Flashers and Tower Lighting Controls

FLASHERS & TOWER LIGHTING CONTROLS

Flashers for incandescent or LED lighting used with both alternating and non-alternating applications in the signaling, communications, and advertising industries. FAA approved versions for obstruction lighting control are available. Tower lighting illuminates communications towers, tall buildings, and bridges as required by FA regulation. Designs are also available for powered AM and FM towers.

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Description
The FSU1000 incorporates an onboard adjustable flash rate of 10 to 100 FPM and a universal input voltage in one device. Its circuitry is encapsulated and is capable of controlling loads of up to 20A. The versatility of the FSU1000 makes it ideal for applications where various flash rates and operating voltages are required.

Operation
When input voltage is applied to terminal 2 and the load (lamp), the load energizes steadily. When input voltage is applied to terminal 3, the output flashes.

Optional Low Current Switch (S1): This low current switch could be a limit switch or contact. While open, the operator sees the load (lamp) ON and operating. When the limit switch closes, the load (lamp) flashes to attract attention.

Features & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal input voltage 24 to 240VAC</td>
<td>Allows flexibility for a wide range of applications with one part</td>
</tr>
<tr>
<td>Onboard adjustable flash rate</td>
<td>Provides flexibility for user to select flash rate between 10 - 100 FPM</td>
</tr>
<tr>
<td>Totally solid state and encapsulated</td>
<td>No moving parts to arc and wear out over time and encapsulated to protect against shock, vibration, and humidity</td>
</tr>
<tr>
<td>High output rating up to 20A, 200A inrush</td>
<td>Allows direct operation of high current loads without a contactor</td>
</tr>
</tbody>
</table>

Accessories

P1015-13 (AWG 10/12), P1015-64 (AWG 14/16), P1015-14 (AWG 18/22) Female Quick Connect
These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.

P1015-18 Quick Connect to Screw Adapter
Screw adapter terminal designed for use with all modules with 0.25 in. (6.35 mm) male quick connect terminals.

Ordering Information

<table>
<thead>
<tr>
<th>MODEL</th>
<th>INRUSH RATING</th>
<th>LOAD RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSU1000</td>
<td>10A</td>
<td>1A</td>
</tr>
<tr>
<td>FSU1003</td>
<td>60A</td>
<td>6A</td>
</tr>
<tr>
<td>FSU1004</td>
<td>100A</td>
<td>10A</td>
</tr>
<tr>
<td>FSU1005</td>
<td>200A</td>
<td>20A</td>
</tr>
</tbody>
</table>

If you don’t find the part you need, call us for a custom product 800-843-8848
**Specifications**

**Technical Data**

**Operation**
- ON/OFF recycling solid-state flasher (continuous duty)

**Flash Rate**
- Adjustable 10 - 100 FPM

**ON/OFF Ratio**
- ≅ 50%

**Input**
- Range/Frequency: 24 to 240VAC / 50/60Hz

**Output**
- Load Type: Inductive, resistive, or incandescent
- Maximum Load Rating: 1, 6, 10, or 20A steady state
- Inrush: 10 times steady state current

**Mechanical**
- Mounting*: Surface mount with one #10 (M5 x 0.8) screw

**Dimensions**
- FSU1000: H 50.8 mm (2”); W 50.8 mm (2”); D 30.7 mm (1.21”)
- FSU1003, FSU1004: H 50.8 mm (2”); W 50.8 mm (2”); D 38.4 mm (1.51”)

**Termination**
- 0.25 in. (6.35 mm) male quick connect terminals

**Protection**
- Circuitry: Encapsulated

**Environmental**
- Operating/Storage Temperature: -20° to 60°C (240VAC +50°C) / -40° to 85°C

**Weight**
- 1A units: ≅ 2.4 oz (68 g)
- ≥ 6A units: ≅ 3.9 oz (111 g)

*Units rated > 6A must be bolted to a metal surface using the included heat sink compound.
The maximum mounting surface temperature is 90°C.

**Flasher Function Diagram**

V = Voltage
S1 = Initiate Switch
L = Load
R = Reset
T1 = ON Time
T2 = OFF Time
T1 ≅ T2
Flashers and Tower Lighting Controls

**FS100 SERIES**

**Low Current Flasher**

**Description**

The FS100 Series (low current) may be used to control inductive, incandescent or resistive loads. This series offers a 1A (fullwave) or a 2A (halfwave) steady state, 10A inrush solid-state output and may be ordered with an input voltage of 24 or 120VAC. The FS100 Series offers a factory fixed flash rate of 75 FPM or may be ordered with a fixed, custom flash rate ranging from 45 to 150 FPM. Ideal for OEM applications where cost is a factor.

**Operation**

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 input voltage is removed.

**Reset:** Removing input voltage resets the output and the sequence to T2.

**Features & Benefits**

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact Size: 38 x 23.9mm (1.5” x 0.94”)</td>
<td>Ideal for OEM applications</td>
</tr>
<tr>
<td>Custom Flash Rates Available</td>
<td>Tailor to specific application; custom rates range from 45 to 150 FPM</td>
</tr>
</tbody>
</table>

