

PULME AX7A200B

PULME AX7A200B XC7A200T FPGA Development Board User Manual

Model: AX7A200B | Brand: PULME

1. INTRODUCTION AND OVERVIEW

The PULME AX7A200B is an XC7A200T FPGA Development Board designed for various applications requiring powerful on-board processing and storage capabilities. This board integrates an Artix-7 series FPGA, offering a flexible platform for embedded system development, signal processing, and high-speed data transfer.

Key features include:

- Enhanced transfer rates for faster and more convenient operation.
- Robust on-board storage and processing, suitable for integration with application-specific sensors and devices.
- Reliable and scalable architecture for diverse applications.
- Suitable for smart home, intelligent building, and industrial automation projects.

2. PRODUCT COMPONENTS AND LAYOUT

Familiarize yourself with the various components and interfaces of the AX7A200B development board.

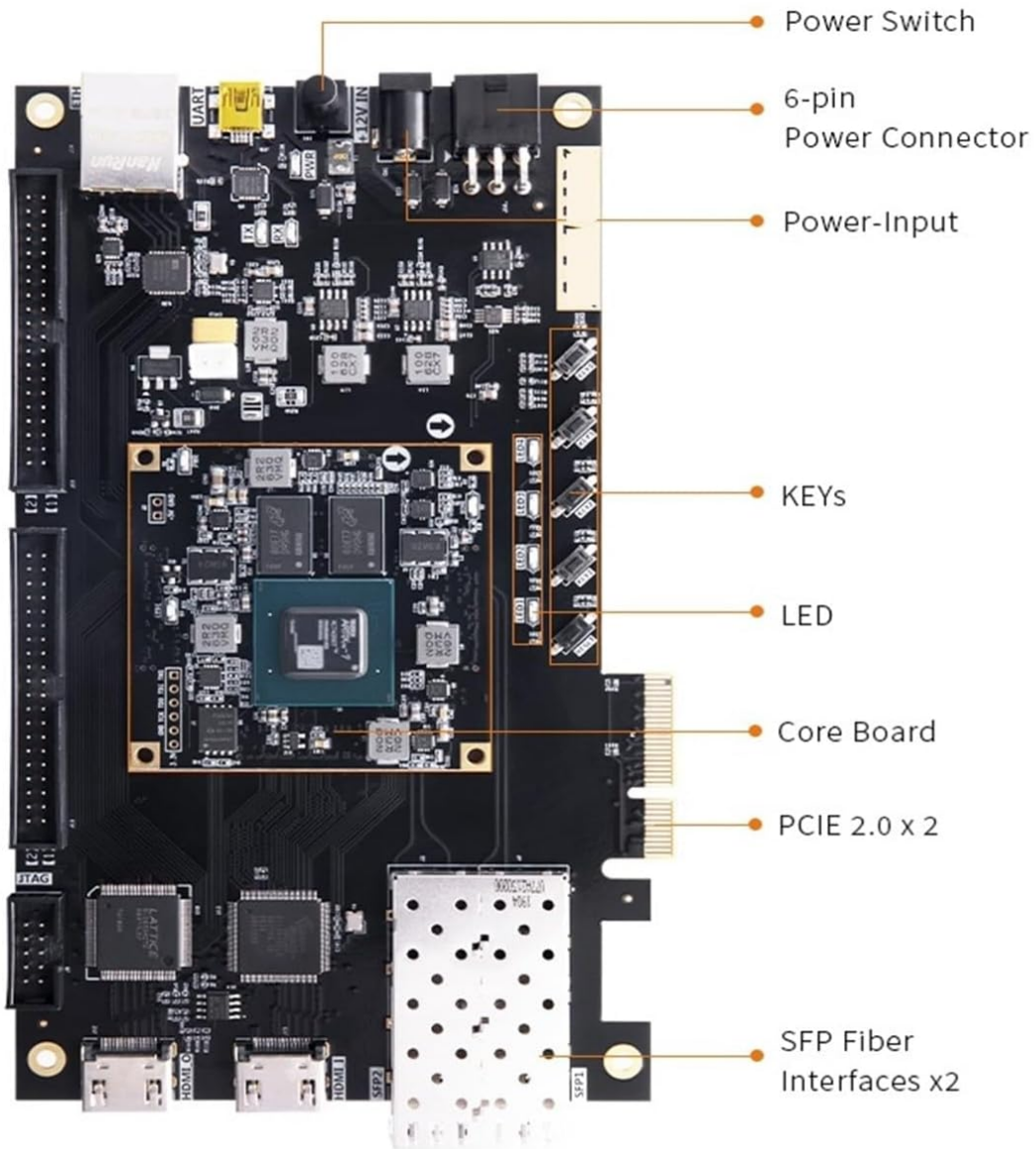


Figure 2.1: Top view of the AX7A200B board highlighting power and interface components. Labels indicate Power Switch, 6-pin power connector, Power-Input, KEYS, LED indicators, the central Core Board, PCIE 2.0 x 2 interface, and SFP Fiber Interfaces x2.

