



**QY-9315S Single Board Computer**  
**Hardware Manual**

Version No. : 1.0

2013.07

**Company Profile:**

Hangzhou Qiyang 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 development 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.

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## I . Preface

### 1.1 Company Profile

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## 1.2 Suggestion for Using QY-9315S Single Board Computer

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 SBC, 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 *QY-9315S Linux User Manual*;

## II. System Composition

### 2.1 Mainboard Resource:

QY-9315S is of high performance of ARM9 CPU structure single board computer based on standard 3.5'.

#### Products Introduction :

Chip Specification:	Cirrus Logic EP9315,200MHz
Core:	ARM920T
SDRAM:	64MB
Flash:	32MB
OS:	Linux2.4/2.6
External Interface	
Storage	IDE & CF Card
USB	3 * USB2.0 Full-Speed Host interface
RS232	5-ch RS232, 3-ch support all model
RS485	2-ch, Multiplexes with RS232
LCD	Support 3.5'-17" TFT-LCD ,resolution up to 1024 x 768
VGA	VGA interface, can be connected with universal display
Touch Panel	4-wire resistive touch panel
Input Interface	8 * 8 matrix keyboard, can be used as I/O,4-wire resistive touch panel
PC104	PC104 Bus
CAN	Support CAN2.0A and CAN2.0B
Audio	AC97 & I2S Audio output, provide dual-track line input interface
LAN	10/100M Ethernet interface
Other	RTC/Reset Circuit / Watchdog
Power	+6V~+25V wide range power supply
Power consumption	≤3W
Mechanical and Environmental	
Size	147mm * 101.6mm, standard 3.5'
PCB Specification	8-layer
Operating Temperature	-20℃~+70℃
Relative Humidity	5%~95%,Non-Condensing;

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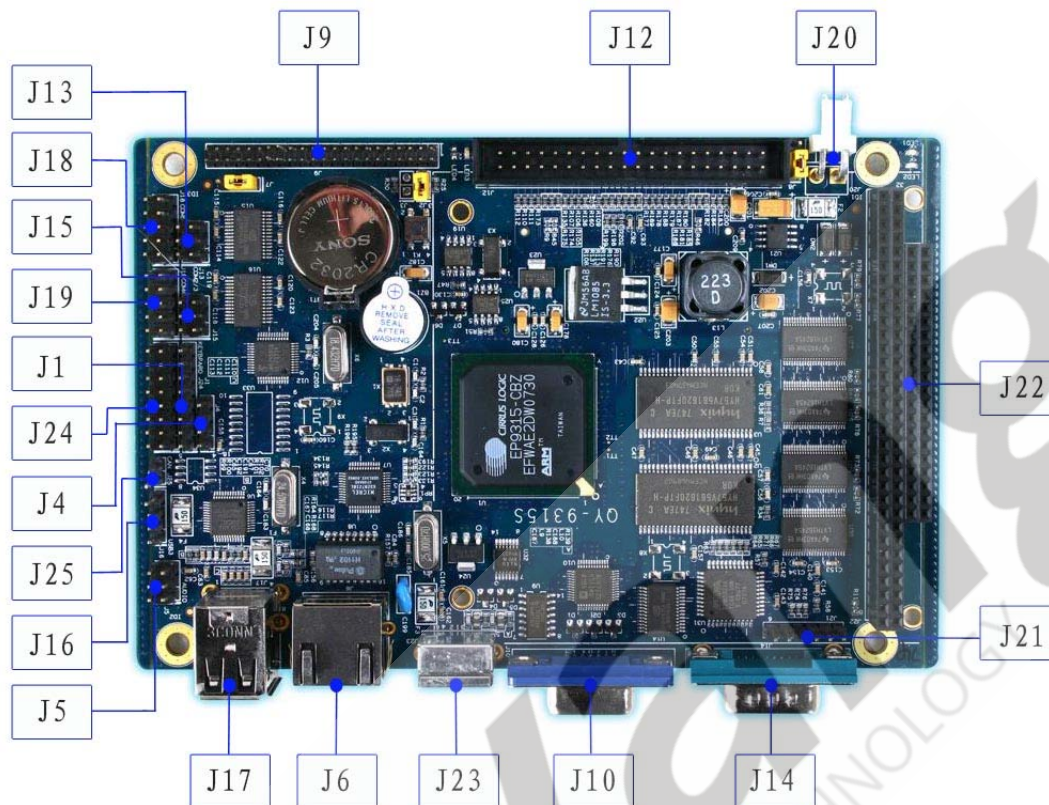
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### 2.2 Mainboard Interface Basic Function



