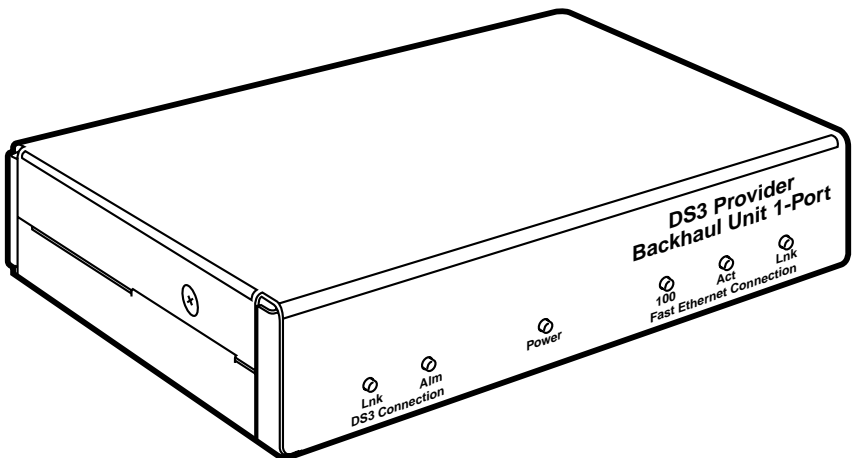




DS3 Network Extender Kit DS3 Provider Backhaul Unit, 1-Port



**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**

Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. This equipment generates, uses, and can radiate radio-frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or telephone reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an experienced radio/TV technician for help.

Caution:

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

To meet FCC requirements, shielded cables are required to connect this device to a personal computer or other Class B certified device.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

EUROPEAN UNION DECLARATION OF CONFORMITY

This equipment has been tested and found to comply with the limits for a class B device in accordance with the specifications in the European standard EN55022.



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 conectado 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 física 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 líneas de energía.
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 objetos líquidos 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: Objetos 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.

1. Introduction

These instructions provide basic installation procedures for the DS3 Provider Backhaul Unit, 1-Port (LRA1216A). This Backhaul Unit also serves as the Provider Unit for the DS3 Network Extender Kit (LR0025A-KIT), which also includes a Subscriber Unit.

The DS3 Network Extender Kit can be used to create a long-distance Ethernet connection across a DS3 circuit. All you have to do is set the DIP switch once, cable the units, and plug them in. No other configuration—no muss, no fuss. Just a reliable, high-speed connection that's always on.

CAUTION

Excess static electricity can damage your Unit(s). Use proper static-protection handling techniques when installing and handling this equipment.

The DS3 Provider Backhaul Unit, 1-Port comes with a power supply and this manual. The DS3 Network Extender Kit comes with a Provider Unit, a Subscriber Unit, a power supply for each Unit, and this manual. (The power supplies are identical; you can use either one with either Unit.) If you didn't receive everything, or if anything arrived damaged, contact Black Box right away.

2. Installation

1. Unpack the DS3 Provider Unit and its power supply.
2. Plug the power supply into both the power source and the back of the Unit. It doesn't matter in which order you do this. Verify that the Unit's Power LED is lit.

NOTE

The Unit's 100, Act, and Lnk LEDs will also light until the DS3 link has been established. In addition, the Unit won't present Ethernet Link when the DS3 line is not operational.

3. Make sure that the Provider Unit's configuration DIP switch is set correctly for your application:
 - Switch position #1, on the left, controls the clock source: Leave it in the default DOWN setting for Local (internal) clock, or move it to UP for Loop clock. (When you set the same switch on the Subscriber unit, don't set position #1, because the Subscriber Unit always gets its clock from the Provider Unit.)
 - Switch position #2, on the right, controls the TX line build out: Leave it in the default DOWN setting for 0 to 255 ft. (0 to 77.7 m) or move it to UP for 255 to 450 ft. (77.7 to 137.2 m).
4. Plug your DS3 cables into the DS3 TX and RX BNC ports on the back of the Provider Unit. Verify this connection by looking at the DS3 Lnk LED on the front of the Unit. If it's pulsing steadily once per second, a DS3 connection is established and operational.
5. The Provider Unit's Ethernet port is 10/100-Mbps auto-negotiating. We recommend that, if possible, you set the hub, switch, PC, etc., at the other end of the Ethernet cable to auto-negotiate as well, *before* you connect the cable.

