WORLD’S SAFEST RUNWAY LIGHTING

PRODUCT CATALOGUE

FOR CIVIL AND MILITARY AIRPORTS

SOLAR AIRFIELD LIGHTING
PORTABLE AIRFIELD LIGHTING TRAILER
S4GA is a Government-owned company that designs, manufactures and supplies world’s safest runway lighting for Non-Precision Airports. S4GA Lighting Systems are compliant with ICAO standards and certified by INTERTEK.

### ABOUT S4GA

- **WORLD’S SAFEST RUNWAY LIGHTING**
- **GOVERNMENT-OWNED**
- **CERTIFIED**

### OUR APPLICATIONS

- Thessaloniki International Airport, Greece
- Dhala Airport, Maldives
- Jijiga Airport, Ethiopia
- Military Airbase, Libya
- Military Airbase, Argentina
- Mining Company Airport, Ivory Coast
- Chartres – Champhol Aerodrome, France
- Domestic Airports, Seychelles
- Domestic Airports, Sierra Leone
- Domestic Airports, Europe

### OUR SOLUTIONS

- **FOR NON-PRECISION AIRPORTS**
  - Complete permanent solar LED airfield lighting system

- **FOR AIRPORT CONSTRUCTION**
  - Temporary airport lighting

- **FOR HELIPADS**
  - Portable helipad lighting

### BECOME S4GA PARTNER

S4GA is open for a long-term partnership with reliable companies doing business on local markets. For airport systems integrators, we offer full training and technical project support.

**TRAINING**
- Product training in your country
- Product training in S4GA office in Poland
- Online training materials for your engineers

**PROJECT DELIVERY SUPPORT**
- On-site project supervision
- Online technical support and consulting
- Meetings with End Customer

**AFTER-SALES SUPPORT**
- Installation manuals
- Online technical support
- Troubleshooting materials

**TROUBLE SHOOTING MATERIALS**
- Troubleshooting manuals
- Online webinars
- Video tutorials
# TABLE OF CONTENT

## SOLAR AIRFIELD LIGHTING

### HIGH-INTENSITY SOLAR AIRFIELD LIGHTS

- SP-401 Solar Runway Edge Light ................................................. 6-7
- SP-401 Solar Threshold Light .................................................. 8-9
- SP-401 Solar Runway End Light .............................................. 10-11

### MEDIUM-AND LOW-INTENSITY SOLAR AIRFIELD LIGHTS

- SP-401 Solar Approach Light .................................................. 13-14
- SP-401 Solar Runway Threshold Identification Light ................. 15-16
- SP-401 Solar Runway Edge Light ............................................ 17-18
- SP-401 Solar Runway Threshold End Light ............................. 19-20
- SP-401 Solar Taxiway Edge Light ........................................... 21-22
- SP-401 Solar Obstruction Light Type A ................................. 23-24

## OTHER SOLAR AIRFIELD LIGHTING EQUIPMENT

- Solar Precision Approach Path Indicator ................................. 26-27
- UR-3 PAPI Controller-Converter ........................................... 28
- Solar Wind Direction Indicator ............................................. 29-30
- Solar Engine ........................................................................ 31-33

## AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM

- ALCMS Advanced .................................................................. 35-36
- ALCMS Basic ......................................................................... 37-38
- UR-201 Control and Monitoring Unit ...................................... 39-40

## PORTABLE AIRFIELD LIGHTING TRAILER

- About S4GA Airfield Lighting Trailer .................................... 42
- SP-401 Portable Runway Edge Light ...................................... 43-44
- SP-401 Portable Runway Threshold End Light ...................... 45-46
- SP-401 Portable Approach Light .......................................... 47-48
- SP-401 Portable Runway Threshold Identification Light ........ 49-50
- SP-401 Portable Taxiway Light ............................................. 51-52
- SP-401 Portable Obstruction Light ........................................ 53-54
- UR-101 Handheld Controller ................................................ 55-56
- OCT-401 Charger .................................................................. 57
COMPLETE PERMANENT
SOLAR AIRFIELD LIGHTING

— SOLUTION: SOLAR AIRFIELD LIGHTING SYSTEM

APPLICATION: CIVIL & MILITARY AIRPORTS

For Non-Precision Airports with increasing flight traffic, located in remote regions with high photovoltaic potential and unavailable electrical infrastructure, we offer a complete solar powered LED runway lighting system compliant with ICAO standards and certified by INTERTEK.
HIGH INTENSITY
SOLAR AIRFIELD LIGHTS

SP-401 Solar Runway Edge Light
SP-401 Solar Threshold Light
SP-401 Solar Runway End Light
SP-401 SOLAR HIRL RUNWAY EDGE LIGHT

HIGH INTENSITY

FEATURES

- Applicable for IFR Runways (CAT I, II, III)
- Controlled via wireless mesh type network
- Operates on solar energy
- Hybrid version available: solar + 230 VAC / 6.6A

APPLICATION

Bidirectional optics; designed for permanent usage on Precision Approach Runways (CAT I, II, III) in regions without access to electricity.

TECHNICAL SPECIFICATIONS

Optics

- 16,500 cd light output (tested by accredited laboratory)
- Bidirectional type
- LED lifespan: 100,000 hrs
- Maximum power consumption: 45 W
- NVD compatible (optional)
- Color: white / white, white / yellow, white / red, red / yellow
- User-replaceable

Battery

- 2 x built-in batteries
- Autonomy: 180 hrs (minimum intensity)
- Total capacity: 214Wh (2x18V/12A)
- Deep-cycle VRIL, 12V/9Ah (available worldwide)
- Lifespan: 1,200 cycles (designed for 4+5 years)
- User-replaceable, air transportable

Solar Power Supply

- 25W solar panel, separately installed
- Poly- or monocrystalline type
- Lifespan: 15 years
- MPPT Temp. / Built-in inverter: 12-36V/2A

Control & Monitoring

- Wireless mesh type network
- Operating frequency: 868 MHz (optional: 2.4GHz or 433 MHz)
- Operating range: up to 1.5 km, relayed (each light is a repeater)
- Operating Modes: Steady / Flashing / Dusk till dawn
- Visible / Infrared (optional) / Visible + Infrared (optional)
- Activation options: Via ALCMS Computer Interface (requires UR-20!)
- Via UR 201 Control & Monitoring Unit
- Via UR 101: Handheld Controller

Casing & Components

- Materials:
  - Optic head: aluminum, glass covered by antireflective layer
  - Casing: Lexan polycarbonate, UV stabilized
  - Mounting: galvanized steel (optional: marine grade stainless steel)
  - Fragile mounting: aluminum (tested by accredited laboratory)
- Detachable antenna
- Pressure stabilizing valve
- Battery level indicator
- Carrying handle (optional)
- Casing lifespan: 15 years
- Dimensions (LxWxH): 549 mm x 450 mm x 420 mm
- Weight: 14.1 kg

Safety & Reliability

- Five levels of protection against system failure
- Power supply: backup battery
- Real-time monitoring via ALCMS (Airfield Lighting Control and Monitoring System)
- Emergency ON/OFF button

Environmental Conditions

- Temperature range: -20 to 50 °C (-4 to 122 °F)
- Optional: -40 to 80 °C (-40 to 176 °F)
- Ingress protection: IP-57 (tested by accredited laboratory)
- Jet Blast Resistance: 240 kph (tested by accredited laboratory)

Compliance

- Photometric & Chromaticity: ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.9.10, Figure A2-10 & clause 5.3.11.1, Figure A2-11, Annex 1, Figure A1-1b
- Jet Blast Resistance: FAA AC 150/5345-5GB dated September 2007, clause 3.2
- Temperature range: -20 to 50 °C (-4 to 122 °F)
- Optional: -40 to 80 °C (-40 to 176 °F)
- Ingress protection: IP-57 (tested by accredited laboratory)
- Jet Blast Resistance: 240 kph (tested by accredited laboratory)

Accredited Laboratory Testing

- Photometric & Chromaticity: Intertek Laboratory
- Jet Blast Resistance: Warsaw Institute of Aviation
- Frangibility: Laborex Research Laboratory
- Ingress Protection: EMAC Institute of Innovative Technologies
- Electromagnetic Compatibility: Military Institute of Armament Technology
WORLD’S SAFEST RUNWAY LIGHTING

PHOTOMETRIC PERFORMANCE

White

<table>
<thead>
<tr>
<th>Item</th>
<th>Test Area Required</th>
<th>AVERAGE MIN. 10000 CD</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot;</td>
<td>MIN. 5000 CD</td>
<td>MAX. 5000 CD</td>
<td>-</td>
</tr>
<tr>
<td>11&quot;</td>
<td>MIN. 5000 CD</td>
<td>MAX. 5000 CD</td>
<td>-</td>
</tr>
<tr>
<td>10&quot;</td>
<td>MIN. 5000 CD</td>
<td>MAX. 5000 CD</td>
<td>-</td>
</tr>
<tr>
<td>9&quot;</td>
<td>MIN. 5000 CD</td>
<td>MAX. 5000 CD</td>
<td>-</td>
</tr>
<tr>
<td>8&quot;</td>
<td>MIN. 5000 CD</td>
<td>MAX. 5000 CD</td>
<td>-</td>
</tr>
<tr>
<td>6&quot;</td>
<td>MIN. 5000 CD</td>
<td>MAX. 5000 CD</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>490 mm x 360 mm x 570 mm</td>
<td>16 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, NO BATTERIES</td>
<td>490 mm x 360 mm x 570 mm</td>
<td>10.8 kg</td>
</tr>
</tbody>
</table>

www.solutions4ga.com
SP-401 SOLAR RUNWAY THRESHOLD LIGHT

HIGH INTENSITY

FEATURES

- Applicable for IFR Runways (CAT I, II, III)
- Controlled via wireless mesh type network
- Operates on solar energy
- Hybrid version available: solar + 230 VAC / 6.6A

APPLICATION

Unidirectional optics; designed for permanent usage on Precision Approach Runways (CAT I, II, III) in regions without access to electricity.

TECHNICAL SPECIFICATIONS

Optics

- 11,400 cd light output (tested by accredited laboratory)
- Undirectional type
- LED lifespan: 100,000 hrs
- Maximum power consumption: 28 W
- NVD-compatible (optional)
- Color: green
- User-replaceable

Battery

- 2 x built-in batteries
- Autonomy: 250 hrs (minimum intensity)
- Total capacity: 2.4W (2x12V/12V)
- Deep-cycle VLRA, 12V/9Ah (available worldwide)
- Lifespan: 1,200 cycles (designed for 4-5 years)
- User-replaceable, air transportable

Solar Power Supply

- 25W solar panel, separately installed
- Poly- or monocrystalline type
- Lifespan: 15 years
- MPPT/Temp / Built-in inverter: 12-36V/2A

Control & Monitoring

- Wireless mesh type network
- Operating frequency: 868 MHz (optional: 2.4GHz or 433 Mhz)
- Operating range: up to 1.5 km, relayed (each light is a repeater)
- Operating Modes: Steady / Flashing / Dusk Till dawn
- Visible / Infrared (optional) / Visible + Infrared (optional)
- Activation options:
  - Via ACLMS Computer Interface (requires UR-20!)
  - Via UR 201 Control & Monitoring Unit
  - Via UR-101: Handheld Controller

Casing & Components

- Materials: Optic: head: aluminum; glass covered by antireflective layer
  - Casing: Lexan polycarbonate, UV stabilized
  - Mounting: galvanized steel (optional: marine grade stainless steel)
  - Frangible mounting: aluminum (tested by accredited laboratory)
- Detachable antenna
- Pressure stabilizing valve
- Battery level indicator
- Carrying handle (optional)
- Casing lifespan: 15 years
- Dimensions (LxxWxxH): 549 mm x 450 mm x 420 mm
- Weight: 14.1 kg

Solutions4GA Sp. z o. o. | Sylwestra Kaliskiego 57, 01-476 Warsaw, Poland | t.: +48 22 270 10 29 | office@solutions4ga.com | VAT EU: PL 524 276 80 55

8
WORLD’S SAFEST RUNWAY LIGHTING

TECHNICAL DRAWING

PHOTOMETRIC PERFORMANCE

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>490 mm x 360 mm x 570 mm</td>
<td>16 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, NO BATTERIES</td>
<td>490 mm x 360 mm x 570 mm</td>
<td>10.6 kg</td>
</tr>
</tbody>
</table>
SP-401 SOLAR RUNWAY END LIGHT

**HIGH INTENSITY**

**FEATURES**
- Applicable for IFR Runways (CAT I, II, III)
- Controlled via wireless mesh type network
- Operates on solar energy
- Hybrid version available: solar + 230 VAC / 6.6A

**APPLICATION**
Unidirectional optics; designed for permanent usage on Precision Approach Runways (CAT I, II, III) in regions without access to electricity.

