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B-KON Flashers have proven their reliability through years of use on communication towers, smoke stacks, cooling towers, tall buildings, bridges and utility towers. The highest quality components are encapsulated in a rugged plastic housing with a molded-in heat transfer plate. The flash rate, ratio, and fail-safe design meet FAA regulations. Zero voltage switching can increase lamp life up to ten times. The FS155-30RF & FS165-30RF include superior RF filtering circuitry for use in high RF installations; including AM hot towers.


For more information see:
Appendix B, page 165, Figure 4 for dimensional drawing.
Appendix C, page 171, Figure 30 for connection diagram.

Operation
FS Series - Flasher (OFF First)
FA Series - Flashers & Aux. Modules

Upon application of input voltage, the T2 OFF time begins. At the end of the OFF time, the T1 ON time begins and the load energizes. At the end of T1, T2 begins and the load de-energizes. This cycle repeats until voltage is removed. Reset: Removing input voltage resets the output and the sequence to T2.

Features:

- Zero voltage switching - up to 10 times longer lamp life
- No RFI caused by contacts closing
- High inrush capability - up to 200A
- RF model for AM hot towers & other high RF installations
- Auxiliary units for synchronous flashing or constant line loading

Approvals:  (FS155 & FA155 models only)

Auxiliary Products:

- **Quick connect to screw adaptor:**
P/N: P1015-18
- **Female quick connect:**
P/N: P1015-13 (AWG 10/12)
P/N: P1015-64 (AWG 14/16)
P/N: P1015-14 (AWG 18/22)

Available Models:

FA155	FS155-30RF
FA155-2	FS155-30T
FA165	FS165-30T
FA165-2	

If desired part number is not listed, please call us to see if it is technically possible to build.

Order Table:

<u>Input</u>	<u>Wattage</u>	<u>Inrush</u>	<u>Description</u>	<u>Part Number</u>
120VAC	2500W	200A	For High RF Radiation locations including AM Hot Towers	FS155-30RF
120VAC	2500W	200A	Standard Flasher	FS155-30T
230VAC	5000W	200A	For High RF Radiation locations including AM Hot Towers	FS165-30RF
230VAC	5000W	200A	Standard Flasher	FS165-30T
120VAC	2500W	200A	Auxiliary unit for synchronous operating of additional beacons	FA155-2
120VAC	3000W	300A	Auxiliary unit with optical isolation between input and load contacts	FA155-3
230VAC	5000W	200A	Auxiliary unit for synchronous operating of additional beacons	FA165-2
120VAC	2500W	200A	Auxiliary unit to provide constant line loading	FA155
230VAC	5000W	200A	Auxiliary unit to provide constant line loading	FA165

Specifications

Operation	Single & multiple beacon flashing with auxiliary modules
Flash Rate (FS Series Only)	30 ±10 FPM
ON/OFF Ratio (FS Series Only)	50 - 67% ON time; 33 - 50% OFF time
Voltage	120 or 230VAC ±20%
AC Line Frequency	50/60Hz
Output Rating (Zero Voltage Switching)	2500W @ 120VAC; 5000W @ 230VAC
Inrush Current	200A peak for 1 cycle of AC line
Mounting*	Surface mount with one #10 (M5 x 0.8) screw
Dimensions	2 x 2 x 1.51 in. (50.8 x 50.8 x 38.4 mm)
Termination	0.25 in. (6.35 mm) male quick connect terminals
Circuitry	Encapsulated
Operating / Storage Temperature	-40° to 65°C / -40° to 85°C
Humidity	95% relative, non-condensing
Weight	≅ 3.9 oz (111 g)

* Note: Must be mounted to metal surface using the included heat sink compound. The maximum mounting surface temperature is 90°C.



The FB120A and FB230A are used to monitor the operation of one two-lamp incandescent beacon and one beacon flasher (or auxiliary module). The flasher and lamps are monitored by sensing the flow of current in the circuit. If the lamp(s) or the flasher fail to operate properly, a solid-state output and an isolated SPDT relay energize. When connected to a site monitoring system, this unit provides the remote beacon monitoring protection required by the FAA/FCC. On a multiple beacon structure, one unit is required for each two-lamp incandescent beacon (one unit per beacon for LED beacons).

