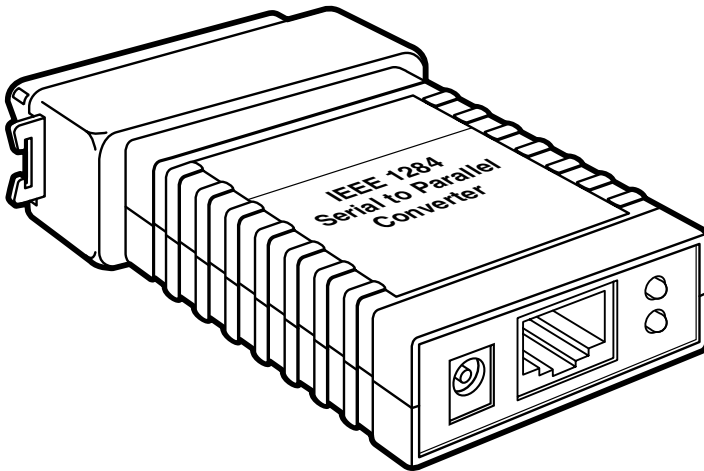




# IEEE 1284 Serial to Parallel Converter



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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 Industry Canada.*

*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 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 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.

# CE Notice

The CE symbol on your IEEE 1284 Serial to Parallel Converter indicates that it is in compliance with the Electromagnetic Compatibility (EMC) directive and the Low Voltage Directive (LVD) of the Union European (EU).

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# 1. Specifications

|                             |  |
|-----------------------------|--|
| <b>Transmission Format—</b> | Serial side: Asynchronous, full duplex; Parallel side: IEEE 1284 BiTronics, supporting Compatibility and Nibble Modes (switchable)         |
| <b>Data Rates—</b>          | 9.6, 19.2, 38.4, and 115.2 kbps  |
| <b>Range—</b>               | Meets capacitive and resistive load requirements of RS-232 and RS-423  |
| <b>ESD Protection—</b>      | 4KV  |
| <b>Connectors—</b>          | Parallel connection: Male 36-pin Centronics® or Mini-Centronics 36; Serial connection: DEC™ MMJ jack, RJ-45 jack, or DB25 (male or female) |
| <b>Temperature Range—</b>   | 32 to 140°F (0 to 60°C)  |
| <b>Humidity Tolerance—</b>  | 5 to 95% noncondensing   |
| <b>Altitude Tolerance—</b>  | Up to 10,100 feet (3078.5 m)   |
| <b>Power Supply—</b>        | Power derived from RS-232/423 and IEEE-1284 interfaces   |

## NOTE

**IEEE 1284 B interface must support the optional 5V on pin 18, and IEEE 1284 C must support interface pin 36 (peripheral logic high). Otherwise, power must be supplied using the optional AC wallmount power supply (PS095).**

|                 |   |
|-----------------|---|
| <b>Size—</b>    | 3"H x 2"W x 0.75"D (7.6 x 5.1 x 1.9 cm) |
| <b>Weight —</b> | 0.5 lb. (0.2 kg)                        |



## 2. Introduction

### 2.1 Description

The IEEE 1284 Serial to Parallel Converter lets you connect RS-232/423 serial hardware to a printer or other device equipped with a BiTronics parallel interface. Able to work in either Level 1 Compatible or Nibble modes (according to the IEEE 1284 standard), the Converter supports the high speeds necessary for graphics-intensive laser-printer applications.

On the serial side, the Converter translates Nibble operations into standard Hewlett-Packard® LaserJet® IV serial printer escape sequences. This allows operation with standard printer drivers. On the parallel side, the Model 2030 translates all commands received from the serial device into BiTronics Nibble operations or Compatible operations (depending upon the mode selected).

The IEEE 1284 Serial to Parallel Converter works with all BiTronics Level 1 compatible hardware, including Level 2 hardware with Level 1 backward compatibility. Power may be supplied by both interfaces, or by an optional plug-in AC adapter (PS095).

### 2.2 Features

- Supports data rates up to 115.2 kbps.
- Supports two IEEE 1284 BiTronics modes: Compatible and Nibble (switchable).
- 4KV ESD protection on serial interface.
- Power derived from both interfaces, or from external AC power supply.
- LEDs for Power and Data mode (distinctive blinking).
- Male 36-pin Centronics or Mini-Centronics 36 for parallel connection.
- DEC MMJ jack, RJ-45 jack, or DB25 (male or female) for serial connection.
- Miniature size.

## 3. Configuration

### 3.1 Configuration Switches

The Converter uses a set of eight external DIP switches that allow configuration to 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.

