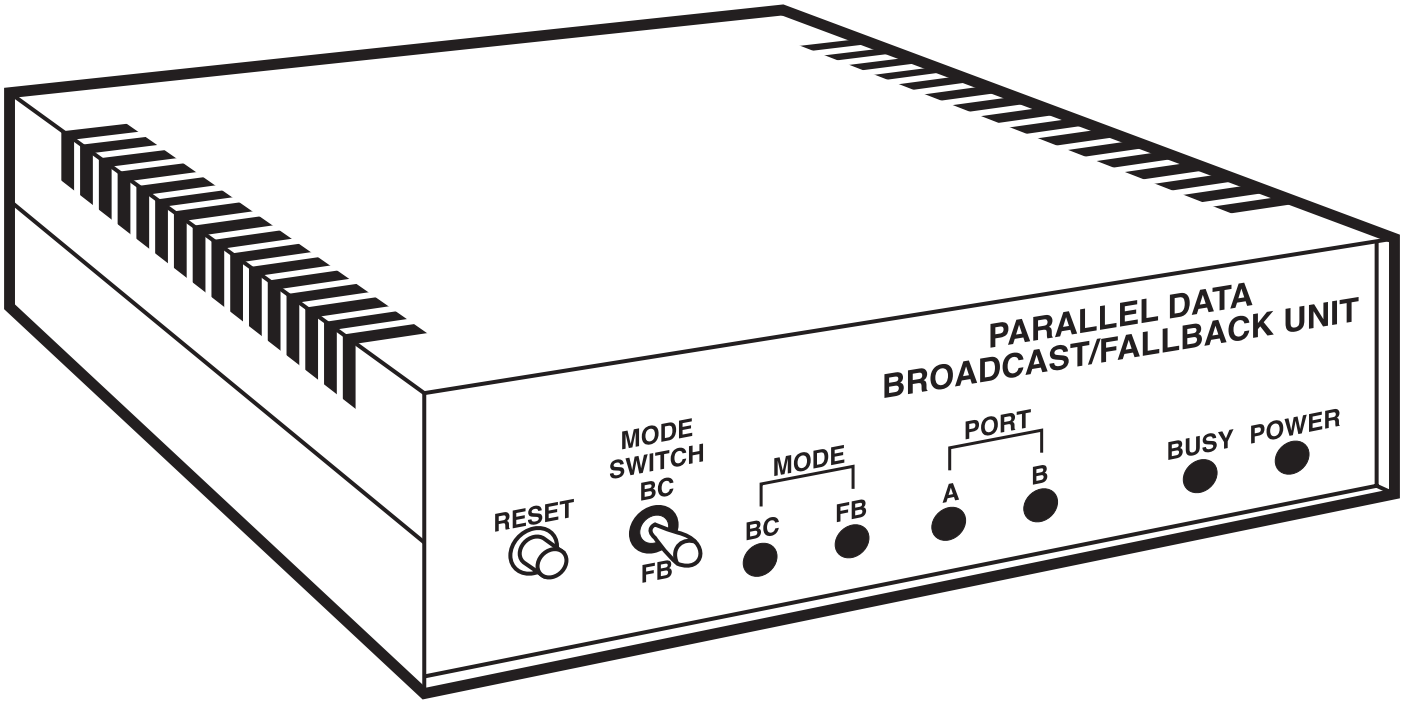
1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax 724-746-0746

BLACK BOX®
NETWORK SERVICES

DECEMBER 2000
PI070A

Parallel Data Broadcast/ Fallback Unit



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 la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie 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 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

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

1. Specifications

Indicators — Power, Busy, Port A, Port B, Broadcast Mode, Fallback Mode

Data Format — Parallel, 8 bit

Flow Control — Busy, Busy Acknowledge

Speed — 40,000 characters per second or as fast as the slowest printer

Interface — IBM PC and Centronics compatible

Connectors — (3) DB25 female

Controls — Reset and Mode Select

Pins Supported — 1-17; pins 18-25 are tied to electrical ground

Power — Wallmount power supply, 115 VAC

Size — 2.06"H x 6"W x 8.06"D (5.23 x 15.25 x 20.47 cm)

Weight — Unit only: 2.1 lb. (0.9 kg); Wallmount power supply only: 0.9 lb. (0.4 kg)

2. Introduction

The Parallel Data Broadcast/Fallback Unit operates in one of two modes: broadcast or fallback. It has one input port and two output ports.

