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

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY ANADA 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 classe A prescrites dans le Règlement sur le brouillage radioélectrique publié 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.

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1. Specifications

Compliance — Both models: FCC Class A, IC Class/classe A; SW901AE: CE

Compatibility — Compatible with dialup modems using ITU-TSS V.34, V.32 bis, V.32, and most other major modem stds.

Interfaces — EIA RS-232C (DCE on common or master port, DTE on primary and alternate ports) and modular telco

Protocols — Synchronous or asynchronous

Clock Source — External (from attached DTE) or recovered (from attached DCE)

Data Format — Transparent to data format

Flow Control — Transparent to flow control, but monitors/switches on DSR, CTS, or RLSD (CD); also passes or forces DTR

Operation — Automatic fallback (default), automatic switching, or manual switching (user-selectable);
Automatic modes can respond to DSR (default), CTS, or CD (user-selectable);
DTR can be forced or passed on the Alternate channel (user-selectable)

Maximum Distance — Up to 50 ft. (15.2 m) to any attached RS-232 device with standard cable

Data Rate — Up to maximum rate supported by cabling

User Controls — (1) Front-mounted 3-position toggle switch for mode/channel selection; (4) internal jumpers for mode and trigger-signal selection

Indicators — (2) Front-mounted LEDs: (1) each for the primary and alternate ("ALTERNATIVE") channels

Connectors — (3) Rear-mounted DB25 female: common (master), primary, and alternate ports

Leads Supported — 1 through 8, 15, 17, 20 through 22, and 24 (PGND, TD, RD, RTS, CTS, DSR, SGND, RLSD [CD], TSETC [TC], RSETC [RC], DTR, RI, SQD, and TSETT [EXTC] respectively; Pins 1 and 7 (PGND and SGND) tied common

MTBF — 180,000 hours

Temperature Tolerance — Operating: 32 to 122˚ F (0 to 50˚ C);
Storage: –4 to 158˚ F (–20 to 70˚ C)

Humidity Tolerance — 0 to 95% noncondensing

Enclosure — High-impact ABS plastic

Power — Input:
SW901A: 115 VAC, 60 Hz, or 220 VAC, 50 Hz (selectable) through detachable power cord (included) and internal power supply;
SW901AE: 230 VAC, 50 Hz through desktop power supply;
Output (power supplies of both models): 18 VAC, 60 Hz, at 700 mA
Consumption (both models): 8 watts

Size — 2.2"H x 8"W x 11.3"D (5.6 x 20.3 x 28.7 cm)

Weight — 2.7 lb. (1.2 kg)

2. Introduction

The RS-232 Fallback Switch is designed to allow automatic electronic switching between two modems (see **Figure 2-1** below). It has two automatic modes of operation—regular fallback and auto-switching—that you can customize by setting jumpers inside the unit (refer to **Chapter 3**). Alternatively, you can operate the Fallback Switch manually, physically switching between modems as needed.

You can use the RS-232 Fallback Switch to switch between RS-232 devices other than modems, but you need to make sure that those devices and the cables that attach them to the Fallback Switch are pinned in such a way that the devices can communicate properly with the Fallback Switch; see **Figure 2-2** on the next page for the pinout of the Switch's RS-232 ports.

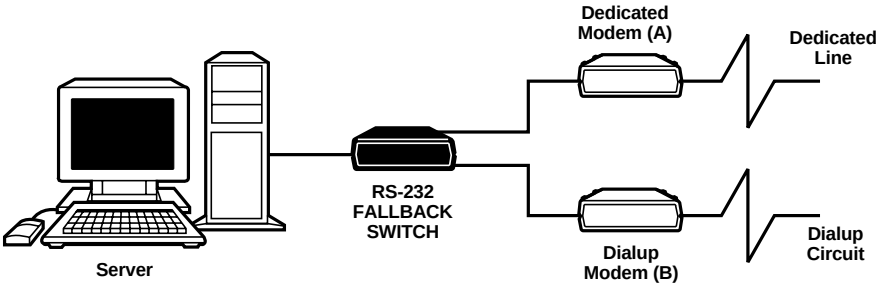


Figure 2-1. A typical application.

