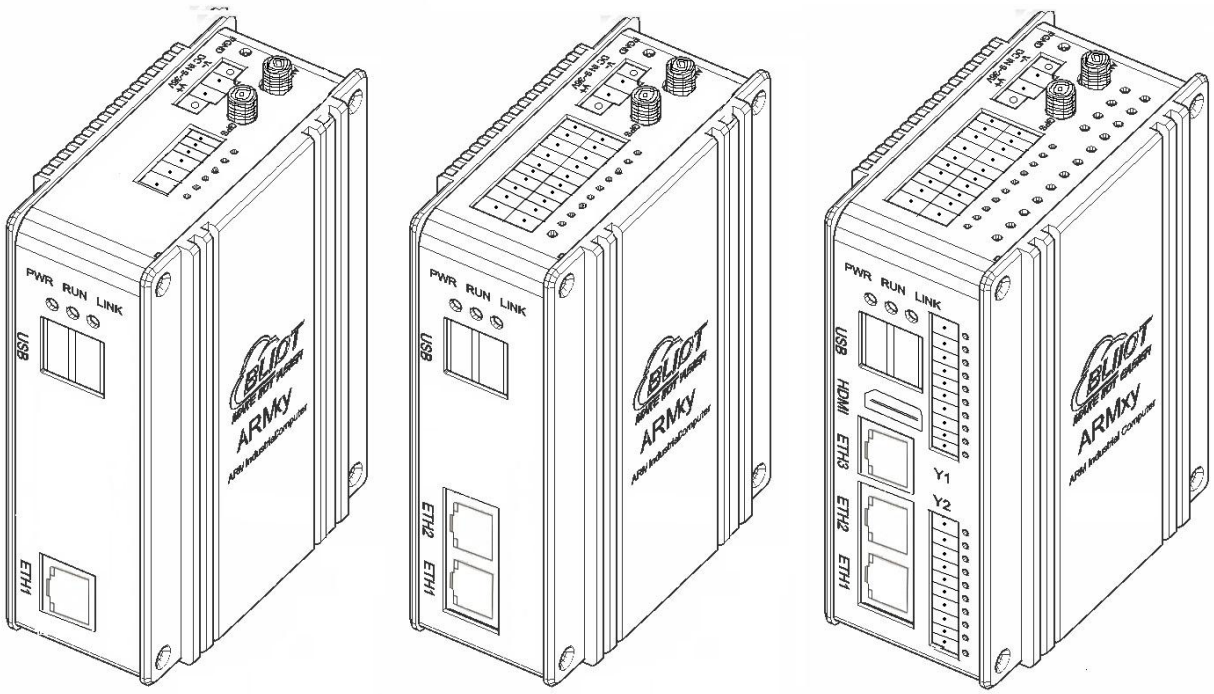


ARMXY EMBEDDED

COMPUTER DATASHEET

ARMxy BL330 Series

Version History

Version	V1.0	2024-3-30	Initial Release	

Contents

1. Overview

The ARMxy BL330 series is a versatile industrial ARM controller designed for flexible I/O configuration. It is based on the Allwinner Technology T113-i dual-core ARM Cortex-A7 + XuanTie C906 RISC-V + HiFi4 DSP heterogeneous multi-core processor. This industrial-grade computer features an ARM Cortex-A7 processor with clock speed of up to 1.2GHz. It is equipped with either 256Mbyte NAND Flash or 4/8GByte eMMC storage options and offers various combinations of 128M/256M/512M/1GByte DDR3 RAM and ROM.

The BL330 series ARM embedded computer offers a rich array of interfaces including

3 x 10/100M Ethernet ports, 2 x USB 2.0 ports, 1 x optional HDMI 2.0a port, 1 x optional X series IO board, 2 x optional Y series IO boards. These interfaces support various functions such as communication, PWM output, pulse counting, and data acquisition and control. The BL330 also supports hardware decoding of 1080P@60fps videos.

