



SIGNS

SOLAR AIRFIELD SIGNS

Carmanah solar LED airfield signs are a simple solution for airfields that experience difficulties with grid access or for those that require a quick, minimally disruptive addition to an existing airfield.



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

Compliance with Standards

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

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

ICAO: Please inquire about ICAO compliant options

Construction

Corrosion-resistant sign construction requires minimal maintenance:

- Aluminum housing
- Acrylic sign legend panels
- Stainless steel hardware Retroreflective sheeting

Installation

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

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

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

REPRESENTED IN YOUR REGION BY:

MODELS AVAILABLE

TYPE	PURPOSE	LEGEND COLOR	BACKGROUND COLOR
L-858Y	Direction, Destination & Boundary	1490 mm (58.6 in)	Yellow
L-858R	Mandatory Sign	1820 mm (71.6 in)	Red
L-858L	Runway/Taxiway Location	Yellow	Black
L-858B	Runway Distance Remaining	White	Black

OPERATING CONDITIONS

Temperature: -40 °C to +55 °C (-40 °F to +131 °F)

Humidity: 0 to 100%

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

Sign Dimensions

SIGN HEIGHTS

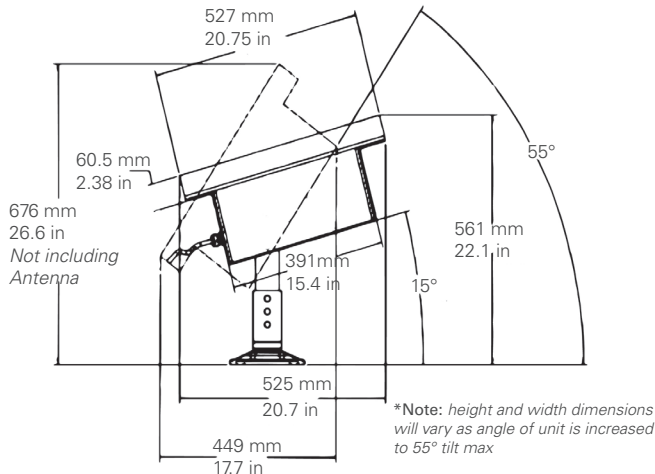
TYPE	SIGN SIZE NO.	SIGN FACE HEIGHT	LEGEND HEIGHT	OVERALL MOUNTING HEIGHT
L-858Y/R/L	1	457 mm	305 mm	755 mm
	1	18 in	12 in	29.7 in
L-858Y/R/L	2	610 mm	381 mm	908 mm
	2	24 in	15 in	35.7 in
L-858Y/R/L	3	762 mm	457 mm	106 mm
	3	30 in	18 in	41.7 in
L-858B	4	1220 mm	1016 mm	1478 mm
	4	48 in	40 in	58.2 in
L-858B	5	762 mm	635 mm	1060 mm
	5	30 in	25 in	41.7 in

SIGN LENGTHS

SIZE NO.	1 MODULE	2 MODULE
1	750 mm (29.4 in)	1490 mm (58.6 in)
2	910 mm (35.9 in)	1820 mm (71.6 in)
3	1080 mm (42.4 in)	2150 mm (84.6 in)
4	1220 mm (47.9 in)	N/A
5	1080 mm (42.4 in)	N/A

Note: Sign depth is 238.5 mm (9.39 in).

SEPS DIMENSIONS



PACKAGING DATA

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

DESCRIPTION	GROSS WEIGHT ¹ KG (LB)	DIMENSIONS (MM)	CARTON (IN)
Size 1, Module 1	21 (46)	870 x 864 x 330	34 x 34 x 13
Size 1, Module 2	35 (78)	870 x 1600 x 330	34 x 63 x 13
Size 2, Module 1	32 (71)	1020 x 1020 x 330	40 x 40 x 13
Size 2, Module 2	47 (104)	1020 x 1930 x 330	40 x 76 x 13
Size 3, Module 1	37 (81)	1170 x 1170 x 330	46 x 46 x 13
Size 3, Module 2	60 (131)	1170 x 2260 x 330	46 x 89 x 13
Size 4, Module 1	54 (120)	1580 x 1320 x 330	62 x 52 x 13
Size 5, Module 1	39 (85)	1170 x 1170 x 330	46 x 46 x 13

¹ Estimated weight

Specifications subject to local environmental conditions.

Specifications may be subject to change.

US and International patents apply. Other patents pending.

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

SIGNS

SOLAR AIRFIELD SIGNS

Additional Equipment Data

SOLAR ENGINE POWER SUPPLY (SEPS)

Installed Weight	59.8 kg (132 lb)
Shipping Weight	Box 1 (SEPS) - 34.4 kg (76 lb) Box 2 (battery) - 30.8 kg (68 lb)
Installed Dimensions*	759 H x 1089 W x 441 D mm 29.9 H x 42.9 W x 17.4 D in *with wireless antenna at 55° tilt

Shipping Dimensions

Box 1 (SEPS)	647 H x 1191 W x 355.6 D mm (25.5 H x 46.9 W x 14.0 D in)
Box 2 (Battery)	210 H x 332 W x 188 D mm (8.3 H x 13.1 W x 7.4 D in)

Temperature

Operating:	-30 °C to +50 °C (-22 °F to +122 °F)
Storage:	-40 °C to +80 °C (-40 °F to +176 °F)

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

Lifetime	4,000 cycles to 20% depth of discharge at +20°C (+68 °F)
----------	--

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

LED DRIVER

Channel A:	18 – 38 VDC from 0.3 – 1.4 A and 5 – 100% duty cycle, constant current
------------	---

Channel B:	18 – 38 VDC from 0.3 – 1.4 A and 5 – 100% duty cycle, constant current
------------	---

Automatic Light Control (ALC)	ALC dynamically reduces brightness in response to unusually low amounts of sunlight to ensure continued autonomous operation. Available on Channels A and B.
-------------------------------	--

Control, Autonomous Mode	Dusk-to-dawn, steady on
--------------------------	-------------------------

Load Cabling	6.7 m (22 ft) cable can exit onto the surface or down into a ground pot
--------------	---

PV PANEL

Power	95 W
Type	High Efficiency Monocrystalline, IEC 61215
Lifetime	10 years at 90% output

WIRELESS[™]

Range	4 km (2.5 m)
Frequency	900 MHz ISM Band, FHSS
Encryption	256-bit AES
Control, On-demand Mode	- Seamless integration with existing Carmanah wireless solar products - Up to 8 independent groups - Flash Mode, Emergency Mode, Autonomous Mode - On-demand Temporary Mode (High, Medium, Low) - Configuration Mode, ARCAL



All Carmanah products are manufactured in facilities that are certified to ISO quality standards.

Carmanah is a Canadian public corporation - TSX:CMH

© 2017, Carmanah Technologies Corp.

Document: AVIA_Signs_Spec_Sheet_RevB