**Accessories**

- **P1023-2 “P” Clamp**
  - Mounting Bracket Alum. 15/16

**For dimensional drawing see: Appendix, page 512, Figure 25.**

**Ordering Information**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>INPUT VAC</th>
<th>OUTPUT RATING A</th>
<th>OUTPUT TYPE AC</th>
<th>LOAD TYPE</th>
<th>FLASH RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS126</td>
<td>120</td>
<td>1</td>
<td>Fullwave</td>
<td>Incandescent &amp; Resistive</td>
<td>75 FPM</td>
</tr>
<tr>
<td>FS126-45</td>
<td>120</td>
<td>1</td>
<td>Fullwave</td>
<td>Incandescent &amp; Resistive</td>
<td>45 FPM</td>
</tr>
<tr>
<td>FS126-60</td>
<td>120</td>
<td>1</td>
<td>Fullwave</td>
<td>Incandescent &amp; Resistive</td>
<td>60 FPM</td>
</tr>
<tr>
<td>FS126RC</td>
<td>120</td>
<td>1</td>
<td>Fullwave</td>
<td>Incandescent, Resistive, &amp; Inductive</td>
<td>75 FPM</td>
</tr>
<tr>
<td>FS126RC-45</td>
<td>120</td>
<td>1</td>
<td>Fullwave</td>
<td>Incandescent, Resistive, &amp; Inductive</td>
<td>45 FPM</td>
</tr>
<tr>
<td>FS127</td>
<td>120</td>
<td>2</td>
<td>Halfwave</td>
<td>Incandescent &amp; Resistive</td>
<td>75 FPM</td>
</tr>
<tr>
<td>FS146</td>
<td>24</td>
<td>1</td>
<td>Fullwave</td>
<td>Incandescent &amp; Resistive</td>
<td>75 FPM</td>
</tr>
<tr>
<td>FS146RC</td>
<td>24</td>
<td>1</td>
<td>Fullwave</td>
<td>Incandescent, Resistive, &amp; Inductive</td>
<td>75 FPM</td>
</tr>
</tbody>
</table>

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FS100 SERIES

Low Current Flasher

Specifications

Technical Data

Operation
OFF/ON solid-state flasher (continuous duty)

Flash Rate
Factory fixed at 75 FPM ±20%
From 45-150 FPM ±20%

ON/OFF Ratio
≅ 50%

Input
Voltage
24, 120VAC, ±15%

AC Line Frequency
50/60Hz

Output
Output
Fullwave AC or Halfwave rectified AC
Incandescent, resistive, or inductive
(Choose RC suffix for inductive loads)

Load Type
Maximum Load Rating
Fullwave: 1A steady state
Halfwave: 2A steady state

Inrush
10A

Mechanical
Mounting
Removable mounting bracket, use one #8
(M4 x 0.7) screw

Connection/Wires
18 AWG (0.82mm²) wires 6 in. (15.2cm)

Dimensions
H 38.1 mm (1.5”); W 23.9 mm (0.94”)

Protection
Circuitry
Encapsulated

Environmental
Operating/Storage
Temperature
-20° to 60°C / -40° to 85°C
Humidity
95% relative, non-condensing
Weight
≅ 1.1 oz (31 g)

Flasher Function Diagram

V = Voltage
R = Reset
L = Load
T1 = ON Time
T2 = OFF Time
T1 ≅ T2
## Description

The FS100 Series (medium power) may be used to control inductive, incandescent, or resistive loads. Input voltages of 24, 120, or 230VAC are available. Fixed flash rates in stock range from 30, 50, 60, and 90 FPM, with custom flash rates ranging from 10 to 300 FPM. Encapsulation provides protection against shock, vibration, and humidity. This group of solid-state flashers has proven reliability with years of use throughout the world.

## Operation

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 input voltage is removed.

**Reset:** Removing input voltage resets the output and the sequence to T2.

### Features & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3A steady, 30A inrush current</td>
<td>Provides direct control of inductive, incandescent, or resistive loads</td>
</tr>
<tr>
<td>Totally solid state and encapsulated</td>
<td>No moving parts to arc and wear out over time and encapsulated to protect against shock, vibration, and humidity</td>
</tr>
</tbody>
</table>

### Accessories

- **P1023-6 Mounting bracket**
  - The 90° orientation of mounting slots makes installation/removal of modules quick and easy.

- **P1015-64 (AWG 14/16) Female Quick Connect**
  - These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.

- **P1015-18 Quick Connect to Screw Adapter**
  - Screw adapter terminal designed for use with all modules with 0.25 in. (6.35 mm) male quick connect terminals.

- **C103PM (AL) DIN Rail**
  - 35 mm aluminum DIN rail available in a 36 in. (91.4 cm) length.

- **P1023-20 DIN Rail Adapter**
  - Allows module to be mounted on a 35 mm DIN type rail with two #10 screws.

### Ordering Information

<table>
<thead>
<tr>
<th>MODEL</th>
<th>INPUT</th>
<th>FLASH RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS143</td>
<td>24VAC</td>
<td>90 FPM</td>
</tr>
<tr>
<td>FS152</td>
<td>120VAC</td>
<td>90 FPM</td>
</tr>
<tr>
<td>FS152-30</td>
<td>120VAC</td>
<td>30 FPM</td>
</tr>
<tr>
<td>FS152-60</td>
<td>120VAC</td>
<td>60 FPM</td>
</tr>
<tr>
<td>FS162</td>
<td>230VAC</td>
<td>90 FPM</td>
</tr>
<tr>
<td>FS162-30</td>
<td>230VAC</td>
<td>30 FPM</td>
</tr>
</tbody>
</table>

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For dimensional drawing see: Appendix, page 512, Figure 16.
**Specifications**

**Technical Data**

**Operation**
- OFF/ON solid-state flasher (continuous duty)
- Flash rate: 90 FPM ±10%
- Custom Flash Rates: 10 - 300 FPM ±10%
- ON/OFF Ratio: ≅ 50%

**Input**
- Voltage/Frequency: 24, 120, or 230VAC ±15% / 50/60 Hz

**Output**
- Load Type: Inductive, resistive, or incandescent
- Output: Fullwave AC, solid state, SPST
- Maximum Load Rating: 3A steady state
- Inrush: 10 times steady state current

