JetBox 8210 User Manual

Hardware

www.korenix.com

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Acknowledgments

Table of Content

Chapter 1 Overview

The advantage of adopting Korenix JetBox series is ready-to-use. Korenix is devoted to improve the usability of embedded computer in industrial domain. Besides operating system (Linux/WinCE), Korenix provides device drivers, protocol stacks, system utilities, supporting services and daemons in one Compact Flash card to make system integration simple. Further, Korenix provides application development toolkits for users to build up their own applications easily.

JetBox 8210 is a high performance, compact and rugged embedded computer. All-in-one device with small volume, fanless design and a capability to withstand a wide range of temperatures is suitable for industrial severe environment. It is equipped with Intel Xscale PXA270 RISC processor and 128MB SDRAM (256MB optional) and supports Linux and WinCE5.0 to meet requirements of industrial PC applications. For better expansibility, it carries 4 USB ports, 2 RS-232 ports and 2 RS-232/422/485 ports for versatile peripheral and interfaces and one Compact Flash slot for system integration. It also supports VGA (640*480) and audio to give users much flexibility in industrial applications. In addition, it is equipped with 2 RJ-45 ports and supports daemons and web server to accommodate to the network communication environment today.

With complete software solution and excellent hardware design, JetBox series is the best choice of embedded computer.

Chapter 2 Hardware Specification

Model	**JetBox 8210**
CPU	**Intel Xscale PXA270 32 bits 416 MHz**
SDRAM	**128MB (default), 256 MB (optional)**
Boot Memory	**256 KB Flash (Boot loader), up to 1024 KB**
Compact Flash Interface	**1 slot (OS and Applications)**
VGA	**640*480*16-bits**
Audio	**AC97 stereo audio output with 2.1 W amp,**

Model	JetBox 8210
	mono MIC input
Ethernet	**10/100 Base-T * 2**
NVRAM	**Battery backup SRAM 1 MB (optional)**
EEPROM (I2C)	**128-256 Bytes**
USB Host	**USB v1.1 Host Port * 4**
RTC	**Battery backup external RTC**
WDT	**External Watch Dog Timer**
UART	**16C550 compatible RS232 * 2, RS232/422/485 * 2**
DIO	**Buffered TTL DI *16, DO * 16**
Battery	**3V Li-Battery**
EEPROM (Security)	**128 bytes EEPROM**
Unique Number	**6 bytes unique serial number**
Reset Button	**1**
Power Switch	**1**
LED Indicator	**Power * 1, CF * 1**
Dip Switch (In Box)	**8-bits Dip-Switch * 4 (Configuration)**
USB Slave (In Box)	**1**
Power Input	**10VDC-48VDC, (-48VDC) or 100VAC-240VAC@50-60 Hz**
Power Consumption	**5W**
Dimensions	**250(W)*66.5(H)*106.3(D)mm**
Operating Temperature	**-15℃ ~ 70℃, 5 to 95% RH**
Net Weight	**1.07kg**

Chart 1 JetBox 8210 HW spec

Chapter 3 Hardware Feature

3-1 Dimensions

The following figures show the dimensions of JetBox 8210. The following sections give you detailed information about the function of each I/O connector.

