

EM9G45 Hardware Manual



Boardcon Technology Limited

www.boardcon.com

1. Introduction

1.1. About this Manual

This manual is intended to provide the user with an overview of the board and benefits, complete features specifications, and set up procedures. It contains important safety information as well.

1.2. Feedback and Update to this Manual

To help our customers make the most of our products, we are continually making additional and updated resources available on the Boardcon website (www.boardcon.com , www.armdesigner.com).

These include manuals, application notes, programming examples, and updated software and hardware. Check in periodically to see what's new!

When we are prioritizing work on these updated resources, feedback from customers is the number one influence, If you have questions, comments, or concerns about your product or project, please no hesitate to contact us at support@armdesigner.com.

1.3. Limited Warranty

Boardcon warrants this product to be free of defects in material and workmanship for a period of one year from date of buy. During this warranty period Boardcon will repair or replace the defective unit in accordance with the following process:

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This warranty is limited to the repair or replacement of the defective unit .In no event shall Boardcon be liable or responsible for any loss or damages, including but not limited to any lost profits, incidental or consequential damages, loss of business, or anticipatory profits arising from the use or inability to use this products.

Repairs make after the expiration of the warranty period are subject to a repair charge and the cost of return shipping. Please contact Boardcon to arrange for any repair service and to obtain repair charge information.

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1 EM9G45 Introduction

1.1 Summary

This EM9G25 SBC is a new Linux development board powered by Atmel SAM9G45 ARM9 processor. The AT91SAM9G45 is the first embedded microprocessor that offers a true EHCI-compliant USB high-speed controller.

Onboard peripherals include USB device, double-USB host, Ethernet 10/100 interface, SD/MMC card slots, a 24-bit true color LCD TFT display with resistive touchscreen and backlight, Audio input/output, and a backup battery.

The SBC supports Linux, Android and Microsoft WinCE. Boardcon provides full BSPs for Linux operating systems free of charge, and Android and WinCE are coming soon.

Related Applications for EM9G25 SBC: POS terminals, security, building automation, industrial control, medical, PC and gaming peripherals, toys and cellular phone accessories, data acquisition system, handheld devices, etc.

EM9G25 SBC competes well against other low cost solutions but also provides the longevity and stability OEMs require to go to take their products to market.

1.2 Atmel SAM9G45 Features

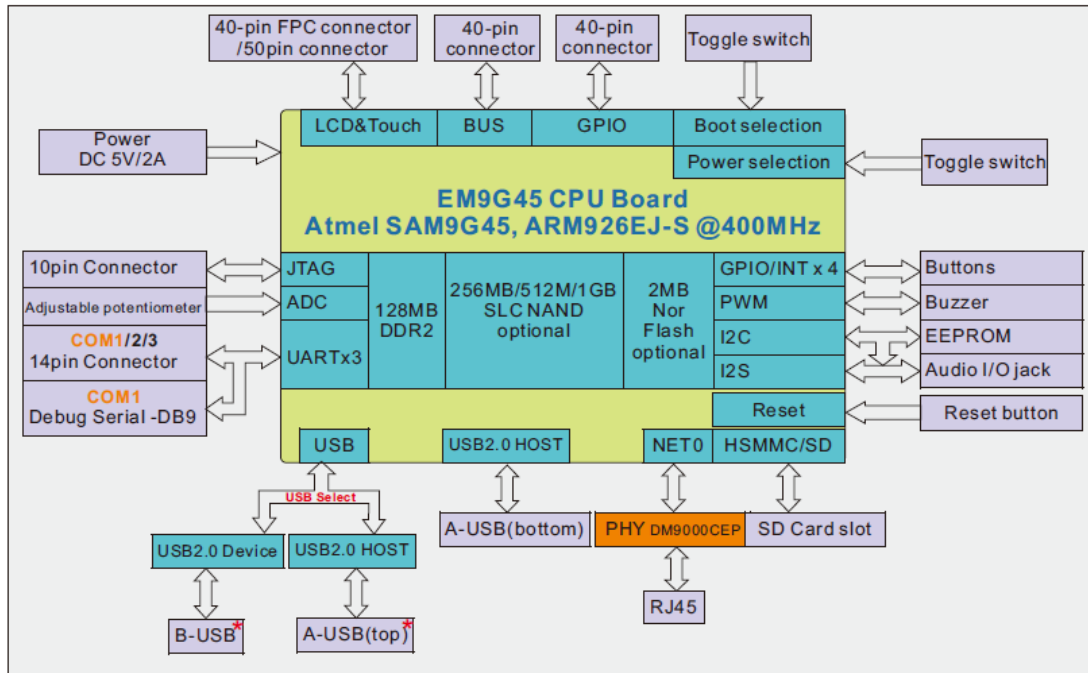
- 400 MHz ARM926EJ-S™ ARM®Thumb®Processor
 - 32 KBytes Data Cache, 32 KBytes Instruction Cache, MMU
- Memories
 - Dual External Bus Interface supporting 4-bank DDR2/LPDDR, SDRAM/LPSDR, Static Memories, CompactFlash, SLC NAND Flash with ECC
 - One 64-kbyte internal SRAM, single-cycle access at system speed or processor speed through TCM interface
 - One 64-kbyte internal ROM, embedding bootstrap routine
- Peripherals
 - LCD Controller supporting STN and TFT displays up to 1280*860
 - ITU-R BT. 601/656 Image Sensor Interface
 - USB Device High Speed, USB Host High Speed and USB Host Full Speed with OnChip Transceiver
 - 10/100 Mbps Ethernet MAC Controller
 - Two High Speed Memory CardHosts (SDIO, SDCard, MMC)
 - AC'97 controller
 - Two Master/Slave Serial Peripheral Interfaces
 - Two Three-channel 32-bit Timer/Counters
 - Two Synchronous Serial Controllers (I2S mode)
 - Four-channel 16-bit PWM Controller
 - Two Two-wire Interfaces
 - Four USARTs with ISO7816, IrDA, Manchester and SPI modes

