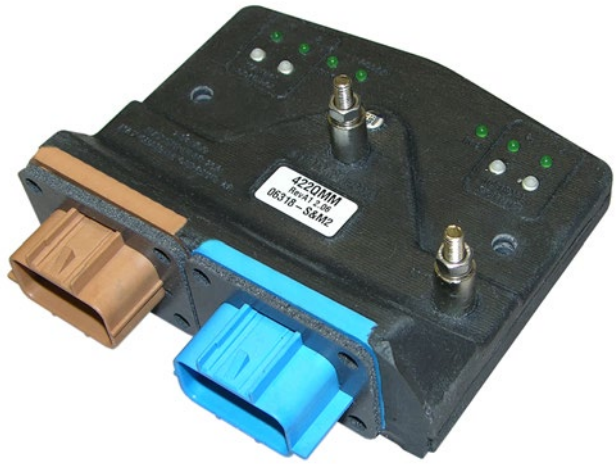
Quad Multi Module



Introduction

The E-Plex 422QMM has been designed to simplify wiring in electronic systems by interfacing to simple resistive loads for lighting applications. This four-channel DC power distribution module is capable of handling loads of up to 5A per channel or 20A total. The four channels can be utilized as either inputs, outputs, or a combination of both. The individual channels may be combined in order to handle larger amperage loads.

The 422QMM incorporates 2 PWM capable channels, allowing the ability to utilize up to two channels as advanced dimmer circuits for DC lighting banks, providing a flexible solution for lighting without requiring additional external dimming hardware. Two additional digital inputs allow for status feedback of low-switched devices. Local electronic override capabilities allow independent operation of the device loads.

Key Features

- 4 solid-state high side outputs capable to 5 amps each (20 amps total).
- High side output withstands up to 25A inrush current.
- 2 channels with PWM dimming capabilities.
- 2 active low digital input channels.
- Status LED's for each channel.
- Thermal, short circuit, and programmable overload protection.
- Local electronic override capabilities.
- LEN value 2.

Design Specifications

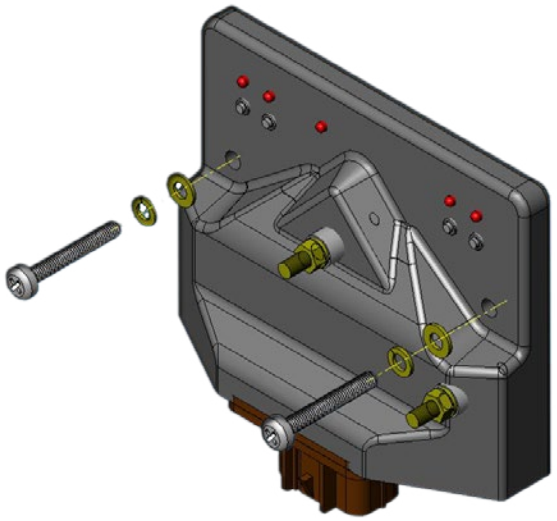
- Shock: Mil Std 202 Method 213 test condition 1.
- Vibration: Tested to Lloyds Register Approval Vibration Test 2.
- Transient voltage suppression: EN6100-6-1.
- Moisture resistance: IP66.
- PCB characteristics: UL94V-0.
- Power distribution: UL 1077 compliant (except high-voltage dielectric test).
- Ignition protection: UL 1500 compliant.
- Salt spray: Tested to Lloyds Register Approval Salt Spray Test.
- Operating Temperature: -40°C to 60°C.
- Storage Temperature: -40°C to 85°C.
- Operating Humidity: 0% to 100% (condensing).
- Weight: 0.86 lb (390 grams).

