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› Twotrees TTS-20 Pro Laser Engraver User Manual

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Twotrees TTS-20 Pro Laser Engraver User Manual

Model: TTS-20 Pro

Brand: Twotrees

1. INTRODUCTION

The Twotrees TTS-20 Pro is a high-performance 20W laser engraver and cutter designed for precision and versatility. Featuring an upgraded COS chip and 20,000mW high-power laser, it offers engraving speeds up to 500mm/s and processing rates of 30,000mm/min, making it twice as fast as previous models. This machine is ideal for both professional and hobbyist use, capable of working with a wide range of materials.

Key features include ultra-fine precision with 0.08mm spot technology, 0.01mm movement accuracy, and 0.02mm repeat positioning accuracy, ensured by a solid steel axis and belt tensioning. It boasts broad compatibility with popular software like LaserGRBL and LightBurn, supporting various operating systems. The TTS-20 Pro comes 98% pre-assembled for quick setup, allowing users to begin creating almost immediately.



Figure 1.1: The Twotrees TTS-20 Pro Laser Engraver showcasing its capabilities with various engraved and cut samples, including wood, metal, and glass items.

2. SAFETY INFORMATION

Operating a laser engraver requires strict adherence to safety guidelines to prevent injury. The Twotrees TTS-20 Pro is a Class 4 laser product, meaning its laser radiation is hazardous to the eye and skin. Always take necessary precautions.

- **Eye Protection:** Always wear appropriate laser safety goggles that block the specific wavelength of the laser (typically 450nm for diode lasers) when the machine is in operation. Never look directly into the laser beam or at its reflection.
- **Skin Protection:** Avoid direct exposure of skin to the laser beam.
- **Ventilation:** Ensure adequate ventilation in your workspace to dissipate fumes and smoke produced during engraving and cutting, especially when working with materials like wood, acrylic, or leather.
- **Fire Safety:** Keep a fire extinguisher nearby. Never leave the machine unattended during operation, as some materials can ignite.

- **Children and Pets:** Keep children and pets away from the operating area.
- **Material Safety:** Only engrave or cut materials that are safe for laser processing. Avoid materials that produce toxic fumes or can explode when exposed to laser energy.
- **Emergency Stop:** Familiarize yourself with the location and operation of the emergency stop button.



Figure 2.1: Important safety labels for the laser engraver, indicating Class 4 laser radiation and the necessity to avoid eye or skin exposure to direct or scattered radiation.

3. SETUP

The Twotrees TTS-20 Pro comes 98% pre-assembled, significantly reducing setup time. Follow these general steps to get your machine ready for operation:

1. **Unpacking:** Carefully remove all components from the packaging and verify that all parts are present according to the packing list.
2. **Final Assembly:** Complete the remaining 2% of assembly, which typically involves attaching the laser module and connecting cables. Refer to the included quick start guide for detailed instructions.
3. **Software Installation:** The TTS-20 Pro is compatible with LaserGRBL and LightBurn software.

- **LaserGRBL:** Supports Windows XP, 7, 8, 10, and 11. Download the latest version from the official LaserGRBL website.
 - **LightBurn:** Supports Windows, macOS, iOS, and Android. Purchase and download LightBurn from their official website.
4. **Driver Installation:** Install any necessary drivers for your operating system to ensure proper communication between your computer and the engraver.
 5. **Workspace Preparation:** Place the engraver on a stable, level surface in a well-ventilated area, away from flammable materials.

