



AV-23

**Solar Powered ICAO Low Intensity
Obstruction Light Type A
Installation & Service Manual**



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Version No.	Description	Date	Approved
3.0	IR Controller Instructions	Sept 2012	C. Procter
4.0	Remove AV07 Model	January 2013	J. Dore



Introduction

Congratulations! By choosing to purchase an Avlite light, you have become the owner of one of the most advanced solar LED airfield lights in the world.

Avlite Systems draws on more than 25 years experience in the design and manufacture of navigation aids, and particular care has been taken to ensure your light gives years of trouble free service.

As a commitment to producing the highest quality products for our customers, Avlite has been independently certified as complying with the requirements of ISO 9001:2008 quality management system.

By taking a few moments to browse through this booklet, you will become familiar with the versatility of your light, and be able to maximise its operating function.

Please remember to complete the Avlite warranty registration card accompanying your light.

Operating Principle

The solar module of the light converts sunlight to an electrical current that is used to charge the battery. The battery provides power to operate the light at night.

The flasher unit has very low current requirements. A microprocessor drives an ultra bright LED through a DC/DC converter, which enables the LED to operate within the manufacturer's specifications. The battery is protected from over-charging within the circuit to ensure maximum battery life.

On darkness, the microprocessor will initiate a program check and after approximately 1 minute will turn on.

Technology

Avlite Systems is a world-class solar lighting systems manufacturer with a proven reputation for rapid, innovative, and agile technology solutions designed specifically for defense, government, civil and humanitarian aid operations in the most remote, toughest environments.

Electronics

Avlite employs leading in-house electronic engineers in the design and development of software and related circuitry. All individual electronic components are sourced directly by Avlite procurement staff ensuring that only the highest quality components are used in our products.

LED Technology

All aviation lights use the latest advancements in LED (Light Emitting Diode) technology as a light source. The major advantage of LED's over traditional light sources is well established in that they typically have an operational life in excess of 100,000 hours, resulting in substantial savings to maintenance and servicing costs.

Precision Construction

Commitment to investing in the design and construction of injection-moulded parts including optic lenses, light bases and a range of other components ensures that all Avlite products are of a consistent and superior quality.

Optical Performance

Avlite manufactures a range of aviation LED lenses moulded from multi-cavity dies. Complex shapes such as the AV70 and 16-segment multi-focus lenses are a testament to the company's superior in-house lens manufacturing capabilities and outstanding optical performance.

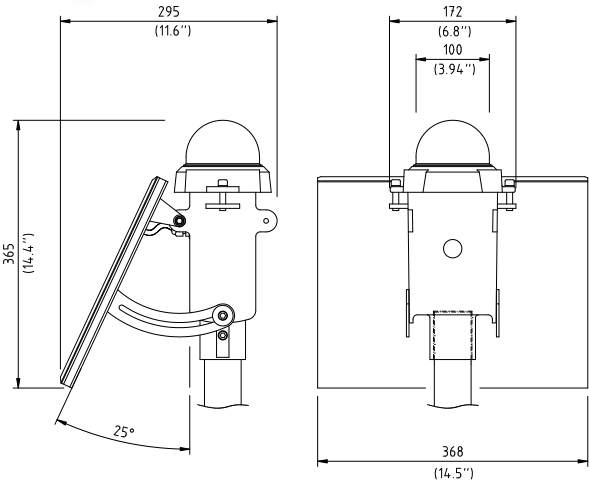
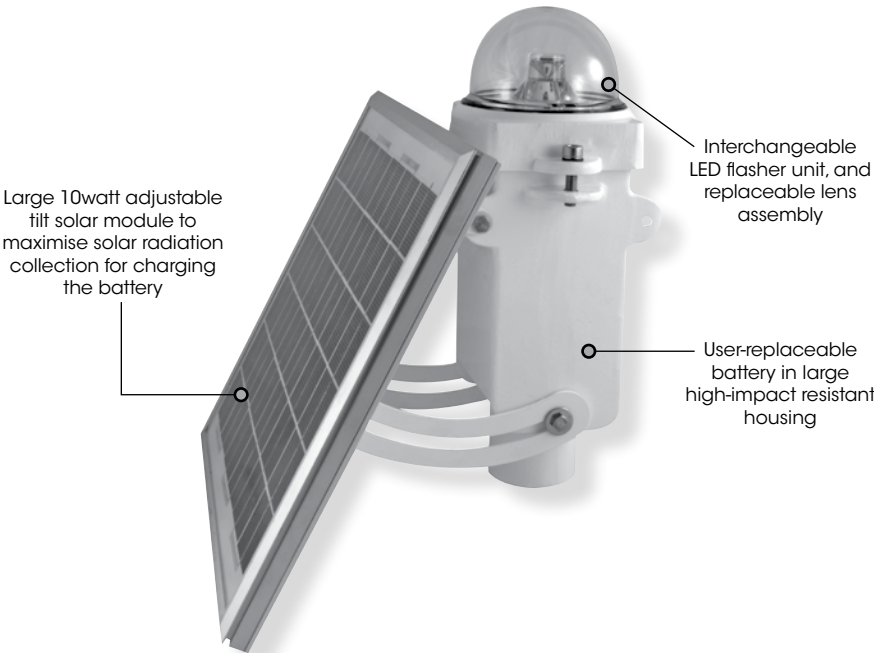
Award-winning, Patented Technology

Several United States and Australian patent registrations are held on Avlite's range of innovative designs, with other regional patents pending in Canada, United Kingdom and Europe.

AV-23 Model

Solar Obstruction Light

The AV-23 is a low intensity solar powered obstruction light designed to offer users years of maintenance-free operation. The unit is completely self-contained and incorporates a large 10watt solar module, 7.5Ah battery, LED light source and advanced driving circuitry.



