

Serial Device Servers

	Serial Device Server Ov	verview				
	Connect Your Devices to th	e eWorld	7-2			
	Serial Device Server Appli	cations	7-3			
	Serial Device Server Selec	tion Guide	7-4			
	Serial Device Servers					
	EKI-1521 EKI-1522	1-port RS-232/422/485 Serial Device Server 2-port RS-232/422/485 Serial Device Server	7-5			
	EKI-1524	4-port RS-232/422/485 Serial Device Server	7-6			
	EKI-1528 (New) EKI-1526 (New)	8-port RS-232/422/485 Serial Device Server 16-port RS-232/422/485 Serial Device Server	7-7			
	ADAM-4571/L ADAM-4570/L	1-port RS-232/422/485 Serial Device Server 2-port RS-232/422/485 Serial Device Server	7-9			
	Modbus Gateways					
	Modbus Gateway Solutions	1	7-10			
0000 00000 000000 00000000000000000000	EKI-1221 (New) EKI-1222 (New)	1-port Modbus Gateway 2-port Modbus Gateway	7-11			
P1 P2 Status	ADAM-4572	1-port Modbus Gateway	7-12			
LAN	Serial to USB Converter	S				
	ADAM-4561/4562	1-port Isolated USB to RS-232/422/485 Converter	7-12			
	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	7-13			
	Wireless Serial Device	Wireless Serial Device Servers				
Bornal ADIANTECH ADIANTECH	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	7-14			
	An					



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 Industrial Panel PC 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.









Automation Software

Touch Panel PC

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Fanless Box PC

Ethernet Switch

Device Server .

Ethernet I/O

Building Automation .

7-3

Serial Device Server Selection Guide



Serial Device Servers

Model Name	No. of	No. of	Ethernet	Sorial Type	Conn	ector	Paud Pata	Operating	Drivor	Dago
MOUEL NAME	Ethernet Port	Serial Port	Interface	Serial Type	Ethernet	Serial	Dauu nale	Mode	DIIVEI	гауе
EKI-1351	WLAN	1	802.11 b/g	RS- 232/422/485	SMA	DB9	50 ~ 921.6 kbps	Virtual COM, Data Mode, Control Mode	Windows 2000/XP/Vista	7-14
EKI-1352	WLAN	2	802.11 b/g	RS- 232/422/485	SMA	DB9	50 ~ 921.6 kbps	Virtual COM, Data Mode, Control Mode	Windows 2000/XP/Vista	7-14
EKI-1521	2	1	10/100 Mbps	RS- 232/422/485	RJ45	DB9	50 ~ 921.6 kbps	Virtual COM, Data Mode, Control Mode	Windows 2000/XP/Vista	7-5
EKI-1522	2	2	10/100 Mbps	RS- 232/422/485	RJ45	DB9	50 ~ 921.6 kbps	Virtual COM, Data Mode, Control Mode	Windows 2000/XP/Vista	7-5
EKI-1524	2	4	10/100 Mbps	RS- 232/422/485	RJ45	DB9	50 ~ 921.6 kbps	Virtual COM, Data Mode, Control Mode	Windows 2000/XP/Vista	7-6
EKI-1528	2	8	10/100 Mbps	RS- 232/422/485	RJ45	RJ45	50 ~ 921.6 kbps	Virtual COM, Data Mode, Control Mode	Windows 2000/XP/Vista	7-7
EKI-1526	2	16	10/100 Mbps	RS- 232/422/485	RJ45	RJ45	50 ~ 921.6 kbps	Virtual COM, Data Mode, Control Mode	Windows 2000/XP/Vista	7-7
ADAM-4571	1	1	10/100 Mbps	RS- 232/422/485	RJ45	DB9	50 ~ 921.6 kbps	Virtual COM, Data Mode, Control Mode	Windows 2000/XP/Vista	7-9
ADAM-4571L	1	1	10/100 Mbps	RS-232	RJ45	DB9	50 ~ 921.6 kbps	Virtual COM	Windows 2000/XP/Vista	7-9
ADAM-4570	1	2	10/100 Mbps	RS- 232/422/485	RJ45	RJ48	50 ~ 921.6 kbps	Virtual COM, Data Mode, Control Mode	Windows 2000/XP/Vista	7-9
ADAM-4570L	1	2	10/100 Mbps	RS-232	RJ45	RJ48	50 ~ 921.6 kbps	Virtual COM	Windows 2000/XP/Vista	7-9

