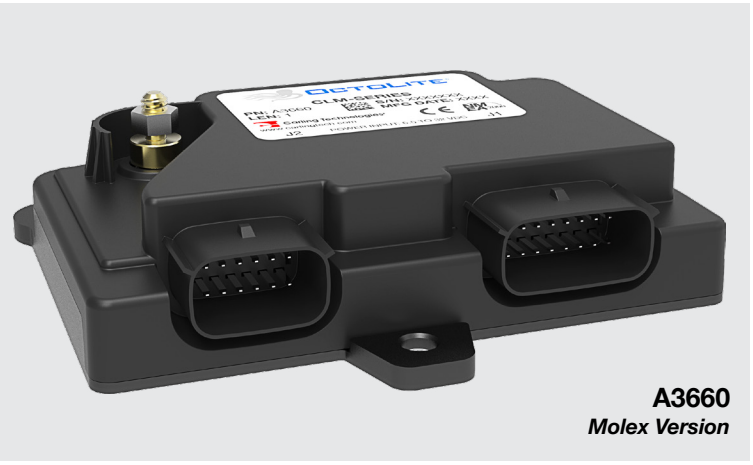
CLM-SERIES

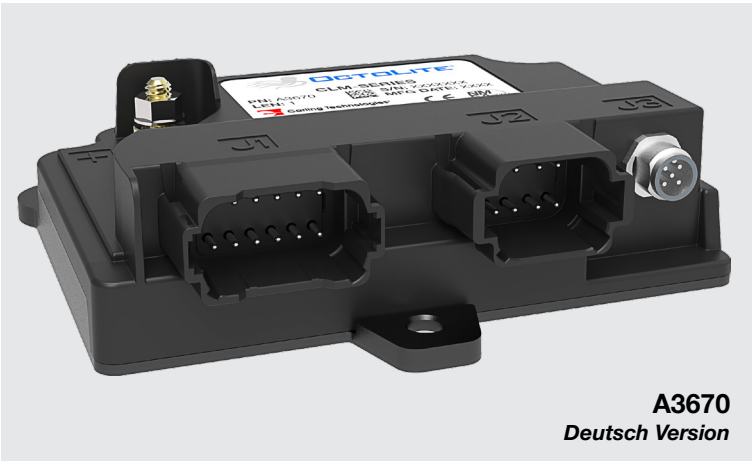
SOLID STATE POWER CONTROLLER

The CLM-Series is a 12 output, solid state power controller. It provides fast switching with low loss solid state On/Off functions, accurate current measurement, short circuit protection and Pulse-Width Modulation (PWM) function. The outputs can be connected in parallel for higher current capacity. The CLM-Series also provides interface with up to 7 discrete inputs. The discrete inputs can be configured as an active-high or active-low logic. The maximum current capacity of this unit is 75 Amps.

Relative to electromechanical relays, the CLM-Series can increase thermal efficiency by providing lower power dissipation and providing higher power-to-weight densities. The CLM-Series provides improved safety and reliability while reducing vessels down time, operator's work load, overall vessel weight and wiring complexity. The CLM-Series is available with Molex® and DEUTSCH connectors.



A3660
Molex Version



A3670
Deutsch Version

Product Highlights:

- CAN NMEA2000® communication
- Meets 100 V/m Electric Field
- Programmable trip level for each Electronic Circuit Breaker output
  - Resolution 1 Amp
- Six (6) outputs at 10 Amps max each
- Two (2) outputs at 15 Amps max each (A3660)
- Two (2) outputs at 12 Amps max each (A3670)
- Four (4) outputs at 5 Amps max each
- Voltage back feed blocking circuit for each output
- Short circuit protection circuit for each output

Model Numbers:

- **CLMM12** – Marine, Molex® Connector, NMEA2000® certified
- **CLMD12** - Marine, DEUTSCH Connector, NMEA2000® certified

Removal of OctoLite cover in the field will compromise the operation of the unit and voids warranties set forth by Carling Technologies.

*Manufacturer reserves the right to change product specification without prior notice. Please refer to our website for the latest details.

