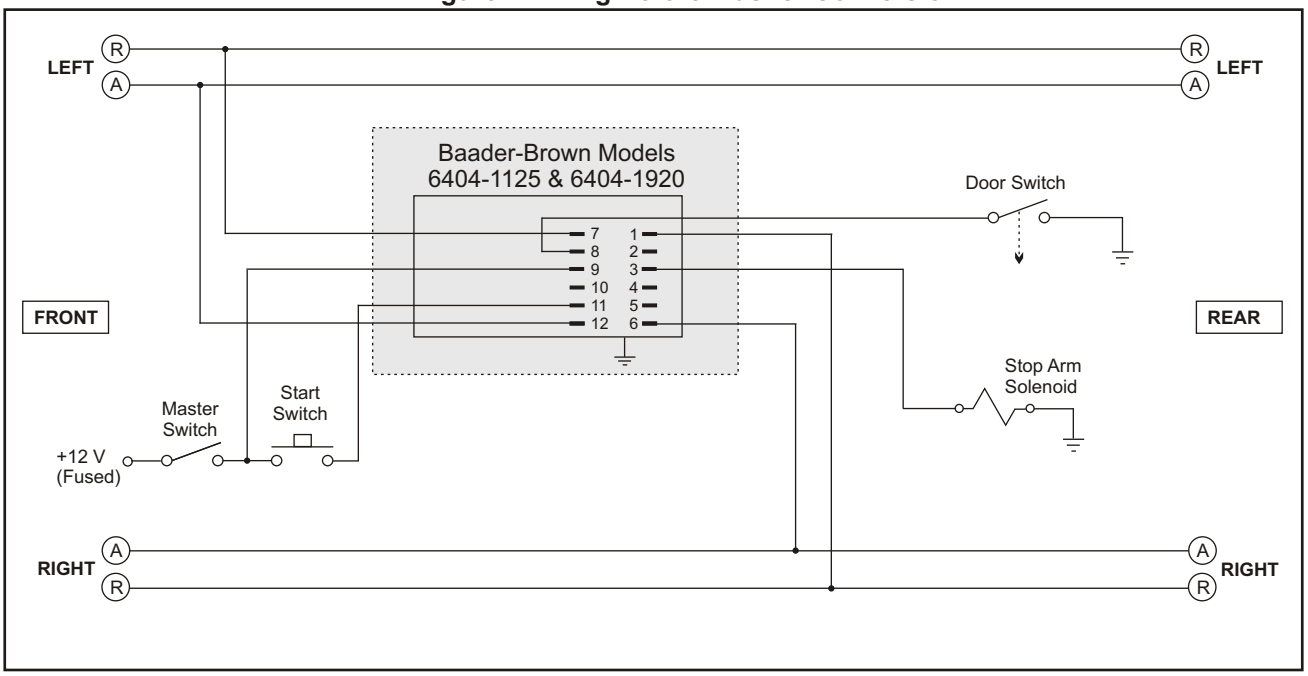
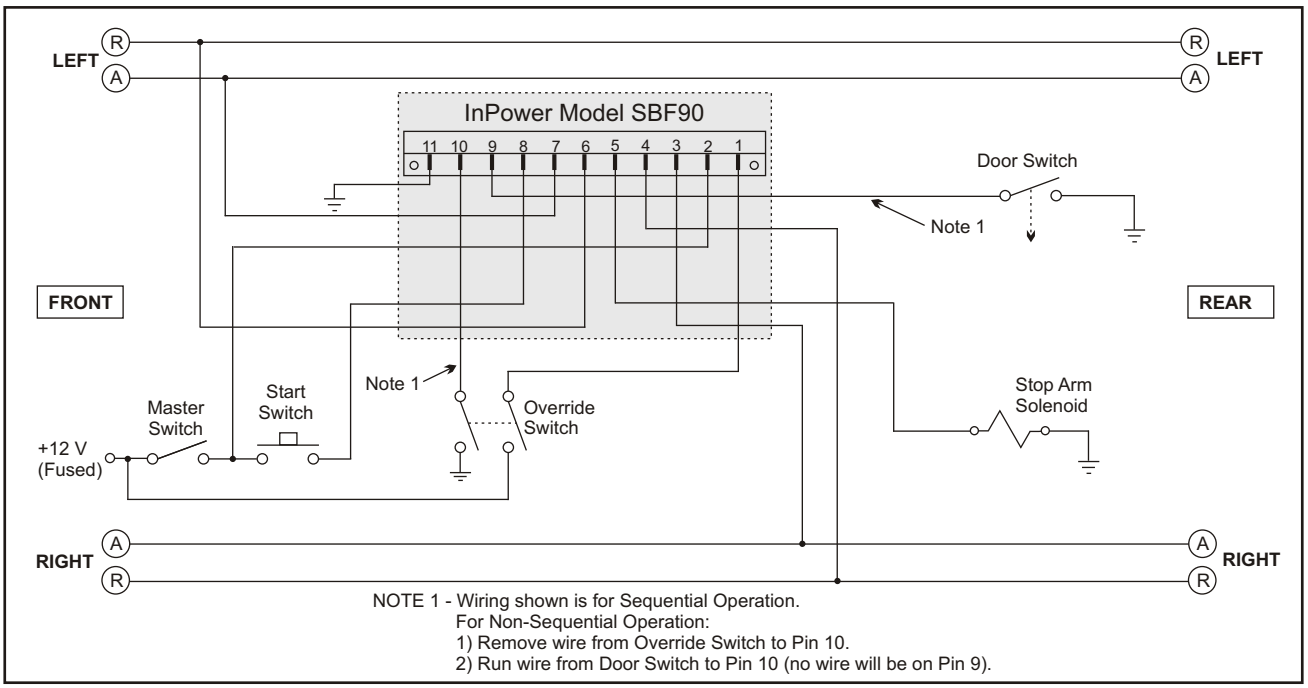


Figure 2 Wiring After Flasher Conversion

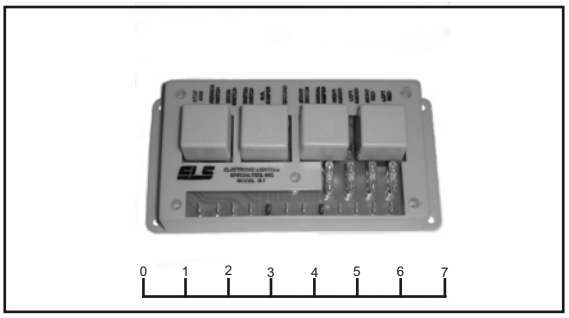


NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 10.
2) Run wire from Door Switch to Pin 10 (no wire will be on Pin 9).

FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
ELS Model B-1
To
InPOWER Model SBF90

ELS Model B-1



InPOWER Model SBF90

Wiring Conversion Chart

Wire On ELS Model B-1 Terminal	Description	Goes to InPower Model SBF91 Terminal	Description	Comments
For Sequential Operation:				
1	Stop Arm	5	Stop Arm	
2	Override Switch	1	Override Switch	
3	Door Switch (wire to Door Sw.)	9	Flash Red Only After Amber	
3	Door Switch (wire to Override Switch)	10	Flash Red When Door is Opened	
4	Master Switch	2	Master Switch	
-	(N.S. Jumper)		N/A	
5	Ground	11	Ground	
6	Start Switch	8	Start Switch	
-	(Manual Jumper)		N/A	
7	Right Amber	3	Right Amber Lights	
8	Left Amber	7	Left Amber Lights	
9	Right Red	4	Right Red Lamps	
10	Left Red	6	Left Red Lights	
For Non-Sequential Operation:				
1	Stop Arm	5	Stop Arm	
2	Override Switch	1	Override Switch	
3	Door Switch (wire to Door Sw.)	10	Flash Red When Door is Opened	
3	Door Switch (wire to Override Switch)	-	(No wire)	Remove wire to Override Switch
4	Master Switch	2	Master Switch	
-	(N.S. Jumper)		N/A	
5	Ground	11	Ground	
6	Start Switch	1	Start Switch	
-	(Manual Jumper)		N/A	
7	Right Amber	3	Right Amber Lights	
8	Left Amber	7	Left Amber Lights	
9	Right Red	4	Right Red Lamps	
10	Left Red	6	Left Red Lights	

Note - See Figure 1 & 2 for wiring details.

FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
ELS Model B-1
To
InPOWER Model SBF90

Figure 1 Wiring Before Flasher Conversion

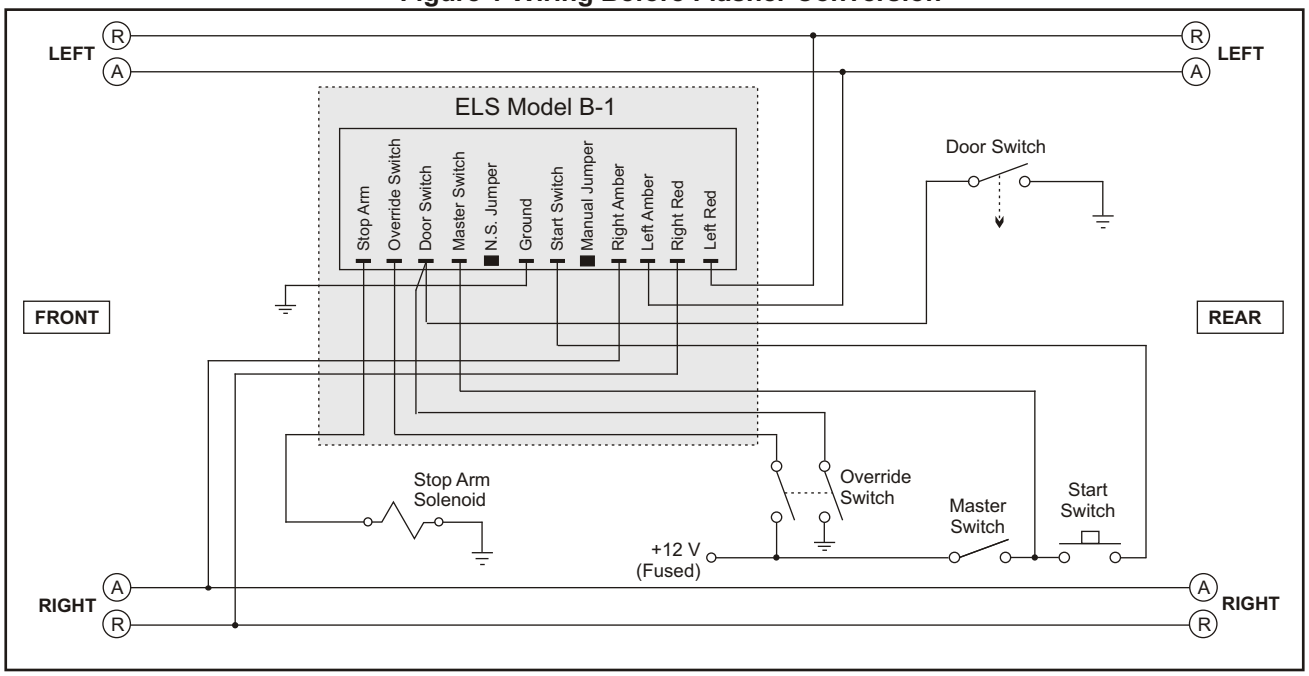
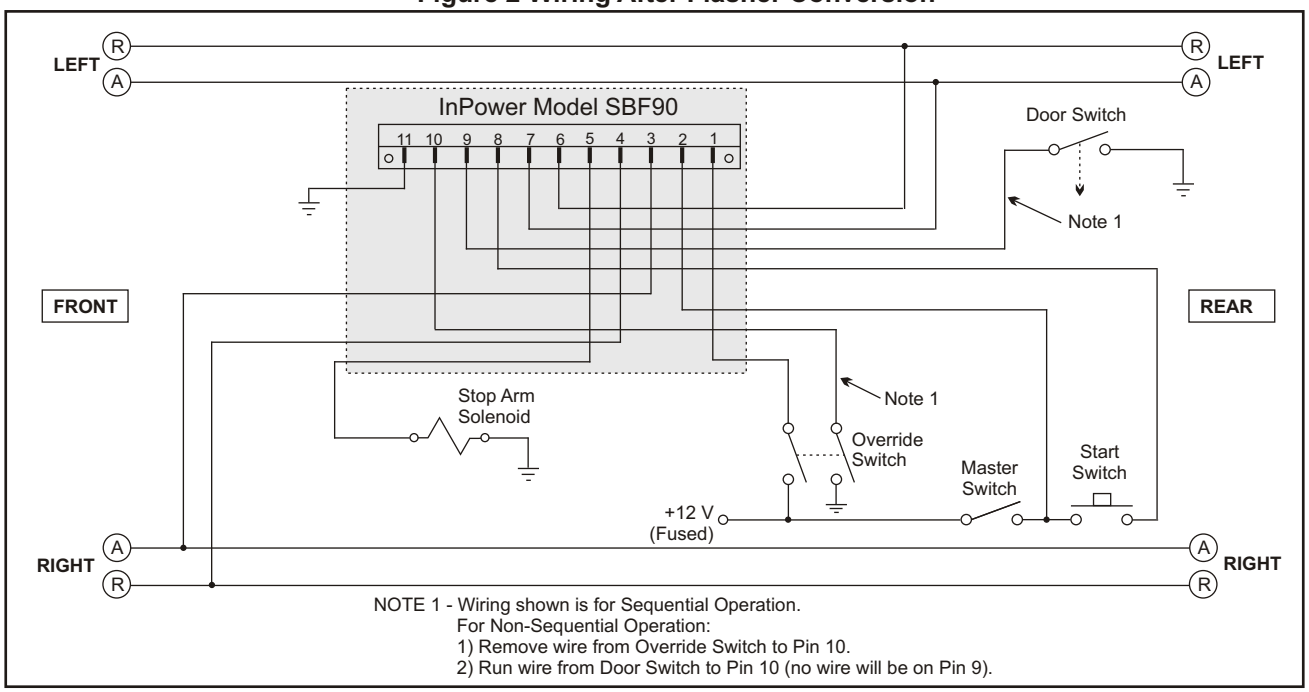


