

OWNER'S MANUAL



DSP SERIES,
DB SERIES

MULTIPOINT CONTROLLERS

524DSP, Rev. 3.15
528DSP, Rev. 2.08
525DB, Rev. 4.00
528DB, Rev. 2.05
5218DB, Rev. 2.03

Thank you for selecting a BayTech multiport controller.

The data provided in this Owner's Manual explains the various ways you can operate your unit and configure it to your own computer system. We suggest that you read this manual carefully before attempting to install your multiport controller 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.

BayTech also manufactures data communications devices that provide buffered and non-buffered peripheral sharing. If you would like information on any of these models, please contact BayTech Sales/Service.

We welcome any comments you may have about our multiports. And we hope that you will continue to look to BayTech for your data communications needs.

The information contained in this document is subject to change without notice.

IBM PC, IBM PC/AT, IBM PC/XT are products of International Business Machines Corporation.

Copyright 1990 by Bay Technical Associates, Inc.

TABLE OF CONTENTS

1.0	GENERAL INFORMATION	1
1.1	DSP SERIES	1
1.2	DB SERIES	2
2.0	SPECIFICATIONS	3
3.0	INSTALLATION	6
3.1	UNPACKING	6
3.2	POWER	6
3.3	FACTORY CONFIGURATION DEFAULTS	7
4.0	CABLING	8
5.0	OPERATION	11
5.1	OPERATING PROCEDURE	11
5.1.1	DSP SERIES	11
5.1.1.1	SHARING A PRINTER USING HARDWARE HANDSHAKING	11
5.1.1.2	SHARING A PRINTER USING XON/XOFF HANDSHAKING	12
5.1.2	DB SERIES	13
5.1.2.1	SHARING A SINGLE PRINTER.....	13
5.1.2.2	CONTENDING FOR MULTIPLE PRINTERS	14
5.1.2.3	SPECIFIED SHARING OF MULTIPLE PRINTERS	14
5.1.2.4	PRINTER DISCONNECT	15
5.1.2.5	APPLICATION NOTE	16

5.3.2.5	525DB MODELS WITH OPTION 20 - HARDWARE HANDSHAKING	25
5.3.2.6	525DB MODELS WITH OPTION 20 - XON/XOFF HANDSHAKING	25
6.0	CONFIGURATION	27
6.1	524DSP CONFIGURATION PROCEDURE.....	27
6.1.1	HOST PORT CONFIGURATION VIA DIP-SWITCHES	27
6.1.2	PERIPHERAL PORTS CONFIGURATION VIA MENU-DRIVEN PROCEDURE	29
6.1.2.1	STATUS	30
6.1.2.2	SET CONFIGURATION	31
6.1.2.3	SET PRINTER XON/XOFF	33
6.1.2.4	SET TIME-OUT	34
6.1.2.5	EXIT	34
6.2	528DSP CONFIGURATION PROCEDURE.....	35
6.2.1	MAIN CONFIGURATION MENU	35
6.2.2	STATUS	36
6.2.3	SET SERIAL PORT CONFIGURATION	37
6.2.4	SET CONTROL CHARACTER	40
6.2.5	SET PRINTER TIME-OUT INTERVAL	41
6.2.6	EXIT	42
6.3	DB SERIES CONFIGURATION PROCEDURE	43
6.3.1	MAIN CONFIGURATION MENU	43
6.3.2	STATUS	44
6.3.3	SET SERIAL PORT CONFIGURATION	45
6.3.4	SET PRINTER TIME-OUT	48
6.3.5	SET NUMBER OF PRINTERS.....	49
6.3.6	PROGRAM PRINTER SELECT CODE	50
6.3.7	SET PRINTER SELECT MODE.....	51
6.3.8	SET FORM FEED MODE	52
6.3.9	PROGRAM HEADER PAGE MESSAGE	53
6.3.10	EXIT	53

7.0	MAINTENANCE	54
8.0	REPACKING FOR SHIPPING	54
9.0	TECHNICAL SUPPORT.....	55
10.0	FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFACE STATEMENT	56
<u>APPENDIX A</u> - CABLING TO DSP AND DB SERIES.....		57
A.1	BETWEEN IBM PC, IBM PC XT OR IBM PS/2 AND MULTIPOINT	57
A.2	BETWEEN IBM PC AT AND MULTIPOINT	59
A.3	BETWEEN MULTIPOINT AND HEWLETT PACKARD LASERJET	60
A.4	BETWEEN MULTIPOINT AND VARIOUS PRINTERS.....	61
<u>APPENDIX B</u> - INSTRUCTIONS FOR USE OF 500 DB SERIES SUPPORT SOFTWARE		62
B.1	README	62
B.2	TERMINAL EMULATION PROGRAM (TERM).....	63
B.3	MEMORY RESIDENT PORT SELECT PROGRAM.....	65
B.4	SETUP INSTRUCTIONS	66
B.5	RAMEXEC INSTRUCTIONS.....	71
<u>APPENDIX C</u> - 524DSP, 528DSP, 525DB, AND 528DB EPROM/RAM UPGRADE.....		72
<u>APPENDIX D</u> - 5218DB EPROM/RAM UPGRADE.....		74
<u>APPENDIX E</u> - 524DSP MAIN BOARD MECHANICAL LAYOUT.....		76
<u>APPENDIX F</u> - 525DB MAIN BOARD MECHANICAL LAYOUT.....		77

<u>APPENDIX G</u> - 528DSP/528DB/5218DB MAIN BOARD(S) MECHANICAL LAYOUT.....	78
<u>APPENDIX H</u> - 5218DB UNIT ASSEMBLY LAYOUT	79
<u>APPENDIX I</u> - TROUBLESHOOTING.....	80
<u>APPENDIX J</u> - INDEX	87

1.0 GENERAL INFORMATION

IMPORTANT: Please verify which model of the 500 Series multiport controller you have purchased, i.e., Type DSP or Type DB. There is a label on the rear panel indicating the series type. Also verify what hardware type you have purchased, i.e., 524, 525, 528, etc.. The hardware type is indicated on the front panel.

