Thermalright TL-H12-X28-S

Thermalright TL-H12-X28-S CPU Fan Instruction Manual

Model: TL-H12-X28-S | Brand: Thermalright

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your Thermalright TL-H12-X28-S CPU Fan. This 120mm ARGB performance fan is designed for efficient computer case cooling, offering high airflow and quiet operation for CPU cooling and chassis ventilation.

Image 1.1: Thermalright TL-H12-X28-S 120mm ARGB Performance Fan. This fan features a 28mm thickness, 3-phase 6-pole motor, durable S-FDB V2 bearing, and PWM/ARGB sharing connectors.

2. PRODUCT FEATURES

- **High Speed & Airflow:** Operates at 2150 RPM with an airflow of 80.45 CFM (MAX) for effective heat dissipation.

- **Quiet Operation:** Features 7 noise-reducing fan blades and a noise level of ≤29.4 dBA.

- **Durable Bearing:** Equipped with S-FDB V2 bearing for long-term, stable, and trouble-free operation.

- **Enhanced Thickness:** 28mm fan thickness provides stability and optimizes performance with large fan blades.

- **ARGB Lighting:** Integrated 5V 3PIN ARGB lighting interface for customizable illumination.

- **PWM Control:** 4-pin PWM power connector for precise fan speed control.

- **Easy Installation:** 120mm size compatible with most cases, includes self-tapping screws for mounting.

Dual side Soft-Touch Rubber pads
provide vibration absorption

S-FDB (Stably-FDB) Bearing V2 with
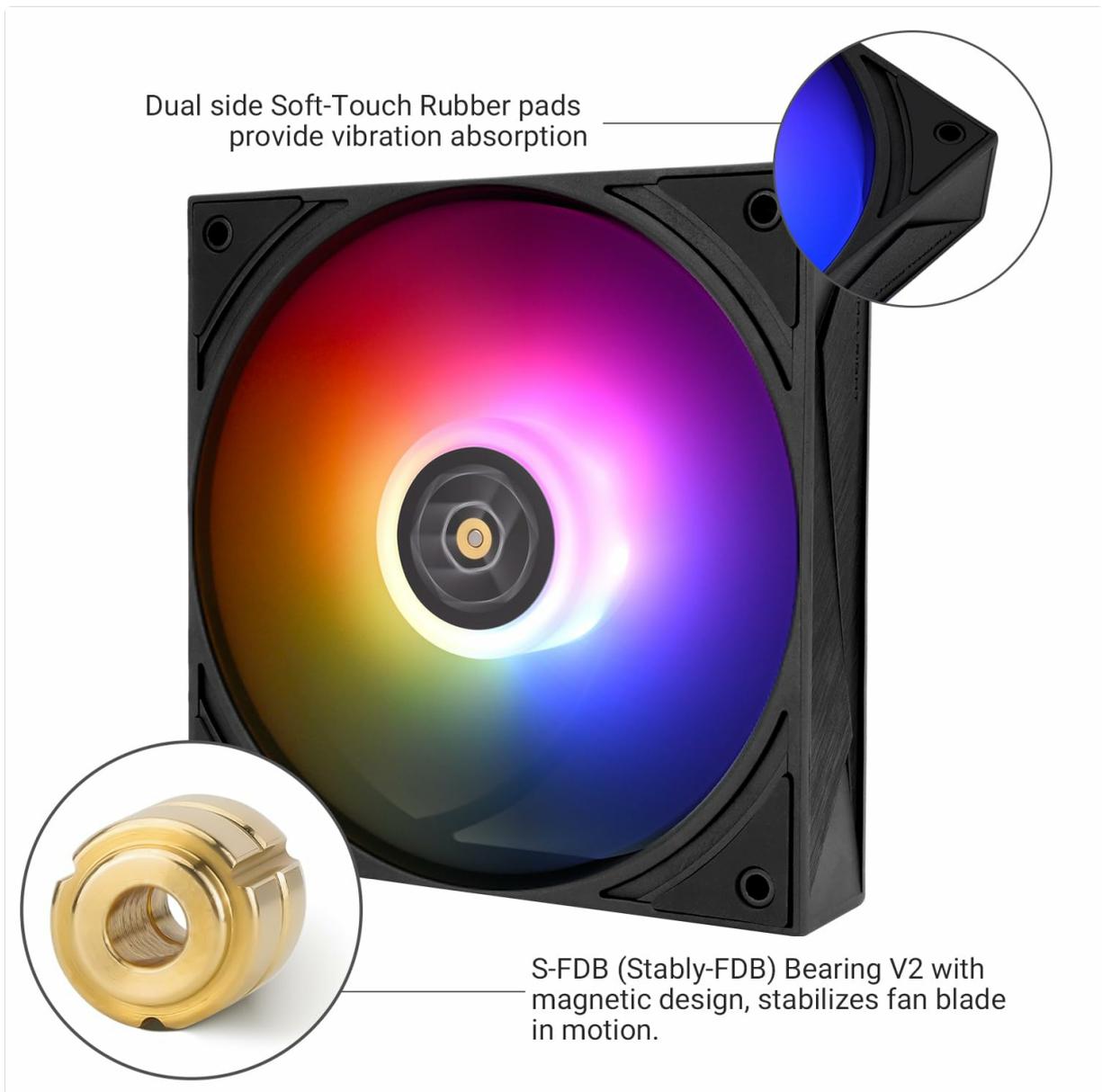magnetic design, stabilizes fan blade
in motion.