- 8-channel 10-bit ADC with 4-wire Touch Screen support
- System
 - 133 MHz twelve 32-bit layer AHB Bus Matrix
 - 37 DMA Channels
 - Boot from NAND Flash, SDCard, DataFlash® or serial DataFlash
 - Reset Controller with on-chip Power-on Reset
 - Selectable 32768 Hz Low-power and 12 MHz Crystal Oscillators
 - Internal Low-power 32kHz RC Oscillator
 - One PLL for the system and one 480 MHz PLL optimized for USB High Speed
 - Two Programmable External Clock Signals
 - Advanced Interrupt Controller and Debug Unit
 - Periodic Interval Timer, Watchdog Timer, Real Time Timer and Real Time Clock
- I/O
 - Five 32-bit Parallel Input/Output Controllers
 - 160 Programmable I/O Lines Multiplexed with up to Two Peripheral I/Os with Schmitt trigger input
- Package
 - 324-ball LFBGA, pitch 0.8 mm

1.3 EM9G45 Features

Feature	Specifications
CPU	Atmel SAM9G45, ARM926EJ-S @400MHz
RAM	On board 128MB DDR2
NAND Flash	Default mounted 256MB, 512MB/1GB optional
NOR Flash (optional)	2MB
Power	3.3V power supply for CPU board
Connector	DC-2.0mm pitch board-to-board connectors
CPU Dimension	37mm x 74mm
Serial Ports (UARTs)	COM-1 - RS232, five-wire DB9 RS232 serial port COM-2 - RS232, three-wire available via 2mm pitch 3 pins COM-3 - RS232, three-wire available via 2mm pitch 3 pins
LCD	The LCD port integrated 4-wire resistor touch screen port. The board comes with driver for 4.3-, 7- inch TFT LCD
Ethernet	Davicom DM9000CEP, RJ45 interface
USB	1x USB2.0 device, 2x USB2.0 host
JTAG	1x 2mm pitch 10-pin JTAG Port
Keyboard & mouse	USB, keypad is working via USB
Audio codec	Adopt WM8731 Audio chip, Audio input and output slot
ADC	Adjustable resistor is connected with pins of ADC to check analog/digital change

1.5 Block Diagram



* **Note:** Only two USB are active at one time. The USB can be specified by operating the USB_SEL.

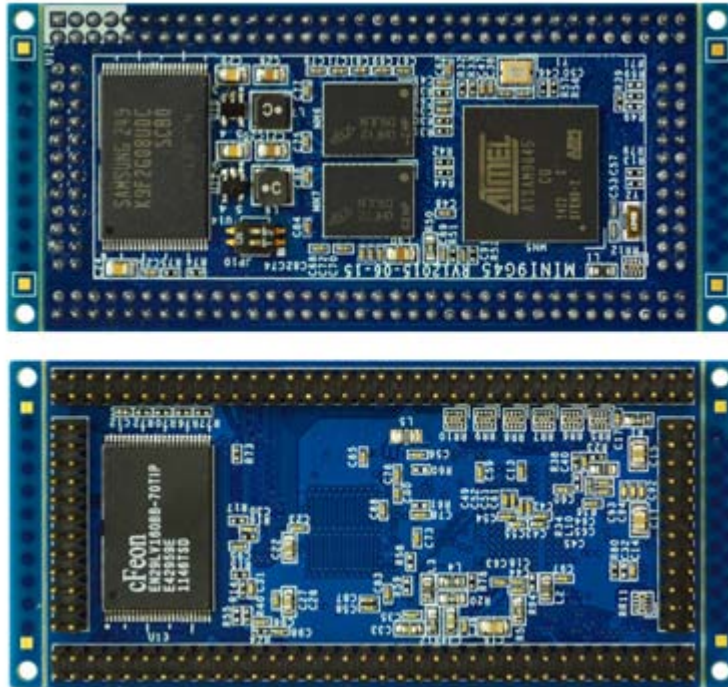
1.6 Motherboard Power meter

Support voltage	5v/2A				
System	Connected devices	Electric current(A)	System	Connected devices	Electric current(A)
Linux (7" image)	5v power	0.2	Linux (7" image)	Power, 7 inch resistive screen	0.69
Linux (7" image)	Power, sd card, play mp3, two U disk, debug serial, Ethernet, 7inch LCD, headphone	0.91	Linux (4.3" image)	5v power	0.14
Linux (4.3" image)	Power, 4.3 inch resistive screen	0.32	Linux (4.3" image)	Power, sd card, play mp3, two U disk, debug serial, Ethernet, 4.3 inch LCD, headphone	0.59



1.7 CPU Module Introduction

The EM9G45 CPU board – MINI9G45 is a miniature computer-on-module (CoM) / system-on-module (SoM) board designed to serve as a building block in embedded applications. The module is provided with comprehensive documentation and full ready-to-run SW support for Linux operating systems.



