



深圳市海天雄电子有限公司
Shenzhen Haitianxiong Electronic Co., Ltd.

CES-EDU210

Product Manual

Cortex-A8 Teaching Experimental Platform

Rev. V1.0

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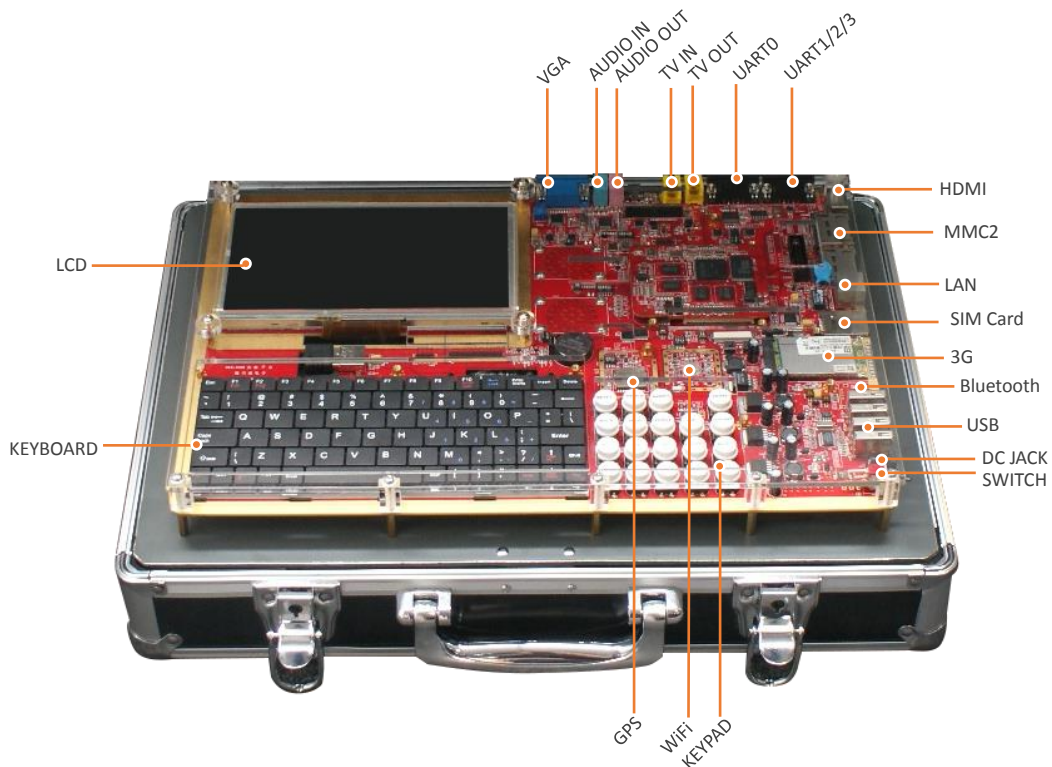
Introduction

CES-EDU210 teaching experiment platform is a complete embedded teaching experiment system launched by Haitianxiong Electronic for Senior Education Institute. The experimental system includes software and hardware resources. At the same time, the teaching platform is equipped with Embedded Cortex-A8 Advanced Experiment Course as experimental teaching material for colleges and universities according to the requirements of university experimental outline and the suggestions of experts and professors in teaching field.

CES-EDU210 teaching platform configuration ARM Cortex-A8 core processor, superior processing performance, 1GHz frequency speed, ARM V7 instruction set. 64/32-bit internal bus structure, 32 / 32KB data / instruction L1 cache, 512KB of L2 cache, can achieve 2000DMIPS (computing 200 million instruction sets per second) high-performance computing power. Built-in MFC multi-format codec system, support for MPEG-1/2/4, H.263, H.264 format video codec, JPEG hardware codec. Maximum support 8000 * 8000 resolution, built-in high-performance PowerVR SGX540 3D graphics expansion of resources, excellent multimedia processing capabilities, rich functional interface, scalable functional modules, which will greatly promote the ability of students innovative thinking.

The operating systems supported by CES-EDU210 teaching platform are: Google Android 4.0, Windows Embedded CE6.0 R3, and Linux 3.2.0, with open software resources provided.

Function interface



Hardware parameters

CPU	Samsung S5PV210 , ARM Cortex-A8 architecture, frequency at 1GHz
Memory	1GB SAMSUNG K4T1G084QQ DDR2 memory chip
FLASH	1GB SAMSUNG K9K8G08U0A NAND FLASH chip
PMU	A set of intelligent power management circuit, using Maxim MAX8698C management chip
3G	Using ZTE AD3812 module , PCI Express Mini Card interface
WiFi	Mavrell88w8686 , fully compatible with IEEE802.11b/g international , SDIO interface
GPS	1 high-precision GPS module with SIRF Star III module Sensitivity: -159Dbm for tracking -144Dbm at capture
Bluetooth	Support USB Bluetooth interface module, high-speed Bluetooth communication data
Camera	Support 3 million pixel camera
Ethernet	1 * 10M / 100M Ethernet interface, using DM9000AEP NIC chip