**TECHNICAL SPECIFICATIONS**

**Optics**
- 2,700 cd light output (tested by accredited laboratory)
- Unidirectional type
- LED lifespan: 100,000 hrs
- Maximum power consumption: 5 W
- NVC-compatible (optional)
- Color: red
- User-replaceable

**Battery**
- 2 x built-in batteries
- Autonomy: 380 hrs (minimum intensity)
- Total capacity: 2.4W (2xNAC/12V)
- Deep-cycle VRLA, 12V/9AH (available worldwide)
- Lifespan: 1,200 cycles (designed for 4-5 years)
- User-replaceable, air transportable

**Solar Power Supply**
- 25W solar panel, separately installed
- Poly- or monocrystalline type
- Lifespan: 15 years
- MPPT Temp / Built-in inverter: 12-24V/2A

**Control & Monitoring**
- Wireless mesh type network
- Operating frequency: 868 MHz (optional: 2.4GHz or 433 MHz)
- Operating range: up to 1.5 km, relayed (each light is a repeater)
- Operating Modes: Steady / Flashing / Dusk till dawn
- Visible / Infrared (optional) / Visible + infrared (optional)
- Activation options:
  - Via ACMSS Computer Interface (requires UR-201)
  - Via UR-201 Control & Monitoring Unit
  - Via UR-101 : Handheld Controller

**Casing & Components**
- Materials: Optic: head: aluminum, glass covered by antireflective layer
  - Casing: Lexan polycarbonate, UV stabilized
  - Mounting: galvanized steel (optional: marine grade stainless steel)
  - Frangible mounting: aluminum (tested by accredited laboratory)
- Detachable antenna
- Pressure stabilizing valve
- Battery level indicator
- Carrying handle (optional)
- Casing lifespan: 15 years
- Dimensions (LxWxH): 549 mm x 450 mm x 420 mm
- Weight: 14.1 kg

**Safety & Reliability**
- Five levels of protection against system failure
- Secondary power supply: backup battery
- Real-time monitoring via ACMMS (Airfield Lighting Control and Monitoring System)
- Emergency ON/OFF button

**Environmental Conditions**
- Temperature range: -20 to 50 °C (-4 to 122 °F)
- Optional: -40 to 80 °C (-40 to 176 °F)
- Ingress protection: IP-67 (tested by accredited laboratory)
- Jet blast resistance: 240 kph (tested by accredited laboratory)

**Compliance**
- Photometric & Chromaticity: ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.11.5 & clause 5.3.11 (rad direction), Appendix 1, Figure A7-1b
- Frangibility: FAA AC 150/5345-46E, clause 3.4.2.1
- FAA AC 150/5320-23, clause 3.2
- CE Declaration of Conformity: 2014/30/UE RED Directive, clauses 3.1a, 3.1b, 3.2
- 2011/65/UE RoHS Directive, clause 4.1

**Accredited Laboratory Testing**
- Photometric & Chromaticity: Intertek Laboratory
- Jet Blast Resistance: Warsaw Institute of Aviation
- The Laboratory of Aerosanics
- Frangibility: Laborex Research Laboratory
- Ingress Protection: EMAG Institute of Innovative Technologies
- Electromagnetic Compatibility: Military Institute of Armament Technology
PHOTOMETRIC PERFORMANCE

<table>
<thead>
<tr>
<th>9°</th>
<th>Red</th>
<th>5°</th>
<th>3°</th>
<th>1°</th>
<th>0°</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,5°</td>
<td>1842 2002 2114 2224 2275 2293 2346 2177 2051 1944</td>
<td>1739 1844 1942 2092 2241 2341 2385 2389 2357 2283 2166</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7,5°</td>
<td>1833 1946 2036 2216 2372 2438 2477 2480 2455 2386 2270</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6°</td>
<td>1629 1763 1998 2109 2218 2418 2526 2577 2598 2604 2587 2524 2446</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5,5°</td>
<td>1550 1695 1825 2070 2185 2307 2484 2583 2628 2648 2654 2643 2571 2499</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5°</td>
<td>1605 1740 1883 2121 2242 2364 2538 2527 2699 2696 2586 2571 2596 2545</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4,5°</td>
<td>1653 1788 1927 2182 2309 2436 2570 2648 2690 2708 2703 2700 2661 2582</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4°</td>
<td>1698 1822 1982 2251 2368 2463 2593 2668 2703 2708 2725 2726 2681 2610</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,5°</td>
<td>1432 1771 1855 2013 2291 2405 2500 2621 2866 2719 2742 2748 2746 2695 2632</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3°</td>
<td>1435 1738 1875 2027 2213 2427 2518 2629 2893 2730 2745 2738 2744 2702 2644</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,5°</td>
<td>1457 1746 1888 2038 2317 2431 2525 2633 2706 2739 2749 2751 2739 2718 2656</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2°</td>
<td>1474 1490 2039 2316 2429 2522 2639 2707 2748 2754 2749 2743 2713 2760</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,5°</td>
<td>1372 1871 2021 2297 2415 2505 2628 2697 2739 2737 2753 2734 2726 2662</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1°</td>
<td>1178 1850 2003 2280 2396 2492 2622 2690 2738 2732 2758 2743 2712 2652</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0,5°</td>
<td>1085 1819 1992 2239 2359 2461 2597 2688 2747 2738 2750 2732 2696 2638</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SP-401 RUNWAY END CAT I, CAT II, CAT III

<table>
<thead>
<tr>
<th>TEST AREA</th>
<th>REQUIRED</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREA 1 (MAIN BEAM (PINK PART))</td>
<td>MIN. 1250 CD AVG. 2429.53 CD MAX. 3705.95 CD</td>
<td></td>
</tr>
<tr>
<td>AREA 2 (YELLOW PART)</td>
<td>MIN. 250 CD</td>
<td>MIN. 1746,65 CD</td>
</tr>
<tr>
<td>AREA 3 (BLUE PART)</td>
<td>MIN. 125 CD</td>
<td>MIN. 1281,30 CD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (L x W x H)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>490 mm x 360 mm x 570 mm</td>
<td>16 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, NO BATTERIES</td>
<td>490 mm x 360 mm x 570 mm</td>
<td>10.6 kg</td>
</tr>
</tbody>
</table>
MEDIUM-AND LOW-INTENSITY
SOLAR AIRFIELD LIGHTS

- SP-401 Solar Approach Light
- SP-401 Solar Runway Threshold Identification Light
- SP-401 Solar Runway Edge Light
- SP-401 Solar Runway Threshold End Light
- SP-401 Solar Taxiway Edge Light
- SP-401 Solar Obstruction Light Type A
# SP-401 SOLAR APPROACH LIGHT

## FEATURES
- Operates 365 days on solar energy
- 5-level protection against system failure
- 180 hrs of autonomy
- 1.800 cd light output

## APPLICATION
Unidirectional optics, designed for permanent usage at airports located in regions without access to electricity and with high photovoltaic potential.

## TECHNICAL SPECIFICATIONS

### Safety & Reliability
- Five levels of protection against system failure
- Secondary power supply: backup battery
- Real-time monitoring via ALCONS (Airfield Lighting Control and Monitoring System)
- Emergency ON/OFF button

### Environmental Conditions
- Temperature range: 20 to 50 °C (4 to 122 °F)
- Optional: -40 to 80 °C (-40 to 176 °F)
- Ingress protection: IP-67 (tested by accredited laboratory)
- Jet Blast Resistance: 240 kph (tested by accredited laboratory)

### Compliance
- ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.4.6, clause 5.3.4.9, Appendix 1, Figure A1-1b
- FAA AC 150/5345-50B dated September 2007, clause 5.2.2
- ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 3.3.1.3
- FAA AC 150/5345-46E clause 3.4.2.1
- FAA AC 150/5220-23 clause 3.2
- ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 8.1.8 and 8.1.9 clause 8.1.11

### Photometric & Chromaticity
- ICAO, Annex 14th, Volume I, 8th Edition dated July 2018, Part 6, clause 3.2.2

### Jet Blast Resistance
- FAA AC 150-5345-50B dated September 2007, clause 5.2.2

### Frangibility
- ICAO, Annex 14th, Volume I, 8th Edition dated July 2018, clause 5.3.1.3
- FAA AC 150-5345-46E clause 3.4.2.1
- FAA AC 150/5220-23 clause 3.2

### Secondary Power Supply
- ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.4.6, clause 5.3.4.9, Appendix 1, Figure A1-1b

### CE Declaration of Conformity
- 2014/53/EU RED Directive, classes 3.1a, 3.1b, 3.2
- 2011/65/EU RoHS Directive, clause 4.1

## Accredited Laboratory Testing
- Photometric & Chromaticity: Intertek Laboratory
- Jet Blast Resistance: Warsaw Institute of Aviation, The Laboratory of Aerodynamics
- Frangibility: Laborex Research Laboratory
- Ingress Protection: EMAG Institute of Innovative Technologies
- Electromagnetic Compatibility: Military Institute of Armament Technology

### Optics
- 1.800 cd light output (tested by accredited laboratory)
- Unidirectional type
- LED lifespan: 100,000 hrs
- Maximum power consumption: 3.9W
- NVG-compatible (optional)
- Color: white
- User-replaceable

### Battery
- 2 x built-in batteries
- Autonomy: 180 hrs (minimum intensity)
- Total capacity: 21.6W (2x5.4W/12V)
- Deep-cycle VR1A, 12V/9Ah (available worldwide)
- Lifespan: 1,200 cycles (designed for 4-5 years)
- User-replaceable, air transportable

### Solar Power Supply
- 20W solar panel, separately installed
- Poly- or monocrystalline type
- Lifespan: 15 years
- MPPT Temp / Built-in Inverter: 12-36V/2A

### Control & Monitoring
- Wireless mesh type network
- Operating frequency: 868 MHz (optional: 2.4GHz or 433 MHz)
- Operating range: up to 1.5 km, relayed (each light is a repeater)
- Operating Modes: Steady / Flashing / Dusk till dawn
- Visible / Infrared (optional) / Visible + Infrared (optional)
- Activation options:
  - Via ALCONS Computer Interface (requires UR-201)
  - Via UR-201 Control & Monitoring Unit
  - Via UR-101 Handheld Controller

### Casing & Components
- Materials:
  - Dome: glass, UV-resistant
  - Casing: Lexan polycarbonate, UV-stabilized
  - Mounting: galvanized steel (options: marine grade stainless steel)
  - Frangible mounting: aluminum (tested by accredited laboratory)
- Detachable antenna
- Pressure stabilizing valve
- Battery level indicator
- Carrying handle (optional)
- Casing lifespan: 15 years
- Dimensions L x W x H: 549 mm x 450 mm x 431 mm
- Weight: 12.4 kg
**TECHNICAL DRAWING**

**PHOTOMETRIC PERFORMANCE**

<table>
<thead>
<tr>
<th>10&quot;</th>
<th>11&quot;</th>
<th>12&quot;</th>
<th>14&quot;</th>
<th>15&quot;</th>
<th>16&quot;</th>
<th>18&quot;</th>
<th>20&quot;</th>
<th>24&quot;</th>
<th>30&quot;</th>
<th>36&quot;</th>
<th>40&quot;</th>
<th>48&quot;</th>
<th>54&quot;</th>
<th>60&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>15&quot;</td>
<td>106</td>
<td>98</td>
<td>90</td>
<td>82</td>
<td>75</td>
<td>68</td>
<td>61</td>
<td>55</td>
<td>49</td>
<td>43</td>
<td>38</td>
<td>33</td>
<td>28</td>
<td>23</td>
</tr>
<tr>
<td>11&quot;</td>
<td>102</td>
<td>94</td>
<td>86</td>
<td>78</td>
<td>71</td>
<td>64</td>
<td>57</td>
<td>51</td>
<td>45</td>
<td>39</td>
<td>34</td>
<td>29</td>
<td>24</td>
<td>19</td>
</tr>
<tr>
<td>10&quot;</td>
<td>92</td>
<td>84</td>
<td>76</td>
<td>68</td>
<td>61</td>
<td>54</td>
<td>47</td>
<td>41</td>
<td>35</td>
<td>30</td>
<td>26</td>
<td>21</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>9&quot;</td>
<td>82</td>
<td>74</td>
<td>66</td>
<td>58</td>
<td>51</td>
<td>44</td>
<td>37</td>
<td>31</td>
<td>26</td>
<td>21</td>
<td>17</td>
<td>13</td>
<td>10</td>
<td>7.5</td>
</tr>
<tr>
<td>8&quot;</td>
<td>74</td>
<td>66</td>
<td>58</td>
<td>50</td>
<td>43</td>
<td>36</td>
<td>29</td>
<td>23</td>
<td>18</td>
<td>14</td>
<td>10</td>
<td>7.5</td>
<td>5.5</td>
<td>4.5</td>
</tr>
<tr>
<td>7&quot;</td>
<td>66</td>
<td>58</td>
<td>50</td>
<td>43</td>
<td>36</td>
<td>29</td>
<td>22</td>
<td>17</td>
<td>13</td>
<td>9.5</td>
<td>6.5</td>
<td>5.5</td>
<td>4.5</td>
<td>3.5</td>
</tr>
<tr>
<td>6&quot;</td>
<td>58</td>
<td>50</td>
<td>43</td>
<td>36</td>
<td>29</td>
<td>22</td>
<td>16</td>
<td>12</td>
<td>8.5</td>
<td>5.5</td>
<td>4.5</td>
<td>3.5</td>
<td>2.5</td>
<td>1.5</td>
</tr>
<tr>
<td>5&quot;</td>
<td>50</td>
<td>43</td>
<td>36</td>
<td>29</td>
<td>22</td>
<td>16</td>
<td>12</td>
<td>8.5</td>
<td>5.5</td>
<td>3.5</td>
<td>2.5</td>
<td>1.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>4&quot;</td>
<td>43</td>
<td>36</td>
<td>29</td>
<td>22</td>
<td>16</td>
<td>12</td>
<td>8.5</td>
<td>5.5</td>
<td>3.5</td>
<td>2.5</td>
<td>1.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>3&quot;</td>
<td>36</td>
<td>29</td>
<td>22</td>
<td>16</td>
<td>12</td>
<td>8.5</td>
<td>5.5</td>
<td>3.5</td>
<td>2.5</td>
<td>1.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>2&quot;</td>
<td>29</td>
<td>22</td>
<td>16</td>
<td>12</td>
<td>8.5</td>
<td>5.5</td>
<td>3.5</td>
<td>2.5</td>
<td>1.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
</tbody>
</table>

**SHIPMENT DATA**

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (L x W x H)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>490 mm x 360 mm x 570 mm</td>
<td>14.8 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, NO batteries</td>
<td>490 mm x 360 mm x 570 mm</td>
<td>9.6 kg</td>
</tr>
</tbody>
</table>
SP-401 SOLAR RTIL LIGHT

RUNWAY THRESHOLD IDENTIFICATION LIGHT

**FEATURES**
- Operates 365 days on solar energy
- 5-level protection against system failure
- 690 hrs of light autonomy
- 1,200 cd light output

**APPLICATION**
Unidirectional optics; designed for permanent usage at airports located in regions without access to electricity and with high photovoltaic potential.

**TECHNICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Optics</th>
<th>1,200 cd light output (tested by accredited laboratory)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unidirectional type</td>
</tr>
<tr>
<td></td>
<td>Vertical adjustment: 0 - 10°</td>
</tr>
<tr>
<td></td>
<td>Horizontal adjustment: 0 - 180°</td>
</tr>
<tr>
<td></td>
<td>L.E.D. lifespan: 100,000 hrs</td>
</tr>
<tr>
<td></td>
<td>Maximum power consumption: 3.9W</td>
</tr>
<tr>
<td></td>
<td>NVG-compatible (optional)</td>
</tr>
<tr>
<td></td>
<td>Color: white</td>
</tr>
<tr>
<td></td>
<td>User-replaceable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Battery</th>
<th>2 x built-in batteries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Autonomy: 680 hrs (minimum intensity)</td>
</tr>
<tr>
<td></td>
<td>Total capacity: 216W (2x9V/12V)</td>
</tr>
<tr>
<td></td>
<td>Deep-cycle VRLA, 12V/9Ah (available worldwide)</td>
</tr>
<tr>
<td></td>
<td>Lifespan: 1,220 cycles (designed for 4-5 years)</td>
</tr>
<tr>
<td></td>
<td>User-replaceable, air transportable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solar Power Supply</th>
<th>20W solar panel, separately installed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poly- or monocristalline type</td>
</tr>
<tr>
<td></td>
<td>Lifespan: 15 years</td>
</tr>
<tr>
<td></td>
<td>MPPT-Temp / Built-in inverter 12-36V/2A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control &amp; Monitoring</th>
<th>Wireless mesh type network</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operating frequency: 868 MHz (optional: 2.4GHz or 433 MHz)</td>
</tr>
<tr>
<td></td>
<td>Operating range: up to 7.5 km, relayed (each light is a repeater)</td>
</tr>
<tr>
<td></td>
<td>Operating Modes:</td>
</tr>
<tr>
<td></td>
<td>Flashing (94 FPM) / Dusk till dawn</td>
</tr>
<tr>
<td></td>
<td>Visible / infrared (optional) / Visible + infrared (optional)</td>
</tr>
<tr>
<td></td>
<td>Activation options:</td>
</tr>
<tr>
<td></td>
<td>Via ALMS Computer Interface (requires UR-201)</td>
</tr>
<tr>
<td></td>
<td>Via UR-201 Control &amp; Monitoring Unit</td>
</tr>
<tr>
<td></td>
<td>Via UR-101 Handheld Controller</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Casing &amp; Components</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dome: glass, UV resistant</td>
</tr>
<tr>
<td></td>
<td>Casing: Lexan polycarbonate, UV stabilized</td>
</tr>
<tr>
<td></td>
<td>Mounting: galvanized steel (optional), marine grade stainless steel</td>
</tr>
<tr>
<td></td>
<td>Frangible mounting: aluminum (tested by accredited laboratory)</td>
</tr>
<tr>
<td></td>
<td>Detachable antenna</td>
</tr>
<tr>
<td></td>
<td>Pressure stabilizing valve</td>
</tr>
<tr>
<td></td>
<td>Battery level indicator</td>
</tr>
<tr>
<td></td>
<td>Carrying handle (optional)</td>
</tr>
<tr>
<td></td>
<td>Casing lifespan: 15 years</td>
</tr>
<tr>
<td></td>
<td>Dimensions (LxWxH): 549 mm x 450 mm x 431 mm</td>
</tr>
<tr>
<td></td>
<td>Weight: 12.4 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety &amp; Reliability</th>
<th>Five levels of protection against system failure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Secondary power supply backup battery</td>
</tr>
<tr>
<td></td>
<td>Real-time monitoring via AILCMS</td>
</tr>
<tr>
<td></td>
<td>Emergency ON/OFF button</td>
</tr>
</tbody>
</table>

| Environmental Conditions | Temperature range: -20 to 50 °C (-4 to 122 °F) |
|                         | Optional: -40 to 80 °C (-40 to 176 °F)           |
|                         | Ingress protection: IP-97 (tested by accredited laboratory) |
|                         | Jet Blast Resistance: 240 kph (tested by accredited laboratory) |

<table>
<thead>
<tr>
<th>Compliance</th>
<th>ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.8.3 &amp; clause 5.3.8.4, Appendix 1, Figure A1-1b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet Blast Resistance</td>
<td>FAA AC 150/5345-508 dated September 2007, clause 3.2.2</td>
</tr>
<tr>
<td>Frangible</td>
<td>ICAO, Annex 14th, Volume I, 8th Edition dated July 2018, clause 5.3.1.3</td>
</tr>
<tr>
<td>FAA AC 150-5345-46F clause 3.4.2.1</td>
<td></td>
</tr>
<tr>
<td>Secondary Power Supply</td>
<td>FAA AC 150/5220-23, clause 3.2</td>
</tr>
<tr>
<td>CE Declaration of Conformity</td>
<td>2014/35/UE RED Directive, clauses 3.1a, 3.1b, 3.2</td>
</tr>
<tr>
<td></td>
<td>2011/65/UE RoHS Directive, clause 4.1</td>
</tr>
</tbody>
</table>

| Accredited Laboratory Testing | Photometric & Chromaticity: Intertek Laboratory |
|                              | Jet Blast Resistance: Warsaw Institute of Aviation |
|                              | The Laboratory of Aerodynamics |
|                              | Frangibility: Laborex Research Laboratory |
|                              | Ingress Protection: EMAG Institute of Innovative Technologies |
|                              | Electromagnetic Compatibility: Military Institute of Armament Technology |
1. Aluminum adapter for glass dome
2. Rubber protection
3. Glass dome
4. LED optics, unidirectional type
5. Radio antenna for wireless control & monitoring
6. Micro-computer with integrated radio transceiver
7. Rubber protection
8. UV-stabilized Lexan polycarbonate casing
9. Emergency ON/OFF button
10. Charging port for solar panel
11. Protective plate
12. 2 x batteries built-in, VRLA type 12V/9Ah
13. 20W Solar panel with standard optimal inclination
14. Frangible mounting
15. Solar holder

**TECHNICAL DRAWING**

**CHROMATICITY PERFORMANCE**

**SHIPPING DATA**

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>490 mm x 360 mm x 579 mm</td>
<td>14.8 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, NO BATTERIES</td>
<td>490 mm x 360 mm x 579 mm</td>
<td>9.6 kg</td>
</tr>
</tbody>
</table>
SP-401 SOLAR RUNWAY EDGE LIGHT

MEDIUM INTENSITY

FEATURES

• Operates 365 days on solar energy
• 5-level protection against system failure
• 180 hrs of autonomy
• 1,200 cd light output

APPLICATION

Medium intensity, combined optics (bi-and omnidirectional); designed for permanent usage at airports located in regions without access to electricity and with high photovoltaic potential.

TECHNICAL SPECIFICATIONS

Optics

• 1,200 cd light output (tested by accredited laboratory)
• Combined type, omnidirectional and bidirectional
• LED lifespan: 100,000 hrs
• Maximum power consumption: 9W
• NVG-compatible (optional)
• Color: white / white, white / yellow, white / red, red / yellow
• User-replaceable

Battery

• 2x built-in batteries
• Autonomy: 180 hrs (minimum intensity)
• Total capacity: 2x6W (2x9Ah/12V)
• Deep-cycle VRLA, 12V/9Ah (available worldwide)
• LED lifespan: 1,200 cycles (designated for 4-5 years)
• User-replaceable, air transportable

Solar Power Supply

• 20W solar panel, separately installed
• Poly- or monocrystalline type
• LED lifespan: 15 years
• MPPT-Temp / Built-in inverter 12-36V/2A

Control & Monitoring

• Wireless mesh type network
• Operating frequency: 868 MHz (optional: 2.4GHz or 433 MHz)
• Operating range: up to 1.5 km, relayed (each light is a repeater)
• Operating Modes:
  Steady / Flashing / Dusk to dawn
  Visible / Infrared (optional) / Visible + Infrared (optional)
• Activation options:
  Via ACMS Computer Interface (requires UR-201)
  Via UR-201 Control & Monitoring Unit
  Via UR-101 Handheld Controller

Casting & Components

• Materials:
  Domes: glass, UV-resistant
  Casing: Lexan polycarbonate, UV-stabilized
  Mounting: galvanized steel (optional: marine grade stainless steel)
  Flange: mounting: aluminum (tested by accredited laboratory)
• Detachable antenna
• Pressure stabilizing valve
• Battery level indicator
• Carrying handle (optional)
• Casing lifespan: 15 years
• Dimensions (LxWxH): 549 mm x 450 mm x 437 mm
• Weight: 12.4 kg

Safety & Reliability

• Five levels of protection against system failure
• Secondary power supply: backup battery
• Real-time monitoring via ACMS (Airfield Lighting Control and Monitoring System)
• Emergency ON/OFF button

Environmental Conditions

• Temperature range: -20 to 50 °C (-4 to 122 °F)
• Optional: -40 to 80 °C (-40 to 176 °F)
• Ingress protection: IP-57 (tested by accredited laboratory)
• Jet Blast Resistance: 250 kph (tested by accredited laboratory)

Compliance

Photometric & Chromaticity

ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.9.8 & clause 5.3.9.9, Appendix 1, Figure A1A-1b

Jet Blast Resistance

ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.9.8 & clause 5.3.9.9, Appendix 1, Figure A1A-1b

Fragility

ICAO, Annex 14th, Volume I, 8th Edition dated July 2018, clause 5.3.1.3

Secondary Power Supply

ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 8.1.1.3.1 & clause 8.1.1.4

CE Declaration of Conformity

2014/30/EU RED Directive, clauses 3.1a, 3.1b, 3.2
2011/65/EU RoHS Directive, clause 4.1

Accredited Laboratory Testing

Photometric & Chromaticity

Intertek Laboratory

Jet Blast Resistance

Warsaw Institute of Aviation

The Laboratory of Aerodynamics

Fragility

Laborex Research Laboratory

Electromagnetic Compatibility

EMAG Institute of Innovative Technologies

Military Institute of Armament Technology
WORLD'S SAFEST RUNWAY LIGHTING

TECHNICAL DRAWING

PHOTOMETRIC PERFORMANCE

White

<table>
<thead>
<tr>
<th>TEST AREA</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREA 1 (BLUE PART)</td>
<td>MIN. 20 CD</td>
</tr>
<tr>
<td>AREA 2 (YELLOW PART)</td>
<td>MIN. 10 CD</td>
</tr>
<tr>
<td>AREA 3 (RED PART)</td>
<td>MIN. 5 CD</td>
</tr>
</tbody>
</table>

| AREA 1 (BLUE PART) MIN. 20 CD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|--------------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|
| AREA 2 (YELLOW PART) MIN. 10 CD|    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |
| AREA 3 (RED PART) MIN. 5 CD    |    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |

<table>
<thead>
<tr>
<th>SP-401 RUNWAY EDGE LIGHT (WHITE)</th>
<th>MIN. 20 CD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

SHIPPING DATA

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>490 mm x 360 mm x 579 mm</td>
<td>14.8 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, No batteries</td>
<td>490 mm x 360 mm x 579 mm</td>
<td>9.6 kg</td>
</tr>
</tbody>
</table>

www.solutions4ga.com
SP-401 SOLAR RUNWAY THRESHOLD END LIGHT

**FEATURES**
- Operates 365 days on solar energy
- 5-level protection against system failure
- 280 hrs of autonomy

**APPLICATION**
Bidirectional optics; designed for permanent usage at airports located in regions without access to electricity and with high photovoltaic potential.

---

**TECHNICAL SPECIFICATIONS**

**Optics**
- 30W (red) / 450 (green) cd light output (tested by accredited laboratory)
- Bidirectional, unidirectional type
- LED lifespan: 100,000 hrs
- Maximum power consumption: 1.8W
- NVG compatible (optional)
- Color: red/green/red/red/green
- User replaceable

**Battery**
- 2 x built-in batteries
- Autonomy: 240 hrs (minimum intensity)
- Total capacity: 216Wh (2x9Ah/12V)
- Deep cycle VRLA, 12V/9Ah (available worldwide)
- Lifespan: 2,000 cycles (designed for 4-5 years)
- User replaceable, air transportable

**Solar Power Supply**
- 20W solar panel, separately installed
- Poly- or monocrystalline type
- Lifespan: 15 years
- MPPT/Temp / Built-in inverter: 12-36V/2A

**Control & Monitoring**
- Wireless mesh type network
- Operating frequency: 868 MHz (optional 2.4GHz or 433 MHz)
- Operating range: up to 1.5 km, relayed (each light is a repeater)
- Operating Modes:
  - Steady / Flashing / Dusk to dawn
  - Visible / Infrared (optional)
  - Visible + Infrared (optional)
- Activation options:
  - Via ALMS Computer Interface (requires UR-201)
  - Via UR-201 Control & Monitoring Unit
  - Via UR-101 Handheld Controller

**Casing & Components**
- Materials:
  - Dome: glass, UV resistant
  - Casing: Lexan polycarbonate, UV-stabilized
  - Mounting: galvanized steel (optional: marine grade stainless steel)
  - Frangible mounting: aluminum (tested by accredited laboratory)
- Detachable antenna
- Pressure stabilizing valve
- Battery level indicator
- Carry handle (optional)
- Casing lifespan: 15 years
- Dimensions (LxWxH): 549 mm x 450 mm x 431 mm
- Weight: 12.4 kg

---

**Safety & Reliability**
- Five levels of protection against system failure
- Secondary power supply: backup battery
- Real-time monitoring via ALMS (Airfield Lighting Control and Monitoring System)
- Emergency ON/OFF button

**Environmental Conditions**
- Temperature range: -20 to 50 °C (-4 to 122 °F)
  - Optional: -40 to 80 °C (-40 to 176 °F)
- Ingress protection: IP 67 (tested by accredited laboratory)
- Jet Blast Resistance: 240 kph (tested by accredited laboratory)

**Compliance**
- Photometric & Chromaticity: ICAO. Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.10.9 (green direction), clause 5.3.11.4 (red direction), Appendix 1, Figure A1-1b
- FAA AC 150/5345-503 dated September 2007, clause 3.2.2

**Technical Specifications**
- Frangibility:
  - ICAO. Annex 14th, Volume I, 7th Edition dated July 2018, clause 5.3.3.3
  - FAA AC 150-5345-46E, clause 3.4.2.1
  - FAA AC 150-5220-23, clause 3.2

**Secondary Power Supply**

**CE Declaration of Conformity**
- 2014/53/EU RED Directive, clauses 3.1a, 3.1b, 3.2
- 2011/65/EU ROHS Directive, clause 4.1

---

**Accredited Laboratory Testing**
- Photometric & Chromaticity: Intertek Laboratory
- Jet Blast Resistance: Warsaw Institute of Aviation
- The Laboratory of Aerodynamics
- Frangibility: Labelex Research Laboratory
- Ingress Protection: EMA, Institute of Innovative Technologies
- Electromagnetic Compatibility: Military Institute of Armament Technology
WORLD'S SAFEST RUNWAY LIGHTING

TECHNICAL DRAWING

PHOTOMETRIC PERFORMANCE

Red

<table>
<thead>
<tr>
<th>Test Area</th>
<th>Required</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREA 1 (BLUE PART)</td>
<td>MIN. 52 CD</td>
<td>MIN. 52 CD</td>
</tr>
<tr>
<td>AREA 2</td>
<td>MIN. 40 CD</td>
<td>MAX. 67 CD</td>
</tr>
<tr>
<td>AREA 3 (GIRDER PART)</td>
<td>MIN. 5 CD</td>
<td>MIN. 5 CD</td>
</tr>
</tbody>
</table>

Green

<table>
<thead>
<tr>
<th>Test Area</th>
<th>Required</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREA 1 (BLUE PART)</td>
<td>MIN. 52 CD</td>
<td>MIN. 52 CD</td>
</tr>
<tr>
<td>AREA 2</td>
<td>MIN. 40 CD</td>
<td>MAX. 67 CD</td>
</tr>
<tr>
<td>AREA 3 (GIRDER PART)</td>
<td>MIN. 5 CD</td>
<td>MIN. 5 CD</td>
</tr>
</tbody>
</table>

SHIPPING DATA

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>490 mm x 360 mm x 570 mm</td>
<td>14.8 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, NO batteries</td>
<td>490 mm x 360 mm x 570 mm</td>
<td>9.6 kg</td>
</tr>
</tbody>
</table>
# SP-401 SOLAR TAXIWAY EDGE LIGHT, TURNING PAD LIGHT

## Features
- Operates 365 days on solar energy
- 5-level protection against system failure
- 600 hrs of autonomy

## Application
Omnidirectional optics; designed for permanent usage at airports located in regions without access to electricity and with high photovoltaic potential.