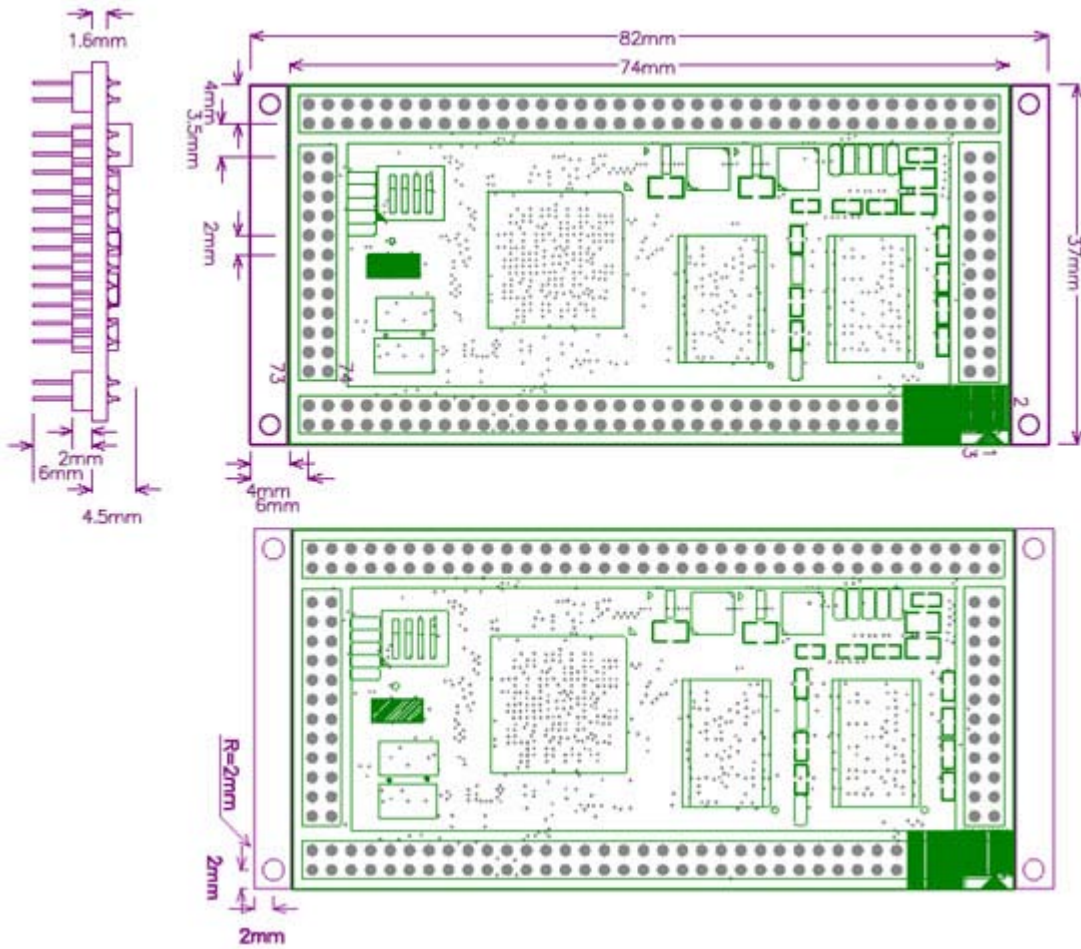
Board Dimension

- * Board size: 74mm x 37mm
- * Pin to Pin space: 2mm
- * Pin number: (J1A+J1C) x 24 + (J1B+J1D) x 72, total 192 pins

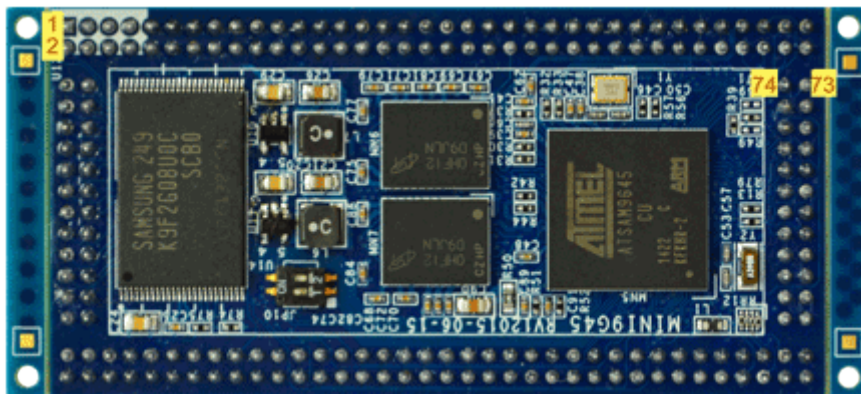
Feature

- * MINI9G45 Development Board: [EM9G45](#), [EM9G45-I](#)
- * Power supply: 3.3V
- * Pin out: 10/100 Ethernet port, USB HOST, USB device, UART, GPIO, RTC, JTAG, audio codec and speaker, watchdog, I2C, HS-ISP BUS, SDIO, ADC, PWM, etc.
- * Application: POS terminals, security, industrial control, medical, handheld devices, etc.
- * Compatible module: [MINI2440](#), [MINI2416-III](#), [MINI210-III](#)