For more information see:
Appendix B, page 167, Figure 32 for dimensional drawing.
Appendix C, page 171, Figure 31 for connection diagram.

Operation

If one lamp in an incandescent beacon fails, the relay and solid-state lamp failure outputs energize after 10s. If the flasher fails in the ON or OFF condition, the relay and the solid-state flasher failure output energizes after 6s. If both failures occur, all three outputs energize after their trip delays.

Note: If both incandescent lamps fail, all three outputs will energize. The relay and solid-state flasher failure output energizes after 6s, and the solid-state lamp failure output energizes after 10s.

Features:

- Senses failed flashing incandescent beacon lamps & beacon flashers
- Toroidal current sensing
- One isolated, 5A, SPDT alarm output
- Two 1A, solid-state line voltage alarm outputs
- Trip delays prevent nuisance alarms

Available Models:

FB120A
FB230A

Order Table:

Input	Lamp Type	Part Number
120VAC	Incandescent Beacon	FB120A
230VAC	Incandescent Beacon	FB230A

Specifications

Input Voltage		Lamp Failure	Fixed at 10s; -0/+40%
FB120A	120VAC ±15%	LEDs	
FB230A	230VAC ±15%	Lamp Failure (Red)	Glows when one or both lamps fail
AC Line Frequency	50/60Hz	Flasher Failure (Red)	Glows when the flasher fails
Lamp Socket Voltage	±10%; 50/60Hz	Protection	
Alarm Outputs		Circuitry	Encapsulated
Type	3 total - 1 relay, 2 solid state;	Mounting	Surface mount with two #6 (M3.5 x 0.6) screws
	One isolated SPDT relay rated 5A resistive	Dimensions	3.5 x 2.5 x 1.75 in. (88.9 x 63.5 x 44.5 mm)
	Two solid-state line voltage outputs	Termination	7 position barrier block for 20 AWG (0.5 mm ²)
	rated 0.5A steady, 5A inrush		to 14 AWG (2.5 mm ²) wire
Lamp Failure Detection		Environmental	
FB120A	For two 620W or 700W lamps	Operating / Storage Temperature	-40° to 60°C / -40° to 85°C
FB230A	For two 500W or 700W lamps	Weight	≅ 7 oz (198 g)
Trip Delays			
Flasher Failure	Fixed at 6s; -0/+40%		



The SCR490D Series is used to provide remote monitoring of steady burning incandescent marker and obstruction lighting. Four onboard switches allow operator programming for lighting systems with two through nine lamps on a single AC circuit. The SCR490D uses a toroidal sensor and electronic circuitry to sense the failure of one or more lamps.

For more information see:
Appendix B, page 167, Figure 32 for dimensional drawing.
Appendix C, page 171, Figure 32 for connection diagram.

Operation

When a lamp fails, the SCR490D senses a decrease in current flow. Then, after a fixed time delay, it transfers to its alarm mode. In alarm mode, the LED indicator, the output relay (SPDT isolated contacts), and a non-isolated solid-state output are energized. Replacement of the failed lamps resets the alarm outputs and the LED indicator. To prevent false alarm signals, power must be applied to the SCR490D at the same time that lamps are energized.

Features:

- Senses failed obstruction lamps
- 2 - 9 steadily burning lamps can be monitored
- Toroidal current sensing
- Isolated, 10A, SPDT alarm output contacts
- 1A, solid-state line voltage alarm output
- 6 second trip delay prevents nuisance alarms

Approvals:  

Available Models:

SCR490D

Order Table:

<u>Input</u>	<u>Part Number</u>
120VAC	SCR490D

Specifications

Operation		
Number of Lamps	2 - 9 (selectable)	
Lamp Wattage	116W, incandescent lamps	
Rated Lamp Voltage	120 or 130VAC (selectable)	
Monitored Voltage	120VAC ±3%	
Trip Delay	≅ 6s fixed	
Voltage	120VAC	
AC Line Frequency	50/60Hz	
Tolerance	120VAC	- 20% - 10%
Line Voltage Output (Solid State Rated)	≤ 125W to operate a spare lamp or alarm	
Isolated Alarm Output	10A @ 120VAC or 30VDC resistive; 1/4 hp @ 125VAC; 1/2 hp @ 250VAC	
Mounting	Surface mount with two #6 (M3.5 x 0.6) screws	
Dimensions	3.5 x 2.5 x 1.75 in. (88.9 x 63.5 x 44.5 mm)	
Termination	Screws with captive clamps for up to 14 AWG (2.45 mm ²) wire	
Circuitry	Encapsulated	
Operating / Storage Temperature	-40° to 65°C / -40° to 85°C	
Humidity	95% relative, non-condensing	
Weight	≅ 6.8 oz (193 g)	



The SCR series is a universal lamp alarm relay designed to sense the failure of flashing or steady incandescent beacon lamps or steady side lights. The toroidal current sensor provides isolation and allows monitoring of more than one line at a time. The SCR Series energizes when one or more lamps fail. It will monitor the operation of one to four side lights and up to four beacon lamps.

For more information see:
Appendix B, page 167, Figure 32 for dimensional drawing.
Appendix C, page 171, Figure 33 for connection diagram.

Operation

When a lamp fails, the SCR Series senses a decrease in current flow. After a fixed time delay, the LED glows and the two alarm outputs energize. The outputs and the LED are reset when the failed lamps are replaced and the current returns to the nominal setting, or when the input voltage is removed. The SCR will sense an open flasher, it will not sense a continuously ON flasher (see FB Series).

Features:

- Monitors incandescent lamps for failure
- Senses failed flashing beacon or obstruction lamps
- Switch selectable number, voltage, & wattage of lamps
- Isolated, 10A, SPDT alarm output contacts
- 1A, solid-state line voltage alarm output
- Toroidal current sensing

Approvals:   (SCR430T only)

Available Models:

SCR430T
SCR630T

Order Table:

<u>Input</u>	<u>Lamp Type</u>	<u>Part Number</u>
120VAC	Incandescent	SCR430T
230VAC	Incandescent	SCR630T

Specifications

Lamp Monitoring	
Capacity (in lamps)100W 116W 620W 700W
SCR430T 120VAC Lamps	4 4 4 n/a
SCR630T 230VAC Lamps	n/a 4 n/a 4
Time Delay	
Trip Delay	Factory fixed \approx 6s
Input	
Input Voltage/Tolerance	SCR430T - 120VAC \pm 10%
	SCR630T - 230VAC \pm 10%
AC Line Frequency	50/60Hz
Output	To operate a spare lamp or alarm
Line Voltage Output (Solid-state Rated)	\leq 125W @ 120VAC
	\leq 250W @ 240VAC
Isolated Alarm Output (SPDT)	10A @ 240VAC or 30VDC resistive;
	1/4 hp @ 125VAC; 1/2 hp @ 250VAC

Mechanical	
Mounting	Two #6 (M3.5 x 0.6) screws
Dimensions	3.5 x 2.5 x 1.75 in. (88.9 x 63.5 x 44.5 mm)
Termination	Screws with captive clamps for up to 14 AWG (2.45 mm ²) wire
Protection	
Circuitry	Encapsulated
Environmental	
Operating Temperature	-40° to 65°C
Weight	\approx 6.8 oz (193 g)



The FB series is a universal lamp alarm relay designed to sense the failure of flashing LED beacon lamps. It will monitor the operation of one to eight beacons connected to a single flasher and/or auxiliary modules and the operation of the flasher. The FB Series output relay energizes when one or more lamps fail. All monitored lamps must be the same wattage and voltage. The 0.5A solid-state output energizes when a flasher failure is sensed.

For more information see:
Appendix B, page 167, Figure 32 for dimensional drawing.
Appendix C, page 171, Figure 31 for connection diagram.

Operation

When a LED beacon lamp fails, the FB senses a decrease in current flow. After a 10s lamp failure trip delay, the isolated SPDT (4-5-6) and non-isolated SPNO (3-1) relay contacts energize. These contacts are used to indicate a beacon failure has occurred. The "L" onboard LED indicator flashes green during the trip delay and glows red after the output relay energizes. Connected to a site monitoring system, it provides remote beacon monitoring required by FAA-AC No: 150/5345-43E.