## Technical Specifications

### Optics
- 11 cd light output (tested by accredited laboratory)
- Omnidirectional type
- LEDs lifespan: 100,000 hrs
- Maximum power consumption: 0.6W
- NVG-compatible (optional)
- Color: blue
- User-replaceable

### Battery
- 2 x built-in batteries
- Autonomy: 600 hrs (minimum intensity)
- Total capacity: 216W (2X9V/12V)
- Deep-cycle VRLA, 12V/9Ah (available worldwide)
- Lifespan: 1,200 cycles (designed for 4-5 years)
- User-replaceable, air transportable

### Solar Power Supply
- 20W solar panel, separately installed
- Poly- or multicrystalline type
- Lifespan: 15 years
- MPPT Temp / Built-in Inverter: 12.36V/2A

### Control & Monitoring
- Wireless mesh type network
- Operating frequency: 868 MHz (optional: 2.4GHz or 433 MHz)
- Operating range: up to 5.5 km, relayed (each light is a repeater)
- Operating Modes:
  - Steady / Flashing / Dusk till dawn
  - Visible / Infrared (optional) / Visible + Infrared (optional)
- Activation options:
  - Via ALMS Computer Interface (requires UR-201)
  - Via UR-201 Control & Monitoring Unit
  - Via UR-101 Handheld Controller

### Casing & Components
- Materials:
  - Dome: glass, UV-resistant
  - Casing: Lexan polycarbonate, UV-stabilized
  - Mounting: galvanized steel (optional: marine grade stainless steel)
  - Frangible mounting: aluminum (tested by accredited laboratory)
- Detachable antenna
- Pressure stabilizing valve
- Battery level indicator
- Carrying handle (optional)
- Casing lifespan: 15 years
- Dimensions: L x W x H 545 mm x 450 mm x 431 mm
- Weight: 12.4 kg

### Safety & Reliability
- Five levels of protection against system failure
- Secondary power supply: backup battery
- Real-time monitoring via ALMS
- Emergency ON/OFF button

### Environmental Conditions
- Temperature range: -20 to 50 °C (-4 to 122 °F)
  - Optional: -40 to 80 °C (-40 to 176 °F)
- Ingress protection: IP-67 (tested by accredited laboratory)
- Jet Blast Resistance: 240 kph (tested by accredited laboratory)

### Compliance
- Photometric & Chromaticity: ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.18.7 & clause 5.3.18.8, Appendix 1, Figure A1-b
- FAA AC 150/5345-50B dated September 2007, clause 3.2.2

### Accredited Laboratory Testing
- Photometric & Chromaticity: Intertek Laboratory
- Jet Blast Resistance: Warsaw Institute of Aviation
- Frangibility: Laboratory of Aerodynamics
- Ingress Protection: Laborex Research Laboratory
- Electromagnetic Compatibility: Military Institute of Armament Technology
1. Aluminum adapter for glass dome
2. Rubber protection
3. Glass dome
4. LED optics, omnidirectional type
5. Radio antenna for wireless control & monitoring
6. Micro-computer with integrated radio transceiver
7. Rubber protection
8. UV-stabilized Lexan polycarbonate casing
9. Emergency ON/OFF button
10. Charging port for solar panel
11. Protective plate
12. 2 x batteries built-in, VRLA type 12V9Ah
13. 20W Solar panel with standard optimal inclination
14. Frangible mounting
15. Solar holder

**PHOTOMETRIC PERFORMANCE**

**SHIPPING DATA**

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>490 mm x 360 mm x 570 mm</td>
<td>14.8 kg</td>
<td></td>
</tr>
<tr>
<td>SP-401 Lighting Unit, NiO batteries</td>
<td>490 mm x 360 mm x 570 mm</td>
<td>9.6 kg</td>
<td></td>
</tr>
</tbody>
</table>
# SP-401 SOLAR OBSTRUCTION LIGHT

## TYPE A LOW INTENSITY

### FEATURES
- Operates 365 days on solar energy
- 5-level protection against system failure
- 280 hrs of autonomy

### APPLICATION
Low intensity obstruction aviation light, designed for permanent usage as obstacle light in airports or helipads located in regions without access to electricity and with high photovoltaic potential.

### TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Optics</th>
<th>Safety &amp; Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 37 cd light output (tested by accredited laboratory)</td>
<td>- Five levels of protection against system failure</td>
</tr>
<tr>
<td>- Omnidirectional type</td>
<td>- Secondary power supply: backup battery</td>
</tr>
<tr>
<td>- LED Lifespan: 100,000 hrs</td>
<td>- Real-time monitoring via ALDMS (Airfield Lighting Control and Monitoring System)</td>
</tr>
<tr>
<td>- Maximum power consumption: 1.8W</td>
<td>- Emergency ON/OFF button</td>
</tr>
<tr>
<td>- NVG-compatible (optional)</td>
<td></td>
</tr>
<tr>
<td>- Color: red</td>
<td></td>
</tr>
<tr>
<td>- User-replaceable</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Battery</th>
<th>Environmental Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 2 x built-in batteries</td>
<td>- Temperature range: -20 to 50 °C (-4 to 122 °F)</td>
</tr>
<tr>
<td>- Autonomy: 280 hrs (minimum intensity)</td>
<td>Optional: -40 to 80 °C (-40 to 176 °F)</td>
</tr>
<tr>
<td>- Total capacity: 7.6W (2x1.9AV/12V)</td>
<td>Ingress protection: IP-67 (tested by accredited laboratory)</td>
</tr>
<tr>
<td>- Deep-cycle VRLA, 12V/9Ah (available worldwide)</td>
<td>- Jet Blast Resistance: 240 kph (tested by accredited laboratory)</td>
</tr>
<tr>
<td>- Lifespan: 1,200 cycles (designed for 4-5 years)</td>
<td></td>
</tr>
<tr>
<td>- User-replaceable, air transportable</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solar Power Supply</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 220W solar panel, separately installed</td>
<td>ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, table 6-2, Appendix I, Figure A17b</td>
</tr>
<tr>
<td>- Poly- or monocrylline type</td>
<td>FAA AC 150/5345-508 dated September 2007, clause 3.2.2</td>
</tr>
<tr>
<td>- MPPT Temp / Built-in inverter 12-36V/2A</td>
<td>FAA AC 150/5220-23, clause 3.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control &amp; Monitoring</th>
<th>Frangibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Wireless mesh type network</td>
<td>ICAO, Annex 14th, Volume I, 8th Edition dated July 2018, clause 5.3.1.3</td>
</tr>
<tr>
<td>- Operating frequency: 868 MHz (optional: 2.4GHz or 433 MHz)</td>
<td>FAA AC 150-5345-46E clause 3.4.2.1</td>
</tr>
<tr>
<td>- Operating range: up to 1.5 km, relayed (each light is a repeater)</td>
<td>FAA AC 150/5220-23, clause 3.2</td>
</tr>
<tr>
<td>- Visible / Infrared (optional) / Visible + Infrared (optional)</td>
<td>CE Declaration of Conformity</td>
</tr>
<tr>
<td>- Activation options: Via ALDMS Computer Interface (requires UR-201)</td>
<td>2014/53/EU RED Directive, clauses 3.1a, 3.1b, 3.2</td>
</tr>
<tr>
<td>Via UR-201 Control &amp; Monitoring Unit</td>
<td>2011/65/EU ROHS Directive, clause 4.1</td>
</tr>
<tr>
<td>Via UR-101: Handheld Controller</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Casing &amp; Components</th>
<th>Accredited Laboratory Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Materials: Dome glass, UV-resistant</td>
<td>Photometric &amp; Chromaticity</td>
</tr>
<tr>
<td>Casing: Lexan copolymer, UV stabilized</td>
<td>Intertek Laboratory</td>
</tr>
<tr>
<td>Mounting: galvanized steel (optional: marine grade stainless steel)</td>
<td>Jet Blast Resistance</td>
</tr>
<tr>
<td>Frangible mounting: aluminum (tested by accredited laboratory)</td>
<td>Warsaw Institute of Aviation</td>
</tr>
<tr>
<td>Detachable antenna</td>
<td>The Laboratory of Aerodynamics</td>
</tr>
<tr>
<td>Pressure stabilizing valve</td>
<td>Frangibility</td>
</tr>
<tr>
<td>Battery level indicator</td>
<td>Laborex Research Laboratory</td>
</tr>
<tr>
<td>Carrying handle (optional)</td>
<td>Ingress Protection</td>
</tr>
<tr>
<td>Casing Lifespan: 15 years</td>
<td>EMAG Institute of Innovative Technologies</td>
</tr>
<tr>
<td>Dimensions: L x W x H: 549 mm x 450 mm x 431 mm</td>
<td>Electromagnetic Compatibility</td>
</tr>
<tr>
<td>- Weight: 12.4 kg</td>
<td>Military Institute of Armament Technology</td>
</tr>
</tbody>
</table>
WORLD’S SAFEST RUNWAY LIGHTING

TECHNICAL DRAWING

PHOTOMETRIC PERFORMANCE

SHIPPING DATA

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>490 mm x 360 mm x 579 mm</td>
<td>14,8 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, NO batteries</td>
<td>490 mm x 360 mm x 579 mm</td>
<td>9,6 kg</td>
</tr>
</tbody>
</table>
OTHER SOLAR AIRFIELD LIGHTING EQUIPMENT

- Solar Precision Approach Path Indicator
- UR-3 PAPI Controller-Converter
- Solar Wind Direction Indicator
- Solar Engine
SOLAR PAPI
PRECISION APPROACH
PATH INDICATOR


FEATURES
• Simple Design
• Sharp Color Transition
• Controlled Positioning

APPLICATION
Halogen two-projector PAPI with solar power supply; designed for permanent usage at Airports located in regions with unavailable electrical infrastructure and high photovoltaic potential.

TECHNICAL SPECIFICATIONS

Optics
• Two-projector PAPI unit
• Halogen lamp standard type 200W, PK30d
• Vertical adjustment: 0 - 10°
• Transition: Better than 3 minutes of arc on beam axis
• Filter: Dichroic on borosilicate glass Signal Red to BS 1376
• Azimuth range: +8˚ (ICAO), +10˚(FAA) or +15˚(CAP 168)

Power Supply
• Solar power supply (check Solar Engine brochure)
• 230 VAC (requires PAPI Controller)
• Optional 6.6A electrical power supply

Wireless Control
• Via UR-201 Control & Monitoring Unit
• Via UR-101 Handheld Controller
• Via ALCMS Computer interface

Environmental Conditions
• Temperature range: -20 to 50 ºC (-4 to 122 ºF)
• Ingress protection: IP-65
• Wind Speed: 160 kph

Casing And Components
• Projectors: 1.6mm aluminium sheet, black anodized external surface of covers aviation yellow epoxy paint
• Fasteners: stainless steel, monel
• Bases: Cast aluminium, heat treated and stabilised, black anodised finish
• Pillar coupling: Malleable iron, hot dipped zinc coated
• Support pillars: Aluminium alloy tubing, natural anodised
• Frangible foot: Cast aluminium, natural anodised
• Ball joints: Glass filled black nylon
• Color: aviation yellow

Compliance
• ICAO, Annex 14th, Volume I, 6th Edition dated 2013, clauses 5.3.5.28 – 5.3.5.40, Figure A2-23 Appendix 1, 2.1.1
**TECHNICAL DRAWING**

1. Top cover
2. Dichroic red/white glass
3. Lens
4. Front glass
5. Projector body
6. Base frame
7. Aluminium leg
8. K.K. Fitting
9. Aluminium leg
10. Frangible ground fitting

**PHOTOMETRIC PERFORMANCE**

White/Red Light emitted Luminous intensity (cd)

<table>
<thead>
<tr>
<th>Angle (°)</th>
<th>0</th>
<th>0.5</th>
<th>1</th>
<th>1.5</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>2648</td>
<td>1650</td>
<td>959</td>
<td>581</td>
<td>346</td>
<td>216</td>
<td>135</td>
<td>83</td>
<td>55</td>
<td>32</td>
</tr>
<tr>
<td>1</td>
<td>2968</td>
<td>1814</td>
<td>1116</td>
<td>704</td>
<td>442</td>
<td>285</td>
<td>179</td>
<td>116</td>
<td>77</td>
<td>51</td>
</tr>
<tr>
<td>1.5</td>
<td>3462</td>
<td>2176</td>
<td>1395</td>
<td>898</td>
<td>565</td>
<td>371</td>
<td>237</td>
<td>158</td>
<td>109</td>
<td>72</td>
</tr>
<tr>
<td>2</td>
<td>4314</td>
<td>2672</td>
<td>1740</td>
<td>1147</td>
<td>730</td>
<td>480</td>
<td>314</td>
<td>214</td>
<td>145</td>
<td>95</td>
</tr>
<tr>
<td>2.5</td>
<td>5602</td>
<td>3532</td>
<td>2332</td>
<td>1570</td>
<td>1007</td>
<td>677</td>
<td>448</td>
<td>304</td>
<td>207</td>
<td>141</td>
</tr>
<tr>
<td>3</td>
<td>7524</td>
<td>5012</td>
<td>3337</td>
<td>2224</td>
<td>1488</td>
<td>991</td>
<td>664</td>
<td>444</td>
<td>302</td>
<td>203</td>
</tr>
<tr>
<td>3.5</td>
<td>10288</td>
<td>6720</td>
<td>4500</td>
<td>3000</td>
<td>2000</td>
<td>1333</td>
<td>916</td>
<td>611</td>
<td>414</td>
<td>274</td>
</tr>
<tr>
<td>4</td>
<td>14112</td>
<td>9440</td>
<td>6320</td>
<td>4210</td>
<td>2800</td>
<td>1866</td>
<td>1254</td>
<td>870</td>
<td>582</td>
<td>392</td>
</tr>
<tr>
<td>4.5</td>
<td>19728</td>
<td>12544</td>
<td>8512</td>
<td>5740</td>
<td>3820</td>
<td>2542</td>
<td>1728</td>
<td>1192</td>
<td>832</td>
<td>564</td>
</tr>
<tr>
<td>5</td>
<td>28580</td>
<td>18386</td>
<td>12260</td>
<td>8140</td>
<td>5420</td>
<td>3614</td>
<td>2471</td>
<td>1701</td>
<td>1132</td>
<td>751</td>
</tr>
</tbody>
</table>

**APPLICATION FEATURES**

1. Simple Design
2. Sharp Color Transition
3. Controlled Positioning

**COMPLIANCE**


- User-Replaceable Optic Elements
- Corrosion Resistant

**DIMENSIONS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAPI, 4 x Projector Unit</td>
<td>560 x 650 x 750 mm</td>
</tr>
<tr>
<td>Clinometer</td>
<td>360 x 290 x 100 mm</td>
</tr>
</tbody>
</table>

Gross Weight

- 52 kg
- 1 kg
UR-3 PAPI CONTROLLER CONVERTER

UR-3 PAPI Controller-Converter is designed to provide remote control over S4GA Precision Approach Path Indicator (PAPI) units. Adding UR-3 to S4GA PAPI allows users to remotely control and change the intensity of PAPI via UR-201 Control & Monitoring Unit and UR-101 Handheld Controller.

