EZ9260-EVB Development Board

Hardware Manual

Version No.: 1.0

2008.07

Catalogue

Ⅰ. Preface

1.1 Company Profile

Hangzhou Qiyang Intelligent Technology Co., Ltd. is located at the bank of the beautiful West Lake. It is a high and new technology enterprise which is specializing in R&D, manufacture and sell embedded computer main board with high performance, low power consumption, low cost, small volume, and provides embedded hardware solutions.

We Offer:

◆ Research & develop, manufacture and sell embedded module products which have independent intellectual property rights, and cooperate with TI, ATMEL, Cirrus Logic, Freescale, and other famous processor manufacturers. It has launched a series of hardware products, such as ARM expanding board, ARM core module, ARM industrial board, sound/video decoding transmission platform, supporting tools and software resources which support user for their next embedded design.

◆ We give full play to the technical accumulation in ARM platform and Windows CE, Linux, Android operating system for many users providing custom service (OEM/ODM), to realize embedded products into the market stably, reliably and quickly.

1.2 Suggestion for Using EZ9260-EVB

1.Please read the instructions first, before using the single board computer;

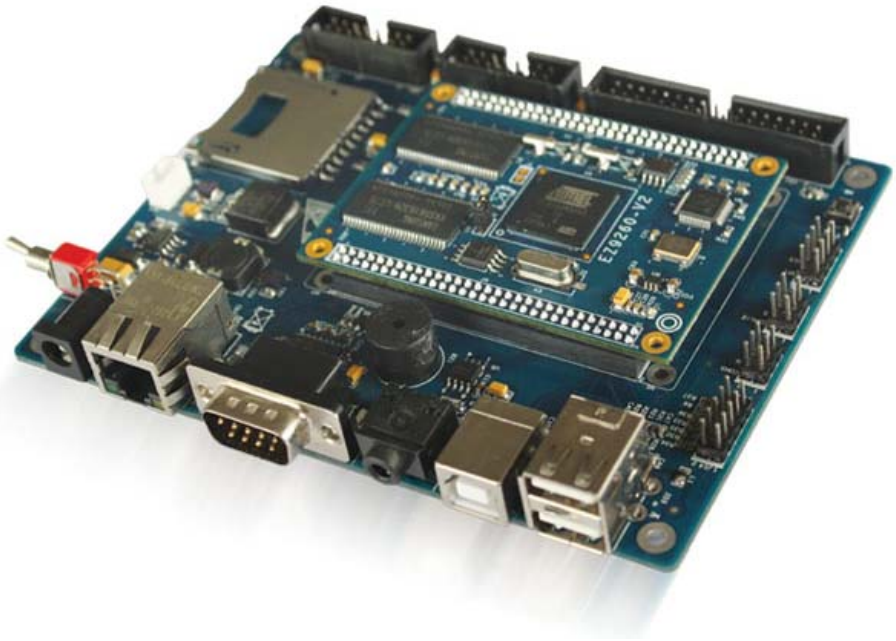
2.Before using, please check the packing list and see whether there is a missing file in the CD;

3.Please understand the basic structure and composition of the development board, including the hardware resource allocation etc.;

4.If you need to develop on Linux system and burn program into the development board, in addition to this document, we also suggest reading another document ***EZ9260-EVB Linux User Manual***.

5.EZ9260-EVB embedded development board, can drive monochrome, STN touch panel. We suggest to select touch panel, according to user's requirement.

6.EZ9260-EVB embedded development board, accept customized back plane and batch order for core board.



Ⅱ. System Composition

2.1 Summary

EZ9260-EVB development board, ATMEL AT91SAM9260 Processor, the core board has high precision of 6-layer PCB board, with the best electric performance and anti-interference performance; Peripheral equipment: integration of memory, RTC, 100M Ethernet, 7-ch serial port, SPI etc. We offer multifunction interface back plane to design. The back plane includes serial port, SD card, USB, audio, bus, SPI. Support Linux 2.6.We accept the customized back plane and batch order for the core board.

