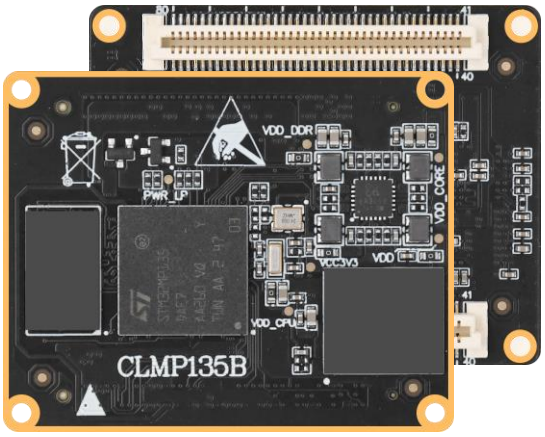
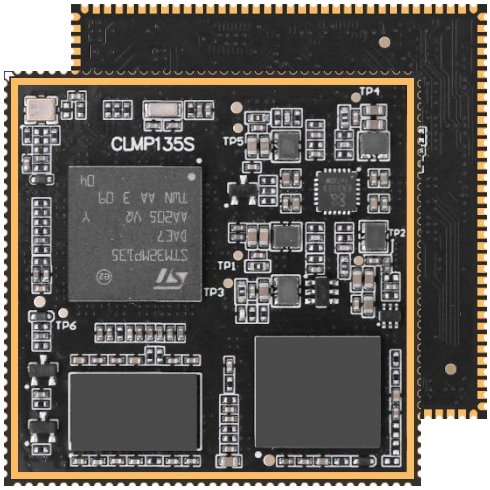
ATK-CLMP135

Core Board Specification

V1.1





ALIENTEK

1. Shopping:

TMALL: https://zhengdianyuanzi.tmall.com

TAOBAO: https://openedv.taobao.com

2. Download

Address: http://www.openedv.com/docs/index.html

3. FAE

Website : www.alientek.com

Forum : http://www.openedv.com/forum.php

Videos : www.yuanzige.com

Fax : +86 - 20 - 36773971

Phone : +86 - 20 - 38271790

Disclaimer

The product specifications and instructions mentioned in this document are for reference only and subject to update without prior notice; Unless otherwise agreed, this document is intended as a product guide only, and none of the representations made herein constitutes a warranty of any kind.

In order to get the latest version of product information, please regularly visit the download center or contact the customer service of Taobao ALIENTEK flagship store. Thank you for your tolerance and support.

Revision History:

Version	Version Update Notes	Responsible person	Proofreading	Date
V1.0	First draft	ALIENTEK Linux Team	ALIENTEK Linux Team	2023.04.12
V1.1	1. Add relevant information about the stamp hole core board	ALIENTEK Linux Team	ALIENTEK Linux Team	2023.05.23

Catalogue

Chapter 1. Product Overview

1.1 Product Introduction

The ATK-CLMP135 core board is a high-performance core board developed by ALIENTEK on the STM32MP135DAE7 chip from ST Microelectronics for the embedded Linux field. It is suitable for embedded system development.

The STM32MP135DAE7 features a single-core ARM cortex-A7 processor with a maximum clock frequency of 1GHz and supports dual gigabit Ethernet ports. In terms of RAM, the ATK-CLMP135 core board comes with a standard 512MB DDR; in terms of ROM, the core board comes with an 8GB EMMC storage, meeting the majority of development capacity requirements. The peripheral resources are abundant, supporting interfaces such as I2C, SPI, CAN FD, GMAC, UART, ADC, LCD, USB, SDIO, etc.

The ATK-CLMP135 core board is divided into BTB interface core board ATK-CLMP135B and pinhole interface core board ATK-CLMP135S according to the interface type.

The ALIENTEK has provided a wealth of development documents and software resources for the ATK-CLMP135 series core boards and development boards. The software materials include but are not limited to U-boot, Linux, peripheral driver source codes, file systems, Qt source codes, C application source codes, related development tools and development environments, etc. The documentation materials include tutorial documents and user manuals: The tutorial documents include Linux embedded driver development guide, Linux C application programming guide, embedded Qt development guide, and currently there are over 2,300 pages in total; The user manuals include development board quick experience documents, factory system source code usage guide, development board hardware reference manual, Qt cross-compilation environment setup manual, system logo modification manual, etc., and currently there are 12 user manual documents. The hardware materials include development board and core board schematic pdf documents, development board and core board AD packaging libraries, development board and core board mechanical size diagrams, chip reference manuals, etc. All software resources are completely free and open source, facilitating users' development, improving development efficiency, and shortening the development cycle. The development materials and factory source codes used by ATK-CLMP135B can be directly used with the On-Time Atom ATK-DLMP135 development board.

1.2 Application Areas

1.3 Purchase channel

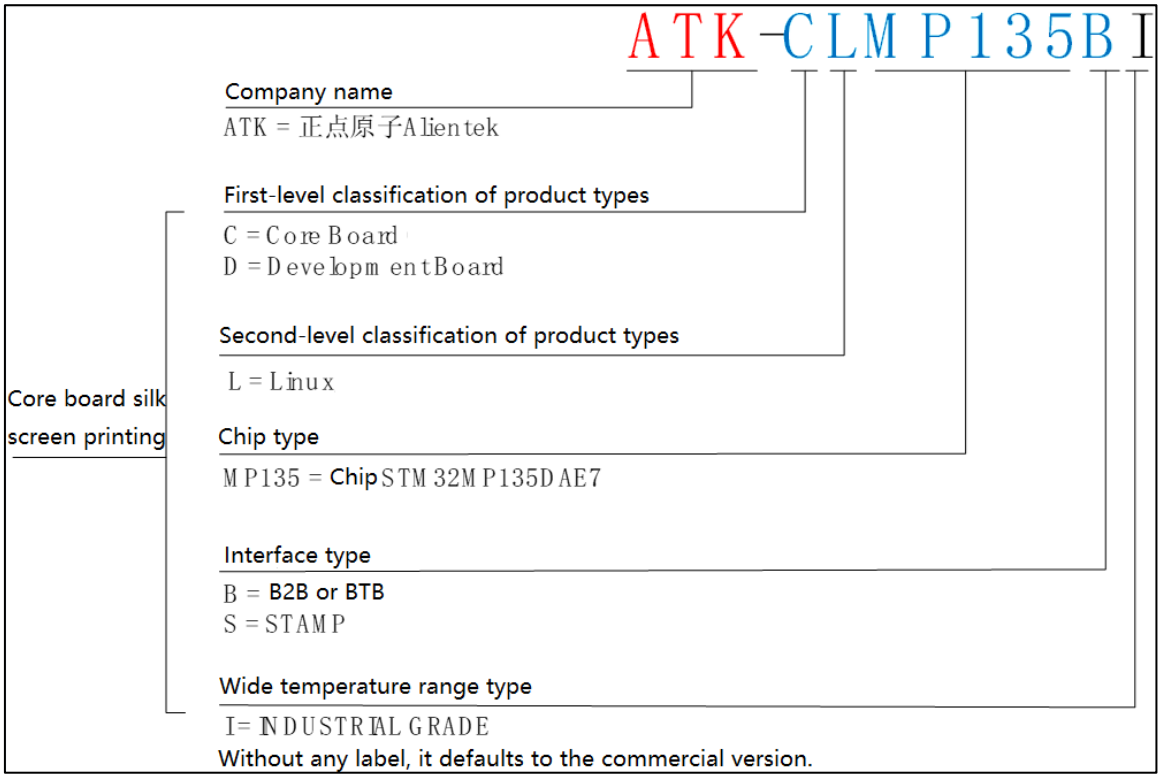
Purchase link: https://detail.tmall.com/item.htm?id=712583666143