Additionally, it features a built-in Mini PCIe interface to support communication modules such as Bluetooth, WiFi, and 4G modules.

The BL330 series ARM embedded computer supports a range of operating systems and development tools, including Linux-5.4.61 and Linux-RT-5.4.61 kernels, Ubuntu 20.04 operating system, Docker containers, Node-Red, Qt-5.12.5 and Qt-5.11.3 for graphical interface development. In addition, BL330 is compatible with BLIoTLink industrial protocol conversion software for data collection and transformation, and can seamless integration with various mainstream IoT cloud platforms and industrial SCADA software. Users can leverage the BLRAT for remote access and maintenance of the BL330 embedded computer. Additionally, with support for Node-Red, users can rapidly develop IoT applications on the BL330.

The BL330 series ARM embedded computer has undergone rigorous electrical performance design and high-low temperature testing to ensure stability and reliability. It is designed for DIN35 rail mounting, making it suitable for various industrial application environments.

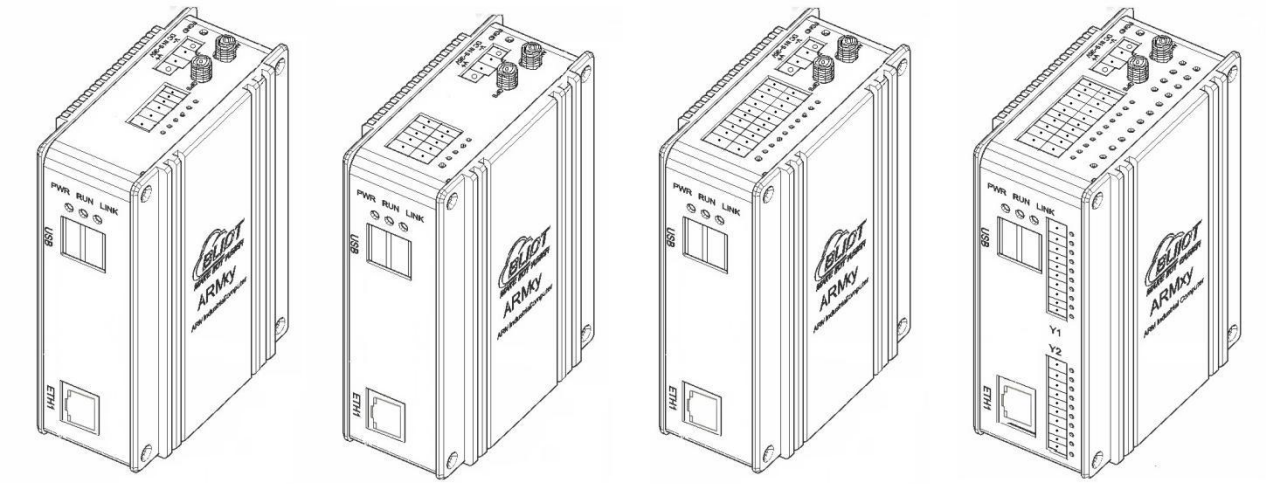
This embedded computer is widely used in industrial IoT, photovoltaic power generation and energy storage systems, automation control, and transportation and rail applications.

2. Typical Application Areas

- Industrial Control
- Edge Computing
- Data Acquisition
- Energy Storage Systems
- Photovoltaic Power Generation
- IoT Gateway
- Rail Transportation
- Smart Devices

3. Software and Hardware Specifications

Exterior Structure and Dimensions of Product with 1 Ethernet Port:



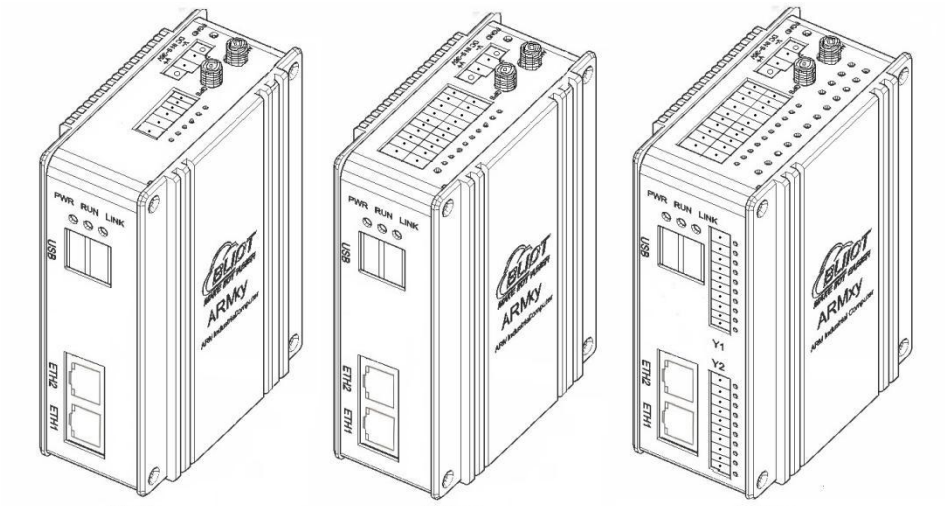
Basic
42*83*110mm

C Type
42*83*110mm

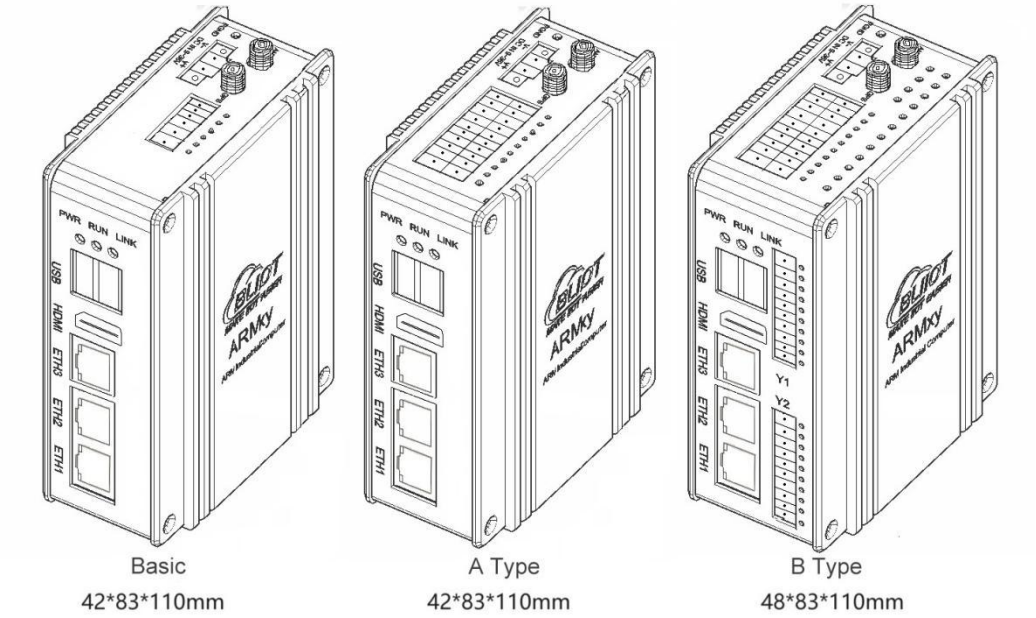
A Type
42*83*110mm

B Type
48*83*110mm

Exterior Structure and Dimensions of Product with 2 Ethernet Ports:



Exterior Structure and Dimensions of Product with 3 Ethernet Ports:



Hardware	Parameters
CPU	Allwinner T113-i, 22nm, 2x ARM Cortex-A7, clock speed up to 1.2GHz
	2 x ARM Cortex-A7, clock speed up to 1.2GHz
	1x HiFi4 DSP, clock speed up to 600MHz
	1x XuanTie C906 RISC-V(64bit), clock speed up to 1008MHz
	Encoder: H.265 MP@L5.0 up to 4K@30fps H.264 BP/MP/HP@L5.0 up to 4K@24fps MPEG-4 SP/ASP L5.0 up to 1080p@60fps

	MPEG-2/MPEG-1 MP/HL up to 1080p@60fps JPEG/Xvid/Sorenson Spark up to 1080p@60fps MJPEG up to 1080p@30fps
	Decoder: JPEG/MJPEG up to 1080p@60fps
ROM	256Mbyte Nand Flash or 4/8GByte eMMC
RAM	128M/256M/512M/1GByte DDR3
ETH	RJ-45, 1~3, 3x10/100M, ESD Level 3, EFT Level 3
USB	2xUSB2.0 HOST(USB1, USB2), ESD Level 3
HDMI	1x HDMI2.0a, compatible with HDCP2.2, HDCP1.4 standard, supports up to 1080@60fps
IO Slot	X series IO board slot: 1, X series IO board, support RS485, CAN, RS232, RS422, DI, DO, GPIO, etc; Y series IO board slot: 2, Y series IO board, support RS485, CAN, RS232, RS422, DI, DO, Relay output, AI, AO, PT100, PT1000, TC, etc.
LED	1x power indicator light
	2x user-programmable indicator light
Mini PCIE	1, Supports Bluetooth, WiFi, 4G module, etc.
SIM Slot	1 slot, NANO
Antenna	2, For 4G/WIFI/GPS
Debug	1x Micro USB debug port
SD Slot	1
Reset	1 reset button
Watchdog	Onboard independent hardware watchdog
Power	Rated DC 24V, supports wide voltage range of 9-36VDC Equipped with reverse polarity protection and overcurrent protection 3-pin terminal block with screw terminals
Grounding	1-pin GND terminal
Installation	DIN35 rail mounting, wall mounting
Material	Aluminum alloy casing + stainless steel
Dimension	110*83*42mm or 110*83*48mm

Software	Parameters
Kernel	Linux-5.4.61, Linux-RT-5.4.61

File System	Buildroot-2019.02, Ubuntu20.04
GUI development tool	Qt-5.12.5, Qt-5.11.3
Protocol Conversion Software	BLIoTLink, used for protocol conversion, such as Modbus, PLC, BACnet, IEC104, MQTT, OPC UA, support AWS IoT Core, Thingsboard, IgnitionSCADA, Alibaba IoT, HUAWEI IoT.
Remote Access Tool	BLRAT, enables remote device access for convenient remo te maintenance.
Other Software	Node-Red, Python, Docker, C#, MySQL, SQLite

4. 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-Modul e(SOM) boards as needed. Additionally, various X and Y boards can be selected to ach ieve diverse IO configurations, catering to the requirements of different application scena rios.

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:

Host Model: BL330

SOM Model: SOM330

X Board Model: X10

The complete product name would be:

BL330-SOM330-X10

Means 1 Ethernet port, 256MB NAND Flash, 256MB DDR3 RAM, and 2 RS485 ports.

If you need to add WiFi, then you would append "W" to the host model number.

For example: BL330W-SOM330-X10

If you need to add a 4G module, you would append "L" to the host model number.

For example: BL330L-SOM330-X10

ARMxy BL330 Model List

Model	ETH	USB	HDMI	X board IO Slot	Y board IO Slot	Dimension
BL330	1x10/100M	2	X	1x6PIN	X	42x83x110mm

BL330A	1x10/100M	2	X	1x20PIN	X	42x83x110mm
BL330B	1x10/100M	2	X	1x20PIN	2	48x83x110mm
BL330C	1x10/100M	2	X	1x10PIN	X	42x83x110mm
BL331	2x10/100M	2	X	1x6PIN	X	42x83x110mm
BL331A	2x10/100M	2	X	1x20PIN	X	42x83x110mm
BL331B	2x10/100M	2	X	1x20PIN	2	48x83x110mm
BL332	3x10/100M	2	1	1x6PIN	X	42x83x110mm
BL332A	3x10/100M	2	1	1x20PIN	X	42x83x110mm
BL332B	3x10/100M	2	1	1x20PIN	2	48x83x110mm

