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› Cloudray K Series Co2 Laser Lead Set D20 FL50.8 Instruction Manual

Cloudray K Series

Cloudray K Series Co2 Laser Lead Set Instruction Manual

Model: K Series | Brand: Cloudray

1. INTRODUCTION

This manual provides essential information for the proper installation, operation, and maintenance of your Cloudray K Series Co2 Laser Lead Set. This set includes a laser head, a 1st mirror mount, and a 2nd mirror mount, designed for use with D20 mirrors and D20 FL50.8 lenses in CO2 laser engraving and cutting machines. Please read this manual thoroughly before attempting any installation or operation to ensure safe and efficient use of the components.

2. PRODUCT OVERVIEW

The Cloudray K Series Co2 Laser Lead Set is constructed from high-quality aluminum alloy, ensuring durability and precise optical alignment. The set is designed to facilitate the path of the laser beam from the CO2 laser tube to the workpiece.

Key Components:

- **Laser Head (D20 FL50.8):** Integrates the focusing lens and an air assist nozzle for clean cuts.
- **1st Mirror Mount:** Holds the first mirror to redirect the laser beam.
- **2nd Mirror Mount:** Holds the second mirror, further guiding the beam towards the laser head.

Each component is designed for precise adjustment to ensure optimal laser beam alignment and focusing.

