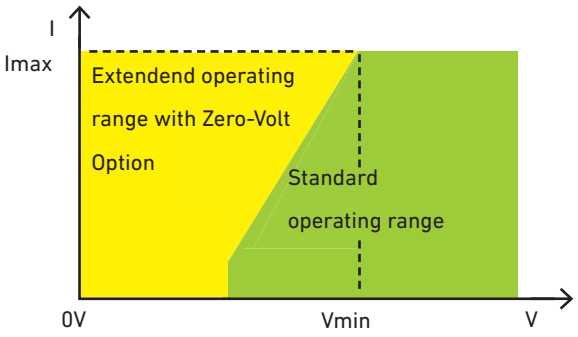
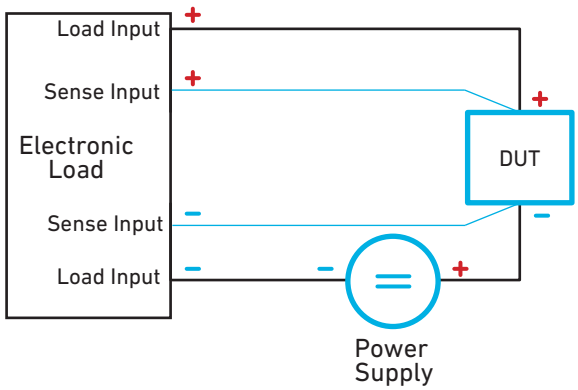
Höcherl & Hackl
The electronic load

Application Note #2

# Loading of low input voltages with an external auxiliary power supply

An external power supply can be used as replacement for the Zero Volt Option.
It extends the operating range of the Electronic Load to very low input voltages which otherwise could no be loaded because they are below the minimum operating voltage.
In addition, the voltage drop on the load cables can be compensated.




## Applications

- loading of single accumulator cells
- test of full cells
- measurement of characteristic curves

## Schematic

The power supply is con-nected in series to the DUT like shown in the schematic.
To get a correct voltage reading in the load display the sense lines of the load are connected to the DUT's output.
This is also necessary to get correct settings in the modes constant voltage, constant resistance and constant power.
Furthermore it is ensured that the DUT is protected against reversed polarity coming from the power supply.

## Requirements to the power supply

The output voltage of the power supply must not exceed 3V and must be able to supply the maximum load current.
Distortion on the output voltage will also appear in the load current.

## Power Derating

Because of the fact that the Electronic Load does not measure the additional voltage coming from the external power supply the corresponding higher power is not taken into account.
Therefore the power dissipation of the Electronic Load has to be reduced by:
**Power Supply Voltage · Load Current Setting**

The additional power from the external power supply can not be measured by the power limitation of the Electronic Load.

## Settings at the Electronic Load

When operating at very low input voltages the undervoltage protection must be set to 0 V (see user manual).

## Notes

Contrary to the integrated Zero Volt Option installed by H&H small voltages can be achieved only with the accuracy of the undervoltage protection setting.
At the minimum voltage level instabilities (oscillations) can occur.

Additionally consider that wrong polarity of the external power supply or the DUT can cause high current that can damage the power supply or the DUT.