WORLD'S SAFEST RUNWAY LIGHTING

PRODUCT CATALOGUE

SOLAR LED RUNWAY LIGHTING
FOR NON-PRECISION AIRPORTS

PORTABLE AIRFIELD LIGHTING TRAILER
FOR MILITARY AND CIVIL
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**

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.

**OUR APPLICATIONS**

Thessaloniki International Airport, Greece  
Dhaalu 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 MILITARY & CIVIL  
Portable airfield lighting trailer

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
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<td>SP-401 Portable Runway Threshold End Light</td>
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<td>SP-401 Portable Taxiway Light</td>
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</tr>
<tr>
<td>UR-101 Handheld Controller</td>
<td>38-39</td>
</tr>
</tbody>
</table>
COMPLETE SOLAR LED RUNWAY LIGHTING
FOR NON-PRECISION AIRPORTS

— SOLUTION: COMPLETE LIGHTING SYSTEM

AIRFIELD LIGHTING

SOLAR PAPI

AGL CONTROL AND MONITORING

SOLAR POWER SUPPLY

SOLAR WDI

— APPLICATION: NON-PRECISION AIRPORT

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.
**SP-401 LED ELEVATED RUNWAY EDGE LIGHT**

**Features**

- Operates 365 days on solar energy
- Wireless mesh control
- 180 hrs of light autonomy
- 1,200 cd light output

**Optics**

- 1,200 cd light output
- 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**

- 2 x built-in batteries
- Autonomy: 180 hrs (minimum intensity)
- Total capacity: 216W (2x9Ah/12V)
- Deep-cycle VRLA, 12V/9Ah
- Lifespan: 1200 cycles
- Designed for 4-5 years
- Air transportable
- User-replaceable
- Standard type, available worldwide

**Solar Power Supply**

- 20W solar panel, separately installed
- Poly- or monocrystalline type
- Standard optimal inclination (upon request)
- Lifespan: 15 years
- Built-in inverter 12-36V/2A

**Certification**

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

**Operating Modes**

- Steady / Flashing / Dusk till dawn
- Visible / Infrared (optional) / Visible + Infrared (optional)

**Control & Monitoring**

- Wireless mesh type network
- Up to 1.5 km operating range
- Activation options:
  - Via UR-201 Control & Monitoring Unit
  - Via ALCMS Computer Interface
  - Via UR-101 Handheld Controller
- Emergency ON/OFF button
- Self-diagnostics
- Real-time monitoring via ALCMS (Airfield Lighting Control and Monitoring System)

**Environmental Conditions**

- Temperature range: -20 to 50 ºC (-4 to 122 ºF)
- Ingress protection: IP-67
- Wind Speed: 160 kph

**Casing And Components**

- Casing made of UV-stabilized Lexan polycarbonate
- Outer UV-resistant glass dome
- Detachable antenna
- Pressure stabilizing valve: yes
- Battery level indicator: yes
- Carrying handle (optional)
- Casing lifespan: 15 years
- Casing color: aviation yellow
- Frangible mounting compliant with ICAO regulations
- Dimensions (LxWxH): 528 mm x 450 mm x 442 mm
- Weight: 12,4 kg

**Application**

Medium intensity, combined optics (bi- and omnidirectional); designed for permanent usage at Non-Precision Runways located in regions without access to electricity and high photovoltaic potential.
**PHOTOMETRIC PERFORMANCE**

**White Direction 1**
- Average Intensity 750 cd
- Average Intensity 950 cd
- Average Intensity 1,200 cd

**White Direction 2**
- Average Intensity 750 cd
- Average Intensity 950 cd
- Average Intensity 1,200 cd

**TECHNICAL DRAWING**

1. Aluminum adapter for glass dome
2. Rubber protection
3. Glass dome
4. LED optics, combined type omni- and bidirectional
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

**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 with accessories</td>
<td>600 mm x 400 mm x 360 mm</td>
<td>13 kg</td>
</tr>
</tbody>
</table>


**TECHNICAL SPECIFICATIONS**

### Optics
- 10,000 cd light output
- Bidirectional type
- LED lifespan: 100,000 hrs
- Maximum power consumption: 45W
- NVG-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: 216W (2x9Ah/12V)
- Deep-cycle VRLA, 12V/9Ah
- Lifespan: 1,200 cycles
- Designed for 4-5 years
- Air transportable
- User-replaceable
- Standard type, available worldwide

### Solar Power Supply
- 20W solar panel, separately installed
- Poly- or monocrystalline type
- Standard optimal inclination (upon request)
- Lifespan: 15 years
- Built-in inverter 12-36V/2A

### Certification
- ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.9.10 Appendix 2, Figure A2-9 or A2-1

### Compliance:

### Operating Modes
- Steady / Flashing / Dusk till dawn
- Visible / Infrared (optional) / Visible + Infrared (optional)

### Control & Monitoring
- Wireless mesh type network
- Up to 1.5 km operating range
- Activation options:
  - Via UR-201 Control & Monitoring Unit
  - Via ALCMS Computer Interface
  - Via UR-101 Handheld Controller
- Emergency ON/OFF button
- Self-diagnostics
- Real-time monitoring via ALCMS (Airfield Lighting Control and Monitoring System)

### Environmental Conditions
- Temperature range: -20 to 50 ºC (-4 to 122 ºF)
- Ingress protection: IP-67
- Wind Speed: 160 kph