MINI9G45 PCB Dimension



Pin Definition



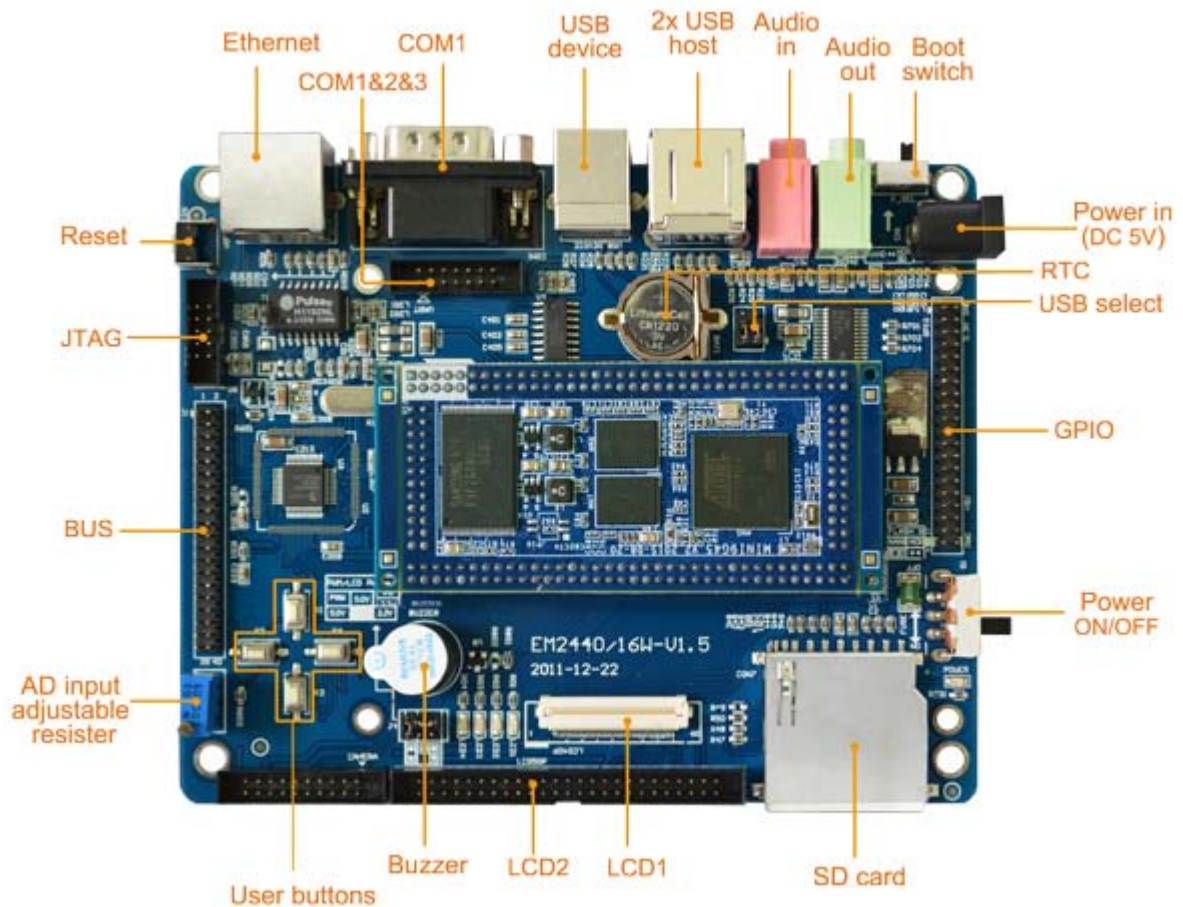
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	EBI1_D6	49	ETX0	97	TSXM	145	ISI_D2
2	EBI1_D7	50	ETX1	98	TSYP	146	ISI_D3
3	EBI1_A7	51	ETXEN	99	TSYM	147	ISI_D4
4	EBI1_A8	52	ERXDV	100	LCDDOTCLK	148	ISI_D5
5	EBI1_A5	53	PD4	101	LCDHSYNC	149	ISI_D6
6	EBI1_A6	54	ERX0	102	LCDVSYNC	150	ISI_D7