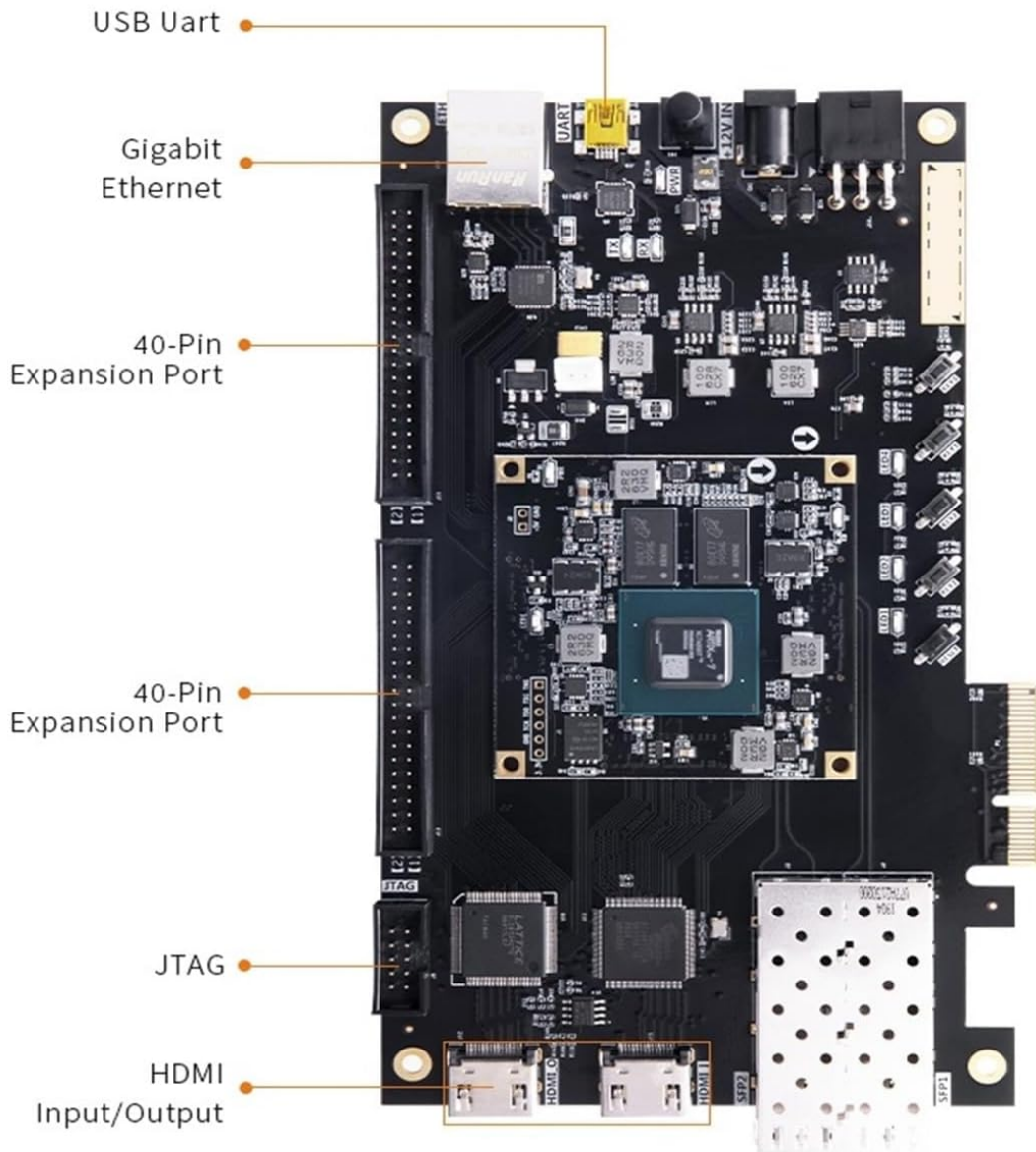


Figure 2.2: Top view of the AX7A200B board highlighting data and expansion components. Labels indicate USB Uart, Gigabit Ethernet port, two 40-Pin Expansion Ports, JTAG