### Casing And Components
- Casing made of UV-stabilized Lexan polycarbonate
- Outer UV-resistant glass dome
- Detachable antenna
- Pressure stabilizing valve: yes
- Battery level indicator: yes
- Carrying handle (optional)
- Casing lifespan: 15 years
- Casing color: aviation yellow
- Frangible mounting compliant with ICAO regulations
- Dimensions (LxWxH): 528 mm x 450 mm x 442 mm
- Weight: 14.1 kg

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**APPLICATION**

High intensity, bi-directional optics; designed for permanent usage at Non-Precision Runways located in regions without access to electricity and high photovoltaic potential

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**FEATURES**

- Operates 365 days on solar energy
- Wireless mesh control
- 180 hrs of light autonomy
- 10,000 cd light output

---

**APPLICATION**

High intensity, bi-directional optics; designed for permanent usage at Non-Precision Runways located in regions without access to electricity and high photovoltaic potential
TECHNICAL DRAWING

1. Aluminum cooling block
2. LED optics, bi-directional type
3. Glass optical cover
4. Clip for optical cover
5. Radio antenna for wireless control & monitoring
6. Micro-computer with integrated radio transceiver
7. Cooling block gasket
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

PHOTOMETRIC PERFORMANCE

White

<table>
<thead>
<tr>
<th>Zone 1 Grid</th>
<th>Zone 2 Circle</th>
<th>Zone 3 Circle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average 1253 cd</td>
<td>Min. 753 cd</td>
<td>Max 17/92</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zone 1 Grid</th>
<th>Zone 2 Circle</th>
<th>Zone 3 Circle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average 952 cd</td>
<td>Min. 704 cd</td>
<td>Max 1343</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zone 1 Grid</th>
<th>Zone 2 Circle</th>
<th>Zone 3 Circle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average 4077 cd</td>
<td>Min. 3386 cd</td>
<td>Max 5134</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zone 1 Grid</th>
<th>Zone 2 Circle</th>
<th>Zone 3 Circle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average 1934 cd</td>
<td>Min. 1547 cd</td>
<td>Max 2230</td>
</tr>
</tbody>
</table>

Yellow

<table>
<thead>
<tr>
<th>Zone 1 Grid</th>
<th>Zone 2 Circle</th>
<th>Zone 3 Circle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average 495 cd</td>
<td>Min. 3644 cd</td>
<td>Max 5272</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zone 1 Grid</th>
<th>Zone 2 Circle</th>
<th>Zone 3 Circle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average 4077 cd</td>
<td>Min. 3386 cd</td>
<td>Max 5134</td>
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</table>

<table>
<thead>
<tr>
<th>Zone 1 Grid</th>
<th>Zone 2 Circle</th>
<th>Zone 3 Circle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average 1934 cd</td>
<td>Min. 1547 cd</td>
<td>Max 2230</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 with accessories</td>
<td>600 mm x 400 mm x 360 mm</td>
<td>15 kg</td>
</tr>
</tbody>
</table>
SP-401 LED ELEVATED RUNWAY THRESHOLD END LIGHT

**FEATURES**

- Operates 365 days on solar energy
- Wireless mesh control
- 280 hrs of light autonomy

**APPLICATION**

Bidirectional optics; designed for permanent usage at Non-Precision Runways located in regions without access to electricity and high photovoltaic potential.

**TECHNICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Optics</th>
<th>Operating Modes</th>
</tr>
</thead>
<tbody>
<tr>
<td>320 (red)/450 (green) cd light output</td>
<td>Steady / Flashing / Dusk till dawn</td>
</tr>
<tr>
<td>Bidirectional, unidirectional type</td>
<td>Visible / Infrared (optional) / Visible + infrared (optional)</td>
</tr>
<tr>
<td>LED lifespan: 100,000 hrs</td>
<td></td>
</tr>
<tr>
<td>Maximum power consumption: 1.8 W</td>
<td></td>
</tr>
<tr>
<td>NVG-compatible (optional)</td>
<td></td>
</tr>
<tr>
<td>Color: red/green, red, green</td>
<td></td>
</tr>
<tr>
<td>User-replaceable</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Battery</th>
<th>Control &amp; Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 x built-in batteries</td>
<td>Wireless mesh type network</td>
</tr>
<tr>
<td>Autonomy: 280 hrs (minimum intensity)</td>
<td>Up to 1.5 km operating range</td>
</tr>
<tr>
<td>Total capacity: 216W (2x9Ah/12V)</td>
<td>Activation options:</td>
</tr>
<tr>
<td>Deep-cycle VRLA, 12V/9Ah</td>
<td>- Via UR-201 Control &amp; Monitoring Unit</td>
</tr>
<tr>
<td>Lifespan: 1,200 cycles</td>
<td>- Via ALCMS Computer Interface</td>
</tr>
<tr>
<td>Designed for 4-5 years</td>
<td>- Via UR-101 Handheld Controller</td>
</tr>
<tr>
<td>Air transportable</td>
<td>Emergency ON/OFF button</td>
</tr>
<tr>
<td>User-replaceable</td>
<td>Self-diagnostics</td>
</tr>
<tr>
<td>Standard type, available worldwide</td>
<td>Real-time monitoring via ALCMS (Airfield Lighting Control and Monitoring System)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solar Power Supply</th>
<th>Environmental Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>20W solar panel, separately installed</td>
<td>Temperature range: 20 to 50 °C (-4 to 122 °F)</td>
</tr>
<tr>
<td>Poly- or monocrystalline type</td>
<td>Ingress protection: IP-67</td>
</tr>
<tr>
<td>Standard optimal inclination (upon request)</td>
<td>Wind Speed: 160 kph</td>
</tr>
<tr>
<td>Lifespan: 15 years</td>
<td></td>
</tr>
<tr>
<td>Built-in inverter 12-36V/2A</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Casing And Components</th>
<th>Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing made of UV-stabilized Lexan polycarbonate</td>
<td>ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.10.9/5.3.11.4 &amp; Appendix 1, Figure A1-1b</td>
</tr>
<tr>
<td>Detachable antenna</td>
<td>Dimensions (LxWxH): 528 mm x 450 mm x 442 mm</td>
</tr>
<tr>
<td>Pressure stabilizing valve: yes</td>
<td>Weight: 12.4 kg</td>
</tr>
<tr>
<td>Battery level indicator: yes</td>
<td></td>
</tr>
<tr>
<td>Carrying handle (optional)</td>
<td></td>
</tr>
<tr>
<td>Casing lifespan: 15 years</td>
<td></td>
</tr>
<tr>
<td>Casing color: aviation yellow</td>
<td></td>
</tr>
<tr>
<td>Frangible mounting compliant with ICAO regulations</td>
<td></td>
</tr>
</tbody>
</table>
**TECHNICAL DRAWING**

