ARMXY EMBEDDED

COMPUTER DATASHEET

ARMxy BL370 Series

Version History

Version	V1.0	2024-10-19	Initial Release	

Contents

1. Overview 2
2. Typical Application Areas 2
3. Hardware and Software Specifications 3
4. Software Ecosystem 6
5. Product Selection 8
6. Electromagnetic Compatibility Testing 11
7. Environmental Suitability Testing 11
8. Packing List 12
9. Technical Support & Services 13

1. Overview

The ARMxy series ARM embedded computer BL370 series is an industrial-grade ARM controller with flexible I/O. It is designed with the Rockchip RK3562/RK3562J processor, featuring a quad-core ARM Cortex-A53 and a single-core ARM Cortex-M0, with a clock speed of up to 1.8GHz/2.0GHz. The BL370 series comes with 8/16/32GB eMMC, and various RAM and ROM combinations of 1/2/4GB LPDDR4X. It supports a rich set of I/O interfaces and is equipped with a built-in 1TOPS NPU for deep learning. The BL370 series is widely used in industries such as industrial control, edge computing, AIoT, artificial intelligence, communication management, AGV, machine vision inspection, robotics, industrial IoT gateways, energy storage systems, automation control, and transportation rail systems.

The BL370 series ARM embedded computer offers a variety of interfaces, including 1-3 optional 10/100M adaptive RJ45 ports, 2xUSB 2.0, 1xHDMI 2.0, 1 X-series I/O board, and 2 Y-series I/O boards.These interfaces can be used for communication, PWM output, pulse counting, and other data acquisition and control tasks. The device supports 1080P@60fps H.264 video encoding and 4K@30fps H.265 video decoding. It also features a built-in Mini PCIe interface, supporting communication via Bluetooth, Wi-Fi, 4G, and 5G modules.

The BL370 series ARM embedded computer supports various operating systems, including Linux-5.10.198, Linux-RT-5.10.198 kernel, Ubuntu 20.04, Debian 11 (bullseye) (planned), and Android 13 (planned). It also supports Docker containers, Node-RED, and Qt-5.15.2 for graphic interface development. Additionally, the device is compatible with the BLIoTLink industrial protocol conversion software for industrial data acquisition and conversion, enabling fast access to mainstream IoT cloud platforms and industrial SCADA configuration software. Remote access and maintenance can be performed through the BLRAT remote access tool, and Node-RED supports the rapid development of IoT applications.

The BL370 series ARM embedded computer has undergone professional electrical performance design and high/low-temperature testing validation. It can operate reliably and stably in harsh electromagnetic interference environments and a temperature range of -40 to 85°C. The device is designed for DIN35 rail mounting, making it suitable for various industrial application environments.

2. Typical Application Areas

- Industrial Control
- Energy Storage System EMS/BMS
- AIoT Artificial Intelligence

- Intelligent Manufacturing
- Communication Management
- AGV Robots
- Machine Vision
- Edge Computing
- Motion Control
- Robotics
- Rail Transportation
- Smart Devices

3. Hardware and Software Specifications

Exterior Structure and Dimensions of Product with 1 Ethernet Port:

Standard Model C Model A Model B Model

Exterior Structure and Dimensions of Product with 2 Ethernet Ports:

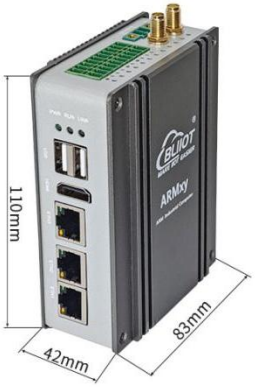
Standard Model

A Model

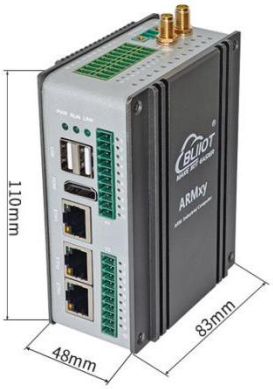
B Model

Exterior Structure and Dimensions of Product with 3 Ethernet Ports:

Standard Model



A Model



B Model

Hardware	Parameters
CPU	Rockchip RK3562J/RK3562, 22nm
	4x ARM Cortex-A53 (64-bit) +1xM0 RK3562J clock speed: ● Normal Mode: 1.2GHz ● Overdrive Mode: 1.8GHz RK3562 clock speed: 2.0GHz Cortex-M0 clock speed: 200MHz
	NPU: 1TOPS

	Supports INT4/INT8/INT16/FP16 Compatible with deep learning frameworks such as TensorFlow, PyTorch, Caffe, and MXNet.
	GPU: Mali-G52-2EE Supports OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, and Vulkan 1.1.
	Encoder: Supports 1080P@60fps H.264.
	Decoder: Supports 4K@30fps H.265 and 1080P@60fps H.264.
ROM	8/16/32GByte eMMC
RAM	1/2/4GByte LPDDR4X
ETH	RJ-45 interface, 1 to 3 ports, 3x10/100M adaptive network ports, ESD Level 3, EFT Level 3.
USB	2xUSB 2.0 HOST (USB1, USB2), speed up to 480Mbps, ESD Level 3.
HDMI	1x HDMI 2.0, supports 1080P@120fps and 4K@60fps.
I/O Slot	X-series I/O board slot: 1, supports X-series I/O board with RS485, CAN, RS232, RS422, DI, DO, GPIO, and other interfaces. Y-series I/O board slots: 2, supports Y-series I/O boards with RS485, CAN, RS232, RS422, DI, DO, relay output modules, AI, AO, PT100, PT1000, thermocouples,and other interfaces.
LED	1x Power Indicator Light.
	2x User-programmable indicator lights.
Mini PCIe	1x, supports Bluetooth, Wi-Fi, 4G modules, and more.
SIM Slot	1, NANO
Antenna	2x, used for 4G/Wi-Fi/GPS, and other modules.
Debug	1x Micro USB debugging port.
SD Slot	1
Reset	1
Watchdog	Onboard independent hardware watchdog.
Power	Rated DC 24V, supports wide voltage range of 12-24VDC, with reverse polarity protection and overcurrent protection. 2-pin screw terminal.
Grounding	1x Ground connection point.
Installation	DIN35 rail mounting, wall-mounted installation.
Material	Aluminum alloy casing + stainless steel.
Dimension	110x83x42mm or 110x83x48mm.

Software	Parameters
Kernel	Linux-5.10.198, Linux-RT-5.10.198.
File System	Buildroot-2021.11 (Linux-5.10.198, Linux-RT-5.10.198) Ubuntu 20.04
GUI development tool	Qt-5.15.10

4. Software Ecosystem

Category	Software	Type	Highlights
Industrial Communication & Protocols	IGH EtherCAT Master	Open Source	Supports real-time EtherCATmaster for high-precision motion control and synchronized I/O.
Data Acquisition Edge Processing	BLIoTLink	Proprietary	Data acquisition and protocol conversion, supporting multiple protocols and API-based secondary development.
	Node-RED	Open Source	Low-code logic orchestration tool,supporting visual flow design and custom nodes.
	Vnode	Open Source	Lightweight edge computing node,suitable for high-efficiency data pipeline processing.
Industrial Control & Execution	OpenPLC	Open Source	Open-source PLC, suitable for simple logic control and local automation.
	CODESYS Runtime	Licensed	Industrial control platform, supporting full IEC61131-3 programming and motion control.
	Beremiz	Open Source	Open-source IEC61131-3 compliant PLC integrated development environment for machine automation,providing tools to create HMI.
	NexPLC	Proprietary	Next-generation industrial control and operation & maintenance integrated platform, supporting cloud-based collaboration.