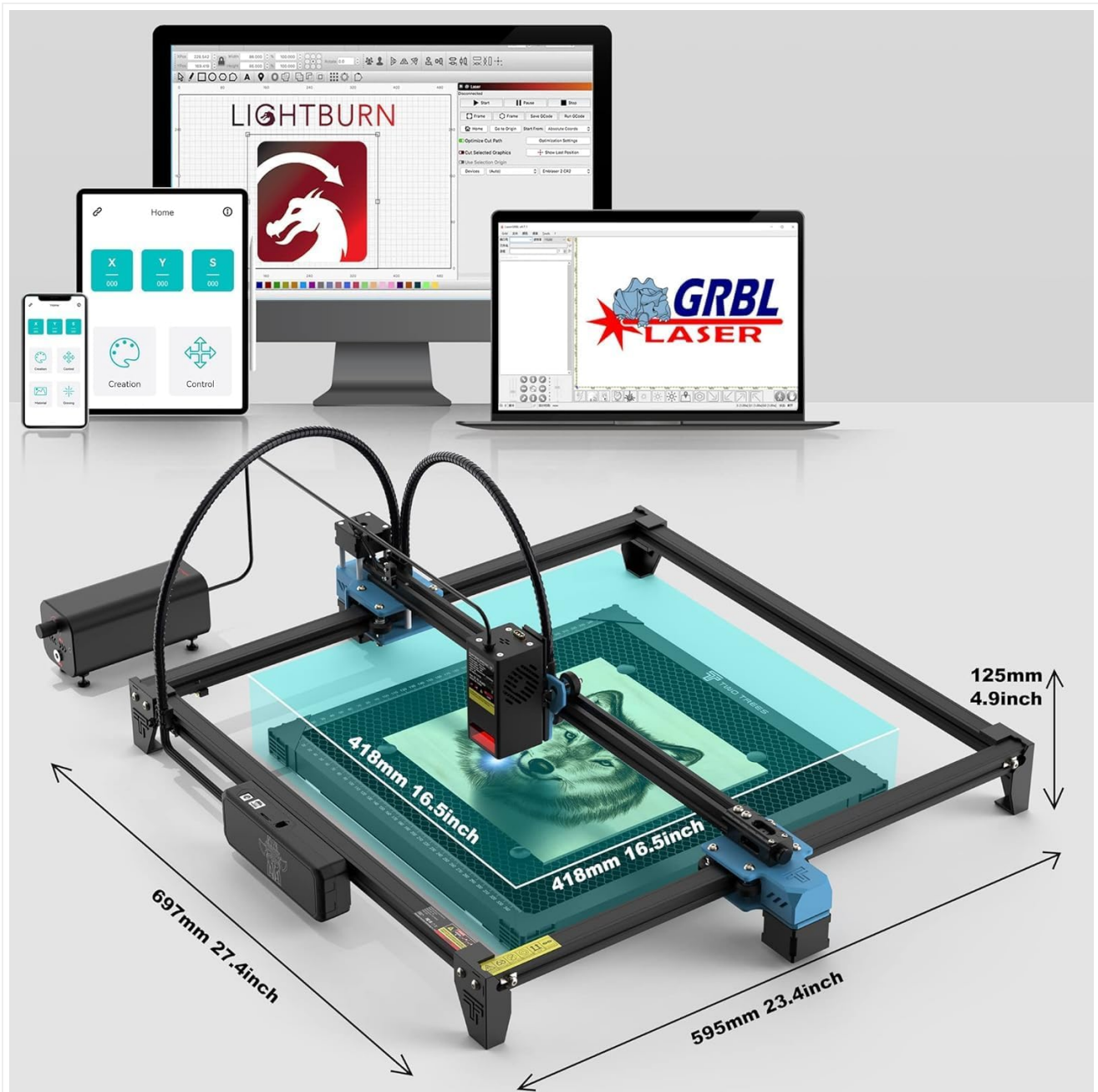


Figure 3.1: The TTS-20 Pro machine with its dimensions (697mm x 595mm x 125mm) and logos for compatible software, LightBurn and LaserGRBL, indicating broad software support.

4. OPERATING INSTRUCTIONS

The Twotrees TTS-20 Pro offers powerful engraving and cutting capabilities across a variety of materials. Here are instructions and tips for optimal operation:

4.1 Material Compatibility and Tips

This engraver can process over 100 materials, including wood, leather, aluminum oxide, and glass.

- **Wood Cutting:** For optimal wood cutting performance, it is highly recommended to use an air assist system (not included). This helps to clear debris and prevent charring, resulting in cleaner cuts.
- **Transparent Materials (Acrylic/Glass):** When engraving transparent materials, such as clear acrylic or glass, apply black paint to the surface where you intend to engrave. The black paint absorbs the laser energy, allowing for effective engraving. Transparent colors will not react effectively with the laser head without this preparation.
- **Metal Engraving:** The 20W laser is capable of colorful engraving on metal surfaces, expanding creative possibilities.



Figure 4.1: A visual demonstration of the 20W laser power, showing single-pass cutting on 20mm plywood and 5mm acrylic, and multi-pass cutting for thicker materials like 30mm plywood (6 passes) and 20mm acrylic (5 passes).

