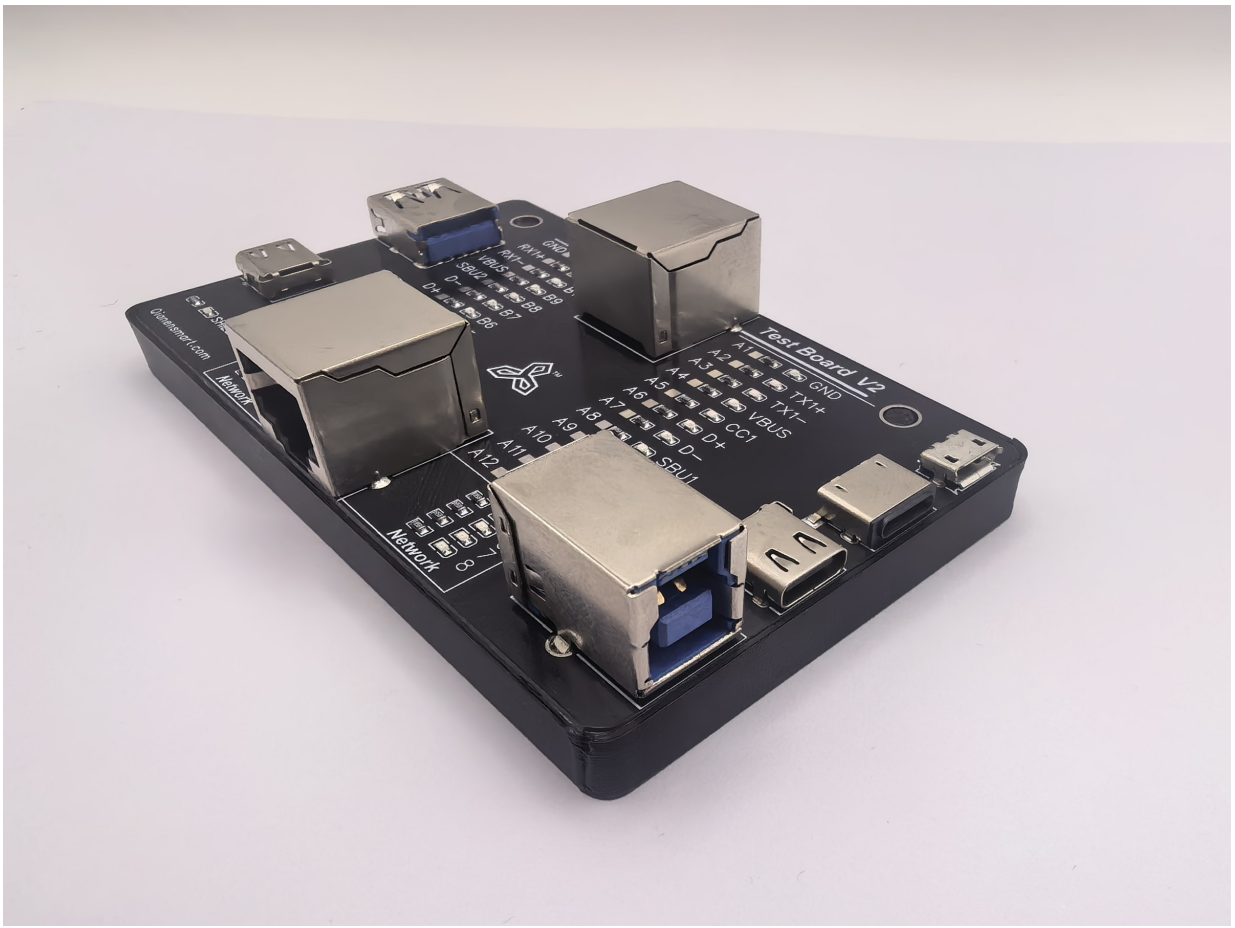
USB 线材通断测试仪

USB Cable Continuity Tester

中英双语使用说明书 · Bilingual User Guide



一根线，两端接入对应接口。
通过指示灯检查线芯通断与接线配置，无需电脑、软件或外部电源。

One cable. Both ends into the matching sockets.
Check conductor continuity and wiring through the LEDs—no computer, software or external power supply.

6 类接口
6 connector types

CR2032
Replaceable battery / 可更换电池

V2 彩灯分区
Color-coded LED groups

适用：多功能 V2 彩灯款；V1 功能相同，灯珠颜色可能不同。

Optimized Bilingual Edition · 2026.10

30 秒快速开始

Quick start in 30 seconds

先断电：只测试独立、未供电的线材。两端都要从充电器、电脑、手机和其他设备上拔下。

Disconnect first: Test only standalone, unpowered cables. Unplug both ends from chargers, computers, phones and all other devices.

01 确认已安装 CR2032 电池，外壳与接口完好

Make sure a CR2032 cell is installed and the tester is undamaged.

02 将同一根线的两端插入测试仪两边对应接口

Plug both ends of the same cable into the matching sockets on opposite sides.

03 按丝印与灯色判读，不要只数亮灯数量

Read the silk-screen labels and LED colors. Do not judge by LED count alone.

它可以做什么 WHAT IT DOES

检查 USB 与 RJ45 线材的导体通断。

Check conductor continuity in USB and RJ45 cables.

辅助识别电源、数据、高速、CC/SBU 与屏蔽路径。

Help identify power, data, SuperSpeed, CC/SBU and shield paths.

轻弯线材，辅助发现间歇性断路或接触不良。

Gently flex the cable to reveal intermittent opens or poor contact.

它不能替代什么 WHAT IT DOES NOT DO

不测电压、电流、功率，也不证明“多少瓦”。

No voltage, current, power or wattage measurement.

不验证快充、PD 协商、实际速率、视频或 MFi 真伪。

No verification of fast charging, PD negotiation, real data rate, video or MFi authenticity.

不替代绝缘、耐压、信号质量与安全认证测试。

Not a substitute for insulation, hi-pot, signal-quality or safety-certification tests.

核心原则：灯亮＝对应线路形成导通回路；不等于功率、协议、速率或整体品质合格。

Key rule: LED on = the corresponding path is continuous. It does not certify power, protocol support, speed or overall cable quality.

