POWER EQUIPMENT

LAHSO

Land and Hold Short Operations Power and Control Unit

Uses

A Land and Hold Short Operations (LAHSO) system is used to increase airport capacity. A LAHSO system, controlled by an L-884 Power and Control Unit (PCU), consists of a row of six or seven in-pavement unidirectional pulsing white lights installed across the runway at the hold-short point.

For new installations, six lights are used. Seven lights are used if five lights were installed according to AC 150/5345-54. Lights pulse simultaneously at a rate of 1.72 seconds ON, 0.46 seconds OFF. The fixture may be either clear L-850A or L-850F (incandescent fixtures only). The L-850F has two lamps, one primary and one backup. If two or more lights in the primary LAHSO bar have failed, the PCU switches from the primary to the backup lamp bar. See data sheet 2001 (L-850A) or data sheet 2037 (L-850F) for more information.

Features

- Graphical display provides detailed troubleshooting information
- Uses dual photocells to insure accurate detection of one failing photocell
- Provides optional interfaces in excess of FAA requirements:
  - LAHSO ON Output–Provides positive feedback to the control system that LAHSO is operating
  - Caution Alarm–Provides pre-alarm information
  - Alarm Reset Input–Allows either Caution or Fault alarm to be reset remotely
  - Test Backup Input–Forces PCU to switch to backup L-850F lamp bar for test purposes
  - Sign monitor input–Two inputs are present to monitor each LAHSO runway hold short position sign. (Requires individual dry contact feedback points from each sign, supplied by others.) Per FAA Order 7110.118, if one of the two signs is not functional or is destroyed, LAHSO may continue if LAHSO lights are operational. A feedback point from the sign activates a Caution (one sign failed) or a Fault (two signs failed).
- Can be mounted either indoors or outdoors
- Provides all signals needed for connection to a Mode 2 L-821 LAHSO control panel or L-890 Touchscreen, including ON/OFF, Fault, and Field/Tower.

Ordering Code[1,2]

44A601X - X X

Location
1 = Indoor LAHSO[3]
2 = Outdoor LAHSO

Input Voltage
1 = 240 V
2 = 208 V (indoor only)
3 = 120 V (indoor only)

Contact Relay
0 = Without dry contact relay (standard)
1 = With dry contact relay (optional)[4]

Notes

1 Current sensing relays are mounted separately. Current sensing relays are connected to the runway edge circuit associated with the LAHSO fixture.
2 To ensure proper lamp-out monitoring, L-850A and L-850F fixtures must not have film disc cutouts
3 Photocells are automatically mounted on the enclosure but can be removed and mounted separately
4 Custom monitoring output points when used with non -ADB SAFEGATE control systems. Contact the ADB SAFEGATE Sales Department for details.

PCU Specifications

Input Voltage	Outdoor unit: 240 VAC, 60 Hz Indoor unit: 120 VAC, 208 VAC, 240 VAC; 60 Hz
PCU maximum load	1,600 VA
Distance	LAHSO lights may be up to 10,000 ft (3 km) away (20,000 ft/6 km round trip) using AWG 8, L-824 wire
Indoor enclosure	- NEMA 1 - Style I, -40 °F to +131 °F (40 °C to +55 °C) - 63 lb (2 8.58 kg) - 24 × 8.6 3 × 24 in (61 × 22 × 61 cm)
Outdoor enclosure	- NEMA 4 - Style II, -67 °F to +158 °F (-55 °C to +70 °C) - 72 lb (3 2.66 kg) - 24 × 8 × 24 in (61 × 20.3 × 61 cm)

Note: Outdoor PCU must be mounted outside airfield safety area. Mounting an outdoor PCU in the vicinity of the LAHSO fixtures is the preferred method of installation.

LAHSO

Theory of Operation

LAHSO lights are flashing in-pavement white lights designed to pulse simultaneously so that they are distinguishable from the various runway lights. The lights pulse from one of the three steps (6.6 A, 5.2 A, or 4.1 A) for 1.72 seconds and then to 1 A for 0.46 seconds. The pulsing lights provide an effective visual cue for the pilot from short final through the landing rollout, indicating the point beyond which the landing aircraft is not authorized to proceed. Either six or seven unidirectional clear L-850A or L-850F lights (without film disc cutouts) are used.

The L-884 PCU consists of a microprocessor-controlled circuit that regulates the output current in a manner similar to an L-828 constant current regulator.

ON/OFF control is activated from the Air Traffic Control Tower or by a local control switch on the PCU (See Figure 1). If the PCU local control switch is in the Local position (OFF or B3/B4/B5), then the Field/Tower PCU contact will open, activating a "Field Control" light on the LAHSO panel. When the PCU local control switch is in the Remote position, the Field/Tower PCU contact will close, activating a "Tower Control" light on the LAHSO panel.

The PCU photocell defines whether day or night conditions exist. During daytime, the intensity is always set to B5 (6.6 A) even if the runway edge lights are off. At nighttime, the PCU uses two current sensing relays (mounted separately) to monitor the intensity of the corresponding HIRL (5-step) or MIRL (3-step) runway edge lighting circuit and to automatically set the intensity step. Alternately, an L-830 transformer can be used to monitor the runway edge circuit.

A fault alarm is generated if one of the following conditions occurs:

- Failure of the PCU electronics due to failure of the DC power supply (Time Delay = 0 sec)
- Loss of input power to PCU (Time Delay = 0 sec)
- Failure to pulse the lights (Time Delay = 5 sec)
- Two or more lights in a bar have failed (Time Delay = 5 sec)

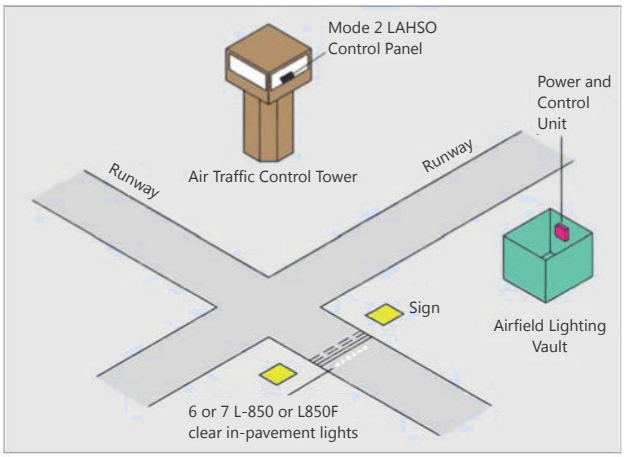

Figure 1

The PCU has the following fail-safe modes:

- If the photocell fails, intensity reverts to the highest step
- If PCU DC power supply fails (using either L-850A or L-850F lamps), a Fault alarm is generated and LAHSO lamps go OFF
- If L-850A fixtures are used or if the LAHSO PCU has switched to the backup L-850F lamps and if the number of lamps out for Fault alarm occurs, then a Fault alarm is generated and the remaining LAHSO lamps continue to pulse

Note: The PCU is not designed for use with an L-847 Circuit Selector Switch.