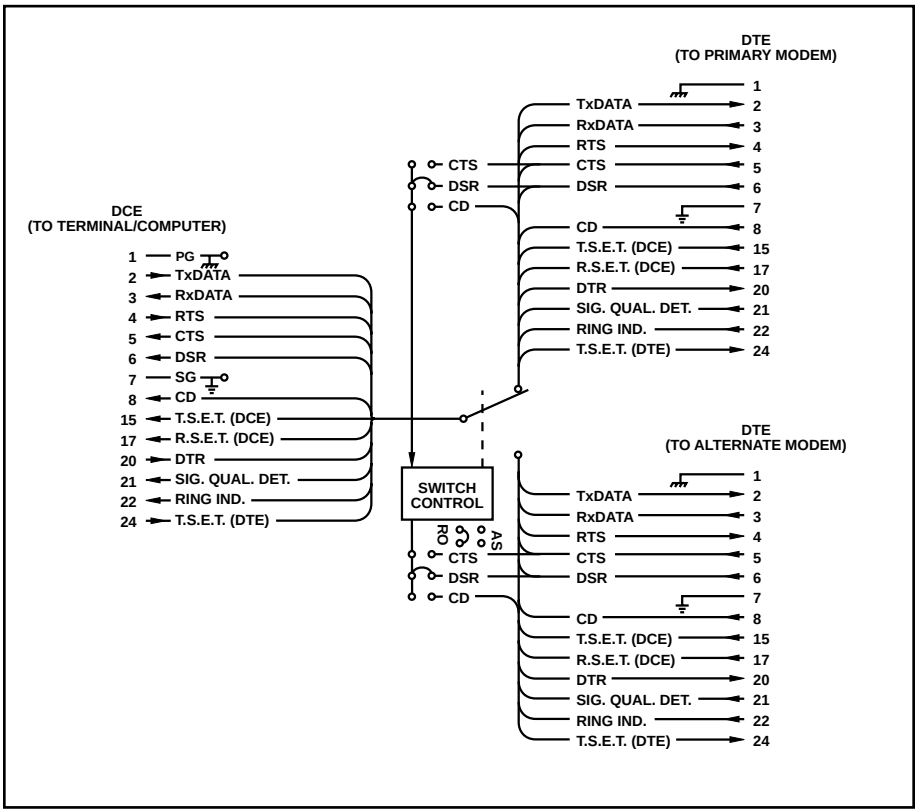


Figure 2-2. Signal handling.

3. Configuration

Before you install the RS-232 Fallback Switch, you should set its internal jumpers if you need it to do anything different from its default functions. There are four of these jumpers, as described below (refer to **Figure 3-1** on page 13).

3.1 Jumper Descriptions

FB/AS: Fallback vs. Auto-Switching Mode
The Fallback Switch is factory-preset to operate in normal fallback (FB) mode. In this mode, the Fallback Switch expects to communicate with the modem attached to the PRIMARY connector under normal circumstances. However, when the Switch senses DSR (or CTS or CD, depending on which of these "trigger signals" you select—see below) on the ALTERNATE connector, it switches to the modem attached to that connector. (This switch occurs even if the primary modem is still operating.) When the Fallback Switch no longer senses the trigger signal, it "falls back" to the primary modem.

By contrast, if you set this jumper to auto-switching (AS) mode, the Fallback Switch doesn't give either the PRIMARY or the ALTERNATE channel higher priority than the other; it will switch to whichever modem raises the trigger signal first, and won't switch back to the other modem until the currently connected one drops the trigger signal.

CD/DSR/CTS (Primary and Alternate): "Trigger Signal" Control
During automatic operation, the RS-232 Fallback Switch is constantly checking for the presence of a "trigger signal" that controls its switching function. The Fallback Switch comes from the factory preset to look for DSR (Data Set Ready, Pin 6) as the trigger signal, but you can set either of these jumpers to have the Switch monitor CTS (Clear to Send, Pin 5) or CD ("Carrier Detect," Pin 8—actual name RLSD, Received Line Signal Detector) instead.

The "alternate options" jumper determines which signal is montored on the alternate channel; its setting is meaningful in both fallback and auto-switching mode. The "primary options" jumper determines which signal is monitored on the primary channel; its setting is meaningful in auto-switching mode only.

These two jumpers can be set differently.

