

## Drive Termination - Active vs. Passive

Both physical ends of a SCSI bus must be terminated. There are two types of termination, active and passive. Depending on whether you are using a Python, Peregrine or Scorpion OAT drive determines what type of termination is used and how it is set.

Communications along a SCSI bus is conducted via electrical pulses. When a signal reaches the end of a nonterminated bus, it reaches open air. Air has an exceptionally high impedance, thus causing the signal to reflect back into the bus creating an echo effect. Echo noise in the line will cause significant data errors. In order to prevent this, terminators are placed at both physical ends of the SCSI bus. These terminators produce an impedance, which matches that of the cable. The presence of matching impedance effectively eliminates signal echo.

Passive termination utilizes a terminating resistor pack which reside on the bus to minimize reflections at the end of the cable. The terminator does not regulate the power for termination but relies on the interface card to provide consistent power. A resistor (passively) converts the supplied (+5 volts) to a corresponding amount of impedance. If there is a fluctuation in the voltage supplied to it, the resistor will consequently send a fluctuation in impedance. A passive terminator simply provides an impedance that is close to the impedance of the cable. If the impedance is not relatively constant, it is likely that data errors will occur.

Active termination works to control the impedance at the end of the SCSI bus by using a voltage regulator, not just the power supplied by the interface card. Because it is active, regulating the power that it gets from the interface card, active termination is more stable than passive termination. A voltage regulator has the ability to actively maintain a constant amount of impedance regardless of fluctuations in the power supplied to it. Although passive termination is suitable for a standard SCSI1, or SCSI-2, active termination was designed for use with a Fast SCSI-2 (10 MHz) bus.

### **Peregrine and Scorpion Family**

Active termination is used by the Peregrine and Scorpion family of DAT drives (identified by firmware: 5.xx for Peregrine, 6xxx for Scorpion and 7xxx for Scorpion 24 drives). Termination is enabled by installing a jumper shunt over pins 11 and 12 on the Peregrine and Scorpion drives.

### **Python Family**

Passive termination is used by the Python DAT drive (drives using 2.xx, 3.xx, or 4.xx firmware). The drive is terminated by two eleven (11) pin passive terminating resistor packs which consist of 220 ohms (+ or -5%) to TEMPWR and 330 ohms (+ or -5%) to GROUND.