UR-3 Controller-Converter also provides the ability to power S4GA PAPI using standard 230 VAC electrical supply. No need for costly 6.6 A grid, powered by a constant current regulator.

FEATURES
1. Applicable for S4GA halogen PAPI
2. Allows remote PAPI activation
3. Allows to power PAPI via solar engine, power bank, generator set.

CE COMPLIANCE
1. 2014/35/UE
2. 2014/30/UE
3. 2011/65/UE
4. 2014/53/UE

TECHNICAL SPECIFICATIONS

Electrical
- Power input: 230 VAC
- Transformer: Toroidal type 230VAC 600VA (available steps: 2.8, 3.4, 4.2, 5.4, 6.6 Amp)
- Power outlets: 2 x 200 W

Communication between Controller and UR-201 / UR-101
- Type: Wireless mesh type network
- Operating range: Up to 1,500 meters
- External antenna: Yes

PAPI Remote Control
- PAPI intensity setup: 3-step via UR-201, UR-101
  5-step via ALCMS
- Activation options: Via UR-201 Control & Monitoring Unit
  Via ALCMS Computer Interface
  Via UR-101 Handheld Controller
- Emergency ON/OFF button: Yes

Enclosure
- Type: CS 33/150
- Material: Galvanized steel
- Color: Grey
- Dimensions: 300 mm x 300 mm x 150 mm

Compliance
- 2014/35/UE: Low Voltage Directive
- 2014/30/UE: Electromagnetic Compatibility Directive
- 2011/65/UE: ROHS Directive

SHIPPING DATA
- Dimensions of Package (LxWxH): 400 mm x 335 mm x 225 mm
- Gross Weight: 12.5 kg
# SOLAR WIND DIRECTION INDICATOR

**APPLICATION**

SAGA WDI is airport windsock compliant with ICAO standards; designed for permanent usage at Airports located in regions with unavailable electrical infrastructure and high photovoltaic potential.

**FEATURES**

- Easy installation
- Weather resistant
- Illuminated, solar powered

## TECHNICAL SPECIFICATIONS

### Physical

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAST</td>
<td>Height 7.40 m (adjustable)</td>
</tr>
<tr>
<td></td>
<td>Reinforced mast: yes</td>
</tr>
<tr>
<td>WIND SOCK</td>
<td>Dimensions 100 x 450 cm</td>
</tr>
<tr>
<td></td>
<td>Color: Red/White</td>
</tr>
<tr>
<td></td>
<td>Swivel Frame: yes</td>
</tr>
<tr>
<td></td>
<td>Protection: galvanized steel</td>
</tr>
<tr>
<td></td>
<td>Mounting: Anchorage block</td>
</tr>
<tr>
<td></td>
<td>Braces Dimensions: 3x120 cm</td>
</tr>
</tbody>
</table>

### Illumination

- Internal lighting
- Obstruction light: type A obstruction light installed on top of the mast

### Power Supply

- SOLAR ENGINE
  - 280W solar panel
  - 2 x batteries 12V/100Ah
  - 230 VAC power supply (optional)
  - 6.6 A electrical grid (optional)

### Environmental Conditions

- Operating temperature: -60°C to +80°C
- Humidity: 100%
- Wind Speed: 160 kph

### Certification

- CE-EN60947-1
- CEI60364, NF C15-100
- 2014/35/UE
- ISO 9001:2008

---

Compliance:
S4GA WDI is airport windsock compliant with ICAO standards; designed for permanent usage at Airports located in regions with unavailable electrical infrastructure and high photovoltaic potential.

- Easy installation
- Weather resistant
- Illuminated, solar powered

**TECHNICAL SPECIFICATIONS**

**Physical**
- **MAST:**
  - Height 7.40 m (adjustable)
  - Reinforced mast: yes
- **WIND SOCK:**
  - Dimensions 100 x 450 cm
  - Color: Red/White
  - Swivel Frame: yes
  - Protection: galvanized steel
  - Mounting: Anchorage block
  - Braces Dimensions: 3x120 cm

**Illumination**
- Internal lighting
- Obstruction light: type A obstruction light installed on top of the mast

**Power Supply**
- **SOLAR ENGINE**
  - 280W solar panel
  - 2 x batteries 12V/100Ah
- 230 VAC power supply (optional)
- 6.6 A electrical grid (optional)

**Environmental Conditions**
- Operating temperature: -60ºC to +80ºC
- Humidity: 100%
- Wind Speed: 160 kph

**Certification**
- CE-EN60947-1
- CEI60364, NF C15-100
- 2014/35/UE
- ISO 9001:2008

**Compliance:**


---

**WIND DIRECTION INDICATOR PHOTOS**

[Images of wind direction indicators in various settings]
SE-302 SOLAR ENGINE

FOR PAPI, WIND DIRECTION INDICATOR AND OTHER AIRFIELD LIGHTING EQUIPMENT

FEATURES

- Applicable for Different Airfield Lighting Equipment
- 20% More Energy Efficient Solar Panel
- All Consisting Parts Are User-Replaceable
- Adjustable Solar Engine Size

APPLICATION

S4GA Solar Engine is designed to power PAPI or other airfield lighting equipment. It consists of premium quality Q.ANTUM solar panel and VICTRON power bank.

1. POWER BANK

CAPACITY: 2640 W
Stores solar energy and powers airport infrastructure connected to Power Banks

2. SOLAR PANEL

CAPACITY: 640 W
Q CELL Solar panel collects solar energy 20% more effective than other solar panels

3. Airfield lighting equipment is connected to Power Bank and powered by solar energy

EXAMPLES OF S4GA SOLAR ENGINES
SOLAR PANEL

Q.ANTUM DUO TECHNOLOGY

2 X Q.PEAK SOLAR PANELS
TOTAL POWER OUTPUT: 640 W

ALLUMINIUM FRAME

SUPPORTIVE FRANGIBLE LEGS

Q.ANTUM TECHNOLOGY:
LOW LEVELISED COST OF ELECTRICITY
Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.9%.

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID Technology, Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING
High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

STATE OF THE ART MODULE TECHNOLOGY
Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology.

TECHNICAL SPECIFICATIONS

General
- 2 x Q.PEAK DUO-G5 solar panels
- Front Cover: 3.2 mm thermally pre-stressed glass with antireflection technology
- Back Cover: composite film
- Frame: Black anodized aluminium
- Cell: 6 x 20 monocrystalline Q.ANTUM solar half cells
- Connector: Multi-Contact, MC4, IP65 and IP68
- Dimensions: 1685 x 1000 x 32 mm
- Weight: 18.7 kg

Electrical
- Total Engine Size: 640 W (2 x 320 W)
- Nominal Power: 315-330 Wp
- Maximum system voltage: 1000 V

Control & Monitoring
- Operating temperature: -40 to 85°C
- Wind/Snow Load: 4000/5400 Pa

Certification
- VDE Quality Tested, IEC 61215 (Ed. 2); IEC 61730 (Ed. 1), Application class A
- DIN EN 50380

TECHNICAL DRAWING

FRONT VIEW

SIDE VIEW

BOTTOM VIEW
INVERTER / CHARGER

General
- MultiPlus 24/300/70 Inverter Charger
- Power Control: yes
- Transfer Switch (A): 16
- Parallel and 3-phase operation: yes
- Dimensions [HxWxD]: 375 x 214 x 110 mm
- Weight: 10 kg

Inverter
- Input voltage range (V DC): 9.5 – 17 V, 19 – 33 V, 38 – 66 V
- Output voltage: 230 VAC ± 2%
- Frequency: 50 Hz ± 0,1%

Charger
- Input voltage range: 187-265 VAC
- Input frequency: 45 – 65 Hz

Environmental Conditions
- Temperature Range: -40 to 85°C
- Ingress Protection: IP21
- Humidity: 95%

Compliance
- Safety: EN 60335-1, EN 60335-2-29
- Emission, Immunity: EN 55014-1, EN 55014-2, EN 61000-3-3
- Automotive Directive: 2004/104/EC

CHARGE CONTROLLER

General
- BlueSolar Charge Controller MPPT 100/30
- Dimensions [LxWxH]: 130 x 186 x 70 mm
- Weight: 1,25 kg

Electrical
- Battery Voltage: 12/24V Auto Select
- Rated charge current: 30 A
- Nominal PV power, 12V: 440 W
- Nominal PV power, 24V: 880 W
- Max. PV short circuit current: 35 A
- Maximum PV open circuit voltage: 100 V
- Maximum efficiency: 98%
- Protection: battery reverse polarity (fuse, not user-accessible) PV reverse polarity / Output short circuit / Over Temperature

Environmental Conditions
- Temperature range: -30 to +60°C
- Humidity: 95%, non-condensing

Compliance
- Safety: EN/IEC 62109-1 / UL 1741 / CSA C22.2
- NEMA protection class: NEMA 4
- IK Code: IK08
- Material: galvanized steel
- Dimensions (LxWxH): 600 x 1400 x 300 mm
- Ingress Protection: IP-65

BATTERY

General
- Victron Energy Battery Deep Cycle
- Lifespan: 750 cycles
- Designed for 5 years
- Air-transportable
- User-replaceable
- Dimensions [LxWxH]: 330 x 171 x 220 mm
- Weight: 33 kg

Electrical
- Nominal Voltage: 12V
- Nominal Capacity: 220 Ah
- Total capacity: 2640 W (12V x 220Ah)

Environmental Conditions
- Temperature range: -40 to 85°C

TECHNICAL DRAWING

SHIPPING DATA

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x Power Bank</td>
<td>1460 mm x 860 mm x 600 mm</td>
<td>140 kg</td>
</tr>
<tr>
<td>2 x Solar Panels, 1 x Mounting Set for SE-302 Solar Engine</td>
<td>2310 mm x 1160 mm x 600 mm</td>
<td>100 kg</td>
</tr>
</tbody>
</table>
AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM

ALCMS Advanced
ALCMS Basic
UR-201 Control and Monitoring Unit
ALCMS ADVANCED
AIRFIELD LIGHTING CONTROL & MONITORING SYSTEM

SYSTEM OVERVIEW
S4GA ALCMS is an Airfield Lighting Control and Monitoring System designed to provide full remote control and monitoring of solar LED runway lighting from the TWR or maintenance room. S4GA ALCMS consists of Computer Interface integrated in UR-201 Control and Monitoring Unit. It features open interface for integrating with existing AGL control system.

FEATURES
• Custom Airfield Layout
• Individual Light Status Display
• Custom Grouping of Lights
• 5-step Light Intensity Setup
• Operating Mode Setup

CONTROL
• Grouping of entire airfield lighting in major groups
• Control of entire lighting system and groups of lights
• Individual control of separate taxiways
• 5-step intensity level setup for a particular group of lights
• Operating modes setup: flashing, dusk-till-dawn, pilot-activated, GSM-activated
• Timer setup (for pilot-activated and GSM-activated modes)

ALCMS Advanced is designed for airports with advanced AGL system (including multiple taxiways, approach lighting, temporarily closed areas). This type computer interface has advanced features like customized airfield layout and more detailed grouping of lights (e.g. control of separate taxiways).

• Real-time monitoring
• Automatic failure alarm
• Operating mode setup
• Individual light status indication
• Grouping of airfield lights
• Light intensity steps
• Separate taxiways control
• Airfield layout

For airports with simple runway lighting system (runway edge, threshold and one taxiway), S4GA offers ALCMS Basic.
**MONITORING**

- Real-time individual light status monitoring: battery level, lamp status, connection status, charging speed, temperature, charging efficiency of solar panel
- Monitoring of UR-201 Control Module: GSM signal strength, back-up battery level, power connection
- Immediate light failure detection and report: light unavailable, critical battery level
- Color indication of current light status:

  - **RED**: Lamp is Offline
  - **AMBER**: The battery level is below 30%
  - **GREY**: The unit is 100% operational

**ADMIN MANAGEMENT**

- Adding, editing and deleting users
- Setting/changing passwords
- 3 levels of access: Master, Admin, User

**ACCESSORIES INCLUDED**

- 24" TV Monitor
- Wireless set: keyboard + mouse
- HDMI cable
- Power cable

**SHIPPING DATA**

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALCMS Set (24&quot; screen, cables, keyboard, mouse)</td>
<td>620 mm x 205 mm x 460 mm</td>
<td>10 kg</td>
</tr>
</tbody>
</table>
ALCMS BASIC
AIRFIELD LIGHTING CONTROL & MONITORING SYSTEM

SYSTEM OVERVIEW
S4GA ALCMS is an Airfield Lighting Control and Monitoring System designed to provide full remote control and monitoring of solar LED runway lighting from the TWR or maintenance center. S4GA ALCMS consists of Computer Interface integrated in UR-201 Control and Monitoring Unit. It features open interface for integrating with existing AGL control system.

FEATURES
• Individual Light Status Display
• 3 Groups of Lights
• 3-step Light Intensity Setup
• Operating Mode Setup

CONTROL
• Grouping of entire airfield lighting in 3 major groups
• Control of entire lighting system and groups of lights
• 3-step intensity level setup for a particular group of runway lights and PAPI
• Operating modes setup: flashing, NVG, dusk-till-dawn, pilot-activated, GSM-activated
• Timer setup (for VHF-activated and GSM-activated modes)

ALCMS Basic is designed for airports with simple runway lighting system. Typically, it includes a runway and one taxiway leading to an apron. ALCMS Basic allows to control entire system and groups of lights separately (e.g. runway, threshold and taxiway lights) as well as report about individual light statuses.

