Universal Lamp Alarm Relay FB9L

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.

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: CE

Auxiliary Products:

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

Available Models:

FB9L

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.

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

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

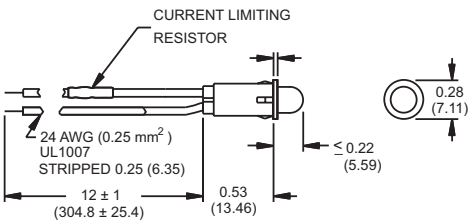
Mechanical
Mounting ..... One #10 (M5 x 0.8) screw
Dimensions ..... 3 x 2 x 1.64 in (76.7 x 51.3 x 41.7 mm)
Termination ..... IP20 screw terminals for up to 14 AWG (2.45 mm²) wire or two 16 AWG (1.3 mm²) wires

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

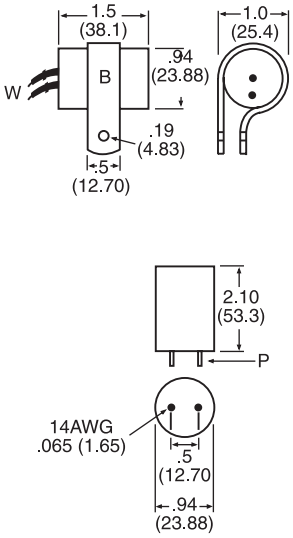
Environmental
Operating / Storage Temperature ..... -40° to 60°C / -40° to 85°C
Weight ..... ≅ 3.9 oz (111 g)

FIGURE 24



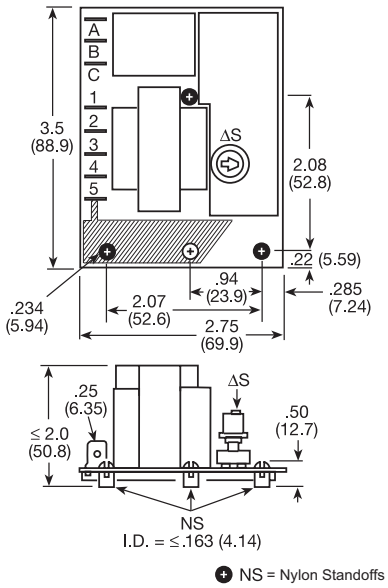
LPM

FIGURE 25



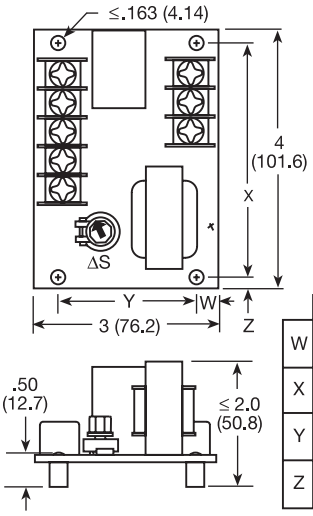
MSM

FIGURE 26



LLC1

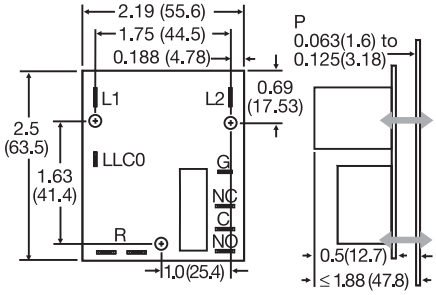
FIGURE 27



	N	C
W	.44 (11.35)	.25 (6.35)
X	3.62 (91.9)	3.5 (88.9)
Y	2.12 (53.8)	2.5 (63.5)
Z	.19 (4.83)	.25 (6.35)