Electrical Specifications

Description	Min	Nominal	Max	Absolute Max (Surge)
Voltage	7 VDC	12 / 24 VDC	32 VDC	45 VDC[2]
Current, Total	0.025 A	–	25 A[1]	33 A[2]
Current, per channel continuous	0	–	5 A	70 A[5]
Current, per channel intermittent duty[3]	0	–	7.5 A	70 A[5]
Inrush capable per channel	–	–	25 A	70 A[5]
Analog input low threshold[9]	0 V	–	3.5 V	–
Analog input high threshold[9]	4.5 V	–	32 V	–
Digital input low threshold[9]	- 0.5 V	–	1.0 V	–
Digital input high threshold[9]	4.6 V	–	32 V	–
Lead inductance	0	–	100 µH[10]	–
Load Inductance[7]	0	–	15 mH	–
PWM Frequency[4]	0 Hz	244 Hz	–	–
Output Impedance[6]	36 mΩ	38 mΩ	40 mΩ	–

Electrical Specifications

Screw assembly to a flat mounting surface in 2 places, as shown in the illustration.



Mounting Instructions

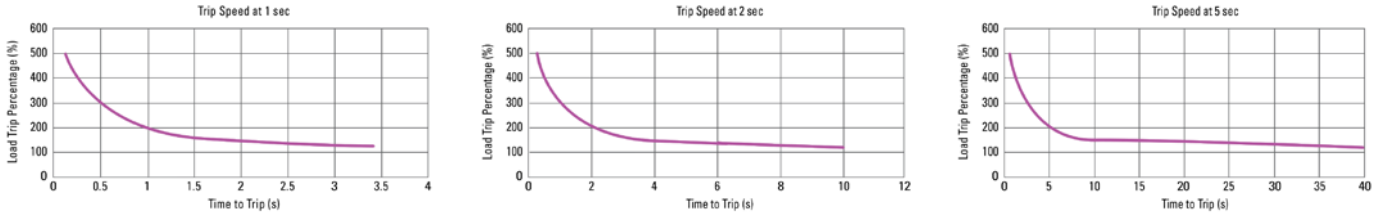
Imperial (English) fasteners: Use #10 size screw, #10 split lock washer, #10 washer. Torque to 20~22 in-lb. Do not exceed this torque as it could cause damage to the electronics.

Metric fasteners: Use M5 size screw, M5 split lock washer and M5 washer. Torque to 250~280 N-cm. Do not exceed this torque as it could cause damage to the electronics.

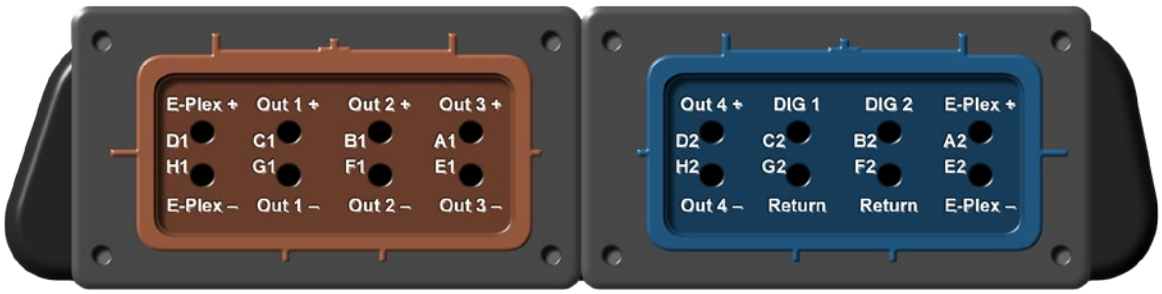
NOTES:

1. *De-rate max current by 0.2 A per °C above ambient, 25°C.*
2. *Measured at 8.3 ms single half sine wave. (JEDEC Method).*
3. *Duty cycle at 1 minute on time, 5 minutes off. Trip delay must be set to maximum rating.*
4. *Not recommended for motor or inductive loads.*
5. *Single pulse only.*
6. *Measured with voltage drop method at 5 amp.*
7. *For load resistance greater than 5 ohms load inductance is unlimited.*
8. *This specifies the turn-on/off threshold for a channel configured as an input (active high), impedance @ 50k.*
9. *This specifies the turn-on/off threshold for a channel configured as a digital input (active low), impedance @ 50K.*
10. *Specified as 50 feet of 2 AWG (43mm²) wires with a 6" diameter spool for both power and ground.*

