



HELLROARING TECHNOLOGIES, INC.

P.O. Box 1521
POLSON, MT 59860
406 883-3801 [HTTP://WWW.HELLROARING.COM](http://www.hellroaring.com)
SUPPORT@HELLROARING.COM

SSR-5090-100V-24C

The SSR-5090-100V-24C is designed for DC load switching (solid state relay) applications for voltages up to 100 Vdc and a control voltage input of 24 volts (or higher with external adapter network) at approximately 20 mA. This unit **does utilize opto-isolation**. Many applications will benefit by the reliable, high current, dc switching capability. The SSR-5090-100V-24C unit can switch either the high side or low side. It can also be configured for back to back mosfet output at half the current rating and 4 times the on resistance.

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: support@hellroaring.com.

Depending on your power source capability and wire size utilized, appropriate circuit protection should be installed. The following table includes recommendations for wire protection values. In all cases, we recommend using circuit protection no greater than 100 amps.

Wire Size AWG	Circuit protection
4	100 A
6	80 A
8	60 A
10	40 A
12	25 A

The circuit protection listed is for continuous current.

Industrial Switching Applications:

Wire per one of the Load Switching Applications diagram illustrated below. **Diode suppression** for inductive loads is recommended for most applications. For the H-bridge configuration using 4 units, additional diode suppression is not necessary because it is essentially built-in to the configuration. For installation, follow these steps:

- 1) For highly inductive loads, Verify the load has diode suppression installed as illustrated.
- 2) Connect the power source Positive (+) to terminal "A" and "C".
- 3) Connect the load (+) to terminal B. The other side of the load should be connected to the power source common.

The unit is now ready for switching. Apply a 24 volt control voltage (requires 20 mA) to the control signal input as desired and within the limits specified. Do not disconnect the load while the SSR is switched ON. For higher control input voltages (such as 70 volts), an external input adapter network is required. If you ordered this unit with a higher control input voltage, this adapter network should be supplied with the unit.

Note on Diode Suppression

The Hellroaring SSR-5090-100V-24C series have built-in suppression for slight inductive loads with a dissipation up to 1 Joule. For higher inductive energy, you will need to use external means to protect the SSR. We recommend external suppression when the inductive energy level is uncertain.