Modbus Gateways

Madal Nama	No. of	No. of	Ethernet	Sovial Tuna	Connector		Boud Data	Operating	20	Daga
Mouel Name	Ethernet Port	Serial Port	Interface	Serial Type	Ethernet	Serial	Dauu nale	Mode	03	Faye
EKI-1221	2	1	10/100 Mbps	RS- 232/422/485	RJ45	DB9	50 ~ 921.6 kbps	Modbus RTU Master/Slave, Modbus ASCII Master/Slave	Windows 2000/XP/Vista	7-11
EKI-1222	2	2	10/100 Mbps	RS- 232/422/485	RJ45	DB9	50 ~ 921.6 kbps	Modbus RTU Master/Slave, Modbus ASCII Master/Slave	Windows 2000/XP/Vista	7-11
ADAM-4572	1	1	10/100 Mbps	RS- 232/422/485	RJ45	Screw Terminal	300 ~ 115.2 kbps	Modbus RTU Slave, Modbus ASCII Slave	Windows 2000/XP/Vista	7-12

USB to Serial Converters

Madal Nama	Interfece	e Serial Port	Carial Tura	David Data	Connector		Protection		Driver	Daga
wouel Name	Internace		Serial Type	Dauu nale	USB	Serial	Isolation	Surge	Driver	raye
ADAM-4561	USB 1.1	1	RS-232/422/485	50 ~ 115.2 kbps	Туре В	Screw terminal	3000 V _{DC} (RS-232/422/485)	3000 V _{DC} (RS-485)	Windows 2000/XP	7-12
ADAM-4562	USB 1.1	1	RS-232	75 ~ 115.2 kbps	Туре В	DB9	$2500 V_{DC}$	-	Windows 2000/XP	7-12
USB-4604B	USB 1.1/2.0	4	RS-232	50 ~ 921.6 kbps	Туре В	DB9	-	$2500 V_{DC}$	Windows 2000/XP/2003, CE5.0	7-13
USB-4604BM	USB 1.1/2.0	4	RS-232/422/485	50 ~ 921.6 kbps	Туре В	DB9	_	2500 V _{DC}	Windows 2000/XP/2003, CE5.0	7-13

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Automation Software

Touch Panel PC

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Fanless Box PC I

Ethernet Switch

Device Server

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EKI-1521 EKI-1522

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

2-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 .
- SNMP MIB-II for network management

Introduction

EKI-1521 and EKI-1522 feature two independent Ethernet ports and MAC addresses to provide a redundant network mechanism to guarantee Ethernet network reliability. EKI-1521 and EKI-1522 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 and EKI-1522 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 and EKI-1522, guaranteeing compatibility with legacy serial devices and enabling backward compatibility with existing software. With TCP server, TCP client, and UDP modes, EKI-1521 and EKI-1522 ensures 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 10/100 Mbps

8-pin RJ45

EKI-1521: 1 EKI-1522: 2

DB9 male

5, 6, 7, 8

1, 1.5, 2

Built-in 1.5 KV magnetic isolation

RS-232/422/485, software selectable

None, Odd, Even, Space, Mark

50 bps ~ 921.6 kbps

RS-485: Data+, Data-, GND

XON/XOFF, RTS/CTS, DTR/DSR

Built-in 15 KV ESD for all signals

Windows 2000/XP/Vista (x86)

TCP/UDP server (polling) mode

RS-422: TxD+, TxD-, RxD+, RxD-, GND

RS-232; TxD, RxD, CTS, RTS, DTR, DSR, DCD, RI, GND

Advantech Serial Device Server Configuration Utility

COM port redirection mode (Virtual COM)

