MILITARY AIRFIELD LIGHTING SOLUTIONS

Carmanah has been a trusted military and GSA equipment supplier for over 15 years. Our solar-powered airfield products thrive in remote, austere operations, and have proven themselves durable and reliable for militaries worldwide. We have installed more solar airfields worldwide than any other company and are the only supplier to offer a CAT 1, ICAO-compliant solar airfield.

Our products are ideal for both temporary and permanent operations, including:

- Forward operating bases
- Main bases, forts and camps
- Training facilities
- Helipads
- Border security sites

All products are configured to meet your specific requirements including: optics, power (battery and solar), exterior finish and our secure wireless control.

Approach Lighting System (ALS)

Solar powered system meets FAA and ICAO photometric. Options for sequenced flashing lights (SFL), steady burning, visible and infrared (IR) output and stepped intensities. Easily re-configurable to a range of ALS options.

PAPI

Patented, LED-based optics achieve the lowest power consumption, highest intensity light and sharpest red/white transition in the industry. ICAO, FAA and STANAG compliant.

Signs

Solar Engine Power Supplies (SEPS) power our signs and wind cones. Avoids cabling, trenching and limits airfield downtime.

Wind Cone

Solar powered system meets FAA and ICAO photometric. Options for sequenced flashing lights (SFL), steady burning, visible and infrared (IR) output and stepped intensities. Easily re-configurable to a range of ALS options.

Apron And Taxiway Edge Lights

High-performance, self-contained and low-maintenance. Visible or infrared (IR) output. ICAO, FAA and STANAG compliant.

Wireless Control

Airfield lighting control and monitoring options include wireless Handheld Controller, laptop monitoring, control tower integration and ARCAL for pilot activated lighting.
- On page 3: Add a new small apron towards the end of the taxiway (far right). At the side of the apron that meets the taxiway, make the lights (dots) red. Include no other lights around this apron. Add a callout box for "Barricade lights" with the text "Portable safety barricades provide a reliable hazard marking solution for identifying closed runways, construction zones, and other dangerous air/field obstacles." Use the image of the A650 (same as apron edge lights).

**WHY CHOOSE CARMANAH AIRFIELD LIGHTS?**

- **Runway Edge Lights**: Durable, portable and low-maintenance for permanent, temporary or emergency installations. Visible or infrared (IR) output and variable light intensities. ICAO, FAA and STANAG compliant.

- **Elevated Runway Guard Lights (ERGL)**: Provides 24-hour unidirectional flashing to reduce airfield incursions at runway and taxiway intersections.

- **Runway Threshold Lights**: Configurable solar-powered system ideal for rapid deployment, off-grid or remote helipads. ICAO, FAA and STANAG compliant.

- **PAPI**: Aids in rapid, portable deployment of Carmanah lights for airfields, helipads and other applications. Built to your specifications.

- **Barricade Lights**: Portable solution for identifying closed runways, construction zones and other airfield obstacles.

**MILITARY AIRFIELDS**
Install airfield lighting in minutes with the PALT Portable Airfield Lighting Trailer system.

- Stores and charges 130+ lights for a complete 4000 m runway
- Configurable from 500 - 4000 m runway
- Air transportable and towable to expedite airfield light installation
- Integrated AC and solar charging system ensures airfield lights are always ready

Applications
The PALT combines our rugged cable and transportation trailer product line with our trusted A704, A650, and PAPI solar airfield lights. Our system is ideal for:

- Military, police, airport operators
- Night vision goggle (NVG) and covert operations
- Humanitarian, disaster, and medevac situations

Compliant and Self-contained
Airfield lights are a critical navigation aid for pilots and ours are:

- ICAO and FAA compliant
- Solar-powered = no cabling or civil works required
- Self-contained, integrated, and sealed against water and dust to greater than IP68

Proven in Austere Environments
Used worldwide in military environments for over fifteen years, our airfield lights exceed operational requirements:

- Lightweight, compact, and designed for portability with integrated handles, aviation yellow or olive drab chassis, and military charge ports
- Wirelessly controlled up to 4 km with military-grade encryption
- High efficiency, LED optics
- Third-party tested for performance

The system is easily configured to transport, charge, and control these products:
The PALT utilizes a recognized platform with these key features:

**Features**
- Light tactical trailer (LTT) chassis matches the performance of US military HMMWV and NATO requirements
- Air transportable with lifting points
- Fits in standard cargo container
- Front and rear stabilization bars easily deploy during use
- Changeable tongue for ball mount, pintle hook, or lunette ring towing
- Hydraulic brakes, operating and blackout lights
- Rugged off-road suspension, wheels, and run-flat tires
- Chromoly steel and aircraft aluminum chassis

**Dimensions**
- 4286 mm (169 in) total length, 2276 mm (90 in) width, 1969 mm (78 in) height, 1840 mm (72.5 in) track width
- 1905 kg (4200 lb) max. weight
- 410 mm (16 in) min. ground clearance

To this versatile platform, we add a comprehensive Go Power! industrial-grade solar charging system. Recharge via the sun or any AC outlet with:

**Solar System**
- Large 4x AGM battery bank to recharge the airfield lights’ batteries during storage
- 320 W solar panel array recharges the battery bank when no AC power is available
- 75A battery charger recharges the battery bank quickly when connected to AC power

**Electrical**
- Integrated user readout including battery status, voltage, LVD
- NEMA electrical box with circuit breakers for easy maintenance

**AIRFIELD LIGHTING SPECIFICATIONS**

**Features**
- FAA and ICAO compliant lighting
- A704 white and white/yellow runway edge lights (quantity depends on runway length) + 16x A704 red/green threshold lights + optional A704-1L blue taxiway lights
- Visible and NVG-compatible infrared (IR) output
- Wireless control from up to 4 km (2.5 miles) away
- -40 to 80 °C (-40 to 176 °F) max. operating temperature

**SPECIFICATIONS**

Specifications subject to local environmental conditions.
Specifications may be subject to change.
US and international patents apply. Other patents pending.
“Carmanah” and Carmanah logo are trademarks of Carmanah Technologies Corp.
A704
SOLAR AIRFIELD LIGHT

Meets traditional airfield requirements in an easy-to-install, low maintenance package.

• ICAO and FAA compliant
• Omni and bi-directional options
• Third party tested
• Proven technology platform
• Available in three solar engine sizes

Applications
Medium-intensity runway edge & threshold (MIRL)
High-intensity runway edge & threshold (HIRL)
Simple approach lighting
Taxiway lighting
NVG operations
Emergency airfields
Helipads

Advanced Design
• Improved optical efficiency with latest LEDs
• Up to 25% more power with high-efficiency solar panels
• Reduced standby power consumption
• Multiple solar engine sizes for best value-for-performance

Easy Installation
Limited crew, no trenching, no airfield interruptions. Just place the A704 and it emits light dusk-to-dawn while maintaining its battery. Optional wireless control provides on-demand operation from up to 4 km (2.5 m) away.

Low Maintenance
The A704 integrates solar panels, battery, electronics, and LED light source into a compact, stand-alone unit requiring minimal maintenance. The replaceable battery extends service life well beyond 5 years.

Reliable
The Energy Management System (EMS) monitors all operations to provide consistent output in the harshest environments. Testing to ICAO, FAA and MIL specifications ensures high performance for many years.

Trusted
With thousands of installations worldwide, Carmanah solar LED lights operate year-round at permanent airfields and temporary military installations.
**A704 SOLAR AIRFIELD LIGHT**

**SPECIFICATIONS**

**Optical**
- High-power LEDs meet IES LM-80 lumen maintenance, ensuring consistent photometrics for life of product
- ICAO, SAE25050 (FAA), and FAA EB 67 compliant chromaticity
- NVG-compatible infrared (IR) LEDs
- Steady-on and flash

**Energy Collection**
- High-efficiency cells with blocking diodes
- Maximum power point tracking with temperature compensation (MPPT-TC) for optimal energy collection in all solar conditions

**Energy Storage**
- On-board battery status
- Designed for 5+ year battery life; Replaceable and recyclable
- Optional port for battery charging and cabled operation

**Energy Management System (EMS)**
- Intelligent, microprocessor EMS
- On-board diagnostics and datalogger
- Push button interface for local control
- Autonomous, Temporary, and Emergency Modes

**Automatic Light Control (ALC)**
- ALC adjusts output intensity in response to unusually low amounts of sunlight to ensure continued operation

**Construction**
- Premium, UV-resistant polycarbonate lens
- Powder coated aluminum and polycarbonate chassis with integrated handle
- Waterproof, vented battery compartment

**Temperature**
- -30 to 50 °C (-22 to 122 °F) Optimal
- -40 to 80 °C (-40 to 176 °F) Maximum

**Wind & Ice Loading**
- 644 kph (400 mph) wind; 0.03 psi (22 kg/m²) ice

**Shock & Vibration**
- MIL-STD-202G and MIL-STD-810G

**Ingress**
- EN 60529 IP 67 immersion
- MIL-STD-202G immersion & damp heat cycling
- MIL-STD-810G rain & salt fog

**Compliance**
- CE compliant (non-wireless model only)

**DIMENSIONS AND WEIGHTS**

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<tr>
<th>MODEL</th>
<th>STANDARD</th>
<th>COMPACT</th>
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<tbody>
<tr>
<td>Weight</td>
<td>6.7 kg (15 lb)</td>
<td>4.9 kg (11 lb)</td>
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<tr>
<td>Battery (96E)</td>
<td>4.2V, 24 Ahr</td>
<td>Battery (60K)</td>
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<td>LARGE</td>
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<tr>
<td>Weight</td>
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<td>Battery (200BC)</td>
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**CONFIGURATION**

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<th>MODEL</th>
<th>OUTPUT ▼</th>
<th>SOLAR ENGINE ▼</th>
<th>CHASSIS ▼</th>
<th>CONTROL ▼</th>
<th>CHARGE PORT ▼</th>
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<tr>
<td>A704</td>
<td>WHITE / IR</td>
<td>COMPACT</td>
<td>STANDARD</td>
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<td>NON-WIRELESS</td>
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<td>WHITE / YELLOW / IR</td>
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<td>RED / IR</td>
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**A704 SOLAR AIRFIELD LIGHT**

**THIRD PARTY VALIDATION: PHOTOMETRIC COMPLIANCE**

Refer to table below for additional details.