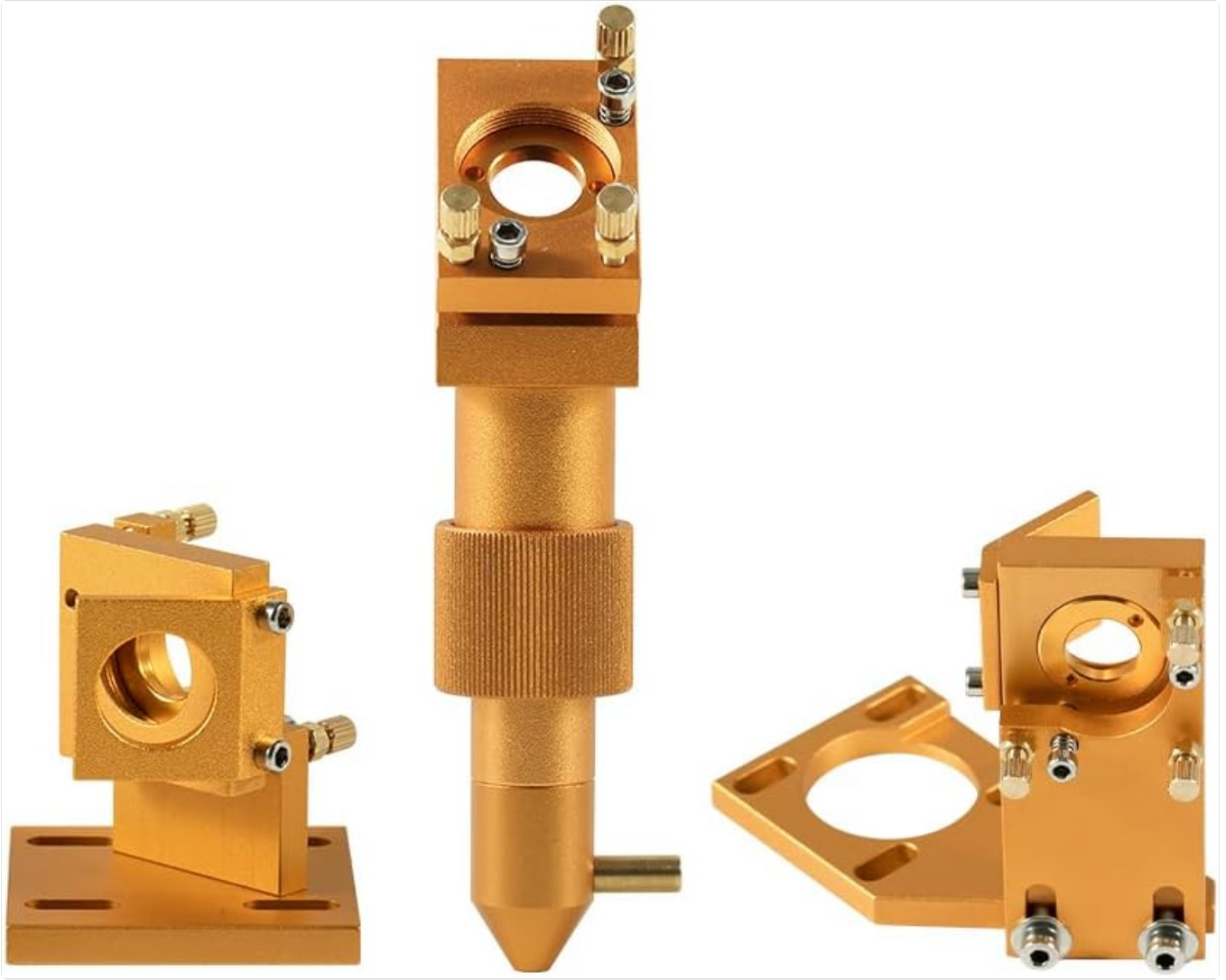


Figure 2.1: Overview of the Cloudray K Series Co2 Laser Lead Set components.

3. SETUP AND INSTALLATION

Proper installation and alignment are critical for the performance and safety of your CO2 laser system. These components are designed for D20 mirrors and D20 FL50.8 lenses.

3.1 Component Identification and Dimensions

Familiarize yourself with the individual components and their dimensions before installation.



Figure 3.1.1: Exploded view of the laser head, showing adjustable length (62-92mm) and M14 thread for lens tube. Caliber 3mm, OD 5mm.

