BLACK BOX®
NETWORK SERVICES

Terminal Servers • Device Servers • Secure Console Servers

Use advanced IP technology to link serial RS-232, RS-422, or RS-485 devices to your Ethernet network.

FEATURES

» Enable you to access a single serial device over your Ethernet network.
» Choose from DB9 male, DB25 male, DB25 female, or RJ-45 connectors.
» Selectable RS-232, RS-422, or RS-485 serial interface on all models.
» Network side automatically adapts to 10- or 100-Mbps network speed, as well as for duplex mode.
» Full bidirectional modem support.
» Completely manageable via a network link, a Web browser, or Telnet™.
» Support SNMP management.
» Includes TTY/COM port emulation software and Device Management software for centrally controlling multiple terminal servers.
» Ideal for connecting serial-based COM port, UDP or TCP socket-based applications to remote devices.
» Built-in surge protection on all interfaces.
» 66-MHz, 87-MIPS processor.

LES4011A

10/100 Terminal Servers

For simple, single-port serial connectivity with a variety of interface options, choose BLACK BOX® 10/100 Terminal Servers.

With these compact devices, you can provide basic device server functionality, linking to time clocks, sensors, scanners, plotters, and other RS-232, RS-422, or RS-485 serial equipment in your office or industrial application.

To allow serial devices to communicate with your LAN, just attach the terminal servers to your TCP/IP networks. You can also connect them to terminals for multi-user UNIX systems, terminal emulation PCs, modems, and all types of serial printers.

The software-selectable EIA-232/422/485 DB9, DB25, or RJ-45 port on the servers features full modem and hardware flow control and speeds up to 230 kbps.

For network-side links, the servers' RJ-45 port adapts to either Ethernet or Fast Ethernet connectivity and half- or full duplex mode, making them easy to use in legacy environments. You can also control how the data coming from a serial device is packetized before forwarding the packet onto the LAN network.

What's more, the servers come with a COM port redirector utility that allows applications to talk to serial devices across a network just as if the serial devices were directly attached to the server. The utility enables you to map the baud rate of the host COM port to a higher baud rate for the serial line connecting the serial device and one of the 10/100 Terminal Servers.

The terminal servers also support serial data tunneling between devices across an IP network, and because they're fully next-generation Internet Protocol Version 6 (IPv6) compliant, they can be used in networks that have been upgraded to IPv6 in order to gain a lot larger IP address space and establish more robust IPsec security. The terminal servers can also be set up to automatically obtain an IP address from a local network running a DHCP/BOOTP server.

To prevent unauthorized network access, the terminal servers have a comprehensive suite of security features, including trusted host filtering and the ability to disable individual services.

You can configure the terminal servers multiple ways, including via direct connections to the serial port or via its easy-configuration wizard. But to enable fully functional Windows® based terminal server management, use the included Device Management software. It enables you to assign IP addresses to the 10/100 Terminal Servers, perform firmware updates, create downloadable configuration files, view statistics, and more.

The 10/100 Terminal Servers also include a browser-based configuration/management tool and a window-oriented menu interface, as well as a CLI-based management option. In addition, the servers support SNMP for integration into managed networks. Using SNMP, you can remotely configure the servers and gather statistics.

To minimize the number of modem connections on your network, take advantage of the terminal servers' virtual modem feature. It provides "modem-like" communication between two 10/100 Terminal Servers on a network or between a terminal server and a host. Virtual modem links are very useful when you want to link multiple devices with a central site, and with a single 10/100 Terminal Server at each end, there's no need for multiple modems—thereby saving you the associated costs of calls and connections. Data is sent in raw format from the virtual modem and can be received by another 10/100 Terminal Server or a host.

The compact terminal servers are housed in a solid steel enclosure and boast ESD protection against electrostatic discharge and power surges. Plus, for industrial applications, they're DIN-rail mountable with the optional DIN Rail Mounting Kit (**page 9**).

TECH SPECS

Management — Web browser; Device Management software (included); Telnet, shared console port; SNMP, MIB II, read and write
Processor — 66-MHz, 87-MIPS PowerQUICC MPC852T
Protocols — IPV6, IPV4, TCP/IP, CIDR, ARP, RARP, UDP, UDP Multicast, ICMP, BOOTP, DHCP, TFTP, Telnet, Raw, Reverse Telnet, RCP, HTTP
CE Approval — Yes
Interface — Serial: RS-232, RS-422, RS-485, software selectable; Network: 10BASE-T/100BASE-TX
Connectors — Ethernet network: All: (1) RJ-45 (10 Mbps/100 Mbps); Serial: LES4011 models: (1) DB9 M;
   LES4012 models: (1) DB25 M;
   LES4013 models: (1) DB25 F;
   LES4014 models: (1) RJ-45
Indicators — LEDs: (1) Power/Ready, (1) Link status/LAN speed, (1) Network link activity, (1) Serial Tx and Rx data
Environmental — Operating temperature: 32 to 131°F (0 to 55°C); Storage temperature: -40 to +150°F (-40 to +66°C)
Power — LES4011A–LES4014A: 120 VAC, 50 Hz, external, with U.S. cord; LES4011E-UK–LES4014E-UK: 230 VAC, 60 Hz, external, with U.K. cord; LES4011E–LES4014E: 230 VAC, 60 Hz, external, with European cord
Size — 0.9"H x 2.5"W x 3.5"D (2.3 x 6.4 x 8.9 cm)
Weight — 0.5 lb. (0.2 kg)

Item			Code
10/100 Terminal Servers, RS-232/422/485			
1-Port	DB9 Male	U.S. Power Cord	**LES4011A**
		U.K. Power Cord	**LES4011E-UK**
		European Power Cord	**LES4011E**
	DB25 Male	U.S. Power Cord	**LES4012A**
		U.K. Power Cord	**LES4012E-UK**
		European Power Cord	**LES4012E**
	DB25 Female	U.S. Power Cord	**LES4013A**
		U.K. Power Cord	**LES4013E-UK**
		European Power Cord	**LES4013E**
	RJ-45	U.S. Power Cord	**LES4014A**
		U.K. Power Cord	**LES4014E-UK**
		European Power Cord	**LES4014E**

For DIN rail mounting options, see page 9.

