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BPC-iMX8MP-03 Industrial Computer

DEBIX BPC-iMX8MP-03 Industrial Computer User Guide

Contents

DEBIX BPC-iMX8MP-03 Industrial Computer

Specifications

- **Model:** BPC-iMX8MP-03 Industrial Computer
- **Manufacturer:** Polyhex Technology Company Limited
- **Components:** DEBIX SOM A core board, DEBIX SOM A I/O board, steel and aluminum enclosure
- **Features:** Ruggedized, dustproof, anti-vibration, shock-resistant, wide temperature range
- **Portability:** Yes

FAQs

- **Q: Can I disassemble the BPC-iMX8MP-03 Industrial Computer by myself?**
  - **A:** For safety reasons, the product can only be disassembled by professional personnel to avoid any damage or safety hazards.
- **Q: What should I do if the equipment shows signs of damage or malfunction?**
  - **A:** If you notice any damage, malfunction, exposure to moisture, or operation issues, contact service personnel immediately for proper inspection and assistance.

PRODUCT INFORMATION

- **Version:** V1.0(2023-03)
- **Complied by:** Polyhex Technology Company Limited **http://www.polyhex.net/**
- BPC-iMX8MP-03 Industrial Computer is a ruggedized and protected computer. It is composed of a DEBIX SOM A (core board), a DEBIX SOM A I/O board (carrier board), and a steel and aluminum enclosure. It combines various types of harsh environment resistance features, including ruggedness, dustproof, anti-vibration, shock resistance, wide temperature, portability, and other indicators.

Figure 1

REVISION HISTORY		
Rev.	**Date**	**Description**
1.0	2023.03.17	First edition

Security

Safety Precaution
This document informs how to make each cable connection. In most cases, you will simply need to connect a standard cable.

Table 1 Terms and conventions

Symbol	Meaning
⚠️ *Warning!*	Always disconnect the power cord from the chassis whenever there is no workload required on it. Do not connect the power cable while the power is on. A sudden rush of power can damage sensitive electronic components. Only experienced electricians should open the chassis.
⚠️ *Caution!*	Always ground yourself to remove any static electric charge before touching the *BPC-iMX8MP-03* product. Modern electronic devices are very sensitive to electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag.

Safety Instruction

To avoid malfunction or damage to this product please observe the following:

1. Disconnect the device from the DC power supply before cleaning. Use a damp cloth. Do not use liquid detergents or spray-on detergents.
2. Keep the device away from moisture.
3. During installation, set the device down on a reliable surface. Drops and bumps will lead to damage.
4. Before connecting the power supply, ensure that the voltage is in the required range, and the way of wiring is correct.
5. Carefully put the power cable in place to avoid stepping on it.
6. If the device is not used for a long time, power it off to avoid damage caused by sudden overvoltage.
7. Do not pour liquid into the venting holes of the enclosure, as this could cause fire or electric shock.
8. For safety reasons, the device can only be disassembled by professional personnel.
9. If one of the following situations occurs, get the equipment checked by service personnel:
   - The power cord or plug is damaged.
   - Liquid has penetrated the equipment.
   - The equipment has been exposed to moisture.
   - The equipment does not work well, or you cannot get it to work according to the user's manual.
   - The equipment has been dropped and damaged.
   - The equipment has obvious signs of breakage.
10. Do not place the device in a place where the ambient temperature is below -20°C (-4°F) or above 70°C (158°F). This will damage the machine. It needs to be kept in an environment at controlled temperature.
11. Due to the sensitive nature of the equipment, it must be stored in a restricted access location, only accessible by qualified engineers.

DISCLAIMER: Polyhex disclaims all responsibility for the accuracy of any statement of this instructional document.

Technical Support

1. Visit the DEBIX website **https://www.debix.io/** where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Polyhex's customer service center for technical support if you need additional assistance. Please have the following info ready before you call:
   - Product name and memory size
   - Description of your peripheral attachments
   - Description of your software(operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages
   - **Discord Community (recommended): https://discord.com/invite/adaHHaDkH2**
   - **Email: info@polyhex.net**.

