

Explanation of Voltage, Current, and kVA ratings for multi-output supplies

A basic AC hipot rating is like that of the PFT-503CM from HVI: 0 – 50 kVac @ 3 kVA, 60 mAac. It is rated for 0 – 50 kVac voltage output and can deliver up to 3 kVA of power at full voltage. That equates to 60 mAac output current. The 60 mAac of current can be output from the hipot at any output voltage setting from 0 – 50 kVac. Same with a DC hipot that may be rated for 80 kVdc @ 10 mAdc, capable of providing up to 10 mAdc current to a load with up to 80 kVdc applied across it. In both cases, they are *constant current* instruments: one current rating throughout the entire voltage range.

Many AC hipots have two or more output voltage settings, whether via two bushing outputs or one cable with a transformer tap selector switch, possibly to series or parallel two windings. The intent is to offer two different voltage range outputs both rated for the full kVA/power of the test set, usually for versatility to test multiple loads requiring different voltage and current ratings.

To calculate the AC current needed, use the following equation:

$$\text{Amps} = 2\pi f CV$$
f = frequency in Hz. *C* = load capacitance in farads *V* = test voltage in volts

Examples of Dual Output Hipot Ratings

ALT-120/60: Two *full kVA* output voltage settings each rated 7 kVA.

Output 1: 0 – 120 kVac @ 7 kVA = 58 mAac

Output 2: 0 – 60 kVac @ 7 kVA = 117 mAac



HPA-100/5010FC3: Two *full kVA* output voltage settings each rated 20 kVA.

Output 1: 0 – 100 kVac @ 20 kVA = 200 mAac

Output 2: 0 – 50 kVac @ 20 kVA = 400 mAac



Don't undersize the hipot

When selecting an AC hipot model, the current draw of the load is dependent upon its capacitance. Know the minimum current (mAac) requirements needed from a hipot **at the test voltage level required.**

Power = VA = Volts x Amps. V and A are inversely proportional. At the same VA (power) rating, if you halve the maximum voltage output, the current rating will double.