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Serial Device Servers

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Connect Your Devices to the eWorld

Introduction

As the world becomes more and more wired, it is critical to manage and connect devices. Advantech offers comprehensive and cost-effective eConnectivity solutions for easy installation and operation in critical industrial environments. These solutions meet the requirements from worldwide enterprises that need supervisory control, operator interfaces, and logging of events and alarms via serial communication over Ethernet networks.

Serial Device Servers

Advantech's serial device servers offer the easiest way to enable RS-232/422/485 serial devices to be connected to host over Ethernet network quickly and cost-effectively. COM port redirector makes integration of existing serial application with network-level application an easy task. No extra programming effort is required at the host, so software development costs can be saved. Advantech's serial device servers are especially suitable for remotely controlling and monitoring your serial devices via Ethernet.

Serial Device Servers

ADAM-4570 and EKI-1500 series are cost-effective serial device servers which enable users to easily connect equipment with an RS-232/422/485 serial port to the Ethernet. Through TCP/UDP, IP, Socket or Winsock, ADAM-4571, ADAM-4570, and EKI-1500 series can be used for different operating systems ranging from Microsoft Windows to Linux. Moreover, these serial device servers can use serial tunneling communications without any intermediate host PCs and software programming to save costs and effort, allowing two native serial devices to communicate over a network. After COM port redirector installation, the ADAM-4570 series and EKI-1500 series serial ports will be configured as a virtual COM port on the host. Standard serial operating calls are transparently redirected to these serial device servers. Advantech serial device servers provide high transmission speeds up to 921.6 kbps to offer the best performance in the industrial and ensure that the critical application will not be harmed by data throughput. COM port redirection (Virtual COM), TCP/UDP server/client mode, various operating mode are supported and especially suitable for different serial applications.

Wireless Serial Device Servers

Advantech wireless serial device servers EKI-1351 and EKI-1352 make it possible to quickly connect RS-232/422/485 serial devices with PC hosts via 802.11b/g wireless LAN networks. Functionally transparent and efficient, EKI-1351 and EKI-1352 save costs when existing hardware and software must continue to be used and also bring the advantages of remote management and data accessibility to RS-232/422/485 devices that cannot connect to the network.

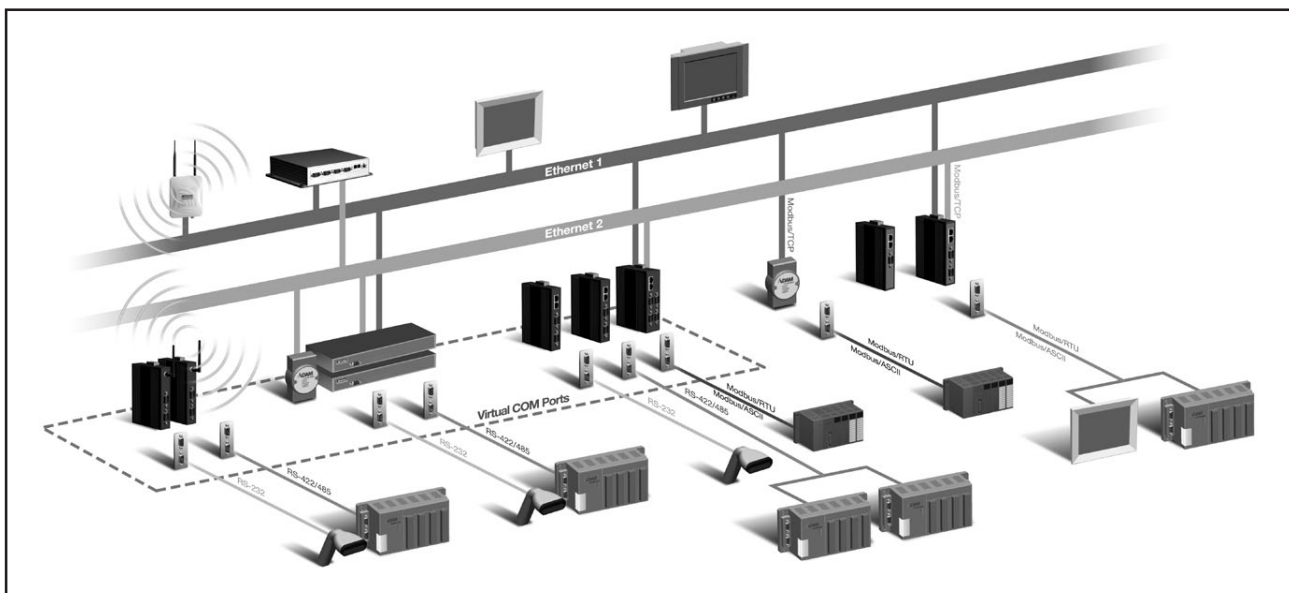
Modbus Gateways

Advantech Modbus gateways ADAM-4572, EKI-1221, and EKI-1222 present an interface between Modbus serial devices and computer hosts or HMIs running Modbus/TCP on Ethernet networks. Fully compliant with Modbus/TCP, Advantech Modbus gateways offer a convenient solution to connect existing devices or controllers running Modbus serial protocol (Modbus/ASCII or Modbus/RTU) to an Ethernet network.

Serial to USB Converters

The industrial-grade USB to serial converters (ADAM-4561/4562, USB-4604B/4604BM) are especially suitable for wide variety of industries such as banking, retail, factory automation, and industrial automation. USB to serial converters provide software selectable RS-232/422/485 ports that are compatible with all standard RS-232 or RS-422/485 serial devices and suitable for printers, POS systems, and industrial control devices. Use them to expand your serial ports fast, easily, and cost-effectively.

Serial Device Server System Architecture



Serial Device Server Applications

Multi-Access

Traditional --- Single Access

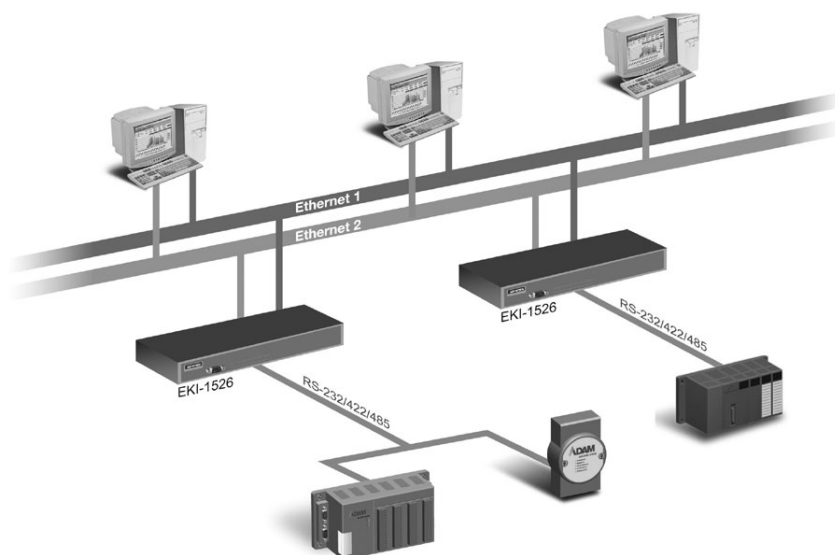
Most serial devices are connected directly to the PC serial port via cable. The OS, such as Windows XP, provides the COM ports that the application can access, and control the serial device through the serial cable. This means that the serial device can be connected to one host and only one application on this host can handle input, output and control operation.