1. ICAO MIRL (Annex 14, Vol.1, 6.3.9.9)
   FAA L-861 MIRL (AC 150/5345-46, EB67)
   FAA L-862 HIRL (AC 150/5345-46, EB67), step 3 of 5
   Transport Canada MIRL (TP-312, 5.3.10.13)

2. FAA L-861E & L-861SE MIRL (AC 150/5345-46, EB67)
   FAA L-862E HIRL (AC 150/5345-46, EB67), step 3 of 5

3. ICAO Type A (Annex 14, Vol. 1, 6-3)
   ICAO Type B (Annex 14, Vol. 1, 6-3)
   FAA L-810 (AC 150/5345-43, EB67)

4. FAA L-810 vertical divergence; 850 - 890 nm peak

### PEAK INTENSITY

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<tr>
<th>Runway Edge, Approach, Helipad, FATO</th>
<th>Auto Low (cd)</th>
<th>Auto Medium (cd)</th>
<th>Auto High (cd)</th>
<th>Temp Low (cd)</th>
<th>Temp Medium (cd)</th>
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<td>76</td>
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<thead>
<tr>
<th>Taxiway and Apron Edge</th>
<th>Auto Low (cd)</th>
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<th>Auto High (cd)</th>
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<th>Temp Medium (cd)</th>
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<td><strong>ICA0/FAA +</strong></td>
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<td><strong>FAA L-860E/HR, TLOF</strong></td>
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<tr>
<td><strong>L-861 FATO</strong></td>
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<thead>
<tr>
<th>Helipad TLOF &amp; FAT0</th>
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<th>Auto High (cd)</th>
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<tr>
<th>Obstruction</th>
<th>Auto Low (cd)</th>
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<td><strong>FAA L-810</strong></td>
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<tr>
<th>NVG Operations (mW/sr)</th>
<th>Auto Low (cd)</th>
<th>Auto Medium (cd)</th>
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<th>Temp Low (cd)</th>
<th>Temp Medium (cd)</th>
<th>Temp High (cd)</th>
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<td><strong>ICAO/FAA +</strong></td>
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Meets traditional airfield requirements for taxiways and general purpose marking.

• ICAO and FAA compliant
• Greater than 10 cd of intensity
• Dusk-to-dawn or on-demand operation
• NVG compatible IR LEDs available

Applications
Taxiway and apron edge
Construction, barricades and fences
Temporary or permanent markings
Helipads
Hazard marking

Compliant Output

Easy Installation and Relocation
No specialized work crew required. Lights are immediately operational with limited air traffic disruption. The A650 can be quickly relocated for temporary or emergency applications.

Self-contained and Low Maintenance
All components are incorporated within a compact, stand-alone unit. The A650 features a replaceable battery pack that extends the service life beyond five years, reducing the total cost of ownership and resulting in significant cost savings.

Unprecedented Reliability
Energy Management System (EMS) monitors and adapts the brightness to environmental conditions for consistent operation and long life under the toughest conditions.

Designed and Tested to Tough Industrial Standards
MIL-STD-810G: Solar Radiation, Salt Fog; EN 60945: ESD, EMI, EMC; IP68; L70. The A650 is acceptable for barricade and construction applications at Commercial Part 139 Airports under FAA Advisory Circular AC 150/5370-2E.

User Friendly
Easy configuration and programming options including:
on-board user interface, infrared remote and device manager software through USB connection or optional wireless control system offering secure 900 MHz.
**SPECIFICATIONS**

- **Solar Panel**: High-efficiency cells with bypass and blocking diode function. Maximum power point tracking (MPPT) for optimal energy collection.
- **Battery**: Tool-less, replaceable and recyclable best-in-class battery pack with extreme temperature range. Battery status feedback of Good, Charge or Bad (Replace).
- **Light Source**: High power LED. Colour-specific temperature corrected LED drivers provide consistent intensity under all operating conditions.
- **Intensity**: Greater than 10 cd intensity, steady-on (see photometric plots).
- **Flash Patterns**: 256+ (non-wireless). Steady-on mode and flash patterns (wireless).
- **Construction**: Premium grade UV resistant, polycarbonate/polysiloxane co-polymer body and lens material. Double O-ring sealing with waterproof vent.
- **Colours**: Blue, Red, Yellow, Green and White. ICAO and SAE25050 (FAA) compliant chromaticity. NVG-compatible infrared (IR) LEDs (wireless only).
- **Operating Temperature**: -43 to 51 °C (-45 to 124 °F) ambient temperature. The A650 will function up to 190 °F (88 °C) internal and surface temperatures.
- **Storage Temperature**: -43 to 80 °C (-45 to 176 °F).
- **Colour Indicator**: Yes, FAA Eng. Brief 67 compliant.
- **Weight**: 1.6 kg (3.5 lb).
- **Wind Loading**: 644 kph (400 mph).
- **Automatic Light Control (ALC)**: When enabled, ALC will dynamically reduce brightness in response to unusually low amounts of sunlight to ensure continued operation.
- **Radio Receiver**: 900 MHz ISM (wireless).

**PHOTOMETRICS**

**A650 NON-WIRELESS**

Note: Intensity dependent on location. Based on equatorial location of 12-hour night duration and steady-on (001) flash code.

**A650 WIRELESS**

- **4 km (2.5 m) control range**
- **900 MHz with encrypted signal**
- **Control 8 groups of lights independently**

**CONFIGURATION**

- **A650**
  - RED
  - GREEN
  - WHITE
  - YELLOW
  - BLUE
  - NON-SWITCHED
  - SWITCHED*
  - NON-WIRELESS
  - WIRELESS*

*A650 Wireless version must have switch.

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The LED PAPI is the most advanced on the market and has the widest range of configurations:

- Visible and IR output
- Portable and permanent
- ICAO / FAA / STANAG Compliant
- Several power options

**Applications**
Permanent airfields
Temporary airfields
Emergency airfields
Military & NVG operations

**Advanced Optics**
The PAPI and the Abbreviated PAPI (APAPI) use patented, LED-based optics to achieve the lowest power consumption, highest intensity and sharpest white/red transition. It exceeds ICAO / FAA / STANAG requirements to provide a clear approach path to the aviator.

**Easy Installation**
The PAPI works equally well in permanent or temporary locations. Permanent mounting is easy with standard frangible mounting. Temporary deployment is fast with retractable legs and a lightweight, compact form factor.

**Power Supply Versatility**
The low power consumption of the PAPI makes it mate well with several available power supplies:
- Solar kit
- Generator kit
- Battery kit
- AC only

**Controllable**
Optional wireless control provides on-demand operation from up to 4 km (2.5 m) away. There is also 3 and 5-step, wired control and local control available.