6 类接口与四色灯色含义

Six connector types and four LED color groups

按线材两端的实际插头选择对应插座。接口可测类型包括 USB Type-A、Type-C、Type-B、Micro-B、Lightning 与 RJ45。

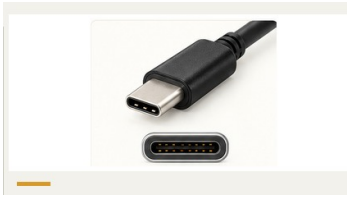
Choose sockets that match the actual plugs on both ends: USB Type-A, Type-C, Type-B, Micro-B, Lightning and RJ45.



USB Type-A

常见数据线与充电线

Data and charging cables



USB Type-C

C to C / A to C 等

C-to-C / A-to-C cables



USB Type-B

打印与设备连接线

Printer and device cables



Micro-B

小型设备线材

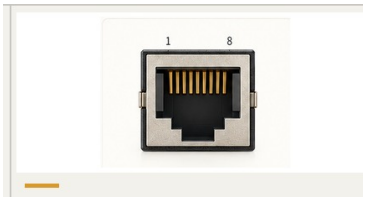
Compact-device cables



Lightning

Lightning 接口线材

Lightning cables



RJ45

网线逐芯通断检查

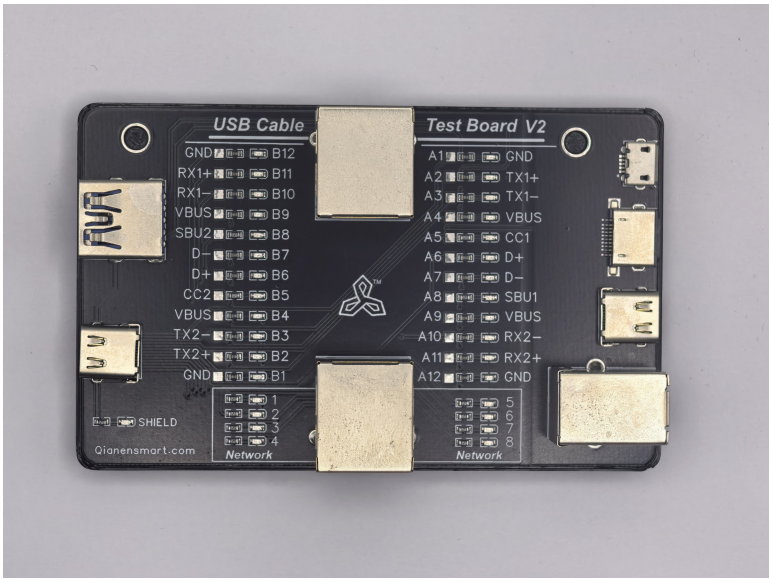
Conductor-by-conductor checks

灯色 / Color	线路组 / Circuit group	含义 / Meaning
红 Red	GND / VBUS	接地与供电回路导通 / Ground and power paths
黄 Yellow	D+ / D−	USB 2.0 数据通路 / USB 2.0 data paths
蓝 Blue	TX / RX	SuperSpeed 差分对 / SuperSpeed pairs
绿 Green	CC / SBU / SHIELD	配置、辅助或屏蔽路径 / Configuration, sideband or shield

> 不同线材保留的线芯不同，**正常线材也不一定全部灯亮**。V1 与 V2 功能相同，V2 以颜色辅助区分功能。
>
> Cables populate different conductors, so **a good cable may not light every LED**. V1 and V2 test the same paths; V2 adds color coding.

指示灯判读与排查

LED interpretation and troubleshooting



实物灯位以板卡丝印为准。 / Always read the LEDs together with the on-board labels.

现象 / Indication	含义与处理 / Meaning and action
稳定亮灯 / Steady ON	对应线路导通；结合线材标称类型判断是否符合预期。 The path is continuous. Compare the pattern with the cable specification.
应亮却不亮 / Expected LED OFF	先重新插紧；Type-C 可翻转一端再测。仍不亮再排查缺芯、断路或接触不良。 Reseat both ends and flip one Type-C plug if applicable. Then check for absent conductors, opens or poor contact.
轻弯时闪烁 / Flickers when flexed	可能存在间歇性断路或接头接触不良。 This may indicate an intermittent open or poor connector contact.
只亮一边或一组 / One side or group ON	可能是正常设计，见 A to C 与 CC 线专页；不要直接判为坏线。 This can be normal. See the A-to-C and C-to-C pages before declaring a fault.
VBUS 偏暗 / Dim VBUS	MFi／E-marker 线束可能出现；亮度不是品质或授权判据。 Possible on MFi／E-marker cable assemblies. Brightness is not a quality or authenticity test.

异常时按顺序：重新插紧两端 → 翻转一个 Type-C 插头 → 用已知良好线材交叉验证 → 检查或更换电池。

If the result looks wrong: Reseat both ends → flip one Type-C plug → cross-check with a known-good cable → check or replace the battery.

