

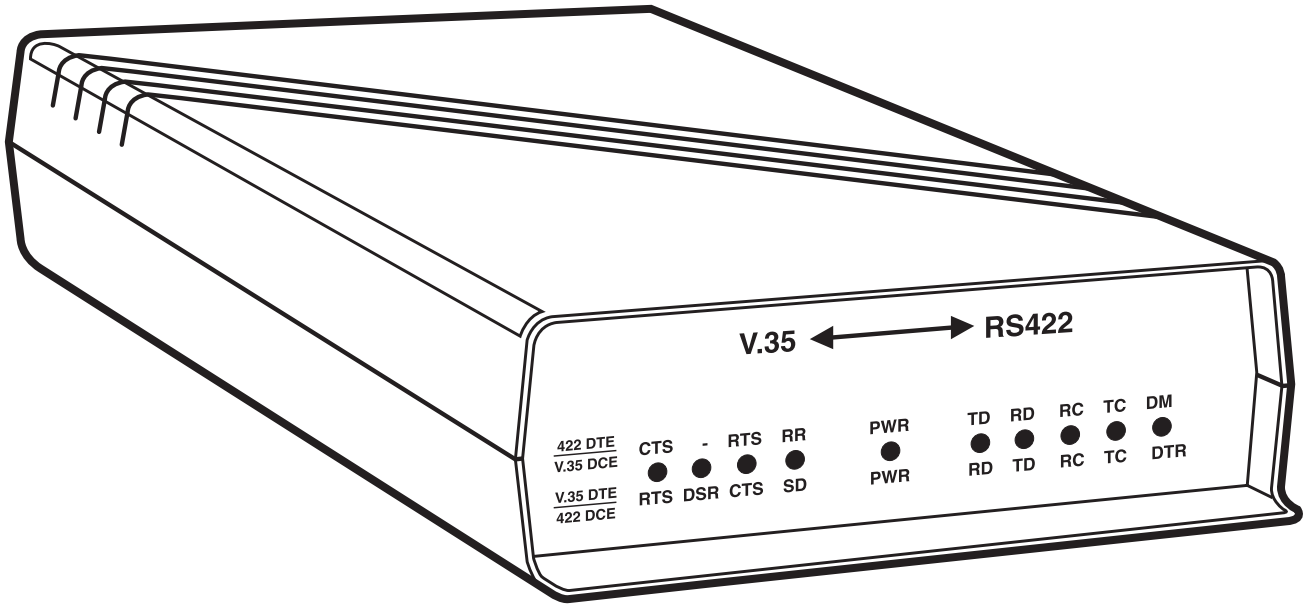


# BLACK BOX<sup>®</sup>

## NETWORK SERVICES



JUNE 2000  
 IC483A-R2  
 IC483AE-R2  
 IC483C-R2



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**FEDERAL COMMUNICATIONS COMMISSION  
AND  
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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 the Canadian Department of Communications.

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 le ministère des Communications du Canada.

**INSTRUCCIONES DE SEGURIDAD (Normas Oficiales Mexicanas Electrical Safety Statement)**

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.

## **TRADEMARKS**

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



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# 1. Specifications

**Speed**—Up to 2.5 Mbps

**Maximum Transmission Rate**—Approximately 2.455 Mbps

**Interface**—RS-422 on RS-449 connector, V.35

**Connectors**—IC481A-R2: RS-422: (1) DB37 female (pinned to RS-449 specifications);  
V.35: (1) male 34-pin “M” block;  
IC483A-R2: RS-422: (1) DB37 female (pinned to RS-449 specifications);  
V.35: (1) female 34-pin “M” block

**Controls**—Jumpers for Pin H of V.35 and Pins 12 and 30 (Terminal Ready) of RS-449;  
V.35 port DTE/DCE jumper-selectable;  
RS-422 port DTE/DCE jumper-selectable

**Maximum Storage Temperature**—158 °F (70 °C)

**Maximum Operating Temperature**—122 °F (50 °C)

**Power**—IC481A-R2, IC483A-R2: 115-VAC, 60-Hz, 16-watt power supply;  
IC483AE-R2: 230-VAC, 50-Hz, 16-watt power supply;  
IC481C-R2, IC483C-R2: Requires 16 watts from RM060 interface

**Size**—Standalone: 2.3"H x 8"W x 11.9"D (5.8 x 20.3 x 30.2 cm);  
Rackmount Card: 7.5"W x 10.5"D (19.1 x 26.7 cm)

**Weight**—2 lb. (0.9 kg)

# 2. Introduction

The V.35 ↔ RS-422 Interface Converter comes in both 115-VAC (IC483A-R2) and 230-VAC (IC483AE-R2) standalone units. A card version (IC483C-R2) is available for rack-mounting. The rack (RM060) is switch-selectable for either 115-VAC or 230-VAC operation.