Force DTR/Pass DTR on Alternate Channel
The RS-232 Fallback Switch is factory-preset to pass through the state of the DTR signal (Data Terminal Ready, Pin 20) from the master channel to the alternate channel. However, if the device on the alternate channel needs to sense DTR even when it isn't active, you can set this jumper to have the Switch force DTR high on the alternate channel.

2.2 Configuration Procedure

If you need to change the settings of any of the RS-232 Fallback Switch's configuration jumpers, take these steps:

1. Making sure that the Fallback Switch is OFF and unplugged from utility power, unscrew and temporarily remove the screws from the bottom of the Fallback Switch.
2. Lift off the Switch's top cover.
3. Referring to Figure 3-1 on the next page, move the jumper(s) to the desired position(s).
4. Replace the Switch's cover and screw the screws back in.

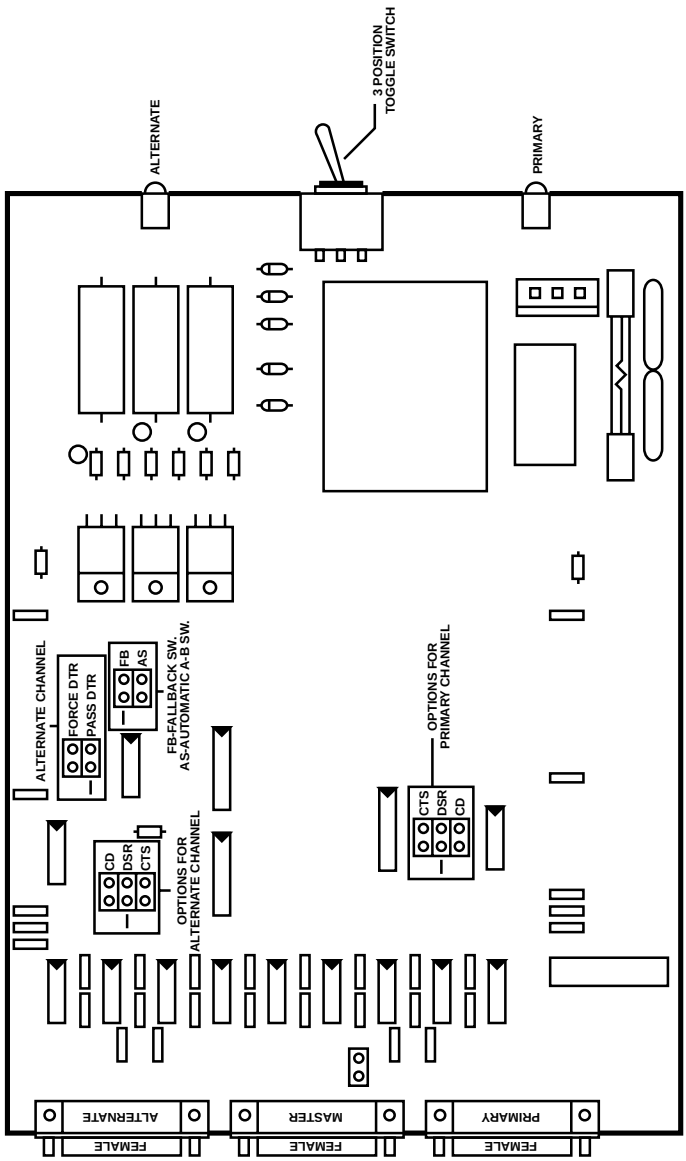


Figure 3-1. Layout of the Switch's printed circuit board.

4. Installation

Once you have made any necessary adjustments to its configuration, the RS-232 Fallback Switch can be installed. Take these steps:

1. Place the Fallback Switch in a cool, dry place close to the devices you want to attach to it.

2. Run cable from your primary modem (or other device) to the PRIMARY connector on the Switch's rear panel. For a modem or other DCE, this cable should be straight-through-pinned RS-232 cable; for a DTE device, this cable will need to be specially cross-pinned—call Black Box for technical support.

3. Run cable from your alternate modem (or other device) to the ALTERNATE connector on the Switch's rear panel. For a modem or other DCE, this cable should be straight-through-pinned RS-232 cable; for a DTE device, this cable will need to be specially cross-pinned—call Black Box for technical support.

