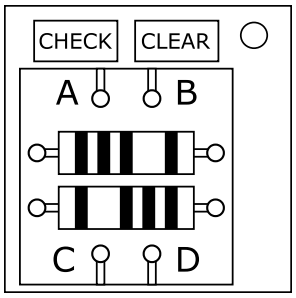
On the Subject of Resistors



"It is easier to resist at the beginning than at the end."
– Leonardo da Vinci, on procrastination

The module contains 2 input pins (**A** and **B**), 2 resistors, and 2 output pins (**C** and **D**). Follow the rules to make the correct connections. To make a connection, click one pin and then another. Press **CLEAR** to remove all connections.

1. Take the first digit of the bomb's serial number (or 0 if there are no digits). The *primary input* is **A** if even, **B** if odd.
2. Take the last digit of the bomb's serial number (or 0 if there are no digits). The *primary output* is **C** if even, **D** if odd.
3. The *target resistance* in Ω is calculated as follows:
    1. Take the first two digits of the bomb's serial number.
       e.g. **2E7X19** → **27**, **ZJ3MLN** → **3**, **ABCDEF** → **0**
    2. For each battery present on the bomb (up to a max of 6), multiply by 10.
4. Connect the primary input to the primary output, with the target resistance.

   Note: all resistance values are checked to be within 5% accuracy.
5. If a lit **FRK** indicator is present, also connect the primary input to the other (secondary) output, with the target resistance.

   Note: this means C and D will also be connected with some non-infinite resistance. This value is not checked as part of your solution, and so can be anything.
6. If step 5 did not apply and at least 1 *D cell battery* is present, connect the secondary input to the secondary output, with 0Ω resistance.
7. Press **CHECK** when finished to check the solution. All input/output pairs not mentioned should be disconnected.

Consult the following page to learn how to produce the target resistance.

Producing resistance

An input and output can be connected via one of five paths.

1. **No resistors,** 0Ω of resistance.
2. **Top resistor.**
3. **Bottom resistor.**
4. **Both resistors in serial.**
   i.e. input → top resistor → bottom resistor → output
   The combined resistance is the sum of the individual resistances.
5. **Both resistors in parallel.**
   i.e. input → top resistor, input → bottom resistor,
   top resistor → output, bottom resistor → output
   The combined resistance is less than either of the individual resistances.

For the curious... it's: 1 / (1 / (top resistance) + 1 / (bottom resistance))
Don't worry, this won't be on the test!

Reading resistors

Each resistor has a sequence of three colored bands, indicating a two-digit number and a multiplier. A fourth band indicates a tolerance value (not used). The fourth band is separated by a gap from the first three. Resistors can be rotated; take care to read the bands in the correct direction.

Color	First Band	Second Band	Multiplier
Black	0	0	1Ω
Brown	1	1	10Ω
Red	2	2	100Ω
Orange	3	3	1,000Ω
Yellow	4	4	10,000Ω
Green	5	5	100,000Ω
Blue	6	6	1,000,000Ω
Violet	7	7	10,000,000Ω
Gray	8	8	—
White	9	9	—
Gold	—	—	0.1Ω
Silver	—	—	0.01Ω

For example, **Green Violet Yellow** indicates 57 × 10,000Ω = 570,000Ω.