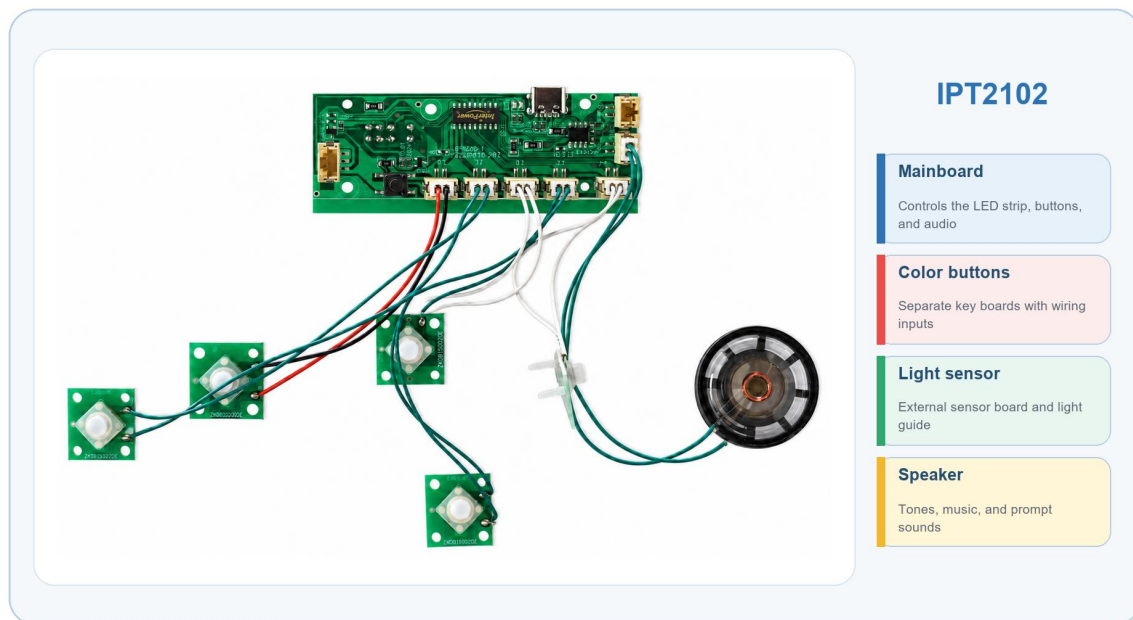




Product Introduction Manual • Illustrated Edition

IPT2102 LED Strip Match Game Toy PCBA

Components • Positions • Gameplay • Assembly



IPT2102

Mainboard

Controls the LED strip, buttons, and audio

Color buttons

Separate key boards with wiring inputs

Light sensor

External sensor board and light guide

Speaker

Tones, music, and prompt sounds

LED strip interaction | Color buttons | Piano / game modes | Audio feedback

V1.0 Illustrated Guide

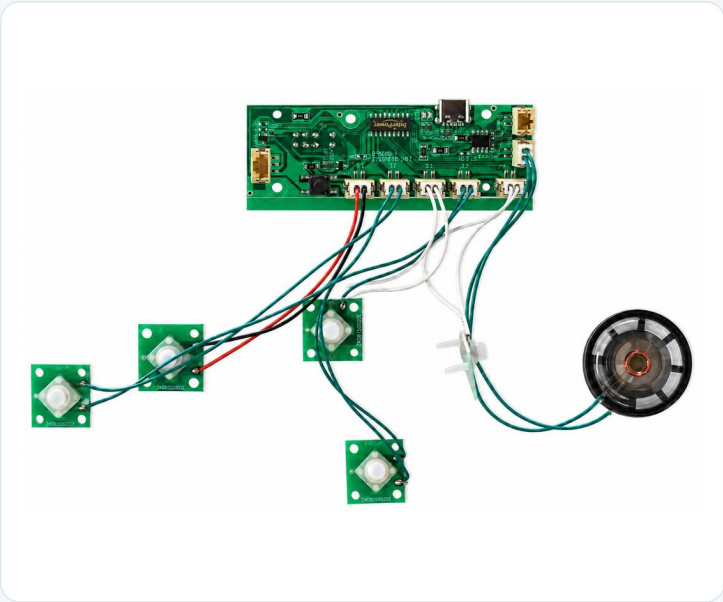
Covers PCBA components, A/OFF/B positions, two play modes, assembly, and inspection.

1. PCBA Components at a Glance

Identify the mainboard, color-button boards, light-sensor board, speaker, and wiring harness before product assembly.

PCBA Components and Wiring

Identify the major assemblies before installation



1

Mainboard

Connects the buttons, LED strip, speaker, and light sensor.

2

Button boards

Color-button boards connect to the mainboard through the wiring harness.

3

Light sensor

Keep the sensing face outward and the light guide unobstructed.

4

Speaker and wiring

Keep the sound outlet open and provide strain relief for the wires.

