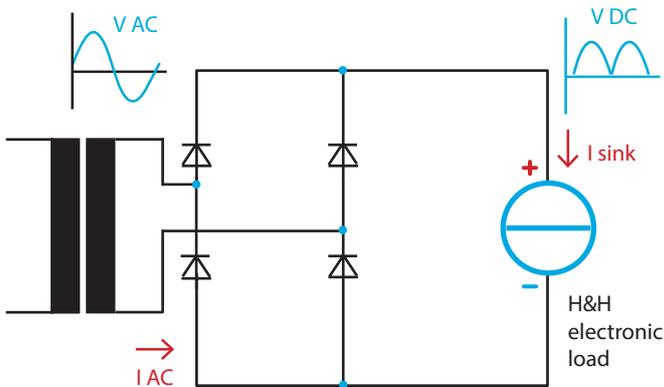


Loading of an AC Voltage with a DC Load

Sometimes there is the requirement to load an AC source .
When there is no special AC load available a DC load with a rectifier at the load input can be used.

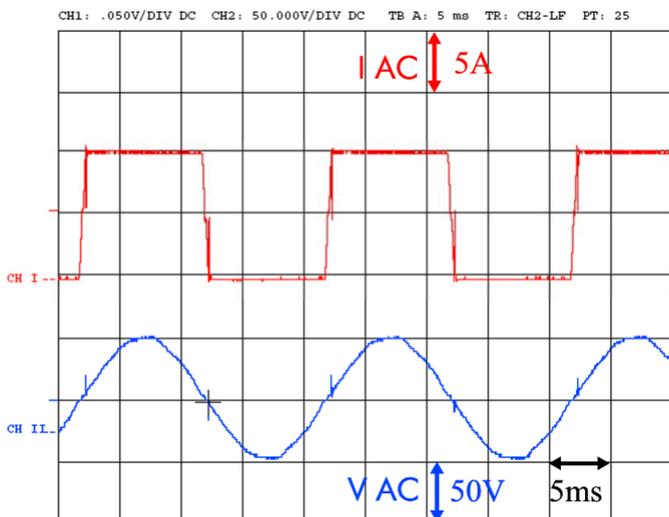


Waveform

It is important to know that the loading of the DUT has different waveforms depending on the selected mode. When in DC mode a constant current of 1 A is set then the AC current is 1 A, too. The waveform, however, is rectangular.

Example for Constant Current Mode

After the input voltage has crossed the zero line and is getting higher than the min. input voltage of the electronic load the current will be regulated to the set value and keeps constant over the duration of the half sine wave. When the AC voltage drops to zero volt again the current will drop to 0. The result is that the AC source is loaded with a rectangular current. The current display of the electronic load shows the RMS value of the input current because of the rectangular waveform.



Example for Constant Resistance Mode

In resistance mode the waveform of the load current depends on the waveform of the input voltage. This means that the current has the same waveform as the rectified input voltage. So the load current for the DUT is close to a sine wave. Fluctuations on the input voltage will cause variations on the load current because of the resistance mode. Distortion on the input voltage will also be seen on the load current. The current display of the electronic load measures the mean value. Therefore the RMS value is factor 1.11 higher because of the waveform.

Note

When loading transformers instability of the current can occur because of the leakage inductance. In this case a capacitor of a few μF can be connected to the load input to stabilize the system.