1.1 DSP SERIES

The DSP Series models described herein are printer sharing devices that allow up to four computers (524DSP) or up to eight computers (528DSP) to automatically share one printer. They are self-contained units (desk-top or rack-mounted) that connect easily to RS-232C serial port devices with asynchronous transmission.

Operation is as simple as using a printer. No control characters are required for operation.

When a user wishes to print, he sends a normal print command. If the printer is not in use, the computer will be connected to the printer. If the printer is already being used, the multiport will prevent the computer from sending characters until the printer is available.

The following features are user-programmable: the serial port configuration (baud rate, word size, stop bits, and parity), the XON/XOFF handshaking for each individual port, and the printer time-out interval. The 528DSP also allows user-programming of the control character. Programming of these features is easily accomplished via dip-switch settings (524DSP only) and the menu-driven configuration mode. All changes are saved in non-volatile memory.

1.2 DB SERIES

The DB Series Models are printer sharing devices that allow automatic printer sharing, printer contention and specific printer selection. They are self-contained units (desk-top or rack-mounted) that connect easily to RS-232C serial devices with asynchronous transmission.

There are three DB models: The 525DB has a total of five available ports of which one to four may be user-programmed as printer ports. The 528DB has a total of nine available ports of which one to eight may be user-programmed as printer ports. The 5218DB has a total of 18 available ports of which one to eight may be user-programmed as printer ports.

NOTE: Ports that are not designated printer ports are reserved for computers.

In addition to the number of printers, the following features are user-programmable on all DB models: The serial port configuration (baud rate, word size, stop bits, parity, logical name and XON/XOFF) for each individual port, the printer time-out period, the printer select code, the printer select mode, the form feed mode, and the header page message. These features are programmed by accessing the configuration mode (see *Section 6.3*).

2.0 SPECIFICATIONS

Interface: RS-232C (CCITT V.24), -12v mark, +12v space.

Transmission: Asynchronous.

Factory-set Power-up Default Configuration - All Ports:

Baud Rate: 9600.

Word Size: 8.

Stop Bits: 1.

Parity: None.

XON/XOFF: Off.

Control Character: Control-T (14H)

Printer Time-out Interval: 20 seconds.

Number Of Printers: 1.

Printer Select Code: \$PRINTER (DB Series only).

Printer Select Mode: 1 (DB Series only).

Form Feed Mode: 1 (DB Series only).

Header Page Message: Off (DB Series only).

524DSP Configuration:

Dip-switch Configuration - Host (Printer) Port 5:

Baud Rate: 150, 300, 600, 1200, 2400, 4800, 9600, 19200.

Word Size: 7 or 8 bits.

Stop Bits: 1 or 2.

Parity: Even, odd or none.

Software Configuration - Peripheral (Computer) Ports

1 to 4: (Reconfigurable in menu-driven mode. Saved in non-volatile memory to become the new power-up default Configuration.)

Baud Rate: 300, 600, 1200, 2400, 4800, 9600, 19200. **Word**

Size: 5, 6, 7 or 8 bits.

Parity: Even, odd or none.

Stop Bits: 1, 1 1/2 or 2.

XON/XOFF: On or off.

Printer Time-out Interval: 1 to 255 seconds.

528DSP Configuration:

Software Configuration - All Ports: (Reconfigurable in menu-driven mode. Saved in non-volatile memory to become the new power-up default configuration.)

Baud Rate: 300, 600, 1200, 2400, 4800, 9600

Word Size: 5, 6, 7 or 8 bits.

Parity: Even, odd or none.

Stop Bits: 1, 1 1/2 or 2.

XON/XOFF: On or off.

Printer Time-out Interval: 1 to 200 seconds.

DB Series Configuration (all models):

Software Configuration - (Reconfigurable in menu-driven mode. May be saved in non-volatile memory to become the new power-up default configuration.)

Baud Rate: 110, 135, 300, 600, 1200, 2400, 4800, 9600; 19,200 (525DB). Other rates optional.

Word Size: 5, 6, 7 or 8 bits.

Parity: Even, odd or none.

Stop Bits: 1, 1 1/2 or 2.

XON/XOFF: On or off.

Logical Name: 16 characters.

Printer Time-out: 0 to 200 seconds.

Number Of Printers: Max. 8 on 5218DB and 528DB;
max. 4 on 525DB

Printer Select Code: 1 to 8 ASCII characters.

Printer Select Mode:

Mode 1 = printer selection at beginning of printing;

Mode 2 = printer selection any time while printing.

Form Feed Mode:

Mode 1 = no form feed;

Mode 2 = at beginning of printing;

Mode 3 = at end of printing;

Mode 4 = at beginning and end of printing.

Header Page Message: 80 characters.

Available Options:

Option 2: Custom Control Character (524DSP only).

Option 3C: Custom Connectors (DTE, DB-25 male connectors available per port).

Option 4: 230 VAC power.

Option 12: Current Loop interface available per port. Please specify active or passive transmit and active or passive receive.

Option 17: RS-422 interface available per port.

Option 20: Receive buffer expansion to 7.7K per port (525DB only).

Buffer Size:

524DSP, 528DSP/DB, 5218DB: 256 byte Tx/Rx per port.

525DB: 3.7 K Rx/256 byte Tx per port; optionally available with 7.7 K Rx/256 byte Tx per port (Option 20)

Power: 524DSP and 525DB - 115 VAC, 50/60 Hz, max .2A; optional 230 VAC, 50/60 Hz, max .1A;

528DSP/528DB/5218DB - 115 VAC, 50/60 Hz, max .3A; optional 230 VAC, 50/60 Hz., max .2A.

Environment: 0 degrees to 50 degrees C temperature; 5% to 95% humidity.

Dimensions: 524DSP and 525DB: 2 1/4 x 8 x 7 1/2 inches.

528DSP and 528DB: 3 x 10 1/8 x 8 inches.

5218DB: 16 3/4 x 10 1/8 x 3 1/2 inches.

Weight: 524DSP and 525DB: 3 lbs.

528DSP and 528DB: 5 lbs.

5218DB: 9 1/2 lbs.

Indicators: 1 green power LED (except for the 524DSP); 4, 5, 9 or 18 red, port-activity LEDs.

Connectors: 5, 9, or 18 DB-25s with DCE (female) ports; any combination of DTE/DCE ports optionally available.

