



EM9360 工控主板数据手册

EM9360

EM9360 CPU

AT91SAM9260 Window CE5.0

Microsoft eVC +SP4

EM9360 EM9360

EM9360

- ARM9 EM9360
 - 1 3 100M
 - WinSock WinSock API 2 6 3
 - USB HOST USB 4 CAN
 - 5 USB Device ActiveSync
 - 7 ISA
 - EM9360 API
 - WinCE

- CPU 400MHz EM9360 EM9360 CPU
 - 200MHz EM9360G CPU 400MHz
 - EM9360G

- EM9360 Windows CE Windows CE
 - CE
 - eVC C# Visual Studio
 - 2003 Visual Studio 2005 EM9360 CE
 - Windows API

ActiveSync

EM9360

- EM9360 80mm× 57mm IDC

- EM9360

ARM9

24

EM9360

EM9360

EM9360

5

B 701#

610041

028-86180660

028-85141028

<http://www.emtronix.com>

support@emtronix.com

注意：英创将会不断的完善本手册的相关技术内容，请客户适时从公司网站下载最新版本的数据手册，

恕不另行通知。

1	.....	4
2	.....	6
3	.....	7
3.1	EM9360 的 CN1 信号定义	8
3.2	EM9360 的 CN2 信号定义	11
4	EM9360	13
5	ISA	14
6	EM9360	16
8	.....	23
7	.....	24

1、主要技术指标

CPU

- 32 ARM9 CPU
- CPU EM9360 / 200MHz EM9360G / 400MHz
- 64MB 256MB NAND FLASH
- WINDOWS CE
- eVC
- USB U
- RTC

- 3 10M/100M 100BASE-TX
- 1 USB HOST U
- 1 USB Device ActiveSync
- 6 UART
- COM2 – COM7
- COM3 3 TTL 3.3V
- COM3 3 RS232C TTL
- COM2 9 TTL GPRS/CDMA
- 1 CAN CAN2.0B

- LCD LCD
- 128× 64 320× 240 240× 128
- GPIO 4× 4
- ISA 4× 4 4× 5

DIO

- ISA 2 CS0# CS1#
- 500ns
- 12 GPIO
- GPIO0 GPIO2 PPS_IN PPS_OUT
- GPIO2 GPIO3 3

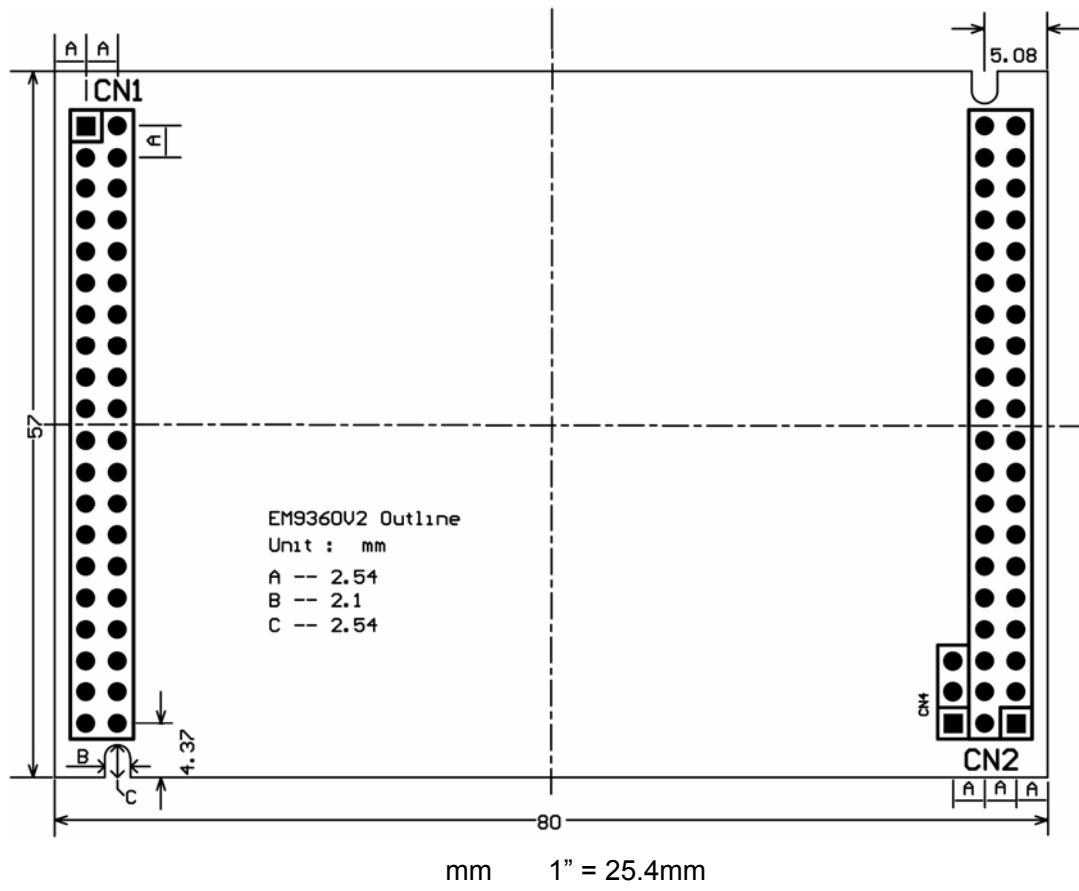
- +5V±5%
- EM9360 / 400mA EM9360G / 350mA
- -10 60 -40 80
- 80mm× 57mm
- 2 40 IDC 0.1"