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NETWORK SERVICES

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FEATURES

» Access serial devices securely over your 10- or 100-Mbps Ethernet network.

» Use to connect your LAN to RS-232/422/485 serial ports.

» Extensive encryption and authentication features protect data and access to serial devices across your network.

» Boast 128-, 192-, and 256-bit AES, 3DES, Blowfish, and CAST128, plus ARCFOUR or ARCTWO data encryption across the LAN via SSH and SSL.

» Software-selectable interface prevents tampering in the field.

» Easy to manage through your LAN, a Web browser, or direct serial link.

» IEEE802.3af Power over Ethernet (PoE) versions suit areas without readily available power outlets.

» Models available with a built-in modem.

» Feature a 66-MHz, 87-MIPS processor.

» Built-in surge protection on all interfaces.

10/100 Secure Device Servers

For extensive security, flexibility, and next-generation IPv6 technology for serial connectivity, order the BLACK BOX® 10/100 Secure Device Servers.

Ideal for applications requiring remote device management, as well as data capture and monitoring functions, the device servers enable you to use your Ethernet network to access remote RS-232/422/485 ports on serial equipment.

The device servers function as Ethernet communications and terminal servers so you can connect your serial devices directly to your LAN. The performance and flexibility of the Secure Device Servers allows you to use a wide range of high-speed devices in complex application environments.

The device servers work in any server environment running TCP/UDP/IP. Using an IP network, you can access remote serial ports on PBXs, servers, routers, scanners, storage equipment, as well as terminals for multiuser UNIX® systems and data-acquisition equipment in industrial and PoS retail environments.

Models are available with one, two, or four serial (DB9, DB25, or RJ-45) ports. For network-side links, all 10/100 Secure Device Servers feature an autonegotiating 10-/100-Mbps RJ-45 connector that adapts to the speed and duplex of your connected LAN.

Extra secure and IPv6 compliant.

For peace of mind, the Secure Device Servers boast security features that protect your sensitive data, such as private, confidential holder information processed and sent across a corporate or public network by a credit card reader or register at a retail checkout.

The device servers support all major encryption ciphers such as AES, 3DES, RC4, RC2, and CAST128. Standard encryption tools include Secure Shell (SSH) and Secure Sockets Layer (SSL), and access is limited to authorized users via authentication schemes, such as RADIUS, TACACS+, LDAP, Kerberos, NIS, and RSA Security's SecurID tokens.

In addition to enabling PPP authentication via PAP or CHAP, you can lock ports and set up idle port timers, supervisory and port (line) passwords, per-user access level assignments, and event-related e-mail alert notifications. Trusted host filtering allows only those hosts that have been configured in the device server to access it. You can also individually disable daemons/services that aren't being used by the device server.

What's more, because the 10/100 Secure Device Servers have a software-selectable EIA/RS-232/422/485 interface, you can prevent mechanical tampering in the field.

Because they're Internet Protocol Version 6 (IPv6) compliant, they can be used in networks that have upgraded to IPv6 in order to gain a lot larger IP header space and establish more robust IPsec security. The terminal servers can also be set up to automatically obtain an IP address

TECH SPECS

Management — Web browser; Device Management software (included); Telnet, shared console port; SNMP, MIB II, read and write; Syslog

Port Buffering — 256K per port or 3DES encrypted to NFS server

Processor — 66 MHz, 87 MIPS

Protocols — IPv6, IPv4, TCP/IP, Reverse SSH, SSH, SSL, CIDR, RIPV2/MD5, ARP, RARP, UDP, UDP Multicast, ICMP, BOOTP, DHCP, TFTP, SNTP, Telnet, raw, reverse Telnet, LPD, RCP, DNS, WINS, HTTP, HTTPS, SMTP, SNMPV3, PPP, PAP/CHAP, SLIP, CSLIP

Security and Authentication — SSHV1 and SSHV2; SSL V3.0/TLS V1.0, SSL V2.0 SSL Server and SSL client mode capability; encryption: AES (256/192/128), 3DES, DES, Blowfish, CAST128, ARCFOUR (RC4), ARCTWO (RC2); hashing algorithms: MD5, SHA-1, RIPEMD160, SHA1-96, MD5-96; key exchange: RSA, EDH-RSA, EDH-DSS, ADH; X.509 certificate verification: RSA, DSA; certificate authority (CA) list; local database; RADIUS authentication and accounting; TACACS+, LDAP, NIS, Kerberos; RSA SecureID-agent or via RADIUS; IP address filtering; disable unused daemons

Serial Ports — Software selectable to RS-232, RS-422, or RS-485; full modem and hardware flow control; 50 bps to 230 kbps for EIA-232; up to 230 kbps for EIA-422/485; Sun Break Safe; full bidirectional modem support; 15-Kv ESD protection on all signals

CE Approval — Yes

Connectors — Ethernet network: All: (1) RJ-45 (10 Mbps/100 Mbps); Serial (RS-232/RS-422/RS-485): LES5011 models: (1) DB9 M; LES5012 models: (1) DB25 M; LES5013 models: (1) DB25 F; LES5014–LES5016A models, LEE9011E models: (1) RJ-45; LES5024A, LEE9024E models, LES5044A, LEE9044E models, LES5045 models: (2) RJ-45; Modem: LES5016A, LEE9011E models: (1) RJ-11

Indicators — LEDs: Per unit: (1) Power/Ready; Per Ethernet port: (1) Network Link activity; Per serial port: (1) Tx and Rx data

Environmental — Operating temperature: 32 to 131°F (0 to 55°C); Storage temperature: -40 to +150°F (-40 to +66°C)

Power — AC input: LES5011A–LES5014A, LES5016A, LES5024A, LES5044A: 120 VAC, 50 Hz, external, with U.S. cord; LES5011E-UK–LES5014E-UK, LEE9011E-UK, LEE9024E-UK, LEE9044E-UK: 100–230 VAC, 50–60 Hz, external, with U.K. cord; LES5011E–LES5014E, LEE9011E, LEE9024E, LEE9044E: 100–230 VAC, 50–60 Hz, external, with European cord; PoE input: LES5015 models, LES5045 models only: IEEE 802.3af compliant data pins (½, ⅜) or unused pins (⅝, ⅞), external power 9–30 VDC, 4.8 watts, standard barrel socket; power over serial cable (+5V reg., 1W max.)