Figure 2 Wiring After Flasher Conversion

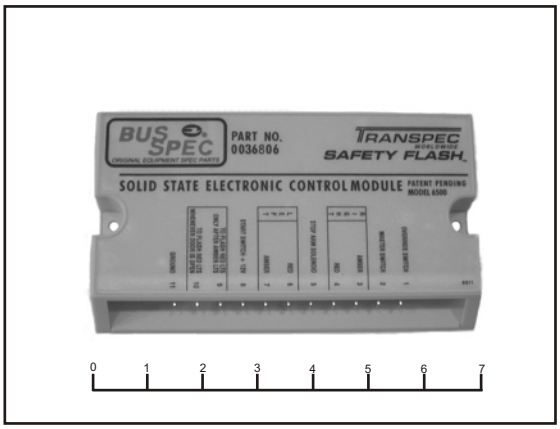


NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 10.
2) Run wire from Door Switch to Pin 10 (no wire will be on Pin 9).

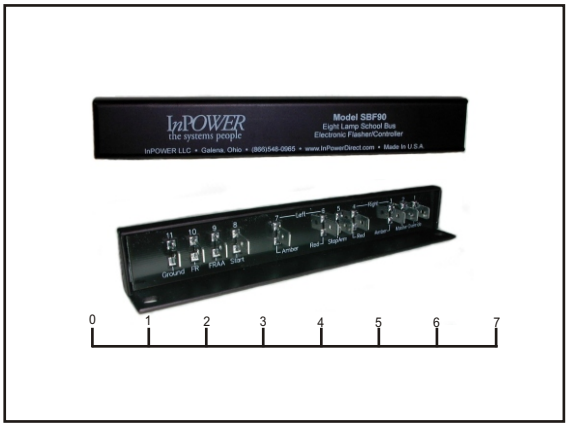
FLASHER REPLACEMENT INSTRUCTIONS

CONVERTINGTranspec Model 6500
To
InPOWER Model SBF90

Transpec Model 6500



InPOWER Model SBF90



Wiring Conversion Chart

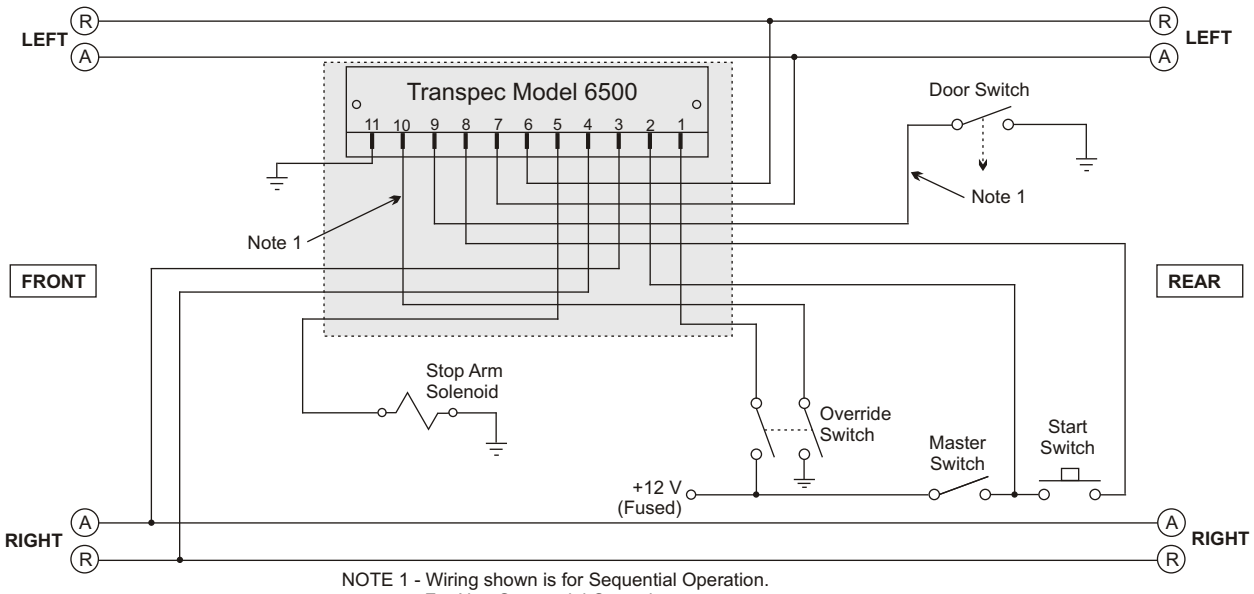
Wire On Transpec Model 6500 Terminal	Description	Goes to InPower Model SBF90 Terminal	Description
1	Override Switch	1	Override Switch
2	Master Switch	2	Master Switch
3	Right Amber	3	Right Amber Lights
4	Right Red	4	Right Red Lamps
5	Stop Arm Solenoid	5	Stop Arm
6	Left Red	6	Left Red Lights
7	Left Amber	7	Left Amber Lights
8	Start Switch +12V	8	Start Switch
9	To Flash Red LTS Only After Amber LTS	9	Flash Red ONLY After Amber
10	To Flash Red LTS Whenever Door is Opened	10	Flash Red When Door is Opened
11	Ground	11	Ground

NOTES:
1 See Figure 1 & 2 for wiring details.

FLASHER REPLACEMENT INSTRUCTIONS

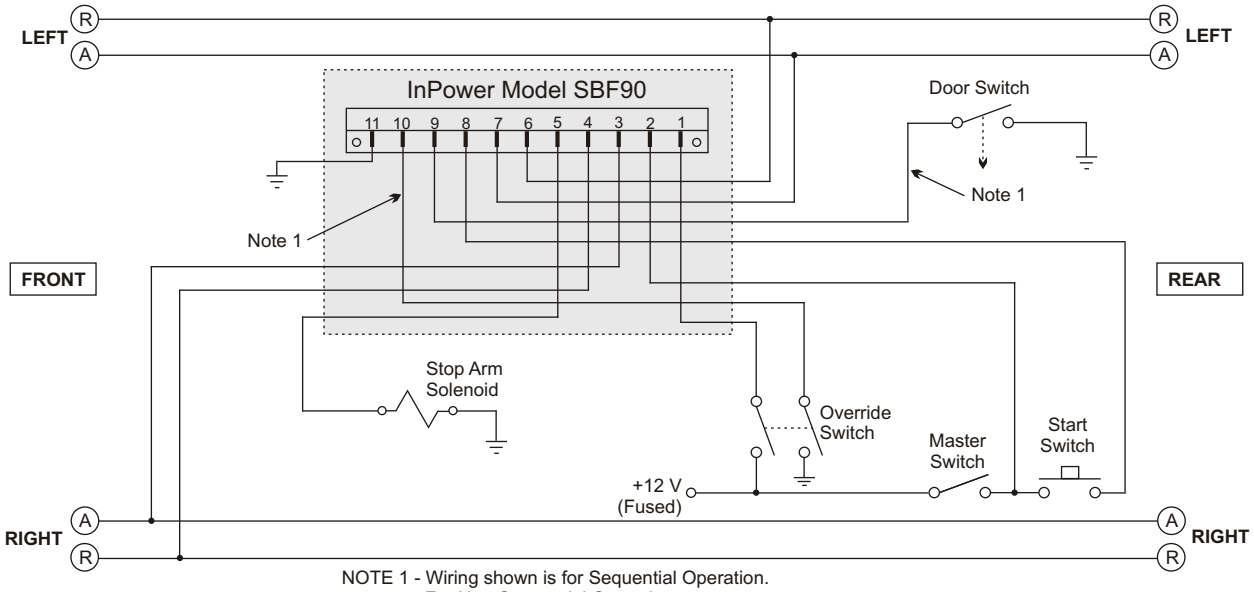
CONVERTING
Transpec Model 6500
To
InPOWER Model SBF90

Figure 1 Wiring Before Flasher Conversion



NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 10.
2) Run wire from Door Switch to Pin 10 (no wire will be on Pin 9).

Figure 2 Wiring After Flasher Conversion

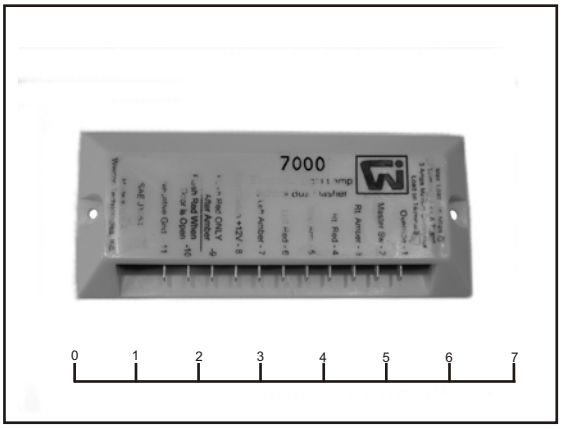


NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 10.
2) Run wire from Door Switch to Pin 10 (no wire will be on Pin 9).