**Trusted**
Deployed around the globe, from military to civilian airfields and from the Middle East to the Arctic Circle, the PAPI has proven it is robust. LED keypad and LED indicators designed for use with gloves. Removable, replaceable antenna.
**PAPI**
**PRECISION APPROACH PATH INDICATOR**

**SPECIFICATIONS**

**Optical**
- High-power LEDs with proper heat management ensure consistent photometrics for life of product
- NVG-compatible infrared (IR) LEDs
- FAA L-880/881 & E-3007 (2 & 4 LHA) compliant
- ICAO Annex 14 PAPI (2 & 4 LHA) & APAPI (2 LHA) compliant
- STANAG 3316 PAPI (2 & 4 LHA) & APAPI (2 LHA) compliant
- UFC 3-635-01 (4 LHA) compliant
- Ultra-low, 55W / LHA power consumption make solar possible

**Power Options**
- Solar kit: Solar panels and mounting, batteries and enclosures; air transportable container; AC input for backup
- Generator kit: Gas or diesel generator; AC input for backup
- Battery kit: Batteries & enclosures; AC input for backup
- AC only: 100 – 240 VAC 50/60 Hz; 3 and 5-step current input

**Control Options**
- Non-Wireless: AC input of 3 and 5-step current; local control
- Wireless: 4 km (2.5 m) control range with optional Handheld Controller; local control

**Construction**
- Powder coated aluminum chassis with integrated handles
- Aviation orange standard, yellow and other colors available
- Stainless steel and anodized aluminum hardware
- Integrated digital level
- Optical glass lens

**Temperature**
- -35 to 55 °C (-31 to 131 °F) ambient

**Wind Loading**
- 161 kph (100 mph)

**Ingress**
- NEMA 4 & EN 60529 IP 55

**PHOTOMETRICS**

**PAPI ISOCANDELA**

**WHITE (cd)**
- 0 - 10000
- 10000 - 20000
- 20000 - 30000
- 30000+

**RED (cd)**
- 0 - 5000
- 5000 - 10000
- 10000 - 15000
- 15000+

**CONFIGURATION**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>SIZE</th>
<th>MOUNTING</th>
<th>OUTPUT</th>
<th>POWER</th>
<th>CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAPI</td>
<td>ABBREVIATED 2 LHA STANDARD 2 LHA STANDARD 4 LHA</td>
<td>PERMANENT PORTABLE VISIBLE VISIBILITY / IR SOLAR KIT GENERATOR KIT BATTERY KIT AC NON-WIRELESS WIRELESS WIRED, STYLE B</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Options: carrying case, tactical battery pack, tilt switch (for FAA), low temperature arctic kit, custom chassis color

Specifications subject to local environmental conditions.
Specifications may be subject to change.

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Document: AVIA_PAPI_Spec_Sheet_RevD.indd
WIND CONE
SOLAR ILLUMINATED SYSTEM

Cost-effective, low-maintenance solution for improving safety at temporary, permanent and emergency airports and heliports.

• Internally LED illuminated
• Powered by a robust Solar Power Supply (SPS)
• Designed to meet L-806(L) or L-807(L) FAA AC 150/5345-27
• Compliant with ICAO Annex 14, Volume 1, 6th Edition

Easy Installation and Relocation
No specialized work crews required. Limited air traffic disruption and functions immediately upon installation. Optional Handheld Controller allows for wireless operation including mode changes for enhanced visibility in poor weather conditions up to 4 km (2.5 m) away.

Rugged, Weatherproof Design
Sealed bearings for precision vaning and true wind direction in all types of weather and wind conditions. Additional bearing covers provided for protection against dirt and moisture. Water-repellent and color-fast nylon sock is resistant to rot and mildew. Standard orange or white/orange sock.

Reliable Performance
The SPS provides power to the wind cone in a simple to install package. Nominal 10 day autonomy (operation without solar charging) ensures consistent performance with a minimum 5 year battery service life.

REPRESENTED IN YOUR REGION BY:
## SPECIFICATIONS

### MODELS

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-806</td>
<td>Frangible, 8 foot windsock, unlit or internally lit</td>
</tr>
<tr>
<td>L-807</td>
<td>Non-frangible, size 1 or size 2 windsock, unlit or internally lit with centre hinge</td>
</tr>
</tbody>
</table>

### OPERATING CONDITIONS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>-45 to +55 °C (-49 to +131 °F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>0 - 100%</td>
</tr>
</tbody>
</table>

### SOLAR POWER SUPPLY (SPS)

#### Installed Weight

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 watts</td>
<td>39 kg (86 lb)</td>
</tr>
<tr>
<td>135 watts</td>
<td>121.6 kg (268 lb)</td>
</tr>
</tbody>
</table>

#### Shipping Weight

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 watts</td>
<td>129 kg (285 lb)</td>
</tr>
<tr>
<td>135 watts</td>
<td>179 kg (395 lb)</td>
</tr>
</tbody>
</table>

#### Installed Dimensions

<table>
<thead>
<tr>
<th>Size</th>
<th>Height/mm (in)</th>
<th>Width/mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-806</td>
<td>940-1400</td>
<td>840 or 1500</td>
</tr>
<tr>
<td>L-807 size 1</td>
<td>940-1400</td>
<td>840 or 1500</td>
</tr>
<tr>
<td>L-807 size 2</td>
<td>940-1400</td>
<td>840 or 1500</td>
</tr>
</tbody>
</table>

#### Operating Temperature

-40 to +55 °C (-40 to +131 °F)

#### Storage Temperature

-40 to +55 °C (-40 to +131 °F)

#### Chassis

Weather and corrosion-resistant construction of steel and powder coated aluminum

#### Mounting

Frangible couplings and floor flange mounts

#### Wind loading

193 kph (120 mph) min. for 135W installed at 65° tilt

#### Tilt

25° - 65° in 10° steps

#### Diagnostics

On-board feedback indicators for: battery and system status

#### Certifications

CE, FCC

### BATTERY

#### Power

2x 12 VDC 100 Ah Standard

#### Type

Replaceable and recyclable, absorbent glass mat (AGM) SLA. Standard with one battery

#### Charger

Temperature-compensated, maximum power point tracking (TC-MPPT)

### PV PANEL

#### Power

50, 135 W

#### Type

High-efficiency polycrystalline, IEC 61215

#### Lifetime

12 years at 90% output

### CONFIGURATION

<table>
<thead>
<tr>
<th>MODEL</th>
<th>TYPE ▼</th>
<th>ILLUMINATION ▼</th>
<th>SOCK ▼</th>
<th>CONTROL ▼</th>
<th>OPTIONS ▼</th>
</tr>
</thead>
<tbody>
<tr>
<td>WIND CONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L-806</td>
<td>FRANGIBLE</td>
<td></td>
<td>UNLIT</td>
<td>NON-WIRELESS</td>
<td>FLOOR FLANGE</td>
</tr>
<tr>
<td>L-807 - SIZE 1</td>
<td>HINGED</td>
<td>INTERNALLY LIT</td>
<td>ORANGE</td>
<td>WHITE/ORANGE</td>
<td></td>
</tr>
<tr>
<td>L-807 - SIZE 2</td>
<td>HINGED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### WIND CONE SOLAR ILLUMINATED SYSTEM

#### WIND CONE OVERALL HEIGHT

<table>
<thead>
<tr>
<th>Model</th>
<th>Overall Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-806</td>
<td>3099 mm (122 in)</td>
</tr>
<tr>
<td>L-807 size 1</td>
<td>6248 mm (246 in)</td>
</tr>
<tr>
<td>L-807 size 2</td>
<td>6706 mm (264 in)</td>
</tr>
</tbody>
</table>

### INSTALLATION

The Wind Cone should be installed according to FAA AC 150/5340-30. The Solar Power Supply (SPS) should be installed on a level concrete pad between a minimum of 12 feet and a maximum 15 feet from the wind cone.

### OPERATION

The operation of the Wind Cone is entirely dependent on the direction and relative velocity of the surface wind. Movement of the wind through the open throat of the cage and into the sock causes the tail to inflate. The tail of the inflated sock indicates true wind direction for velocities as low as three knots through a 360° circle about the vertical shaft.
Carmanah solar LED airfield signs are a simple solution for airfields that experience difficulties with grid access or for those that require a quick, minimally disruptive addition to an existing airfield.

- Includes an L-858Y, L-858R, L-858L, or L-858B solar-powered sign and a Solar Engine Power Supply (SEPS).
- SEPS incorporates the latest technology in solar technology, hardware and software to provide a reliable and sustainable power source.
- High quality LED light source virtually eliminates runway shutdowns, reduces re-lamping expenses and on-going maintenance costs.
- Battery life: 5+ years.
- Easy installation and relocation: no specialized work crews required.
- Limited air traffic disruption and functions immediately upon installation.
- Optional Handheld Controller allows for remote, wireless operation including mode changes for enhanced visibility in poor weather conditions.
- Engineered for reliable performance, the Energy Management System (EMS) monitors and adapts the brightness to environmental conditions for consistent operation and long life under the tough conditions.
- Minimum autonomy (operation without solar charging) 7+ days - scalable to meet requirements up to 40 days.

Compliance with Standards

**FAA:** Designed to meet L-858Y, L-858R, L-858L and L-858B AC 150/5345-44 (Current Edition) and the FAA Engineering Brief No. 67 “Light Sources other than Incandescent and Xenon for Airport Lighting and Obstruction Lighting Fixtures.”

**CE:** Complies with the requirements of the EMC Directive 2004/108/EC.

**ICAO:** Please inquire about ICAO compliant options.

Construction

Corrosion-resistant sign construction requires minimal maintenance:
- Aluminum housing
- Acrylic sign legend panels
- Stainless steel hardware Retroreflective sheeting

Installation

Each sign is furnished complete with mounting flanges for installation on a concrete pad, which is the recommended method of installation. Contact Carmanah for more information on sign installation hardware.

The Solar Engine Power Supply (SEPS) should be installed on a level concrete pad within 20 feet of the solar sign.

For a temporary application, the wiring between the SEPS and the sign can be above ground. Both the sign and SEPS contain side conduits for cabling access.