The V.35 ↔ RS-422 Interface Converter provides bidirectional conversion of all the commonly used V.35 and RS-422 signals. It operates with one port configured as Data Terminal Equipment (DTE) and the other port configured as Data Communications Equipment (DCE) only.

The Converter has two jumper-selectable configurations. One connects RS-422 modem equipment to V.35 terminal equipment (DTE to DCE). The other connects V.35 modem equipment to RS-422 terminal equipment (DCE to DTE). Both configurations allow bidirectional data transfer. Typical applications appear in **Figure 2-1**.

The Converter's ports should be configured the opposite of the equipment's interface that you are connecting to it. See **Figure 2-1**.

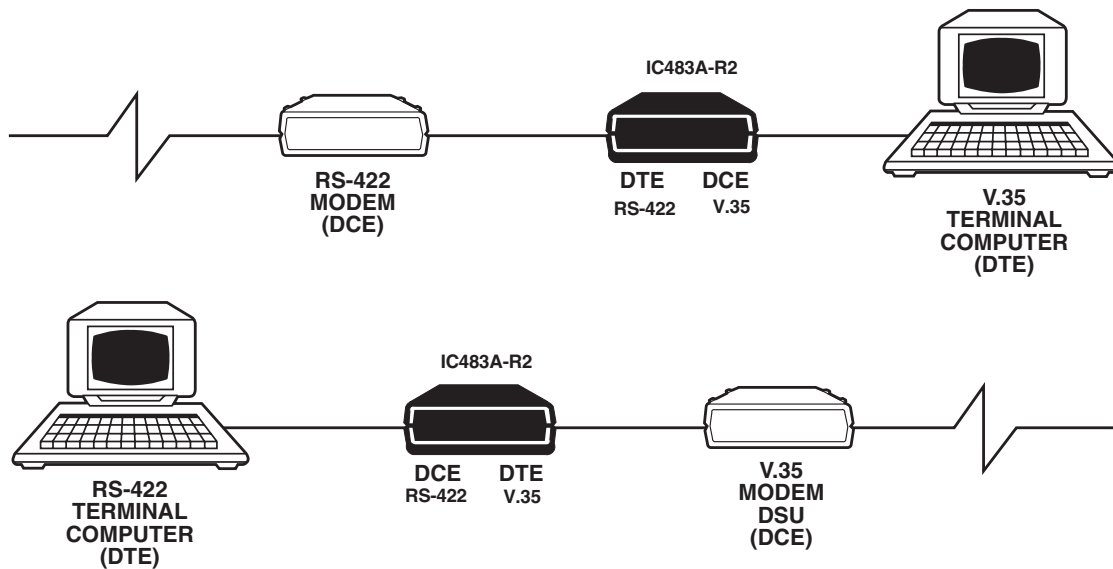


Figure 2-1. Typical Applications of the V.35 ↔ RS-422 Interface Converter.

# 3. Installation

## 3.1 DIP Shunt Settings

V.35 ↔ RS-422 Interface Converter has two jumper-selectable configurations determined by DIP shunt settings located inside the unit on the printed circuit board. One configuration is for connecting a V.35 DCE device to a 422 DTE device, and the other is for connecting a V.35 DTE to a 422 DCE device. See **Figure 3-1** for more information on DIP shunt settings.