Handshaking: CTS/DTR and selectable XON/XOFF.

UL and CSA Listed: UL file No. E95312; CSA file No. 87062-01 (except 5218DB).

Mounting: Desk-top; rack-mount optional.

Warranty: One year parts and labor.

3.0 INSTALLATION

3.1 UNPACKING

After opening the box, check the packing list that comes with your multiport to ensure that you have received all components. Also check the unit to make certain that it did not receive damage during shipping.

3.2 POWER

All models come with standard 115VAC, 50/60 Hz. power and a three-prong power cord. Do not attempt to operate the unit with a two-prong socket or adapter.

230 VAC, 50/60 Hz. is optional.

All Models power up when you depress the power switch on the back of the unit to "ON". The 528DSP and all models in the DB Series "power-on" is indicated on the front panel by the illuminating of a green LED.

CAUTION: Unplug your multiport before removing the cover and attempting to make any internal changes.

3.3 FACTORY CONFIGURATION DEFAULTS

From the factory, all ports on the DSP and DB models are configured to 9600 baud rate, 8 word size, 1 stop bit, no parity, and XON/XOFF handshaking disabled. The time-out is set to 20 seconds.

Other factory default for the DB Series only are as follows: Number of printers is one, Printer Select Code is *\$PRINTER*, Printer Select Mode is Mode 1, and the header page message is *This Print Job is for:* and is disabled.

If these configurations correspond to your application, operations may begin immediately (see *Section 5.1.1* for the DSP Series and *Section 5.1.2* for the DB Series). There is no need to configure your multiport.

If these configurations do not correspond to your needs, you should make necessary changes by resetting the internal dip-switches (524DSP only, see *Section 6.1.1*) and/or accessing the configuration mode (see *Section 6.1.2* for the 524DSP, *Section 6.2* for the 528DSP, or *Section 6.3* for all models in the DB Series).

4.0 CABLING

Important: Before you proceed with cabling, you must know whether the devices to which you will connect your multiport are DTE (Data Terminal Equipment) or DCE (Data Communication Equipment). The following devices are generally DTE: terminals, printers, and computers like the IBM PC. The following devices are DCE: modems and some computers.

If your device receives data on Pin 2 and transmits data on Pin 3, it is DCE. However, to verify the interface requirements, please refer to the owner's manual for your device.

BayTech's standard configuration of its multiports is all ports DCE. DCE ports use the following signals for communication:

PIN	EIA-232	DIRECTION	DESCRIPTION
1	PGND	-	Protection Ground
2	TS	INPUT	Data In
3	RX	OUTPUT	Data Out
4	RTS	INPUT	Internally enabled if no wire connected (Normally not used as a handshaking line.)
5	CTS	OUTPUT	-12 volts when multiport buffer full.
6	DSR	OUTPUT	+12 volts when multiport powers-up
7	SGND	-	Signal Ground
20	DTR	INPUT	Multiport transmit enabled when +12 volts. Internally enabled if no wires connected.

If your multiport is custom configured with DTE ports (Option 3C), the following signals are used for communication:

PIN	EIA-232	DIRECTION	DESCRIPTION
1	PGND	-	Protection Ground

2	TS	INPUT	Data Out
3	RX	OUTPUT	Data In
4	RTS	INPUT	+12 volts when multiport powers-up.
5	CTS	OUTPUT	Multiport transmit enabled when +12 volts. Internally enabled if no wires connected
6	DSR	OUTPUT	Internally enabled if no wire connected (Normally not used as a handshaking line.)
7	SGND	-	Signal Ground
20	DTR	INPUT	-12 volts when multiport buffer full.

If you are interfacing a DCE device to a DTE device, you must use a one-to-one straight cable as is Figure 1 on page 10. If you are interfacing a DCE device to a DCE device, or a DTE device to a DTE device, you must use a crossed cable as in Figure 2 on page 10.

When using XON/XOFF protocol, it may be desirable to use cables with only Tx, Rx and GND connected. Input handshaking lines are enabled if nothing is connected, allowing the system to operate with only Tx, Rx and GND connected. Please see *Appendix A* for recommended minimum cabling diagrams.

All computer or device handshaking requirements should be met.

Figure 1 Multiport to DTE

MULTIPORT - DCE			DTE DEVICE		
MALE DB-25			FEMALE DB-25		
1	PGND			PGND	1
2	TXD		>	TXD	2
3	RXD	<		RXD	3
4	RTS		>	RTS	4
5	CTS	<		CTS	5
7	SGND			SGND	7
20	DTR		>	DTR	20

FIGURE 2 Multiport to DCE

MULTIPORT - DCE			DCE DEVICE		
MALE DB-25			MALE DB-25		
1	PGND			PGND	1
2	TXD		>	RXD	3
3	RXD	<		TXD	2
4	RTS		>	DSR	6
5	CTS	<		DTR	20
6	DSR	<		RTS	4
7	SGND			SGND	7
20	DTR		>	CTS	5

5.0 OPERATION

5.1 OPERATING PROCEDURE

5.1.1 DSP SERIES

The 524DS-P multiport controllers allow up to four computers to automatically share one printer. The 528DSP allows up to eight computers to automatically share one printer. There are no control characters used in operations.

For operations, the printer to be shared is connected via cable to Host Port (Port 5 of the 524DSP or Port 9 of the 528DSP). The computers are connected via cable to the peripheral (computer) ports. Computer ports not used may be left empty.

For configuration only, a terminal or PC is connected via cable to the Host Port.

A description of the various configuration changes that you can make is described in *Section 5.2*.

5.1.1.1 SHARING A PRINTER USING HARDWARE HANDSHAKING

When CTS/DTR handshaking is selected, the multiport initially will hold the CTS lines high to all computers. The DS-P then scans all ports in numerical sequence by port number looking for characters. This scan mode is reflected by the flashing of the red LEDs on the front panel.

The first computer from which the multiport recognizes characters is connected to the printer. The printer port and the connected computer port LEDs illuminate. The CTS line becomes an active handshaking line, and full duplex communication is initiated between the computer and the printer. The connection will remain until no characters are received from the computer for the time-out period.