In the broadcast mode, the Parallel Data Broadcast/Fallback Unit acts a data broadcast device. It receives information from the computer or PC and sends ("broadcasts") that information simultaneously to the two printers that are connected to the output ports. The Parallel Data Broadcast/Fallback Unit automatically adjusts its output speed to that of the slowest printer.

In the fallback mode, the information received from the computer or PC is sent to one printer. If that printer should malfunction or cease to operate, the Parallel Data Broadcast/Fallback Unit automatically switches its output to the other printer to ensure uninterrupted data flow.

3. Installation

The installation procedure for the broadcast mode of operation is given in **Section 3.1**. The installation procedure for the fallback mode of operation is given in **Section 3.2**. The front-panel layout is shown in Figure 1 and the jumper functions are given in Table 1. The jumper locations can be found on the board layout shown in Figure 2.

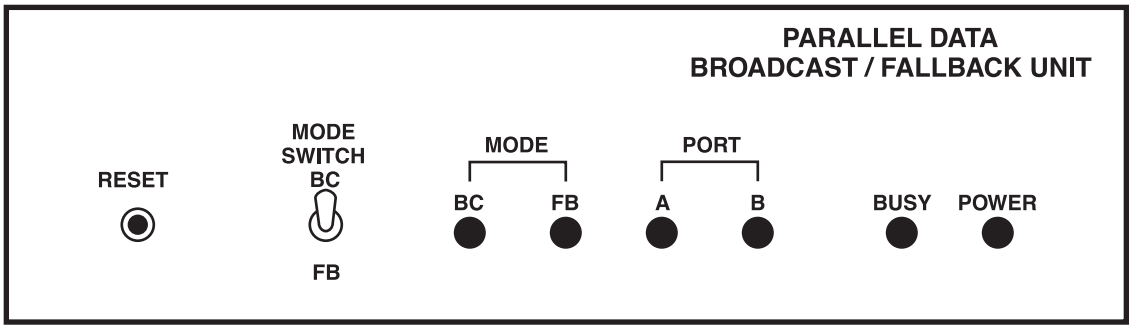


Figure 1. Front Panel.

Table 1. Jumper Functions

Jumper	Position	Function
W2		Reserved for future use.
W3	A-B	Transfers the ACK signal from the printer connected to Port B to the device connected to the Master Port.
W3	B-C	Generates a pseudo-ACK signal from Port B when the Busy signal goes away.
W4	A-B	Transfers the ACK signal from the printer connected to Port A to the device connected to the Master Port.
W4	B-C	Generates a pseudo-ACK signal from Port A when the Busy signal goes away.

NOTE

Jumpers W3 and W4 should always be set in identical positions.