Size — 4-port models: 1.1"H x 3.2"W x 4.4"D (2.8 x 8.1 x 11.2 cm); All others: 0.9"H x 2.5"W x 3.5"D (2.3 x 6.4 x 8.9 cm)

Weight — 4-port models: 0.8 lb. (0.4 kg); All others: 0.5 lb. (0.2 kg)

10/100 Secure Device Servers (CONTINUED)

from a local network running a DHCP/BOOTP server.

Plus the included COM redirect software provides fixed TTY or COM ports so server-based applications can communicate accurately with serial devices in encrypted or clear text modes.

Manage via the network, a browser, or a serial link.

Secure Device Servers are easy to configure and manage. You can use the included Device Management software, a Windows based configuration tool, that connects via an Ethernet link. This software gives you a way to control multiple device servers from a central site and ensures maximum uptime for your remote equipment. Assign an IP address to new device servers, update firmware, create configuration files, view statistics, and more with the software.

Or connect via a Web browser using its included WebManager software. You just open your browser and type in the IP address of the device server that you want to manage/configure.

You can also connect directly via a serial port using a serial terminal or terminal emulation software, through a modem connection to the serial port (PPP/SLIP configured for remote access by a Telnet session), or from the network through the Ethernet interface using reverse Telnet or reverse SSH.

Port buffering features enable you to capture and hold local and remote serial port activity in memory for viewing and troubleshooting at a later stage without affecting the normal operation of the serial ports.

The device servers also support SNMP for integration into managed networks.

No power outlets nearby? No problem.

Need to set up serial port connections in out-of-the-way areas without nearby AC power outlets? Then order the Power over Ethernet (PoE) models. They operate as powered devices (PDs) according to IEEE 802.3af PoE specifications and support connections to 802.3af-compliant end-span and mid-span power source equipment (PSE). Operating as PDs, the PoE Secure Device Servers draw up to 13 watts of DC power via UTP data cables connected on the Ethernet side instead of from power cords. PSE power can be through two unused twisted-pair wires (on 10 /100 Mbps only) or through two "phantom power" data pairs (100 Mbps).

The PoE models also feature inrush current protection that guards against input current surges that may occur during powerup. The PoE 10/100 Secure Device Servers begin with a low current draw stage, then switch to a high-current stage to allow them to draw their required power up to a maximum of 12.95 watts.

Models available with a built-in dial-up modem.

For remote and Internet access, you can attach the device servers to a modem. Or you can just order the models with an integrated V.92/V.90 data modem built in! These dialup models support PPP connections, and the onboard RJ-11 modem connection provides a more secure and reliable link to the POTS network than other dongle-style RJ-11 or RJ-45 modems available.

All 10/100 Secure Device Servers support virtual modem links between two device servers on a network or between a terminal server and a host. With a 10/100 Secure Device Server at each end of the link, there's no need for multiple modems in your application.

They also can be used for serial tunneling, in which two device servers are connected back-to-back over Ethernet to virtually link two serial ports.

Item			Code
10/100 Secure Device Servers, RS-232/422/485			
1-Port	DB9 Male	U.S. Power Cord	**LES5011A**
		U.K. Power Cord	**LES5011E-UK**
		European Power Cord	**LES5011E**
	DB25 Male	U.S. Power Cord	**LES5012A**
		U.K. Power Cord	**LES5012E-UK**
		European Power Cord	**LES5012E**
	DB25 Female	U.S. Power Cord	**LES5013A**
		U.K. Power Cord	**LES5013E-UK**
		European Power Cord	**LES5013E**
	RJ-45	U.S. Power Cord	**LES5014A**
		U.K. Power Cord	**LES5014E-UK**
		European Power Cord	**LES5014E**
	RJ-45, PoE	U.S. Power Cord	**LES5015A**
		U.K. Power Cord	**LES5015E-UK**
		European Power Cord	**LES5015E**
1-Port with Modem			
	RJ-45	U.S. Power Cord	**LES5016A**
		U.K. Power Cord	**LEE9011E-UK**
		European Power Cord	**LEE9011E**
2-Port	RJ-45	U.S. Power Cord	**LES5024A**
		U.K. Power Cord	**LEE9024E-UK**
		European Power Cord	**LEE9024E**
4-Port	RJ-45	U.S. Power Cord	**LES5044A**
		U.K. Power Cord	**LEE9044E-UK**
		European Power Cord	**LEE9044E**
	RJ-45, PoE	U.S. Power Cord	**LES5045A**
		U.K. Power Cord	**LES5045E-UK**
		European Power Cord	**LES5045E**

For DIN-rail mounting options, see page 9.

LES5014A

LES5016A

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» Access up to 16 serial devices securely over your Ethernet network.
» Autosense 10-, 100-, or 1000-Mbps connections.
» Software-selectable RS-232/422/485 serial interface prevents tampering in the field.
» Easy to manage through a network link, Web browser, or direct serial connection.
» Extensive encryption and authentication features protect data and access to serial devices across your network.
» Secured with 128-, 192- and 256-bit AES, 3DES, Blowfish, and CAST128, plus ARCFOUR or ARCTWO data encryption across the LAN via SSH and SSL.
» Include COM redirect software to provide true remote serial ports over an Ethernet LAN.
» Support e-mail event notification.
» Feature a 400-MHz, 750-MIPS, 32-bit processor.
» Built-in surge protection on all interfaces.
» Compact 1U rackmount chassis.

10/100/1000 Secure Device Servers, Rackmount

Access up to 8 or 16 serial devices securely over a mixed-speed Ethernet network with the 10/100/1000 Secure Devices Servers, Rackmount from Black Box.

With software-selectable serial interfaces for connection to RS-232, RS-422, and RS-485 devices, the flexible device servers enable you to quickly link standard office equipment, data-acquisition devices, and serial hardware on your factory floor to your Ethernet, Fast Ethernet, or Gigabit Ethernet LAN.

