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R QIDI TECHNOLOGY PLUS4

R QIDI TECHNOLOGY QIDI Box Multi-Color 3D Printing System for PLUS4 3D Printer User Manual

Model: PLUS4

1. Introduction

This manual provides comprehensive instructions for the installation, operation, maintenance, and troubleshooting of your R QIDI TECHNOLOGY QIDI Box Multi-Color 3D Printing System, designed specifically for the QIDI PLUS4 3D Printer. The QIDI Box enhances your 3D printing capabilities with multi-color and multi-material support, active filament drying, and intelligent filament management.



Figure 1: QIDI Box Multi-Color 3D Printing System Overview.

Key features include:

- **16-Color Multi-Material Printing Capacity:** Expand your creative possibilities by cascading multiple QIDI BOX units for up to 16 colors or materials.
- **65°C Active Drying:** Integrated drying system with real-time humidity monitoring to ensure optimal filament condition.
- **NFC Auto-Recognition:** Automatic identification of official QIDI filaments and loading of optimal print settings.
- **Professional-Grade Extrusion:** Dual hardened steel gears for reliable handling of various filament types, including abrasive composites.
- **Enhanced Safety:** Features a 115°C thermal fuse, filament run-out and tangle detection, dual thermal sensors, and automatic shutdown.

2. Safety Information

Please read all safety instructions carefully before operating the QIDI Box. Failure to follow these instructions may result in injury, damage to the product, or property damage.

- **Electrical Safety:** Ensure the QIDI Box is connected to a grounded power outlet with the correct voltage (110V / 220-240V AC, 50/60Hz). Do not operate with damaged power cords or plugs.
- **Heat:** The QIDI Box operates with an internal heating element for filament drying (up to 65°C). Avoid touching internal components during operation. Allow the unit to cool before performing maintenance.
- **Ventilation:** Ensure adequate ventilation around the QIDI Box and the 3D printer to prevent heat buildup.

- **Filament Handling:** Use caution when loading and unloading filament. Keep hands clear of moving parts.
- **Children and Pets:** Keep the device out of reach of children and pets.
- **Emergency Shutdown:** In case of malfunction or unusual operation, immediately disconnect the power supply.



Figure 2: Internal safety features including temperature sensors and PTC fuse.

3. Package Contents

Please check the package contents upon arrival. If any items are missing or damaged, contact customer support.

- QIDI Box Unit
- Power Cord
- 8-4 Pin Signal Cable
- BOX Hub Signal Cable
- BOX Hub and Bracket
- PTFE Tube (1000mm)*5
- Desiccant*4
- PTFE Tube Buckle*2
- Bimetal Nozzle (listed in product details, may be an extra)



Figure 3: Visual representation of included accessories.

4. Product Overview

The QIDI Box is an advanced filament management system designed to integrate seamlessly with your QIDI PLUS4 3D printer, offering enhanced capabilities for multi-color and multi-material printing.

4.1 Multi-Color and Multi-Material Capability

The QIDI Box supports up to 4 spools of filament. By connecting multiple QIDI Box units, you can expand your system to handle up to 16 different colors or materials, enabling complex and vibrant prints.



Figure 4: QIDI Box integrated with a 3D printer for multi-color printing.

4.2 Active Filament Drying

An integrated heating system maintains an internal temperature of up to 65°C, actively drying filaments during storage and printing. This is crucial for moisture-sensitive materials like Nylon (PA) and PVA, preventing common printing issues such as bubbling and stringing.



Figure 5: Active drying process within the QIDI Box.

4.3 NFC Intelligent Recognition and Auto-Reload

The QIDI Box features NFC technology to automatically detect official QIDI filaments, applying optimal printing parameters without manual input. It also includes an auto-reload function that seamlessly switches to a backup spool when the current one runs out, ensuring uninterrupted printing.



Figure 6: NFC recognition and auto-reload mechanism.

4.4 Hardened Steel Dual Feed Gear

Equipped with robust dual hardened steel gears, the QIDI Box ensures reliable and consistent filament feeding, even with abrasive materials such as carbon fiber (CF) and glass fiber (GF) composites.



Figure 7: Detail of the hardened steel dual feed gear system.

5. Setup

Follow these steps to set up your QIDI Box with the QIDI PLUS4 3D Printer.

1. **Placement:** Position the QIDI Box securely on top of your QIDI PLUS4 3D printer or on a stable surface next to it. Ensure there is enough space for cable connections and filament paths.
2. **Install BOX Hub:** Attach the BOX Hub and Bracket to your QIDI PLUS4 printer according to the printer's instructions for accessory installation. This hub facilitates communication between the QIDI Box and the printer.
3. **Connect Signal Cables:**
    - Connect the 8-4 Pin Signal Cable from the QIDI Box to the designated port on the BOX Hub.
    - Connect the BOX Hub Signal Cable from the BOX Hub to the corresponding port on your QIDI PLUS4 3D printer.
4. **Connect Power:** Plug the provided Power Cord into the QIDI Box and then into a grounded electrical outlet.
5. **PTFE Tube Installation:**
    - Cut the PTFE tubes to the appropriate length to connect each filament output of the QIDI Box to the filament input of your QIDI PLUS4 printer's extruder. Ensure the tubes are not kinked and allow for smooth filament movement.
    - Secure the PTFE tubes using the provided PTFE Tube Buckles.
6. **Power On:** Turn on the QIDI Box and your QIDI PLUS4 3D printer. The printer's interface should recognize the connected QIDI Box.