SPECIFICATIONS * *

AV-23

Light Characteristics

Light Source
Available colors
Peak Intensity (cd)†
Horizontal Output (degrees)
Vertical Divergence (degrees)
Reflector Type
Available Flash Characteristics
Intensity Adjustments
LED Life Expectancy (hours)

As tested AV-OL-ILA-12-R LED
Red as standard. Other colors available on request, including IR
Complies with ICAO LIOLA
360
+4 to +13
Single LED Optic
>250 including steady-on (user-adjustable)
Adjustable in 25% increments
>100,000

Electrical Characteristics

Current Draw (mA)
Circuit Protection
Nominal Voltage (V)
Temperature Range

Steady-on: 39
Integrated
12
-40 to 80°C

Solar Characteristics

Solar Module Type
Output (watts)
Solar Module Efficiency (%)
Charging Regulation

Multicrystalline
10 (1 x 10watt)
14
Microprocessor controlled

Power Supply

Battery Type
Battery Capacity (Ah)
Nominal Voltage (V)
Battery Service Life
Autonomy (nights)

SLA (Sealed Lead Acid)
7.5
12
Average 5 years
Steady-on: >10
Flashing: >45 (14 hour darkness, 12.5% duty cycle)

Physical Characteristics

Body Material
Lens Material
Lens Diameter (mm/inches)
Lens Design
Mounting
Height (mm/inches)
Width (mm/inches)
Mass (kg/lbs)
Product Life Expectancy

7-stage powder-coated aluminium
LEXAN® Polycarbonate - UV stabilized
107 / 4¼
Single LED Optic
50mm OD pole
365 / 14³/₈
295 / 11⁵/₈
5.5 / 12¹/₈
Up to 12 years

Certifications

CE
Quality Assurance
ICAO

EN61000-6-3:1997, EN61000-6-1:1997
ISO9001:2008
Low Intensity Obstruction Light Type A

Intellectual Property

Trademarks

AVLITE® is a registered trademark of Avlite Systems

Warranty *

3 year warranty

Options Available

- IR Controller
- 200mm bolt pattern mounting plate
- IR LED

* Specifications subject to change or variation without notice

* Subject to standard terms and conditions

† Intensity setting subject to solar availability





Installation of AV-23 Model

Charging the Battery

New lights should be connected and left in the sun for 1-2 days to ensure battery is charged before placing in service.

Preferred Installation Location

For best light performance, ensure solar modules are not covered and are in clear view of the sky with no shadows.

Light Operation

Light is activated by connecting solar module and battery positive and negative wires. Intensity and flash settings need to be set prior to activation.

1. Unscrew the two socket cap screws located at either side of the light and remove lens cover.
2. Carefully remove internal flasher unit from within the lens cover.
3. The power and range settings of the light are adjusted by setting the DIP switches located on the top of this internal flasher unit. Your lantern is normally set to maximum range (see 'Selecting an Intensity Setting' section of this manual).
4. Set rotary switches to the required flash code (see 'Selecting a Flash Code' section of this manual), also located on the top of the internal flasher unit.
5. Replace internal flasher unit back inside light cover.
6. To activate the light, connect the "Battery Negative (-)" wire to the negative terminal, and the "Battery Positive (+)" wire to the positive terminal of the battery, and the "Solar Negative (-)" wire to internal "Solar Negative (-)" wire, and the "Solar Positive (+)" wire to the internal "Solar Positive (+)" wire.
7. Replace lens cover back onto unit, making sure that wires are not protruding, and screw the two socket cap screws up tight.
8. To test place dark cover (towel or jacket) on top of light to activate sensor, light will come on within one minute.

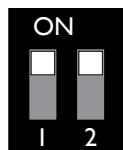
Care must be taken to observe the polarity of each wire before they are connected.

To ensure waterproofing of the unit, make sure that no wires are protruding and that there is an even seal when reattaching the lens cover to the unit body.

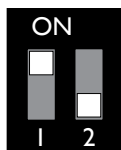
Selecting an Intensity/Power Setting

Intensity/power settings on Avlite lanterns operate via DIP switches, located near the rotary switches on the flasher unit. The intensity/power settings may be used to reduce the power consumption and intensity of the lantern. Setting the lantern to 25% intensity will reduce the power consumption to 25% of the normal 100% setting and the range by 25%. This setting may be used to adjust the current draw of the light to local sunlight conditions.

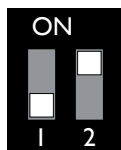
The following diagrams indicate intensity/power settings:-



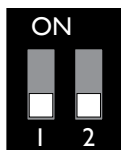
100%



75%



50%



25%

Intensity Setting	Power mA / hour
100%	100
75%	76
50%	51
25%	26

Power Consumption Calculator

Night Hours (use 13.7 if unknown)	Power mA/hour	Duty Cycle (e.g. 20% = 0.2)	Total power used per night (mA)
	X	X	=

Model	Total power used per night (mAh)	Solar Panel Charge (mA)	Number of full sunlight hours required to break even (the amount of time it will take for the solar to replace what the light took out overnight)
AV-23		456	

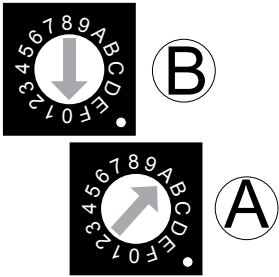
If the number of Full Sunlight hours is less than 2.5-3.0 hours, please consider reducing the intensity (Power) or reducing the Duty Cycle.

Selecting a Flash Code - Rotary Switches A & B

All lights have 2 rotary switches marked A and B on the flasher unit. Turning the small arrows to the appropriate number or letter will set the code (see 'Flash Codes' section, of this manual). The unit may take up to one minute to activate a new flash code. A comprehensive list of available flash codes is listed on pages in the 'Flash Codes' section of this manual.

