

**Features:**

- Up to 200°C Operating Temperature
- Output Range: 500 to 2500 VDC
- Voltage or Resistor Controlled
- Compact Design
- Shielded and Encapsulated
- Bipolar or Single Ended Input

**Applications:**

- Photomultiplier Tubes
- Geiger Tubes
- Proportional Counters

**Description:**

The HVC/HVR Series of high voltage power supplies were designed for use in instrumentation that must operate in harsh environments. They provide a regulated source of high voltage and are capable of operating under conditions of high shock, vibration, and temperature. These supplies provide output voltages from 500 to 2500 VDC at operating currents up to 150  $\mu$ A. The output voltage is variable and can be adjusted using either an external trim resistor or control voltage. They provide a stable output voltage across the entire operating temperature range. Typical drift with temperature is  $\pm 50$  ppm/ $^{\circ}$ C. Output ripple is small, typically less than 150 mVp-p with a 150  $\mu$ A load.

The compact design of both the HVC and HVR Series supplies makes them attractive for space critical applications. The HVC Series is enclosed in a cylindrical metal housing 3.25" long by 0.875" in diameter. The HVR Series is enclosed in a rectangular metal housing that is 1.2" wide by 4.4" long by 0.65" high. Both are encapsulated with high temperature potting compounds that enable them to

withstand adverse environmental conditions while adding little mechanical stress to the interior components.

Both the HVC and HVR Series are available as either positive output or negative output supplies with maximum output voltages of either 2500 VDC or 1900 VDC. Two input voltage ranges are offered. The 15 volt model accepts a single supply input from +13.5 to +16.5 VDC. The 24 volt model will accept either single ended supply voltages from +21.6 to +33.0 VDC or dual supply voltages from  $\pm 10.8$  to  $\pm 16.5$  VDC. The dual supply capability of this model makes it easy to use in systems that have either a  $\pm 12$  volt or a  $\pm 15$  volt supply. Each unit is fully burned in and tested over the full operating temperature range prior to shipment and guaranteed against defects.

Custom versions of these supplies with different electrical and packaging options are also available. Please consult the factory for details.

*Specifications:*

| PARAMETER   | Temp. Range | MODEL NUMBER (see Ordering Information for explanation) |      |                                   |      |                                   |      |                                   |      | Units |
|---|-------------|---|------|-----------------------------------|------|-----------------------------------|------|-----------------------------------|------|-------|
|   |             | 25N24R, 25N24V,<br>25P24R, 25P24V                       |      | 25N15R, 25N15V,<br>25P15R, 25P15V |      | 19N24R, 19N24V,<br>19P24R, 19P24V |      | 19N15R, 19N15V,<br>19P15R, 19P15V |      |       |
| Output Voltage Range <sup>(1)</sup>                           | Full        | 850 to 2500   |      | 850 to 2500                       |      | 500 to 1900                       |      | 500 to 1900                       |      | VDC   |
| Max. Output Current   | Full        | 150   |      | 125                               |      | 75                                |      | 75                                |      | uA    |
| Input Voltage (Single Supply)                                 | Full        | +21.6 to +33.0  |      | +13.5 to 16.5                     |      | +21.6 to +33.0                    |      | +13.5 to 16.5                     |      | VDC   |
| Input Voltage (Dual Supply)                                   | Full        | ±10.8 to ±16.5  |      | N/A                               |      | ±10.8 to ±16.5                    |      | N/A                               |      | VDC   |
| Input Supply Current <sup>(2)</sup><br>(@ Max Voltage & Load) |             | Typ.  | Max. | Typ.                              | Max. | Typ.                              | Max. | Typ.                              | Max. |       |
|   | 125°C       | 40  | 52   | 50                                | 70   | 17                                | 23   | 29                                | 38   | mA    |
|   | 150°C       | 43  | 56   | 54                                | 75   | 19                                | 25   | 31                                | 41   | mA    |
|   | 175°C       | 46  | 60   | 59                                | 80   | 21                                | 27   | 34                                | 44   | mA    |
|   | 200°C       | 51  | 64   | 65                                | 85   | 23                                | 29   | 37                                | 47   | mA    |

*Regulation, Noise, and Temperature Drift (all models):*

- Line Regulation ..... ±0.1% for a 10% Line Change
- Load Regulation ..... ±0.2% for a 50% Load Change
- Output Ripple & Noise ..... 150 mVp-p Typical, 500 mVp-p Max.
- Output Voltage Temperature Stability ..... ±50 ppm/°C Typical, ±125 ppm/°C Max.