1. Aluminum adapter for glass dome
2. Rubber protection
3. Glass dome
4. LED optics, bi- or 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

**PHOTOMETRIC PERFORMANCE**

**Red Direction**
- Average Intensity: 30 cd
- Average Intensity: 70 cd
- Average Intensity: 320 cd

**Green Direction**
- Average Intensity: 60 cd
- Average Intensity: 90 cd
- Average Intensity: 450 cd

**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 with accessories</td>
<td>600 mm x 400 mm x 360 mm</td>
<td>13 kg</td>
</tr>
</tbody>
</table>
SP-401 LED ELEVATED APPROACH LIGHT

FEATURES

- Operates 365 days on solar energy
- Wireless mesh control
- 180 hrs of light autonomy
- 1.200 cd light output

APPLICATION

Unidirectional optics; designed for permanent usage at Non-Precision Runways located in regions without access to electricity and high photovoltaic potential.

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Optics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• 1.200 cd light output</td>
<td></td>
</tr>
<tr>
<td>• Unidirectional type</td>
<td></td>
</tr>
<tr>
<td>• LED lifespan: 100,000 hrs</td>
<td></td>
</tr>
<tr>
<td>• Maximum power consumption: 3.9W</td>
<td></td>
</tr>
<tr>
<td>• NVG-compatible (optional)</td>
<td></td>
</tr>
<tr>
<td>• Color: white</td>
<td></td>
</tr>
<tr>
<td>• User-replaceable</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Battery</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• 2 x built-in batteries</td>
<td></td>
</tr>
<tr>
<td>• Autonomy: 180 hrs (minimum intensity)</td>
<td></td>
</tr>
<tr>
<td>• Total capacity: 216W (2x9Ah/12V)</td>
<td></td>
</tr>
<tr>
<td>• Deep-cycle VRLA, 12V/9Ah</td>
<td></td>
</tr>
<tr>
<td>• Lifespan: 1,200 cycles</td>
<td></td>
</tr>
<tr>
<td>• Designed for 4-5 years</td>
<td></td>
</tr>
<tr>
<td>• Air transportable</td>
<td></td>
</tr>
<tr>
<td>• User-replaceable</td>
<td></td>
</tr>
<tr>
<td>• Standard type, available worldwide</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solar Power Supply</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• 20W solar panel, separately installed</td>
<td></td>
</tr>
<tr>
<td>• Poly- or monocrystalline type</td>
<td></td>
</tr>
<tr>
<td>• Standard optimal inclination (upon request)</td>
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<td>• Lifespan: 15 years</td>
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<td>• Built-in inverter 12-36V/2A</td>
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<tr>
<td>• ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.9.9 &amp; Appendix 1, Figure A-1b</td>
<td></td>
</tr>
</tbody>
</table>

Operating Modes

- Steady / Flashing / Dusk till dawn
- Visible / Infrared (optional) / Visible + Infrared (optional)

Control & Monitoring

- Wireless mesh type network
- Up to 1.5 km operating range
- Activation options:
  - Via UR-201 Control & Monitoring Unit
  - Via ALCMS Computer Interface
  - Via UR-101 Handheld Controller
- Emergency ON/OFF button
- Self-diagnostics
- Real-time monitoring via ALCMS (Airfield Lighting Control and Monitoring System)

Environmental Conditions

- Temperature range: -20 to 50 ºC (-4 to 122 ºF)
- Ingress protection: IP-67
- Wind Speed: 160 kph

Casing And Components

- Casing made of UV-stabilized Lexan polycarbonate
- Outer UV-resistant glass dome
- Detachable antenna
- Pressure stabilizing valve: yes
- Battery level indicator: yes
- Carrying handle (optional)
- Casing lifespan: 15 years
- Casing color: aviation yellow
- Frangible mounting compliant with ICAO regulations
- Dimensions (LxWxH): 528 mm x 450 mm x 442 mm
- Weight: 12.4 kg
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

PHOTOMETRIC PERFORMANCE

- Average Intensity 750 cd
- Average Intensity 950 cd
- Average Intensity 1,200 cd

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 with accessories</td>
<td>600 mm x 400 mm x 360 mm</td>
<td>13 kg</td>
</tr>
</tbody>
</table>
# SP-401 LED ELEVATED TAXIWAY EDGE LIGHT

## FEATURES
- Operates 365 days on solar energy
- Wireless mesh control
- 600 hrs of light autonomy

## APPLICATION
Omnidirectional optics; designed for permanent usage at Non-Precision Runways located in regions without access to electricity and high photovoltaic potential.

