This application note explains how to provide an optional Auxiliary power supply to the host board. This optional and additional circuit helps in case the host board needs to be powered by regular DC power supply. The following sample circuits will not work for 3.3V models like PEM1203 or 1303.

Auxiliary power supply having priority over POE module

In Figure 1 below, whenever the auxiliary power is ON, it takes priority over the POE and feeds the host board. In this condition, the module stays in stand-by mode.

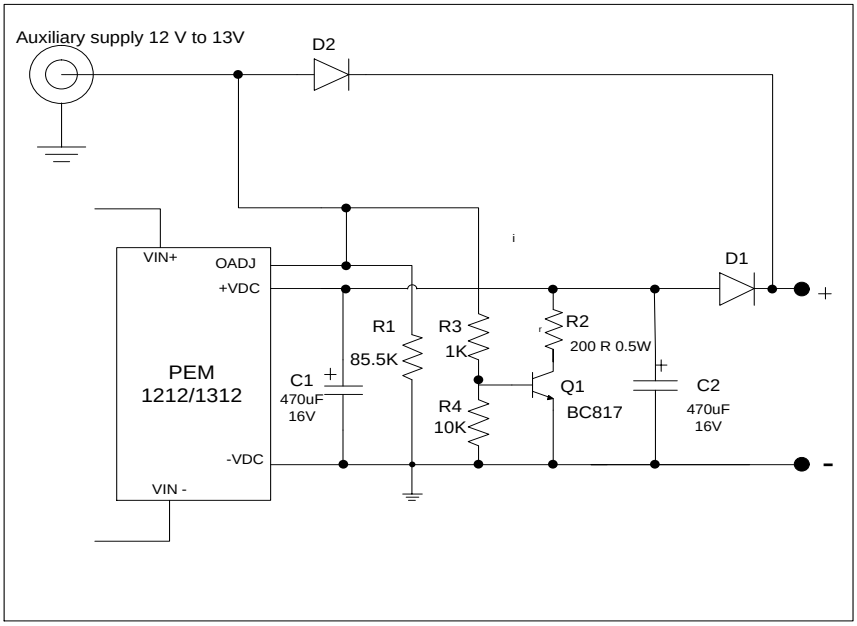

Figure 1: Auxiliary power supply having priority over POE
Example device used PEM1312 or PEM1212.

The Schottky diode D1 works as gating for auxiliary power towards the host device, similarly diode D2 works as gating for POE power towards the host device. When the auxiliary power is OFF and POE power is present, the PEM module will supply power to the target device via D1. D1 has a forward voltage drop of 0.5V. To compensate for this drop, the output voltage of the PEM module is increased by 0.5V using the resistor R1 between OADJ and –VDC. For other values please refer to the appropriate product datasheet.

When the auxiliary power is switched ON, it takes OADJ pin to High, which internally reduces the voltage at pin +VDC by 10%. Schottky diode D2 starts conducting and provides supply from the auxiliary to the target device. Simultaneously D1 would disconnect the module from target device, and the auxiliary power switches ON the transistor Q1 via R3. The resistor R2 provides a minimum load for the module and places it in a stand-by mode. It is recommended that resistor R2 is rated to provide a load between 0.5W and 1W.

If auxiliary power gets switched OFF, it takes the OADJ pin to Low and the pin +VDC would regain its original voltage and resume supply from POE module to the target device through D1. Simultaneously the Q1 is turned OFF, and the minimum load R2 is disconnected.

Capacitor C2 is required in order to reduce the change over time between the auxiliary supply and the POE supply. C2 should be placed as close as possible to the output. The capacitor C1 is used for loop stability and reduces the ripple.

NOTE: D1 and D2 should be the same. These can be of any type having a maximum forward voltage drop of 0.5V. Example: 1N5820.