#### Basic Interface Function

Label	Name	Function	Specification
J1	JTAG	Simulating and debugging	Mini eight Pin interface
J4	SPI	SPI	SPI communication
J5	AUDIO	Audio input and output	For audio application
J6	Ethernet	10/100MEthernet	Program download,communication
J9	LCD	LCD	LCD with touch panel
J10	VGA	VGA video output	
J12	IDE	Connect to IDE device	Used for mounting IDE Bus device
J13	COM2/COM3	3-wire port	common port application
J14	Debugging port	Download,communication	Program download, UART communication development

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J15	RS485	RS485	485 Bus development application
J16	USB host3	USB HOST	For USB Host application
J17	USB host1&2	USB HOST	For USB Host application
J18	COM5	9-wire port	With the function of flow control port development application
J19	COM4	9-wire port	With the function of flow control port development application
J20	Power interface	System power supply	
J21	CPLD burning	CPLD burning port	CPLD Chip program burning
J22	PC104	PC/104	
J23	PS/2	PS/2 keyboard interface	
J24	Keyboard	array keyboard interface	
J25	CAN	CAN 2.0	CAN2.0 A/B,
J11(back)	CF card socket	CF card interface	Expand storage application conveniently and stably

### III. Mainboard Interface Definition

#### 3.1 Definition

J1 Pin Definition: Simulating, Debugging

1	+3.3VD
2	nTRST
3	TDI
4	TMS
5	TCK
6	TDO



7	nRESET
8	GND

**J4 Pin Definition: SPI Interface**

1	SPI_TXI
2	SPI_RXI
3	SPI_FRM
4	SPI_CLK

**J5 Pin Definition: Audio Signal Input/Output**

1	LINE_INL
2	LINE_UOTL
3	LINE_INR
4	LINE_OUTR
5	GND_AUD
6	NC

**J6 Pin Definition: 10/100M Ethernet**

1	TX+
2	TX-
3	RX+
4	CT
5	CT
6	RX-
7	CMT
8	CMT

**J9 Pin Definition: To expand LCD**

1	GND	2	SPCLK
3	HSYNC	4	VSYNC
5	GND	6	LCD_R0
7	LCD_R1	8	LCD_R2
9	LCD_R3	10	LCD_R4
11	LCD_R5	12	GND
13	LCD_G0	14	LCD_G1
15	LCD_G2	16	LCD_G3
17	LCD_G4	18	LCD_G5
19	GND	20	LCD_B0
21	LCD_B1	22	LCD_B2
23	LCD_B3	24	LCD_B4
25	LCD_B5	26	GND
27	LCD_DE	28	VDD
29	VDD	30	R/L
31	U/D	32	
33	BRIGHT	34	LCD_DE
35	GND	36	nRESET
37	TSC_SXP	38	TSC_SYP
39	TSC_SXM	40	TSC_SYM
41	TSC_XP	42	TSC_YP
43	TSC_XM	44	TSC_YM

J13 Pin Definition:3-Wire Port

1	RX1
2	RX2

3	TX1
4	TX2
5	GND
6	NC

J15 Pin Definition:RS485

1	RS485_A1
2	RS485_A2
3	RS485_B1
4	RS485_B2
5	GND
6	NC

J16 Pin Definition: USB Host

1	VBUS
2	USBM
3	USBP
4	GND

J18 Pin Definition:9-Wire Port

1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	

J19 Pin Definition:9-Wire Port

1	DCD	2	DSR
---	-----	---	-----

3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	

J20 Pin Definition: System Power Supply

1	V+
2	V-

J21 Pin Definition: CPLD Burning Port

1	+3.3VD
2	TDO
3	TDI
4	TCK
5	TMS
6	GND

J22 Pin Definition:PC/104

A		B	
1		1	GND
2	D7	2	RESETDR V
3	D6	3	+5V
4	D5	4	IRQ9
5	D4	5	
6	D3	6	
7	D2	7	

D		C		8	D1	8	
1	GND	1	GND	9	D0	9	+12V
2		2	SBHE	10	IOCHRDY	10	
3		3	LA23	11	AEN	11	SMEMW
4	IRQ10	4	LA22	12	SA19	12	SMEMR
5	IRQ11	5	LA21	13	SA18	13	IOW
6	IRQ12	6	LA20	14	SA17	14	IOR
7	IRQ15	7	LA19	15	SA16	15	
8	IRQ14	8	LA18	16	SA15	16	
9	DACK0	9	LA17	17	SA14	17	DACK1
10	DRQ0	10	MEMR	18	SA13	18	DRQ1
11		11	MEMW	19	SA12	19	REFRESH
12		12	SD8	20	SA11	20	SYSCLK
13		13	SD9	21	SA10	21	IRQ7
14		14	SD10	22	SA9	22	IRQ6
15		15	SD11	23	SA8	23	IRQ5
16		16	SD12	24	SA7	24	IRQ4
17	+5V	17	SD13	25	SA6	25	IRQ3
18	MASTER	18	SD14	26	SA5	26	
19	GND	19	SD15	27	SA4	27	TC
20	GND	20		28	SA3	28	BALE
				29	SA2	29	+5V
				30	SA1	30	OSC
				31	SA0	31	GND
				32	GND	32	GND

