TN-D-1

Interfacing with the UltraVolt D Series of Microsize High Voltage Power Supplies

Introduction

In this technical note, we provide the connections, pins, and leads for the UltraVolt D Series of microsize high-voltage power supplies. This document augments the datasheet. A complete datasheet can be found at advancedenergy.com/hv.

The D Series microsize units deliver 0 to 1kV through 0 to 6kV in a 1, 2, 4 or 6W miniature package. The input voltages available are 15 ±1.5 VDC and 24 ±2 VDC depending on type.

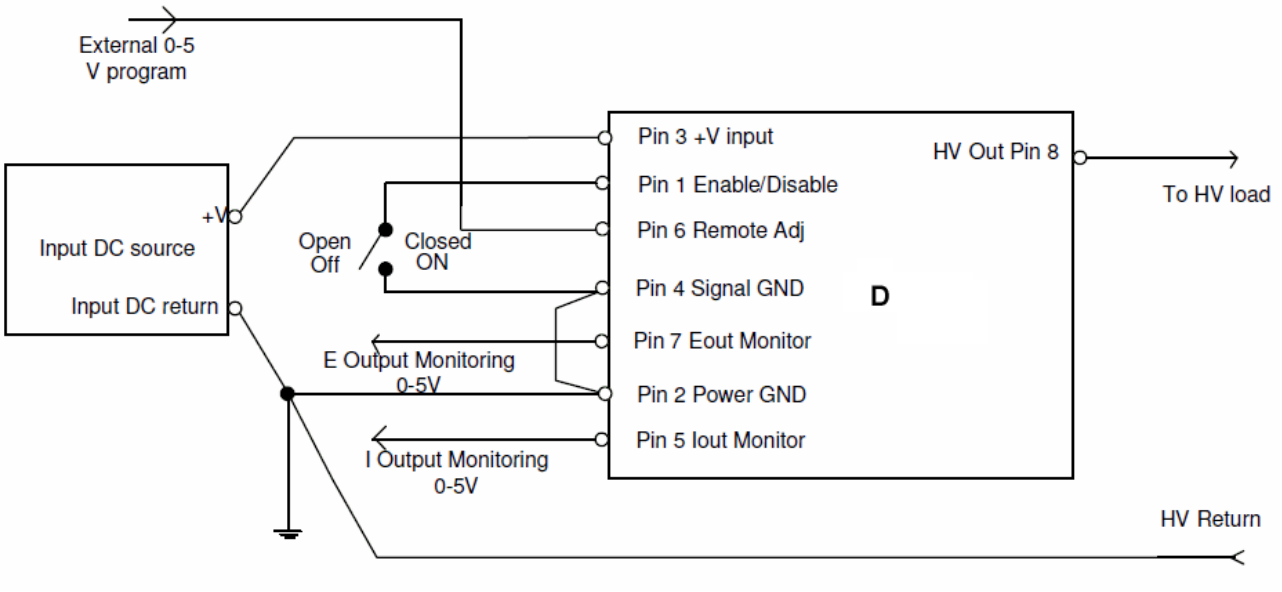

Figure 1: D Series Functional Diagram

Connections Overview

Pin 1, Enable / Disable:

This pin is used to inhibit the output voltage using a logic signal. A short or zero logic will turn the unit ON. An open collector logic gate is required; it should be able to sink at least 0.5mA. An internal pull-up resistor is provided. When pin 1 is left open or at logic High the output will turn OFF. By default the unit is OFF. If this function is not used, Pin 1 should be connected to Pin 4 (or system return); otherwise no output voltage will be available.

Pin 2, Input Power Ground Return:

This pin is the return to the input DC source. The connection to this pin is also used in the system as the HV return.

Pin 3, Positive power input:

This pin is the positive power input (15 or 24VDC) coming from the system AC/DC, DC/DC or Battery low-voltage power source. The input source must be capable of providing at least 120% of the maximum input current required by the D Series unit at full load (see datasheet for more details).

Pin 4, Signal Ground Return:

This pin is used as the return for the voltage control signal, voltage monitor signal, and current monitor signal. It is provided as a separate ground for low-power signals in order to avoid any interference with the HV Return and Input DC Return. Do not use this pin as a direct connection to the HV Return. This pin is internally connected to Power GND (Input Power Ground return).

Pin 5, Output Current (Iout) monitor:

The analog buffered output signal, 0-5VDC, is proportional with the output current draw (Pin 5 output impedance = 1kΩ). The signal goes from zero to five volts for output currents from zero to maximum (see datasheet for Iout max). Accuracy of the signal is ±2%.

Pin 6, Control Input (Remote Adjust):

This pin allows the control of the high-voltage output by a low-voltage signal. Using a 0 to 5V ±0.1% positive DC voltage, the high voltage can be controlled from 0 to 100%. The control 5V signal source can come from a DAC, op amp, etc.

Pin 6 input impedance is 94kΩ. This signal is clamped to 5.3V for protection against overdrive. When zero volts is provided (or pin 6 is not connected), no output voltage will be present.

Pin 7, Output Voltage Monitor:

This pin provides a low-voltage 0 to 5V signal proportional with the HV output voltage. The +5V level equals 100% output voltage (see datasheet for Max E_{out}). The signal is positive in reference to Signal Ground regardless of the output-voltage polarity. This signal is buffered with an output impedance of 1kΩ. The accuracy of the voltage monitor is ±0.2%.

Pin 8, High Voltage Output:

This is the high-voltage output (up to 6kV depending on the model). The pin is located farther away from the other seven pins in order to provide the proper clearance for the high-voltage circuit. When designing a system PC board, adequate creepage and clearance spacing must be observed.