2.2 Mainboard Resource

- ATMEL AT91SAM9260 ARM9 Processor,200MHz,adopt BGA;
- Standard 128M NandFlash, can change to higher capacity of Flash chip on your own demand;
- Perfectly support Linux2.6.22;
- Abundant Resource on board: 7-ch UART(3-ch RS232),2-ch USB HOST, 1-ch USB Device, network , audio output, JTAG ,etc;
- Composite interface: AD Input, timer IO,TTL UART;
- External bus interface,can be expand I/O;
- SD Card storage;
- CSI image sensor interface.(Not have driver currently) ;
- Core board 74mm * 53mm; name card size, suitable for embedded situation;

◆ Power supply, can support +6~+25V wide range power supply;

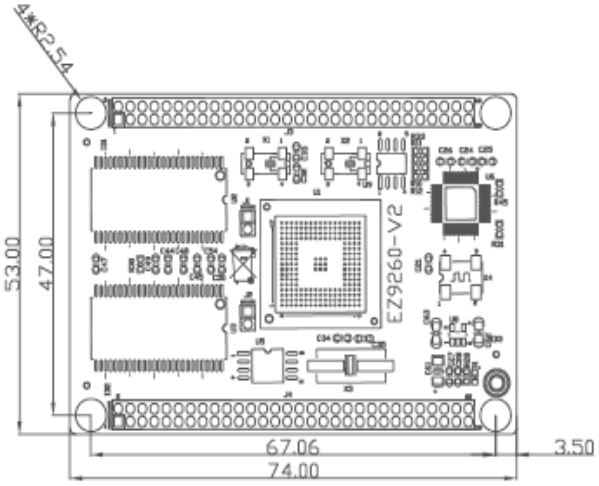
◆ Safety and reliability: EZ9260-EVB is a industrial grade CPU module with high reliability and high integration. Core board can be used directly in industrial site.

Mechanical and Environmental	
Core Board Size	74mm * 53mm
Power Consumption	≤1W
Operating temperature	-20°C~ +70°C(Can change to -40°C~ 85°C)
Relative Humidity	5%~95%， (Non-Condensing)
Software source	
OS	Linux 2.6
Test Code	Hardware interface test source code
Development Tool	arm-linux-gcc
Boot code	Uboot
Schematic	Development Board Schematic (PDF)