TCP/UDP client (event handling) mode

Pair connection (peer to peer) mode

SNMP, HTTP, DNS, SMTP, ARP, NTP

SNMP MIB-II

- Speed
- No. of Ports .
- Port Connector
- Protection

Serial Communications

- Port Type
- No. of Ports
- Port Connector
- Data Bits
- Stop Bits
- Parity
- Flow Control **Baud Rate**
- Serial Signals
- Protection

Software

- Driver Support
- Utility Software
- **Operation Modes**
- Configuration
- Protocol
- Management

Mechanics

- Dimensions (W x H x D) 37 x 140 x 95 mm

- DIN-rail, panel EKI-1521: 592g

General

Power Requirements

- Power Input
- **Power Consumption**

- Storage Temperature
- 5~95% RH

Regulatory Approvals

- EMC Safetv UL (UL60950-1) EKI-1521: 1,102,913 hrs MTBF EKI-1522: 1,000,154 hrs

Ordering Information

- EKI-1521
- 1-port RS-232/422/485 Serial Device Server 2-port RS-232/422/485 Serial Device Server

7-5

Serial Comm. Card 0 LISB DAC RS-485 Ethernet I/C Building Automation .

Enclosure Mounting

- LED Indicators
- Reboot Trigger

$12 \sim 48 V_{DC}$, redundant dual inputs Terminal block

System: Power, System Status LAN: Speed, Link/Active



- Weight
 - Metal with solid mounting hardware EKI-1522: 600g

Serial: Tx. Rx

Built-in WDT (watchdog timer)

- **Power Connector**
- EKI-1521: 2 W EKI-1522: 2.5 W
- Operating Temperature 0 ~ 60° C (32 ~ 140° F)
- -20 ~ 80° C (-4 ~ 176° F)
- Hazardous Location UL/cUL Class I, Division 2

- **Environment**
- **Operating Humidity**

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

Windows utility, Telnet console, Web Browser ICMP, IP, TCP, UDP, BOOTP, DHCP, Auto IP, Telnet, EKI-1522



EKI-1524

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 Window 2000/XP/Vista drivers
- Automatic RS-485 data flow control .
- SNMP MIB-II for network management

Introduction

EKI-1524 features two independent Ethernet ports and MAC addresses to provide a redundant network mechanism to guarantee Ethernet network reliability. The EKI-1524 is a network-based, serial device server for connecting four RS-232/422/485 devices, such as CNCs, PLCs, scales, and scanners, directly to a TCP/IP network. Once connected through EKI-1524 device server, your serial device will be able to send and receive data on a network like any other network device. EKI-1524 provide a simple and cost-effective way to bring the advantages of remote management and data accessibility to thousands of devices that can not connect to a network.

EKI-1500 series device servers provide various operations: COM port redirection (Virtual COM port), TCP server, client and UDP mode. After Advantech redirection software installation, standard serial operating calls are transparently redirected to the EKI-1500 series device servers, guaranteeing compatibility with legacy serial devices and enabling backward compatibility with existing software. EKI-1524 also supports serial tunneling, allowing two native serial devices to communicate over a network.

Specifications

Ethernet Communications

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

Δ

DB9 male

5, 6, 7, 8

1, 1.5, 2

RS-232/422/485, software selectable

None, Odd, Even, Space, Mark

50 bps ~ 921.6 kbps

RS-485: Data+, Data-, GND

XON/XOFF, RTS/CTS, DTR/DSR

Built-in 15 KV ESD for all signals

Windows 2000/XP/Vista (x86)

Pair connection (peer to peer) mode Windows utility, Telnet console, Web Browser

SNMP, HTTP, DNS, SMTP, ARP, NTP

SNMP MIB-II

ICMP, IP, TCP, UDP, BOOTP, DHCP, Auto IP, Telnet,

RS-422: TxD+, TxD-, RxD+, RxD-, GND

RS-232: TxD, RxD, CTS, RTS, DTR, DSR, DCD, RI, GND

Protection

Serial Communications

- Port Type
- No. of Ports
- Port Connector .
- Data Bits
- Stop Bits
- Parity
- Flow Control **Baud Rate**
- Serial Signals
- Protection

Software

- Driver Support
- 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
- Configuration Protocol
- Management

