JetBox 9462-w

User Manual

Hardware

www.korenixembedded.com

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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, Korenix provides device drivers, protocol stacks, system utilities, supporting services and daemons to make system integration simple. Further, Korenix provides application development toolkits for users to build up their own applications easily.

The stylish JetBox 9400 series is an industrial layer-3 router with Linux computing. It is a gateway to connect different network groups (Ethernet, fieldbus, serial or IO control) in a complex networking architecture and manage peripherals at the

front-end site through its Linux programs or Java applications. It is reliable (network redundancy, system recovery) and robust (passive cooling, protected against the dusts and spills, shock & vibration resistance) to adopt in severe industrial vertical markets, such as transportation, substation, or hazardous environment.

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Feature	JetBox9462-w
Processor	Intel Xscale IXP435 667MHz RISC-based Fanless
System memory	128MB DDR2 RAM
System flash	32MB
Ethernet	10/100 Base-Tx RJ45 connector x5
Storage	SD card slot x1 CF card slot x1
Mobile slot	miniPCIe x1 SIM x1
Serial port	RS232/422/485 x4 (DB37 connector) with long distance termination switches (internal), default RS232
USB	USB 2.0 x3 (Host)
USB Supporting devices	USB flash, wireless dongle
Digital IO	8 DIO (default 8 DI), DI or DO is defined by customers
Console port	3-pin header (RS232 interface)
LED per Ethernet port (on the port)	Link/Activity (Green on/Green blinking) Full Duplex/Collision (Yellow on/ Yellow blinking)
LED per unit	Power on/off x1 (Green on/off)
Reset Button	x1
HW Watchdog timer	Generates a time-out system reset, 1 sec
Power supply	DC 12~48V
Power Consumption	25W
OS support	Embedded Linux 2.6.20
Construction	Rugged Aluminum Alloy Chassis, IP31 protection
Color	Silver
Mounting	Wall mount
Dimensions	66.5(H) x 250(W) x 106.3(D) mm
Net Weight	1.07kg

Operating Temp.	-40 ~ 176°F(-40 ~ 80℃)**, 5 to 95% RH
Storage Temp.	-40 ~ 176°F(-40 ~ 80℃), 5 to 95% RH
Regulation	FCC class A, CE, UL* EN55022 class A EN55024 EN61000-3-2, 3 EN61000-4-2, 3, 4, 5, 6, 8, 11 IEC 60950 IEC61373* (Railway) EN50155* (Railway) EN50121-4* (Railway) NEMA TS2* (traffic control)
Shock	IEC60068-2-27 (50g peak acceleration)
Vibration	IEC60068-2-6 (5g/ 10~150Hz/ operating)
MTBF	greater than 200,000 hours@25℃
Warranty	5 years

*Optional

**Safety information for UL:

- Maximum Surrounding Air Temperature 65℃
- For use in Pollution Degree 2 Environment

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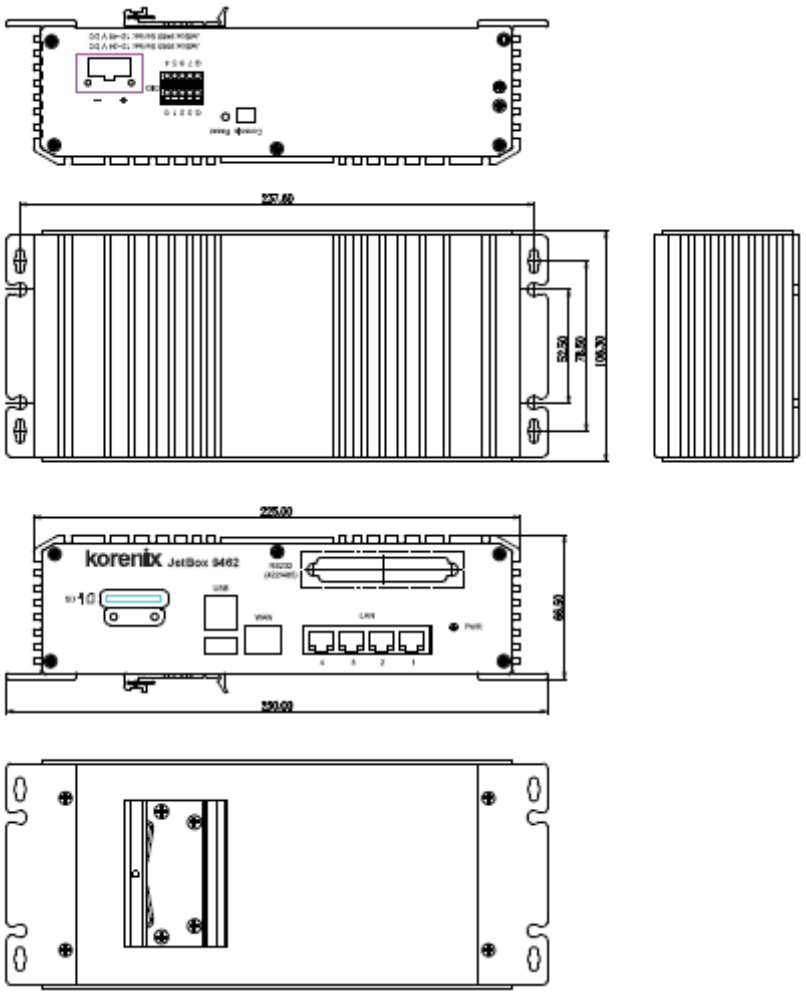
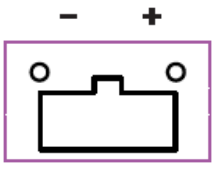
JetBox9462-w appearance