Ⅲ. Size & Structure Chart

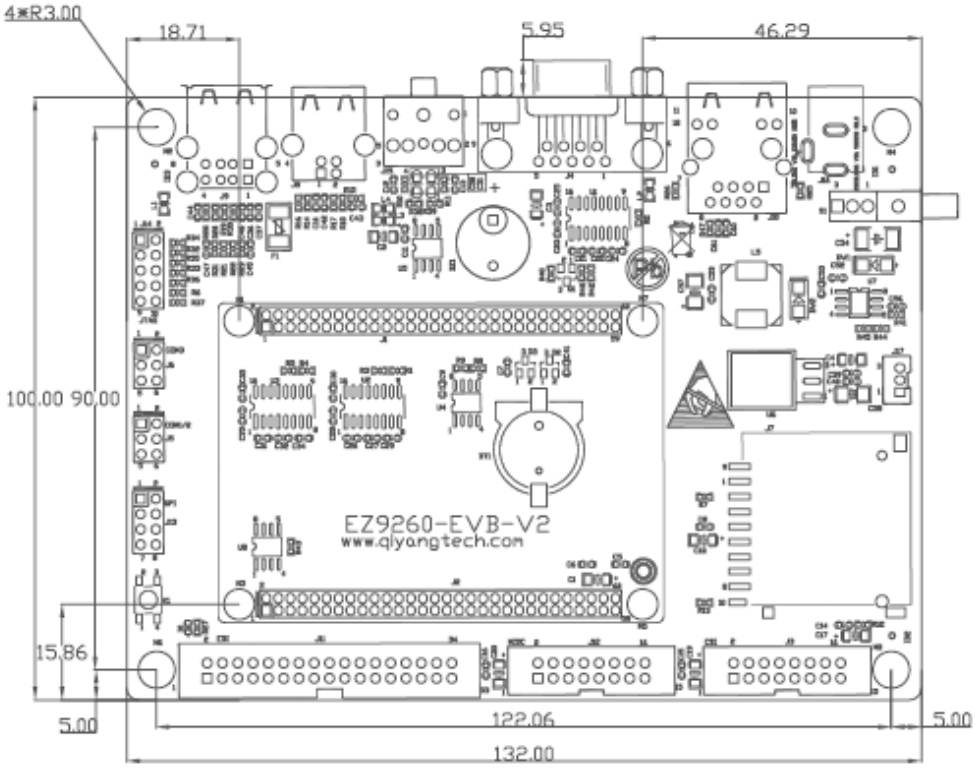
3.1 Core Board Size

Unit: mm, if you need connector size, please email: supports@qiyangtech.com



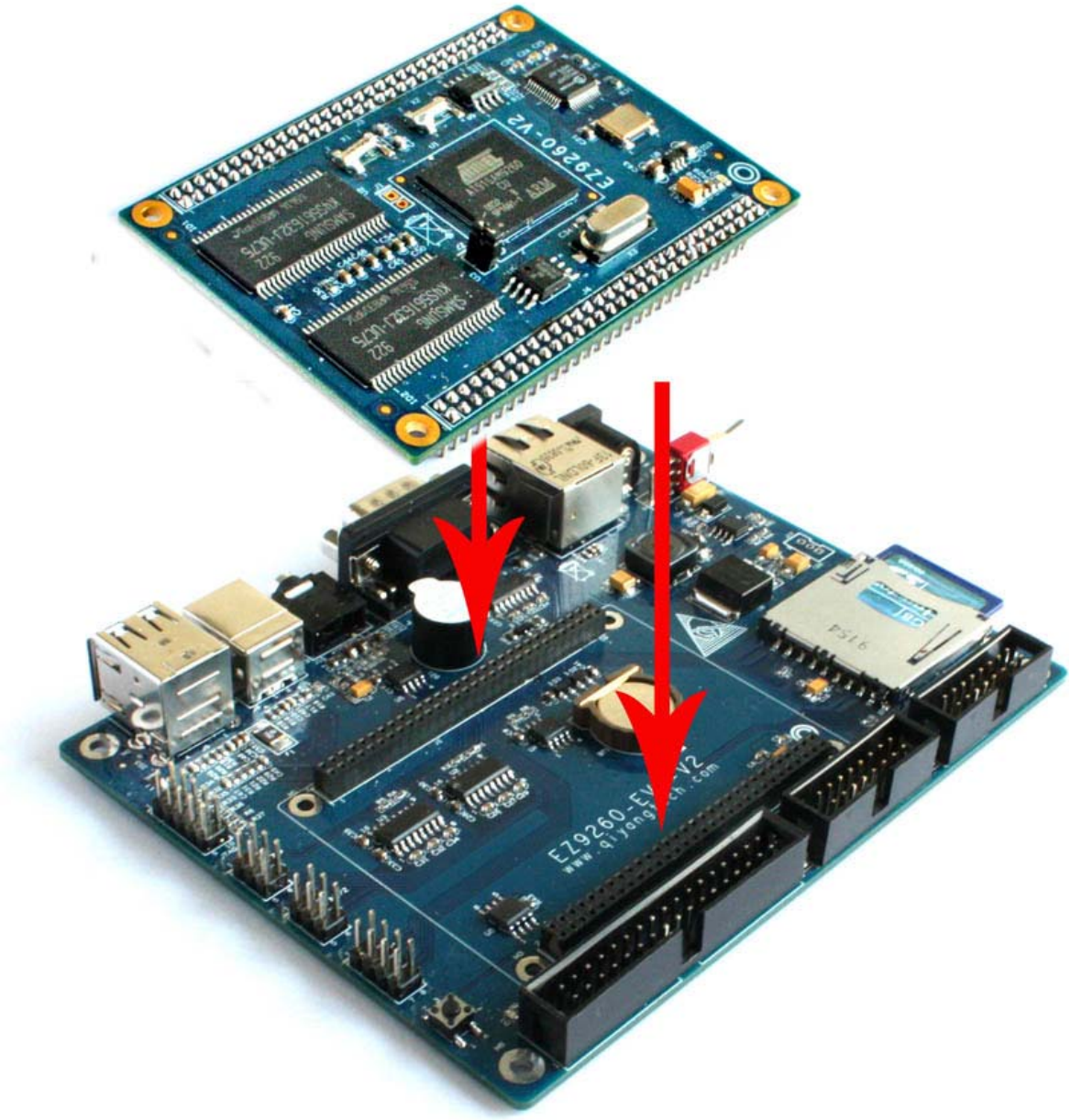
3.2 Back Plane Size

Unit: mm, if you need connector size, please email: supports@qiyangtech.com



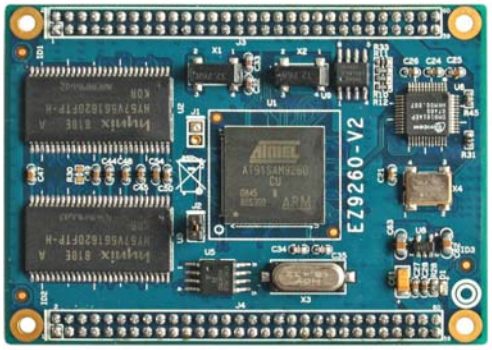
Ⅳ. Device Connection Pictorial View

EZ9260-EVB adopts back-insert form, and connects to back plane by 2 * 60 pin connector,which constitutes the complete intelligent equipment,the connection mode is as shown:

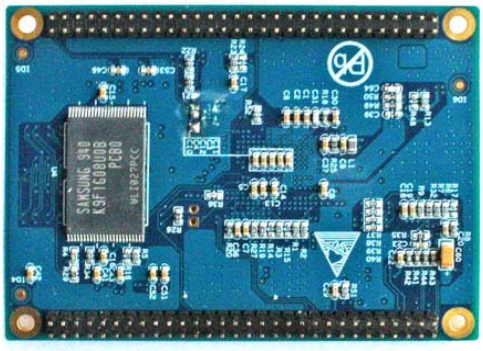


Ⅴ. Core Board

The core board has high precision of 6-layer PCB board with the best electric performance and anti-interference performance;hardware resources:CPU, NorFlash ,NandFlash (the back), Network chip, the clock chip, crystal oscillator etc, as many as 120 pins. It fully expands the AT91SAM9260 hardware resources and the user can expand the development board without limit.



Core Board(Front)



Core Board(Back)

Core board Resource:

- CPU: ATMEL AT91SAM9260，200MHz，ARM926EJ-S;
- SDRAM: 133MHz,64MB ;
- Flash: 128M * 8-bit NandFlash;
- DateFlash: 2MB DataFlash;
- Clock: DS1337 Real-time clock chip;
- Clock crystals: 32.768 MHz of the RTC clock source;
- Network: DM9161 network chip, realizes the adaptive 10/100 Mbps Ethernet function;
- 3.3V power supply, low consumption;

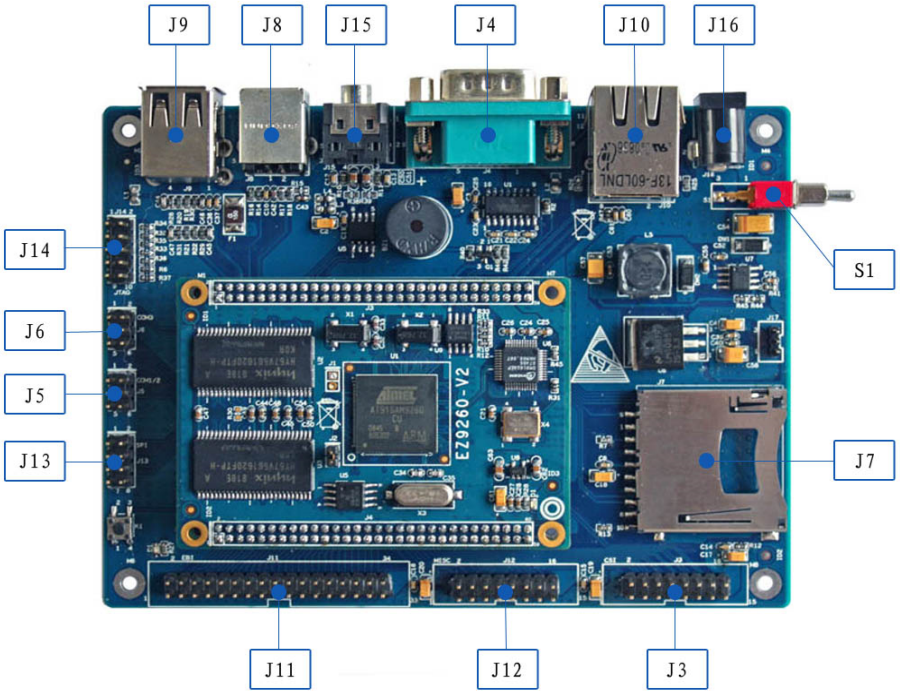
◆ Adopt high precision 6-layer PCB with the best electric performance and anti-interference ability;

◆ Size: 74mm * 53mm;

◆ 2x60 Solid pin connector

Ⅵ. Back Plane

EZ9260-EVB development board adopts high precision 4-layer PCB with the best electric performance and anti-interference ability which fully expand interfaces of AT91SAM9260 Processor.