interface, and HDMI Input/Output ports.

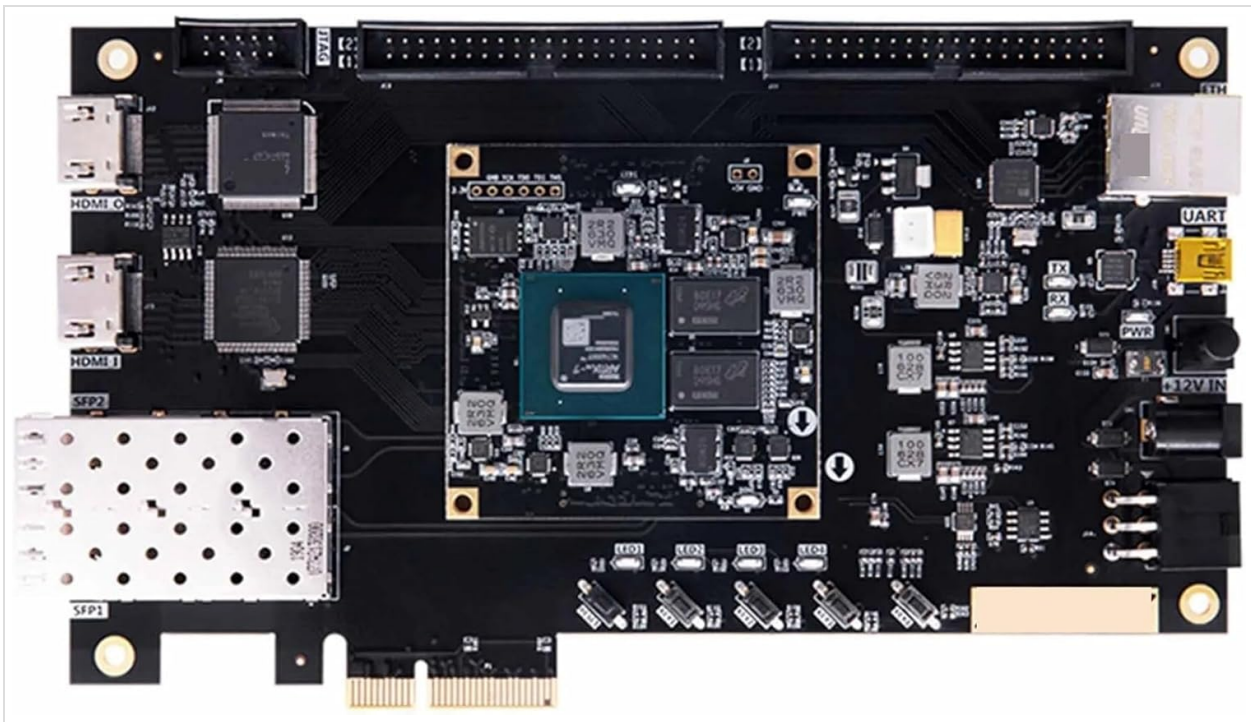


Figure 2.3: Detailed view of the AX7A200B FPGA Development Board, showing the integrated circuits and various connectors.

