

**INSTALLATION AND SERVICE INSTRUCTIONS  
FOR  
2000 SERIES FLAMEPROOF LED BEACONS**

Address all communications and shipments to:



**FEDERAL SIGNAL CORPORATION**  
**Industrial Systems Group**  
2645 Federal Signal Drive  
University Park, IL 60466-3195

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*REV. A 508*  
*Printed in U.S.A.*

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FOR  
2000 SERIES FLAMEPROOF LED BEACONS**



**SAFETY MESSAGE TO INSTALLERS, USERS AND MAINTENANCE PERSONNEL**

It is important to follow all instructions shipped with this product. This device is to be installed by trained personnel who is thoroughly familiar with the country electric codes and will follow these guidelines as well as local codes.

The selection of mounting location for the device, its controls and the routing of the wiring is to be accomplished under the direction of the facilities engineer and the safety engineer. In addition, listed below are some other important safety instructions and precautions you should follow:

- Read and understand all instructions before installing or operating this equipment.
- Disconnect device from the power supply before any installation or maintenance is performed.
- Do not open enclosure when hazardous atmosphere is present.
- Review Section III. Certification to determine whether the device can be used safely in the intended area.
- After installation, test the unit to ensure that it is operating properly.
- After testing is complete, provide a copy of this instruction sheet to all operating personnel.
- Establish a procedure to routinely check the intercom installation for integrity and proper operation.
- The product nameplate, which may contain cautionary or other information of importance to maintenance personnel, should not be obscured in any way.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death.

**I. INSTALLATION**

*A. Unpacking*

After unpacking the unit, examine it for damage that may have occurred in transit. If the equipment has been damaged, do not attempt to install or operate it. File a claim immediately with the carrier stating the extent of the damage. Carefully check all envelopes, shipping labels, and tags before removing or destroying them.

## B. General

The equipment comprises of a base enclosure and a cover and power supply printed circuit board that operates the LED lamp array. On Ex de models, a cast termination enclosure with cover is fastened to the base enclosure and electrically connected via certified line bushings.

## C. Mounting and Wiring

The 2000 Series Beacons are designed for mounting on a flat horizontal or vertical surface. The units may be directly mounted on normally flammable surfaces.

### 1. Surface Mounting and Wiring Instruction for Ex d Models.

a. Unit is to be mounted using user provided M10 stainless steel bolts through the two fixing lugs located on the base enclosure.

b. Mounting structure must be capable of supporting more than 6kg.

c. Four M20 threaded entries are provided in the side of the enclosure for the installation of certified Ex d cable glands.

d. The wellglass cover must be removed to access the PCB mounted field wiring terminals. Remove the four M8 fixing screws to remove the cover. It may be necessary to pry the cover around the cover fixing lugs to remove. Take care not to mar any of the flame path surfaces.

e. A series of four-pole screw terminal blocks are provided for field wiring. See figure 1 for wiring diagram. These terminals are rated for the following wire ranges: 24 to 12 AWG (0.25 to 4 mm<sup>2</sup>). Terminal tightening torque is 0.5 Nm. The power feed through terminals of J1 are rated for 300 V, 10 amps maximum. See section D for specific mode of operation wiring.

f. Two internal and two external lugs are provided for the earth connection.

g. Upon completion of field wiring, re-fit the cover. Carefully align the cover spigot with the bore in the base and push the cover on to engage. Once the two parts are mated, tightening the M8 fixing screws evenly a few turns at a time will close the gap. Tighten the fixing screws to 5Nm.