When a computer-to-printer connection already exists and another computer begins to send characters, the multiport will accept up to 32 characters from that computer and then drop the CTS line to it. The multiport will wait for the computer that is currently connected to time-out, and then will again begin its scanning process in numerical sequence by port number checking for characters.

For example, if the unconnected computers on both Ports 2 and 3 have each sent 32 characters to the multiport, the multiport will connect the computer on Port 2 first. When the computer on Port 2 finishes sending print data and times-out, the multiport will then connect the computer on Port 3 and so on.

5.1.1.2 SHARING A PRINTER USING XON/XOFF HANDSHAKING

When XON/XOFF handshaking is selected, the DSP scans all ports in numerical sequence by port number looking for characters. This scan mode is reflected by the flashing of the red LEDs on the front panel.

The first computer from which the multiport recognizes characters is connected to the printer. The printer port and the connected computer port LEDs illuminate. The XON/XOFF become active flow control characters, and full duplex communication is initiated between the computer and the printer. The connection will remain until no characters are received from the computer for the time-out period.

When a computer-to-printer connection already exists and another computer begins to send characters, the multiport will accept up to 32 characters from that computer and then send an XOFF to it. The multiport will wait for the computer that is currently connected to time-out, and then will again begin its scanning process in numerical sequence by port number looking for characters.

For example, if the unconnected computers on both Ports 2 and 3 have each sent 32 characters to the multiport, the multiport will connect the computer on Port 2 first. When the computer on Port 2 finishes sending print data and times-out, the multiport will then connect the computer on Port 3. And so on.

NOTE: When XON/XOFF is enabled, XON/XOFF is passed through from the computer ports to the printer port.

5.1.2 DB SERIES

The DB Series can be programmed to allow multiple users to share one or more printers. Users can share a single printer, contend for multiple printers, or send print jobs to a specific printer(s). Other programmable features include individual serial port configuration (baud rate, word size, etc.), the printer time-out interval, the Printer Select Code, the Printer Select Mode, and a header page message can be enabled to print out before each print job.

A description of the various configuration changes that you can make is described in *Section 5.2*.

5.1.2.1 SHARING A SINGLE PRINTER

In applications where several users are sharing one printer, printer sharing is automatic. The user performs his normal print operation; there are no codes to send. Data is automatically sent to the printer.

If the printer is already in use or not available, the requesting computer or computers will be put into a queue and connected in the order in which they requested connection.

Printer disconnection is described in *Section 5.1.2.4*.

NOTE: The printer select code described in *Section 5.1.2.2* and *Section 5.1.2.3* is still active for this application and is trapped when sent.

5.1.2.2 **CONTENDING FOR MULTIPLE PRINTERS**

In multiple printer applications, if no specific printer is desired, the data is sent through the multiport to the next available printer (first-in-first-out). The Printer Select Code for this is *\$PRINTER0*.

The Printer Select Code and the 0 (zero) are trapped if they are valid and not passed to the printer.

The Printer Select Code and the 0 need only to be sent once. They are then stored in non-volatile memory and will be effective on all subsequent print jobs, until the user sends another the Printer Select Code followed by a new printer request. The DB models power-up from the factory in this contention mode.

5.1.2.3 **SPECIFIED SHARING OF MULTIPLE PRINTERS**

To select a specific printer in multiple printer applications, the computer sends the user-defined Printer Select Code (factory set is *\$PRINTER*) followed by the printer port number. These characters are trapped if they are valid and not passed to the printer.

The printer port number sent from each computer is stored in non-volatile memory until the user sends the Printer Select Code followed by a new printer port number. The DB Series model will set up a default printer port assignment for any computer that sends a valid printer select code and printer port number.

This means that if the multiport loses power, the new printer port number will not be lost. If the user desires to send print jobs to the same printer, there is no need to resend the Printer Select Code and the printer port number.

From the factory, the DB models power-up with a preset printer assignment number of 0 (zero) for each of the computer ports, connecting computers to printers on a contention or first-available basis.

There are two modes for sending the Printer Select Code. In Printer Select Mode 1 (printer selection at beginning of printing), the multiport looks for the Printer Select Code in the first 16 characters received. If the first characters of the Printer Select Code are not received within 16 characters, the data will be routed to the previously designated printer. If the first characters of the Printer Select Code are received within 16 characters and a valid Printer Select Code is subsequently received, then the new printer port number is stored, and data will be routed to that printer.

In Printer Select Mode 2 (printer selection anytime while printing), the multiport looks for the Printer Select Code any time. If no Printer Select Code is received, the data will be routed to the previously assigned printer. The 8th or parity bit is masked from the Printer Select Code before it is examined, allowing you to send the Printer Select Code with odd or even parity.

NOTE: BayTech provides an IBM compatible ram-resident pop-up utility software program for the DB Series that allows the user to easily select between any printer from within virtually any software package. Please see *Appendix B*.

5.1.2.4 PRINTER DISCONNECT

Once a computer is connected to a printer in either Printer Select Mode, it will remain connected until no characters are received for the specified time-out period. In Printer Select Mode 2, the DB model will also disconnect a computer from a printer if the DB model receives a disconnect code. The disconnect code consists of the Printer Select Code followed by either the first character of the Printer Select Code or by a valid printer port number.

If the buffer of the DB Series is filled to capacity, the unit will drop the DTR line or send an XOFF to the computer, causing the computer to stop sending characters until the buffer can accept more data. In this case, the time that the computer is not sending characters is not counted as part of the input inactivity time-out.

5.1.2.5 APPLICATION NOTE

The user may wish to write his own program to send the Printer Select Code to the multiport.

For example, a user could print an ASCII file prior to their normal print file that contains the Printer Select Code and the appropriate printer port number. Some word processing packages give you the capability of creating printer initialization strings. The Printer Select Code and the appropriate printer port number could be imbedded as the first characters of the printer initialization file. Another method is to make the Printer Select Code the first characters of the text.

5.2 USER-PROGRAMMABLE OPERATIONS

5.2.1 524DSP

5.2.1.1 SERIAL PORT CONFIGURATION

The multiport will translate for devices using different configurations, allowing the user to mix-and-match devices of different configurations. The user may set the baud rate, word size, stop bits, parity, and XON/XOFF handshaking (computer ports only) for each individual port.