Type-C 24Pin 引脚功能定义

Type-C 24-pin function reference

板上 A1–A12 与 B1–B12 对应 Type-C 母座引脚，用于逐点核对；不要求每种线材都点亮全部位置。

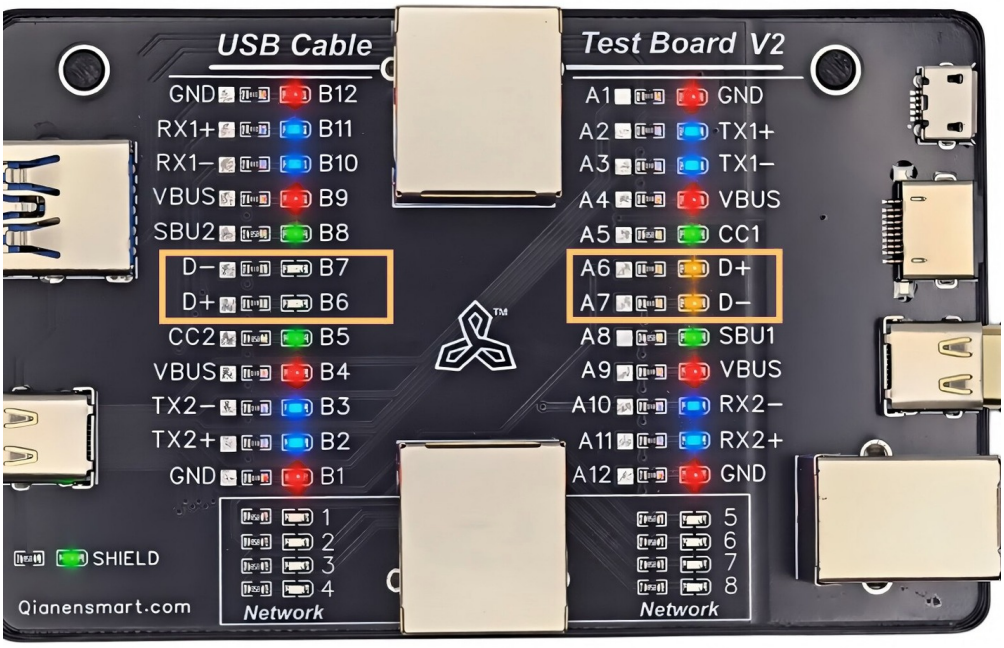
The A1–A12 and B1–B12 labels match the Type-C receptacle pins. Not every cable populates every position.

Pin	信号 Signal	功能 / Function	Pin	信号 Signal	功能 / Function
A1	GND	接地 / Ground	B1	GND	接地 / Ground
A2	TX1+	SuperSpeed 发送+ / TX+	B2	TX2+	SuperSpeed 发送+ / TX+
A3	TX1−	SuperSpeed 发送− / TX−	B3	TX2−	SuperSpeed 发送− / TX−
A4	VBUS	电源 / Bus power	B4	VBUS	电源 / Bus power
A5	CC1	配置通道 / Configuration	B5	CC2	配置通道 / Configuration
A6	D+	USB 2.0 数据+	B6	D+	USB 2.0 数据+
A7	D−	USB 2.0 数据−	B7	D−	USB 2.0 数据−
A8	SBU1	辅助信号 / Sideband	B8	SBU2	辅助信号 / Sideband
A9	VBUS	电源 / Bus power	B9	VBUS	电源 / Bus power
A10	RX2−	SuperSpeed 接收− / RX−	B10	RX1−	SuperSpeed 接收− / RX−
A11	RX2+	SuperSpeed 接收+ / RX+	B11	RX1+	SuperSpeed 接收+ / RX+
A12	GND	接地 / Ground	B12	GND	接地 / Ground

线路 / Path	作用 / Purpose	判读边界 / Limit
VBUS / GND	供电与回流 / Power and return	不测电压、电流或功率 / No voltage, current or power measurement
D+ / D−	USB 2.0 数据 / USB 2.0 data	不验证实际速率 / Does not verify actual speed
TX / RX	SuperSpeed 差分对 / SuperSpeed pairs	导通不等于信号质量合格 / Continuity is not signal-quality certification
CC1 / CC2	方向、角色、PD 与 VCONN / Orientation, role, PD and VCONN	不验证 PD 协商 / Does not verify PD negotiation
SBU1 / SBU2	备用模式辅助信号 / Alternate-mode sideband	不验证视频或雷雳功能 / Does not verify video or Thunderbolt
SHIELD	外壳屏蔽路径 / Shell shield path	不评价整体品质 / Does not grade overall quality

C to C：D+／D− 只亮一组

C to C: only one D+／D− group lights



图示：A6/A7 或 B6/B7 通常只亮其中一组；GND/VBUS 为红色，D+/D− 为黄色。 / Usually only A6/A7 or B6/B7 lights. Power LEDs are red; D+/D− LEDs are yellow.

01 两端分别插入左右两个 Type-C 母座

Insert both plugs into the two Type-C receptacles.

02 观察 D+／D−：正插亮一组，翻转一端后可切换到另一组

Check D+／D−. One group lights; flipping one plug can switch to the other group.

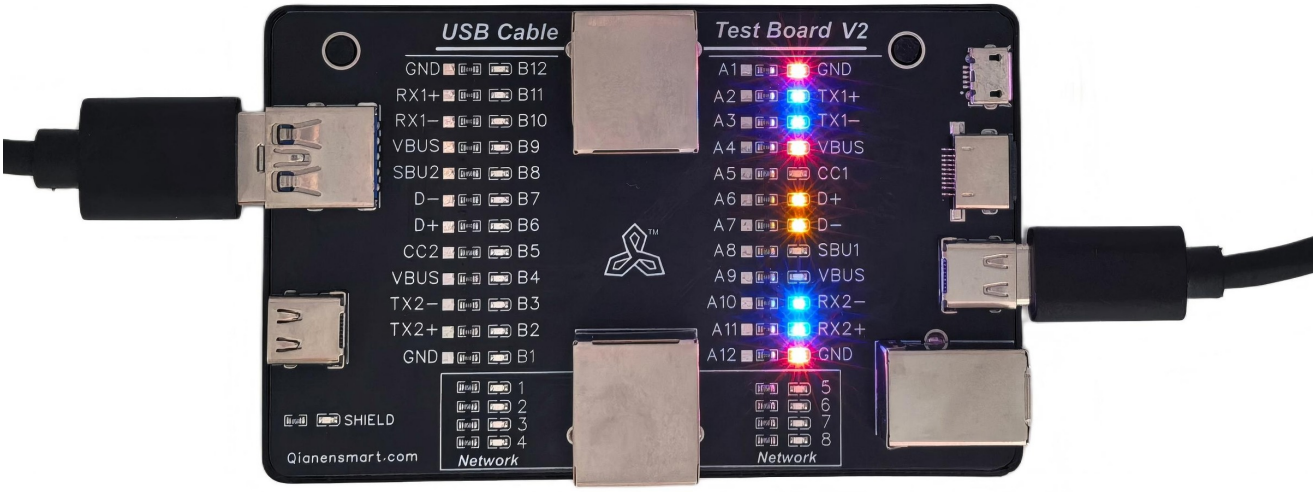
为什么只亮一边？ CC 线通常只有一对 D+／D− 线芯。测试仪设置两组指示，是为了兼容 Type-C 正反插；另一组不亮不代表灯珠损坏或线材断路。

Why only one side? A C-to-C cable usually contains one D+／D− pair. Two indicator groups support reversible Type-C insertion. The other unlit group does not indicate damaged LEDs or an open cable.