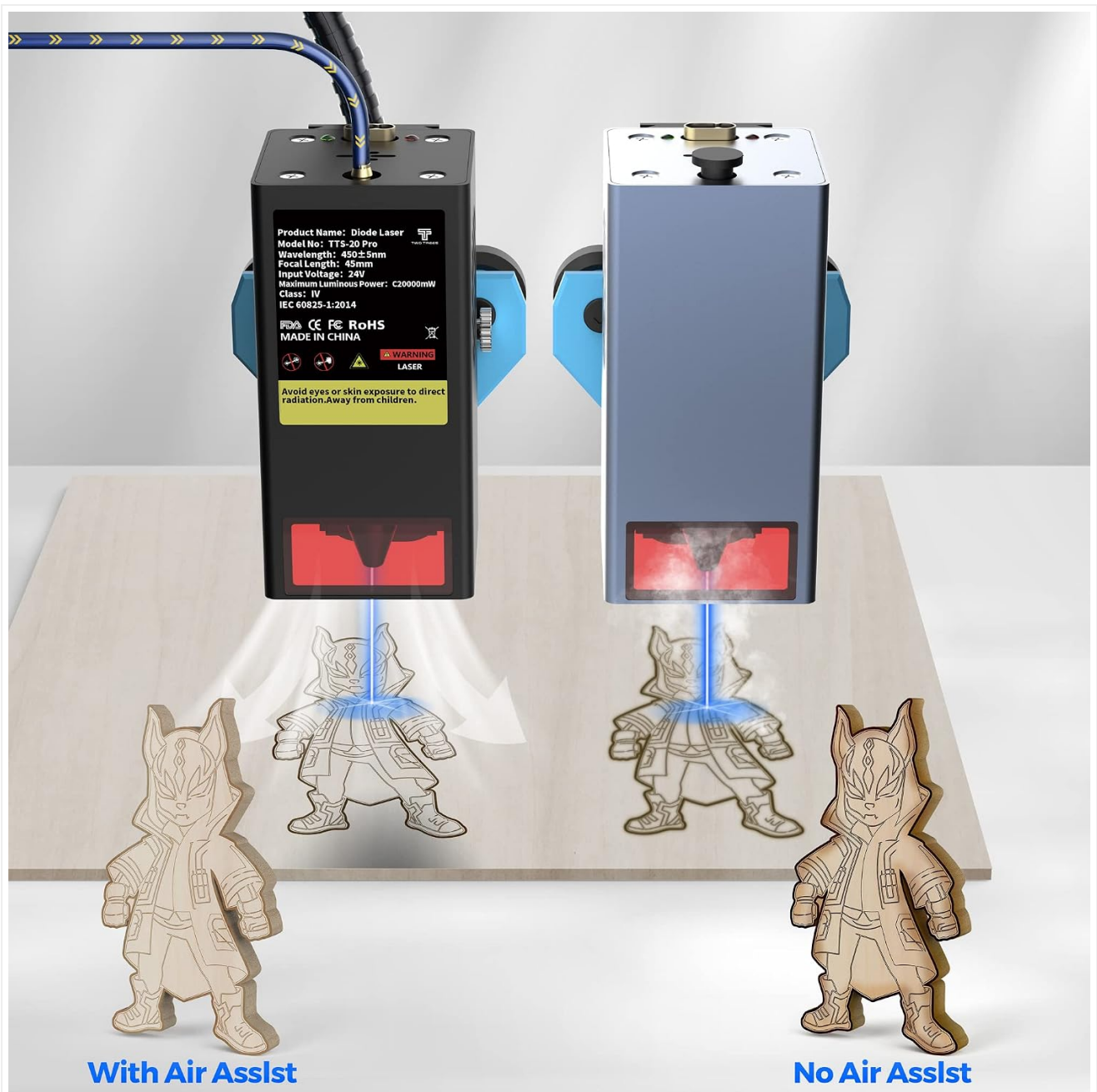


Figure 4.2: A comparison illustrating the benefits of using air assist during laser engraving, showing cleaner results compared to engraving without air assist.