**Mechanical**
- Mounting: Surface mount with one #10 (M5 x 0.8) screw
- Dimensions: H 50.8 mm (2’’), W 50.8 mm (2’’); D 30.7 mm (1.21’’)
- Termination: 0.25 in. (6.35 mm) male quick connect terminals

**Protection**
- Circuitry: Encapsulated

**Environmental**
- Operating/Storage Temperature: -20° to 60°C / -40° to 85°C
- Weight: ≅ 2.2 oz (62 g)

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**Flasher Function Diagram**

- **V = Voltage**
- **R = Reset**
- **L = Load**
- **T1 = ON Time**
- **T2 = OFF Time**

- Flasher OFF First
- Flash Rate: 90 FPM ±10%
- ON/OFF Ratio: ≅ 50%
Flashers and Tower Lighting Controls

FS200 SERIES

Description
The FS200 Series may be used to control inductive, incandescent, or resistive loads. Factory fixed flash rate of 45 or 90 FPM or may be ordered with a fixed custom flash rate ranging from 10 to 180 FPM. Encapsulation provides protection against shock, vibration, and humidity. Uniform performance, high inrush current capability, and low RFI, make this series ideal for general industrial applications.

Operation
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 input voltage is removed.

Reset: Removing input voltage resets the output and the sequence to T2.

Features & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3A steady, 30A inrush, SPST output contact</td>
<td>Provides direct control of inductive, incandescent, or resistive loads</td>
</tr>
<tr>
<td>Totally solid state and encapsulated</td>
<td>No moving parts to arc and wear out over time and encapsulated to protect against shock, vibration, and humidity</td>
</tr>
<tr>
<td>High inrush current capability and low RFI</td>
<td>Ideal for general industrial applications</td>
</tr>
</tbody>
</table>

Accessories

<table>
<thead>
<tr>
<th>ACCESSORY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1023-6 Mounting bracket</td>
<td>The 90° orientation of mounting slots makes installation/removal of modules quick and easy.</td>
</tr>
<tr>
<td>P1015-64 (AWG 14/16) Female Quick Connect</td>
<td>These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.</td>
</tr>
<tr>
<td>P1015-18 Quick Connect to Screw Adapter</td>
<td>Screw adapter terminal designed for use with all modules with 0.25 in. (6.35 mm) male quick connect terminals.</td>
</tr>
<tr>
<td>C103PM (AL) DIN Rail</td>
<td>35 mm aluminum DIN rail available in a 36 in. (91.4 cm) length.</td>
</tr>
<tr>
<td>P1023-20 DIN Rail Adapter</td>
<td>Allows module to be mounted on a 35 mm DIN type rail with two #10 screws.</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>MODEL</th>
<th>INPUT</th>
<th>RATING</th>
<th>FLASH RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS219-45</td>
<td>12VDC ± 20%</td>
<td>3A</td>
<td>45 FPM</td>
</tr>
<tr>
<td>FS224</td>
<td>24VDC ± 20%</td>
<td>3A</td>
<td>90 FPM</td>
</tr>
</tbody>
</table>

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Specifications

**Technical Data**

**Operation**
- OFF/ON solid-state flasher (continuous duty)
- Flash Rate: Fixed at 90 FPM ±10%
- Custom Flash Rate: 10 - 180 FPM
- ON/OFF Ratio: ≅ 50%

**Input**
- Voltage: 12, 24, 36, 48, or 110VDC

**Output**
- Load Type: Inductive, resistive, or incandescent
- Maximum Load Rating: 0.25 - 3A steady state
- OFF State Leakage Current: ≤ 250 µA
- Inrush: 10 times steady state current

**Mechanical**
- Mounting: Surface mount with one #10 (M5 x 0.8) screw
- Dimensions: H 50.8 mm (2”); W 50.8 mm (2”); D 30.7 mm (1.21”)
- Termination: 0.25 in. (6.35 mm) male quick connect terminals

**Protection**
- Circuitry: Encapsulated

**Environmental**
- Operating/Storage: Temperature: -20° to 60°C / -40° to 85°C
- Weight: ≅ 2.2 oz (62 g)

**Flasher Function Diagram**

V = Voltage
R = Reset
L = Load
T1 = ON Time
T2 = OFF Time
T1 ≅ T2

FLASHER (OFF FIRST)
**Description**

The FS300 Series of solid-state flashers were specifically designed to operate lamp loads. Their two-terminal series connection feature makes installation easy. The high immunity to line noise and transients makes the FS300 Series ideal for moving vehicle applications. All solid-state construction means reliability and long life. The FS300 Series offers a factory fixed flash rate of 75 FPM or may be ordered with a fixed, custom flash rate ranging from 60 to 150 FPM.

**Operation**

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 input voltage is removed.

**Reset:** Removing input voltage resets the output and the sequence to T2.

**Features & Benefits**

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Totally solid state and encapsulated</strong></td>
<td>No moving parts to arc and wear out over time and encapsulated to protect against shock, vibration, and humidity</td>
</tr>
<tr>
<td><strong>High immunity to line noise and transients</strong></td>
<td>Designed specifically for moving vehicle applications</td>
</tr>
<tr>
<td><strong>High surge current capability</strong> (10 times steady state)</td>
<td>Direct operation of incandescent lamp loads</td>
</tr>
<tr>
<td><strong>Two terminal series connection</strong></td>
<td>Provides quick and easy installation for new or existing applications</td>
</tr>
</tbody>
</table>

**Accessories**

**P1023-6 Mounting bracket**

The 90° orientation of mounting slots makes installation/removal of modules quick and easy.

**P1015-64 (AWG 14/16) Female Quick Connect**

These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.

**P1015-18 Quick Connect to Screw Adapter**

Screw adapter terminal designed for use with all modules with 0.25 in. (6.35 mm) male quick connect terminals.