Use them to securely access remote serial ports on equipment such as PBXs, servers, routers, network storage equipment, and security appliances through an IP network. You can even customize baud rates for unique speed requirements.

And there's no need to worry about data security. The device servers use Secure Shell (SSH) and Secure Sockets Layer (SSL) encryption and fully support AES, 3DES, RC4, RC2, and CAST128 ciphers. These enable you to safeguard sensitive data communications, such as confidential user account information processed by credit card readers or other serial equipment in retail applications.

You can limit access to authorized users by taking advantage of the device servers' extensive authentication scheme, including RADIUS, TACACS+, LDAP, Kerberos, NIS, and RSA Security's SecurID tokens.

The device servers' compact 1U rackmount chassis is ideal for high-density enterprise applications. The included brackets enable you to mount them from the front or the back of the chassis, depending on your environment. Up to five device servers can be mounted in a 5U rack.

The 10/100/1000 Secure Device Servers also support Internet Protocol Version 6 (IPv6), making them compatible with networks that have upgraded to this new IP standard. Plus the included COM redirect software provides fixed TTY or COM ports so server-based applications can communicate accurately with serial devices across IP networks in encrypted or clear text modes. They're also capable of establishing "pseudo" links via Telnet, Rlogin, UDP, or TCP socket-based applications to remote devices.

You also have a number of configuration and management options. The included Windows based Device Management software enables you to centrally control multiple device servers, so you get maximum uptime for your remote equipment. Assign IP addresses to new 10/100/1000 Secure Device Servers, update firmware, create configuration files, view statistics, and more.

Or configure and manage a device server via a Web browser. With the included WebManager software, just type an IP address into your browser to access the device server.

You can also connect the device servers directly via a serial port link with serial terminal or terminal emulation software, through a modem connection to the serial port (PPP/SLIP configured for remote access by a Telnet session), or from the network through the Ethernet interface using reverse Telnet or reverse SSH.

The device servers also support SNMP for integration into managed networks.

Port buffering enables you to capture and hold local and remote serial port activity in memory for viewing and troubleshooting at a later stage without affecting the normal operation of the serial ports.

TECH SPECS

Management — Web browser; Device Management software (included); Telnet, shared console port; SNMP, MIB II, read and write Syslog

Port Buffering — 256 KB per port or 3DES encrypted to NFS server

Processor — 400-MHz, 750-MIPS, 32-bit

Protocols — IPv6, IPv4, TCP/IP, Reverse SSH, SSH, SSL, CIDR, RIPV2/MD5, ARP, RARP, UDP, UDP Multicast, ICMP, BOOTP, DHCP, TFTP, SNTP, Telnet, raw, reverse Telnet, LPD, RCP, DNS, WINS, HTTP, HTTPS, SMTP, SNMPV3, PPP, PAP/CHAP, SLIP, CSLIP

Security and Authentication — SSHV1 and SSHV2; SSL V3.0/TLS V1.0, SSL V2.0; SSL Server and SSL client mode capability; encryption: AES (256/192/128), 3DES, DES, Blowfish, CAST128, ARCFOUR (RC4), ARCTWO (RC2); hashing algorithms: MD5, SHA-1, RIPEMD160, SHA1-96, MD5-96; key exchange: RSA, EDH-RSA, EDH-DSS, ADH; X.509 certificate verification: RSA, DSA; certificate authority (CA) list; local database; RADIUS authentication and accounting; TACACS+, LDAP, NIS, Kerberos; RSA SecureID-agent or via RADIUS; IP address filtering; disable unused daemons

Serial Ports — Software selectable to RS-232, RS-422, or RS-485; full modem and hardware flow control; 50 bps to 230 kbps for EIA-232; up to 230 kbps for EIA-422/485; Sun Break Safe; full bidirectional modem support; 15-Kv ESD protection on all signals

CE Approval — Yes

Interface — 10BASE-T/100BASE-TX/1000BASE-T

Connectors — LES5084 models: Ethernet network: (1) RJ-45 (10/100/1000 Mbps); Serial: (8) RJ-45; LES5164 models: Ethernet network: (1) RJ-45 (10/100/1000 Mbps); Serial: (16) RJ-45

Indicators — LEDs: Per unit: (1) Power/Ready; Per Ethernet port: (1) Network Link activity; Per serial port: (1) Tx and Rx data

Environmental — Operating temperature: 32 to +131°F (0 to 55°C); Storage temperature: -40 to +150°F (-40 to +66°C)

Power — 100–240, 50–60 Hz, autosensing, external, with U.S. cord (LES5084A, LES5164A), U.K. cord (LES5084E-UK, LES5164E-UK), or European cord (LES5084E, LES5164E)

Size — 1.75"H (1U) x 17.1"W x 10.4"D (4.4 x 43.4 x 26.4 cm)

Weight — 6.6 lb. (3 kg)

Item			Code
10/100/1000 Secure Device Servers, RS-232/422/485, Rackmount			
RJ-45	8-Port	U.S. Power Cord	**LES5084A**
		U.K. Power Cord	**LES5084E-UK**
		European Power Cord	**LES5084E**
	16-Port	U.S. Power Cord	**LES5164A**
		U.K. Power Cord	**LES5164E-UK**
		European Power Cord	**LES5164E**

» Access up to four serial RS-232 devices securely over your Ethernet network.
» RJ-45 interface for both RS-232 and Ethernet/Fast Ethernet connections.
» Autosense 10- or 100-Mbps networks.
» Extensive encryption and authentication features protect data and access to serial devices across your network.
» Secured with 128-, 192-, and 256-bit AES, 3DES, Blowfish, and CAST128, plus ARCFOUR or ARCTWO data encryption across the LAN via SSH and SSL.
» For areas without power outlets, order 802.3af Power over Ethernet (PoE) models.
» Work in the latest IPv6 networks, protecting your investment.
» Manageable through an Ethernet link, a Web browser, or a direct serial link.
» Include COM redirect software to provide true remote serial ports over a LAN.
» Support e-mail event notification and SNMP V3 for integration into managed networks.
» Feature a 66-MHz, 87-MIPS processor.
» Built-in surge protection on all interfaces.

