BLACK BOX
NETWORK SERVICES

G.SHDSL Two-Wire Extender/NTU

Extend E1/T1, X.21, or V.35 communications over two wires

Customer Support Information

Order toll-free in the U.S.: Call 877-877-BBOX (outside U.S. call 724-746-5500)
FREE technical support 24 hours a day, 7 days a week: Call 724-746-5500 or fax
724-746-0746 • Mailing address: Black Box Corporation, 1000 Park Drive, Lawrence,
PA 15055-1018 • Web site: www.blackbox.com • E-mail: info@blackbox.com

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RADIO FREQUENCY INTERFERENCE STATEMENTS

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

INSTRUCCIONES DE SEGURIDAD

(Normas Oficiales Mexicanas Electrical Safety Statement)

2. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.

3. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.

4. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.

5. Todas las instrucciones de operación y uso deben ser seguidas.

6. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..

7. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.

8. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.

9. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

10. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

11. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

12. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

13. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

14. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

15. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

16. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

17. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

18. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

19. Servicio por personal calificado deberá ser provisto cuando:

   • El cable de poder o el contacto ha sido dañado; u

   • Objectos han caído o líquido ha sido derramado dentro del aparato; o

   • El aparato ha sido expuesto a la lluvia; o

   • El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

   • El aparato ha sido tirado o su cubierta ha sido dañada.

SAFETY WHEN WORKING WITH ELECTRICITY

⚠

WARNING

• This device contains no user serviceable parts. This device can only be repaired by qualified service personnel.

• Do not open the device when the power cord is connected. For systems without a power switch and without an external power adapter, line voltages are present within the device when the power cord is connected.

• For devices with an external power adapter, the power adapter shall be a listed Limited Power Source. The mains outlet that is utilized to power the device shall be within 10 feet (3 meters) of the device, shall be easily accessible, and protected by a circuit breaker in compliance with local regulatory requirements.

• For AC powered devices, ensure that the power cable used meets all applicable standards for the country in which it is to be installed.

• For AC powered devices which have 3 conductor power plugs (L1, L2 & GND or Hot, Neutral & Safety/Protective Ground), the wall outlet (or socket) must have an earth ground.

• For DC powered devices, ensure that the interconnecting cables are rated for proper voltage, current, anticipated temperature, flammability, and mechanical serviceability.

• WAN, LAN & PSTN ports (connections) may have hazardous voltages present regardless of whether the device is powered ON or OFF. PSTN relates to interfaces such as telephone lines, FXS, FXO, DSL, xDSL, T1, E1, ISDN, Voice, etc. These are known as "hazardous network voltages" and to avoid electric shock use caution when working near these ports. When disconnecting cables for these ports, detach the far end connection first.

• Do not work on the device or connect or disconnect cables during periods of lightning activity.

In accordance with the requirements of council directive 2002/96/EC on Waste of Electrical and Electronic Equipment (WEEE), ensure that at end-of-life you separate this product from other waste and scrap and deliver to the WEEE collection system in your country for recycling.

WARNING

This device contains no user serviceable parts. This device can only be repaired by qualified service personnel.

WARNING

This device is NOT intended nor approved for connection to the PSTN. It is intended only for connection to customer premise equipment.

Electrostatic Discharge (ESD) can damage equipment and impair electrical circuitry. It occurs when electronic printed circuit cards are improperly handled and can result in complete or intermittent failures. Do the following to prevent ESD:

• Always follow ESD prevention procedures when removing and replacing cards.

WARNING

• Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to an unpainted surface of the chassis frame to safely channel unwanted ESD voltages to ground.

• To properly guard against ESD damage and shocks, the wrist strap and cord must operate effectively. If no wrist strap is available, ground yourself by touching the metal part of the chassis.

Thank you for your purchase of this Black Box product! This product has been thoroughly inspected and tested and is warranted for one year for parts and labor. If any questions or problems arise during installation or use of this product, contact Black Box Technical Support.

1. SELECT CONFIGURATION METHOD

Before powering up, you must select one of the following methods for configuring your Black Box:

- **Plug 'n' Play**—The Black Box comes factory-configured for Plug 'n' Play configuration when connected to a service-provider network.

- **DIP Switch**—For deploying the Black Box in back-to-back applications. To use DIP-switch configuration you must first set the DIP switches to a position other than all *OFF* or all *ON* before powering-up the Black Box.

- **Software Configuration**—Allows you to modify configurable parameters by connecting a PC to the console port and issuing software commands. To use software configuration you must set all the DIP switches to the *ON* position before powering-up the Black Box.