Example:

SWITCH		FLASH CODE	ON	OFF
A	B			
A	0	FL 3 S	0.3	2.7





Flash Codes

AVLITE® code reference is listed by number of flashes

**For the latest version of this document visit www.avlite.com,
or email support@avlite.com**

Symbols

FL	Flash followed by number Eg. FL 1 S, one flash every second
F	Fixed
Q	Quick flash
VQ	Very quick flash
OC	Occulting; greater period on than off
ISO	Isophase; equal period on and off
LFL	Long flash long
MO	Morse code () contains letter

For example, VQ (6) + LFL 10 S means 6 very quick flashes followed by a long flash, during a 10-second interval.

The amount of power your light draws through the night depends on the duty cycle, i.e. the amount of time on as a proportion to the timing cycle. For example, 0.5 seconds on and 4.5 seconds off equals a 10% duty cycle.

It is best to operate at the lowest duty cycle appropriate to the actual needs of the application.

Please note, Avlite models will retain full autonomy in normal operating conditions with duty-cycles up to approximately 30%. In applications whereby duty cycles exceed this limit, a reduction in light intensity is recommended. Please contact a Avlite consultant if assistance is required.

SWITCH	FLASH CODE	ON	OFF
A	B		
0	0	F (Steady light)	
D	3	VQ 0.5 S	0.2 0.3
E	3	VQ 0.6 S	0.2 0.4
F	3	VQ 0.6 S	0.3 0.3
7	3	Q 1 S	0.2 0.8
8	3	Q 1 S	0.3 0.7
9	3	Q 1 S	0.4 0.6
A	3	Q 1 S	0.5 0.5
8	4	Q 1 S	0.8 0.2
B	3	Q 1.2 S	0.3 0.9
9	4	Q 1.2 S	0.5 0.7
C	3	Q 1.2 S	0.6 0.6
F	4	FL 1.5 S	0.2 1.3
1	0	FL 1.5 S	0.3 1.2
0	5	FL 1.5 S	0.4 1.1
0	4	FL 1.5 S	0.5 1.0
2	0	FL 2 S	0.2 1.8
3	0	FL 2 S	0.3 1.7
4	0	FL 2 S	0.4 1.6
5	0	FL 2 S	0.5 1.5
6	0	FL 2 S	0.7 1.3
7	0	FL 2 S	0.8 1.2
1	2	ISO 2 S	1.0 1.0
8	0	FL 2.5 S	0.3 2.2
9	0	FL 2.5 S	0.5 2.0
D	6	FL 2.5 S	1.0 1.5
1	5	FL 3 S	0.2 2.8
A	0	FL 3 S	0.3 2.7
2	5	FL 3 S	0.4 2.6
B	0	FL 3 S	0.5 2.5
3	5	FL 3 S	0.6 2.4
C	0	FL 3 S	0.7 2.3
D	0	FL 3 S	1.0 2.0
2	2	ISO 3 S	1.5 1.5
5	4	OC 3 S	2.0 1.0
E	2	OC 3 S	2.5 0.5
4	6	OC 3.5 S	2.5 1.0
4	5	FL 4 S	0.2 3.8
5	5	FL 4 S	0.3 3.7
E	0	FL 4 S	0.4 3.6
F	0	FL 4 S	0.5 3.5
6	5	FL 4 S	0.6 3.4
0	1	FL 4 S	0.8 3.2
1	1	FL 4 S	1.0 3.0
2	1	FL 4 S	1.5 2.5
3	2	ISO 4 S	2.0 2.0
3	6	OC 4 S	2.5 1.5
F	2	OC 4 S	3.0 1.0
3	1	FL 4.3 S	1.3 3.0
8	5	FL 5 S	0.2 4.8
4	1	FL 5 S	0.3 4.7
5	1	FL 5 S	0.5 4.5
9	5	FL 5 S	0.9 4.1
6	1	FL 5 S	1.0 4.0

SWITCH	FLASH CODE	ON	OFF
A	B		
7	1	FL 5 S	1.5 3.5
4	2	ISO 5 S	2.5 2.5
8	2	LFL 5 S	2.0 3.0
0	3	OC 5 S	3.0 2.0
1	3	OC 5 S	4.0 1.0
2	3	OC 5 S	4.5 0.5
C	6	FL 6 S	0.2 5.8
B	5	FL 6 S	0.3 5.7
C	5	FL 6 S	0.4 5.6
8	1	FL 6 S	0.5 5.5
9	1	FL 6 S	0.6 5.4
A	1	FL 6 S	1.0 5.0
7	5	FL 6 S	1.2 4.8
B	1	FL 6 S	1.5 4.5
5	2	ISO 6 S	3.0 3.0
9	2	LFL 6 S	2.0 4.0
6	4	OC 6 S	4.0 2.0
3	3	OC 6 S	4.5 1.5
4	3	OC 6 S	5.0 1.0
A	4	FL 7 S	1.0 6.0
9	6	FL 7 S	2.0 5.0
5	6	OC 7 S	4.5 2.5
D	5	FL 7.5 S	0.5 7.0
C	1	FL 7.5 S	0.8 6.7
E	5	FL 8 S	0.5 7.5
B	4	FL 8 S	1.0 7.0
6	2	ISO 8 S	4.0 4.0
A	2	LFL 8 S	2.0 6.0
6	6	OC 8 S	5.0 3.0
B	2	LFL 8 S	3.0 5.0
F	5	FL 9 S	0.9 8.1
C	4	FL 9 S	1.0 8.0
7	6	OC 9 S	6.0 3.0
0	6	FL 10 S	0.2 9.8
1	6	FL 10 S	0.3 9.7
D	1	FL 10 S	0.5 9.5
2	6	FL 10 S	0.8 9.2
E	1	FL 10 S	1.0 9.0
1	4	FL 10 S	1.5 8.5
C	2	LFL 10 S	2.0 8.0
D	2	LFL 10 S	3.0 7.0
7	2	ISO 10 S	5.0 5.0
2	4	LFL 10 S	4.0 6.0
8	6	OC 10 S	6.0 4.0
5	3	OC 10 S	7.0 3.0
6	3	OC 10 S	7.5 2.5
F	1	FL 12 S	1.2 10.8
D	4	FL 12 S	2.5 9.5
3	4	LFL 12 S	2.0 10.0
0	2	FL 15 S	1.0 14.0
4	4	LFL 15 S	4.0 11.0
7	4	OC 15 S	10 5.0
A	6	LFL 20 S	2.0 18.0
E	4	FL 26 S	1.0 25.0