1.4 Materials Download

Download center: http://www.openedv.com/docs/boards/arm-linux/zdyz-STM32MP135.html

Chapter 2. Product Selection

2.1 Product Naming



2.2 Differences between Commercial and Industrial Versions

The ATK-CLMP135 series core boards are divided into commercial and industrial versions based on the different operating temperatures for different usage scenarios.

The operating temperature of the commercial core board is -20℃ to +70℃.

The operating temperature of the industrial core board is -40℃ to +80℃.

The commercial BTB version core board is labeled as CLMP135B with silk screen printing, while the industrial BTB version core board is labeled as CLMP135BI. The commercial stamp hole version core board is labeled as CLMP135S, and the industrial stamp hole version core board is labeled as CLMP135SI. The difference between commercial and industrial versions lies in EMMC. By checking the silk screen printing of EMMC, it is possible to determine whether it is an industrial EMMC.

Unless otherwise specified, the images in this document are of the commercial core board.

Chapter 3. Product Parameters

3.1 BTB Interface Core Board CLMP135B

3.1.1 Hardware Parameters

Item	Parameter	Note
Core board size	50mm*40mm	
Processor model	STM32MP135DAE7	LFBGA289 package
Processor architecture	Single-core Cortex-A7, with a clock speed of 1GHz	
Power management	Separate power supply	
Memory	512MB DDR3L	Model is based on actual soldering.
Storage	8GB EMMC	Model is based on actual soldering.
Working voltage	5V 0.5A	Power supply range: 5V ± 300mV
Power consumption	Less than 1W	Minimum system power consumption of the core board
Working temperature	Commercial grade: -20℃ ~ +70℃	
	Industrial grade:-40℃ ~ +80℃	
Number of interface pins	160PIN	
Pin spacing	0.8mm	
Interface type	Two 2*40 anti-reverse insertion BTB sockets, with board-to-board connection	
PCB process	8 layers, independent ground signal layer	

3.1.2 Core Board Resources

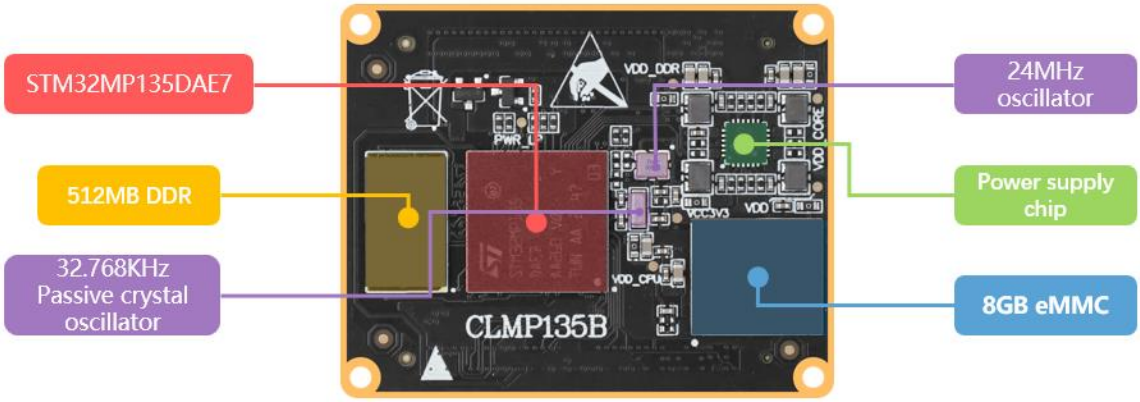


Figure 3.1-1 Front resources of the CLMP135B core board

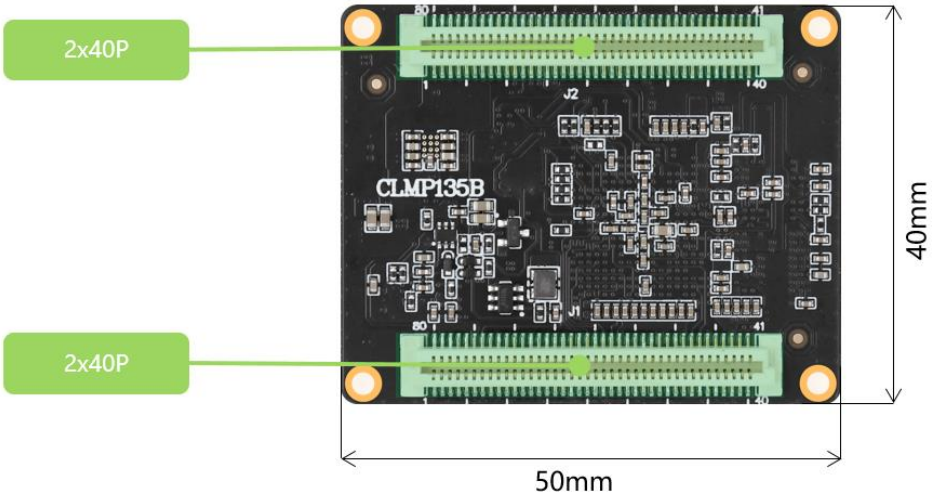


Figure 3.1-2 Backside resources of the CLMP135B core board

3.1.3 Pinout sequence and interface signals

In the PINOUT section of the ATK-CLMP135B core board schematic, it is the pin definition corresponding to the BTB connector of the core board. This connector is of a 2x40PIN specification and has a total of 160 pins.