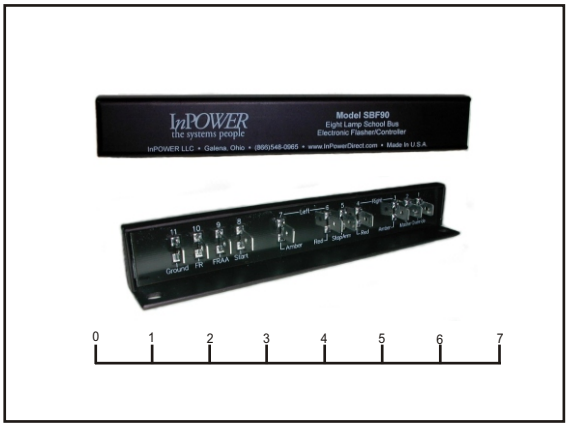
FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
Weldon Model 7000
To
InPOWER Model SBF90

Weldon Model 7000



InPOWER Model SBF90



Wiring Conversion Chart

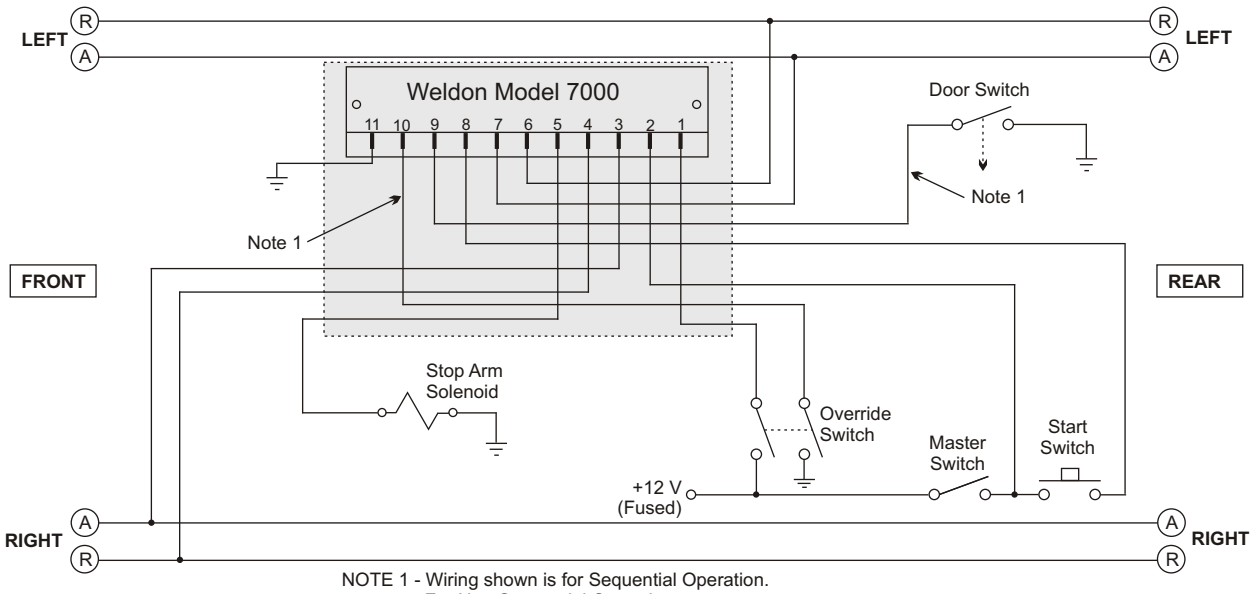
Wire On Weldon Model 7000 Terminal	Description	Goes to InPower Model SBF90 Terminal	Description
1	Override	1	Override Switch
2	Master Switch	2	Master Switch
3	Rt Amber	3	Right Amber Lights
4	Rt Red	4	Right Red Lamps
5	Stop Arm	5	Stop Arm
6	Left Red	6	Left Red Lights
7	Left Amber	7	Left Amber Lights
8	Start Switch	8	Start Switch
9	Flash Red ONLY After Amber	9	Flash Red ONLY After Amber
10	Flash Red When Door is Opened	10	Flash Red When Door is Opened
11	Negative Ground	11	Ground

NOTES:
1. Weldon unit shown is “new” type and includes terminal numbers. The older Weldon 7000 is larger and does not include terminal numbers. However, the terminal functions and layout are the same.
2. See Figure 1 & 2 for wiring details.

FLASHER REPLACEMENT INSTRUCTIONS

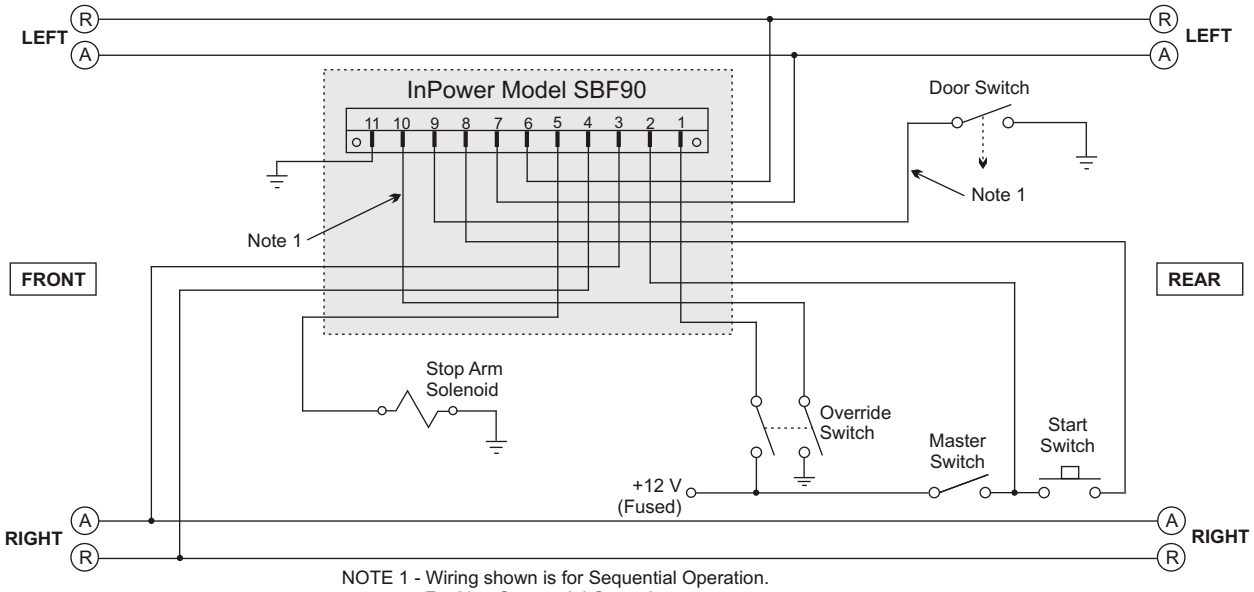
CONVERTING
Weldon Model 7000
To
InPOWER Model SBF90

Figure 1 Wiring Before Flasher Conversion



NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 10.
2) Run wire from Door Switch to Pin 10 (no wire will be on Pin 9).

Figure 2 Wiring After Flasher Conversion

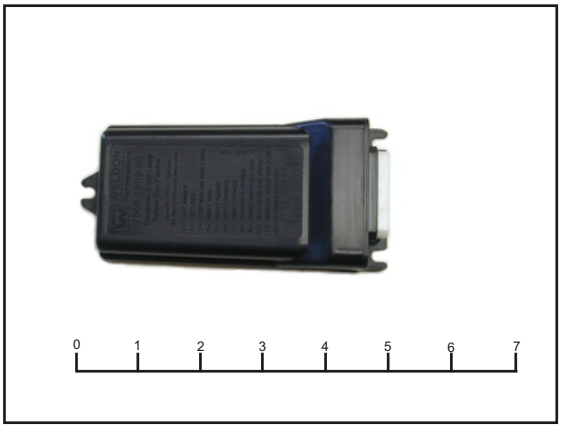


NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 10.
2) Run wire from Door Switch to Pin 10 (no wire will be on Pin 9).

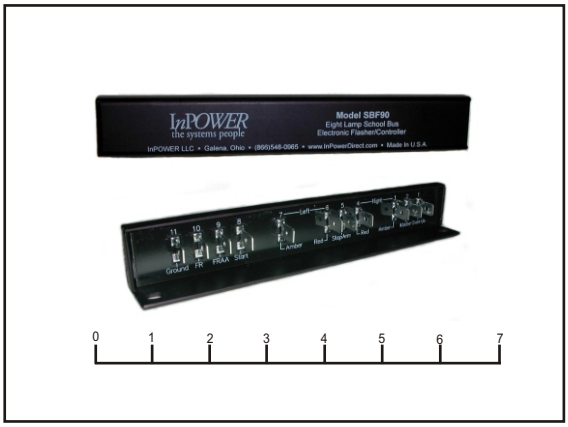
FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
Weldon Model 7000-1000-00
To
InPOWER Model SBF90

Weldon Model 7000-1000-00



InPOWER Model SBF90



Wiring Conversion Chart

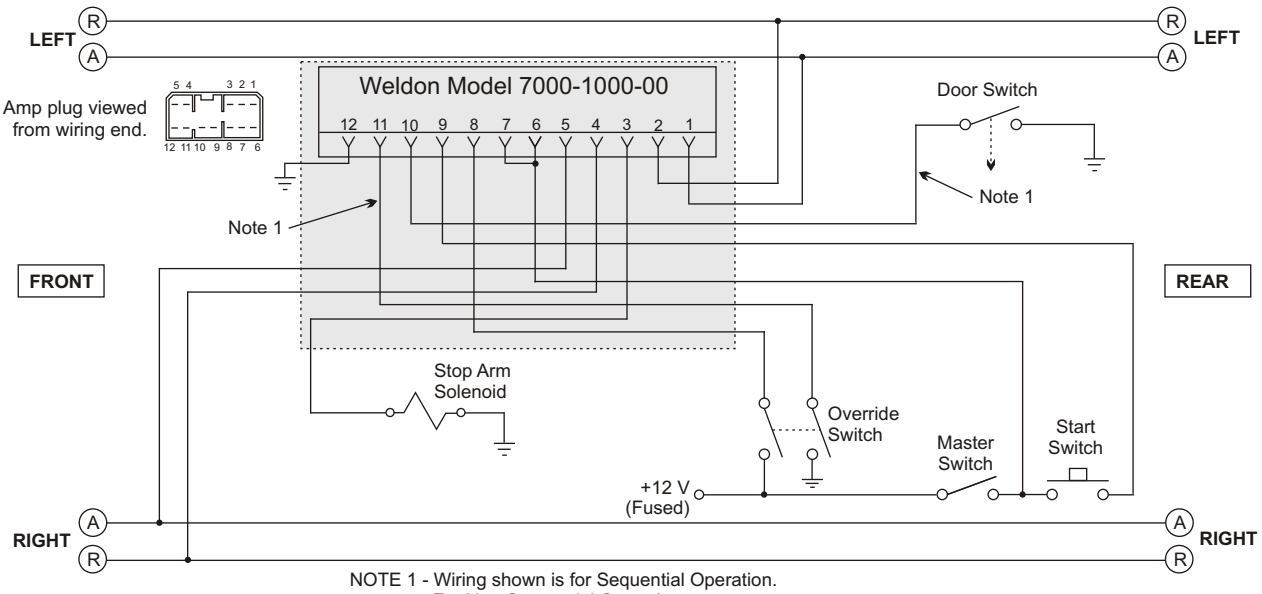
Wire On Weldon Model 7000-1000-00 Pin	Description	Goes to InPower Model SBF90 Terminal	Description
8	Override Power	1	Override Switch (+12V)
6,7	+ Batt Power	2	Master Switch (+12V)
5	Right Amber	3	Right Amber Lights
4	Right Red	4	Right Red Lamps
3	Stop Arm	5	Stop Arm
2	Left Red	6	Left Red Lights
1	Left Amber	7	Left Amber Lights
9	Start Switch (-12V)	8	Start Switch
10	Seq. Door Sw. (Gnd)	9	FRAA (Flash Red ONLY After Amber)
11	Non-Seq. Door Sw. (Gnd)	10	FR (Flash Red When Door is Opened)
12	Flasher Ground	11	Ground

NOTES:
1 Weldon unit shown is the new type with the 12-pin Amp Multilock 070 connector.
2 See Figure 1 & 2 for wiring details.

FLASHER REPLACEMENT INSTRUCTIONS

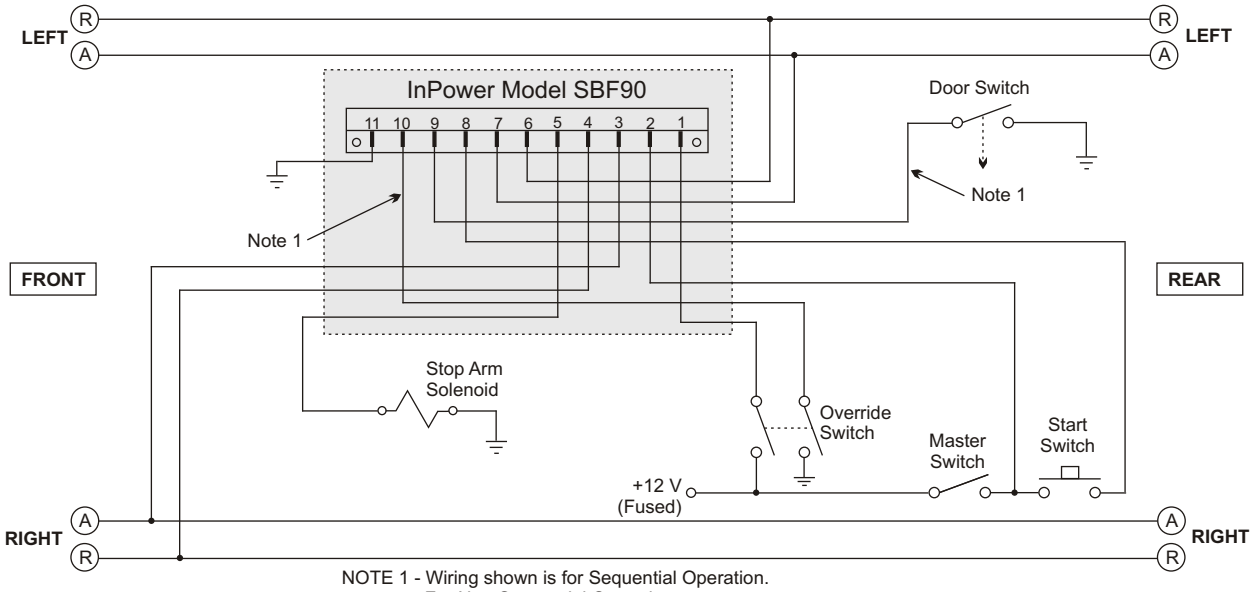
CONVERTING
Weldon Model 7000-1000-00
To
InPOWER Model SBF90

Figure 1 Wiring Before Flasher Conversion



NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 11.
2) Run wire from Door Switch to Pin 11 (no wire will be on Pin 10).