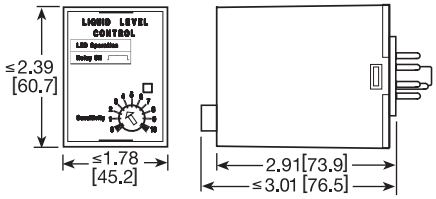
LLC2

FIGURE 28



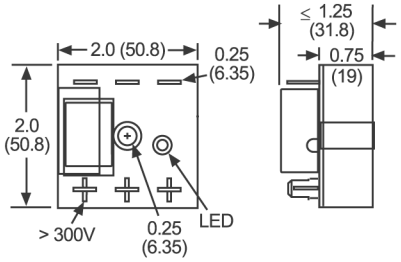
LLC8

FIGURE 29



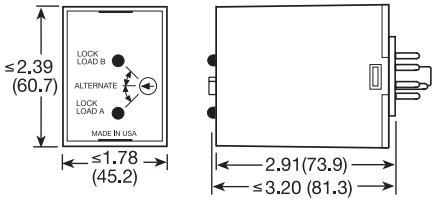
LLC5

FIGURE 30



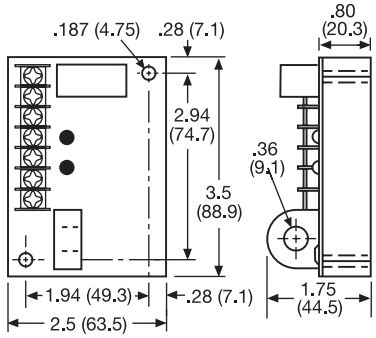
TVM; TVW

FIGURE 31



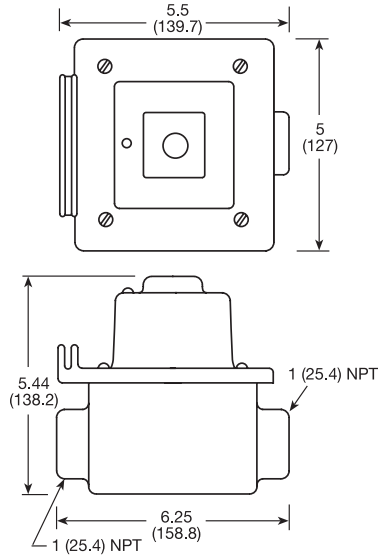
ARP

FIGURE 32



FB; SCR

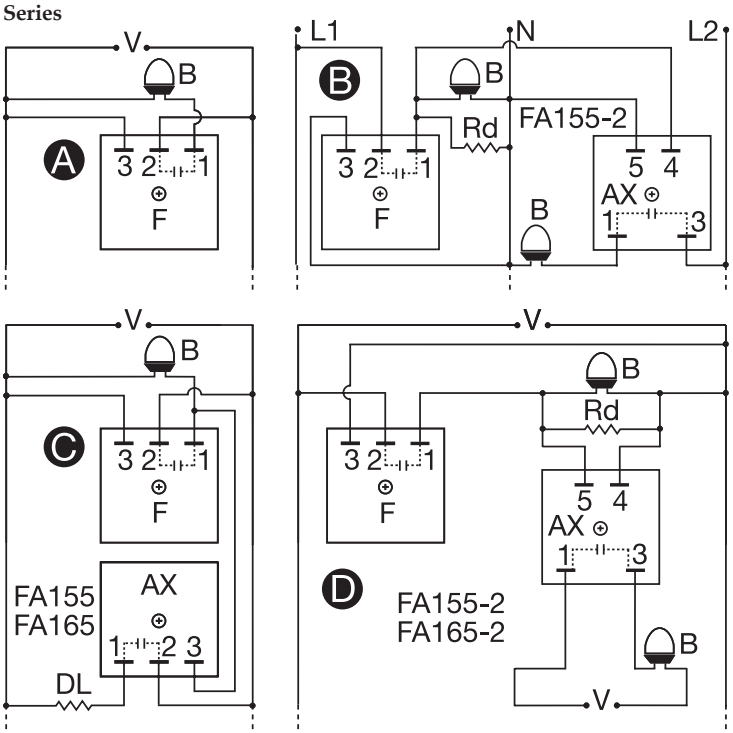
FIGURE 33



PCR

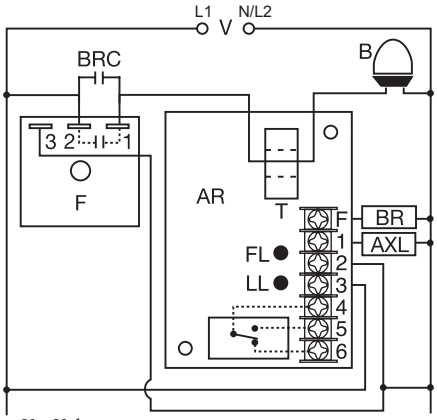
inches (millimeters)

FIGURE 30 - FS155 & FS165 & FA Series



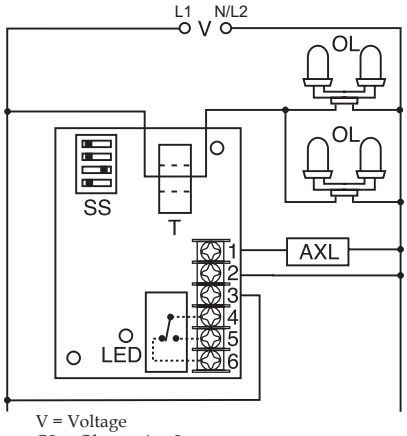
F = Flasher (FS155-30T, FS155-30RF, FS165-30T, FS165-30RF)
AX = Auxiliary Unit
B = Beacon
DL = Dummy Load for Constant Line Loading
Rd = 3.3 KΩ @ 5W for 120VAC
8.5 KΩ @ 5W for 230VAC

FIGURE 31 - FB Series



V = Voltage
B = Beacon