Factory default configuration on all ports is 9600 baud rate, 8 word size, 1 stop bit, no parity and XON/XOFF handshaking disabled.

5.2.1.2 PRINTER XON/XOFF HANDSHAKING

The printer port can be configured to support XON/XOFF handshaking if desired. Please verify that your printer supports XON/XOFF handshaking.

Factory default is Printer XON/XOFF handshaking disabled.

5.2.1.3 THE PRINTER TIME-OUT INTERVAL

The time-out allows the multiport to disconnect the computer if no characters are received from the computer for the specified time-out period. The time-out interval can be programmed from 1 to 255 seconds.

Factory default is 20 seconds.

5.2.2 528 DSP

5.2.2.1 SERIAL PORT CONFIGURATION

The multiport will translate for devices using different configurations, allowing the user to mix-and-match devices of different configurations. The user may set the baud rate, word size, stop bits, parity and XON/XOFF handshaking for each individual port.

Factory default configuration on all ports is 9600 baud rate, 8 word size, 1 stop bit, no parity, and XON/XOFF disabled.

5.2.2.2 CONTROL CHARACTER

The control character is the character that is sent to the multiport followed by ASCII Capital C to access the configuration mode. The control character for the 528DSP may be programmed by the user.

The factory default control character is Control-T (14H).

5.2.2.3 PRINTER TIME-OUT INTERVAL

The time-out allows the multiport to disconnect the computer if no characters are received from the computer for the specified time-out period. The time-out interval can be programmed from 1 to 200 seconds.

Factory default is 20 seconds.

5.2.3 DB SERIES (ALL MODELS)

5.2.3.1 SERIAL PORT CONFIGURATION

The multiport will translate for devices using different configurations, allowing the user to mix-and-match devices of different configurations. The user may set the baud rate, word size, stop bits, parity, and XON/XOFF handshaking for each individual port.

Factory default configuration on all ports is 9600 baud rate, 8 word size, 1 stop bit, no parity and XON/XOFF handshaking disabled.

5.2.3.2 PRINTER TIME-OUT INTERVAL

The time-out allows the multiport to disconnect the computer if no characters are received from the computer for the specified time-out period. The time-out interval can be programmed from 1 to 255 seconds on DSP models and from 0 to 200 seconds on DB models.

Factory default is 20 seconds.

5.2.3.3 NUMBER OF PRINTERS

On the Model 525DB, one to four ports can be defined as printer ports with the remainder of the ports used as computer ports: e.g., four computers sharing one printer, three computers sharing two printers, etc.. On the Model 528DB, which has a total of nine available ports, from one to eight ports may be programmed as printer ports with the remainder used as computer ports: e.g. eight, computer ports and one printer port, seven computer ports and two printer ports, six computer ports and three printer ports, five computer ports and four printer ports, etc.

On the Model 5218DB, which has a total of eighteen available ports, from one to eight ports may be programmed as printer ports with the remainder used as computer ports.

Factory default on the all DB models is one printer port (Port 1) with the remainder computer ports.

5.2.3.4 PRINTER SELECT CODE

To select a printer in multiple printer applications, the computer sends a "Printer Select Code" plus the printer port number. This code may consist of any ASCII characters. The number of characters used may range from one to eight.

The Printer Select Code is trapped by the multiport if it is valid and not passed to the printer.

NOTE: The 8th or parity bit is masked from the Printer Select Code before it is examined, allowing you to send the Printer Select Code with odd or even parity.

Factory default printer select code is *\$PRINTER*.

5.2.3.5 PRINTER SELECT MODE

In multiple printer applications, the user may choose between two methods of selecting printers. Mode 1, which allows the computer to select the printer at the beginning of printing only, is especially good for plotters, because it is transparent after the Printer Select Code is received or after 16 characters are received without a Printer Select Code. Mode 2 is the more general-purpose mode and allows the computer to select a printer anytime while printing simply by sending the new Printer Select Code.

Factory default is Mode 2.

5.2.3.6 FORM FEED MODE

This allows the user to select if or when form feed occurs. However, anytime the Printer Select Code is received and another character is not received before disconnect, the form feed will not be sent to the printer.

Factory default is no form feed.

5.2.3.7 THE HEADER PAGE MESSAGE

The user may choose to print on a separate sheet of paper a programmable identifying message and the logical name of the computer sending data before printing any other data. The header page message may also be disabled.

Factory default is: This print job is for:, with the header page message disabled.

5.3 DATA FLOW CONTROL

5.3.1 DSP SERIES

5.3.1.1 HARDWARE HANDSHAKING

When a computer transmits data to the multiport, the data is received and stored in a 256-character buffer which in turn retransmits it to the printer. During transmission, after the buffer receives 246 characters, the multiport will make the CTS (Clear-To-Send) line low (negative voltage), signaling the computer that it cannot accept more data (this is 10 characters less than the buffer can hold).

When the buffer empties to the point where it only contains a few bytes, the multiport will make the CTS (Clear-To-Send) line high (positive voltage), signaling the computer that it can accept more data.

If the printer signals the multiport by lowering the DTR (Data Terminal Ready) line that it cannot receive more data, the multiport will stop transmitting data until the DTR line goes high.

5.3.1.2 XON/XOFF HANDSHAKING

During transmission, after the buffer receives 236 characters, the multiport will send an XOFF, signaling the computer that it cannot accept more data. When the buffer empties to the point where it only contains a few bytes, the multiport will send an XON, signaling the computer that it can accept more data.

If the printer signals the multiport by sending an XOFF that it cannot receive more data, the multiport will stop transmitting data until it receives an XON from the printer.

NOTE: When XON/XOFF is enabled, the multiport will continue to support hardware handshaking lines.

5.3.2 DB SERIES

5.3.2.1 528DB AND 5218DB - HARDWARE HANDSHAKING

When a computer transmits data to the multiport, the data is received and stored in a 256-character buffer which in turn retransmits it to the printer. During transmission, after the buffer receives 246 characters, the multiport will make the CTS (Clear-To-Send) line low (negative voltage), signaling the computer that it cannot accept more data. (This is 10 characters less than the buffer can hold.)