Industrial Computer Introduction

BPC-iMX8MP-03 Industrial Computer Introduction

BPC-iMX8MP-03 Industrial Computer is a compact and secure computer, designed for industrial applications and can be widely used in machine vision and machine learning, advanced multimedia, smart cities, edge computing and other solutions that require high reliability.

Main features:

- Stainless steel and aluminum enclosure with MTBF>50,000 hours
- It encompasses a DEBIX SOM A and DEBIX SOM A I/O Board
- Support boot from eMCC, Micro SD card, and SPI NOR Flash
- Support dual Gigabit Ethernet, 2.4GHz & 5GHz dual-band Wi-Fi, Bluetooth 5.,0 and a Mini PCIe 4G module/LoRa module/network card
- Support 4 x USB 3.0, 2 x USB 2.0, physically isolated interfaces: 4 x RS232, 2 x RS485/RS232/CAN, 4 x DI, 4 x DO
- Support for Ubuntu, Android, Yocto, Windows 10 IoT
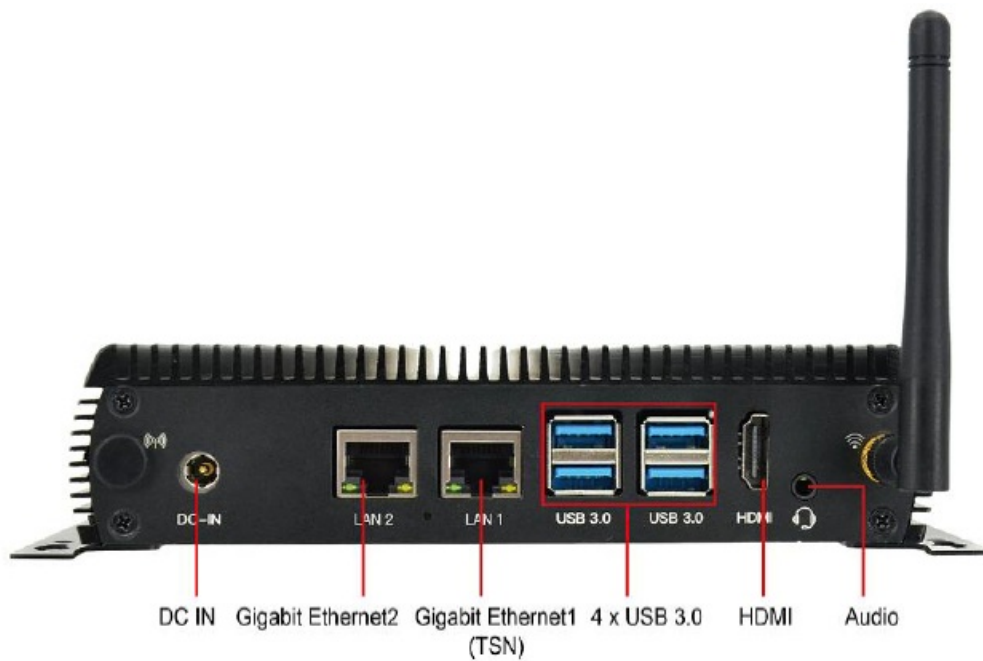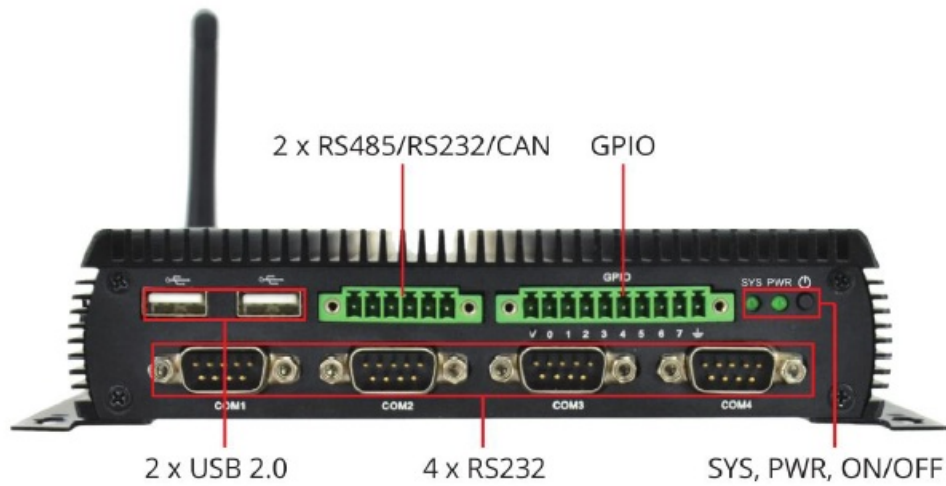
Overview