## TECHNICAL SPECIFICATIONS

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

### Battery
- 2 x built-in batteries
- Autonomy: 600 hrs (minimum intensity)
- Total capacity: 216W (2x9Ah/12V)
- Deep-cycle VRLA, 12V/9Ah
- Lifespan: 1,200 cycles
- Designed for 4-5 years
- Air transportable
- User-replaceable
- Standard type, available worldwide

### Solar Power Supply
- 20W solar panel, separately installed
- Poly- or monocrystalline type
- Standard optimal inclination (upon request)
- Lifespan: 15 years
- Built-in inverter 12-36V/2A

### Control & Monitoring
- Wireless mesh type network
- Up to 1.5 km operating range
- Activation options:
  - Via UR-201 Control & Monitoring Unit
  - Via ALCMS Computer Interface
  - Via UR-101 Handheld Controller
- Emergency ON/OFF button
- Self-diagnostics
- Real-time monitoring via ALCMS (Airfield Lighting Control and Monitoring System)

### Environmental Conditions
- Temperature range: -20 to 50 ºC (-4 to 122 ºF)
- Ingress protection: IP-67
- Wind Speed: 160 kph

### Casing And Components
- Casing made of UV-stabilized Lexan polycarbonate
- Outer UV-resistant glass dome
- Detachable antenna
- Pressure stabilizing valve: yes
- Battery level indicator: yes
- Carrying handle (optional)
- Casing lifespan: 15 years
- Casing color: aviation yellow
- Frangible mounting compliant with ICAO regulations
- Dimensions (LxWxH): 528 mm x 450 mm x 442 mm
- Weight: 12.4 kg

### Certification
- ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.18.6 & Appendix 1, Figure A1-1b
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 12V/9Ah
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>
</tr>
</thead>
<tbody>
<tr>
<td>SP-401 Lighting Unit with accessories</td>
<td>600 mm x 400 mm x 360 mm</td>
<td>13 kg</td>
</tr>
</tbody>
</table>
**SP-401 LED ELEVATED OBSTRUCTION LIGHT**

**FEATURES**
- Operates 365 days on solar energy
- Wireless mesh control
- 280 hrs of light autonomy

**APPLICATION**
Low intensity obstruction aviation light; designed for usage as Obstacle light in Airports or Helipads located in regions without access to electricity and high photovoltaic potential.

**TECHNICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Optics</th>
<th>Operating Modes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 37 cd light output (peak)</td>
<td>• Steady / Flashing / Dusk till dawn</td>
</tr>
<tr>
<td>• Omnidirectional type</td>
<td>• Visible / Infrared (optional) / Visible + Infrared (optional)</td>
</tr>
<tr>
<td>• LED lifespan: 100,000 hrs</td>
<td>Control &amp; Monitoring</td>
</tr>
<tr>
<td>• Maximum power consumption: 1.8 W</td>
<td>• Wireless mesh type network</td>
</tr>
<tr>
<td>• NVG-compatible (optional)</td>
<td>• Up to 1.5 km operating range</td>
</tr>
<tr>
<td>• Color: red</td>
<td>• Activation options:</td>
</tr>
<tr>
<td>• User-replaceable</td>
<td>• Via UR-201 Control &amp; Monitoring Unit</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>• Ingress protection: IP-67</td>
</tr>
<tr>
<td>• Total capacity: 216W (2x9Ah/12V)</td>
<td>• Wind Speed: 160 kph</td>
</tr>
<tr>
<td>• Deep-cycle VRLA, 12V/9Ah</td>
<td></td>
</tr>
<tr>
<td>• Lifespan: 1,200 cycles</td>
<td></td>
</tr>
<tr>
<td>• Designed for 4-5 years</td>
<td></td>
</tr>
<tr>
<td>• Air transportable</td>
<td></td>
</tr>
<tr>
<td>• User-replaceable</td>
<td></td>
</tr>
<tr>
<td>• Standard type, available worldwide</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solar Power Supply</th>
<th>Casing And Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 20W solar panel, separately installed</td>
<td>• Casing made of UV-stabilized Lexan polycarbonate</td>
</tr>
<tr>
<td>• Poly- or monocrystalline type</td>
<td>• Outer UV-resistant glass dome</td>
</tr>
<tr>
<td>• Standard optimal inclination (upon request)</td>
<td>• Detachable antenna</td>
</tr>
<tr>
<td>• Lifespan: 15 years</td>
<td>• Pressure stabilizing valve: yes</td>
</tr>
<tr>
<td>• Built-in inverter 12-36V/2A</td>
<td>• Battery level indicator: yes</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>• Casing color: aviation yellow</td>
</tr>
<tr>
<td></td>
<td>• Frangible mounting compliant with ICAO regulations</td>
</tr>
<tr>
<td></td>
<td>• Dimensions (LxWxH): 528 mm x 450 mm x 442 mm</td>
</tr>
<tr>
<td></td>
<td>• Weight: 12.4 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• ICAO, Annex 14th, Volume 1, 7th Edition dated July 2016, Table 6-2 &amp; Appendix 1, Figure A1-1b</td>
<td></td>
</tr>
</tbody>
</table>
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, VLRA type 12V/9Ah
13. 20W Solar panel with standard optimal inclination
14. Frangible mounting
15. Solar holder

