

OWNER'S MANUAL

TRAN•X[®] PARALLEL/SERIAL CONVERTERS FOR HIGH SPEED LONG DISTANCE COMMUNICATIONS

LPT-460
PS-02
SP-01
SP-02

Thank you for selecting a BayTech Tran-x high speed parallel/serial converter product.

The data provided in this Owner's Manual explains the various ways you can operate your unit and configure it to your computer system. We suggest that you read this manual carefully before attempting to install the Tran-x and that you place special emphasis on correct cabling and configuration. If you have any problems with your installation, please contact a BayTech applications engineer for assistance toll-free at 800-523-2702.

BayTech also manufactures data communications devices that provide port sharing and expansion, networking, port contention, buffered and non-buffered printer sharing; modems and multiplexers. If you would like information on any of these models, please contact BayTech Customer Service. A brief description of other BayTech products is included in the back of this owner's manual.

We welcome any comments you may have about our products and hope you will continue to look to BayTech for your data communications needs.

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1 GENERAL INFORMATION

BayTech's Tran-x high speed parallel/serial converter products are your solution to the common requirement for high speed data transfer over long distances. The Tran-x LPT-460 internal card and Tran-x PS-02 external converter module allow your PC, graphics workstation, or network file server to transmit data at speeds up to 460k baud at distances up to 1000 feet or even greater distances at lower speeds.

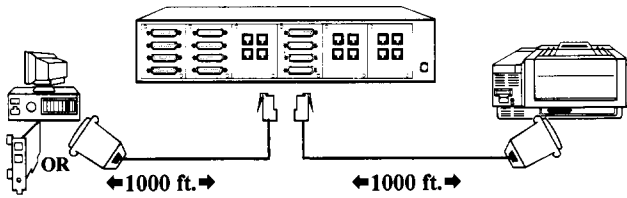
The LPT-460 and PS-02 convert parallel data to serial data which can then be received by any remote serial or serial-to-parallel conversion device. The LPT-460 and PS-02 typically connect to the Tran-x SP-01 or Tran-x SP-02 high speed serial-to-parallel converter modules to allow high speed printing over long distances. Tran-x may also connect to the BayTech 700/800 Series, Model 24/24SII, LaserShare, or network print servers for the fastest peripheral sharing speeds available anywhere. Other features include:

1. High speed data output over extended distances with available baud rates from 300 to 460k bps.
2. Communicates with EIA-422 serial interface using an RJ-45 modular jack to provide ease and cost effectiveness in cabling. LPT-460 will also support EIA-232 serial interface.
3. Uses either RJ-11 (4-wire) or RJ-45 (8-wire) cabling.
4. Connects to Tran-x SP-01 or SP-02 converter modules, BayTech peripheral sharing devices, or other serial devices.
5. The LPT-460 card easily installs into your PC expansion slot and is and configurable as LPT1, LPT2, or LPT3.
6. The PS-02 plugs directly into your PC's existing parallel port or a parallel port on any BayTech peripheral sharing solution.
NOTE: The PS-02 requires external power.

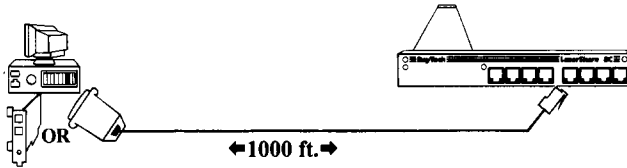
The SP-01 and SP-02 accept high speed serial data and convert it into parallel data. The serial source would typically be the LPT-460, PS-02, or the Model 24SII. The SP-01 and SP-02 have the following features:

1. Serial input speeds up to 460k baud bps.
2. Communicates with EIA-422 serial interface using an RJ-45 modular jack to provide ease and cost effectiveness in cabling.
3. 128 character receive buffer for XON/XOFF or hardware handshaking.
4. Uses either RJ-11 (4-wire) or RJ-45 (8-wire) cabling. Either unit will require external power when using RJ-11 (4-wire) cabling.
5. Connects to Tran-x LPT-460 extender card, PS-02 converter module, BayTech peripheral sharing devices, or other serial devices.
6. The SP-01 is high speed module which interfaces directly to the Centronics connector on your parallel printer. The SP-02 interfaces directly to a parallel computer port on the BayTech 700/800 Series, the Model 24, Model 24SII, or any other parallel receiving device with a DB-25 female connector.
7. SP-01 Reports printer status back to PC when using XON/XOFF.

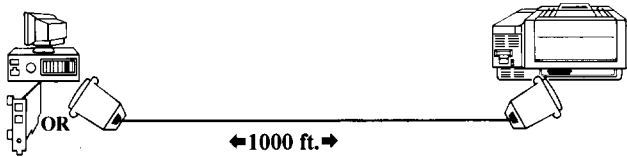
Figure 1 below shows typical examples using Tran-x parallel/serial converters.



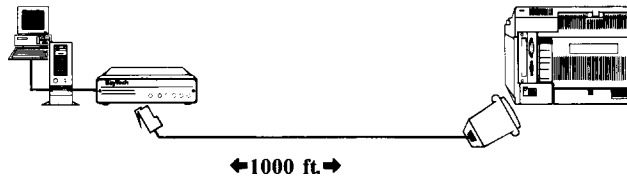
Connect Tran-x to BayTech Model 24SII DES for the fastest peripheral sharing solution. The Model 24SII DES is expandable from 4 to 24 ports and features speeds to 460K bps.



Use Tran-x with BayTech LaserShare. LaserShare allows up to 8 users direct access to the HP LaserJet family of printers.



Use Tran-x for parallel printing to 1,000 feet directly from your PC.



Use Tran-x for parallel printing to 1,000 feet from a BayTech Print Server.

FIGURE 1

It is not necessary to read this entire manual for a specific Tran-x model. Use the following guidelines and reference chart to determine which sections apply to your specific Tran-x model.

1. Determine what Tran-x model you have received (see packing list).
2. Determine if you will be connecting your Tran-x using 8-wire (RJ-45) or 4-wire (RJ-11) cabling.
3. See the quick reference chart below to determine the applicable sections and appendices.

TRAN-X QUICK REFERENCE CHART	
Model/Cabling	Applicable Sections and Appendices
LPT-460/8-wire	2.1, 3.1-3.5, 3.7.1, 4.1, 4.1.1, 4.1.4, App. A.1, App. C
LPT-460/4-wire	2.1, 3.1-3.5, 3.7.1, 4.2, 4.2.1, 4.2.4, App. A.1, App. C
PS-02/8-wire	2.2, 3.1-3.3, 3.6, 3.7.1, 4.1, 4.1.2, 4.1.4, App. A.2, App. B, App. C
PS-02/4-wire	2.2, 3.1-3.3, 3.6, 3.7.1, 4.2, 4.2.2, 4.2.4, App. A.2, App. B, App. C
SP-01/8-wire	2.3, 3.1, 3.3, 3.6, 3.7.2, 4.1, 4.1.3, 4.1.4, App. A.3, App. B, App. C
SP-01/4-wire	2.3, 3.1, 3.3, 3.6, 3.7.2, 4.2, 4.2.3, 4.2.4, App. A.3, App. B, App. C
SP-02/8-wire	2.3, 3.1, 3.3, 3.6, 3.7.2, 4.1, 4.1.3, 4.1.4, App. A.4, App. B, App. C
SP-02/4-wire	2.3, 3.1, 3.3, 3.6, 3.7.2, 4.2, 4.2.3, 4.2.4, App. A.4, App. B, App. C

2 SPECIFICATIONS

2.1 TRAN•X LPT-460 SPECIFICATIONS

INTERFACE: Asynchronous EIA-232 (CCITT V.24), -5v mark, +5v space or EIA-422, 0 to 5 volt differential (TX+, TX-, RX+, RX-).

THROUGHPUT SPEEDS: 46,000 characters per second.
690 pages per minute text; 3.68 pages per minute graphics.

FACTORY POWER-UP DEFAULT CONFIGURATION:

Serial Interface: EIA-422.

Baud rate: 460,800 bps.

Word size: 8 bits.

Parity: None.

Stop Bits: 1 bit.

Power-On: Disabled.

LPT Assignment: LPT1.

Interrupt Assignment: IRQ7.

USER-PROGRAMMABLE CONFIGURATIONS:

The following parameters are configured via jumper location or DIP switch setting:

Serial Interface: EIA-232 or EIA-422.

LPT Assignment: LPT1, LPT2, or LPT3.

Interrupt Assignment: IRQ7 or IRQ5.

The following parameters are configured via the BayTech supplied **P MODE** command for IBM compatible PCs:

Baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 57600, 76800, 115200, 230400, or 460800.

Word size: 7 or 8 bits.

Parity: Even, odd or none.

Stop bits: 1 or 2.

NOTE: A serial configuration of 7 data bits and no parity requires the number of stop bits to be 2.

Power-On: Enabled or disabled.

Handshake Select: XON/XOFF or Hardware (optional).

DIMENSIONS: IBM PC half card; 5.75"l x 5.1"w.

POWER: Draws power from the PC.

CONNECTORS: RJ-45 (8-wire) modular connector which will also accept an RJ-11 (4-wire) connector.

MOUNTING: Plugs into either half or full expansion slot in the PC.

HANDSHAKING: HSI/CTS and XON/XOFF.

WARRANTY: One year on parts and labor.

2.2 TRAN•X PS-02 SPECIFICATIONS

INTERFACE: EIA-422, 0 to 5 volt differential (TX+, TX-, RX+, RX-).

FACTORY POWER-UP DEFAULT CONFIGURATION:

Baud rate: 460,800 bps.

Word size: 8 bits.

Parity: None.

Stop Bits: 1 bit.

Handshaking: Hardware.

NOTE: The word size, stop bits, and parity are fixed at 8, 1, and none respectively.

