

JetCore User Manual

1. Introduction

Welcome to JetCore!. JetCore is an advanced carrier board designed for NVIDIA Jetson modules, supporting AI edge computing and robotics applications. Its robust design, versatile connectivity options, and performance make it ideal for industries like robotics, automation, and surveillance.

Key Features:

- Compatible with Jetson Xavier NX, Orin NX, and Nano.
- Multiple communication interfaces: UART, CAN, I2C, SPI, and GPIO.
- Integrated IMU for temperature and motion sensing.
- High durability in temperatures ranging from -40°C to +85°C.

2. Technical Specifications

Specification	Details
Compatibility	Jetson Xavier NX, Orin NX, Nano
Power Input	XT30 Connector, 12-18V DC
Interfaces	Ethernet, USB, UART, CAN, GPIO
Video Output	Micro HDMI (4K resolution support)
Storage Expansion	M.2 Key M (NVMe SSD), SD card slot
Operating Temperature	-40°C to +85°C

Dimensions	86mm x 67mm x 18mm
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3. Getting Started

3.1 Package Contents

- JetCore Carrier Board.
- XT30 Power Connector Cable.
- Documentation (Quick Guide, Warranty Card).

3.2 Hardware Setup

1. **Unboxing:**
 - Inspect the board for any visible damage.
2. **Connecting Power:**
 - Use the XT30 connector with a 12-18V DC power supply.
 - Ensure secure and stable connections to avoid interruptions.
3. **Peripherals:**
 - Connect devices using USB 2.0, USB 3.0, or Ethernet ports.
 - For UART, CAN, or I2C, refer to the pinout diagram.

3.3 Software Setup

1. Install NVIDIA JetPack SDK using the NVIDIA SDK Manager.
 - Supported versions: JetPack 4.x and 5.x.
2. Attach the NVIDIA Jetson module to the JetCore board.
3. Flash the Jetson module with the latest firmware:
 - Use the SDK Manager GUI or Command Line for flashing.

3.4 Initial Boot

1. Connect the HDMI cable to a display (optional).
 2. Power on the board.
 3. Follow the on-screen setup process for language, time zone, and Wi-Fi.
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4. Functional Interfaces

4.1 Power Supply

- Ensure stable 12–18V DC input through the XT30 port.

4.2 Ethernet Port

- Gigabit Ethernet (RJ45) for high-speed networking.

4.3 USB Ports

- USB 3.0 (for data transfer and peripherals).
- USB 2.0 ports, including one dedicated for debugging.

4.4 GPIO, UART, CAN, and I2C Ports

- GPIO for custom input/output functionalities.
- UART for serial communication.
- CAN for robust industrial communication.
- I2C for low-speed peripheral interfacing.

4.5 CSI Camera Interface

- Connect MIPI CSI cameras for high-definition imaging.

4.6 Storage Expansion

- Add an NVMe SSD via the M.2 Key M slot for high-speed storage.
 - SD card slot is available through a daughter board.
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5. Configuration and Advanced Usage

5.1 Using CAN Interface

1. Connect CAN_H and CAN_L lines to the CAN port.
2. Enable the interface using the `ip link` command.

5.2 Configuring CSI Camera

1. Connect the ribbon cable to the CSI port.
2. Test the camera using `v4l2-ctl` or GStreamer commands.

5.3 GPIO Setup

1. Use GPIO pins for custom input/output logic.
2. Configure GPIO using the Jetson GPIO library in Python or C++.

5.4 MAVLink Integration

- Set up MAVLink with a flight controller for drone operations.
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6. Troubleshooting

Power Issues

- Verify XT30 connector and ensure power supply meets the voltage requirements.
- Check for loose connections.

Interface Not Detected

- Reinstall drivers for USB, Ethernet, or other ports.
- Check firmware compatibility.

Camera Not Working

- Ensure the ribbon cable is correctly oriented and connected.
- Test with `v4l2-ctl --list-devices`.

Flashing Fails

- Reconnect the USB cable and re-enter recovery mode.
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7. Maintenance and Care

- Store in a dust-free environment.
 - Use anti-static precautions when handling the board.
 - Avoid bending or applying force on connectors.
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8. Appendices

Pinout Diagrams

- Top and bottom views with labeled interfaces.

Support Information

- Visit discuss.vecros.com for updates.
- Contact: [**support@vecros.com**](mailto:support@vecros.com)