7	EBI1_A3	55	ERX1	103	LCDDEN	151	NWAIT
8	EBI1_A4	56	ERXER	104	TWCK0	152	EBI1_NCS1
9	EBI1_A1	57	PD28	105	TWD0	153	NCS2
10	EBI1_A2	58	VDDBU	106	LCDD23	154	NCS3
11	EBI1_D30	59	HDPB	107	LCDD22	155	NCS4
12	EBI1_D31	60	PD2	108	LCDD 21	156	NCS5
13	EBI1_D28	61	HDMB	109	LCDD 20	157	EBI1_NBS1
14	EBI1_D29	62	GPAD6	110	LCDD 19	158	EBI1_NBS3
15	EBI1_D26	63	HDMA	111	LCDD 18	159	GND
16	EBI1_D27	64	GPAD5	112	LCDD 17	160	GND
17	EBI1_D24	65	HDPB	113	LCDD 16	161	P3V3_IO
18	EBI1_D25	66	GPAD4	114	LCDD 15	162	P3V3_IO
19	EBI1_D22	67	SPI0_MISO	115	LCDD 14	163	EBI1_D8
20	EBI1_D23	68	SPI0_NCS	116	LCDD 13	164	EBI1_D 9
21	EBI1_D20	69	SPI0_SPCK	117	LCDD 12	165	EBI1_D10
22	EBI1_D21	70	SPI0_MOSI	118	LCDD 11	166	EBI1_D11
23	EBI1_D18	71	EMDC	119	LCDD 10	167	EBI1_D12
24	EBI1_D19	72	EMDIO	120	LCDD 9	168	EBI1_D13
25	EBI1_D16	73	PA31	121	LCDD 8	169	EBI1_D14
26	EBI1_D17	74	PD5	122	LCDD 7	170	EBI1_D15
27	NTRST	75	ETX2/WAKE_UP	123	LCDD 6	171	FIQ
28	NRST	76	ETX3	124	LCDD 5	172	IRQ
29	TDO	77	ERX2/BOOT_SEL	125	LCDD 4	173	EBI1_NWE
30	TDI	78	ERX3	126	LCDD 3	174	EBI1_NRD
31	TCK	79	PD29(SD_CD)	127	LCDD 2	175	EBI1_A20
32	TMS	80	MCI0_DA2	128	LCDD 1	176	EBI1_A19
33	RXD2	81	MCI0_DA3	129	LCDD 0	177	EBI1_A18
34	TXD2	82	MCI0_CDA	130	PD6	178	EBI1_A17
35	RXD1	83	MCI0_CK	131	PD7	179	EBI1_A16
36	TXD1	84	MCI0_DA0	132	PD8	180	EBI1_A15
37	DRXD	85	MCI0_DA1	133	PD9	181	EBI1_A14
38	DTXD	86	PA27(SD_WP)	134	PD0	182	EBI1_A13
39	TXD0	87	PD1	135	PWM3	183	EBI1_A12
40	RXD0	88	PCK1	136	PWM1	184	EBI1_A11
41	RTS1	89	LRCK	137	PWM2	185	EBI1_A10
42	CTS1	90	BCK	138	PA22	186	EBI1_A9
43	RXD3	91	TWD1	139	ISI_VSYNC	187	EBI1_D0
44	TXD3	92	TWCK1	140	ISI_HSYNC	188	EBI1_D1
45	CTS0	93	ADCDAT	141	ISI_PCLK	189	EBI1_D2

46	ETXCK	94	DACDAT	142	ISI_MCLK	190	EBI1_D3
47	RTS0	95	LCDPWR	143	ISI_D0	191	EBI1_D4
48	PD3	96	TSXP	144	ISI_D1	192	EBI1_D5

2 Peripherals Introduction



2.1 Power (CN1)

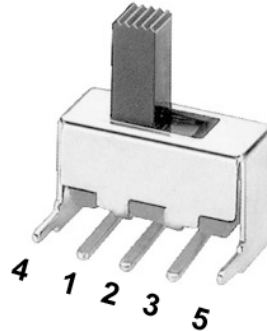
Power supply: DC 5V/2A



Pin	Signal	Description	Pin	Signal	Description
1	VDD5V	Main power supply. DC 5V power in, connect to SW-SPDT	2	GND	Ground
3	GND	Ground			

2.2 Power switch (POWER)

The power switch is a toggle switch, controlling the evaluation board power ON/OFF.



Pin	Signal	Description	Pin	Signal	Description
1	VDD5V	Connect to FUSE	2	VDD5V	Connect to CN1 Pin1
3	NC	Not connect	4	GND	Ground
5	GND	Ground			

2.3 GPIO

The GPIO is a 40-pin header connector. The pins can be defined as

- Data input / output.
- Interrupt generation.



Pin	Signal	Description	Pin	Signal	Description
1	GND	Ground	2	GND	Ground
3	NC	Not connect	4	NC	Not connect
5	VDD33V	DC 3.3V	6	VDD33V	DC 3.3V
7	EINT4	Interrupt 4	8	EINT3	Interrupt 3
9	EINT8	Interrupt 8	10	EINT11	Interrupt 11
11	EINT14	Interrupt 14	12	EINT13	Interrupt 13
13	EINT19	Interrupt 19	14	EINT15	Interrupt 15

15	EINT18	Interrupt 18	16	EINT9	Interrupt 9
17	TOUT1	PWM out 1	18	TOUT0	PWM out 0
19	AIN2	AIN2	20	AIN3	AIN3
21	AIN0	AIN0	22	AIN1	AIN1
23	nSS_SPI	Nss_SPI	24	SPIMISO	SPI Master data in; slave data out
25	SPIMOSI	SPI Master data out; slave data in	26	SPICLK	SPI clock
27	GPG13	Gate Pulse Generator 13	28	GPG14	Gate Pulse Generator 14
29	nLED_3	nLED_3	30	nLED_4	nLED_4
31	nLED_1	nLED_1	32	nLED_2	nLED_2
33	VDD5V	DC 5V	34	VDD5V	DC 5V
35	I2CSDA	I2C data	36	I2CSCL	I2C clock
37	GND	Ground	38	GND	Ground
39	OM0	NAND/NOR Flash select	40	GND	Ground

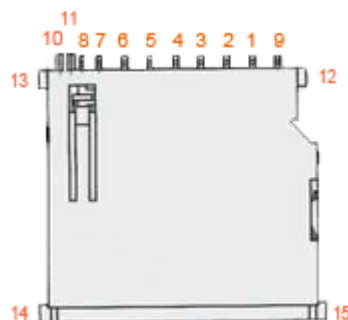
2.4 SD Card (CON7)

The SD card is used as an external storage device. It also can be used for booting card and download image. The MMC controller interface supports up to 4-bit transfer modes. MMC is always accessible through the carrier board interface.

