

DOCUMENT 1336
REVISION D
June 29, 2021



Instruction Manual

*PRO APF Series LED Style III
Inset Runway Guard Light, Stop Bar Light and
Combination Guard/Stop Bar Light, FAA Types
L-852G, L-852S & Combination L-852G/L-852S*

12-inch unibody aluminum optical assembly

Eaton Crouse-Hinds Series
Airport Lighting Products
1200 Kennedy Road
Windsor, CT 06095

Copyright © 2021 Cooper Technologies Company

For Parts or Technical Service Call (860) 683-4300

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

1 Revisions

Revision	Issue/Reissue Letter Number	Description	Checked	Approved
A	A220-117	Initial Issue	8/11/20	PG
B	A220-151	Added section 9.8 & renumbered next sections; Updated fixture wattage and transformer size in table 3 for Arctic Kit versions; Revised section 10 for P/N's extensively; Labelled Bluetooth board in figure 1 & 6.	10/7/20	TT
C	A221-021	Title Page: Copyright year changed to 2021; Section 10: Spare/Replacement Parts List, Item 3, 21837-TY was 21676-TY; Item 4, 21644-4 was 21619-4; Item 5, 21837-C was 21642-1; Item 6, 21644-2 was 21644-1; Jumper diagram 26 was 4.	3/17/21	PG
D	A221-090	Pg.1: Updated Part Number Explanation with P3 option for Logitrac Monitoring; Pg.2: Added warning for Blue Heat shrink tubing in section 7; Pg.11: Added Item 18, 21616-6; Pg.17: Figure 6A was Figure 6; Added Figure 6B; Pg. 21 & 22: Added Figures 13, 14 & 15; Table 3: Added Column for logitrac arrangement and Added rows for P3 options	6/29/21	PG

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

2 Product Warranty

Warranty

Refer to Eaton's Crouse-Hinds Airport Lighting Products Terms and Conditions for product specific warranty information.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

3 Warning Labels



DANGER

DANGER:

The hazard or unsafe practice will result in severe injury or death.



WARNING

WARNING:

The hazard or unsafe practice could result in severe injury or death.



CAUTION

CAUTION:

The hazard or unsafe practice could result in minor injury.



NOTICE

NOTICE:

Possibly dangerous situation, goods might be damaged.



IMPORTANT

IMPORTANT:

Helpful information.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

4 Safety Notices



DANGER

DANGER:

This equipment is normally used or connected to circuits that may employ voltages that are dangerous and may be fatal if accidentally contacted by operating or maintenance personnel. Extreme caution should be exercised when working with this equipment.

4.1 Keep Away from Live Circuits



DANGER

DANGER:

Operating and maintenance personnel must at all times observe all safety regulations. Do not perform maintenance on internal components or re-lamp with power ON.

4.2 Resuscitation

Maintenance personnel should familiarize themselves with the technique for resuscitation found in widely published manuals of first aid instructions.



IMPORTANT

IMPORTANT:

See FAA Advisory Circular AC 150/5340-26 for additional information.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

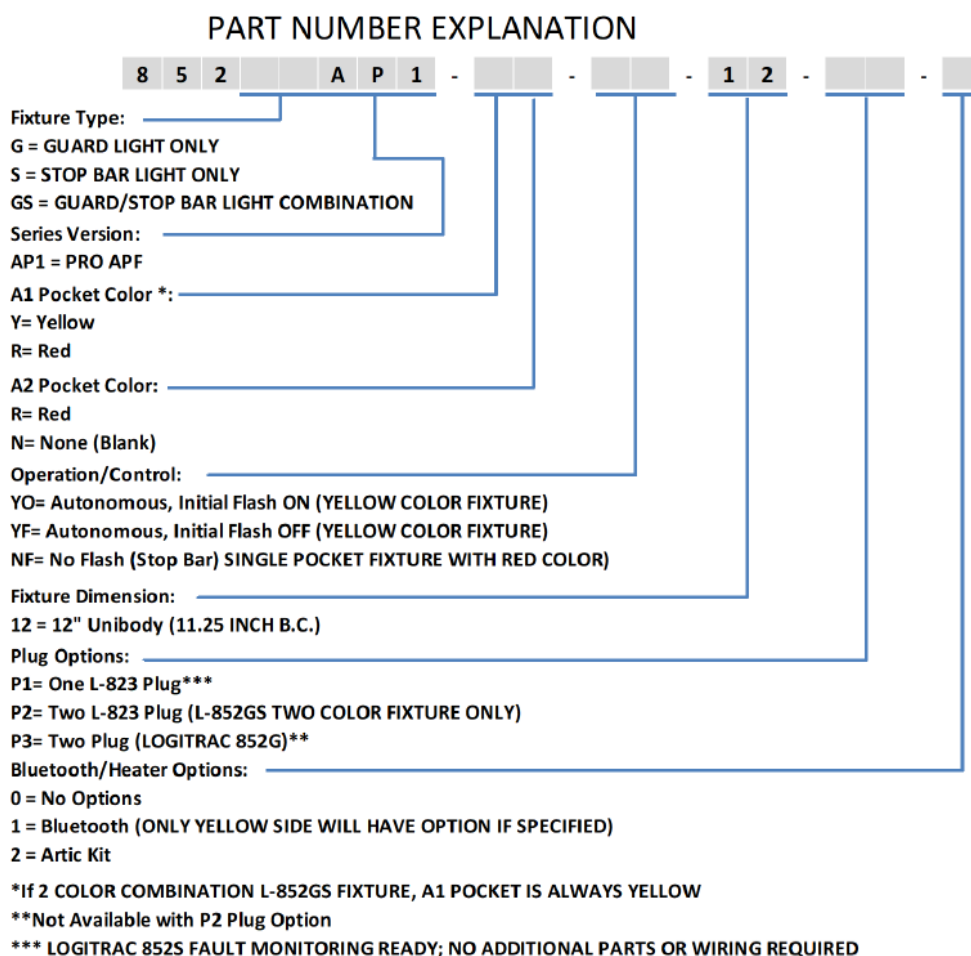
5 Table of Contents

Table of Contents

1	Revisions	ii
2	Product Warranty	iii
3	Warning Labels	iv
4	Safety Notices	v
4.1	Keep Away from Live Circuits	v
4.2	Resuscitation	v
5	Table of Contents	vi
6	Part Number Explanation	1
7	General Description.....	1
8	Installation	3
8.1	Installation	3
8.2	Installation Bolt Torque.....	4
8.3	Heico-lock Installation Guidelines (2014)	5
9	Maintenance	6
9.1	Cleaning Lenses	6
9.2	Light Module Replacement	6
9.3	Gasket Replacement	7
9.4	Lens Replacement	7
9.5	Power Cord Replacement.....	8
9.6	Pressure Test	9
9.7	Power Supply Replacement.....	9
9.8	Power Supply Bluetooth Board Replacement	10
9.9	Cleanliness and Workmanship	10
9.10	Maintenance Program.....	10
10	Spare/Replacement Parts List.....	11
11	Troubleshooting	12
11.1	Visual Inspection.....	13
12	Tables & Figures	15
13	Appendix A: Bluetooth Instruction	23
13.1	Running the Application	23

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

6 Part Number Explanation



7 General Description

The Eaton Crouse-Hinds Series In-Pavement Runway Guard Light / Stop Bar Light is a Style 3 (.25 in [\leq 6.35mm] above grade) ITS verified light unit that meets the photometric requirements of FAA L-852G or FAA L-852S per FAA AC 150/5345-46 (latest). The use of in-pavement runway guard lights and stop bar lights are described in FAA AC 150/5340 (latest).

The unit is unidirectional. The fixtures are weatherproof, and will endure roll-over loads without damage. The light units consist of an aluminum optical assembly. The optical assembly has a forged aluminum optical housing and an aluminum die-cast inner cover that are attached using six screws (10-32 UNC x 7/16 lg., stn. stl., socket head cap). A bonded silicone gasket is used to provide a watertight seal between the inner cover and the optical housing. One or two LED assemblies are fastened to the optical housing for the unidirectional L-852G or L-852S and L-852G/S combination fixtures, respectively. These LED assemblies are powered by either one or two power supplies. Electrical connections are made at one or two power entry assemblies in the inner cover. The power cord entries have ITS verified L-823 plugs for connecting to

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

FAA L-830/L-831 isolation transformers. Lenses are held into the optical housing with a bracket, gasket, molded elastomeric boot, and two screws. The light beam color on combination fixture L-852G/S is changed by applying power to the corresponding plug. For L-852G fixtures, the flashing is pre-set at the factory for either initial ON or initial OFF. It can be field changed if the blue tooth option is present. All fasteners are type 18-8 stainless steel. The complete light unit is 11.97 in [304 mm] in diameter, 3.4 in [86.4 mm] deep, and weighs 11.5 lbs [5.2 kg]. Refer to Section 10 for a list of spare and replacement parts.

The light units are intended for use with FAA L-868 size-B steel light bases per FAA AC 150/5345-42 (latest version). To mount to a L-868 base, use six 3/8-16 UNC hex bolts and six 2-piece stn. stl. washers (hex bolts and washers per FAA EB 83A).