Advanced --- Multi-Access

Advantech ADAM-4570 series, EKI-1500 series, and EKI-1300 series allow a maximum of 5 hosts connected to one serial port simultaneously and handle the commands from each host and reply to all hosts or the host that query depending on the easily configuration. Advantech serial device servers have two kinds of operating modes for multi-access. First is broadcast mode; serial device servers handle a command from one application and reply the data from the serial port to all applications connected to this serial port. The other is polling mode; serial device servers handle the command from one application and reply to this application only. Query from other applications must be queued and wait for current process completion.

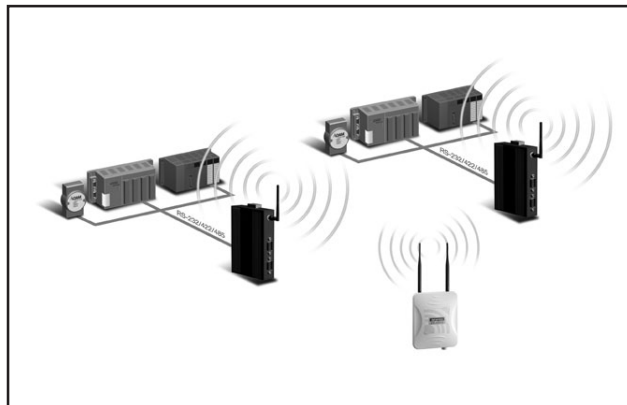
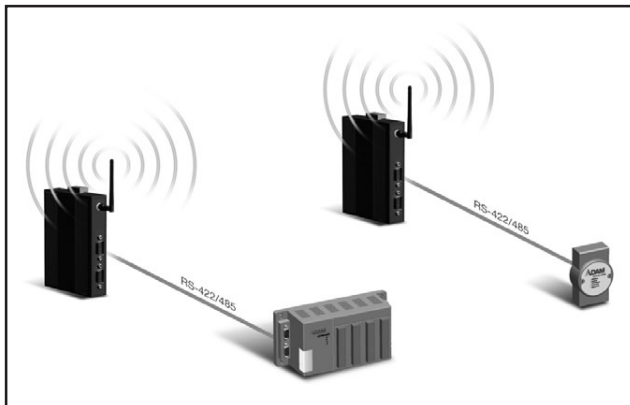
Dual Ethernet Redundancy

Advantech EKI-1500 series provide dual Ethernet connections for building reliable and redundant networks. Through the serial device servers, users can establish two physical networks in the same domain, one for the primary connection, and the other is a backup host that can connect to the serial device servers directly when the primary connection fails. Furthermore, the two Ethernet ports can be set to two different networking domains to support different network applications.



Wireless Serial Tunneling

Two native serial devices can communicate over a wireless Ethernet network without any intermediate host PC and software programming. Both Ad-hoc and infrastructure mode for wireless operation are selectable so that EKI-1300 series wireless serial device servers can connect to an AP (Access Point) or two EKI-1300 series wireless serial device servers can directly communicate without AP.



http://www.promicro.co.za
mailto:info@promicro.co.za

52 Shepherd Avenue, Bryanston, South Africa
P O Box 593, Cramerville, 2060, South Africa

Tel: 011-706-7913
Fax: 011-706-2766

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Serial Device Server Selection Guide

Serial Device Servers



Model Name		EKI-1351	EKI-1352	EKI-1521	EKI-1522	EKI-1524
No. of Ethernet Port		WLAN	WLAN	2	2	2
No. of Serial Port		1	2	1	2	4
Ethernet Interface		802.11 b/g	802.11 b/g	10/100 Mbps	10/100 Mbps	10/100 Mbps
Serial Type		RS-232/422/485	RS-232/422/485	RS-232/422/485	RS-232/422/485	RS-232/422/485
Connector	Ethernet	SMA	SMA	RJ45	RJ45	RJ45
	Serial	DB9	DB9	DB9	DB9	DB9
Baud Rate		50 ~ 921.6 kbps	50 ~ 921.6 kbps	50 ~ 921.6 kbps	50 ~ 921.6 kbps	50 ~ 921.6 kbps
Operating Mode		Virtual COM, Data Mode, Control Mode	Virtual COM, Data Mode, Control Mode	Virtual COM, Data Mode, Control Mode	Virtual COM, Data Mode, Control Mode	Virtual COM, Data Mode, Control Mode
Driver		Windows 2000/XP/Vista	Windows 2000/XP/Vista	Windows 2000/XP/Vista	Windows 2000/XP/Vista	Windows 2000/XP/Vista
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Model Name		EKI-1528	EKI-1526	ADAM-4571	ADAM-4571L	ADAM-4570	ADAM-4570L
No. of Ethernet Port		2	2	1	1	1	1
No. of Serial Port		8	16	1	1	2	2
Ethernet Interface		10/100 Mbps	10/100 Mbps	10/100 Mbps	10/100 Mbps	10/100 Mbps	10/100 Mbps
Serial Type		RS-232/422/485	RS-232/422/485	RS-232/422/485	RS-232	RS-232/422/485	RS-232
Connector	Ethernet	RJ45	RJ45	RJ45	RJ45	RJ45	RJ45
	Serial	RJ45	RJ45	DB9	DB9	RJ48	RJ48
Baud Rate		50 ~ 921.6 kbps	50 ~ 921.6 kbps	50 ~ 921.6 kbps	50 ~ 921.6 kbps	50 ~ 921.6 kbps	50 ~ 921.6 kbps
Operating Mode		Virtual COM, Data Mode, Control Mode	Virtual COM, Data Mode, Control Mode	Virtual COM, Data Mode, Control Mode	Virtual COM, Data Mode, Control Mode	Virtual COM, Data Mode, Control Mode	Virtual COM, Data Mode, Control Mode
Driver		Windows 2000/XP/Vista	Windows 2000/XP/Vista	Windows 2000/XP/Vista	Windows 2000/XP/Vista	Windows 2000/XP/Vista	Windows 2000/XP/Vista
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Selection Guide