### 2. Surface Mounting and Wiring Instruction for Ex de Models

a. Unit is to be mounted using user provided M10 stainless steel bolts through the two fixing lugs located on the base enclosure.

b. Mounting structure must be capable of supporting more than 7 kg.

c. Four M20 threaded entries are provided in the side of the enclosure for the installation of certified Ex e cable glands.

d. The terminal box cover must be removed to access the field wiring terminal block. Remove the three M6 fixing screws to remove the cover. The screws are provided with retainers to keep them captivated to the cover.

e. A twelve-pole screw terminal block is provided for field wiring. See figure 2 for wiring diagram. These terminals are rated for the following wire ranges: 22 to 12 AWG (0.5 to 4 mm<sup>2</sup>). Terminal tightening torque is 0.5 to 0.7 Nm. The power feed through terminals of J1 are rated for 300V, 10 amps maximum. See section D for specific mode of operation wiring.

f. Two internal and two external lugs are provided for the earth connection.

g. Upon completion of field wiring, re-fit the terminal box cover. Make sure that the gasket is properly seated. Tighten the fixing screws to 5Nm.

#### D. Modes of Operation

The 2000 Series LED Beacons may be activated either through direct application of power or by remote contact closure. The light may be operated as steady-on, slow flash, or rapid flash depending on the J2 terminal block wiring. Model variations are also available for remote telephone initiation during ring mode.

##### 1. Remote Activation



The remote activation circuitry is separated from the mains voltage by basic insulation only. Field connections to this circuit need to observe the same restrictions as supply mains wiring.

a. Connect power wiring to the J1 terminal block as indicated in Figure 1(Ex d) or 2 (Ex de). The supply power should not be switched as the remote contacts are used to activate the light.

b. Remove the factory link wire from the J2 terminal block. Connect remote activation wiring to the J2 terminal block as indicated in Figure 3 (Ex d) or 4 (Ex de). Remote activation is accomplished by applying a dry contact closure at the J2 terminal block between the C terminal and one of the S (steady), F (slow-flash), or FF (rapid-flash) terminals.

c. The selected light pattern will initiate when power is applied to the J1 terminal block and one of the remote activation contacts is closed. For proper operation of the remote activating circuit, the total loop resistance should not exceed 1000 ohms.

##### 2. Direct Power Activation

a. Connect power wiring to the J1 terminal block as indicated in Figure 1(Ex d) or 2 (Ex de).

b. Unit is factory set to rapid flash mode by the link wire located on the J2 terminal block. If a different operating mode is desired, move one leg of the jumper to the desired position as shown in Figure 3 (Ex d) or 4 (Ex de).

c. The selected light pattern will initiate when power is applied to the J1 terminal block.

### 3. Telephone Activation

a. Connect power wiring to the J1 terminal block as indicated in Figure 1 (Ex d) or 2 (Ex de).

b. Connect telephone line wiring to the J3 terminal block as indicated in Figure 1 (Ex d) or 2 (Ex de).

c. The light will operate in rapid flash mode when power is applied to the J1 terminal block and telephone ring voltage is detected.

## II. MAINTENANCE

### SAFETY MESSAGE TO MAINTENANCE PERSONNEL



Listed below are some important safety instructions and precautions you should follow:

- Read and understand all instructions before operating this unit.
- Any maintenance to the unit must be performed by properly trained personnel.
- Any maintenance to the unit must be done with the power turned off.
- After disconnecting power, allow ten minutes for internal components to cool and to allow all capacitors to discharge.
- Do not open enclosure when hazardous atmosphere is present.
- Never alter the unit in any manner. Safety may be endangered if additional openings or other alterations are made to units.
- Only factory provided service parts are to be used. Only these components have been verified and certified for use in hazardous areas.
- No repairs or modifications are to be made to the base, cover, or termination chamber, as this will invalidate the certification.
- If cover fasteners are replaced, use Grade A2-70 as a minimum.
- The nameplate, which contains cautionary or other information of importance to maintenance personnel, should not be obscured.
- After performing any maintenance, test the unit to ensure that it is operating properly.

#### A. Routine Checks

Ensure that the unit is maintained in line with the regulations in force and at regular intervals, at least once per year.