3. SETUP INSTRUCTIONS

Follow these steps to set up your AX7A200B FPGA Development Board:

1. **Power Connection:** Connect a compatible 6-pin power supply to the '6-pin power connector' on the board. Ensure the power switch is in the OFF position before connecting.
2. **Peripheral Connections:**
 - **USB UART:** Connect a USB cable from the board's USB Uart port to your computer for serial communication and debugging.
 - **Ethernet:** For network connectivity, connect an Ethernet cable to the Gigabit Ethernet port.
 - **HDMI:** If using video input/output, connect HDMI cables to the HDMI Input/Output ports.
 - **Expansion Ports:** Utilize the 40-Pin Expansion Ports for connecting compatible expansion modules or custom hardware.
 - **PCIe:** Insert the board into a compatible PCIe slot on a host system if using the PCIe 2.0 x 2 interface.
 - **SFP Fiber:** Connect SFP transceivers to the SFP Fiber Interfaces for high-speed optical communication.
3. **Initial Power-On:** Once all necessary connections are made, switch the 'Power Switch' to the ON position. Observe the LED indicators for proper power-up sequence.

4. OPERATING INSTRUCTIONS

The AX7A200B board is designed for flexible operation based on your project requirements. Here are general guidelines:

- **FPGA Programming:** Use appropriate Xilinx development tools (e.g., Vivado) to design, synthesize, and implement your FPGA logic. Program the FPGA via the JTAG interface or through a configured boot method.
- **Software Development:** For embedded processors within the FPGA (if applicable), use relevant SDKs to develop and debug software applications.

- **Data Transfer:** Utilize the Gigabit Ethernet, USB Uart, PCIe, and SFP interfaces for high-speed data transfer and communication with other devices or systems.
- **Expansion:** Leverage the 40-Pin Expansion Ports to extend the board's functionality with custom peripherals or standard modules.
- **Monitoring:** Monitor the board's status using the on-board LED indicators.

5. MAINTENANCE

Proper care and maintenance will ensure the longevity and reliable operation of your development board:

- **Handling:** Always handle the board by its edges to avoid touching sensitive components. Use anti-static precautions (e.g., anti-static wrist strap) when working with the board.
- **Cleaning:** Keep the board free from dust and debris. Use a soft, dry brush or compressed air for cleaning. Avoid using liquid cleaners directly on the board.
- **Storage:** When not in use, store the board in an anti-static bag in a cool, dry environment, away from direct sunlight and extreme temperatures.
- **Power Off:** Always power off the board and disconnect the power supply before making or changing any connections.

6. TROUBLESHOOTING

If you encounter issues with your AX7A200B board, consider the following basic troubleshooting steps:

- **No Power:** Ensure the power supply is correctly connected and functional. Verify the power switch is in the ON position. Check for any visible damage to the power connector or cable.
- **Connectivity Issues:** If experiencing problems with USB UART, Ethernet, or HDMI, check all cable connections. Ensure drivers are correctly installed on your host computer for USB UART.
- **FPGA Not Programming:** Verify your JTAG cable connection and ensure your development software (e.g., Vivado) is correctly configured and detecting the device. Check for power supply stability.
- **Unexpected Behavior:** Review your FPGA design and software code for errors. Ensure all external components connected to expansion ports are compatible and correctly wired.

For persistent issues, refer to the official PULME support resources or contact technical support.

7. SPECIFICATIONS

Below are the technical specifications for the PULME AX7A200B FPGA Development Board:

| Feature | Detail |
|-------------|-------------------------|
| Brand | PULME |
| Model Name | AX7A200B |
| FPGA | Xilinx Artix-7 XC7A200T |
| Item Weight | 500 Grams |

| Feature | Detail |
|--------------|---|
| Connectivity | USB Uart, Gigabit Ethernet, HDMI, PCIe 2.0 x 2, SFP Fiber Interfaces x2 |
| Expansion | 2x 40-Pin Expansion Ports |
| Debugging | JTAG |

8. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the official PULME website or contact your vendor. Keep your purchase receipt as proof of purchase for any warranty claims.

When contacting support, please be prepared to provide the product model (AX7A200B) and a detailed description of the issue you are experiencing.