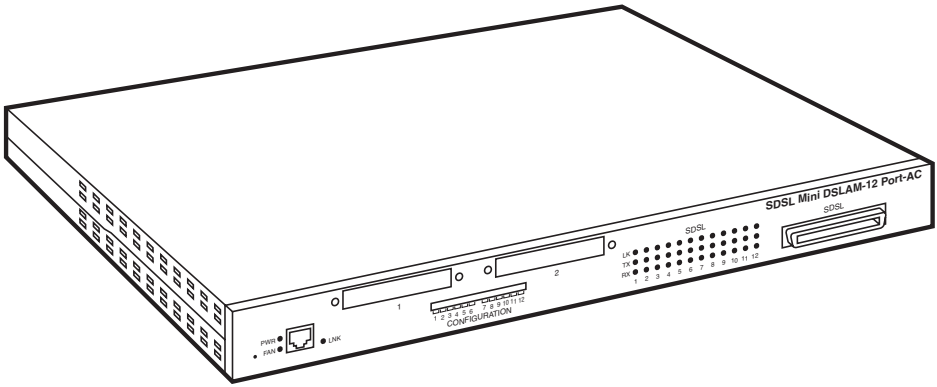
1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax 724-746-0746

BLACK BOX®
NETWORK SERVICES

JANUARY 2001
LRA1202A

SDSL 12-Port Mini DSLAM



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**

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 J 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.

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

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

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

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

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

5. 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..

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

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

8. 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.

9. 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.

10. 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.

11. 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.

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

13. 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.

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

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

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

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

18. Servicio por personal calificado deberá ser provisto cuando:

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

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

    C: El aparato ha sido expuesto a la lluvia; o

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

    E: El aparato ha sido tirado o su cubierta ha sido dañada.

Contents

TRADEMARKS USED IN THIS MANUAL

Any trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

1. Specifications

Bandwidth—Selectable to 144, 272, 400, 528, 784, 1040, 1552, 2064, or 2320 kbps

Distance—Up to 24,000 ft. (7315.2 m) at 144 kbps

Standards—IPacket™ and AutoIP™ compliant; NEBS: Level 3; EMC: FCC Part 15 Class A, CSA/C108.8, CE; Safety: UL® 1950; CSA C22.2 No. 950, CE

Indicators—LEDs: Per unit: (1) Power; Per port: (1) LK, (1) TX, (1) RX

Interface—SDSL: Telco, CAP encoding;

Connectors—SDSL: (1) RJ-21

Temperature—Operating: -40 to +149°F (-40 to +65°C); Storage: -40 to +158°F (-40 to +70°C)

Power—AC: 100 to 125 VAC, 2 amps or 200 to 240 VAC, 1 amp; DC: 48 VDC, 2.9 amps

Size—1.75"H (1 rack unit) x 17"W x 14"D (4.4 x 43.2 x 35.6 cm)

Weight (Chassis only)—11.2 lb. (5.1 kg)

2. Introduction

The SDSL 12-Port Mini DSLAM remote access multiplexor is fully compliant with IPacket™ and AutoIP™ technology. It's ideal for high-speed, business-class DSL in a remote terminal, or as a small-scale central office or in-building DSL

Supporting 10/100 Ethernet, T1/E1, and DS3/E2 backhaul technologies, the Mini DSLAM can be deployed in a variety of network designs, and can deliver high-speed SDSL from locations that were previously considered too remote. With the Mini DSLAM, CLECs, ILECs, and IP network service providers can extend their high-speed broadband Internet service areas.

Designed specifically for remote terminal co-location, the Mini DSLAM can be managed remotely and only requires a single rack unit (1.75"H or 1 U). The SDSL Mini DSLAM uses existing T1/E1 technology within Digital Loop Carrier (DLC) systems for data backhaul to the main central office. Telcos can deploy extremely high-speed SDSL services to those service areas served through DLCs. The Mini DSLAM supports 12 individual single copper pair SDSL lines, and data rates ranging from 144 kbps up to 2.3 Mbps symmetrical bandwidth distances up to 24,000 ft (7315.2 m).

IPacket™ Technology

IPacket™ technology provides optimized IP services that make Ethernet easy to use and reliable on the service network. It eliminates the complexity of ATM and Frame Relay from this portion of the network, greatly decreasing administration and configuration costs. Also, more bandwidth is available for data transport. With IPacket™, you regain 20% of bandwidth that was previously lost to transport overhead.