*Mechanical Specifications:*

- Shock ..... 200G, 1/2 Sine, 5 msec Duration
- Vibration ..... 25G, 250 Hz Random
- Pressure ..... 0 to 500 PSIG
- Total Weight ..... 2.8 oz (80 gm) HVC Series  
3.7 oz (105 gm) HVR Series

*Notes :*

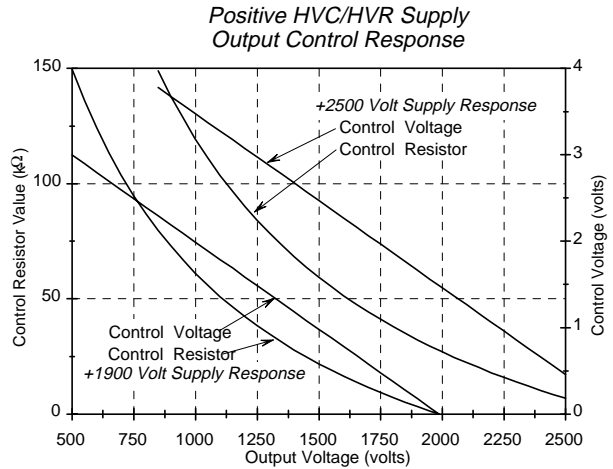
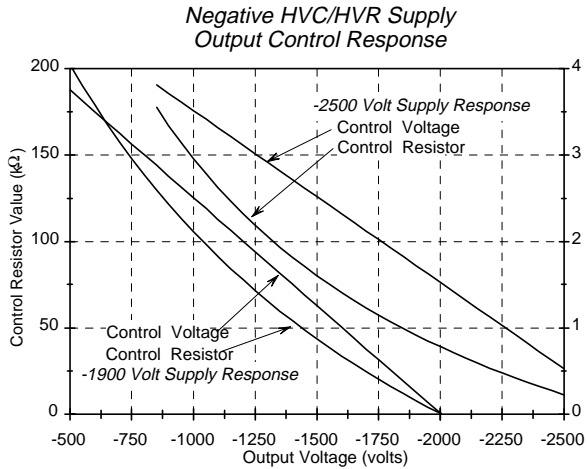
1. The output voltage range listed in the table is the range over which the regulation and temperature drift is specified. The supplies will operate at lower output voltages with a slight degradation in regulation and drift.
2. The input supply current is proportional to the output power. Lower output voltage and current require proportionally less input current.
3. Every attempt has been made to insure the accuracy and reliability of the specifications listed. Contact a factory representative for the latest information available on this product(6/01/94).

*Output Voltage Control:*

The output voltage of the HVC/HVR Series high voltage supplies can be easily adjusted for the application. Two control options are available. The first option, control method R, allows the supply to be controlled with either an external trim resistor or a control voltage. The two charts on the next page

show the control responses for this option for both the 2500 volt and 1900 volt supplies.

Although control method R provides the most flexibility in controlling the output of the supply, the voltage control response is inverted (i.e. the output

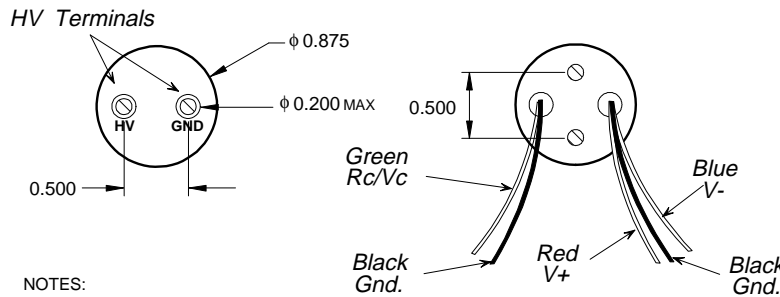
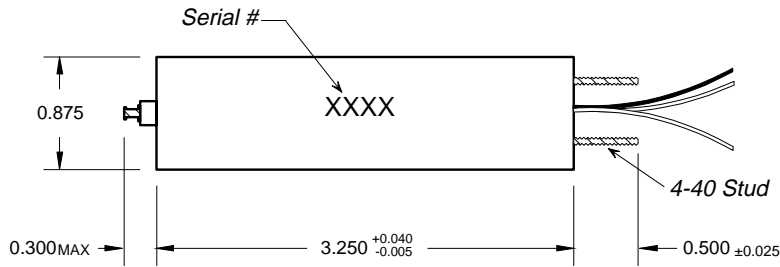


voltage decreases with increasing control voltage). For applications that require only voltage control, a second option, control method V, is available. This option provides a simple output voltage response for a 0V to 5V control input. For the 2500 volt supplies,

the output voltage, HV, is given as  $|HV| = 500V_C$ , where  $V_C$  is the input control voltage. For the 1900 volt supplies, the output voltage response to the control voltage is  $|HV| = 400V_C$ .

