

# **2B** Technologies, Inc.

*An InDevR Company*

**Technical Note No. 031**

**Voltage Regulation for solar panel operation for 2B instrumentation**

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**Summary:** The pump and pump circuitry can be damaged by voltages higher than 14 Volts on 2B ozone monitors models 205 and 202. When using solar panels in remote locations, voltages typically exceed this voltage level during peak sunlight hours and can break down the pumps quickly and damage the pump control circuitry leading to board failure. This occurs with improper voltage regulation from the solar panel charging unit. To avoid this, we suggest using a voltage regulator inserted internally between the input power and the printed circuit board (PCB) or externally between the external power source and the instrument. The voltage regulator will ensure that the voltage supplied to the instrument is 12 Volts.

**Parts needed:**

1 x DC-DC converter (V-Infinity PN: VCD30-D12-S12-T)  
Black and Red wiring

**Procedure for Internal Mount**

1. Remove top cover of Model 202 or Model 205.
2. Cut the red and black wires at the midpoint and strip both cut sides.
3. Locate a place on the instrument base plate to mount the DC-DC converter.
4. Extend the cut power wire ends from the chassis side by splicing new wiring so wires will reach “-Vin” and “+Vin” where “-Vin” is black and “+Vin” is red.
5. Ensure that exposed wire is covered with electrical tape or heat shrink.
6. Cut and strip new black and red power wire leads to extend from “-Vout” (black) and “+Vout” (red) to the other cut ends from step 2.
7. Solder or splice the wires together and cover exposed wires.
8. Cut and splice another black wire to extend from “Case” on the voltage converter to the chassis using the existing chassis ground screw on the power in for the connection.