Mechanics

- Dimensions (W x H x D) 55 x 140 x 95 mm
- Enclosure
 - Metal with solid mounting hardware Mounting DIN-rail, panel
 - Weight
- General
- LED Indicators

Reboot Trigger

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

Power Requirements

Power Input $12 \sim 48 V_{\text{DC}}$, redundant dual inputs

4 W

668g

- **Power Connector** Terminal block
- **Power Consumption**

Environment

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

Regulatory Approvals

lass A)

Ordering Information

- EKI-1524
 - 4-port RS-232/422/485 Serial Device Server

EKI-1528 EKI-1526

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

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



- 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 UPD operation modes
- Provides rich configuration methods: Windows utility, Telnet console, Web
- Built-in 15 KV ESD protection for all serial signals
- SNMP MIB-II for network management
- Built-in buzzer for easy location
- 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

No. of Ports

- Speed
- 10/100 Mbps, auto MDI/MDIX 2

8-pin RJ45

EKI-1528: 8 EKI-1526: 16

8-pin RJ45

5, 6, 7, 8

1, 1.5, 2

IEEE 802.3, IEEE 802.3u

Built-in 1.5 KV magnetic isolation

RS-232/422/485, software selectable

None, Odd, Even, Space, Mark

XON/XOFF, RTS/CTS, DTR/DSR

RS-422: TxD+, TxD-, RxD+, RxD-, GND RS-485: Data+, Data-, GND

RS-232: TxD, RxD, CTS, RTS, DTR, DSR, DCD, GND

50 bps ~ 921.6 kbps

15 KV ESD for all signals

- Port Connector
- Protection

Serial Communications

- Port Type
- No. of Ports
- Port Connector
- Data Bits
- Stop Bits
- Parity
- Flow Control
- Baud Rate
- Serial Signals
- Protection

Software

- Driver Support Windows 2000/XP/Vista (x86) Utility Software Advantech Serial Device Server Configuration Utility
- Operation Modes

Configuration

- TCP/UDP server (polling) mode TCP/UDP client (event handling) mode
 - Pair connection (peer to peer) mode
 - Windows utility, Telnet console, Web Browser, serial console

COM port redirection mode (Virtual COM)

Protocols

ICMP, IP, TCP, UDP, BOOTP, DHCP, Auto IP, Telnet, SNMP, HTTP, DNS, SMTP, ARP, HTTPS, SSL, SSH, NTP SNMP MIB-II

Management

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 $100 \sim 240 \; V_{\text{AC}}, \, 47 \sim 63 \; \text{Hz}$ **Power Consumption** EKI-1528: 8 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

Automation Software

AD\ANTECH

- EKI-1526: 10 W



EKI-1528 EKI-1526



Physical Views



EKI-1526: Rear View



Ordering Information

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

*All items include 1pc OPT1J

Accessories

- OPT1I
- OPT1J1702002600
- 17020020001702002605
- 1702031801
- 1702031836
- 1 m RJ45 to DB9 Male Cable 30 cm RJ45 to DB9 Male Cable Power Cable US Plug 1.8m Power Cable EU Plug 1.8m Power Cable UK Plug 1.8m
- Power Cable China/Australia Plug 1.8m

ADAM-4571/L ADAM-4570/L

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

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





Specifications

Ethernet Communications

- Compatibility IEEE 802.3, IEEE 802.3u
- Speed

10/100 Mbps 1

- No. of Ports
- 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 (x86)
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 Utility Software Advantech Serial Device Server Configuration Utility
 Operation Modes COM port redirection (Virtual COM) (ADAM-4571L/4570L only supports this mode) TCP/UDP server (polling) mode

TCP/UDP client (event handling) mode

Pair Connection (peer to peer) mode

Mechanics

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

General

LED Indicators

Reboot Trigger

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

Power Requirements

- Power InputPower Connector
- Power Connector
 Power Consumption
- Terminal block ADAM-4571/4571L: 1.5 W ADAM-4570/4570L: 2 W

 $10 \sim 30 V_{DC}$

Environment

- Operating Temperature $0 \sim 60^{\circ} \text{ C} (32 \sim 140^{\circ} \text{ F})$
- Storage Temperature -20 ~ 80° C (-4 ~ 176° F)
- Operating Humidity 5 to 95% RH

Regulatory Approvals

- EMC

Ordering Information

ADAM-4571

ADAM-4570

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

CE, FCC Part 15 Subpart B (Class A)

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

*ADAM-4570/4570L includes 2pcs OPT1A

Accessories

- OPT1AOPT1D
- 1 m RJ48 to DB9 Male Cable 30 cm RJ48 to DB9 Male Cable







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 networked-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.