- Windows CE
- SDK API
- eVC MFC

Windows

-
-
- TCP/IP WinSock API
-

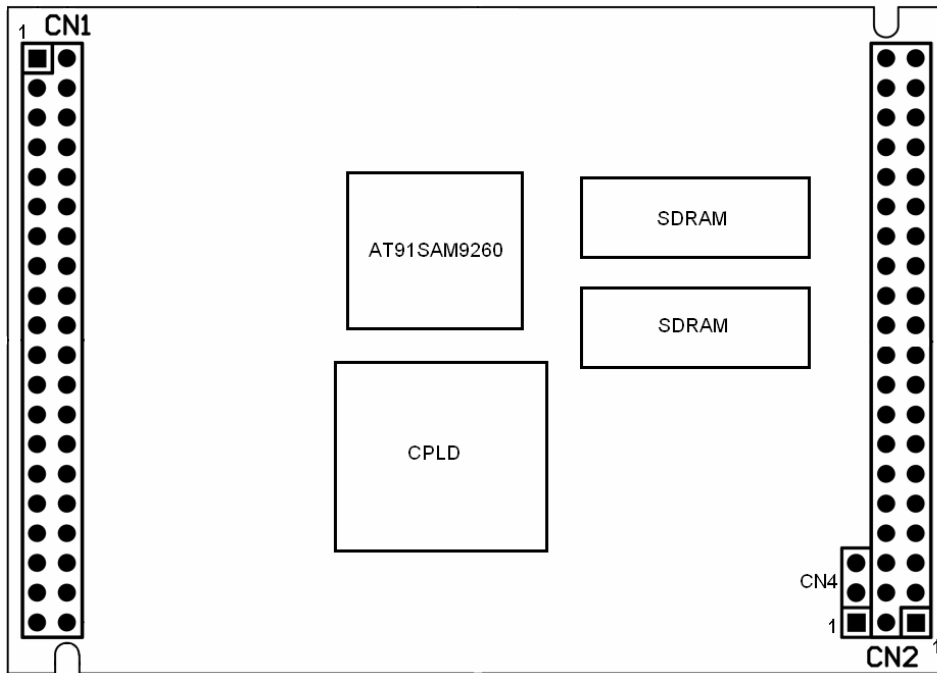
2、外形尺寸



3、模块信号管脚功能描述

EM9360					EM9360	
		2	0.1	IDC40	CN1	
CN2	EM9360	CN1	CN2		CN1	
	CAN	USB	CN2	ISA	LCD	GPIO
	CN1	CN2			1#	
EM9360				LVTTTL	3.3V	+5V

" #"