**Package Outlines:**

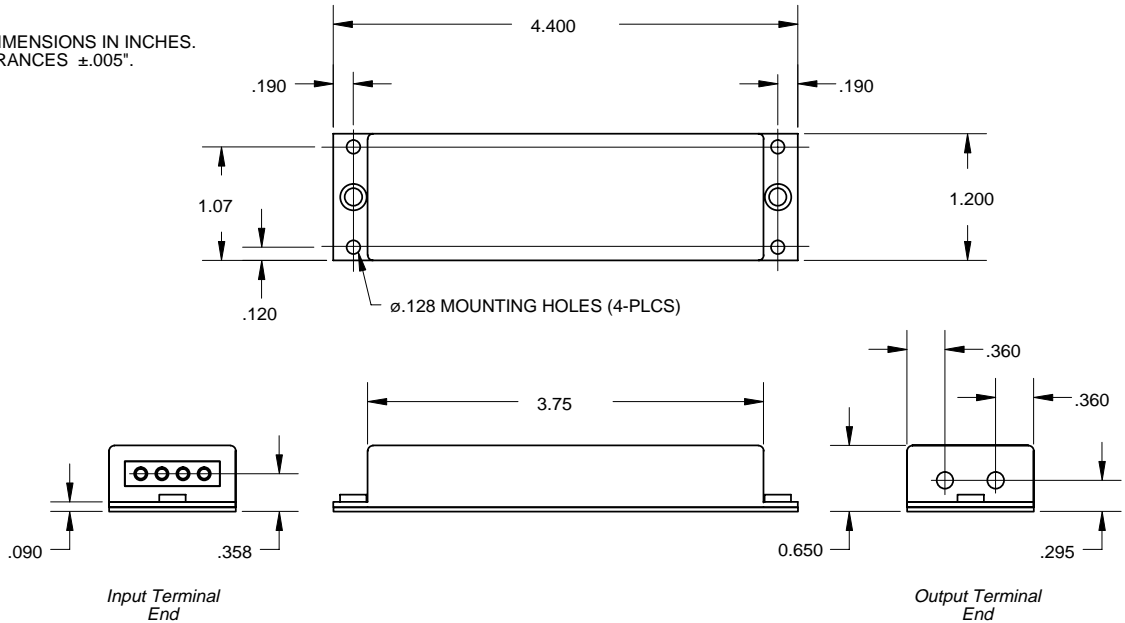
**HVC Series**



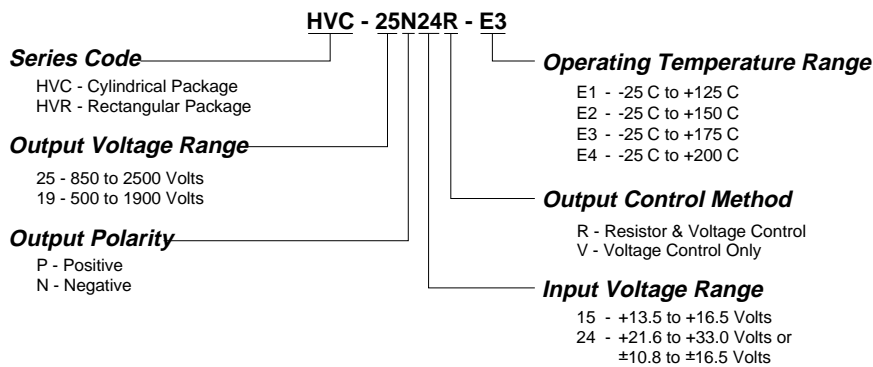
- NOTES:  
1. ALL DIMENSIONS IN INCHES.  
2. TOLERANCES ARE ±0.005 UNLESS OTHERWISE NOTED.

**HVR Series**

NOTES:  
1. ALL DIMENSIONS IN INCHES.  
2. TOLERANCES  $\pm 0.005"$ .



**Ordering Information:**



**Example:** *HVC-25N15V-E3* is the part number for a cylindrical supply with a -850 to -2500 VDC output and a +15 VDC input. It's output is adjusted by the user with a external voltage. The operating temperature range is -25 C to +175 C.

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