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PWM-10A-24V-5ME-10.50H-36T

The **PWM-10A-24V-5ME-10.50H-36T** is designed for Pulse Width Modulating DC power to a load up to 10A max. Designed for a nominal power source voltage 24Vdc (12V to 32Vdc). It has a 5V Enable input and a 0 to 5V Modulation control input. Control input is Between 4 and 5V will result in 100% duty cycle, and between 0 and 1V will result in 0% duty cycle. The Frequency range of this model is capable of being adjusted for the range of 10 to 50 Hz. The unit has a built-in transient suppressor diode rated at 36 Vdc which typically clamps transients to about 40V.

Should you have a specific application or question not covered here, feel free to send an e-mail technical support request. Include as much detail as practical regarding your application. Send to: sales11@hellroaring.com. Or check our web site for current e-mail address.

Inductive load Applications:

Diode transient suppression is built in for this unit. However, Because this unit utilizes the same power source to power the unit and also supply the power to the load, and depending upon how inductive the load is, a free wheeling diode or a capacitor with sufficient capacitance may be necessary across the Pulse out terminal and the Ground terminal to prevent high frequency switch off oscillations. A free wheeling diode will result in longer turn off dissipation time. For high duty cycles, this could result in an inability to utilize the upper 50% dc at upper frequency rates due to the loads inability to turn off quickly enough. To keep the turn off time as quick as practical, use sufficient capacitance across those terminals which allows for the maximum voltage of the built in TVS and keep the high frequency oscillations away.



For applications assistance, you can send e-mail to sales11@hellroaring.com.

Hellroaring PWM-10A-24V-5ME-10.50H-36T Instructions

Definitions:

Gnd: This terminal requires the power source return.

+24V: This terminal requires +24 Vdc nominal (+12 to +32 Vdc).

Enbl Input: This terminal, when at +5V, will enable the output transistors to switch ON and OFF at the frequency and pulse width settings. A logic low, will cause the output transistors to remain OFF.

Mod Input: This terminal, when at 0 to +1Vdc, will result in a 0% duty cycle. When at +4 to +5Vdc, will result in 100% duty cycle. When at +1V to +4V will result in a duty cycle somewhere between 0 and 100% duty cycle.

N/C: No Connection.

PWM Output: This terminal will provide the power source voltage to your load, when enabled, at the frequency and duty cycle set. Use a capacitor with sufficient capacitance from this terminal to the Ground terminal. Our tests using a common automotive solenoid coil, a 3 uF capacitor quenched any high frequency oscillation on turn off. This capacitor must be bi-directional. A capacitor is not necessary for Mostly resistive loads.

Frequency Adjust: Adjustable from less than 10Hz to greater than 50Hz by adjusting the trim-pot.

LED: Illuminates whenever the output transistors are ON.

Dimensions: 3.5 to 4" long, by 2.1" wide.

Weight: 2 to 3 Oz., typical.

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Specifications:

<u>PWM-10A-24V-5ME-10.50H-36T:</u>		Unless specified otherwise, ambient temp = +65C ; max current.
Max voltage	36 Volts	
Recommended operating voltage	12 to 32V Vdc	
Recommended TVS on output terminals	36V - Built-in	
Absolute Max ON Current	10 Amps	100% duty cycle 65C ambient
Enable Power	+ 5.0 Vdc for enable 0V for disable	
Mod Input	0-+5Vdc for 0-100% Duty Cycle	
PWM output	Source Voltage	- 0.1V max @ max load current.
Switch on transient time Tr	< 10 uS	
Switch off transient time Tf	< 10 uS	

Note: Specifications are subject to change without notice.

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Standard Terms and Conditions of Sale

The sale of Hellroaring Technologies, inc. products shall be governed by the laws of the state of Montana. All sales shall transfer title within the state of Montana via common carrier. Hellroaring Technologies, inc. will not collect sales taxes for any other state. Should the unlikely event, a cause of action arises, buyer agrees that such action shall be held and governed in the state of Montana. The buyer recognizes that there exists inherent risks associated with batteries and installation & operation of battery devices. It is understood that any technical information published by Hellroaring Technologies, inc. including any installation instructions is of a general nature only and it is the user's responsibility to determine the proper application, installation, and operation of products. The buyer assumes all risk and agrees to indemnify Hellroaring Technologies, inc. against any and all causes for injury or damage to third parties that arises from use of such product.

Return Policy

Should any single unit standard product sold by Hellroaring Technologies, inc. not meet or exceed your expectations, you may, within 30 days of our shipment to you, return such product for a full refund (credit on credit card orders) less a 15% restock charge, provided that:

- a) You obtain an RMA number and provide your shipping address by calling customer service at 406 883-3801 or send an RMA request via e-mail (include the model #, serial number, and your phone number), and
- b) The product, including all accessories, is returned in original and re-saleable condition, and
- c) Units are Shipped (prepaid and insured for damage in transit) in the original or equivalent packaging, and
- d) (optional) You include a simple note as to the reason for dissatisfaction. (This can help us improve our products)

For quantity orders, or custom products, sales are final and our standard limited warranty applies.

Limited Warranty

This Limited Warranty is extended to the original purchaser. Hellroaring Technologies, inc. warrants that our SSR products will be free from defects in materials and workmanship upon delivery. All claims for defects must be made within 30 days of delivery. The sole and exclusive remedy for failure of the product shall be for us, at our option, to repair or replace the product, to whatever extent we deem necessary to restore the product to proper operating condition. We may make replacements with new or functionally equivalent products of equal value. Should Hellroaring Technologies, inc. be unable to repair or replace the product within a reasonable time, we reserve the right, at our option, to issue a refund or credit of the purchase price in lieu of repair or replacement. We reserve the right to assess a \$15 fee for units returned and proven not to be defective. To obtain warranty service you must:

- 1) Call Customer Service at 406-883-3801 for a Return Material Authorization (RMA) number and shipping address. Or send an RMA request via e-mail (include the model #, serial number, and your phone number and your return shipping address)
- 2) Return the product in the original or equivalent packaging (Shipping prepaid and insured for damage in transit), together with the RMA number AND a description of the problem. Include your return shipping address and your phone number.

Do not attempt to disassemble, or otherwise tamper with any of the 4 nuts on the bottom of each unit. Doing so will void this limited warranty. For quantity orders, extended warranty for switching applications may be available on an application specific basis at slight extra cost.

Exclusions

This Limited Warranty is made expressly in lieu of and to the exclusion of any and all warranties, express or implied, oral or written, including, without limitation, any and all implied warranties of merchantability or fitness for a particular purpose, and all such other warranties are expressly disclaimed. This Limited Warranty shall not be applicable to failures of the product that result from accident, abuse, misapplication or alteration, improper installation or maintenance, unauthorized repair attempts, operation or attempts to operate it beyond its mechanical, chemical, thermal, or electrical capacity intentionally or otherwise, and we assume no liability as a consequence of such events under the terms of this warranty. Hellroaring Technologies, inc. shall not be liable for any special, indirect, incidental, consequential, exemplary, or punitive damages for claims in any claim, action, suit or proceeding arising out of the purchase, use or performance of the product, and whether or not it has been advised of the possibility of such damages. The foregoing allocation of risk is reflected in the price of the product. Nor shall there be any liability thereunder for claims of labor, loss, profit, goodwill, repairs or other expenses incidental to the repair or replacement of such product.

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