The FB also monitors the operation of the flasher. If the flasher remains in the ON or OFF condition for more than 6s the solid-state output energizes and the "F" flasher failure, onboard LED glows red. This output is normally used to energize an external flasher bypass relay. The contacts of the bypass relay are used to route voltage around the failed flasher and to indicate an alarm condition.

Note: In a single flasher, single beacon system, if the beacon lamp fails, zero current flow is detected. This will cause the flasher failure output to energize after 6s and then the beacon failure outputs after 10s. This is normal operation and can be expected anytime zero current is flowing through the monitored conductor.

Calibration

The alarm relays must be calibrated after initial installation and each time the LED lamps are replaced. In order to calibrate or re-calibrate the alarm relay, the internal memory must be cleared.

Clearing Memory:

Remove input voltage, transfer the calibration switch to the off position, re-apply input voltage. The LED will flash Red to indicate the memory is clear and the relay is ready for calibration.

Calibration:

- 1) Perform visual inspection of the structure's lighting to assure all lamps and flashers are operating properly.
- 2) Remove input voltage, and check to ensure the calibrate switch is in the OFF position. Adjust the lamp selector switches for the correct number of similar (see note a) lamps to be monitored.
- 3) Reapply input voltage, the LED should flash Red. After confirming the LED is flashing Red and the lamp selector switches are properly adjusted, transfer the calibrate switch from OFF to ON. The LED will alternately flash Red & Green. Within 30 seconds the LED will glow Green indicating input power is applied and the unit is calibrated. Leave the calibrate switch in the ON position. Reapplying input voltage when this switch is in the ON position does not affect the calibration settings.

Calibration Failed:

- 4) If the relay is unable to establish trip points for the setup conditions within 60 seconds, the LED will double blink Red. Remove input voltage and repeat steps 2 and 3.

Notes:

- a. Monitoring a mixture of LED beacons and LED obstruction lamps is not possible with the SCR9L.
- b. This alarm relay is not designed to monitor incandescent lamps.
- c. This alarm relay must be recalibrated each time an LED lamp is replaced.
- d. Due to LED lamp aging, recalibration every 12 months is recommended.
- e. Applying input voltage when the calibrate switch is in the OFF position, erases the previous calibration settings. The LED will flash Red. The output relays are OFF and the unit will not sense lamp failures.
- f. Only one (1) temperature compensated LED Beacon can be monitored with this product. A combination of temperature compensated and standard LED Beacons cannot be monitored.

Features:

- Senses failed flashing beacon lamps
- Switch selectable number of beacons
- Senses flasher failure
- Isolated, 10A, SPDT alarm output contacts
- 10A, NO line voltage alarm output
- 0.5A, solid-state flasher failure output "F"
- Self calibrating; no fine adjustment required
- Meets FAA-AC No: 150/5345-43E

Approvals:

Auxiliary Products:

- **DIN mount adaptor:**
P/N: P1023-20
- **DIN rail:** P/N: C103PM (AI)

Available Models:

FB9L

Order Table:

Input	Beacon Type	Part Number
120 - 230VAC	LED	FB9L

Specifications

Sensors

Calibration Range (total all Lamps) 150mA - 8.0A
Absolute Max Current (total all Lamps) 15A max. (may not calibrate above 8A)
Single Lamp Current 150mA - 8.0A (total all lamps ≤ 8.0A)

Trip Delay

Flasher Failure Fixed at 6s; -0/+40%
Lamp Failure Fixed at 10s; -0/+40%

Input

Input Voltage/Tolerance 120 to 230VAC / ±15%
AC Line Frequency 50/60Hz

Output

To operate a spare lamp or alarm
Line Voltage Output (SPNO) 5A @ 240VAC or 30VDC resistive;
1/4 hp @ 125VAC; 1/2 hp @ 250VAC
Isolated Alarm Output (SPDT) 10A @ 240VAC or 30VDC resistive;
1/4 hp @ 125VAC; 1/2 hp @ 250VAC