USER-PROGRAMMABLE CONFIGURATIONS: The following items are configured via jumper location:

Baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 57600, 76800, 115200, 230400, or 460800.

Handshaking: Hardware (HSI) or XON/XOFF.

DIMENSIONS: 2.1"w x 3.2"l x 0.7"h.

POWER: +7 to +12 VDC, 38ma; external power option required.

CONNECTORS: RJ-45 (8-wire) modular connector which will also accept an RJ-11 (4-wire) connector, DB-25 male connector for connection to parallel device.

MOUNTING: Mounts to DB-25 female parallel port of a PC or a parallel printer port on the BayTech 700/800 Series and BayTech Model 24/Model 24SII peripheral sharing solutions.

WARRANTY: One year on parts and labor.

2.3 TRAN•X SP-01 AND SP-02 SPECIFICATIONS

INTERFACE: EIA-422, 0 to 5 volt differential (TX+, TX-, RX+, RX-).

FACTORY POWER-UP DEFAULT CONFIGURATION:

Baud rate: 460,800 bps.

Word size: 8 bits.

Parity: None.

Stop Bits: 1 bit.

Handshaking: Hardware.

NOTE: The word size, stop bits, and parity are fixed at 8, 1, and none respectively.

USER-PROGRAMMABLE CONFIGURATIONS: The following items are configured via jumper location:

Baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 57600, 76800, 115200, 230400, or 460800.

Handshaking: Hardware (HSO) or XON/XOFF.

DIMENSIONS: SP-01: 2.1"w x 2.9"l x 0.7"h;
SP-02: 2.1"w x 3.2"l x 0.7"h.

POWER: Receives power from the communication cable (+12v, 38ma) if cabled to the Model 24SII peripheral sharing solution, Tran-x LPT-460, or Tran-x PS-02 when using RJ-45 (8-wire) cabling. External power required when using RJ-11 (4-wire) cabling.

CONNECTORS: RJ-45 (8-wire) modular connector with built-in RJ-11 (4-wire) connector. SP-01 has Centronics connector for connection to parallel printer. SP-02 has DB-25 male connector for connection to parallel device.

MOUNTING: SP-01 mounts to Centronics connector of parallel printer; SP-02 mounts to DB-25 connector of a parallel computer port on the BayTech 700/800 Series or Model 24/Model 24SII peripheral sharing solutions.

WARRANTY: One year on parts and labor.

3 **INSTALLATION**

The information contained in this section is provided as an overview and guide to installation and set-up of your Tran-x parallel/serial converter.

NOTE: Determine the type(s) of Tran-x parallel/serial converter(s) you have purchased prior to installation (i.e., LPT-460, PS-02, SP-01, or SP-02).

3.1 **UNPACKING**

After opening the box, check the packing list that comes with the Tran-x unit to ensure that you have received all components. At a minimum you should have received the unit, this manual and any applicable addendums, and a software utility diskette. Also check the unit to make certain that it did not incur damage during shipping. If items are missing or damage did occur, please contact BayTech technical support at 800-523-2702.

3.2 **SOFTWARE UTILITY DISKETTE**

IMPORTANT: Copy the BayTech original diskette onto a blank diskette and store the original in a safe place. Read your operating systems manual for copying instructions.

A PC having either the Tran-x LPT-460 or PS-02 installed may utilize the **FPRINT.EXE** program. FPRINT.EXE optimizes the parallel printer speed of your PC when you are printing a file. To use FPRINT.EXE, first copy the file to your PC's root directory (or subdirectory) and then verify that the directory containing FPRINT.EXE is included in the PATH statement of your PC's AUTOEXEC.BAT file. When FPRINT.EXE is executed with no file name specified, a menu will appear similar to that shown on the following page:

BayTech 1992
Parallel Print Program

```
Sending file to I/O Address: 3bc
Usage:  fprint [filename.ext][portnum]
Example: fprint graphic.lst 1 - for LPT1
         fprint graphic.lst 2 - for LPT2
         fprint graphic.lst 3 - for LPT3
         fprint graphic.lst      defaults to LPT1
```

Program sends files to LPT1, LPT2, or LPT3
LPT1, LPT2, and LPT3 I/O addresses are calculated by looking at:
memory locations 0:408, 0:40A, and 0:40C for LPT1, LPT2, and LPT3.

If your computers does not support these addresses for the
location of your parallel ports, this program will not work with
your computer.

This menu shows how to use the FPRINT.EXE program. The typical format for the FPRINT.EXE command would be as follows ([X] denotes optional):

FPRINT <Filename> [X]

where X is 1 (for LPT1), 2 (for LPT2), or 3 (for LPT3) and <Filename> is the name and extension of any file. If you do not include a number at the end of this command, the file will be sent to LPT1 by default.

The Tran-x LPT-460 utilizes the **LPTSTAT.EXE** and **PMODE.EXE** programs. *Section 3.4* discusses how LPTSTAT.EXE is used in the initial installation of the LPT-460. The PMODE.EXE program is used by your PC to configure various parameters of the LPT-460. Please see *Section 3.5* for more information regarding PMODE.EXE.

NOTE: The Tran-x PS-02 may also utilize the LPTSTAT.EXE program to perform various diagnostics.

The diskette also contains a **README** file which describes the function of these programs. To view the README file on your terminal screen, enter the command **TYPE A:README** from your computer prompt. To print this file, enter the command **COPY A:README LPT1:** from your computer prompt.

3.3 FACTORY DEFAULT CONFIGURATION

From the factory, all Tran-x products come configured to use EIA-422 serial interface, hardware handshaking, and have serial parameters set at 460,800 baud rate, 8 data bits, 1 stop bit, and no parity.

The baud rate for the Tran-x PS-02, SP-01, and SP-02 is configured via jumper setting (see *Section 3.6*). Handshaking for the Tran-x PS-02, SP-01 and SP-02 is also configured via jumper setting. The word size, stop bits, and parity for these models are fixed at 8, 1, and none respectively (i.e., these parameters are not programmable).

The Tran-x LPT-460 parallel to serial converter card comes set to use LPT1 and interrupt IRQ7. The LPT assignment is configured via DIP switch settings (see *Section 3.4*). The IRQ assignment and serial interface are configured via jumper settings (see *Section 3.4*). The serial parameters (baud rate, word size, stop bits, and parity) are configured via the **PMODE** command (see *Section 3.5*).

If these factory set values do not meet your application requirements, you will have to reconfigure your Tran-x unit.

3.4 TRAN•X LPT-460 PHYSICAL INSTALLATION AND CONFIGURATION

The Tran-x LPT-460 installs directly into an 8-bit or 8/16-bit I/O expansion slot inside an IBM PC/XT/AT or compatible computer.

You will need to following equipment to install the Tran-x LPT-460 inside your PC:

- A phillips-head screwdriver and a flat blade screwdriver
 - A container to place loose screws
 - A large work area (i.e., desk top or table top)
1. Determine if you have any other I/O cards that address either LPT1, LPT2, or LPT3. There should be no physical address conflicts. BayTech supplies a program called LPTSTAT.EXE on the supplied utility diskette to assist you. The LPTSTAT program is an executable file that checks the status and addresses of your PC's LPT ports.

IMPORTANT: You should run the LPTSTAT.EXE program before installing the LPT-460.

To run LPTSTAT, type **LPTSTAT** from the BAYTECH subdirectory prompt. When LPTSTAT is executed, a screen similar to the following will appear:

BayTech 1992		
Parallel Port Status		
Port#	I/O Address	Status
LPT1	3bc	Ready
LPT2	port does not exist	
LPT3	port does not exist	

If a particular LPT port is not being used, the message "LPTx port does not exist" will appear next to that LPT port, where

x = 1, 2, or 3. Either do a print screen of this menu or write down the relevant information which will be used in Step 8.

2. **IMPORTANT:** Remove power from your computer by setting the on-off switch to Off and unplug the power cord from the AC outlet.
3. Disconnect all external devices such as the keyboard, terminal screen, printer(s), mouse, etc.. Make sure that power to all external devices has been removed. Move the external devices to another location so that they are out of your way.
4. Remove the cover as follows:
 - Make sure the cover is unlocked. On some systems the keylock switch mechanically locks the cover. You should check whether the keylock switch is in the UNLOCK position. Otherwise, you need to use your security key to unlock it.
 - Locate and remove the cover mounting screws from the back of the chassis using a phillips screwdriver. Put the screws in your container for safe keeping. Please see *Figure 2*.

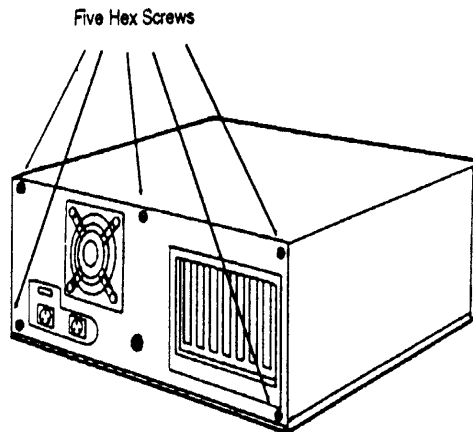
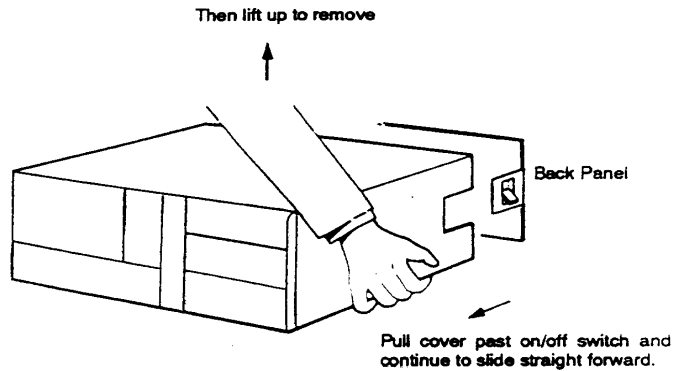


FIGURE 2

- To remove the cover, grasp the chassis in both hands and slide it forward (see *Figure 3*). If you experience any resistance, verify that the edge of the chassis is not caught on any of the internal ribbon cables.