Figure 2

Figure 3

BPC-iMX8MP-03 Industrial Computer uses DEBIX SOM A and DEBIX SOM A I/O Board connection as the main board, which supports dual Gigabit Ethernet, three boot modes, shock and vibration resistance, etc.. The data specifications are as follows.

Table 2 BPC-iMX8MP-03 Industrial Computer Specification

System	
Motherboard	DEBIX SOM A + DEBIX SOM A I/O Board
Model	BPC-iMX8MP-03
Memory	2GB LPDDR4 (1GB/4GB/8GB optional)
Storage	Onboard 16GB eMMC (8GB/32GB/64GB/128GB/256GB optional)
OS	Ubuntu 20.04, Android 11, Yocto-L5.10.72_2.2.0, Windows 10 IoT Enterprise
Boot Mode	1) Support DEBIX SOM A board eMCC boot (default) 2) Support DEBIX SOM A I/O Board Micro SD card boot 3) Support DEBIX SOM A I/O Board SPI Nor Flash boot (reserved)
Communication	
Gigabit Network	2 x Independent MAC RJ45 Gigabit Ethernet ports, both support POE power supply (need POE power device module)
Wi-Fi & Bluetooth	2.4GHz & 5GHz dual-band Wi-Fi, Bluetooth 5.0, external Wi-Fi and 4G SMA antenna interface
Video & Audio	
HDMI	1 x HDMI output, the connector is Type A HDMI female
Audio	1 x headphone output and microphone input combo interface, the connector is a 3.5mm socket
External I/O Interface	
DC Block	1 x DC socket, supports 5.5mm x 2.1mm plug
USB 3.0	4 x USB 3.0 Host, the connector is double layer Type-A interface
USB 2.0	3 x USB 2.0 Host, the connector is Type-A interface
Serial Ports	1) 4 x physically isolated RS232, compatible with UART TTL 3.3V without physical isolation 2) 2 x physically isolated RS485/RS232/CAN (RS485 by default),

	compatible with UART TTL 3.3V without physical isolation
GPIO	1)　4 x physically isolated DIs, supporting wet and dry nodes 2)　4 x physically isolated DOs, support wet nodes, compatible with external relay dry nodes
LED & Key	1)　1 x System status indicator 2)　1 x Power status indicator 3)　1 x ON/OFF key
Internal I/O Interface	
Slot	1)　1 x Micro SIM pop-up card slot 2)　1 x Micro SD pop-up card slot
Mini PCIe	1)　Support Mini PCIe 4G module, such as Quectel 4G module, built-in SIM card 2)　Support Mini PCIe LoRa module 3)　Support Mini PCIe expansion modules, such as network card, SATA card, serial port card
Power Supply	
Power Input	Default DC 12V/2A power input, support DC 12V~36V wide voltage input
Mechanical & Environmental	
Enclosure Material	Steel and aluminum alloy
Dimension (W x D x H)	124mm x 169.42mm x 38.9mm
Gross Weight	812g
Heat Dissipation	No fan, heat dissipation through the enclosure
Operating Temp.	-20 °C to 70 °C
Relative Humidity	10%~90%