Solid-state Line Voltage Output (F) 0.5A steady; 5A inrush

Mechanical

Mounting One #10 (M5 x 0.8) screw
Dimensions 3 x 2 x 1.64 in (76.7 x 51.3 x 41.7 mm)
Termination IP20 screw terminals for up to 14 AWG
(2.45 mm²) wire or two 16 AWG
(1.3 mm²) wires

LEDs

Power/Timing/Lamp Failure (Bi color) Glows red when one or more lamps fail
Flasher Failure (Red) Glows red when the flasher fails

Protection

Circuitry Encapsulated

Environmental

Operating / Storage Temperature -40° to 60°C / -40° to 85°C
Weight ≈ 3.9 oz (111 g)

Indicator Table:

L	Green	Input ON & Calibrated
L	Green Flashing	Trip Delay
L	Red	Lamp Failure
L	Red/Green Flashing	Calibrating
L	Red Flashing	Not Calibrated
F	Red	Flasher Failure



The SCR series is a universal lamp alarm relay designed to sense the failure of flashing or steady LED beacon lamps or obstruction lamps. The SCR Series energizes when one or more lamps fail. It will monitor the operation of one to eight beacon or obstruction lamps. All monitored lamps must be the same wattage and voltage. When connected to a site monitoring system, it provides the remote lamp monitoring protection required by the FAA-AC No: 150/5345-43E.

For more information see:
Appendix B, page 167, Figure 32 for dimensional drawing.
Appendix C, page 172, Figure 35 for connection diagram.

Features:

- Monitors LED lamps for failure
- Senses failed flashing or steady beacon or obstruction lamps
- Switch selectable number of lamps
- Isolated, 10A, SPDT alarm output contacts
- 5A, NO line voltage alarm output
- Self calibrating; no fine adjustment required
- Meets FA-AC No: 150/5345-43E

Approvals: 

Available Models:

SCR9L

Operation

When a lamp fails, the SCR Series senses a decrease in current flow. After a 10s trip delay, the onboard LED glows and the two alarm outputs energize. The outputs and the LED are reset when the failed lamps are replaced and the unit is recalibrated. The SCR will sense an open flasher, it will not sense a continuously ON flasher (see FB Series). Removing input voltage de-energizes the output and the LED's. It does not change the calibration.

Calibration

The alarm relays must be calibrated after initial installation and each time the LED lamps are replaced. In order to calibrate or re-calibrate the alarm relay, the internal memory must be cleared.

Clearing Memory:

Remove input voltage, transfer the calibration switch to the off position, re-apply input voltage. The LED will flash Red to indicate the memory is clear and the relay is ready for calibration.

Calibration:

- 1) Perform visual inspection of the structure's lighting to assure all lamps and flashers (if used) are operating properly.
- 2) Remove input voltage, and check to ensure the calibrate switch is in the OFF position. Adjust the lamp selector switches for the correct number of similar (see note a) lamps to be monitored.
- 3) Reapply input voltage, the LED should flash Red. After confirming the LED is flashing Red and the lamp selector switches are properly adjusted, transfer the calibrate switch from OFF to ON. The LED will alternately flash Red & Green. Within 30 seconds the LED will glow Green indicating input power is applied and the unit is calibrated. Leave the calibrate switch in the ON position. Reapplying input voltage when this switch is in the ON position does not affect the calibration settings.

Calibration Failed:

- 4) If the relay is unable to establish trip points for the setup conditions within 60 seconds, the LED will double blink Red. Remove input voltage and repeat steps 2 and 3.

Notes:

- a. Monitoring a mixture of LED beacons and LED obstruction lamps is not possible with the SCR9L.
- b. This alarm relay is not designed to monitor incandescent lamps.
- c. This alarm relay must be recalibrated each time an LED lamp is replaced.
- d. Due to LED lamp aging, recalibration every 12 months is recommended.
- e. Applying input voltage when the calibrate switch is in the OFF position, erases the previous calibration settings. The LED will flash Red. The output relays are OFF and the unit will not sense lamp failures.
- f. Only one temperature compensated LED Beacon can be monitored with this product. A combination of temperature compensated and standard LED Beacons cannot be monitored.