SWITCH	FLASH CODE	ON	OFF	ON	OFF
A	B				
0	A FL (2) 4 S	0.5	1.0	0.5	2.0
E	B VQ (2) 4 S	0.2	1.0	0.2	2.6
1	A FL (2) 4.5 S	0.3	1.0	0.3	2.9
2	A FL (2) 4.5 S	0.4	1.0	0.4	2.7
3	A FL (2) 4.5 S	0.5	1.0	0.5	2.5
F	9 FL (2) 5 S	0.2	0.8	0.2	3.8
2	C FL (2) 5 S	0.2	1.2	0.2	3.4
4	A FL (2) 5 S	0.4	0.6	0.4	3.6
0	7 FL (2) 5 S	0.5	1.0	0.5	3.0
1	7 FL (2) 5 S	1.0	1.0	1.0	2.0
9	B Q (2) 5 S	0.3	0.7	0.3	3.7
2	9 Q (2) 5 S	0.5	0.5	0.5	3.5
5	A FL (2) 5.5 S	0.4	1.4	0.4	3.3
7	8 FL (2) 6 S	0.3	0.6	1.0	4.1
A	A FL (2) 6 S	0.3	0.9	0.3	4.5
6	A FL (2) 6 S	0.3	1.0	0.3	4.4
7	A FL (2) 6 S	0.4	1.0	0.4	4.2
9	9 FL (2) 6 S	0.5	1.0	0.5	4.0
2	8 FL (2) 6 S	0.8	1.2	0.8	3.2
3	7 FL (2) 6 S	1.0	1.0	1.0	3.0
3	9 Q (2) 6 S	0.3	0.7	0.3	4.7
A	9 FL (2) 7 S	1.0	1.0	1.0	4.0
7	B FL (2) 8 S	0.4	0.6	2.0	5.0
8	A FL (2) 8 S	0.4	1.0	0.4	6.2
4	7 FL (2) 8 S	0.5	1.0	0.5	6.0
8	8 FL (2) 8 S	0.8	1.2	2.4	3.6
5	7 FL (2) 8 S	1.0	1.0	1.0	5.0
4	C OC (2) 8 S	3.0	2.0	1.0	2.0
5	C OC (2) 8 S	5.0	1.0	1.0	1.0
F	B VQ (2) 8 S	0.2	1.0	0.2	6.6
9	A FL (2) 10 S	0.4	1.6	0.4	7.6
9	8 FL (2) 10 S	0.5	0.5	1.5	7.5
6	7 FL (2) 10 S	0.5	1.0	0.5	8.0
7	7 FL (2) 10 S	0.5	1.5	0.5	7.5
6	9 FL (2) 10 S	0.5	2.0	0.5	7.0
8	7 FL (2) 10 S	0.8	1.2	0.8	7.2
B	9 FL (2) 10 S	1.0	1.0	1.0	7.0
9	7 FL (2) 10 S	1.0	1.5	1.0	6.5
4	9 Q (2) 10 S	0.6	0.4	0.6	8.4
B	A FL (2) 12 S	0.4	1.0	0.4	10.2
C	9 FL (2) 12 S	0.5	1.0	0.5	10.0
D	9 FL (2) 12 S	1.5	2.0	1.5	7.0
A	8 FL (2) 15 S	0.5	1.5	2.0	11.0
A	7 FL (2) 15 S	1.0	2.0	1.0	11.0
8	B Q (2) 15 S	0.2	0.8	0.2	13.8
C	A FL (2) 20 S	1.0	3.0	1.0	15.0
D	A FL (2) 25 S	1.0	1.0	1.0	22.0

SWITCH	FLASH CODE	ON	OFF	ON	OFF	ON	OFF
A	B						
7	9 Q (3) 5 S	0.5	0.5	0.5	0.5	0.5	2.5
5	9 VQ (3) 5 S	0.2	0.3	0.2	0.3	0.2	3.8
0	C VQ (3) 5 S	0.3	0.2	0.3	0.2	0.3	3.7
E	9 VQ (3) 5 S	0.3	0.3	0.3	0.3	0.3	3.5
3	C FL (3) 6 S	0.5	1.0	0.5	1.0	0.5	2.5
2	B FL (2+1) 6 S	0.3	0.4	0.3	1.2	0.3	3.5