### MODELS AVAILABLE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>PURPOSE</th>
<th>LEGEND COLOR</th>
<th>BACKGROUND COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-858Y</td>
<td>Direction, Destination &amp; Boundary</td>
<td>1490 mm (58.6 in)</td>
<td>Yellow</td>
</tr>
<tr>
<td>L-858R</td>
<td>Mandatory Sign</td>
<td>1820 mm (71.6 in)</td>
<td>Red</td>
</tr>
<tr>
<td>L-858L</td>
<td>Runway/Taxiway Location</td>
<td>Yellow</td>
<td>Black</td>
</tr>
<tr>
<td>L-858B</td>
<td>Runway Distance Remaining</td>
<td>White</td>
<td>Black</td>
</tr>
</tbody>
</table>
**OPERATING CONDITIONS**

Temperature: \(-40 ^\circ C \text{ to } +55 ^\circ C\) \((-40 ^\circ F \text{ to } +131 ^\circ F\) )

Humidity: 0 to 100%

Wind: Mode 2 signs withstand wind velocities up to 225 mph

---

**Sign Dimensions**

**SIGN HEIGHTS**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>SIGN SIZE NO.</th>
<th>SIGN FACE HEIGHT</th>
<th>LEGEND HEIGHT</th>
<th>OVERALL MOUNTING HEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-858Y/R/L</td>
<td>1</td>
<td>457 mm</td>
<td>305 mm</td>
<td>756 mm</td>
</tr>
<tr>
<td>2</td>
<td>610 mm</td>
<td>381 mm</td>
<td>908 mm</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>762 mm</td>
<td>457 mm</td>
<td>106 mm</td>
<td></td>
</tr>
<tr>
<td>L-858B</td>
<td>4</td>
<td>1220 mm</td>
<td>1016 mm</td>
<td>1478 mm</td>
</tr>
<tr>
<td>5</td>
<td>762 mm</td>
<td>635 mm</td>
<td>1060 mm</td>
<td></td>
</tr>
</tbody>
</table>

**SIGN LENGTHS**

<table>
<thead>
<tr>
<th>SIZE NO.</th>
<th>1 MODULE</th>
<th>2 MODULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>750 mm (29.4 in)</td>
<td>1490 mm (58.6 in)</td>
</tr>
<tr>
<td>2</td>
<td>910 mm (35.9 in)</td>
<td>1820 mm (71.6 in)</td>
</tr>
<tr>
<td>3</td>
<td>1080 mm (42.4 in)</td>
<td>2150 mm (84.6 in)</td>
</tr>
<tr>
<td>4</td>
<td>1220 mm (47.9 in)</td>
<td>N/A</td>
</tr>
<tr>
<td>5</td>
<td>1080 mm (42.4 in)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**SEPS DIMENSIONS**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>60.5 mm</td>
</tr>
<tr>
<td>Height</td>
<td>2.38 in</td>
</tr>
<tr>
<td>Not including Antenna</td>
<td></td>
</tr>
</tbody>
</table>

**PACKAGING DATA**

Signs are shipped with frangible couplings, and floor flanges—ready for installation.

**DESCRIPTION**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>GROSS WEIGHT(^1) KG (LB)</th>
<th>DIMENSIONS (MM)</th>
<th>CARTON (IN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size 1, Module 1</td>
<td>21 (46)</td>
<td>870 x 864 x 330</td>
<td>34 x 34 x 13</td>
</tr>
<tr>
<td>Size 1, Module 2</td>
<td>36 (78)</td>
<td>870 x 1600 x 330</td>
<td>34 x 63 x 13</td>
</tr>
<tr>
<td>Size 2, Module 1</td>
<td>32 (71)</td>
<td>1020 x 1020 x 330</td>
<td>40 x 40 x 13</td>
</tr>
<tr>
<td>Size 2, Module 2</td>
<td>47 (104)</td>
<td>1020 x 1900 x 330</td>
<td>40 x 76 x 13</td>
</tr>
<tr>
<td>Size 3, Module 1</td>
<td>37 (81)</td>
<td>1170 x 1170 x 330</td>
<td>48 x 48 x 13</td>
</tr>
<tr>
<td>Size 3, Module 2</td>
<td>60 (131)</td>
<td>1170 x 2260 x 330</td>
<td>48 x 89 x 13</td>
</tr>
<tr>
<td>Size 4, Module 1</td>
<td>54 (120)</td>
<td>1580 x 1320 x 330</td>
<td>62 x 52 x 13</td>
</tr>
<tr>
<td>Size 5, Module 1</td>
<td>39 (85)</td>
<td>1170 x 1170 x 330</td>
<td>48 x 48 x 13</td>
</tr>
</tbody>
</table>

\(^1\) Estimated weight

Specifications subject to local environmental conditions. Specifications may be subject to change.

US and international patents apply. Other patents pending.

"Carmanah" and Carmanah logo are trademarks of Carmanah Technologies Corp.

Carmanah Technologies Corp. | carmanah.com | 1.250.380.0052 | info@carmanah.com
Carmanah’s Solar Elevated Runway Guard Light (ERGL) provides a distinctive warning to pilots that they are approaching a runway holding position and are about to enter an active runway. The ERGL has a high intensity LED light source and is powered by our industry leading solar engine power supply (SEPS).

- Provides 24-hour unidirectional marking at runway and taxiway intersections
- Installs in minutes and can be relocated just as quickly
- Includes LED lights, frangible column and tether
- Fixture flash-rate is controlled from an intelligent lighting control system module located in the SEPS; alternating flashes, 45-50 per minute
- Can be aimed both vertically and horizontally and has an adjustable Light Beam: 0° to 20° vertically; ±20° horizontally
- Significant reduction of maintenance costs and re-lamping expenses through long-lasting LED technology - average LED life of 56,000 hours under high-intensity conditions and more than 100,000 hours under actual operating conditions
- Engineered for reliable performance, the Energy Management System (EMS) monitors and adapts brightness to environmental conditions for consistent operation and long life under tough conditions
- Autonomy (operation without solar charging) 7+ days - scalable to meet requirements up to 40 days
- Battery life: 5+ years

SEPS Models
The ERGL is available in two SEPS models: Standard and Wireless. With the standard SEPS, the unit will activate automatically between dawn and dusk with pre-set illumination. The wirelessly controlled SEPS allows the unit to be activated remotely via a handheld controller.

Fixture Construction
The ERGL fixture is fabricated from corrosion-resistant materials and all exterior surfaces are painted aviation yellow for added protection and visibility. Includes high-strength ERGL base plate. The two ERGL light sources are surrounded by a black face plate and independent visors to reduce the amount of incident sunlight, thereby maximizing the contrast during the LED ON/OFF cycle.

Installation
ERGL systems are typically installed in pairs with one unit on either side of the taxiway holding position. The ERGL should be installed according to FAA AC 150/5340-30. The SEPS should be installed on a level concrete pad within 20 feet of the ERGL. For a temporary application, the wiring between the SEPS and the ERGL can be above ground. Both the ERGL and SEPS contain side conduits for cabling access.
**OPERATING CONDITIONS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>-40 °C to +55 °C (-40 ºF to +131 ºF)</td>
</tr>
<tr>
<td>Humidity</td>
<td>0 to 100%</td>
</tr>
<tr>
<td>Wind</td>
<td>Withstands wind velocities up to 480 kph (300 mph)</td>
</tr>
</tbody>
</table>

**SOLAR ENGINE POWER SUPPLY (SEPS)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed weight</td>
<td>59.8 kg (132 lb)</td>
</tr>
<tr>
<td>Shipping weight</td>
<td>Box 1 (SEPS) - 34.4 kg (76 lb) Box 2 (battery) - 30.8 kg (68 lb)</td>
</tr>
<tr>
<td>Installed dimensions*</td>
<td>759 H x 1089 W x 441 D mm 29.9 H x 42.9 W x 17.4 D in</td>
</tr>
</tbody>
</table>

* with wireless antenna at 55° tilt

<table>
<thead>
<tr>
<th>Shipping dimensions</th>
<th>Box 1 (SEPS) - 647 H x 1191 W x 356 D mm Box 2 (battery) - 210 H x 332 W x 188 D mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>Operating: -30 to +50 °C (-22 to +122 ºF) Storage: -40 to +80 °C (-40 to +176 ºF)</td>
</tr>
</tbody>
</table>

**Chassis**

Weather and corrosion-resistant construction of stainless steel and powder coated aluminum

**Mounting**

Frangible couplings and floor flange mounts

**Wind loading**

480 kph (300 mph) min. installed at 55° tilt

**Tilt**

15°, 35°, 55°

**Diagnostics**

On-board feedback indicators for: Battery Status, System Status, Battery Reverse Polarity, and Solar Panel Reverse Polarity

**Certifications**

ROHS, WEEE, CE, FCC

**BATTERY**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>12 VDC 105 A-hr at C/100 discharge rate</td>
</tr>
<tr>
<td>Type</td>
<td>Replaceable and recyclable, absorbent glass mat (AGM) SLA.</td>
</tr>
<tr>
<td>Lifetime</td>
<td>4,000 cycles to 20% depth of discharge at +20°C (+68°F)</td>
</tr>
<tr>
<td>Charger</td>
<td>Temperature-compensated, maximum power point tracking (TC-MPPT)</td>
</tr>
</tbody>
</table>

