

Honeywell

9LCA111L00AS
MEDIUM INTENSITY RED
LIGHTING SYSTEM
TRAINING GUIDE



9LCA111L00AS Training Manual

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INTRODUCTION

Thank you for choosing Honeywell for your tower lighting needs. Honeywell has been manufacturing tower lighting and airfield lighting systems for over 50 years.

System Description

9LC type controllers are FAA approved lighting systems. Honeywell manufactures many different models to meet various lighting requirements. The following model is the one of the most common, and is discussed in this training manual:

<u>Model</u>	<u>FAA Type</u>	<u>Color</u>	<u>Input Voltage</u>
9LCA111L00AS	L-864	Red	120 VAC, 60 Hz

Several other models are available, and there are many similarities between all models. This training manual is meant to supplement the “Installation and Operation Guide” which comes with each system. For drawings, circuit diagrams and more detailed information, please refer to the Installation and Operation Guide.

Technical Support

The Honeywell technical service department can be reached at (805) 581-5591. Normal hours are 7 a.m. to 6:00 p.m. Pacific. If you have any questions or are unsure about installation or troubleshooting methods, please call our service department. Incorrect wiring can cause permanent damage to the system.

INSTALLATION

9LC Controller

The controller can be located anywhere up to 450 feet away from the top beacon, depending on correct wire size for voltage drop. When the system is shipped, it has been tested and calibrated in the factory for proper operation. Although the enclosure is a NEMA 4 equivalent indoor/outdoor enclosure, most users prefer to install the enclosure in the communications shelter. This makes maintenance and repair easier during bad weather, and reduces the chances of vandalism.

Photocell

The photocell should be mounted *upright*, and rotated so that the window has an unobstructed view of the northern sky. If there is a light source nearby, such as flood lighting, which might affect the photocell's operation, the photocell may be mounted higher on the tower.

Beacon/Sidelights

When mounting the tower lights, care should be taken to make all the light units as level to the horizon as possible. Even if the strobe/beacon is only a couple of degrees off level, the 'ground scatter' light will increase significantly.

The beacon should be mounted so that no part of the tower or antennas blocks the light output of the fixtures. If a significant portion of the light must be blocked, two beacons should be mounted at opposite sides of the tower to provide an unobstructed view of at least one beacon from any angle. Some sites that use wide panel antennas utilize the two beacon setup at the top level to assure 360° coverage.

Wiring and Alarm Connections

Good wiring terminations are critical for reliable operation. Make sure that each conductor has enough insulation removed to make good contact, and that no part of the wire's insulation is caught in the terminal block. Do not use crimp on connectors on the conductors before inserting them into the terminal block, as this can create a resistive hot spot.

Wiring diagrams for the controller are located in the installation and operation guide. The following connections must be made:

Input Power

Make sure the proper voltage has been supplied before energizing the unit for the first time. Ensure that polarity of the incoming power conductors is correct. Honeywell recommends that the tower lighting system has its own circuit breaker, so that power can be interrupted for servicing the system.

Tower Output Wiring

A total of four (4) wires are needed to connect the tower lights to the controller. For towers that are closer to 350 feet, a change in wire gauge may be necessary. The six wires are as follows:

- **Green:** Used as the ground for the tower lighting system.
- **White:** Used as the neutral for the tower lighting system.
- **Black:** Beacon output line.
- **Yellow:** Sidelight output line.

Photocell Wiring

Connect the photocell leads to the controller at TB3-B and TB3-R.

Alarm Wiring

Honeywell provides dry contact alarms that can be monitored by remote alarming system. Depending on the type and number of alarm channels your system has available, there are several ways to alarm the lighting system. Several examples are included in the installation and operation guide. It is usually a good idea to separate all the alarms. This allows you to distinguish a reportable failure (flashing light or top light outage) from a non-reportable failure (intermediate steady burning light outage.) Alarm contact information is included at the end of this manual.

COMPONENT DESCRIPTIONS & FUNCTIONS

9LC Controller

This is the NEMA 4 enclosure that contains the necessary hardware to properly operate the Beacon and sidelights during night mode. During day mode, the controller supplies an alarm lockout to all alarm cards. During night mode, the controller supplies a flashing 120VAC to the beacon and a steady 120VAC to the sidelights. The controller monitors each light and reports an alarm upon failure of any of the lights. The controller can operated one (1) KG114 beacon, and up to four (4) sidelights. The controller includes the following components:

Mode Switch SW1

- Put either in the Day or Night position to override photocell control.
- Should be left in the 'Auto' position for proper mode change.

Master Card MC

- This card is the central piece to the controller. It has numerous functions to perform in both the day and night modes.
- Provides a constant 12VDC to the other three cards and to the power control relay K2.
- Provides a 12VDC-photocontrol signal to the power control relay K2 to energize (night) or de-energize (day) to power the red lights.
- Provides a flashing 12VDC signal to the beacon relay, K3, to open and close the relay to flash the beacon at 30 times a minute.
- Provides an Alarm Lockout to the cards that are not in operation during day or night mode. For example, during day mode the lockout signal is applied to the Flasher By-Pass Card and to the Alarm Card to lockout the red light alarms.

Alarm Card AC

- The alarm card uses toriods to sense the current being drawn by the lights. The use of toriods provides isolation between the tower output lines and the alarm card in case of a surge or lightning strike.
- Has an alarm channel for each tower light.
- The strobe alarm channel senses the current being drawn by the strobe's power supply. SW1 on the alarm card is used to set the alarming. If SW1-1 is ON, the alarm card will report a failure only if the flashtube fails. If SW1-2 is ON, then the alarm card will report an alarm if the strobe comes ON in its night mode intensity.
- The beacon and sidelight alarm channels sense the current being drawn by the incandescent bulbs. Each channel can be set to alarm when a particular number of bulbs fail.