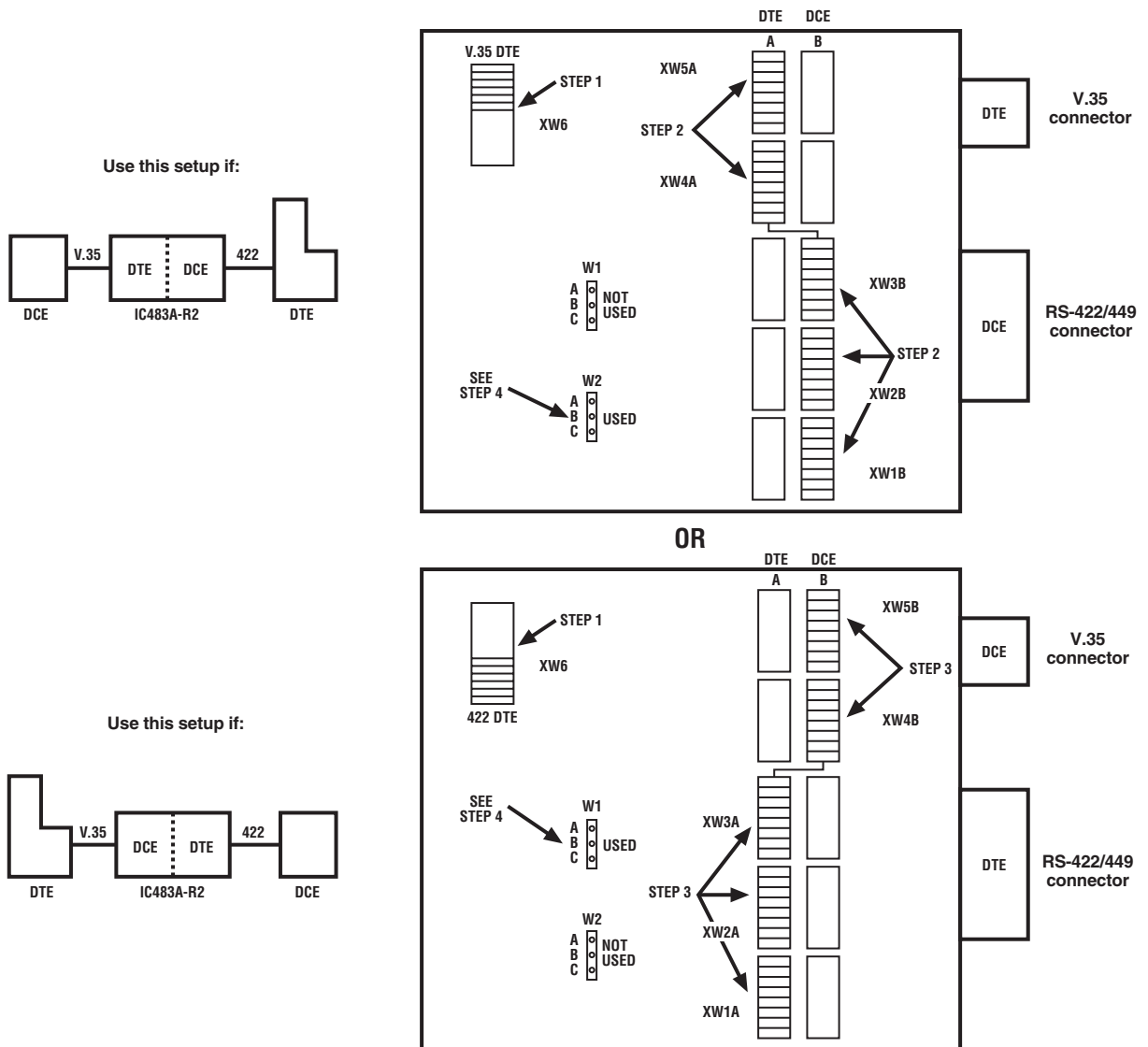


Figure 3-1. Quick Setup Guide for DIP Shunt Settings.

To install the V.35 ↔ RS-422 Interface Converter, follow these steps and refer to **Figures 3-1** and **3-2**.

1. Set jumper XW6 to the V.35 side when configuring the V.35 side of the unit as DTE. Set XW6 to the 422 side when configuring the RS-422 side of the unit as DTE. Jumper XW6 affects only the front-panel LEDs.
2. When configuring the Converter's V.35 side as DTE and the RS-422 side as DCE, set the jumpers in the sockets labeled XW1B, XW2B, XW3B, XW4A, and XW5A.
3. When configuring the Converter's V.35 side as DCE and the RS-422 side as DTE, set the jumpers in the sockets labeled XW1A, XW2A, XW3A, XW4B, and XW5B.
4. Jumper W1 is used if the V.35 side of the Converter is configured as DCE (Jumper W2 is not used). If W1 is in the B-C position, the DTR signal (pin H) is passed from the V.35 port through to pins 12 and 30 of the RS-422 port. If W1 is placed in the A-B position, pins 12 and 30 are forced high.