**C103PM (AL) DIN Rail**

35 mm aluminum DIN rail available in a 36 in. (91.4 cm) length.

**P1023-20 DIN Rail Adapter**

Allows module to be mounted on a 35 mm DIN type rail with two #10 screws.

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For dimensional drawing see: Appendix, page 512, Figure 16.
Specifications

Technical Data

Operation
OFF/ON recycling solid-state flasher (continuous duty)

Flash Rate
Fixed at 75 FPM ±10%

Custom Flash Rates
60 - 150 FPM

ON/OFF Ratio
≅ 50%

Input
Voltage
12, 24, 36, 48, 72, & 110VDC

Output
Load Type
Incandescent or resistive

Maximum Load Rating
0.25 - 2.5A steady state

Inrush
10 times steady state current

Mechanical
Mounting
Surface mount with one #10 (M5 x 0.8) screw

Dimensions
H 50.8 mm (2”); W 50.8 mm (2”);
D 30.7 mm (1.21”)

Termination
0.25 in. (6.35 mm) male quick connect terminals

Protection
Circuitry
Encapsulated

Environmental
Operating/Storage
Temperature
-20° to 60°C / -40° to 85°C

Humidity
95% relative, non-condensing

Weight
≅ 2.2 oz (62 g)

Flasher Function Diagram

V = Voltage
R = Reset
L = Load
T1 = ON Time
T2 = OFF Time
T1 ≅ T2
Description
The FS491 is a low leakage AC flasher designed to control LED, or resistive loads. This product offers a solid-state output and accepts an input voltage of 120VAC to 240VAC. It offers a factory fixed flash rate of 75 FPM. The FS491 is the perfect solution for LED lamp flashing.

Operation
Upon application of input voltage, the output energizes and the ON time begins. At the end of the ON time, the output de-energizes and the OFF time begins. At the end of the OFF time, the output energizes and the cycle repeats as long as input voltage is applied.

Reset: Removing input voltage resets the output and the flash sequence.

Features & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totally solid state</td>
<td>No moving parts to arc and wear out, up to 100 million operations under typical conditions</td>
</tr>
<tr>
<td>Fully encapsulated</td>
<td>Protects circuitry from shock, vibration and humidity</td>
</tr>
<tr>
<td>Extremely low leakage current</td>
<td>Ideal for use in LED lighting applications</td>
</tr>
</tbody>
</table>

Specifications

- **Technical Data**
  - **Operation**: ON/OFF solid-state flasher (continuous duty)
  - **Flash Rate**: Fixed at 75 FPM ±20%
  - **ON/OFF Ratio**: ≅ 50%
  - **Input**: 120 - 240VAC
  - **Voltage Tolerance**: ± 15%
  - **AC Line Frequency**: 50/60Hz
  - **Output**: LED or resistive
  - **Load Type**: Bridge Rectifier & FET
  - **Maximum Load Rating**: 0.5A steady state; 5A inrush
  - **Max. Load Leakage Current**: 250µA
  - **Voltage Drop**: 2V typical
  - **Mechanical**: Surface mount with one #8 (M4 x 0.7) screw
  - **Dimensions**: Dia. 23.9 mm (0.94”), L 38.1 mm (1.5”)
  - **Surge Protection**: IEEE C62.41 - 1991 Level A
  - **Encapsulated**: Encapsulated
  - **Environmental**: Operating/Storage: -20°C to 60°C / -40°C to 85°C
  - **Humidity**: 95% relative, non-condensing
  - **Weight**: ≅ 1.1 oz (31 g)

For dimensional drawing see: Appendix, page 512, Figure 25.
Flashers and Tower Lighting Controls

FS500 SERIES

Description
The FS500 Series flash rate is adjustable from 10 to 100 FPM. A locknut is provided to hold selected flash rate. The long-life electronic circuit combined with a quality electromechanical relay provides flexibility and reliability in most applications.

Operation
Upon application of input voltage, the output relay is energized and the ON time begins. At the end of the ON time, the output relay de-energizes and the OFF time begins. At the end of the OFF time, the output is energized and the cycle repeats as long as input voltage is applied.

Reset: Removing input voltage resets the output and the sequence.

Features & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid-state circuitry with electromechanical relay</td>
<td>Long life circuitry at a reliable low cost</td>
</tr>
<tr>
<td>Industry standard octal plug connection</td>
<td>Eliminates need for special connectors</td>
</tr>
<tr>
<td>Adjustable flash rate</td>
<td>Provides flexibility for user to select flash rate between 10 - 100 FPM</td>
</tr>
<tr>
<td>10A, DPDT isolated output contacts</td>
<td>Allows control of loads for AC or DC voltages</td>
</tr>
</tbody>
</table>

Accessories

- **BZ1 Front Panel Mount Kit**
  Provides an easy method of through-the-panel mounting of 8- or 11-pin plug-in timers, flashers, and other controls.

- **NDS-8 Octal 8-pin Socket**
  8-pin 35mm DIN rail or surface mount. Surface mounted with two #6 screws or snaps onto a 35 mm DIN rail. Uses PSC8 hold-down clips.

- **PSC8 Hold-down Clips**

- **C103PM (AL) DIN Rail**
  35 mm aluminum DIN rail available in a 36 in. (91.4 cm) length.

Ordering Information

<table>
<thead>
<tr>
<th>MODEL</th>
<th>INPUT VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS512</td>
<td>12VDC</td>
</tr>
<tr>
<td>FS524</td>
<td>24VAC/DC</td>
</tr>
<tr>
<td>FS590</td>
<td>120VAC/DC</td>
</tr>
</tbody>
</table>

For dimensional drawing see: Appendix, page 512, Figure 24.

