

# Series Connection of HDM DC-DC Converters

## General Description

The Rantec line of HDM DC-DC converters can be operated in series to attain higher output voltages than can be achieved with a single module, such as a two 24 volt modules to obtain 48 volts. Additionally, the individual module outputs may be trimmed (+/-10%, see Ap Note HDMA-104) to obtain more voltage options. The maximum available current in a series connection of modules cannot exceed the maximum current rating of any of the individual modules in the series circuit. Synchronization of the modules switching frequencies is recommended to prevent increased ripple or harmonics (See Ap Note HDMA-102.) As the total number of modules used in the series circuit increases, additional filtering may be required at the system level.

Caution should be taken when connecting modules in series as to not exceed the output isolation rating of the module. For example, if the two modules shown in Figure 1 were two 24-volt modules, the upper module would have 48V at its +Vout terminal relative to its baseplate. Most modules have an output isolation rating of 50VDC. If the desired system output voltage rating exceeds the output isolation rating of the module, please consult the factory, as changes may be able to be made to accommodate system isolation rating needs.

## Implementation

Reverse biased diodes should be used across the output of each module (see figure 1). This will protect the modules from the output of the other modules in the event that one starts before the other, or for a short circuit condition at the load.

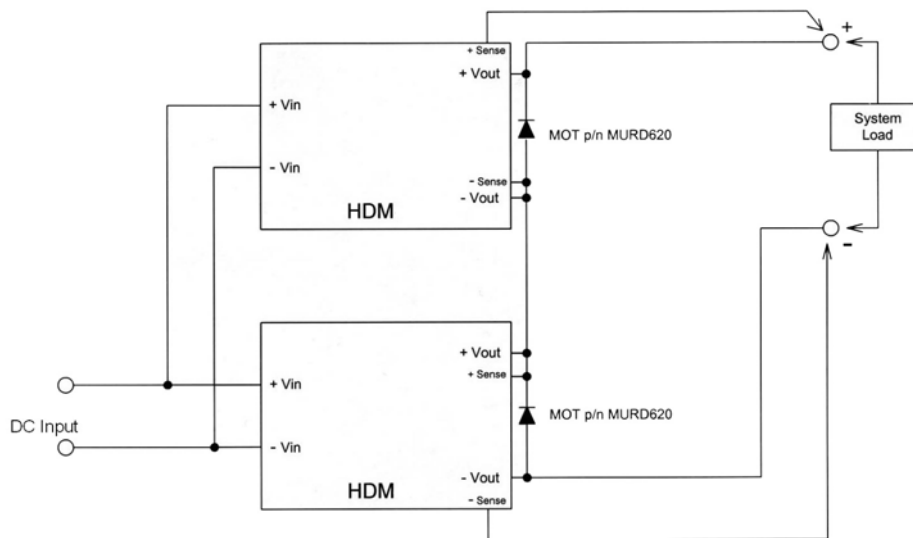


Figure 1 – Sample Series Connection of Rantec HDM Modules