Figure 2 Wiring After Flasher Conversion

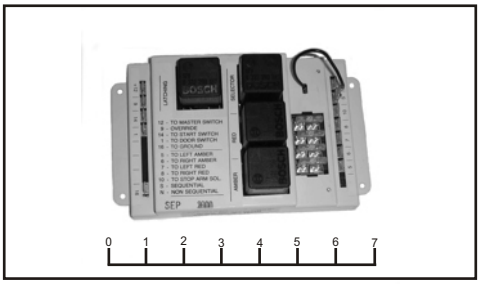


NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 10.
2) Run wire from Door Switch to Pin 10 (no wire will be on Pin 9).

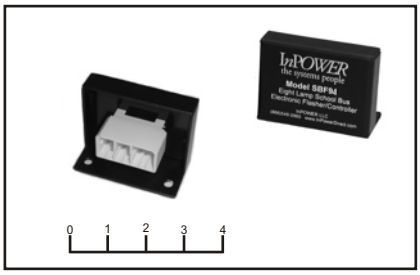
FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
AEROFLASH Model 165-0018
To
InPOWER Model SBF94

AEROFLASH Model 165-0018



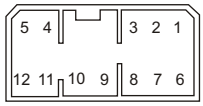
InPOWER Model SBF94



Wiring Conversion chart

Wire On Aeroflash Model 165-0018 Terminal	Description	Goes to InPower Model SBF94 Terminal	Description
For Sequential Operation:			
1	Door Switch (wire to Door Sw.)	10	Flash Red Only After Amber
1	Door Switch (wire to Override Switch)	11	Flash Red When Door is Opened
2,3,4	Not Used		
5	Amber Light – Left	1	Left Amber Lights
6	Amber Light – Right	5	Right Amber Lights
7	Red Light – Left	2	Left Red Lights
8	Red Light – Right	4	Right Red Lights
9	"Fail Safe" Switch	8	Override Switch
10	Stop Arm Solenoid	3	Stop Arm
11	Not Used		
12	Master Switch +12V	6,7	Master Switch
13	Not Used Most Installations		
14	Start Switch	9	Start Switch
15	Not Used		
16	Ground	12	Ground
For Non-Sequential Operation:			
1	Door Switch (wire to Door Sw.)	11	Flash Red When Door is Opened
1	Door Switch (wire to Override Switch)	-	(No wire)
2,3,4	Not Used		
5	Amber Light – Left	1	Left Amber Lights
6	Amber Light – Right	5	Right Amber Lights
7	Red Light – Left	2	Left Red Lights
8	Red Light – Right	4	Right Red Lights
9	"Fail Safe" Switch	8	Override Switch
10	Stop Arm Solenoid	3	Stop Arm
11	Not Used		
12	Master Switch +12V	6,7	Master Switch
13	Not Used Most Installations		
14	Start Switch	9	Start Switch
15	Not Used		
16	Ground	12	Ground

Connector Pin Layout



View looking into Amp Multilock 070 connector on flasher unit.

Note - See Figure 1 & 2 for wiring details.

FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
AEROFLASH Model 165-0018
To
InPOWER Model SBF94

Figure 1 Wiring Before Flasher Conversion

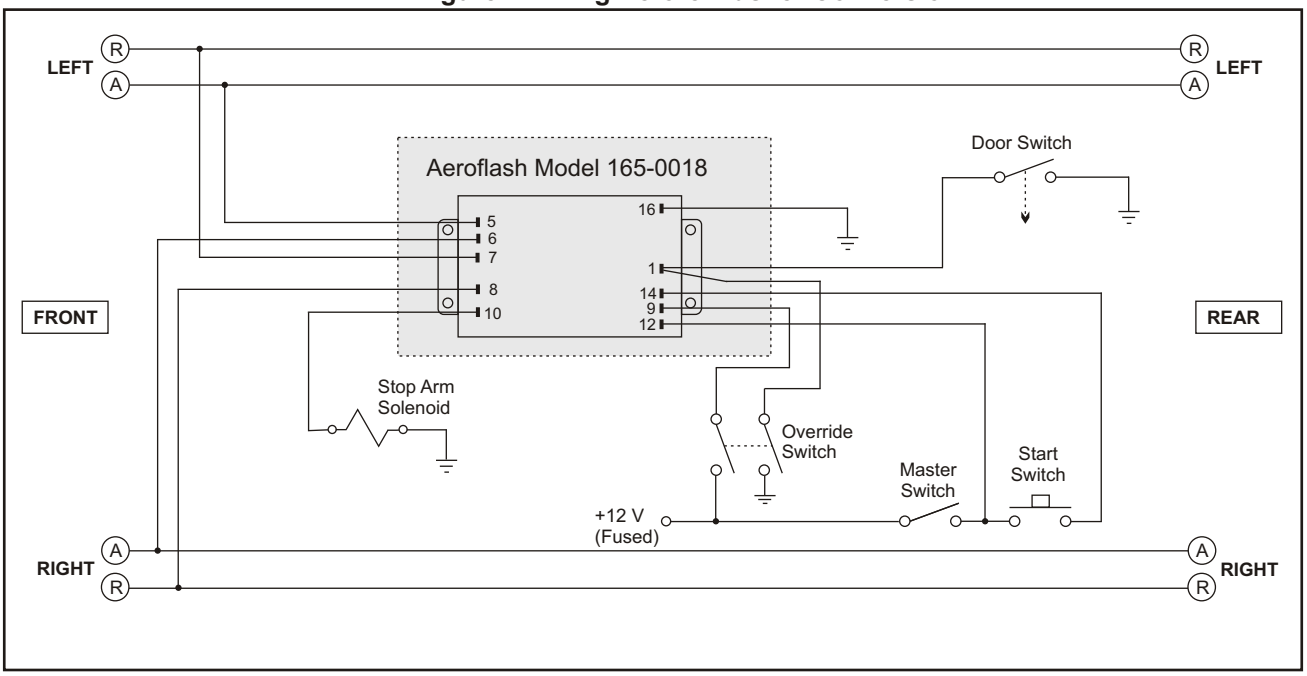
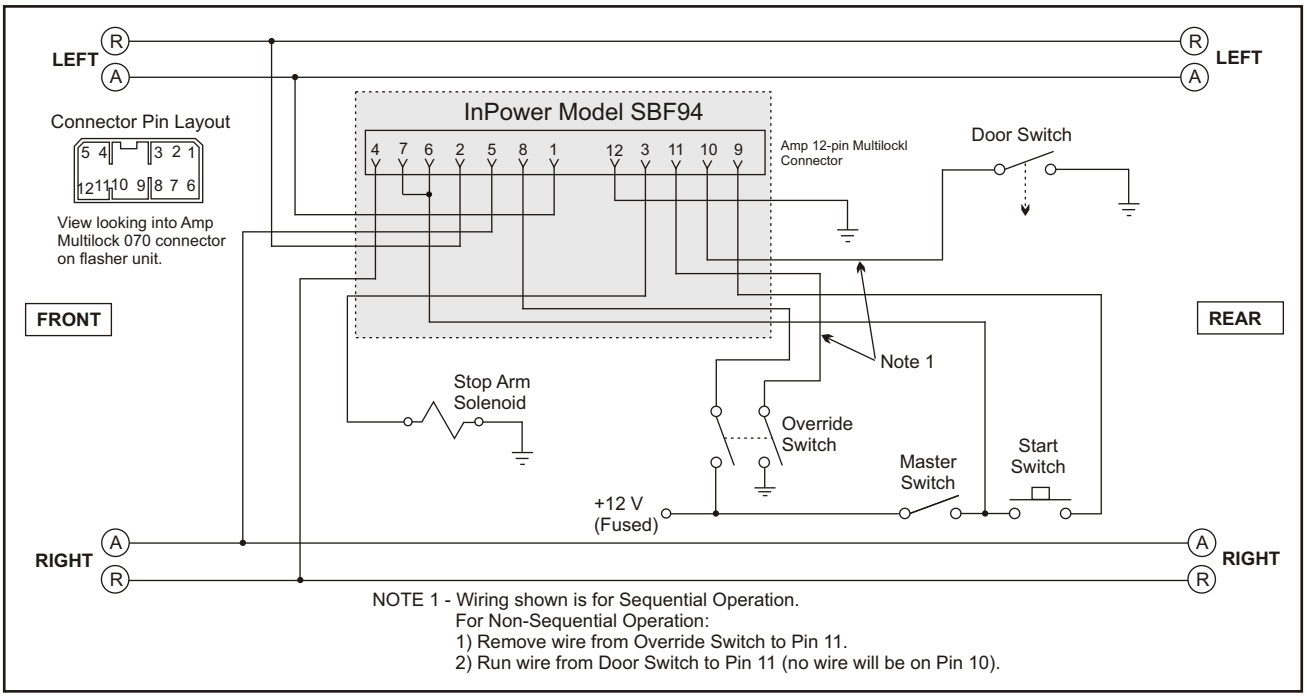


Figure 2 Wiring After Flasher Conversion

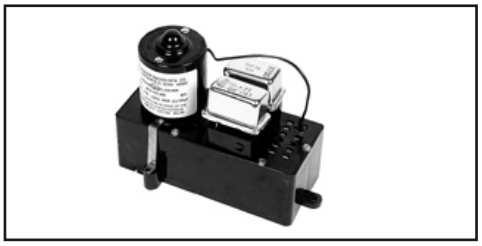


NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 11.
2) Run wire from Door Switch to Pin 11 (no wire will be on Pin 10).

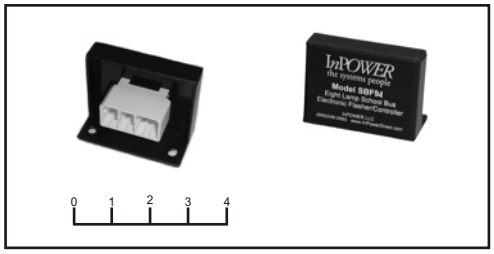
FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
BAADER-BROWN Models
To
InPOWER Model SBF94

Baader-Brown 6404-1125 & 6404-1920



InPOWER Model SBF94



Wiring Conversion Chart

Wire On Baader-Brown Terminal	Description	Goes to InPower Model SBF94 Terminal	Description	Comments
For Sequential Operation:				
1	Red Light – Right	4	Right Red Lights	
2	Not Used			
3	Stop Arm Solenoid	3	Stop Arm	
4	Not Used			
5	Not Used			
6	Amber Light – Right	5	Right Amber Lights	
7	Red Light – Left	2	Left Red Lights	
8	Door Switch	10	Flash Red Only After Amber	
		*11	Flash Red When Door is Opened	
9	Master Switch +12V	6,7	Master Switch	
10	Not Used			
11	Start Switch	9	Start Switch	
12	Amber Light – Left	1	Left Amber Lights	
-	Ground	12	Ground	
		8	Override Switch(If Used, run wire from Override Sw. to terminal 8)	
For Non-Sequential Operation:				
1	Red Light – Right	4	Right Red Lights	
2	Not Used			
3	Stop Arm Solenoid	3	Stop Arm	
4	Not Used			
5	Not Used			
6	Amber Light – Right	5	Right Amber Lights	
7	Red Light – Left	2	Left Red Lights	
8	Door Switch	11	Flash Red When Door is Opened (No wire on terminal 9)	
9	Master Switch +12V	6,7	Master Switch	
10	Not Used			
11	Start Switch	9	Start Switch	
12	Amber Light – Left	1	Left Amber Lights	
-	Ground	12	Ground	
		8	Override Switch(If Used, run wire from Override Sw. to terminal 1)	

Note - See Figure 1 & 2 for wiring details.
* If Override Switch is used run wire from terminal 11 to Override Switch (See Fig. 2).

FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
Baader-Brown Models 6404-1125 & 6404-1920
To
InPOWER Model SBF94

Figure 1 Wiring Before Flasher Conversion

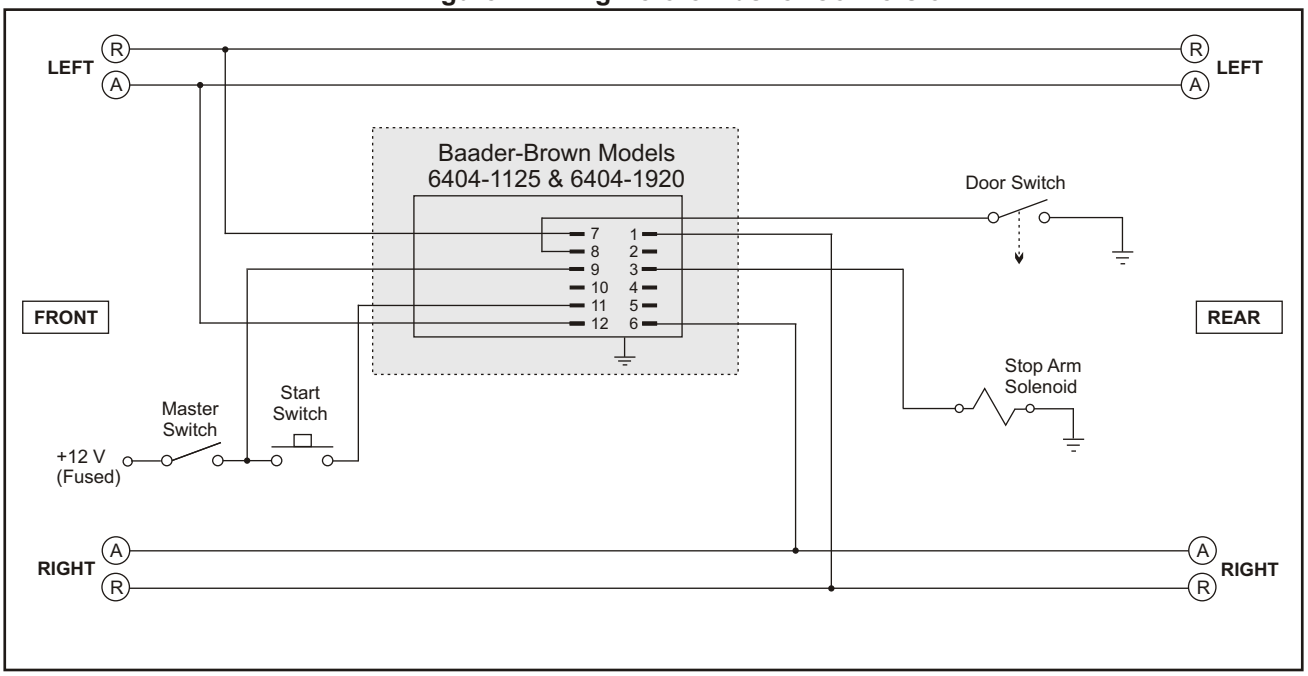
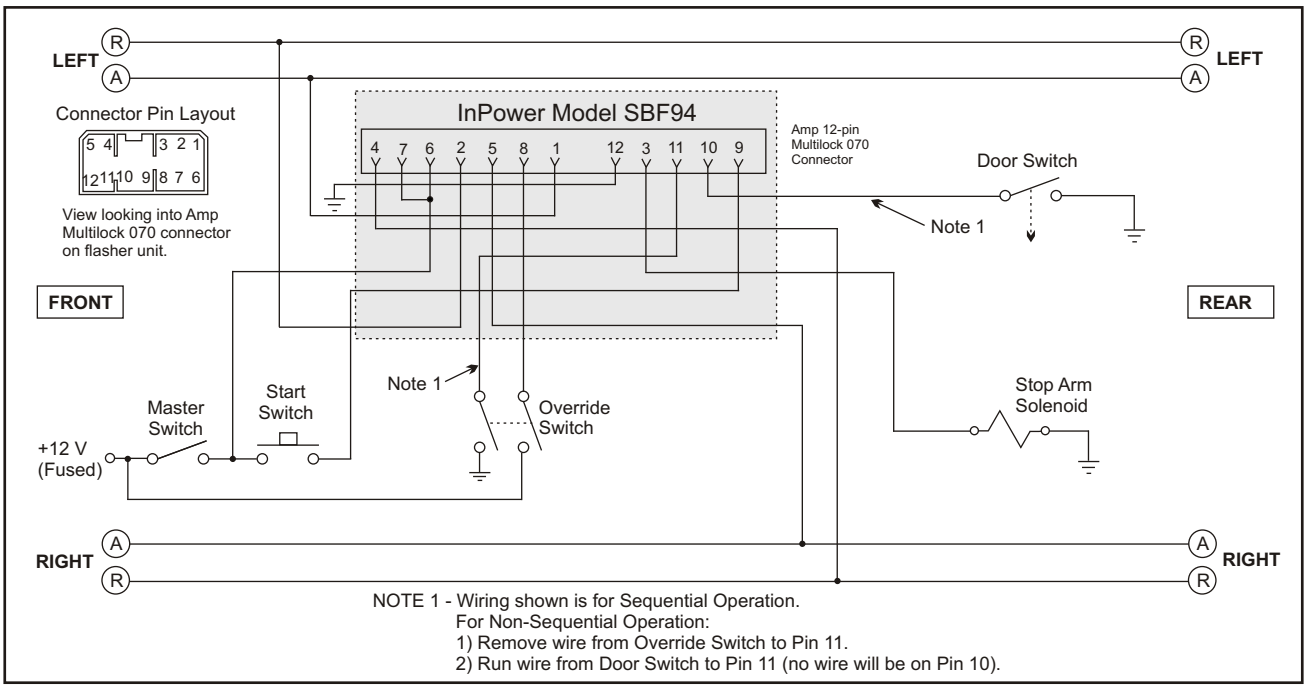


Figure 2 Wiring After Flasher Conversion

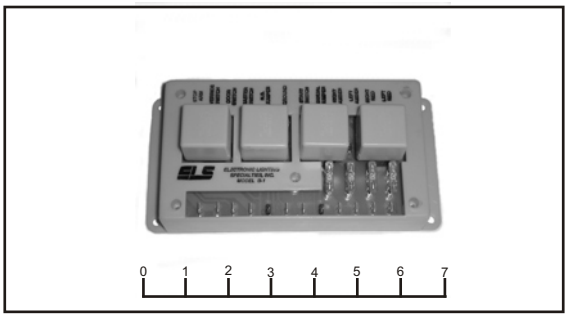


NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 11.
2) Run wire from Door Switch to Pin 11 (no wire will be on Pin 10).

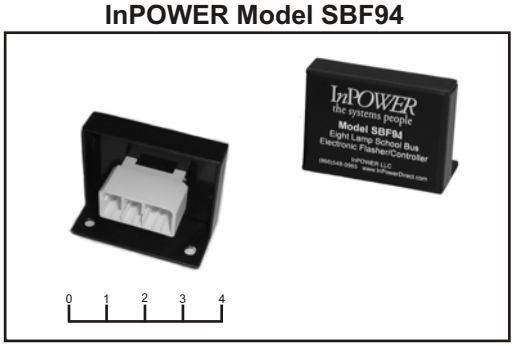
FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
ELS Model B-1
To
InPOWER Model SBF94

ELS Model B-1



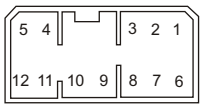
InPOWER Model SBF94



Wiring Conversion Chart

Wire On ELS Model B-1 Terminal	Description	Goes to InPower Model SBF94 Terminal	Description	Comments
For Sequential Operation:				
1	Stop Arm	3	Stop Arm	
2	Override Switch	8	Override Switch	
3	Door Switch (wire to Door Sw.)	10	Flash Red Only After Amber	
3	Door Switch (wire to Override Switch)	11	Flash Red When Door is Opened	
4	Master Switch	6,7	Master Switch	
-	(N.S. Jumper)		N/A	
5	Ground	12	Ground	
6	Start Switch	9	Start Switch	
-	(Manual Jumper)		N/A	
7	Right Amber	5	Right Amber Lights	
8	Left Amber	1	Left Amber Lights	
9	Right Red	4	Right Red Lamps	
10	Left Red	2	Left Red Lights	
For Non-Sequential Operation:				
1	Stop Arm	3	Stop Arm	
2	Override Switch	8	Override Switch	
3	Door Switch (wire to Door Sw.)	11	Flash Red When Door is Opened	
3	Door Switch (wire to Override Switch)	-	(No wire)	Remove wire to Override Switch
4	Master Switch	6,7	Master Switch	
-	(N.S. Jumper)		N/A	
5	Ground	12	Ground	
6	Start Switch	9	Start Switch	
-	(Manual Jumper)		N/A	
7	Right Amber	5	Right Amber Lights	
8	Left Amber	1	Left Amber Lights	
9	Right Red	4	Right Red Lamps	
10	Left Red	2	Left Red Lights	

Connector Pin Layout



View looking into Amp Multilock 070 connector on flasher unit.

Note - See Figure 1 & 2 for wiring details.

FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
ELS Model B-1
To
InPOWER Model SBF94

