ARM8008
User's Manual

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Chapter 1 Overview

ARM8008 embedded motherboard which has a large number of functions is an ARM9 embedded system platform. It uses Samsung Corporation S3C2410A microprocessor, expands an adequate number of storage resources and a typical embedded system interface, provides complete WinCE and Linux system solutions, and is allowed to flexibly equip with various external devices according to actual demand. Therefore, users can focus on the application of related technology development, without worrying about the complexity of hardware platform and the underlying software. It applies to communication system, network system, consume electronics, wireless system, innovation laboratory, equipment control and so on.

Standard Configuration:

- Operation system: WinCE, Linux and other driver programs under two operating system interface
- CPU: SAMSUNG S3C2410 processor
- SDRAM: 64MB
- NAND FLASH: 64MB
- LCD: Support DSTN and TFT LCD (16/256/4K/64K color)
- Touch screen: 4-wire Resistive Touch Screen
- USB HOST: support USB keyboard, mouse, U disk and USB camera
- USB DEVICE: support the data communications between PC and motherboard
- SD Card: support SD/MMC Card, capacity up to 2G
- Serial: support three standard RS-232 communication interfaces
- Ethernet: support standard TCP/IP protocol, 10M Ethernet port, CS8900A, with connectivity and transmission indicator light
- Keyboard: 20-pin scanning keyboard
- Audio: support multimedia voice
- JTAG: 10-pin interface, support writing and debugging program
- Clock: built-in RTC chip, get the power from back-up Li-ion battery
- Expansion bus: 40-pin expansion bus, 16-bit data width and 6-bit address width
- Power: 5V, 500mA, single DC power supply
- Other:

  EEPROM (AT24C0256): one

  Reset button: one

  LED: three

  Buzzer: one

  Adjustable resistance: one
- Size: 96mm*90

Main Features:

- 6 layer PCB design, high stability
- Small size, high integration and easy to install
- Low power consumption, good electromagnetic compatibility,
- Select USB camera and LCD screen for small-scale monitoring
- Open a PC104 bus expansion slot, the expansion slot is 40-pin expansion bus, 16-bit data width and address width of six, through this expansion slot, users can select variety of data acquisition and control card.

Chapter 2 Product Features

Samsung S3C2410 has three standard interfaces, ARM8008 leads out three RS-232 standard communication interfaces. The following table is the serial port pin description:

pin	description	pin	description
1	VDD3.3V	2	VDD3.3V
3	TXD0	4	RXD0
5	CTS0-	6	RTS0
7	GND	8	GND
9	TXD1	10	RXD1
11	TXD2	12	RXD2
13	GND	14	GND

Interface for USB: two USB Host interface, one USB device interface.

USB Device interface synchronizes with PC, and USB Host interface supports USB keyboard, mouse, U-disk and other devices.

Interface for JTAG: ARM8008 designed with 10-pin JTAG interface.

pin	Description
1	nTRST
2	VDD3.3V
3	TDI
5	TMS
7	TCK
8	nRESET
10	TDO
4、6、9	GND

Matrix Keyboard Interface

ARM8008 support a variety of small general-purpose keyboard. The following table is the pin description of the ARM8008 matrix keyboard interface.

NO.	Grade	CPU-pin	NO.	Grade	CPU-pin
1	L3CLOCK	GPB4	2	nXDREQ0	GPB10
3	L3MODE	GPB2	4	nXDREQ1	GPB8
5	L3DATA	GPB3	6	nXDACK0	GPB9
7	GND	GND	8	nXDACK1	GPB7
9	MCLK	GPE12	10	MDAT	GPG5
11	KSCAN0	GPE11	12	EINT19	GPG11
13	KSCAN1	GPG6	14	EINT11	GPG3
15	KSCAN2	GPE13	16	EINT2	GPF2
17	KSCAN3	GPG2	18	EINT0	GPF0
19	GND	GND	20	GND	GND

Audio Input Interface

Samsung2410 has IIS audio bus, ARM8008 leads out a digital audio input and output interface, which supports multimedia sound, the following table is the pin description for the audio interface:

Pin	Description
1	I2SSDO
2	I2SSCLK
3	I2SLRCK
4	CDCLK
6	I2SSDI
7	GPH10
8	GPH9
9	VDD3.3V
5,10	GND

Interface for Ethernet: support standard TCP/IP protocol, 10M Ethernet port, with connection and transmission indicator.

Pin	Signal Name
1	Tranmist Data+
2	Tranmist Data-
3	Receive Data+
4	NC
5	NC
6	Receive Data-
7	NC
8	NC

Interface for LCD: ARM8008 leads out all S3C2410 LCD controller pins of all internal signals, described in the following table shows the definition of these pins.

number	pin	number	Pin
1	LCD_PWR(VDD)	2	LCD_PWR(VDD)
3	LCD_PWR(VDD)	4	GND
5	nERESET	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	PWREN

33	LCDVF2	34	LCDVF1
35	LCDVF0	36	VM
37	VFRAME	38	VLINE
39	VCLK	40	LEND
41	nDIS_OFF	42	GND
43	TSXM	45	TSXP
46	GND	47	TSYM
49	TSYP	50	GND

Note: Undefined pin is not connected, by using JP501 jumper; you can choose LCD power supply voltage between 5V and 3.3V.

Interface for PC104 Bus: Using the External Bus of ARM CPU and programmable logic device could extend PC104 Bus, which supports standard PC104 Bus expansion board, the signal definition is as follows:

Pin	Signal Name	Pin	Signal Name
1	DATA15	2	DATA14
3	DATA13	4	DATA12
5	DATA11	6	DATA10
7	DATA9	8	DATA8
9	DATA7	10	DATA6
11	DATA5	12	DATA4
13	DATA3	14	DATA2
15	DATA1	16	DATA0
17	ADDR6	18	ADDR5
19	ADDR4	20	ADDR3
21	ADDR2	22	ADDR1
23	nWE	24	nOE
25	nGCS2	26	nGCS5
27	Nscs7	28	GPA12
29	EINT3	30	IOINT8
31	IOINT16	32	AIN1
33	AIN2	34	NC
35	GND	36	GND
37	VDD3.3V	38	VIN5V
39	VDD3.3V	40	VIN5V

Interface for Memory Card: one SD card interface, support SD/MMC card.

Reset Circuit: ARM8008 motherboard can complete power-on reset and running reset. When give the power to system, motherboard will reset automatically. When the system is running, if you press the reset button,

ARM8008 will into the reset state, and if you release the button, the system will work normally.