To set the switches:

1. Open the Converter's case by inserting a small flat-blade screwdriver in the slot on either side of the case and twisting gently.
2. Having exposed the PC board, you will see the miniature DIP-switch packet on the side of the board nearest the Centronics® connector.
3. Use a small screwdriver and gently push each switch to its proper setting. The ON position is printed on the switch packet.
4. Fit the case halves and end plate together and push to snap closed.

### 3.2 Detailed Switch Settings

The DIP switches on the Converter's PC board are labeled 1 through 8. Only switches 1 through 4 are used. Switches 5 through 8 have no function.

#### SWITCH 1: HARDWARE/SOFTWARE CONTROL

The setting for Switch 1 determines whether the Converter will use hardware or software (X-on/X-off) flow control.

| Flow Control | SW1                   |
|--------------|-----------------------|
| Hardware     | OFF (factory default) |
| Software     | ON                    |

## IEEE 1284 SERIAL TO PARALLEL CONVERTER

### SWITCH 2: REVERSE FLOW CONTROL

The setting for Switch 2 determines whether the serial device receives reverse flow control information from the printer (see IEEE 1284 specification for details on reverse flow control).

| <b>Reverse Flow Control</b> | <b>SW2</b>            |
|-----------------------------|-----------------------|
| Hardware (Nibble)           | OFF (factory default) |
| None (Compatible)           | ON                    |

### SWITCHES 3 AND 4: DATA RATE

Switches 3 and 4 set the serial data rate for the Converter.

| <b>Data Rate</b> | <b>SW3</b>            | <b>SW4</b>            |
|------------------|-----------------------|-----------------------|
| 9600 bps         | OFF (factory default) | OFF (factory default) |
| 19,200 bps       | OFF                   | ON                    |
| 38,400 bps       | ON                    | OFF                   |
| 115,200 bps      | ON                    | ON                    |

### SWITCHES 5 THROUGH 8: FUTURE USE

## 4. Installation

Once you have configured the Converter, follow these installation instructions.

1. Plug the Converter directly into the 36-pin Centronics® interface. Where necessary, a short (no more than 6 ft. or 1.8 m) parallel printer cable may be used.
2. The RS-232 interface is wired as a DCE (see below) according to the EIA-561 standard. Connect the Converter to your serial RS-232 DTE device using a straight-through modular cable.

| <b>RJ-45 (DCE)</b> | <b>Signal</b> |
|--------------------|---------------|
| 1 -----            | DSR           |
| 2 -----            | CD            |
| 3 -----            | DTR           |
| 4 -----            | SG            |
| 5 -----            | RD            |
| 6 -----            | TD            |
| 7 -----            | CTS           |
| 8 -----            | RTS           |

3. The Converter derives power from the RS-232/423 and IEEE 1284 interfaces.

### IMPORTANT

**For the Converter to operate as an interface-powered device, the IEEE 1284 B interface must support the optional 5V on pin 18, and IEEE 1284 C must support interface pin 36 (peripheral logic high). If the IEEE 1284 interface does not meet these requirements, you must supply power to the Converter using the optional wallmount AC power supply (PS095).**

## 5. Operation

Once the Converter is properly configured and installed, it should operate transparently—as if it were a standard cable connection. There is no ON/OFF switch.

### LED Status Monitors

The Converter features two easy-to-read status LEDs. The green LED glows when optional AC power (from the optional PS095 power supply) is applied to the unit. The red LED indicator blinks to show data activity. Since there is only one indicator, it uses different LED codes to demonstrate various messages. The following chart describes these codes.

| <b><u>LED Codes</u></b> |  |
|-------------------------|--|
| ● ● — ● — ● ● — ● —     | 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.                                 |

| <b><u>Key</u></b> |             |
|-------------------|-------------|
| ●                 | Blink       |
| —                 | Short pause |
| —                 | Long pause  |

# Appendix: Interface Connections

## 36-Pin Centronics Parallel Port Connections

| Pin | Description   | Direction           |
|-----|---|---------------------|
| 1   | Strobe  | Output              |
| 2   | Data bit 0  | } I/O               |
| 3   | Data bit 1  |                     |
| 4   | Data bit 2  |                     |
| 5   | Data bit 3  |                     |
| 6   | Data bit 4  |                     |
| 7   | Data bit 5  |                     |
| 8   | Data bit 6  |                     |
| 9   | Data bit 7  |                     |
| 10  | Acknowledge   | Input (active low)  |
| 11  | Busy  | Input (active high) |
| 12  | Paper end   |                     |
| 13  | Select  |                     |
| 16  | Logic Ground  |                     |
| 17  | Chassis Ground                                      |                     |
| 18  | +5 volts  |                     |
|     | (19, 20, 21, 22, 23, 24,<br>25, 26, 27, 28, 29, 30) | } Ground            |
| 31  | Init  |                     |
| 32  | Error   |                     |
| 36  | nSelectIn   |                     |

**Note:** All other pins are unconnected.



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