线材设计 / Cable wiring	常见预期 / Typical expectation
仅充电 / Charge-only	GND/VBUS；数据灯不亮 / Power only; data LEDs off
USB 2.0	GND/VBUS + 一组 D+/D−；TX/RX 不亮可正常 / One D+/D− group; TX/RX off can be normal
全功能或 USB 3.x / Full-featured or USB 3.x	电源、D+/D−、TX/RX 及按设计连接的 CC/SBU / Power, data, TX/RX and CC/SBU as designed

A to C：只亮一边与 Micro-B

A to C: one-side LEDs and Micro-B



USB 3.x A to C 示例。 / USB 3.x Type-A to Type-C example.

A to C 常见灯态

Typical A-to-C pattern

GND　VBUS　D+　D−　TX/RX

高速灯只亮 A 排

One-row SuperSpeed can be normal

A-TX　A-RX　B-TX　B-RX　可正常

Type-A 是单面触点结构。A to C 线材通常只在一边形成对应指示，高速灯也可能只亮 A 排；这通常不等于坏线。

Type-A uses a single-sided contact set. An A-to-C cable commonly lights only one corresponding side, and SuperSpeed indications may appear only on the A row. This is usually normal.

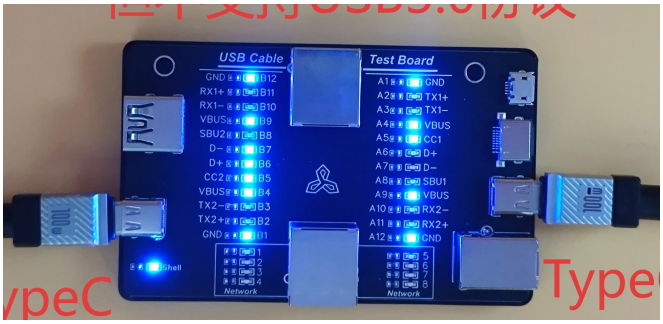
线材 / Cable	常见预期 / Typical expectation
USB 3.x A ↔ C	GND/VBUS + D+/D− + TX/RX；高速灯可只亮一排 / SuperSpeed LEDs may appear on one row
USB 2.0 A ↔ C	GND/VBUS + D+/D−；TX/RX 不亮正常 / TX/RX off is normal
A 或 C ↔ Micro-B 2.0	GND/VBUS + D+/D−；Micro-B 2.0 无 TX/RX / No SuperSpeed pairs in Micro-B 2.0

若线材标称 USB 3.x，重新插紧后 TX/RX 仍全部不亮，再用已知良好的 USB 3.x 线材交叉验证，排查高速线芯缺失或断路。

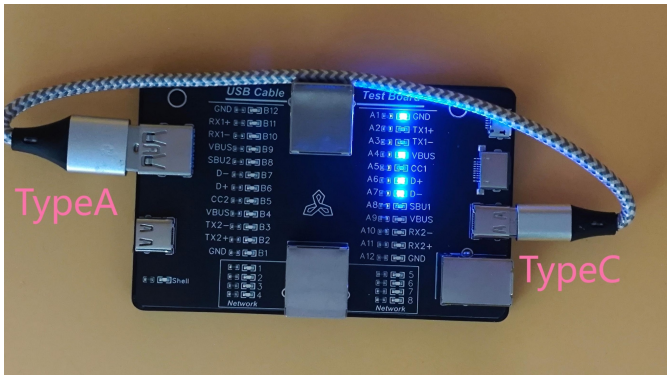
If an advertised USB 3.x cable shows no TX/RX after reseating, cross-check with a known-good USB 3.x cable to investigate absent or open SuperSpeed conductors.

供电型 C to C 与 USB 2.0 A to C

Power-oriented C to C and USB 2.0 A to C



C to C：多组 GND/VBUS，TX/RX 不亮 / Multiple power paths; TX/RX off



A to C：D+/D− 亮，TX/RX 不亮 / USB 2.0 data; TX/RX off

实测场景 / Scenario	灯态与判读 / Indication and interpretation
供电型 C to C / Power-oriented C to C	可见多组 GND/VBUS 导通，D+/D− 视线材设计点亮；TX/RX 不亮表示未形成 SuperSpeed 导通回路。 Multiple power paths may light; D+/D− depends on wiring. TX/RX off means no SuperSpeed continuity.
USB 2.0 A to C	GND/VBUS 与 D+/D− 亮，TX/RX 不亮，符合 USB 2.0 线材的常见接线。 Power and D+/D− light while TX/RX stays off, consistent with common USB 2.0 wiring.

多组电源灯亮不等于已验证过流能力或快充功率。能否快充仍取决于线材规格、充电器、受电设备与协议协商；TX/RX 不亮也不能用来判断充电快慢。

Multiple power LEDs do not verify current capacity or charging wattage. Fast charging depends on the cable rating, charger, device and protocol negotiation. TX/RX status does not indicate charging speed.

如果线材标称支持 USB 3.x，而 TX/RX 全部不亮，先重新插紧并用已知良好的 USB 3.x 线材交叉验证，再排查高速线芯缺失或断路。

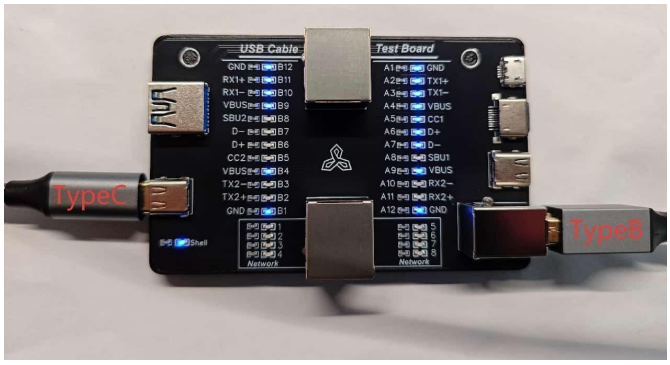
If USB 3.x is advertised but all TX/RX LEDs remain off, reseat and cross-check with a known-good USB 3.x cable before investigating absent or open SuperSpeed conductors.