When the buffer empties to the point where it only contains a few bytes, the multiport will make the CTS (Clear-To-Send) line high (positive voltage), signaling the computer that it can accept more data.

If the printer signals the multiport by lowering the DTR (Data Terminal Ready) line that it cannot receive more data, the multiport will stop transmitting data until the DTR line goes high.

5.3.2.2 528DB AND 5218DB - XON/XOFF HANDSHAKING

During transmission, after the buffer receives 236 characters, the multiport will send an XOFF, signaling the computer that it cannot accept more data. When the buffer empties to the point where it only contains a few bytes, the multiport will send an XON, signaling the computer that it can accept more data.

If the printer signals the multiport by sending an XOFF that it cannot receive more data, the multiport will stop transmitting data until it receives an XON from the printer.

NOTE: When XON/XOFF is enabled, the multiport will continue to support hardware handshaking lines.

5.3.2.3 525DB MODELS - HARDWARE HANDSHAKING

Computer-to-525DB-to-printer communication

When a computer device transmits data to a printer through the 525DB's peripheral port, the data is received and stored in a 3720-character receive buffer which in turn retransmits it to the desired printer through the appropriate printer port. After the buffer receives 3700 characters, the multiport will make the computer port CTS (Clear-To-Send) line low (negative voltage).

When the buffer empties, the multiport will make the CTS line high (positive voltage), signaling the computer device that it can accept more data.

When the multiport is sending data to the printer through the desired printer port and the printer cannot receive any more data, the multiport will expect to see a low on the DTR line.

5.3.2.4 525DB MODELS - XON/XOFF HANDSHAKING

Computer-to-525DB-to-printer communication

When a computer device transmits data to a printer through the 525DB's peripheral port, the data is received and stored in a 3720-character receive buffer which in turn retransmits it to the desired printer through the appropriate printer port. After the buffer receives 3708 characters, the multiport will send an XOFF to computer ports that have XON/XOFF handshaking enabled, signaling the computer device that it cannot accept more data. (However, in reality it can accept another 12 characters before overflowing the buffer.)

When the buffer empties, the multiport will send an XON to computer ports that have XON/XOFF handshaking enabled, signaling the computer device that it can accept more data.

When the multiport is sending data to the printer through the desired printer port and the printer cannot receive any more data, the multiport will expect to receive an XOFF character.

5.3.2.5 525DB MODELS WITH OPTION 20 - HARDWARE HANDSHAKING

Computer-to-525DB-to-printer communication

When a computer device transmits data to a printer through a multiport's computer port, the data is received and stored in a 7720-character receive buffer which in turn retransmits it to the desired printer through the appropriate printer port. After the buffer receives 7700 characters, the multiport will make the computer port CTS (Clear-To-Send) line low (negative voltage).

When the buffer empties, the multiport will make the CTS line high (positive voltage), signaling the computer device that it can accept more data.

When the multiport is sending data to the printer through the desired printer port and the printer cannot receive any more data, the multiport will expect to see a low on the DTR line.

5.3.2.6 525DB MODELS WITH OPTION 20 - XON/XOFF HANDSHAKING

Computer-to-525DB-to-printer communication

When a computer device transmits data to a printer through a multiport's computer port, the data is received and stored in a 7720-character receive buffer which in turn retransmits it to the desired printer through the appropriate printer port. After the buffer receives 7708 characters, the multiport will send an XOFF to computer ports that have XON/XOFF handshaking enabled, signaling the peripheral device that it cannot accept more data. (However, in reality it can accept another 12 characters before overflowing the buffer.)

When the buffer empties, the multiport will send an XON to computer ports that have XON/XOFF handshaking enabled, signaling the computer device that it can accept more data.

When the multiport is sending data to the printer through the desired printer port and the printer cannot receive any more data, the multiport will expect to receive an XOFF character.

6.0 CONFIGURATION

6.1 524DSP CONFIGURATION PROCEDURE

6.1.1 HOST PORT CONFIGURATION VIA DIP-SWITCHES

Settings for the baud rate, word size, stop bits and parity of the host port (Port 5) are made through internal dip-switches. Note that XON/XOFF for the host (printer) port is enabled or disabled via the software configuration mode (see *Section 6.1.2.3*).

Disconnect the AC power cord of the multiport, remove the four screws with a Phillips-head screwdriver, and lift-off cover.

Locate the internal dip-switches (see *Appendix C*). Determine the correct settings as shown in *Table A* on page 29.

NOTE: If Switch 6 is "on" (parity disabled), the setting of Switch 5 will have no effect on the operation of the multiport. Also, Switch 8 has been reserved for future expansion.

Replace the cover of the multiport and screw down. Apply power to the multiport.

NOTE: Dip-switches are only effective when the power to the unit is turned on.

TABLE A

CONFIGURATION SWITCH SET-UP FOR HOST PORT

BAUD RATE	SWITCH #1	SWITCH #2	SWITCH #3
150	OFF	OFF	OFF
300	ON	OFF	OFF
600	ON	OFF	ON
1200	OFF	OFF	ON
2400	ON	ON	OFF
4800	OFF	ON	OFF
9600	OFF	ON	ON
19200	ON	ON	ON

STOP BITS	SWITCH #4
2	OFF
1	ON

PARITY	SWITCH #5
EVEN	OFF
ODD	ON

PARITY	SWITCH #6
ENABLE	OFF
DISABLE	ON

WORD SIZE	SWITCH #6
8 BIT	OFF
7 BIT	ON

6.1.2 PERIPHERAL PORTS CONFIGURATION VIA MENU-DRIVEN PROCEDURE

NOTE: All peripheral port configuration changes must be made through the host port, Port 5, and all ports on the multiport must be off-line, i.e. no computer to printer activity. The LEDs will be scanning Port 1 through Port 4 when there is no computer to printer activity.

NOTE: The 524DSP is case sensitive in the configuration mode. You are advised to put your keyboard in the "caps lock" position.

To access the configuration mode of the 524DS-P, connect a terminal (or a PC running a terminal emulation program) to Port 5. Send through Port 5 the following two control characters: ASCII *Control-T* (14HEX) followed by an ASCII capital *C* (43HEX).