• Real-time monitoring
• Automatic failure alarm
• Operating mode setup
• Individual light status indication
• Grouping of airfield lights
• Light intensity, steps
• Separate taxiways control
• Airfield layout

For airports with more advanced AGL system (including few taxiways, approach lighting, temporarily closed areas), S4GA offers ALCMS Advanced.

---------------

CONTROL PANEL
LAMP STATUS
ADMIN MGMT

INTERF ACE
PRESS ON TO ACTIVATE INTERFACE

OPERATING MODES
• FLASHING
• DUSK TILL DAWN
• REMOTE

REMOTE ACTIVATION
• GSM (cell phone)
• VHF (air-band radio)

LIGHT INTENSITY
• LOW - 10%
• MEDIUM - 30%
• HIGH - 100%

TIMER SETUP

ALCMS Advanced
OBLIGATORY REQUIRES
UR-201 TO BE SUPPLIED.

MINIMUM SYSTEM
24" TV Monitor
HDMI cable
Power cable
Wireless set: keyboard + mouse

Gross Weight
10 kg
Dimensions of Package (LxWxH)
600 mm x 400 mm x 360 mm

ACCESSORIES INCLUDED
HDMI cable
Power cable
Wireless set: keyboard + mouse
24" TV Monitor

INPUT PANEL
LEVELS OF ACCESS
ADDING, EDITING, DELETING USER

UR-201 CONTROL UNIT STATUS
LIGHTING GROUPS STATUS

MONITORED AREAS STATUS

INDIVIDUAL LIGHT ALARM LOG

INDIVIDUAL LIGHT STATUS

ADM IN MGMT
**MONITORING**

- Real-time individual light status monitoring: battery level, charging speed, temperature, operating status, charging efficiency of solar panel
- Monitoring of UR-201 Control Module: GSM signal strength, back-up battery level, power connection
- Immediate light failure detection and report: light unavailable, critical battery level.
- Color indication of current status in 4 monitored areas: Lamps, Power, GSM, VHF
- Color indication of current light statuses:
  - [RED] LAMP IS OFFLINE
  - [AMBER] THE BATTERY LEVEL IS BELOW 30%
  - [GREY] THE UNIT IS 100% OPERATIONAL

**ADMIN MANAGEMENT**

- Adding, editing and deleting users
- Setting/changing passwords
- 3 levels of access: Master, Admin, User

**ACCESSORIES INCLUDED**

- 24" TV Monitor
- Wireless set: keyboard + mouse
- HDMI cable
- Power cable

**ALCMS ADVANCED OBLIGATORY REQUIRES UR-201 TO BE SUPPLIED.**

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALCMS Set (24&quot; screen, cables, keyboard, mouse)</td>
<td>600 mm x 400 mm x 360 mm</td>
<td>10 kg</td>
</tr>
</tbody>
</table>
UR-201 CONTROL AND MONITORING UNIT

HARDWARE OF ALCMS

FEATURES

• Airfield Lighting Control Panel
• Automatic Failure Alarm via SMS
• Remote Activation of Airfield Lighting (via GSM, VHF)
• Remote Airfield Lighting Monitoring

CE COMPLIANCE

• 2014/53/EU Radio Equipment Directive
• 2011/65/EU and 2015/863 RoHS Directive

UR-201 Control & Monitoring Unit is a hardware element of S4GA ALCMS. It is designed to provide User with ability to remotely control and monitor S4GA Solar LED Runway Lighting.

UR-201 Unit can be optionally equipped with computer-based ALCMS offering real-time individual light monitoring (check ALCMS Basic, ALCMS Advanced product brochures)

FEATURES

• Airfield Lighting Control Panel
• Automatic Failure Alarm via SMS
• Remote Activation of Airfield Lighting (via GSM, VHF)
• Remote Airfield Lighting Monitoring

CE COMPLIANCE

• 2014/53/EU Radio Equipment Directive
• 2011/65/EU and 2015/863 RoHS Directive

UR-201 Control & Monitoring Unit is a hardware element of S4GA ALCMS. It is designed to provide User with ability to remotely control and monitor S4GA Solar LED Runway Lighting.

UR-201 Unit can be optionally equipped with computer-based ALCMS offering real-time individual light monitoring (check ALCMS Basic, ALCMS Advanced product brochures)
**TECHNICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Control &amp; Monitoring</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjust lighting intensity</td>
<td>Yes</td>
</tr>
<tr>
<td>Select operating mode</td>
<td>Yes</td>
</tr>
<tr>
<td>Remote monitoring of the SP-401 unit(s) key parameters</td>
<td>Yes</td>
</tr>
<tr>
<td>Automatic failure alarm (via SMS)</td>
<td>Battery level of any lighting unit drops below 30%</td>
</tr>
<tr>
<td></td>
<td>Any lighting unit stops responding to UR-201</td>
</tr>
<tr>
<td></td>
<td>Power supply of UR-201 Units stops</td>
</tr>
<tr>
<td>Communication between Remote Control Unit and the Lights</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Wireless</td>
</tr>
<tr>
<td>Operating Range</td>
<td>Up to 1.500 m, relayed (each light is a repeater)</td>
</tr>
<tr>
<td>Radio transceiver (frequency/power output)</td>
<td>Operating frequency: 868 MHz (optional 2.4 GHz or 433 MHz), 16 mW</td>
</tr>
<tr>
<td>External antenna</td>
<td>Yes</td>
</tr>
<tr>
<td>External Switches</td>
<td></td>
</tr>
<tr>
<td>Grouping of lights</td>
<td>Yes: up to 3 groups</td>
</tr>
<tr>
<td>Light intensity</td>
<td>Yes: 10%, 30%, 100% (for each group)</td>
</tr>
<tr>
<td>Operating mode</td>
<td>Yes: steady, flashing, NVG (for each group)</td>
</tr>
<tr>
<td>Timer</td>
<td>Yes</td>
</tr>
<tr>
<td>Remote activation of the Lights</td>
<td>Yes: GSM, VHF, GSM+VHF</td>
</tr>
<tr>
<td>Power Source</td>
<td></td>
</tr>
<tr>
<td>Primary power source</td>
<td>90 – 240 VAC</td>
</tr>
<tr>
<td>Back-up power source</td>
<td>Battery 18Ah, 12V</td>
</tr>
<tr>
<td>Back-up battery operating time</td>
<td>24 hrs</td>
</tr>
<tr>
<td>Remote Activation</td>
<td></td>
</tr>
<tr>
<td>VHF (pilot radio)</td>
<td>Yes</td>
</tr>
<tr>
<td>GSM (cell phone)</td>
<td>Yes</td>
</tr>
<tr>
<td>Lighting Protection</td>
<td></td>
</tr>
<tr>
<td>Separate lightning arrester</td>
<td>Yes</td>
</tr>
<tr>
<td>Lightning arrester grounding</td>
<td>Yes</td>
</tr>
<tr>
<td>External Ports</td>
<td></td>
</tr>
<tr>
<td>VHF antenna</td>
<td>Yes</td>
</tr>
<tr>
<td>Lighting system antenna</td>
<td>Yes</td>
</tr>
<tr>
<td>GSM antenna</td>
<td>Yes</td>
</tr>
<tr>
<td>USB</td>
<td>Yes</td>
</tr>
<tr>
<td>HDMI</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>ACCESSORIES INCLUDED</strong></td>
<td></td>
</tr>
<tr>
<td>CABLES</td>
<td></td>
</tr>
<tr>
<td>• VHF cable, length 10 m</td>
<td></td>
</tr>
<tr>
<td>• 868 MHz cable, length 10 m</td>
<td></td>
</tr>
<tr>
<td><strong>APPLIANCES INCLUDED</strong></td>
<td></td>
</tr>
<tr>
<td>ANTIENNESS</td>
<td></td>
</tr>
<tr>
<td>• 868 MHz antenna</td>
<td></td>
</tr>
<tr>
<td>• GSM Antenna</td>
<td></td>
</tr>
<tr>
<td>• VHF antenna</td>
<td></td>
</tr>
<tr>
<td><strong>SHIPPING DATA</strong></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Dimensions of Package (LxWxH)</td>
</tr>
<tr>
<td>UR-201 Unit</td>
<td>650 mm x 510 mm x 350 mm</td>
</tr>
<tr>
<td>Accessories (cables, antennas)</td>
<td>1500 mm x 100 mm x 20 mm</td>
</tr>
</tbody>
</table>
PORTABLE AIRFIELD LIGHTING TRAILER

- SP-401 Portable Runway Edge Light
- SP-401 Portable Runway Threshold End Light
- SP-401 Portable Approach Light
- SP-401 Portable Runway Threshold Identification Light
- SP-401 Portable Taxiway Light
- SP-401 Portable Obstruction Light
- UR-101 Handheld Controller
- OCT-401 Charger
PORTABLE AIRFIELD LIGHTING TRAILER
FOR MILITARY AND CIVIL

CONTACTLESS CHARGING

- Only 10 min required to plug-in 132 lights
- Charging time: 8 hours
- Charging starts instantly

CONTROL & MONITORING UNIT
LOW BATTERY SMS AUTO REPORTING

System sends User notifications about light failures:

- Low battery level
- The light is out of the runway

TRAILER PRODUCTS

SP-401 PORTABLE RUNWAY EDGE LIGHT
SP-401 PORTABLE RUNWAY THRESHOLD END LIGHT
SP-401 PORTABLE TAXIWAY LIGHT
UR-101 HANDHELD CONTROLLER
## SP-401 PORTABLE RUNWAY EDGE LIGHT

### MEDIUM INTENSITY

#### FEATURES

- 180 hrs of autonomy
- Remote activation
- Convertible to solar airfield light
- 1,200 cd light output

#### APPLICATION

Mobile airfield light designed to quickly illuminate temporary airfield in accordance with ICAO:
- Temporary runways
- Remote airfields
- Backup airport lighting
- Emergency landing airstrips

### TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Optional</th>
<th>1,200 cd light output (tested by accredited laboratory)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Combined type, omnidirectional and bidirectional</td>
</tr>
<tr>
<td></td>
<td>LED lifespan: 100,000 hrs</td>
</tr>
<tr>
<td></td>
<td>Maximum power consumption: 9W</td>
</tr>
<tr>
<td></td>
<td>NVG-compatible (optional)</td>
</tr>
<tr>
<td></td>
<td>Color: white / white, white / yellow, white / red / red / yellow</td>
</tr>
<tr>
<td></td>
<td>User-replaceable</td>
</tr>
</tbody>
</table>

#### Battery

- 2 x built-in batteries
- Autonomy: 180 hrs (minimum: intensity)
- Total capacity: 2.16W (2x9V/12V)
- Deep-cycle VRLA: 12V/9Ah (available worldwide)
- Lifespan: 1,200 cycles (designed for 4-5 years)
- User-replaceable, air transportable

#### Charging

- Via OCT-401 Charger (charging time: 8 hrs)
- Contactless charging in a Trailer (charging time: 8 hrs)
- Optional solar power supply

#### Remote Activation / Control

- Wireless mesh type network
- Operating frequency: 868 MHz (optional: 2.4GHz or 433 MHz)
- Operating range: up to 1.5 km, relayed (each light is a repeater)
  - Operating Modes: Steady / Flashing / Burst till dawn
  - Visible / Infrared (optional) / Visible + Infrared (optional)
- Remote activation:
  - Via UR-101 Handheld Controller
  - Via UR-201 Controller & Monitoring Unit
  - GSM activation (Cell Phone)
  - VHF activation (Air-band Radio)
  - Via ALCMS Computer Interface (requires UR-201)

#### Casing & Components

- Materials: Dome glass, UV-resistant
- Casing: Lexan polycarbonate, UV stabilized
- Carrying handle: stainless steel
- Detachable antenna
- Pressure stabilizing valve
- Battery level indicator
- Transport circuit breaker
- Casing lifespan: 15 years
- Optional: frangible mounting (tested by accredited laboratory)
- Dimensions (LxWxH): 244 mm x 185 mm x 297 mm
- Weight: 7 kg

### Compliance

- **Safety & Reliability**
  - Five levels of protection against system failure
  - Secondary power supply: backup battery
  - Failure auto reporting via SMS (requires UR-201 Unit)
  - Emergency ON/OFF button

- **Environmental Conditions**
  - Temperature range: -20 to 50 °C (-4 to 122 °F)
  - Optional: -40 to 60 °C (-40 to 140 °F)
  - Ingress protection: IP-47 (tested by accredited laboratory)
  - Jet blast resistance: 240 kph (tested by accredited laboratory)

- **Photometric & Chromaticity**
  - ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.9.8 & clause 5.3.9.9, Appendix 1, Figure A1-1b

- **Jet / Blast Resistance**
  - FAA AC 150/5345-508 dated September 2007, clause 3.2.2

- **Frangibility**
  - FAA AC 150-5345-46E, clause 3.4.2.1
  - FAA AC 150-5320-23, clause 3.2

- **Secondary Power Supply**

- **CE Declaration of Conformity**
  - 2014/30/EU R&D Directive, clauses 3.1a, 3.1b, 3.2
  - 2011/65/EU ROHS Directive, clause 4.1

### Accredited Laboratory Testing

- Photometric & Chromaticity: Intertek Laboratory
- Jet Blast Resistance: Warsaw Institute of Aviation
- Frangibility: Labex Research Laboratory
- Ingress Protection: EMAG Institute of Innovative Technologies
- Electromagnetic Compatibility: Military Institute of Armament Technology
**TECHNICAL DRAWING**

1. Aluminum adapter for glass dome
2. Rubber seal
3. Glass dome
4. LED optics, combined type omni- and bidirectional
5. Radio antenna for wireless control & monitoring
6. Carrying handle
7. Emergency ON/OFF button
8. Charging port for backup charging via cable
9. Micro-computer with integrated radio transceiver
10. Protective plate
11. 2 x batteries built-in, VRLA type 12V/9Ah
12. Rubber seal
13. UV-stabilized Lexan polycarbonate casing

**PHOTOMETRIC PERFORMANCE**

| White |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12”  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 11”  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10”  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 9”   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 8.5” | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 8”   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 7.5” | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 7”   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6.5” | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6”   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 5.5” | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 5”   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4.5” | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4”   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3.5” | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3”   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2.5” | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2”   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.5” | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1”   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.5” | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0”   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SUM  | 10| 9.5| 9  | 8.5| 8  | 7.5| 7  | 6.5| 6  | 5.5| 5  | 4  | 3  | 2.5| 2  | 1.5| 1  | 0.5| 0  | 9.5| 9  |