Type-B 2.0 与 C to Type-B 3.0

Type-B 2.0 and C-to-Type-B 3.0



A to Type-B 2.0：打印机、烧录器等 / Printers, programmers and equipment



C to Type-B 3.0：高速设备线材 / SuperSpeed device cable

线材 / Cable	常见预期 / Typical expectation
A ↔ Type-B 2.0	GND/VBUS 与 D+/D− 亮；TX/RX 不亮正常。常见于打印机、烧录器、音频与工业设备。 Power and USB 2.0 paths light; TX/RX off is normal. Common on printers, programmers, audio and industrial equipment.
C ↔ Type-B 3.0	除电源与 USB 2.0 外，通常还应有 TX/RX；SHIELD 是否点亮取决于外壳屏蔽连接。 TX/RX should normally be present in addition to power and USB 2.0; SHIELD depends on shell wiring.

SHIELD 亮＝屏蔽路径导通，不能直接证明线材整体品质。Type-B 接头体积和外观也不能代替线芯规格与实际性能测试。

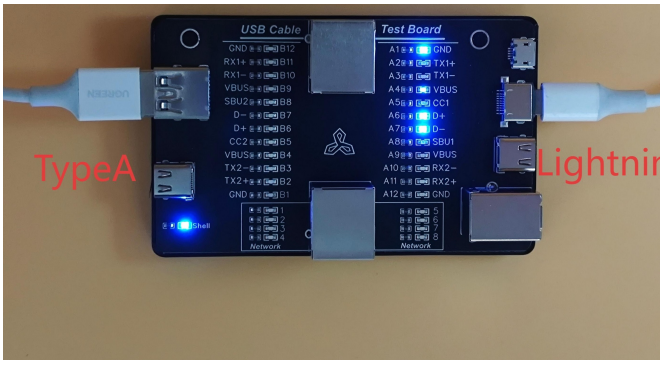
SHIELD on means shield-path continuity, not overall cable quality. Connector size and appearance do not replace conductor-specification and performance testing.

若 Type-B 3.0 线材的 TX/RX 全不亮，先检查两端是否插到底，再用已知良好的高速线材交叉验证。

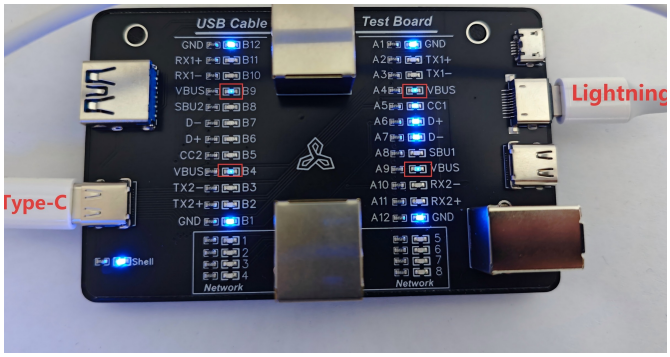
If all TX/RX LEDs are off on a Type-B 3.0 cable, check that both plugs are fully seated and cross-check with a known-good SuperSpeed cable.

A／C to Lightning 与芯片线束

A／C to Lightning and cable circuitry



Type-A to Lightning 实测 / Type-A to Lightning test



Type-C to Lightning 实测 / Type-C to Lightning test

线材 / Cable	常见预期 / Typical expectation
A ↔ Lightning	GND/VBUS 与 D+/D− 按线材设计点亮；TX/RX 不亮正常。 Power and USB 2.0 paths light as designed; TX/RX off is normal.
C ↔ Lightning	电源与数据灯按实际接线点亮；VBUS 偏暗可以是线内电路造成的正常现象。 Power and data paths light according to wiring. Dim VBUS can be normal due to in-cable circuitry.

MFi／E-marker 线束：VBUS 可能变暗

DIM VBUS ON CABLES WITH CIRCUITRY

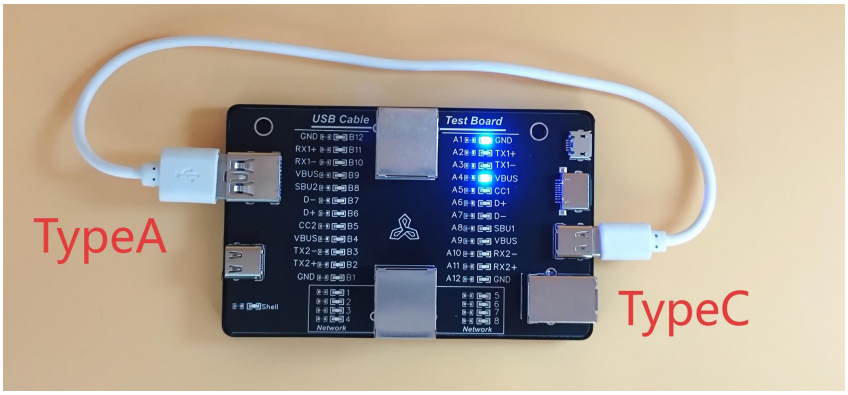
带 MFi、E-marker 或其他线内电路的线束，可能使 VBUS 指示灯亮度降低。只要对应线路稳定导通，这种现象本身不代表供电异常。

Cable assemblies with MFi, E-marker or other in-cable circuitry can make the VBUS LED dimmer. If the path remains steadily continuous, dimness alone does not prove a power fault.

> **不要以亮度或电源灯数量判断：**MFi 授权、E-marker 芯片真伪、快充功率或线材整体品质。
>
> **Do not use brightness or power-LED count to judge:** MFi licensing, E-marker authenticity, fast-charge power or overall cable quality.

只亮 GND／VBUS 两颗灯

Only GND and VBUS LEDs light



实测示例：仅电源回路形成导通。 / Example: only the power paths indicate continuity.