The multiport will respond with an identification block and the main configuration menu:

```
Bay Technical Associates
Model 524DS-P Printer contention
Copyright 1982, 1986
Revision 3.15

Status.....1
Set Configuration.....2
Set printer XON/XOFF.....3
Set time-out.....4
Exit.....X

Enter Request:
```

6.1.2.1 STATUS

By responding to the *Enter Request:* message at the end of the main configuration menu with "1" (Status), you may review the status of the current configuration of the multiport.

The multiport will respond with:

Port	Baud Rate	Word Size	Stop Bits	Parity	Xon/Xoff
1	9600	8	1	None	Off
2	9600	8	1	None	Off
3	9600	8	1	None	Off
4	9600	8	1	None	Off

Current inactivity time-out
is set for 20 seconds
Printer port XON/XOFF is off

Bay Technical Associates
Model 524DS-P Printer contention
Copyright 1982, 1986
Revision x.xx

Status.....1
Set Configuration.....2
Set printer XON/XOFF.....3
Set time-out.....4
Exit.....X

Enter Request:

6.1.2.2 SET CONFIGURATION

By responding to the *Enter Request:* message at the end of the main configuration menu with "2" (Set Configuration), you may change the serial port configuration for Ports 1 through 4, i.e. baud rate, word size, stop bits, parity, and XON/XOFF. Note that each port may be configured individually. This allows the user to mix-and-match devices of different configurations. It also allows the multiport to translate for devices using different configurations.

The multiport will respond with:

Enter port number(0-4,X):

You should then enter the number of the port that you wish to reconfigure. Note that if you enter "0" (zero), you may review the configuration of all peripheral ports. If you enter "X", the multiport will return you to the main configuration menu.

For instance, if you enter "1" for Port 1, the multiport will respond with the current status of Port 1 and a menu of the available options:

Port	Baud Rate	Word Size	Stop Bits	Parity	Xon/Xoff
1	9600	8	1	None	Off

```
Quit.....1      Set stop bits..4
Set baud rate..2  Set parity.....5
Set word size..3  Set XON/XOFF...6
```

Enter Request:

You may now reconfigure Port 1 by selecting the appropriate option (1-6) from the menu. For example, to change the baud rate to 2400 baud, send character "2" (Set baud rate).

The multiport will respond with this menu:

```
1   For      300
2   For      600
3   For     1200
4   For     2400
5   For     4800
6   For     9600
7   For    19200
```

Enter:

Send "4" for 2400 baud rate, and the multiport will respond with the reconfigured status of the port and the serial port configuration menu:

Port	Baud Rate	Word Size	Stop Bits	Parity	Xon/Xoff
1	9600	8	1	None	Off

```
Quit.....1      Set stop bits..4
Set baud rate..2  Set parity.....5
Set word size..3  Set XON/XOFF...6
```

Enter request:

By following the menu, you may make any other necessary configuration changes for Port 1. If there are no other changes for this port, send "1" (Quit) and the multiport will respond with:

Enter port number(0-4,X):

If you wish to make serial port configuration changes for another port, enter that port number and follow the procedure listed above for Port 1. If no other serial port configuration changes are needed, send "X". The multiport will save all changes permanently in non-volatile memory and will return you to the main configuration menu (see *Section 6.1.2*).

6.1.2.3 SET PRINTER XON/XOFF

By responding to the *Enter Request:* message at the end of the main configuration menu with "3" (Set printer XON/XOFF), you may enable or disable XON/XOFF for Port 5, the host and printer port.

The multiport will respond with:

```
Printer port XON/XOFF is OFF
Change the handshaking mode (Y/N)? :
```

If you wish to change the handshaking mode, enter "Y" (yes). The multiport will respond with the reconfigured status of the port and the prompt:

```
Printer port XON/XOFF is ON
Change the handshaking mode (Y/N)? :
```

If no change is needed, enter "N" (no). Note that "N" must be entered to exit. The multiport will save the change permanently in non-volatile memory and will return you to the main configuration menu (see *Section 6.1.2*).

6.1.2.4 SET TIME-OUT

By responding to the *Enter request:* message at the end of the main configuration menu with "4" (Set time-out), you may set the disconnect time-out. The multiport will disconnect automatically the computer if no characters are received from the computer for the specified time-out period.

The multiport will respond with:

Current inactivity time-out
is set for 20 seconds

Modify (Y/N)?

If you wish to change the time-out length, send "Y" (yes). The multiport will respond with:

Enter new time-out length (1-255):

You should now enter the time-out length that you desire, from 1 to 255 seconds. For example, if you entered "200" seconds, the multiport will respond with:

Current inactivity time-out
is set for 200 seconds

Modify(Y/N)?

If no change is needed, enter "N" (no). Note that "N" must be entered to exit. The multiport will save the change permanently in non-volatile memory and will return you to the main configuration menu (see *Section 6.1.2*).

6.1.2.5 EXIT

To exit the configuration mode, send a capital "X", and the multiport will return to the operating mode. Disconnect the terminal used for configuration from Port 5 and connect the printer that is to be shared to Port 5.

6.2 528DSP CONFIGURATION PROCEDURE

NOTE: All configuration changes must be made through the host port. This is Port 9 on the 528DSP and all ports on the multiport must be off-line, i.e. no computer to printer activity. The LEDs will be scanning Port 1 through Port 4 when there is no computer to printer activity.

NOTE: The 528DSP is case sensitive in the configuration mode. You are advised to put your keyboard in the "caps lock" position.

To access the configuration mode of the multiport, connect a terminal (or a PC running a terminal emulation program) to the host port. Send from this device the current control character (factory default is *Control-T*) followed by capital ASCII *C* (43HEX).

6.2.1 MAIN CONFIGURATION MENU

The multiport will respond to the receiving of the control character and capital *C* with an identification block and a configuration menu of the options available, as follows:

```
Bay Technical Associates
Model 528DS-P Printer contention
Copyright 1982, 1986
Revision x.xx

Status.....1
Set Serial Port Configuration...2
Set Control Character.....3
Set Printer Time-out Interval...4
Exit.....X

Enter Request:
```

6.2.2 STATUS

By responding to the *Enter Request:* message at the end of the main configuration menu with "1" (Status), you may review the status of the current configuration of the multiport.