4. Run cable from the master or common device (server, PC, host, printer, etc.) to the MASTER connector on the Switch's rear panel. For a computer, printer, or other DTE, this cable should be straight-through-pinned RS-232 cable; for a DCE device, this cable will need to be specially cross-pinned—call Black Box for technical support.

5. Attach the Fallback Switch's power cord (SW901A) or the output cord of the Switch's power supply (SW901AE) to the IEC 320 male inlet on the unit's rear panel.

This completes the installation of the RS-232 Fallback Switch. It should be ready for continuous operation; see the next chapter.

5. Operation

The RS-232 Fallback Switch will begin operating immediately as soon as you plug its power cord (SW901A) or the input cord of its power supply (SW901AE) into a utility-power outlet—the unit has no ON/OFF switch. It will continue operating until it is unplugged.

For normal automatic switching, leave the Fallback Switch's front-panel toggle switch in the left-hand ("AUTO") position. To manually (override) switch to the device on the primary channel, move this toggle switch to the center ("PRI") position. To manually (override) switch to the device on the alternate channel, move this toggle switch to the right-hand ("ALT") position. As long as this toggle switch is in the PRI or ALT position, the Fallback Switch will maintain a dedicated connection to the corresponding device; it will never automatically switch to the other device until this toggle switch is returned to the AUTO position.

While the Fallback Switch is operating and is switched (automatically or manually) to the primary device, its front-panel "PRIMARY" LED will be lit. While the unit is switched to the alternate device, the "ALTERNATIVE" LED will be lit.

6. Troubleshooting

6.1 Calling Black Box

If you determine that your RS-232 Fallback Switch is malfunctioning, *do not attempt to alter or repair the unit.* It contains no user-serviceable parts. Contact Black Box at (724) 746-5500 for technical support: The problem might be solvable over the phone.

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, including the makes and models of the computer, video card, and video equipment.
- any particular application that, when used, appears to create the problem or make it worse.

6.2 Shipping and Packaging

If you need to transport or ship your Fallback Switch:

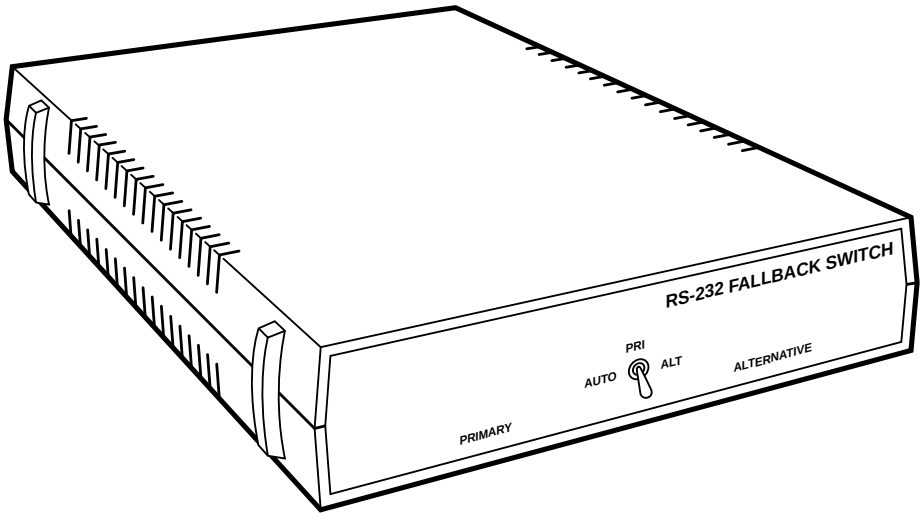
- Package it carefully. We recommend that you use the original container.
- If you are shipping the Switch for repair, include its power cord. If you are returning the Switch, make sure you include everything you received with the unit. Before you ship, contact Black Box to get a Return Materials Authorization (RMA) number.

NOTES

BLACK BOX®
NETWORK SERVICES

MARCH 1997
SW901A
SW901AE

RS-232 Fallback Switch



CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S. 24 hours, 7 A.M. Monday to midnight Friday: **877-877-BBOX**
FREE technical support, 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mail order: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: **www.blackbox.com** • E-mail: **info@blackbox.com**