Trip Speed Characteristics



Wiring Specifications



	Pin #	Pin Description
	A1	Solid State Output 3
	E1	Output 3 Return
PWM Capable	B1	Solid State Output 2
	F1	Output 2 Return
	C1	Solid State Output 1
	G1	Output 1 Return
	D1	E-Plex Data Bus +
	H1	E-Plex Data Bus –
	M5-T1	Battery Power

Pin #	Pin Description	
D2	Solid State Output 4	PWM Capable
H2	Output 4 Return	
C2	Digital Input 1	
G2	Return	
B2	Digital Input 2	
F2	Return	
A2	E-Plex Data Bus +	
E2	E-Plex Data Bus -	
M5-T2	Battery Return	

Outputs and Returns: 0 to 5A, 7-32VDC, Digital = 1 to 5mA for -0.5 to 32VDC.
Outputs B1, D2 are PWM capable and may be used to dim lighting loads.

Battery Power (+): 0.025A to 25A, 7-32VDC.

Status LEDs:

ON - Channels 1-4 indicates Load ON, E-Plex channel indicates module responding.
OFF - Channels 1-4 indicates Load OFF, E-Plex channel indicates module not responding 10.
BLINKING - Channels 1-4 indicates Load FAULT, E-Plex channel indicates module responding.

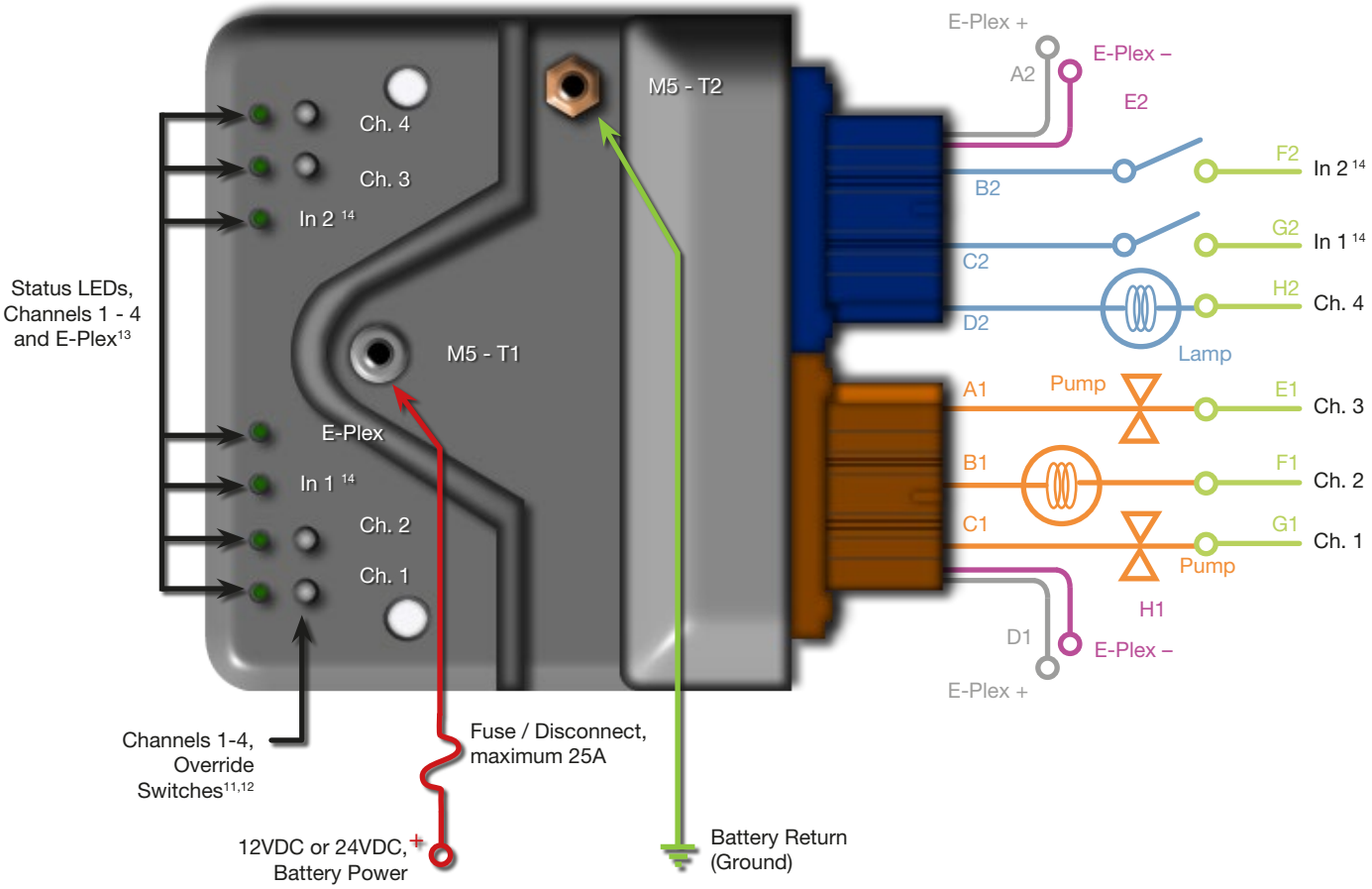
Power / Battery Connections: Must be fused at a maximum of 25A. Maximum wire size should be sized based on upstream fuse. When connecting the power source to the power studs on the module, torque the hex nuts to 18~20 in-lb (200~225 N-cm). Failure to properly torque hex nuts may result in intermittent operation due to terminals loosening over time.
Note: External surge suppression is required when the module battery supply cable is longer then 50'.