Chart 2 JetBox 8210 appearance

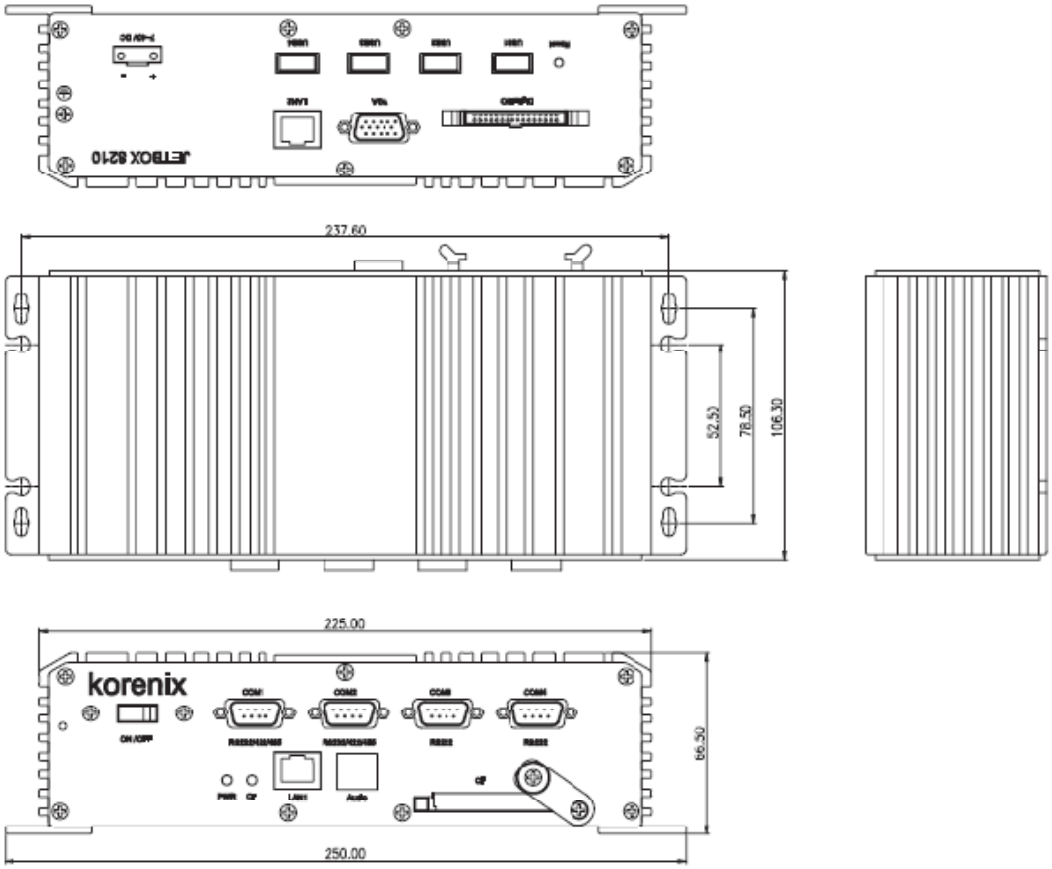

Chart 3 JetBox 8210 ME drawing

3-2 Front Panel IO Connectors

3-2-1 Power ON/OFF Switch

This switch is used to turn the system power on and off.

Chart 4 Power switch

3-2-2 COM Connectors

COM 1 and COM2 Connectors

The JetBox 8210 provides 2 D-sub 9-pin connectors for RS-232/422/485 communications. The default setting of COM1~ COM2 is RS-232. Please refer with the programming guide for changing the settings or use the “SerCon” control applet of the control panel to change the settings.

COM3 and COM4 Connectors

The JetBox 8210 provides 2 D-sub 9-pin connectors (COM3 and COM4) for RS-232 communication.

Note the settings are stored in the EEPROM, not registry. It’s necessary to configure each hardware target manually or programmatically. Replacing the CF card with OS and hive registry data will not affect the mode settings of the COM ports.

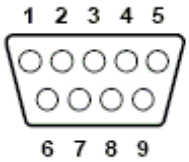

Chart 5 COM connector

	RS-232	RS-422	RS-485 (2-wire)	RS-485 (4-wire)
1	DCD	TX D-(A)	DATA-(A)	TX D-(A)
2	RX D	TX D+(B)	DATA+(B)	TX D+(B)
3	TX D	RX D+(B)		RX D+(B)
4	DTR	RX D-(A)		RX D-(A)
5	GND	GND	GND	GND

	RS-232	RS-422	RS-485 (2-wire)	RS-485 (4-wire)
6	**DSR**	**RTS-(A)**		
7	**RTS**	**RTS+(B)**		
8	**CTS**	**CTS+(B)**		
9	**RI**	**CTS-(A)**		

Chart 6 COM connector PIN assignment

3-2-3 Power LED Indicator

This LED indicator is used to indicate the power on off status.

3-2-4 CF LED Indicator

This LED indicator is used to indicate the CF card access status.

3-2-5 Ethernet Connector

A standard RJ-45 jack socket with LED indicators shows its Active/Link status (Green LED) and Speed status (Orange LED).