Features

- Low voltage consumption.
- Support hot-plug.
- Support SD mode and SPI mode.

CON7



Pin	Signal	Description	Pin	Signal	Description
1	SDDATA3	Card data bit 3	2	SDCMD	Command signal
3	GND	Ground	4	VDD33V	Power Positive 3.3V
5	SD_CLK	Interface clock	6	GND	Ground
7	SDDATA0	Card data bit 0	8	SDDATA1	Card data bit 1
9	SDDATA2	Card data bit 2	10	WP_SD_1	Test card is inserted

11	nCD_SD	Card write protect detection	12	GND	Ground
13	GND	Ground	14	GND	Ground
15	GND	Ground			

2.5 LCD (40P FPC, 50P Header)

There are two LCD interfaces of EM9G45, one is 40P FPC and the other is 50P header.

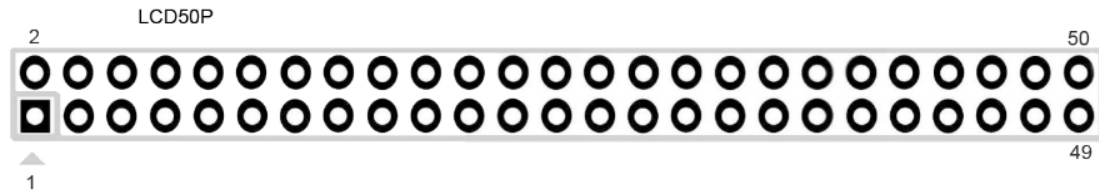
The board comes with driver for 4.3", 7" resistive LCD, user also can choose other size of LCD&touchscreen.

40Pin LCD connector



Pin	Signal	Pin	Signal
1	VDD_IN	2	VDD_IN
3	VD0	4	VD1
5	VD2	6	VD3
7	VD4	8	VD5
9	VD6	10	VD7
11	GND	12	VD8
13	VD9	14	VD10
15	VD11	16	VD12
17	VD13	18	VD14
19	VD15	20	GND
21	VD16	22	VD17
23	VD18	24	VD19
25	VD20	26	VD21
27	VD22	28	VD23
29	GND	30	LCD_PWR
31	I2CSDA	32	I2CSCL
33	VM	34	VFRAME
35	VLINE	36	VCLK
37	TSXM	38	TSXP
39	TSYM	40	TSYP

50Pin LCD connector



Pin	Signal	Pin	Signal
1	VDD_N	2	VDD_N
3	VDD_N	4	GND
5	NC	6	VD0
7	VD1	8	VD2
9	VD3	10	VD4
11	VD5	12	VD6
13	VD7	14	VD8
15	VD9	16	VD10
17	VD11	18	GND
19	VD12	20	VD13
21	VD14	22	VD15
23	VD16	24	VD17
25	VD18	26	VD19
27	VD20	28	VD21
29	VD22	30	VD23
31	GND	32	LCD_PWR
33	I2CSDA	34	I2CSCL
35	NC	36	VM
37	VFRAME	38	VLINE
39	VCLK	40	NC
41	NC	42	GND
43	TSXM	44	TSXP
45	NC	46	GND
47	TSYM	48	TSYP
49	NC	50	GND

2.6 PWM (J4)

The buzzer is active and will sound when a DC voltage is applied. Connect Pin 5 and 6 with Jumper to control PWM out.



J4

Pin1&3, Pin1&2 is used to power LCD (just control the backlight). The default select Pin1&3.

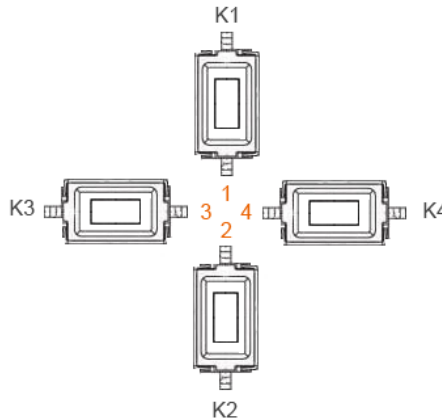
Pin	Signal	Description	Pin	Signal	Description
1	VDD_IN	Voltage in	2	VDD33V	DC 3.3V
3	VDD5V	DC 5V	4	NC	Not connect
5	NetJ4_5	Connect to buzzer	6	VDD5V	DC 5V

BUZZER

Pin	Signal	Description	Pin	Signal	Description
1	NetJ4_5	Voltage in. Connect to pin 5 of J4	2	NetU8_C	Control PWM. Connect to U3_Collector

2.7 Buttons (K1/2/3/4, RST)

On-board 4 user buttons (User-Defined) and 1 reset button.



Pin	Signal	Description	Pin	Signal	Description
1	EINT1	Interrupt 1	2	EINT2	Interrupt 2
3	EINT3	Interrupt 3	4	EINT4	Interrupt 4
K1	GND	Ground	K2	GND	Ground
K3	GND	Ground	K4	GND	Ground

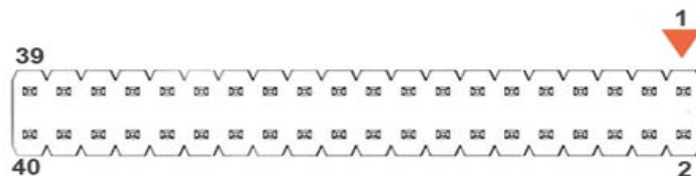


The RST button is a Side Tact Switch. The board adopts MAX811 as the Reset chip.