Visualization & Monitoring	FUXA	Open Source	Lightweight web-based SCADA, suitable for rapid configuration and small to medium monitoring projects.
	Ignition	Open Source	Enterprise-level industrial platform,supporting integrated SCADA, MES, and IoT deployment.
	Grafana	Open Source	Professional time-series data visualization and analytic dashboards, supporting multiple data sources.
Communication &Middleware	Nginx/Apache	Open Source	Web portal for exposing and securely managing edge services.
AI / Machine Vision	YOLOv5/8 OpenCV	Open Source	Complete edge AI vision stack, supporting object detection and image prepossessing.
	TensorFlow Lite, PyTorch Mobile	Open Source	Lightweight AI model inference frameworks, supporting edge-side intelligent analysis.
Remote Operation & Maintenance Management	BLRAT	Proprietary	Secure remote operation & maintenance channel, supporting remoted evice debugging and maintenance.
	QuickConfig	Proprietary	Graphical gateway configuration and management tool, supporting one-click deployment and monitoring.
Development & Support Environment	Python, C/C++, Node.js, Java	Open Source	Multi-language development support, suitable for diverse development scenarios and performance requirements.
	Python 3, Node.js	Open Source	Provides standard runtime, supporting scripting and containerized applications.
	Docker, Kubernetes(K3s)	Open Source	Supports application containerization and cluster management, enabling micro services architecture.
	API Documentation, Deployment Guides, Sample Projects	Proprietary / Open Source	Provides comprehensive technical documentation and typical scenario examples.
System & Security	OpenSSL	Open Source	Provides communication encryption and secure tunneling to ensure data transmission security.

	iptables	Open Source	Kernel-level firewall for network protection.
	Encryption Chip Demo	Proprietary	Encapsulates SHA-256 encryption and authentication algorithms.
	Wireshark, tcpdump	Open Source	Network protocol analysis for security monitoring.
	Prometheus + Grafana	Open Source	System resource monitoring and alerting, supporting visualized operation & maintenance.

5. Product Selection

The ARMxy series ARM embedded controllers adopt a flexible design concept, allowing users to customize ROM and RAM combinations by choosing different System-on-Module(SOM) boards as needed. Additionally, various X and Y boards can be selected to achieve diverse IO configurations, catering to the requirements of different application scenarios.

Product naming convention

Host Model Number - SOM Model Number - X Board Model Number - Y1 Board Model Number - Y2 Board Model Number

For example, if we had a specific product configuration:

BL370-SOM370-X10

Indicates 1 Ethernet port, 8GB eMMC, 1GB LPDDR4X, and 2 RS485 ports.

If Wi-Fi is required, add "W" to the host model number, e.g., BL370W-SOM370-X10.

If a 4G module is required, add "L" to the host model number, e.g., BL370L-SOM370-X10.

ARMxy BL370 Model List

Model	ETH	USB	HDMI	X board I/O Slot	Y board I/O Slot	Dimension
BL370	1x10/100M	2	X	1x6PIN	X	42x83x110mm
BL370A	1x10/100M	2	X	1x20PIN	X	42x83x110mm
BL370B	1x10/100M	2	X	1x20PIN	2	48x83x110mm
BL370C	1x10/100M	2	X	1x10PIN	X	42x83x110mm
BL371	2x10/100M	2	X	1x6PIN	X	42x83x110mm
BL371A	2x10/100M	2	X	1x20PIN	X	42x83x110mm
BL371B	2x10/100M	2	X	1x20PIN	2	48x83x110mm

BL372	3x10/100M	2	1	1x6PIN	X	42x83x110mm
BL372A	3x10/100M	2	1	1x20PIN	X	42x83x110mm
BL372B	3x10/100M	2	1	1x20PIN	2	48x83x110mm

ARMxy BL370 SOM Model List

You can select the appropriate ROM, RAM, and temperature grade based on your requirements.

Model	MCU	Clock Speed	Kernel	NPU	eMMC	LPDDR4X	Temperature
SOM370	RK3562J	1.8GHz	4 x A53 +M0	1TOPS	8GByte	1GByte	-40~85℃
SOM371	RK3562J	1.8GHz	4 x A53 +M0	1TOPS	16GByte	2GByte	-40~85℃
SOM372	RK3562J	1.8GHz	4 x A53 +M0	1TOPS	32GByte	4GByte	-40~85℃
SOM373	RK3562	2.0GHz	4 x A53 +M0	1TOPS	8GByte	1GByte	0~70℃
SOM374	RK3562	2.0GHz	4 x A53 +M0	1TOPS	16GByte	2GByte	0~70℃
SOM375	RK3562	2.0GHz	4 x A53 +M0	1TOPS	32GByte	4GByte	0~70℃

X Series I/O Board Model List

You can select the appropriate X series I/O board based on your requirements, ensuring that the number of pins on the X series I/O board is compatible with the industrial computer's casing.

