

# APPROACH LIGHTING

## PAPI-L

### LED Precision Approach Path Indicator



#### Compliance with Standards

- FAA:** L-880(L) & L-881(L) AC 150/5345-28 (Current Edition). ETL Certified.
- ICAO:** Annex 14, Vol. 1, para. 5.3.5.23 to 5.3.5.45
- T/C:** Transport Canada TP 312 par. 5.3.6.14 and Appendix B, section B.3.1.
- CE:** Complies with the requirements of the EMC Directive 2004/108/EC

#### Uses

The PAPI system uses a single LED light channel on each light unit to provide the pilot precise visual information, enabling the approach procedure to be performed with the utmost accuracy and safety.

The FAA Type L-880 PAPI system consists of four light units located at the side of the runway adjacent to the origin of the glide path. The nominal glide slope angle is midway between the angular settings of the central pair of the four units. If an aircraft is on the correct approach path, the pilot will see two red and two white light indicators. If the aircraft approach is too high, an increased number of white light indicators will be seen. If the approach is too low, the pilot will note an increased number of red light indicators.

The FAA Type L-881 PAPI system is identical to the L-880, except only two light units (instead of four) are used. The nominal glide slope is midway between the angular settings of the two units, and when the pilot is on or close to the correct approach path, the unit nearest the runway will be seen as red and the other unit as white.

The FAA Style A system is for use with an AC voltage input. The FAA Style B system is for use on 6.6 A or 20 A series circuits. An electronic inclinometer assembly, which is a mercury-free product, is provided on each FAA PAPI unit to de-energize all light units if the optical pattern of any light unit is raised between 0.5° and 1.0° or lowered between 0.25° and 0.5° with respect to the setting angle of the light unit.

#### Features

- Use of LEDs greatly increases light source life and significantly reduces ongoing maintenance costs and periodic re-lamping expenses
- Each PAPI light unit uses a maximum of only 120 W when the heater is active.
- Depending on operating mode, light unit uses 62% to 80% less energy than traditional light units that use three 105 W lamps, two 200 W lamps or three 200 W lamps.
- Unique, sealed optical chamber designed to prevent dew/frost on LED optical elements. Also includes a digitally controlled heated outer glass that is designed to ensure that the outer glass is clear of frost/ dew within:
  - 3 minutes over a temperature range of -21 °C to +55 °C (-6 °F to +131 °F)
  - 4 minutes over a temperature range of -39 °C to -22 °C (-38 °F to -8 °F)
  - 5 minutes over a temperature range of -55 °C to -40 °C (-67 °F to -40 °F)
- Average LED life of 60,000 hours under high-intensity conditions and more than 150,000 hours under typical operating conditions, resulting in significant reduction or even elimination of ongoing maintenance costs and periodic re-lamping expenses.
- Very low power rating of LED light units contributes to a lower life cycle cost. Limits cost for supporting equipment, such as CCRs, to strict minimum.
- Use of LED light source improves safety and pilot recognition by eliminating color shifts typical of incandescent light sources at lower intensity settings.
- For Style A (Voltage Powered) FAA systems, a separate Master Control Cabinet is not used. Master functionality is incorporated into the Primary Light Unit. This minimizes installation costs and provides for compliance with FAA Safety Management System requirements to clear the Runway Safety Areas (RSA) and Runway Obstacle Free Areas (ROFA) of all unnecessary obstacles. Distance from the voltage power supply is limited only by the incoming power wire size used. Operates on a wide input voltage range of 215 VAC to 265 VAC, 50/60 Hz and can be field re-configured to operate on a voltage range of 108 VAC to 132 VAC, 50/60 Hz.
- For Style B (Series Circuit Powered) systems, operates on either 3- or 5-step CCRs that are designed in compliance with IEC or FAA requirements

