# Key Specifications For An Electronic Load

Many design and manufacturing engineers consider an electronic load a luxury device. In general, **electronic devices are tested with a static load**, which is often no more than a simple resistor. Outputs that are more versatile require testing under capacitive or inductive environments, which are still very straightforward to implement. Products with complex outputs are often tested against their counterparts (known as the “standard”). For instance, a POTS (plain old telephone system) may be tested with a generator that emulates the phone company system. However, this latter setup can often be expensive. Although it is usually a requirement in the design department, the manufacturing floor cannot often afford multiple test units to establish multiple manufacturing lines.

Design engineering can also suffer by having to rely on using the counterpart system. All is fine if the design unit works, but if communications fails, localizing the problem may be difficult. Does the problem lie in a mismatch of the voltages or impedances at the connection point? Or, does the problem lie in the circuitry that generates the protocol signal? Or, perhaps the problem lies in a fault in the standard itself? These types of problems can be addressed by using an electronic load.

**Electronic loads emulate the functions of a resistor, capacitor, and/or inductor**. It can present any complex impedance desired to the UUT. The automated versions of electronic loads have test connections (modern connections are USB and Ethernet) which can be variably adjusted through a computer test routine.

**There are two benefits to using electronic loads** in place of actual resistors or complex standards. The first is that it is more versatile than the resistors and other discrete components. You do not need to keep reinserting components to change the impedance, only to make an adjustment on the controls or at the computer. In addition, the electronic load focuses on the electronic portion of the test. If there is a failure, then the engineer can quickly determine that the problem is at the connection. In addition, electronic loads, though more expensive than a set of discreet components, are usually monumentally less expensive than complex standards. The manufacturing floor can usually afford to get as many electronic loads as they desire.

**If you decide to procure an electronic load,** choose the specifications **in the same way as you would for a discrete component**. Besides checking the range of impedance and the ability for automation, electronic loads must also match the frequency requirements of the product. It must also be able to handle the output power. Finally, for test floor applications, consider choosing a quick install connector mate.

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