Pin	Signal	Description	Pin	Signal	Description
1	NetU_3(MR)	Connect to MAX811	2	GND	Ground

2.8 BUS (J1)

The BUS is a 40pin header connector. There are 8 address lines (address 0-6 and address 24), 16 data lines (data 0-15), 4 interrupts and 4 chip_select signals. The BUS supports IDE protocol and can be extended functionality.



Pin	Signal	Description	Pin	Signal	Description
1	LADDR1	address 1	2	GPA0/LADDR0	GPIO port/address 0
3	LADDR3	address 3	4	LADDR2	address 2
5	LADDR5	address 5	6	LADDR4	address 4
7	BA0/LADDR24	address 24	8	LADDR6	address 6
9	LDATA6	Data 6	10	LDATA7	Data 7
11	LDATA4	Data 4	12	LDATA5	Data 5
13	LDATA2	Data 2	14	LDATA3	Data 3
15	LDATA0	Data 0	16	LDATA1	Data 1
17	nRESET	Bus reset	18	nWAIT	Request an extension of the current bus cycle
19	LnOE	Read Enable	20	LnWE	Write Enable
21	LDATA14	Data 14	22	LDATA15	Data 15
23	LDATA12	Data 12	24	LDATA13	Data 13
25	LDATA10	Data 10	26	LDATA11	Data 11
27	LDATA8	Data 8	28	LDATA9	Data 9
29	nGCS3	chip select signal 3	30	nGCS5	chip select signal 5
31	nIDE_CS1	chip select signal 1	32	nIDE_CS2	chip select signal 2
33	EINT2	Interrupt 2	34	EINT1	Interrupt 1

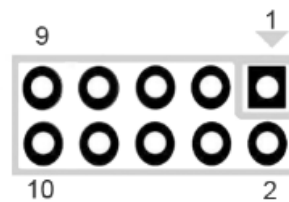
35	EINT6	Interrupt 6	36	EINT5	Interrupt 5
37	IDE_DACK	IDE DACK	38	IDE_DREQ	IDE DREQ
39	VDD5V	DC 5V	40	GND	Ground

2.9 JTAG

The JTAG is a 2mm pitch 10-pin connector.

Features

- IEEE P1149.1, 1149.6 (standard JTAG) interface to off-chip test and development equipment
- Debug-related control and status



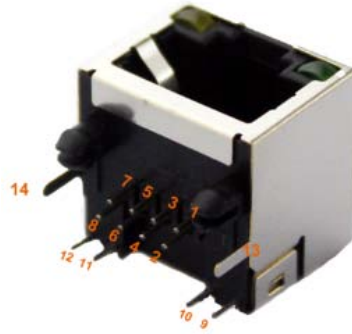
Pin	Signal	Description	Pin	Signal	Description
1	VDD33V	DC 3.3V	2	VDD33V	DC 3.3V
3	nTRST	Test logic reset	4	nRESET	Test logic reset
5	TDI	Test data input	6	TDO	Test data output
7	TMS	Test mode select	8	GND	Ground
9	TCK	Test clock	10	GND	Ground

2.10 Ethernet (LAN_100M)

EM9G45 incorporates a full-featured 10/100M Ethernet interface. The platform adopts DM9000CEP as the Ethernet chip.

Features:

- 10/100 BASE-T IEEE 802.3 compliant
- IEEE 802.3u compliant Auto-Negotiation
- Integrated IEEE 1588 time stamping module (inside the MAC).
- Automatic channel swap (ACS)
- Full- and Half-duplex
- Automatic MDI/MDIX crossover
- Automatic polarity correction
- Activity and speed indicator LED controls



Pin	Signal	Description	Pin	Signal	Description
1	TD+	Data send +	2	TD-	Data send -
3	RD+	Data receive +	4	AGND	Ground
5	AGND	Ground	6	RD-	Data receive -
7	AGND	Ground	8	AGND	Ground
9	LAND2_LNK	Detect link	10	VDD33V	DC 3.3V
11	LAND2_SPD	Detect speed	12	VDD33V	DC 3.3V
13	GND	Ground	14	GND	Ground

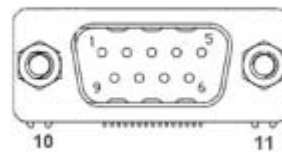
2.11 Serial port (COM1, UART)

COM1 is a DB9 serial port used as debug.

Features:

- 32-entry FIFO for receiver and 32-entry FIFO for transmitter
- Programmable baud rate of up to 250K bit/s
- The serial port operates at RS232 voltage levels.

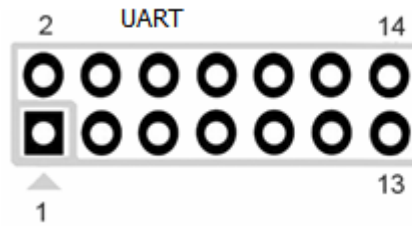
The COM1 is a debug port. It is used to input and display interactive command, view system boot information and transfer files.