Additional Features

- All outputs are PWM capable for light dimming
  - Frequency: 200Hz
  - Maximum PWM peak current: 3A
  - Inductive Loads (Motors) not recommended
  - Duty cycle adjustable from 5 to 100% at 1% resolution
- Current Measurement accuracy +/- 0.5 Amps (Typical)
- Current Measurement Resolution 0.1 Amps
- Minimum current measurement 0.5 Amps
- 75 Amps maximum capacity
- Seven (7) discrete inputs configurable as (Active High, Active Low, Open)
- NMEA2000® proprietary bootloader for software and configuration updates
- Low current LED modules require adding a 1 KΩ ±5% 2W resistor, this will prevent the LED from glowing when output power is OFF
- Real-time fault monitoring for all (12) outputs, including:
  - Open circuit detection (Open Load, loads must be greater than 1 Amp)
  - Short circuit/Over current
- Outputs can be paralleled for higher current capacity
  - Only parallel two channels with the same current rating.
  - Wiring recommendation: Run two outputs wire together with matched impedance.
  - Maximum current rating when two channels are paralleled is typically 180% of the single channel rating. (Example: 18A maximum for two 10A channels in parallel).
  - See tables below for recommended parallel channels:

A3660 Recommended Parallel Outputs:

Paralleled Outputs	Max Current
Output 7 (15A) & Output 4 (15A)	27A
Output 9 (5A) & Output 6 (5A)	9A
Output 6 (5A) & Output 12 (5A)	9A
Output 3 (5A) & Output 12 (5A)	9A
Output 5 (10A) & Output 8 (10A)	18A
Output 2 (10A) & Output 8 (10A)	18A
Output 2 (10A) & Output 10 (10A)	18A
Output 1 (10A) & Output 10 (10A)	18A

A3670 Recommended Parallel Outputs:

Paralleled Outputs	Max Current
Output 7 (12A) & Output 4 (12A)	22A
Output 9 (5A) & Output 6 (5A)	9A
Output 6 (5A) & Output 12 (5A)	9A
Output 3 (5A) & Output 12 (5A)	9A
Output 5 (10A) & Output 8 (10A)	18A
Output 2 (10A) & Output 8 (10A)	18A
Output 2 (10A) & Output 10 (10A)	18A
Output 1 (10A) & Output 10 (10A)	18A

All illustrations are for reference purposes only. Nothing contained in this document shall replace or modify the requirements of Industry Standard s applicable to wire or other protection, including without limitation, those of the American Boat and Yacht Council (ABYC); the National Electric Code (NEC); and/or the National Fire Protection Association (NFPA). Failure to install the CLM System or any components thereof in compliance with any such Industry Standard may limit the warranties made by Carling Technologies, Inc.

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General Specifications

Electrical

Voltage Input	6.5 to 32 VDC
Max Current Capacity	75 Amps
Serial Communication	CAN NMEA2000®
2 High Side Outputs	15 Amps each (A3660) 12 Amps each (A3670)
6 High Side Outputs	10 Amps each
4 High Side Outputs	5 Amps each
7 Discrete Inputs	Active High, Active Low, Open

Mechanical (A3660)

Dimensions (L x W x H)	5.7" x 4.2" x 1.33"
Weight (max)	1.25lbs (0.567 kg)
Degree of protection	IP69K
Torque Value (voltage input stud)	20 in-lbs. (2.26 N/m)
J2 Mating connector	Molex P/N 0334721201
J1 Mating connector	Molex P/N 0334721601

Mechanical (A3670)

Dimensions (L x W x H)	5.7" x 5" x 1.6"
Weight (max)	1.32 lbs (0.599 kg)
Degree of protection	IP67
Torque Value (voltage input stud)	20 in-lbs. (2.26 N/m)
J1 Mating Connector	Deutsch DT06-12SA
J1 Socket	Deutsch 0462-209-16141 (14 AWG)
J1 Wedge	Deutsch W12S
J2 Mating Connector	Deutsch DT06-08SA-E003
J2 Socket	Deutsch 0462-201-16141 (16 – 20 AWG)
J2 Wedge	Deutsch W8S
J3 Mating Connector	Micro-C Male