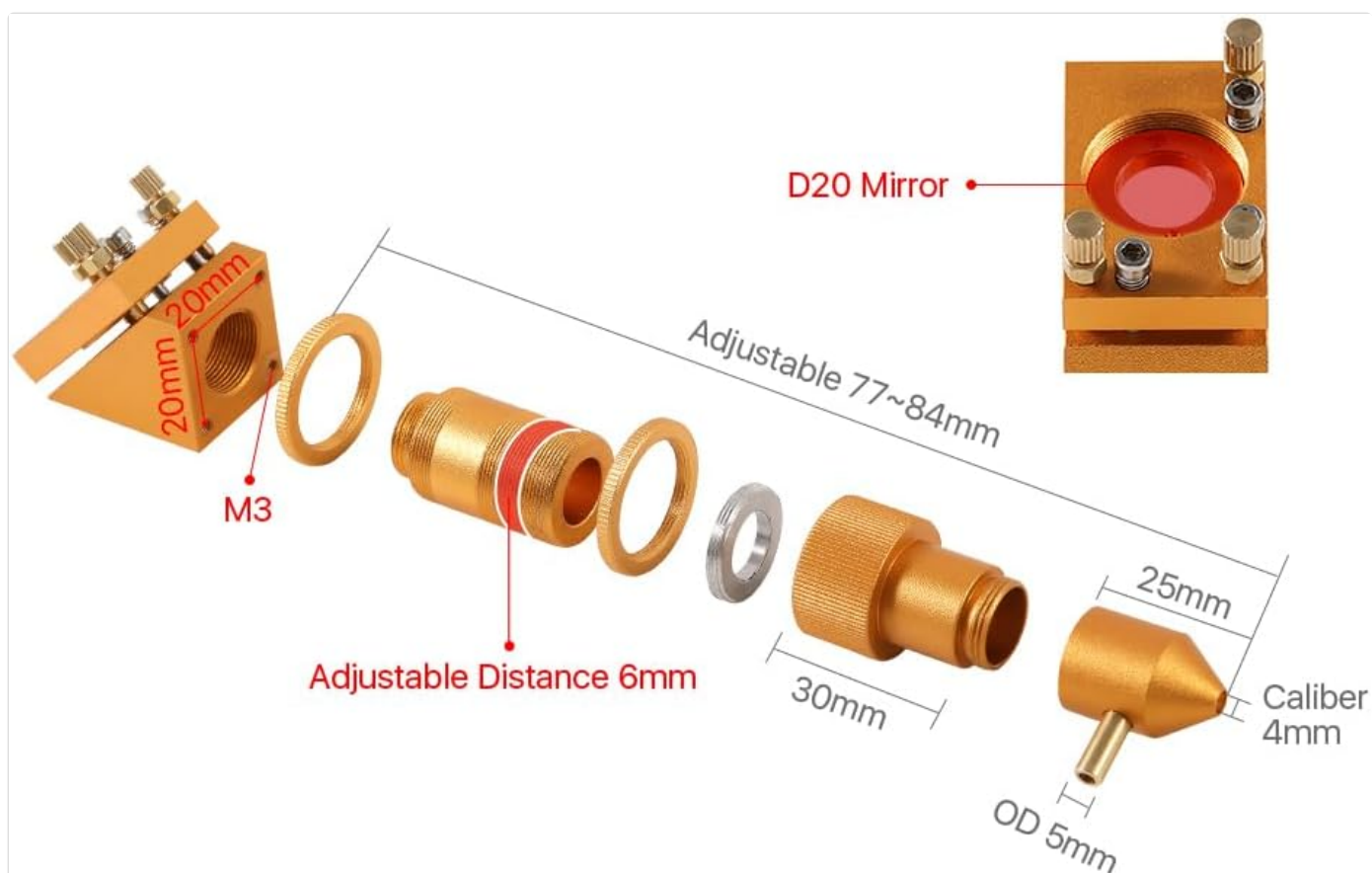


Figure 3.1.2: Exploded view of an alternative laser head, showing adjustable length (77-84mm) and adjustable distance of 6mm. Caliber 4mm, OD 5mm.

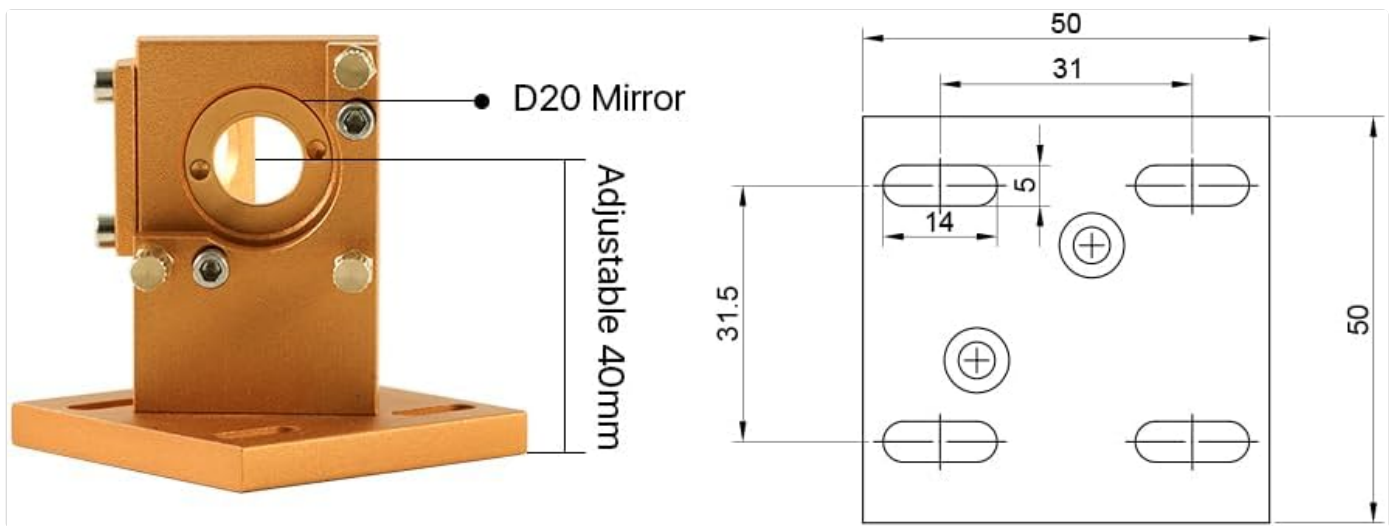


Figure 3.1.3: Dimensions for the 1st mirror mount, showing a D20 mirror aperture and 40mm adjustable height.