Pin	Signal	Description	Pin	Signal	Description
1	NC	NC	2	RSTXD0	RS232 serial data out
3	RSRXD0	RS232 serial data in	4	NC	NC
5	GND	Ground	6	NC	NC
7	RSCTS0	Clear to Send	8	RSRTS0	Request to Send
9	NC	NC	10	GND	Ground
11	GND	Ground	12		

The UART is a 14-pin connector. It can be extended to 3x three-wire serial ports(COM1, COM2 and

COM3). The signals TXD0/RXD0 shared with COM1. If it is used as debug, the UART (TXD0/RXD0) is disabled.



Pin	Signal	Description	Pin	Signal	Description
1	GND	Ground	2	GND	Ground
3	VDD5V	DC 5V	4	VDD5V	DC 5V
5	TXD2	Serial 2 data out	6	RXD2	Serial2 data in
7	TXD1	Serial 1 data out	8	RXD1	Serial1 data in
9	TXD0	Serial 1 data out	10	RXD0	Serial0 data in
11	nCTS0	Clear to Send 0	12	nRTS0	Request to Send 0
13	VDD33V	DC 3.3V	14	VDD33V	DC 3.3V

2.12 USB2.0 Device (USB_DEVICE)

The USB2.0 device is a type-B USB. It is use to download image.

Features:

- Supports USB 2.0 High Speed (480Mbps), Full Speed (12Mbps) and Low Speed (1.5Mbps) operation in host mode
- Supports USB 2.0 High Speed (480 Mbps) and Full Speed (12 Mbps) operation in peripheral mode.



Pin	Signal	Description	Pin	Signal	Description
1	VBUS	USB_5V	2	D-	DND1/GND
3	D+	DPD1/USB_EN/EINT2	4	GND	Ground
5	GND	Ground	6	GND	Ground

2.13 USB2.0 HOST (USBH)

USBH is a type A Double-USB2.0 Host. It supports low speed (1.5Mbps), full speed (12Mbps) and high speed (480Mbps).

The USB Host is used to connect U disk and other USB storage devices.



Pin	Signal	Description	Pin	Signal	Description
1	VDD5V	DC 3.3V	2	DN0	USB host data 0(-)
3	DP0	USB host data 0(+)	4	GND	Ground
5	VDD5V	DC 3.3V	6	DNH1	USB host data 1(-)
7	DPH1	USB host data 0(+)	8	GND	Ground
9	GND	Ground	10	GND	Ground
11	GND	Ground	12	GND	Ground

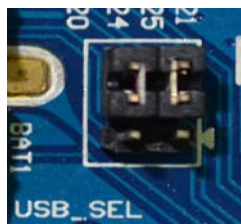
There are three USB ports (1x USB device and 2x USB host), but only two USB are active at one time. The USB can be specified by operating the USB_SEL.

How to select USB:

1. USB device and Bottom_USB host are active



2. Double-USB host are active (Bottom_USB host and Top_USB host)

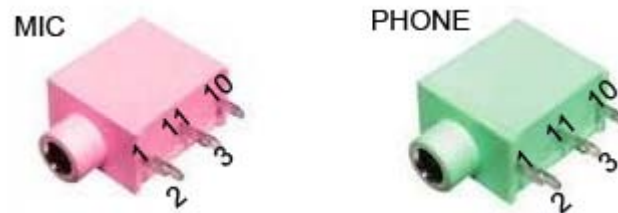


2.14 Audio I/O (MIC, PHONE)

The development board adopts IIS interface chip WM8731, provides stereo audio output (Green, 3.5mm audio jack) and MIC recording (Pink, 3.5mm audio jack).

Features:

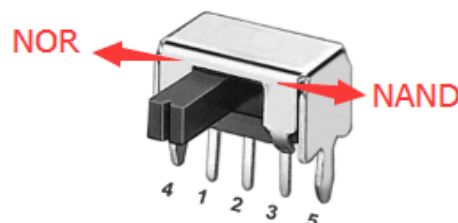
- Low power
- Integrated ADC and DAC
- IIS transfer audio data
- Stereo output, support recording



MIC					
Pin	Signal	Description	Pin	Signal	Description
1	GND	Ground	2	MICIN	MIC input
3	MICIN	MIC input	10	MICIN	MIC input
11	MICIN	MIC input			
PHONE					
Pin	Signal	Description	Pin	Signal	Description
1	GND	Ground	2	LHPOUT	Left Channel Headphone Output
3	RHPOUT	Right Channel Headphone Output	10	LHPOUT	Left Channel Headphone Output
11	RHPOUT	Right Channel Headphone Output			

2.15 Boot Switch (F_SEL)

F_SEL is a Toggle Switch used to set the boot mode. If turn to the left, it is booting from NOR FLASH, otherwise, booting from NAND FLASH. Download and system boot the default selection NAND mode.



Pin	Signal	Description	Pin	Signal	Description

1	NC	Not connect	2	OM0	Boot select
3	GND	Ground	4	GND	Ground
5	GND	Ground			

2.16 Backup battery (BAT1)



The backup battery (3V) is used to ensure that the RTC (frequency 32.768KHz) is still able to work after power off. Lithium cell model: CR1220.

3 Product Configurations

3.1 Standard Contents

- EM9G45 Single board computer x1
- CD-ROM (Linux BSP, Documents, tools, Schematic Drawing, datasheets) x1
- Ethernet cable x1
- Serial Cable x1
- USB Cable x1
- 5V/2A DC power adaptor x1

3.2 Optional Parts

- LCD Module (4.3-, 7-inch)