1. Check for external damage and corrosion and repair/replace as necessary.
2. Check for water or dust ingress and replace O-rings or gaskets if necessary.
3. Check all earth connections and verify continuity.
4. Check flameproof paths and fittings for damage and corrosion.
5. Lubricate all threads, O-rings, and flameproof paths with suitable lubricant. Dow Corning 4 silicone lubricant is recommended.

**B. Replacement Parts**

Contact the factory for spare parts availability and part numbers. Typical spare parts are listed below. Due to certification, certain component parts (i.e., base enclosure) are not available for field replacement. Units with this type of damage must be either replaced entirely or returned to Federal Signal for service.

Description	Part No.
Amber LED Array	K147169A
Blue LED Array	K147169A-01
Green LED Array	K147169A-02
Red LED Array	K147169A-03
Wellglass Mounting Screws, M8 x 25mm	K7002087A-25
Wire Guard	K8006009A
O-Ring Kit	K8006029A
Wellglass Assembly	K8006038A

**III. CERTIFICATION**

Certified to EN 60079-0:2006, EN 60079-1:2004, and EN 60079-7:2006.



ATEX Certificate Number: Baseefa07ATEX0150



IECEX Certificate Number: IECEX BAS 07.0038

Ex d IIB T4 ExtD A21 IP66 T135° (-40°C ≤ Ta ≤ +55°C)

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Group and category marking:

  II 2 GD

Where:  indicates compliance with directive 94/9/EC  
 hexagon symbol, the specific marking of explosion protection  
 II indicates suitability for use in surface industries  
 2 indicates suitability for use in a Zone 1 area  
 G indicates suitability for use in the presence of gases  
 D indicates suitability for use in the presence of combustible dusts

#### IV. SPECIFICATIONS

Electrical:	500mA @ 24VDC 220mA @ 110-240VAC
Ambient Environment:	Ta = -40°C to +55°C Pa = 80kPa to 110kPa
Enclosure Rating:	IP66 Indoor/Outdoor Use
Max. Surface Temperature:	85°C @ +55°C

#### V. SERVICE

The Federal Signal factory will service your equipment or provide technical assistance with any problems that cannot be handled locally.

Any units returned to Federal Signal for service, inspection, or repair must be accompanied by a Return Material Authorization. This R.M.A. can be obtained from a customer service representative at Federal Signal.

At this time a brief explanation of the service requested, or the nature of the malfunction, should be provided.

In order to expedite service, please refer to the product model number and serial number on the label. The serial number is interpreted as follows:

L0616400000 L = Factory Product Code  
06 = Last two digits for year of manufacture  
164 = Numerical day code for year of manufacture  
00000 = 5 digit code for product serial number

Address all communications and shipments to:

FEDERAL SIGNAL CORPORATION  
Industrial Systems Group  
Service Department  
2645 Federal Signal Drive  
University Park, IL 60466-3195