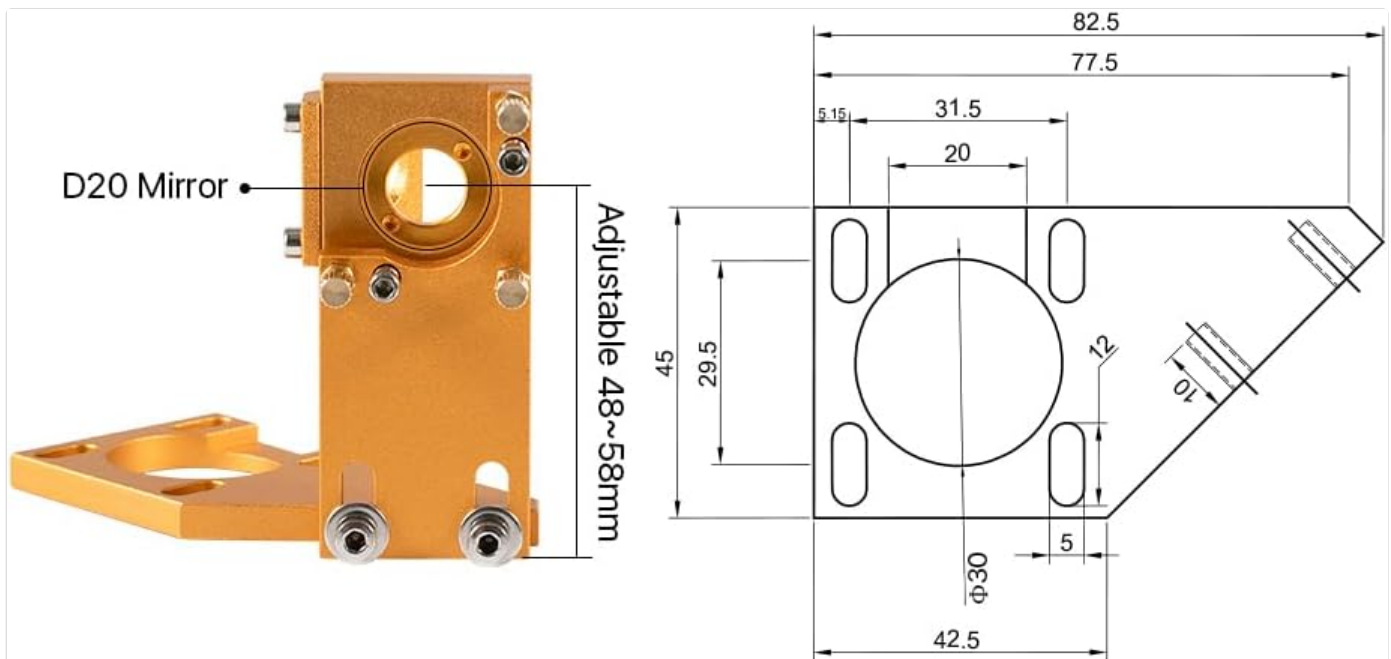


Figure 3.1.4: Dimensions for the 2nd mirror mount, showing a D20 mirror aperture and 48-58mm adjustable height.

3.2 Installation Steps

1. **Mounting the Mirror Mounts:** Securely attach the 1st and 2nd mirror mounts to your laser machine's frame. Ensure they are positioned to allow for the laser beam path from the tube to the laser head. Note that for some K40 machines, the 1st mirror mount may require custom adaptation due to height differences.
2. **Installing Mirrors:** Carefully place the D20 mirrors into their respective mounts. Ensure they are seated correctly and secured without overtightening.
3. **Mounting the Laser Head:** Attach the laser head to the gantry of your laser machine. For some K40 machines, a custom mounting plate may be necessary as the head might be longer or have a different diameter than stock components. The new head may also reduce Z-depth by approximately 10mm.
4. **Installing Focusing Lens:** Insert the D20 FL50.8 focusing lens into the laser head. Ensure the convex side of the lens faces upwards (towards the laser source) for optimal focusing.
5. **Connecting Air Assist:** Connect your air compressor line to the air assist nozzle on the laser head. This provides a stream of air to clear debris and protect the lens during operation.
6. **Beam Alignment:** This is a critical step. The center of all mirrors and the laser head must be aligned to the center height of the laser tube. Use a low-power laser pulse and target paper or tape to adjust the mirrors until the beam hits the exact center of each mirror and the lens aperture. Adjustments are made using the screws on the mirror

mounts.