- *Figure 4* shows a typical example of the inside of an IBM compatible PC.

FIGURE 3

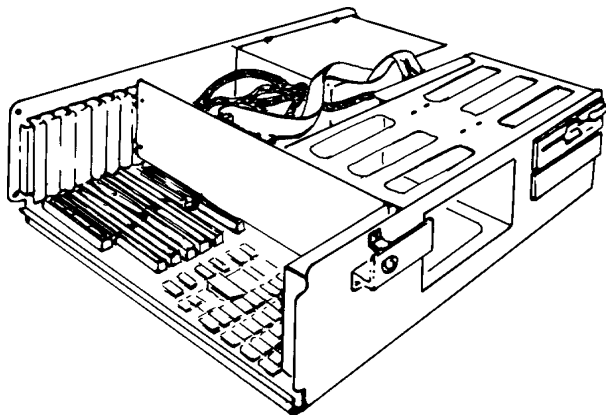


FIGURE 4

5. Since adding I/O boards to your computer will affect the original configuration, you may need to change a jumper or switch setting on the system board. Please refer to the system I/O board reference manual for the correct setting. Set the proper jumper or switch if necessary.
6. You will need to choose an expansion slot. An expansion slot is a long, narrow connector on the upper left corner of the system board. There are two kinds of expansion slots on the system board: a 16-bit (full) expansion slot and an 8-bit (short) expansion slot. The Tran-x LPT-460 uses only 8 bits, but will install into either kind of expansion slot.
7. **CAUTION:** Circuit boards are very sensitive to static electricity. One shock can permanently damage delicate electronic components. To rid your body of any static electricity build-up, you should touch your system chassis before touching any printed circuit boards.

NOTE: When handling a circuit board, you should avoid touching the soldered side of the board. Remember to always hold the board by its edges or by its metal mounting bracket.

8. Configure the Tran-x LPT-460 to communicate with the appropriate LPT port. This is done via Switch 1 located on the card (see *Appendix A.1* for location of Switch 1).

NOTE: Use the information in this step only to set Switch 1. Do not physically install the card until Step 11.

The DIP switch settings for the LPT assignment are defined as follows:

Logical Address	I/O Address	Switch S'1 Position			
		1	2	3	4
LPT1: (Default)	3BC Hex	Off	Off	On	Off
LPT2:	378 Hex	Off	On	Off	On
LPT3:	278 Hex	On	On	Off	On

Refer to the printout or handwritten copy of the LPTSTAT menu from Step 1 to determine which I/O addresses are being used by your PC currently.

Use *TABLE 1* on the following page to determine which LPT port the LPT-460 will be assigned to (Column B). If this assignment or the assignment of any other LPT port is not suitable, then you may change the physical address of your other parallel ports (if any) and run the LPTSTAT.EXE program again. Please refer to the operator's manual for your other parallel cards for instructions to change the physical address. When the LPT assignments for all existing parallel cards are suitable, you may continue with configuration.

NOTE: If LPTSTAT shows that LPT1, LPT2, and LPT3 already exist prior to installing the LPT-460, then one of the existing parallel cards will have to be removed (or disabled) in order to install the LPT-460.

	A			B	C		
	Before Installation: If LPTSTAT Parallel Port status menu shows LPTx (x=1 to 3) assigned to the following I/O address:			Then configure the LPT-460 for LPT//O address assignment of:	After Installation: Your PC will assign LPTx (x=1 to 3) to the following I/O address:		
	3BC Hex	378 Hex	278 Hex		3BC Hex	378 Hex	278 Hex
1	<u>LPT1</u>	<u>LPT2</u>	X	LPT3/278 Hex	<u>LPT1</u>	<u>LPT2</u>	LPT3
2	<u>LPT1</u>	X	<u>LPT2</u>	LPT2/378 Hex	<u>LPT1</u>	LPT2	<u>LPT3</u>
3	X	<u>LPT1</u>	<u>LPT2</u>	LPT1/3BC Hex	LPT1	<u>LPT2</u>	<u>LPT3</u>
4	<u>LPT1</u>	X	X	LPT2/378 Hex	<u>LPT1</u>	LPT2	X
5	X	<u>LPT1</u> *	X	LPT1/3BC Hex	LPT1	<u>LPT2</u>	X
				LPT3/278 Hex*	X	<u>LPT1</u>	LPT2
6	X	X	<u>LPT1</u> +	LPT1/3BC Hex	LPT1	<u>LPT2</u>	X
				LPT2/378 Hex	X	LPT1	<u>LPT2</u>

NOTE: An underlined **LPT** port represents your first physical parallel card (if installed) and a double underlined **LPT** represents your second physical parallel card (if installed). The LPTSTAT program does not show LPTx ports underlined. The underlined LPT ports are shown for physical identification purposes. The bold LPT port in Column C shows how to address the Tran-x LPT-460 after installation. Please note how your physical parallel cards are addressed by your computer before and after installation of the Tran-x LPT-460.

IMPORTANT: The PMODE command's LPT parameter must match the choice in column B for the LPT//O address assignment and not necessarily the LPT assignment shown in bold in column C after installation.

X indicates that no logical LPTx port exists.

*There are 2 possible choices for LPT assignment on the LPT-460 for this Parallel Port Status. This choice will not change how your computer addresses your other physical parallel card.

+There are 2 possible choices for LPT assignment on the LPT-460 for this Parallel Port Status. Either choice will result in having to change how you address your other physical parallel card.

TABLE 1

The following information is provided to assist you in understanding the IBM DOS process of port assignment.

IBM DOS maps logical ports LPT1, LPT2, and LPT3 to the following hexadecimal addresses if all three addresses are available:

LPT1 3BC
LPT2 378
LPT3 278

However, some physical LPT cards may be hardware configured to use any of the three I/O addresses.

For example, suppose your PC already has two physical LPT cards installed, with LPT1 hardware set to use I/O address 3BC Hex and LPT2 hardware set to use I/O address 278 Hex as shown in column A, line 2 of the Parallel Port Status menu in *TABLE 1*. In this case, IBM DOS will route logical port LPT1 to I/O address 3BC Hex (LPT1). IBM DOS will attempt to route logical port LPT2 to I/O address 378 Hex, but since there is no physical LPT card hardware configured to use I/O address 378 Hex, IBM DOS will route logical port LPT2 to I/O address 278 Hex (LPT2). Prior to installation of the LPT-460, the user would have had their application software route data intended to go out LPT1 to logical port LPT1 and data intended to go out LPT2 to logical port LPT2.

Since the only I/O address not used in this example is 378 Hex, you must configure the Tran-x LPT-460's LPT assignment to be LPT2 since the LPT2 setting on the Tran-x is set to use I/O address 378 Hex (refer to column B, line 2 of *TABLE 1*). After installation, IBM DOS will route logical port LPT1 to I/O address 3BC Hex, logical port LPT2 to I/O address 378 Hex, and logical port LPT3 to I/O address 278 Hex (refer to column C, line 2 of table 1).

After installation, you would have your application software send output data to logical port LPT1 to communicate with LPT1, to logical port LPT2 to communicate with the Tran-x LPT-460, and to logical port LPT3 to communicate with LPT3 (refer to column C, line 2 of table 1). If your application software initially sent output data to LPT2 to communicate with LPT2 prior to installing the Tran-x LPT-460, you would have to change the application software to route output data to logical port LPT3 to communicate with LPT3.

9. Select the appropriate interrupt, IRQ5 or IRQ7 by positioning the IRQ jumper to either the *IRQ5* or *IRQ7* position as marked on the Tran-x LPT-460 (see *Appendix A.1* for location of IRQ jumpers) or remove the jumper for no interrupt.

Verify that the interrupt selection does not conflict with that of other installed cards. If you choose the LPT assignment in Step 8 to be LPT1, you should set the interrupt to IRQ7 (default). If you choose LPT2, use interrupt IRQ5. If you choose LPT3, do not use either interrupt (no interrupt jumper).

10. Determine whether you will use EIA-232 or EIA-422 serial interface. In most cases, you will want to use EIA-422 serial interface (default) to support longer cabling distances at higher speeds. If you wish to run cabling distances over 150 feet and/or speeds faster than 9600 baud, you should use EIA-422 serial interface.

IMPORTANT: The serial interface of the LPT-460 must match that of the receiving device. If you are interfacing to another Tran-x product, you must choose EIA-422 serial interface.

Find the jumper locations on the Tran-x LPT-460 card for EIA-232/EIA-422 selection (see *Appendix A.1*). These are marked *JP3*, *JP4*, and *JP6*. The position of *JP4* and *JP6* determines the serial interface the Tran-x LPT-460 will communicate with: EIA-232 or EIA-422.

JP4 and *JP6* both have three pin positions on the board to install a 2-position jumper. Each position has a pin for common (center pin), a pin for 422, and a pin for 232. The common pin is always connected to one of the positions on the 2-position jumper. The other position of the jumper is installed on either the 422 pin (for EIA-422) or the 232 pin (for EIA-232).

JP3 is used to install a 180 ohm terminating resistor between the RX+ and RX- for long cable distances. BayTech installs this jumper from the factory. If you do not want the terminating resistor installed, simply remove this jumper.

11. Install the Tran-x LPT-460 as follows:

- Remove the screw holding the slot cover to the back of the chassis behind the slot you have chosen. Put the screw in a safe place. You will need it later. Remove the slot cover.

