

## **Expanded instructions for HP programmable attenuator, model 33321H**

To use the HP model 33321H programmable attenuator, you need a regulated, filtered power supply to provide 24 volts DC.

Connect the POSITIVE (+) lead to terminal # 4, and leave it connected . If you make an error and connect negative (-) to this lead, it probably will not do damage, as these units provide some reverse polarity protection, but the unit will of course not operate if polarity is incorrect . Again, this unit has common POSITIVE (+), not common negative!

Terms: When we say to pulse, we mean to apply voltage only for a moment. Do not leave voltage supplied to the (-) terminals.

This may easily be accomplished by putting a SPST (single pole, single throw), MOMENTARY, normally open switch in series with the (-) supply wire. This is basically the same type of switch you would use on a doorbell. It is closed only as long as you hold it closed.

To switch IN the 10 db attenuator, PULSE 24 volts DC (-) to pin # 1.

The 10 db will stay active until you remove it by pulsing pin # 2 with 24 volts dc (-).

To switch IN the 20 db attenuator, PULSE 24 volts DC (-) to pin # 3.

The 20 db will stay active until you remove it by pulsing pin # 5 with 24 volts dc (-).

To switch IN the 40 db attenuator, PULSE 24 volts DC (-) to pin # 6.

The 40 db will stay active until you remove it by pulsing pin # 7 with 24 volts dc (-).

If all three attenuators are switched in, you will get the total of the three, or 10 + 20 + 40, or 70 db total.

NEVER exceed 2 watts of power through this attenuator. If you do, you will burn it out.