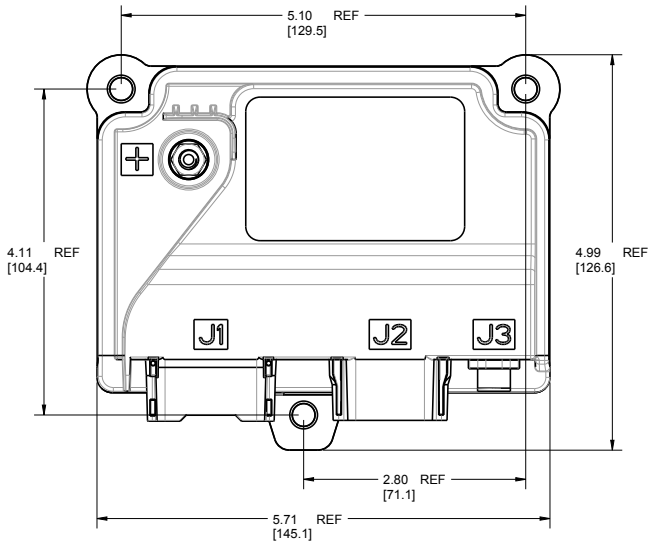
Certifications

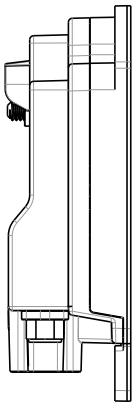
NMEA2000®	Category B
CE	**IEC 60533** Electrical and Electronic Installations in Ships **IEC 60945** Maritime Navigation and Radio Communication Equipment and Systems

Environmental

High Temperature Soak	EN 60068-2-2:2007 Section 2 or 4
Low Temperature Soak	EN 60068-2-1:2007
Temp. Cycling (Operational)	IEC 60068-2-14:2009 Test Nb
Temp. Shock (Storage)	IEC 60068-2-14:2009 Test Na
Simulated Solar Radiation	EN 60068-2-5:2010 Procedure B
Altitude (Transport)	EN 60068-2-13:1999
Altitude (Operational)	EN 60068-2-13:1999 Test M: Low air pressure
Humidity (Soak)	EN 60068-2-78:2002
Humidity (Cyclic)	EN 60068-2-30:2005
Dust Ingress	IEC 60529:2001 Section 13
Water Ingress	DIN 40050-9:1993 IEC 60529:2001 Section 14
Mechanical Shock (Drop Test)	EN 60068-2-32:1993 Test Ed: Free Fall. Procedure 1.
Mechanical (Shock)	60068-2-27:2009
Mechanical (Bump)	60068-2-29:1993
Vibration (General)	60068-2-6 : 1996
Vibration (Random)	EN 60068-2-64:1995 Method 1
Vibration (Resonant Search)	60068-2-6 : 1996
Chemical Resistance	EN 60068-2-74:2000 Test Class B
Salt Spray	EN 60068-2-52: 1996
Ozone	ASTM D1171-99 Method 1
Electrical (Operating Voltage)	SAE J1455:2011 Section 4.13.1
Electrical (Over Voltage)	SAE J1455:2011 Section 4.13.1
Electrical (Reverse Polarity)	SAE J1455:2011 Section 4.13.1
Electrical (Short Circuit)	SAE J1455:2011 Section 4.13.1
Electrical (Power Up)	SAE J1455:2011 Section 4.13.1
Electrical Transients Immunity	ISO 11451-1:2005 ISO 114522:2004
Electrical Transients Emissions	ISO 13766:2006 Section 5 Annex D and Annex E
Electrical Transients	ISO 13766:2006
Conducted Transients	ISO 7637-2:2011
Electrostatic Discharge (ESD)	ISO 13766:2006

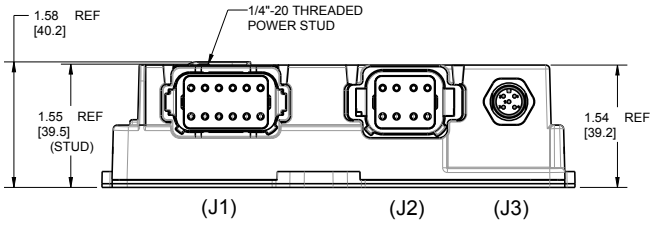
Dimensional Specifications in. [mm]

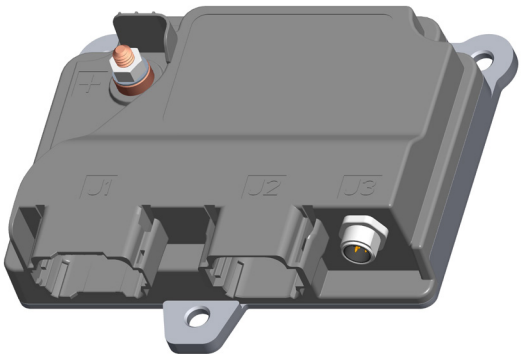




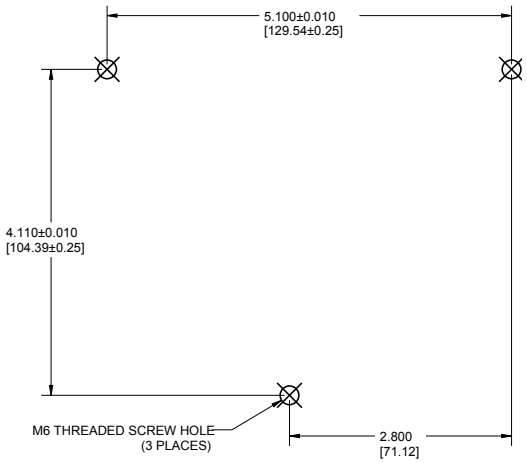
NOTES:

1. WEIGHT: 1.25 LBS. (0.567 KG.) MAX.
2. TEMPERATURE: OPERATING -40° C TO 55° C.
   STORAGE -55° C TO 85° C.
3. MATING CONNECTIONS:
   J1 - DEUTSCH P/N DT06-12SA
   J2 - DEUTSCH P/N DT06-08SA-E003
   J3 - MICRO-C MALE CONNECTOR, M12 X 1





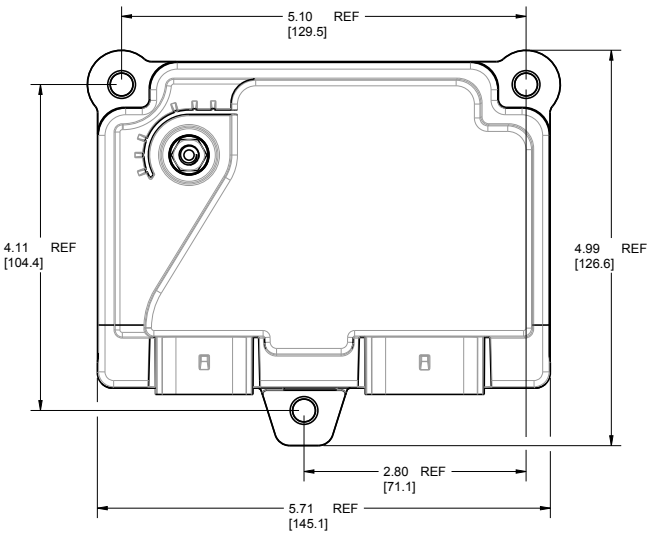
A3670

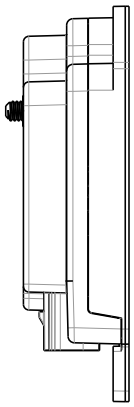


MOUNTING HOLE PATTERN
SCALE 1.000

CLA-8139 Rev: A

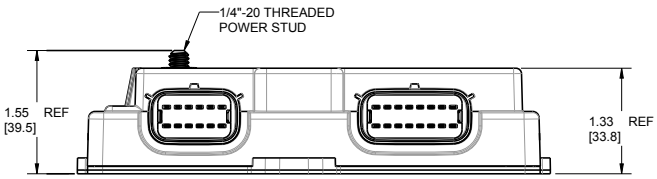
Dimensional Specifications in. [mm]



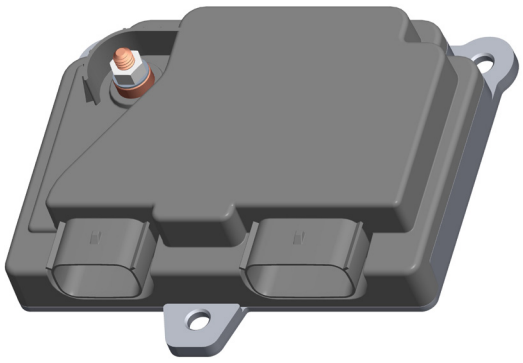


NOTES:

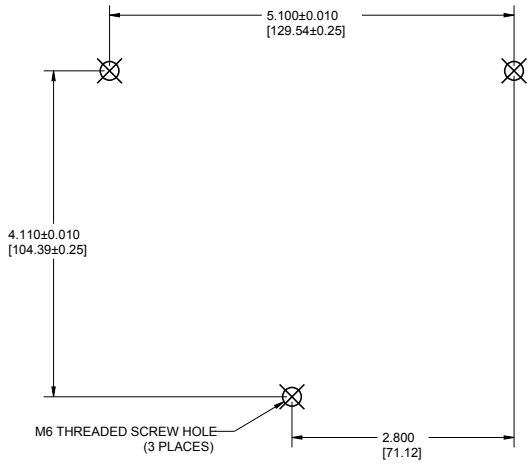
1. WEIGHT: 1.25 LBS. (0.567 KG.) MAX.
2. TEMPERATURE: OPERATING -40° C TO 55° C.
   STORAGE -55° C TO 85° C.
3. MATING CONNECTIONS:
   J1 - MOLEX P/N 0334721601
   J2 - MOLEX P/N 0334721201