CAUTION: If you drop this screw or any screw into the chassis, you must locate the screw and remove it before applying power. If there are any loose screws in the chassis when power is applied, you may cause a short circuit and subsequently damage the system.

- Place the Tran-x LPT-460 card in the slot, slide it down until the bus connector on the card enters the slot connector. Press carefully on the top edge of the card until it is completely seated in the slot connector (see *Figure 5*).

- Insert your slot cover screw into the top of the mounting bracket of the Tran-x LPT-460 and then tighten the screw.

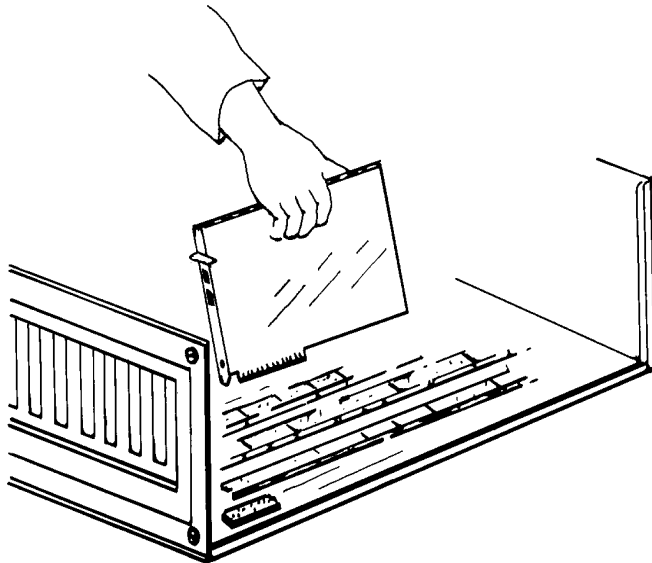


FIGURE 5

- Make sure all other add-on cards and cables are still connected properly.

12. Once the Tran-x LPT-460 has been configured and installed, you may replace the chassis cover and tighten the cover mounting screws.
13. Reconnect all external peripherals to the system.

CAUTION: Make sure your computer is powered down and unplugged when cabling the Tran-x LPT-460 to any external device such as a the Tran-x SP-01, the Model 24SII, or LaserShare.

14. Proceed to *Section 3.5* (Computer Setup for Tran-x LPT-460).

3.5 COMPUTER SETUP FOR TRAN-X LPT-460

Once the Tran-x LPT-460 has been installed, you must configure the serial parameters for the serial port. BayTech supplies a program on the software utility diskette called PMODE.EXE which is used to set the serial parameters and the Power-On setting. You should obtain the PMODE.EXE file from the supplied software utility diskette. You may wish to add the **PMODE** command to your AUTOEXEC.BAT file.

See your DOS manual for instructions on editing your AUTOEXEC.BAT file.

The PMODE command has 7 parameters: LPT port, baud rate, parity, word size, stop bits, Power-On, and handshake select respectively.

IMPORTANT: The LPT port in the PMODE command must match the LPT setting on the Tran-x LPT-460 as set by DIP Switch 1 in Step 8 of Section 3.4. If you are connecting the Tran-x LPT-460 extender to the SP-01 or SP-02 converter with an 8-conductor cable, you must enable Power-On (on) in the PMODE command unless the SP-01 or SP-02 is equipped with an external power supply.

For example, if you have the LPT assignment for the Tran-x LPT-460 assigned to LPT1 and you want to connect and supply power to the Tran-x SP-01 or SP-02 converter using 8-conductor cabling, 460,800 baud rate, 8 data bits, 1 stop bit, and no parity, you would include the following BayTech command in your AUTOEXEC.BAT file:

PMODE LPT1:460800,n,8,1,on

There is only one space in the **PMODE** command, between **PMODE** and LPT. The **PMODE** command may be inserted in either upper or lower case.

NOTE: A serial configuration of 7 data bits and no parity requires the number of stop bits to be 2 in the event you are not connecting to another Tran-x and wish to use parity. When connecting to the SP-01 or SP-02, the parity, word size, and stop bits must be set to none, 8, and 1 respectively and the baud rate parameter must match the baud rate setting for the SP-01 or SP-02. The handshake select option instructs the LPT-460 to use either XON/XOFF handshaking or hardware handshaking. If you wish to use XON/XOFF handshaking, include ,**X** at the end of the **PMODE** command. If you wish to use hardware handshaking, do not include ,**X** at the end of the **PMODE** command (i.e., leave this parameter blank).

You must have your computer direct its output to the appropriate LPT port when you wish to transmit data via the Tran-x LPT-460 card. This is typically accomplished by having your application package(s) send print data to the correct LPT port. After you have installed and configured the LPT-460, you may wish to run the LPTSTAT program again to determine how DOS has mapped your parallel ports.

NOTE: DOS may assign an LPTx number that does not match the LPT assignment for the LPT-460. In this case, send any data to be printed via the LPT-460 to the LPT port that DOS has assigned. Please see *TABLE 1* in *Section 3.4*.

Proceed to *Section 3.7* (Data Flow Control).

3.6 TRAN•X PS-02, SP-01, AND SP-02 - PHYSICAL INSTALLATION AND CONFIGURATION

NOTE: In the following instructions, the term *local Tran-x* refers to the Tran-x you are installing at your site. The term *remote Tran-x* or *remote device* refers to another Tran-x or device (such as the Model 24SII) located in a different area which will connect to the local Tran-x via RJ-45 or RJ-11 cabling.

The Tran-x PS-02 connects directly to an existing parallel port on your PC or to a parallel printer port on the BayTech 700 Series, 800 Series, Model 24, or Model 24SII peripheral sharing solutions. The Tran-x SP-01 installs directly into the 36-pin Centronics connector of a parallel printer. The Tran-x SP-02 interfaces to a parallel computer port on the BayTech 700 Series, 800 Series, Model 24, or Model 24SII peripheral sharing solution or any other parallel receiving device with a DB-25 female connector.

1. **IMPORTANT:** Remove power from the device you are connecting the Tran-x unit to (e.g., PC, printer, Print Master, etc.) by setting the on-off switch to Off.
2. Disconnect all external cables from this device.
3. Select the appropriate Baud Rate for the local Tran-x. The factory default baud rate is 460,800 bps. The baud rate setting of the local Tran-x must match the baud rate of the remote Tran-x or remote device. Typically, there is no need to reconfigure the baud rate for the local Tran-x if you are connecting it to a remote Tran-x. If the remote device is not another Tran-x unit, you may have to reconfigure the baud rate of the local Tran-x or change the remote device's baud rate to match the local Tran-x.

If the default baud rate is suitable, proceed to Step 3d.

You will require a phillips-head screwdriver if you need to change the baud rate. The baud rate is configured via jumper settings as follows:

- a. Remove the two phillips-head screws that secure the cover of the Tran-x unit and remove the cover. Place the screws in a safe place.
- b. Locate the four jumper locations for baud rate on the printed circuit board. These jumper locations are identified as *JP1* on the PS-02 (see *Appendix A.2*), the SP-01 (see *Appendix A.3*), and the SP-02 (see *Appendix A.4*). We will refer to each individual jumper location as 1, 2, 3, and 4 with 1 being the jumper location closest to the DB-25 or Centronics connector in each respective drawing. Each jumper location has two pin positions to install a 2-position jumper. Up to four 2-position jumpers may be installed.
- c. Use the table on the following page to determine the required jumper installation for your desired baud rate. This table shows the four available baud rates using one 2-position jumper. These are the most popular baud rates. Please see *Appendix B* for other baud rates available by using more than one 2-position jumper.

NOTE: "On" indicates that a 2-position jumper is installed on the referenced jumper location and "Off" indicates that no jumper is installed.

Desired Baud Rate	Jumper Location (JP1):			
	1	2	3	4
460.8K	On	Off	Off	Off
230.4K	Off	On	Off	Off
115.2K	Off	Off	On	Off
9600	Off	Off	Off	On

On = jumper installed
Off = jumper not installed

- d. The default Handshaking is hardware. If you need to change the setting for Handshaking, proceed to Step 4. If not, you may replace the cover and proceed to Step 5 if you are installing a Tran-x PS-02, Step 6 if you are installing a Tran-x SP-01, or Step 7 if you are installing a Tran-x SP-02.
4. Select the appropriate Handshaking (hardware or XON/XOFF).
The Handshaking selection determines if you will use hardware flow control (default) or XON/XOFF flow control. The device you are connecting the local Tran-x to must support the same type of handshaking to ensure proper data flow control. Please see *Section 3.7* for a more detailed description of data flow control for your Tran-x unit.

The Handshaking mode is configured via jumper settings. If you must reconfigure your Tran-x unit with respect to any of these parameters, use the following procedure:

- a. Remove the two phillips-head screws that secure the cover of the Tran-x unit and remove the cover. Place the screws in a safe place.

- b. Locate the jumper location for Handshaking on the printed circuit board. This jumper location is identified as *JP2* on the PS-02 (see *Appendix A.2*), the SP-01 (see *Appendix A.3*), and the SP-02 and *Appendix A.4*).

The Handshaking jumper location has three pin positions to install a 2-position jumper. With the RJ-45 connector facing you, the center pin is the common pin. The common pin is connected to one of the positions on the 2-position jumper. The other position of the jumper is installed on the pin to the right of the common pin for XON/XOFF handshaking or the pin to the left of the common pin for hardware handshaking (see the appropriate mechanical layout in *Appendix A*).

If no jumper is installed, the Tran-x will use hardware handshaking.