When the V.35 side of the Converter is configured as DTE, W1 has no effect and W2 is used instead. With W2 in the A-B position, the terminal ready (DTR) signal is passed from the RS-422 side of the V.35 port. With W2 in the B-C position, pin H is forced high.

5. Attach your straight-pinned RS-449 cable from the RS-422 device to the 37-pin female receptacle (J1) on the rear panel of the V.35 ↔ RS-422 Interface Converter.
6. Attach your straight-pinned V.35 cable from the V.35 device to the 34-pin female M-block connector (J2) on the rear panel of the V.35 ↔ RS-422 Interface Converter.
7. After you set the DIP shunts as explained in **Section 3.1**, steps 1–4, plug the power module into an AC outlet. The Converter is now ready to use.



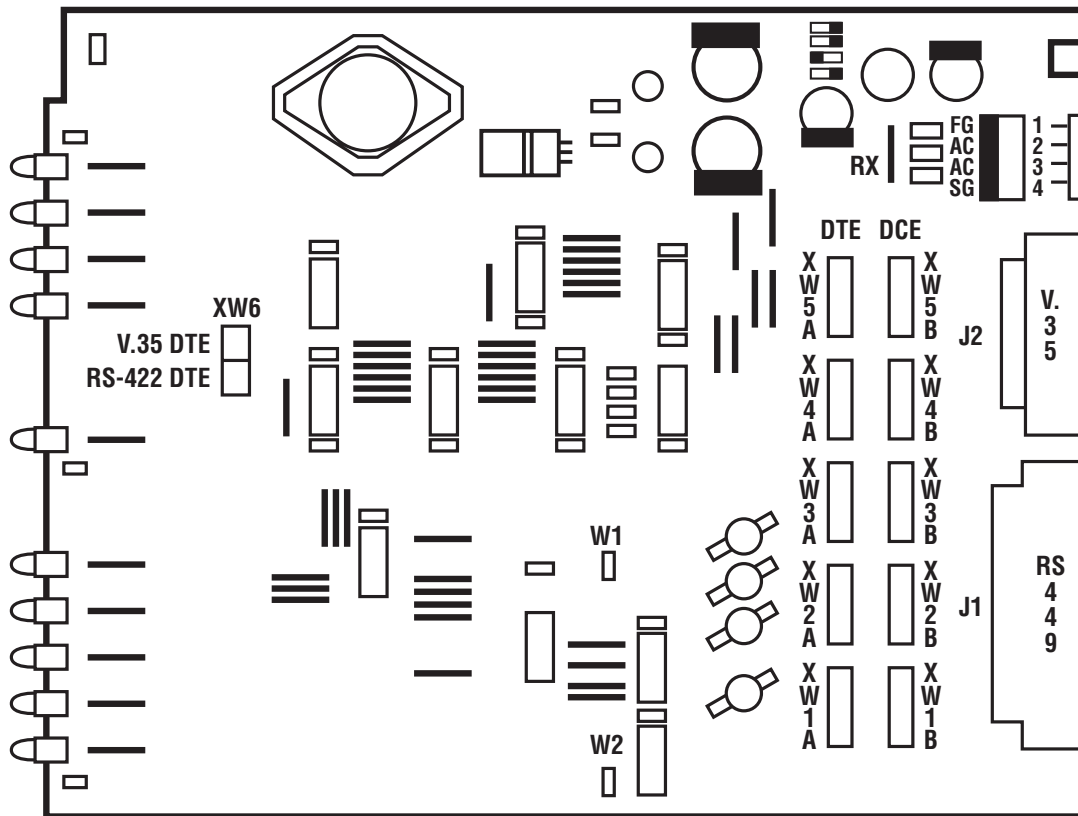


Figure 3-2. Board Layout Showing LED Indicators and Plug Connectors.

## 3.2 LEDs

The V.35 ↔ RS-422 Interface Converter has ten LED indicators on its front panel. The row of type above the LEDs indicates the uses of the LEDs for an RS-422 DTE/V.35 DCE configuration. The row of type below the LEDs indicates the uses of the LEDs for a V.35 DTE/RS-422 DCE configuration. See **Figure 3-3** and **Figures 4-5** and **4-6**. For the card version, the LEDs are distinguished on the pull lever.