**IMPORTANT*****IMPORTANT***

Do not open any light unit unless the warranty period has expired. Opening a light unit will void the warranty

**CAUTION*****CAUTION:***

Never handle the light unit by the leads as this can break the waterproof seal

**WARNING*****WARNING:***

Blue heat shrink tubing is only for Logitrac monitoring and no power should be connected to it

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

8 Installation

Each light unit is shipped complete, including the LED modules, and is ready for installation as received. Installation of a light unit is to be done with primary POWER OFF and SECURED. At each light location, install a steel FAA L-868 size-B, 12 in [304.8 mm] deep minimum, light base per FAA AC 150-5345-42 (latest revision). Install the light base with two opposing bolt holes perpendicular to the runway centerline. Place the properly sized isolation transformer(s) in the light base and make necessary primary power connections using L-823 connectors. Minimum isolation transformer requirements can be found in Section 12, Table 3. All isolation transformers are 6.6 ampere secondary models.



IMPORTANT

IMPORTANT:

Proper transformer wattage is dependent on the configuration options of your light unit(s) and is necessary for meeting FAA performance requirements. See Section 12, Tables 4 and 5 for minimum transformer requirements.

8.1 Installation

The Style 3 fixtures are shipped complete, including the LED module(s), and are ready for installation as received. **Installation of a light unit is to be done with primary POWER OFF and SECURED.** At each light location, install a steel, Size B, 12 inch deep minimum, L-868 Light Base per FAA AC 150/5340-42 (latest revision). Place the properly sized isolation transformer(s) in the light base and make necessary primary power connections using L-823 connectors. Isolation transformer requirements are dependent on a light unit's heater option and whether it is used with a Logitrac device. All isolations transformers are 6.6 ampere secondary models. Verify that the mounting flange on the light base is clean and the O-ring (optional on deep cans) is coated with Dow Corning FS 1292 grease or equal and is in place on the light base. Connect the plug(s) from the light unit to the secondary of the previously installed isolation transformer(s). Installation tool, Crouse-Hinds P/N 19999, will ease in the installation and removal of the light unit (See Figure 3). The threaded eyebolts on the lifting tool screw into threaded holes in the light fixture. Lower the light unit straight down onto the base. The light fixture is subject to optical misalignment or mechanical damage if not seated properly. Verify the light beam is properly orientated for the individual location. Secure the light unit to the base per section 8.2.

All 852G-AP1 light units are flashing lights. For light units with the "YO" designator in the part number, the light will flash ON first in the cycle. For light units with the "YF" designator in the part number, the light will flash OFF first in the cycle. This allows the light installers to arrange either an alternating flashing bar of lights (i.e. YO---YF---YO---YF---YO---YF---... etc.), in which the YOs flash on while the YFs flash off in an alternating fashion, or a solid bar of lights that flash in unison (i.e. YO---YO---YO---YO---YO---YO---... etc.). In the case of an accidental undesirable light bar installation (i.e. YO---YF---YF---YO---YO---YO---...etc.), each 852G-AP1 light unit's immediate powered flashing state is reprogrammable using Bluetooth technology. See Section 13 for Bluetooth access instructions.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

8.2 Installation Bolt Torque

- Use fully threaded, 3/8-16 bolts meeting requirements of FAA EB 83A. (P/N 21716 is recommended)
- Use Heico-Lock or Nord-Lock stainless steel lock-washers per FAA specification*.
- Mounting base holes must be degreased, cleaned, and dried prior to bolt installation.
- Base-to-fixture mating surfaces must be degreased, cleaned, and dried prior to installation.
- Apply marine grade anti-seize ($K=.18$) per manufacturer's instructions to each bolt.
- Install the 3/8-16 bolts with lock-washers per lock-washer manufacturer's guidelines.
- See Section 8.3 for Heico-Lock installation guidelines (2014).
- Achieve a full final torque of 28 FT-LBS [37.9 N-m] +10%, -0% with a calibrated torque wrench.
- Impact wrenches are *not* recommended as installation tools.
- Check torque and re-torque all bolts within 2 weeks of initial installation.
- Maintain all bolts by checking torque and re-torquing per FAA specifications*.
- If other lubricants or thread locking compounds are used (not recommended), torque must be recalculated based on K factor provided by lubricant or compound manufacturer.
- New bolts and lock-washers shall be used each time a light unit is removed from its base.

*Refer to the following specifications for FAA installation and maintenance recommendations:

- AC150/5340-26 "Maintenance of Airport Visual Aids"
- AC150/5345-46 "Specification for Runway and Taxiway Light Fixtures"
- FAA Engineering Brief No. 83A "*In-pavement Light Fixture Bolts*"



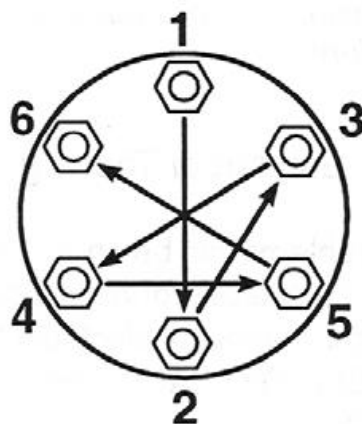
WARNING:

12 inch one piece optical assemblies are designed to withstand a maximum torque of 28 FT-LB (336 in-lb) [37.9 N-m] per bolt, assuming $K=.18$ lubricant and appropriate superior-grade 3/8 hardware, however other components within the light fixture installation (i.e. base-can, extension rings, spacer rings, etc.) may not be capable of supporting such a load. Crouse-Hinds recommends following the installation bolt torque values and methodology outlined in Section 8.3.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

8.3 Heico-lock Installation Guidelines (2014)

- Step 1: Hand tighten to ensure that 2-3 threads extend beyond the nut on through-bolt applications.
Step 2: Tighten each bolt to one-third of the final required torque following the pattern as shown below.
Step 3: Increase the torque to two-thirds following the pattern shown below.
Step 4: Increase the torque to full torque following the pattern shown below.
Step 5: Perform one final pass on each bolt working clockwise from bolt 1, at the full final torque.



Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

9 Maintenance

The preferred method of maintaining a light unit is to periodically and systematically replace the unit and return it to the maintenance shop for renovation. As an alternative, the light unit can be serviced in the field. However, it is recommended that field servicing be limited to cleaning the lens only as described in Section 9.1. For extensive field service, refer to Sections 9.2-9.9 and Section 10 for instructions and spare parts kits.



IMPORTANT

IMPORTANT:

***Do not open any light unit unless the warranty period has expired.
Opening a light unit will void the warranty***

9.1 Cleaning Lenses

With a compressed air blast or suitable brushes, remove all accumulated debris from the light channel. Clean the outer surface of the prism with a detergent solution. If the lens is coated with a substance impervious to the detergent, a suitable solvent should be sparingly applied with a wad of cotton or a patch of cloth on the end of a wood splint. After the solvent has acted the remaining solvent and softened coating should be removed with a clean piece of cotton or cloth. Care should be taken to avoid excessive contact between the solvent and the lens seal. Remove all remaining solvent from lens and seal. A gentle air blast may be used.

9.2 Light Module Replacement



CAUTION

CAUTION:

Power supply is hot when light unit is energized and remains hot for a short time after the light unit is turned off

Refer to Section 10 to determine the appropriate replacement kit for your light unit. **Remove and secure power to the light unit.** Remove the six bolts and separate the optical assembly from the light base. Disconnect the light unit lead(s) from the isolation transformer(s). Turn the optical assembly upside down and remove the six screws holding the inner cover to the light housing. Disconnect the power supply lead(s) from the LED assemblies. Remove the two cap screws holding the light reflector and LED board to the block heat-sink. Leave the heat-sink fastened to the optical housing. Clean the inside surfaces of the lens(es) with denatured alcohol. Using a thin layer of thermal grease between the bottom of the board and the block heat-sink, place the new LED board on the block heat-sink. Align the small hole and slot of the LED board with that of the heat-sink. Be sure to keep the new light reflector clean and free of contaminants. Insert the new light reflector's alignment pins into the small hole and slot of both the LED board and heat-sink beneath the board. Tighten the screws to 18-20 in-lbs [2.03-2.26 N-m]. Connect the power supply leads to the new LED assemblies. Inspect the power cord terminals for signs of corrosion. Replace power cord assemblies per Section 9.5. Inspect/replace the optical housing's O-ring gasket per Section 9.3. Assemble the inner cover onto the light housing. Tighten the mounting screws to 35-40 in-lbs [3.95-4.52 N-m]. Perform a pressure test as described in Section 9.6. Connect the light unit lead(s) from the isolation transformer(s). Clean the mounting flange area of the light base. Secure the light to the base per Section 8.1.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

9.3 Gasket Replacement

Every time the light unit is opened, the gasket must be closely examined and replaced, if necessary. Any gasket that is stretched, torn, has permanent set, or some other defect which would prevent it from forming a watertight seal must be replaced with a new gasket. Refer to Section 10 to determine the appropriate replacement kit for your light unit.



NOTICE

NOTICE:

A bad gasket seal is the most common cause of inset light unit leaks. It is strongly recommended that a new gasket be installed every time the light unit is opened.

Remove the old gasket from the groove in the inner cover using a plastic (or comparably soft) tool. Carefully clean the inner cover's gasket groove and the mating sealing surface on the optical housing. Take care not to damage the sealing surfaces or the new gasket. Coat the gasket with a thin layer of Dow Corning FS 1292 or equal lubricating grease. Position the new gasket in the center of the groove and press it into place. Torque the inner cover screws to 35-40 in-lbs [to 3.95-4.52 N-m]. Perform a pressure test as described in Section 9.6. Connect the light unit lead(s) from the isolation transformer(s). Clean the mounting flange area of the light base. Install the light unit into the light base per Section 8.1.



NOTICE

NOTICE:

The groove is designed to be wider than the gasket. This provides room for the displacement of the gasket when compressed between sealing surfaces. Properly tightened screws are important for obtaining a complete seal.