- c. Replace the cover.
If you are installing a Tran-x PS-02, proceed to Step 5.
If you are installing a Tran-x SP-01, proceed to Step 6.
If you are installing a Tran-x SP-02, proceed to Step 7.
5. **Tran-x PS-02:** Mount the Tran-x PS-02 directly into the DB-25 female parallel port on your PC or parallel printer port of your BayTech peripheral sharing solution. Secure the Tran-x PS-02 by using the screws provided on the unit. Plug the DC jack from the external power supply into the receptacle on the PS-02 and the AC plug into an AC outlet. Proceed to Step 8.

6. **Tran-x SP-01:** Plug the Tran-x SP-01 directly onto the Centronics parallel port on your printer (see *Figure 6*). Secure the Tran-x SP-01 by using the spring clips on the printer.

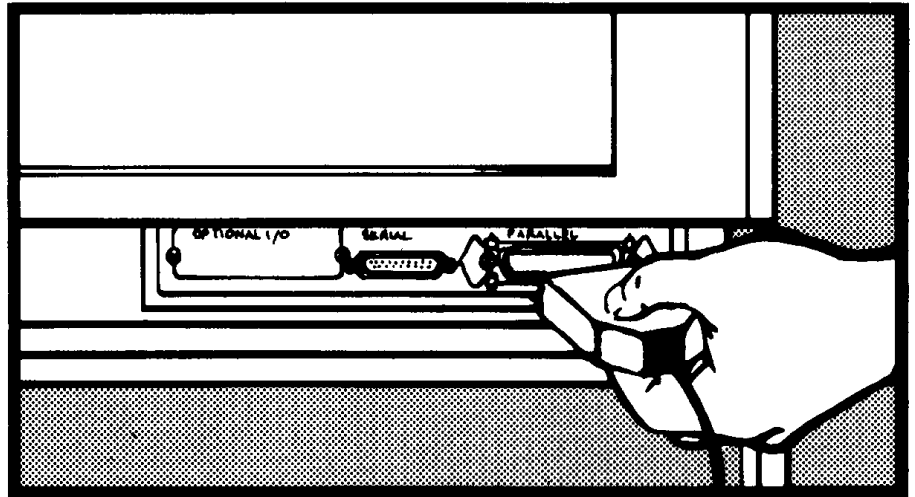


FIGURE 6

If your printer supports both parallel and serial communication, configure it to communicate in parallel when using the Tran-x SP-01. See your printer owner's manual for instructions.

IMPORTANT: The Tran-x SP-01 may require external power. If using 8-wire cabling and connecting the SP-01 to an LPT-460, PS-02, or Model 24SII, the SP-01 will draw its power from the remote device. You must enable the Power-on parameter on the Tran-x LPT-460 extender or Model 24SII when connecting it directly to the SP-01 unless the SP-01 is equipped with an external power supply. If you are using 4-wire cabling, you will require an external power supply. If external power is required, plug the DC jack into the receptacle on the SP-01 and the AC plug into an AC outlet.

NOTE: The Tran-x SP-01 supports a word size of 8 data bits, 1 stop bit, and no parity only.

Proceed to Step 8.

7. **Tran-x SP-02:** Plug the Tran-x SP-02 directly into the DB-25 female parallel computer port on your BayTech peripheral sharing solution. Secure the Tran-x SP-02 by using the screws provided on the unit.

IMPORTANT: The Tran-x SP-02 may require external power. If using 8-wire cabling and connecting the SP-02 to an LPT-460, PS-02, or Model 24SII, the SP-02 will draw its power from the remote device. You must enable the Power-on parameter on the Tran-x LPT-460 extender or Model 24SII when connecting it directly to the SP-02 unless the SP-02 is equipped with an external power supply. If you are using 4-wire cabling, you will require an external power supply. If external power is required, plug the DC jack from the external power supply into the receptacle on the SP-02 and the AC plug into an AC outlet.

NOTE: The Tran-x SP-02 supports a word size of 8 data bits, 1 stop bit, and no parity only.

8. Proceed with cabling before applying power to the device you are connecting the Tran-x unit to (e.g., PC, printer, Print Master, etc.). See *Section 4*.

3.7 DATA FLOW CONTROL

All Tran-x products will support either hardware or XON/XOFF flow control (handshaking). The Handshaking type is configured via jumper location as described in *Section 3.4* for the LPT-460 or *Section 3.6* for the PS-02, SP-01, and SP-02.

3.7.1 TRAN-X LPT-460 AND PS-02

When the Tran-x LPT-460 or PS-02 is transmitting data and the receiving device is unable to receive data, the Tran-x will expect to either detect reversed voltage on the appropriate input handshake lines (HSI- low and HSI+ high) or receive an XOFF character (if using XON/XOFF handshaking). See *Section 4* for pinout information.

When the receiving device becomes ready to receive data again, the Tran-x LPT-460 or PS-02 will expect to either detect normal voltage on the appropriate input handshake lines (HSI- high and HSI+ low) or receive an XON character (if using XON/XOFF handshaking).

3.7.2 TRAN-X SP-01 AND SP-02

When the Tran-x SP-01 or SP-02 is receiving data and becomes unable to receive any more information, it will signal the transmitting device to stop sending data by setting the appropriate output handshake lines to reversed voltage (HSO- low, HSO+ high) or by sending an XOFF character (if using XON/XOFF). Please see *Section 4* for pinout information.

When the Tran-x becomes ready to receive data once again, it will signal the transmitting device by setting the output handshake lines to normal voltage (HSO- high, HSO+ low) or by sending an XON character (if using XON/XOFF).

4 CABLING

All Tran-x products have an RJ-45 receptacle for external cabling. The external cable should have an RJ-45 plug for 8-wire operation or an RJ-11 plug for 4-wire operation. All models may use 4-wire or 8-wire cabling. Following are drawings of the RJ-45 receptacle and plug. The pin number assignments are given.

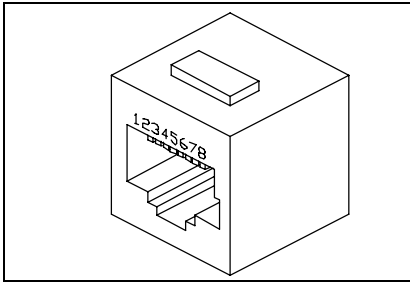


Figure 6: RJ-45 Receptacle

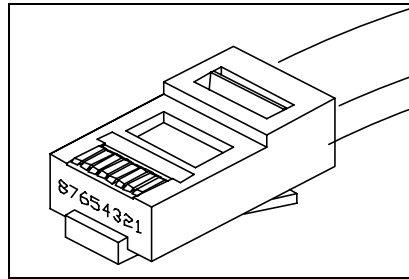


Figure 7: RJ-45 Plug

4.1 8-WIRE OPERATION

Tran-x units using 8-wire cabling will support either hardware or XON/XOFF handshaking. Please refer to the pin/signal definition of your Tran-x unit and review the corresponding notes. This is in *Section 4.1.1* for the LPT-460, *Section 4.1.2* for the PS-02, or *Section 4.1.3* for the SP-01 and SP-02. Once you have reviewed this material and configured the remote equipment as described, use the cable pinout shown in *Section 4.1.4* to connect the local Tran-x to the remote device.

NOTE: If you are connecting the local Tran-x to a remote BayTech product (such as another Tran-x or Model 24SII), the remote device must be configured to have a matching serial interface and matching serial configuration (baud rate, word size, etc.).

NOTE: The serial interface for the PS-02, SP-01, and SP-02 is fixed at EIA-422. The serial interface for the LPT-460 may be configured for either EIA-232 or EIA-422.

4.1.1 LPT-460

The RJ-45 modular connector on the Tran-x LPT-460 uses the following signals for communications:

LPT-460 RJ-45 PIN-OUT INFORMATION			
PIN	SIGNAL 232/422	DIRECTION	DESCRIPTION
1	+12V or +5V	Output	+12V if configured with Power-On (to supply power to Tran-x SP-01 or SP-02) or +5V through pull-up resistor
2	GND/GND	----	Signal Ground
3	NU/TX+	Output	Not Used/Transmit Data (+)
4	TX/TX-	Output	Transmit Data/Transmit Data (-)
5	RX/RX- CTS/HSI-	Input	XON/XOFF Mode: Receive Data/Receive Data (-) Hardware Mode: Clear to Send/Handshake In (-)
6	NC/RX+ NC/HSI+	----/Input	XON/XOFF Mode: No Connection/Receive Data (+) Hardware Mode: No Connection/Handshake In (+)
7	GND/GND	----	Signal Ground
8	NC	----	No connection

NOTE: When cabling the LPT-460 to the M24SII-V07 I/O module, the port on this module must be configured to have a Port Designation of computer and be set up to use 4-wire operation.

4.1.2 PS-02

The RJ-45 modular connector on the Tran-x PS-02 uses the following signals for communications:

PS-02 RJ-45 PIN-OUT INFORMATION			
PIN	SIGNAL (422)	DIRECTION	DESCRIPTION
1	+12V	Output	+12V to supply power to Tran-x SP-01 or SP-02
2	GND	----	Signal Ground
3	TX+	Output	Transmit Data (+)
4	TX-	Output	Transmit Data (-)
5	RX-/HSI-	Input	Receive Data (-)/Handshake In (-)
6	RX+/HSI+	Input	Receive Data (+)/Handshake In (+)
7	GND	----	Signal Ground
8	NC	----	No connection

NOTE: When cabling the PS-02 to the Model 24SII-V07 I/O module, the port on this module must be configured to have a Port Designation of computer and should be set up to use 4-wire operation. If connecting the PS-02 to a Model 24 parallel port, the parallel port must have a Port Designation of printer.