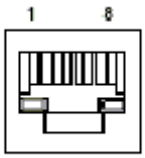

Chart 7 Ethernet connector

Pin	10/100 BaseT Signal Name
1	TX+
2	TX-
3	RX+
4	

Pin	10/100 BaseT Signal Name
5	
6	RX-
7	
8	

Chart 8 Ethernet connector PIN assignment

3-2-6 Audio Connector

JetBox 8210 provides an AC97 stereo audio output with a 2.1 W amplifier and a mono MIC input.

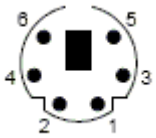

Chart 9 Audio connector

Pin	Audio Signal Name
1	**OUT_R+**
2	**OUT_R-**
3	**OUT_L+**
4	**OUT_L-**
5	**MIC_IN**
6	**GND**

Chart 10 Audio connector PIN assignment

3-2-7 Compact Flash Socket

This socket is used by the Compact Flash (CF) card contains OS and the user's applications.

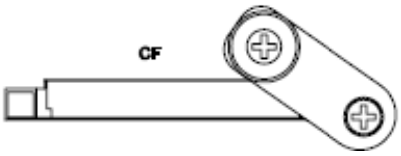

Chart 11 Compact flash socket

3-3 Rear Panel IO Connectors

3-3-1 Digital IO Connector

JetBox 8210 provides 16 digital input channels and 16 digital output channels.

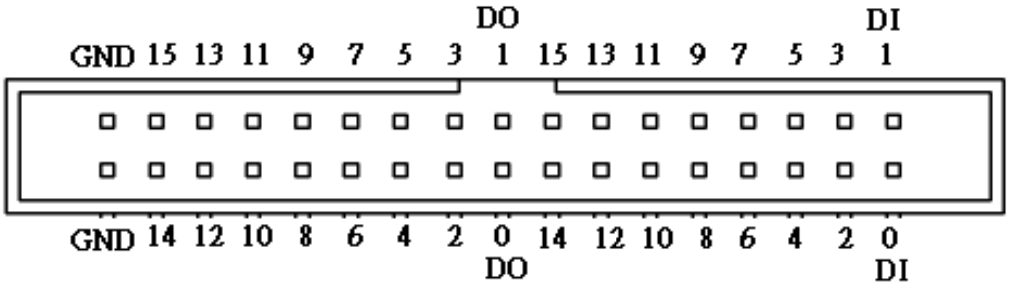

Chart 12 Digital IO connector

3-3-2 VGA Connector

JetBox 8210 supports VGA (640*480) output to give users much flexibility in industrial applications.

Note: Because the frequency of JetBox 8210 VGA output is around 62 Hertz, not the general VGA 60 or 75 Hertz. Therefore, the VGA output of the JetBox 8210 is NOT fully compliant with all the VGA monitors, especially for some monitors without "Auto Sync" functionality.

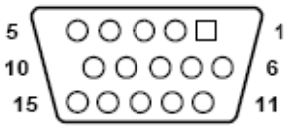

Chart 13 VGA connector

Pin	VGA Signal Name
1	**RED**
2	**GREEN**
3	**BLUE**
4	
5	**GND**
6	**GND**
7	**GND**
8	**GND**
9	
10	**GND**
11	
12	
13	**H-SYNC**
14	**V-SYNC**
15	

Chart 14 VGA connector PIN assignment

3-3-3 Ethernet Connector (the same as 3-2-5)

3-3-4 Reset Button

This button is used to reset the CPU causing the system reboot.

3-3-5 USB1 ~ USB4 Connectors

JetBox 8210 provides 4 USB type “A” female connectors for USB peripherals.

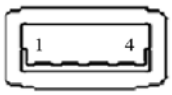

Chart 15 USB connector

Pin	USB Signal Name
1	VCC
2	DATA-
3	DATA+
4	GND

Chart 16 USB connector PIN assignment

3-3-6 Power Connector

JetBox 8210 comes with a Phoenix connector that carries a 7 ~ 40 VDC external power input.

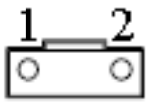

Chart 17 Power connector

Pin	Power Signal Name
1	VCC
2	GND

Chart 18 Power connector PIN assignment

3-4 Memory and Storage

3-4-1 Overview

The following figure shows the memory architecture of JetBox 8210. The gray block means it is reserved as system usage.

