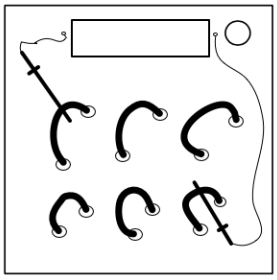
On the Subject of Probing



Not that kind of probing...

This modules has six wires and two crocodile clips. Each wire carries three alternating currents (AKA 3-phase current), each phase a different frequency. The possible frequencies are 10Hz, 22Hz, 50Hz and 60Hz.

In order to probe the circuit you need to connect the red clip to a wire and the blue clip to a different wire. Common frequencies in both wires will cancel out and the display will show the remaining frequencies, in order from lowest to highest.

If the red and white wire contains a 50Hz current connect the red clip to the wire with the frequencies 10Hz, 22Hz and 60Hz, otherwise if the red and yellow wire does not contain a 10Hz current connect the red clip to the wire with the frequencies 22Hz, 50Hz and 60Hz, otherwise connect the red clip to the wire with the frequences 10Hz, 22Hz and 50Hz.

If the yellow and red wire contains a 10Hz current connect the blue clip to the wire with the frequencies 10Hz, 50Hz and 60Hz otherwise connect the blue clip to the wire that contains the frequencies 10Hz, 22Hz and 50Hz.

Leave the clips connected for at least six seconds to defuse. Leaving the incorrect wires connected for more than six seconds will cause a strike.

NOTE: Be aware that each time a strike is gained the frequencies in each wire may change.

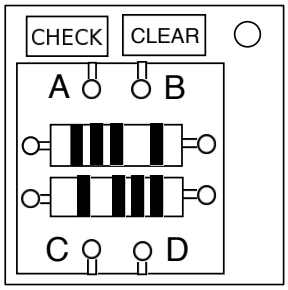
Wires are numbered in reading order in two rows.
Wire 1 is the Red and White wire.
Wire 5 is the Red and Yellow wire.

Frequencies are listed by their first digit. (i.e. 10 = 1, 22 = 2, 50 = 5, 60 = 6)
Rules restated by what frequencies are missing rather than what frequencies are there.

If 1 is missing 1, 2, or 6, then Red on wire missing 5, otherwise if 5 is missing 1 then Red on wire #5, otherwise Red on wire missing 6.

If 5 is missing 2, 5, or 6 then Blue on wire missing 2, otherwise Blue on wire missing 6.

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!

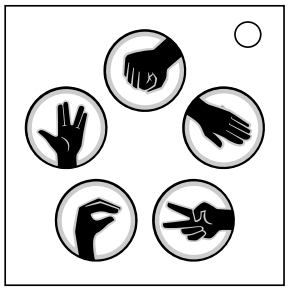
Reading resistors

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.

On the Subject of Rock-Paper-Scissors-Lizard-Spock



Anecdotal evidence suggests that in the game of Rock-Paper-Scissors, players familiar with each other will tie 75 to 80% of the time due to the limited number of outcomes. Rock-Paper-Scissors-Lizard-Spock was created by Internet pioneer Sam Kass as an improvement on the classic game. All hail Sam Kass. Hail.

To disarm this module, determine which of the five icons to press.

First, determine the decoy. If the five icons are arranged in a pentagon, there is no decoy. Otherwise, the decoy is the one that is in the middle of the arrangement or in the middle in a line of three (horizontal, diagonal or vertical).

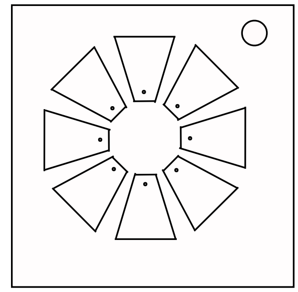
Next, go through the rows of the following table and determine the highest-scoring icon in each row. Stop at the first row in which there's no tie and the highest-scoring icon is not the decoy. Then press the icons on the module that beat this icon. If no row applies, press all icons except the decoy.

Which icon beats which? It's very simple. Scissors cuts paper. Paper covers rock. Rock crushes lizard. Lizard poisons Spock. Spock smashes scissors. Scissors decapitates lizard. Lizard eats paper. Paper disproves Spock. Spock vaporizes rock. And, as it always has, rock crushes scissors.

# of occurrences of:	Rock	Paper	Scissors	Lizard	Spock
serial number letter Skip this row if the serial number contains an X or Y.	R, O	P, A	S, I	L, Z	C, K
port Skip this row if a PS/2 port is present.	RJ-45	Parallel	Serial	DVI-D	Stereo RCA
lit indicator Skip this row if a lit TRN indicator is present.	FRK, FRQ	BOB, IND	CAR, SIG	CLR, NSA	SND, MSA
unlit indicator Skip this row if an unlit TRN indicator is present.	FRK, FRQ	BOB, IND	CAR, SIG	CLR, NSA	SND, MSA
serial number digit	0, 5	3, 6	1, 9	2, 8	4, 7

Rock	is beaten by	Paper, Spock
Paper	is beaten by	Scissors, Lizard
Scissors	is beaten by	Rock, Spock
Lizard	is beaten by	Rock, Scissors
Spock	is beaten by	Paper, Lizard

On the Subject of Round Keypads



I think someone tried to make this module look really cool, but failed.

- The circular keypad contains 8 symbols from the columns below.
- Find the column below that contains the most symbols from the keypad.
- If two or more columns have the most symbols, use the right-most column.
- Press all buttons that have a symbol not present on the correct column.

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Ѧ	Ϙ	Ѽ	¶	ټ	Ӭ
ƛ	Ͽ	Ҩ	Ѣ	Ѣ	҂
Ϟ	Ҩ	Ж	Ѭ	Ͼ	æ
Ѭ	☆	Ԇ	Ж	¶	Ψ
ϗ	ϗ	ƛ	¿	Ѯ	Ҋ
Ͽ	¿	☆	ټ	★	Ω