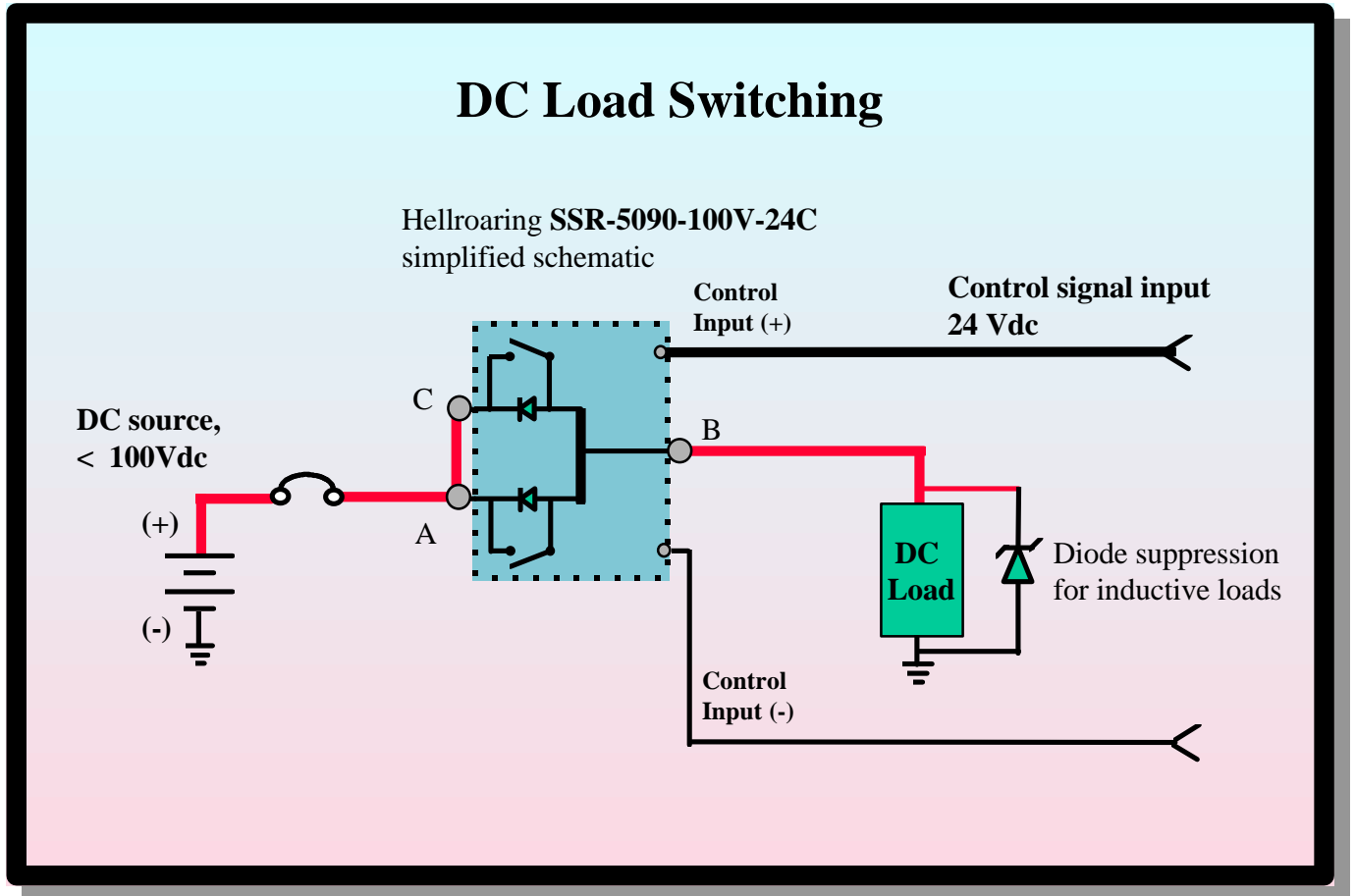


Figure 1

Basic DC load Switching applications.

Some Possible Applications include:

- Alternator field coil drive**
- DC Heater current pulsing.**
- DC power buss cutoff control.**
- One polarity DC motor on/off control.**