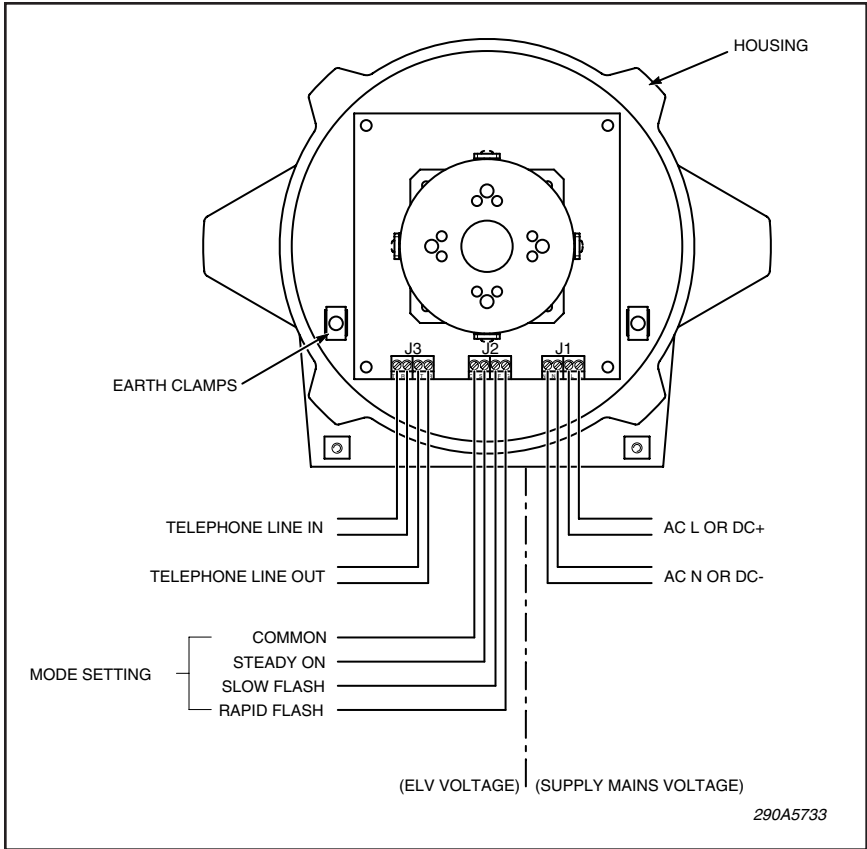


Figure 1.



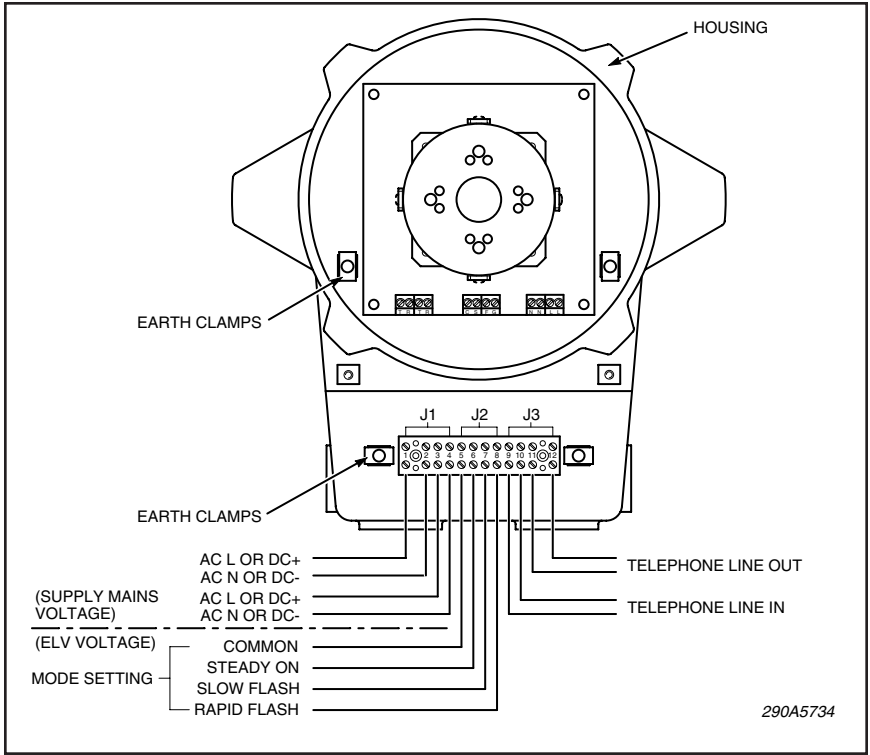


Figure 2.