Figure 1 Wiring Before Flasher Conversion

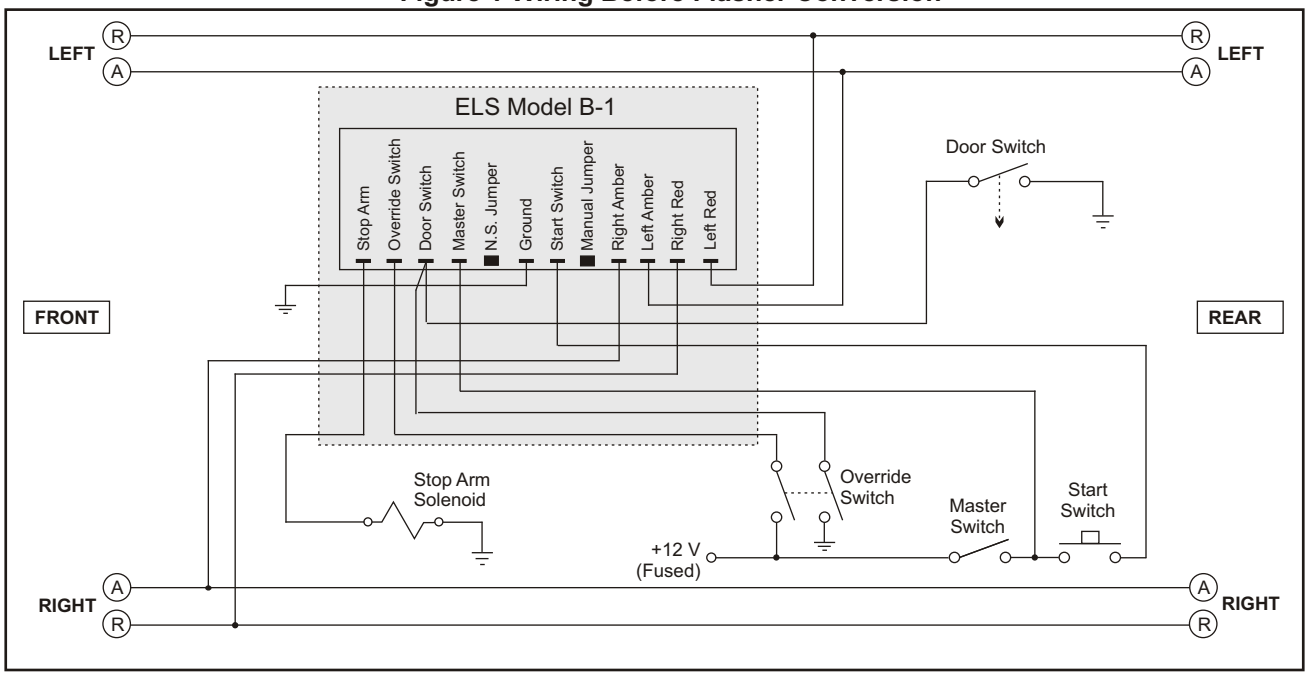
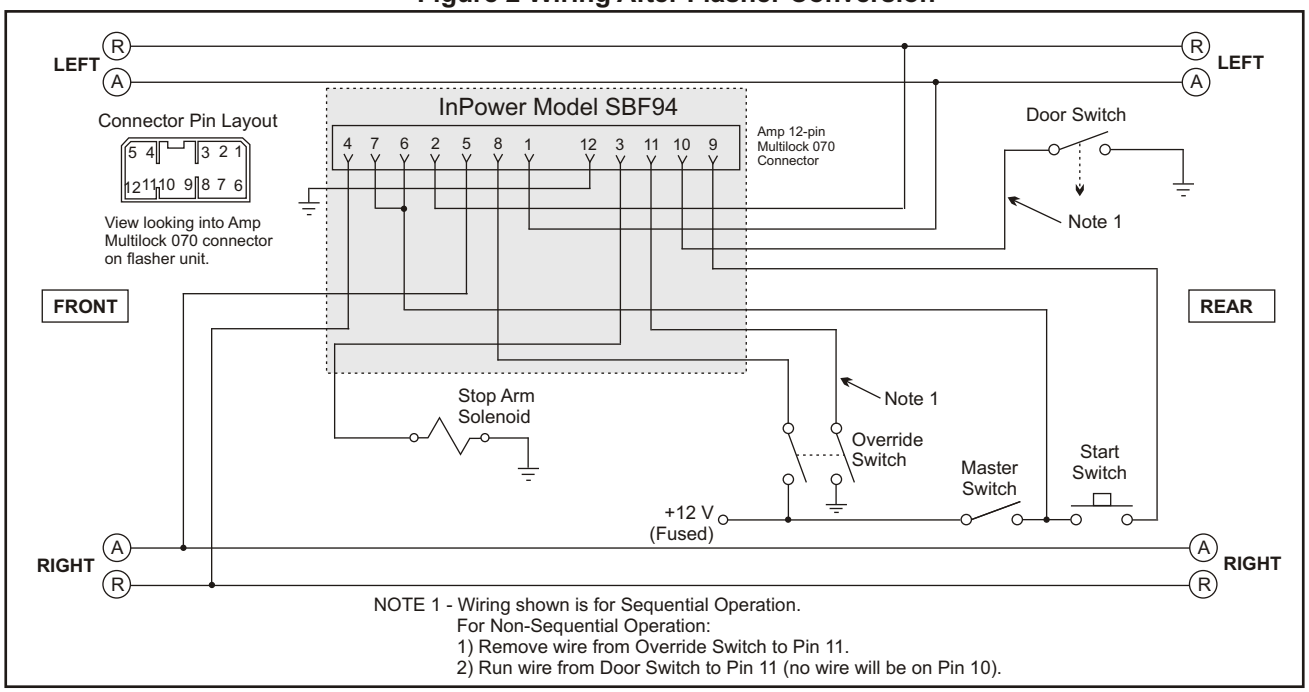


Figure 2 Wiring After Flasher Conversion

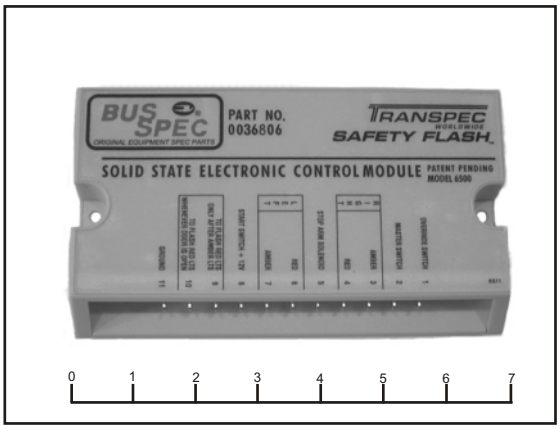


NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 11.
2) Run wire from Door Switch to Pin 11 (no wire will be on Pin 10).

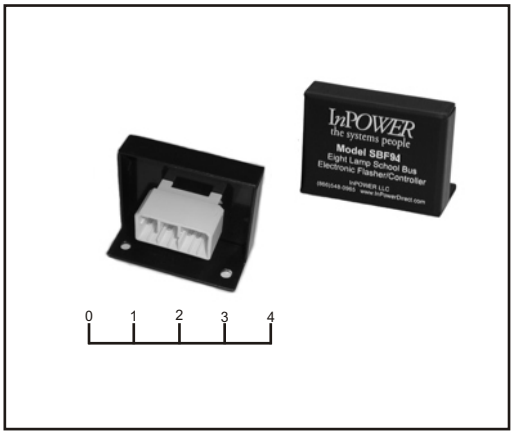
FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING Transpec Model 6500
To
InPOWER Model SBF94

Transpec Model 6500



InPOWER Model SBF94



Wiring Conversion Chart

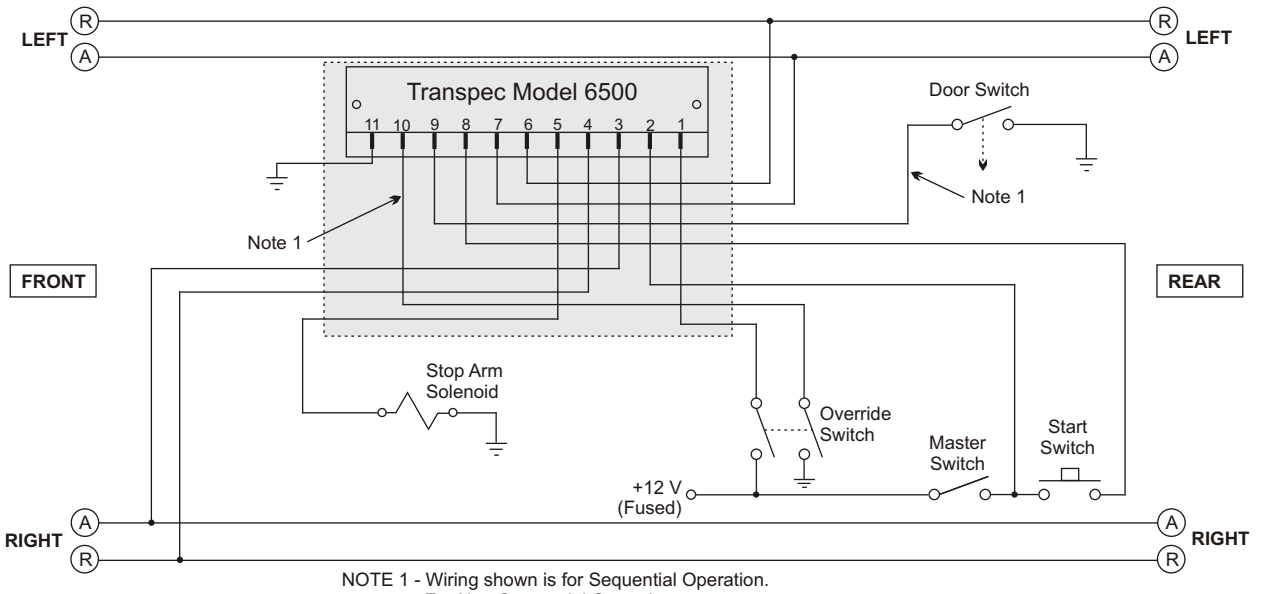
Wire On Transpec Model 6500 Terminal	Description	Goes to InPower Model SBF94 Terminal	Description
1	Override Switch	8	Override Switch
2	Master Switch	6,7	Master Switch
3	Right Amber	5	Right Amber Lights
4	Right Red	4	Right Red Lamps
5	Stop Arm Solenoid	3	Stop Arm
6	Left Red	2	Left Red Lights
7	Left Amber	1	Left Amber Lights
8	Start Switch +12V	9	Start Switch
9	To Flash Red LTS Only After Amber LTS	10	Flash Red ONLY After Amber
10	To Flash Red LTS Whenever Door is Opened	11	Flash Red When Door is Opened
11	Ground	12	Ground

NOTES:
1 See Figure 1 & 2 for wiring details.

FLASHER REPLACEMENT INSTRUCTIONS

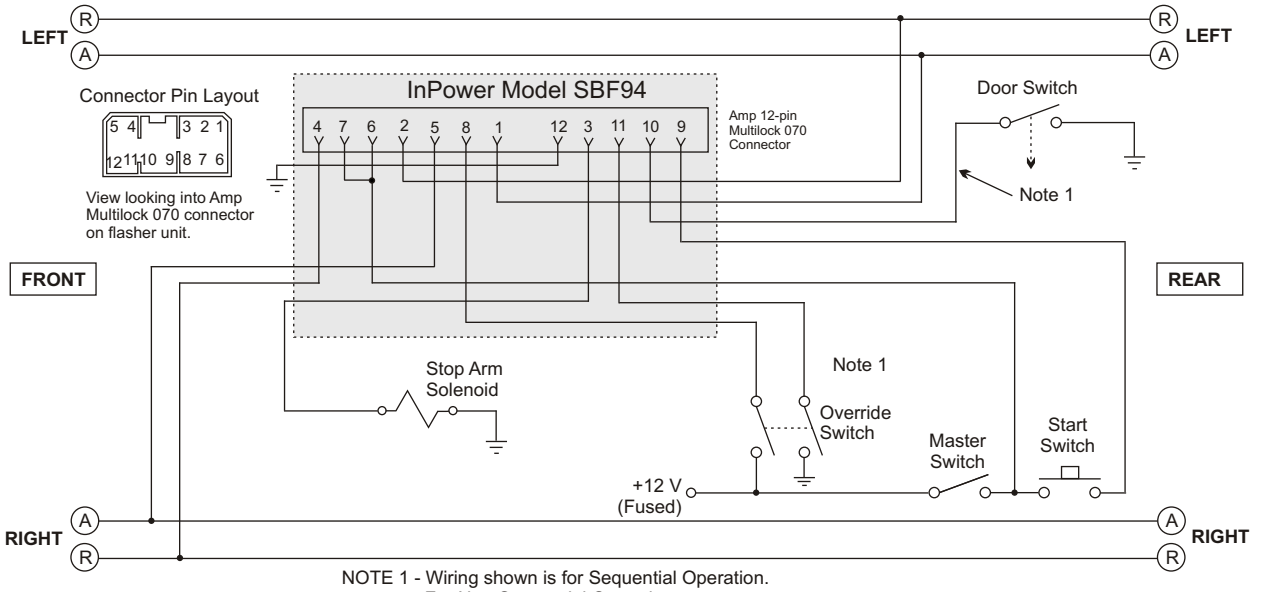
CONVERTING
Transpec Model 6500
To
InPOWER Model SBF94

Figure 1 Wiring Before Flasher Conversion



NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 10.
2) Run wire from Door Switch to Pin 10 (no wire will be on Pin 9).

Figure 2 Wiring After Flasher Conversion

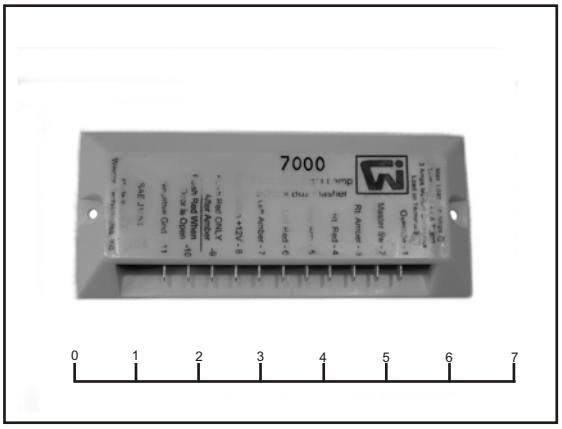


NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 11.
2) Run wire from Door Switch to Pin 11 (no wire will be on Pin 10).