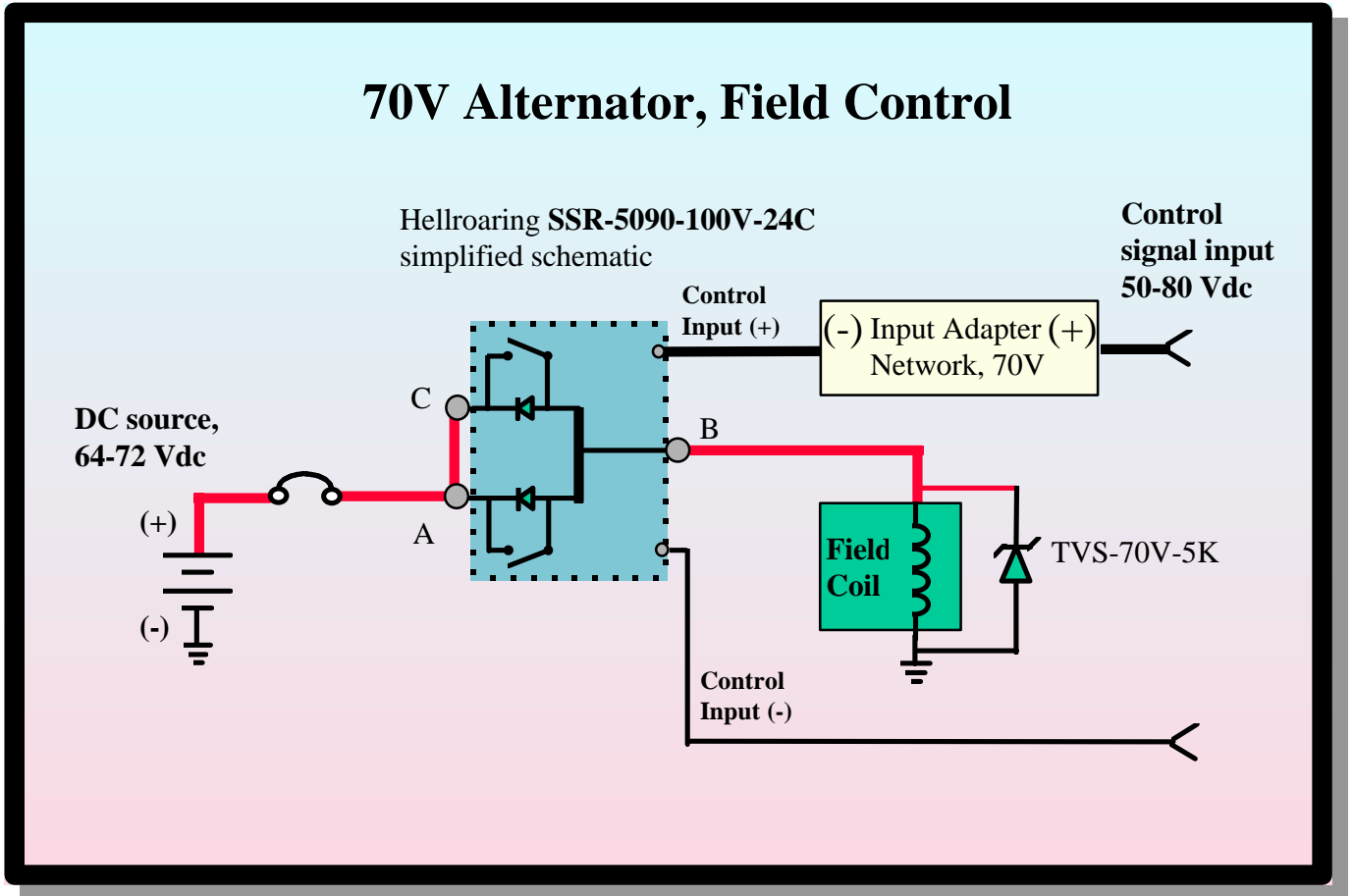


Figure 2

Switching applications with higher input control voltages.