如果只有 GND 与 VBUS 灯稳定点亮，而 D+／D−、TX／RX 等数据灯均不亮，通常说明线材只保留了供电回路。V2 中电源灯为红色。

If only GND and VBUS remain steadily on, with no data or SuperSpeed LEDs, the cable usually contains power wiring only. Power LEDs are red on V2.

典型仅充电灯态 / Typical charge-only indication

GND	VBUS	D+	D−	TX	RX	CC
●	●	○	○	○	○	○

亮：供电与回流导通 / ON: power continuity　　**灭：未形成数据导通回路 / OFF: no data continuity**

01 若线材标称“仅充电”，两颗电源灯通常符合设计

If the cable is sold as charge-only, two power LEDs usually match its design.

02 若标称“数据线”，先重新插紧并交叉验证，再排查数据芯缺失或断路

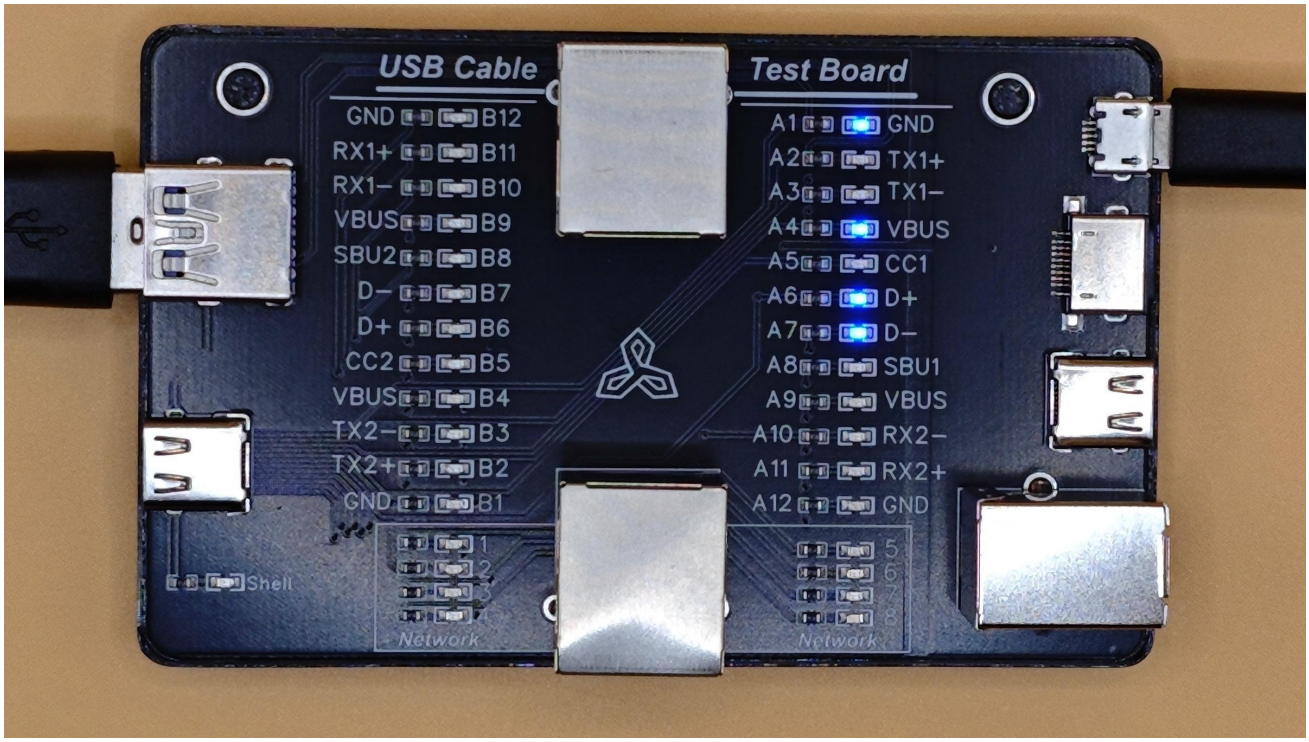
If advertised as a data cable, reseat and cross-check first; then investigate missing or open data conductors.

仅充电 ≠ 必然是劣质线。常见于玩具、小手电等设备的配线；只有在线材标称支持数据、却确认没有数据通路时，才说明它与标称功能不符。本测试不能判断充电速度、功率或安全性。

Charge-only does not automatically mean poor quality. Such cables are often supplied with toys and small lights. It conflicts with the specification only when a cable advertised for data is confirmed to lack data paths. This test cannot judge charging speed, power or safety.

Micro-B 2.0 线材测试

Testing Micro-B 2.0 cables



Micro-B 线材两端接入对应接口。 / Connect both ends of the Micro-B cable to the matching sockets.

01 Micro-B 插头插入测试仪 Micro-B 母座，另一端插入 Type-A 或 Type-C 对应接口

Insert the Micro-B plug into the Micro-B receptacle and the other end into the matching Type-A or Type-C socket.

02 核对 GND/VBUS 与 D+/D−；Micro-B 2.0 没有 TX/RX 高速线对

Check GND/VBUS and D+/D−. Micro-B 2.0 has no SuperSpeed TX/RX pairs.