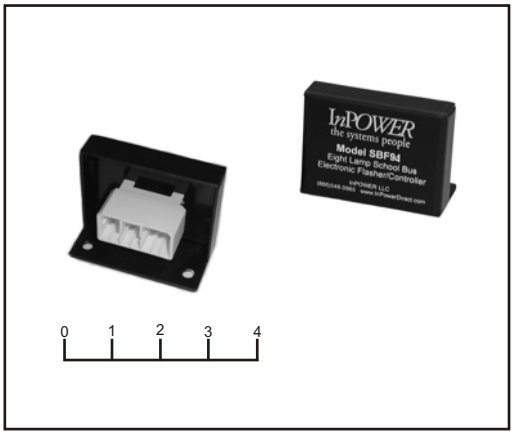
FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
Weldon Model 7000
To
InPOWER Model SBF94

Weldon Model 7000



InPOWER Model SBF94



Wiring Conversion Chart

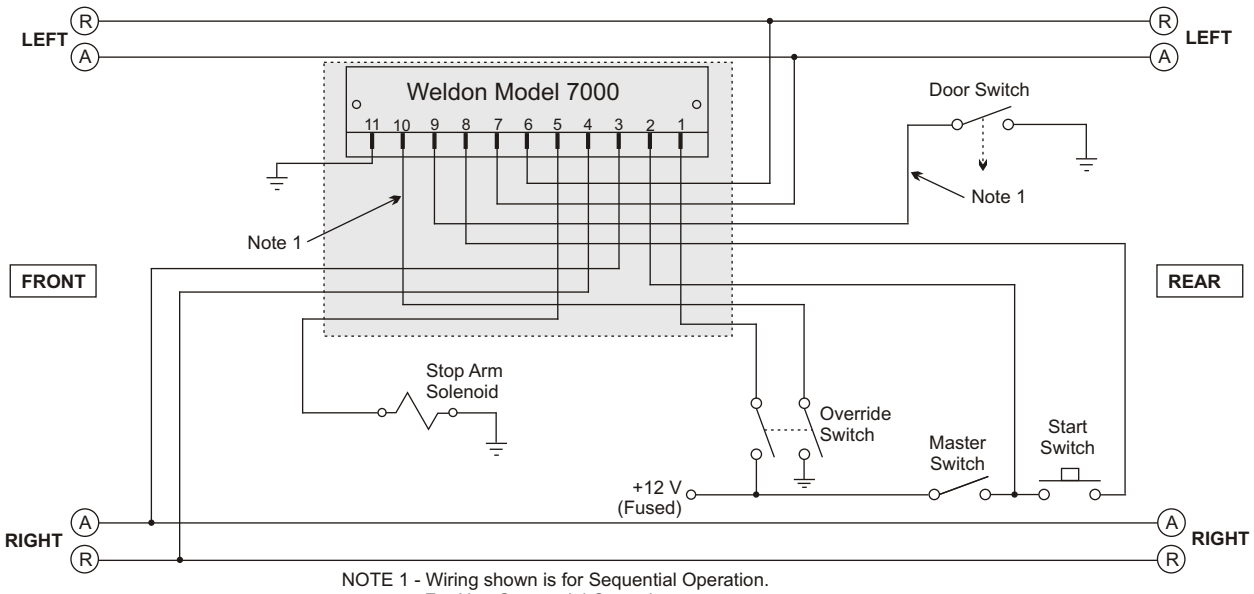
Wire On Weldon Model 7000 Terminal	Description	Goes to InPower Model SBF94 Terminal	Description
1	Override	8	Override Switch
2	Master Switch	6,7	Master Switch
3	Rt Amber	5	Right Amber Lights
4	Rt Red	4	Right Red Lamps
5	Stop Arm	3	Stop Arm
6	Left Red	2	Left Red Lights
7	Left Amber	1	Left Amber Lights
8	Start Switch	9	Start Switch
9	Flash Red ONLY After Amber	10	Flash Red ONLY After Amber
10	Flash Red When Door is Opened	11	Flash Red When Door is Opened
11	Negative Ground	12	Ground

NOTES:
1. Weldon unit shown is “new” type and includes terminal numbers. The older Weldon 7000 is larger and does not include terminal numbers. However, the terminal functions and layout are the same.
2. See Figure 1 & 2 for wiring details.

FLASHER REPLACEMENT INSTRUCTIONS

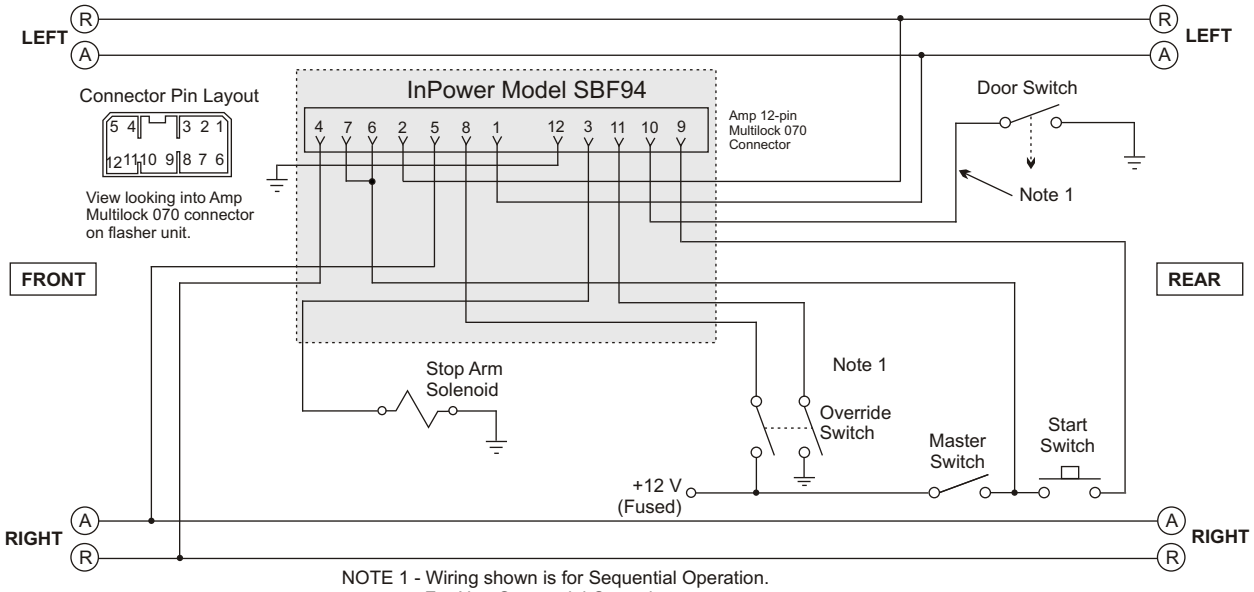
CONVERTING
Weldon Model 7000
To
InPOWER Model SBF94

Figure 1 Wiring Before Flasher Conversion



NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 10.
2) Run wire from Door Switch to Pin 10 (no wire will be on Pin 9).

Figure 2 Wiring After Flasher Conversion

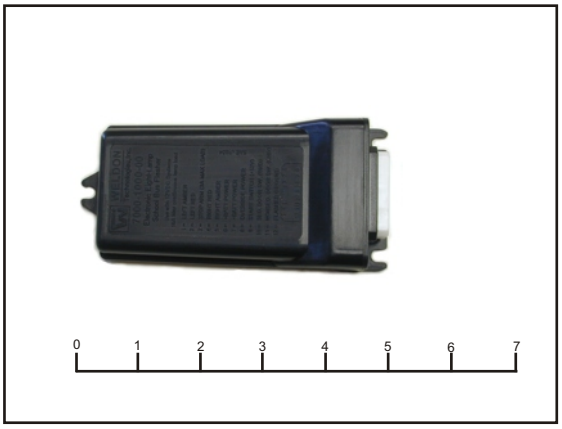


NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 11.
2) Run wire from Door Switch to Pin 11 (no wire will be on Pin 10).

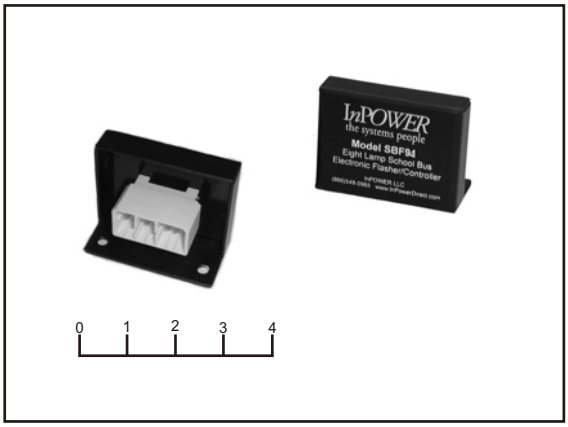
FLASHER REPLACEMENT INSTRUCTIONS

CONVERTING
Weldon Model 7000-1000-00
To
InPOWER Model SBF94

Weldon Model 7000-1000-00



InPOWER Model SBF94



Wiring Conversion Chart

Wire On Weldon Model 7000-1000-00 Pin	Description	Goes to InPower Model SBF94 Pin	Description
8	Override Power	8	Override Switch (+12V)
6,7	+ Batt Power	6,7	Master Switch (+12V)
5	Right Amber	5	Right Amber Lights
4	Right Red	4	Right Red Lamps
3	Stop Arm	3	Stop Arm
2	Left Red	2	Left Red Lights
1	Left Amber	1	Left Amber Lights
9	Start Switch (-12V)	9	Start Switch
10	Seq. Door Sw. (Gnd)	10	FRAA (Flash Red ONLY After Amber)
11	Non-Seq. Door Sw. (Gnd)	11	FR (Flash Red When Door is Opened)
12	Flasher Ground	12	Ground

NOTES:

1 Weldon unit shown is the new type with the 12-pin Amp Multilock 070 connector. The SBF94 uses the same Amp connector.

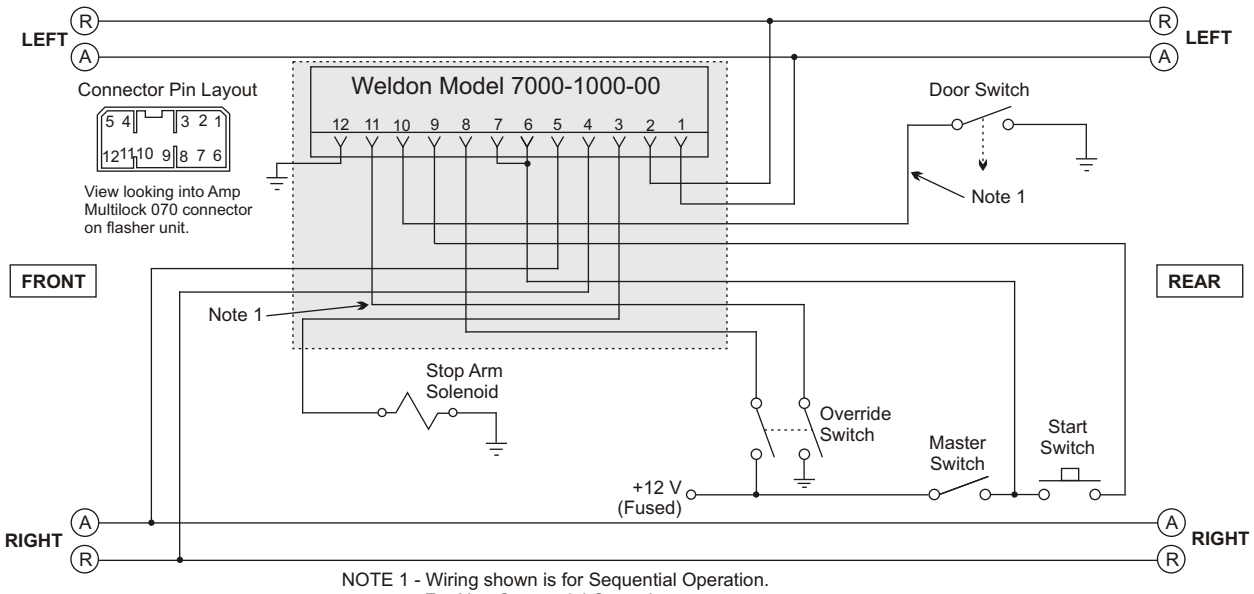
2 No wiring changes are required. Just reconnect the harness from the Weldon flasher to the InPower flasher.