**LED DRIVER**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channels</td>
<td>2 independent channels</td>
</tr>
<tr>
<td>Channel A</td>
<td>18 – 38 VDC from 0.3 – 1.4 A and 5 – 100 % duty cycle, constant current</td>
</tr>
<tr>
<td>Channel B</td>
<td>18 – 38 VDC from 0.3 – 1.4 A and 5 – 100 % duty cycle, constant current</td>
</tr>
<tr>
<td>Automatic Light Control (ALC)</td>
<td>ALC dynamically reduces brightness in response to unusually low amounts of sunlight to ensure continued autonomous operation. Available on Channels A and B.</td>
</tr>
<tr>
<td>Control, Autonomous Mode</td>
<td>Dusk-to-dawn flashing or 24-hour flashing</td>
</tr>
<tr>
<td>Load Cabling</td>
<td>6.7 m (22 ft) cable can exit onto the surface or down into a ground pot</td>
</tr>
</tbody>
</table>

**PV PANEL**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>95 W</td>
</tr>
<tr>
<td>Type</td>
<td>61215 High Efficiency Monocrystalline, IEC</td>
</tr>
<tr>
<td>Lifetime</td>
<td>10 years at 90% output</td>
</tr>
</tbody>
</table>

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Specifications subject to local environmental conditions.
Specifications may be subject to change.
US and international patents apply. Other patents pending.
“Carmanah” and Carmanah logo are trademarks of Carmanah Technologies Corp.
When landing aircraft, an ALS is critical during the transition from instrument flight (IFR) to visual flight (VFR). Our ALS features:

- Advanced LED optics with no high voltage cables or bulb changes
- Designed for portable or fixed applications
- Visible and optional Infrared (IR) operating modes
- Optional wireless control provides on-demand operation from up to 4 km (2.5 m) away
- Optional control tower integration and ARCAL
- Solar, AC or battery powered options

Our ALS is compliant with international standards for approach lighting systems and accommodates a wide variety of layouts including:

- ICAO Simple ALS
- FAA Medium Intensity Approach Lighting (MALS)
**Specifications**

**Optical**
- High-power LEDs with efficient heat management ensure consistent photometrics for life of product.
- Steady-Burning Light (SBL): +10,000 cd
- Sequenced Flashing Light (SFL): +100,000 cd with 5.5 ms flash
- NVG-compatible infrared (IR) LEDs
- FAA MALSR compliant, FAA-E-2980
- ICAO Annex 14 compliant
- UFC 3-335-01 MALSR compliant
- Up to 5 stepped intensities: 100%, 20%, 4%, 0.8%, 0.16% or custom

**Power Options**
- Solar kit: Solar panels and mounting, batteries and enclosures, AC input for backup
- Generator kit: Gas or diesel generator; AC input for backup
- Battery kit: Batteries & enclosures, AC input for backup
- AC only: 100 - 240 VAC 50/60 Hz; 3 and 5-step current input

**Control Options**
- Non-Wireless: Multi step current control
- Wireless: 4 km (2.5 m) control range with optional Handheld Controller, local control

**Construction**
- Powder coated aluminum chassis
- Aviation orange standard, yellow and other colors available
- Stainless steel and anodized aluminum hardware

**Temperature**
- -31° to 131°F (-35 to 55 °C)

**Wind Loading**
- 300 mph (134 m/s)

**Ingress (Battery Box)**
- NEMA 4 & EN 60529 IP 55

**Dimensions**

**Steady Burning Barrette**

**Battery Box**

**Solar System**

**Configuration**

<table>
<thead>
<tr>
<th>Model</th>
<th>Layout Type</th>
<th>Mounting Type</th>
<th>Output Type</th>
<th>Power Type</th>
<th>Control Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS</td>
<td>FAA MALSR</td>
<td>PERMANENT</td>
<td>VISIBLE</td>
<td>SOLAR KIT</td>
<td>NON-WIRELESS</td>
</tr>
<tr>
<td></td>
<td>UFC MALSR</td>
<td>VISIBLE / IR</td>
<td>BATTERY KIT</td>
<td>AC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ICAO SIMPLE</td>
<td>CUSTOM</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specifications subject to local environmental conditions. Specifications may be subject to change.

US and international patents apply. Other patents pending. “Carmanah” and Carmanah logo are trademarks of Carmanah Technologies Corp.
Wirelessly control Carmanah’s solar airfield lighting system from up to 4 km (2.5 m) away. Features include:

- Instantaneous control of an unlimited number of airfield products
- Individual communication with each light
- Separately control up to 8 groups of lights
- Uninterrupted, secure, MIL-grade encryption

**Wireless Control**
Enables remote operation of an airfield lighting system including mode changes for enhanced visibility in poor weather conditions or blackout or infrared (NVG) modes in response to immediate threat.

**Multiple Configuration Options**
Secure, password-protected communications where one or more controllers can be keyed to a system of lights.

**Versatile Interface**
Contains a radio modem, supporting electronics and external serial interface. It also supports an interface suitable for connecting to an off-the-shelf, standalone aviation band VHF receiver (ARCAL) to facilitate pilot-controlled lighting operation.

**Rugged, Weatherproof Design**
Tested to Condition B, Method 104A of MIL-STD-202F for moisture resistance. Reliable operations in temperatures ranging from -40 to 60 °C (-40 to 140 °F). Weatherproof back-lit LED keypad and LED indicators designed for use with gloves. Removable, replaceable antenna.
How Carmanah’s Wireless Control Works

Point-to-multipoint wireless system communicates with each light individually so that if one light goes out, the system still functions.

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Range</td>
<td>Up to 4 km (2.5 mi)</td>
</tr>
<tr>
<td>Individual Groups</td>
<td>1 - 8</td>
</tr>
<tr>
<td>Frequency</td>
<td>900 MHz ISM point-to-multipoint; others available, please inquire</td>
</tr>
<tr>
<td>Encryption</td>
<td>Up to 256 bit AES encryption</td>
</tr>
<tr>
<td>Control Tower Integration</td>
<td>Via included RS-232 connector</td>
</tr>
<tr>
<td>Pilot Activated Lighting</td>
<td>Via included ARCAL connector</td>
</tr>
<tr>
<td>Password Protection</td>
<td>User and Admin modes</td>
</tr>
<tr>
<td>Operation</td>
<td>12 hrs of continuous use on single charge (1 operation / min.)</td>
</tr>
<tr>
<td></td>
<td>1250 hrs of storage on a single charge</td>
</tr>
<tr>
<td>Modes</td>
<td>Visible, IR (NIGHT), flashing, steady on, standby, off, autonomous, temporary, emergency, diagnose</td>
</tr>
<tr>
<td>Antenna</td>
<td>Removable antenna included</td>
</tr>
<tr>
<td></td>
<td>External antenna options</td>
</tr>
<tr>
<td>Battery</td>
<td>Lithium-ion, long cycle life</td>
</tr>
<tr>
<td></td>
<td>3.75 V, 6.8 Ahr</td>
</tr>
<tr>
<td></td>
<td>Battery status indicators</td>
</tr>
<tr>
<td></td>
<td>Universal battery charger included</td>
</tr>
<tr>
<td>Construction</td>
<td>Powder coated aluminum</td>
</tr>
<tr>
<td></td>
<td>Backlit, waterproof, silicone keypad</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40 to 80 °C (-40 to 140 °F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 to 60 °C (-40 to 140 °F)</td>
</tr>
<tr>
<td>Weight</td>
<td>1.4 kg (3 lb)</td>
</tr>
<tr>
<td>Ingress</td>
<td>Waterproof, vented battery compartment</td>
</tr>
<tr>
<td></td>
<td>MIL-STD-202, Method 104A for immersion</td>
</tr>
<tr>
<td>Compliance</td>
<td>FCC, ANATEL</td>
</tr>
</tbody>
</table>

Specifications subject to local environmental conditions. Specifications may be subject to change.
Allows pilots to activate and manage the intensity of airfield lights on approach. Ideal for unmanned airfields and control towers.

**Compliance with Standards**

- **FAA:** L-854 AC 150/5345-49 (Current Edition)
- **ICAO:** Aerodrome Design Manual, Part 5 para. 3.4.6
- **FCC:** 47 CFR, Part 15:2007 (Class A)
- **Canada:** TP 312 - Aerodromes Standards and Recommended Practices

The Carmanah ARCAL system provides air-to-ground (Type I) radio control of Carmanah solar airfield products. Pilots can remotely activate and change intensities of our products by simply keying the microphone button of their standard VHF communication transmitter.

Airport operators benefit from maximum runway usage while minimizing energy expenditure and increasing the performance capabilities of our solar airfield products.