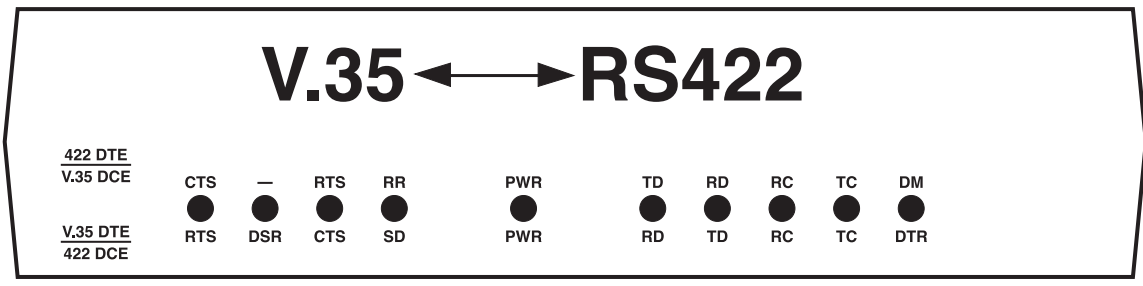


Figure 3-3. Front Panel LEDs.

# 4. Ground Strap and Pin Connections

## 4.1 Ground Strap

Signal grounds (pins 19, 20, and 37 on the 422 interface and pin B on the V.35 interface) are connected together, but not connected to chassis ground (pin A). To connect signal ground to frame ground, install a 100-ohm, ½-watt resistor at location RX near the P1 power connector on the board.

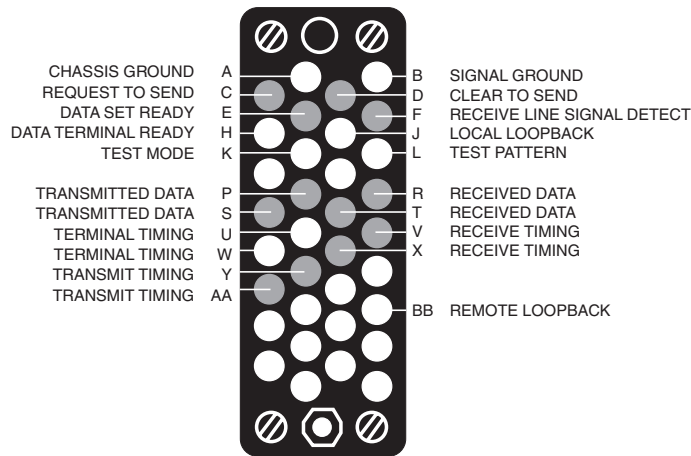


Figure 4-1. V.35 Interface.

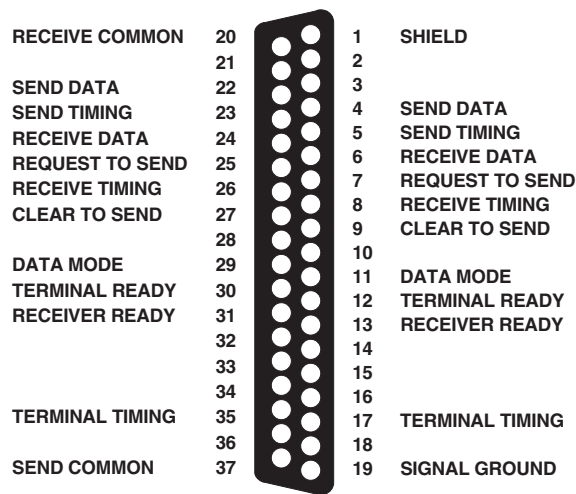


Figure 4-2. RS-422 Interface.

## 4.2 Pin Connections

Figures 4-1 and 4-2 show the pin connections for the V.35 ↔ RS-422 Interface Converter. The pins that are grayed out in these figures indicate signals tied to the front-panel LEDs only.

The Converter is shipped with the RS-422 port configured as DCE and the V.35 port configured as DTE.<sup>1</sup> In this configuration, pins 12 and 30 are inputs. See Figure 4-3 for jumper W2 settings.

To operate the Converter with the RS-422 port configured as DTE and the V.35 port configured as DCE, the signal directions are reversed<sup>2</sup>. Pins 12 and 30 of the RS-422 port become outputs. See Figure 4-4 for jumper W1 settings.

AB–DTR passed through.  
BC–DTR always asserted.