EKI-1221 EKI-1222



•

1-port Modbus Gateway

2-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 (x86)
- 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 networked-based devices. The EKI-1221 and EKI-1222 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 and EKI-1222 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

Port Connector

Speed No. of Ports

.

10/100 Mbps 2

EKI-1221: 1

EKI-1222: 2

DB9 male

7,8

1.2

8-pin RJ45 Built-in 1.5 KV magnetic isolation

RS-232/422/485, software selectable

None, Odd, Even, Space, Mark

XON/XOFF, RTS/CTS, DTR/DSR

RS-422: TxD+, TxD-, RxD+, RxD-, GND

RS-232: TxD, RxD, CTS, RTS, DTR, DSR, DCD, RI, GND

50 bps ~ 921.6 kbps

IEEE 802.3, IEEE 802.3u

Serial Communications

Port Type

Protection

- No. of Ports
- Port Connector
- Data Bits
- Stop Bits
- Parity
- Flow Control
- Baud Rate
- Serial Signals
- Protection

Software

 OS Support Windows 2000/XP/Vista (x86) Utility Software Advantech Serial Device Server Configuration Utility Operation Modes Modbus RTU Master/Slave mode Modbus ASCII Master/Slave mode

RS-485: Data+, Data-, GND

15 KV ESD for all signals

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) 37 x 140 x 95 mm
 - Metal with solid mounting hardware Enclosure

Terminal block

EKI-1221: 2 W

EKI-1222: 2.5 W

- Mounting
- Weiaht
- DIN-rail, panel mount EKI-1221: 592a EKI-1222: 600g

 $12 \sim 48 \; V_{\text{DC}},$ redundant dual inputs

Power Requirements

- Power Input **Power Connector**
- **Power Consumption**

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) Safety UL (UL60950-1) UL/cUL Class I, Division 2
- Hazardous Location

Ordering Information

EKI-1221 EKI-1222





1-port Modbus Gateway 1-port Isolated USB to

RS-232/422/485 Converter



IEEE 802.3, IEEE 802.3u

10/100 Mbps

RS-232/422/485

Plug-in terminal block

300 bps ~ 115.2 kbps RS-232: TxD, RxD, GND

None, Odd, Even, Mark, Space

Windows 2000/XP/Vista (x86)

RS-422: TxD+, TxD-, RxD+, RxD-, GND RS-485: Data+, Data-, GND

Advantech Serial Device Server Configuration Utility

Modbus/RTU slave mode, Modbus/ASCII slave mode

8-pin RJ45

7, 8 1, 2

ADAM-4561/4562



Specifications

Ethernet Communications

- Compatibility
- Speed
- Port Connector

Serial Communications

- Port Type
- No. of Ports
- Port Connector
- Data Bits
- Stop Bits
- . Parity
- Baud Rate
- Data Signals

Software

OS Support

Utility Software

Operation Mode

Mechanics

- Dimensions (H x W x D) 70 x 130 x 30 mm ABS+PC with solid mounting hardware
- Enclosure
- Mounting

General

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

DIN-rail, stack, wall

Power Requirement

- Power Input
- Power Consumption

Environment

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

Ordering Information

- ADAM-4572

1-port Modbus Gateway

 $10 \sim 30 V_{DC}$

1.5 W

Specifications

General

- Certifications Connectors
- Enclosure
- Mounting
- Power Consumption

Communications

- Max. Distance

- Transmission Speed

- Isolation Protection

Software

- Driver Support
- Operating Temperature 0 ~ 70° C (32 ~ 158° F)
- Storage Temperature
- Operating Humidity

Ordering Information

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

7-19 AD\ANTECH **Serial Device Servers**

ABS+PC DIN-rail, stack, wall ADAM-4561: 270 mA @ 5 V (Typical) 300 mA @ 5 V (Max.) ADAM-4562: 155 mA @ 5 V (Typical) 220 mA @ 5 V (Max.)