ARMxy BL330 SOM Model List

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

Model	MCU	Clock Speed	Kernel	Nand Flash	eMMC	DDR3	Temperature
SOM330	T113-i	1.2GHz	2 x A7	256Mbyte	/	256MByte	-40~85°C
SOM331	T113-i	1.2GHz	2 x A7	256Mbyte	/	128MByte	-40~85°C
SOM332	T113-i	1.2GHz	2 x A7	/	4GByte	256MByte	-40~85°C
SOM333	T113-i	1.2GHz	2 x A7	/	4GByte	512MByte	-40~85°C
SOM334	T113-i	1.2GHz	2 x A7	/	8GByte	512MByte	-40~85°C
SOM335	T113-i	1.2GHz	2 x A7	/	8GByte	1GByte	-40~85°C
SOM336	T113-i	1.2GHz	2 x A7	/	4GByte	256Mbyte	-20~70°C

X Series IO Board Model List

You can select the appropriate X series IO board based on your requirements, ensuring that the number of pins on the X series IO 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 IO Board Model List

You can select the appropriate Y series IO board based on your requirements, as the Y series IO modules are compatible with all Y slots.

When the Y63 is selected, you can not choose second Y-series IO board.

Model	Description		Model	Description
Y01	4DI+4DO, NPN		Y41	4AO, 0/4~20mA
Y02	4DI+4DO, PNP		Y43	4AO, 0~5/10V
Y11	8DI, NPN		Y46	4AO, ±5V/±10V
Y12	8DI, PNP		Y51	2RTD, 3-Wire PT100
Y13	8DI, Dry Contact		Y52	2RTD, 3-Wire PT1000
Y21	8DO, PNP		Y53	2RTD, 4-Wire PT100
Y22	8DO, NPN		Y54	2RTD, 4-Wire PT1000
Y24	4DO, Relay		Y56	Resistance measurement
Y31	4AI, single-ended, 0/4~20mA		Y57	Voltage measurement
Y33	4AI, single-ended, 0~5/10V		Y58	4TC
Y34	4AI, differential, 0~5/10V		Y63	4 RS485 or RS232
Y36	4AI, differential, ±5V/±10V		Y95	4 PWM Output + 4 Pulse Counter (1 High-Speed, 3 Low-Speed), NPN

Y37	4 IEPE Measurement		Y96	4 PWM Output + 4 Pulse Counter (1 High-Speed, 3 Low-Speed), PNP

5. 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	—

6. 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 with the basic requirements of the Chinese GB/T national standards and corresponding IEC standards, demonstrating stable operation in standard industrial environments.

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

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

7. Packing List

- One ARM embedded controller
- One set of DIN35 mounting brackets
- Pre-installed BLIoTLink software
- Pre-installed BLRAT software
- Ubuntu file system
- Pressure-free terminal blocks configured according to selected accessories

- When purchasing WiFi and 4G modules, antennas for WiFi and 4G modules will be included.

8. 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, MQTT Communication Protocol Examples
- ✓ Ubuntu Operating System Demonstration Examples
- ✓ HiFi4 DSP Development Examples
- ✓ ARM+HiFi4 DSP Inter-core Communication Development Examples
- ✓ IgH EtherCAT Master, CAN Development Examples
- ✓ 4G/WiFi/NB-IoT/ZigBee/LoRa Development Examples
- ✓ HDMI Multimedia Display Development Examples
- ✓ Assistance with Product Customization and Development
- ✓ Customized Research and Development (R&D) and Manufacturing
- ✓ Provide Long-Term After-Sales Service

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