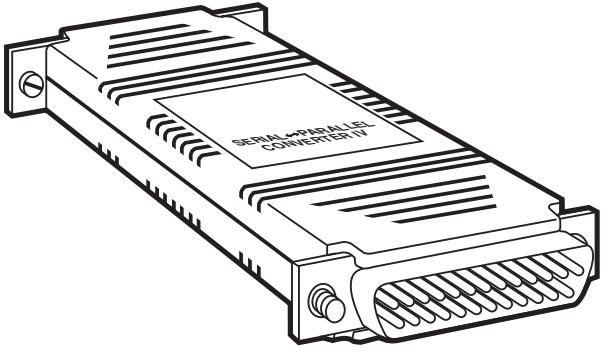
BLACK BOX®
NETWORK SERVICES

APRIL 2001
PI125A

Serial ↔ Parallel Converter IV



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 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.

TRADEMARKS USED IN THIS MANUAL

Centronics® is a registered trademark of Centronics Corporation.

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Contents

1. Specifications

Configuration: (1) 8-position DIP switch

Flow Control: Serial port: X-ON/X-OFF and DTR/CTS; Parallel port: Busy and Acknowledge

Memory: 32 bytes

Speed: 300, 600, 1200, 2400, 4800, 9600, 19,200, or 38,400 bps

Interfaces: (1) RS-232 serial (DCE); (1) Centronics parallel

Connectors: (1) DB25 female (RS-232 side); (1) DB25 male (Centronics side)

Power: 3 mA typical idle power required @ 3 volts DC or higher voltage; derived from DTR and RTS leads of serial interface, or ACK (Pin 10) of DB25 parallel interface

Size: 0.6"H x 2.1"W x 3.5"D (1.5 x 5.3 x 8.9 cm)

Weight: 2 oz. (56.7 g)

2. Introduction

The Serial ↔ Parallel Converter IV converts RS-232 serial to Centronics® parallel or vice versa—you choose the direction of conversion with a switch. The Converter supports both X-ON/X-OFF and DTR/CTS serial hardware handshaking, and Busy/Acknowledge parallel handshaking.

Since the Converter is powered by the connected devices, it needs no external power source.

The Converter is programmed with an 8-position DIP switch for data rate, word structure, and direction of conversion. The DIP switch can also activate a self-test mode, in which the Converter continuously delivers a repetitive data stream to the output port until the test is turned off.

Because the Converter is so small and light, it's easy to connect it directly to a DB25 serial port or a computer's DB25 parallel port. For other connections, all you need is common, low-cost serial or PC parallel printer cables.

3. Installation

CAUTION

Make sure the computer and any other connected devices are turned off before you make any connections to the Converter.

The Converter has been designed to plug directly into a computer's DB25 male (DTE) serial port, or into a computer's DB25 female parallel printer port. If your serial port is a DB9 male port, use an ordinary DB9-female-to-DB25-male adapter. If you're outputting to a parallel printer, use a standard PC-to-parallel printer cable and the included DB25 female-to-female gender changer.

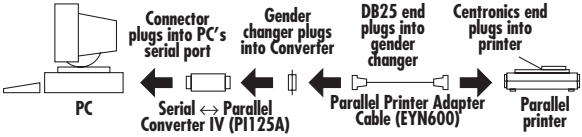

Figure 3-1. Serial-to-Parallel Application.

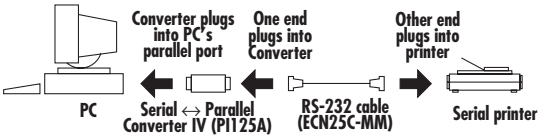

Figure 3-2. Parallel-to-Serial Application.

After connecting the hardware, set up the Converter by selecting the appropriate DIP-switch settings for your application.

Position	1	2	3	4	5	6	7	8
Speed (bps)								
300	OFF	ON	ON					
600	ON	OFF	ON					
1200	OFF	OFF	ON					
2400	ON	ON	OFF					
4800	OFF	ON	OFF					
9600	ON	OFF	OFF					
19,200	OFF	OFF	OFF					
38,400	ON	ON	ON					
Parity/Bits								
Odd/7				OFF	ON			
Even/7				ON	OFF			
None/8				ON	ON			
Self-Test								
ON						ON		
OFF						OFF		
Conversion								
S to P							ON	
P to S							OFF	
RTS for Power								
Selected								ON
Deselected								OFF

NOTE

The Converter reads DIP-switch settings during power-up. When the self-test mode is selected, the Converter will continually check the status (on or off) of this position until the self-test mode is turned off, after which the position will no longer be checked. All other positions (1–5, 7, and 8) are not checked after power-up, and changing any of these positions will not affect the operation of the Converter until the connected equipment is powered off and back on again.

The installation is finished. If your connection is working, you don't have to do anything else. If you have problems, or if you want more information on the self-test mode, read the "Self-Test Mode" section that follows.

Self-Test Mode

The Converter's self-test mode confirms the successful connection and operation of the Converter from the internal processor through the output port. It does *not* specifically verify the correct connection or operation of the input port, but the serial handshake leads that power the Converter must be working for a consistent self-test output to the parallel device when connected in serial to parallel mode.

The Converter can draw operating power from either or both pieces of connected equipment. In serial to parallel mode, the parallel device's input port will not usually be configured so that it can furnish operating power. This means that control of the Converter via the power supply will depend only on control of the handshake leads of the connected serial device. The Converter can then be reset by dropping DTR and RTS briefly and then raising them again. When self-test is selected, raising DTR and RTS will cause the Converter to output the self-test message to the parallel device (usually a printer). Turning off the self-test function by turning DIP-switch Position 6 off will terminate the self-test and place the Converter in operating mode.

When the Converter is to be used in parallel to serial mode, this is how to run the self-test:

1. Connect the Converter's serial port to the serial device (usually a printer). Use a straight-pinned RS-232 cable.

2. Set up the word structure and direction of conversion with the DIP switches.

3. Turn DIP-switch Position 6 on to start the self-test.

4. Turn on the serial device (terminal or serial printer).

The Converter will send the self-test message continuously to the serial device until DIP-switch Position 6 is turned off. Once the self-test is disabled, you can connect to the parallel input device, and send data normally. *Do not* make the parallel connection until the self-test is complete.

Note that a PC's parallel port usually has pull-up resistors embedded at the port, and this condition will typically provide enough power to enable the Converter. If this is the case, dropping DTR and RTS at the Converter's serial output will not be enough to turn the Converter off or to reset it, since the Converter will still be drawing power from the PC's parallel port and thus will remain on even though the serial output port has had power removed from it. To reset the Converter in parallel to serial mode, you might have to turn the PC off and back on again while the serial device is off (or while its leads are low), so that voltages on the parallel port drop.

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