CE, FCC Part 15 Subpart B (Class A)

(ADAM-4562)

5.6.7.8

15 ft (4.6 m)

USB: USB Type B (Type A to Type B cable provided)

Serial: Plug-in terminal (ADAM-4561) or DB9 male

Parity error, frame error, serial break (ADAM-4562)

- Data Bits
- Error Detection
- Parity Bits
- RS-232 Signals
- Stop Bits

Protection

- Surge Protection

- Windows 2000/ME/XP

 - -25 ~ 85° C (-13 ~ 185° F)
 - 20~95% RH

ADAM-4561: None, Odd, Even ADAM-4562: None, Odd, Even, Mark, Space ADAM-4561: 3-wire (Tx, Rx, GND) ADAM-4562: 9-wire

- 1, 1.5, 2 ADAM-4561: 50 bps to 115.2 kbps
- ADAM-4562: 75 bps to 115.2 kbps
- - ADAM-4561: 3,000 V_{DC} (RS-232/422/485) ADAM-4562: 2,500 V_{DC} 3,000 V_{DC} (RS-485)

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
- Connectors
- Enclosure
- USB Cable

Insert

- Power Input
- Power Consumption
- 130 mA @ 5 V (Typical) 200 mA @ 5 V (Max.)

CE, FCC (Class A)

Max. 15ft (4.6 m)

4 x DB9

ABS+PC

Communications

- Data Bits
- Parity Stop Bits

Protection

- EFT Protection
- ESD Protection
- $2,500 V_{\text{DC}}$ IC Embedded 16KV

Mechanism

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

Software

Driver Support

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 4-port RS-232/422/485 to USB Converter w/ESD

Windows 2000/XP/2003, Windows CE 5.0

- USB-4604BM
- Esis Pty Ltd Ph 02 9481 7420 www.esis.com.au



5, 6, 7, 8

1 x USB Type B (Type A to Type B cable provided)

10 to 48 V_{DC} (external) or 5 V_{DC} (Bus powered)

None, Odd, Even, Space, Mark 1, 1.5, 2

 Transmission Speed up to 921.6 kbps

EKI-1351 EKI-1352

1-port RS-232/422/485 to 802.11b/q 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



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

11/54 Mbps

Reverse SMA

EKI-1351: 1 EKI-1352: 2

DB9 male

5, 6, 7, 8

1, 1.5, 2

Open space 100m

Infrastructure, Ad-Hoc

RS-232/422/485, software selectable

None, Odd, Even, Space, Mark

RS-485: Data+, Data-, GND

Windows 2000/XP/Vista (x86)

15 KV ESD for all signals

RS-422: TxD+, TxD-, RxD+, RxD-, GND

TCP/UDP client (event handling) mode

Pair connection without AP (peer to peer) mode

RS-232: TxD, RxD, CTS, RTS, DTR, DSR, DCD, RI, GND

50 bps ~ 921.6 kbps

- Speed
- Network Mode
- Antenna Connector
- Free Space Range

Serial Communications

- Port Type
- No. of Ports
- Port Connector
- Data Bits
- Stop Bits
- Parity **Baud Rate**
- Serial Signals
- Protection

Software

- Driver Support
- Utility Software
- Advantech Serial Device Server Configuration Utility Operation Modes COM port redirection mode (Virtual COM) TCP/UDP server (polling) mode

Mechanics

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

 $12 \sim 48 \; V_{\text{DC}},$ redundant dual inputs

General

LED Indicators

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

Terminal block

Power Requirements

- Power Input •
- **Power Connector**
- **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) • Safetv UL (UL60950-1)
- Hazardous Location UL/cUL Class I. Division 2

Ordering Information

- EKI-1351 EKI-1352
- 1-port 802.11b/g WLAN Serial Device Server 2-port 802.11b/g WLAN Serial Device Server
- 7-14 AD\ANTECH **Serial Device Servers**