9.4 Lens Replacement

If a lens is broken, leaks, or is badly pitted or scarred, it must be replaced. It is highly recommended that this task be performed in a clean shop environment. Lens replacement kits contain all necessary parts to change a lens. Arctic kit replacement kits include replacement lenses for units with arctic kits. Refer to Section 10 to determine the appropriate replacement kit for your light unit. **Remove and secure power to the light unit.** Separate the optical assembly from the light base by removing the six bolts. Disconnect the light unit lead(s) from the isolation transformer(s). Turn the optical assembly upside down and remove the six screws holding the inner cover to the optical housing. Disconnect the power supply lead(s) from the LED modules. Remove the two screws holding the light reflector and LED board to the block heat-sink. Carefully remove the LED board with reflector attached and place aside in a clean location. Leave the heat-sink attached to the optical housing. If you are replacing an arctic kit, first remove the #6 tie-down screw, strain-relief clip, and spacer which fasten the end of the arctic kit's flexible circuit heater to the optical housing. Otherwise, remove the two lens retaining bracket screws from the optical housing. Remove the lens-retaining bracket and discard the lens-retaining gasket. Firmly push the lens/boot assembly from the outside of the optical housing; discard the old lens and boot. If you are replacing an arctic kit, discard the arctic kit assembly as an electronic assembly. Thoroughly clean the lens opening with denatured alcohol and allow it to dry. Inspect the lens opening for scratches or pits; a damaged lens opening surface will not seal properly. Place the new lens boot over the

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

replacement lens. Apply a thin coat of Dow Corning FS 1292 grease or equal over the entire outside surface of the lens boot. Align the lens/boot assembly in the lens opening and press it into place. Verify that the lens boot is not pinched in the lens opening. Using the new lens retaining gasket, fasten the lens retaining bracket to the optical housing. Torque the mounting screws to 55-60 in-lbs [6.21- 6.78 N-m]. If you are replacing an arctic kit, use the provided #6 screw, strain-relief clip, and spacer to fasten the arctic kit's heater to the optical housing as shown in Figure 1. Torque the arctic kit screw to 8-11 in-lbs [0.90-1.24 N-m]. Re-install the LED module(s) per Section 9.2. Connect the power supply leads to the LED modules. The screw-hole patterns on the bottom cover and optical housing are offset to insure proper alignment. Align all six holes and assemble the inner cover onto the optical housing. Torque the mounting screws to 35-40 in-lbs [3.95-4.52 N-m]. Perform a pressure test per Section 9.6. Clean the mounting flange area of the base. Install the light unit into the base per Section 8.1.

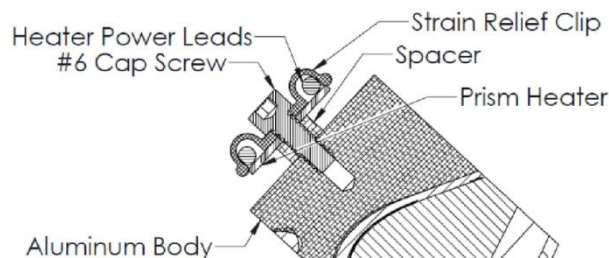


Figure 1: 12" Light Unit Arctic Kit Fastening Cross-Section View

9.5 Power Cord Replacement

Refer to Section 10 to determine the appropriate replacement kit for your light unit. **Remove and secure power to the light unit.** Separate the optical assembly from the light base by removing the six bolts. Disconnect the light unit lead(s) from the isolation transformer(s). Disconnect the power supply leads from the power cord terminals. Remove the power cord by unscrewing the retaining collar. Clean the mounting surfaces with denatured alcohol and allow them to dry. Apply a thin coat of Dow Corning FS 1292 or equal grease to the mounting flange of a power cord. Apply a drop of Loctite 243 to the power cord threads. Screw the power cord retaining collar onto the adapter; refer to Figure 6A for proper inner cover/feed-thru orientation. Torque the retaining collar to 25-30 in-lbs [2.82-3.39 N-m]. Reconnect the power supply leads to the power cord terminals. Inspect/replace the inner cover's gasket per Section 9.3. The screw-hole patterns on the bottom cover and optical housing are offset to ensure proper alignment. Align all six holes and assemble the inner cover onto the optical housing. Torque the mounting screws to 35-40 in-lbs [3.95-4.52 N-m]. Perform a pressure test per Section 9.6. Connect the light unit lead(s) to the isolation transformer(s). Clean the mounting flange area of the support ring. Install the light unit into the light base per Section 8.1.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

9.6 Pressure Test

A light unit should be subjected to a 20-psig (138-kPa gauge) air pressure test to verify that it is waterproof whenever it has been opened or components have been replaced. A tire valve style pressure fitting is located on the bottom of the inner cover. Pressurize the unit to 20-psig (138-kPa gauge) then place it in a tub of water or use a soap solution to locate escaping air bubbles. Carefully inspect the areas around the lens, inner cover seal, and power cord adapter for leaks. Relieve the internal air pressure before installing the light unit or attempting to repair a leak.



WARNING

WARNING:

Do not exceed 20-psig (138-kPa gauge) when pressure testing the light unit. Serious injury and/or permanent damage to the light unit may result if a higher air pressure is used. Once the pressure test is complete, be sure to relieve the air pressure.

9.7 Power Supply Replacement



CAUTION

CAUTION:

Power supply is hot when light unit is energized and remains hot for a short time after unit is turned off.

Refer to Section 10 to determine the appropriate replacement kit for your light unit. **Remove and secure power to the light unit.** Separate the light unit from the base by removing the six bolts. Installation tool, Crouse-Hinds P/N 19999, will ease the removal of the light unit. Disconnect the light unit lead(s) from the isolation transformer(s). Turn the optical assembly upside down and remove the six screws holding the inner cover to the optical housing. Disconnect the power supply leads from the power cord terminals and LED Module and arctic kit, if applicable. On P3 units, disconnect the contact closure cables from the power supply. For units with an arctic kit (heater), disconnect the heaters' power and temperature sensor cables from the power supply. Remove the three screws holding the power supply to the power supply bracket. Configure the jumper settings for the new power supply per Table 3.



IMPORTANT

IMPORTANT:

The jumpers must be placed in the correct position(s) for proper operation of the appropriate fixture. The heater will remain on indefinitely with the temperature sensor disconnected.

Reconnect internal cables per appropriate wiring diagram in Figures 11. Discard the old power supply as an electronics assembly. Apply a thin layer of thermal grease to the mating surface of the new power supply. Torque the mounting screws to 22-24 in-lbs [2.49-2.71 N-m]. Reconnect the power supply to the feed-thru terminals and LED assembly. Inspect/replace the optical housing's gasket per Section 9.3. Assemble the inner cover onto the optical housing. Tighten the mounting screws to 35-40 in-lbs [3.95-4.52 N-m]. Clean the mounting flange area of the base. Install the light unit into the base per Section 8.1.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

9.8 Power Supply Bluetooth Board Replacement

Refer to Spare/Replacement Parts List for Bluetooth Board replacement for your light unit. **REMOVE and SECURE power to the light unit.** Disconnect the light unit lead from the isolation transformer. Disconnect the LED cable from the expansion board, located on top of the main power supply in the inner cover assembly. Remove the single nut, lock washer, and washer above the expansion board, which secures the expansion board to the power supply underneath it. Note: There are 2 spacer washers between the expansion board and the power supply bracket. Remove the expansion board from the power supply by gently pulling the expansion board up and away from the power supply. Discard the old expansion board as an electronics assembly. Replace the 2 spacer washers, align and engage the connectors of the new expansion board with the power supply and press it into place. Replace the flat washer, lock washer and nut on to the mounting screw. Torque the nut to **16-18 in-lbs**. Connect the ends of the LED cables to the new expansion board. Inspect the feed-thru terminal for signs of corrosion. Replace feed-thru assembly per Section 9.5 if corrosion is found. Inspect/replace the optical housing's gasket per Section 9.4. Assemble the inner cover onto the light housing. Tighten the mounting screws to **30 in-lbs**. Perform a pressure test as described in Section 9.6. Connect the light unit lead from the isolation transformer. Clean the mounting flange area of the light base. Secure the light to the base per Section 8.1.

9.9 Cleanliness and Workmanship

Service life depends upon the entire assembly being waterproof. All surfaces must be clean, dry and free of all foreign matter if the light unit is to operate for extended periods without requiring maintenance.

9.10 Maintenance Program

In order to ensure maximum light unit life, the installed units should be subject to a maintenance program in accordance with the following:

A daily operation check should be made of the lighting units. The lights should be energized and visually inspected. If any units are out, the location of the unit should be recorded and the LED modules replaced per Section 9.2 at a time when the circuit is de-energized.

- 9.10.1 Regular cleaning is necessary to ensure that inset lighting units operate at maximum efficiency. The lens and channel in front of the lens should be cleaned periodically with a soft cloth and solvent. The weather and the location of the units will dictate the regularity and type of cleaning.
- 9.10.2 Snowplow operators should exercise extra care not to strike the light units with snowplow blades. After snow removal operations, inspect all light units to locate and replace if necessary, any damaged light units. Passes over the light rows should be made with a power broom only if practical. Whenever snowplows must traverse in-pavement light units, they should be traveling at less than 5 mph or have the blades lifted clear of the units. Recommended snow removal techniques are described in FAA AC 150/5200-23.
- 9.10.3 The light is designed to exclude both ground and surface water from entering. If the lights are not properly maintained (i.e., bolts tightened and seals in good condition) water may enter the unit. To prevent this from occurring, it is recommended that each unit be inspected for the presence of water at least once a month. More frequent inspection is desirable during and following rainy seasons.
- 9.10.4 Optical assembly mounting bolts should be checked for proper torque per Section 8.2. Light units in and around the touchdown zone area are especially prone to vibration and shock damage if the mounting bolts

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

are not properly torqued. The mounting surface of the light base must be clean and free of foreign matter when checking mounting bolts.

