The Ag102 can be connected to a Powered Device (PD) such as the Ag9412-S, to have a Power over Ethernet (PoE) solution with a Sealed Lead Acid (SLA) battery backup, see Figure 1.

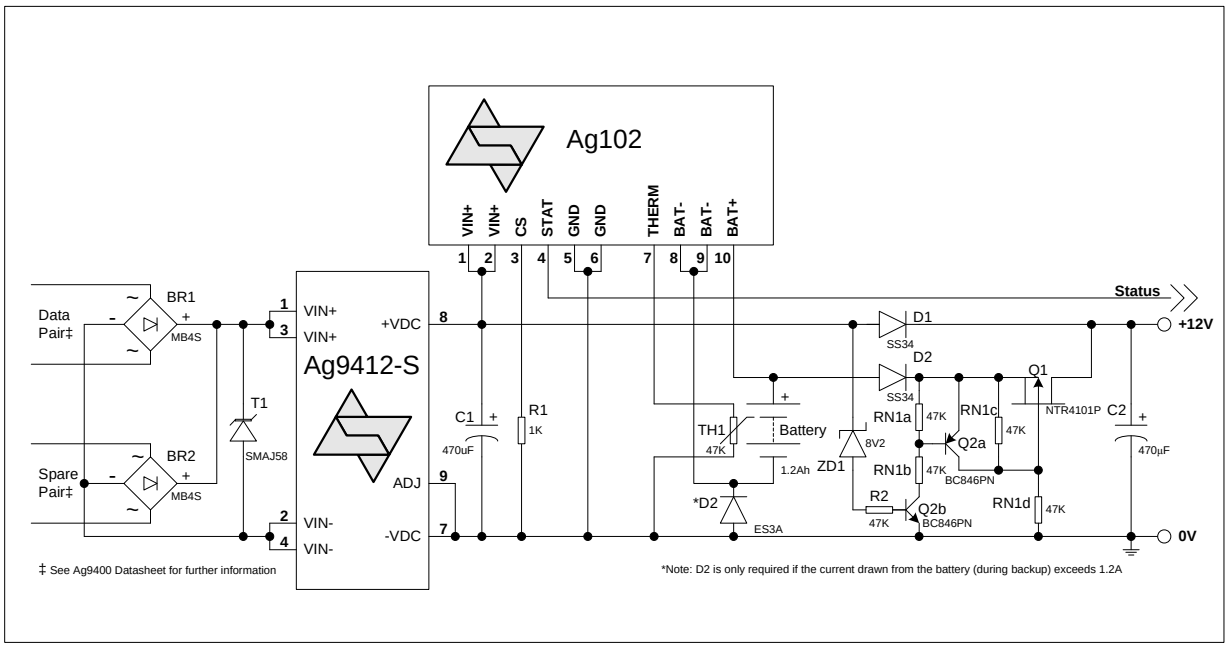

Figure 1: PoE Interface using an Ag9412-S

The main consideration here, is carefully handling the available power budget to stay within the limitation of IEEE802.3af specification. The Ag9412-S has a maximum output power of 12 Watts, which has to be shared between the Ag102 and the circuit load. So with this in mind the choice of battery is very important. The Ag102 can charge a range of SLA batteries from 1.2Ah up to 7Ah, but you can't afford to use the entire power budget on the Ag102 and leave nothing for your main circuit (unless you are looking for a PoE SLA battery charger).

In Figure 1 the Ag9412-2BR output voltage has been increased (by connecting the ADJ pin to the –VDC pin) to its maximum of ~12.7V. This is done to allow of the forward voltage drop across D1 and to balance the voltage with the battery (~12.8V). Therefore the available current (from the Ag9412-S) is 12W / 12.7V = 0.945A. If the voltage drop is not a problem, then do not connect the ADJ pin and the available current will be increased slightly 12W / 12V = 1A.

With the Ag102, the peak input current is drawn from the supply when the module is transitioning between constant current and constant voltage modes (during the bulk charge). Table 1 shows the typical input current drawn by the module at this point.

Battery Capacity	Peak Input Current
1.2Ah	~400mA
2.0Ah	~630mA
2.1Ah	~660mA
2.3Ah	~750mA
2.8Ah	~900mA
3.2Ah	~1000mA
4.0Ah	~1300mA
7.0Ah	~1300mA

Table 1: Battery Capacity vs. Peak Input Current

Once the Ag102 is in constant voltage mode the input current will drop to less than 100mA, but the current figures in Table 1 have to be used.

2.8Ah batteries and upwards are unsuitable for use with the Ag9412-S (and IEEE802.3af). To use these batteries you will need to use PoE+ (IEEE802.3at) and replace the Ag9412-S with an Ag5000 or Ag5100.

Going back to the example shown in Figure 1, here a 1.2Ah battery is being used. Taking the peak input current from Table 1 (~400mA) and subtract this from the available current (945mA) you will end up with ~545mA to drive the your circuit.

C1 can be used by both the Ag9412-S and the Ag102, it is important that it is positioned close to the Ag9412-S output and the tracks to the Ag102 are kept as short as possible. If the tracks cannot be kept short then a second 470uF may be required across the Ag102 input pins.

D2 is only required if the current from the battery (in backup mode) can exceed 1.2A. If the current is less than this, then D2 doesn't need to be fitted, as the return path to the battery will be via pins 5 & 6 (GND) of the Ag102.

The Ag102 battery change-over circuit and other alternatives are shown in application note "AN102-1".