



## Power Demands of a System

When installing any new fire, security, CCTV or access control system, one of the first and most important considerations is power demand. Knowing this allows efficient and cost-effective matching of power supply to the system requirements. The same is true when a new device is added to an existing system. Will the system's power supply be able to handle the additional power requirements? The following equation is a helpful tool to determine what the total power demand of a system will be:

$$\text{Power (in Watts)} = \text{Current (in Amps)} \times \text{Voltage (in Volts)}$$

VA is power in watts described for AC systems. 100 VA equals 100 Watts.

To determine the power requirements for a system, add the total AMPS required by each device in the installation and multiply by the Voltage

### EXAMPLES:

1. Given a relay coil with a resistance of 300 Ohms and an Activation Voltage of 12 Volts, how much current is needed?

Divide 12 Volts by 300 Ohms. This equals .04 AMPS, or 40 milliamps.

*NOTE:* 1000 milliamps equals 1 amp.

2. Given a device that draws a 350 milliamp current at 12 volts, what is the power requirement of the system?

Multiply .35 AMPS by 12 to get 4.2 Watts.

3. Given a 24VDC system with 5 devices that draw 100 Milliamps each, and one device that draws 1 AMP, what is the total power demand of the system?

In this case, five devices at .1 AMPS each (100 milliamps) plus one device at 1 AMP equals .1+.1+.1+.1+.1 + 1.0, which is equal to 1.5 AMPS. Multiplied by 24Volts, the total power demand of the system is 36VA, or 36 Watts.