**SP-401 RUNWAY EDGE LIGHT (WHITE)**

<table>
<thead>
<tr>
<th>AREA 1 (BLUE PART)</th>
<th>AREA 2 (YELLOW PART)</th>
<th>AREA 3 (WHITE PART)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOT AREA</td>
<td>REQUIRED</td>
<td>RESULTS</td>
</tr>
<tr>
<td>AREA 1</td>
<td>MIN. 20 CD</td>
<td>AVG. 18.4 CD</td>
</tr>
<tr>
<td>AREA 2</td>
<td>MIN. 16 CD</td>
<td>AVG. 15.3 CD</td>
</tr>
<tr>
<td>AREA 3</td>
<td>MIN. 8 CD</td>
<td>AVG. 6.4 CD</td>
</tr>
</tbody>
</table>

**SHIPPING DATA**

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (L xW xH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>350 mm x 250 mm x 210 mm</td>
<td>8.2 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, NO batteries</td>
<td>350 mm x 250 mm x 210 mm</td>
<td>3 kg</td>
</tr>
</tbody>
</table>
**SP-401 PORTABLE RUNWAY THRESHOLD END LIGHT**

**FEATURES**
- 280 hrs of autonomy
- Remote activation
- Convertible to solar airfield light

**APPLICATION**
Mobile airfield light designed to quickly illuminate temporary airfield in accordance with ICAO.
- Displaced thresholds
- Temporary runways
- Remote airfields
- Backup airport lighting
- Emergency landing airstrips

**TECHNICAL SPECIFICATIONS**

**Optics**
- 320 (red) / 410 (green) cd light output (tested by accredited laboratory)
- Bidirectional or unidirectional type
- LED lifespan: 100,000 hrs
- Maximum power consumption: 1.8W
- NVC compatible (optional)
- Color: red, green, red, green
- User-replaceable

**Battery**
- 2 x built-in batteries
- Autonomy: 280 hrs (minimum intensity)
- Total capacity: 216Wh (2x108Wh/12V)
- Deep-cycle VRLA, 12V/18AH (available worldwide)
- Lifespan: 1,200 cycles (designed for 4-5 years)
- User replaceable, air transportable

**Charging**
- Via OCT-401 Charger (charging time: 8 hrs)
- Contactless charging in a Trailer (charging time: 8 hrs)
- Optional: solar power supply

**Remote Activation Control**
- Wireless mesh type network
- Operating frequency: 868 MHz (optional 2.4GHz or 433 MHz)
- Operating range: up to 1.5 km, relayed (each light is a repeater)

**Remote Activation**
- Via UR-101 Handheld Controller
- Via UR-201 Control & Monitoring Unit
- GSM activation (Cell Phone)
- VHF activation (Air-band Radio)
- Via ALCMS Computer Interface (requires UR-201)

**Casing & Components**
- Materials: Dome: glass, UV resistant; Casing: lexan/polycarbonate, UV stabilized; Carrying handle: stainless steel
- Detachable antenna
- Pressure stabilizing valve
- Battery level indicator
- Transport circuit breaker
- Casing lifespan: 15 years
- Optional: frangible mounting (tested by accredited laboratory)
- Dimensions (LxWxH): 244 mm x 185 mm x 297 mm
- Weight: 7 kg

**Compliance**
- ICAO Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.10.9 (green direction), clause 5.3.11.4 (red direction)
- FAA AC 150/534A
- EUROCAE ED-15A

**Safety & Reliability**
- Five levels of protection against system failure
- Secondary power supply backup battery
- Failure auto reporting via SMS (requires UR-201 Unit)
- Emergency ON/OFF button

**Environmental Conditions**
- Temperature range: -20 to 50 °C (-4 to 122 °F)
- Optional: -40 to 80 °C (-40 to 176 °F)
- Ingress protection: IP-57 (tested by accredited laboratory)
- Jet blast resistance: 250 kph (tested by accredited laboratory)

**Photometric & Chromaticity**
- FAA AC 150/5345-461, clause 3.4, 2.1
- FAA AC 150/5200-23, clause 3.2

**Secondary Power Supply**
- IEC 60664-2-11, clause 3.1a, 3.1b, 3.2

**Accredited Laboratory Testing**
- Photometric & Chromaticity: Intertek Laboratory
- Jet Blast Resistance: Warsaw Institute of Aviation
- Frangibility: Laborex Research Laboratory
- Ingress Protection: EMAO Institute of Innovative Technologies
- Electromagnetic Compatibility: Military Institute of Armament Technology
WORLD’S SAFEST RUNWAY LIGHTING

TECHNICAL DRAWING

PHOTOMETRIC PERFORMANCE

STANDARD LUMINARIES

SHIPPING DATA

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>350 mm x 250 mm x 210 mm</td>
<td>8.2 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, NO batteries</td>
<td>350 mm x 250 mm x 210 mm</td>
<td>3 kg</td>
</tr>
</tbody>
</table>
SP-401 PORTABLE APPROACH LIGHT

**FEATURES**
- 180 hrs of autonomy
- Remote activation
- Convertible to solar airfield light
- 1,800 cd light output

**APPLICATION**
Mobile airfield light designed to quickly illuminate temporary airfield in accordance with ICAO:
- Temporary runways
- Remote airfields
- Backup airport lighting
- Emergency landing airstrips

**TECHNICAL SPECIFICATIONS**

**Optics**
- 1,800 cd light output (tested by accredited laboratory)
- Unidirectional type
- LED lifespan: 100,000 hrs
- Maximum power consumption: 3.9W
- NVO-compatible (optional)
- Color: white
- User-replaceable

**Battery**
- 2 x built-in batteries
- Autonomy: 180 hrs (minimum: intensity)
- Total capacity: 2.46W (2xMv/12V)
- Deep-cycle VRILA, 12V/9Ah (available worldwide)
- Life-span: 1,200 cycles (designed for 4-5 years)
- User-replaceable, air transportable

**Charging**
- Via DC-1-401 Charger (charging time: 8 hrs)
- Contactless charging in a trailer (charging time: 8 hrs)
- Optional solar power supply

**Remote Activation/Control**
- Wireless mesh type network
- Operating frequency: 868 MHz (optional: 2.4GHz or 433 MHz)
- Operating range: up to 1.5 km, relayed (each light is a repeater)
- Operating Modes:
  - Steady / Flashing / Busk till dawn
  - Visible / Infrared (optional) / Visible + Infrared (optional)
- Remote activation:
  - Via UR-101 Handheld Controller
  - Via UR-201 Control & Monitoring Unit
  - GSM activation (Cell phone)
  - Wi-Fi activation (Air-band Radio)
- Via ALEMS Computer Interface (requires UR-201)

**Casing & Components**
- Materials:
  - Dome: glass, UV-resistant
  - Casing: Lexan polycarbonate, UV-stabilized
  - Carrying handle: stainless steel
- Detachable antenna
- Pressure stabilizing valve
- Battery level indicator
- Transport circuit breaker
- Casing lifespan: 15 years
- Optional: frangible mounting (tested by accredited laboratory)
- Dimensions: L x W x H: 244 mm x 185 mm x 297 mm
- Weight: 7 kg

**Safety & Reliability**
- Five levels of protection against system failure
- Secondary power supply: backup battery
- Failure auto reporting via SMS (requires UR-201 Unit)
- Emergency ON/OFF button

**Environmental Conditions**
- Temperature range: -20 to 50 °C (-4 to 122 °F)
- Optional: -60 to 80 °C (-40 to 176 °F)
- Ingress protection: IP 57 (tested by accredited laboratory)
- Jet blast resistance: 240 kph (tested by accredited laboratory)

**Compliance**
- Photometric & Chromaticity: ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.4.8 & clause 5.3.4.9, Appendix 1, Figure A1-1b
- FAA AC 150/5345-50A dated September 2007, clause 3.2.2
- FAA AC 150-5345-46E, clause 3.4.2.1
- FAA AC 150/5320-23, clause 3.2
- CE Declaration of Conformity: 2014/30/EU RED Directive, clauses 3.1.a, 3.1.b, 3.2
- 2011/65/EU RoHS Directive, clause 4.1

**Accredited Laboratory Testing**
- Photometric & Chromaticity: Intertek Laboratory
- Jet Blast Resistance: Warsaw Institute of Aviation
- Frangibility: LaborEx Research Laboratory
- Ingress Protection: EMAG Institute of Innovative Technologies
- Electromagnetic Compliability: Military Institute of Armament Technology
TECHNICAL DRAWING

PHOTOMETRIC PERFORMANCE

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>250 mm x 210 mm x 350 mm</td>
<td>8.2 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, NO batteries</td>
<td>250 mm x 210 mm x 350 mm</td>
<td>3 kg</td>
</tr>
</tbody>
</table>

www.solutions4ga.com
SP-401 PORTABLE RTIL LIGHT

RUNWAY THRESHOLD IDENTIFICATION LIGHT


FEATURES
• 690 hrs of autonomy
• Remote activation
• Convertible to solar airfield light
• 1,200 cd light output

APPLICATION
Mobile airfield light designed to quickly illuminate temporary airfield in accordance with ICAO.
• Temporary runways
• Remote airfields
• Backup airport lighting
• Emergency landing airstrips

TECHNICAL SPECIFICATIONS

Optics
• 1,200 cd light output (tested by accredited laboratory)
• Undirectional type
• LED lifespan: 100,000 hrs
• Maximum power consumption: 3.9W
• NVG-compatible (optional)
• Color: white
• User-replaceable

Battery
• 2 x built-in batteries
• Autonomy: 690 hrs (minimum intensity)
• Total capacity: 216W (2x9Ah/12V)
• Deep-cycle VRLA, 12V/9Ah (available worldwide)
• 1,200 cycles (designed for 4-5 years)
• User-replaceable, air transportable

Charging
• Via OCT-401 Charger (charging time: 8 hrs)
• Contactless charging in a Trailer (charging time: 8 hrs)
• Optional solar power supply

Remote Activation & Control
• Wireless mesh type network
• Operating frequency: 868 MHz (optional: 2.4 GHz or 433 MHz)
• Operating range: up to 1.5 km, relayed (each light is a repeater)
• Operating modes:
  - Flashing (94 FPM) / Dusk till dawn
  - Visible / Infrared (optional) / Visible + Infrared (optional)
• Remote activation:
  - Via UR-101 Handheld Controller
  - Via UR-201 Control & Monitoring Unit
  - GSM activation (Cell Phone)
  - VHF activation (Air-bond Radio)
  - Via ALCMS Computer Interface (requires UR-201)

Casing & Components
• Materials
  - Dome: glass, UV-resistant
  - Casing: Lexan polycarbonate, UV-stabilized
  - Carrying handle: stainless steel
• Detachable antenna
• Pressure stabilizing valve
• Battery level indicator
• Transport circuit breaker
• Casing lifespan: 15 years
• Optional fragile mounting (tested by accredited laboratory)
• Dimensions (L x W x H): 244 mm x 185 mm x 297 mm
• Weight: 7 kg

Safety & Reliability
• Five levels of protection against system failure
• Secondary power supply: backup battery
• Failure auto reporting via SMS (requires UR-201 Unit)
• Emergency ON/OFF button

Environmental Conditions
• Temperature range: -20 to 50 °C (-4 to 122 °F)
• Ingress protection: IP: 67 (tested by accredited laboratory)
• Jet blast resistance: 240 kph (tested by accredited laboratory)

Compliance
Photometric & Chromaticity
ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.8.3 & clause 5.3.8.4, Appendix 1, Figure A1-1b

Jet Blast Resistance

Frangible
ICAO, Annex 14th, Volume I, 8th Edition dated July 2018, clause 5.3.1.3

Secondary Power Supply

CE Declaration of Conformity
2014/53/UE RED Directive, clauses 3.1a, 3.1b, 3.2
2017/165/UE R&OHS Directive, clause 4.1

Accredited Laboratory Testing
Photometric & Chromaticity
Intertek Laboratory

Jet Blast Resistance
Warsaw Institute of Aviation
The Laboratory of Aerodynamics

Frangibility
Laborsex Research Laboratory

Ingress Protection
EMAG Institute of Innovative Technologies

Electromagnetic Compatibility
Military Institute of Armament Technology
1. Aluminum adapter for glass dome
2. Rubber seal
3. Glass dome
4. LED optics, unidirectional type
5. Radio antenna for wireless control & monitoring
6. Carrying handle
7. Emergency ON/OFF button
8. Charging port
9. Micro-computer with integrated radio transceiver
10. Protective plate
11. 2 x batteries built in, VRLA type 12V/9Ah
12. Rubber seal
13. UV-stabilized lexan polycarbonate casing

---

**TECHNICAL DRAWING**

---

**CHROMATICITY PERFORMANCE**

---

**SHIPPING DATA**

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>259 mm x 210 mm x 350 mm</td>
<td>8.2 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, No batteries</td>
<td>259 mm x 210 mm x 350 mm</td>
<td>3 kg</td>
</tr>
</tbody>
</table>
SP-401 PORTABLE TAXIWAY LIGHT, TURNING PAD LIGHT

Compliance:

FEATURES
- 600 hrs of autonomy
- Remote activation
- Convertible to solar airfield light

APPLICATION
Mobile airfield light designed to quickly illuminate temporary airfield in accordance with ICAO:
- Temporary taxiway
- Backup taxiway lighting

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Safety &amp; Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Five levels of protection against system failure</td>
</tr>
<tr>
<td>Secondary power supply, backup battery</td>
</tr>
<tr>
<td>Failure auto reporting via SMS (requires UR-201 Unit)</td>
</tr>
<tr>
<td>Emergency ON/OFF button</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature range: -20 to 50 °C (-4 to 122 °F)</td>
</tr>
<tr>
<td>Optional: -40 to 80 °C (-40 to 176 °F)</td>
</tr>
<tr>
<td>Ingress protection: IP-57 (tested by accredited laboratory)</td>
</tr>
<tr>
<td>Jet blast resistance: 240 kph (tested by accredited laboratory)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.18.7 &amp; clause 5.3.18.8, Appendix 1, Figure A1-1b</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Jet Blast Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICAO, Annex 14th, Volume I, 8th Edition dated July 2018, clause 5.3.18.7 &amp; clause 5.3.18.8, Appendix 1, Figure A1-1b</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frangibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAA AC 150/5345-46E, clause 3.4.2.1</td>
</tr>
<tr>
<td>FAA AC 150/5345-23, clause 3.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Power Supply</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>CE Declaration of Conformity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/35/EU RED Directive, clauses 3.1a, 3.1b, 3.2</td>
</tr>
<tr>
<td>2011/65/EU R&amp;RS Directive, clause 4.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accredited Laboratory Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photometric &amp; Chromaticity</td>
</tr>
<tr>
<td>InterTek Laboratory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Jet Blast Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warsaw Institute of Aviation</td>
</tr>
<tr>
<td>The Laboratory of Aerodynamics</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frangibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Research Laboratory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ingress Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMAG Institute of Innovative Technologies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electromagnetic Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military Institute of Armament Technology</td>
</tr>
</tbody>
</table>
WORLD'S SAFEST RUNWAY LIGHTING