There are pin number silk-screening on the backside of the core board, as shown below:

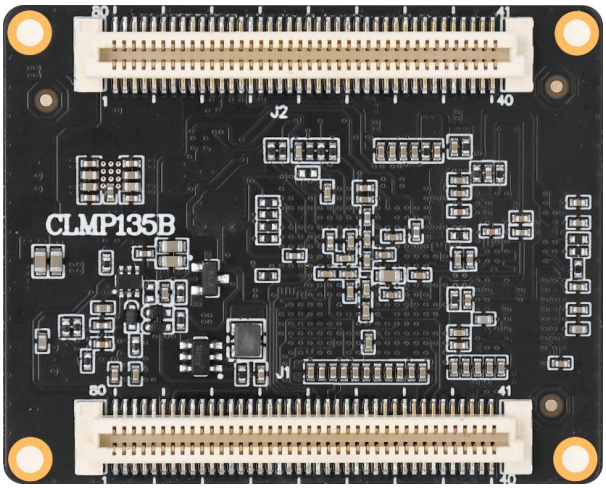


Figure 3.1-3 On the back of the core board

One can see that there are a pair of BTB connector sockets on the back of the core board. The one on top is J2, and the one at the bottom is J1. They are respectively labeled with pin numbers 1, 40, 41, and 80, and correspond one-to-one with the BTB male sockets on the base board.

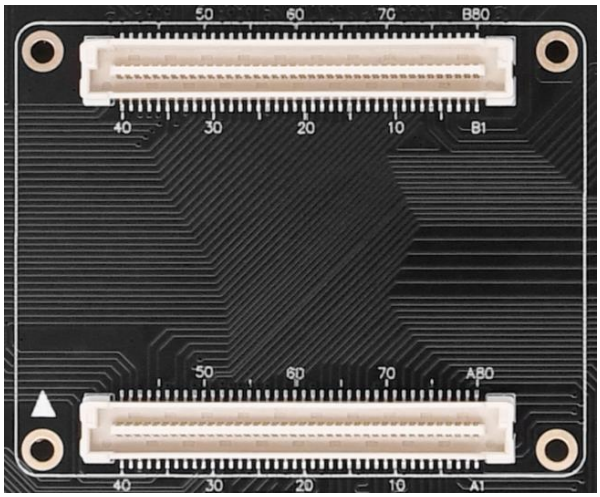


Figure 3.1-4 The BTB interface of the development board base plate

For the specific pin function definitions, you can refer to the PINOUT section of the ATK-CLMP135B core board schematic diagram.

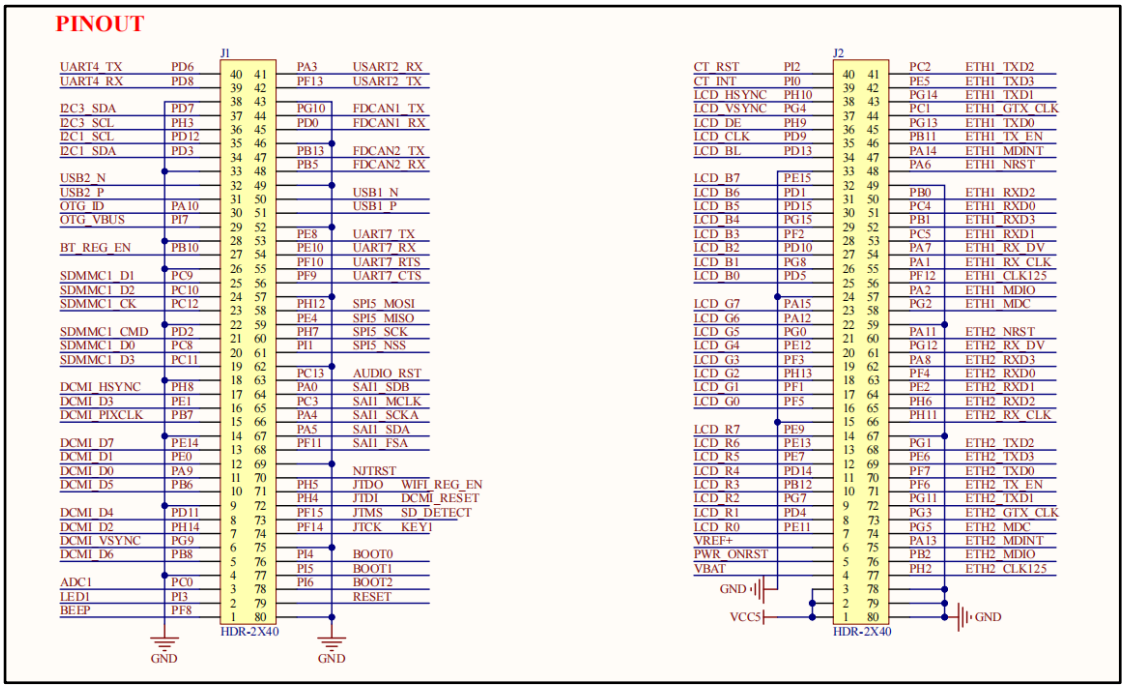


Figure 3.1-5 The PINOUT section of the core board schematic diagram

Here, only the functions used by the core board on the base board (i.e., the default factory system functions) are described. If you want to view the re-usable pin functions, you can search for the corresponding IO number in the core board schematic diagram and check the re-usable functions in the chip pins.

3.1.4 Reusable Function Resources of Pin Connections

The core board connects all the I/Os on the processor. Users can design their own baseboards according to their own needs to utilize the I/O resources on the core board and reassign the I/Os to the functions they require.

According to the peripheral functions, the maximum number of single peripheral resources that the ATK-CLMP135 series core board can reuse is listed here. The specific selection can be combined with the data sheet of the chip. (The maximum number of single peripheral resources: refers to the maximum number of a certain peripheral that the core board can use without using other peripherals)

Peripheral function	Maximum number of multiplexing for a single peripheral device	Peripheral function	Maximum number of multiplexing for a single peripheral device
GPIO	121	Ethernet	2 units, supporting gigabit
ADC	Two, 20 channels	SD/MMC	1
PWM	37	RGB LCD	1
U(S)ART	4*USART + 4*UART	Camera DCMI	1
I2C	5	USB	2
SPI	5	SAI	2
CAN FD	2	JTAG	1

32-bit timer	2	16-bit high-speed timer	2 个
16-bit general-purpose timer	10	16-bit low-power timer16-bit low-power timer	5 个
System timer	4	RTC	1 个
WDOG	2		

3.2 Stamp Hole Interface Core Board CLMP135S

3.2.1 Hardware Parameters

Item	Parameter	Note
Core board size	44mm*44mm	
Processor model	STM32MP135DAE7	LFBGA289 package
Processor architecture	Single-core Cortex-A7, with a clock speed of 1GHz	
Power management	Separate power supply	
Memory	512MB DDR3L	Model is based on actual soldering.
Storage	8GB EMMC	Model is based on actual soldering.
Working voltage	5V 0.5A	Power supply range: 5V ± 300mV
Power consumption	Less than 1W	Minimum system power consumption of the core board
Working temperature	Commercial grade: -20℃ ~ +70℃	
	Industrial grade: -40℃ ~ +80℃	
Number of interface pins	140PIN	
Pin spacing	1.2mm	
Interface type	Postal stamp hole	
PCB process	8 layers, independent grounding signal layer	