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- A unique digital display indicating the vertical angle can be read from outside the light unit. This eliminates the need to manually use an aiming device during initial installation and for routine verification of vertical angle setting, minimizing maintenance time.
- Outer optical lens protected from sandblast by a hardened front glass shield
- In case a light unit tilts, the display locally indicates which light unit has tilted. Light unit status indicators, including horizontal angle, can also be read from outside the PAPI unit without removing the top cover. This also allows quick troubleshooting, minimizing the maintenance effort needed to determine which light unit is tilted.
- Light units may be aimed at any vertical angle up to 10°
- Rugged lightning protection that complies with ANSI/IEEE C62.41-1991 Location Category C2 given in FAA Eng. Brief 67. Category C2 is defined as a 1.2/50µS – 8/20 µS combination wave, with a peak voltage of 10,000 V and a peak current of 5,000 A.
- For Style A (Voltage Powered) systems, a photoelectric control on the primary light unit automatically provides full intensity during the day and a reduced intensity (5% or 20% of full intensity) at night. A circuit breaker is provided to permit the input power to be de-energized for field maintenance.
- Includes an integral deflection plate on the top front edge of the light unit cover. This prevents the pilot from seeing light reflected from the back of the light unit.
- Light unit body is painted anti-reflective black. Top cover is painted aviation orange for FAA applications and aviation yellow for ICAO/TP 312 applications.
- A set of connectorized water proof cables and connector boxes are provided to allow for a fast and reliable installation of each PAPI unit.
- Meets both FAA Class I and II temperature ranges:
  - Class I: -31 °F to +131 °F (-35 °C to +55 °C)
  - Class II: -67 °F to +131 °F (-55 °C to +55 °C)
- Protection class IP55.

### Ordering Code

#### Specification

F = FAA

I = ICAO/TP 312<sup>1</sup>

#### Power

A = PAPI A, 215 to 265 VAC, 50/60 Hz (voltage)<sup>2</sup>

B = PAPI B, 2.8-6.6 A, 50/60 Hz (current)

R = PAPI B, 2.8-6.6 A, 50/60 Hz (current) redundant

#### Type

2 = 2 Light Units (FAA L-881)

4 = 4 Light Units (FAA L-880)

#### Housing

0 = Aluminum (Standard)

1 = 316 Stainless Steel

#### Operation/Control Mode<sup>3</sup>

0 = Style B (Current) Operation

1 = Style A (Voltage) Operation, Current Sensing Night Control Mode

2 = Style A (Voltage) Operation, Current Sensing Day/Night Control Mode

3 = Style A (Voltage) Operation, External On/Off Control Mode

#### Notes

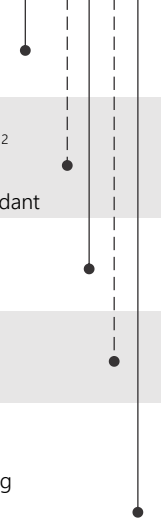
Contact the ADB SAFEGATE Sales Department for information on baffles.

<sup>1</sup> ICAO and TP 312 PAPI units are normally provided without a tilt switch function.

<sup>2</sup> All PAPI A units are factory preset to operate from a voltage range of 215 to 265 VAC. The system can be easily modified in the field for 108 to 132 VAC (120 VAC nominal operation).

<sup>3</sup> See Operation/Control Mode table for details.

LPLX - X X X X 0 0



### Touchpad Cover Assembly

44A7564

### Baffle Kits

94A0701 - X X 0

#### Type

2 = 2 Light Units (FAA L-881)

4 = 4 Light Units (FAA L-880)

#### Baffle Location

L = Baffle on left side

R = Baffle on right side

B = Baffle on both sides

#### Notes

- Provides a 0 to 5.5 degree cut-off angle to modify the horizontal light beam coverage of the PAPI unit for obstacle avoidance in the approach area. See manual for field adjustment.
- The PAPI baffle can only be installed at the factory. It cannot be installed in the field.