Important Note: Due to variations in laser machine designs, particularly with K40 models, direct bolt-on compatibility for the 1st mirror mount and laser head may not be guaranteed. Custom modifications or mounting plates might be required to achieve proper alignment and fit.

4. OPERATING PRINCIPLES

The K Series laser lead set is designed to optimize the laser beam for cutting and engraving applications. Understanding the optical principles helps in achieving the best results.

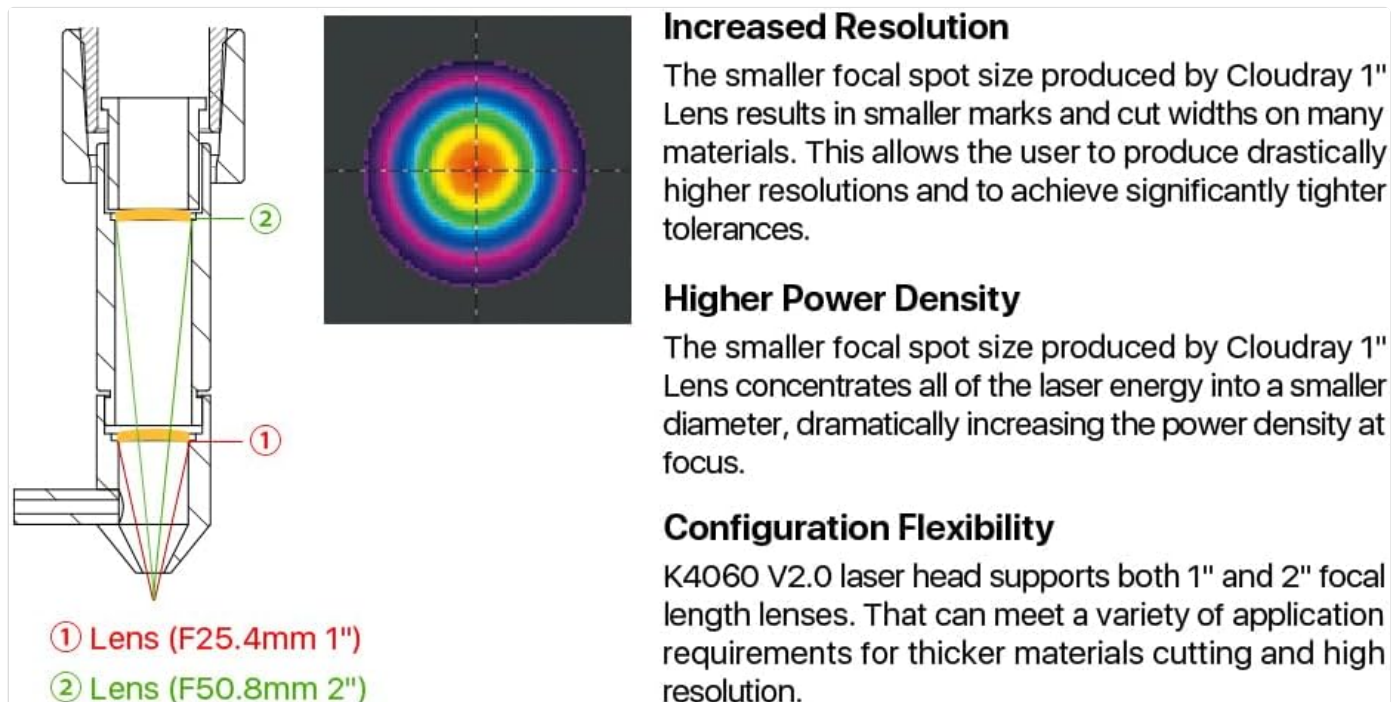


Figure 4.1: Illustration of lens focusing, showing how a smaller focal spot size leads to increased resolution and higher power density.

4.1 Increased Resolution

The focusing lens concentrates the laser beam into a smaller spot. A smaller focal spot size results in finer marks and narrower cut widths, allowing for higher resolution and tighter tolerances in your work.

4.2 Higher Power Density

By concentrating the laser energy into a smaller diameter, the power density at the focal point is dramatically increased. This enhances the cutting and engraving capabilities of your machine.