EM9360 CN1 – CN2

EM9360

3.1 EM9360 的 CN1 信号定义

PIN#		I/O	
1	TPTX1+	O	1
2	TPTX1-	O	1
3	TPRX1+	I	1
4	TPRX1-	I	1
5	VDD_MCT1	O	1
6	VDD_MCT2	O	2
7	TPTX2+	O	2
8	TPTX2-	O	2
9	TPRX2+	I	2
10	TPRX2-	I	2
11	TPTX3+	O	3
12	TPTX3-	O	3
13	TPRX3+	I	3
14	TPRX3-	I	3
15	VDD_MCT3	O	3
16	SP100M1#	O	1 100M
17	LINK1#	O	1
18	SP100M2#	O	2 100M
19	LINK2#	O	2
20	SP100M3#	O	3 100M
21	LINK3#	O	3
22	USBCNX	I	USB Device
23	USB_DD+	I/O	USB Device
24	USB_DD-	I/O	USB Device
25	USB_HD+	I/O	USB HOST

26	USB_HD-	I/O	USB HOST	
27	CAN_TX0	O	CAN	TTL
28	CAN_RX0	I	CAN	TTL
29	TXD2	O	COM2	LVTTL
30	RXD2	I	COM2	LVTTL
31	COM3_TX	O	COM3	RS232C
32	COM3_RX	I	COM3	RS232C
33	TXD4	O	COM4	LVTTL
34	RXD4	I	COM4	LVTTL
35	TXD5	O	COM5	LVTTL
36	RXD5	I	COM5	LVTTL
37	TXD6	O	COM6	LVTTL
38	RXD6	I	COM6	LVTTL
39	TXD7	O	COM7	LVTTL
40	RXD7	I	COM7	LVTTL

CN1

- EM9360 3 100M/10M

LAN VDD_MCTx
EM9360 RJ45
LAN VDD_MCTx

- VDD_MCT1 3.3V
LED VDD_MCT2 VDD_MCT3

- LED LINKx# SP100Mx# LVTTL
LED 3.3V
VDD_MCT1 LED

-
- USB_DD USB ActiveSync USB_CNX

 - USB_HD USB USB USB 5V

 - EM9360 6 6 LVTTL
 3.3V RS232 RS485 RS422
 - EM9360 COM6_TXD CN1.37#

 - CN1 CAN SJA1000T TTL CAN

 - EM9360 RS232C 3 CN3

3.2 EM9360 的 CN2 信号定义

PIN#			
1-8	SD0 - SD7	I/O	ISA SD0 LSB SD7 MSB 5V TTL
9-13	SA0 – SA4	O	ISA 5 5V TTL
14	RSTOUT#	O	
15	CS0#	O	ISA 360ns
16	CS1#	O	ISA 360ns
17	WE#	O	ISA 200ns
18	RD#	O	ISA 280ns
19	LCD_WE# / OP0	O	LCD OP0 OP0 OPx OP0 5K
20	LCD_RD# / OP1	O	LCD OP1 OP1 OPx OP1 5K
21	LCD_CE# / DBGSL#	O	LCD DBGSL# DBGSL# DBGSL# DBGSL#

22	IRQ1	I	
23-30	SA5 – SA12 / GPIO4 – GPIO11	I / O	GPIO ISA 8 3.3V TTL GPIO
31	GPIO0	I/O	IO PPS_IN
32	GPIO1	I/O	IO PPS_OUT
33-34	GPIO2 - GPIO3	I/O	IO
35-36	+5V	I	+5V
37	RSTIN#	I	
38	BATT3V	I	3.0V RTC
39-40	GND		

CN2

- | | | | |
|--|--------|------|--------|
| | DBGSL# | 5.1K | |
| | DBGSL# | 5.1K | DBGSL# |
- | | | | | |
|---------|----------|---------|----------|--------|
| EM9360 | | LCD | | KS0108 |
| 128× 64 | LCD | SED1335 | 320× 240 | LCD |
| T6963C | 240× 128 | LCD | | |
- | | | | |
|----------|-------------------|------------------|--------------|
| | SA5-SA12 | EM9360 | |
| SA5-SA12 | GPIO | GPIO | EM9360 SA5 – |
| SA12 | 4× 4 | SA5 SA7 SA9 SA11 | |
| | SA6 SA8 SA10 SA12 | | |
| EM9360 | CPLD | | |