3 See Figure 1 & 2 for wiring details.

FLASHER REPLACEMENT INSTRUCTIONS

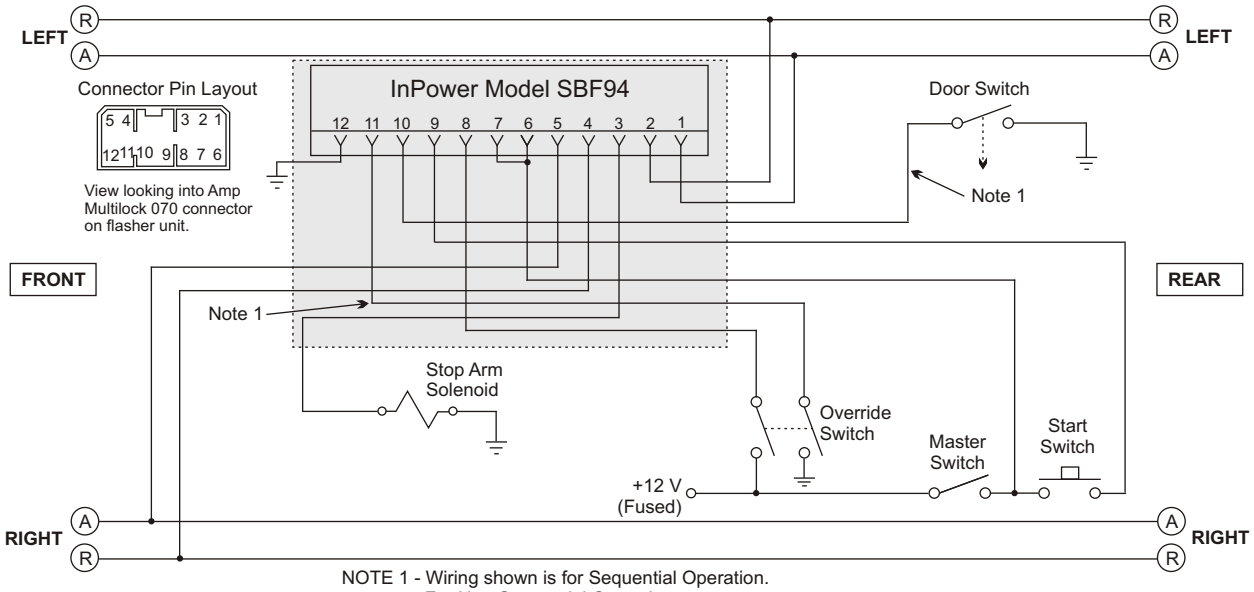
CONVERTING
Weldon Model 7000-1000-00
To
InPOWER Model SBF94

Figure 1 Wiring Before Flasher Conversion



NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 11.
2) Run wire from Door Switch to Pin 11 (no wire will be on Pin 10).

Figure 2 Wiring After Flasher Conversion



NOTE 1 - Wiring shown is for Sequential Operation.
For Non-Sequential Operation:
1) Remove wire from Override Switch to Pin 11.
2) Run wire from Door Switch to Pin 11 (no wire will be on Pin 10).

VCM-08
Dual 15 Amp Alternating Lamp Flasher

InPower's VCM Series *Vehicle Control Modules* are a set of "tools" for the designers of vehicle electrical control systems. These solid state modules are designed to withstand the environments typically found on trucks, emergency vehicles, buses, coaches and speciality vehicles, and are available in a variety of standard and custom configurations and functions.

Key Features

- ***100% Solid State Construction***
- ***Operates Halogen and LED Lamps***
- ***Standard Automotive Relay Pin Format***
- ***Dual 12 Volt 15 Amp Solid State Outputs***
- ***Compact Size with Panel-Mount Bracket***
- ***High Technology Power Switching Circuit***
- ***Durable Metal Case***

Technical Description

The InPower VCM-08 warning lamp flasher represents a breakthrough in solid state flasher technology. The use of advanced SMT and packaging technology results in a very compact, high performance flasher with exceptional reliability and low cost.

The VCS-08 flasher is a completely solid state dual output alternating warning lamp flasher. Its outputs are rated at +12 volts @ 15 amps each, and are designed to operate high in-rush current halogen and incandescent lamps, as well as LED lights.

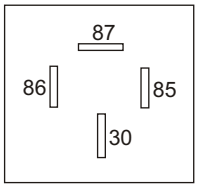
When a ground is applied to the input, the outputs will alternately flash at a rate of 75 cycles per minute at a 50% duty cycle. The solid state outputs are a unique design that will automatically shut off if an over current or short circuit fault occurs. If a fault shut down occurs on one output the other output will remain operational.

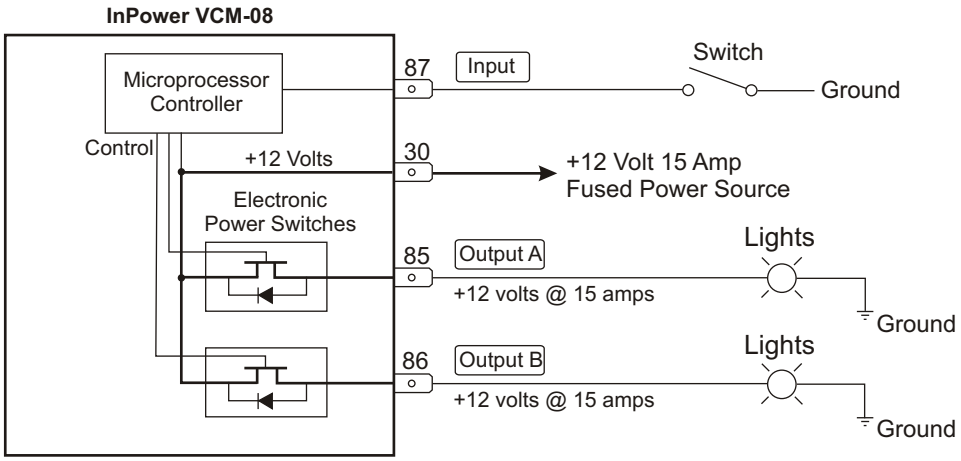
Ordering Guide

Model	Description
VCM-08	Solid state alternating lamp flasher with single input and two +12 volt @ 15 amp outputs.

Wiring Diagram

Terminal Layout





PATENT PENDING

VCM-08

Solid State Dual 15 Amp Alternating Flasher

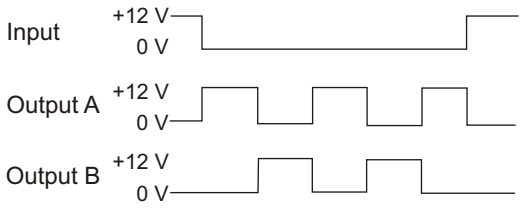
Specifications

Power Input (30):	+8 to 16 Vdc @ 15 amps
Control Input (87):	External contact closure to ground
Output A (85):	+12 volts @ 15 amps
Output B (86):	+12 volts @ 15 amps
Flash Rate:	75 per minute

Mechanical

Weight:	0.10 lbs.
Operating Temperature:	-40° C to +85° C

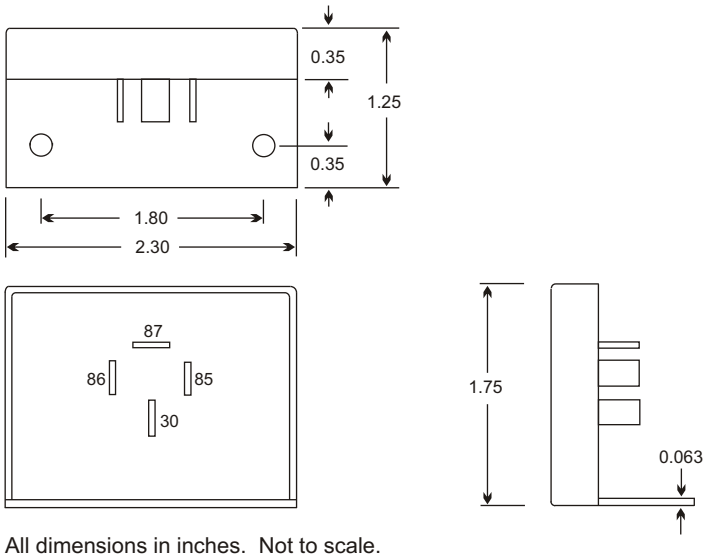
Timing Diagram



Installation

1. We recommend that the module be installed by a person trained and skilled in vehicle electrical systems. The installation should comply with SAE (Society of Automotive Engineers) and the vehicle manufacturer's electrical wiring procedures (e.g., Ford, General Motors, etc.).
2. The module should be installed on the inside of the vehicle in a dry and protected environment.
3. For optimum power output performance the product should be mounted to a metal surface.
4. Do not connect loads to the output that will exceed the output current rating of the module.
5. The 12 volt power input (30) must be from a properly fused +12 volt power source.
6. Wiring must be of the proper gage and type to handle the intended load currents.
7. We recommend the use of insulated 1/4 inch female blade terminals that connect to the terminals on the module. Be sure to properly crimp these terminals. **Do not solder wires directly to the module terminals.**
8. If you are experiencing problems with the installation or need troubleshooting assistance, contact InPower Customer Service at 740-548-0965.

Outline Drawing



All dimensions in inches. Not to scale.

Offered by:

Off Road Engineering LLC
www.offroadengineering.com
(949) 581 2991

PDS-62B 070507

Bus Alternating Warning Light Flasher Circuit

Product Information

InPower Model: VCM-08 Dual 15 Amp Alternating Lamp Flasher

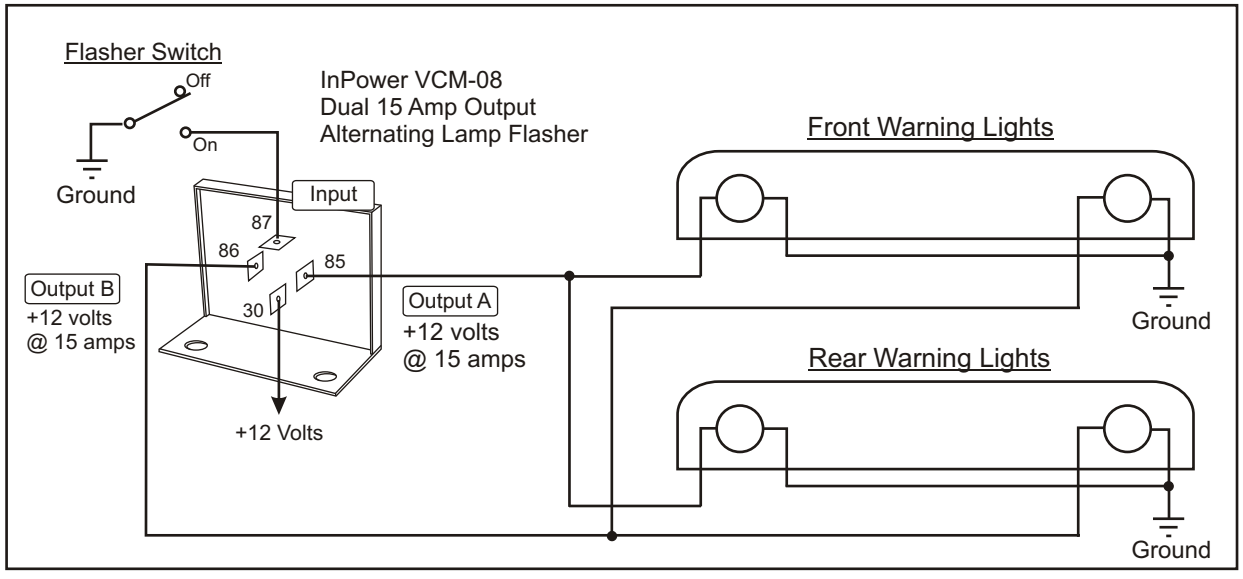
Description: The VCS-08 flasher is a completely solid state dual output alternating warning lamp flasher. Its outputs are rated at +12 volts @ 15 amps each, and are designed to operate high in-rush current halogen and incandescent lamps, as well as LED lights. When a ground is applied to the input, the outputs will alternately flash at a rate of 75 cycles per minute at a 50% duty cycle. The solid state outputs are a unique design that will automatically shut off if an over current or short circuit fault occurs. If a fault shut down occurs on one output the other output will remain operational.

Documentation: Product Data Sheet PDS-62

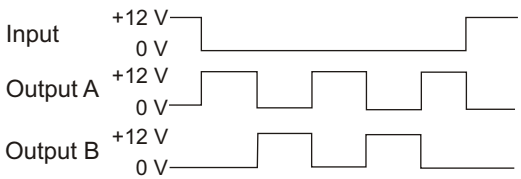
Operation

1. Flasher Switch to On position.
2. Output A and Output B alternately flash at a rate of 75 flashes per minute.

Application Wiring Diagram



Timing Diagram



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