JetBox9462-w mechanical outline



The JetBox comes with a Phoenix connector that carries a 12~48V DC external power input.



Pin	Power Signal Name
1	VCC
2	GND

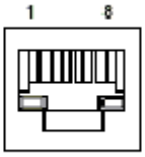
- *Use Copper Conductors Only, Tighten to **4.5 lb** in*
- *The wire gauge to the terminal block should be in the range between **12~28 AWG***

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

The LED indicators show their Active/Link status (Green blinking/ Green on) and Col/Fdx status (Yellow on/ blinking).

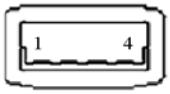
This LED indicator is used to indicate the power on / off status.
Power on/off: Green on/ off

Standard RJ-45 jack sockets.



Pin	10/100 Base-T Signal Name
1	RX+
2	RX-
3	TX+
4	
5	
6	TX-
7	
8	

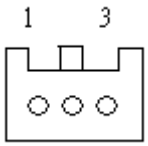
USB type “A” female connectors for USB peripherals



Pin	USB Signal Name
1	VCC
2	DATA-

3	DATA+
4	GND

The JetBox provides one Console port 3-pin connector for debug use.



	Console
1	**TXD**
2	**RXD**
3	**GND**

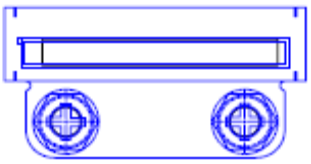
This button is used to reset the CPU causing the system reboot or reset to the factory default.

Press 3 seconds for system reboot.

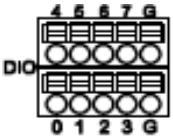
Press 7 seconds to reset the JetBox to the factory default.

This socket is used for the type I/II CF Card and reserved for system extension.

This socket is used for a SD Card and is for the users' applications. There is a external blanket to cover the SD card slot.



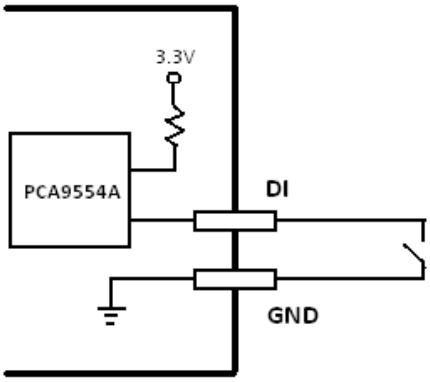
The JetBox supports 8 digital channels and users can configure them as digital outputs or digital inputs. Following is the connector pin assignments. (The default setting is digital input)



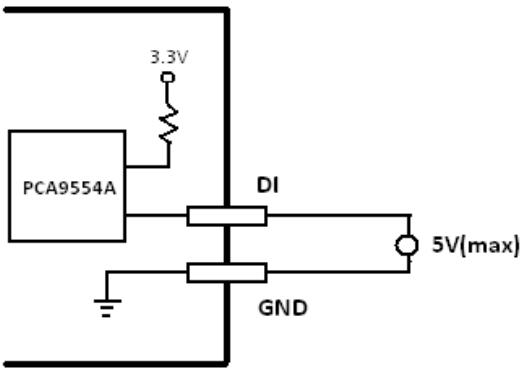
Digital input

Below figures show 2 ways to use digital input function. The digital input channels can support max. 5V.