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 with accessories</td>
<td>600 mm x 400 mm x 360 mm</td>
<td>13 kg</td>
</tr>
</tbody>
</table>
SOLAR PAPI
PRECISION APPROACH PATH INDICATOR

FEATURES

- Simple Design
- Sharp Color Transition
- Controlled Positioning
- User-Replaceable Optic Elements
- Corrosion Resistant

APPLICATION

Halogen two-projector PAPI with solar power supply; designed for permanent usage at Non-Precision Runways 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

PAPI VISUAL INDICATION

TOO HIGH

SLIGHTLY HIGH

ON GLIDE PATH

SLIGHTLY LOW

TOO LOW
**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</td>
<td>135</td>
<td>135</td>
<td>65</td>
<td>65</td>
<td>455</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Zones for ICAO Annex 14, Vol 1 (2013), Fig A2-23 shown

**DIMENSIONS**

- Gross Weight: 52 kg
- Dimensions of Package (LxWxH): 560 x 650 x 750 mm
- Shipping Weight: 1 kg

- Variable White
- PAPI Red

- Zone 1: Minimum Intensity for curve to ±2° (head) and ±2° (sidel)
- Zone 2: Minimum Intensity for curve to ±4° (head) and ±2° (sidel)
- Zone 3: Minimum Intensity for curve to ±6° (head) and ±3° (sidel)
- Zone 4: Minimum Intensity for curve to ±8° (head) and ±3° (sidel)
# SOLAR WIND DIRECTION INDICATOR

## Application
SAGA WDI is airport windsock compliant with ICAO standards; designed for permanent usage at Non-Precision Runways located in regions with unavailable electrical infrastructure and high photovoltaic potential.

## Features
- Easy Installation
- Weather Resistant
- Illuminated, Solar Powered

## Technical Specifications

<table>
<thead>
<tr>
<th>Physical</th>
<th></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>

<table>
<thead>
<tr>
<th>Illumination</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Internal lighting</td>
<td></td>
</tr>
<tr>
<td>• Obstruction light: type A LED obstacle light installed on top of the mast</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power Supply</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• SOLAR ENGINE</td>
<td>280W solar panel</td>
</tr>
<tr>
<td></td>
<td>2 x batteries 100Ah/12V</td>
</tr>
<tr>
<td>• 230 VAC power supply (optional)</td>
<td></td>
</tr>
<tr>
<td>• 6.6 A electrical grid (optional)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Conditions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Minimum temperature: -60ºC</td>
<td></td>
</tr>
<tr>
<td>• Humidity: 100%</td>
<td></td>
</tr>
<tr>
<td>• Wind Speed: 160 kph</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Certification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• CE-EN60947-1</td>
<td></td>
</tr>
<tr>
<td>• CE06364, NF G15-100</td>
<td></td>
</tr>
<tr>
<td>• 2014/35/UE</td>
<td></td>
</tr>
<tr>
<td>• ISO 9001:2008</td>
<td></td>
</tr>
</tbody>
</table>

Compliance:
WORLD’S SAFEST RUNWAY LIGHTING

TECHNICAL DRAWING

- LED OBSTACLE LIGHT
- WIND SOCK
- REINFORCED MAST
- INTERNAL LIGHT
- ANCHORAGE BLOCK
- SOLAR ENGINE
- CONCRETE FOUNDATIONS

WIND DIRECTION INDICATOR PHOTOS
## 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 user to remotely control and change intensity of PAPI via UR-201 Control & Monitoring Unit and UR-101 Handheld Controller.

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power input</td>
<td>230 VAC</td>
</tr>
<tr>
<td>Transformer</td>
<td>Toroidal type 230VAC 600VA (available steps: 2.8, 3.4, 4.2, 5.4, 6.6 Amp)</td>
</tr>
<tr>
<td>Power outlets</td>
<td>2 x 200 W</td>
</tr>
</tbody>
</table>

#### Communication between Controller and UR-201 / UR-101

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Wireless mesh type network</td>
</tr>
<tr>
<td>Operating range</td>
<td>Up to 1.500 meters</td>
</tr>
<tr>
<td>External antenna</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### PAPI Remote Control

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAPI intensity setup</td>
<td>3-step via UR-201, UR-101</td>
</tr>
<tr>
<td></td>
<td>5-step via ALCMS</td>
</tr>
<tr>
<td>Activation options</td>
<td>Via UR-201 Control &amp; Monitoring Unit</td>
</tr>
<tr>
<td></td>
<td>Via ALCMS Computer Interface</td>
</tr>
<tr>
<td></td>
<td>Via UR-101 Handheld Controller</td>
</tr>
<tr>
<td>Emergency ON/OFF button</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### Enclosure

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>CS-33/150</td>
</tr>
<tr>
<td>Material</td>
<td>Galvanized steel</td>
</tr>
<tr>
<td>Color</td>
<td>Grey</td>
</tr>
<tr>
<td>Dimensions</td>
<td>300 mm x 300 mm x 150 mm</td>
</tr>
</tbody>
</table>

#### Compliance

<table>
<thead>
<tr>
<th>Directive</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/35/UE</td>
<td>Low Voltage Directive</td>
</tr>
<tr>
<td>2014/30/UE</td>
<td>Electromagnetic Compatibility Directive</td>
</tr>
<tr>
<td>2011/65/UE</td>
<td>ROHS Directive</td>
</tr>
</tbody>
</table>