Figure 1. IPT2102 PCBA assembly: mainboard, button boards, light sensor, speaker, and wiring harness

Core components	User inputs	Lighting output	Modes
Mainboard / sensor / speaker	Color buttons / A-OFF-B switch	150 cm LED strip (product reference)	Piano / game

2. Mainboard Rear Side and Switch Positions

Mainboard Rear Side and A / OFF / B Switch

The switch selects the operating mode; the light sensor is mounted separately

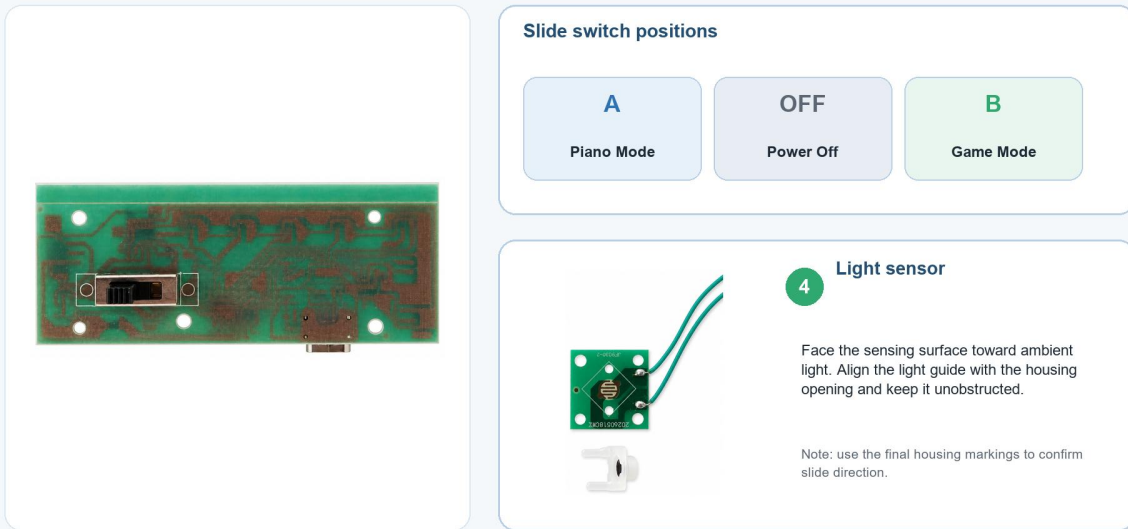


Figure 2. Mainboard rear side, A/OFF/B switch, and light-sensor assembly

Switch positions

A = Piano Mode; OFF = power off; B = Game Mode. Use the final housing markings to confirm slide direction.

3. Color Buttons and Mode Operation

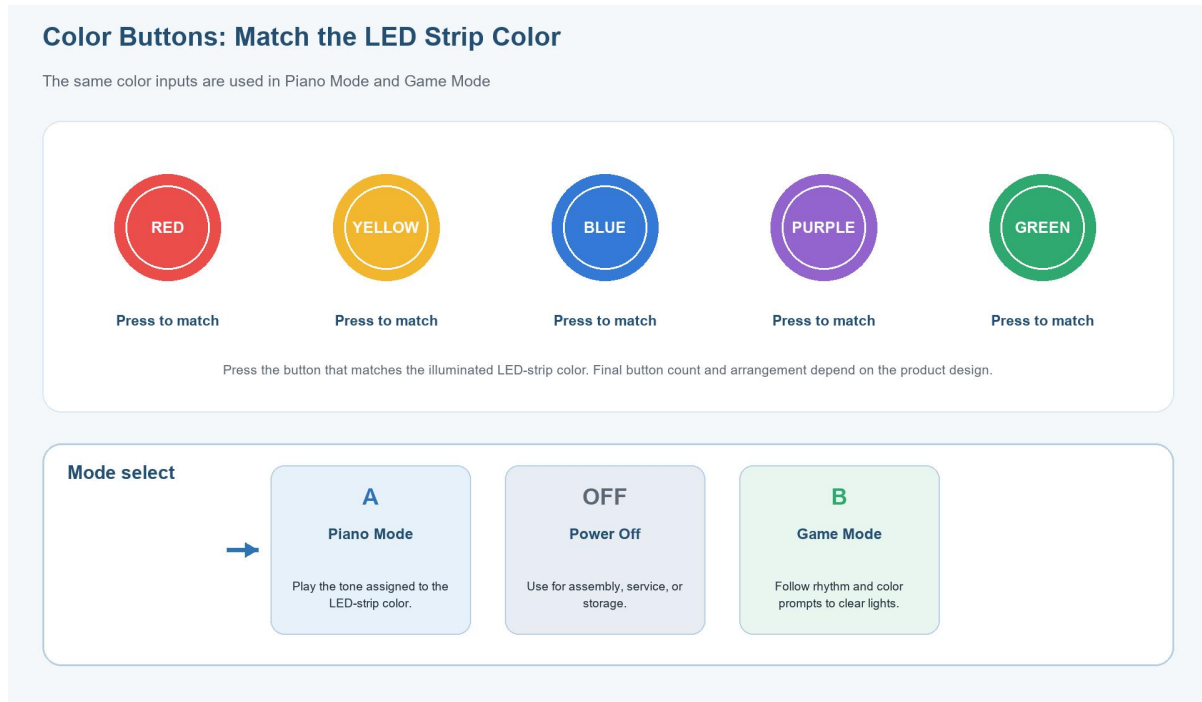


Figure 3. Color-button inputs and A/OFF/B mode selection

Operation note

Before power-up, check the wiring harness and LED-strip connection. During operation, press the button matching the illuminated LED-strip color.

