# Sizing battery packs for back up operation

Warning

- Verify Voltage and current ratings before powering the unit.

- If the main fuse needs to be replaced, remove power from the unit before replacing the fuse.

- Only use the recommended fuse amperage rating. Failing to use the proper fuse rating will reduce the device's ability to protect from over voltage and over current.

Power Consumption

Our EChart Flow Computer family is rated at 0.3 Watts of average power consumption. The image below shows the Current consumption of an EChart unit against the Voltage supplied to the unit.

Current Consupmtion VS. Voltage
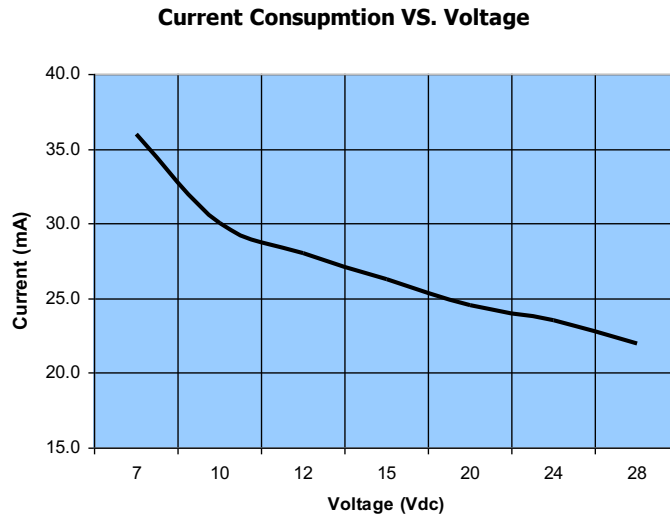
Calculating Battery Needs

Based on the power consumption shown above, it is possible to determine the size of the battery needed to support the flow computer for a known period of time.

For example, if we want to equip the flow computer with a 12 V backup battery that will keep the system operating for two weeks (336 Hours), the average current needed will be:

$$i = \frac{Power}{Voltage} = \frac{0.3W}{12V} = 0.025A$$

For one hour of operation at 12V the flow computer will need 0.025 Ah, thus, for our two weeks target:

$$Ah = A/h \times hours = 0.025A \times 336 hours = 8.4Ah$$

We will need a 12V battery with at least 8.4Ah.

Power consumption varies dramatically depending on what else is connected to the flow computer. Here are some considerations:

- □ If there are serial devices polling the flow computer continuously, then the power consumption will be considerably higher. In this case it is better to measure the average current draw directly in order to calculate the power requirements.
- □ Additional I/O has to be taken into account when calculating power needs. Switch outputs, relays, pulse outputs and Analog Outputs add to the overall system requirements.
- □ New battery technologies have protection circuits that will cut off power before the battery is completely depleted leaving you with only 80% or 90% of the original capacity for your use.