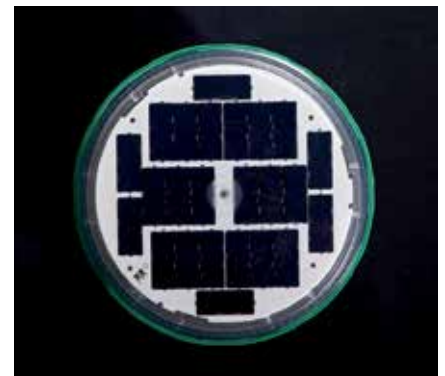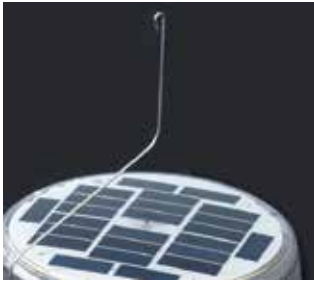# M650H

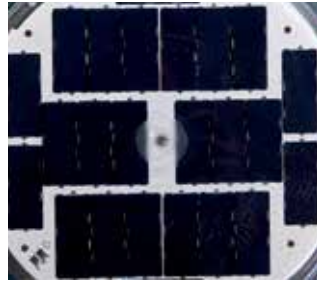## Self-contained LED lantern for buoys and minor beacons, 2 to 4+ NM Range

The M650H is a cost effective, self-contained, high-performance, low-maintenance and easy-to-install solar LED marine lantern. The M650H features a replaceable battery pack that extends the service life beyond five years, reducing the total cost of ownership. Applications include: marine aids-to-navigation marking, marina lighting, dock lighting, and port lighting. To view performance in your installation location, visit www.carmanahmarine.com/selector.

- Standard IALA colours Red, Green, White, Yellow, Blue

- High-efficiency solar cells with bypass and blocking diode function. Maximum power point tracking (MPPT) for optimal energy collection

- Premium grade UV resistant, polycarbonate/polysiloxane co-polymer body and lens material

- Colour-specific temperature corrected LED drivers provide consistent intensity under all operating conditions

- IP 68 rated. Double O-ring sealing with waterproof vent

- SLA battery

- Ventilated battery compartment

- Adjustable intensity and range

- Vertical divergence > 8º (FWHM)

- Programmable with On-Board User Interface, USB port, or optional wireless IR-Programmer

- Integrated event-log

- Optional ON/OFF switch

- Optional external charger

- Optionally integrated GPS synchronization

Bird Deterrent
Stainless steel as standard. Tool-less installation and replacement.

Solar Modules
High-efficiency cells with bypass and blocking diode function. Maximum power point tracking (MPPT) for optimal energy collection.

SLA Battery
Tool-less replaceable and recyclable best-in-class battery pack with extreme temperature range and 5-year life expectancy. On-board battery status feedback of Good, Charge, Low or Replace. True battery voltage shown.

Colour Indicator
Protective bumper indicates LED colour.

On-Board User Interface
Configure lantern parameters and features and access status reports.

650 Device Manager Software
Connect Windows based PC via USB port to configure parameters, view detailed information about the lantern, change transition settings, change passcodes, and update firmware. Multi-level access for advanced features.

IR Controller
Check battery status, change flash code, set ship mode and turn lantern off with optional IR (Infrared) controller.

Installation
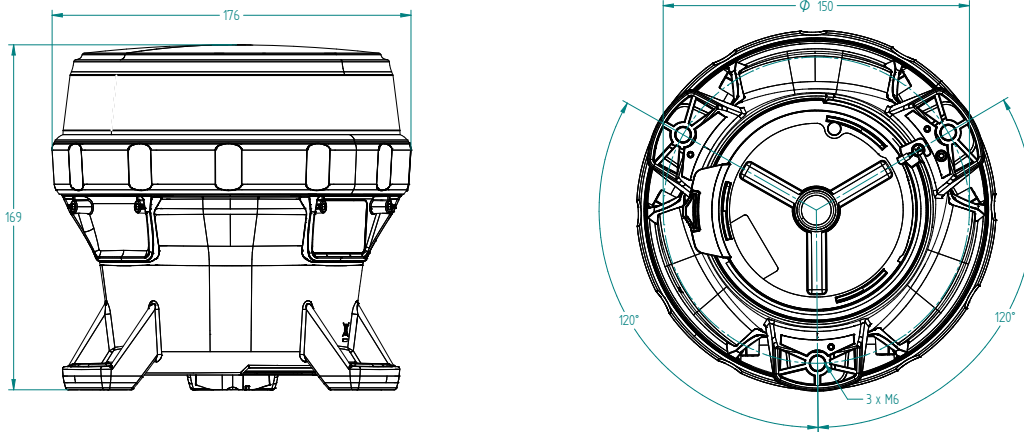Supports installation on structure using 3 x M6 bolts on a 150 mm diameter.

Bottom Cover Removal Tool
Available as accessory.

Barge Application
For barge application, sector plates with open sectors of 112,5º, 135º and 225º.

Technical Specification M650H

Optical performance

Maximum fixed intensity				
31 cd	45 cd	60 cd	52 cd	15 cd

NOTE: Peak IALA intensity dependent on location. To view performance in your installation location, visit www.carmanahmarine.com/selector.

Main Technical Specification

Lens visual/Mechanical diameter	165 mm
Lens material	UV stabilized Polycarbonate
Light source	High Power Light Emitting Diode (LED)
Vertical divergence	>8° (FWHM)
Solar module	High efficiency cells; bypass and blocking diodes; MPPT
Battery	Sealed Lead Acid
Degree of ingress protection	IP 68
Weight	1.58 kg
Overall height	169 mm
Overall width	176 mm dia.
Installation	3 x M6 on 150 mm dia.

Order Overview M650H

Option matrix

M650H Switched	ON/OFF switch
M650H Unswitched	No ON/OFF switch
M650H Switched GPS	Includes GPS synchronization & ON/OFF switch
M650H Unswitched GPS	Includes GPS synchronization (no ON/OFF switch)

Accessories

57003	650 Bird Deterrent – Additional (1 ships with each lantern)
57392	650 Bottom Cover Replacement Pack Switched
57393	650 Bottom Cover Replacement Pack Unswitched
59198	650 Bottom Cover Removal Tool
72835	650 Battery Replacement Pack
59188	650 International Wall Charger Assembly
57394	650 USB Cable
69899	IR (Infrared) Programmer
38334	650 Standard Bolt Kit
64407	650 Security Mounting Bolt Kit (Includes drivers)
56578	650 Security Bolt and Nut Set (Drivers not included)
53284	500/650 Security Key
53285	500/650 Security Socket

Product codes

Colour	M650H unswitched	M650H switched	M650H unswitched GPS	M650H switched GPS
red	M650R	M650R-S	M650R-GPS	M650R-SGPS
green	M650G	M650G-S	M650G-GPS	M650G-SGPS
white	M650W	M650W-S	M650W-GPS	M650W-SGPS
yellow	M650Y	M650Y-S	M650Y-GPS	M650Y-SGPS
blue	M650B	M650B-S	M650B-GPS	M650B-SGPS

SELF-CONTAINED