

OhmMaster Tutorial (English)

Introduction

OhmMaster is an app for the HP Prime G2 calculator that solves mixed resistor circuits with a voltage or current source. It supports up to 30 resistors, grouping them in parallel or series, and calculates:

- Total equivalent resistance
- Source current and voltage
- Voltage drops, currents, and power for each resistor

This guide walks you through every step, from the welcome screen to interpreting the final results.

1. Welcome Screen

When you launch OhmMaster, a welcome screen appears with the logo and a greeting message. Simply press any key to proceed.

2. Initial Data Entry

You'll see a form with these fields:

Field	Description
Mode	Choose between Normal or Developer mode.
Password (Dev)	Enter the developer password (only in Developer mode).
Source Type	Select source type: Voltage (V) or Current (A).
Source Value	Numeric value for the source (must be > 0 , up to 1000).
No. of Resistors	Number of resistors to analyze (1 to 30).

Validations:

- The source value must be greater than 0 and no more than 1000.
- The resistor count must be an integer between 1 and 30.

- If Developer mode is selected and the password is incorrect, an error will appear.

Use **Retry** to fix mistakes or **Cancel** to exit.

3. Resistor Configuration

For each resistor, you'll enter:

Field	Description
Value (Ω)	Resistance in ohms (must be > 0 and ≤ 100000).
Configuration	Choose Series or Parallel.
Group	For parallel: group number (1 to 10); for series: 0.

- In Normal mode, all values are validated.
 - In Developer mode, you can enter values freely without validation.
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4. Internal Grouping

OhmMaster automatically:

1. Detects and groups resistors in parallel and computes their equivalent resistance.
 2. Includes any series resistors attached to those parallel groups.
 3. Handles pure series resistors separately.
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5. Final Calculations

- **Equivalent resistance:** sums series blocks and computes parallel blocks via reciprocal sums.
- **Total current or voltage:** calculated based on the source type.
- **Total power:** the product of total voltage and current.
- **Per-resistor details:** voltage drop, current, and power for each resistor.

6. Interpreting Results

The results screen shows:

- Source details (voltage or current).
- Equivalent resistance and total power.
- A list of parallel groups with their equivalent resistances.
- Detailed data for each resistor: value, type, voltage drop, current, and power.

7. Practical Examples

- A circuit powered by a voltage source with mixed series/parallel resistors.
- A circuit powered by a current source with mixed resistor groupings.

Use these examples to verify your own calculations.

8. Tips & Troubleshooting

- Do not exceed 30 resistors in a single analysis.
- Avoid assigning the same group number to overlapping parallel sets.
- Use Developer mode for quick tests without validation checks.

Ready to streamline your circuit analysis with OhmMaster!

You can try solving the following circuit:

Purple color indicates the voltage source (or it can also be a current source)

Blue color indicates a series resistor with no group (Group 0)

Dark red color indicates the group (in this case, group 1 as an example)

Yellow color indicates a parallel resistor assigned to group 1

Green color indicates the two resistors that are in series within the parallel group 1