### Contractor Kit

94A0716 - X X

#### Power

A = Voltage Driven (PAPI A)  
B = Current Driven (PAPI B)

#### Type

2 = 2 Light Units (FAA L-881)  
4 = 4 Light Units (FAA L-880)

#### Notes

- Kit provides materials, such as 2" EMT, for contractors installing equipment outside the United States.
- 94A0716-XX-CAN provides a longer, flexible conduit length to allow for longer Canadian power cords.

### Longer Cord Length

94A0690 - X X

#### Power

A = Voltage Driven (PAPI A)  
B = Current Driven (PAPI B)

#### Type

2 = 2 Light Units (FAA L-881)  
4 = 4 Light Units (FAA L-880)

**Note:** Standard cord length is 8 ft (2.4 m) with 7 ft (2.1 m) extending outside the enclosure. This kit provides an optional 10 ft (3 m) longer cord.

### Electrical Supply

Each Style A (Voltage) PAPI system is powered from the Primary Light Unit. Each Style B (Current) PAPI light unit is powered with 6.6 A maximum via a 6.6A/6.6 A or 20 A/6.6 A 200 W isolation transformer.

Style A (Voltage Driven) <sup>1</sup>	
Input Voltage	215 to 265 VAC, 50/60 Hz or 108 to 132 VAC, 50/60 Hz
L-880 (4 box):	528 VA max. <sup>2</sup>
Input Voltage	215 to 265 VAC, 50/60 Hz or 108 to 132 VAC, 50/60 Hz
L-881 (2-box):	264 VA max. <sup>2</sup>
Style B (Current-Driven) <sup>3</sup>	
L-880 (4-box) – Total CCR Load:	630 VA max
L-881 (2-box) – Total CCR Load:	330 VA max.

#### Notes

- As seen at input of PAPI Primary Light Unit
- Source of primary light source power can be a minimum of 305 m (1000 ft) away using 6 mm<sup>2</sup> (AWG 10) wire.
- Includes PAPI light units and isolation transformers

### Packaging

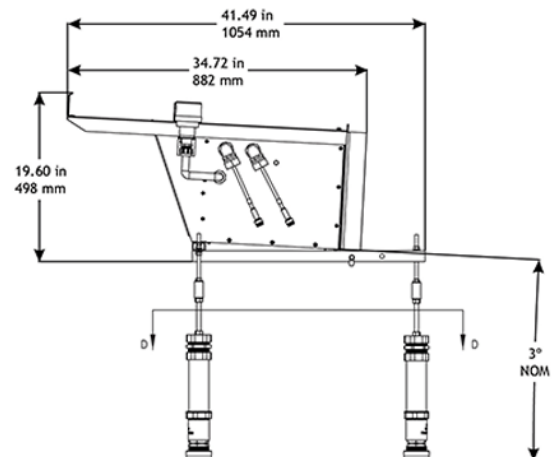
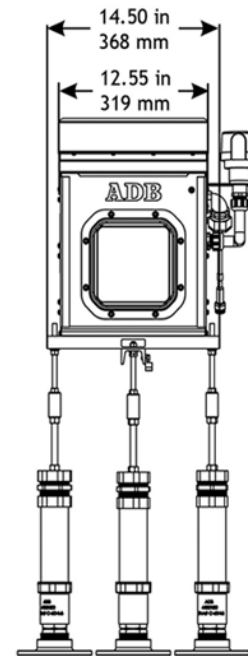
2 Box System = 1 package

4 Box System = 2 packages

Weight per package: 200 lb (91kg)

Package Dimensions: 48 x 40 x 30 in (122 x 102 x 76 cm)