SWITCH	FLASH CODE	ON	OFF	ON	OFF	ON	OFF
A	B						
A	B Q (3) 6 S	0.3	0.7	0.3	0.7	0.3	3.7
F	A FL (3) 8 S	0.5	1.0	0.5	1.0	0.5	4.5
0	B FL (3) 9 S	0.3	1.0	0.3	1.0	0.3	6.1
B	7 FL (3) 9 S	0.8	1.2	0.8	1.2	0.8	4.2
B	8 FL (3) 10 S	0.3	0.7	0.3	0.7	0.9	7.1
C	8 FL (3) 10 S	0.4	0.6	0.4	0.6	1.2	6.8
C	B FL (3) 10 S	0.5	0.5	0.5	0.5	0.5	7.5
C	7 FL (3) 10 S	0.5	1.5	0.5	1.5	0.5	5.5
D	B FL (3) 10 S	0.6	0.6	0.6	0.6	0.6	7.0
D	7 FL (3) 10 S	1.0	1.0	1.0	1.0	1.0	5.0
3	8 FL (2+1) 10 S	0.5	0.7	0.5	2.1	0.5	5.7
8	9 OC (3) 10 S	5.0	1.0	1.0	1.0	1.0	1.0
B	B Q (3) 10 S	0.3	0.7	0.3	0.7	0.3	7.7
D	8 FL (2 + 1) 10 S	0.5	0.5	0.5	1.5	0.5	6.5
1	B FL (3) 12 S	0.5	1.5	0.5	1.5	0.5	7.5
E	A FL (3) 12 S	0.5	2.0	0.5	2.0	0.5	6.5
E	7 FL (3) 12 S	0.8	1.2	0.8	1.2	0.8	7.2
B	6 FL (3) 12 S	1.0	1.0	1.0	3.0	1.0	5.0
4	8 FL (2+1) 12 S	0.8	1.2	0.8	2.4	0.8	6.0
5	8 FL (2+1) 12 S	1.0	1.0	1.0	4.0	1.0	4.0
1	8 FL (2+1) 13.5 S	1.0	1.0	1.0	4.0	1.0	5.5
F	7 FL (3) 15 S	0.3	1.7	0.3	1.7	0.3	10.7
9	D FL (3) 15 S	0.4	1.0	0.4	1.0	0.4	11.8
0	8 FL (3) 15 S	0.5	1.5	0.5	1.5	0.5	10.5
F	8 FL (2+1) 15 S	0.6	0.3	0.6	0.3	1.4	11.8
0	9 FL (2+1) 15 S	0.7	0.5	0.7	0.5	1.9	10.7
1	9 FL (2+1) 15 S	0.7	0.7	0.7	0.7	2.1	10.1
6	8 FL (2+1) 15 S	1.0	2.0	1.0	5.0	1.0	5.0
1	C VQ (3) 15 S	0.1	0.5	0.1	0.5	0.1	13.7
4	B FL (3) 20 S	0.5	3.0	0.5	3.0	0.5	12.5
3	B FL (3) 20 S	0.5	1.5	0.5	1.5	0.5	15.5
5	B FL (3) 20 S	0.8	1.2	0.8	1.2	0.8	15.2
6	B FL (3) 20 S	1.0	1.0	1.0	1.0	1.0	15.0

SWITCH	FLASH CODE	ON	OFF	ON	OFF	ON	OFF	ON	OFF
A	B								
B	F VQ (4) 4 S	0.3	0.3	0.3	0.3	0.3	0.3	0.3	2.3
B	D Q (4) 6 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	2.7
8	D Q (4) 6 S	0.4	0.6	0.4	0.6	0.4	0.6	0.4	2.6
1	D FL (4) 10 S	0.5	1.0	0.5	1.0	0.5	1.0	0.5	5.0
2	D FL (4) 10 S	0.8	1.2	0.8	1.2	0.8	1.2	0.8	3.2
F	E Q (4) 10 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	6.7
B	E FL (4) 12 S	0.3	1.7	0.3	1.7	0.3	1.7	0.3	5.7
4	F FL (4) 12 S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	8.5
C	E FL (4) 12 S	0.5	1.5	0.5	1.5	0.5	1.5	0.5	5.5
3	D FL (4) 12 S	0.8	1.2	0.8	1.2	0.8	1.2	0.8	5.2
A	D Q (4) 12 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	8.7
4	D FL (4) 15 S	0.5	1.5	0.5	1.5	0.5	1.5	0.5	8.5
8	E FL (4) 15 S	1.0	1.0	1.0	1.0	1.0	1.0	1.0	8.0
7	D FL (4) 15 S	1.5	0.5	0.5	0.5	0.5	0.5	0.5	10.5
D	E FL (4) 16 S	0.5	1.5	0.5	1.5	0.5	1.5	0.5	9.5
C	D FL (4) 20 S	0.3	3.0	0.3	3.0	0.3	3.0	0.3	9.8
5	D FL (4) 20 S	0.5	1.5	0.5	1.5	0.5	1.5	0.5	13.5
0	D FL (4) 20 S	0.5	1.5	0.5	1.5	0.5	4.5	0.5	10.5
3	F FL (4) 20 S	1.5	1.5	1.5	1.5	1.5	1.5	1.5	9.5
0	F Q (4) 20 S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	16.5
E	E Q (4) 28 S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	24.5
6	F FL (4) 30 S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	26.5

SWITCH	FLASH CODE		ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
A	B											
D	D	Q (5) 7 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	2.7
E	D	Q (5) 10 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	5.7
E	8	FL (5) 16.5 S	5.0	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	3.5
5	F	FL (5) 20 S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	15.5
9	F	FL (5) 20 S	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	11.2
9	E	FL (5) 20 S	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	11.0

SWITCH	FLASH CODE	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
A	B												
F	D	Q (6) 10 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	4.7
A	F	FL (6) 15 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	9.7
7	F	FL (6) 15 S	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0	7.0

SWITCH	FLASH CODE	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
A	B														
6	E	VQ (6) + LFL 10 S	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	5.0
7	E	VQ (6) + LFL 10 S	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	4.4
2	F	Q (6) + LFL 15 S	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	7.0
2	E	Q (6) + LFL 15 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	7.0
3	E	Q (6) + LFL 15 S	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	5.8
8	F	VQ (6) + LFL 15 S	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	9.4

