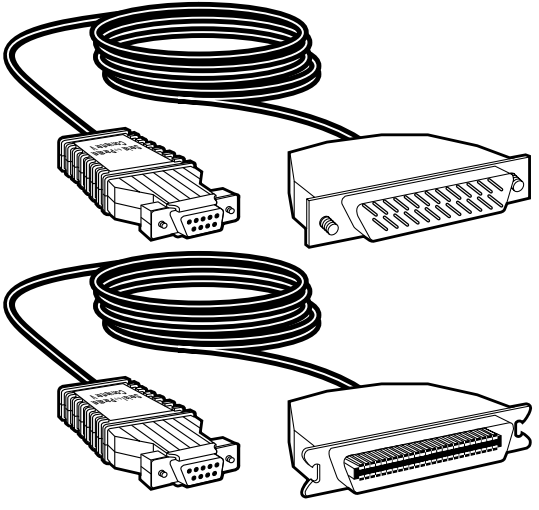
BLACK BOX®
NETWORK SERVICES

FEBRUARY 1998
PI045A
PI046A

Serial↔Parallel Converter V
Serial↔Parallel Converter V-DB25



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FEDERAL COMMUNICATIONS COMMISSION AND CANADIAN DEPARTMENT OF COMMUNICATIONS 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 classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

TRADEMARKS USED IN THIS MANUAL

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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

Interface	Async, RS-232C compatible
Connectors	PI045A—Serial: DB9 female; Parallel: Centronics 36-pin male; PI046A—Serial: DB9 female; Parallel: DB25 male
Cables	6-foot (1.8-m) integral cable
Data Rates	Up to 38,400 bps, selected by external DIP switch
Indicators	LED displays status and operating condition
Power Supply	None required; Uses power from RS-232C interface
MTBF	322,310 hours
MTTR	1 hour
Data Format	7 or 8 bits; 1 or 2 stop bits; even, odd, or no parity

Temperature	32° to 140°F (0° to 60°C)
Humidity	Up to 95%, noncondensing
Altitude	Up to 10,100 feet (3078 m)
Size	2.7"H x 1¼"W x ¾"D (6.9 x 3.2 x 1.9 cm)
Weight	2 oz. (56.7 g)

2. Introduction

2.1 Description

The Serial↔Parallel Converter V and V-DB25 automatically convert RS-232C serial data to parallel-data format and vice versa. Incorporating advanced microprocessor technology, the Converters are able to automatically sense and select parallel and serial modes. Requiring no AC power or batteries, the Serial↔Parallel Converters support serial data rates up to 38.4 Kbps.

For easy configuration, the Converter features a convenient set of external configuration switches. These accessible configuration switches allow the user to control baud rate, parity, word length, and flow control. An easy-to-read LED indicator displays status and operating condition.

The Converter is housed in an ultra-miniature ABS plastic case. The Serial↔Parallel Converter V comes equipped with a DB9 female connector on the serial side and a Centronics® 36-pin male connector on the parallel side. The Serial↔Parallel Converter V-DB25 comes equipped with a DB9 female connector on the serial side and

a DB25 male connector on the parallel side. A six-foot (1.8-meter) integral cable is also included.

2.2 Features

- Converts parallel data to serial data and vice versa
- Automatically selects parallel-to-serial and serial-to-parallel operation
- Serial data rates to 38,400 bps
- No AC power or batteries required
- Supports both software and hardware flow control
- A five-state LED monitors status and diagnostics
- External configuration switches
- Serial DB9 female with built-in 6-foot (1.8-m) cable with a parallel Centronics male or parallel DB25 male connector

3. Configuration

The Converter is simple to install and designed for excellent reliability: just set it and forget it.

3.1 Configuration Switches

The Serial↔Parallel Converter V or V-DB25 uses a set of eight external DIP switches (see Figure 3-1) that allow configuration for a wide range of applications. Because all eight switches are in one externally accessible DIP-switch package, there is no need to open the case for configuration. The configuration switches allow you to select data rates, parity, word length, and flow-control selection. **Section 3.2** describes all switch locations, positions, and functions.

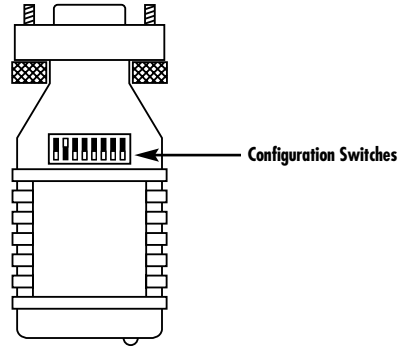
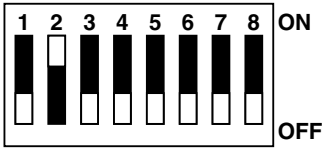


Figure 3-1. The location of the configuration switches.

The Serial↔Parallel Converter V uses a miniature configuration-switch package. To configure your unit, use a small screwdriver and gently push each switch to its proper setting. The ON and OFF positions are shown below.



3.2 Detailed Switch Settings

This section describes the function of each DIP switch and lists all possible settings.

Switch 1: Hardware/Software Control

The setting for Switch 1 determines whether these interface converters will control either hardware or software flow control.

Flow Control	SW1
Hardware	OFF
Software	ON

Switch 2: Enable/Disable the LED Indicator

The setting for Switch 2 determines whether the LED indicator is enabled or disabled.

LED	SW2
ON	ON
OFF	OFF

Switches 3 through 5: Data, Parity, and Stop Bit

Switches 3 through 5 are used to specify the data, parity, and stop bits. The table at the top of the next page shows the settings that may be used.