### Dimensions



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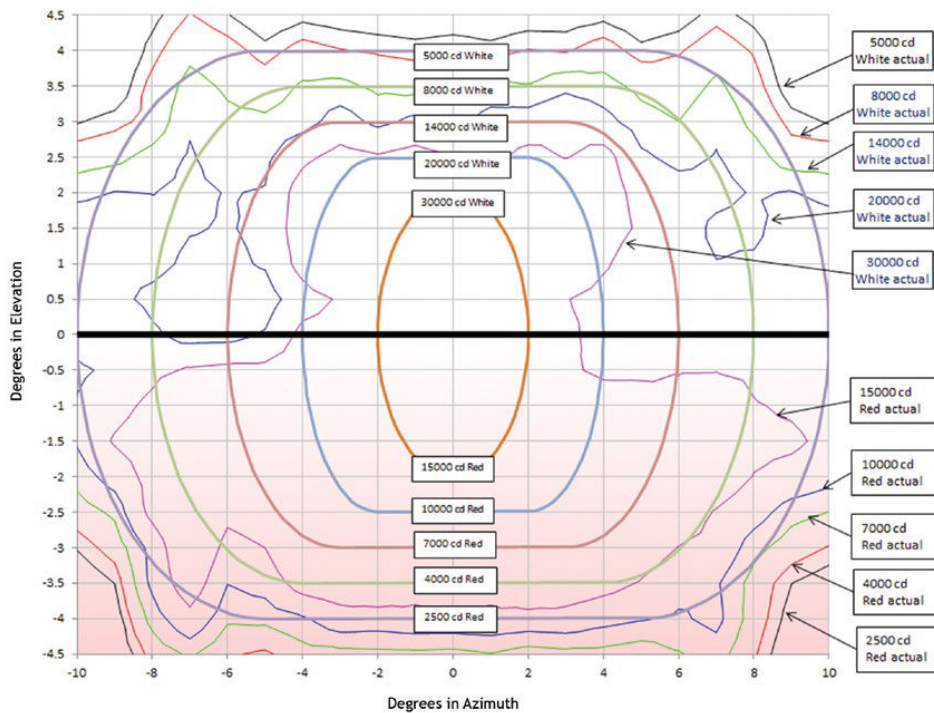
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### Operation/Control Mode

Multiple remote control options are available that maximize operational flexibility and minimize energy usage

Option	Operation/Control Mode	Description
0	Style B (Current) Operation	Powered from a 3-step CCR (4.8 A to 6.6 A, 50/60 Hz) or a 5-step CCR (2.8 A to 6.6 A, 50/60 Hz). Light unit intensity is controlled by CCR setting. Optionally can be configured for no light output on steps B1 and B2 of a 5-step CCR, but with the heated defroster on the front glass active to keep it clear of dew/frost. Operating range is field programmable. The heater is activated at turn-on in any step; light output is activated after initial heating period is complete (up to 3 minutes for Temperature Class I and 5 minutes for Temperature Class II) or instantly for FAA applications.
1	Style A (Voltage) Operation, Current Sensing Night Control Mode	Powered from a continuous 50/60 Hz AC voltage source. Provides On/Off control through current sensing of the runway series circuit during nighttime operations. During daytime, light units are activated at the 100% step via control from the photocell (current sensing input is not used). Nighttime intensity is automatically set to 5% or 20% (field selectable).
2	Style A (Voltage) Operation, Current Sensing Day/Night Control Mode	Powered from a continuous 50/60 Hz AC voltage source. Provides On/Off control through current sensing of the runway series circuit. Turns on the light units anytime (Day or Night) when current greater than 2.8 A is present in the associated series circuit. When On, light units are activated at the 100% step via control from the photocell during daytime. Nighttime intensity is automatically set to 5% or 20% (field selectable).
3	Style A (Voltage) Operation, External On/Off Control Mode	Powered from a continuous 50/60 Hz AC voltage source. Provides On/Off control through an external contact closure connected to Primary Light Unit. When On, light units are activated at the 100% step via control from the photocell during daytime. Nighttime intensity is automatically set to 5% or 20% (field selectable).

### Photometric Curve



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Product specifications may be subject to change, and specifications listed here are not binding. Confirm current specifications at time of order.