FLSUN S1

FLSUN S1 3D Printer User Manual

Your guide to setting up, operating, and maintaining your FLSUN S1 Ultra High-Speed FDM 3D Printer.

1. Introduction to FLSUN S1

The FLSUN S1 is a state-of-the-art 3D printer designed for high-speed and high-quality FDM printing. Featuring a stable Delta structure and advanced intelligent monitoring, it offers an exceptional printing experience right out of the box.

Figure 1.1: FLSUN S1 3D Printer Overview

2. Setup and First Use

The FLSUN S1 is designed for quick and easy setup, allowing you to begin printing within minutes of unboxing. The machine comes fully assembled, requiring minimal user intervention.

2.1 Unboxing and Placement

Carefully remove the printer from its packaging. Ensure it is placed on a stable, level surface with adequate space around it for operation and ventilation. Verify all components are present as listed in the packing guide.

2.2 Automatic Leveling

The FLSUN S1 features an advanced FLSUN 2.0 algorithm for fully automatic one-button leveling. This simplifies the bed calibration process significantly.

Figure 2.1: One-button automatic leveling and material shortage reminder.

1. Power on the printer.
2. Navigate to the leveling option on the touchscreen interface.
3. Initiate the automatic leveling process. The printer will perform a series of measurements to calibrate the print bed.
4. Follow any on-screen prompts to finalize the leveling, including Z-height adjustment if necessary.

For detailed installation instructions, please refer to the officialInstallation Manual (PDF).

3. Operating Your FLSUN S1

The FLSUN S1 is engineered for high-performance printing, offering impressive speed and precision.

3.1 High-Speed Printing Capabilities

Experience rapid prototyping and production with the FLSUN S1's impressive speed and acceleration.

- **Maximum Print Speed:** Up to 1200mm/s
- **Maximum Acceleration:** Up to 40000mm/s²
- **Maximum Flow Rate:** 110mm³/s

Figure 3.1: High-speed printing metrics of the FLSUN S1.

Your browser does not support the video tag. Please update your browser.

Video 3.1: Official FLSUN video demonstrating ultra high-speed printing capabilities of the S1 printer.

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Video 3.2: Official FLSUN video showcasing the Delta high-speed printing in action.

3.2 Advanced Extruder and Cooling System

The FLSUN S1 features a dual-gear direct-drive extruder with a titanium alloy core wheel, enabling printing at temperatures up to 350°C. The newly printed model is rapidly cooled by a CPAP turbo fan, achieving a single-layer cooling time of 1 second at 40000 rpm/min, which helps prevent warping and drawing.

Figure 3.2: Temperature capabilities for multi-consumable printing.

Figure 3.3: CPAP High-Pressure Turbo Fan for efficient cooling.

3.3 Intelligent Monitoring and Control

The FLSUN S1 integrates advanced monitoring and control features for enhanced print quality and user convenience.

- **AI Camera:** Monitors for issues like spaghetti failures and foreign objects, providing real-time alerts and supporting time-lapse photography.
- **Microtac Radar Control:** Ensures precise control and monitoring.
- **WIFI Connectivity:** Allows for real-time monitoring and intelligent adjustment via mobile phone or PC.

Figure 3.4: Remote monitoring and time-lapse photography features.