4.1.3 SP-01 AND SP-02

The RJ-45 modular connector on the Tran-x SP-01 and SP-02 uses the following signals for communications:

SP-01 AND SP-02 RJ-45 PIN-OUT INFORMATION			
PIN	SIGNAL (422)	DIRECTION	DESCRIPTION
1	NC	----	No connection
2	GND	----	Signal Ground
3	TX+/HSO+	Output	Transmit Data (+)/Handshake Out (+)
4	TX-/HSO-	Output	Transmit Data (-)/Handshake Out (-)
5	RX-	Input	Receive Data (+)
6	RX+	Input	Receive Data (+)
7	GND	----	Signal Ground
8	+12V	Input	Power input from remote device

NOTE: When cabling the SP-01 or SP-02 to the Model 24SII-V07 I/O module, the port on this module must be configured to have a Port Designation of printer and set up to use 4-wire operation. In addition, this port should have its +12 volt power output enabled to supply power to the SP-01 or SP-02 unless the SP-01 or SP-02 will have an external power supply connected.

NOTE: Although the Model 24SII must be set up to use 4-wire operation, an 8-wire cable must be used in order to supply power to an SP-01 or SP-02.

4.1.4 RECOMMENDED CABLING USING 8-WIRE OPERATION

If you are connecting another BayTech device (such as another Tran-x or the Model 24SII DES) to your local Tran-x using 8-wire operation, crossed RJ-45 cables are required. See the cable diagram below.

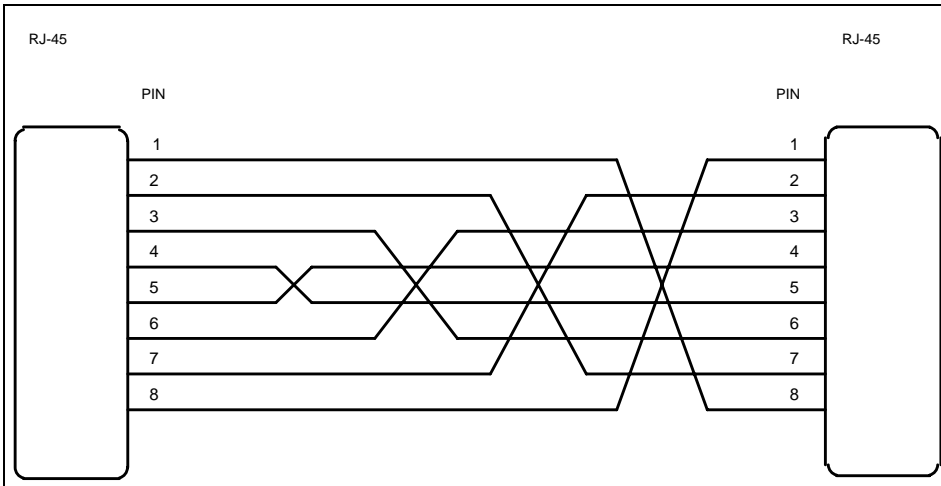


Figure 8: Crossed RJ-45 Cable
BayTech Part No. RJ08X010 (10 feet)

Once you have connected your cables, if you experience any problems communicating with your Tran-x, please see *Appendix C* (Troubleshooting)

4.2 4-WIRE OPERATION

The pin/signal definition for the RJ-11 (4-wire) connector on the Tran-x depends upon how the Handshaking is configured (hardware or XON/XOFF). Please refer to the pin/signal definition of your Tran-x unit and review the corresponding notes. This is in *Section 4.2.1* for the LPT-460, *Section 4.2.2* for the PS-02, and *Section 4.2.3* for the SP-01 and SP-02. Once you have reviewed this material and configured the remote equipment as described, use the cable pinout shown in *Section 4.2.4* to connect the local Tran-x to the remote device.

If you are connecting the local Tran-x to a remote BayTech product (such as another Tran-x, Model 24SII, or LaserShare), the remote device must be configured to have a matching serial interface, matching serial configuration (baud rate, word size, etc.), and matching handshaking (hardware or XON/XOFF).

NOTE: 4-wire operation supports EIA-422 serial interface only. The serial interface for the PS-02, SP-01, and SP-02 is fixed at EIA-422. The serial interface for the LPT-460 may be configured for either EIA-232 or EIA-422.

4.2.1 LPT-460

HARDWARE HANDSHAKING

The RJ-11 modular connector on the Tran-x LPT-460 utilizes the following signals for communications when using 4-wire cabling and hardware handshaking:

LPT-460 RJ-11 PIN-OUT INFORMATION			
PIN	SIGNAL 422 only	DIRECTION	DESCRIPTION
1	TX+	Output	Transmit Data (+)
2	TX-	Output	Transmit Data (-)
3	HSI-	Input	Handshake In (-)
4	HSI+	Input	Handshake In (+)

NOTE: When cabling the LPT-460 to the M24SII-V07 I/O module in this configuration, the port on this module must be configured to have a Port Designation of computer, be set up to use 4-wire operation, and have XON/XOFF disabled.

XON/XOFF HANDSHAKING

The RJ-11 modular connector on the Tran-x LPT-460 utilizes the following signals for communications when using 4-wire cabling and XON/XOFF handshaking:

LPT-460 RJ-11 PIN-OUT INFORMATION			
PIN	SIGNAL 422 only	DIRECTION	DESCRIPTION
1	TX+	Output	Transmit Data (+)
2	TX-	Output	Transmit Data (-)
3	RX-	Input	Receive Data (-)
4	RX+	----/Input	Receive Data (+)

NOTE: When cabling the LPT-460 to the M24SII-V07 I/O module in this configuration, the port on this module must be configured to have

a Port Designation of computer, be set up to use 4-wire operation, and have XON/XOFF enabled.

4.2.2 PS-02

HARDWARE HANDSHAKING

The RJ-11 modular connector on the Tran-x PS-02 utilizes the following signals for communications when using 4-wire cabling and hardware handshaking:

PS-02 RJ-11 PIN-OUT INFORMATION			
PIN	SIGNAL EIA-422	DIRECTION	DESCRIPTION
1	TX+	Output	Transmit Data (+)
2	TX-	Output	Transmit Data (-)
3	HSI-	Input	Handshake In (-)
4	HSI+	Input	Handshake In (+)

NOTE: When cabling the PS-02 to the M24SII-V07 I/O module in this configuration, the port on this module must be configured to have a Port Designation of computer, set up to use 4-wire operation, and have XON/XOFF disabled.

XON/XOFF HANDSHAKING

The RJ-11 modular connector on the Tran-x PS-02 utilizes the following signals for communications when using 4-wire cabling and XON/XOFF handshaking:

PS-02 RJ-11 PIN-OUT INFORMATION			
PIN	SIGNAL EIA-422	DIRECTION	DESCRIPTION
1	TX+	Output	Transmit Data (+)
2	TX-	Output	Transmit Data (-)
3	RX-	Input	Receive Data (-)
4	RX+	Input	Receive Data (+)

NOTE: When cabling the PS-02 to the M24SII-V07 I/O module in this configuration, the port on this module must be configured to have a Port Designation of computer, set up to use 4-wire operation, and have XON/XOFF handshaking enabled.

4.2.3 SP-01 AND SP-02

HARDWARE HANDSHAKING

The RJ-11 modular connector on the Tran-x SP-01 and SP-02 utilizes the following signals for communications when using 4-wire cabling and hardware handshaking:

SP-01 AND SP-02 RJ-11 PIN-OUT INFORMATION			
PIN	SIGNAL EIA-422	DIRECTION	DESCRIPTION
1	HSO+	Output	Handshake Out (+)
2	HSO-	Output	Handshake Out (-)
3	RX-	Input	Receive Data (-)
4	RX+	Input	Receive Data (+)

NOTE: When cabling the SP-01 or SP-02 to the M24SII-V07 I/O module in this configuration, the port on this module must be configured to have a Port Designation of printer, set up to use 4-wire operation, and have XON/XOFF disabled.

XON/XOFF HANDSHAKING

The RJ-11 modular connector on the Tran-x SP-01 and SP-02 utilizes the following signals for communications when using 4-wire cabling and XON/XOFF handshaking:

SP-01 AND SP-02 RJ-11 PIN-OUT INFORMATION			
PIN	SIGNAL EIA-422	DIRECTION	DESCRIPTION
1	TX+	Output	Transmit Data (+)
2	TX-	Output	Transmit Data (-)
3	RX-	Input	Receive Data (-)
4	RX+	Input	Receive Data (+)

NOTE: When connecting the SP-01 or SP-02 to the M24SII-V07 I/O module in this configuration, the port on this module must be configured to have a Port Designation of printer, set to use 4-wire operation, and have XON/XOFF enabled.

4.2.4 RECOMMENDED CABLING USING 4-WIRE OPERATION

When connecting a local Tran-x unit to a remote BayTech product using 4-wire Operation, crossed RJ-11 cables are required. See the cable diagram below.

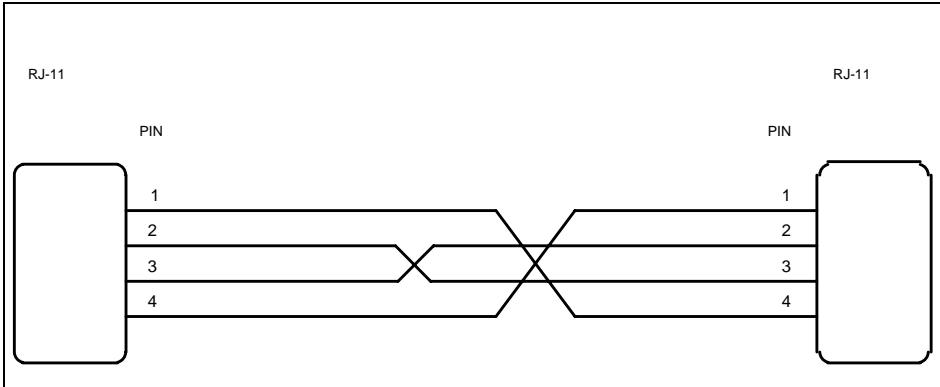


Figure 9: Crossed RJ-11 Cable
BayTech Part No. RJ04X010 (10 feet)

Once you have connected your cables, if you experience any problems communicating with your Tran-x, please see *Appendix C* (Troubleshooting).