Modbus Gateways



Model Name		EKI-1221	EKI-1222	EKI-1224	ADAM-4572
No. of Ethernet Port		2	2	2	1
No. of Serial Port		1	2	4	1
Ethernet Interface		10/100 Mbps	10/100 Mbps	10/100 Mbps	10/100 Mbps
Serial Type		RS-232/422/485	RS-232/422/485	RS-232/422/485	RS-232/422/485
Connector	Ethernet	RJ45	RJ45	RJ45	RJ45
	Serial	DB9	DB9	DB9	Screw Terminal
Baud Rate		50 ~ 921.6 kbps	50 ~ 921.6 kbps	50 ~ 921.6 Kbps	50 ~ 921.6 kbps
Operating Mode		Modbus RTU Master/Slave, Modbus ASCII Master/Slave	Modbus RTU Master/Slave, Modbus ASCII Master/Slave	Modbus RTU Master/Slave, Modbus ASCII Master/Slave	Modbus RTU Master/Slave, Modbus ASCII Master/Slave
Driver		Windows 2000/XP/Vista	Windows 2000/XP/Vista	Windows 2000/XP/Vista	Windows 2000/XP/Vista
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Serial to USB Converters



Model Name		ADAM-4561	ADAM-4562	USB-4604B	USB-4604BM
Interface		USB 1.1	USB 1.1	USB 1.1/2.0	USB 1.1/2.0
Serial Port		1	1	4	4
Baud Rate		50 ~ 115.2 kbps	75 ~ 115.2 kbps	50 ~ 921.6 kbps	50 ~ 921.6 kbps
Serial Type		RS-232/422/485	RS-232	RS-232	RS-232/422/485
Connector	USB	Type B	Type B	Type B	Type B
	Serial	Screw Terminal	DB9	DB9	DB9
Protection	Isolation	3,000 V _{DC} (RS-232/422/485)	2,500 V _{DC}	-	-
	Surge	3,000 V _{DC} (RS-485)	-	2,500 V _{DC}	2,500 V _{DC}
Driver		Windows 2000/XP	Windows 2000/XP	Windows 2000/XP/2003, CE5.0	Windows 2000/XP/2003, CE5.0
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EKI-1528

EKI-1526

8-port RS-232/422/485 Serial Device Server

16-port RS-232/422/485 Serial Device Server



EKI-1528

EKI-1526



Features

- 8 or 16-port RS-232/422/485 serial communication
- Provides 2 x 10/100 Mbps Ethernet ports for LAN redundancy
- Supports baud rate up to 921.6 kbps
- Provides COM port redirection (Virtual COM), TCP and UDP operation modes
- Provides rich configuration methods: Windows utility, Telnet console, Web Browser, and serial console
- Built-in 15 KV ESD protection for all serial signals
- SNMP MIB-II for network management
- Built-in buzzer for easy location
- Standard 1U rackmount size
- Rear wiring
- Automatic RS-485 data flow control

Introduction

EKI-1528 and EKI-1526 are industrial-grade network-based serial device servers for connecting up to 8 or 16 serial RS-232/422/485 devices, such as CNCs, PLCs, scales and scanners, directly to a TCP/IP network. The EKI-1528 and EKI-1526 feature two independent Ethernet ports and MAC addresses to provide a redundant network mechanism to guarantee Ethernet network reliability. The EKI-1528 and EKI-1526 provide a simple and cost-effective way to bring the advantages of remote management and data accessibility to thousand of devices that can't connect to an Ethernet network. The EKI-1528 and EKI-1526 offer rich ways to configure through Windows utility, Web Browser, serial console or Telnet console, these methods make it easy manage many EKI-1528 and EKI-1526 or serial devices on your network.

Specifications

Ethernet Communications

- **Compatibility** IEEE 802.3, IEEE 802.3u
- **Speed** 10/100 Mbps, auto MDI/MDIX
- **No. of Ports** 2
- **Port Connector** 8-pin RJ45
- **Protection** Built-in 1.5 KV magnetic isolation

Serial Communications

- **Port Type** RS-232/422/485, software selectable
- **No. of Ports** EKI-1528: 8
EKI-1526: 16
- **Port Connector** 8-pin RJ45
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, Odd, Even, Space, Mark
- **Flow Control** XON/XOFF, RTS/CTS, DTR/DSR
- **Baud Rate** 50 bps ~ 921.6 kbps
- **Serial Signals** RS-232: TxD, RxD, CTS, RTS, DTR, DSR, DCD, GND
RS-422: TxD+, TxD-, RxD+, RxD-, GND
RS-485: Data+, Data-, GND
- **Protection** 15 KV ESD for all signals

Software

- **Driver Support** Windows 2000/XP/Vista
- **Utility Software** Advantech Serial Device Server Configuration Utility
- **Operation Modes** COM port redirection mode (Virtual COM)
TCP/UDP server (polling) mode
TCP/UDP client (event handling) mode
Pair connection (peer to peer) mode
- **Configuration** Windows utility, Telnet console, Web Browser, serial console
- **Protocols** ICMP, IP, TCP, UDP, BOOTP, DHCP, Auto IP, Telnet, SNMP, HTTP, DNS, SMTP, ARP, HTTPS, SSL, SSH, NTP
- **Management** SNMP MIB-II

Mechanics

- **Dimensions (H x W x D)** 44 x 440 x 220 mm
- **Enclosure** SECC chassis
- **Mounting** Rack
- **Weight** EKI-1528: 2.53 kg
EKI-1526: 2.58 kg

General

- **LED Indicators** System: Power, System Status
LAN: Speed, Link/Active
Serial: Tx, Rx
- **Alert Tools** Built-in buzzer and RTC (real time clock)
- **Reboot Trigger** Built-in WDT and push button for hardware reboot

Power Requirements

- **Power Input** 100 ~ 240 V_{AC}, 47 ~ 63 Hz
- **Power Consumption** EKI-1528: 8 W
EKI-1526: 10 W

Environment

- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Operating Humidity** 5 ~ 95% RH

