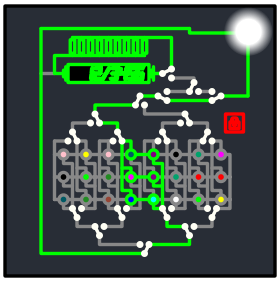
On the Subject of Charge



Note: this module is powered by smoke.
If you let the smoke out, this module stops working.

The module is a electronic circuit. It has four main components: battery, statuslight, discharger, and powergrid. A detailed diagram of the module can be found on page 3.

When the battery charge level is at least 1 J, the display on the battery is activated. This display shows the current and required charge level. This value is indicated in joules (J). Charge the battery to the required level (no more and no less) and connect the battery to the statuslight in order to solve the module.

The powergrid consists of 24 enery sources arranged in three rows of eight columns. Each enery source is represented by a diode that cyclically switches between two colors. Use the table on page 2 to determine the power of each energy source. The enery source can change the colors with which it flashes, but it will never change its activity and power.

The module has a short circuit protection system. On the right side of the module, you can see the lock indicator. If it is off (gray) then you can use the switches, otherwise, if it is red, you will not be able to use the switches. A locking occurs when the battery starts charging or discharging and lasts for exactly one second. After the end of the locking, switches #1 and #3 will change to state 2 (see next pages for switches information).

The battery is charged by connecting it to the powergrid. Charging is only permitted under the following conditions:

- The sum of the power of the connected energy sources is greater than zero.
- On each row the number of connected active energy sources is odd or zero.
- Exactly the same set of enery sources has not been used since the last discharge.

If any of the conditions are not met, the battery will be automatically disconnected from the powergrid and you will receive a strike. Since after the start of charging the battery, the locking mode will turn on, and exactly one second later the battery will be automatically disconnected from the powergrid, the battery charge level will be increased by the number of joules (J) equal to the total number of watts (W) of connected energy sources.

The battery is discharged by connecting it to the discharger. The battery will be **fully** discharged in one second.

Energy sources' power

For each row of the table, if the condition is true, then the enery sources in the "True colors" column are active and have a power equal to the value in the "Power" column, and the enery sources in the "False colors" column are inactive and have a power equal to 0 W. Otherwise, if the condition is false, then the enery sources in the "True colors" column are inactive and have a power of 0 W, and the enery sources in the "False colors" column are active and have a power equal to the value in the "Power" column.

Power	True colors	False colors	Condition
5 W	Black/Yellow	Magenta/Red	** Last digit of any 2FA code is even
11 W	Magenta/Blue	Red/White	At least 2 indicators
13 W	Magenta/Yellow	Magenta/White	Starting time is less than 59 minutes
7 W	Yellow/Red	Red/Blue	Exactly 3 digits in serial number
3 W	White/Yellow	Red/Black	** The number of solved modules greater than 13
17 W	Blue/Yellow	Blue/Black	Has rca port
2 W	Magenta/Black	Blue/White	** No strikes

** When a condition changes its validity, the colors of the energy sources of this row are swapped so that the energy sources do not change their activity and power.

Switches

Switches are the only element of the module that you can interact with. To interact with a switch, press it. If locking is not enabled, the switch will change its state. Let's designate the states of the switch as state 1 (when the green plug is connected to the red one) and as state 2 (when the green plug is connected to the blue one).

- Switch #1 is used to discharge the battery (state 1).
- Switch #2 is used to select the component connected to the battery: statuslight (state 1) or powergrid (state 2).
- Switch #3 is used to select the component connected to the powergrid: battery (state 1) or statuslight (state 2).
- Switch #4 is used to select the component connected to the statuslight: powergrid (state 1) or battery (state 2).
- The rest of the switches are used to select the energy sources to be connected.

Energy sources

Energy sources must be connected in a strict order: only the positive pole of the battery can be connected to the left and top (plus sign in the diagram), and only negative pole to the right and bottom (minus sign in the diagram). To make sure that the switches' states you choose connects the set of energy sources you need, you can connect the statuslight to the powergrid. If the statuslight turns white and the power sources you need have a green outline, then you have selected the correct state of the switches. **Note:** when connecting statuslight, the second and third conditions from the page 1 are not checked.

Module diagram