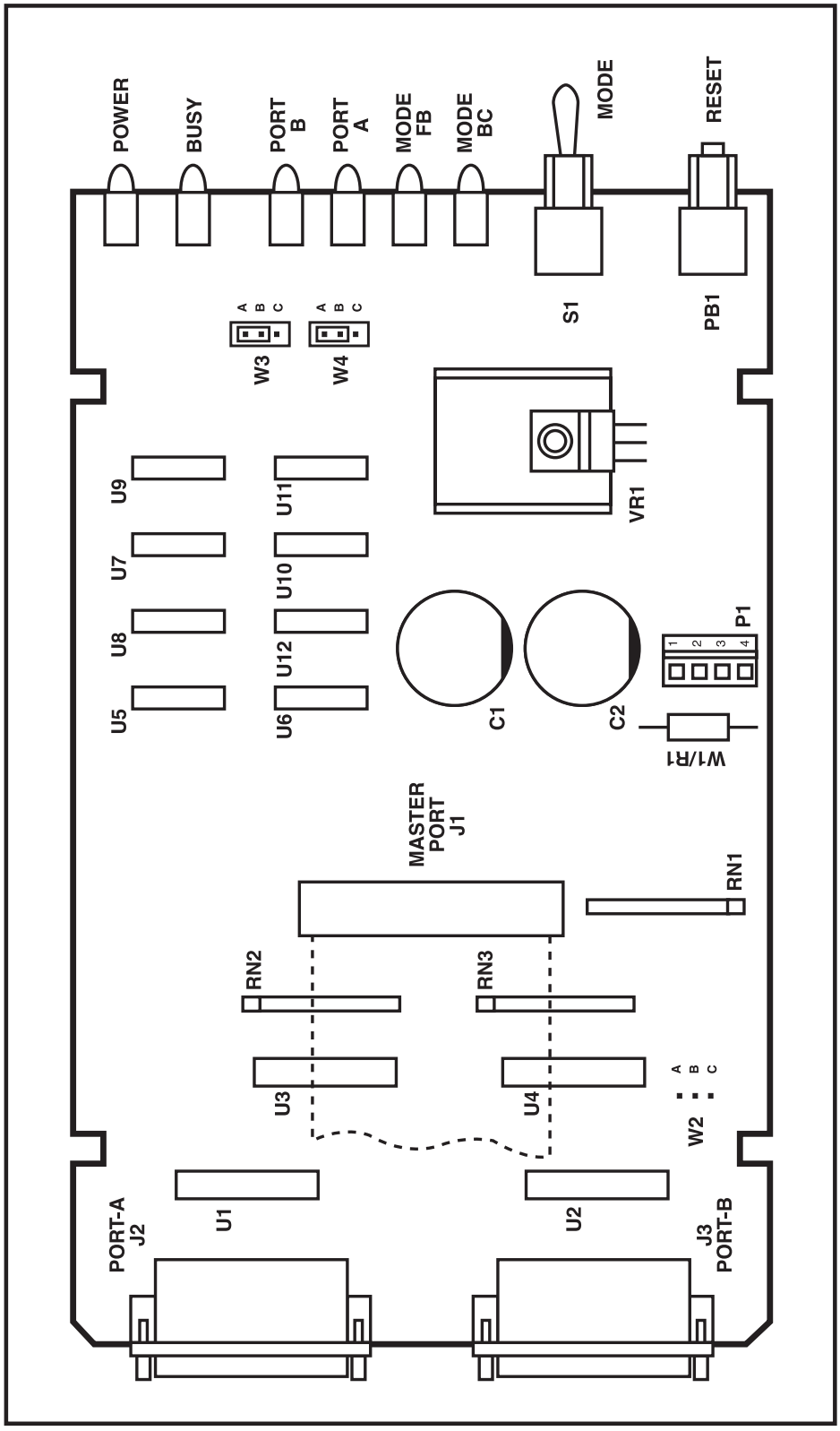


Figure 2. Printed Circuit Board Layout.

3.1 Broadcast Mode Installation

Proceed as follows and refer to Figure 3 to install the Parallel Data Broadcast/Fallback Unit for the broadcast mode of operation:

1. Remove power from the computer or PC and printers that are to be connected to the Parallel Data Broadcast/Fallback Unit.
2. Connect the computer or PC to Master Port of the Parallel Data Broadcast/Fallback Unit.
3. Connect one printer to Port A/Primary and connect the other printer to Port B/Secondary of the Data Broadcast/Fallback Unit.
4. Set the Mode Select switch on the front panel of the Parallel Data Broadcast/Fallback Unit to the Broadcast position.
5. Plug the wallmount power supply into the AC outlet.
6. The Power LED should be lit and the Mode BC, Port A, and Port B LEDs should be lit.