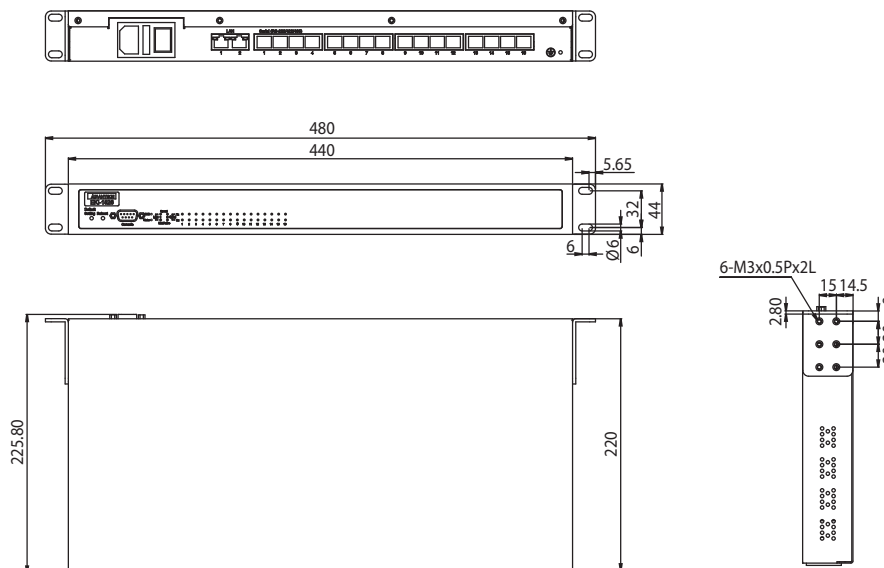
Regulatory Approvals

- **EMC** CE, FCC Part 15 Subpart B (Class A)
- **MTBF** EKI-1528: 198,571 hrs
EKI-1526: 175,708 hrs

EKI-1528 EKI-1526

Dimensions

Unit: mm



Dimensions (W x D x H): 440 x 220 x 44 mm

Physical Views

EKI-1528: Front View



EKI-1528: Rear View



EKI-1526: Front View



EKI-1526: Rear View



Ordering Information

- EKI-1528 8-port RS-232/422/485 Serial Device Server
- EKI-1526 16-port RS-232/422/485 Serial Device Server

*All items include 1pc OPT1J

Accessories

- OPT1I 1 m RJ45 to DB9 Male Cable
- OPT1J 30 cm RJ45 to DB9 Male Cable
- 1702002600 Power Cable US Plug 1.8m
- 1702002605 Power Cable EU Plug 1.8m
- 1702031801 Power Cable UK Plug 1.8m
- 1702031836 Power Cable China/Australia Plug 1.8m

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EKI-1521

EKI-1522

EKI-1524

1-port RS-232/422/485 Serial Device Server

2-port RS-232/422/485 Serial Device Server

4-port RS-232/422/485 Serial Device Server



Features

- Provides 2 x 10/100 Mbps Ethernet ports for LAN redundancy
- Provides COM port redirection (Virtual COM), TCP and UDP operation modes
- Supports baud rate up to 921.6 kbps
- Allows a max. of 5 hosts to access one serial port
- Allows a max. of 16 hosts to be accessed as TCP client mode
- Built-in 15 KV ESD protection for all serial signals
- Provides rich configuration methods including Windows utility, Telnet console, and Web Browser
- Supports Windows 2000/XP/Vista drivers
- Automatic RS-485 data flow control
- Class I, Division 2 certification

Introduction

EKI-1521, EKI-1522 and EKI-1524 feature two independent Ethernet ports and MAC addresses to provide a redundant network mechanism to guarantee Ethernet network reliability. EKI-1521, EKI-1522 and EKI-1524 are serial device servers that connect RS-232/422/485 serial devices, such as PLC, meters, sensors, and barcode reader to an IP-based Ethernet LAN. They allow nearly any device with serial ports to connect and share an Ethernet network. EKI-1521, EKI-1522 and EKI-1524 provide various operations: COM port redirection (Virtual COMport), TCP Server, TCP Client and UDP mode. With COM port redirection mode, standard serial operation calls are transparently redirected to the EKI-1521, EKI-1522 and EKI-1524, guaranteeing compatibility with legacy serial devices and enabling backward compatibility with existing software. With TCP server, TCP client, and UDP modes, EKI-1521, EKI-1522 and EKI-1524 ensure the compatibility of network software that uses a standard network API. Moreover, you can make serial devices communicate with other devices peer-to-peer, without any intermediate host PCs and software programming.

Specifications

Ethernet Communications

- Compatibility** IEEE 802.3, IEEE 802.3u
- Speed** 10/100 Mbps
- No. of Ports** 2
- Port Connector** 8-pin RJ45
- Protection** Built-in 1.5 KV magnetic isolation

Serial Communications

- Port Type** RS-232/422/485, software selectable
- No. of Ports** EKI-1521: 1
EKI-1522: 2
EKI-1524: 4
- Port Connector** DB9 male
- Data Bits** 5, 6, 7, 8
- Stop Bits** 1, 1.5, 2
- Parity** None, Odd, Even, Space, Mark
- Flow Control** XON/XOFF, RTS/CTS, DTR/DSR
- Baud Rate** 50 bps ~ 921.6 kbps
- Serial Signals** RS-232: TxD, RxD, CTS, RTS, DTR, DSR, DCD, RI, GND
RS-422: TxD+, TxD-, RxD+, RxD-, GND
RS-485: Data+, Data-, GND
Built-in 15 KV ESD for all signals
- Protection** Built-in 15 KV ESD for all signals

Software

- Driver Support** Windows 2000/XP/Vista
- Utility Software** Advantech Serial Device Server Configuration Utility
- Operation Modes** COM port redirection mode (Virtual COM)
TCP/UDP server (polling) mode
TCP/UDP client (event handling) mode
Pair connection (peer to peer) mode
- Configuration** Windows utility, Telnet console, Web Browser
- Protocol** ICMP, IP, TCP, UDP, BOOTP, DHCP, Auto IP, Telnet, SNMP, HTTP, DNS, SMTP, ARP, NTP
- Management** SNMP MIB-II

Mechanics

- Dimensions (W x H x D)** EKI-1521/1522: 37 x 140 x 95 mm
EKI-1524: 55 x 140 x 95 mm
- Enclosure** Metal with solid mounting hardware
- Mounting** DIN-rail, Panel
- Weight** EKI-1521: 592g
EKI-1522: 600g
EKI-1524: 668g

General

- LED Indicators** System: Power, System Status
LAN: Speed, Link/Active
Serial: Tx, Rx
Built-in WDT (watchdog timer)
- Reboot Trigger**

Power Requirements

- Power Input** 12 ~ 48 V_{DC}, redundant dual inputs
- Power Connector** Terminal block
- Power Consumption** EKI-1521: 2 W
EKI-1522: 2.5 W
EKI-1524: 4 W

Environment

- Operating Temperature** -10 ~ 60° C (14 ~ 140° F)
- Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- Operating Humidity** 5 ~ 95% RH

Regulatory Approvals

- EMC** CE, FCC Part 15 Subpart B (Class A)
- Safety** UL (UL60950-1)
- MTBF** EKI-1521: 1,102,913 hrs
EKI-1522: 1,000,154 hrs
EKI-1524: 862,230 hrs
- Hazardous Location** UL/cUL Class I, Division 2