(J2) (J1)



A3660

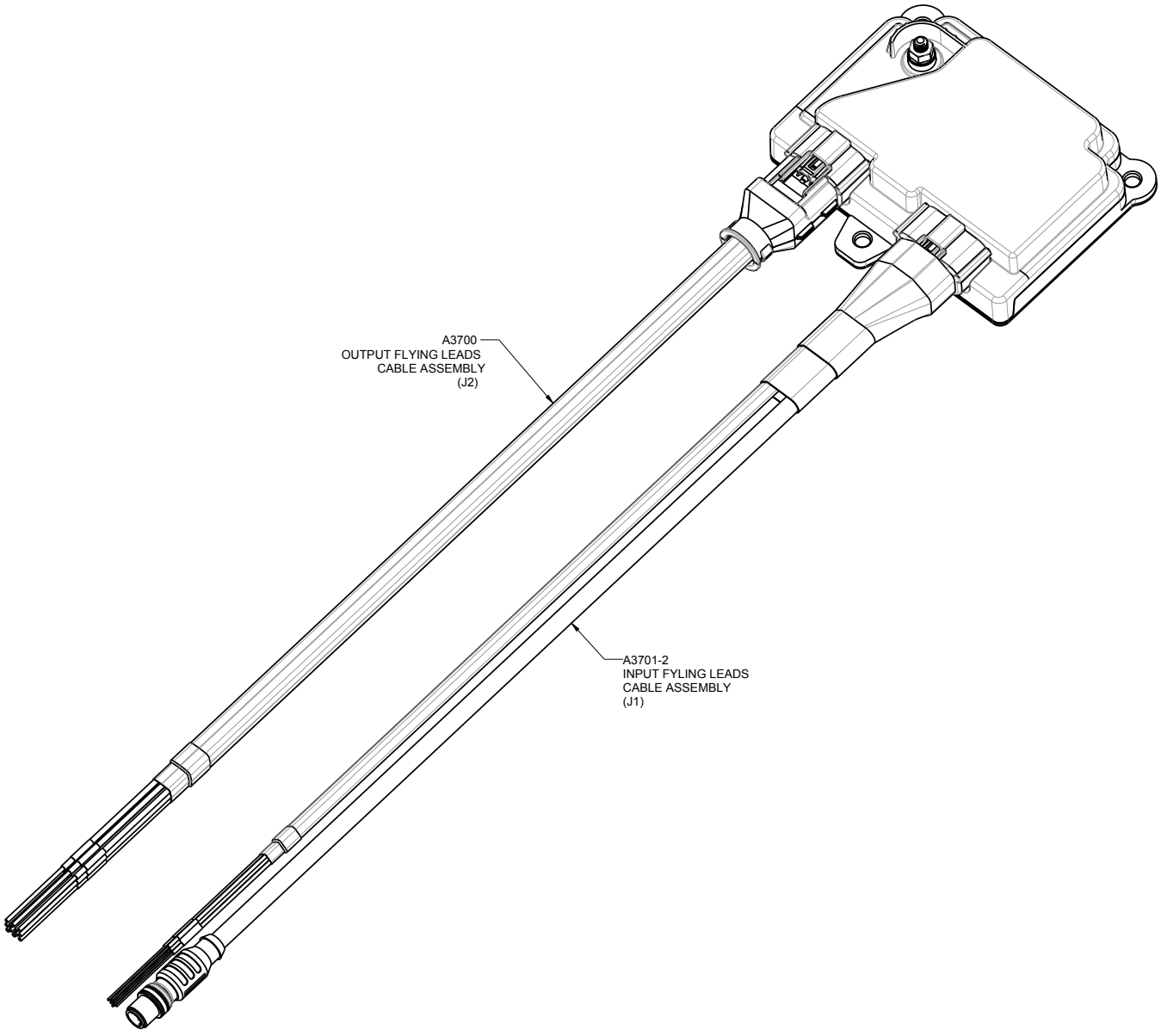


MOUNTING HOLE PATTERN
SCALE 1.000

CLA-8139 Rev: A

Dimensional Specifications in. [mm]

VIEW SHOWING TYPICAL CABLE INSTALLATIONS TO THE DC DISTRIBUTION BOX
(A3660)



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OctoPlex®
CONTROL & MONITORING SYSTEM