2. POWER UP THE NTU

Your G.SHDSL.bis NTU comes with one of the following power supply options:

- External AC adaptor with detachable power cord

- External DC power supply with terminal block connector (model 48V-PSM3)

2.1 MODELS WITH EXTERNAL AC ADAPTOR

1. Connect female plug of the AC power cord to the AC adaptor provided.

2. Connect the barrel-type connector of the AC adaptor to the Power connector on the Black Box.

3. Insert the male plug of the AC power cord into an AC power outlet (100–240 VAC).

2.2 MODELS WITH EXTERNAL DC POWER SUPPLY

The 36-60 VDC DC to DC adapter is supplied with the DC version of the G.SHDSL.bis NTU. The black and red leads plug into a DC source (nominal 48VDC) and the barrel power connector plugs into the barrel power supply jack on the G.SHDSL.bis NTU. (See Figure 1.)
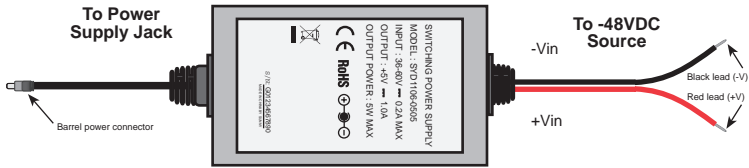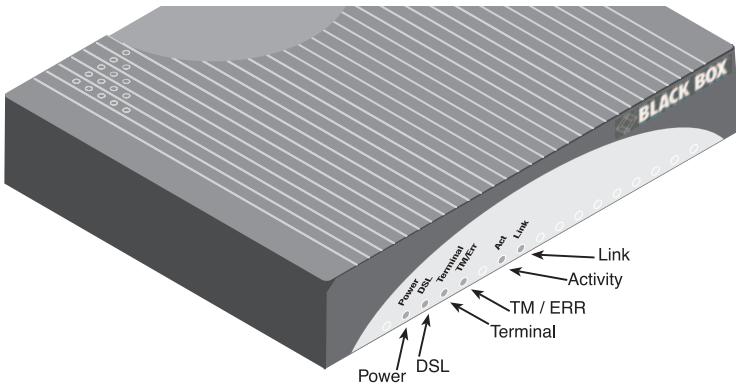

Figure 1. DC Power Supply

Figure 2. ME233A-R2

2.3 POWER UP INDICATION

Verify that the *Power* LED (see Figure 2) illuminates and remains lit.

Once the LB510A-R2 is properly configured and installed, it should operate transparently. The following sections describe power-up and reading the LED status monitors.

3. CONNECT THE G.SHDSL PORT

1. Obtain single-twisted-pair cable with an RJ-45 plug connector at each end.

2. Plug one end of the cable into the RJ-45 socket (labelled DSL) on the Black Box NTU.

   • If you are connecting to a DSL service, plug the other end of the cable into the RJ-45 wall socket that provides your G.SHDSL service.

   • If connecting to another Black Box, verify the other end of the cable is connected to the DSL port on other Black Box and the DSL port is correctly configured.

3. When a DSL link is established, the front-panel DSL LED will turn on.

4. CONNECT THE SERIAL PORT

Your Black Box comes with one of the following serial WAN ports for connection to an NTU:

   • V.35 (DB-25F)—ME233A-R2

   • X.21 (DB-15)—ME232A-R2

   • E1 (120-Ohm RJ-48C and dual 75-Ohm BNC connectors)—ME231A-R2

Connect the serial cable to the Black Box serial port as follows:

1. Attach the male connector of the serial cable to the female serial connector on the Black Box.

2. Attach the other end of the cable to the serial connector on the local serial NTU.

NOTE: You can connect the V.35 interface to an M/34 connector using the interface adapter.

NOTE: You can configure the E1 interface to either recover the network clock from the E1 line or supply the network clock for the E1 line.

5. ADDITIONAL INFORMATION

For detailed information about installing, configuring, operating and troubleshooting, refer to the following.

To download the user manual for the ME232A-R2 using a Firefox® browser, go to **ftp://ftp.blackbox.com/manuals/M/ME232A-R2_user.pdf.**

To download the user manual for the ME232A-R2 using an Internet Explorer® browser, go to
ftp://ftp.blackbox.com/anonymous/manuals/M/ME232A-R2_user.pdf.

A. COMPLIANCE INFORMATION

A.1 COMPLIANCE

EMC:

- FCC Part 15, Class A
- EN55022, Class A
- EN55024

Safety:

- UL 60950-1/CSA C22.2 NO, 60950-1
- EIC/EN60950-1
- AS/NZS 60950-1

A.2 EC DECLARATION OF CONFORMITY

Product Description: Black Box G.SHDSL.bis NTU

This equipment conforms to the requirements of Council Directive 1999/5/EC on the approximation of the laws of the member states relating to Radio and Telecommunication Terminal Equipment and the mutual recognition of their conformity.

$C\!E$ The safety advice in the documentation accompanying the products shall be obeyed. The conformity to the above directive is indicated by the CE sign on the device.

A.3 AUTHORIZED EUROPEAN REPRESENTATIVE

D R M Green
European Compliance Services Limited.
Oakdene House, Oak Road
Watchfield,
Swindon, Wilts SN6 8TD, UK

About Black Box

Black Box provides an extensive range of networking and infrastructure products. You'll find everything from cabinets and racks and power and surge protection products to media converters and Ethernet switches all supported by free, live 24/7 Tech support available in 30 seconds or less.

ME231A-R2, version 1