3.2.2 Core Board Resources

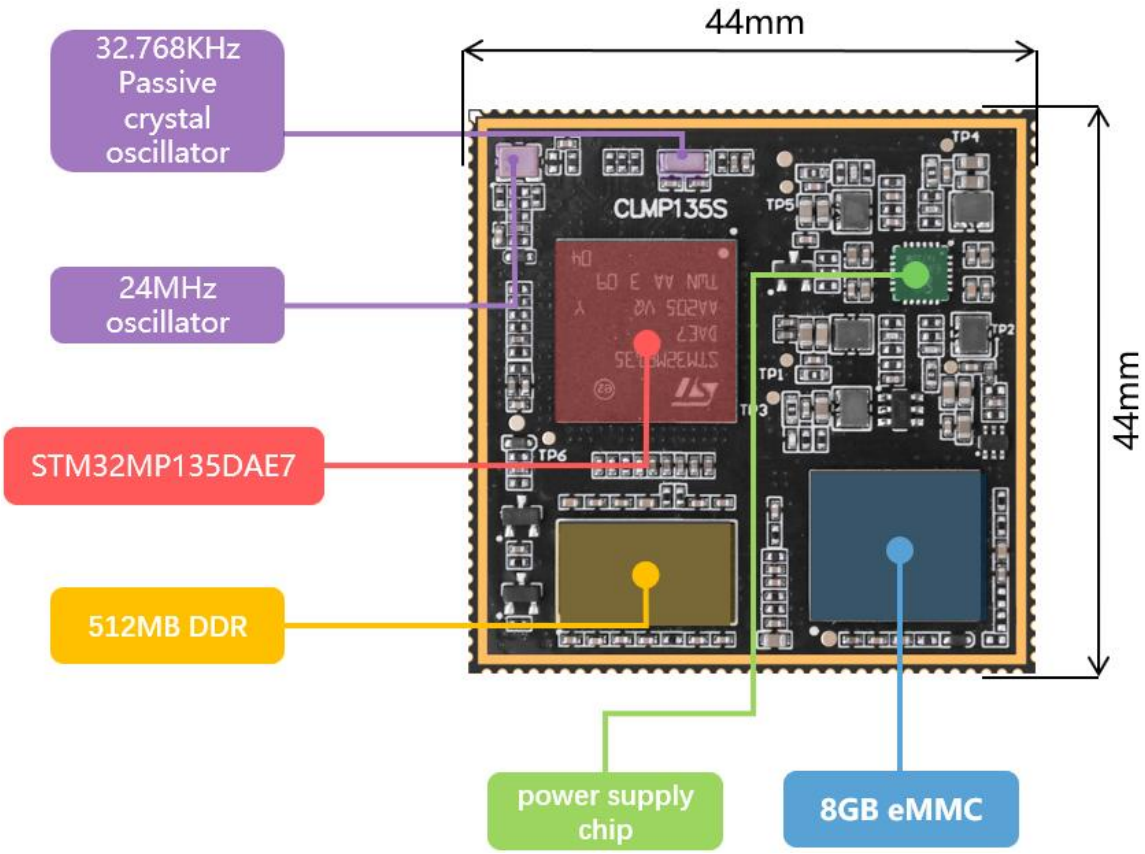


Figure 3.2-1 ATK-CLMP135S Core Board Resources

3.2.3 Pin Order and Interface Signals

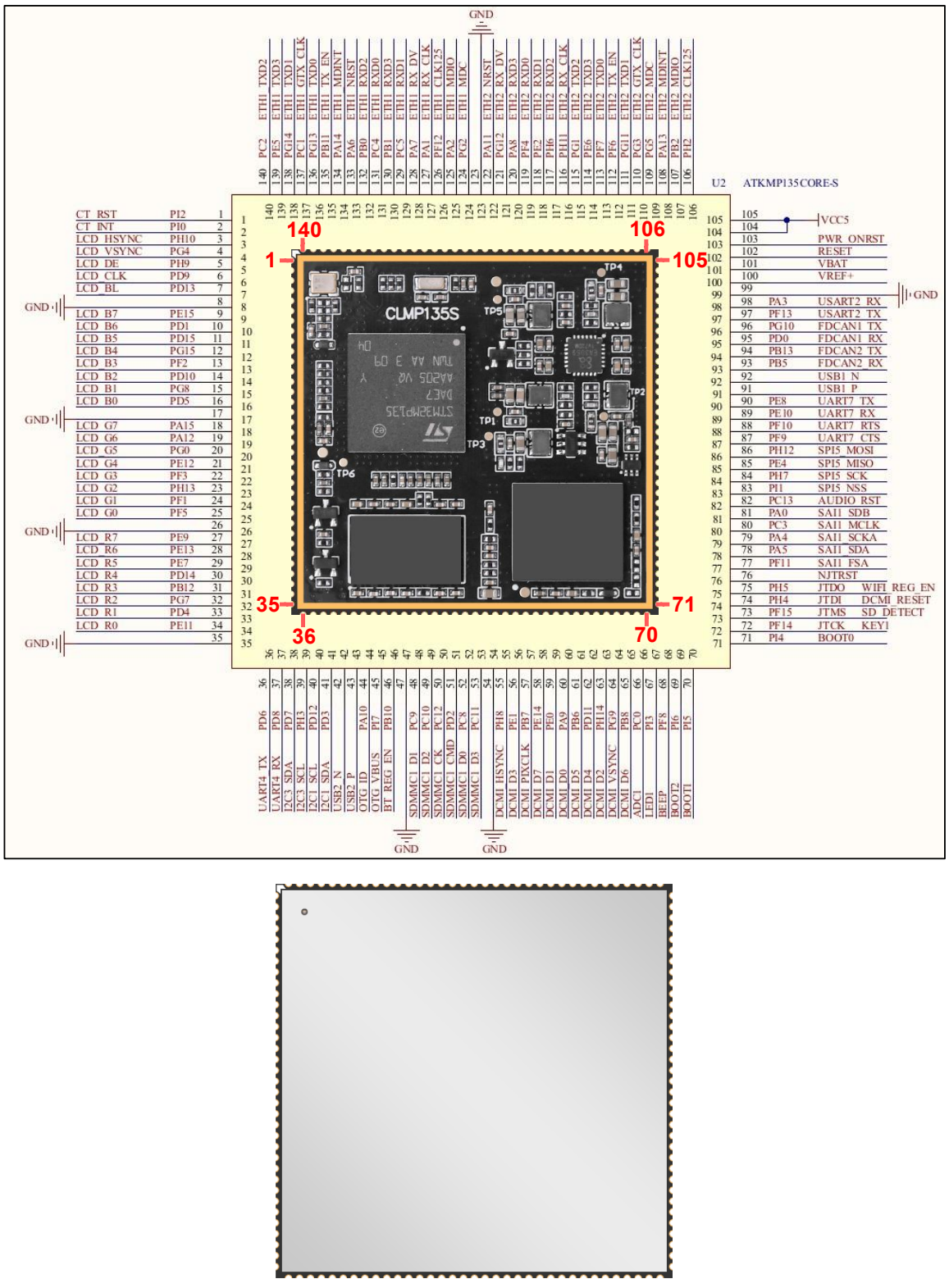


Figure 3.2-2 ATK-CLMP135S core board interface signals

In the picture, there is a white marking point in the upper left corner of the core board as a reference point. The shield cover dot is placed in the upper left corner. From the reference point, downwards, it is the 1st pin.

