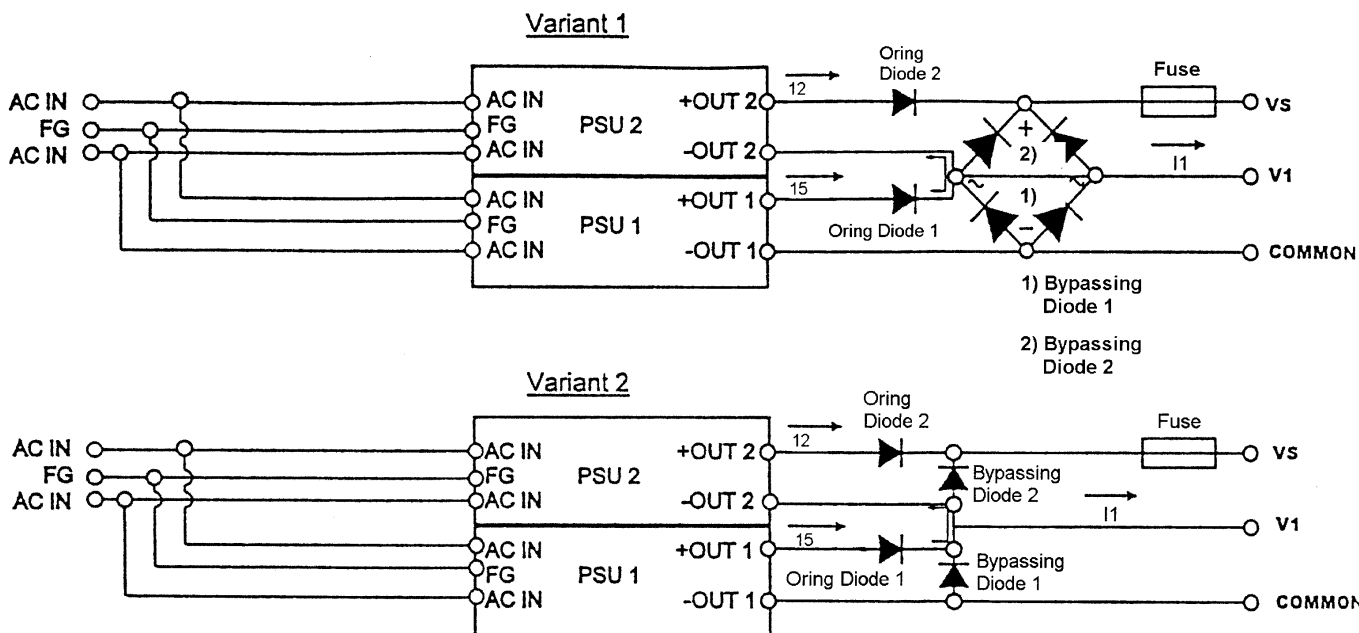




SERIAL CONNECTION ON ETA AC/DC POWER SUPPLIES



REMARKS ABOUT SERIES CONNECTION

Common Voltages:

$V_s = V_1 + V_2$

Sum of the currents drawn from a common output channel must not exceed the rated current of the according PSU.

$I_s = I_1 + I_2 \leq \text{rated current of PSU1}$

Bypassing Diodes:

They are inevitable to protect PSU's in series connection from fatal reverse voltages and currents.

Reverse currents can cause severe damage to the exposed PSU, fire hazards not excluded.

Reverse currents may occur on PSU's which can not feed power into a hot chain due to one or several of the following reasons: Asynchronous rise-up, being switched off, active OVP, active fold back OCP, internal failure, overload or load short circuit.

The negative Voltage which under normal conditions lays over the bypassing diode equals to the output voltage of the PSU to be protected. The maximum positive voltage which under fault condition lays over the bypassing diode is equal to the output voltage of the neighbour PSU. Both under the condition that no further voltages are supplied from the load.

In worst case the diodes must constantly withstand the peak current available from the neighbour PSU. If the neighbour PSU is equipped with a constant current limiter, the maximum current value will be reached at short circuit condition.

Please consult the PSU datasheet or the PSU manufacturer to specify the possible maximum currents. In any case the diodes need careful dimensioning considering all conditions mentioned above.

Oring diodes:

They are used to prevent the PDU from start-up failures or the OVP from being activated if positive voltage returns from load side (e.g. a battery) They protect batteries from being slowly discharged over the PDU error amp during offline operation, AC fails or PDU malfunctions. Further they are used in hot swap and redundant systems.

Oring Diodes should have a low threshold voltage in order to maximize conversion efficiency (e.g. Schottky). They must be dimensioned to withstand the total output voltage and maximum current available on the attached channel.

Output fuse:

The fuse must be dimensioned for total output voltage and maximum available current.

Recommended voltage drop of output line is at most 0.15V for both "+" and "-" lines.