Dry connect for digital input

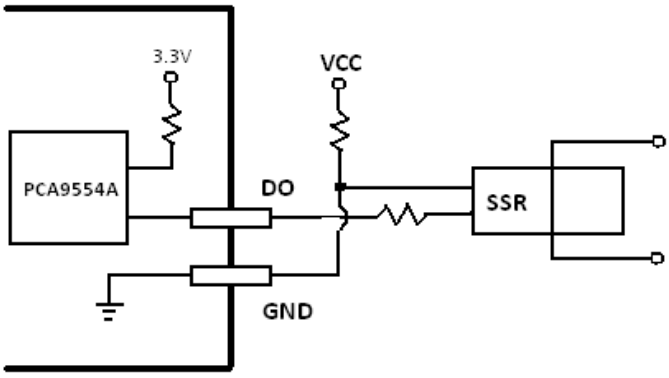


Wet connect for digital input

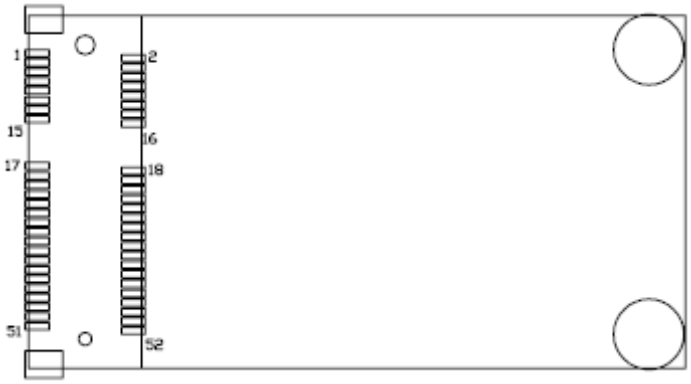


Digital Output

Below figure shows how to use digital output function. The digital output channels can support max. 3.3V.



The JetBox is available with GSM/ GPRS/ EDGE/ 3G/ HSDPA/ HSUPA module via its internal miniPCIe connector (the signal is the same as USB signal)

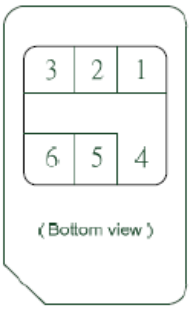


Pin	Signal name	Description	Input/Output	Active State	Voltage Levels		
					Min	Typ	Max
1	NC	No connect					
2	VCC	3.3 V supply	Input	Power	3.00	3.30	3.60
3	NC	No connect					
4	GND	Ground	GND	GND			
5	NC	No connect					
6	NC	No connect					
7	NC	No connect					
8	USIM_PWR	USIM VCC supply	Output (1.8 V)	Power	1.60	1.80	1.90
			Output (3.0 V)		2.70	3.00	3.30
9	GND	Ground	GND	GND			
10	USIM_DATA	USIM I/O pin	Input High (1.8 V)	Low	1.20		2.10
			Input Low (1.8 V)		0.00		0.63
			Output High (1.8 V)		1.30	1.80	2.10
			Output Low (1.8 V)		0.00		0.30
			Input High (3.0 V)		1.95		3.30
			Input Low (3.0 V)		0.00		1.05
			Output High (3.0 V)		2.10	3.00	3.30
			Output Low (3.0 V)		0.00		0.40
11	NC	No connect					
12	USIM_CLK	USIM clock	Output High (1.8 V)	High	1.30	1.80	2.10
			Output Low (1.8 V)		0.00		0.47

Pin	Signal name	Description	Input/Output	Active State	Voltage Levels		
					Min	Typ	Max
			Output High (3.0 V)		1.90	3.00	3.30
			Output Low (3.0 V)		0.00		0.60
13	NC	No connect					
14	USIM_RESET	USIM reset	Output High (1.8 V)	Low	1.30	1.80	2.10
			Output Low (1.8 V)		0.00		0.47
			Output High (3.0 V)		2.20	3.00	3.30
			Output Low (3.0 V)		0.00		0.70
15	GND	Ground	GND	GND			
16	NC	No connect					
17	NC	No connect					
18	GND	Ground	GND	GND			
19	NC	No connect					
20	W_DISABLE#	Wireless disable	Input High	Low	2.30	3.30	3.60
			Input Low				0.90
21	GND	Ground	GND	GND			
22	NC	No connect					
23	NC	No connect					
24	VCC	3.3 V supply	Input	Power	3.00	3.30	3.60
25	NC	No connect					
26	GND	Ground	GND	GND			
27	GND	Ground	GND	GND			
28	NC	No connect					
29	GND	Ground	GND	GND			
30	NC	No connect					
31	NC	No connect					
32	NC	No connect					
33	NC	No connect					
34	GND	Ground	GND	GND			
35	GND	Ground	GND	GND			
36	USB_D-	USB data negative(Low/Full	Input High		2.00	3.00	3.60
			Input Low		0.00		2.00