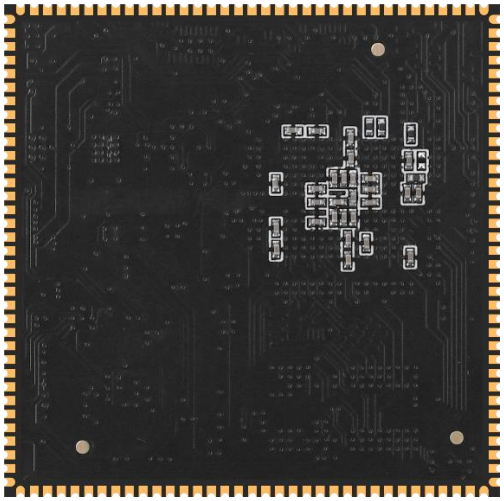


Figure 3.2-3 Back view of ATK-CLMP135S core board

3.2.4 Reusable pin function resources

The core board has connected all the IOs on the processor. Users can design their own baseboards according to their own needs to utilize the IO resources on the core board and convert the IOs into the functions they require.

According to the peripheral functions, the maximum resource numbers of individual peripherals that the ATK-CLMP135 series core boards can reuse are listed here. The specific selection can be combined with the data sheet of the chip. (Maximum resource number of individual peripheral: refers to the maximum number of a certain peripheral that the core board can use without using other peripherals)

Peripheral function	Maximum number of multiplexing for a single peripheral device	Peripheral function	Maximum number of multiplexing for a single peripheral device
GPIO	121	Ethernet	2 units, supporting gigabit
ADC	Two, 20 channels	SD/MMC	1
PWM	37	RGB LCD	1
U(S)ART	4*USART+4*UART	Camera DCMI	1
I2C	5	USB	2
SPI	5	SAI	2
CAN FD	2	JTAG	1
32-bit timer	2	16-bit advanced Timer	2
16-bit general-purpose timer	10	16-bit low-power timer	5
System timer	4	RTC	1
WDOG	2		

Chapter 4. Certification

4.1 FCC certification

FCC Part 15 SDOC
Supplier's Declaration of Conformity

This Certificate of Conformity is hereby issued to the product designated below:

Certificate No. :	23EP04220F01
Report No. :	EP2304220F01
Date Issue. :	2023-05-19
Applicant's name :	Guangzhou Xingyi Electronic Technology Co., Ltd.
Address :	8th Floor, Baiyun Torch Building, No.1 Kesheng Road, Taihe Town, Baiyun District, Guangzhou City, Guangdong Province, China
Manufacturer's name :	Guangzhou Xingyi Electronic Technology Co., Ltd.
Address :	8th Floor, Baiyun Torch Building, No.1 Kesheng Road, Taihe Town, Baiyun District, Guangzhou City, Guangdong Province, China
Product Description :	Core-board
Model(s)/Type References :	ATK-CLMP135B
Parameters :	Input: DC 5V 500mA
Standard(s) :	FCC Part 15 Subpart B ANSI C63.4:2014

The device bearing the trade name and model specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified. (Refer to Test Report if any modifications were made for compliance).
This certificate of conformity is based on a single evaluation of the submitted sample(s) of the above mentioned product. It does not imply an assessment of the whole production have to be observed.

Approved By

Eric Liu
Director of engineering department

Dongguan Pubiao Testing Technology Co., Ltd
No. 3, 1/F., Building A, No.30, Minghua Road, Juzhou, Shijie, Dongguan, Guangdong, China
Tel: +86 769 81813516 E-mail: service@pubiaotest.com Web: www.pubiaotest.com

Figure 4.1-1 FCC Certification

4.2 CE certification

CE

CERTIFICATE OF CONFORMITY

Electromagnetic Compatibility (EMC) Directive 2014/30/EU

This Certificate of Conformity is hereby issued to the product designated below:

Certificate No. :	23EP04220E01
Report No. :	EP2304220E01
Date Issue. :	2023-05-19
Applicant's name :	Guangzhou Xingyi Electronic Technology Co., Ltd.
Address :	8th Floor, Baiyun Torch Building, No.1 Kesheng Road, Taihe Town, Baiyun District, Guangzhou City, Guangdong Province, China
Manufacturer's name :	Guangzhou Xingyi Electronic Technology Co., Ltd.
Address :	8th Floor, Baiyun Torch Building, No.1 Kesheng Road, Taihe Town, Baiyun District, Guangzhou City, Guangdong Province, China
Product Description :	Core-board
Model(s)/Type References :	ATK-CLMP135B
Parameters :	Input: DC 5V 500mA
Standard(s) :	EN 55032:2015+A11:2020+A1:2020 EN 55035:2017+A11:2020 EN IEC 61000-3-2:2019+A1:2021 EN 61000-3-3:2013+A1:2019+A2:2021

On the basis of the referenced test report(s), sample(s) tested of the above product have been found to comply with the standards harmonized with the directives listed on this verification at the time the tests were carried out. Other standards and Directives may be relevant to the product. This verification is part of the full test report(s) and should be read in conjunction with it(them).

Once compliance with all product relevant CE mark directives are verified, including any relevant e.g. risk assessment and production control, the manufacturer may indicate compliance by signing a Declaration of Conformity themselves and applying the mark to products identical to the tested sample(s).

Approved By

Eric Liu
Director of engineering department

Dongguan Pubiao Testing Technology Co., Ltd
No. 3, 1/F., Building A, No.30, Minghua Road, Juzhou, Shijie, Dongguan, Guangdong, China
Tel: +86 769 81813516 E-mail: service@pubiaotest.com Web: www.pubiaotest.com

Figure 4.2-1CE Certification

4.3 RoHS certification

Dongguan Universal Testing Technology Co., Ltd.

CERTIFICATE OF CONFORMITY

CERTIFICATE No.: UTLR23041500C01

Page 1 of 1

Applicant:	Guangzhou Xingyi Electronic Technology Co., Ltd.
Address:	8th Floor, Baiyun Torch Building, No.1 Kesheng Road, Taihe Town, Baiyun District, Guangzhou City, Guangdong Province, China
Sample Information:	**Below sample and sample information are provided by client**
Sample Name:	Core-board
Model No.:	ATK-CLMP135B

This Certificate Is Applicable To The Sample Parts Investigated In Our Test Report No. UTLR23041500 And Date 2023-04-23.