LES6044A

10/100 Secure Terminal Servers

Plug-and-play 10/100 Secure Terminal Servers provided data encryption and next-generation IPv6 technology for secure and direct serial device connectivity from a 10- or 100-Mbps network.

Ideal for applications where you to need manage and troubleshoot devices over a network or the Web, the terminal servers feature four RJ-45 ports for connecting RS-232 devices. Use them in office and retail environments, as well as in TCP/UDP/IP networks, to connect printers and scanners, and access remote serial ports on data-acquisition devices, PBXs, servers, and routers.

For network-side connections, just attach your LAN to the single 10-/100-Mbps RJ-45 port on the terminal servers. This port automatically adapts to the speed and duplex of your network.

Highly secure, the terminal servers protect sensitive data with Secure Shell (SSH) and Secure Sockets Layer (SSL) encryption. They also support AES, 3DES, RC4, RC2, and CAST128 ciphers. User authentication through RADIUS, TACACS+, LDAP, Kerberos, NIS, and RSA Security's SecurID tokens ensures that only authorized users access your system.

And because the 10/100 Secure Terminal Servers support next-generation IPv6 (Internet Protocol Version 6), they're compatible with networks that have upgraded in order to establish more robust IPsec security and gain a lot larger IP address space.

The terminals servers can be set up to automatically obtain an IP address from a local network running a DHCP/BOOTP server. What's more, port buffering enables you to capture and hold local and remote serial port activity in memory for viewing and troubleshooting later without affecting the normal operation of the serial ports.

Use the included Windows based Device Management software to manage and control multiple terminal servers from a central location. This software also enables you to assign IP addresses to the terminal servers, update firmware, create configuration files, view statistics, and more.

You can also manage it with a browser with the included WebManager utility, through a terminal serial port link, or via a modem serial port connection (PPP/SLIP configured for remote access by a Telnet session), as well as through the Ethernet interface using reverse Telnet or reverse SSH. Included COM redirect software provides fixed TTY or COM ports so you can communicate with serial devices in encrypted or clear text modes within server-based applications.

For use in areas without readily accessible outlets, order the 802.3af-complaint Power over Ethernet (PoE) models. These operate as powered devices (PDs), support end-span and mid-span power source equipment (PSE) links, and draw up to 13 watts of DC power via their UTP cables. PSE power is provided through two unused twisted-pair wires (10 Mbps/100 Mbps only) or through two "phantom power" data pairs (100 Mbps).

The PoE models also feature inrush current protection, which guards against input surges that may occur during power up. After a low-current draw stage, the 10/100 Secure Terminal Servers switch to a high-current stage to allow them to draw power up to a maximum of 12.95 watts.

TECH SPECS

Management — Web browser; Device Management software (included); Telnet, shared console port; SNMP, MIB II, read and write Syslog
Port Buffering — 256 KB per port or 3DES encrypted to NFS server
Processor — 66 MHz, 87 MIPS
Protocols — IPv6, IPv4, TCP/IP, Reverse SSH, SSH, SSL, CIDR, RIPV2/MD5, ARP, RARP, UDP, UDP Multicast, ICMP, BOOTP, DHCP, TFTP, SNTP, Telnet, raw, reverse Telnet, LPD, RCP, DNS, WINS, HTTP, HTTPS, SMTP, SNMPV3, PPP, PAP/CHAP, SLIP, CSLIP
Security and Authentication — SSHV1 and SSHV2; SSL V3.0/TLS V1.0, SSL V2.0, SSL Server and SSL client mode capability; encryption: AES (256/192/128), 3DES, DES, Blowfish, CAST128, ARCFOUR (RC4), ARCTWO (RC2); hashing algorithms: MD5, SHA-1, RIPEMD160, SHA1-96, MD5-96; key exchange: RSA, EDH-RSA, EDH-DSS, ADH; X.509 certificate verification: RSA, DSA; certificate authority (CA) list; local database; RADIUS authentication and accounting; TACACS+, LDAP, NIS, Kerberos; RSA SecureID-agent or via RADIUS; IP address filtering; disable unused daemons
Serial Ports — EIA-232, RJ-45 connectors, full modem and hardware flow control, 50 bps to 230 kbps, Sun Break Safe, full bidirectional modem support, 15-Kv ESD protection on all signals
CE Approval — Yes
Interface — Serial: RS-232; Ethernet network: 10BASE-T/100BASE-TX
Connectors — Ethernet network: (1) RJ-45 (10 Mbps/100 Mbps); Serial (RS-232): (4) RJ-45
Indicators — LEDs: Per unit: (1) Power/Ready; Per Ethernet port: (1) Network Link activity; Per serial port: (1) Tx and Rx data
Environmental — Operating temperature: 32 to 131°F (0 to 55°C); Storage temperature: -40 to +150°F (-40 to +66°C)
Power — Input: LES6044A: 120 VAC, 50 Hz, external, with U.S. cord; LES6044E-UK: 100–240 VAC, 50–60 Hz, autosensing, external, with U.K. cord; LES6044E: 100–240 VAC, 50–60 Hz, autosensing, external, with European power cord; PoE input: LES6045A, LES6045E-UK, LES6045E: IEEE 802.3af compliant data pins (⅛, ⅜) or unused pins (⅝, ⅞), 9–30 VDC, 10 watts, standard barrel socket; power over serial cable (+5V reg., 1W max.)
Size — 1.1"H x 3.2"W x 4.4"D (2.8 x 8.1 x 11.2 cm)
Weight — 1.6 lb. (0.7 kg)

Item				Code
10/100 Secure Terminal Servers, RS-232				
RJ-45	4-Port		U.S. Power Cord	**LES6044A**
			U.K. Power Cord	**LES6044E-UK**
			European Power Cord	**LES6044E**
	4-Port, PoE		U.S. Power Cord	**LES6045A**
			U.K. Power Cord	**LES6045E-UK**
			European Power Cord	**LES6045E**

For DIN-rail mounting options, see page 9.

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NETWORK SERVICES
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FEATURES

» Access up to 24 serial RS-232 devices securely over your Ethernet network.

