

HDM's EQ48-24 Battery Equalizer is a bi-directional circuit which balances the voltage between four or more individual batteries connected in series during charge, discharge, and idle periods. EQ48-24 prevents severe under and over voltage, common in series connections, which can compromise the performance, reliability, and life of your battery system. Equalized batteries are able to receive a full, clean charge, increasing battery pack power, capacity, and life, therefore supporting your mission much better.



Industry-Leading Features

- Patented equalization technology which reduces size, cost, and weight
- Equalizes two 24v batteries in a series string
- Multi-module daisy-chain connection for high voltage system configuration
- Stackable / parallelable for high current equalization
- Easy installation and mounting
- Appropriate for sealed, agm, and gel batteries
- Extends battery life and run time
- Dust and splashproof
- Maintenance free

Standard Features

- Automatic equalization during charge, discharge, or idling
- Low voltage protection
- Overvoltage protection
- Over current protection
- Automatic recovery²
- Flange mounting

ELECTRICAL

Nominal Battery Voltage	24V _{DC}
Operating	18~33V _{DC}
Maximum Equalization Current (I _{eq})	5A _{DC} ¹
Quiescent Current Draw	<20mA _{DC}
Low voltage shutdown	<18(±5%)V _{DC}
Overvoltage shutdown	>33(±5%)V _{DC}
Differential voltage auto shutdown	>8(±5%)V _{DC}
Operating modes	Charge, Discharge, Idling
Fuse	(2) 10A AGC

MECHANICAL

Dimensions (LxWxH)	7.25 x 2.34 x 1.1"
Weight	1.2 lbs
Construction	Black Composite Case

INTERFACE

48V Connection	18" Red 12AWG with 5/16 Stud Ring Terminal
24V Connection	18" Red 12AWG with 5/16 Stud Ring Terminal
Ground Connection	18" Black 12AWG with 5/16 Stud Ring Terminal

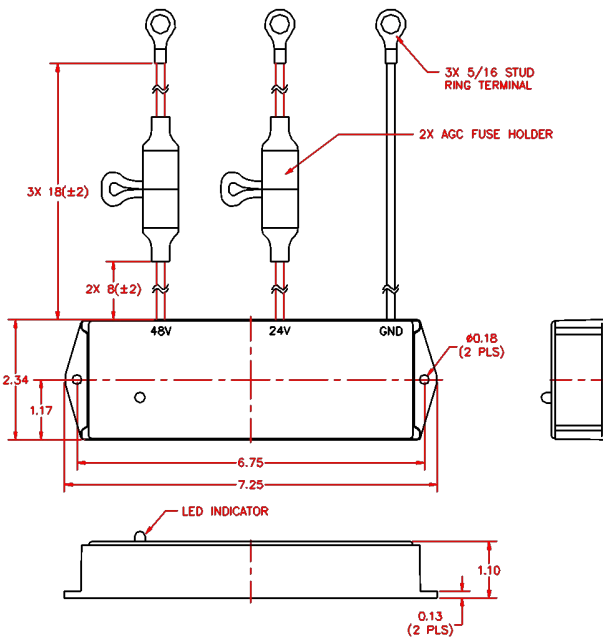
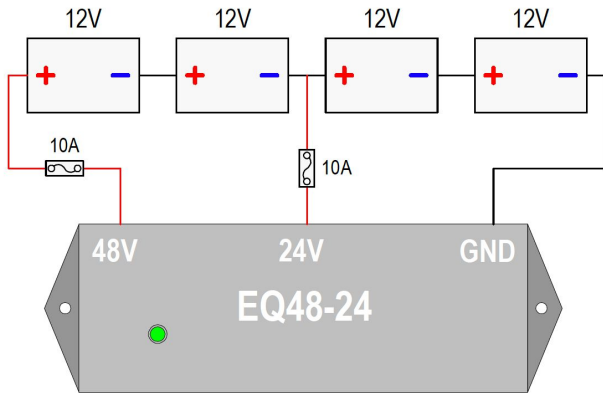
ENVIRONMENTAL

Cooling	Natural Convection
Operating Temperature	-40 ~ +50°C
Storage Temperature	-40 ~ +85°C
MTBF Prediction ⁵	606,000 Hrs

Specifications typical at 25°C unless otherwise stated and are subject to change without notice.

1. Maximum current during equalization mode.
2. EQ48-24 will auto-recover when parameters are within operating limits and LED will return to steady or blink Green.
3. Battery low or over voltage warning indicates that the battery has exceeded the normal operating limit. Module may auto-recover and continue to equalize when external supply or load is removed. Manual reset is required to reset the warning indicator by disconnecting and reconnecting the module.
4. Module will auto-shutdown, but LED may remain steady or blink Green due to residual voltage across internal filter capacitor.
5. Calculated per Bellcore TR-NWT-000332 method at 50% stress, +40°C. Products are covered by 1 year limited warranty.

Battery Equalizer Diagram



⚠ CAUTION:

Always disconnect or turn OFF all external charging sources and/or DC loads before installing or removing the EQ48-24 module.

⚠ CAUTION:

When connecting the EQ48-24 module, always follow the connection sequence to prevent damage to the module and/or void product warranty.

MODEL			
EQ48-24			
DESCRIPTION			
48V System, 2x 24V Battery Equalizer, 3-Wire			
MODE	LED	MODE	MODE
Balanced		Steady Green	Voltage Differential <0.3V (+/-0.2)
Equalizing		Blink Green Once Per Sec	Voltage Differential >0.3V (+/-0.2)
Low/Over Auto-Shutdown (Gnd~24V Connection)		Green / Blink Orange 1x Per 4 Sec	Gnd~24V Conn - Beyond Normal Range ³ <18V or >33V (+/-5%)
Low/Over Auto-Shutdown (24V~48V Connection)		Green / Blink Orange 2x Per 4 Sec	24V~48V Conn - Beyond Normal Range ³ <18V or >33V (+/-5%)
24V Disconnect		Blank	24V Lead Disconnected
Auto Shutdown		Steady Red	1. Diff Voltage >8V (±5%) 2. 48V Lead Disconnected ⁴

BATTERY EQUALIZER INSTALLATION INSTRUCTIONS

- Install battery equalizer in a location close to the main battery bank. Avoid installing in a location which may be exposed to high temperature such as near the engine.
- Connect per connection diagram starting from the negative terminal of the **1st** battery in the series connected string.
 - Connect **GND** Wire (Black) of the module to the negative terminal of the **0V/Gnd** battery connection.
 - Connect **24V** Wire (Red) of the module to the positive terminal of the **24V** battery connection.
 - Connect **48V** Wire (Red) of the module to the positive terminal of the **48V** battery connection
- Module LED will be steady or blink Green indicating module is in equalization mode.

BATTERY EQUALIZER REMOVAL INSTRUCTIONS

- To remove EQ48-24 from the battery system, start disconnecting from the positive terminal of the **last** battery (highest voltage point).
 - Disconnect **48V** Wire (Red) of the module from the positive terminal of the **48V** battery connection.
 - Disconnect **24V** Wire (Red) of the module from the positive terminal of the **24V** battery connection.
 - Disconnect **GND** Wire (Black) of the module from the negative terminal of the **0V/Gnd** battery connection.

All dimensions in inches unless otherwise specified.

PB-EQ48-24 20120517-1300