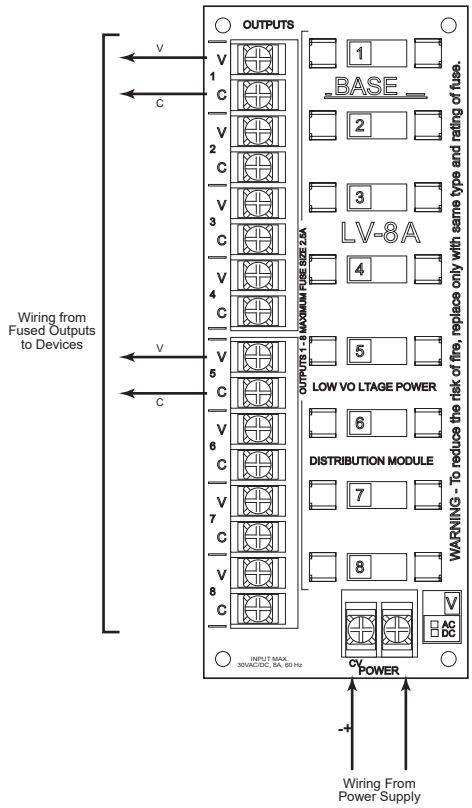

Figure 1 - LV-8A Wiring Diagram

BASE

LV-8A

Low Voltage Power Distribution Module

Installation and Operation Manual

BASE Electronics, Inc.
2856-C Janitell Road • Colorado Springs, CO 80906 • (719) 540-9697 • Fax (719) 540-9698

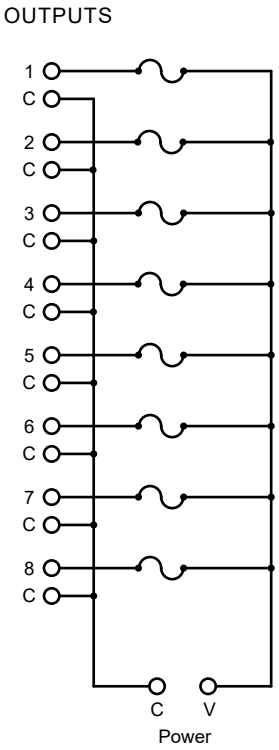

Figure 2 - LV-8A Schematic Diagram

LV-8A Specifications

• Indoor Temperature Range: -25° C. to +70°C.

• Electrical
Maximum Voltage AC/DC: 30V
Maximum Total Current: 8A
Maximum Recommended Current per Output: 2.5A
Connections: Captive Screw Terminals for #14 to #24AWG Wire

• Size: 2.75" wide by 7.00" long by 1.20 maximum height (inches).

• Mounting: (4) 3/8 inch high nylon standoffs included

• Other Power Distribution Modules Available
LV-8 with Emergency Power Disconnect Relay
LV-8RC with 8 Relay Outputs and Emergency Power Disconnect Relay
LV-8RCL with 8 LED/Relay Outputs and Emergency Power Disconnect Relay/LED
LV-8RC-N, LV-8RCL-N for Open Collector Access Controllers (Sink Drive)

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Limited Warranty

The LV-8A Low Voltage Power Distribution Module is warranted by BASE Electronics against manufacturing defects in materials and workmanship for a period of 2 years from date of purchase. During this period, any warranty repair required will be made at no charge for parts or labor. This warranty does not apply to any work or materials provided by any outside persons or technicians involved in the installation, unauthorized repair, connection, or testing of this product. This warranty does not cover any damage or failure caused by or attributable to Acts of God, abuse, misuse, improper or abnormal usage, faulty or improper installation or maintenance, neglect or accident. BASE Electronics is not responsible or liable for any special, consequential or indirect damages resulting from or in connection with the use or performance of this product as pertaining to economic loss, property loss, costs for removal or installation, or loss of revenues or profit. Except as provided herein, BASE Electronics makes no expressed or implied warranties. The duration of product performance for its intended purpose is limited to the duration set forth herein.

For Warranty or other repair, send the product postage prepaid to BASE Electronics and include Sender's name, company, address, phone and brief problem description. BASE Electronics will notify sender of any required repair costs not covered under this warranty prior to making such repairs.

This Warranty gives you specific legal rights. You may have other rights that vary from state to state.

LV-8A
Low Voltage Power Distribution Module

The LV-8A distributes power from a low voltage power source to 8 individually fused outputs. Ideal for providing distributed power to CCTV Cameras, Security System Components, Motion Detectors, Exit Buttons, etc.

Two terminals are provided for each output. Two terminals are provided for input power from a user-supplied low voltage power source up to 30V (AC or DC).

The LV-8A uses standard 3AG type fuses ordered separately depending on individual output device current requirements. Heavy duty wire clamp-type captive screw terminals are utilized for #14-24AWG wiring.

The module is 2.75" wide x 7.00" long. The installed height with relay is 1.20". Standoffs are included for mounting the circuit board in a user-supplied enclosure.