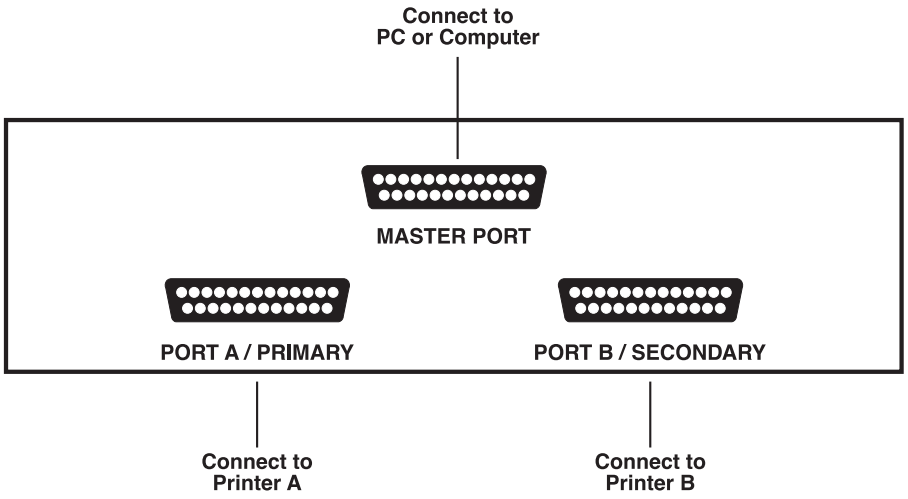


Figure 3. Broadcast Mode Connections.

7. Apply power to the PC, then to the devices connected to the Parallel Data Broadcast/Fallback Unit.
8. Put both printers on-line and set them both up to receive data.
9. Send a small amount of information to the printers to test for proper broadcast operation. If the printers fail to operate, check the following:

- all devices are powered on,
- the printers are are on-line and set up to receive data,
- cable connections are secure (see **Chapter 4** for cable pinning), and
- switch settings on the Parallel Data Broadcast/Fallback Unit are correct.

10. Installation is complete when the units pass the test in step 9.

If the cables and devices are connected properly, powered up, and ready for data transmission and data will not pass to either printer, one of the printer ports may not be receiving an ACK signal (pin 10) from the printer.

The Parallel Data Broadcast/Fallback Unit needs to receive an ACK signal on ports A and B before it will pass the ACK signal through to the Master port. If the printer doesn't provide this signal, set W3 and W4 to position B-C. (Both jumpers should always be in the same position.) An ACK signal will then be sent to the Master Port when the BUSY signal goes away on Port A or Port B.

3.2 Fallback Mode Installation

Proceed as follows and refer to Figure 4 to install the Parallel Data Broadcast/Fallback Unit for the fallback mode of operation:

1. Remove power from the computer or PC and printers that are to be connected to the Parallel Data Broadcast/Fallback Unit.

2. Connect the computer or PC to Master Port of the Parallel Data Broadcast/Fallback Unit.

3. Connect the printer that is to be the primary printer to Port A/Primary, and connect the backup printer to Port B/Secondary of the Data Broadcast/Fallback Unit.