- 9.10.5 If any light unit contains water, the water should be removed and the entire light unit cleaned and dried. Perform a pressure test per Section 9.6 to locate the source of the leak. Replace the inner cover gasket and/or lens boot(s), depending on the source(s) of the leak, per Sections 10 and/or 9.4.

10 Spare/Replacement Parts List

Item	Part Number	Description
	LED Module Replacements	
1	21797	Yellow LED PCB
2	21794	Red LED PCB
	Prism/Lens Replacements	
3	21837-TY	Prism Replacement Kit (Yellow Color Side)
4	21644-4	Arctic Kit Replacement Kit (Yellow Color Side)
5*	21837-C	Prism Replacement Kit (Red Color Side)
6*	21644-2	Arctic Kit Replacement Kit (Red Color Side)
	Power Supply Replacements	
7	21696-H-1205	Power Supply (Yellow Side)
8	21696-HT-1205	Power Supply, Arctic Kit (Yellow Side)
9	21696-1	Power Supply (Red Side)
10	21696-2	Power Supply Arctic Kit (Red Side)
	Power Cord Assembly	
11	K3326992	Lead Assembly
	Seal, Bottom Cover	
12	21140	Gasket, Bottom Cover, Style III
	2-Piece Lock Washer Kit	
13	21647-2	2-Piece Washer Replacement Kit, QTY 6 (For mounting 12" light units into base canister. *Washers are included with LED module and power supply replacement kits.)
14	21647-XX	2-Piece Washer Replacement Kit, Customer Specified QTY
	Installation Bolts	
15	21716-XX	Screw, Hex Head, 3/8-16 UNC, 410 Black Oxide Stainless Steel meeting FAA EB 83A, Customer Specified Length (see Table 2 below).
	Cable Replacements	
16	50705-1	Cable Assembly with Ferrite
17	50612-2	BLUETOOTH BOARD (OPTION 1 ONLY)
18	21616-6	Cable assembly for LOGITRAC Monitoring

*Kit includes prism/lens, lens boot, lens gasket, lens bracket, bracket screws.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

Table 1: Spare/Replacement parts

P/N	Length (IN)		P/N	Length (IN)
21716-07	0.88		21716-22	2.75
21716-08	1.00		21716-24	3.00
21716-09	1.13		21716-26	3.25
21716-10	1.25		21716-28	3.50
21716-11	1.38		21716-32	4.00
21716-12	1.50		21716-36	4.50
21716-14	1.75		21716-48	6.00
21716-16	2.00			
21716-18	2.25			
21716-20	2.50			

Table 2: 21716-XX bolt lengths

11 Troubleshooting

If a light unit is under warranty, please contact Crouse-Hinds Airport Lighting for assistance. DO NOT open a unit. If the unit is opened, the warranty is VOID. If the warranty period has expired and troubleshooting is required, follow the steps below to find the root cause. Replacement parts will be required for testing of the different components of the light unit.



WARNING

WARNING:

Do not remove the fixture from the base can while the fixture is powered. Dangerous voltage may be present on the primary and secondary sides of the isolation transformer.

Contact Crouse-Hinds Airport Lighting for assistance prior to operating a failed fixture. There may be dangerous voltage present on the input AC pins of the power supply.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

11.1 Visual Inspection

Follow the steps in Section 9.7 to open the fixture. Verify all the wires are not pinched or damaged and that the wire insulation is intact. Verify the input AC is connected to the feed thru (see Figure 5). Verify the power supply connections and appropriate jumper setting per Figures 10, 11 & 12 and Table 3.

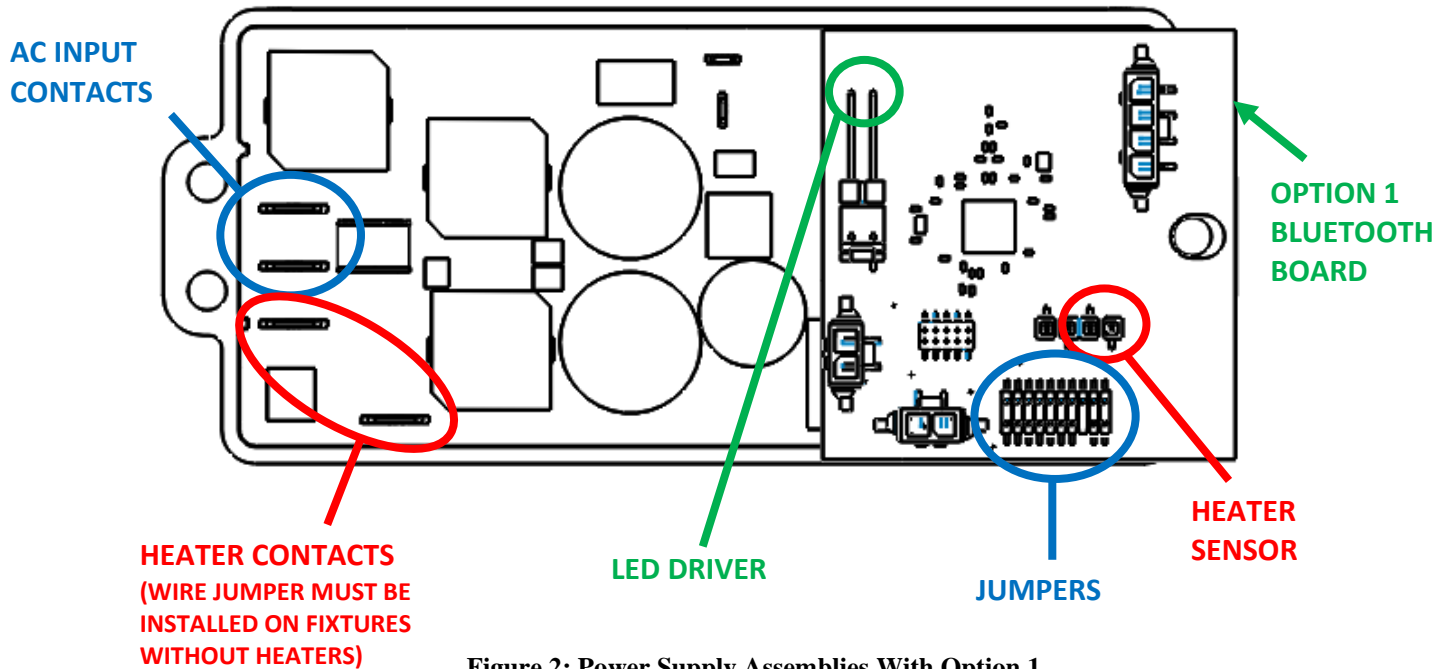


Figure 2: Power Supply Assemblies With Option 1

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

For all other color configurations (green, red, & yellow), the power supply is set up as follows:

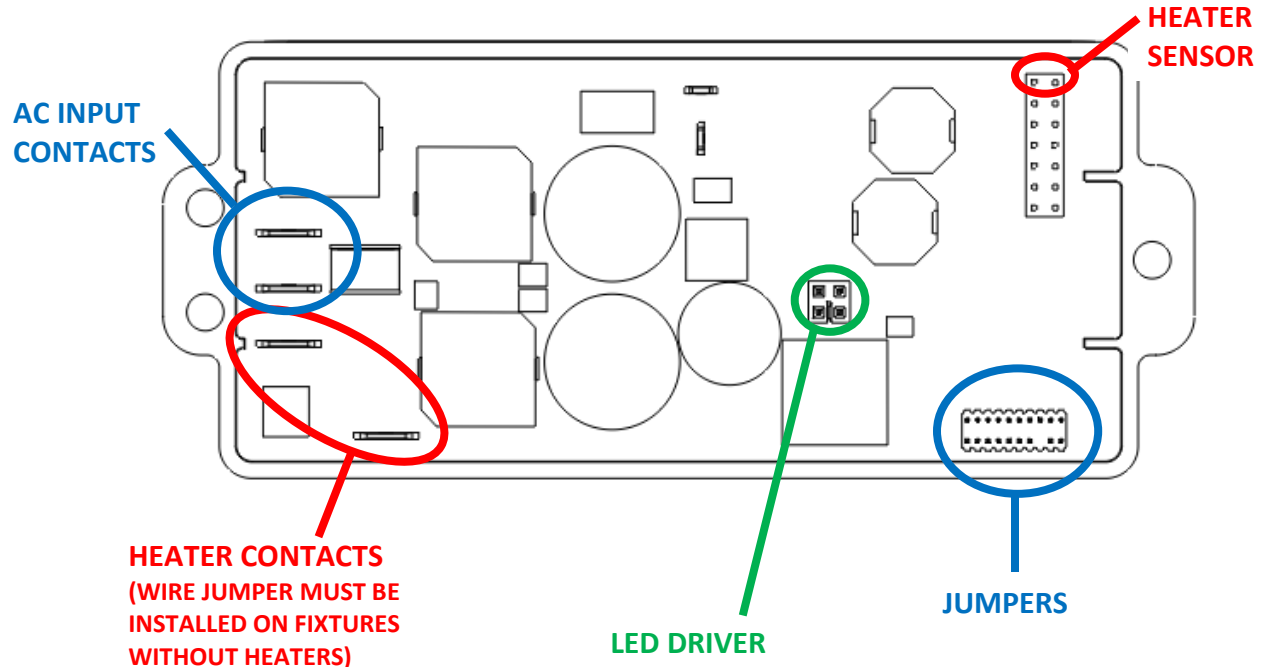


Figure 2: Power Supply Assemblies Without Option 1



IMPORTANT

IMPORTANT:

The jumpers must be placed in the correct position(s) for proper operation of the appropriate fixture.

