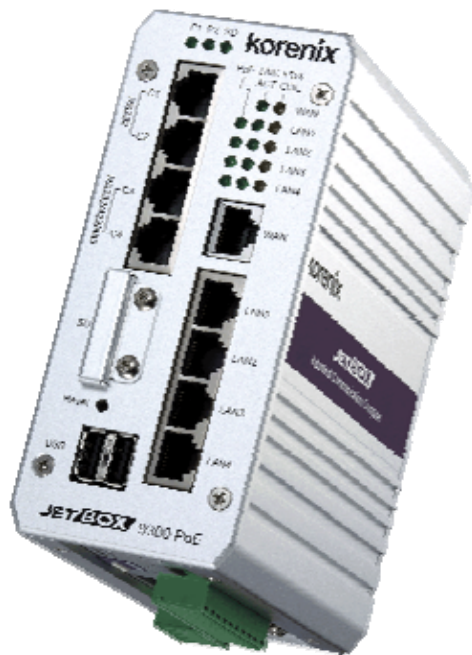


Chapter 1 Overview

JetBox 9310

Industrial Communication Computer



Communication Transformer: An Ultimate Networking Engine

- Industrial computer
 1. RISC, 64MB SDRAM
 2. Linux, VCOM, Modbus/TCP
 3. 4 COM, 2 USB, 4 DI/DO, SD card
- Router (5 Ethernet ports)
 1. Free combination between WAN & LAN
 2. IP routed, static routing
 3. NAT, firewall, DMZ
- Managed PoE switch
 1. IEEE802.3af PoE
 2. SNMP v1/v2c/v3
 3. QoS
 4. VLAN (802.1Q, port-based)



In a networking communication environment, router, switch and computer are indispensable devices to a typical networking architecture. Along with technology development, the complexity of devices increases and the troublesome settings become more and more confusing. Hence, the revolution of networking devices is anticipated. Functional integration and human-oriented manipulation will be the mainstream in next networking generation.

JetBox 9310 is the communication transformer to digest router, managed PoE switch, and computer functions into one tiny box. Extreme simple operation is the core spirit of JetBox 9310. Korenix provides not only API but also User Interface to make router, managed PoE switch, and computer setting simple.

JetBox 9310 is a RISC-based embedded computer, system memory 64MB SDRAM default (128MB optional) and carries all major interfaces such as five Ethernet ports,

two USB2.0 ports, two RS-232 ports, two RS-232/422/485 ports, four digital inputs, four digital outputs and one SD card slot. Moreover, built-in Linux OS and network essential applications make JetBox 9310 a powerful network engine.

1-1 Power over Ethernet

Power over Ethernet is a useful technology for powering devices where it would be inconvenient, expensive or infeasible to supply power separately. JetBox 9310 refers to IEEE802.3af standard as a PSE (Power Sourcing Equipment) to provide 48 volts DC over two of the four available pairs on a Cat. 3/Cat. 5e cable with a maximum current of 400 mA for a maximum load power of 15.4W.

1-2 SNMP Control

SNMP (Simple Network Management Protocol) is used in networking management systems to monitor network-attached devices. JetBox 9310 provides complete SNMP v1, v2c, v3 protocol and MIBs (Management Information Bases). Customers can use one or more systems to manage a number of devices through JetBox 9310 SNMP control.

1-3 IP Management (JetView)

JetView is a device management utility developed by Korenix to support various device management features. JetBox 9310 uses JetView for device discovery and basic system IP address modification.

1-4 JetBox Virtual COM Commander

Virtual COM can be useful in case there is a lack of available physical serial ports or to communicate with any other serial devices via internet or LAN (Serial-over-Ethernet technology). Except the physical communication through TCP server/client and UDP modes, JetBox 9310 also provides virtual COM mode. Customers can install the virtual COM driver by installing JetBox Commander. Customers can manage virtual COMs through JetBox Commander or let virtual COM work alone without JetBox Commander.

1-5 User Interface: Web & CLI

Although JetBox 9310 is a Linux-based computer, considering the easy and powerful usage in networking environment, Korenix provides user-friendly interface for router, managed PoE switch, and system settings. Users can set up those specific functions in Web user interface or Command line interface.

1-6 Router

The default setting of Ethernet ports in JetBox 9310 is one WAN port and four LAN port. And users can change the combination through Web UI or CLI. It is more flexible to adapt JetBox 9310 to customers' networking environment, such as using two WAN ports for two enterprises' network as networking redundancy.

When the Ethernet port of JetBox 9310 setting as WAN port, IP routing and statistic routed are supported.

1-7 NAT (Network Address Translation) &

DMZ (Demilitarized Zone)

NAT server enables a LAN to use one set of IP addresses for internal traffic and a second set of addresses for external traffic. Therefore, NAT server can provide a type of firewall by hiding internal IP addresses, enable a company to use more internal IP addresses without conflicting with IP addresses used by other companies, and allow a company to combine multiple ISDN connections into a single Internet connection.

