SAMLEX AMERICA®

APPLICATION OF ISOLATED DC-DC CONVERTERS FOR PROVIDING POSITIVE OR NEGATIVE OUTPUTS FROM PLUS OR MINUS RAILS

Isolated DC-DC voltage converters can provide positive or negative voltages from a single device. Most isolated converters have “floating” outputs that provide isolation between the case, the input and the output circuitry (See Fig.1A & B). Connecting the output circuit reference node (ground) to the positive output will cause the output common of the device to be at a relative negative voltage. For example, by connecting the 12V output of the 12V output versions of SD or IDC series to ground, the output common may be used to supply a negative voltage (-12V) to the load. (See Fig. 2).

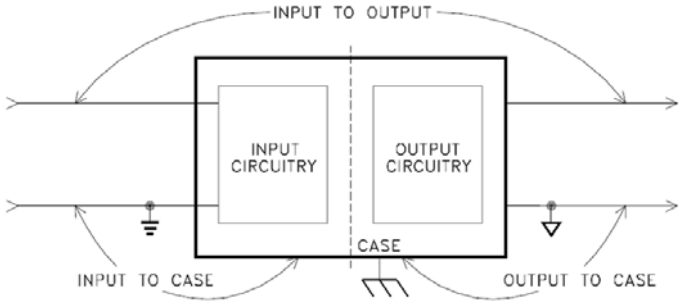

FIGURE 1A
ISOLATION BETWEEN CASE, INPUT AND OUTPUT CIRCUITRY

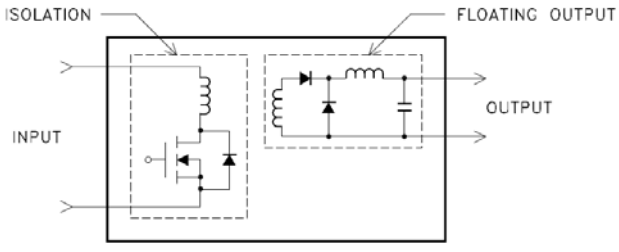

FIGURE 1B
SIMPLIFIED INPUT/OUTPUT CIRCUITRY FOR SINGLE OUTPUT DEVICE

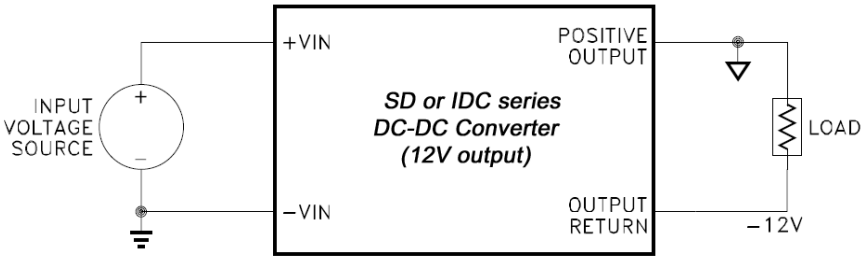

FIGURE 2
ISOLATED OUTPUT CONFIGURED TO PROVIDE NEGATIVE VOLTAGE

Isolated DC-DC converters may be also be used with either a positive or a negative input voltage source, as long as the relative polarity of the input to the device is maintained. (See Fig. 3) The positive input (Vin) must be positive with respect to the input return. The input return must be kept negative with respect to the Vin pin. If this polarity is reversed, the converter input will approximate a forward biased diode and permanent damage to the unit will occur. An example of operating from a negative source is shown, connecting the input return to the –24V and the input positive terminal to ground, maintaining the correct polarity. The outputs can still be made either positive or negative as described earlier.

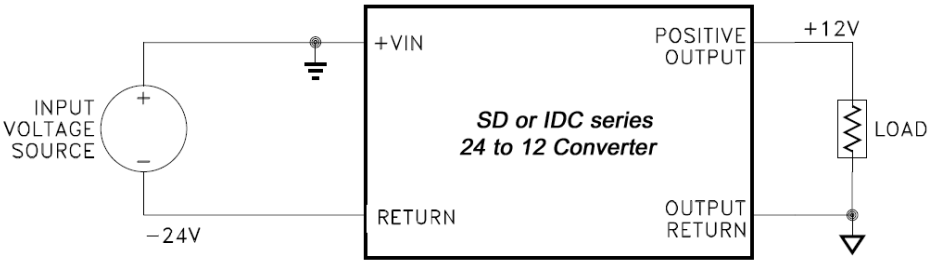

FIGURE 3
NEGATIVE INPUT VOLTAGE OPERATION