J24 Pin Definition: Array Keyboard Interface

1	X0	2	Y0
3	X1	4	Y1
5	X2	6	Y2
7	X3	8	Y3
9	X4	10	Y4
11	X5	12	Y5
13	X6	14	Y6
15	X7	16	Y7

J25 Pin Definition: CAN 2.0

1	CANH
2	CANL

### 3.2 LED Definition

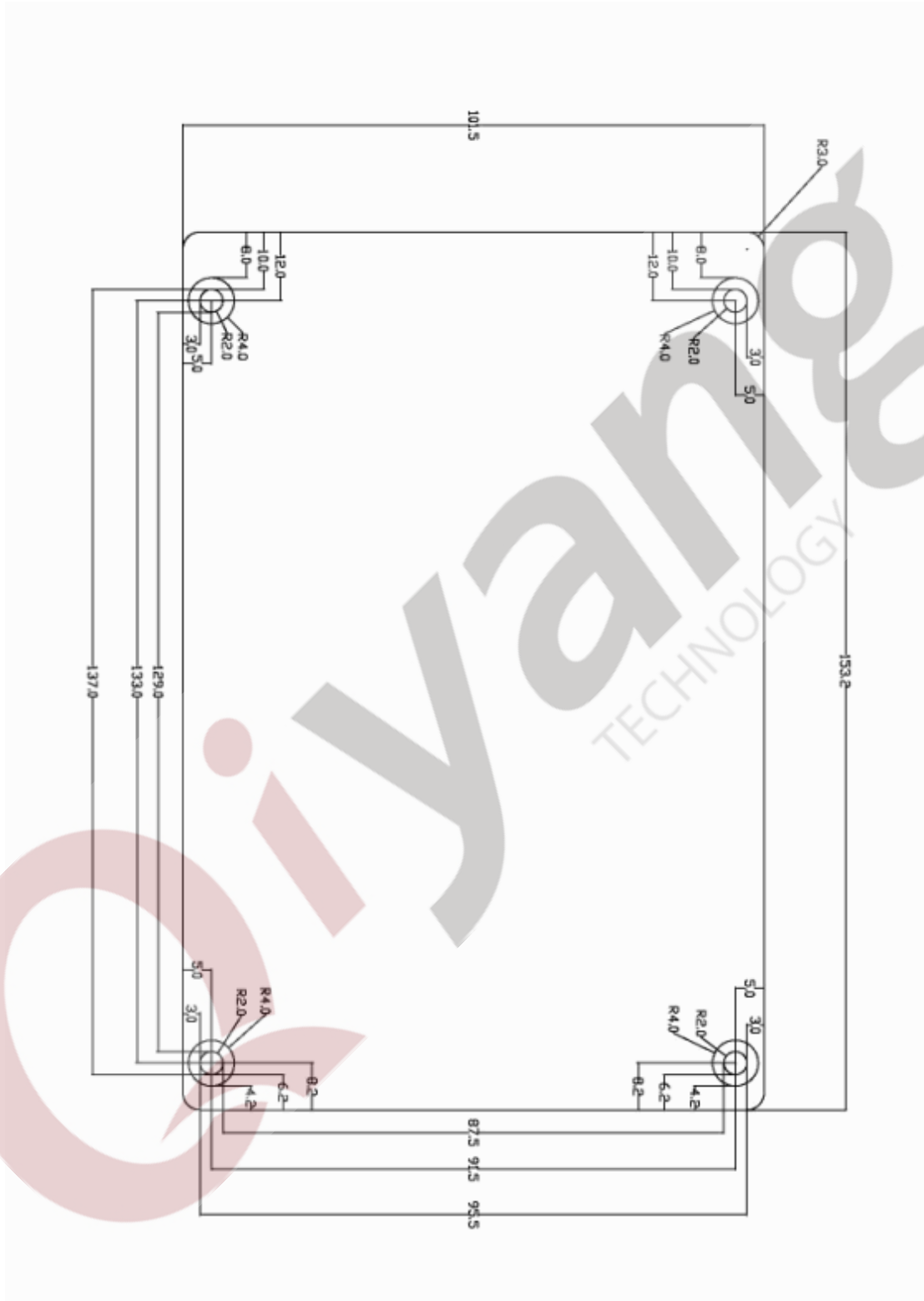
Name	Label	Function	Specification
System LED	LED1 (Blue)	Chip working condition hints.	
System LED	LED2 (red)	Chip working condition hints.	
IDE	LED3 (red)	IDE reading and writing.	When operating IDE, light on
CF card	LED3 (red)	CF card reading and writing.	When operating CF card, light on