Model	RS232/RS485	CAN	DI	DO	GPIO	PIN
X10	2	x	x	x	x	6PIN
X11	x	2	x	x	x	6PIN
X12	1	1	x	x	x	6PIN
X13	x	x	2	2	x	6PIN
X14	x	x	4	x	x	6PIN
X15	x	x	x	4	x	6PIN
X16	x	x	x	x	4	6PIN
X20	4	x	x	x	x	10PIN
X21	3	1	x	x	x	10PIN
X22	2	2	x	x	x	10PIN

X23	4	x	4	4	x	20PIN
X24	3	1	4	4	x	20PIN
X25	2	2	4	4	x	20PIN
X26	2	x	8	4	x	20PIN
X27	1	1	8	4	x	20PIN
X28	2	x	12	x	x	20PIN
X29	1	1	12	x	x	20PIN
X30	x	x	x	x	16	20PIN

Y Series I/O Board Model List

You can select the appropriate Y series I/O board based on your requirements, as the Y series I/O modules are compatible with all Y slots. When the Y63 is selected, you can not choose sec ond Y-series I/O board.

Model	Description		Model	Description
Y01	4xDI+4xDO(NPN)		Y41	4xAO, 0~20mA/4~20mA
Y02	4xDI+4xDO(PNP)		Y43	4xAO, 0~5V/0~10V
Y11	8xDI(NPN)		Y46	4xAO, ±5V/±10V
Y12	8xDI(PNP)		Y51	2xRTD, 3-Wire PT100
Y13	8xDI(Dry Contact)		Y52	2xRTD, 3-Wire PT1000
Y21	8xDO(PNP)		Y53	2xRTD, 4-Wire PT100
Y22	8xDO(NPN)		Y54	2xRTD, 4-Wire PT1000
Y24	4xDO(Relay)		Y56	Resistance Measurement
Y31	4xAI, Single-ended, 0~20mA/4~20mA		Y57	Voltage Measurement
Y33	4xAI, Single-ended, 0~5V/0~10V		Y58	4xTC
Y34	4xAI, Differential, 0~5V/0~10V		Y63	4xRS485 or RS232
Y36	4xAI, Differential, ±5V/±10V		Y95	4xPWM Output(NPN) + 4xPulse Counter Input
Y37	4xIEPE		Y96	4xPWM Output(PNP) + 4xPulse Counter Input

Ordering Notes

Y01: DI channels support dry contacts or NPN-type wet contact sensors.

Y02: DI channels support dry contacts or PNP-type wet contact sensors.

Y58: Supports thermocouples of types J, K, T, E, R, S, B, and N

6. Electromagnetic Compatibility Testing

Test	Item	Standard	Level	Condition	Result	Remarks
Electromagnetic Emission	Conducted Emission	GB/T 9254 Class A/ CISPR 32 Class A	Class A	150 kHz - 30 MHz	PASS	Complies with limits for general industrial environments
	Radiated Emission	GB/T 9254 Class A/ CISPR 32 Class A	Class A	30 MHz - 1 GHz	PASS	Complies with limits for general industrial environments
Immunity Testing	ESD	GB/T 17626.2/IEC 61000-4-2	Level III	Contact discharge: ±4 kV; Air discharge: ±8 kV	PASS	—
	Radiated RF Immunity	GB/T 17626.3/ IEC 61000-4-3	Level III	Field strength: 10 V/m, 80 MHz – 1 GHz	PASS	—
	EFT	GB/T 17626.4/ IEC 61000-4-4	Level III	Power lines: 2 kV; Signal lines: 1 kV	PASS	—
	Surge	GB/T 17626.5/ IEC 61000-4-5	Level III	Differential mode: 2 kV; Common mode: 4 kV	PASS	—
	Voltage Dips and Interruptions	GB/T 17626.11/ IEC 61000-4-11	Level III	Voltage dip: 70% for 500 ms; Complete interruption: 10 ms	PASS	—
	Power Frequency Magnetic Field Immunity	GB/T 17626.8/ IEC 61000-4-8	Level III	Test intensity: 30 A/m, 50 Hz	PASS	—

7. Environmental Suitability Testing

Test Item	Standard	Level	Condition	Result	Remarks
Low-Temperature Startup & Operation	GB/T 2423.1-2008/IEC 60068-2-1	N/A	Ambient temperature: +40°C, device starts and operates normally	Compliant	Meets basic low-temperature startup requirements for industrial environments.