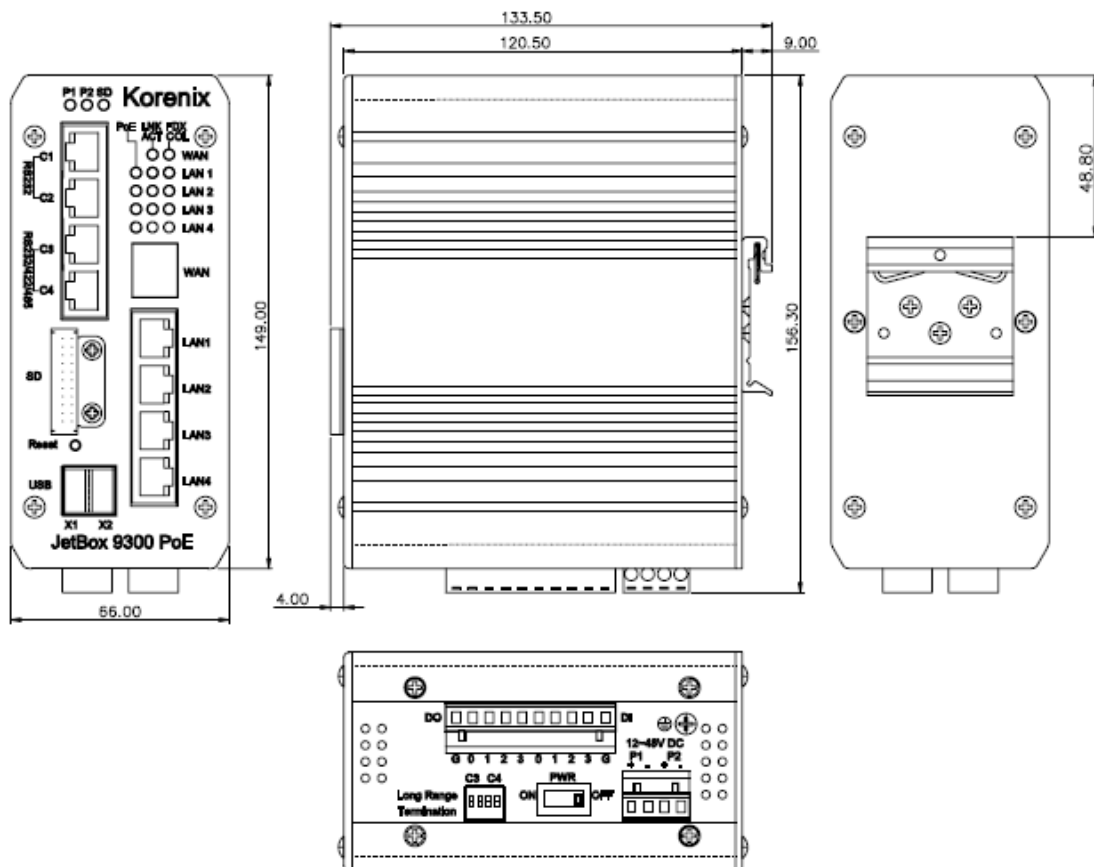
JetBox 9310 provides NAT endpoint filtering as a firewall to protect customer's network from outside world. Any incoming traffic must match the IP address of the outgoing connection when NAT endpoint filtering enable. But sometimes, customers need to expose certain types of applications to the outside world. Therefore, JetBox 9310 also provides DMZ host function. Customers can place a computer in the DMZ to expose to the Internet and run the application on that computer when DMZ host enable.

1-8 DIO Scheduling

Digital input and output are essential control in industrial environment. JetBox 9310 not only focus on network related functions, but also in industrial control. Hence, JetBox 9310 carries four digital inputs and four digital outputs for alarm, indicator, or sensor control. Further, the digital input and output of JetBox 9310 can be enable or disable based on schedule. Customers can set up scheduling table by Web UI or CLI.

Chapter 2 Dimensions

(Unit=mm)



Chapter 3 Hardware Specifications

3-1 System

Processor: RISC

System memory: SDRAM 64MB, Max. 128MB (Optional)

Ethernet: 10/100 Based-Tx RJ-45 connector x5

Built-in 15KV ESD protection of all signals

SSD: SD card slot x1

Serial Port:

RS-232 x2, RS-232/422/485 x2 (RJ45 connector)

USB: USB 2.0 x2 (Host)

Supporting devices: USB flash, wireless dongle

System Control:

LED per port: Link/Activity x5

(Green on/Green blinking)@100Mbps

LED per PoE port (LAN1~LAN4): On (Green)/off x4

LED per unit: Power On(Green)/off x2, SD card x1 (Green)