4.3 Configuration Flexibility

The K Series laser head supports both 1-inch (FL25.4mm) and 2-inch (FL50.8mm) focal length lenses. This flexibility allows you to meet various application requirements, from cutting thicker materials to achieving high-resolution engravings.

5. MAINTENANCE

Regular maintenance of your optical components is essential for consistent performance and longevity of your laser system.

5.1 Cleaning Optics

- **Mirrors:** Periodically inspect mirrors for dust, debris, or damage. Clean them gently with a lens tissue and optical cleaning solution. Avoid touching the mirror surfaces with bare hands.
- **Focusing Lens:** The focusing lens is particularly susceptible to contamination from cutting debris. Clean it regularly using the same method as mirrors. Ensure the air assist system is functioning correctly to minimize debris accumulation.

5.2 Inspection and Alignment

- **Visual Inspection:** Regularly check all mounts and the laser head for any signs of wear, looseness, or damage.
- **Beam Alignment Check:** If you notice a decrease in cutting or engraving quality, or if components have been moved, re-check the laser beam alignment. Misalignment can lead to power loss and poor results.

6. TROUBLESHOOTING

This section addresses common issues you might encounter with your laser optical system.

6.1 Reduced Cutting/Engraving Performance

- **Cause:** Dirty optics (mirrors or lens).
Solution: Clean all optical components as described in the Maintenance section.
- **Cause:** Beam misalignment.
Solution: Re-align the laser beam path through all mirrors and the laser head. Ensure the beam is centered at each point.
- **Cause:** Incorrect lens focal length or orientation.
Solution: Verify that the correct lens (D20 FL50.8) is installed and oriented with the convex side facing the laser source.

6.2 Inconsistent Cut Depth or Engraving Quality

- **Cause:** Loose optical components.
Solution: Ensure all mirrors and the lens are securely fastened in their mounts.
- **Cause:** Gantry or machine vibration.
Solution: Check the stability of your laser machine and gantry. Address any sources of vibration.

6.3 Air Assist Malfunction

- **Cause:** Clogged air assist nozzle.
Solution: Inspect and clean the air assist nozzle on the laser head.
- **Cause:** Air line blockage or insufficient pressure.
Solution: Check the air compressor and air lines for any blockages or leaks.

7. SPECIFICATIONS

Feature	Specification
Brand	Cloudray
Model Number	K Series (MP09LP406020S)
Material	Anodized Aluminum
Mirror Diameter	20 mm (0.79 inch)

Feature	Specification
Lens Diameter	20 mm (0.79 inch)
Lens Focal Length	50.8 mm (2 inches)
Number of Actuators	3 (for adjustments)
Adjustment Screw Thread	50 TPI
Adjustments	Z, θ_x , θ_y
Actuator Locks	Yes
Overall Dimensions (L x W x H)	12.7 x 12.7 x 10.2 cm (approximate package dimensions)

Material		Anodized Aluminum	
Number of Actuators		3	
Adjustment Screw Thread		50 TPI	
Adjustments		z, θ_x , θ_y	
Actuator Locks		Yes	
Optic Diameter			
Optical Mirror Mounts		Focusing Lens	Mirrors
Laser Head A V2.0	D12 F25.4mm (D0.47" F1")	D12 F50.8mm (D0.47" F2")	20mm (0.79")
Laser Head C V2.0	D12 F25.4mm (D0.47" F1")	D20 F50.8mm (D0.79" F2")	20mm (0.79")
1st Mirror Mount V2.0	-		20mm (0.79")
2nd Mirror Mount V2.0	-		20mm (0.79")

Figure 7.1: Detailed optical specifications for various K Series components.

8. WARRANTY AND SUPPORT

8.1 Warranty Information

This product is covered by a 30-day free return policy. Additionally, spare parts availability in the EU is guaranteed for 1 year from the date of purchase. Please retain your proof of purchase for any warranty claims.

8.2 Technical Support

For technical assistance, troubleshooting beyond this manual, or inquiries regarding parts and service, please contact Cloudray customer support. Refer to the contact information provided with your purchase or visit the official Cloudray website for support resources.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question

and use this page's manual context to help answer it.

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After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question

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