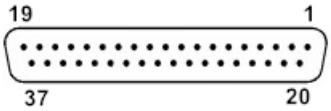
Pin	Signal name	Description	Input/Output	Active State	Voltage Levels		
					Min	Typ	Max
		speed)	Output High		2.80	3.30	3.60
			Output Low				0.30
		USB data negative(High speed)	Input High		0.30		0.44
			Input Low		0.00		0.01
			Output High		0.36	0.38	0.44
			Output Low		0.00		0.01
37	GND	Ground	GND	GND			
38	USB_D+	USB data positive(Low/Full speed)	Input High		2.00	3.00	3.60
			Input Low		0.00		2.00
			Output High		2.80	3.30	3.60
			Output Low				0.30
		USB data positive(High speed)	Input High		0.30		0.44
			Input Low		0.00		0.01
			Output High		0.36	0.38	0.44
			Output Low		0.00		0.01
39	VCC	3.3 V supply	Input	Power	3.00	3.30	3.60
40	GND	Ground	GND	GND			
41	VCC	3.3 V supply	Input	Power	3.00	3.30	3.60
42	LED_WWAN#	LED driver	Tri-state				
			Output Low		0.00		0.45
43	GND	Ground	GND	GND			
44	NC	No connect					
45	NC	No connect					
46	NC	No connect					
47	NC	No connect					
48	NC	No connect					
49	NC	No connect					
50	GND	Ground	GND	GND			
51	NC	No connect					
52	VCC	3.3 V supply	Input	Power	3.00	3.30	3.60

The SIM connector is used for a SIM card of mobile network service. It is accompanied with the miniPCIe mobile module.



Pin	Signal name	Description
8	USIM_PWR	USIM VCC supply
10	USIM_DATA	USIM I/O pin
12	USIM_CLK	USIM clock
14	USIM_RESET	USIM reset
20	W_DISABLE#	Wireless disable
36	USB_D-	USB data negative
37	GND	Ground
38	USB_D+	USB data positive
42	LED_WWAN#	LED driver
2,24,39,41,52	VCC	3.3 V supply
4,9,15,18,21,26,27,29,34,35,37,40,43,50	GND	Ground
1,3,5,6,7,11,13,16,17,19,22,23,25,28,30,31,32,33,44,45,46,47,48,49,51	NC	No connect

The JetBox provides 4-port serial device server (DB37 connector), supporting TCP server/client and paired TCP modes.

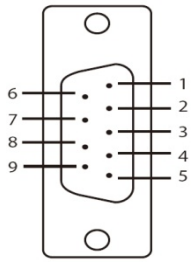


Pin	Function	Pin	Function
1	NC	20	RI2
2	DCD2	21	DTR2
3	GND	22	DSR2
4	CTS2	23	RTS2
5	RXD2	24	TXD2
6	RI3	25	DCD3
7	DTR3	26	GND
8	DSR3	27	CTS3
9	RTS3	28	RXD3
10	TXD3	29	RI1
11	DCD1	30	DTR1
12	GND	31	DSR1
13	CTS1	32	RTS1
14	RXD1	33	TXD1
15	RI0	34	DCD0
16	DTR0	35	GND
17	DSR0	36	CTS0
18	RTS0	37	RXD0
19	TXD0		

Optional Accessories

Serial cable:

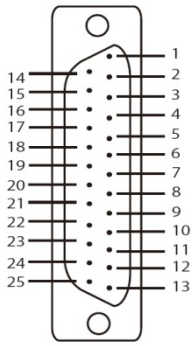
CM37M9x4-60 4-port male DB37 to male DB9 connection cable, 60cm