TEST:

TEST REQUIREMENTS	CONCLUSION(S)
Heavy metals and flame retardants content- RoHS Directive 2011/65/EU Annex II amending Annex(EU)2015/863 and amending Annex (EU)2017/2102	**PASS**
Phthalates content- RoHS Directive 2011/65/EU Annex II amending Annex(EU)2015/863 and amending Annex (EU)2017/2102	**PASS**

RoHS

CE

DONGGUAN UNIVERSAL TESTING TECHNOLOGY CO., LTD. UTL APPROVED

Lab Manager

Date:Apr.23, 2023

Dongguan Universal Testing Technology Co., Ltd
3rd Floor, HuiHai Building, No.631 Yinlang South Road, Dalang Town, Dongguan City, Guangdong province, China.
Website :http://www.utl-lab.cn Tel: +86 400-0683-789 E-mail: utl@utl-lab.cn Hotline: +86 13829128006

Figure 4.3-1 RoHS Certification

Chapter 5. Software Resources

5.1 Factory System Firmware Resources

5.1.1 Basic Information

Type	Description	Note
TF-A	Version: 2.6	Provide source code
OP-TEE	Version: 3.16	Provide source code
U-Boot	Version: 2021.10	Provide source code
Linux kernel	Version: 5.15.24	Provide source code
Root file system rootfs	Provide buildroot and Debian root file system	Provide tutorial
Qt	Qt version is 5.12.9	Provide source code
Cross compiler	arm-buildroot-linux-gnueaihf, version 9.4 arm-none-linux-gnueabihf, version 10.3	Provide software
System flashing	STM32CubeProgrammer and SD card are both available	Provide tutorial

Drive type	Description	Note
LCD drive	RGB LCD drive	Provide source code
Touch	FT5xx6, GT9147 and other capacitive touch screens (Only available at ALIENTEK)	Provide source code
RS485	RS485 drive	Provide source code
RS232	RS232 drive	Provide source code
FDCAN	FDCAN drive	Provide source code
Ethernet	PHY is YT8531C	Provide source code
USB HOST	USB HUB is SL2.1A	Provide source code
USB OTG	USB slave device and host	Provide source code
4G wireless	ME3630 4G module	Provide source code
KEY	GPIO	Provide source code
LED	GPIO	Provide source code
Audio	CS42L51	Provide source code
SDIO WIFI&BT	ALIENTEK RTL8723DS module	Provide source code
EEPROM(IIC)	AT24C64，IIC interface	Provide source code
NOR FLASH(SPI)	W25Q128，SPI interface	Provide source code
TF card/EMMC	SDMMC drive	Provide source code
Camera	OV5640 drive	Provide source code
Uart	UART drive	Provide source code
PWM backlight	LCD PWM backlight	Provide source code
Built-in RTC	STM32MP135 interal RTC	Provide source code

External RTC	PCF8563 RTC chip	Provide source code
HDMI	Sil9022A HDMI chip	Provide source code
ADC	ADC drive	Provide source code

Chapter 6. Core Board Structural Dimensions

6.1 CLMP135B Structural Dimensions

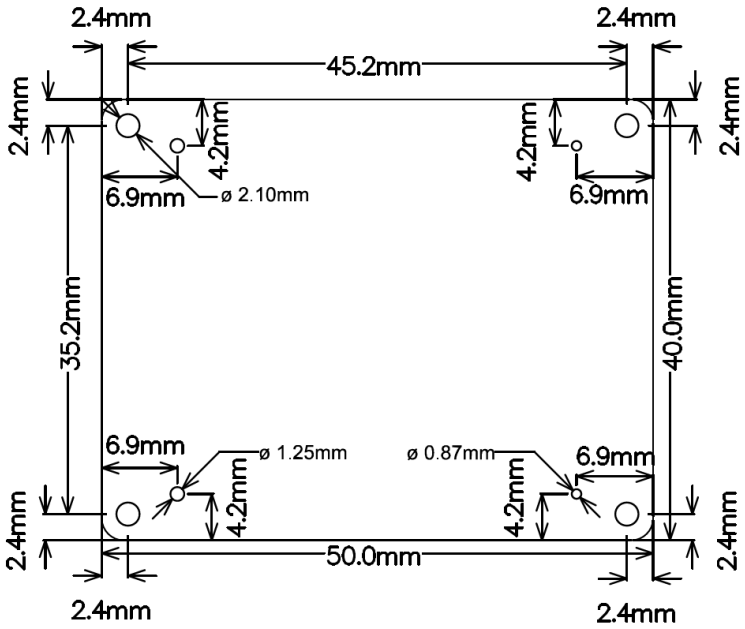


Figure 6.1-1 ATK-CLMP135B core board structural dimensions

6.2 CLMP135S Structural Dimensions

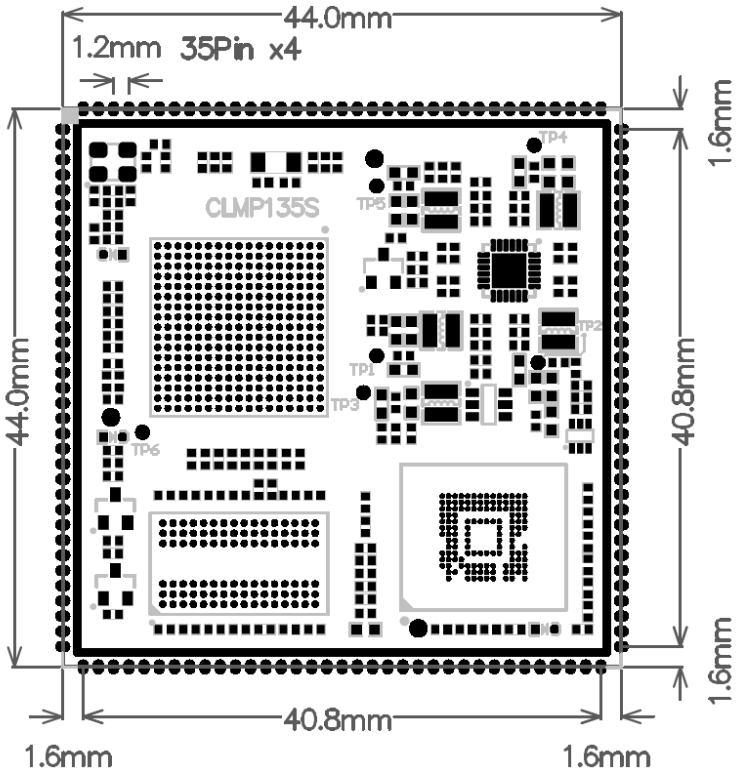


Figure 6.2-1 ATK-CLMP135S core board structural dimensions (front view)