The heater will remain on indefinitely with the temperature sensor disconnected.

Replace any damaged or burned cables. Replace damaged LED module(s) per Section 9.2. Replace damaged power supply(ies) per Section 9.7. Refer to Section 10 to determine the appropriate replacement kit for your light unit.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

12 Tables & Figures

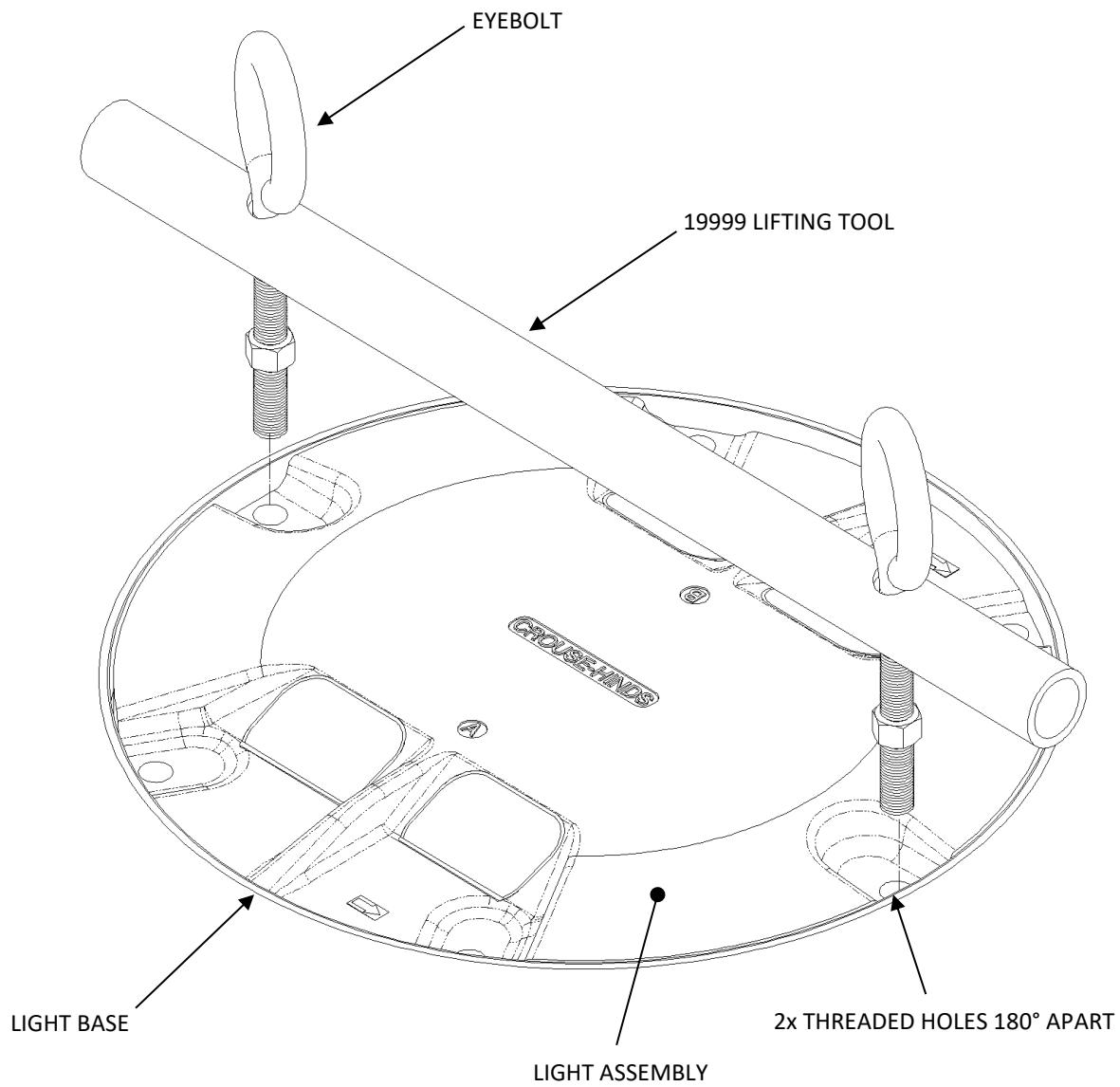


Figure 3: 19999 Installation (Lifting) Tool

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

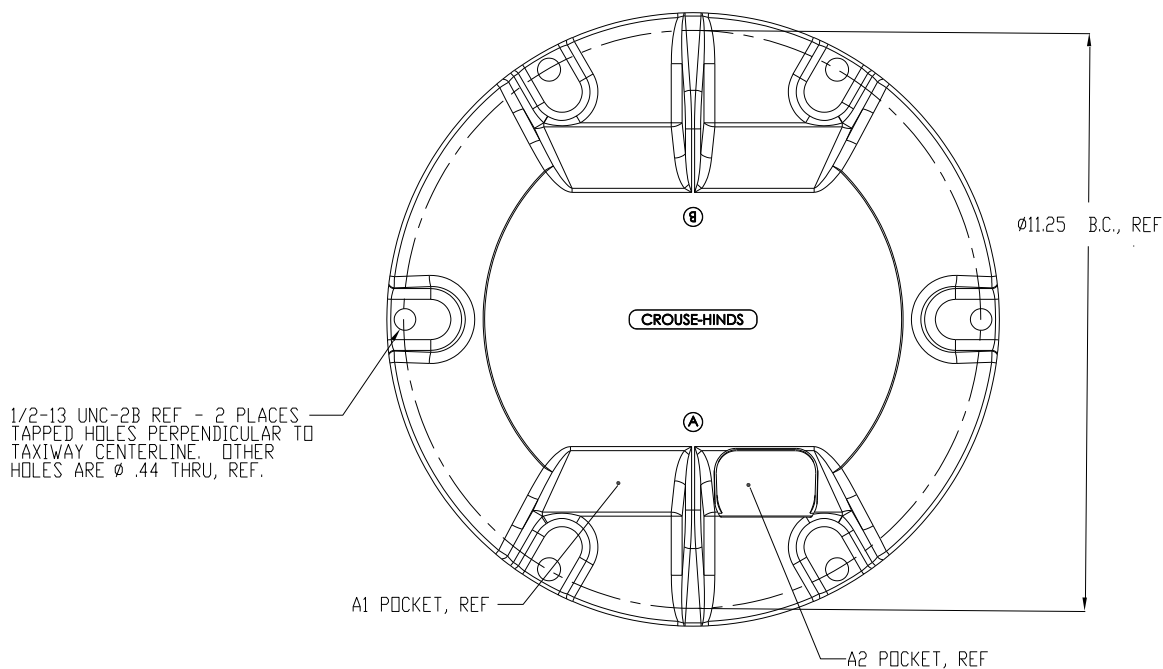


Figure 4: Top View of Light Unit, Bidirectional Configuration

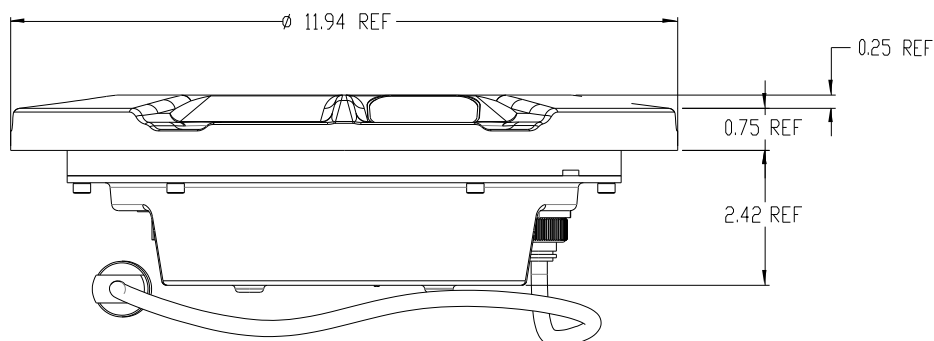