### SHIPPING DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions of Package (LxWxH)</td>
<td>450 mm x 335 mm x 225 mm</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>12.5 kg</td>
</tr>
</tbody>
</table>

1. Toroidal transformer 230 VAC / 6.6 A
2. Micro-controller
3. Radio transceiver
4. Emergency ON/OFF button
5. Electrical relay
6. 200W power outlets
7. 230VAC power supply
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 SMS, via VHF)
• Remote Airfield Lighting Diagnostics

CE COMPLIANCE
• 2014/35/UE
• 2014/30/UE
• 2011/65/UE
• 2014/53/UE Radio Equipment Directive (RED)

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

### Control & Monitoring
- Adjust lighting intensity: Yes
- Select operating mode: Yes
- Remote monitoring of the SP-401 unit(s) key parameters: Yes
- Automatic failure alarm (via SMS): Battery level of any lighting unit drops below 30%.
- Any lighting unit stops responding to UR-201.
- Power supply of UR-201 Units stops.

### Communication between Remote Control Unit and the Lights
- Type: Wireless
- Operating Range: Up to 1,500 meters
- Radio transceiver (frequency/power output): 868 MHz, 16 mW
- External antenna: Yes

### External Switches
- On / Off: Yes
- Light intensity: Yes (3 for each group)
- Operating mode: Yes (3 for each group)
- Timer: Yes
- Remote: Yes

### Power Source
- Primary power source: 90 – 240 VAC
- Back-up power source: Battery 18 Ah, 12 V
- Back-up battery operating time: 24 hrs

### Remote Activation
- VHF (pilot radio): Yes
- GSM (cell phone): Yes

### Lighting Protection
- Separate lightning arrester: Yes
- Lightning arrester grounding: Yes

### External Ports
- VHF antenna: Yes
- Lighting system antenna: Yes
- GSM antenna: Yes
- USB: Yes
- HDMI: Yes

### ACCESSORIES INCLUDED
- **CABLES**
  - VHF cable, length 10 m
  - 868 MHz cable, length 10 m

### SHIPPING DATA

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (LxWxH)</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>UR-201 Unit</td>
<td>650 mm x 510 mm x 350 mm</td>
<td>18 kg</td>
</tr>
<tr>
<td>Accessories (cables, antennas)</td>
<td>1500 mm x 100 mm x 20 mm</td>
<td>8 kg</td>
</tr>
</tbody>
</table>

### GSM Receiver
- Receiver frequency: 900, 1800 Mhz
- Recommended antenna: Outdoor / external
- Operating mode: Gain: 2dBi, VSWR <1.8
- Polarization: vertical
- External antenna connection type: SMA
- Sim-card: GSM provider is selected and supplied by the User according to the network coverage on site

### VHF Scanner
- Receiver frequency: 900, 1800 Mhz
- Operation frequency: Programmable by S4GA
- Transmission frequency: Scanner does not transmit signal
- External antenna connection type: UC1, BNC
- Recommended antenna: Base / outdoor
- Base antenna radio characteristics: Maximum power: 100W FM
- Wind resistance: 60m/s
- Base antenna signal cable: RF10, 10.3 mm diameter

### Casing
- UV resistance: Yes
- Material: Powder coated steel
- Operating Temperature: -20 / + 50 Degrees Celsius
- Color: Aviation yellow

### ANTENNAS
- 868 MHz antenna
- GSM Antenna 3G/4G
- VHF antenna comet AB380
**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 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**

- 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, dusk-till-dawn, pilot-activated, GSM-activated
- Timer setup (for pilot-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: YES
- Automatic failure alarm: YES
- Operating mode setup: YES
- Individual light status indication: YES
- Grouping of airfield lights: 3
- Light intensity steps: 3
- Separate taxiways control: N/A
- Airfield layout: N/A

For airports with more advanced AGL system (including multiple taxiways, approach lighting, temporarily closed areas), S4GA offers ALCMS Advanced.
**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 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'' screen, cables, keyboard, mouse)</td>
<td>620 mm x 205 mm x 460 mm</td>
<td>10 kg</td>
</tr>
</tbody>
</table>
**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

---

**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: YES
- Automatic failure alarm: YES
- Operating mode setup: YES
- Individual light status indication: YES
- Grouping of airfield lights: 3+
- Light intensity steps: 5
- Separate taxiways control: YES
- Airfield layout: YES

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

---

**SYSTEM OVERVIEW**

**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**

- Real-time monitoring: YES
- Automatic failure alarm: YES
- Operating mode setup: YES
- Individual light status indication: YES
- Grouping of airfield lights: 3+
- Light intensity steps: 5
- Separate taxiways control: YES
- Airfield layout: YES

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

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

**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>
SOLAR ENGINE

FOR PAPI 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. SOLAR PANEL
CAPACITY: 640 W
Q CELL Solar panel collects solar energy 20% more effective than other solar panels