If you don’t find the part you need, call us for a custom product 800-843-8848

*(some models)*
**Specifications**

**Technical Data**

**Operation**
ON/OFF recycling flasher with adjustable flash rate

**Flash Rate**
Adjustable from 10 - 100 operations per minute (guaranteed range)

**ON/OFF Ratio**
≈ 50%

**Input**
Input Voltage
12VDC, 24VAC/DC, 120VAC/DC, 230VAC

**Tolerance**
- 12VDC & 24VDC/AC
-20% - 10%

-15% - 20%

**AC Line Frequency**
50/60Hz

**Output**
Load Type
Electromechanical relay

**Form**
DPDT

**Rating**
10A resistive @ 120/240VAC & 28VDC;
1/3 hp @ 120/240VAC

**Mechanical**

**Mounting**
Plug-in socket

**Dimensions**
H 91.6 mm (3.62”); W 60.7 mm (2.39”); D 45.2 mm (1.78”)

**Termination**
Octal 8-pin plug-in

**Protection**
Isolation Voltage
≥ 1500V RMS input to output

**Polarity**
DC units are reverse polarity protected

**Environmental**

**Operating/Storage**
Temperature
-20° to 60°C / -30° to 85°C

**Weight**
≈ 5.8 oz (164 g)

**Flasher Function Diagram**

V = Voltage
R = Reset
T1 = ON Time
T2 = OFF Time
NO = Normally Open
NC = Normally Closed
Description
The SC3/SC4 Series are solid-state 3 or 4 channel chasers designed for sequential three circuit flashing of incandescent lamp loads. Unlike electromechanical chasers, there are no contacts to arc, wear, and eventually fail.

Operation
Sequential 3 or 4 circuit flashing of incandescent loads with equal time delays for each load. Upon application of input voltage, Load 1 is energized. At the end of the time delay, Load 1 de-energizes and Load 2 energizes. At the end of the time delay, Load 2 de-energizes and Load 3 energizes. This cycle continues until input voltage is removed. The set time delay (rate) is the timing for the whole cycle, for all 3 loads (output contacts).

Reset: Removing input voltage resets the unit and cycle.

Features & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totally solid state and encapsulated</td>
<td>No moving parts to arc and wear out over time and encapsulated to protect against shock, vibration, and humidity</td>
</tr>
<tr>
<td>1A steady solid state output</td>
<td>Provides 100 million operations in typical conditions.</td>
</tr>
</tbody>
</table>

Accessories

P1015-13 (AWG 10/12), P1015-64 (AWG 14/16), P1015-14 (AWG 18/22) Female Quick Connect
These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.

P1015-18 Quick Connect to Screw Adapter
Screw adapter terminal designed for use with all modules with 0.25 in. (6.35 mm) male quick connect terminals.

Ordering Information

<table>
<thead>
<tr>
<th>MODEL</th>
<th>INPUT VOLTAGE</th>
<th>RATING</th>
<th>CHANNEL</th>
<th>FLASH RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC3120A</td>
<td>120VAC</td>
<td>1A</td>
<td>3 Sequential</td>
<td>Adjustable 30 - 30FPM</td>
</tr>
<tr>
<td>SC4120A</td>
<td>120VAC</td>
<td>1A</td>
<td>4 Sequential</td>
<td>Adjustable 30 - 30FPM</td>
</tr>
</tbody>
</table>

If you don’t find the part you need, call us for a custom product 800-843-8848.
Sequential 3 circuit flashing of incandescent lamp loads. Fixed rate.

For sequential 4 circuit and adjustable rates, please contact the factory.

- **Rate**: Fixed: 30 operations per minute (±10%)
- **Input Voltage**: 120VAC ±15%
- **AC Line Frequency**: 50/60 Hz
- **Output Type**: Solid state
- **Mechanical Mounting**: Surface mount with two #6 (M3.5 x 0.6) screws
- **Termination**: 0.25 in. (6.35 mm) male quick connect terminals
- **Dimensions**: H 88.9 mm (3.5”); W 63.5 mm (2.5”); D 31 mm (1.22”)
- **Protection Circuitry**: Encapsulated
- **Dielectric Breakdown**: ≥ 2000V RMS terminals to mounting surface
- **Insulation Resistance**: ≥ 100 MΩ
- **Environmental Operating/Storage Temperature**: -20° to 60°C / -40° to 85°C
- **Humidity**: 95% relative, non-condensing
- **Weight**: ≅ 5.4 oz (153 g)

**Flasher Function Diagram**

SC4 shown.

For SC3, L4 is eliminated and L1TD begins as soon as L3TD is completed.

V = Voltage  
R = Reset  
L1, L2, L3, L4 = Lamps  
TD = Time Delay (all are equal)
Description
The FA/FS Series 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 includes superior RF filtering circuitry for use in high RF installations, including AM hot towers.

Operation
FS Series - Flasher (OFF First)
FA Series - Auxiliary 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 & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero voltage switching</td>
<td>Delivers up to 10 times longer lamp life</td>
</tr>
<tr>
<td>Encapsulated</td>
<td>Protects against shock, vibration, and humidity</td>
</tr>
<tr>
<td>Metalized mounting surface</td>
<td>Facilitates heat transfer in high current applications</td>
</tr>
<tr>
<td>Superior RF filtering circuitry (RF models only)</td>
<td>Ideal for AM hot towers and other high RF installations</td>
</tr>
<tr>
<td>High inrush capability up to 200A</td>
<td>Will withstand the repetitive inrush current of incandescent beacons</td>
</tr>
</tbody>
</table>

Accessories

P1015-13 (AWG 10/12), P1015-64 (AWG 14/16), P1015-14 (AWG 18/22) Female Quick Connect
These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.

P1015-18 Quick Connect to Screw Adapter
Screw adapter terminal designed for use with all modules with 0.25 in. (6.35 mm) male quick connect terminals.