Composition

Figure 4

BPC-iMX8MP-03 Industrial Computer assembly consists of these main components: DEBIX SOM A + I/O Board, enclosure and antenna.
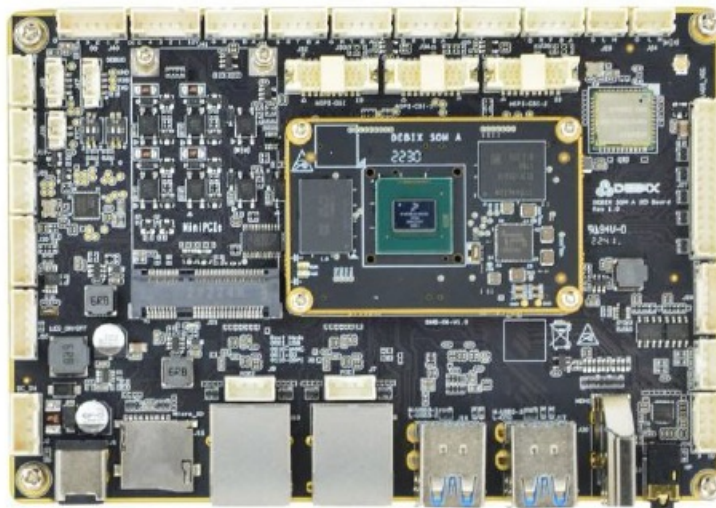

Figure 5 DEBIX SOM A + I/O Board

Figure 6 Enclosure and antenna

External Interface Power Interface

BPC-iMX8MP-03 Industrial Computer provides one power connector (DC socket), with default DC 12V/2A power input. As shown in the figure below.

Figure 7 DC-IN

HDMI Interface

- BPC-iMX8MP-03 Industrial Computer provides an HDMI interface, and the connector is an
- A-type HDMI female socket, which is used to connect a monitor, TV or projector. As shown in the Figure 8.
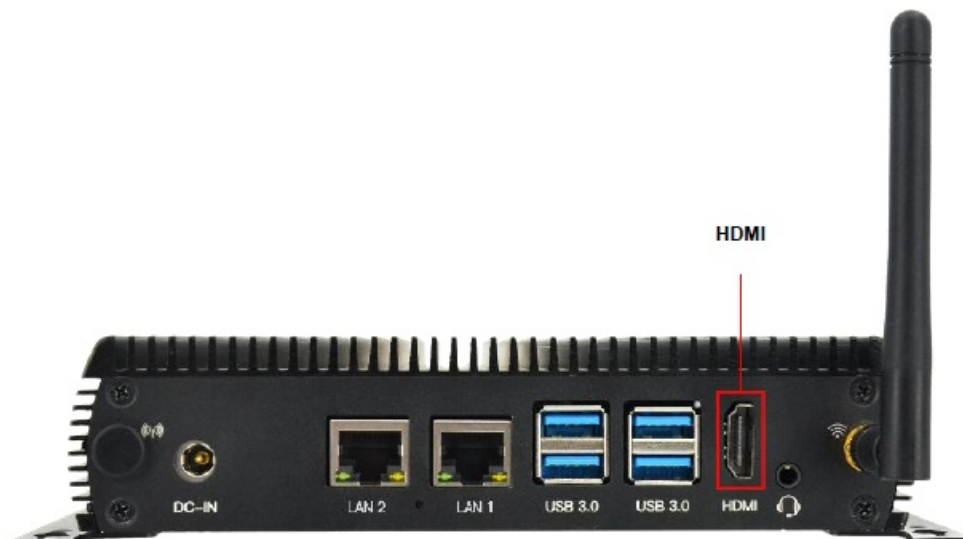- HDMI resolution up to 3840x2160p30. Audio supports 32 channel audio output and supports 1 S/PDIF audio eARC input.