» 10/100/1000 network port automatically detects the network speed.

» Great for PoS retail or any serial data-acquisition application where security is a top concern.

» Secured with 128-, 192-, and 256-bit AES, 3DES, Blowfish, and CAST128, plus ARCFOUR or ARCTWO data encryption across the LAN via SSH and SSL.

» Compatible with next-generation IPv6 networks.

» COM redirect utility for communicating with serial ports over an Ethernet LAN.

» Easy to manage through any Web browser, your network, or through a direct serial connection.

» 400-MHz, 750-MIPS, 32-bit processor.

» Support SNMP V3 management.

» E-mail event notification.

» Built-in surge protection on all interfaces.

» Compact 1U rackmount chassis.

LES7164A

10/100/1000 Secure Terminal Servers, Rackmount

Integrate serial port connections into your mixed-speed network—and ensure optimum data communications privacy—with the BLACK BOX® 10/100/1000 Secure Terminal Servers.

These terminal servers enable you to use your Ethernet, Fast Ethernet, or Gigabit Ethernet network to securely access as many as 24 remote serial console ports on equipment such as PBXs, servers, routers, or network storage equipment.

They not only reliably communicate with RS-232 serial devices, but the terminal servers autodetect 10-, 100-, and 1000-Mbps networks and adapt to half- or full duplex operation (except on Gigabit links, which operate at full duplex only).

The terminal servers have a comprehensive suite of security features to protect sensitive data sent across a private or public network to instruments such as retail data systems, bar code scanners, receipt printers, scanners, and loggers. They do this with advanced Secure Shell (SSH) and Secure Sockets Layer (SSL) encryption and by supporting AES, 3DES, RC4, RC2, and CAST128 encryption ciphers. User authentication through RADIUS, TACACS+, LDAP, Kerberos, NIS, and RSA Security's SecurID tokens ensures that only authorized users can access the system.

In addition to enabling PPP authentication via PAP or CHAP, you can lock ports and set up idle port timers, supervisory and port (line) passwords, per-user access level assignments, and event-related e-mail alert notifications.

The terminal servers also support serial data tunneling in an IP network, and because they're Internet Protocol Version 6 (IPv6) compliant, they can be used in networks that have upgraded to IPv6 in order to establish more robust IPsec security and gain a lot larger IP address space. You can also set them up to automatically get IP addresses from a LAN running a DHCP/BOOTP server.

Housed in a compact chassis that's designed for use in high-density enterprise applications, the 10/100/1000 Secure Terminal Servers come with brackets for convenient rackmounting in just 1U of space. Mount at their front or back. Up to five device servers can be mounted in a standard 5U rack.

You can configure the terminal servers multiple ways, including via direct connections to the serial port or via a configuration wizard. With the included Windows based Device Management software, you can assign IP addresses, view statistics, and more. For browser-based configuration/management, the terminal servers come with a WebManager utility. Or, if you prefer, manage them via a modem serial port connection (PPP/SLIP configured for remote access by a Telnet session), through the network interface using reverse Telnet or reverse SSH, or from the CLI.

The 10/100/1000 Secure Terminal Servers also support SNMP for integration into managed networks.

A virtual modem feature provides a "modem like" communication between two terminal servers on a network or between a terminal server and a host, enabling you to save on the costs of additional modems connections.

TECH SPECS

Management — Web browser; Device Management software (included); Telnet, shared console port; SNMP, MIB II, read and write Syslog

Port Buffering — 256 KB per port or 3DES encrypted to NFS server

Processor — 400 MHz, 750 MIPS, 32 bit

Protocols — IPv6, IPv4, TCP/IP, Reverse SSH, SSH, SSL, CIDR, RIPV2/MD5, ARP, RARP, UDP, UDP Multicast, ICMP, BOOTP, DHCP, TFTP, SNTP, Telnet, raw, reverse Telnet, LPD, RCP, DNS, WINS, HTTP, HTTPS, SMTP, SNMPV3, PPP, PAP/CHAP, SLIP, CSLIP

Security and Authentication — SSHV1 and SSHV2; SSL V3.0/TLS V1.0, SSL V2.0 SSL Server and SSL client mode capability; encryption: AES (256/192/128), 3DES, DES, Blowfish, CAST128, ARCFOUR (RC4), ARCTWO (RC2); hashing algorithms: MD5, SHA-1, RIPEMD160, SHA1-96, MD5-96; key exchange: RSA, EDH-RSA, EDH-DSS, ADH; X.509 certificate verification: RSA, DSA; certificate authority (CA) list; local database; RADIUS authentication and accounting; TACACS+, LDAP, NIS, Kerberos; RSA SecureID-agent or via RADIUS; IP address filtering; disable unused daemons

Serial Ports — EIA-232, RJ-45 connectors, full modem and hardware flow control, 50 bps to 230 kbps, Sun Break Safe, full bidirectional modem support, 15Kv ESD protection on all signals

CE Approval — Yes

Interface — Ethernet network: 10BASE-T/100BASE-TX/1000BASE-T; Serial: RS-232

Connectors — Ethernet network:
    All: (1) RJ-45 (10 Mbps/100 Mbps/1000 Mbps);
    Serial (RS-232): LES7044 models: (4) RJ-45;
        LES7084 models: (8) RJ-45;
        LES7164 models: (16) RJ-45;
        LES7244 models: (24) RJ-45

Indicators — LEDs: Per unit: (1) Power/Ready;
    Per Ethernet port: (1) Network Link activity;
    Per serial port: (1) Tx and Rx data

Environmental — Operating temperature: 32 to 131°F (0 to 55°C); Storage temperature: -40 to +150°F (-40 to +66°C)

Power — 100–240 VAC, 50–60 Hz, external, autosensing with U.S cord (LES7044A, LES7084A, LES7164A, LES7244A), U.K cord (LES7044E-UK, LES7084E-UK, LES7164E-UK, LES7244E-UK), or European cord (LES7044E, LES7084E, LES7164E, LES7244E)

Size — 1.75"H (1U) x 17.1"W x 10.4"D (4.4 x 43.4 x 26.4 cm)