Figure 5: Side View of Light Unit, P1 Configuration Shown

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

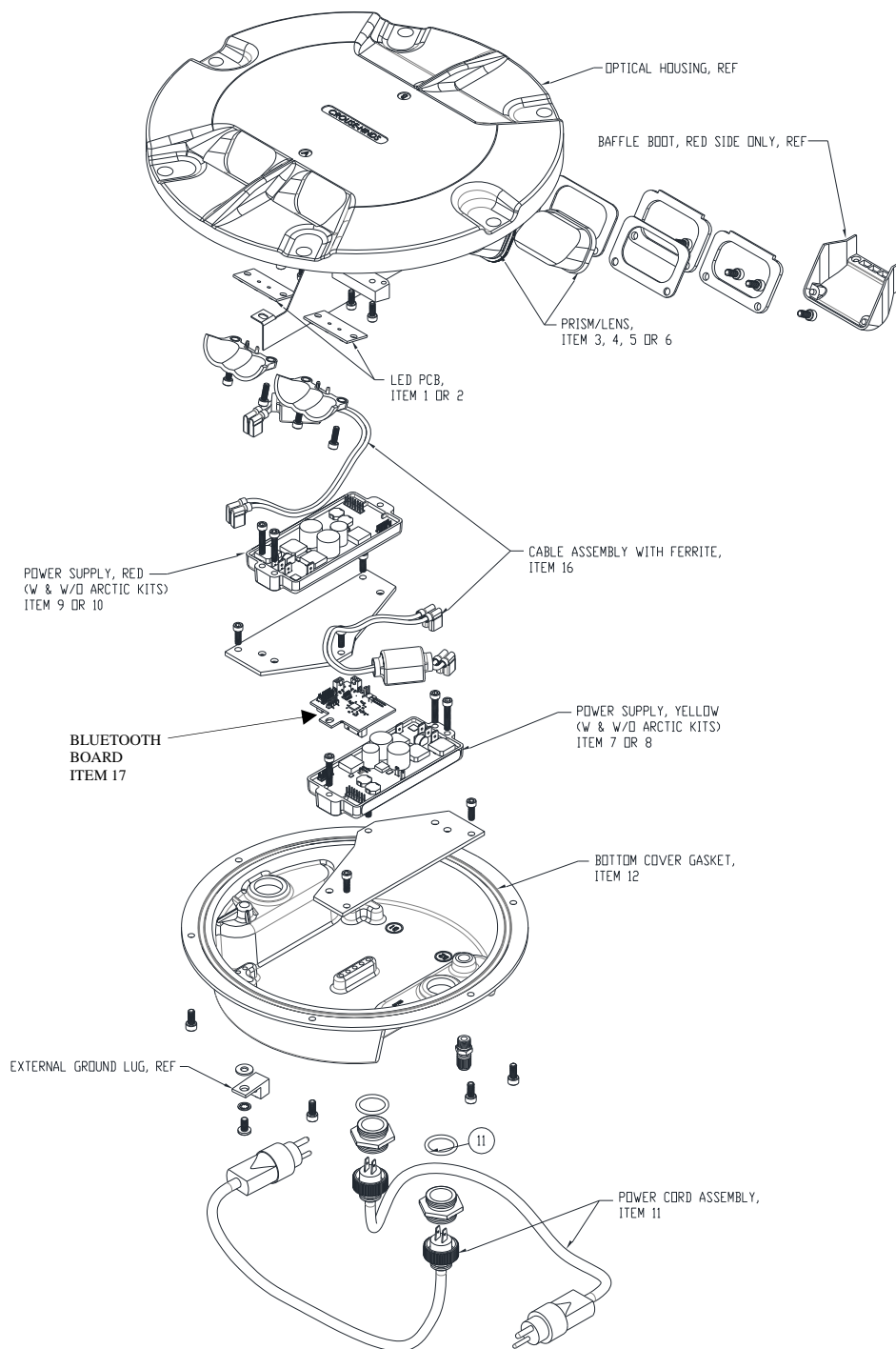


Figure 6A: Light Unit Exploded View, two color Configuration Shown

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

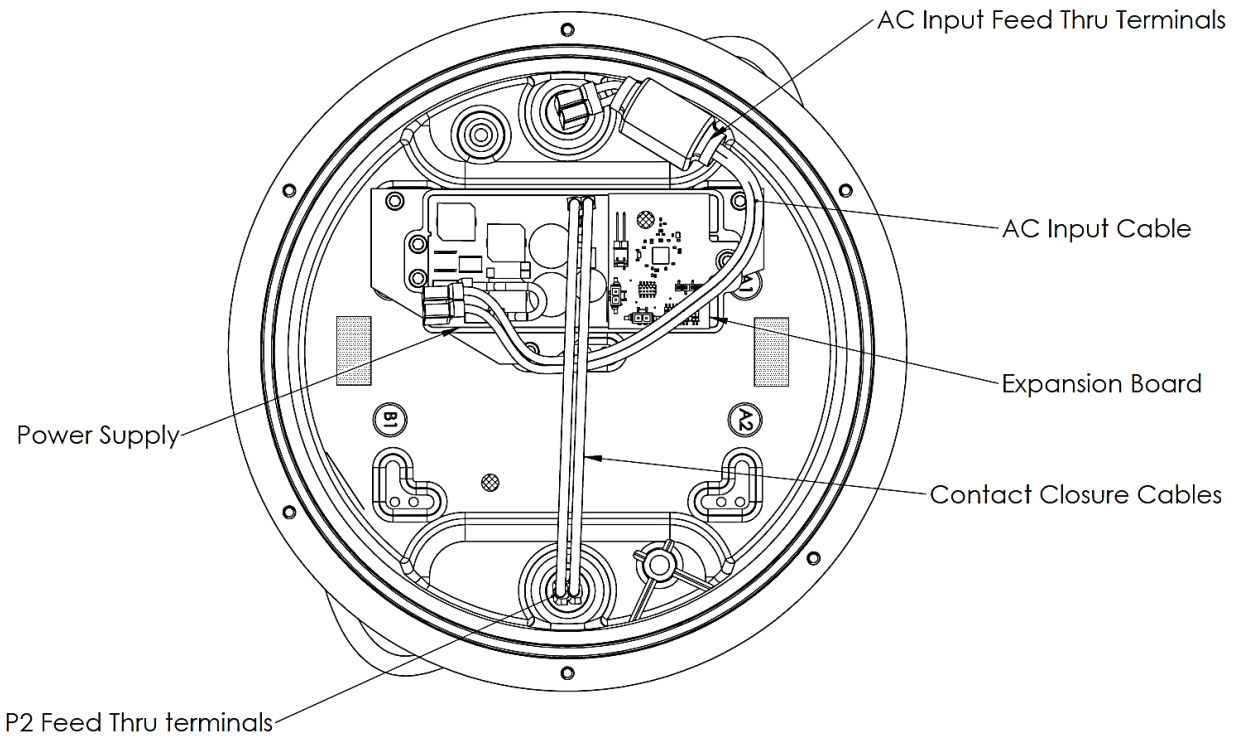


Figure 6B: Installation View of Inner Cover P3 option

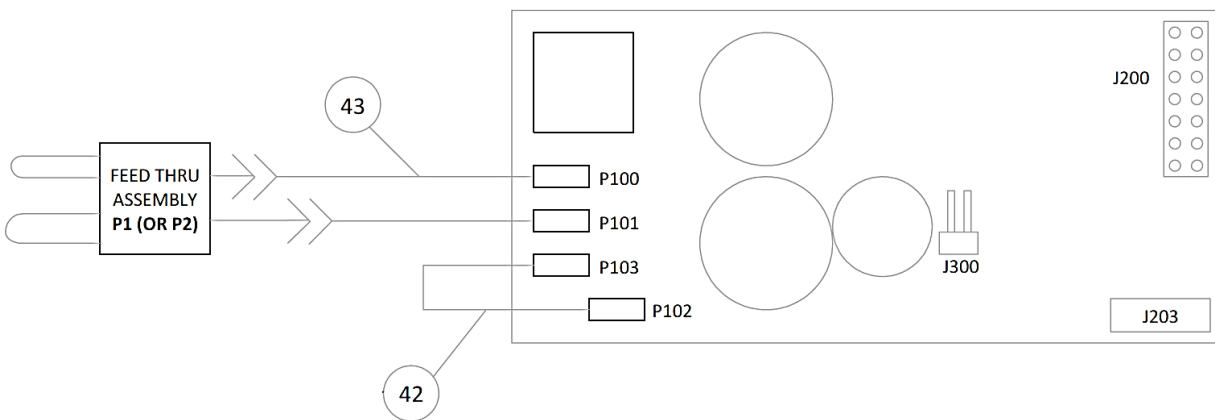


Figure 7: Power Supply Wiring Diagram without Heater, One Power Supply per Light

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

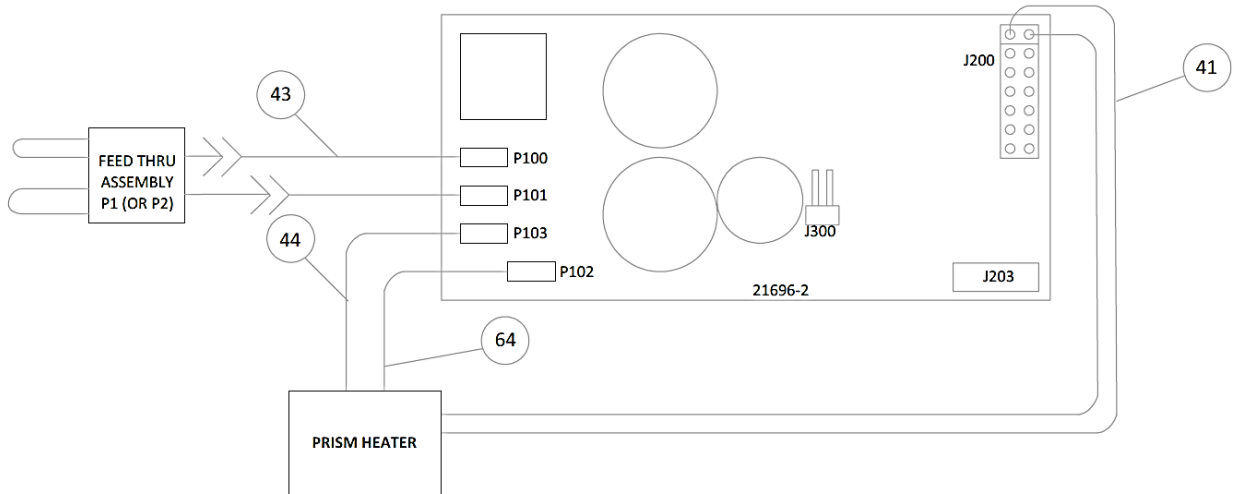


Figure 8: Power Supply Wiring Diagram with Heater, One Power Supply per Light and Heater