### 3.3 Jumper

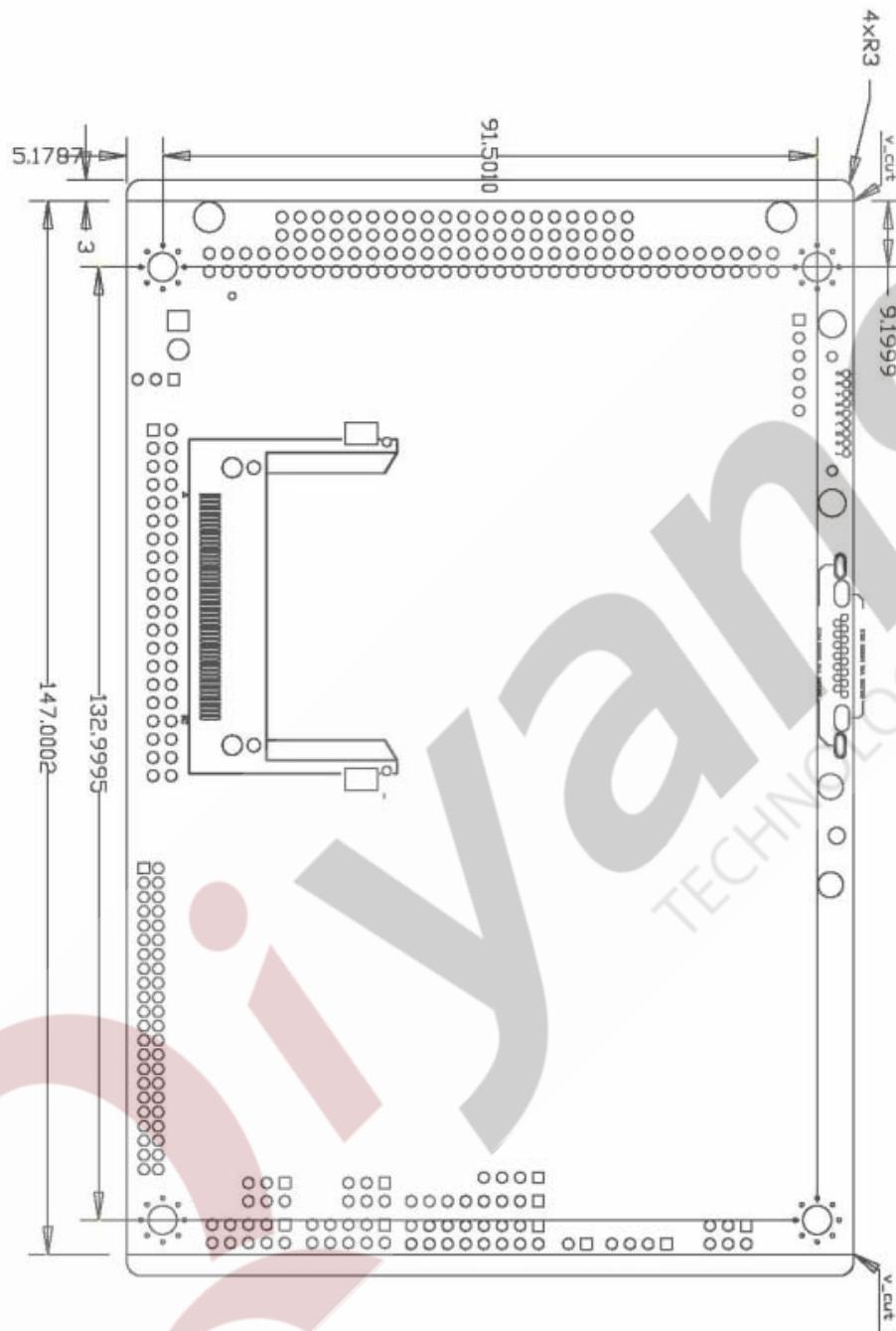
Name	Label	Pin 1 connect with Pin 2	Pin 2 connect with Pin 3 (Or Pin 1 disconnect with Pin2)
LCD power	J7	LCD 3.3V power supply	LCD 5V power supply
CF Card power	J8	CF card 3.3V power supply	CF card 5V power supply
<p>J2 disconnect, system DOWNLOAD EBOOT.nb0 from debugging port</p> <p>J2 short circuit, system starts normally</p>			



**3.4 Mainboard Specification:**



picture 1



picture 2

#### IV. CD

Software and technique support:

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- ◆ Linux OS BSP;
- ◆ Linux compilers;
- ◆ Download tool software;
- ◆ QT development environment;
- ◆ Interface testing program;
- ◆ According to customer's requirements, we can assist to develop dependence-driven.

## V. Remark

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 IAC-335X-Kit; 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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