4. Set the Mode Select switch on the front panel of the Parallel Data Broadcast/Fallback Unit to the Fallback position.

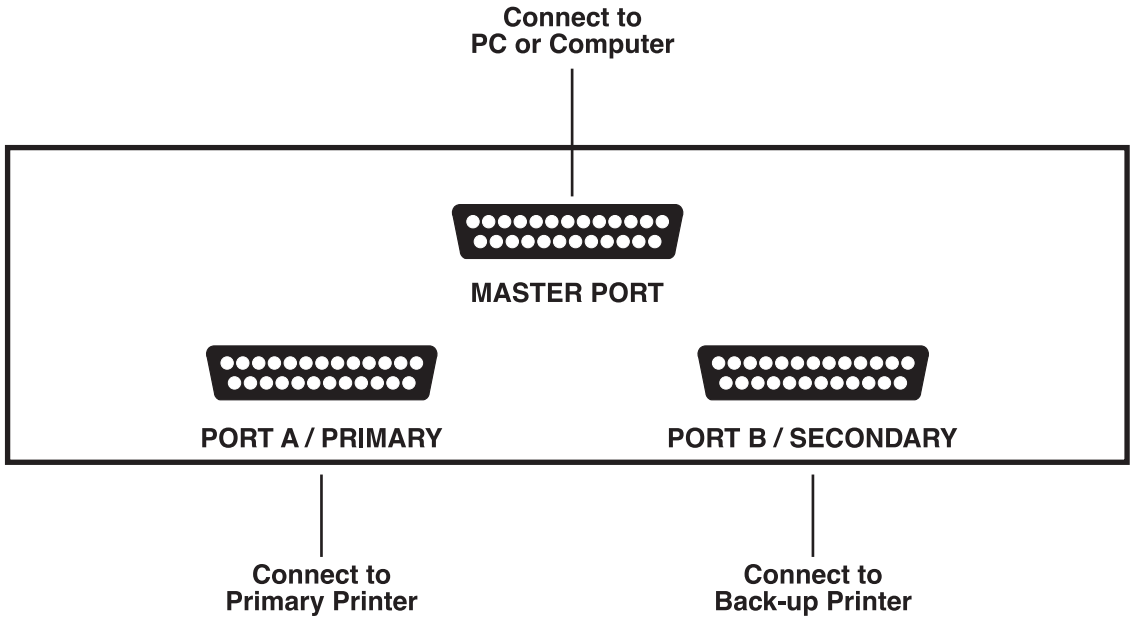


Figure 4. Fallback Mode Connections.

5. Plug the wallmount power supply into the AC outlet.

6. The Power and Mode FB LEDs should be lit.

7. Apply power to the devices connected to the Parallel Data Broadcast/Fallback Unit.

8. Put both printers on-line and set them both up to receive data.

9. Press the Reset button on the Parallel Data Broadcast/Fallback Unit.

10. The Port A LED should be lit. This indicates the Parallel Data Broadcast/Fallback Unit is set to print to the printer connected to Port A/Primary. If the Port A LED does not light, check the following:

    - all devices are powered on,
    - the printers are on-line, have paper, and are set up to receive data,
    - cable connections are secure, and
    - switch and jumper settings on the Parallel Data Broadcast/Fallback Unit are correct.

11. To be sure that the Parallel Data Broadcast/Fallback Unit will operate correctly in the fallback mode, take the primary printer (the printer connected to Port A/Primary) off-line. The Port A LED should go out and the Port B LED should light. Send a print job to printer B to ensure it is functioning properly. Put the primary printer online and press the Reset button on the Parallel Data Broadcast/Fallback Unit to select the printer connected to Port A/Primary.

12. If data does not pass to the ports, jumpers W3 and W4 may need to be changed.

13. Installation is complete after the Parallel Data Broadcast/Fallback Unit passes the test in step 11.

If the printer connected to the Port A/Primary port receives an Error or PE signal from the printer, the Parallel Data Broadcast/Fallback Unit automatically switches to the printer connected to Port B/Secondary.

4. Pinning

Table 2 gives the pinning of the connectors for Port A/Primary and Port B/Secondary ports of the Parallel Data Broadcast/Fallback Unit. Table 3 gives the pinning for the Master port of the Parallel Data Broadcast/Fallback Unit. Table 4 gives the pinning for the Centronics connector on the printer.