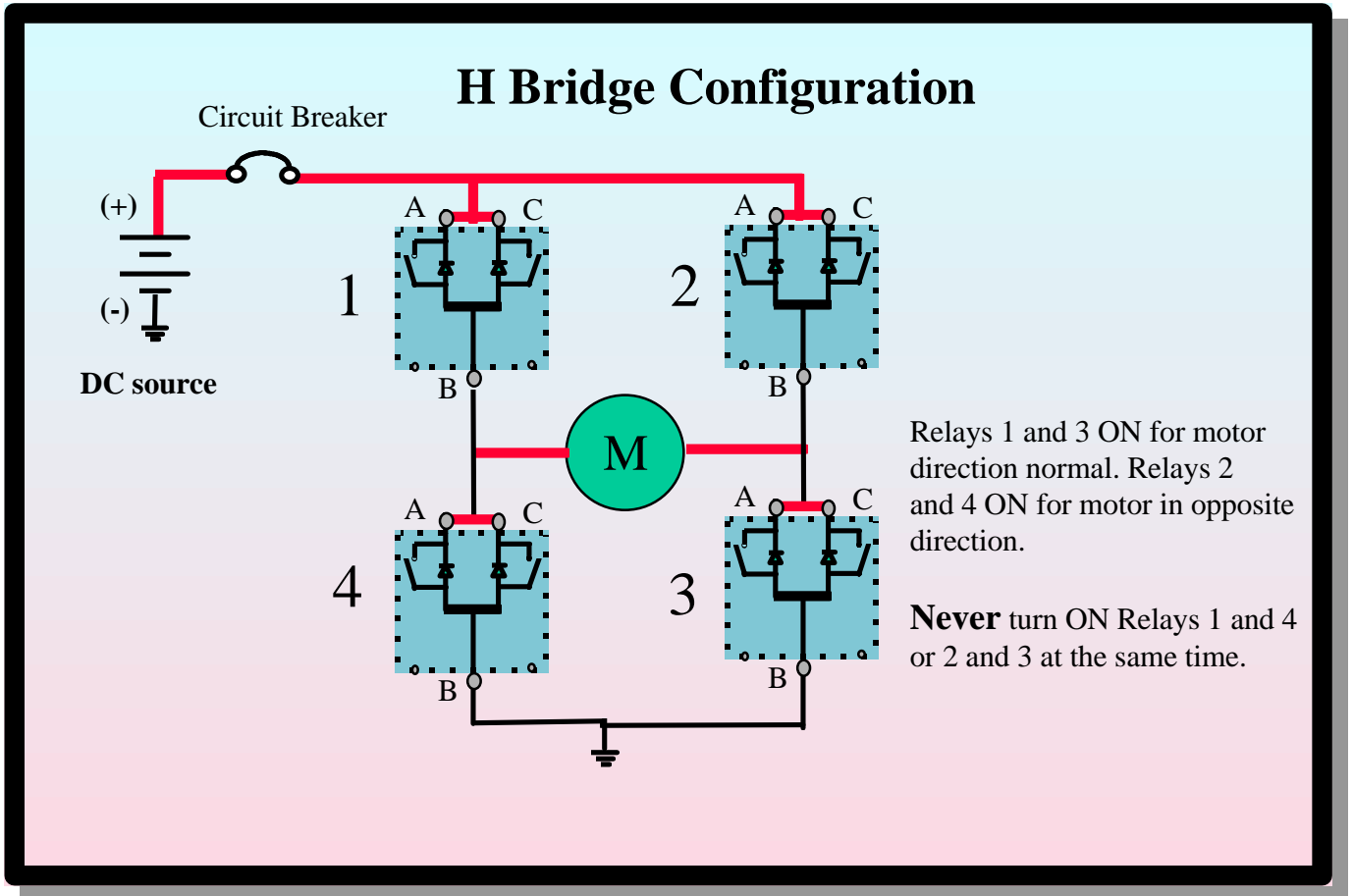
Some Possible Applications include:

Alternator field coil drive

Note:

The **Adapter Network** is supplied with a red wire (+) and #6 ring terminal, for connection to the positive control input, and a Black wire (-) to be connected to the SSR control input (+). Do not reverse this polarity.

The **TVS** is supplied with a Red wire and ¼ ring terminal to be connected to the SSR terminal B and a Black wire to be connected to the load ground connection. Also, do not reverse this polarity.



**Figure 3
H-Bridge Motor Control.**

Some Possible Applications include:

Motor forward and reverse control.

For other applications or possible setups, check our web site <http://hellroaring.com> for additional suggested configurations or other tips. If you have other questions you can send e-mail to support@hellroaring.com. Please include your serial number.