SWITCH	FLASH CODE	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
A	B																		
4	E	VQ (9) 10 S	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	5.8
5	E	VQ (9) 10 S	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	4.9
1	F	Q (9) 15 S	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	6.8
0	E	Q (9) 15 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	6.7
1	E	Q (9) 15 S	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	4.8

SWITCH	FLASH CODE	ON	OFF	ON	OFF	ON	OFF	ON	OFF
A	B								
MORSE CODE () INDICATES LETTER									
7	8	MO (A) 6 S	0.3	0.6	1.0	4.1			
7	B	MO (A) 8 S	0.4	0.6	2.0	5.0			
8	8	MO (A) 8 S	0.8	1.2	2.4	3.6			
B	8	MO (U) 10 S	0.3	0.7	0.3	0.7	0.9	7.1	
C	8	MO (U) 10 S	0.4	0.6	0.4	0.6	1.2	6.8	
D	8	MO (U) 10 S	0.5	0.5	0.5	0.5	1.5	6.5	
9	8	MO (A) 10 S	0.5	0.5	1.5	7.5			
8	9	MO (D) 10 S	5.0	1.0	1.0	1.0	1.0	1.0	
A	8	MO (A) 15 S	0.5	1.5	2.0	11.0			
F	8	MO (U) 15 S	0.6	0.3	0.6	0.3	1.4	11.8	
0	9	MO (U) 15 S	0.7	0.5	0.7	0.5	1.9	10.7	
1	9	MO (U) 15 S	0.7	0.7	0.7	0.7	2.1	10.1	
7	D	MO (B) 15 S	1.5	0.5	0.5	0.5	0.5	0.5	10.5

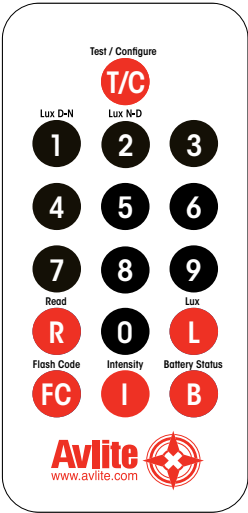
Optional IR Remote Control

The IR remote is used to communicate with Avlite lighting products that have an IR sensor fitted. The remote control is used for the following functions:

- Flash Code: read the current flash code, configure a new flash code.
- Lamp Intensity: read the current lamp intensity, configure a new intensity level.
- Ambient Light Thresholds: read the current light thresholds, configure new ambient light thresholds.
- Perform a battery health check.

On receiving a valid key signal from the IR Remote, the light will flash once. The user should wait until the light responds to each keypress before pressing another key. If there is no response to the keypress after 3 seconds, it has not been detected by the light and the key can be pressed again.

If an invalid key is detected, the light will flash quickly 5 times. In this case, the command will have to be restarted.



Avlite IR Controller / Universal Remote Compatibility

If you lose your Avlite IR Controller, the following Universal Remote Controller has been tested for compatibility: RCA Type RCR312WR programmed for Phillips TV Type Code 10054

Avlite Key	Universal Remote Key
T	Power
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
0	0
R	Channel+
L	Mute
FC	Volume+
I	Volume-
B	Channel-

IR Controller Functions

Test Mode / Configure



Pressing the T/C button for upto 5 seconds places the light in Test Mode. The light will flash once in response to the T/C button being pressed and then turn off. The security code needs to be entered next to gain access to the IR Controller functions.

Security Access

Press 8 6 6 T/C. Between each key press, wait for the light to flash once before pressing the next key.



If security access has been accepted, the light will flash once after the T/C button is pressed and remain off. If an incorrect number has been entered, the light will flash once to acknowledge the T/C button being pressed, followed by the error sequence flash. If this occurs, the security access code can be re-entered again.

Normal Operation

The light will return to normal operation once it has not detected a valid key press for 30 seconds. The light will flash once to indicate it is returning to normal operation.

Read

Pressing the Read followed by one of the configuration keys shall cause the light to flash the configured value.

Example Key Sequences:



The light flashes the 'IR Remote' number belonging to the currently set Flash Code. Refer to the Flash Code tables to match the 'IR Remote' flash number to the Flash Code.



The light flashes the current intensity setting: 1 flash for 25%, 2 for 50%, 3 for 75% and 4 for 100%.



The light flashes the current battery status.



The light flashes the sunset level in Lux, followed by a 2 second gap, followed by the sunrise level. Levels are in the range of 1 to 9.



Flash Code



This key sets the flash code on the light.

Example Key sequence:



This sets the flash code to value 123. The light responds by flashing the flash code value.

Flash Code Numbers

The lamp flashes numbers as follows: Hundreds, Tens, Ones. A value of 125 will be flashed as: 1 flash, followed by a delay, 2 flashes, followed by a delay, 5 flashes.

The flash for number 0 is one long flash.

For example if the current Flash Code is set to 51 via the AB switches, the lamp will flash number 081.

For a flash code set to 01, the lamp will flash 001.

Intensity

This function sets the light intensity. Valid intensity values are 1 for 25%, 2 for 50%, 3 for 75% and 4 for 100%.



Example Key sequence:



This sets the light intensity to 25%.

Battery Status



This function reads the battery status. The response from the light is High Voltage: 4 flashes, Good Voltage: 3 flashes, Low Voltage 2 flashes, Cutoff Voltage or below: 1 flash.

Example Key sequence:



Lux



This key sets the Ambient Light levels for the light. The format is L <1 (Lux D-N) or 2 (Lux N-D)> <Lux Level (1 to 9)> T.

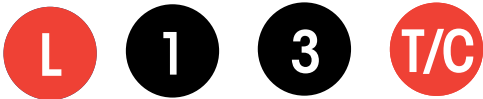
There are 9 programmable lux levels for both the night - day and day – night transitions. The levels 1 to 9 represent increasing Lux levels. The Lux range between levels 1 and 9 is approximately 50 Lux. The nominal and factory preset value is 5. This equates to the day - night transition occurring at around 100Lux, (the level at which the lamp turns on), and a night – day transition of around 150 Lux (the level at which the lamp turns off).