4、EM9360 输入输出信号的基本电气特性

EM9360

USB RS232

3.3V LVTTL

LVTTL

EM9360 CN1

LVTTL

CPU

AT91SAM9260

DC

	Min	Max	
V_{IL}	-0.3V	0.8V	
V_{IH}	2.0V	3.6V	
I_{IL}	-	10 μ A	
I_{IH}	-	10 μ A	
V_{OL}	-	0.4V	
V_{OH}	2.9V	-	
I_o	-	16mA	

AT91SAM9260

5V

ATMEL

5V

EM9360 CN2 – CN4

RS232

CAN

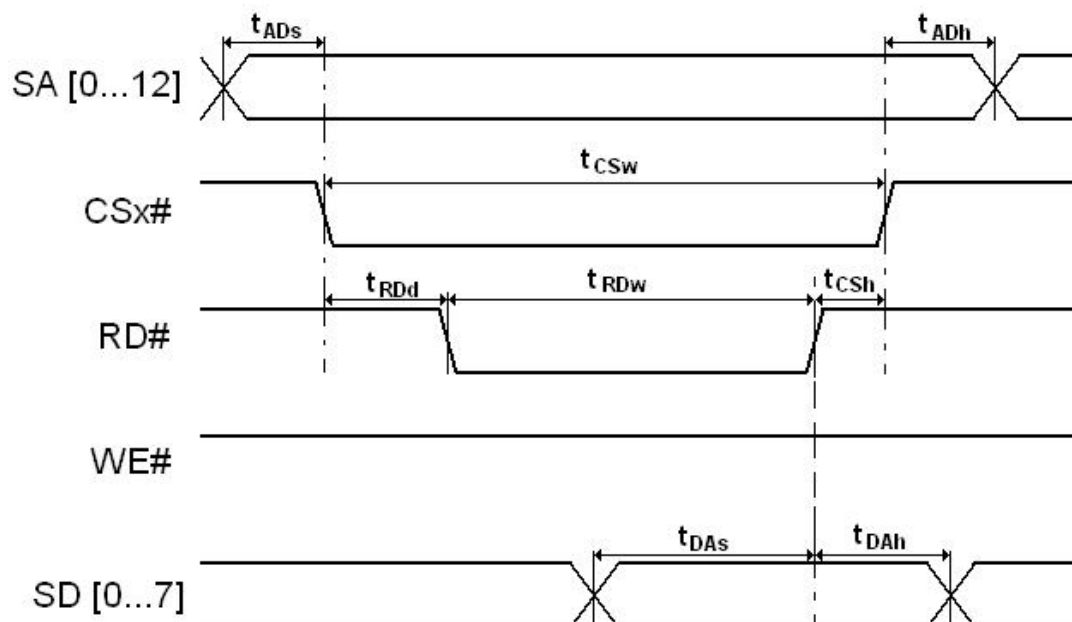
TTL

LVTTL

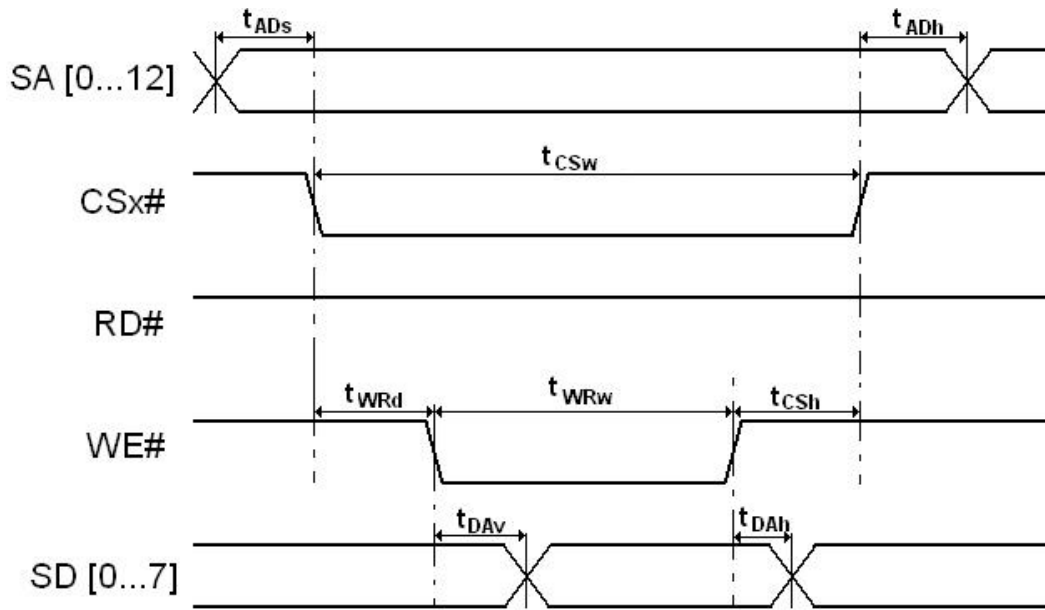
DC

	Min	Max	
V_{IL}	-0.3V	0.80V	
V_{IH}	2.0V	5.5V	5V
I_{IL}	-	15 μ A	
I_{IH}	-	50 μ A	
V_{OL}	-	0.4V	
V_{OH}	2.9V	-	
I_{OL}	-	8.0mA	
I_{OH}	-	-4.0mA	

5、精简 ISA 总线的读写时序



		Min	Typical	Max	
	t_{ADs}	-	10	-	ns
	t_{ADh}	-	10	-	ns
	t_{CSw}	-	360		ns
	t_{RDw}	-	280		ns
	t_{RDd}	-	80	-	ns
	t_{CSsh}	-	0	-	ns
	t_{DAs}	180	-	-	ns
	t_{DAh}	10	-	-	ns



		Min	Typical	Max	
	t_{ADs}	-	10	-	ns
	t_{ADh}	-	10	-	ns
	t_{CSw}	-	360		ns
	t_{WRw}	-	200		ns