For dimensional drawing see: Appendix, page 512, Figure 19.
**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
  - Surface mount with one #10 (M5 x 0.8) screw
  - H 50.8 mm (2”); W 50.8 mm (2”);
  - D 38.4 mm (1.51”)
- Termination
  - 0.25 in. (6.35 mm) male quick connect terminals
- Circuitry
  - Encapsulated
- Operating/Storage
  - Temperature
    - -55° to 65°C / -55° 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.*
**Flashers and Tower Lighting Controls**

**Tower and Obstruction Lighting Controls**

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**FB SERIES**

**Flasher & Incandescent Beacon Alarm Relay**

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**Description**

The FB Series is 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).

**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 & Benefits**

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toroidal current sensing</td>
<td>Reliable low cost monitoring of the flasher and lamps through built-in CT and provides isolation from the monitored circuit</td>
</tr>
<tr>
<td>Failsafe beacon monitoring</td>
<td>Alarm monitors for failed incandescent lamps in addition to flasher function</td>
</tr>
<tr>
<td>One isolated, 5A, SPDT alarm output plus two, 1A, solid-state line voltage alarm outputs</td>
<td>When connected to a site monitoring system, it provides the remote beacon monitoring protection required by the FAA/FCC.</td>
</tr>
<tr>
<td>Fixed trip delays for flasher (6s) and lamp (10s) failures</td>
<td>Prevents nuisance alarms</td>
</tr>
</tbody>
</table>

**Ordering Information**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>LINE VOLTAGE</th>
<th>LAMP TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FB120A</td>
<td>120VAC</td>
<td>Incandescent Beacon</td>
</tr>
<tr>
<td>FB230A</td>
<td>230VAC</td>
<td>Incandescent Beacon</td>
</tr>
</tbody>
</table>

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**Specifications**

**Input Voltage**

- FB120A: 120VAC ±15%
- FB230A: 230VAC ±15%

**AC Line Frequency**

- 50/60Hz

**Lamp Socket Voltage**

- ±10%; 50/60Hz

**Alarm Outputs**

- 3 total - 1 relay, 2 solid state;
- One isolated SFDT relay rated 5A resistive
- Two solid-state line voltage outputs rated 0.5A steady, 5A inrush

**Lamp Failure Detection**

- FB120A: For two 620W or 700W lamps
- FB230A: For two 500W or 700W lamps

**Flasher Failure**

- FB120A: Fixed at 6s; -0/+40%
- FB230A: Fixed at 10s; -0/+40%

**Protection**

**Circuitry**

- Encapsulated

**Mounting**

- Surface mount with two #6 (M3.5 x 0.6) screws

**Dimensions**

- H: 88.9 mm (3.5"), W: 63.5 mm (2.5")
- D: 44.5 mm (1.75")

**Termination**

- 7 position barrier block for 20 AWG (0.5 mm²) to 14 AWG (2.5 mm²) wire

**LEDs**

- Lamp Failure (Red): Glows when one or both lamps fail
- Flasher Failure (Red): Glows when the flasher fails

**Environmental**

**Operating/Storage Temperature**

- -55° to 60°C / -55° to 85°C

**Weight**

- ≅ 7 oz (198 g)

For dimensional drawing see: Appendix, page 514, Figure 47.
**Description**

The SCR490D 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.

**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 & Benefits**

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toroidal current sensing</td>
<td>Reliable low cost monitoring of incandescent marker and obstruction lighting through built-in CT which also provides isolation from the lighting circuit</td>
</tr>
<tr>
<td>Monitors 2 - 9 lamps</td>
<td>Senses failed obstruction lamps on a single AC circuit</td>
</tr>
<tr>
<td>Isolated, 10A, SPDT alarm output plus one 1A, solid-state line voltage alarm output</td>
<td>Provide alarm indication and can also be used for remote monitoring of the lighting system</td>
</tr>
<tr>
<td>Fixed trip delay (6s)</td>
<td>Prevents nuisance alarms</td>
</tr>
</tbody>
</table>

**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**: ± 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**: Height 88.9 mm (3.5"), Width 63.5 mm (2.5"), Depth 44.5 mm (1.75")
- **Termination**: Screws with captive clamps for up to 14 AWG (2.45 mm²) wire
- **Circuitry**: Encapsulated
- **Operating/Storage Temperature**: -55°C to 65°C / -55°F to 149°F
- **Humidity**: 95% relative, non-condensing
- **Weight**: 6.8 oz (193 g)
**Description**

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.

**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 & Benefits**

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toroidal current sensing</td>
<td>Provides isolation from the lighting circuit and allows monitoring of multiple lines simultaneously</td>
</tr>
<tr>
<td>Monitors 1-4 side lights or up to 4 beacon lamps</td>
<td>Senses failed incandescent flashing beacon or steady obstruction lamps</td>
</tr>
<tr>
<td>Isolated, 10A, SPDT alarm output plus one 1A, solid-state line voltage alarm output</td>
<td>Provides alarm indication and can also be used for remote monitoring of the lighting system</td>
</tr>
<tr>
<td>Fixed trip delay (6s)</td>
<td>Prevents nuisance alarms</td>
</tr>
<tr>
<td>Switch selectable number, voltage, and wattage of lamps</td>
<td>User selectable to meet wide application needs with one relay</td>
</tr>
</tbody>
</table>

**Ordering Information**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>INPUT</th>
<th>LAMP TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCR430T</td>
<td>120VAC</td>
<td>Incandescent</td>
</tr>
<tr>
<td>SCR630T</td>
<td>230VAC</td>
<td>Incandescent</td>
</tr>
</tbody>
</table>