F = Flasher
BRC = Flasher Bypass Relay Contacts
T = Toroid
AR = FB Alarm Relay
BR = Bypass Relay Coil
FL = Flasher Failure LED
LL = Lamp Failure LED
AXL = Lamp Alarm Relay Coil
NOTE: Flasher module may be located on either the line or load side of the toroidal sensor.

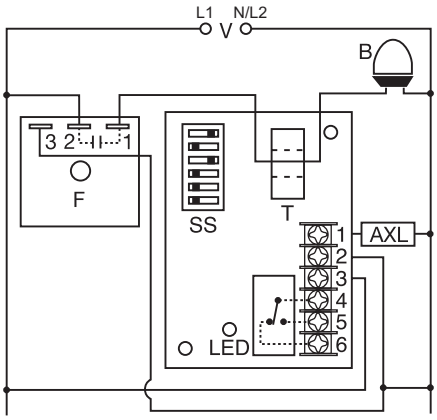
FIGURE 32 - SCR490D



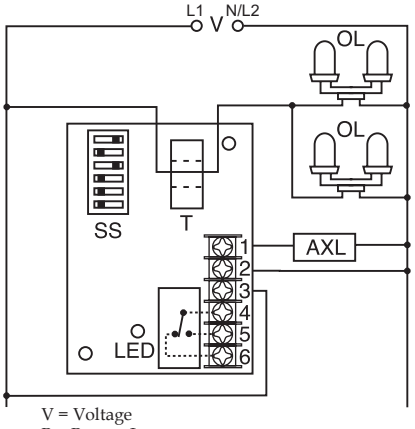
V = Voltage
OL = Obstruction Lamps
T = Toroid
SS = Selector Switch
AXL = Auxiliary Load/Alarm
Relay contacts are isolated.

FIGURE 33 - SCR Series

Beacon Connection Diagram



Obstruction Lamp Connection Diagram



V = Voltage
B = Beacon Lamps
SS = Selector Switch
T = Toroid
F = Flasher
AXL = Auxiliary Load/Alarm
OL = Obstruction Lamps
Relay contacts are isolated.