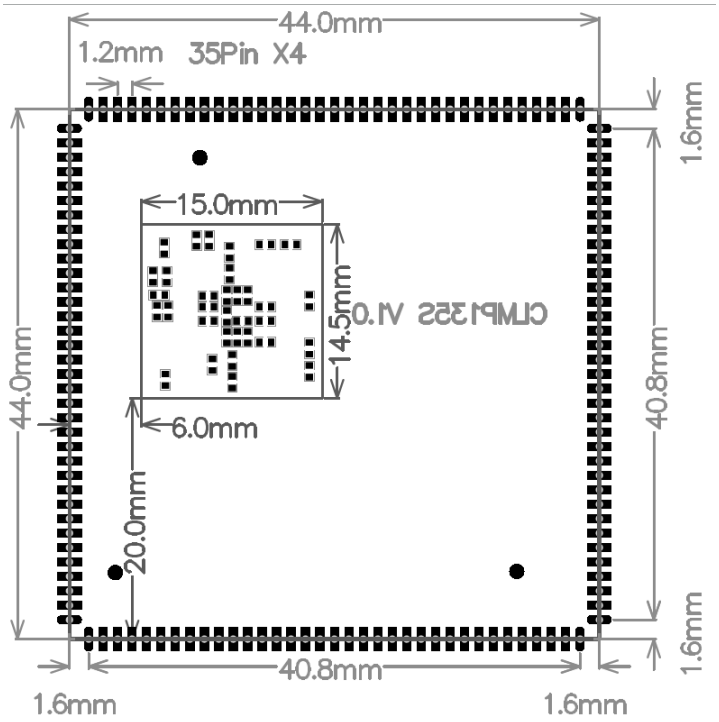


Figure 6.2-2 ATK-CLMP135S core board structural dimensions (front perspective view)

Chapter 7. Development Materials

The core board materials and development board materials are stored in the same online storage. The materials for the ATK-CLMP135 core board and the ATK-DLMP135 development board are the same. That is to say, all products related to Point Atom MP135 share the same online storage materials.

ALIENTEK has provided abundant development documents and software resources for the ATK-DLMP135 development board, covering areas such as Linux driver development, Qt GUI development, and C application development. All software resources are freely available for download through Baidu Netdisk.

Development board & core board materials link:

Download Center: http://www.openedv.com/docs/boards/arm-linux/zdyz-STM32MP135.html

7.1 Data Description

First-level directory of the cloud storage data:

Figure 7.1-1 Primary directory of the cloud storage files

Directory description:

Directory	Description
1_codes	Source code collection, including factory system source code, tutorial routine source code, etc.
2_sch	Schematic collection, including development board, core board, screen, camera, etc. schematics
3_softwares	Software tools collection, including serial port terminal, file transfer, source code reading, virtual machine, etc.
4_reference_data	Reference materials collection, including protocol manuals, ARM manuals, etc. documents
5_tools	Development tools collection, including cross compiler, ST official development tools, etc.
6_hardware	Hardware-related materials collection, including onboard chip materials, development board packaging libraries, etc.
7_STM32MP1_reference	ST official reference materials collection
8_system_image	Factory system image firmware burning package, including bootfs.ext4, rootfs.ext4, etc.

9_tutorials	Tutorial document collection, including driver development, application development, Qt development, etc. detailed documents
10_user_manual	Auxiliary document collection, including quick experience documents, etc., to help users quickly develop

7.1.1 User Manual

Material	Description
ATK-DLMP135 Quick Test Manual.pdf	1. System flashing 2. Development board usage and testing
ATK-DLMP135 Factory System Source Code Use Guide.pdf	1. Install cross-compiler 2. Compile the factory source code
ATK-DLMP135 Hardware Reference Manual.pdf	1. Development board resource description 2. Schematic diagram explanation
ATK-DLMP135 Network Environment Setup Manual.pdf	1. Configuration of development board and computer network environment
ATK-DLMP135 Factory System Qt Cross-compilation Environment Setup.pdf	1. Install and configure Qt Creator environment
ATK-DLMP135 File Transfer manual.pdf	1. File transfer between development board and computer 2. Network transmission
ATK-DLMP135 Factory System LOGO Modification Manual.pdf	1. Replace the factory system display logo of the development board
ATK-DLMP135 Factory System TFTP Setup Manual.pdf	1. Set up virtual machine TFTP environment
ATK-DLMP135 Factory System NFS Setup Manual.pdf	1. Set up virtual machine NFS environment
ATK-DLMP135 Porting Debian Reference Manual.pdf	1. Transplant the minimum Debian system onto the development board
ATK-DLMP135 Firmware Single-step Update Reference Manual.pdf	1. Guide users to update individual system firmware and test

7.1.2 Linux Driver Development Materials

Material	Description
ATK-DLMP135 Embedded Linux Driver Development Guide.pdf	1. Based on factory system learning drive, 1000+ pages
ALIENTEK factory-installed Linux system source code	1. Factory system tf-a\optee\uboot\kernel source code
Linux Driver code	1. Driver development guide example source code
Cross-compiler tool	1. For compiling source code

7.1.3 Qt GUI Development Materials

Material	Description
ATK-DLMP135 Embedded Qt development Guide.pdf	1. Based on the factory system for learning Qt programming, 580 pages
ATK-DLMP135 Factory system Qt cross-compiler environment setup.pdf	1. Installation and configuration of the Qt Creator environment
Qt comprehensive example code	1. Comprehensive source code of the Qt interface in the factory system
Qt development code	1. Sample source code of the Qt development guide

7.1.4 C Application Development Materials

Material	Description
ATK-DLMP135 Embedded Linux C Application Programming Guide.pdf	1. Based on the factory system learning application programming, 1000+ pages
Embedded Linux C Application Programming code	1. Partial source code of Linux C application programming documentation
Visual Studio Code	1. Application development software

7.1.5 Core Board Usage Materials

Material	Description
ATK-CLMP135 Core Board Pinout Allocation Reference Manual.pdf	1. Familiarize with the pin configuration of the core board 2. Definition of pin reassignment
ATK-CLMP135 core board schematic diagram.pdf	1. Core board schematic diagram, for design reference
ATK-DLMP135 base board schematic diagram.pdf	1. Development board schematic diagram, for design reference
Base Board\core board package library	1. Development board AD integration library, for board fabrication
Chip Data Sheet & Reference Manual	1. For consulting chip data descriptions
Mechanical structure diagram of the development board / core board	1. For structural design reference

The material is very abundant. Due to the limitations of this document's length, we cannot list all of them. Please download the documents from the cloud storage for further reference.