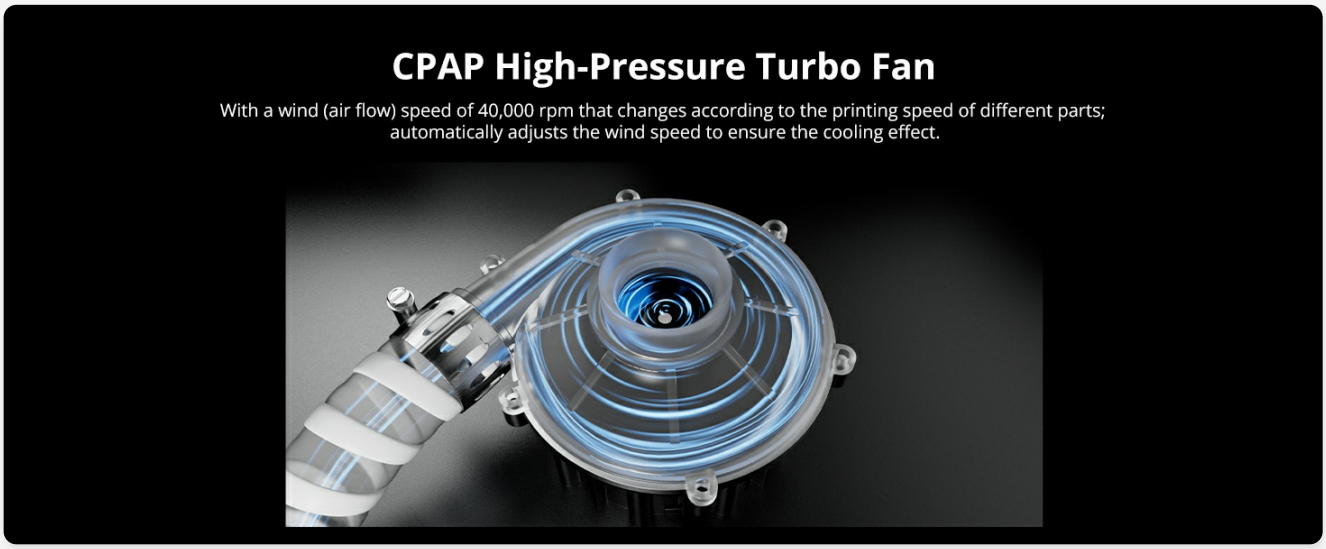

Figure 3.5: Comprehensive monitoring and upgrade methods.

3.4 Large Build Volume and Material Compatibility

The FLSUN S1 offers a generous build volume and supports a wide array of filament types.

- **Build Volume:** 13" x 13" x 17" (approximately 320mm x 320mm x 430mm), allowing for multiple models or large single prints.
- **Supported Materials:** PLA, PETG, TPU, ABS, ASA, PA, PC, PET, and more.