Day - Night Transition		Night - Day Transition	
Level	Lux D-N (Approx)	Level	Lux N-D (Approx)
1	60	1	110
2	70	2	120
3	80	3	130
4	90	4	140
5*	100	5*	150
6	110	6	160
7	120	7	170
8	130	8	180
9	140	9	190

* Factory Preset

Example key sequence:

Assume the current Lux settings are at the factory preset values of 5.



This sets the ambient light level 2 steps lower than the nominal 100 Lux for the lamp to turn on. This will make the lamp turn on when its surroundings are darker.



This sets the ambient light level 3 steps higher than the nominal 150 Lux for the lamp to turn off. This will make the lamp turn off when its' surroundings are brighter.

On successful programming, the light will flash the sunset level (D-N), followed by a 2 second gap, followed by the sunrise level (N-D).

Error Indication

If the key sequence is invalid, or an out of bounds value is attempted to be set, the light flashes 5 times for 1 second. (The command then needs to be sent from the start.)

Example key sequence: (Set the intensity level to 5 – undefined.)



The light flashes 5 times for 1 second.

Configuration Settings

The intensity and flash codes can be changed using the switches on the lamp circuit board or with the IR Remote Control. The lamp intensity and flash code settings are set to the last detected change, carried out with the IR Remote Control or by changing the switch positions.

Example #1: If the intensity is set at 100% with the intensity switches, and is then set to 50% using the IR Remote Control, the intensity setting will change to 50%. If the intensity is then set to 75% using the switches, the new intensity value will be 75%.

In order to change intensity settings using the IR Remoter Control, the lamp must be powered.

The lamp can detect a change in switch settings if they are changed while the light is powered down.

Example #2: The flash code is set according to the switch settings: A=5, B = 1. The operator changes the flash code to 65 (A=4, B=1) using the IR Remote Control. The new flash code is now configured to A=4, B=1. The lamp is powered down and the operator changes the flash code switches to A=3, B=1 and powers on the light. The new flash code is now A=3, B=1. If the flash code is read from the light using the IR Remote Control, the lamp will flash 49 which is the corresponding number for switches A=3, B=1.

Use the IR Remote Control to read the current lamp intensity setting and flash code.



Maintenance and Servicing

Designed to be maintenance free, the AV-23 requires minimal attention, though the following maintenance and servicing information is provided to help ensure the life of your product.

1. **Cleaning Lens-** occasional cleaning of the light lens may be required. Using a cloth and warm soapy water, wipe off any foreign matter before rinsing the lens with fresh water.
2. **Battery Check-** inspection of batteries should be performed every three years (minimum) to ensure that the charger, battery and ancillary electronics are functioning correctly. Using a voltage meter, check that the battery voltage is at least 12 volts under 100MA load, and ensure all terminals are clear of foreign matter (Battery Connected Units Only).
3. **Cleaning Solar Panels (AV-23 Model) -** occasional cleaning of the solar panels may be required. Using a cloth and warm soapy water, wipe off any foreign matter before rinsing the panels with fresh water.

AV-23 Model Only

Replacing the battery- Don't throw the unit out!!

The AV-23 light battery compartment provides the user with the ability to change the battery after years of operation.

1. Remove the 2 x M8 x 50 SHCS.
2. Remove battery from AV-23 case and disconnect the battery leads.
3. Discard old battery in a safe manner.
4. Reattach positive and negative leads to new battery and then place back into case.
5. Refit the light head. Tighten SHCS evenly and securely.
6. To test place dark cover (towel or jacket) on top of light to activate sensor, light will come on.

Care must be taken to observe the polarity of the battery before the leads are re-connected, and ensure the replacement battery is correctly fitted. Always discard old batteries in a safe manner.

Long Term Storage Instructions

If the AV-23 is to be placed in storage for an extended period, being more than 5 months, please follow the below steps.

1. The 12 volt SLA Battery must be stored in a fully charged condition.
2. Remove the light head.
3. Disconnect the battery leads.

All batteries will discharge over time and the rate of discharge is dependent on temperature. If the light is being stored in temperatures greater than 40°C the battery will discharge faster.

Please check battery every 3-6 months and recharge if necessary.

Recharging the Battery

1. Remove the light head and assembly.
2. Connect the battery leads.
3. Reconnect the battery and place unit in the sun for 2-4 days

Or

Reconnect battery and place in front of a halogen lamp for 2-3 days. (Do not place the halogen light too close to the solar panel or the panel may be overheated)

Check the battery voltage regularly to make sure the unit is charging correctly.

AV-23 Trouble Shooting

Problem	Remedy
Light will not activate.	<ul style="list-style-type: none"> • Ensure light is in darkness. • Wait at least 60 seconds for the program to initialise in darkness. • Ensure switch setting is on a valid code (See <i>Flash Codes</i> section of this manual). • Ensure battery terminals are properly connected. • Ensure battery voltage is above 12.6volts.
Timing codes will not change.	<ul style="list-style-type: none"> • Turn rotary switches several times to ensure contacts are clear.
Light will not operate for the entire night.	<ul style="list-style-type: none"> • Expose light to direct sunlight and monitor operation for several days. Avlite products typically require 3.0 hours of direct sunlight per day to retain full autonomy. From a discharged state, the light may require several days of operational conditions to 'cycle' up to full autonomy. • Reducing the light output intensity or duty cycle (flash code) will reduce current draw on the battery. • Ensure solar module is clean and not covered by shading during the day.
Light is constantly on during the day.	<ul style="list-style-type: none"> • Ensure the flash code is not set to F F. This flash code is for testing purposes only and will be steady on for 24 hours a day.