Image 2.1: Close-up view of the fan highlighting dual-side soft-touch rubber pads for vibration absorption and the S-FDB (Stably-FDB) Bearing V2 with magnetic design for stable fan blade motion.

3 phase 6 pole motor allows smoother operation and less power consumption

Image 2.2: Internal view of the fan's 3-phase 6-pole motor, designed for smoother operation and reduced power consumption.

3. SPECIFICATIONS

Feature	Specification
Model Number	TL-H12-X28-S
Dimensions	120mm (L) x 120mm (W) x 28mm (H)
Rotational Speed	2150 RPM ±10% (MAX)
Noise Level	≤29.4 dBA
Air Flow Capacity	80.45 CFM (MAX)
Air Pressure	2.65 mm H2O (MAX)
Power Connector	4-Pin PWM
Lighting Interface	5V 3PIN ARGB

Current	0.25A
Voltage	12 Volts (DC)
Bearing Type	S-FDB V2
Material	Plastic
Compatible Devices	Desktop (PC Cases, Air Coolers, Water Cooling Radiators)

TL-H12-X28-S

120MM*120MM*28MM

Only Support 5V 3Pin ARGB，DO NOT support 12V 4Pin RGB

Image 3.1: Diagram showing the fan dimensions: 120mm length, 120mm width, and 28mm thickness. Note that this fan supports 5V 3PIN ARGB, not 12V 4PIN RGB.

4. PACKAGE CONTENTS

The package includes the following items:

- 1x Thermalright TL-H12-X28-S CPU Fan
- 4x Self-tapping screws for installation
- PWM sharing connector cable
- ARGB sharing connector cable

5. SETUP & INSTALLATION

Follow these steps to properly install your Thermalright TL-H12-X28-S fan:

5.1. Fan Connection (PWM)

1. Locate the 4-pin PWM fan power connector on your fan.

2. Connect this 4-pin PWM connector to an available 4-pin fan header on your motherboard (e.g., CHA_FAN1, CHA_FAN2).

3. If installing multiple fans and wishing to sync their speeds, use the provided PWM sharing connector. Connect the additional fan's PWM cable to the sharing connector, then connect the sharing connector to the motherboard fan header.

Image 5.1: Illustration of the FAN_+5V 3PIN ARGB and FAN_4PIN PWM connectors for motherboard connection.

5.2. ARGB Lighting Connection

1. Identify the 3-pin 5V addressable RGB (ARGB) connector on your fan.

2. Connect this ARGB connector to a compatible +5V ARGB header on your motherboard (do not connect to a 12V RGB header).

3. To synchronize ARGB lighting effects across multiple fans, use the provided ARGB sharing

connector. Connect additional fan ARGB cables to the sharing connector, then connect the sharing connector to the motherboard ARGB header.