	t_{WRd}	-	80	-	ns
	t_{CSH}	-	80	-	ns
	t_{DAv}	-	-	40	ns
	t_{DAh}	80	-	-	ns

6、EM9360 的相关功能的说明

	EM9360	3	100M				
				EM9360			
RJ45				RJ45		EM9360	
USB	EM9360	1	USB	1	USB	EM9360	
USB	U		U			EM9360	USB
	Microsoft	ActiveSync				EM9360	
	ActiveSync	USB				COM1	
EM9360			COM2		USB		
EM9360							
	EM9360	6	6				COM2 –
COM7	COM5 – COM7		GPIO				

GPIO	IO	EM9360	12	IO	
IO					RS485
GPIO0		PPS_IN#			
GPIO1		PPS_OUT#			
GPIO2			IRQ2		
GPIO3			IRQ3		
GPIO4	ISA_SA5				4× 4
GPIO5	ISA_SA6				
GPIO6	ISA_SA7			COM2_RST#	
GPIO7	ISA_SA8			COM3_RST#	
GPIO8	ISA_SA9			COM4_RST#	

GPIO9	ISA_SA10			COM5_RST#	
GPIO10	ISA_SA11			COM6_RST#	
GPIO11	ISA_SA12			COM7_RST#	

GPIO

EM9360 IO API
em9360_isa_dio.h 12 GPIO

ISA

ISA 5 SA0 – SA4 IO 5
 EM9360
 SA5 – SA12 GPIO4 – GPIO11
 API

int ISA_ReadUchar(int nSeg, UINT nOffset, UCHAR* pRdValue);