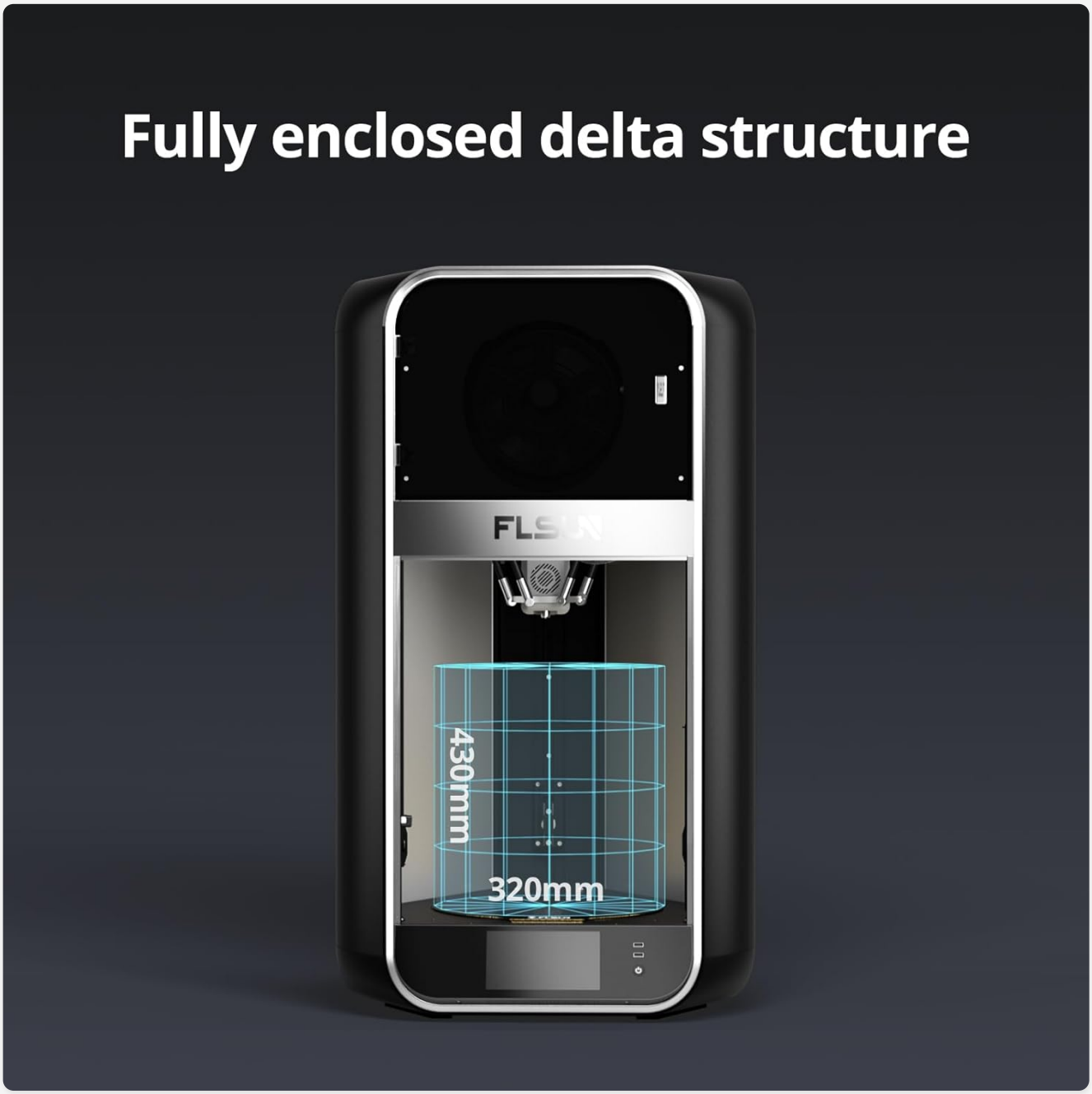

Figure 3.6: Fully enclosed delta structure with large build volume.

Figure 3.7: Examples of models printed with various filament types.

4. Maintenance

Regular maintenance ensures the longevity and optimal performance of your FLSUN S1 3D Printer.

4.1 Print Bed Cleaning

To maintain good filament adhesion, regularly clean the print bed with isopropyl alcohol to remove any fingerprints, dust, or debris. This should be done after several prints or if adhesion issues arise.

4.2 Lubrication of Moving Parts

Periodically re-lubricate the smooth rods and other moving mechanical components with a suitable dry lubricant (e.g., PTFE spray) to ensure smooth operation and reduce noise.

4.3 Nozzle and Hotend Care

The nozzle is a consumable part and will degrade over time. Replace the nozzle or the entire hotend assembly

when print quality deteriorates. Consider upgrading to a full E3D V6 hot-end assembly for enhanced performance and durability. It is also recommended to upgrade the Bowden PTFE tube to a Capricorn tube for better heat resistance, especially when printing at higher temperatures, to prevent carbonization and fume exposure.

5. Troubleshooting Common Issues

This section addresses some common issues users might encounter and provides potential solutions.

5.1 Print Quality Issues (e.g., "Salmon Skin")

If you observe wavy outer walls or a "salmon skin" effect on your prints, this can be caused by stepper motor drivers. Installing 8-diodes TL-smoothers can mitigate this issue by preventing power feedback to the drivers.

5.2 Extruder Calibration (E-steps)

For optimal extrusion accuracy, it may be necessary to calibrate your extruder's e-steps per millimeter. This involves marking a length of filament, extruding a specific amount, and adjusting the e-steps value in the printer's firmware or settings based on the actual extruded length.

5.3 Printer Forgetting Settings

If the printer loses settings (e.g., auto-leveling, Z-height) after a power cycle, ensure that settings are properly saved to the printer's memory after adjustment. Consult the official manual or community resources for specific saving procedures.

5.4 Seeking Further Support

For issues requiring technical assistance or warranty service, it is recommended to contact the seller directly through the platform where the purchase was made. They can provide guidance or connect you with FLSUN support. Additionally, active online communities, such as the FLSUN Facebook group, can be valuable resources for firmware, test files, and user-generated FAQs.

6. Product Specifications

Attribute	Detail
Product Dimensions	21.7 x 40.6 x 23.5 inches (55.1 x 103.1 x 59.7 cm)
Item Weight	40 pounds (18.14 kg)
Material	Metal
Color	Black
Manufacturer	FLSUN
Country of Origin	China
Date First Available	March 14, 2025

7. Warranty and Support

FLSUN is committed to providing excellent customer service and support for your S1 3D Printer.

7.1 Protection Plans

Extended protection plans are available for purchase to cover your FLSUN S1 3D Printer beyond the standard warranty. Options include:

- 3-Year Protection Plan
- 4-Year Protection Plan

Please refer to the product listing or contact your retailer for details on pricing and coverage.

7.2 Customer Support

For any inquiries, technical assistance, or support needs, please utilize the customer support channels provided by your retailer. You can also visit the official FLSUN Store for additional resources and contact information.