- Designed for outdoor, unattended all-weather operation
- Eliminates costly trenching and installation of control lines to remote facilities
- No special airborne equipment or adapters required
- Lights are activated remotely from the air and remain on at the selected intensity for a period of 15 minutes. Additional timer settings of 1, 30, 45 and 60 minutes are available
- Receiver may be programmed to operate on any frequency in the specified VHF range between 118.0 to 136.0 MHz
- Selectable decoder enable/disable prevents multiple relay operation during normal daytime operations
- Optional Remote Maintenance Module (RMM) available
- Configurable to Type J or Type K ARCAL via DIP switch selection (Canada)

**SPECIFICATIONS**

- **Receiver:** Single-conversion superheterodyne design. Adjustable sensitivity from 1 to 30 microvolts permitting a control range of 1.6 to 32 km (1 to 20 miles).
- **Commands:** Three intensity settings controlled by a series of 3, 5 or 7 microphone button clicks from the pilot.
- **Power:**
  - Input Voltage
  - Maximum VA
  - 12 VDC
  - 111
  - 120 VAC
  - 152
  - 240 VAC
  - 182
  - Typical standby power is 4 VA at 12 VDC for calculating solar power autonomy.
- **Output:** 3 A relay contact rating, 0 to 3 amps
- **Frequency:** 118.0 to 136.0 MHz VHF. Digital control electronics allow operating frequency to be easily reprogrammed by the user.
- **Construction:** Nema 4 (indoor/outdoor) enclosure
  - Built-in speaker with volume control
  - Omnidirectional ground-plane antenna with an additional 50 feet of cable for remote mounting
- **Operating Temperature:** -55 to 55 °C (-67 to 131 °F)
- **Humidity:** 0 to 100%
- **Altitude:** 0 to 2000 m (0 to 6,600 ft)
- **Dimensions:** 305 x 254 x 203 mm (12 x 10 x 8 in)
- **Weight:** 9.5 kg (21 lbs)

**CONFIGURATION**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>POWER</th>
<th>ANTENNA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCAL</td>
<td>12 VDC</td>
<td>TOP MOUNT</td>
</tr>
<tr>
<td></td>
<td>120 VAC</td>
<td>REMOTE MOUNT</td>
</tr>
<tr>
<td></td>
<td>240 VAC</td>
<td></td>
</tr>
</tbody>
</table>

**REPRESENTED IN YOUR REGION BY:**
Solar helipad lighting systems are a dependable alternative to generator or grid-powered lighting for ground, rooftop, offshore, temporary or remote heliports. Carmanah provides customized systems for the world’s toughest environments.

Carmanah’s configurable and compliant solar-powered helipad lighting products include:

- FATO – Final Approach and Take Off
- TLOF – Touchdown and Lift Off
- Landing Direction Lights
- Taxiway Lights
- HAPI – Helicopter Approach Path Indicator
- Wind Cones

**A704-VL**

- 21 cm (6.4 in)

**A650**

- 17 cm (6.7 in)

**HAPI**

**SOLAR WIND CONE**

**MILITARY COMPLIANT PRODUCT MAP**

**SOLAR HELIPAD LIGHTING**
Meets traditional helipad requirements in an easy-to-install, low maintenance package.

- ICAO and FAA compliant
- Third party tested
- Proven technology platform
- Available in three solar engine sizes

**Applications**

Helipads
Touchdown and Lift-off area (TLOF)
Final Approach and Take-off area (FATO)
Taxiway lighting
NVG operations
Emergency operations

**Advanced Design**

- Improved optical efficiency with latest LEDs
- Up to 25% more power with high-efficiency solar panels
- Reduced standby power consumption
- Multiple solar engine sizes for best value-for-performance

**Easy Installation**

Limited crew, no trenching, no helipad interruptions. Just place the A704-VL and it emits light dusk-to-dawn while maintaining its battery. Optional wireless control provides on-demand operation from up to 4 km (2.5 m) away.

**Low Maintenance**

The A704-VL integrates solar panels, battery, electronics, and LED light source into a compact, stand-alone unit requiring minimal maintenance. The replaceable battery extends service life well beyond 5 years.

**Reliable**

The Energy Management System (EMS) monitors all operations to provide consistent output in the harshest environments. Testing to ICAO, FAA and MIL specifications ensures high performance for many years.

**Trusted**

With thousands of installations worldwide, Carmanah solar LED lights operate year-round at permanent airfields and temporary military installations.

REPRESENTED IN YOUR REGION BY:
**SPECIFICATIONS**

**Optical**
- High-power LEDs meet IES LM-80 lumen maintenance, ensuring consistent photometrics for life of product
- ICAO, SAE25050 (FAA), and FAA EB 67 compliant chromaticity
- NVG-compatible infrared (IR) LEDs
- Steady-on and flash

**Energy Collection**
- High-efficiency cells with blocking diodes
- Maximum power point tracking with temperature compensation (MPPT-TC) for optimal energy collection in all solar conditions

**Energy Storage**
- Pure-lead VRLA AGM battery with manufacturer operating range -65 to 80 °C (-85 to 176 °F)
- On-board battery status
- Designed for 5+ year battery life. Replaceable and recyclable
- Optional port for battery charging and cabled operation

**Energy Management System (EMS)**
- Intelligent, microprocessor EMS
- On-board diagnostics and datalogger
- Push button interface for local control
- Autonomous, temporary, and emergency modes

**Automatic Light Control (ALC)**
- ALC adjusts output intensity in response to unusually low amounts of sunlight to ensure continued operation

**Construction**
- Premium, UV-resistant polycarbonate lens
- Powder coated aluminum and polycarbonate chassis with integrated handle
- Waterproof, vented battery compartment

**Temperature**
- -30 to 50 °C (-22 to 122 °F) Optimal
- -40 to 80 °C (-40 to 176 °F) Maximum

**Wind & Ice Loading**
- 644 kph (400 mph) wind; 0.03 psi (22 kg/m²) ice

**Shock & Vibration**
- MIL-STD-202G and MIL-STD-810G

**Ingress**
- EN 60529 IP 67 immersion
- MIL-STD-202G immersion & damp heat cycling
- MIL-STD-810G rain & salt fog

**Compliance**
- CE compliant (non-wireless model only)

**DIMENSIONS AND WEIGHTS**

<table>
<thead>
<tr>
<th></th>
<th>STANDARD</th>
<th>COMPACT</th>
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<tbody>
<tr>
<td><strong>Weight</strong></td>
<td>6.7 kg (15 lb)</td>
<td>4.9 kg (11 lb)</td>
</tr>
<tr>
<td><strong>Battery (96E)</strong></td>
<td>4.2V, 24 Ahr</td>
<td>Battery (80X)</td>
</tr>
<tr>
<td><strong>LARGE</strong></td>
<td>10.5 kg (23 lb)</td>
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</tr>
<tr>
<td><strong>Battery (200BC)</strong></td>
<td>4.2V, 60 Ahr</td>
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</table>

**CONFIGURATION**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>OUTPUT ▼</th>
<th>SOLAR ENGINE ▼</th>
<th>CHASSIS ▼</th>
<th>CONTROL ▼</th>
<th>CHARGE PORT ▼</th>
</tr>
</thead>
<tbody>
<tr>
<td>A704-VL</td>
<td>WHITE / IR</td>
<td>COMPACT STANDARD LARGE</td>
<td>YELLOW OLIVE DRAB</td>
<td>NON-WIRELESS WIRELESS</td>
<td>MILITARY CHARGE PORT</td>
</tr>
</tbody>
</table>

Specifications subject to local environmental conditions. Specifications may be subject to change.
US and International patents apply. Other patents pending.
“Carmanah” and Carmanah logo are trademarks of Carmanah Technologies Corp.

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The management system governing the manufacture of this product is ISO 9001:2008 certified.
THIRD PARTY VALIDATION: PHOTOMETRIC COMPLIANCE

Refer to table below for additional details.

1. ICAO FATO (Annex 14, Vol. 1, 5.3.7.4)
2. FAA L-810 vertical divergence; 850 - 890 nm peak
3. FAA L-800-HP (EB 87D, EB67D)
4. FAA L-861T (AC No. 150/5345-46D, EB67)
5. ICAO TLOF (Annex 14, Vol. 1, 5.3.9.20)
6. ICAO TLOF (Annex 14, Vol. 2, Appendix 1)
7. FAA L-860E/HR, TLOF, FATO
8. FAA EB87 Min. Avg.

### PEAK INTENSITY

<table>
<thead>
<tr>
<th></th>
<th>Auto Low (cd)</th>
<th>Auto Medium (cd)</th>
<th>Auto High (cd)</th>
<th>Temp Low (cd)</th>
<th>Temp Medium (cd)</th>
<th>Temp High (cd)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FATO (ICAO)</strong></td>
<td>4</td>
<td>10</td>
<td>18</td>
<td>27</td>
<td>83</td>
<td>266</td>
</tr>
<tr>
<td><strong>Taxiway and Apron Edge</strong></td>
<td>3</td>
<td>7</td>
<td>10</td>
<td>13</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td><strong>TLOF (ICAO &amp; FAA &amp; FATO (FAA)</strong></td>
<td>7</td>
<td>14</td>
<td>27</td>
<td>43</td>
<td>113</td>
<td>288</td>
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<tr>
<td><strong>NVG Operations (mW/sr)</strong></td>
<td>16</td>
<td>34</td>
<td>80</td>
<td>16</td>
<td>34</td>
<td>80</td>
</tr>
</tbody>
</table>

**Legend**

- ICAO FATO
- ICAO Flight Path Alignment
- FAA L-861T
- ICAO TLOF
- FAA EB87 Min.
- FAA EB87 Min. Avg.