Power on/off switch x1

Reset button x1

Watchdog timer: Generates a time-out system reset, 1sec

Power Supply: DC input 48V (-48V)

OS support: Embedded Linux 2.6.21

3-2 Mechanical

Construction: Rugged Aluminum Alloy Chassis, IP31 protection

Color: Silver

Mounting: DIN rail

Dimension: 66(W) x149(H) x 120.5(D) mm

Net weight: 700g

3-3 Environment

Operating Temp: -4 ~ 158 (-20 ~ 70), 5 to 95% RH

Storage Temp: -40 ~ 176 (-40 ~ 80), 5 to 95% RH

EMC:

EMI: FCC class A, EN55022 Class A

EMC:

EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8,
EN61000-4-11

Safety: CE, UL, cUL, EN60950

Shock: IEC60068-2-27 (50g peak acceleration)

Free Fall: IEC60068-2-32

Vibration: IEC60068-2-6 (5g/ 5~500Hz/random operation)

MTBF: 319,175 hours MIL-HDBK-217 GB (MILITARY HANDBOOK) standard

Warranty: 5 years

Chapter 4 Software Specifications

4-1 Embedded Linux

Bootloader: JetBox bootloader

Linux Kernel: 2.6.21

Shell: GNU ash

File system: jffs2

Device drivers: SD card, USB, Watchdog timer, UART

Software packages: busybox, bridge-utils, ethtool, iptables, net-snmp, ntp, openssh,
openssl, pppd, rp-pppoe, syslogd, udhcp, setserial, goahead web server

4-2 Technology

Standard

IEEE802.3 10Base-T Ethernet

IEEE802.3u 100Base-Tx Fast Ethernet

IEEE802.3af Power over Ethernet (PoE)

IEEE802.3x Flow Control and Back-pressure

IEEE802.1p Class of service

IEEE802.1Q VLAN

Processing: Store and Forward architecture

Packet filter: Broadcast packet filtering

4-3 PoE Technology

PD classification: detection, class ID 0~3 follow IEEE802.af standard

PIN assignment (RJ45 connector): V+ (Pin 4,5), V- (Pin 7,8), Tx (Pin 1,2), Rx (Pin 3,6)

Protection: Over-current protection by PD class ID

PoE control: Support user configuration for PoE enable, disable, or based on schedule

PoE schedule control: Each PoE port can be active and powered scheduling with different rules. It supports weekly schedule on hourly basis.

Power Limit Control: The control mode supports IEEE802.3af standard. The maximum DC power delivery on each PoE is 15.4W@DC 48 V input.

4-4 Interface

Number of Ports: 5x 10/100 Base-Tx, auto MDI/MDI-X

Network cables for PoE:

10Base-T: 4-pair UTP/STP Cat.3,4,5, EIA/TIA-568 100ohm (100m)

100Base-Tx: 4-pair UTP/STP Cat.5 EIA/TIA-568 100ohm (100m)

4-5 Routing

IP routed, static routing

Per VLAN routing

NAT/DMZ

ICMP, ARP

Block/Allow IP or port address

4-6 Managed PoE switch

Configuration: Web-interface, TFTP update, configuration backup and restore, DHCP client/server, warm reboot, reset to default, Admin password, Port speed/ Duplex control, Status and statistic display, SNMP v1/v2c/v3, Traps, RMON 1 (Statistics history, Alarm, Events), Command line interface

MIB: MIB-II, Bridge MIB, Ethernet-like MIB, VLAN MIB, Private MIB

NTP for time management

VLAN: Supports port-based VLAN and IEEE802.1Q VLAN

Quality of Service: Four priority queues per port, 802.1p COS and IP Layer

TOS/DiffServ

IP Access Control: Support IP address security to prevent unauthorized access

E-mail warning, SMTP: Automatic e-mail warning by pre-defined events

System Event Log: Support both local mode and server mode

4-7 Ethernet Performance

Transfer Rate: 14,880 pps for Ethernet port and 148,800 pps for fast Ethernet port

Transfer Packet Size: 64 bytes to 1522 bytes (with VLAN tag)

MAC address: 1K MAC address table

Memory Buffer: 512 Kbits

Back-plane: 1.2 Gbps

Chapter 5 Ordering Information

Jetbox 9310 RISC, 48V DC, 64MB SDRAM

All items include:

- JetBox 9310 RISC industrial communication computer
- Serial cables (RJ45 to DB9 male, 150cm) x1
- 4-pin apartable power terminal block
- 10-pin DIO terminal block
- Quick installation guide
- Documentation and software CD-ROM

Chapter 6 Optional Accessories

- Additional applications on SD card: SD card capacity is 1G
SD1G-M Modbus, Modbus/TCP
- 802.11g wireless dongle for advanced Linux users
- Serial cables (RJ45 to DB9 male, 150cm)