Order Table:

Input	Lamp Type	Part Number
120 - 230VAC	LED	SCR9L

Indicator Table:

L	Green	Input ON & Calibrated
L	Green Flashing	Trip Delay
L	Red	Lamp Failure
L	Red/Green Flashing	Calibrating
L	Red Flashing	Not Calibrated

Specifications

Sensors

Calibration Range (total all Lamps) 150mA - 8.0A
Absolute Max Current (total all Lamps) 15A max. (may not calibrate above 8A)
Single Lamp Current 150mA - 8.0A (total all lamps ≤ 8.0A)

Time Delay

Trip Delay Factory fixed ±10s

Input

Input Voltage/Tolerance 120 to 230VAC ±15%
AC Line Frequency 50/60Hz

Output

To operate a spare lamp or alarm
Line Voltage Output (SPNO) 5A @ 240VAC or 30VDC resistive;
1/4 hp @ 125VAC; 1/2 hp @ 250VAC
Isolated Alarm Output (SPDT) 10A @ 240VAC or 30VDC resistive;
1/4 hp @ 125VAC; 1/2 hp @ 250VAC

Auxiliary Input Voltage (H) ≤ 2A @ 230VAC

Mechanical

Mounting One #10 (M5 x 0.8) screw
Dimensions 3 x 2 x 1.64 in (76.7 x 51.3 x 41.7 mm)
Termination IP20 screw terminals for up to 14 AWG
(2.45 mm²) wire or two 16 AWG (1.3 mm²) wires

Protection

Circuitry Encapsulated

Environmental

Operating / Storage Temperature -40° to 60°C / - 40° to 85°C
Weight ≈ 3.9 oz (111 g)



The PCR Series of photo control is a combination of precision electronic circuitry, electromechanical output, and unique molded plastic housing. Designed and built to meet the demands of the most rigorous requirement of tower and obstruction lighting control, each unit is factory calibrated to meet FAA and FCC specifications. Electronic circuit, output contactor, and terminal block are all contained within front plastic housing. Edge support molded into the bottom edge of housing allows easy wiring of new and existing installations. Available with or without cast aluminum junction box.

For more information see:
 Appendix B, page 167, Figure 33 for dimensional drawing.
 Appendix C, page 172, Figure 36 for connection diagram.

Operation

When the amount of light sensed falls below the actuation level for energization, the output relay energizes. Conversely, when the amount rises above the actuation level for de-energization, the output relay de-energizes.

Features:

- Automatic lighting circuit operation: dusk to dawn
- Meets FAA/FCC requirements for obstruction lighting
- Two 20A load contacts
- Direct replacement of popular photo controls
- Time delay eliminates contact chatter

Available Models:

- PCR10
- PCR11
- PCR12
- PCR13

Order Table:

<u>Input</u>	<u>Description</u>	<u>Part Number</u>
120VAC	Photo Control without aluminum box	PCR10
230VAC	Photo Control without aluminum box	PCR12
120VAC	Photo Control with aluminum box	PCR11
230VAC	Photo Control with aluminum box	PCR13

Conversion Chart		
Part Number	REPLACES	
	Hughey & Phillips	Crouse Hinds
PCR11	PC800 120V	PEC52010
PCR13	PC800 240V	PEC52010-1

Specifications

Indication.....	LED indicates power is applied
Light Actuation Levels (Factory Calibrated).....	Energized: ≤ 35 fc De-energized: ≥ 60 fc
Voltage.....	120VAC or 230VAC
AC Line Frequency.....	50/60Hz
Tolerance.....	120 & 230VAC..... -20% - 10%
Output Rating.....	Two SPST NO 20A contacts 1 hp @ 120VAC 2.5 hp @ 240VAC
Termination.....	Screw terminals for up to #8 (M4 x 0.7) AWG wire
Dimensions.....	ABS plastic housing with gasket seal. Multiple knockout holes for optional mounting to Crouse Hinds or Hughey & Phillips cast aluminum electrical boxes.