5 MAINTENANCE

Since there are no adjustments and no moving parts in a Tran-x unit, preventative maintenance is unnecessary.

6 RETURNING UNITS TO THE FACTORY

If you find it necessary to return your unit for warranty work or repair, please call BayTech at 1-800-523-2702 to obtain a Return Authorization number.

IMPORTANT: BayTech cannot accept warranty or no-charge returns without this number.

If you need to repack your unit for shipping, please choose a heavy cardboard box for packing. Surround your unit with sufficient insulation (a minimum of 2-inches) to withstand the rigors of transport. Be sure to seal the box securely with strapping or packing tape. Masking tape or cellophane tape is not recommended.

Please write the Return Authorization number on the outside of the shipping box and return the unit to:

**Bay Technical Associates, Inc.
P.O. Box 387, 200 N. Second Street
Bay Saint Louis, MS 39520 U.S.A.**

7 TECHNICAL SUPPORT

In the event that you have problems with the Tran-x LPT-460 or Tran-x SP-01, you may call applications engineer to assist you from 7 am to 6 pm (CST or CDT), Monday through Friday and/or refer to the Troubleshooting Guide (see *Appendix C*).

When you call BayTech Tech Support, please have the following information available to help the applications engineers answer your questions more accurately and quickly:

1. Identify what kind of Tran-x product(s) you have and the type of device(s) you are installing the Tran-x unit(s) into.
2. Identify any special equipment you are using (for example, in-line spoolers, networks, software drivers, etc.).
3. Identify what cables you are using, what the lengths of the cables are, and who sold you the cables.
4. Identify the software packages you are using.

Always call BayTech before dismantling your equipment or before returning the Tran-x unit to BayTech for repair.

Bay Technical Associates, Inc.
P.O. Box 387, 200 N. Second Street
Bay Saint Louis, MS 39520 U.S.A.
Phone: 228/467-8231 or 800/523-2702
Fax: 228-467-4551
Web Site: www.baytechdcd.com

8 FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFACE STATEMENT*

This equipment generates and uses 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 and television reception. The equipment has been type tested and found to comply within 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 in a residential installation. However, there is no guarantee that interference to radio or television reception will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

1. Reorient the receiving antenna.
2. Relocate the computer equipment with respect to the receiver.
3. Move the computer away from the receiver.
4. Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

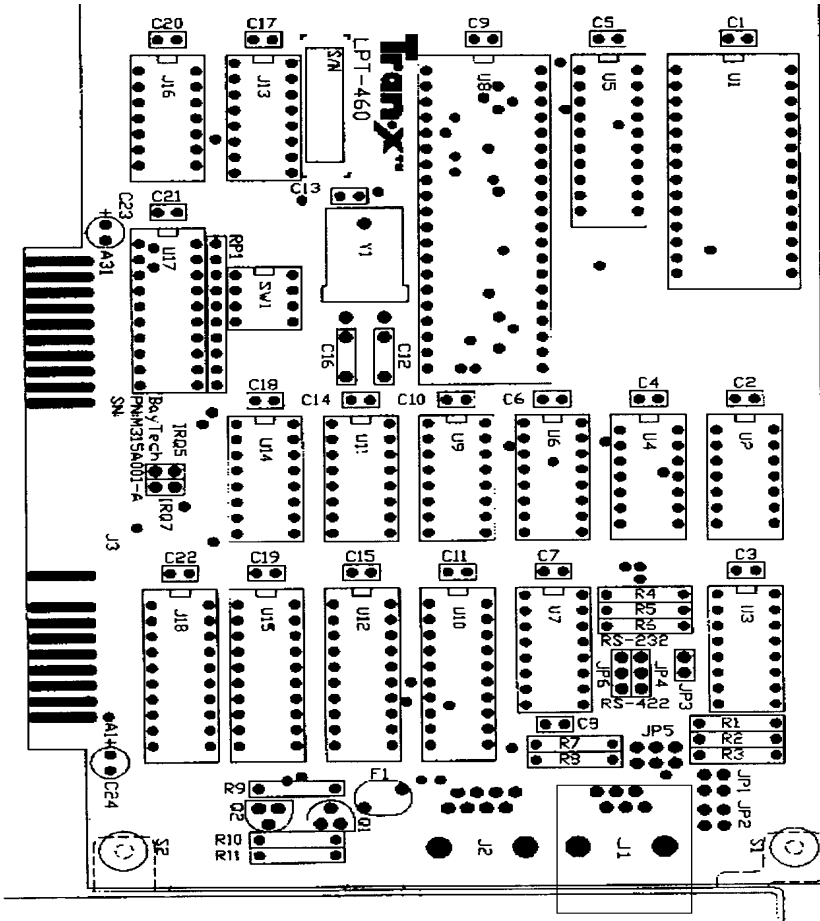
If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

The Federal Communications Commission has prepared a booklet entitled "How to Identify and Resolve Radio - TV Interference Problems" which may be helpful to you. This booklet (stock #004-000-00345-4) may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

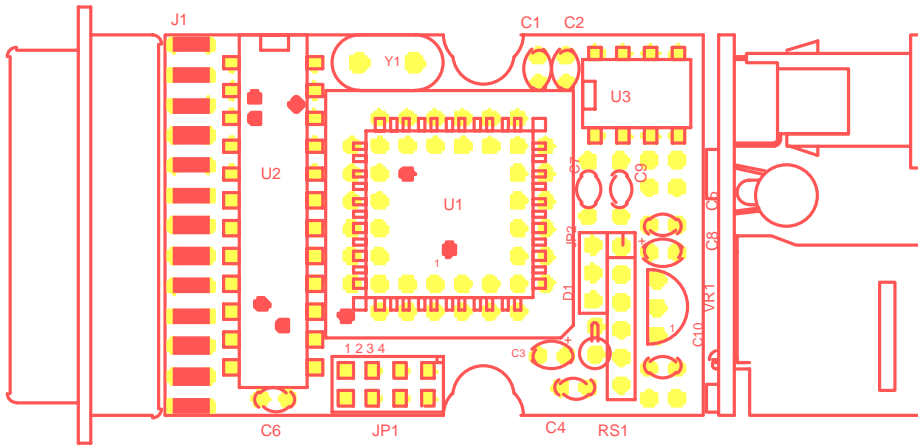
**Use of a shielded interface cable is required to comply within the Class A limits in Subpart J of Part 15 of FCC rules.*

APPENDIX A MECHANICAL LAYOUTS

A.1 TRAN-X LPT-460 MECHANICAL LAYOUT

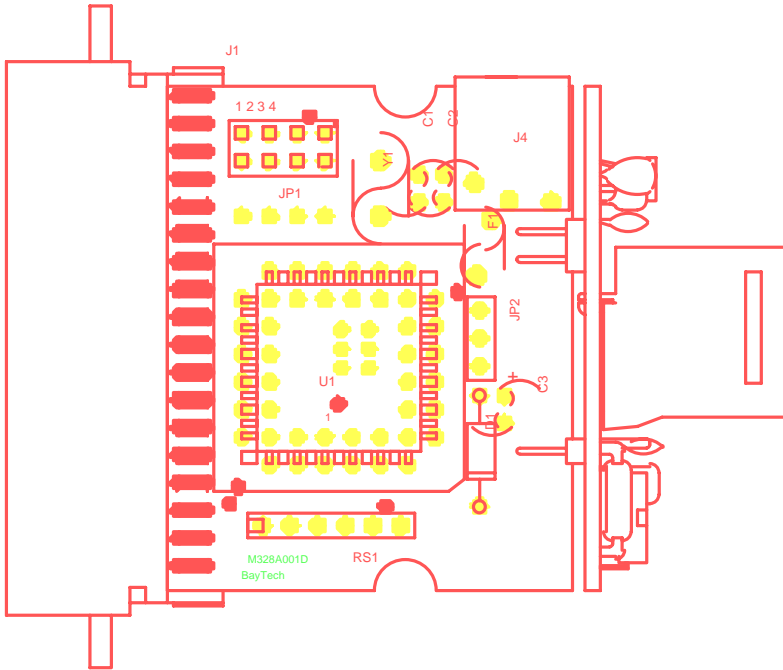


A.2 TRAN-X PS-02 MECHANICAL LAYOUT



COMPONENT SIDE

A.3 TRAN-X SP-01 MECHANICAL LAYOUT



APPENDIX B

PS-02, SP-01, AND SP-02 AVAILABLE BAUD RATES

Use the following table to determine the required jumper installation for your desired baud rate. See *Section 3.6, Step 3* for instructions.

NOTE: An "On" indicates that a 2-position jumper is installed on the referenced jumper location and a "Off" indicates that no jumper is installed.

Desired Baud Rate	JP1 Jumper Location:			
	1	2	3	4
300	On	On	On	Off
600	On	On	Off	On
1200	Off	On	Off	On
2400	Off	On	On	Off
4800	On	Off	Off	On
9600	Off	Off	Off	On
19.2K	On	On	Off	Off
28.8K	On	Off	On	On
38.4K	On	Off	On	Off
57.6K	Off	Off	On	On
76.8K	Off	On	On	On
115.2K	Off	Off	On	Off
230.4K	Off	On	Off	Off
460.8K (2 possible settings)	On	On	On	On
	On	Off	Off	Off
Not Applicable	Off	Off	Off	Off

On = jumper installed

Off = jumper not installed

APPENDIX C

TROUBLESHOOTING

Please check this troubleshooting guide before calling BayTech Tech Support.