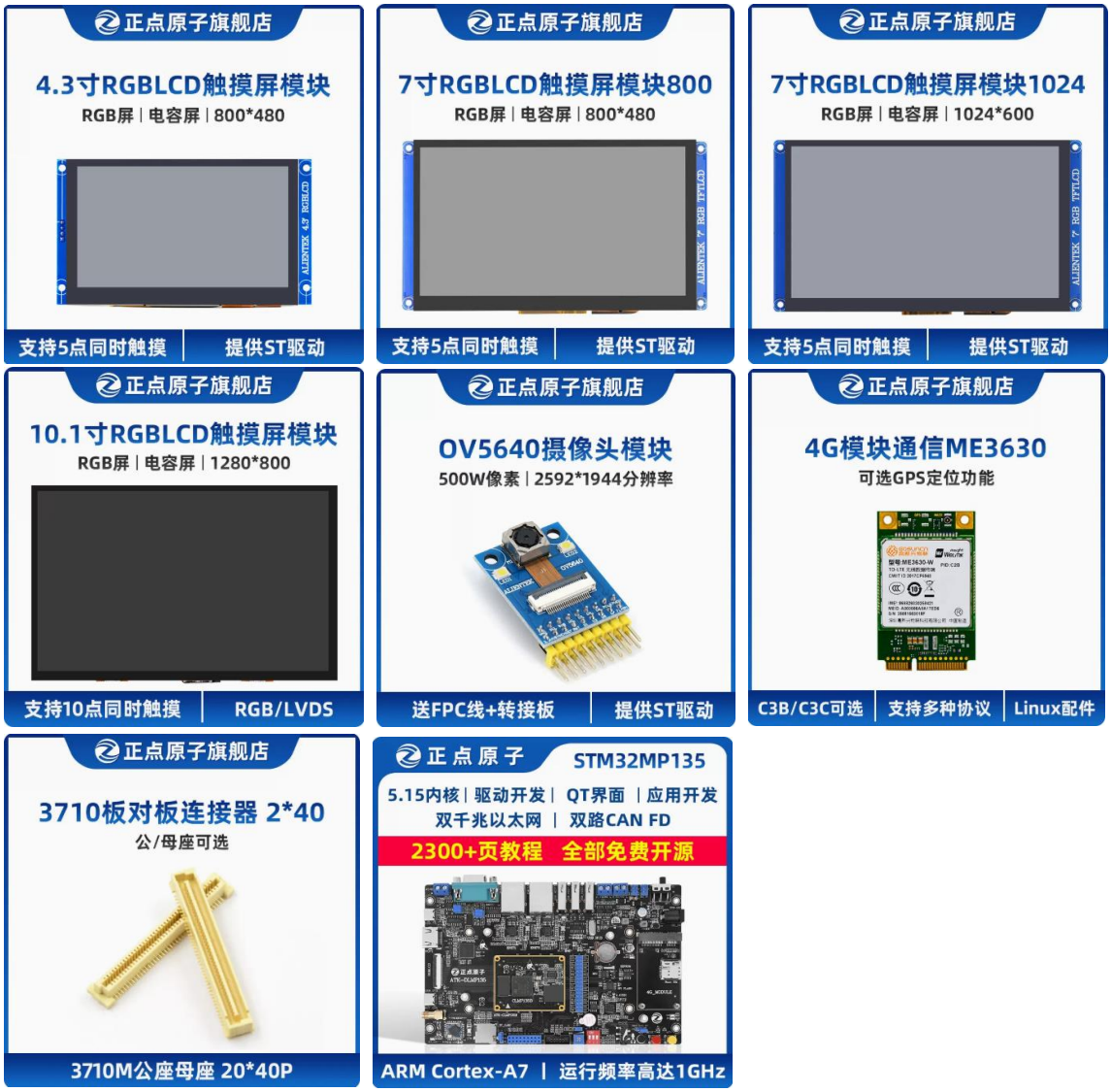
The document materials are constantly updated. Please use the latest cloud storage address to download the materials.

Chapter 8. Optional accessories

The ATK-CLMP135B core board can be used with the ATK-CLMP135 development board from ALIENTEK, along with an OV5640 camera, RGB screen, 4G module, etc., to achieve enhanced performance.

Tmall store link: https://zhengdianyuanzi.tmall.com/category-1498161504.htm?spm=a1z10.1-b.w500222300975822.4.5f821452e3PTLI&search=y&catName=ARM+Linux%BF%AA%B7%A2%B0%E5

The currently compatible modules for the development board are as follows (with purchase links attached in the picture):



The ATK-CLMP135B core board comes with a pair of 2*40PIN 3710F female connectors. When users are fabricating the base board, they need to use a pair of 2*40PIN 3710M male connectors on the base board.

Chapter 9. Precautions and maintenance

9.1 Notes

- Do not plug and unplug peripheral modules with power!
- Before using the product, please carefully read this manual and related development manuals, and pay attention to the applicable matters of the platform.
- Follow all instructions and warnings on the product.
- Please use this product in a cool, dry and clean place.
- Please keep the product dry. If any liquid splashes or soaks, power off immediately and let dry thoroughly.
- Do not use organic solvents or corrosive liquids to clean the product.
- Do not use or store this product in dusty, dirty and messy environment.
- If not used for a long time, please package this product, pay attention to moisture-proof and dust-proof.
- Pay attention to the ventilation and heat dissipation of the product during use to avoid component damage caused by excessive temperature during operation.
- Do not use this product in alternating hot and cold environment to avoid dew damage to components.
- Do not treat this product roughly, drop, knock or shake violently may damage the line and components.
- Pay attention to anti-static when using this product.
- FPC flexible cable is fragile, when plugging cable, pay attention to check whether the metal at both ends of the cable is misplaced and falling off.
- All products have passed the product test before shipment. Please use the development board corresponding to the ALIENTEK for power on test for the first time.
- Do not repair or disassemble the company's products by yourself. If the product fails, please contact the company in time for maintenance.
- Unauthorized modification or use of unauthorized parts may damage the product, the resulting damage will not be repaired.

Chapter 10. After sales service

10.1 Terms of after-sales service

1). After receiving the goods, please open them in front of the express, and sign after acceptance. If you find that the goods are less after signing, take photos in time and contact the seller's customer service to explain the situation within 15 days. If the feedback is lack of goods after 15 days, we will not reissue the goods. Other reasons notwithstanding).

2). 15 days -1 month: we are responsible for the return freight repair of product problems. Human factors damage expensive main chip or LCD screen, touch screen. The buyer needs to pay the cost and one time shipping fee, no maintenance fee.

3). 1-3 months: the problem of the product itself (non-human factors), we are responsible for the delivery of the past freight maintenance. If the main chip is burned out and the LCD screen and touch screen are damaged, the buyer needs to pay the cost, and the maintenance fee is not charged.

4) After 3 months: the buyer shall bear the return freight and the cost of chip, LCD screen and touch screen. No service charge.

10.2 After-sales Support

Technical support:

QQ group: Contact customer service on Taobao to obtain

Taobao store: Zhengdianyuan flagship store

Taobao shop: ALIENTEK flagship store

Forum: http://www.openedv.com/forum.php?mod=forumdisplay&fid=269