- " " nOffset
- SA5 SA6 2
- 1. SA5 SA6 GPIO nOffset = 0x007F;
- 2. SA5 – SA7 GPIO nOffset = 0x00FF;
- 3. SA5 – SA12 8KB nOffset = 0x1FFF;
- ISA 2 CS1# 1KB CS0#
- 8KB CS0#
- EM9360 SA13 – SA15 CS0#
- 64KB
- ISA
-

```

EM9360                                " PPS1:"
GPIO0                                PPS        PPS_IN#
                                        PPS
                                        PPS
GPIO1                                PPS_OUT#

ISA        1        IRQ1
CAN        8
GPIO2      GPIO3        EM9360

RS485    RST#
GPIO6 – GPIO11        COM2 – COM7    RTS#
RS485                RTS                RTS
RTS_CONTROL_TOGGLE

DCB    dcb;                                //
GetCommState( m_hSer, &dcb );                //
dcb.fRtsControl = RTS_CONTROL_TOGGLE        //    RTS
SetCommState(m_hSer, &dcb);                //

m_hSer                " COMx:"
RS485                RTS#                RTS#
RTS#

1ms                    RS485
9600bps

ISA        EM9360    ISA                x86
8            SD[0..7] 13        SA[0..12]

```

5 SA[0..4] 2 CS0# CS1# 2 RD# WE#
 ISA_IRQ GPIO2-GPIO3

LCD EM9360

LCD

LCD KS0108 128× 64 LCD

LCD EM9360 LCD ISA

3 LCD

	LCD_CE#	LCD_WE#	LCD_RD#
128× 64		R/W#	E
320× 240		WE#	RD#
240× 128		WE#	RD#

WINCE EM9360 Headless

LCD EM9360 LCD

LCD			
128× 64	KS0108	Motorola	192× 64 LCD
240× 128	T6963C	Intel	
320× 240	SED1335	Intel	R8835

ISA EM9360 ISA 3

-
- 4
- CAN CAN
- 14

EM9360 4 × 4 EM9360

P5 SA[5..12] ISA

IO

Windows

EM9360 4 × 4

	KIN0	KIN1	KIN2	KIN3
KOUT0	VK_ESCAPE	VK_0	VK_DECIMAL	VK_BACK
KOUT1	VK_CAPITAL	VK_1	VK_2	VK_3
KOUT2	VK_SPACE	VK_4	VK_5	VK_6
KOUT3	VK_RETURN	VK_7	VK_8	VK_9

P5 P5.0 SA5 P5.2 SA7 P5.4 SA9

P5.6 SA11 KOUT[0..3] P5.1 SA6 P5.3 SA8 P5.5 SA10

P5.7 SA12 KIN[0..3] ISA IO

4 KOUT 4 KIN ISA_CS1#

		P5	ISA
	KIN0	P5.1 SA6	.D0
	KIN1	P5.3 SA8	.D1
	KIN2	P5.5 SA10	.D2
	KIN3	P5.7 SA12	.D3
	KOUT0	P5.0 SA5	.D0
	KOUT1	P5.2 SA7	.D1
	KOUT2	P5.4 SA9	.D2
	KOUT3	P5.6 SA11	.D3

ISA

CS1# 0

ISA

KIN[0..3] 5.1K

EM9360

ISA 4x 5

4x 5

	KIN0	KIN1	KIN2	KIN3
KOUT0	VK_ESCAPE	VK_0	VK_PERIOD	VK_BACK
KOUT1	VK_ADD	VK_1	VK_2	VK_3
KOUT2	VK_SUBTRACT	VK_4	VK_5	VK_6
KOUT3	VK_MULTIPLY	VK_7	VK_8	VK_9
KOUT4	VK_DIVIDE	VK_SPACE	VK_DECIMAL	VK_RETURN

4x 4

4x 5

Telnet

\ > KeySet 5

5

4x 5

4x 5

4x 5

ISA

GPIO

EM9360

GPIO

ISA

HANDLE hDevice = NULL;

// GPIO

hDevice = ActivateDevice(TEXT("Drivers\\gpio_keypad"), 0);

// ISA

hDevice = ActivateDevice(TEXT("Drivers\\isa_keypad"), 0);

EM9360 3 JP1- JP3
 DBGSL# OP1 OP0 5.1K

JP1	DBGSL#		
JP2	OP1	OP1 = 0	OP1 = 1
JP3	OP0	OP0 = 0	OP0 = 1

EM9360 SDK API OP[0..1]

WDT EM9260 CPU

16

WinCE Watchdog

CPU

EM9260 API

8

8、使用注意事项

1. EM9360 COM6_TXD CN1.37#

7、勘误表

2008-7	EM9360 V2 37# RXD6 38# TXD6