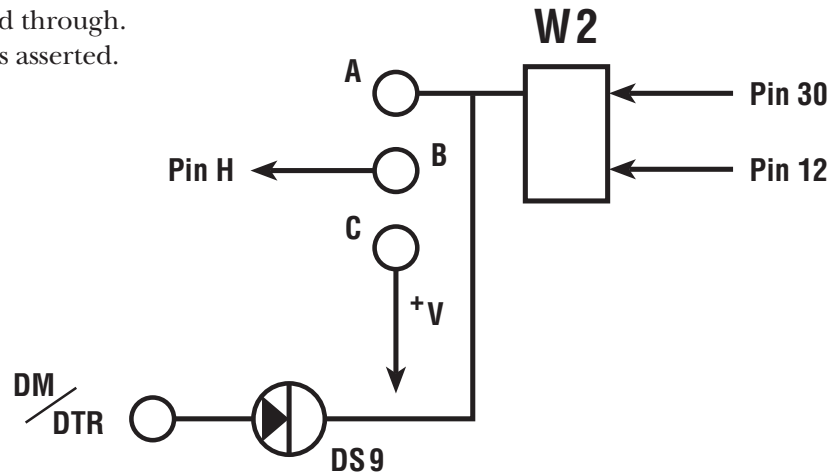


Figure 4-3. Signal directions for RS-422 port configured as DCE; V.35 port configured as DTE.

### <sup>1</sup>NOTE

In this configuration, W1 has no effect on the circuit. W2 is used instead.

AB–DTR always asserted.  
BC–DTR passed through.

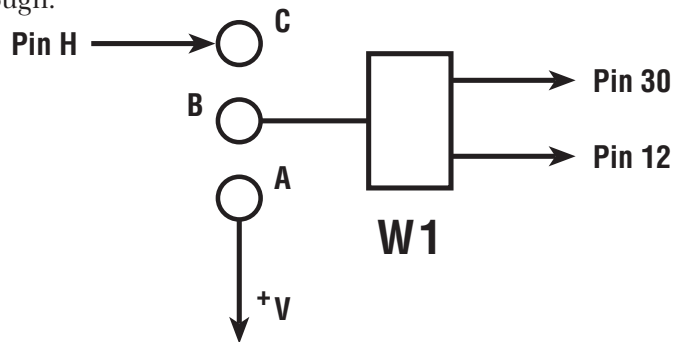


Figure 4-4. Signal directions for V.35 port configured as DCE; RS-422 port configured as DTE.

### <sup>2</sup>NOTE

In this configuration, W2 has no effect on the circuit. W1 is used instead.

The Converter is shipped with the Terminal Ready jumper in the True (ON) position.