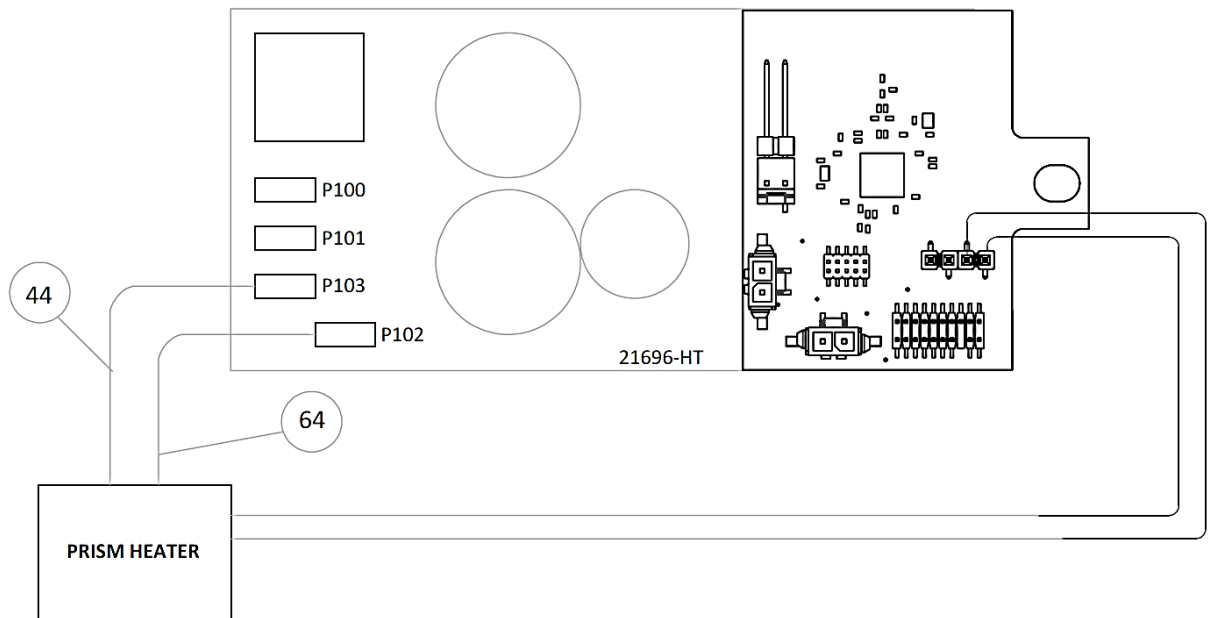
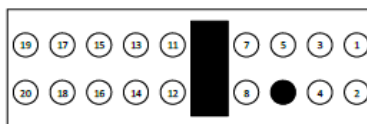


Figure 9: Power Supply Wiring Diagram with Heater, One Power Supply per Light and Bluetooth

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

JUMPER DIAGRAM 5

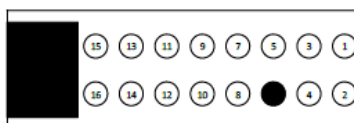


JUMPERS: 1

J203 PINS 9-10

**FIGURE 10: PART NUMBER 852GAP1-YN-YF-12-XX-X GUARD LIGHT
POWER SUPPLY FIRST ON (YO) J203 JUMPER POSITION**

JUMPER DIAGRAM 7



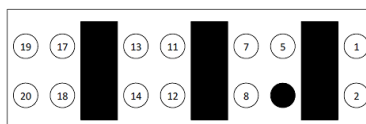
JUMPERS: 2

J203 PINS 19-20

J203 PINS 17-18

**FIGURE 11: PART NUMBER 852GAP1-YN-YF-12-P1-X GUARD LIGHT
POWER SUPPLY FIRST OFF (YF) J203 JUMPER POSITION**

JUMPER DIAGRAM 26



JUMPERS: 3

J203 PINS 15-16

J203 PINS 9-10

J203 PINS 3-4

**FIGURE 12: PART NUMBER 852SAP1-YN-YF-12-P1-X STOP BAR
POWER SUPPLY J203 JUMPER CONFIGURATION**

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

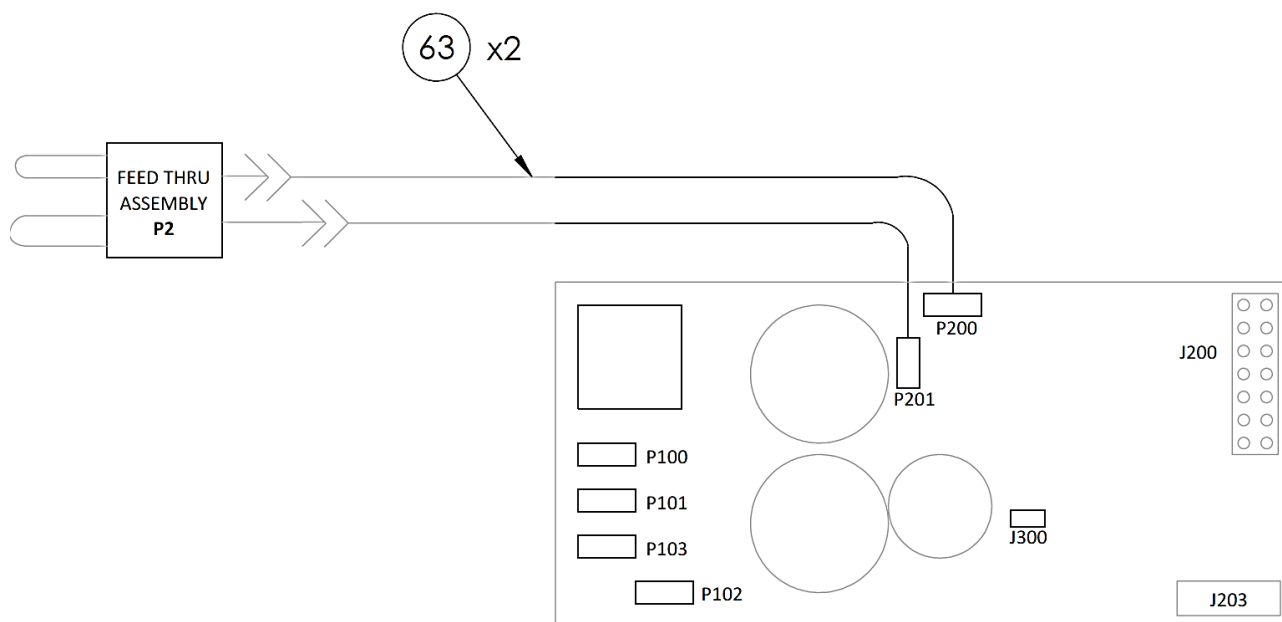


Figure 13: Power Supply Wiring Diagram with Logitrac Monitoring

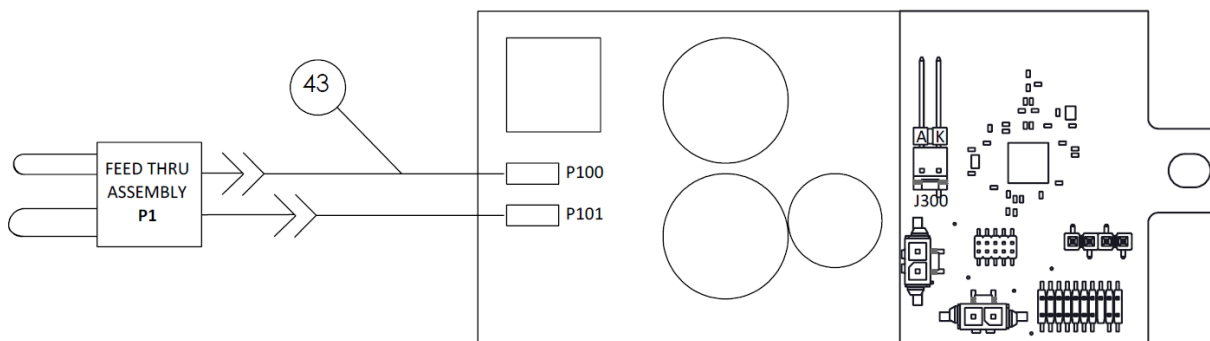


Figure 14: Power Supply Wiring Diagram without Heater and with Bluetooth

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

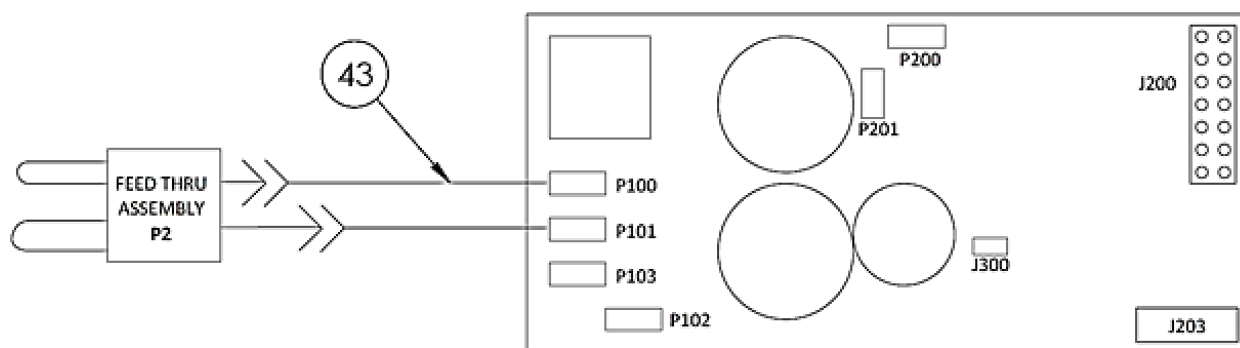


Figure 15: Power Supply Wiring Diagram without Heater and without Bluetooth for two plug option