AutoIP™ Architecture

The AutoIP™ architecture is easy to deploy, delivering IDSL, SDSL, ADSL, and T1/E1 rapidly and with lower provisioning costs. AutoIP includes AutoSync line provisioning, AutoConfig configuration management, AutoRestore backup/recovery services, and AutoFilter traffic management. Together, these services deliver IP broadband services simply and easily.

CAUTION

Electronic equipment can be damaged by electrostatic discharges (ESD). We strongly recommend using proper static precautions when handling this equipment or any information technology equipment.

3. Installation

Follow these steps to install your SDSL 12-Port Mini DSLAM.

Step #1: Unpack and Inspect the Mini DSLAM

Remove the Mini DSLAM from its packaging and inspect the contents. Your package should include the following items:

- SDSL 12-Port Mini DSLAM (LRA1202A)
- (4) Rubber feet
- (10) Rackmount bracket screws
- (2) Rackmount brackets
- (1) AC Power cord
- This users' manual

If anything is missing or damaged, contact Black Box at 724-746-5500.

Step #2: Installing the Uplink Interface Module (UIM)

1. Before opening the Mini DSLAM or installing an uplink interface module, remove all power from the unit.
2. Using a Phillips screwdriver, remove the eight screws that secure the Mini DSLAM chassis.
3. Remove the blanking plate for the appropriate slot.
4. Carefully place the uplink interface module into the correct position to be installed. Make sure that the connector between the module and the Mini DSLAM is properly aligned.
5. Install the four screws that secure the module in place. Replace the eight screws that secure the Mini DSLAM chassis.

Step #3: Selecting a Site

When selecting a site for the Mini DSLAM, consider the following:

- The maximum recommended ambient temperature is 149°F (65°C). Consider the internal temperatures of the rack.
- Place the unit so that the cables will not become a tripping hazard or become dislodged from the unit.
- Do not block power-supply vents or otherwise restrict airflow when installing the unit in a rack.
- Consider the mechanical loading of the rack so that the rack remains stable and unlikely to tip over.
- Consider the overall loading of the branch circuit before installing any equipment in a rack environment.
- Maintain a reliable grounding path in the rack system. This Mini DSLAM is intended for a grounded connection.

For table-top mounting, attach the rubber feet to the bottom of the Mini DSLAM. For rack mounting, attach the rack mount brackets to the sides of the Mini DSLAM at the desired position.

STEP #4: CONNECTING THE MINI DSLAM

Connect AC power to the Mini DSLAM from an appropriate power source. Turn on the power switch located on top of the AC inlet. Verify that the PWR LED is lit.

NOTE

The LK, TX, and RX LEDs will also light on each port until the DSL link is established. Once the DSL link has been established, the TX and RX LEDs will function normally to indicate activity on the Ethernet segment.

1. Attach an SDSL cable to the SDSL connector (RJ-21) on the Mini DSLAM. The pinout for the SDSL RJ-21 connector is shown in Table 1.

Table 1. SDSL RJ-21 connector pinout

Port	Pin	
1	26	Tip
	1	Ring
2	27	Tip
	2	Ring
3	28	Tip
	3	Ring
4	29	Tip
	4	Ring
5	30	Tip
	5	Ring
6	31	Tip
	6	Ring
7	32	Tip
	7	Ring
8	33	Tip
	8	Ring
9	34	Tip
	9	Ring
10	35	Tip
	10	Ring
11	36	Tip
	11	Ring
12	37	Tip
	12	Ring

2. Verify that the configuration switches on the front of the unit are in the appropriate position for each port.

Table 2. Switch Settings (per port pairing)

Left Switch	Right Switch	Bandwidth	Distance Supported (in Kft.)	
			26 AWG	24 AWG
DOWN	DOWN	2.320 Mbps	12	13
DOWN	UP	1.550 Mbps	14	15.5
UP	DOWN	784 kbps	18	19
UP	UP	272 kbps	21	22

NOTE

The distance of the copper cable between the Mini DSLAM and the remote Network Extender will affect the linking of the DSL connection. If the distance is greater than a particular speed will support, the units will not link up. Also, it may take anywhere between 1 and 5 minutes for the DSL connection to link up, depending on cable quality and distance.

3. Verify the SDSL connection via the LK LED on the front of the unit. A steadily pulsing LED (once per second) indicates that the DSL connection is established and operating.

4. Connect the uplink to a connector that is appropriate for the Uplink Interface Module (UIM) that you are using.

5. Once the units have established both DSL and Ethernet link on both sides of the connection, normal data communication will flow through the units, essentially providing a very long Ethernet connection at DSL speeds.