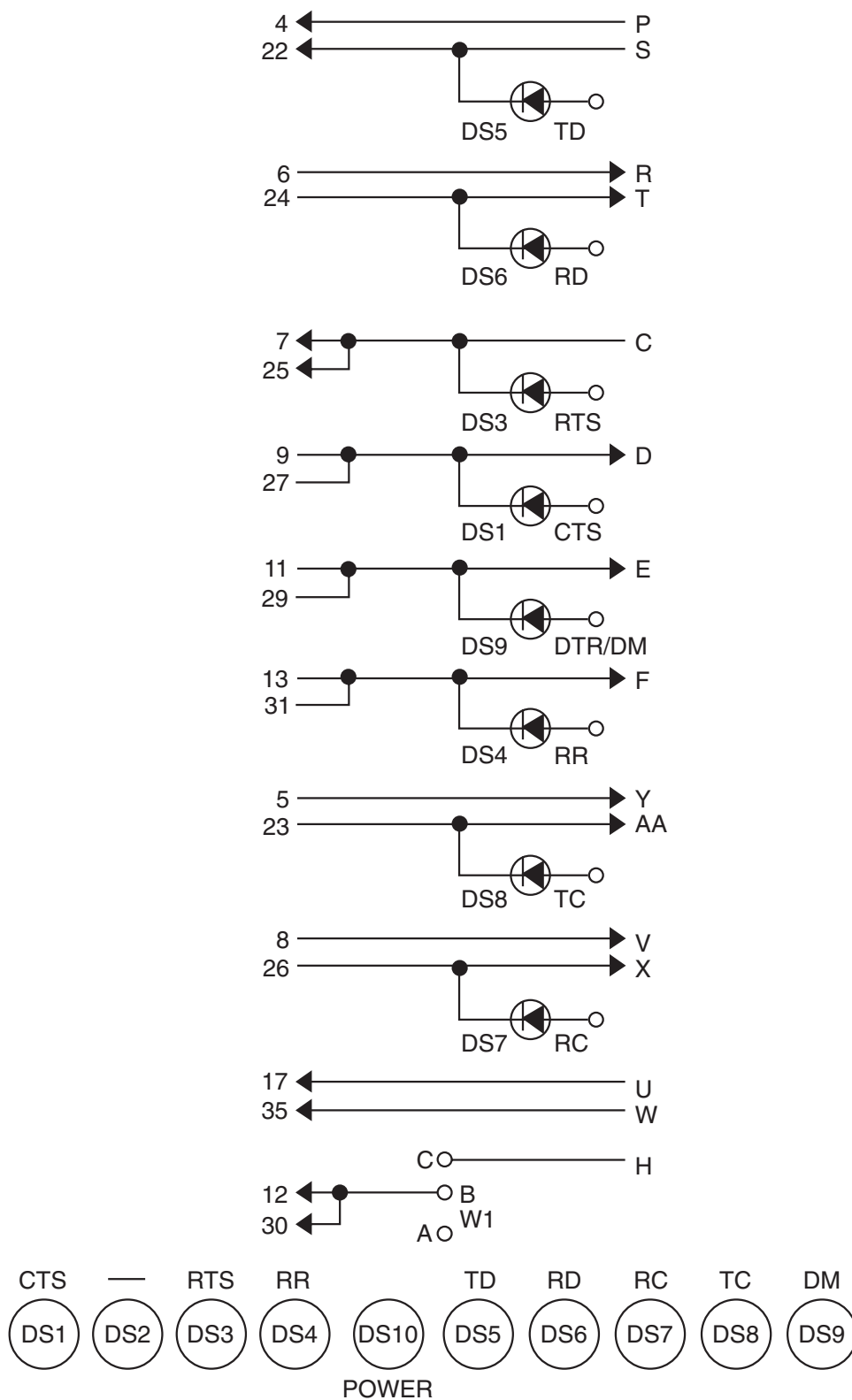


Figure 4-5. The Converter Configured for RS-422 as DTE and V.35 as DCE.

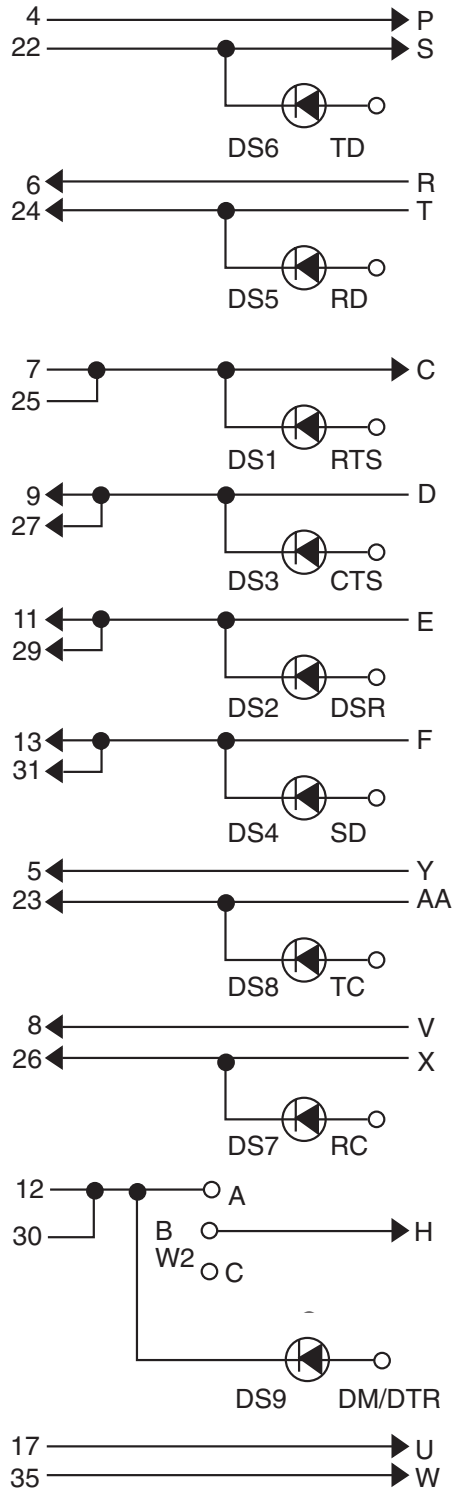


Figure 4-6. The Converter Configured for RS-422 as DCE and V.35 as DTE.



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