PART NUMBER	FAA TYPE	LIGHT COLOR	A1 POCKET COLOR	A2 POCKET COLOR	POWER SUPPLY JUMPER SETTING FIGURE, A1 POCKET	POWER SUPPLY JUMPER SETTING FIGURE, A2 POCKET	ISOLATION TRANSFORMER SIZE W/O HEATER	FIXTURE WATTAGE USE W/O HEATER	ISOLATION TRANSFORMER SIZE WITH HEATER	FIXTURE WATTAGE USE WITH HEATER	USED WITH LOGITRAC
852GAP1-YN-YO-12-P1-X	L-852G	YELLOW	YELLOW	NONE	5	N/A	65W	30.7	100W	64	No
852GAP1-YN-YF-12-P1-X	L-852G	YELLOW	YELLOW	NONE	7	N/A	65W	30.7	100W	64	No
852SAP1-RN-NF-12-P1-X	L-852S	RED	RED	NONE	26	N/A	65W	30.7	100W	64	Yes*
852GSAP1-YR-YO-12-P2-X	L-852GS	YELLOW/RED	YELLOW	RED	5	26	2 X 65W	2 X 30.7	2 X 100W	64 & 80	No
852GSAP1-YR-YF-12-P2-X	L-852GS	YELLOW/RED	YELLOW	RED	7	26	2 X 65W	2 X 30.7	2 X 100W	64 & 80	No
852GAP1-YN-YO-12-P3-X	L-852G	YELLOW	YELLOW	NONE	5	N/A	65W	30.7	100W	64	Yes**
852GAP1-YN-YF-12-P3-X	L-852G	YELLOW	YELLOW	NONE	7	N/A	65W	30.7	100W	64	Yes**

* Logitrac monitoring compatible with Fail-Open pulses. No additional wiring or programming required.

** Logitrac monitoring compatible with Contact-Closure; Additional wiring to A2 pocket required. (see Fig 6B and Fig 13.)

Table 3:
FIXTURE IDENTIFICATION, WATTAGE, AND RECOMMENDED TRANSFORMER SIZE

NOTE, FOR COMBINATION L-852G/S FIXTURE, USE APPROPRIATE SIZE ISOLATION TRANSFORMER INDICATED FOR COLOR SIDE IT IS CONNECTED TO.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

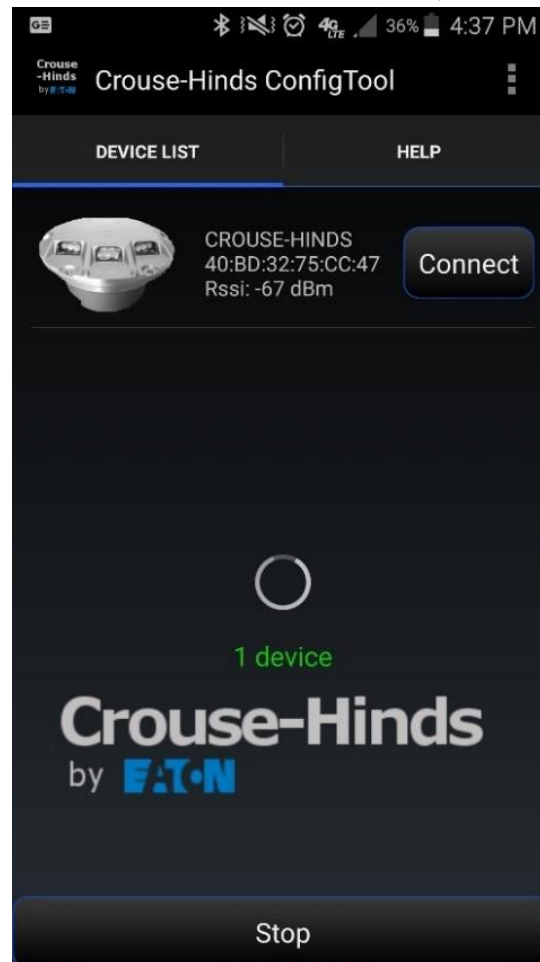
13 Appendix A: Bluetooth Instruction

Contact Eaton Crouse-Hinds Airport Lighting on Bluetooth App information.
The Fixture Configuration Application is an Android based application that can be used to configure light fixtures as well as to gather diagnostic information about the fixtures. Section 13.1 provides user instructions for running the app.

13.1 Running the Application

13.1.1 Running the App and Connecting to a Fixture

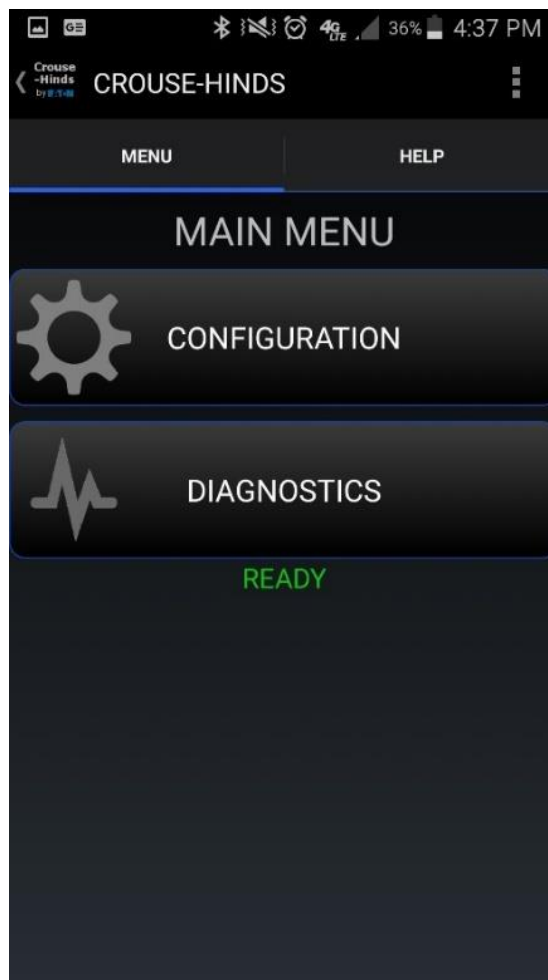
Start the Configuration App by clicking the 'Crouse-Hinds ConfigTool' the icon. All available fixtures will be displayed on the screen. Click on 'Connect' to connect to fixture.



Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

13.1.2 Features

The Configuration App has two features; Diagnostics and Configuration. The Diagnostics feature can be used to gather data about the fixture, while the configuration feature can be used to configure the fixture.



13.1.3 Configuration Feature

In order to run the Configuration feature tap on 'Configuration'.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

13.1.3.1 First ON/First OFF

Whether the fixture starts blinking as first on or first off can be changed by clicking 'SET FIRST ON' or 'SET FIRST OFF' button. The change will take effect the next time the light fixture is turned on.



13.1.3.2 Configuration Feature

The phase of the fixture can be changed by clicking 'SET 0 PHASE' OR 'SET 45 PHASE' button.

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

13.1.3.3 Change Ramp Time

The ramp time of the fixture can be changed by clicking 'DECREASE RAMP' or 'INCREASE RAMP'.



13.1.3.4 Toggle Blinking

Blinking can be toggled by clicking the 'TOGGLE BLINKING' button. Clicking it once will make the fixture stay full on; clicking it again will make the fixture blink again.

Instruction Manual Pro APF Series LED 12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

13.1.4 Diagnostics Feature

In order to run the Diagnostics feature tap on 'Diagnostics.'

13.1.4.1 Operating Data

The following data is displayed under Operating Data.

- Input Current
- Current Step
- PFC Voltage
- LED Voltage
- LED Current
- 12V Bias Voltage
- Line Frequency

OPERATING DATA	
Input Current:	0.102
Current Step:	B1
PFC Voltage:	2.765
LED Voltage:	0
LED Current:	10.312
12V Bias Voltage:	0.034
Line Frequency:	40.016
OK	

13.1.4.2 Temperature Data

The following data is displayed under Temperature Data.

- Heater Temp
- Heater Max Temp
- MCU Temp
- MCU Max Temp
- MCU Stored Temp

TEMPERATURE DATA	
Heater Temp:	-10C
Heater Max Temp:	25C
MCU Temp:	57C
MCU Max Temp:	59C
MCU Stored Temp:	59C
OK	

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

13.1.4.3 Operating Hours

The following data is displayed under Operating Hours.

- Total Hours
- B1 Hours
- B2 Hours
- B3 Hours
- B10 Hours
- B4 Hours
- B30 Hours
- B5/B100 Hours

OPERATING HOURS	
Total Hours:	0.072
B1 Hours:	0
B2 Hours:	0
B3 Hours:	0
B10 Hours:	0
B4 Hours:	0
B30 Hours:	0
B5/B100 Hours:	0.007
OK	

13.1.4.4 Error Logs

The following data is displayed under Error Logs.

- PFC OV
- PFC UV
- PFC OC
- 12V Bias
- LED Voltage
- LED DC OC
- LED Peak OC

ERROR LOGS	
PFC OV:	0
PFC UV:	0
PFC OC:	0
12V Bias:	0
LED Voltage:	0
LED DC OC:	0
LED Peak OC:	0
OK	

Instruction Manual
Pro APF Series LED
12 inch unibody FAA L-852G, L-852S & Combination L-852G/L-852S

13.1.5 Help

The help screen displays helpful information about the Configuration App.