NOTE: This troubleshooting guide is geared towards the IBM PC, AT, XT family and compatibles.

PROBLEM	SYMPTOM	CAUSE	SOLUTION
No data sent to receiving device	Printer, M24SII, or LaserShare give no indication that data is being received (e.g. READY or FORM FEED LED of an HP Laserjet printer does not flash or illuminate, no LEDs on the M24SII illuminate, etc.).	Cable	Verify that you are using the correct cable to connect the Tran-x to the receiving device (see <i>Section 4</i>).
		Serial parameter mismatch	Verify that the serial parameters (baud rate, word size, etc.) of the local Tran-x match those of the remote device (see <i>Section 3.5</i> and <i>Section 3.6</i>).
		Conflicting LPT assignment (LPT-460)	Verify that the LPT assignment selected for the Tran-x LPT-460 does not conflict with other installed cards (see <i>Section 3.4</i>).
		Incorrect LPT syntax in PMODE command (LPT-460)	Verify that the PMODE command's LPT parameter matches the physical LPT assignment of the Tran-x LPT-460 (see <i>Section 3.4</i> and <i>Section 3.5</i>).
		Computer directing output to wrong LPT port	Verify that your computer directs its output to the appropriate LPT port. This is typically done in your various application packages.
		External power (if required)	If connecting an LPT-460 to either the SP-01 or SP-02, verify that the PMODE's Power-On parameter is enabled (see <i>Section 3.5</i>). If using the PS-02, make sure you have external power connected. If using 4-wire cabling, make sure the SP-01 or SP-02 had external power supply.

PROBLEM	SYMPTOM	CAUSE	SOLUTION
Prints Garbage	Missing Characters	No data flow control	If using XON/XOFF flow control, verify that the receiving device supports XON/XOFF and make sure XON/XOFF flow control is enabled on the receiving device. If using hardware flow control, make sure the proper data flow control lines are connected in the cable (see <i>Section 3.8</i> and <i>Section 4</i>).
	Random Garbage Characters.	Serial port configuration	Verify the serial parameters (baud rate, word size, etc.) of the two connected devices match. The serial parameters of the Tran-x LPT-460 are set via the PMODE command (see <i>Section 3.5</i>). The baud rate of the Tran-x PS-02, SP-01, SP-01 is set via jumper location (see <i>Section 3.6</i>).
		Incorrect printer driver	Verify that you are using the appropriate printer driver for the printer you have the Tran-x connected to.
PMODE command gives an error message when executed	Error = <i>Invalid Parameter - n</i> , where n is a parameter of the PMODE command (i.e., lpt port name, baud rate, word size, parity, stop bits, and Power-On).	Syntax error in the PMODE command.	Verify that each parameter of the PMODE command is valid (see <i>Section 3.5</i>).
	LPT port not installed	PMODE command sent to wrong LPT port.	Verify that PMODE is sent to proper LPT port as assigned by hardware DIP switch on LPT-460.

APPENDIX D

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OTHER BAYTECH PRODUCTS

Print Master 700 Series printer controllers are made in several different configurations satisfying various interface requirements. Each unit allows computers to share, select and/or contend for printers easily and economically, without switching cables. The internal buffering system allows simultaneous, high-speed input from all connected computers and output to all printers. Models come in six, eight, and ten port sizes. All have a 1 MB, dynamically allocated buffer that may be expanded to 2 MB. The **706A** and **708A** all parallel port models feature super fast throughput (up to 33,000 characters per second) and an expandable buffer size up to 4 MB.

Print Master II 800 Series peripheral sharing devices connect between your computers, printers, plotters, modems and other peripherals. These models allow any of your computers to access any of your peripherals -- and talk to other computers so files can be transferred and data shared. Plus, a built-in buffer spools output data until your peripherals can receive it, freeing your computers to go on to other tasks. Models come in four, eight, and ten port sizes plus all have 256KB buffer. Eight and ten port models have an expandable buffer up to 1.2 MB.

Model 24SII DES Data Exchange System is the fastest peripheral sharing solution available with throughput speeds up to 60,000 characters per second. The total number of ports may be expanded from 4 to 24 ports using 4-port I/O modules. Any port can be configured as an input or output port. The standard 1.0 MB buffer can be increased to 8.0 MB by user installed ZIP packages. Plus, using popular communications software, this unit allows for computer to computer high speed data transfer as well as modem sharing.

LaserShare is an intelligent printer controller that allows up to four or eight computers to send data to a single HP LaserJet Series II, IID, III, IIID, Brother HL8e* and HL8v*, or Wang LDP8 laser printer. LaserShare connects directly into the optional I/O slot of the laser printer. Power is taken directly from the laser printer so there is no need for a power cord. LaserShare can accept data from all ports simultaneously and is printed on a first-in first-out basis. All LaserShare models come standard with a buffer that can range from 256K to 4.0 MB. **LaserShare 4C** comes with four EIA-232C serial ports, **LaserShare 8C** comes with eight serial ports, **LaserShare 4E** comes with two parallel and two serial ports, and **LaserShare 4A** comes with four parallel ports.

* The LaserShare device for the Brother HL8e and HL8v is referred to as **LaserShare 4CB**. This device is available with four (4) serial computer ports and a fixed buffer size of 256KB.

Tran-x high speed parallel/serial converter products allow you to extend parallel cables to 1000+ feet and allow your network server, graphics workstation, or PC to send/receive data at speeds up to 46,000 characters per second. You can use the Tran-x Series with BayTech Model 24SII or LaserShare for the fastest long distance peripheral sharing solution available anywhere. Modular cabling provides simplicity in connections between remote devices. **Tran-x LPT-460** card plugs directly into your PC expansion slot. **Tran-x PS-02** connects to your PC's parallel port. **Tran-x SP-01** connects to the Centronics connector of a parallel printer. **Tran-x PS-02** connects to the DB-25 parallel port of the BayTech 700 Series Print Master or 800 Series Print Master II peripheral sharing units.

"500H" Series and the Model 24SII DAC Data Acquisition and Control units connect between one host computer and multiple peripheral devices. These models are often used in industrial process-control environments (e.g., for allowing control of multiple numerical or assembly-line machines), in exchanging data between point-of-sale devices, or for operating a number of laboratory instruments or business machines from a central computer. They are especially effective in adapting small low-cost personal computers to these applications. Each unit features six modes of operation which may be easily configured to your application. The **500H** series models are available with either 5 or 9 ports. The **Model 24SII DAC** unit is expandable from 4 to 24 ports in 4-port modular increments.

Telplex Models TX104 and TX108 are asynchronous statistical multiplexers which multiplex and demultiplex four or eight communications channels over a single channel. This single channel is typically a telephone line or cable. The **TX24** will multiplex and demultiplex up to twenty channels. Programmable features include serial port parameters (baud rate, word size, etc.), data flow control, user-programmable strings to be sent to an external modem, and remote diagnostics/configuration capability. These units must be purchased in pairs.

Telplex Model TX104M is an asynchronous statistical multiplexer with built-in modem. Four individual communications channels are multiplexed into a single dial-up or leased telephone line, cutting phone line costs to a minimum. The TX104M features a V.22 bis internal modem which provides reliable communication at speeds up to 4800 bps. With V.42 bis protocol, the TX104M provides error correction and Classes 2-4 data compression. Compatible with most computers, printers, or peripherals, the TX104M ensures rapid throughput, and offers a variety of user-programmable features in order to meet your specific application requirements.

Telplex Model TX108M is an asynchronous statistical multiplexer with built-in modem. Eight individual communications channels are multiplexed into a single dial-up or leased telephone line, cutting phone line costs to a minimum. The TX108M features a V.32 internal modem with MNP Class-4, which provides reliable communication at speeds up to 9600 bps.

Telplex Model BX9600 is an external asynchronous 9600 bps modem. The BX9600 features V.32 full duplex communication, automatic or manual dialing and answering, call progress detection of dial tones and busy signals, pulse or tone dialing, and a variety of other convenient features. The BX9600 interfaces easily to statistical multiplexers and other peripheral sharing devices to allow multiple users to share the modem. And its MNP Class 4 error correction ensures that the BX9600 provides accurate transmission.

The **BX2448** is a V.22 bis external modem which uses dial-up or leased telephone lines and comes equipped with many advantageous features, such as MNP Class 5 data compression, which enables data transmission at speeds to 4800 bps and, MNP Classes 2 - 4 error correction. A wide selection of user-programmable features allows you to customize the modem to your own individual application situation.

500 SERIES MULTIPOINT CONTROLLERS

Included in the **500 Series** line of multipoint controllers are units intended for the following applications:

Port Expansion (A-Series): Allows a single serial port on a computer to individually access up to 17 peripheral devices with full duplex communication.

Single Port Contention (DQ-Series): Allows up to 17 terminals to contend for a single port on a computer system.

Multiple Port Contention (B-Series): Allows either 6, 8 or 12 terminals to contend for either 3, 4 or 6 computer ports respectively.

Networking (F-Series): Networks either 5 or 9 ports together, i.e., allows any port to connect to any other port on the multipoint controller. These also have host port control which allows a host computer system to make and/or break any connection between two ports on the multipoint controller.

Broadcasting (G-Series): Will simultaneously broadcast whatever data is received on the host port out to either 4 or 8 peripheral devices while sending data from a single selected peripheral device back to the host device. This unit is also capable of operating in a port expansion mode such as the **A-Series**.

Auto T-Switch (T-Series): Allows a group of up to 6 terminals to switch between two computer systems.

NOTE: All ports on the **500 Series** are standard with EIA-232 ports. EIA-422 and Current Loop ports are optionally available.

If you have questions concerning any of BayTech's products, please feel free to call a BayTech Applications Engineer at either (800)523-2702 or (601)467-8231.

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