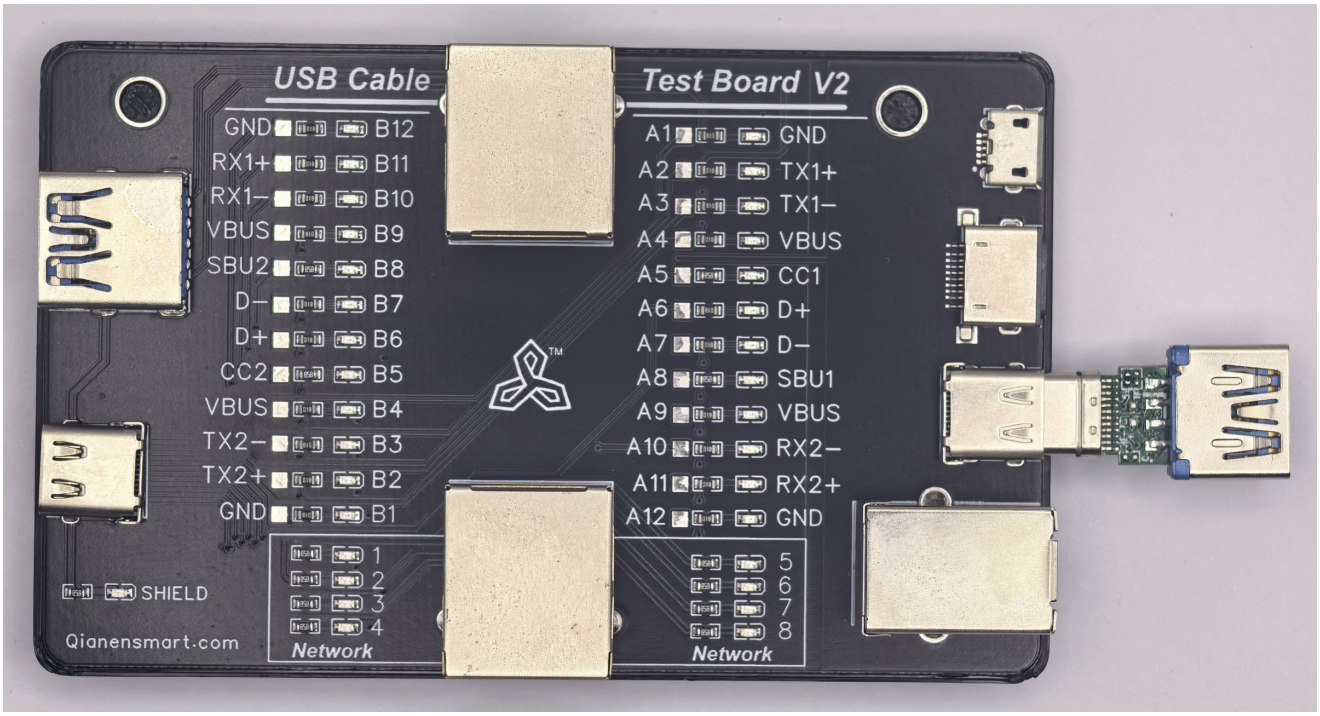
灯态 / Indication	判读 / Interpretation
GND/VBUS + D+/D− 亮	电源与 USB 2.0 数据通路导通，符合常见 Micro-B 2.0 数据线。 Power and USB 2.0 data paths are continuous, consistent with a typical Micro-B 2.0 data cable.
TX/RX 不亮	Micro-B 2.0 的正常现象，不代表缺线。 Normal for Micro-B 2.0; it does not indicate missing conductors.
只有 GND/VBUS 亮	可能为仅充电线；若标称数据线，再排查 D+/D− 缺芯、断路或接触不良。 Possible charge-only wiring. If advertised for data, investigate D+/D− absence, opens or poor contact.

Micro-B 曾广泛用于安卓手机，现仍常见于小型设备、玩具、灯具与工业配件。**灯态不能判断充电快慢或设备兼容性。**

Micro-B was common on Android phones and remains in small devices, toys, lights and industrial accessories. **LED patterns cannot judge charging speed or device compatibility.**

C to A 转接板的使用

Using the C-to-A adapter board



完整连接示意：转接板的 Type-C 插头接入测试仪 Type-C 母座，转接后提供 Type-A 母座。 / The adapter Type-C plug connects to the tester; the other end provides a Type-A receptacle.

01 将转接板的 Type-C 插头插入测试仪一侧的 Type-C 母座

Insert the adapter Type-C plug into one Type-C receptacle on the tester.

02 被测线的 Type-A 插头插入转接板 Type-A 母座；另一端插入测试仪对应接口

Plug the cable Type-A connector into the adapter receptacle, and connect the other cable end to its matching tester socket.

03 按 A to C 灯态判读；结果异常时先检查转接板与两端是否插紧

Interpret the result as an A-to-C connection. If unexpected, check that the adapter and both cable ends are fully seated.

转接板是连接适配，不会给线材增加功能。最终灯态仍取决于被测线材的实际接线。A to C 单边亮灯仍可为正常现象。

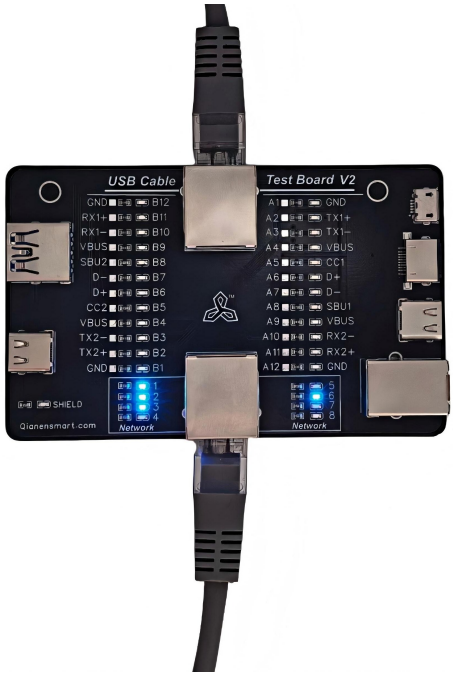
The adapter changes the connection, not the cable’s capability. The LED pattern still reflects the cable wiring. One-side A-to-C indications can remain normal.

避免侧向扳动转接板或以其为支点撬动外壳；插拔时扶住接口，减少对焊点与母座的机械应力。

Avoid side-loading the adapter or using it as a prying lever. Support the connectors during insertion and removal to reduce stress on solder joints and sockets.

RJ45 网线逐芯测试

RJ45 conductor-by-conductor testing



同一根网线的两端分别插入两个 RJ45 插座。 / Plug both ends of one network cable into the two RJ45 sockets.