High-Temperature Startup & Operation	GB/T 2423.2-2008/IEC 60068-2-2	N/A	Ambient temperature: +85°C, device starts and operates normally	Compliant	Meets basic high-temperature startup requirements for industrial environments.
Constant Damp Heat	GB/T 2423.3-2016/IEC 60068-2-78	N/A	Ambient temperature: +40°C, relative humidity: 85%, powered operation for 48 hours	Compliant	Ensures stable operation in humid environments.
Sinusoidal Vibration	GB/T 2423.10-2019/IEC 60068-2-6	N/A	Frequency range: 5 Hz to 500 Hz, acceleration: 2g, 10 cycles per axis (3 axes)	Compliant	Validates vibration resistance during transportation and installation.
Free Fall	GB/T 2423.7-2018/IEC 60068-2-31	N/A	With packaging: Free fall from 0.8 meters, 1 drop per face (6 faces total)	Compliant	Ensures impact resistance during transportation.
IP	GB/T 4208-2017/IEC 60529	IP30	Dust protection: Prevents entry of solid foreign objects ≥2.5mm in diameter	Compliant	Meets industrial environmental protection requirements.

Test Conclusion

After undergoing fundamental environmental adaptability testing, the device fully complies wit h the basic requirements of the Chinese GB/T national standards and corresponding IEC sta ndards, demonstrating stable operation in standard industrial environments.

The following results ensure the device meets a wide range of industrial application scenario s:

- Low/High-Temperature Tests: Validates the device's operational capability under basic ind ustrial environmental conditions.
- Vibration and Free Fall Tests: Ensures reliability during transportation and installation.
- IP Test: Complies with fundamental protection requirements for industrial environments.

8. Packing List

- One ARM embedded controller
- One set of DIN35 mounting brackets
- Ubuntu file system
- Pressure-free terminal blocks configured according to selected accessories
- When purchasing Wi-Fi and 4G modules, antennas for Wi-Fi and 4G modules will be in cluded.

9. Technical Support & Services

- ◆ Provide system firmware images, file system images, kernel driver source code, and a variety of demo programs.
- ◆ Offer a comprehensive platform development kit and introductory tutorials to save software organization time and simplify application development.
- ◆ Provide a rich set of development examples for reference to simplify application development, including:

- ✓ Linux, Linux-RT, Qt Application Development Examples
- ✓ BLIoTLink Industrial Protocol Data Collection and Cloud Platform Integration Development Case
- ✓ BLRAT Remote Access Usage Case
- ✓ Node-Red IoT Application Development Case
- ✓ Docker Container Technology, B-Code Time Synchronization, and MQTT Communication
- ✓ Baremetal (Bare-Metal), RT-Thread (RTOS) Development
- ✓ Inter-core communication example between Cortex-A53 and Cortex-M0.
- ✓ Qt-5.15.10 Software Development Kit for Graphic User Interface Development.
- ✓ Demonstration Examples of Debian, Ubuntu, and Android Operating Systems.
- ✓ Demonstration Example of ROS Operating System Based on Debian.
- ✓ IgH EtherCAT Master, CAN Development Examples
- ✓ NPU, ISP, and OpenCV Development Case.
- ✓ 4G/5G/Wi-Fi/Bluetooth Development Case.
- ✓ Peripheral driver programs for X board, Y board, and others.
- ✓ Assistance with product secondary development.
- ✓ Custom development and production.
- ✓ Provide long-term after-sales service.

Shenzhen Beilai Technology Co.,Ltd

https://bliiot.com