Label	Name	Function	Illustration
S1	switch	Power Switch	Open and close the mainboard power

J3	CSI	Image Sensor Interface	Video application development
J4	Debug UART	Download, Communication	Download program, develop UART communication
J5	COM1/2	3-wire serial port	Common serial communication
J6	COM3	5-wire serial port	Common serial communication
J7	SD	SD Card Interface	Can extend storage application
J8	USB Device	USB Device	Download, USB communication
J9	USB Host*2	USB Host	USB Host device application
J10	Ethernet	10/100M Ethernet	Program download, network communication application
J11	Bus	External Bus	Can be used for external bus equipment
J12	MISC	Composite Interface	ADC, Timer IO,TTL UART
J13	SPI	SPI	SPI communication
J14	JTAG	Simulation, debugging	Used by universal ARM simulator
J15	AUDIO	LINE_OUT	Linear audio signal output
J16	Power	Support +12V	Support+6~+23 wide voltage power supply

Ⅶ. Hardware Specifications

7.1 SDRAM

EZ9260-EVB core board adopts 64M bytes SDRAM by 2 pieces 16-bit SDRAM storages in parallel to a 32-bit SDRAM, data and CLK signal line runs to100MHz.

7.2 NandFlash

EZ9260-EVB core board provides 128MB NandFlash storage, 32MB is used for storing system image file, Other space is used for storing client's application program, the user can make system curing and storage area distribution operations.

7.3 DataFlash

EZ9260-EVB core board provides DataFlash storage, mapping in bank0. Inside can store some startup codes, as storing [FIRSTBOOT.nb0] on Data Flash; this is a system bootloader, can cooperate with DNW tools on PC end, also can save boot logo (24-bit bmp).

7.4 RS232

EZ9260-EVB back plane provides 3-ch RS232 serial port;J5 is corresponding to COM1/2 separately, they are 3-wire serial port, signals are RXD, TXD, GND; J6 is corresponding to COM3 separately, they are 5-wire serial port, signals are

RXD, TXD, GND, RTS, CTS. Support hardware flow control by this 2 *serial ports. All interfaces can be DB9 standard serial port connector through serial expansion line. Pins are defined as follows:

J5 Pin Definition			
1	UART0_RXD	2	UART1_RXD
3	UART0_TXD	4	UART1_TXD
5	GND	6	GND

J6 Pin Definition		
1	UART2_RXD	Receive Data
2	UART2_CTS	Clear To Send
3	UART2_TXD	Transmit Data
4	UART2_RTS	Request To Send
5	GND	Single Ground
6	GND	Single Ground

7.5 Debug UART

EZ9260-EVB back plane provides 1-ch debug UART(J4).You can download program, kernel, Bootload, output system debugging information; Can not be used as a common serial port. Can customize debugging UART.

7.6 MISC Composite Data Interface

EZ9260-EVB back board provide MISC composite data interface (J12), which contains the AD input interface,timer IO,and 3-ch RS232 serial port in

TTL format,completely satisfy you the demand of multiple serial ports.

Pins are defined as follows:

J12 Pin Definition			
1	GND	2	TIOA0
3	TIOA1	4	TIOA2
5	UART3_RXD	6	UART3_TXD
7	UART4_RXD	8	UART4_TXD
9	UART5_RXD	10	UART5_TXD
11	ADC_D0	12	ADC_D1
13	ADC_D2	14	ADC_D3
15	+3.3VD	16	+3.3VD

7.7 USB

EZ9260-EVB back plane has 3-ch USB interfaces,2-ch is USB Hose(J9),another is USB Device(J8).

USB Hose support USB 2.0 protocol, adopts Type B USB socket, support a variety of USB flash drive, mobile hard disk, all kinds of USB Hub, USB mouse, keyboard, etc.

7.8 Ethernet

EZ9260-EVB back plane provides 1-ch Ethernet interface(J10),the socket with Ethernet indicator. Green light is LINK indicator; yellow is 100M indicator. The Ethernet has two functions:

（1）Common internet application

（2）Debugging and maintenance

Above two functions can run at the same time without affecting each other, standard cable access can be used.

7.9 External Bus Interface

EZ9260-EVB development board provides external bus interface(J11).