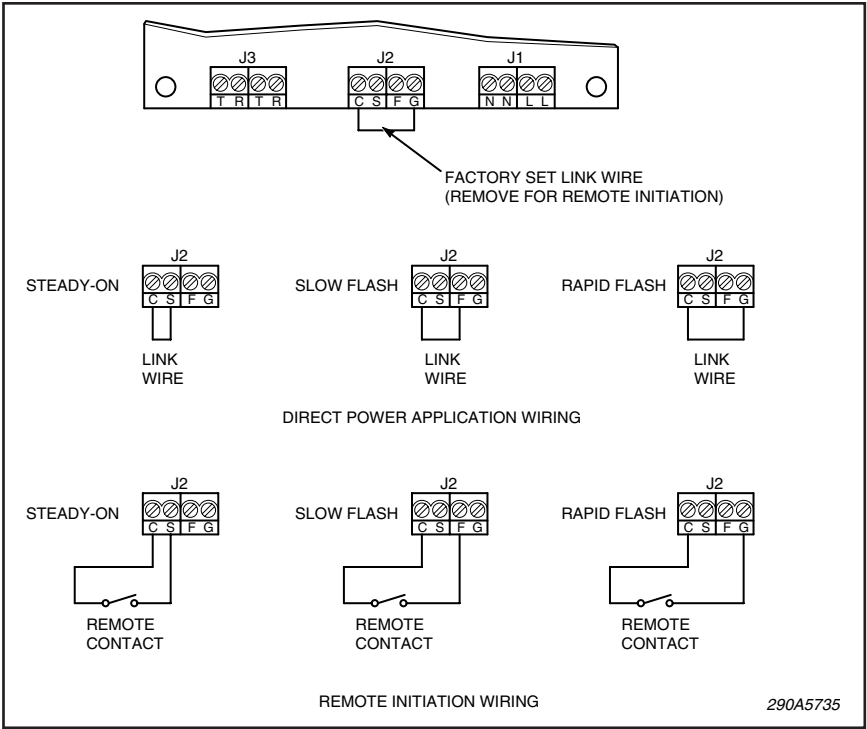


Figure 3.

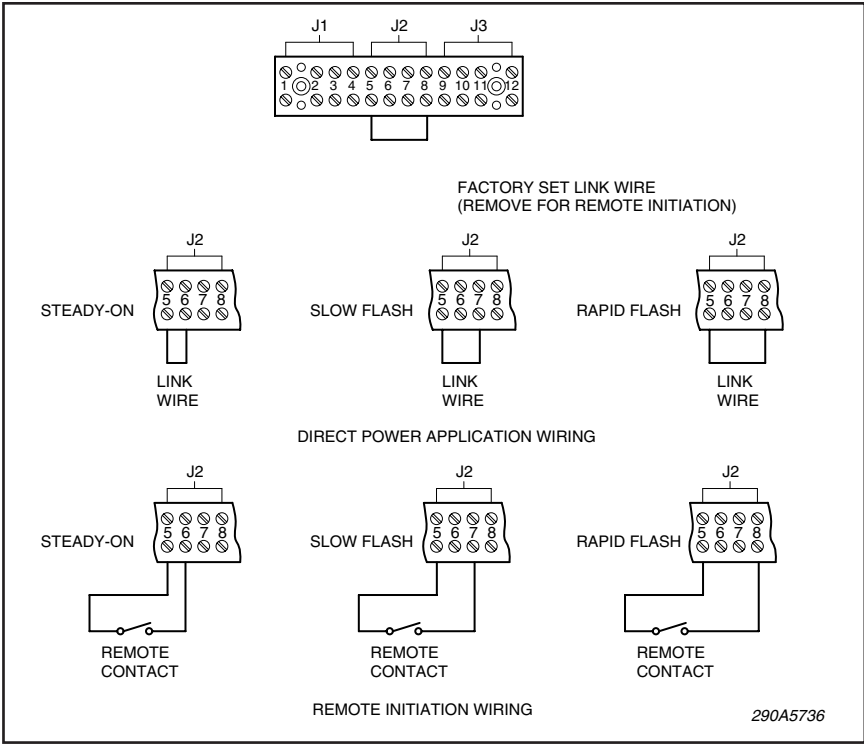


Figure 4.