20W UPGRADED VERSION FOR METAL COLORFUL ENGRAVING WORLD

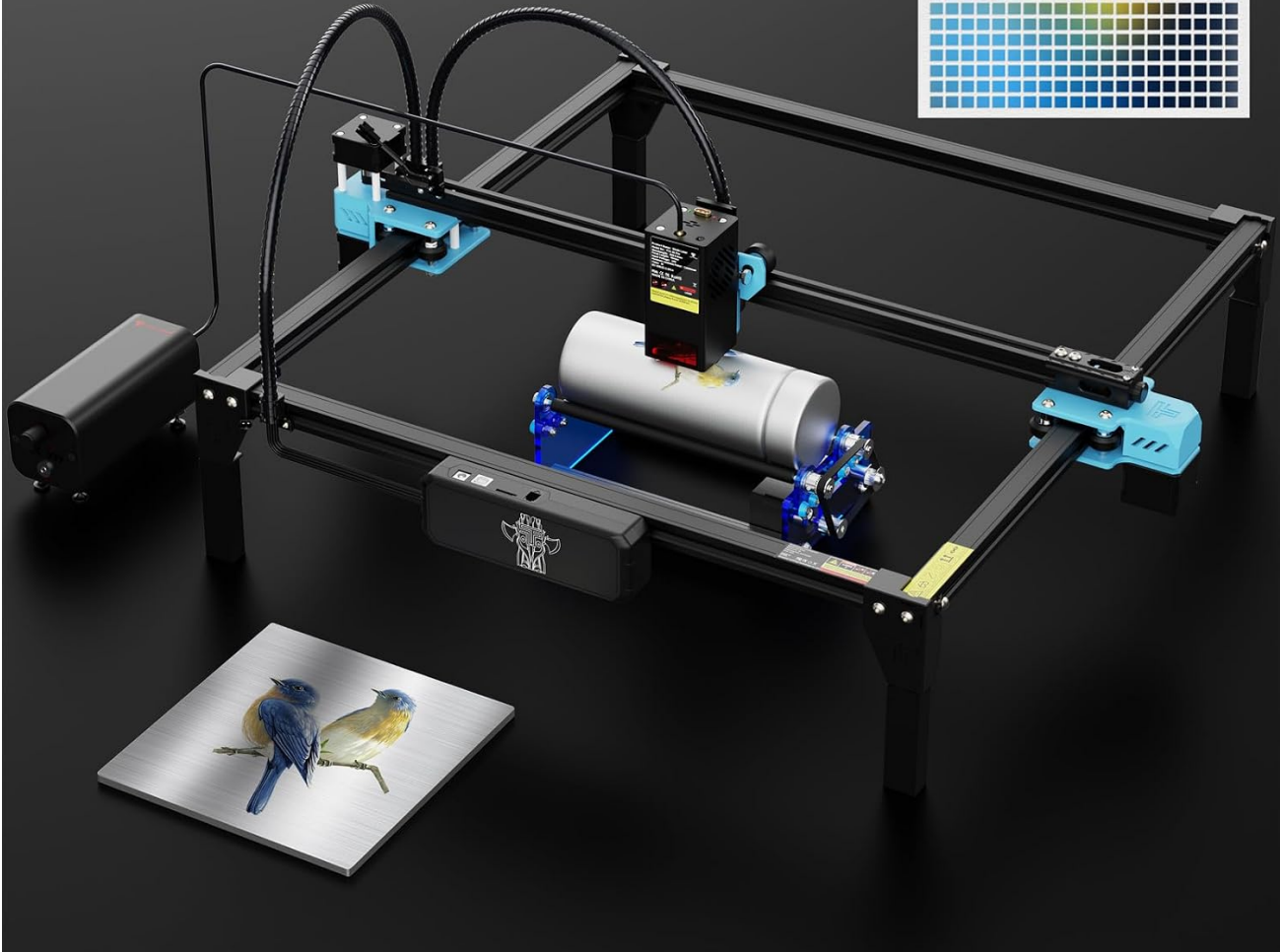
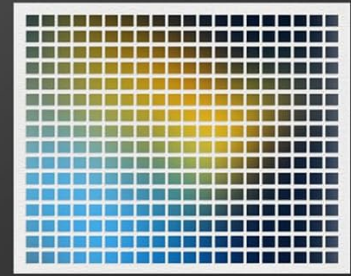


Figure 4.3: The TTS-20 Pro demonstrating its capability for colorful engraving on metal surfaces, expanding the range of creative applications.

4.2 Precision and Speed

The TTS-20 Pro offers exceptional precision and speed for detailed work.

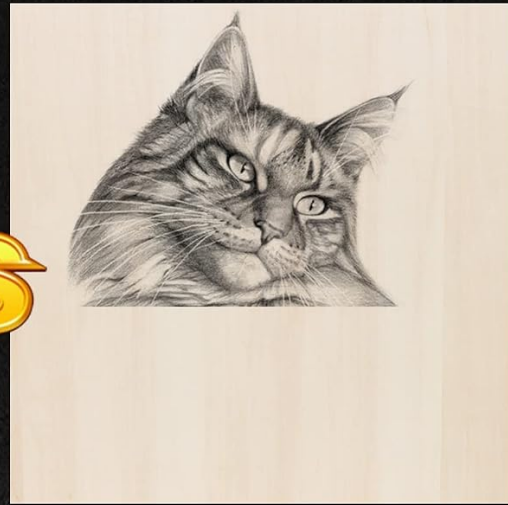
- **Ultra-Fine Spot:** Advanced compressed spot technology ensures crisp, clean engravings.
- **High Speed:** Achieve speeds up to 500mm/s for efficient project completion.