Plug your Ethernet cable into the Fast Ethernet RJ-45 port on the back of the Provider Unit. Verify this connection by looking at the Fast Ethernet Lnk LED on the Unit's front panel. If it's steadily lit, an Ethernet connection has been established. Also check the 100 LED: If it's lit, the link is operating at 100 Mbps; if it's dark, the link is operating at 10 Mbps.

Table 2-1. Pinout of the Provider Unit's Ethernet port.

Pin Number	Signal
1	RX+
2	RX-
3	TX+
4	Not used
5	Not used
6	TX-
7	Not used
8	Not used

NOTE

For most applications, use a *straight-through* Ethernet cable when plugging the Provider Unit into a PC, or a *crossover* cable when plugging into a hub or a switch. Verify the pinout of the Ethernet device to which you are connecting the Provider Unit in order to determine which type of cable is required.

6. *LR0025A-KIT only*: Repeat steps 1 through 5 for the Subscriber Unit. Its controls, indicators, and connectors work the same way as the Provider Unit's, except that it gets its clock source settings from the Provider Unit, so you don't need to set DIP-switch position 1.

Once the Provider Unit and a Subscriber Unit have established both DS3 and Ethernet links on both sides of the connection, normal data communication will flow through the Units. This will provide a very long Ethernet connection at DS3 or fractional DS3 speeds.

3. Operation

While the Provider and Subscriber Units are plugged in and receiving power, they will operate continuously. Each Unit's front-panel LEDs (which are also described on its bottom label) will show you how it's operating:

NOTE

When a Provider or Subscriber Unit is in Red, Yellow, or Blue Alarm, its Ethernet link will be disabled and the Fast Ethernet LEDs (100, Act, and Lnk) will be steadily lit.

- **DS3 Lnk LED (green):**
 - If it's *flashing*, the DS3 connection has been established and traffic is flowing on the link.
 - If it's *steadily lit*, the DS3 connection has been established but no traffic is currently flowing.
 - If it's *dark*, **Red Alarm:** The incoming DS3 connection has been lost and no data is being received. If the outgoing connection from the Unit has also been lost, the Unit at the other end will also be in Red Alarm.
- **DS3 Alm LED (amber):**
 - If it's *dark*, the DS3 connection is operating normally, unless the DS3 Lnk LED is also dark, in which case a Red Alarm is occurring.
 - If it's *steadily lit*, **Yellow Alarm:** The outgoing DS3 connection has been lost and no data is being transmitted. This means that the Unit at the other end has lost incoming connection and is in Red Alarm.
 - If it's *blinking once per second*, **Blue Alarm:** An indirect connection has been lost and the Unit might not be receiving data. This means that the Unit at the other end has lost a connection with an intermediate device and is in Red or Yellow Alarm.
- **Power LED (green):**
 - If it's *steadily lit*, the Unit is powered and operating.
 - If it's *dark*, and all other LEDs are also dark, the Unit isn't receiving any power or isn't receiving enough power to operate. If any other LEDs are lit, the Power LED is probably defective.

- **Fast Ethernet 100 and Lnk LEDs (both green):**
 - If they're *both steadily lit*, a 100-Mbps Fast Ethernet connection has been established, unless the Act LED is also steadily lit and the DS3 Lnk LED is dark, in which case a DS3 alarm is occurring.
 - If Lnk is *steadily lit* and 100 is *dark*, a 10-Mbps Fast Ethernet connection has been established.
 - If they're *both dark*, the Ethernet connection is down or has been lost.
- **Fast Ethernet Act LED (amber):**
 - If it's *flashing*, traffic is flowing normally, indicating typical Ethernet activity.
 - If it's *steadily lit*, traffic is very heavy, unless the other Fast Ethernet LEDs are also lit and the DS3 Lnk LED is dark, in which case a DS3 alarm is occurring.
 - If it's *dark*, there is no traffic flow. This means that the Ethernet connection is either down, lost, or not being used.

4. Troubleshooting

4.1 Calling Black Box

If you determine that your DS3 Provider Unit or Network Extender Kit is malfunctioning, *do not attempt to alter or repair it*. It contains no user-serviceable parts. Contact Black Box Technical Support at 724-746-5500.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem;
- when the problem occurs;
- the components involved in the problem;
- any particular application that, when used, appears to create the problem or make it worse; and
- the results of any testing you've already done.

4.2 Shipping and Packaging

If you need to transport or ship your DS3 Provider Unit or Network Extender Kit:

- Package it carefully. We recommend that you use the original container.
- Before you ship the DS3 Provider Unit or Network Extender Kit back to Black Box for repair or return, contact us to get a Return Authorization (RA) number.

NOTES



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