

### 6.3.5 Loop Gain Measurement

Once the power stage has been measured, the feedback compensation is designed, and the loop is closed around the system. A very special technique is then used to inject the test signal into the closed loop system, as shown in Fig. 6.12.

The test voltage is injected *differentially* across a 20 ohm resistor via a transformer isolator as shown. With this technique, the loop is kept *closed* in order to regulate the output voltage, but the voltage impressed across the resistor allows the measurement of the *open* loop gain. In effect, we are electronically breaking the loop, forcing a difference between the loop input and output signals on either side of the resistor.

Loop measurement is a very powerful design and diagnostic tool. It allows the compensation design to be verified and adjusted for any nonidealities that may arise in the system. It is also a very sensitive measure of almost all of the components in the power system, and can be used to verify that all of the components are correct. The loop measurement technique is discussed in detail in the rest of this chapter.

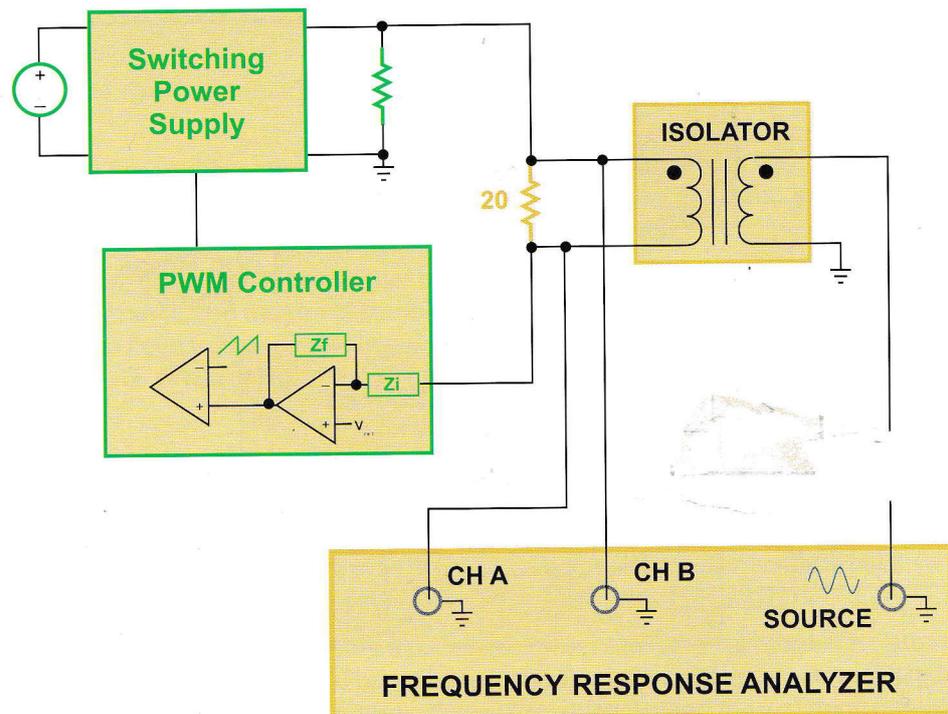


Figure 6.12: Setup for loop gain measurements.