Ordering Information

- EKI-1521** 1-port RS-232/422/485 Serial Device Server
- EKI-1522** 2-port RS-232/422/485 Serial Device Server
- EKI-1524** 4-port RS-232/422/485 Serial Device Server

ADAM-4571/L ADAM-4570/L

**1-port RS-232/422/485 Serial
Device Server**

**2-port RS-232/422/485 Serial
Device Server**



RoHS COMPLIANT (REWORKED) CE FCC



RoHS COMPLIANT (REWORKED) CE FCC

Specifications

Ethernet Communications

- **Compatibility** IEEE 802.3, IEEE 802.3u
- **Speed** 10/100 Mbps
- **No. of Ports** 1
- **Port Connector** 8-pin RJ-45
- **Protection** Built-in 1.5 KV magnetic isolation

Serial Communications

- **Port Type** ADAM-4571/4570: RS-232/422/485, software selectable
ADAM-4571L/4570L: RS-232
- **No. of Ports** ADAM-4571/4571L: 1
ADAM-4570/4570L: 2
- **Port Connector** ADAM-4571/4571L: DB9 male
ADAM-4570/4570L: 10-pin RJ48
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, Odd, Even, Space, Mark
- **Flow Control** XON/XOFF, RST/CTS, DTR/DSR
- **Baud Rate** 50 bps ~ 921.6 kbps
- **Serial Signals** RS-232: TxD, RxD, CTS, RTS, DTR, DSR, DCD, RI, GND
RS-422: TxD+, TxD-, RxD+, RxD-, GND
RS-485: Data+, Data-, GND
- **Protection** 15 KV ESD protection for all signals

Software

- **Driver Support** Windows 2000/XP/Vista
- **Utility Software** Advantech Serial Device Server Configuration Utility
- **Operation Modes** COM port redirection (Virtual COM)
TCP/UDP server (polling) mode
TCP/UDP client (event handling) mode
Pair Connection (peer to peer) mode
- **Configuration** Windows utility, Telnet console, Web Browser
- **Protocol** ICMP, IP, TCP, UDP, BOOTP, DHCP, Auto IP, Telnet, SNMP, HTTP, DNS, SMTP, ARP

Mechanics

- **Dimension (H x W x D)** 70 x 130 x 30 mm
- **Enclosure** ABS+PC with solid mounting hardware
- **Mounting** DIN-rail, stack, wall
- **Weight** ADAM-4571/4571L: 135g
ADAM-4570/4570L: 160g

General

- **LED Indicators** System: Power, System Status
LAN: Speed, Link/Active
Serial: Tx, Rx
- **Reboot Trigger** Built-in WDT (watchdog timer)

Power Requirements

- **Power Input** 10 ~ 30 V_{DC}
- **Power Connector** Terminal block
- **Power Consumption** ADAM-4571/4571L: 1.5 W
ADAM-4570/4570L: 2 W

Environment

- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Operating Humidity** 5 to 95% RH

Regulatory Approvals

- **EMC** CE, FCC Part 15 Subpart B (Class A)

Ordering Information

- **ADAM-4571** 1-port RS-232/422/485 Serial Device Server
- **ADAM-4571L** 1-port RS-232 Serial Device Server
- **ADAM-4570** 2-port RS-232/422/485 Serial Device Server
- **ADAM-4570L** 2-port RS-232 Serial Device Server

*ADAM-4570/4570L includes 2pcs OPT1A

Accessories

- **OPT1A** 1 m RJ48 to DB9 Male Cable
- **OPT1D** 30 cm RJ48 to DB9 Male Cable

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EKI-1351 EKI-1352

1-port RS-232/422/485 to 802.11b/g WLAN Serial Device Server

2-port RS-232/422/485 to 802.11b/g WLAN Serial Device Server



Features

- Link any serial device to an IEEE 802.11 b/g network
- Supports wireless LAN Ad-Hoc and Infrastructure modes
- Provides COM port redirection, TCP, UDP, and pair connection modes
- Supports baud rate up to 921.6 kbps
- Provides Web-based configuration and Windows utility
- Allows a max. of 5 hosts to access one serial port
- Supports Windows 2000/XP/Vista drivers
- Allows a max. of 4 hosts to be accessed as TCP client mode
- Built-in 15 KV ESD protection for all serial signals
- Supports DHCP protocol
- Supports secure access with WEP, WPA, WPA2

Introduction

EKI-1351 and EKI-1352 are wireless serial device servers that bring RS-232/422/485 to wireless Ethernet. They allow nearly any device with serial ports to connect and share an Wireless Ethernet network. EKI-1351 and EKI-1352 provide a quick, simple and cost-effective way to bring the advantages of remote management and data accessibility to thousands of devices that cannot connect to a network.

With EKI-1351 and EKI-1352, your existing serial devices can be used with the most popular operating systems on the market. There is no need to write special drivers for specific operating systems. Moreover, you can make serial devices communicate with other devices peer-to-peer, without any intermediate host PCs and software programming. That saves a lot of cost and effort. In addition, you can actively request data or issue commands from the RS-232/422/485 side or Wireless Ethernet side. This data can be sent bilaterally. Thus, the EKI-1351 and EKI-1352 are especially suitable for remote monitoring environments such as security systems, factory automaton, SCADA, transportation and more.

Specifications

Ethernet Communications

- **Compatibility** IEEE 802.11b, IEEE 802.11g
- **Speed** 11/54 Mbps
- **Network Mode** Infrastructure, Ad-Hoc
- **Antenna Connector** Reverse SMA
- **Free Space Range** Open space 100m
- **Wireless Security** WEP, WPA, WPA2

Serial Communications

- **Port Type** RS-232/422/485, software selectable
- **No. of Ports** EKI-1351: 1
EKI-1352: 2
- **Port Connector** DB9 male
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, Odd, Even, Space, Mark
- **Baud Rate** 50 bps ~ 921.6 kbps
- **Serial Signals** RS-232: TxD, RxD, CTS, RTS, DTR, DSR, DCD, RI, GND
RS-422: TxD+, TxD-, RxD+, RxD-, GND
RS-485: Data+, Data-, GND
- **Protection** 15 KV ESD for all signals

Software

- **Driver Support** Windows 2000/XP/Vista
- **Utility Software** Advantech Serial Device Server Configuration Utility
- **Operation Modes** COM port redirection mode (Virtual COM)
TCP/UDP server (polling) mode
TCP/UDP client (event handling) mode
Pair connection without AP (peer to peer) mode

Mechanics

- **Dimensions (W x H x D)** 37 x 140 x 95 mm
- **Enclosure** Metal with solid mounting hardware
- **Mounting** DIN-rail, Panel
- **Weight** EKI-1351: 595g
EKI-1352: 603g