Data	Parity	Stop Bit	SW3	SW4	SW5
7B	EP	1S	ON	ON	ON
7B	OP	1S	OFF	ON	ON
7B	NP	2S	ON	OFF	ON
7B	EP	2S	OFF	OFF	ON
7B	OP	2S	ON	ON	OFF
8B	EP	1S	OFF	ON	OFF
8B	OP	1S	ON	OFF	OFF
8B	NP	1S	OFF	OFF	OFF

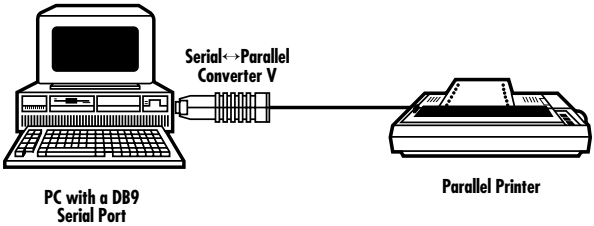
Switches 6 through 8: Frequency and Data Rate

Switches 6 through 8 determine the frequency and data rate. The chart below shows the settings that may be used.

Data Rate	SW6	SW7	SW8
300	OFF	OFF	ON
600	ON	OFF	ON
1200	ON	ON	OFF
2400	OFF	ON	ON
4800	ON	ON	ON
9600	OFF	OFF	OFF
19,200	ON	OFF	OFF
38,400	OFF	ON	OFF

4. Installation

The Converter is very simple to install. Once you have configured the DIP switches, just plug it in like a normal cable and you're ready to go. The figure below illustrates the proper connections for the standard cables.



5. Operation

Once your Converter is properly configured and installed, it should operate transparently—as if it were a standard cable connection. Operating power is derived from the RS-232 data and control signals; there is no "ON/OFF" switch.

The Serial↔Parallel Converter features an easy-to-read status LED that glows red to indicate the condition of the transmission line. Figure 3-1 (page 6) shows the location of the LED.

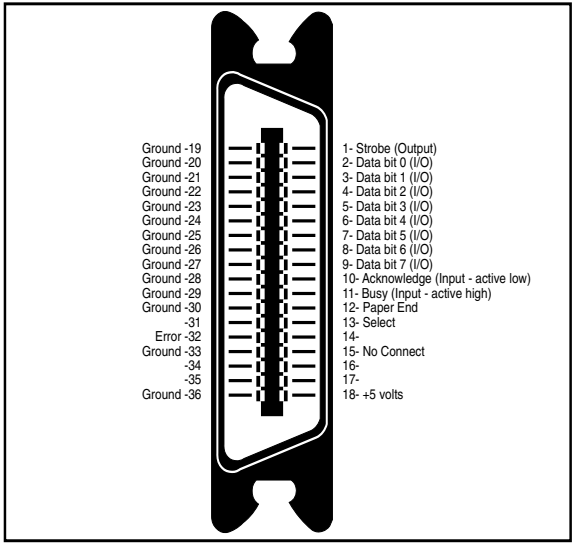
The red LED indicator blinks to show data activity. However, since there is only one indicator, it uses different LED codes to demonstrate various messages. The following chart describes these codes:

Key	
•	Blink
-	Short pause
—	Long pause

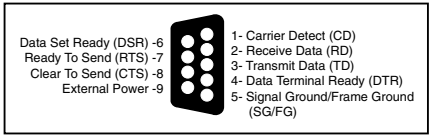
LED Codes	
••-•—••-•—	Computer is sending data.
•—•—•—	Serial device is connected; computer is not sending data.
••—••	Both serial and parallel devices are connected; Computer not sending data.
•-•—•-•—	Printer not ready, data held in buffer.
••••—••••	Computer ignoring flow control, data lost.

Appendix A. Interface Connections

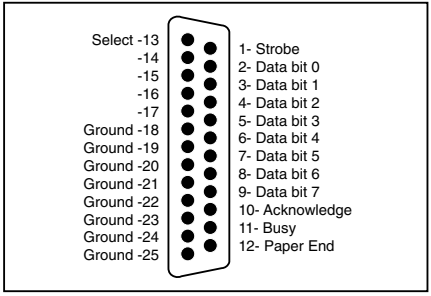
Centronics Interface (PI045A)



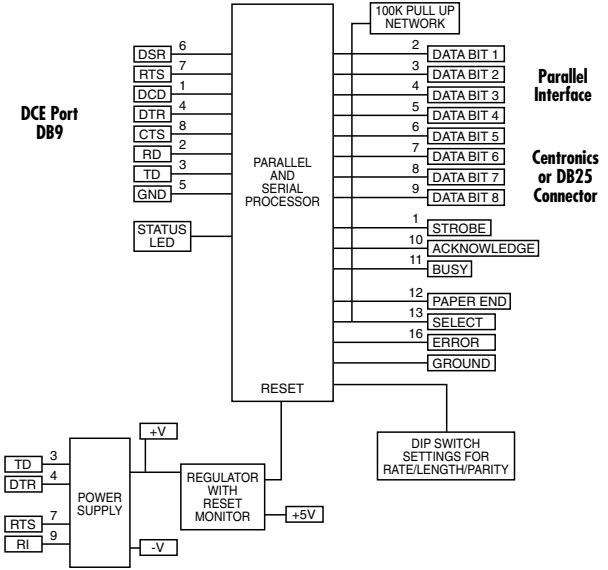
DB9 Interface (PI045A and PI046A)



DB25 Interface (PI046A)



Appendix B. Block Diagram



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