Hellroaring SSR-5090-100V-24C Instructions

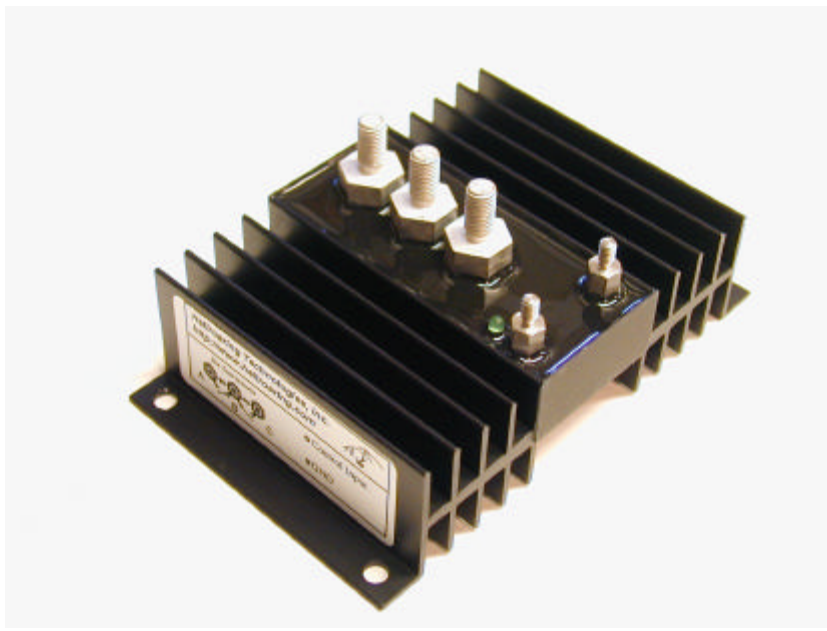
Definitions:

Control Input: These terminals, when connected to a voltage of 18 to 32 volts (24V nominal) will cause the terminals A, B, and C to electrically Combine (switch ON). These terminals, when open circuited, will cause the terminals A, B, and C to switch OFF. Input resistance is about 1100 ohms resulting in only 0.02 amps with a 24 vdc control input. The input voltage (input current) has a direct effect on the turn on time. This is about 4 to 8 mS with a 24 vdc control input. Higher control input voltages such as a 70 volt control input can be obtained by using an external adapter network.

Terminals A, B, & C: Terminals A and C are typically jumpered together to obtain the maximum current capability. When Jumpered, terminals A and C must be more positive than terminal B and are normally connected to the power source positive for high side switching (or to the load negative for low side switching). Terminal B would normally be connected to the load for high side switching (or to the power source negative for low side switching). Terminals A and C are the cathode end of a diode and terminal B is the Anode.

Dimensions: 4.8" long, by 3.0" wide, by 2.0" to the top of the terminal studs.

Weight: 12 Oz., typical with 6 AWG jumper.



Hellroaring SSR-5090-100V-24C Instructions

Specifications:

<u>SSR-5090-100V-24C:</u>		Unless specified otherwise, ambient temp=25C ; max current from terminals "B" to parallel "A" & "C"; max pulse rate 1 per second or slower.
Max voltage	100 Volts	
Absolute Max ON Current	50 Amps	100% duty cycle, 65C ambient to 70 Vdc and 24 v control input.
	75 Amps	100% duty cycle to 65C ambient, to 70 Vdc and 24 v control input, With 1000 fpm forced air.
	45 Amps	100% duty cycle, 65C ambient to 100 Vdc and 24 v control input.
	60 Amps	65% duty cycle, to 65C ambient, 70 Vdc 24 v control input. Max pulse width 30 seconds,
	70 Amps	35% duty cycle, to 65C ambient, 70 Vdc 24 v control input. Max pulse width 20 seconds.
	80 Amps	10% duty cycle, to 65 C ambient, 70 Vdc 24 v control input. Max pulse width 15 seconds.
	90 Amps	5% duty cycle 65C ambient 70 Vdc Source, 24 v control input. Max pulse width 10 seconds.
	100	5% duty cycle 45C ambient 70 Vdc Source, 24 v control input. Max pulse width 5 seconds.
Max On Resistance (@ 10 amps)	0.006	Ohms terminal "B" to parallel "A & C"
Control Input Current	0.020	Amps (with 24 vdc input) typical
Switch on transient time Tr	4-8 mS	typical, with 24 vdc Control input or adapter network.
Switch off transient time Tf	< 0.3 mS	typical

Note: Specifications are subject to change without notice.

Hellroaring SSR-5090-100V-24C Instructions

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 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, 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.

Hellroaring Technologies, inc.