5.3. Airflow Direction

Proper airflow is crucial for effective cooling. For normal airflow design fans, the blade side typically intakes air, and the frame side exhausts air. Install the fan according to your case's desired airflow direction.

Focus on performance from an engineering perspective

Airflow 7 blade design outputs rated 80.45CFM at 2150RPM
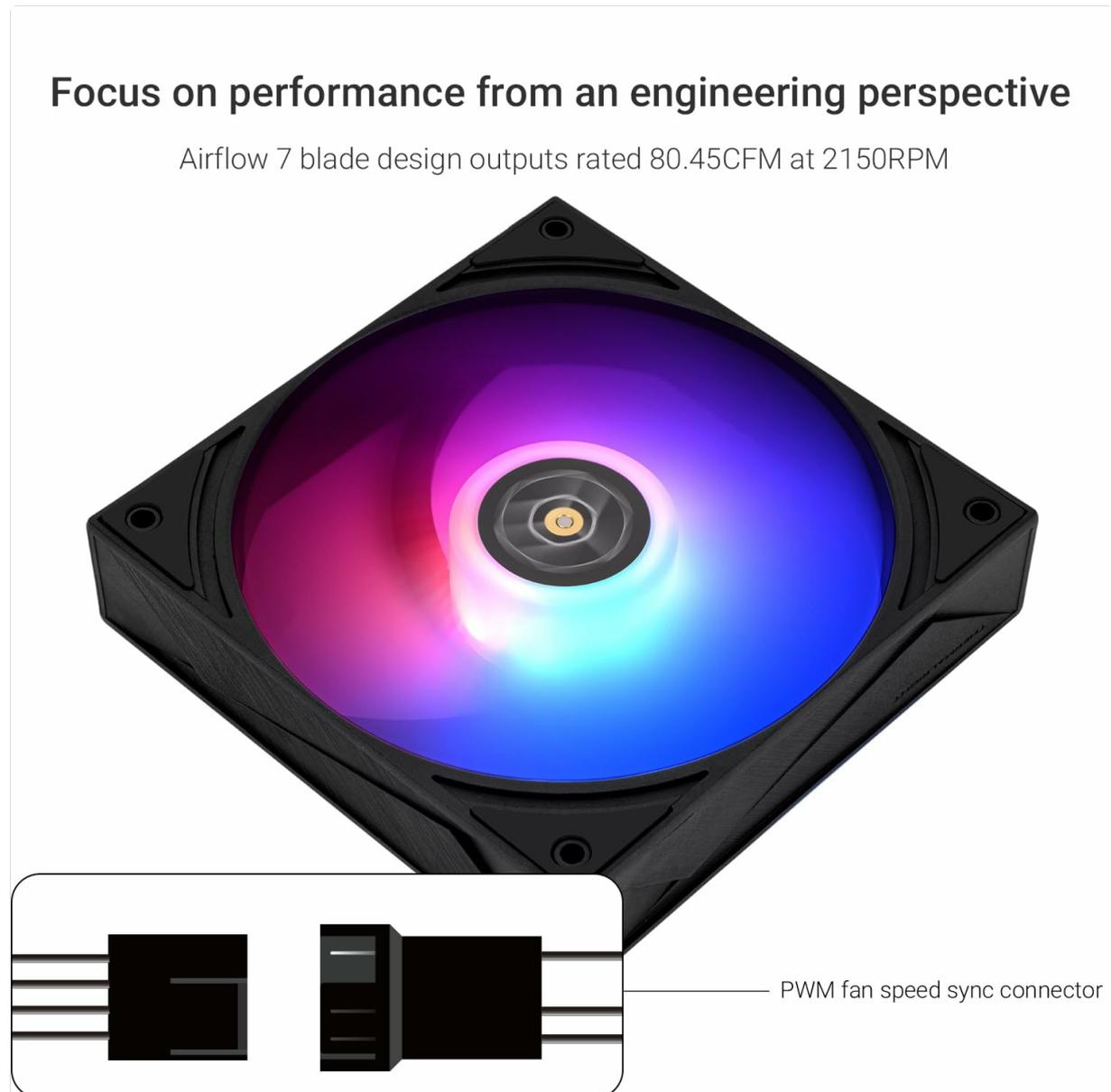
PWM fan speed sync connector

Image 5.2: The fan's blade side acts as the intake, and the frame side acts as the exhaust. A diagram of the PWM fan speed sync connector is also shown.