If you don’t find the part you need, call us for a custom product 800-843-8848

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For dimensional drawing see: Appendix, page 514, Figure 47.
Selection Range

<table>
<thead>
<tr>
<th>SCR430T</th>
<th>SCR630T</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 620 W</td>
<td>116 W</td>
</tr>
<tr>
<td>b. 120 V</td>
<td>130 V</td>
</tr>
<tr>
<td>c.</td>
<td>4L</td>
</tr>
<tr>
<td></td>
<td>3L</td>
</tr>
<tr>
<td></td>
<td>2L</td>
</tr>
<tr>
<td></td>
<td>1L</td>
</tr>
<tr>
<td>a. 700 W</td>
<td>116 W</td>
</tr>
<tr>
<td>b.</td>
<td>4L</td>
</tr>
<tr>
<td>c.</td>
<td>3L</td>
</tr>
<tr>
<td></td>
<td>2L</td>
</tr>
<tr>
<td></td>
<td>1L</td>
</tr>
</tbody>
</table>

a. Lamp Wattage - Select the lamp wattage of the lamps in use.
b. Lamp Voltage - Select the lamp voltage shown on the lamp (SCR430T)
c. Lamps ON - Select the number of lamps on during normal operation. Only one lamp switch at a time may be transferred to the right.

Programming Example

1. Select lamp wattage: 116 or 620 watts
2. Select the number of lamps ON (1 thru 4) during normal operation. Only one lamp switch may be transferred to the right.

Example Shown: SCR430T-620 watts at 120 VAC lamps, two lamps are ON during normal operation.

STEP
1. Select lamp wattage: 116 or 620 watts
2. Select the number of lamps ON (1 thru 4) during normal operation. Only one lamp switch may be transferred to the right at any time.

Specifications

Operation
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 ≈ 6s

Input
Input Voltage/Tolerance
SCR430T - 120VAC ±10%
SCR630T - 230VAC ±10%

AC Line Frequency
50/60Hz

Output
Line Voltage Output
≤ 125W @ 120VAC
≤ 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
H 88.9 mm (3.5”); W 63.5 mm (2.5”);
D 44.5 mm (1.75”)

Termination
Screws with captive clamps for up to 14 AWG
(2.45 mm²) wire

Protection
Circuitry
Encapsulated

Environmental
Operating Temperature
-55° to 65°C

Weight
≈ 6.8 oz (193 g)
The FB9L 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 FB9L 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.

**Operation**

When a LED beacon lamp fails, the FB9L 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 FB9L 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.

**Features & Benefits**

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self calibrating</td>
<td>Saves time at installation. No fine adjustment required.</td>
</tr>
<tr>
<td>Failsafe beacon monitoring</td>
<td>Alarm monitors for failed LED lamps in addition to flasher function</td>
</tr>
<tr>
<td>Number of beacons monitored is switch selectable for up to 8</td>
<td>User selection allows quick set up and easy adaption to multiple applications</td>
</tr>
<tr>
<td>Universal voltage 120 to 230VAC</td>
<td>Meets wide application requirements</td>
</tr>
<tr>
<td>Isolated, 10A, SPDT alarm output contacts</td>
<td>Provides remote beacon monitoring when connected to a site monitoring system, which is required by the FAA</td>
</tr>
</tbody>
</table>

**Accessories**

- **C103PM (AL) DIN Rail**
  35 mm aluminum DIN rail available in a 36 in. (91.4 cm) length.

- **P1023-20 DIN Rail Adapter**
  Allows module to be mounted on a 35 mm DIN type rail with two #10 screws.
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 Fixed at 6s; -0/+40%
- 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
- 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 H 76.7 mm (3”); W 50.8 mm (2”); D 41.7 mm (1.64”)
- 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)
- FAA-AC No. 150/5345-43E

Indicator Table

<table>
<thead>
<tr>
<th>Light Code</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>Green</td>
<td>Input ON &amp; Calibrated</td>
</tr>
<tr>
<td>L</td>
<td>Green Flashing</td>
<td>Trip Delay</td>
</tr>
<tr>
<td>L</td>
<td>Red</td>
<td>Lamp Failure</td>
</tr>
<tr>
<td>L</td>
<td>Red/Green Flashing</td>
<td>Calibrating</td>
</tr>
<tr>
<td>L</td>
<td>Red Flashing</td>
<td>Not Calibrated</td>
</tr>
<tr>
<td>F</td>
<td>Red</td>
<td>Flasher Failure</td>
</tr>
</tbody>
</table>
**Description**

The SCR9L is a universal lamp alarm relay designed to sense the failure of flashing or steady LED beacon lamps or obstruction lamps. The SCR9L 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.

**Operation**

When a lamp fails, the SCR9L 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 SCR9L 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.

**Features & Benefits**

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self calibrating</td>
<td>Designed for use with all types of LED beacon and obstruction lamps</td>
</tr>
<tr>
<td>Failsafe beacon monitoring</td>
<td>Relay will also provide an alarm signal on a failed flasher (open)</td>
</tr>
<tr>
<td>Number of lamps monitored is switch selectable up to 8</td>
<td>User selection allows quick set up and easy adaption to multiple applications</td>
</tr>
<tr>
<td>Universal voltage 120 to 230VAC</td>
<td>Designed for use in most applications</td>
</tr>
<tr>
<td>Isolated, 10A, SPDT alarm output contacts</td>
<td>Provides remote beacon monitoring when connected to a site monitoring system, as is required by the FAA</td>
</tr>
<tr>
<td>LED indication</td>
<td>Provides visual relay status of operation, alarm, trip delay, and calibration</td>
</tr>
<tr>
<td>Fully encapsulated</td>
<td>Protects against shock, vibration, and humidity</td>
</tr>
</tbody>
</table>

**Accessories**

- **C103PM (AL) DIN Rail**
  35 mm aluminum DIN rail available in a 36 in. (91.4 cm) length.