* * * WARNING * * *

Turn off all power feeding the module terminals before servicing or changing input/output wiring, removing or reinstalling fuses, etc. Failure to observe this warning may cause electrical shock hazard or may damage internal or external circuit components.

INSTALLATION

Locate the unit inside an enclosure close to the source power supply. Drill (4) 0.187" diameter holes to match the (4) corner holes in the printed circuit board. Push the nylon standoffs supplied into each hole and snap the module into place.

POWER SUPPLY WIRING

Connect the low voltage power supply input leads to the terminal strip at the bottom side of the circuit board as shown in Figure 1. Use a minimum of 18AWG copper conductors for this wiring and keep the length to the power supply as short as possible.

V = +DC or one side of low voltage AC
C = DC Common or the remaing side of low voltage AC

OUTPUTS AND CONTROLS

NOTE: The maximum recommended operating current at any single LV-8A output should not exceed 2.5 Amperes. The maximum recommended total operating current (all output currents added) should not exceed 8 Amperes. All fuses must be type 3AG. Output Fuses must be 2.5A maximum or less. Fuses are ordered separately - specify desired rating when ordering.

Suggested wiring methods are shown in Figure 1. Wiring to the output devices connects to the Output terminals. Two terminals are provided for each LV-8A output.

V = the fused output terminal (+ when using a DC Voltage)
C = the voltage Common terminal

Add the expected operating current ratings for each device to be powered from one LV-8A output to determine the expected operating current flow. Install a fuse for the output that will trip when this value is exceeded. The value of the fuse selected for each output may be written on the white area below the fuse for easy future reference.

Example A: Output 1 - (1) magnetic lock
operating current = 0.29A at 12 VDC
Install fuse rated just greater than 0.29A = 3/8A or 1/2A

Example B: Output 2 - (4) deadbolt locks
operating current = (4 x 0.40A) = 1.6A
Install fuse rated just greater than 1.6A = 2A

When powering devices over considerable distances, the cabling resistance may be so high that the voltage available at the device drops to an unacceptable level. To prevent this from occuring, the system cabling should be designed with adequate sized conductors. Use the Low Voltage System Cabling Design Guide in this manual for help in obtaining the desired results.

LIGHTNING, TRANSIENT AND NOISE SUPPRESSION

Lightning or transient suppression devices may be installed at the LV-8A output terminals to protect control equipment from induced voltages. A multi-screw, solid ground bar should be installed vertically next to the output side of the module for connection of metal oxide varistors, transient suppression diodes, etc. If shielded cable is used for output wiring, shield drain wires can be connected to the ground bar for line noise suppression. Run a minimum #14AWG green stranded ground wire from the ground bar to the closest Service Ground. Grounding bars of the type mentioned above can be separately supplied by BASE Electronics.

LOW VOLTAGE SYSTEM CABLING DESIGN GUIDE

With an improperly designed cabling system, the resistance of wire conductors may cause a voltage drop that could significantly affect the performance of the powered device. The resistance of a given length of cabling and its voltage drop at the given operating voltage can be calculated. This allows the affect on the powered device to be estimated with adjustments in conductor size implemented in the design stage.

Example:
A CCTV camera requires 0.29A at 24 VAC and the estimated cable length from the power supply is 800 feet. The camera specifications state that the camera will operate properly down to 21.0 VAC (a voltage drop of 3.0 volts maximum). What should be the size of the power cable conductors? From the chart below, we observe that a pair of 18AWG stranded copper conductors will have a resistance of 2 x 800 feet x 6.48 ohms/1000 feet. Using Ohm's Law: E = I x R

E (voltage dropped) = I (the required current) x R (the cabling resistance)
E = (0.29) x (2 x 800 x (6.48/1000)) = 3.007 volts

Subtracting 3.007 volts from 24VAC leaves 20.993 volts available at the camera, an unacceptable level. When 16AWG conductors are used in the equation: E = (0.29) x (2 x 800 x (3.67/1000)) = 1.703 volts

Subtracting 1.703VAC from 24VAC leaves 22.297VAC available at the camera. Taking future expansion of a second camera into account, the estimator may decide to increase the conductors to #14AWG as follows:
E = (2 x 0.29) x (2 x 800 x (2.31/1000)) = 2.14VAC dropped

When powering inductive devices (relay coils, electric strikes, magnetic locks, etc.), remember to install reversing diodes (DC powered) or metal oxide varistors (AC powered) at the device terminals or as recommended by the device manufacturer to counter the affect of Counter Magnetic Force (CMF).

Resistance of Copper Conductors

Solid Conductors		Stranded Conductors		
Wire Gage (AWG)	Resistance (Ω/1000')	Wire Gage (AWG)	Stranding (#/AWG)	Resistance (Ω/1000')
10	1.00	10	37/26	1.11
12	1.59	12	7/20	1.45
14	2.53	14	7/22	2.31
16	4.02	16	7/24	3.67
18	6.39	18	16/30	6.48
20	10.15	20	10/30	10.32
22	16.14	22	7/30	14.74
24	25.67	24	7/32	23.30