---

**Specifications**

- **A704-VL Solar Heliport Light**
- **A704-VL Top of Lens**
- **A704-VL Compact Models**

**Additional Information**

- carmanah.com | 1.250.380.0052 | info@carmanah.com
- US and international patents apply. Other patents pending.
- “Carmanah” and Carmanah logo are trademarks of Carmanah Technologies Corp.

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Document: AVIA_A704-VL Spec Sheet_Rev_B.indd

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**Third Party Validation**

<table>
<thead>
<tr>
<th><strong>Intensity (candela)</strong></th>
<th><strong>Vertical Divergence (degrees)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>150</td>
<td>15</td>
</tr>
<tr>
<td>200</td>
<td>20</td>
</tr>
<tr>
<td>250</td>
<td>25</td>
</tr>
<tr>
<td>300</td>
<td>30</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Intensity (candela)</strong></th>
<th><strong>Vertical Divergence (degrees)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
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<tr>
<td>150</td>
<td>15</td>
</tr>
<tr>
<td>200</td>
<td>20</td>
</tr>
<tr>
<td>250</td>
<td>25</td>
</tr>
<tr>
<td>300</td>
<td>30</td>
</tr>
</tbody>
</table>

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**Table:**

Refer to table below for additional details.

1. ICAO FATO (Annex 14, Vol. 1, 5.3.7.4)
2. FAA L-861T (AC No. 150/5345-46D, EB67)
3. ICAO (Annex 14, Vol. 1, 5.3.18.8)
4. FAA L-860E/HR, TLOF, FATO
5. FAA L-800-HP (EB 87D, EB67D)
6. FAA EB87 Min. Avg.
The LED HAPI is the most advanced on the market and has the widest range of configurations:

• Visible and IR output
• Portable and permanent
• ICAO / FAA / STANAG Compliant
• Several power options

Applications
Permanent helipads
Temporary helipads
Emergency helipads
Hospital helipads
Remote helipads
Military & NVG operations

Advanced Optics
The HAPI uses patented, LED-based optics to achieve the lowest power consumption, highest intensity and sharpest green/red transition. It exceeds ICAO / FAA / STANAG requirements to provide a clear approach path to the aviator.

Easy Installation
The HAPI works equally well in permanent or temporary locations. Permanent mounting is easy with standard frangible mounting. Temporary deployment is fast with retractable legs and a lightweight, compact form factor.

Power Supply Versatility
The low power consumption of the HAPI makes it mate well with several available power supplies:
• Solar kit
• Generator kit
• Battery kit
• AC only

Controllable
Optional wireless control provides on-demand operation from up to 4 km (2.5 m) away. There is also 3 and 5-step, wired control and local control available.

Trusted
Deployed around the globe, from military to civilian airfields and from the Middle East to the Arctic Circle, the HAPI has proven it is robust. LED keypad and LED indicators designed for use with gloves. Removable, replaceable antenna.

REPRESENTED IN YOUR REGION BY:
HAPI
HELIKOPTER APPROACH PATH INDICATOR

**SPECIFICATIONS**

- **Optical**
  - High-power LEDs with proper heat management ensure consistent photometrics for life of product
  - NVG-compatible infrared (IR) LEDs
  - FAA AC 150/5390-2C HAPI compliant
  - ICAO Annex 14, Volume 2 HAPI compliant
  - STANAG HAPI compliant
  - Ultra-low power consumption make solar possible

- **Power Options**
  - Solar kit: Solar panels and mounting, batteries and enclosures; air transportable container; AC input for backup
  - Generator kit: Gas or diesel generator; AC input for backup
  - Battery kit: Batteries & enclosures, AC input for backup
  - AC only: 100 – 240 VAC 50/60 Hz; 3 and 5-step current input

- **Control Options**
  - Non-Wireless: AC input of 3 and 5-step current; local control
  - Wireless: 4 km (2.5 mi) control range with optional Handheld Controller; local control

- **Construction**
  - Powder coated aluminum chassis
  - Aviation orange standard, yellow and other colors available
  - Stainless steel and anodized aluminum hardware
  - Integrated digital level
  - Optical glass lens

- **Temperature**
  - -35 to 55 °C (-31 to 131 °F) ambient

- **Wind Loading**
  - 161 kph (100 mph)

- **Ingress**
  - NEMA 4 & EN 60529 IP 55

**DIMENSIONS**

**PERMANENT**

**PORTABLE**

**CONFIGURATION**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>MOUNTING</th>
<th>OUTPUT</th>
<th>POWER</th>
<th>CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAPI</td>
<td>PERMANENT PORTABLE</td>
<td>VISIBLE</td>
<td>SOLAR KIT</td>
<td>NON-WIRELESS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VISIBLE/IR</td>
<td>GENERATOR KIT</td>
<td>WIRELESS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BATTERY KIT</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AC</td>
<td></td>
</tr>
</tbody>
</table>

Options: carrying case, tactical battery pack, tilt switch (for FAA), low temperature arctic kit, custom chassis color

Specifications subject to local environmental conditions. Specifications may be subject to change.

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US and international patents apply. Other patents pending.
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Carmanah’s A704 Series Airfield Lights come with a range of accessories including durable mounting hardware, frangible couplings, and a selection of replacement parts.

### Mounting Hardware

<table>
<thead>
<tr>
<th>REF.</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>64559</td>
<td>16 x 16” rubber mat and hardware</td>
</tr>
<tr>
<td>2A</td>
<td>71757</td>
<td>Standard bolt kit, 700 series (4x stainless steel bolts)</td>
</tr>
<tr>
<td>2B</td>
<td>71884</td>
<td>Security bolt kit, 700 series (2x bolts, not including keys)</td>
</tr>
<tr>
<td>-</td>
<td>53288</td>
<td>Security bolt kit, bolt key/driver bit</td>
</tr>
<tr>
<td>-</td>
<td>53289</td>
<td>Security bolt kit, nut key/driver bit</td>
</tr>
<tr>
<td>3A</td>
<td>65714</td>
<td>Standard mounting plate (18” installed height)</td>
</tr>
<tr>
<td>-</td>
<td>65717</td>
<td>Extended mounting plate (26” installed height)</td>
</tr>
<tr>
<td>3B</td>
<td>74239</td>
<td>Helipad mounting bracket</td>
</tr>
<tr>
<td>4</td>
<td>65711</td>
<td>Frangible coupling, 1.5” pipe x 2 thread</td>
</tr>
<tr>
<td>5</td>
<td>50144</td>
<td>Floor flange, 2” thread</td>
</tr>
<tr>
<td>6</td>
<td>46397</td>
<td>Anchor bolt kit</td>
</tr>
<tr>
<td>7A</td>
<td>38925</td>
<td>2” hub stake - 15” long</td>
</tr>
<tr>
<td>7B</td>
<td>38964</td>
<td>2” hub stake - 30” long</td>
</tr>
<tr>
<td>-</td>
<td>Inquire</td>
<td>Grass guard kit</td>
</tr>
</tbody>
</table>

### Battery/Charger

<table>
<thead>
<tr>
<th>REF.</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>72890</td>
<td>Battery kit, A704 Compact</td>
</tr>
<tr>
<td>-</td>
<td>72891</td>
<td>Battery kit, A704 Standard</td>
</tr>
<tr>
<td>-</td>
<td>72892</td>
<td>Battery kit, A704 Large</td>
</tr>
<tr>
<td>-</td>
<td>74314</td>
<td>Battery charger, A704 with military charge port, 100-240 VAC, 50/60 Hz</td>
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<tr>
<td>-</td>
<td>69885</td>
<td>Battery charger, A704 battery pack and barrel charge port, 100-240 VAC, 50/60 Hz</td>
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### Optics

<table>
<thead>
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<tr>
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<td>74680</td>
<td>Optical shield, 180 degree, several models</td>
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<td>-</td>
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<td>Head kit, several models</td>
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### Miscellaneous Parts

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<th>REF.</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>40865</td>
<td>A704 series bird deterrent</td>
</tr>
<tr>
<td>9</td>
<td>56150</td>
<td>Replacement antenna</td>
</tr>
<tr>
<td>10</td>
<td>48473</td>
<td>Handheld Controller (see pg. 3 for additional wireless control options)</td>
</tr>
<tr>
<td>-</td>
<td>48984</td>
<td>Installation tool kit with 5/32” security bit for head/battery changes and small socket set</td>
</tr>
</tbody>
</table>

Specifications may be subject to change.

US and international patents apply. Other patents pending.

