Booster pack for MightyWatt

Board revision: 2.5
Firmware version: 2.5.3 (main), 2.3.1 (calibration)
Windows control program version: 1.2.3.0
Guide revision: A (2016-01-29)

Warning! The resistor can get very hot during operation. At full rated power, the surface temperature can be as high as 300 °C!

What's in the Booster pack

1) 1 × power resistor.
2) 2 × leads, each 25 cm long, silicone elastomer insulated, rated 180 ºC, cross-section 1.5 mm^2. Attached to the power resistor by M4 screws.
3) 1× Wago 224-201 pluggable terminal block.

Principle of operation

The Booster pack is intended to increase the maximum power dissipation with MightyWatt. How much power the resistor dissipates depends on the current and the resistor value. The maximum power dissipation is marked on the resistor and is valid for 25 ºC of ambient temperature. The maximum current, I_{max}, is calculated from equation (1), where P is the rated power and R is the resistance.

$$I_{max} = \sqrt{\frac{P}{R}} \quad (1)$$

For example, if the resistor is rated 100 W, its resistance is 1 Ω, then the maximum current is (2).

$$I_{max} = \sqrt{\frac{P}{R}} = \sqrt{\frac{100}{1}} = 10A \quad (2)$$

The resistor will drop voltage V, according to Ohm's law (3), where R is the resistor value and I is the actual current through the resistor.

$$V = RI \quad (3)$$

How to use it

1. Connect one of the leads from the power resistor to MightyWatt PWR+ terminal.
2. Connect the other lead from the power resistor to the device under test (DUT). You can use the supplied terminal block to interface the lead to another lead coming from DUT. The supplied terminal block accepts cables with cross-section up to 2.5 mm^2.

3. Connect DUT negative lead to the PWR- terminal on MightyWatt. In grounded DUTs, always connect the power resistor to the positive terminal to keep the ground connection intact (Figure 1).
4. Place the power resistor away from any heat-sensitive equipment. Make sure nothing, including the leads and terminal block, touches its surface. The surface temperature can reach 300 °C. New power resistors may smell when heated so work in a well-ventilated area.

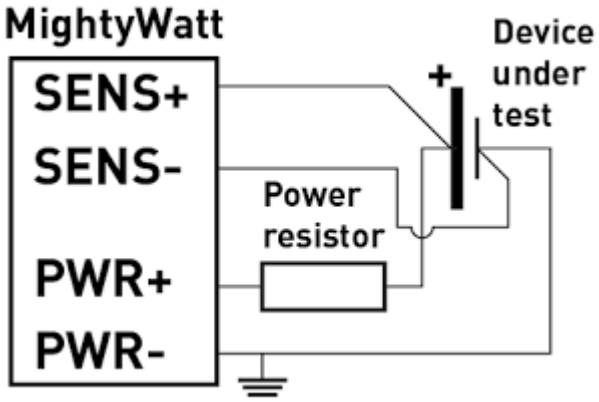

Figure 1: Connection of power resistor to MightyWatt and DUT.

5. It is recommended that you use 4-wire mode to measure the actual voltage at DUT. If you use 2-wire mode, then you are ready to go.
6. In 4-wire mode, in the control program, select **Advanced** → **Series resistance** and type the value of the power resistor. This will allow higher power dissipation than the rated dissipation of the load alone.