2. POWER BANK
CAPACITY: 2640 W
Stores solar energy and powers airport infrastructure connected to Power Bank

3. EXAMPLES OF S4GA SOLAR ENGINES

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

S4GA SOLAR PAPI  S4GA SOLAR WDI  OTHER AIRFIELD LIGHTING EQUIPMENT
SOLAR PANEL

Q.ANTUM DUO TECHNOLOGY

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

SUPPORTIVE FRANGIBLE LEGS
NON-CORROSIVE STEEL FRAME

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

<table>
<thead>
<tr>
<th>General</th>
<th>Electrical</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 x Q.PEAK DUO-G5 solar panels</td>
<td>Total Engine Size: 640 W (2 x 320 W)</td>
</tr>
<tr>
<td>Front Cover: 3.2 mm thermally pre-stressed glass with antireflection technology</td>
<td>Nominal Power: 315-330 Wp</td>
</tr>
<tr>
<td>Back Cover: composite film</td>
<td>Maximum system voltage: 1000 V</td>
</tr>
<tr>
<td>Frame: Black anodized aluminium</td>
<td></td>
</tr>
<tr>
<td>Cell: 6 x 20 monocrystalline Q.ANTUM solar half cells</td>
<td>Control &amp; Monitoring</td>
</tr>
<tr>
<td>Connector: Multi-Contact, MC4, IP65 and IP68</td>
<td>Operating temperature: -40 to 85°C</td>
</tr>
<tr>
<td>Dimensions: 1685 x 1000 x 32 mm</td>
<td>Wind/Snow Load: 4000/5400 Pa</td>
</tr>
<tr>
<td>Weight: 18.7 kg</td>
<td>Certification</td>
</tr>
<tr>
<td></td>
<td>VDE Quality Tested, IEC 61215 (Ed. 2); IEC 61730 (Ed. 1), Application class A</td>
</tr>
<tr>
<td></td>
<td>DIN EN 50380</td>
</tr>
</tbody>
</table>

TECHNICAL DRAWING

www.solutions4ga.com
## SOLAR POWER BANK

### INVERTER / CHARGER

#### General
- MultiPlus C12/800/3S Inverter Charger
- Power Control: yes
- Transfer Switch (A): 16
- Parallel and 3-phase operation: yes
- Dimensions [HxWxL]: 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 100/50
- Dimensions [LxWxH]: 70 x 186 x 130 mm
- Weight: 1.3 kg

#### Electrical
- Battery Voltage: 12/24V Auto Select
- Nominal charge current: 50 A
- Nominal PV power, 12V: 700 W
- Nominal PV power, 24V: 1400 W
- Max. PV short circuit current: 60 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%

#### Compliance
- Safety: EN/IEC 62109-1 / UL 1741 / CSA C22.2
- NEMA protection class: NEMA 4
- IK Code: IK08
- Material: galvanized steel
- Dimensions (LxWxH): 300 x 800 x 600 mm
- Ingress Protection: IP66

### BATTERY

#### General
- Victron Energy Battery Gel and AGM series
- Lifespan: 1.200 cycles
- Designed for 5 years
- Air-transportable
- User-replaceable
- Dimensions [LxWxH]: 238 x 240 x 522 mm
- Weight: 65 kg

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

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

### ENCLOSURE

- TECHNICAL DRAWING
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 LED RUNWAY EDGE LIGHT
- SP-401 LED RUNWAY THRESHOLD END LIGHT
- SP-401 LED TAXIWAY LIGHT
- UR-101 HANDHELD CONTROLLER
**Optics**
- 1,200 cd light output
- 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**
- 2 × built-in batteries
- Autonomy: 180 hrs (minimum intensity)
- Total capacity: 216W (2x9Ah/12V)
- Deep-cycle VRLA, 12V/9Ah
- Lifespan: 1,200 cycles
- Designed for 4-5 years
- Air transportable
- User-replaceable
- Standard type, available worldwide

**Charging**
- Via OCT-401 Charger
  - Charging time: 8 hrs
- Optional: contactless charging in a Trailer
  - Charging time: 8 hrs
- Optional: 2 × solar panels
  - Total power output: 10W

**Certification**
- ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.9.10 Appendix 2, Figure A2-9 or A2-1
- Intertek Report 180400427HZH-001, dated on September 2018

**Operating Modes**
- Steady / Flashing / Dusk till dawn
- Visible / Infrared (optional) / Visible + Infrared (optional)

**Remote Activation & Control**
- Wireless mesh type network
- Up to 1.5 km operating range
- 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 (optional, requires UR-201)
- Emergency ON/OFF button
- Self-diagnostics
- Failure auto reporting via SMS (requires UR-201 Unit)

**Environmental Conditions**
- Temperature range: -20 to 50 ºC (-4 to 122 ºF)
- Optional: -40 to 80 ºC (-40 to 176 ºF)
- Ingress protection: IP-67
- Wind Speed: 160 kph

**Casing And Components**
- Casing made of UV-stabilized Lexan polycarbonate
- Outer UV-resistant glass dome
- Carrying handle made of stainless steel
- Battery level indicator
- Detachable antenna
- Pressure stabilizing valve
- Transport circuit breaker
- Casing lifespan: 15 years
- Casing color: aviation yellow
- Frangible mounting compliant with ICAO regulations (optional)
- Dimensions (LxWxH): 244 mm × 185 mm × 297 mm
- Weight: 7 kg
PHOTOMETRIC PERFORMANCE

1. White Direction 1
   - Average Intensity: 750 cd
   - Average Intensity: 950 cd
   - Average Intensity: 1,200 cd

2. White Direction 2
   - Average Intensity: 750 cd
   - Average Intensity: 950 cd
   - Average Intensity: 1,200 cd

SHIPPING DATA

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimensions of Package (L×W×H)</th>
<th>Gross Weight</th>
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<tbody>
<tr>
<td>SP-401 Lighting Unit</td>
<td>350 mm × 250 mm × 210 mm</td>
<td>8.6 kg</td>
</tr>
<tr>
<td>SP-401 Lighting Unit, NO batteries</td>
<td>350 mm × 250 mm × 210 mm</td>
<td>3.1 kg</td>
</tr>
</tbody>
</table>
## TECHNICAL SPECIFICATIONS