4. Dual-Mode Gameplay



Figure 4. Operating flows for Piano Mode and Game Mode

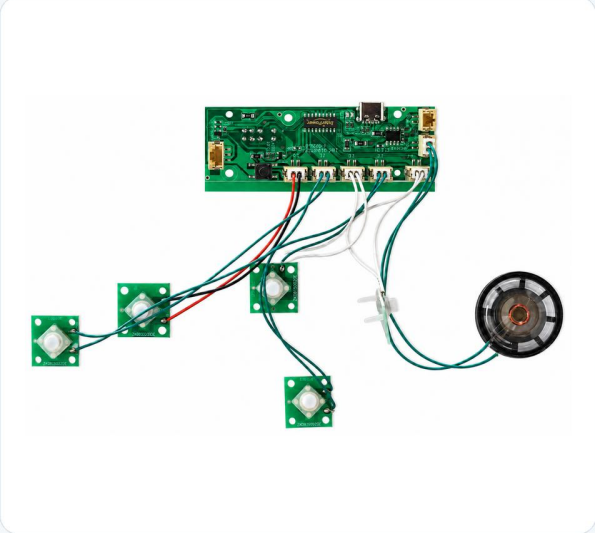
In one sentence

In position A, play tones by matching LED-strip colors; in position B, follow the music rhythm and color prompts to clear the lights.

5. Product Assembly and First-Article Verification

Assembly: Mounting, Wiring, Sensing, Audio, and LED Strip

Disconnect power first, then verify switch, buttons, modes, lighting, and audio



Light sensor

Face the sensor outward, align the light guide with the opening, and keep labels, wires, and housing parts clear.

- 1 Set the switch to OFF and disconnect power.
- 2 Secure the mainboard and button boards without bending the PCB or holding a key down.
- 3 Route and strain-relieve wires; keep the speaker outlet open.
- 4 Use hook-and-loop tape to mount the LED strip on a suitable surface, then retest the product.

Figure 5. Assembly notes for the mainboard, button boards, light sensor, speaker, and LED strip

Assembly warning

Power off before assembly or service. Do not reverse the supply, pinch wires, hold buttons down, or obstruct the light sensor.

6. Inspection and Troubleshooting

6.1 Functional Test Sequence

1 Switch	2 Buttons	3 Modes	4 Light / sound	5 Full cycle
A / OFF / B	Press each color button	A piano / B game	LED-strip colors and audio	Rhythm, detection, and clearing feedback

6.2 Common Issues

No power Check the supply, finished-product battery, connectors, solder joints, and OFF position.	LED strip fault Check the LED-strip connection, connector orientation, wiring, and firmware configuration.
Button fault Retest outside the housing; check button-cap centering, travel, return, and wiring.	No sound Check speaker wires, solder joints, the sound outlet, and firmware volume settings.

6.3 Production Acceptance Notes

- Retest the switch, buttons, LED strip, audio, and both modes at the PCBA, subassembly, and finished-product stages.
- Include low battery, repeated key presses, drop / vibration, temperature / humidity, ESD, harness pull, and LED-strip adhesion in product validation.
- Use the mutually approved specification for supply voltage, interface definitions, test duration, cycle count, and pass / fail timing.

7. Product Reference, Customization & Disclaimer

7.1 Product Reference and Customization

Finished product	Game firmware	Light / sound	Structure / branding
Approx. 26 x 17 x 5 cm; ages 3+; approx. 150 cm LED strip	Modes, rhythm, color detection, difficulty	Color, brightness, animation, tone, volume	Board outline, interfaces, labels, packaging, manual

7.2 Contact

Solution Evaluation / Samples / PCBA Customization

WhatsApp +86 138 2963 2935

WeChat: scan the QR code on the right



WeChat QR Code

7.3 Disclaimer

This manual is a product introduction and technical reference for the IPT2102 toy PCBA. Finished-product dimensions, age guidance, and LED-strip length are taken from the supplied product information.

Components, power design, lighting, audio, rhythm, levels, and button logic may vary by firmware or customer customization. Production shall follow the mutually approved BOM, drawings, firmware, and acceptance specification.

The finished-product manufacturer shall complete electrical, mechanical, toy-safety, EMC, ESD, environmental, reliability, and target-market regulatory validation. The implementing party assumes the risk of unapproved installation, use, or design changes.