Sample circuit for PEM1205 and PEM1305

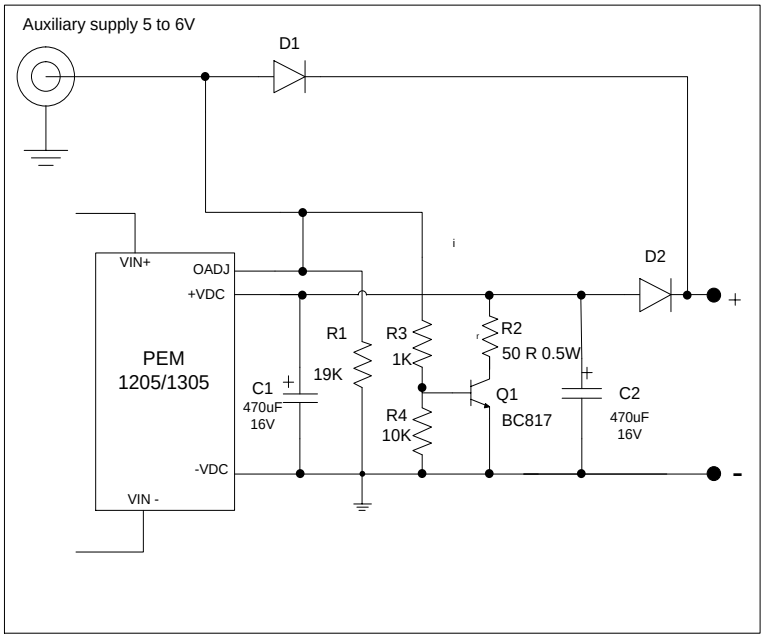

Figure 2: Auxiliary power supply having priority over POE.
Example device used PEM1205 or PEM1305.

POE supply having priority over Auxiliary power supply

In Figure 3 below, whenever the POE power is ON, it will take priority over auxiliary power, and feeds the host board.

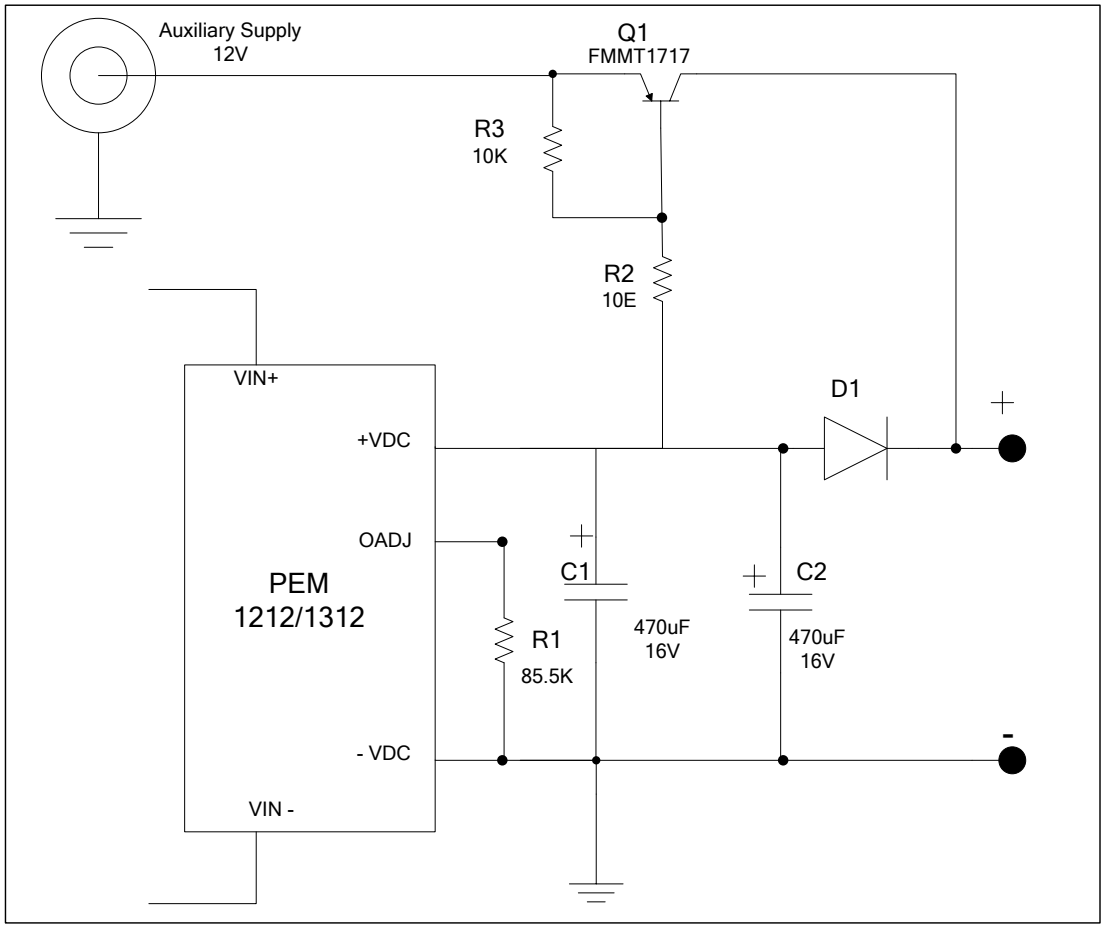

Figure 3. POE supply having priority over Auxiliary power supply.
Example device used PEM 1212 and PEM1312.