Flasher By-Pass Card FC

- The Flasher By-Pass Card is used to sense the fluctuation of voltage to the beacon. During proper night operation, the beacon should flash at 30 times a minute, if the beacon should fail to flash for any reason an alarm will be reported and the card will force the Flasher By-Pass relay K1 to de-energize. When the relay de-energizes, it will apply a constant 120VAC to the beacon.
- Also see description of Backup Card.

Flasher By-Pass Relay K1 (*on panel*)

- This relay is energized as soon as power is applied to the controller.
- The relay supplies 120VAC to the power control relay K2.
- In an event of a beacon flash failure, K1 will de-energize and supply a constant 120VAC to the output of K2, which is the connection for the beacon output line.
- Note: See description of Backup Card.

Power Control Relay K2 (*in black heatsink*)

- The power control relay has 120VAC applied to its input at K2-1. The relay is a Normally Open 40Amp relay.
- During night mode, the master card sends 12VDC to the coil to energize the relay and send the 120VAC to K3 and directly to the sidelights.

Beacon Flasher Relay K3 (*in black heatsink*)

- The beacon flasher relay is a Normally Open 40 Amp relay.
- During night operation, the relay receives 120VAC from K2 at K3-1.
- The master card sends a flashing 12VDC to K3-3 to open and close the relay. The flashing of the 120VAC is sent to the beacon.

Load Balance Relay K4 (*in black heatsink*)

- The load balance flasher relay is a Normally Open 40 Amp relay.
- During night operation, the relay receives 120VAC from K2 at K4-1.
- The master card sends a flashing 12VDC to K4-4 to open and close the relay opposite of the beacon flasher relay.

Photocell

The photocell is used to switch the system between day and night modes by sensing the ambient light level.

Resistive Type Photocell

The photocell is attached to the controller by two wires: Black and Red. The photocell acts as a variable resistance and has the ambient light changes so will the resistance. The resistance will be lower during day mode and higher during night mode. This change in resistance is fed back to the Master Card to activate the change in modes.

STATUS INDICATORS

Power Fail

- Located on the Master Card, is green when power is applied to the controller.

Photo Mode

- Located on the Master Card, will always be lit either Green or Red.
- Green: Day Mode
- Red: Night Mode

Flasher Signal

- Located on the Master Card, will flash during the night mode at 30 times a minute.
- This signal will flash the beacon relay.

Flasher By-Pass

- Located on the Flasher By-Pass Card, the LED should be Green during normal operation.
- If the LED is RED, then a flash failure has occurred.

Beacon Alarm

- Located on the Alarm Card, the LED should be Green during normal operation.
- If the LED is RED, then a lamp(s) have failed.

Sidelight Alarm

- Located on the Alarm Card, the LED should be Green during normal operation.
- If the LED is RED, then a lamp(s) have failed.

ALARMS

The follow chart depicts the alarm contact points available for the various lighting systems:

Alarm Name	Location	Alarm Points	Normal Status	Fault Status	Indicator	Normal	Fault
Power Failure	Master Card TB2	C to NO	Open	Close	Green LED, LED 1	Green	OFF
		C to NC	Close	Open			
Mode Alarm	Master Card TB5	C to NO	Open	Close	Bi-Color LED, LED 3	Green	Red
		C to NC	Close	Open			
Flasher By-Pass Alarm	Flasher By-Pass Card TB4	C to NO	Open	Close	Bi-Color LED, LED 1	Green	Red
		C to NC	Close	Open			
Beacon Alarm	Alarm Card TB3	C to NO	Open	Close	Bi-Color LED, LED 1	Green	Red
		C to NC	Close	Open			
Sidelight Alarm	Alarm Card TB5	C to NO	Open	Close	Bi-Color LED, LED 2	Green	Red
		C to NC	Close	Open			

MAINTENANCE

Spare Parts Table

9LCA111L00AS Dual Lighting Control

Complete Internal Panel Assembly	9LCE111L0BAS
K1	KA120DV2022C
K2, K3, K4	KR241DV4011R
Master Card (MC)	B7C13PAA
Flasher By-Pass Card (FC)	B7C31PAA
Alarm Card (AC)	B7C21PAA

Beacon & Sidelight Lamps

Beacon Lamp – 120V, 620W	LH620120GE
Sidelight Lamp – 120V, 116W	LH116120GE

Scheduled Maintenance

The FAA requires that the incandescent lamps in the beacon and sidelights should be replaced after being operated for not more than 75 percent of their rated life or immediately upon failure.

The FAA requires that the flashtube should be replaced:

- a.) immediately upon failure,
- b.) when the peak intensity falls below 2,000 candela (for medium intensity lights),
- c.) when the fixture begins skipping flashes
- d.) or at the manufacturer's recommended interval

Tools Required

- Screwdrivers
- 3/8" nutdriver to open flashhead
- Clean gloves - used to change lamps
- Digital multimeter with Ohm reading and 10Amp capability

Orders and Returns

When ordering or returning Honeywell equipment, please contact the main office:

Mail: Honeywell
2162 Union Place
Simi Valley, CA 93065

Phone: (805) 581-5591

Fax: (805) 581-5032

Important: Before returning any items, call Technical Support for a Return Material Authorization (RMA) Number. Put the RMA# on a note describing what you are returning, serial number of unit, any information that might help in the repair of the unit, and what you would like Honeywell to do with the returned items, i.e. repair and return, return for credit, etc. **Clearly mark the RMA# on the outside of the box before shipping.**