“Carmanah” and Carmanah logo are trademarks of Carmanah Technologies Corp.
Carmanah's A650 Series taxiway and apron edge lights include several mounting options and a variety of additional accessories and replacement parts.

### Mounting Hardware

<table>
<thead>
<tr>
<th>REF.</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>64559*</td>
<td>Mat kit and hardware</td>
</tr>
<tr>
<td>2</td>
<td>61869*</td>
<td>Fence mounting kit with hardware</td>
</tr>
<tr>
<td>3A</td>
<td>38034*</td>
<td>Standard bolt kit, A650 series (3x stainless steel bolts)</td>
</tr>
<tr>
<td>3B</td>
<td>56578</td>
<td>Security bolt kit, A650 series</td>
</tr>
<tr>
<td>-</td>
<td>53284</td>
<td>Security bolt kit, driver</td>
</tr>
<tr>
<td>-</td>
<td>53285</td>
<td>Security bolt kit, socket</td>
</tr>
<tr>
<td>4A</td>
<td>66699*</td>
<td>Standard mounting plate (14&quot; installed height)</td>
</tr>
<tr>
<td>4B</td>
<td>69752*</td>
<td>Extended mounting plate (24&quot; installed height)</td>
</tr>
<tr>
<td>5</td>
<td>65711*</td>
<td>Frangible coupling, 1.5&quot; pipe x 2 thread</td>
</tr>
<tr>
<td>6</td>
<td>50144*</td>
<td>Floor flange, 2&quot; thread</td>
</tr>
<tr>
<td>7</td>
<td>46397*</td>
<td>Anchor bolt kit</td>
</tr>
<tr>
<td>8A</td>
<td>38925*</td>
<td>2&quot; hub stake - 15&quot; long</td>
</tr>
<tr>
<td>8B</td>
<td>38964*</td>
<td>2&quot; hub stake - 30&quot; long</td>
</tr>
<tr>
<td>-</td>
<td>61870</td>
<td>Stake mounting kit, soft ground</td>
</tr>
<tr>
<td>-</td>
<td>51925</td>
<td>Standard mounting plate, 1&quot; pipe</td>
</tr>
<tr>
<td>-</td>
<td>50145</td>
<td>Frangible coupling, 1&quot; pipe x 2&quot; thread</td>
</tr>
<tr>
<td>-</td>
<td>61887*</td>
<td>Magnet mounting kit (3x magnets, nuts &amp; washers)</td>
</tr>
<tr>
<td>-</td>
<td>61876</td>
<td>Magnetic sign mount</td>
</tr>
</tbody>
</table>

### Battery/Charger

<table>
<thead>
<tr>
<th>REF.</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>72835</td>
<td>Battery kit, A650 series</td>
</tr>
<tr>
<td>-</td>
<td>59188</td>
<td>Charger: A650, 100-240 VAC 50/60 Hz</td>
</tr>
</tbody>
</table>

### Optics

<table>
<thead>
<tr>
<th>REF.</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>Inquire</td>
<td>Optical shield, 180 degree, several models</td>
</tr>
</tbody>
</table>

### Miscellaneous Parts

<table>
<thead>
<tr>
<th>REF.</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>57003</td>
<td>Bird deterrent, A650 series</td>
</tr>
<tr>
<td>10</td>
<td>56150</td>
<td>Replacement antenna</td>
</tr>
<tr>
<td>11</td>
<td>48473</td>
<td>Handheld Controller (see pg. 3 for additional wireless options)</td>
</tr>
<tr>
<td>-</td>
<td>57392</td>
<td>Bottom cover replacement kit (with switch)</td>
</tr>
<tr>
<td>-</td>
<td>57393</td>
<td>Bottom cover replacement kit (without switch)</td>
</tr>
<tr>
<td>-</td>
<td>59198</td>
<td>Bottom cover access tool</td>
</tr>
<tr>
<td>-</td>
<td>48984</td>
<td>Installation tool kit with 5/32&quot; security bit for head/battery changes and small socket set</td>
</tr>
</tbody>
</table>

*OL2A Series Products

Accessories marked with an asterisk (*) are suitable for use with the OL2A obstruction light. For additional information, please contact obstruction@carmanah.com.

Specifications may be subject to change.

US and international patents apply. Other patents pending.

“Carmanah” and Carmanah logo are trademarks of Carmanah Technologies Corp.
Additional accessories are available on request for all other Carmanah airfield lighting products.

### AIRFIELD WIRELESS CONTROL SYSTEMS

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>48473</td>
<td>Handheld Controller</td>
</tr>
<tr>
<td>68066</td>
<td>Handheld Controller battery kit, Lith-ion 3.75V 5300mAh, for controllers manufactured in 2012 and later</td>
</tr>
<tr>
<td>68067</td>
<td>Handheld Controller battery kit, Lith-ion 3.75V 5300mAh, for controllers manufactured in 2011 and earlier</td>
</tr>
<tr>
<td>48176</td>
<td>Handheld Controller, hard shell carry case</td>
</tr>
<tr>
<td>69899</td>
<td>Infrared Programmer: A650</td>
</tr>
<tr>
<td>70073</td>
<td>Li854 ARCAL integration kit for handheld controller</td>
</tr>
<tr>
<td>Inquire</td>
<td>Li854 ARCAL radio control, multiple options</td>
</tr>
<tr>
<td>Inquire</td>
<td>Rugged laptop and monitoring software</td>
</tr>
</tbody>
</table>

### SOLAR ENGINE POWER SUPPLY

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEPS NW</td>
<td>For non-wireless control of Carmanah ERGL, Wind Cone or Sign</td>
</tr>
<tr>
<td>SEPS W</td>
<td>For wireless control of Carmanah ERGL, Wind Cone or Sign</td>
</tr>
<tr>
<td>32303</td>
<td>SEPS W replacement antenna</td>
</tr>
<tr>
<td>SEPS PAPI</td>
<td>Please inquire</td>
</tr>
</tbody>
</table>

### CUSTOM TRAILERS

<table>
<thead>
<tr>
<th>PART NO</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trailer 1</td>
<td>Custom trailer with charging</td>
</tr>
<tr>
<td>Trailer 2</td>
<td>Custom trailer without charging</td>
</tr>
<tr>
<td>Trailer 3</td>
<td>Custom cable trailer</td>
</tr>
</tbody>
</table>

If you require a part that is not included on this accessories sheet including ERGL, Wind Cone or Sign mounting accessories or replacement parts, please contact info@carmanah.com for support.
PIONEERS IN SOLAR AIRFIELD GROUND LIGHTING CONTINUING TO LEAD THROUGH INNOVATION
With more than 300 site installations, Carmanah is trusted by air forces, national guards, police forces, marine corps, navies, armies, and coast guards around the world. Our products perform in the harshest environments.

Carmanah Military Installations

- Bagram AFB (Afghanistan)
- Jalalabad Air Base (Afghanistan)
- Kabul Int’l (Afghanistan)
- Solerno FOB (Afghanistan)
- RAAF Amberley (Australia)
- RAAF Darwin (Australia)
- Undisclosed AFB (Brazil)
- CFB Trenton / Mountain View (Canada)
- CFB Wainwright (Canada)
- Undisclosed AFB (Chile)
- Undisclosed AFB (Colombia)
- Camp Lemonnier AFB (Djibouti)
- Chabelley AFB (Djibouti)
- Undisclosed AFB (Eritrea)
- Istres AFB (France)
- Undisclosed AFB (France)
- Al Asad Air Base (Iraq)
- Balad AFB (Iraq)
- Camp Victory (Iraq)
- Qayyarah AFB (Iraq)
- NAS Sigonella (Italy)
- Hamamatsu AFB (Japan)
- Hyakuri AFB (Japan)
- Matsushima AFB (Japan)
- Misawa AFB (Japan)
- Tsuiki AFB (Japan)
- Aqaba City (Jordan)
- Camp Udairi (Kuwait)
- Labuan AFB (Malaysia)
- Terumbu Layang-Layang (Malaysia)
- Undisclosed AFB (Qatar)
- Changi AFB (Singapore)
- Tengah AFB (Singapore)
- Police Force (South Africa)
- Waterkloof AFB (South Africa)
- Batticaloa (Sri Lanka)
- Inonu (Turkey)
- Entebbe AFB (Uganda)
- Undisclosed AFB (UAE)
- RAF Valley (UK)
- RAF Waddington (UK)
- Altus AFB (USA)
- Camp Aberdeen (USA)
- Dover AFB (USA)
- Elmendorf AFB (USA)
- Fort Bragg AFB (USA)
- Fort Rucker AFB (USA)
- Little Rock AFB (USA)
- MC Base Camp Pendleton (USA)
- Pacific Missile Range Facility (USA)
- Pope AFB (USA)
- Rosecrans ANGB (USA)
- Smoky Hill ANG Range (USA)
- USMC Base Hawaii, Kaneohe Bay (USA)
- White Sands Missile Range (USA)
- Wright-Patterson AFB (USA)
- El Sombrero AFB (Venezuela)
- Undisclosed AFB (Zambia)
- and 50+ more...

carmanahaviation.com
aviation@carmanah.com
1.250.380.0052