Reversed Battery Conditions: The loads will turn on, but no damage will occur to the module if disconnected within 1 minute (Under nominal operating load conditions).

Pin Specifications

Cable Range AWG (mm²)		Female Terminal	Terminal Insulation Range	Seal Insulation Range	Seal P/N
18-16	(1.0-0.75 mm²)	15304716	1.70-2.25 mm	1.20-1.85 mm	15366063
				1.85-2.25 mm	15356064
16-12	(2.50-1.50 mm²)	15304717	2.20-3.00 mm	2.09-2.66 mm	15366061
				2.70-3.2 mm	15336674

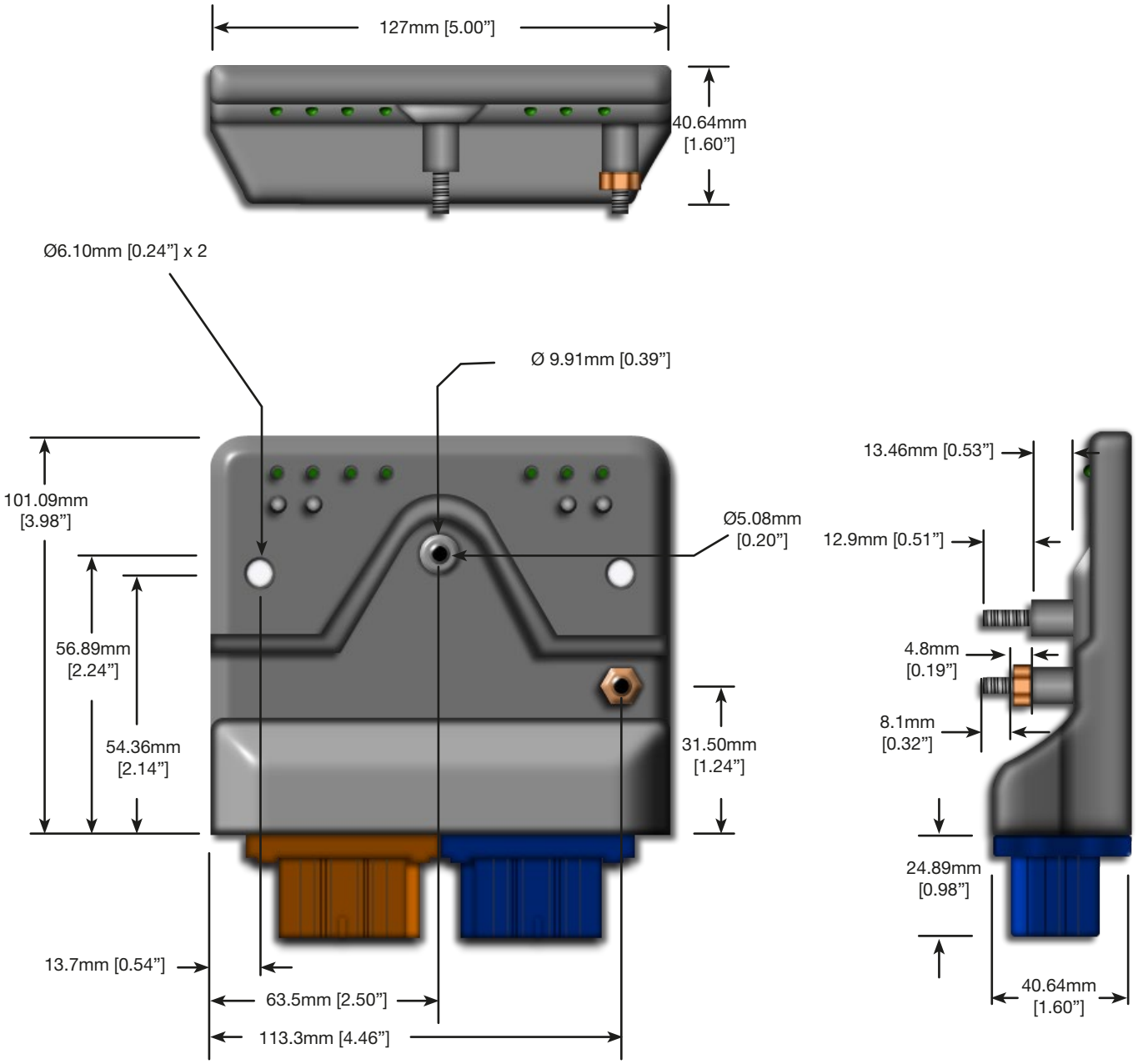
Typical Wiring Diagram



NOTES:

11. Manual override switches are meant to be used as a local electronic manual override for emergency situations only.
12. Load activation function for switches 1 thru 6 are defined in E-Logic as either toggle or momentary operation.
13. LED will be off if system is not functioning or present, however, modules in the system may still be responding.
14. Inputs are active low. Pulling the input to return or battery ground will activate the LED.

Dimensional Diagram



Mechanical Specifications

Connectors:
J1 - Brown: Mates to Delphi P/N 15317308
J2 - Blue: Mates to Delphi P/N 15317304

Cavity Plug:
Delphi P/N 12059168

Power Stud Connections:
M5 nickel plated brass

Ordering Information

Description	E-Plex Part Number
422QMM Series - Quad Multi Module	EP-SW-IO-2+4CH-422QMM

E-PLEX

Powering Systems - Empowering Designers

52 – 54 Riverside, Sir Thomas Longley Road, Medway City Estate, Rochester, Kent ME2 4DP
tel: +44 (0)1634 711622 fax: +44 (0)1634 290773

email: sales@e-plex.co
web: www.e-plex.co