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

### Battery
- 2 × built-in batteries
- Autonomy: 280 hrs (minimum intensity)
- Total capacity: 216W (2×9Ah/12V)
- Deep-cycle VRLA, 12V/9Ah
- Lifespan: 1,200 cycles
- Designed for 4-5 years
- Air transportable
- User-replaceable
- Standard type, available worldwide

### Charging
- Via OCT-401 Charger
  - Charging time: 8 hrs
- Optional: contactless charging in a Trailer
  - Charging time: 8 hrs
- Optional: 2 × solar panels
  - Total power output: 10W

### Certification
- ICAO Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.10.9/5.3.11.4 & Appendix 1, Figure A1-1b
- Intertek Reports: 180400427HZH-003 (not direction), dated on March 2019, 180400427HZH-004 (green direction), dated on March 2019

### Operating Modes
- Steady / Flashing / Dusk till dawn
- Visible / Infrared (optional) / Visible + Infrared (optional)

### Remote Activation & Control
- Wireless mesh type network
- Up to 1.5 km operating range
- 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 (optional, requires UR-201)
- Emergency ON/OFF button
- Self-diagnostics
- Failure auto reporting via SMS (requires UR-201 Unit)

### 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
- Wind Speed: 160 kph

### Casing And Components
- Casing made of UV-stabilized Lexan polycarbonate
- Outer UV-resistant glass dome
- Carrying handle made of stainless steel
- Battery level indicator
- Detachable antenna
- Pressure stabilizing valve
- Transport circuit breaker
- Casing lifespan: 15 years
- Casing color: aviation yellow
- Frangible mounting compliant with ICAO regulations (optional)
- Dimensions (LxWxH): 244 mm × 185 mm × 297 mm
- Weight: 7 kg
WORLD’S SAFEST RUNWAY LIGHTING

TECHNICAL DRAWING

1. Aluminum adapter for glass dome
2. Rubber seal
3. Glass dome
4. LED optics, bi- or unidirectional 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 × batteries built-in, VRLA type 12V/9Ah
12. Rubber seal
13. UV-stabilized Lexan polycarbonate casing

PHOTOMETRIC PERFORMANCE

Average Intensity 30 cd
Average Intensity 70 cd
Average Intensity 320 cd

Average Intensity 60 cd
Average Intensity 90 cd
Average Intensity 450 cd

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</tr>
</tbody>
</table>
### TECHNICAL SPECIFICATIONS

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

#### Battery
- 2 x built-in batteries
- Autonomy: 600 hrs (minimum intensity)
- Total capacity: 216W (2x9Ah/12V)
- Deep-cycle VRLA, 12V/9Ah
- Lifespan: 1,200 cycles
- Designed for 4-5 years
- Air transportable
- User-replaceable
- Standard type, available worldwide

#### Charging
- Via OCT-401 Charger
  - Charging time: 8 hrs
- Optional: contactless charging in a Trailer
  - Charging time: 8 hrs
- Optional: 2 x solar panels
  - Total power output: 10W

#### Certification
- ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.18.8 & Appendix 1, Figure A1-1b
- Intertek Report 180400427HZH-009, dated on March 2019

### Operating Modes
- Steady / Flashing / Dusk till dawn
- Visible / Infrared (optional) / Visible + Infrared (optional)

#### Remote Activation & Control
- Wireless mesh type network
- Up to 1.5 km operating range
- 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 (optional, requires UR-201)
- Emergency ON/OFF button
- Self-diagnostics
- Failure auto reporting via SMS (requires UR-201 Unit)

#### 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
- Wind Speed: 160 kph

#### Casing And Components
- Casing made of UV-stabilized Lexan polycarbonate
- Outer UV-resistant glass dome
- Carrying handle made of stainless steel
- Battery level indicator
- Detachable antenna
- Pressure stabilizing valve
- Transport circuit breaker
- Casing lifespan: 15 years
- Casing color: aviation yellow
- Frangible mounting compliant with ICAO regulations (optional)
- Dimensions (LxWxH): 244 mm × 185 mm × 297 mm
- Weight: 7 kg
**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 showing photometric performance](image)

- **S4GA performance**
- **Required by ICAO**

---

**SHIPPING DATA**

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<td>3.1 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
- 2014/35/UE
- 2014/30/UE
- 2011/65/UE
- 1999/5/EC

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
### TECHNICAL SPECIFICATIONS

#### Control
- **On / Off Button**: Yes
- **Light intensity**
  - Minimum 10%
  - Medium 30%
  - Maximum 100%
- **Special operating mode**
  - Night Vision Googles (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 meters
- **Radio transceiver (frequency/power output)**: 868 MHz, 16 mW

#### Power Source
- **Battery**: Lithium-ion type, 5.2 Ah, 3.7 V
- **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
- **CE Compliance**
  - 2014/35/UE
  - 2014/30/UE
  - 2011/65/UE
  - 1999/5/EC

### ACCESSORIES INCLUDED

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

- **CHARGER**
  - 110-230VAC

- **BATTERY**
  - Lithium-ion type 5.2 Ah, 3.7 V

### 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 x 50 mm x 189.2 mm</td>
<td>-</td>
</tr>
<tr>
<td>UR-101 Handheld Controller with accessories in protective case</td>
<td>336 mm x 300 mm x 148 mm</td>
<td>3 kg</td>
</tr>
</tbody>
</table>