Weight — 4-port models: 6.2 lb. (2.8 kg);
    8-port models: 6.6 lb. (3 kg);
    16- and 24-port models: 6.8 lb. (3.1 kg)

Item			Code
10/100/1000 Secure Terminal Servers, RS-232, Rackmount			
RJ-45	4-Port	U.S. Power Cord	**LES7044A**
		U.K. Power Cord	**LES7044E-UK**
		European Power Cord	**LES7044E**
	8-Port	U.S. Power Cord	**LES7084A**
		U.K. Power Cord	**LES7084E-UK**
		European Power Cord	**LES7084E**
	16-Port	U.S. Power Cord	**LES7164A**
		U.K. Power Cord	**LES7164E-UK**
		European Power Cord	**LES7164E**
	24-Port	U.S. Power Cord	**LES7244A**
		U.K. Power Cord	**LES7244E-UK**
		European Power Cord	**LES7244E**

FEATURES

» Serial console management for up to 32 RS-232 devices over an Ethernet, Fast Ethernet, or Gigabit Ethernet network.

» Dual 10/100/1000 ports give you a redundant path to serial consoles.

» For redundant, reliable power, order optional dual power input models.

» Also feature a PCI port—add a V.92 modem to set up emergency access in case of complete network failure.

» Secured with 128-, 192- and 256-bit AES, 3DES, Blowfish, and CAST128, plus ARCFOUR or ARCTWO data encryption across the LAN via SSH and SSL.

» Advanced user authentication through RADIUS, TACACS+, LDAP, Kerberos, NIS, and RSA.

» A number of ways to manage: through an Ethernet link, a browser, and direct serial port links.

» Supports e-mail event notification.

» 400-MHz, 750-MIPS, 32-bit processor.

» Sturdy steel chassis is only 1U high and can be front- or rear-mounted.

» Built-in surge protection on all interfaces.

» Automatically adapt to network speed on LAN side.

LES8164A

Dual 10/100/1000 Secure Console Servers

Establish secure and redundant access to remote serial console ports from a mixed-speed Ethernet network with the Dual 10/100/1000 Secure Console Servers.

These servers make it easy to manage remote serial RS-232 equipment via their serial console ports, whether they're servers, routers, firewalls, PBXs, or retail data-acquisition instruments. Any device with a serial COM port will operate with your desired application just as it did when you had it directly connected.

The console servers also boast fault-tolerance functions, so you can establish secure and reliable access to mission-critical equipment. Dual 10-/100-/1000-Mbps interfaces provide redundant paths from your network to the RS-232 console ports. You can even remotely access console ports from home or the road via an optional V.92 modem (**page 9**) plugged into the PCI slot on the 10/100/1000 Secure Console Servers.

And, for redundant power, you can even order the console servers with dual AC power supplies. These ensure that you can manage a console if your primary AC power source fails.

The console servers protect sensitive data management info no matter the access path. They do this with advanced Secure Shell (SSH) and Secure Sockets Layer (SSL) encryption and by supporting AES, 3DES, RC4, RC2, and CAST128 encryption ciphers. User authentication through RADIUS, TACACS+, LDAP, Kerberos, NIS, and RSA Security's SecurID tokens ensures that only authorized users can access the system.

What's more, the 10/100/1000 Secure Console Servers are Internet Protocol Version 6 (IPv6) compliant, so you can use them in IPv6 networks with more robust IPsec security and a lot larger IP address space.

For fully functional Windows based terminal server management, the included Device Management software enables you to assign IP addresses, perform firmware updates, view statistics, and more. You also get a browser-based configuration/management tool and a window-oriented menu interface, as well as a CLI-based management option. In addition, the servers support SNMP for integration into managed networks. Using SNMP, you can remotely configure the servers and gather statistics.

TECH SPECS

Management — Web browser; Device Management software (included); Telnet, shared console port; SNMP, MIB II, read and write Syslog

Port Buffering — 256K per port or 3DES encrypted to NFS server

Processor — 400 MHz, 750 MIPS, 32-bit

Protocols — IPv6, IPv4, TCP/IP, Reverse SSH, SSH, SSL, CIDR, RIPV2/MD5, ARP, RARP, UDP, UDP Multicast, ICMP, BOOTP, DHCP, TFTP, SNTP, Telnet, raw, reverse Telnet, LPD, RCP, DNS, WINS, HTTP, HTTPS, SMTP, SNMPV3, PPP, PAP/CHAP, SLIP, CSLIP

Security and Authentication — SSHV1 and SSHV2; SSL V3.0/TLS V1.0, SSL V2.0 SSL Server and SSL client mode capability; encryption: AES (256/192/128), 3DES, DES, Blowfish, CAST128, ARCFOUR (RC4), ARCTWO(RC2); hashing algorithms: MD5, SHA-1, RIPEMD160, SHA1-96, and MD5-96; key exchange: RSA, EDH-RSA, EDH-DSS, ADH; X.509 certificate verification: RSA, DSA; certificate authority (CA) list; local database; RADIUS authentication and accounting; TACACS+, LDAP, NIS, Kerberos; RSA SecureID-agent or via RADIUS; IP address filtering; disable unused daemons

Serial Ports — EIA-232, RJ-45 connectors, full modem and hardware flow control, 50 bps to 230 kbps, Sun Break Safe, full bidirectional modem support, 15Kv ESD protection on all signals

CE Approval — Yes

Connectors — Ethernet: All: (2) RJ-45 (10 Mbps/100 Mbps/1000 Mbps); Serial (RS-232): LES8084 models: (16) RJ-45; LES8164 models: (24) RJ-45; LES8324 models: (32) RJ-45; Modem: All: (1) PCI

Indicators — LEDs: Per unit: (1) Power, (1) System Ready; Per Ethernet port: (1) Network Link activity; Per serial port: (1) Tx and Rx data

Environmental — Operating temperature: 32 to 131°F (0 to 55°C); Storage temperature: -40 to +150°F (-40 to +66°C)

Power — Autosensing 100–240 VAC, 50–60 Hz, external, single or dual IEC 320 inputs, with U.S., U.K., or European cord

Size — 1.75"H (1U) x 17.1"W x 10.4"D (4.4 x 43.4 x 26.4 cm)

