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› [QMTECH Mister FPGA SOC Altera Cyclone V FPGA 5CSEMA6U23 Development Board User Manual](#)

QMTECH 5CSEMA6U23

QMTECH Mister FPGA SOC Altera Cyclone V FPGA 5CSEMA6U23 Development Board User Manual

Comprehensive instructions for setup, operation, and maintenance.

1. INTRODUCTION

This manual provides detailed instructions for the QMTECH Mister FPGA SOC Altera Cyclone V FPGA 5CSEMA6U23 Development Board. It covers the components included, setup procedures, operational guidelines, maintenance tips, troubleshooting steps, and product specifications. Please read this manual thoroughly before using the device to ensure proper functionality and longevity.

2. PACKAGE CONTENTS

Verify that all items listed below are present in your package:

- One (1) QMTECH Mister FPGA SOC Altera Cyclone V FPGA 5CSEMA6U23 Development Board, factory assembled, including:
 - One (1) QMTECH Cyclone V SoC 5CSEMA6U23 Board with 128MB Built-in SDRAM.
 - One (1) QMTECH Official IO board: Features VGA Display, 3.5mm Audio Header, SNAC port, and a 4-port USB Hub. Includes RTC functionality (CR1220 battery not included).
 - One (1) QMTECH Case, constructed from PCB material.
 - One (1) Sandisk 32GB TF card.
- One (1) USB 2.0 cable, Type A to Mini B, Male to Male 5Pin.
- One (1) US type 5V DC power adapter.

3. SETUP INSTRUCTIONS

Follow these steps to set up your QMTECH Mister FPGA Development Board:

1. **Insert TF Card:** Ensure the provided 32GB TF card is securely inserted into the designated slot on the QMTECH Mister unit.
2. **Connect Peripherals:**
 - **Video Output:** Connect a VGA cable to the VGA port or an HDMI cable to the HDMI output port on the

IO board to your display device.

- **Audio Output:** If desired, connect audio devices to the 3.5mm audio header.
- **USB Devices:** Connect USB keyboards, mice, or other peripherals to the 4-port USB hub.
- **Network:** Connect an Ethernet cable to the Ethernet port for network access.

3. **Power Connection:** Connect the included 5V DC power adapter to the "POWER 5V IN" port on the unit and then plug it into a power outlet. The unit should power on automatically.

4. **Initial Boot:** Allow the system to boot up. The initial boot process may take a few moments.



Figure 1: Front view of the QMTECH Mister FPGA unit, showing the power, disk, reset, OSD, and user buttons. The top panel features ventilation slots and the "MiSTer FPGA" branding.



Figure 2: Rear view of the QMTECH Mister FPGA unit, displaying the POWER 5V IN port, 3.5mm Audio jack, VGA output port, and HDMI output port for display connectivity.



Figure 3: Side view of the QMTECH Mister FPGA unit, featuring two USB ports, a Secondary TF card slot, an Ethernet port, and a Console port for various connections.

4. OPERATING INSTRUCTIONS

The QMTECH Mister FPGA system operates based on the MiSTer project framework. Detailed operational instructions, including core loading, game loading, and system configuration, are typically managed through the MiSTer's on-screen display (OSD) menu.

- **Power On/Off:** The unit powers on when connected to the 5V DC adapter. To power off, it is recommended to use the system's shutdown function if available, or simply disconnect the power adapter.
- **OSD Button:** Press the "OSD" button (green) on the front panel to access the MiSTer's on-screen display menu for system configuration and core selection.
- **Reset Button:** The "Reset" button (red) will restart the FPGA core or the entire system, depending on the current state.
- **User Buttons:** The "User" buttons (yellow) are programmable and their function depends on the loaded FPGA core. Refer to specific core documentation for their usage.
- **USB Hub:** The integrated 4-port USB hub supports various USB devices such as gamepads, keyboards, and mice.
- **RTC:** The Real-Time Clock (RTC) functionality requires a CR1220 battery (not included) to maintain time settings when the device is powered off.

For comprehensive guides on MiSTer FPGA operation, including core installation and usage, please refer to the official MiSTer project documentation available online.

5. MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your QMTECH Mister FPGA Development Board.

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the unit. Avoid using liquid cleaners or solvents, as they may damage the PCB case or internal components.
- **Ventilation:** Ensure the ventilation slots on the case are not obstructed to allow for proper airflow and prevent overheating.
- **Storage:** When not in use for extended periods, store the unit in a cool, dry place away from direct sunlight and extreme temperatures.
- **Firmware Updates:** Regularly check the official MiSTer project resources for firmware and core updates to ensure you have the latest features and bug fixes. Follow the provided instructions carefully when performing updates.
- **RTC Battery:** If using the RTC function, replace the CR1220 battery as needed to maintain accurate time. Ensure correct polarity when inserting the new battery.

6. TROUBLESHOOTING

This section addresses common issues you might encounter. For more complex problems, refer to the official MiSTer project community forums or the provided GitHub resources.

Problem	Possible Cause	Solution
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Problem	Possible Cause	Solution
No Power/No Display	Power adapter not connected or faulty. Display cable loose or incorrect input selected on monitor. TF card not inserted or corrupted.	Ensure 5V DC power adapter is securely connected and functional. Check VGA/HDMI cable connections and monitor input settings. Verify TF card insertion. Try re-flashing the MiSTer image to the TF card if corrupted.
USB Devices Not Responding	Device not properly connected. Incompatible USB device. USB hub issue.	Ensure USB devices are firmly plugged into the USB hub ports. Test with a different, known-working USB device. Restart the MiSTer unit.
Audio Issues	Audio cable loose or faulty. Incorrect audio settings in OSD.	Check 3.5mm audio cable connection. Verify audio output settings within the MiSTer OSD.

7. SPECIFICATIONS

Feature	Detail
Brand	QMTECH
Model Name	QMTECH Mister
FPGA/SoC	Altera Cyclone V SoC 5CSEMA6U23 (Intel Processor Brand)
Built-in SDRAM	128 MB DDR3
Storage	32 GB TF card included
Video Output	VGA, HDMI
Audio Output	3.5mm Audio Header
USB Ports	4 (via integrated USB Hub)
Network	Ethernet Port
RTC	Yes (CR1220 battery not included)
Operating System	Linux (for SoC portion)
Power Input	5V DC

8. WARRANTY INFORMATION

Specific warranty details for the QMTECH Mister FPGA SOC Altera Cyclone V FPGA 5CSEMA6U23 Development Board are not provided in the product information. Please refer to your point of purchase or contact QMTECH directly for warranty terms and conditions.

9. SUPPORT AND RESOURCES

For additional technical documentation, schematics, test programs, and community support, please refer to the following resources:

- **Official GitHub Repository:**

https://github.com/ChinaQMTECH/QMTECH_Cyclone_V_SoC_KFB_With_Dual_SDRAM (Contains schematics, user manual, and test programs).

- **MiSTer FPGA Project:** For general MiSTer project information, cores, and community support, visit the official MiSTer FPGA website and forums.