常见直通网线的灯号

TYPICAL STRAIGHT-THROUGH LED PATTERNS

百兆常用线芯 / 100 Mbps pairs

1 · 2 · 3 · 6 亮 / LEDs on

1 2 3 4 5 6 7 8

八芯全导通 / All 8 conductors

1–8 全亮 / All LEDs on

1 2 3 4 5 6 7 8

只说明线芯通断：1、2、3、6 亮通常对应百兆使用的两对线路；1–8 全亮表示八芯均导通。不能据此认证网线类别、带宽、抗干扰能力或实际千兆速率。

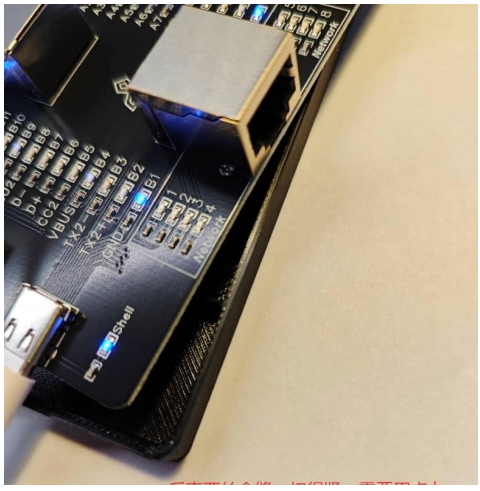
Continuity only: LEDs 1, 2, 3 and 6 indicate the two pairs commonly used by 100 Mbps Ethernet; all eight LEDs indicate continuity of all eight conductors. This does not certify category, bandwidth, interference immunity or actual gigabit performance.

若应亮的灯号缺失，先重新插紧水晶头，再检查线序、压接与断路。交叉线或特殊线序应按实际接线图判读，不要只凭“8 灯全亮”判断网络性能。

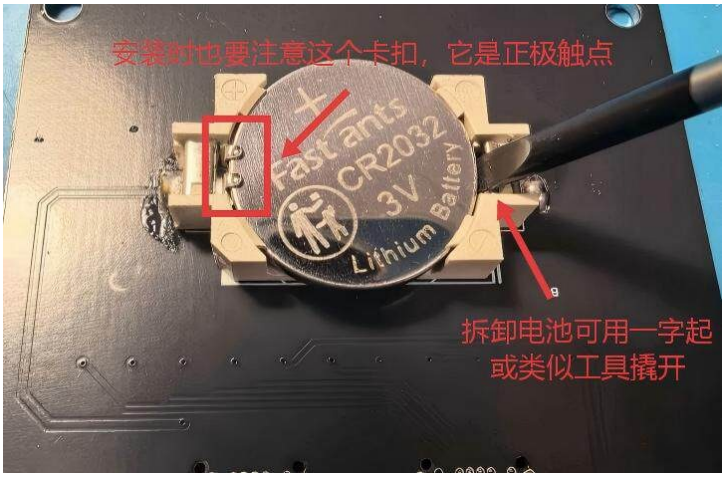
If an expected LED is missing, reseat the plugs, then check wire order, crimping and open conductors. Interpret crossover or custom wiring against its actual pinout; “all eight LEDs on” alone does not prove network performance.

电池拆装与卡扣注意事项

Battery replacement and retaining-clip safety



沿四角逐步松开后壳 / Release the rear cover gradually



原机卡扣与拆卸位置 / Original retaining clip and pry point

01 拔下所有线材；用指甲或塑料撬片沿四角松开后壳，不要撬接口

Disconnect all cables. Release the rear cover gradually at the corners; do not lever against connectors.

02 拆卸时，用小型一字起轻撬电池边缘，使电池从卡扣下方退出；不要猛撬或短路触点

To remove, gently lift the battery edge with a small flat screwdriver until it slides out from the clip. Do not pry forcefully or short the contacts.

03 安装 CR2032，正极“+”朝上；卡扣必须位于电池外侧／上方，不能压到电池下面

Install the CR2032 with “+” facing up. The retaining clip must sit outside/above the battery, never underneath it.

正确：卡扣压住电池上缘



错误：卡扣被压到电池下面



纽扣电池安全：远离儿童；误吞应立即就医。不要充电、短路、加热或拆解。长期不用时取出电池，废电池按当地规定回收。

Button-cell safety: Keep away from children. Swallowing requires immediate medical attention. Do not recharge, short-circuit, heat or disassemble. Remove for long-term storage and recycle according to local rules.

灯态速查、保养与支持

Quick reference, care and support

看到的现象 / What you see	优先怎么理解 / First interpretation
C to C 只有一组 D+/D− 亮	通常正常；两组灯用于兼容正反插。 Usually normal; two groups support reversible insertion.
A to C 只亮一边或一排高速灯	通常与 Type-A 单面触点有关，不等于坏线。 Usually related to the single-sided Type-A contact set; not automatically a fault.
MFi／E-marker 线 VBUS 偏暗	可以是线内电路造成的正常现象；不能用亮度鉴别芯片或授权。 Can be normal due to in-cable circuitry; brightness does not authenticate the chip or license.
只有 GND/VBUS 两颗红灯	通常为仅充电线；若标称数据线，再排查缺芯或断路。 Usually charge-only; if advertised for data, investigate absent or open data conductors.
TX/RX 全不亮	USB 2.0 线可正常；USB 3.x 线需重新插紧并交叉验证。 Normal for USB 2.0; reseat and cross-check advertised USB 3.x cables.
轻弯时闪烁	可能存在间歇性断路或接触不良。 Possible intermittent open or poor contact.

日常保养

CARE AND STORAGE

测试完拔下线材，保持接口清洁、干燥。

Disconnect cables after testing. Keep connectors clean and dry.

避免跌落、重压、液体与高温；不要扳动接口。

Avoid drops, crushing, liquids, high temperatures and side-loading connectors.

长期不用时取出 CR2032 电池。

Remove the CR2032 cell for long-term storage.

更换电池后，用已知良好线材复测。

After battery replacement, verify with a known-good cable.

产品网站与电子版资料：Qianensmart.com

千恩智能电子工作室 · 使用问题请提供线材类型、接口连接方式与灯态照片，便于快速判断。

Product website and digital resources: Qianensmart.com

Qianensmart Studio · For support, provide the cable type, connection method and a clear photo of the LED pattern.

本说明书针对通断测试使用；线材功能以其真实设计与标称规格为准。

This guide covers continuity testing only; interpret results against the cable’s actual design and specification.