

# Build a 12V-15V supply tester

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Here's a project that has proved invaluable when checking DC power supplies for current capacity and regulation.

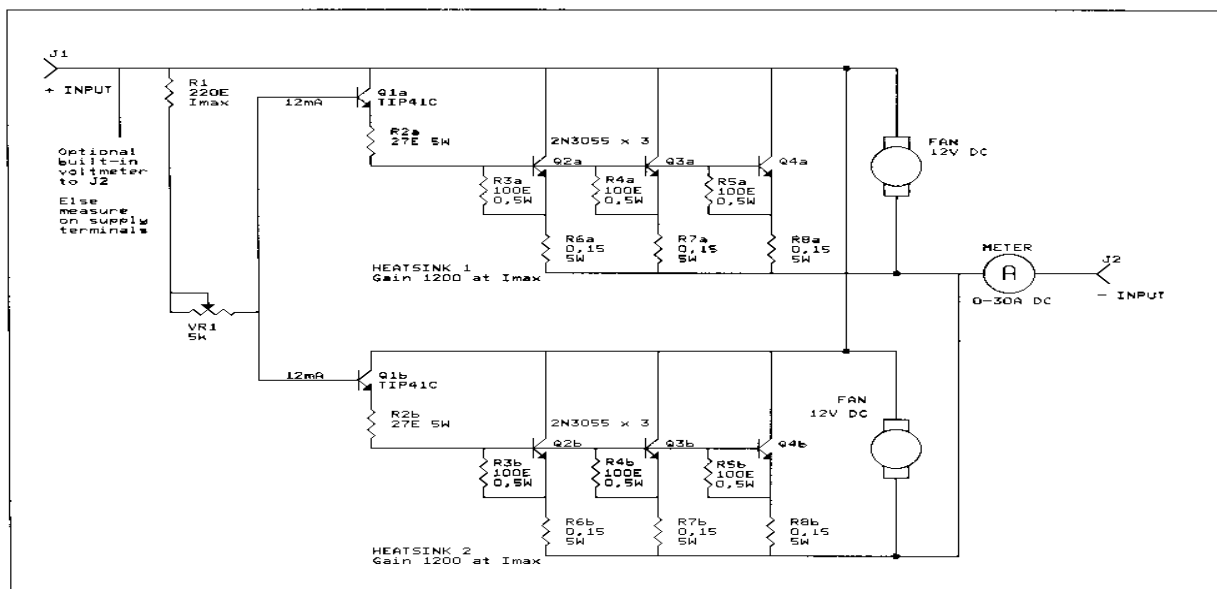
It basically is a controlled current sink which can be manually adjusted to check power supply or battery capacity up to a maximum of 28 Amps at 12-14V DC.

This can of course not be done indefinitely as there will be considerable heat dissipation in the unit. At 20A and say, 12V some 240W of heat is generated and considerable heat sinking is required for the transistors carrying that current. Additionally built-in fans can augment cooling for long-term tests.

The unit shown could safely do 5 minutes at 20A and that is more than plenty for any test. Generally a supply regulation test takes less than half a minute.



## DESIGN



There are two banks of 3 power transistors driven by two emitter-follower driver/control transistors and a common control potentiometer. The current gain for each bank is around 1200 when using 2N3055 transistors and with an input current of say, 10mA we get 24A total through the ammeter to ground. The fans are shown as permanently connected but the author has a small front panel switch to bring them in when necessary. The resistors R3,4,5 leak away leakage currents that can cause thermal runaway and R6,7,8 equalize current distribution.

**CONSTRUCTION** Building the unit is a matter of using what you can find and is mainly a mechanical project. All items were flea market purchases and stripped equipment parts collected over the years.

Two heat sinks were bolted together side by side in the centre and the whole heat sink unit suspended by four 5mm nylon bolts through the enclosure sides for isolation, so that all transistors could be mounted directly without collector isolation.

Two ex-computer fans were fashioned into the rear of the box and orientated for extraction to the outside. The enclosure had various orifices for letting air in.

**NOTE:** The connections to the unit and the supply under test can cause voltage drops at high currents. True regulation figures are best noted on a digital voltmeter connected directly to the source terminals. Instead of manual control, a waveform can be superimposed onto the potentiometer circuit and the unit converted to a battery- or supply exerciser.