5.4. Physical Installation

1. Position the fan in the desired mounting location within your PC case, air cooler, or water cooling radiator.
2. Align the fan's screw holes with the mounting points.
3. Use the included self-tapping screws to secure the fan. Tighten screws firmly but do not overtighten.

Image 5.3: Example of the fan installed as a case fan, demonstrating proper mounting.

DIVERSIFIED USAGE SCENARIOS
TL-H12-X28-S

| Case Airflow | Air Cooling | Water Cooling Radiators |

Image 5.4: The fan can be used for case airflow, air coolers, and water cooling radiators.

5.5. Installation Video Tutorial

For a visual guide on fan installation and connection interfaces, please refer to the official tutorial video below:

Your browser does not support the video tag.

Video 5.1: Official tutorial demonstrating the installation and connection of Thermalright case fans, including PWM and ARGB setup.

6. OPERATING INSTRUCTIONS

Once installed and connected, the Thermalright TL-H12-X28-S fan operates automatically based on your motherboard's fan control settings.

- **Fan Speed Control (PWM):** The 4-pin PWM connector allows your motherboard to dynamically adjust the fan speed based on CPU temperature or other system parameters. You can typically configure fan curves in your motherboard's BIOS/UEFI settings or through manufacturer-provided software.
- **ARGB Lighting Control:** The 5V 3PIN ARGB lighting can be controlled via your motherboard's

ARGB software (e.g., ASUS Aura Sync, MSI Mystic Light Sync, Gigabyte RGB Fusion, ASRock Polychrome Sync) or a dedicated ARGB controller (not included). Ensure your motherboard's ARGB header is enabled and configured correctly in its software.

7. MAINTENANCE

Regular maintenance ensures optimal performance and longevity of your fan.

- **Cleaning:** Periodically clean the fan blades and frame to remove dust buildup. Use a soft brush or compressed air. Ensure the fan is powered off before cleaning.
- **Inspection:** Check for any obstructions around the fan blades or unusual noises during operation.
- **Bearing:** The S-FDB V2 bearing is designed for long-lasting, maintenance-free operation. Do not attempt to disassemble the fan for lubrication.

8. TROUBLESHOOTING

If you encounter issues with your fan, refer to the following common troubleshooting steps:

Problem	Possible Cause / Solution
Fan not spinning	- Ensure the 4-pin PWM connector is securely plugged into the motherboard fan header. - Check motherboard BIOS/UEFI settings to ensure the fan header is enabled and configured correctly. - Verify power supply connections to the motherboard.
ARGB lighting not working	- Confirm the 3-pin 5V ARGB connector is correctly plugged into a +5V ARGB header (not 12V RGB). - Check motherboard ARGB software for lighting control and ensure the header is enabled. - Ensure the ARGB sharing connector (if used) is properly connected.
Fan is too loud	- Adjust fan speed settings in motherboard BIOS/UEFI or software to a lower RPM. - Ensure no cables or obstructions are hitting the fan blades. - Verify the fan is securely mounted to reduce vibration.
Poor cooling performance	- Check fan orientation for correct airflow direction (blade side intake, frame side exhaust). - Clean any dust buildup on the fan blades or radiator fins. - Ensure adequate case ventilation and proper fan placement.

9. WARRANTY & SUPPORT

Thermalright products are manufactured to high-quality standards. For warranty information, technical support, or service inquiries, please contact Thermalright customer support directly or visit their official website. Keep your proof of purchase for warranty claims.
Manufacturer: Thermalright
Model Number: TL-H12-X28-S