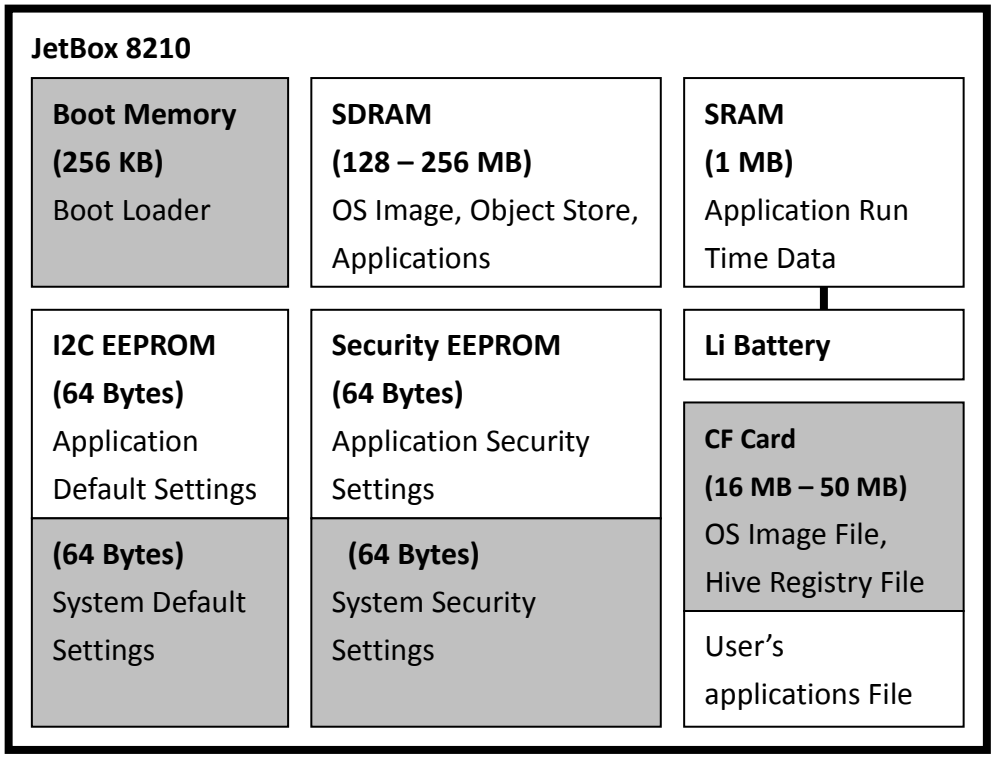

Chart 19 JetBox 8210 memory architecture

3-4-2 Boot Memory

There is 256 KB of Flash ROM for the Boot Loader program.

3-4-3 Compact Flash Card

One type-II Compact Flash card interface is designed for store Windows CE image and user's applications.

3-4-4 SDRAM

JetBox 8210 supports 128 MB of SDRAM. The Windows CE Image occupies 16 MB to 50 MB depending on the model. The remainder 112 MB to 78 MB is arranged for Windows CE Object Store and applications.

3-4-5 Battery Backup SRAM (NVRAM)—Optional

1 MB of battery backed SRAM to provide a security way to save the important run

time information and avoids the risk of power fails.

3-4-6 I2C EEPROM

128 Bytes I2C type EEPROM is provided for the default settings. There is 64 bytes is reserved for system usage, and 64 Bytes is provides for user's applications.

3-4-7 Security EEPROM

128 Bytes security EEPROM is provided for the security settings usage. It's can't be read/write by the hardware programmer, only the software interface can. There is 64 bytes is reserved for system usage, and 64 Bytes is provides for user's applications.

3-5 RS232/422/485 Serial Ports

3-5-1 Overview

JetBox 8210 supports four serial ports. The first 2 ports, COM1 and COM2, are RS232/422/485 configurable. The later 2 ports are dedicated for RS232 mode. Refer with 3-3-2 VGA Connector for connector pin assignments.

3-5-2 Configuration

JetBox 8210 configures COM1 and COM2 as RS232 operation mode as factory default settings. These operation mode settings are stored in the system EEPROM, not registry, and the settings are applied during system boot up. One configuring utility named "SerCon" located in the control panel could be used to change the settings and save to the system EEPROM.