Table 2. Port A and Port B DB25 Female Pin Assignments

Pin #	Signal	Direction
1	Strobe	From Broadcast/Fallback Unit
2	Data Bit	From Broadcast/Fallback Unit
3	Data Bit	From Broadcast/Fallback Unit
4	Data Bit	From Broadcast/Fallback Unit
5	Data Bit	From Broadcast/Fallback Unit
6	Data Bit	From Broadcast/Fallback Unit
7	Data Bit	From Broadcast/Fallback Unit
8	Data Bit	From Broadcast/Fallback Unit
9	Data Bit	From Broadcast/Fallback Unit
10	ACK	To Broadcast/Fallback Unit
11	Busy	To Broadcast/Fallback Unit
12	Paper Empty	To Broadcast/Fallback Unit
13	Select	To Broadcast/Fallback Unit
14	Autofeed	From Broadcast/Fallback Unit
15	Error	To Broadcast/Fallback Unit
16	Initialized	From Broadcast/Fallback Unit
17	Select In	From Broadcast/Fallback Unit
18–25	Common Ground	

Table 3. Master Port DB25 Female Pin Assignments

Pin #	Signal	Direction
1	Strobe	To Broadcast/Fallback Unit
2	Data Bit	To Broadcast/Fallback Unit
3	Data Bit	To Broadcast/Fallback Unit
4	Data Bit	To Broadcast/Fallback Unit
5	Data Bit	To Broadcast/Fallback Unit
6	Data Bit	To Broadcast/Fallback Unit
7	Data Bit	To Broadcast/Fallback Unit
8	Data Bit	To Broadcast/Fallback Unit
9	Data Bit	To Broadcast/Fallback Unit
10	Initialize	To Broadcast/Fallback Unit
11	Busy	From Broadcast/Fallback Unit
12	Print End	From Broadcast/Fallback Unit
13	Select	From Broadcast/Fallback Unit (supplied by both printers)
14	Autofeed XT	To Broadcast/Fallback Unit
17	Select In	To Broadcast/Fallback Unit
18–25	Common Ground	

Table 4. Centronics Connector Pin Assignments

Pin #	Signal	Direction	Description
1	Strobe	To Printer	Strobe pulse to read data in. Pulse width must be more than 0.5 microseconds and less than 100 micro seconds. The signal level is normally high; read-in of data is performed at the low level of this signal.
2	Data 1	To Printer	The Data 1 through Data 8 signals represent data bits 1 to 8 respectively. Each signal is at high level when data is logical 1 and at low level when data is at logical 0. The data must be valid at least 0.5 microseconds before the Strobe pulse goes low and must remain valid at least 0.5 microseconds after the Strobe signal returns high.
3	Data 2	To Printer	
4	Data 3	To Printer	
5	Data 4	To Printer	
6	Data 5	To Printer	
7	Data 6	To Printer	
8	Data 7	To Printer	
9	Data 8	To Printer	
10	ACK	From Printer	Approximately 0.5 microsecond. Low indicates that the data has been received and the printer is ready to receive more data.
11	Busy	From Printer	A high signal indicates that the printer cannot receive data at the moment.

Table 4 (continued). Centronics Connector Pin Assignments

Pin #	Signal	Direction	Description
12	Paper End	From printer	A high signal indicates a form feed command has been received from the computer. The printer will go offline to allow you to insert paper. The signal will go low when the printer is back online.
13	Select	From Printer	Indicates the printer is in the selected sate.
14	Auto Feed XT	To Printer	When this signal is low, the paper is automatically fed one line after a carriage return.
15			Not used.
16	0 V		Logic ground level.
17	Chassis Ground		
18			Not used.
19–30	Ground		Twisted pair ground returns for signals 1 through 12 respectively. Same as logic ground.
31	Input Prime	To Printer	When low, the printer is reset to its initial state and the print buffer is cleared. This signal is normally high and its pulse width must be more than 50 microseconds.
32	Error	From Printer	This signal becomes low when the printer is offline.
33	Ground		Same grounds as pins 19 to 30.
34			Not used.
35			Not used.
36	Select In	To printer	