

# USB 3.0 hub

Product model JL-HUB-016

Version: V1.1

## 1. Overview

The JL-HUB-016 is a USB 3.0 compliant external hub that expands a single USB 3.0 host port into four independent USB 3.0 downstream ports. Featuring a self-powered design, it delivers stable power to high-power devices like external hard drives. With plug-and-play and hot-swappable capabilities, this versatile hub is ideal for PCs, laptops, industrial PCs, and other devices, making it a go-to solution for office, home, and embedded expansion needs.

## 2. Product Model and Key Parameters

| project                | specifications                                                                                                                |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| product model          | JL-HUB-016                                                                                                                    |
| upstream port          | 1 × USB 3.0 A                                                                                                                 |
| downstream port        | 4 × USB 3.0 A power ports                                                                                                     |
| transmission speed     | Ultra-high-speed 5Gbps (theoretical), backward compatible with 480Mbps / 12Mbps / 1.5Mbps                                     |
| power supply mode      | Self-supply: Power Supply and Data Signal Line in One<br>Single port: Maximum 1000mA (limited by total power and port design) |
| maximum output current | Total output: ≤ 1A (self-powered mode)                                                                                        |
| pilot lamp             | 1 × Power indicator light (red/blue)                                                                                          |
| product size           | Approximately 104mm × 38mm × 24.3mm (excluding cables and brackets)                                                           |
| Product weight         | Approximately XX g (including cables and power adapters)                                                                      |

| project                           | specifications                                     |
|-----------------------------------|----------------------------------------------------|
| working temperature               | 0°C ~ 40°C                                         |
| storage temperature               | -20°C ~ 70°C                                       |
| working humidity                  | 10% to 90% relative humidity (RH), no condensation |
| storage humidity                  | 5% to 95% relative humidity (RH), no condensation  |
| Mean Time Between Failures (MTBF) | ≥ 50,000 hours (25°C, normal indoor use)           |

*Center) Table 1: Key Product Parameters (/ center)*

## 3. Interfaces and Cables

### 3.1 Upstream port (connects to the host)

**Interface type: USB 3.0 A**

Supported protocols: USB 3.0, 2.0, and 1.1

Transfer rate: up to 5 Gbps (depending on host and device capabilities)

Pin configuration: USB 3.0 compliant, featuring VBUS, D+, D−, GND, and

SuperSpeed differential pairs (SSRX±, SSTX±).

### 3.2 Downstream port (connects peripherals)

Interface type: 3.0 USB-A

Supported protocols: USB 3.0, 2.0, and 1.1

Transfer rate: USB 3.0 devices: up to 5 Gbps

USB 2.0 devices: up to 480 Mbps

USB 1.1 devices: up to 12Mbps

Port power supply: Powered by the hub's internal power management circuit (5V) with overcurrent protection.

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## 3. Functional Characteristics

### 3.1 Extended Features

Extend a single USB 3.0 host port to four independent USB 3.0 downstream ports, all of which can be used simultaneously.

Supports up to 4 cascades (depending on host and system limitations) and can expand more ports.

### 3.2 Compatibility

Backward compatibility: Fully compatible with USB 2.0/1.1 devices, automatically negotiating the best speed.

Cross-platform support: Compatible with Windows 7/8/10/11, macOS 10.x and later, and mainstream Linux distributions including Ubuntu and CentOS.

Plug and play: The system automatically recognizes and configures without requiring driver installation.

### 3.3 Power Supply Management

Bus power mode: draws power only from the upstream port, suitable for low-power devices (e.g., USB drives, mice, keyboards).

Overcurrent protection: Each downstream port features an independent overcurrent protection circuit to prevent equipment damage.

### 3.4 Indicator Lights

Power indicator: On indicates the device is powered on; off indicates no power or a fault.



**Upstream port: USB0 for connecting to a PC or tablet**

**Downstream ports: USB1, USB2, USB3, USB4 for USB drives or hard drives**

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#### **4. Environmental Adaptability**

Operating conditions: Temperature 0°C to 40°C, humidity 10% to 90% RH (no condensation).

Storage conditions: Temperature -20°C to 70°C, humidity 5% to 95% RH (no condensation).

Altitude:  $\leq 2000\text{m}$ .

#### **5. Reliability**

Plug-in lifespan: USB port withstands  $\geq 1500$  plug-in cycles (per IEC 62680 standard).

Drop test: The packaged product is dropped freely from a height of 1.0m onto a concrete surface without functional damage (per GB/T 2423.5 standard).

Vibration test: The packaged product was subjected to random vibration (frequency 5Hz to 200Hz, acceleration 1.0g) for 2 hours, with no structural damage observed.

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