General

- **LED Indicators** System: Power, System Status
WLAN: Quality, Fail, Link/Active
Serial: Tx, Rx
- **Reboot Trigger** Built-in WDT (watchdog timer)

Power Requirements

- **Power Input** 12 ~ 48 V_{DC}, redundant dual inputs
- **Power Connector** Terminal block
- **Power Consumption** EKI-1351: 3.5 W
EKI-1352: 4 W

Environment

- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Operating Humidity** 5 ~ 95% RH

Regulatory Approvals

- **EMC** CE, FCC Part 15 Subpart B (Class B)
- **Safety** UL (UL60950-1)
- **Hazardous Location** UL/cUL Class I, Division 2

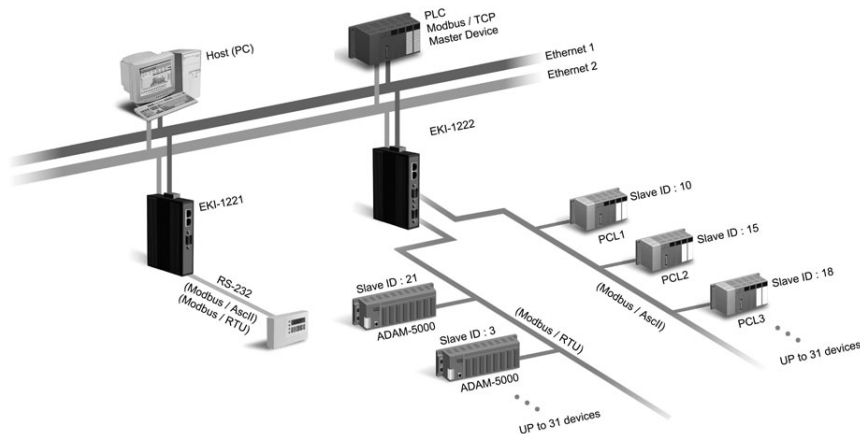
Ordering Information

- **EKI-1351** 1-port 802.11b/g WLAN Serial Device Server
- **EKI-1352** 2-port 802.11b/g WLAN Serial Device Server

Modbus Gateway Solutions

Introduction

Ethernet networks have become increasingly vital for industrial automation applications. Many control devices today do not have an Ethernet port and can only communicate with a dedicated local PC or control panel. Advantech's revolutionary network-enabling technology is now allowing control devices with serial ports to connect to the Ethernet and share networks quickly and cost-effectively. The EKI-1221 and EKI-1222 are network-based, Modbus Gateways for integrating new and existing Modbus/RTU or Modbus/ASCII serial devices to newer Modbus/TCP network-based devices. Manufacturers, system integrators, and end users can now take advantages of the EKI-1221 and EKI-1222 to create networked applications for remote managing and accessing data for control devices that was not possible before.



Modbus Protocol

Originally developed for PLCs in automation and manufacturing control applications, Modbus has become one of the most popular open standard protocols worldwide. When it comes to planning data communications for open, multi-vendor industrial control systems, Modbus is the first choice of end-users and system integrators alike. Although it is not the most powerful protocol available, its rare simplicity allows not only rapid implementation, but also remains flexible enough to be applied in virtually all industrial situations. The communication modes of Modbus include ASCII, RTU or TCP/IP. The EKI-1221 and EKI-1222 are used to support applications such as protocol conversion between serial (Modbus/ASCII or Modbus/RTU) and networked (Modbus/TCP) Modbus devices or it can be used to bridge Modbus serial devices over Ethernet TCP/IP network.

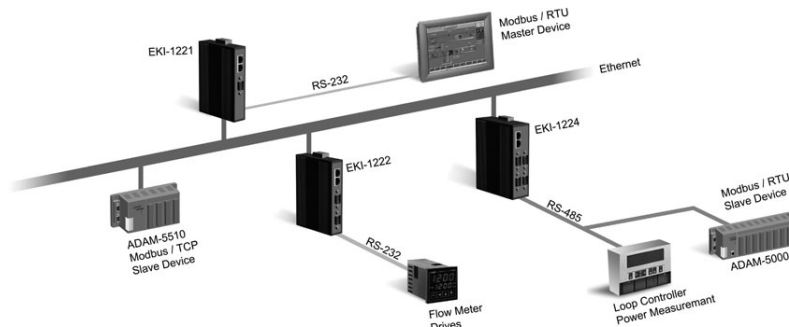
The Modbus/RTU and Modbus/ASCII protocols define how a "master" device polls one or more "slave" devices to read and write real-time data over RS-232, RS-422, or RS-485 serial data communication.

During Modbus network communications, the protocol determines how each controller will know its device address, recognize a message addressed to it, determine the kind of action to be taken, and extract any data or other information contained in the message. If a reply is required, the controller will construct the reply message and send it back using Modbus protocol.

The way controllers communicate with each other is by using a master-slave technique, in which only one device (the master) can initiate queries. The other devices (slaves) respond by supplying the requested data to the master, or by taking the action requested in the query. Typical master device includes host processors and programming panels. Typical slaves include programmable controllers.

The master can address individual slaves and initiate a broadcast message to all slaves. On the other hand, slaves return a response to queries that are addressed to them individually. Responses are not returned to broadcast queries from the master.

The Modbus protocol has a definite format for the master's query, which incorporates the device address, a function code defining the requested action, any data to be sent, and an error-checking field. The slave's response message, which is also constructed using Modbus protocol, contains fields confirming the action taken, any data to be returned, and an error-checking field. If an error occurred in receipt of the message, or if the slave is unable to perform the requested action, the slave will construct an error message and send it as its response.



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EKI-1221 EKI-1222 EKI-1224

1-port Modbus Gateway

2-port Modbus Gateway

4-port Modbus Gateway



Features

- Provides 2 x 10/100 Mbps Ethernet ports for LAN redundancy
- Integration of Modbus TCP and Modbus RTU/ASCII networks
- Supports baud rates up to 921.6 kbps
- Supports up to 16 connections and 32 requests simultaneously
- Supports 31 slaves per serial port
- Easy-managing Advantech Serial Device Server Configuration Utility for Windows 2000/XP/Vista
- Auto searching slave ID over configuration utility
- Software selectable RS-232/422/485 communication
- Mounts on DIN-rail, wall or panel
- Built-in 15 KV ESD protection for all serial signals
- Automatic RS-485 data flow control

Introduction

The EKI-1200 series Modbus gateways are bi-directional gateways for integrating new and existing Modbus/RTU and Modbus/ASCII serial devices to newer TCP/IP network-based devices. The EKI-1221/1222/1224 feature two independent Ethernet ports and MAC addresses to provide a redundant networking mechanism to guarantee Ethernet networking reliability. They provide a simple and cost-effective way to bring the advantage of remote management and data accessibility to thousand of devices that can not connect to a network. The EKI-1221/1222/1224 provide a feature that can allow users to select master or slave operation mode for each serial port. They not only allow an Ethernet master to control serial slaves, but also allow serial masters to control Ethernet slaves.