- **P1023-20 DIN Rail Adapter**
  Allows module to be mounted on a 35 mm DIN type rail with two #10 screws.

For dimensional drawing see: Appendix, page 513, Figure 31.
Calibration
Alarm relays must be calibrated at initial installation and when LED lamps are replaced. Due to LED lamp aging, recalibration is recommended every 12 months.

1. Remove input voltage
2. Move calibration switch to off position
3. Re-apply input voltage
4. LED will flash red to indicate the unit is ready for calibration
5. Visually inspect structure’s lighting to make sure all lamps and flashers (if used) are operating properly
6. Remove input voltage
7. Adjust lamp selector switches for the correct number of lamps to be monitored (see adjustment diagram below)
8. Re-apply input voltage
9. LED should flash red
10. Move calibrate switch to ON position
11. The LED will alternate flashing red and green
12. LED will glow steady green within 30 secs.
   Calibration is complete

Calibration Failed
If the LED double blinks red, calibration failed. Remove input voltage and repeat steps 6-8.

Notes:
- Monitoring a mixture of LED beacons and LED obstruction lamps is not possible with the SCR9L.
- This alarm relay is not designed to monitor incandescent lamps.
- 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.
- Only one temperature compensated LED beacon can be monitored with this product. A combination of temperature compensated and standard LED beacons cannot be monitored.

Adjustment Example

Example Shown: SCR9L two lamps are ON during normal operation.

Indicator Table

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Input ON &amp; Calibrated</td>
</tr>
<tr>
<td>L Green</td>
<td></td>
</tr>
<tr>
<td>L Green Flashing</td>
<td>Trip Delay</td>
</tr>
<tr>
<td>L Red</td>
<td></td>
</tr>
<tr>
<td>L Red/Green Flashing</td>
<td>Calibrating</td>
</tr>
<tr>
<td>L Red Flashing</td>
<td>Not Calibrated</td>
</tr>
</tbody>
</table>

Specifications

<table>
<thead>
<tr>
<th>Sensors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibration Range (total all Lamps)</td>
<td>150mA - 8.0A</td>
</tr>
<tr>
<td>Absolute Max Current (total all Lamps)</td>
<td>15A max. (may not calibrate above 8A)</td>
</tr>
<tr>
<td>Single Lamp Current</td>
<td>150mA - 8.0A (total all lamps &lt; 8.0A)</td>
</tr>
<tr>
<td>Time Delay</td>
<td></td>
</tr>
<tr>
<td>Trip Delay</td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td></td>
</tr>
<tr>
<td>Input Voltage/Tolerance</td>
<td></td>
</tr>
<tr>
<td>AC Line Frequency</td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td></td>
</tr>
<tr>
<td>Line Voltage Output (SPNO)</td>
<td></td>
</tr>
<tr>
<td>Isolated Alarm Output (SPDT)</td>
<td></td>
</tr>
<tr>
<td>Auxilliary Input Voltage (H)</td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
</tr>
<tr>
<td>Mounting</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
</tr>
<tr>
<td>Termination</td>
<td></td>
</tr>
<tr>
<td>Protection</td>
<td></td>
</tr>
<tr>
<td>Circuitry</td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
</tr>
<tr>
<td>Operating / Storage</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td></td>
</tr>
</tbody>
</table>

- 120 to 230VAC ±15%
- Factory fixed ≈10s
- 1/4 hp @ 125VAC; 1/2 hp @ 250VAC
- 5A @ 240VAC or 30VDC resistive
- 10A @ 240VAC or 30VDC resistive
- ≤ 2A @ 230VAC
- One #10 (M5 x 0.8) screw
- H 76.7 mm (3”); W 51.3 mm (2.02”); D 41.7 mm (1.64”)
- Encapsulated
- -40° to 60°C / -40° to 85°C
- 3.9 oz (111 g)
Description
The PCR Series of photo controls 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.

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 & Benefits

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<tbody>
<tr>
<td>ABS plastic housing with gasket seal</td>
<td>Withstands outdoor environmental hazards and protects circuitry from moisture damage</td>
</tr>
<tr>
<td>Two 20A relay contacts</td>
<td>Allows direct control of a lighting circuit without a separate contactor</td>
</tr>
<tr>
<td>Fixed time delay</td>
<td>Eliminates contact chatter</td>
</tr>
<tr>
<td>Reliable photo sensor</td>
<td>Provides automatic lighting circuit operation from dusk to dawn</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>MODEL</th>
<th>INPUT</th>
<th>DESCRIPTION</th>
<th>REPLACES</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCR10</td>
<td>120VAC</td>
<td>Photo Control without aluminum box</td>
<td>n/a</td>
</tr>
<tr>
<td>PCR11</td>
<td>120VAC</td>
<td>Photo Control without aluminum box</td>
<td>PC800 120V</td>
</tr>
<tr>
<td>PCR12</td>
<td>230VAC</td>
<td>Photo Control with aluminum box</td>
<td>n/a</td>
</tr>
<tr>
<td>PCR13</td>
<td>230VAC</td>
<td>Photo Control with aluminum box</td>
<td>PC800 240V</td>
</tr>
</tbody>
</table>

If you don’t find the part you need, call us for a custom product 800-843-8848

*Customer Supplied Jumper
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**
- **H** 159.51 mm (6.28”);
- **W** 127 mm (5.0”);
- **D** 131.75 mm (5.19”)

**Mounting**
- ABS plastic housing with gasket seal. Multiple knockout holes for optional mounting to Crouse Hinds or Hughey & Phillips cast aluminum electrical boxes.

**Operating/Storage Temperature**
- -40° to 60°C / -55° to 85°C