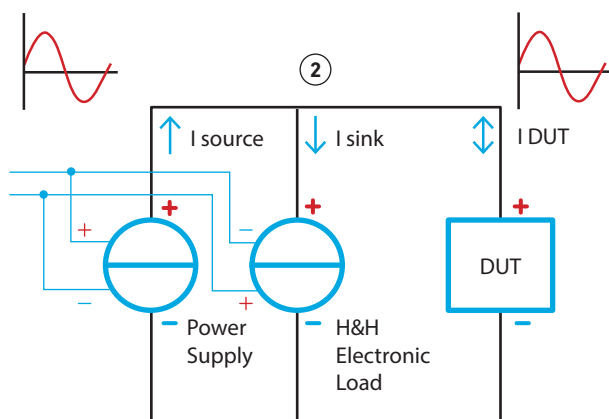
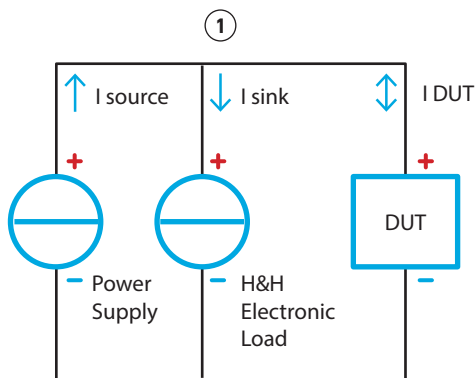


Application Note #1

Source-Sink with Power Supply and Electronic Load

A power supply and an H&H electronic load, e.g. a PLI series device, can be configured as source-sink which is able to deliver and to absorb current.



Applications

Test of accumulators, capacitors etc.

Schematic

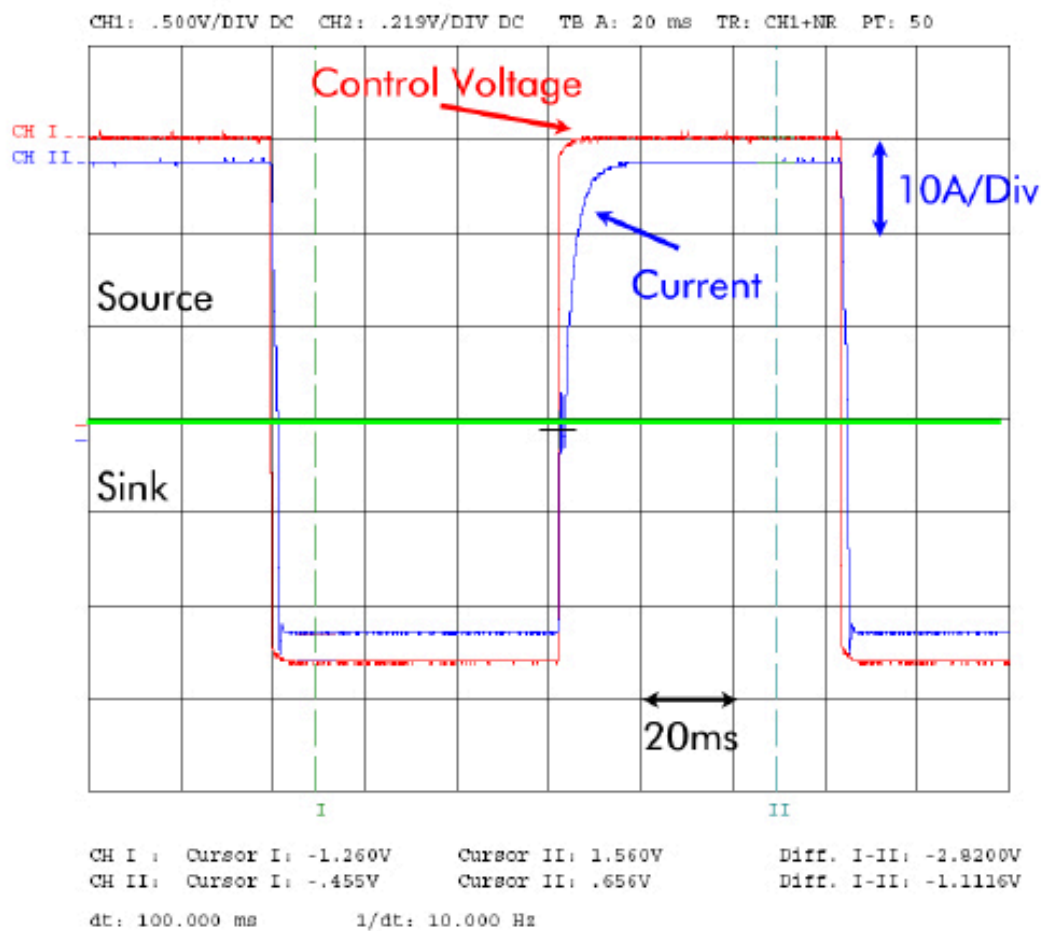
The power supply and the electronic load work in constant current mode and are controlled alternately. When the power supply is off the electronic load is on and vice versa. This can be made by programming or by analog control. (Picture 1)

Analog Control

For analog control the analog control inputs of the power supply and the electronic load are connected in parallel. The control input of the load is thereby reversed in polarity. When the control signal is positive the power supply is controlled as current source and supplies the current I source to the DUT. When the control voltage becomes negative the electronic load takes the current I sink from the DUT. (Picture 2)



It is important that the power supply is protected against the negative control voltage at the analog control input. For battery testing the voltage setting of the power supply can be used to set the maximum charging voltage. Setting of the undervoltage protection at the electronic load can be used to limit the discharging voltage. The function was tested with an electronic load of PLI Series and a power supply from Delta Elektronika.



Scaling

When the power supply and the electronic load have different current ranges then this has to be taken into account with the control voltage. Only when the power supply and the electronic load have the same current range and the same control voltage then it is possible to produce the same absolute current with the control voltage reversed.

Dynamic

The possible dynamic depends mainly on the speed of the power supply.

Example

Power supply Delta Elektronika SM15-200D (15 V / 200 A)
 Electronic Load PLI4806 (60 V / 450 A)

Settings:	Source current:	27 A
	Sink current:	23 A
	DUT:	lead-acid battery
		6 V / 140 Ah
	Frequency:	10 Hz