Avlite Light Warranty V1.1

Activating the Warranty

Upon purchase, the Avlite Systems warranty must be activated for recognition of future claims. To do this you have two (2) options:

1. Postal Registration

Please complete the Avlite Systems Warranty Registration Card and return to Avlite within 30 days of your purchase.

2. Online Registration

Please complete the Online Registration Form at; **www.avlite.com**

Avlite Systems will repair or replace your lantern in the event of electronic failure for a period of up to three years from the date of purchase.

The unit must be returned to Avlite freight prepaid.

Warranty Terms

1. Avlite Systems warrants that any Avlite aviation products fitted with telemetry equipment including but not limited to AIS, GSM, GPS or RF ("Telemetry Products") will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of twelve (12) months from the date of purchase by the original purchaser.
2. Avlite Systems warrants that any rotationally-moulded products ("Roto-Moulded Products") and accessory products ("Accessory Products") will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of twelve (12) months from the date of purchase by the original purchaser.
3. Avlite Systems warrants that any Avlite aviation products other than the Telemetry Products, Roto-Moulded Products and Accessory Products ("Avlite Products") will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of three (3) years from the date of purchase by the original purchaser.
4. Avlite Systems will repair or replace, at Avlite's sole discretion, any Telemetry Products, Roto-Moulded Products, Accessory Products or Avlite Products found to be defective in material and workmanship in the relevant warranty period so long as the Warranty Conditions (set out below) are satisfied.
5. If any Telemetry Products or Avlite Products are fitted with a rechargeable battery, Avlite Systems warrants the battery will be free from defect for a period of one (1) year when used within original manufacturer's specifications and instructions.

Warranty Conditions

This Warranty is subject to the following conditions and limitations;

1. The warranty is applicable to lanterns manufactured from 1/1/2009.
2. The warranty is void and inapplicable if:
 - a. the product has been used or handled other than in accordance with the instructions in the owner's manual and any other information or instructions provided to the customer by Avlite;
 - b. the product has been deliberately abused, or misused, damaged by accident or neglect or in being transported; or
 - c. the defect is due to the product being repaired or tampered with by anyone other than Avlite or authorised Avlite repair personnel.
3. The customer must give Avlite Systems notice of any defect with the product within 30 days of the customer becoming aware of the defect.
4. Rechargeable batteries have a limited number of charge cycles and may eventually need to be replaced. Typical battery replacement period is 3-4 years. Long term exposure to high temperatures will shorten the battery life. Batteries used or stored in a manner inconsistent with the manufacturer's specifications and instructions shall not be covered by this warranty.



5. No modifications to the original specifications determined by Avlite shall be made without written approval of Avlite Systems.
6. Avlite lights can be fitted with 3rd party power supplies and accessories but are covered by the 3rd party warranty terms and conditions.
7. The product must be packed and returned to Avlite Systems by the customer at his or her sole expense. Avlite Systems will pay return freight of its choice. A returned product must be accompanied by a written description of the defect and a photocopy of the original purchase receipt. This receipt must clearly list model and serial number, the date of purchase, the name and address of the purchaser and authorised dealer and the price paid by the purchaser. On receipt of the product, Avlite Systems will assess the product and advise the customer as to whether the claimed defect is covered by this warranty.
8. Avlite Systems reserves the right to modify the design of any product without obligation to purchasers of previously manufactured products and to change the prices or specifications of any product without notice or obligation to any person.
9. Input voltage shall not exceed those recommended for the product.
10. Warranty does not cover damage caused by the incorrect replacement of battery in solar lantern models.
11. This warranty does not cover any damage or defect caused to any product as a result of water flooding or any other acts of nature.
12. There are no representations or warranties of any kind by Avlite or any other person who is an agent, employee, or other representative or affiliate of Avlite, express or implied, with respect to condition of performance of any product, their merchantability, or fitness for a particular purpose, or with respect to any other matter relating to any products.

Limitation of Liability

To the extent permitted by section 68A of the Trade Practices Act 1974 (Cth), the liability of Avlite Systems under this Warranty will be, at the option of Avlite Systems, limited to either the replacement or repair of any defective product covered by this Warranty. Avlite Systems will not be liable to Buyer for consequential damages resulting from any defect or deficiencies in accepted items.

Limited to Original Purchaser

This Warranty is for the sole benefit of the original purchaser of the covered product and shall not extend to any subsequent purchaser of the product.

Miscellaneous

Apart from the specific warranties provided under this warranty, all other express or implied warranties relating to the above product is hereby excluded to the fullest extent allowable under law. The warranty does not extend to any lost profits, loss of good will or any indirect, incidental or consequential costs or damages or losses incurred by the purchaser as a result of any defect with the covered product.

Warrantor

Avlite Systems has authorised distribution in many countries of the world. In each country, the authorised importing distributor has accepted the responsibility for warranty of products sold by distributor. Warranty service should normally be obtained from the importing distributor from whom you purchased your product. In the event of service required beyond the capability of the importer, Avlite Systems will fulfil the conditions of the warranty. Such product must be returned at the owner's expense to the Avlite Systems factory, together with a photocopy of the bill of sale for that product, a detailed description of the problem, and any information necessary for return shipment.

Other Avlite Products Available



Solar Aviation Lighting



Radio Controlled & PALC Systems (FCC Compliant)



**Obstruction Lighting
(LIOL A & LIOL B)**



**Airfield Markers
& Accessories**

Typical Applications

- Temporary & permanent airfield lighting
- Remote, emergency & defence airfield lighting
- Barricade, hazard & perimeter lighting
- Obstruction Lighting

For a complete list of product compliances including ICAO & FAA, please contact Avlite today



Area & Sign Lighting



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