Audio	1 * I2S bus circuit, input / output, double 8 ohm / 2W amplifier, high quality WM8580A audio chip
SD/HSMMMC	4* SDIO port for MMC / SD WIFI
USB OTG	1*USB OTG
USB HOST	4*USB HOST 2.0
Display interface	Support VGA / LVDS / TFT multi-display capabilities, the platform with 7-inch LCD touch screen, pixel 800 * 480, LED backlight, 16: 9 widescreen 16.7M true color, four-wire resistive touch screen
UART	4*UART
HDMI	1*HDMI 1.3
RTC	Internal RTC (with back-up lithium battery)
External Power Supply	12V / 5A power supply, with power switch and indicator
Installation Method	The motherboard is fixed by reeling on the board of the experimental chassis, with transparent acrylic board added to cover the motherboard and avoid the device damage for students' frequent contact
Size	43*30*15CM
CPU	Samsung S5PV210 , ARM Cortex-A8 architecture, frequency at 1GHz

Software parameters——Android 4.0

Operating System	Android 4.0
Kernel	Linux 3.0.8
System Boot Program	U-boot-1.3.4
Serial Debugging Tool	DNW1.01
Cross Compilation Tools	Arm-2009q3
File Format	Ramdisk , YAFFS2
GUI	Android 4.0

3G	Support SMS, Internet and other functions
WiFi	Support 802.11b/g
Camera	Support CMOS Camera , CCD Camera and USB UVC Camera
GPS	Supports SIF III global positioning
LAN	10M / 100M adaptive network port driver, support for wired internet
HDMI	Support HDMI output, images and sound
Audio	IIS audio interface , support for playback and recording capabilities
LCD	7-inch resistive touch LCD display
TOUCH	Four-wire resistive touch LCD display
I2C Driver	Audio、 Camera、 HDMI are driven by I2C communication
USB HOST	Support HOST function, mouse, keyboard, U disk, etc.,
USB OTG	Support ADB and UMS functions, providing source code
Keypad	8*8 button functions, providing source code
SD/MMC	Support high-speed SD / MMC card
UART	Support serial communication
RTC	Supports RTC function
2D/3D Driver	2D / 3D Hardware Acceleration
Bluetooth	Support Bluetooth communication
MFC Driver	Multi-Format video codec

Software parameters——Linux 3.2.0

Operating System	Linux 3.2.0
Kernel	Linux 3.2.0
System Boot Program	U-boot-1.3.4






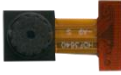






Cross Compilation Tool	Arm-2009q3 (gcc4.4.1)
File System Format	BusyBox1.19.2 , Ext4
GUI	QT4.8.5
Video Player	MPlayer1.1
WiFi	Support 802.11b/g
Camera	Support CMOS Camera and USB UVC Camera, provide the driver source code
LED Driver	Support LED IO control functions
LDC Display	Support 7-inch resistive touch LCD display
TOUCH Driver	Four-wire resistive touch driver , support for calibration
USB HOST	Support mouse, keyboard, U disk, etc.
Keypad	Scan button
SD/MMC	Support high-speed SD / MMC card
UART Driver	4-way serial port

Software parameters——Windows Embedded CE 6.0 R3

Operating System	Windows Embedded CE 6.0 R3
Support Package	Windows Embedded CE 6.0 R3
Bootloader	r V210_USB.BL2.bin (USB bootloader, no source code) eboot.nb0 (USB download program, with source code)
Start Way	NAND FLASH Start
Debugging Tool	DNW v0.6
WiFi	Support 802.11b/g
Bluetooth	Support Bluetooth communication
GPS	Support SIF III global positioning

Camera	Support CMOS Camera and CCD Camera
LAN	10M / 100M adaptive network port driver, support for wired Internet
HDMI	Support HDMI output, images and sound
Audio Driver	IIS audio interface, support for playback and recording capabilities
LCD Display	7-inch resistive touch LCD display
TOUCH Driver	Four-wire resistive touch drive
TV OUT Display	Support analog video output
VGA Driver	Support resolutions 1024 * 768 and 800 * 600
I2C Driver	Audio, Camera, HDMI I2C driver to communicate
USB HOST Driver	Support HOST function, support mouse, keyboard, U disk and so on
USB OTG Driver	Support Device function, can be synchronized with the computer data copy
Keypad Driver	8 * 8 and 2 * 8 scan button drive
SD / HSMMC Driver	Support high-speed SD / MMC card
UART Driver	Serial communication
RTC Driver	Support RTC
MFC Driver	Multi-Format Video Codec
JPEG Driver	JPEG CODEC
2D Driver	2D hardware acceleration
3D Driver	3D hardware acceleration

Product configuration list

	User CD		Power adapter
	Experimental tutorial		Touch pen
	Serial line		Camera (optional)
	cable		3G module (optional)
	USB cable		SD card (optional)
	USB to serial port		Bluetooth module (optional)

Service Support

Technical Support Contact:

TEL : 0755-86325375 86325376

E-mail : ces_support@ces-tech.com

Technical Support Service Hours:

Monday to Friday : 9 : 00 ~ 12 : 00 , 13 : 30 ~ 18 : 00

Disclaimer

This manual information is for reference only, and is subject to change without notice.

For more product information, please visit www.nrisc.com

SHENZHEN HAITIANXIONG ELECTRONIC CO.,LTD (HEADQUARTERS)

ADD : 6th Floor,Skyworth Digital Building, Songbai Road, Shiyan Street,Baoan District, Shenzhen, China.

TEL : (086) 0755-86325375 86325376

E-mail : ces_market@ces-tech.com

URL : www.nrisc.com

SHENZHEN HAITIANXIONG ELECTRONIC CO.,LTD (CHENGDU BRANCH)

ADD : No. 27, Section 4, Renmin South Road, Chengdu, Sichuan, China.

TEL : (086)028-85123126

E-mail : cqmarket@ces-tech.com