Replace the CF card "B" of JetBox 8210 "B" with from a well configured CF card "A" of JetBox 8210 "A" will not change the serial port configurations of JetBox 8210 "B". It's suggested to configure the serial ports programmatically if a great quantity of JetBox 8210 is applied.
Refer with SW Manual if software programming interface is necessary for configuring

programmatically.

3-6 Digital Input and Output

3-6-1 Digital Input

JetBox 8210 supports 16 digital input channels. Refer with 3-3-1 Digital IO Connector for connector pin assignments. Below figures show 2 ways to use digital input function.

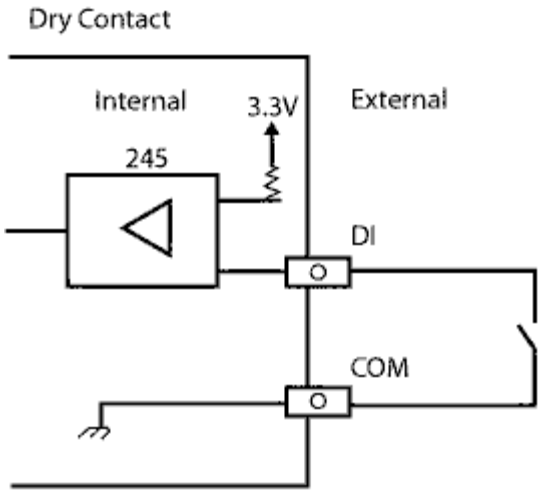

Chart 20 Dry connect for digital input

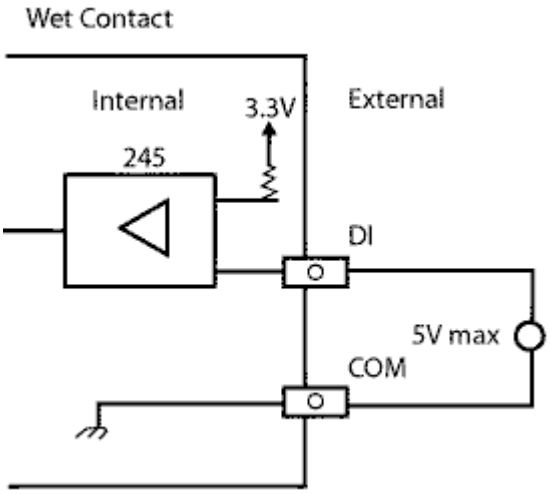

Chart 21 Wet connect for digital input

3-6-2 Digital Output

JetBox 8210 supports 16 digital output channels. Refer with 3-3-1 Digital IO Connector for connector pin assignments. Below figure show how to use digital output function.

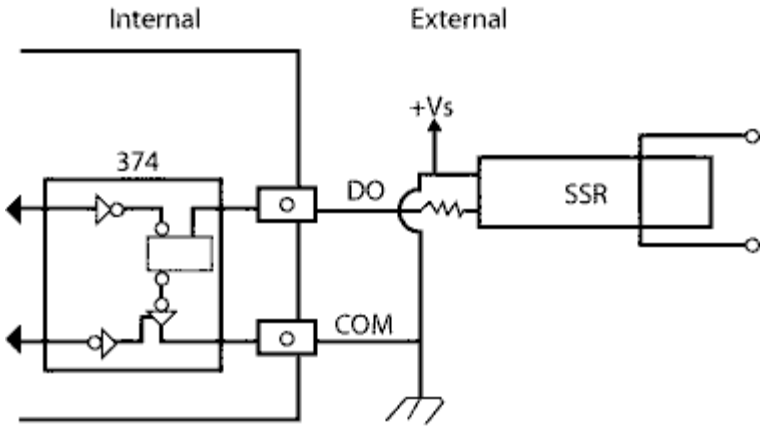

Chart 22 Wet connect for digital output

3-7 Hardware Unique Serial Number

JetBox 8210 provides a 6 bytes hardware unique serial number for identification. User's applications can utilize this ID for security protection.
In addition, the drivers for security are implemented as a non-unloadable driver and the related registry settings are set as hive boot (non-changeable).

Chapter 4 Appendix

4-1 Chart Index

4-2 Customer Service

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