Pins are defined as follows:

J11 Pin Definition			
1	GND	2	nRESET
3	EBI_A2	4	EBI_A3
5	EBI_A4	6	EBI_A5
7	EBI_A6	8	EBI_A7
9	EBI_A8	10	EBI_A9
11	EBI_D0	12	EBI_D1
13	EBI_D2	14	EBI_D3
15	EBI_D4	16	EBI_D5
17	EBI_D6	18	EBI_D7
19	EBI_D8	20	EBI_D9
21	EBI_D10	22	EBI_D11
23	EBI_D12	24	EBI_D13
25	EBI_D14	26	EBI_D15
27	EBI_nRD	28	EBI_nWR
29	EBI_nCS4	30	EBI_nCS5
31	EBI_nWAIT	32	EXT_IRQ0
33	+3.3VD	34	+3.3VD

7.10 SPI Interface

EZ9260-EVB development board provides 1-ch SPI interface(J13), for SPI communication, can be used for driving LCD panel through SPI.

Pin definition is as follows:

J13 Pin Definition			
e1	GND	2	SPI_MISO
3	SPI_MOSI	4	SPI_SPCK
5	SPI_nCS0	6	SPI_ nCS1
7	SPI_nCS2	8	+3.3VD

7.11 Audio

EZ9260-EVB back plane provides binaural audio output interface(J15), can connect to passive earphone and active speaker, use standard 3.5 mm headphone plug to connect.

7.12 CSI Image Sensor Interface

EZ9260-EVB back plane provides CPU's own internal CSI image sensor interface to boot (J3), but there is no driver provided, recommend users to use ordinary I/O.

Pins are defined as follows:

J3 Pin Definition			
1	GND	2	CSI_D0
3	CSI_D1	4	CSI_D2
5	CSI_D3	6	CSI_D4
7	CSI_D5	8	CSI_D6

9	CSI_D7	10	CSI_HSYNC
11	CSI_VSYNC	12	CSI_PCK
13	I2C_SCL	14	I2C_SDA
15	+3.3VD	16	+3.3VD

7.13 JTAG

EZ9260-EVB back plane provides 1-ch JTAG interface(J14) with 10 pin, can connect to common simulator. For example: J-LINK V.5 or higher can use it. Qiyang will provides serial port, network port, USB interface to download Bootload. Compile application software in Linux system. We do not suggest to use simulator.

JTAG interface, pins are defined as follows:

J14 Pin Definition			
1	+3.3VD	2	JTAG_NTRST
3	JTAG_TDI	4	JTAG_TMS
5	JTAG_TCK	6	JTAG_RTCK
7	JTAG_TDO	8	nRESET
9	GND	10	None

7.14 SD Card

EZ9260-EVB back plane provides a standard SD memory card slot, the user can insert SD card to extend storage capacity.

7.15 RTC

EZ9260-EVB development board ‘s battery are used for keeping RTC in CPU to work normally. Use CR1220 button battery; When the board powers on,

VDD3.3 will supply power to RTC.

7.16 Reset

EZ9260-EVB back plane's RESET key is the reset button on the mainboard. Boot the reset pin from the AT91SAM9260 Processor.

7.17 Power

J16 is the power input port for EZ9260-EVB development board. Voltage range:+6V~+25V; we suggest supply power to development board by DC+12V@2A.

Ⅷ. CD

- Linux Image file, system source code
- Schematic
- Driver source code
- Connector data manual
- Compiling tools
- Download tool software
- Interface test program
- According to customer requirements, assist to develop dependence-driven.

Ⅸ. Appendix

1. Before connect to LCD, confirm LCD power specification.

2. Please use the original connecting accessories, avoid damaging the main board.

3. We ensure offering communication technology support through E-mail, telephone for lifelong technical support service.

4. We ensure offering 6 months repair service for free, if malfunction occurs in warranty because of quality problem, contact our retailer or our company with purchase receipt in warranty period, we will repair or replace it.

5. Under these circumstances, we do not offer repair for free:

● Over warranty time;

● Do not have purchase receipt;

● Liquid inlet, Damp or Mold;

● Malfunction and damage is not due to product quality but drops, intense sharking, arbitrarily modify, disoperation after purchase;

● Damage of force majeure.

6. We reserve intellectual property for the software and hardware technical data of EZ9260-EVB; users can only use them for teaching, testing, researching. Shall not be engaged in any commercial purpose. Shall not distribute them on the Internet. Shall not intercept, modify them to tamper copyright.

7. We accept batch order; we can offer technical support and service.

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