While the PEM POE module is working normally, the host device gets power from the module through Schottky diode D1 which should have a maximum forward voltage drop of 0.5V. D1 works as gating for auxiliary power towards the host device. Resistor R1 is connected between OADJ pin and –VDC to increase the output voltage of the PEM module compensate for the voltage drop of D1. Q1 is a Bi-Polar Junction Transistor.

The +VDC voltage keeps Q1 in an OFF condition.

If POE power fails, the voltage at pin +VDC is zero which makes Q1 to conduct and therefore auxiliary supply will start giving power supply to the host device through Q1. When POE power resumes, Q1 will be turned OFF and the PEM module will provide power supply to the host device through D1.

Capacitor C2 is required in order to reduce the change over time between the auxiliary supply and the POE supply. C2 should be placed as close as possible to the output. The capacitor C1 is used for loop stability and reduces the ripple.

NOTE: It is recommended that D1 have a maximum Forward voltage drop of 0.5V. Example: 1N5820.

Sample circuit for PEM1205 and PEM1305

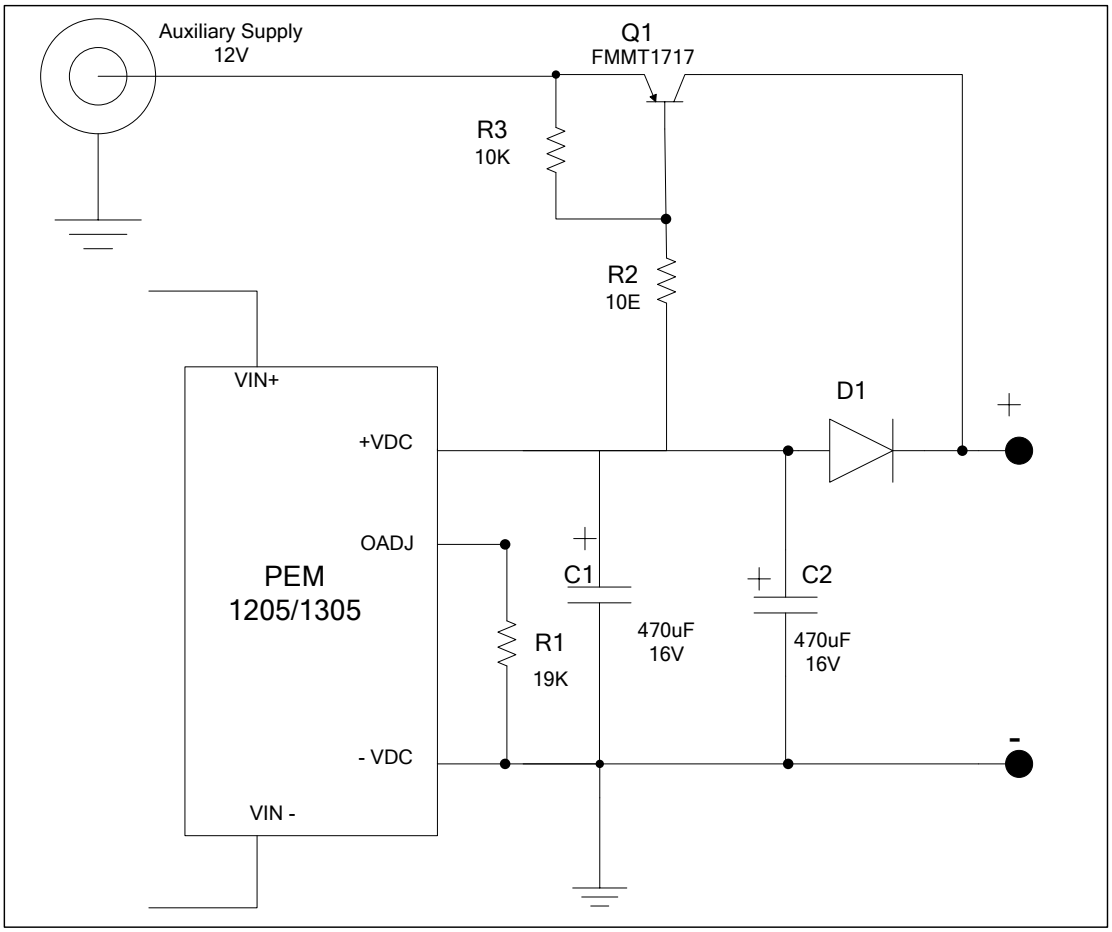

Figure 4: POE supply having priority over Auxiliary power supply.
Example device used PEM 1205 and PEM1305.