6. Operating Instructions

6.1 Loading Filament

1. Open the lid of the QIDI Box.
2. Place a filament spool into an available slot. Ensure the filament is oriented correctly to feed into the mechanism.
3. Insert the end of the filament into the designated input hole for that slot. The QIDI Box will automatically detect official QIDI filaments via NFC and prepare for loading.
4. Follow the prompts on your QIDI PLUS4 printer's screen to load the filament through the PTFE tube to the extruder.

6.2 Multi-Color Printing

To perform multi-color prints, prepare your 3D model in your slicing software (e.g., QIDI Slicer). Assign different colors or materials to specific parts of your model. The slicer will generate G-code that instructs the QIDI Box to switch filaments as needed during the print.

6.3 Using the Active Drying Function

The active drying function operates automatically when the QIDI Box is powered on. You can monitor the internal humidity and temperature via the QIDI Studio software or the printer's display. For optimal results with very moist filaments, it is recommended to pre-dry them in the QIDI Box for several hours before printing.

Figure 8: Visual difference in print quality between dry and moist filament.

6.4 Filament Auto-Reload

When a filament spool runs out, the QIDI Box will automatically detect this and, if a backup spool of the same type/color is loaded in an adjacent slot, it will initiate an automatic switch to continue the print without interruption. Ensure you have backup spools ready for long prints.

6.5 Support Removal

When using dissolvable support materials with the QIDI Box, post-processing is significantly simplified. After printing, simply dissolve the support material according to its specific instructions (e.g., PVA in water) to achieve clean, high-quality prints.

Figure 9: Simplified support removal process.

7. Maintenance

Regular maintenance ensures the longevity and optimal performance of your QIDI Box.

- **Cleaning:** Periodically clean the exterior of the QIDI Box with a soft, dry cloth. Avoid using abrasive cleaners or solvents. Ensure no filament dust or debris accumulates inside the unit, especially around the feeding mechanisms.
- **PTFE Tubes:** Inspect PTFE tubes regularly for wear, kinks, or blockages. Replace them if any damage is observed to ensure smooth filament feeding.
- **Desiccant:** The QIDI Box uses desiccant packs to absorb moisture. Replace the desiccant packs when they are saturated (indicated by a color change, if applicable, or after prolonged use).
- **Feed Gears:** Occasionally check the hardened steel feed gears for any filament residue buildup. Clean gently with a small brush if necessary.

8. Troubleshooting

This section addresses common issues you might encounter with your QIDI Box.

Problem	Possible Cause	Solution
QIDI Box does not power on.	Power cable not connected; power outlet issue; internal fuse.	• Ensure power cable is securely connected to the QIDI Box and a working power outlet. • Test the power outlet with another device. • If the issue persists, contact customer support.

Problem	Possible Cause	Solution
Filament feeding problems (binding, whining noise, no movement).	Filament tangle; PTFE tube kinked/blocked; feed gears clogged; internal mechanism issue.	• Check the filament spool for tangles. • Inspect the PTFE tubes for kinks or blockages. Ensure they are properly seated. • Clean the feed gears of any filament debris. • Ensure the filament is correctly loaded into the feed mechanism. • If the problem persists, it may indicate an internal mechanical issue; contact support.
Printer reports "tangle" error but no visible tangle.	False positive from sensor; minor resistance in filament path.	• Check the entire filament path for any subtle resistance. • Ensure the filament spool rotates freely. • Restart the print. If it's a recurring false positive, ensure firmware is up to date or contact support.
Poor print quality (stringing, bubbles) despite using dry filament.	Filament not sufficiently dry; incorrect print settings; nozzle issue.	• Ensure the filament has been dried for an adequate period (several hours for very moist spools). • Verify print settings (temperature, retraction) in your slicer. • Check the printer's nozzle for clogs or wear.

9. Specifications

Technical specifications for the R QIDI TECHNOLOGY QIDI Box.



Figure 10: Detailed technical specifications of the QIDI Box.

Feature	Specification
Product Dimensions	357*300*234 mm (14.1 x 9.2 x 11.8 inches)
Item Weight	4.35 kg (9.6 lbs) Net, 6.15 kg (13 lbs) Gross
Housing Material	ABS/PC
Number of Slots	4 (Expandable to 16 with additional units)
Feed Gear	Hardened Steel Dual Gears

Feature	Specification
Filament Diameter	1.75 mm
Spool Dimension	Width: 50 mm-72 mm, Diameter: 195 mm-202 mm
Filament Supported (Printing)	PLA, PETG, ABS, ASA, PET, PA, PC, PVA (dried), BVOH (dried), PP, POM, HIPS, TPU (84D), ABS-CF/GF, PLA-CF/GF, PETG-CF/GF, PPS-CF, PET-CF/GF
Filament Supported (Drying)	PLA, ABS, ASA, PA, PC, PET, PETG, PPS, PLA Wood
Maximum Drying Temperature	65°C
Power Supply	110V / 220-240V AC, 50/60Hz
Max Rated Power	245W

10. Warranty and Support

For warranty information, please refer to the documentation included with your purchase or visit the official R QIDI TECHNOLOGY website. Warranty terms and conditions may vary by region and retailer.

For technical support, troubleshooting assistance, or to inquire about replacement parts, please contact R QIDI TECHNOLOGY customer service. You can find contact information and additional resources on their official website:

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