Figure 8 HDMI

Audio Interface

- BPC-iMX8MP-03 Industrial Computer provides a combined headphone and microphone input interface. The connector is a 3.5mm socket, compatible with the built-in needle socket design, has audio input/output functions, and supports rated voltage 1.5V MIC audio input. As shown in the Figure 9.
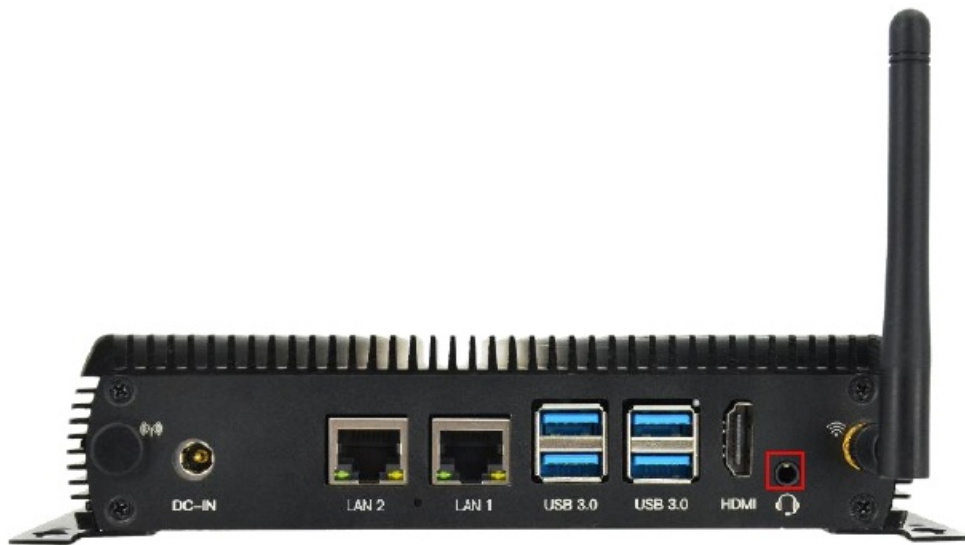
Figure 9 Audio

Ethernet Interface

- BPC-iMX8MP-03 Industrial Computer supports two independent MAC RJ45 Gigabit Ethernet ports (Network port 1: LAN1, Network port 2: LAN2), both support POE power supply (Additional POE module is required), connect device to the network through the network cable of RJ45 connector, and a set of status indicators below the interface to display the status signal, the green is Link and the yellow is Active.
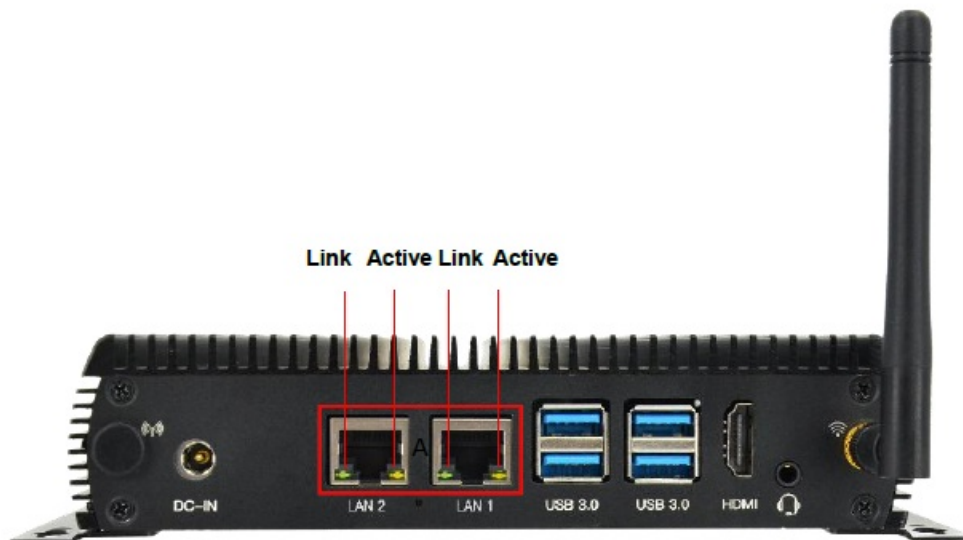

Figure 10 Ethernet

Table 3 Description of RJ45 Port Status Indicator

LED	Color	Description
Link	Green	Light, the network cable is plugged in, network connection status is good
Active	Yellow	Blinking, network data is being transmitted

Documents / Resources

DEBIX BPC-iMX8MP-03 Industrial Computer [pdf] User Guide
BPC-iMX8MP-03 Industrial Computer, BPC-iMX8MP-03, Industrial Computer, Computer

References

- **User Manual**