Specifications

Ethernet Communications

- Compatibility** IEEE 802.3, IEEE 802.3u
- Speed** 10/100 Mbps
- No. of Ports** 2
- Port Connector** 8-pin RJ45
- Protection** Built-in 1.5 KV magnetic isolation

Serial Communications

- Port Type** RS-232/422/485, software selectable
- No. of Ports** EKI-1221: 1
EKI-1222: 2
EKI-1224: 4
- Port Connector** DB9 male
- Data Bits** 7, 8
- Stop Bits** 1, 2
- Parity** None, Odd, Even, Space, Mark
- Flow Control** XON/XOFF, RTS/CTS, DTR/DSR
- Baud Rate** 50 bps ~ 921.6 kbps
- Serial Signals** RS-232: TxD, RxD, CTS, RTS, DTR, DSR, DCD, RI, GND
RS-422: TxD+, TxD-, RxD+, RxD-, GND
RS-485: Data+, Data-, GND
- Protection** 15 KV ESD for all signals

Software

- OS Support** Windows 2000/XP/Vista
- Utility Software** Advantech Serial Device Server Configuration Utility
- Operation Modes** Modbus RTU Master/Slave mode
Modbus ASCII Master/Slave mode

General

- LED Indicators** System: Power, System Status
LAN: Speed, Link/Active
Serial: Tx, Rx
- Reboot Trigger** Built-in WDT (watchdog timer)

Mechanics

- Dimensions (W x H x D)** EKI-1221/1222: 37 x 140 x 95 mm
EKI-1224: 55 x 140 x 95 mm
- Enclosure** Metal with solid mounting hardware
- Mounting** DIN-rail, Panel
- Weight** EKI-1221: 592g
EKI-1222: 600g
EKI-1224: 668g

Power Requirements

- Power Input** 12 ~ 48 V_{DC}, redundant dual inputs
- Power Connector** Terminal block
- Power Consumption** EKI-1221: 2 W
EKI-1222: 2.5 W
EKI-1224: 4 W

Environment

- Operating Temperature** -10 ~ 60° C (14 ~ 140° F)
- Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- Operating Humidity** 5 ~ 95% RH

Regulatory Approvals

- EMC** CE, FCC Part 15 Subpart B (Class A)
- Safety** UL (UL60950-1)
- Hazardous Location** UL/cUL Class I, Division 2

Ordering Information

- EKI-1221** 1-port Modbus Gateway
- EKI-1222** 2-port Modbus Gateway
- EKI-1224** 4-port Modbus Gateway

ADAM-4572

1-port Modbus Gateway



RoHS
COMPLIANT
PRODUCT

CE FCC

Specifications

Ethernet Communications

- **Compatibility** IEEE 802.3, IEEE 802.3u
- **Speed** 10/100 Mbps
- **Port Connector** 8-pin RJ45

Serial Communications

- **Port Type** RS-232/422/485
- **No. of Ports** 1
- **Port Connector** Plug-in terminal block
- **Data Bits** 7, 8
- **Stop Bits** 1, 2
- **Parity** None, Odd, Even, Mark, Space
- **Baud Rate** 50 bps ~ 921.6 kbps
- **Data Signals** RS-232: Tx/D, Rx/D, GND
RS-422: Tx/D+, Tx/D-, Rx/D+, Rx/D-, GND
RS-485: Data+, Data-, GND

Software

- **OS Support** Windows 2000/XP/Vista
- **Utility Software** Advantech Serial Device Server Configuration Utility
- **Operation Mode** Modbus/RTU master/slave mode, Modbus/ASCII master/slave mode

Mechanics

- **Dimensions (H x W x D)** 70 x 130 x 30 mm
- **Enclosure** ABS+PC with solid mounting hardware
- **Mounting** DIN-rail, stack, wall

Features

- Supports 10/100 Mbps communication speeds
- Allows up to 8 clients to access field data simultaneously
- Supports popular HMI software with Modbus/TCP driver or OPC server
- Up to 3 Independent serial ports capacity if configured to RS-485 serial mode
- Provides auto-searching device ID Windows utility
- Surge protection for RS-485 and power line
- Automatic RS-485 data flow control
- Easy mounting on DIN-rail or panel
- Supports Modbus/ASCII, RTU Protocol to control devices

General

- **Certifications** CE, FCC Part 15 Subpart B (Class A)
- **LED Indicators** System: Power, System Status
LAN: Speed, Link/Active
Serial: Tx, Rx

Power Requirement

- **Power Input** 10 ~ 30 V_{DC}
- **Power Consumption** 1.5 W

Environment

- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storing Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Operating Humidity** 5 ~ 95% RH

Ordering Information

- **ADAM-4572** 1-port Modbus Gateway

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EKI-1121L

EKI-1122L

1-port Programmable Device Server

2-port Programmable Device Server



Features

- ARM7 32-bit 80MHz processor
- 8MB Flash ROM on board
- 16MB SDRAM
- 2 x 10/100 Mbps Ethernet ports for LAN redundancy
- 1 or 2 software selectable RS-232/422/485 serial ports
- 50 bps to 921.6 kbps baud rate
- Built-in real-time clock (RTC)
- Class I, Division 2 certification
- Pre-installed Linux Kernel 2.4 platform

Introduction

EKI-1121L and EKI-1122L are RISC-based embedded communication controllers which provide dual auto-sensing 10/100 Mbps Ethernet ports for network redundancy and one or two software-selectable RS-232/422/485 serial ports. The EKI-1121L and EKI-1122L use the ARM7 RISC CPU which is a powerful computing engine to fulfill data compression or protocol conversion requirements. The built-in 8 MB flash ROM and 16 MB SDRAM provide user enough storage to run their specific applications.