**TECHNICAL DRAWING**

1. Aluminum adapter for glass dome
2. Rubber seal
3. Glass dome
4. LED optics, omnidirectional type
5. Radio antenna for wireless control & monitoring
6. Carrying handle
7. Emergency ON/OFF button
8. Charging port for backup charging via cable
9. Micro-computer with integrated radio transceiver
10. Protective plate
11. 2 x batteries built-in, VRLA type 12V/9Ah
12. Rubber seal
13. UV-stabilized Lexan polycarbonate casing

**PHOTOMETRIC PERFORMANCE**

![Graph of photometric performance]

- S4GA performance
- Required by ICAO

**SHIPPING DATA**

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>350 mm x 250 mm x 210 mm</td>
<td>6.2 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, No batteries</td>
<td>350 mm x 250 mm x 210 mm</td>
<td>3 kg</td>
</tr>
</tbody>
</table>
SP-401 PORTABLE OBSTRUCTION LIGHT

TYPE A LOW INTENSITY

- Compliance:

FEAURES

- 280 hrs of autonomy
- Remote activation
- Convertible to solar obstruction light

APPLICATION

Mobile obstruction aviation light; designed for usage as obstacle light at airports and helipads:

- ICAO low intensity obstacle lights type A
- Portable obstruction lighting
- Temporary barricade lights, caution lights
- Hazard marking

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Optics</th>
<th>Safety &amp; Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 97 cd light output (tested by accredited laboratory)</td>
<td>• Five levels of protection against system failure</td>
</tr>
<tr>
<td>• Omnidirectional type</td>
<td>• Secondary power supply, backup battery</td>
</tr>
<tr>
<td>• LED lifespan: 100,000 hrs</td>
<td>• Failure auto reporting via SMS (requires UR-201 Unit)</td>
</tr>
<tr>
<td>• Maximum power consumption: 1.8W</td>
<td>• Emergency ON/OFF button</td>
</tr>
<tr>
<td>• NVO-compatible (optional)</td>
<td></td>
</tr>
<tr>
<td>• Colored red</td>
<td></td>
</tr>
<tr>
<td>• User-replaceable</td>
<td></td>
</tr>
<tr>
<td>• 2 x built-in batteries</td>
<td></td>
</tr>
<tr>
<td>• Autonomy: 280 hrs (minimum intensity)</td>
<td></td>
</tr>
<tr>
<td>• Total capacity: 216W (2xNVO/12V)</td>
<td></td>
</tr>
<tr>
<td>• Deep-cycle VRLA: 12V/9Ah (available worldwide)</td>
<td></td>
</tr>
<tr>
<td>• Lifespan: 1,200 cycles (designed for 4-5 years)</td>
<td></td>
</tr>
<tr>
<td>• User-replaceable, air transportable</td>
<td></td>
</tr>
<tr>
<td>Charging</td>
<td></td>
</tr>
<tr>
<td>• Via OCT-401 Charger (charging time: 8 hrs)</td>
<td></td>
</tr>
<tr>
<td>• Contactless charging in a Trailer (charging time: 8 hrs)</td>
<td></td>
</tr>
<tr>
<td>• Optional solar power supply</td>
<td></td>
</tr>
<tr>
<td>Remote Activation / Control</td>
<td></td>
</tr>
<tr>
<td>• Wireless mesh type network</td>
<td></td>
</tr>
<tr>
<td>• Operating frequency: 868 MHz (optional: 2.4GHz or 433 MHz)</td>
<td></td>
</tr>
<tr>
<td>• Operating range: up to 1.9 km, relayed (each light is a repeater)</td>
<td></td>
</tr>
<tr>
<td>Operating modes:</td>
<td></td>
</tr>
<tr>
<td>• Steady / Flashing / Dim till dawn</td>
<td></td>
</tr>
<tr>
<td>• Visible / Infrared (optional) / Visible + Infrared (optional)</td>
<td></td>
</tr>
<tr>
<td>Remote activation:</td>
<td></td>
</tr>
<tr>
<td>• Via UR-101 Handheld Controller</td>
<td></td>
</tr>
<tr>
<td>• Via UR-201 Control &amp; Monitoring Unit</td>
<td></td>
</tr>
<tr>
<td>• GSM activation (Cell Phone)</td>
<td></td>
</tr>
<tr>
<td>• VHF activation (Air band Radio)</td>
<td></td>
</tr>
<tr>
<td>• Via ALCMS Computer Interface (requires UR-201)</td>
<td></td>
</tr>
<tr>
<td>Casing &amp; Components</td>
<td></td>
</tr>
<tr>
<td>• Materials</td>
<td></td>
</tr>
<tr>
<td>• Dome: glass, UV-resistant</td>
<td></td>
</tr>
<tr>
<td>• Casing: Lexan polycarbonate, UV stabilized</td>
<td></td>
</tr>
<tr>
<td>• Carrying handle: stainless steel</td>
<td></td>
</tr>
<tr>
<td>• Detachable antenna</td>
<td></td>
</tr>
<tr>
<td>• Pressure stabilizing valve</td>
<td></td>
</tr>
<tr>
<td>• Battery level indicator</td>
<td></td>
</tr>
<tr>
<td>• Transport circuit breaker</td>
<td></td>
</tr>
<tr>
<td>• Casing lifespan: 1.5 years</td>
<td></td>
</tr>
<tr>
<td>• Optional: frangible mounting (tested by accredited laboratory)</td>
<td></td>
</tr>
<tr>
<td>• Dimensions (LxWxH): 244 mm x 185 mm x 297 mm</td>
<td></td>
</tr>
<tr>
<td>• Weight: 7 kg</td>
<td></td>
</tr>
</tbody>
</table>

VAT EU: PL 524 276 80 55
WORLD’S SAFEST RUNWAY LIGHTING

TECHNICAL DRAWING

1. Aluminum adapter for glass dome
2. Rubber seal
3. Glass dome
4. LED optics, omnidirectional type
5. Radio antenna for wireless control & monitoring
6. Carrying handle
7. Emergency ON/OFF button
8. Charging port
9. Micro-computer with integrated radio transceiver
10. Protective plate
11. 2 x batteries built-in, VRLA type 12V/9Ah
12. Rubber seal
13. UV-stabilized Lexan polycarbonate casing

PHOTOMETRIC PERFORMANCE

S4GA performance
Required by ICAO

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (L x W x H)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>250 mm x 210 mm x 350 mm</td>
<td>8.2 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, No batteries</td>
<td>250 mm x 210 mm x 350 mm</td>
<td>3 kg</td>
</tr>
</tbody>
</table>
UR-101 HANDHELD CONTROLLER

FEATURES
- Grouping of lights
- Light intensity setup
- Operating modes setup
- Designed for hard operating conditions

CE COMPLIANCE
- 2011/65/EU and 2015/863 RoHS Directive

UR-101 Handheld Controller is designed to provide User with ability to remotely control S4GA airfield lighting system.

LIGHT INTENSITY
- Minimum 10%
- Medium 30%
- Maximum 100%

SPECIAL MODES
- NVG mode
- Dusk till dawn mode

GROUPING OF LIGHTS
- Group I
- Group II
- Group III
- Group IV
- Group V

- ON/OFF SWITCH
- REPLACEABLE BATTERY
- CHARGING PORT
- ANTENNA FOR WIRELESS COMMUNICATION
- INDICATORS
- PUSH BUTTONS

WORLD'S SAFEST RUNWAY LIGHTING

PROTECTIVE CASE

ACCESSORIES INCLUDED

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Weight</td>
<td>3 kg</td>
</tr>
<tr>
<td>Dimensions of Package (L×W×H)</td>
<td>109 mm × 50 mm × 189,2 mm</td>
</tr>
<tr>
<td>Item</td>
<td>UR-101 Handheld Controller</td>
</tr>
<tr>
<td>Item</td>
<td>UR-101 Handheld Controller with accessories</td>
</tr>
<tr>
<td>Item</td>
<td>in protective case</td>
</tr>
</tbody>
</table>

ON/OFF SWITCH

LIGHT INTENSITY
- Minimum 10%
- Medium 30%
- Maximum 100%

SPECIAL MODES
- NVG mode
- Dusk till dawn mode

GROUPING OF LIGHTS
- Group I
- Group II
- Group III
- Group IV
- Group V

- CHARGING PORT
- REPLACEABLE BATTERY
- PROTECTIVE CASE

CHARGER

BATTERY

Lithium-ion type
- 5.2Ah, 3.7V
- Operating time 48 hrs

OPERATING RANGE
- Up to 1.500 m, relayed (each light is a repeater)

Radio transceiver (frequency/power output)
- 868 MHz, (optional 2.4 GHz or 433 MHz), 16 mW

Power Source
- Battery
- Lithium-ion type, 5.2Ah, 3.7V

- Operating time 48 hrs

Charging
- Charger (110-230VAC)

Casing
- Material Powder coated steel
- Internally illuminated buttons Yes

Temperature Range
- -20 to 50 ºC (-4 to 122 ºF)

Compliance
- 2011/65/EU and 2015/863 RoHS Directive

SHIPPING DATA

ITEM

UR-101 Handheld Controller
- 3 kg
- 109 mm × 50 mm × 189,2 mm
- 109 mm × 50 mm × 148 mm

ITEM

UR-101 Handheld Controller with accessories
- 3 kg
- 109 mm × 50 mm × 189,2 mm
- 109 mm × 50 mm × 148 mm

ITEM

in protective case
- 3 kg
- 109 mm × 50 mm × 189,2 mm
- 109 mm × 50 mm × 148 mm
**TECHNICAL SPECIFICATIONS**

**Control**
- On / Off Button: Yes
- Light intensity: Minimum 10%, Medium 30%, Maximum 100%
- Special operating mode: Night Vision Goggles (NVG), Dusk till dawn (DTD)
- Grouping of Lights: Yes, maximum 5 groups

**Communication Between Controller and the Lights**
- Type: Wireless mesh network
- Operating Range: Up to 1.500 m, relayed (each light is a repeater)
- Radio transceiver (frequency/power output): 868 MHz, (optional 2.4 GHz or 433 MHz), 16 mW

**Power Source**
- Battery: Lithium-ion type, 5.2Ah, 3.7V
- Operating time: 48 hrs
- Charging: Charger (110-230VAC)

**Casing**
- Material: Powder coated steel
- Internally illuminated buttons: Yes
- Temperature Range: -20 to 50 ºC (-4 to 122 ºF)
- Color: Black

**Compliance**

---

**ACCESSORIES INCLUDED**

**PROTECTIVE CASE**
Shock-absorbent carrying case with protection foam.

**SHIPPING DATA**

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>UR-101 Handheld Controller</td>
<td>109 mm × 50 mm × 189,2 mm</td>
<td>3 kg</td>
</tr>
<tr>
<td>UR-101 Handheld Controller with accessories in protective case</td>
<td>336 mm × 300 mm × 148 mm</td>
<td></td>
</tr>
</tbody>
</table>

**CHARGER**
110-230VAC

**BATTERY**
Lithium-ion type 5.2Ah, 3.7V
OCT-401 CHARGER

FOR CHARGING SP-401 AIRFIELD LIGHTS

OCT-401 Charger is designed to recharge SP-401 lighting units. It can be used as backup charger for solar-powered SP-401 lights or as stationary charger for SP-401 portable lights. OCT-401 requires standard electrical socket and can operate on both 110 or 230 VAC.

FEATURES

- Charging of up to 10 x SP-401 airfield lights
- Universal AC input (110-230VAC)
- Forced air cooling by built-in DC Fan
- Protected from short circuit / overload / over voltage / over temperature

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Power Output</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC voltage</td>
<td>24V</td>
</tr>
<tr>
<td>Rate current</td>
<td>10A</td>
</tr>
<tr>
<td>Current range</td>
<td>0 – 10A</td>
</tr>
<tr>
<td>Rate power</td>
<td>240W</td>
</tr>
<tr>
<td>Number of charging connectors</td>
<td>10</td>
</tr>
<tr>
<td>Length of charging connectors</td>
<td>255 cm</td>
</tr>
<tr>
<td>Connectors details</td>
<td>4 pins male plug IP66/IP67 High performance engineering plastics Copper alloy (gold plated)</td>
</tr>
<tr>
<td>Charging time</td>
<td>16 hours 8 hours in fast mode</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power Input</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage range</td>
<td>88 – 264VAC 124 – 370VDC</td>
</tr>
<tr>
<td>Frequency range</td>
<td>47 – 63Hz</td>
</tr>
<tr>
<td>Efficiency</td>
<td>87%</td>
</tr>
<tr>
<td>AC current</td>
<td>3.6A/115VAC 1.8A/230VAC</td>
</tr>
<tr>
<td>Length of power cable</td>
<td>285 cm</td>
</tr>
<tr>
<td>Electrical plug</td>
<td>Type E Optional: other type</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Conditions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature range</td>
<td>-20 to 70 °C (-4 to 138 °F)</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP66</td>
</tr>
<tr>
<td>Humidity</td>
<td>20 – 90% RH non-condensing</td>
</tr>
<tr>
<td>Vibration</td>
<td>10 – 50Hz, 2G 10min./cycle, 60min. each along X, Y, Z axes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Casing</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>Sheet steel</td>
</tr>
<tr>
<td>Cover</td>
<td>Steel, all-round foamed-in PU seal</td>
</tr>
<tr>
<td>Surface finish</td>
<td>Dp coat primed, powder coated on the outside, textured paint</td>
</tr>
<tr>
<td>Dedicated for outdoor use</td>
<td>No</td>
</tr>
<tr>
<td>Color</td>
<td>Grey</td>
</tr>
<tr>
<td>NEMA</td>
<td>NEMA 4</td>
</tr>
<tr>
<td>IK Code</td>
<td>IK08</td>
</tr>
<tr>
<td>Dimensions (WxHxD)</td>
<td>300 x 200 x 120 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>6.1 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compliance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CE Compliance</td>
<td>2014/30/EU, 2014/35/EU, 2011/65/EU</td>
</tr>
</tbody>
</table>