500MM / S

With TTS-20 PRO,
No limitations of originality



TTS-20w Pro



Others



Figure 4.4: A visual comparison highlighting the high engraving speed of the TTS-20 Pro (500mm/s) versus other models, demonstrating faster processing for detailed images.

4.3 Official Product Videos

Watch these official videos from Twotrees-US Official Store to see the TTS-20 Pro in action:

Video 4.1: Twotrees TTS-20 Pro Engraving Leaves. This video demonstrates the precision of the laser engraver by etching intricate designs onto delicate leaves, showcasing its fine detail capabilities.

Video 4.2: Twotrees TTS-20 Pro Sheep. This video illustrates the cutting capability of the laser engraver by creating wooden sheep puzzle pieces, followed by their assembly.

Video 4.3: Twotrees TTS-20 Pro stainless steel. This video showcases the engraver's ability to etch designs onto stainless steel, demonstrating its versatility with metal materials.

Video 4.4: Twotrees TTS-20 Pro Dog ID tag. This video demonstrates the engraving of a personalized dog ID tag, highlighting the machine's capability for small, detailed projects.

5. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your Twotrees TTS-20 Pro laser engraver.

- **Cleaning the Lens:** Periodically clean the laser lens with a specialized lens cleaning solution and a lint-free cloth to maintain laser power and precision.
- **Cleaning the Machine:** Keep the machine free of dust and debris. Use compressed air to clean hard-to-reach areas.
- **Lubrication:** Apply a small amount of lubricant to the guide rails and lead screws as recommended in the detailed manual to ensure smooth movement of the laser head.
- **Belt Tension:** Check the tension of the drive belts regularly. Belts that are too loose or too tight can affect engraving accuracy. Adjust as needed.
- **Honeycomb Panel:** Clean the honeycomb work panel frequently to remove accumulated residue, which can affect cutting performance and cause back reflections.

6. TROUBLESHOOTING

This section addresses common issues you might encounter with your Twotrees TTS-20 Pro laser engraver.

- **Issue: Laser not engraving/cutting transparent materials.**
Solution: As mentioned in the operating instructions, transparent materials do not absorb laser light effectively. Apply a thin layer of black paint or use a dark, opaque masking tape on the surface before engraving. The laser will engrave the paint/tape, transferring the design to the material underneath.
- **Issue: Engravings are blurry or inconsistent.**
Solution: Check the focus of the laser. Ensure the material is flat and properly secured. Verify that the machine's frame is rigid and not wobbling. Inspect the belts for proper tension and ensure the guide rails are clean and lubricated.
- **Issue: Machine not connecting to software.**
Solution: Ensure all cables are securely connected. Verify that the correct drivers are installed on your computer. Restart both the engraver and your computer. Check software settings to ensure the correct COM port or connection type is selected.
- **Issue: Excessive smoke or charring during operation.**
Solution: This can indicate that the laser power is too high or the speed is too low for the material. Adjust settings in your software. Ensure proper ventilation and consider using an air assist system, especially for wood cutting.

7. SPECIFICATIONS

Specification	Value
Product Dimensions	29 x 25.5 x 6.5 inches (73.66 x 64.77 x 16.51 cm)
Item Model Number	TTS-20 Pro
ASIN	B0CCY92G3L
Item Weight	19.51 pounds (8.85 kg)
Manufacturer	Twotrees
Country of Origin	China
Date First Available	July 27, 2023

Laser Power	20,000mW (20W)
Movement Accuracy	0.01mm
Repeat Positioning Accuracy	0.02mm
Max Engraving Speed	500mm/s
Processing Rate	30,000mm/min

8. WARRANTY AND SUPPORT

Twotrees products are manufactured to high-quality standards. For specific warranty details, including coverage period and terms, please refer to the warranty card included with your product or visit the official Twotrees website.

If you encounter any issues or require technical assistance, please contact Twotrees customer support. You can typically find contact information (email, phone, or support portal) on the manufacturer's website or within your product documentation. When contacting support, please have your model number (TTS-20 Pro) and purchase details ready to facilitate a quicker resolution.