Specifications

System

- CPU** ARM7 32-bit RISC CPU, 80 MHz
- Flash** 8 MB
- SDRAM** 16 MB
- OS (pre-installed)** uClinux
- Console Port** RS-232, 3-wire (Tx, Rx, GND) pin-header
- Other** RTC, watchdog timer

Ethernet Interface

- LAN** 2 x auto-sensing 10/100 Mbps ports
- Connector** RJ-45
- Protection** 1.5 kV magnetic isolation protection

Serial Interface

- Serial Standards** Software selectable RS-232/422/485 ports
- Connectors** D-sub 9 male
- Protection** 15 kV ESD protection for all signals

Serial Parameters

- Data Bits** 5, 6, 7, 8
- Stop Bits** 1, 1.5, 2
- Parity** None, Even, Odd, Space, Mark
- Flow Control** RTS/CTS, XON/XOFF, automatic RS-485 data flow control
- Baud Rate** 50 bps to 921.6 kbps

Serial Signals

- RS-232** TxD, RxD, DTR, DSR, RTS, CTS, DCD, RI, GND
- RS-422** TxD+, TxD-, RxD+, RxD-, GND
- RS-485** Data+, Data-, GND

LEDs

- System** OS ready, power 1 and power 2 ready
- LAN** Speed (10/100 Mbps), link/active (on connector)
- Serial** TxD, RxD

Mechanics

- Dimensions** 37 x 140 x 95 mm (W x H x D)
- Housing** Metal
- Weight** 600g
- Mounting** DIN-rail, Panel

Power Requirements

- Input Voltage** 12 ~ 48 V_{DC}, redundant dual inputs
- Power Consumption** 2.5 W

Software (uClinux)

- Kernel Version** 2.4.31
- Protocol Stack** TCP, UDP, IPv4, ICMP, ARP, SNMP V1, HTTP, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE
- File System** ROMFS/JFFS2
- System Utility** busybox, telnetd, ftp, sash, tftp
- Daemon** pppd, snmpd, telnetd, inted, ftpd, boa
- Linux Tool Chain** Arm-elf-gcc: C/C++ PC Cross Compiler
- uClibc** POSIX Standard Library

Environmental Limits

- Operating Temperature** -10 ~ 60° C (14 ~ 140° F)
- Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- Operating Humidity** 5 ~ 95 % RH

Regulatory Approvals

- EMC** CE, FCC Part 15 Subpart B (Class A)
- Hazardous Location** UL/cUL Class I, Division 2

Ordering Information

- EKI-1121L** 1-port Programmable Device Server
- EKI-1122L** 2-port Programmable Device Server

ADAM-4561

ADAM-4562

1-port Isolated USB to RS-232/422/485 Converter

1-port Isolated USB to RS-232 Converter



Specifications

General

- **Certifications** CE, FCC Part 15 Subpart B (Class A)
- **Connectors** USB: USB Type B (Type A to Type B cable provided)
Serial: Plug-in terminal (ADAM-4561) or DB9 male (ADAM-4562)
- **Enclosure** ABS+PC
- **Mounting** DIN-rail, stack, wall
- **Power Consumption** ADAM-4561: 270 mA @ 5 V (Typical)
300 mA @ 5 V (Max.)
ADAM-4562: 155 mA @ 5 V (Typical)
220 mA @ 5 V (Max.)

Communications

- **Data Bits** 5, 6, 7, 8
- **Error Detection** Parity error, frame error, serial break (ADAM-4562)
- **Max. Distance** 15 ft (4.6 m)
- **Parity Bits** ADAM-4561: None, Odd, Even
ADAM-4562: None, Odd, Even, Mark, Space
- **RS-232 Signals** ADAM-4561: 3-wire (Tx, Rx, GND)
ADAM-4562: 9-wire
- **Stop Bits** 1, 1.5, 2
- **Transmission Speed** ADAM-4561: 50 bps to 115.2 kbps
ADAM-4562: 75 bps to 115.2 kbps

Protection

- **Isolation Protection** ADAM-4561: 3,000 V_{DC} (RS-232/422/485)
ADAM-4562: 2,500 V_{DC}
- **Surge Protection** 3,000 V_{DC} (RS-485)

Software

- **Driver Support** Windows 2000/XP
- **Operating Temperature** 0 ~ 70° C (32 ~ 158° F)
- **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)
- **Operating Humidity** 20 ~ 95% RH

Features

- RS-232/422/485 port supported (only ADAM-4561)
- Transmission speed up to 115.2 kbps
- Isolation protection 3,000 V_{DC} provided for ADAM-4561 and 2,500 V_{DC} for ADAM-4562
- Automatic RS-485 data flow control
- No external power supply necessary
- Plug & Play installation
- No additional IRQs or I/O ports required
- Hot swap function supported

Ordering Information

- **ADAM-4561** 1-port Isolated USB to RS-232/422/485 Converter
- **ADAM-4562** 1-port Isolated USB to RS-232 Converter

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USB DAQ

USB-4604B

USB-4604BM

4-port RS-232 Serial to USB Converter with ESD Surge Protection

4-port Serial to USB Converter with ESD Surge Protection



Features

- Full compliance with USB V1.1 and V2.0 specifications
- RS-232/422/485 port supported
- Transmission speed up to 921.6 kbps
- Automatic RS-485 data flow control
- Bus-powered; no need for external power supply
- Plug & Play installation
- No additional IRQs or I/O ports required
- Hot swap function supported

Introduction

USB-4604 series allows PC users to connect a serial device to a system that use a USB interface. To attach the USB-4604B/4604BM to a PC, you don't need to open the chassis or power down your PC. Instantly get extra high-speed RS-232/422/485 ports. The power is derived from the USB port, so there are no power adapters to deal with. This makes the USB-4604B/4604BM especially suitable for modems, printers, POS systems and industrial control devices.

Supporting USB2.0 high speed, USB-4604B/4604BM features several powerful functions such as high-speed 921.6 kbps transmission, support for various operating systems, independent RS-232/422/485 ports and more. By simply plugging in a USB hub, USB-4604B and USB-4604BM eliminates the configuration issues associated with high-priced, older card solutions. You only have to install the drivers, no need to set cards slots, IRQ addresses, DMA channels, or device addresses. This reduces programming effort.

Specifications

General

- **Certifications** CE, FCC (Class A)
- **Connectors** 1 x USB Type B (Type A to Type B cable provided)
4 x DB9
- **Enclosure** ABS+PC
- **USB Cable** Max. 15ft (4.6 m)

Insert

- **Power Input** 10 to 48 V_{DC} (external) or 5 V_{DC} (Bus powered)
- **Power Consumption** 130 mA @ 5 V (Typical)
200 mA @ 5 V (Max.)

Communications

- **Data Bits** 5, 6, 7, 8
- **Parity** None, Odd, Even, Space, Mark
- **Stop Bits** 1, 1.5, 2
- **Transmission Speed** Up to 921.6 kbps

Protection

- **EFT Protection** 2,500 V_{DC}
- **ESD Protection** IC Embedded 16KV

Mechanism

- **Dimensions** 132 x 80 x 32 mm
- **Enclosure** ABS+PC
- **Mounting** DIN-rail, panel

Software

- **Driver Support** Windows 2000/XP/2003, Windows CE 5.0

Environment

- **Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- **Storage Temperature** -25 ~ 80° C (-13 ~ 176° F)
- **Operating Humidity** 20 ~ 95% RH

Ordering Information

- **USB-4604B** 4-port RS-232 to USB Converter w/ESD
- **USB-4604BM** 4-port RS-232/422/485 to USB Converter w/ESD