DB9 Pin	RS-232	RS-422	RS-485 (4-wire)	RS485 (2-wire)
1	DCD	TxD-(A)	TxD-(A)	Data-(A)
2	RxD	TxD+(B)	TxD+(B)	Data+(B)
3	TxD	RxD+(B)	RxD+(B)	
4	DTR	RxD-(A)	RxD-(A)	
5	GND	GND	GND	GND
6	DSR	RTS-(A)		
7	RTS	RTS+(B)		
8	CTS	CTS+(B)		
9		CTS-(A)		

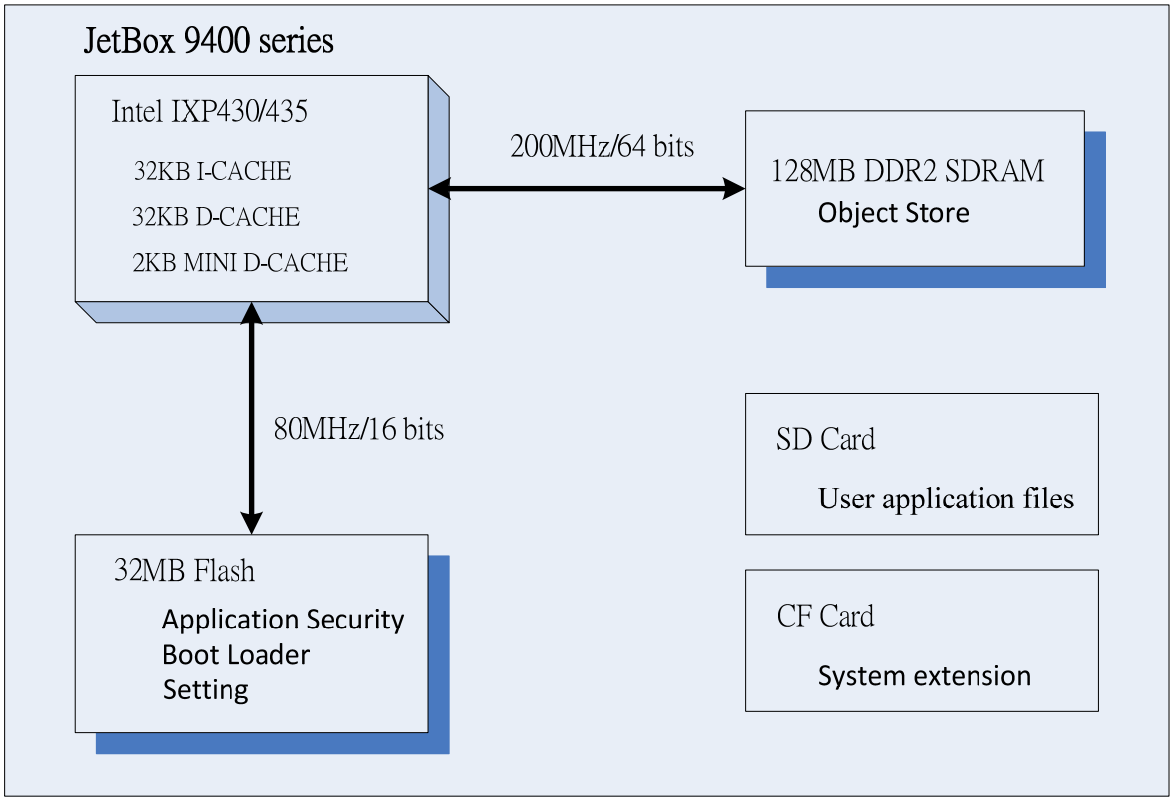
Serial cable:

CM37M25x4-60 4-port male DB37 to male DB25 connection cable, 60cm



DB25 Pin	RS-232	RS-422	RS-485 (4-wire)	RS485 (2-wire)
2	TxD	RxD+(B)	RxD+(B)	
3	RxD	TxD+(B)	TxD+(B)	Data+(B)
4	RTS	RTS+(B)		
5	CTS	CTS+(B)		
6	DSR	RTS-(A)		
7	GND	GND	GND	GND
8	DCD	TxD-(A)	TxD-(A)	Data-(A)
20	DTR	RxD-(A)	RxD-(A)	
22		CTS-(A)		

The following figure shows the memory architecture of the JetBox.



32MB Flash

There is 32M Byte of Flash ROM for the Boot Loader program.

128MB DDR2 RAM

The JetBox supports 128 MB of DDR2 SDRAM. The DDR2 SDRAM is arranged for Linux 2.6 Object Store and applications.

Users can enter the JetBox Linux environment via the user name: root and no password is required.

login : root

password : (none)

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