Weight — LES8084A, LES8084E-UK, LES8084E: 6.6 lb. (3 kg); LES8324A, LES8324E-UK, LES8324E, LES8084A-2AC, LES8084E-2AC-UK, LES8084E-2AC: 7 lb. (3.2 kg); LES8164A, LES8164E-UK, LES8164E: 6.8 lb. (3.1 kg); LES8164A-2AC, LES8164E-2AC-UK, LES8164E-2AC: 7.5 lb. (3.4 kg); LES8324A-2AC, LES8324E-2AC-UK, LES8324E-2AC: 7.7 lb. (3.5 kg)

Item			Code
Dual 10/100/1000 Secure Console Servers, RS-232			
RJ-45	8-Port	U.S. Power Cord	**LES8084A**
		U.K. Power Cord	**LES8084E-UK**
		European Power Cord	**LES8084E**
	16-Port	U.S. Power Cord	**LES8164A**
		U.K. Power Cord	**LES8164E-UK**
		European Power Cord	**LES8164E**
	32-Port	U.S. Power Cord	**LES8324A**
		U.K. Power Cord	**LES8324E-UK**
		European Power Cord	**LES8324E**

Item			Code
Dual 10/100/1000 Secure Console Servers, RS-232, Dual AC Power			
RJ-45	8-Port	U.S. Power Cord	**LES8084A-2AC**
		U.K. Power Cord	**LES8084E-2AC-UK**
		European Power Cord	**LES8084E-2AC**
	16-Port	U.S. Power Cord	**LES8164A-2AC**
		U.K. Power Cord	**LES8164E-2AC-UK**
		European Power Cord	**LES8164E-2AC**
	32-Port	U.S. Power Cord	**LES8324A-2AC**
		U.K. Power Cord	**LES8324E-2AC-UK**
		European Power Cord	**LES8324E-2AC**

» Brackets in DIN rail kits fit terminal or device servers up to four ports.
» The V.92 Modem PCI Card adds a backup dialup connection to Dual 10/100/1000 Secure Console Servers.
» Serial adapters adapt standard RJ-45 serial ports to other serial interfaces for connection to devices such as printers and modems.
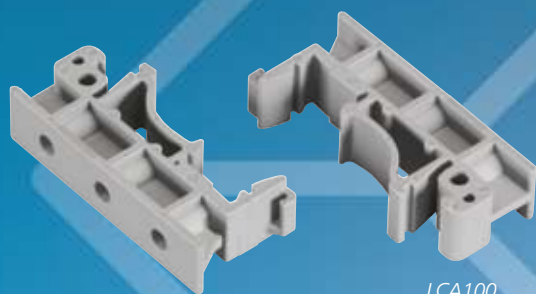
LCA100

Accessories for Terminal Servers, Device Servers, and Console Servers

These helpful accessories enable you to tailor your device server, terminal server, or console server to a specific installation—whether you need to access serial devices on an assembly line, set up a modem link to ensure remote access from outside a network, or adapt existing serial cabling connections.

DIN Rail Mounting Kits

Bring Ethernet-to-serial device connectivity to your industrial DIN rail applications with these speciality kits. By mounting your device server or terminal server on a standard 35-mm DIN rail, you're able to save space and accommodate more components in a factory installation where you require remote serial port connectivity to automation devices.

The LCA100 kit works with all the 10/100 Terminal Servers, RS-232/422/485 on **page 2** and the 1- and 2-port 10/100 Secure Device Servers, RS-232/422/485 on **pages 3–4**.

The LCA101 fits the 4-port versions of the 10/100 Secure Device Servers, RS-232/422/485 on **pages 3–4** and all of the 10/100 Secure Terminal Servers, RS-232 on **page 6**.

V.92 Modem PCI Card for Dual 10/100/1000 Secure Console Servers

In applications where you want remotely access RS-232 console ports from an off-site office or while traveling, just add this card to the Dual 10/100/1000 Secure Console Server (**page 8)** of your choice. Even better, if there's a total system failure on the network side, you'll still be able to remotely communicate with distant serial instruments and equipment via an analog phone line link to the console server.

Supporting simple plug-and-play installation and operation, this modem card has an RJ-11 jack and slides into the PCI slot found on the serial side of the 10/100/1000 Secure Console Server.

As a standard V.92 modem, it boasts a quick-connect feature for speeding up the handshaking process and, in turn, reducing how long it takes to connect to the Web. What's more, a PCM Upstream feature reduces the time it takes to upload files. In addition, Modem-on-Hold™ (MOH) capabilities allow you to suspend Internet connectivity to receive a voice call.

Serial Adapters

These enable you to adapt RJ-45 ports to DB25, DB9, or Sun/Cisco RJ-45 in your terminal server, device server, or console server application.

Item	Code
DIN Rail Mounting Kits	
for 1- and 2-Port Models	**LCA100**
for 4-Port Models	**LCA101**
V.92 Modem PCI Card for Dual 10/100/1000 Secure Console Servers	
for U.S.	**LMS120C-US**
for U.K.	**LMS120C-UK**
for Europe	**LMS120C-UE**
Serial Adapters	
RJ-45 to PC DB25 Female	**LCA102**
RJ-45 to PC DB9 Female	**LCA103**
RJ-45 to Modem DB25 Male	**LCA104**
RJ-45 to Printer DB25 Male	**LCA105**
RJ-45 to Sun®/Cisco® RJ-45 (with 3-m Cable)	**LCA106**

Why Buy From Black Box? Exceptional Value. Exceptional Tech Support. Period.

Recognize any of these situations?

• You wait more than 30 minutes to get through to a vendor's tech support.
• The so-called "tech" can't help you or gives you the wrong answer.
• You don't have a purchase order number and the tech refuses to help you.
• It's 9 p.m. and you need help, but your vendor's tech support line is closed.

According to a survey by *Data Communications* magazine, 90% of network managers surveyed say that getting the technical support they need is extremely important when choosing a vendor. But even though network managers pay anywhere from 10 to 20% of their overall purchase price for a basic service and support contract, the technical support and service they receive falls far short of their expectations—and certainly isn't worth what they paid.

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