The multiport will respond with:

Port	Baud Rate	Word Size	Stop Bits	Parity	Xon/Xoff
1	9600	8	1	None	Off
2	9600	8	1	None	Off
3	9600	8	1	None	Off
4	9600	8	1	None	Off
5	9600	8	1	None	Off
6	9600	8	1	None	Off
7	9600	8	1	None	Off
8	9600	8	1	None	Off
9	9600	8	1	None	Off

```
Control Character is.....14H
Current inactivity time-out
is.....20 seconds
```

Press any Key to continue

```
Status.....1
Set Serial Port Configuration.....2
Set Control Character.....3
Set Printer Time-out Interval.....4
Exit.....X
```

Enter request:

NOTE: Menu selection is case sensitive. It is recommended that your keyboard be in the CAPS LOCK position.

6.2.3 SET SERIAL PORT CONFIGURATION

By responding to the *Enter Request:* message at the end of the main configuration menu with "2" (Set Serial Port Configuration), you may change the serial port configuration for Ports 1 through 9, i.e. baud rate, word size, stop bits, parity, and XON/XOFF. Note that each port may be configured individually. This allows the user to mix-and-match devices of different configurations. It also allows the multiport to translate for devices using different configurations.

The multiport will respond with:

Enter port number (Carriage Return = exit):

You should then enter the number of the port that you wish to reconfigure. For instance, if you enter "1" for Port 1, the multiport will respond with the current status of Port 1 and a menu of the available options:

Port	Baud Rate	Word Size	Stop Bits	Parity	Xon/Xoff
1	9600	8	1	None	Off

```
Exit/Save.....1      Set stop bits..4
Set baud rate..2      Set parity.....5
Set word size..3      Set XON/XOFF...6
```

Enter Request:

You may now reconfigure Port 1 by selecting the appropriate option (1-6) from the menu. For example, to change the baud rate to 2400 baud, send character "2" (Set baud rate).

The multiport will respond with this menu:

```
1   For      110
2   For      135
3   For      300
4   For      600
5   For     1200
6   For     2400
7   For     4800
8   For     9600
```

Enter:

Send "6" for 2400 baud rate, and the multiport will respond with the reconfigured status of the port and the serial port configuration menu:

Port	Baud Rate	Word Size	Stop Bits	Pariity	Xon/Xoff
1	9600	8	1	None	Off

```
Quit.....1      Set stop bits..4
Set baud rate..2  Set parity.....5
Set word size..3  Set XON/XOFF...6
```

Enter request:

By following the menu, you may make any other necessary configuration changes for Port 1. If there are no other changes for this port, send "1" (Quit) and the multiport will respond with:

Save Changes Permanently? (Y/N):

NOTE: When changing the configuration of the host port, Port 9, the multiport will also respond with:

```
Change This Device to NEW
Configuration Before Answering
This Request
```

This reminds you to make sure that the new configuration of the host port matches the configuration of the host device.

CAUTION: If the configuration does not match, you will be locked out of the multiport and unable to access any of its functions.

If you answer "Y" (yes), the new configuration for that port will be stored permanently in non-volatile memory, and the multiport will subsequently power-up at the new configuration.

If you answer "N" (no), the new configuration will be stored in RAM, and on the next power-up, the multiport will revert to the previous configuration.

NOTE: The "Y" and "N" responses must be in upper case. If a lower case "y" is entered, the DB Series unit will interpret it as "no", and the changes you have made will not be saved permanently in memory.

The multiport will respond with:

Enter port number (Carriage Return = exit):

If you enter "*Carriage Return*", the multiport will return to the configuration main menu (see *Section 6.2.1*).

6.2.4 SET CONTROL CHARACTER

By responding to the *Enter Request:* message at the end of the main configuration menu with "3" (Set Control Character), you may change the control character.

PLEASE NOTE: BayTech advises you to log your new control character. If it is forgotten, you will not be able to access the configuration mode of the multiport.

CONTROL CHARACTER _____ DATE _____ BY _____

The multiport will respond with:

Control Character is.....14H
Enter Control Character in Hex:

You should then enter the control character that you want in HEX. Any single-digit character from 00H to 7FH is eligible. The multiport will respond with:

Save Changes Permanently? (Y/N):

If you enter "Y" (yes), the new control character will be saved in non-volatile memory, and the multiport will subsequently respond only to that character. After receiving Y, the multiport will respond with:

Are You Sure? (Y/N):

This message gives you a second chance to consider this change and reminds you to log your new control character.

If "N" (no) is entered in response to either question, the new control character will be stored in RAM only and lost upon power-down.

The multiport will return to the main configuration menu (see *Section 6.2.1*).

6.2.5 SET PRINTER TIME-OUT INTERVAL

By responding to the *Enter request:* message at the end of the main configuration menu with "4" (Set Printer Time-out Interval), you may set the disconnect time-out. The multiport will disconnect automatically the computer if no characters are received from the computer for the specified time-out period.

The multiport will respond with:

```
Current inactivity time-out  
is set for 20 seconds
```

```
Enter Time-out in seconds (1 to 200):
```

You should now enter the time-out length that you desire, from 1 to 200 seconds. For example, if you entered "200" seconds, the multiport will respond with:

```
Current inactive time-out is.....200
```

```
Save Changes Permanently? (Y/N):
```

If you answer "Y" (yes), the new time-out will be stored permanently in non-volatile memory, and the multiport will subsequently power-up with that time-out in effect.

If you answer "N" (no), the new time-out will be stored in RAM, and on the next power-up, the multiport will revert to the previous configuration.

The multiport will now return to the main configuration menu (see *Section 6.2.1*).

6.2.6 EXIT

To exit the configuration mode, send a capital "X", and the multiport will return to the operating mode. Disconnect the terminal used for configuration from Port 9 and connect the printer that is to be shared to Port 9.

6.3 DB SERIES CONFIGURATION PROCEDURE

NOTE: All configuration changes must be made through the host port, and all ports on the multiport must be off-line, i.e. no computer to printer activity. No red LEDs will be illuminated when there is no activity.

To access the configuration mode of the DB models, connect a dumb terminal (or a PC emulating a dumb terminal) to the host port - Port 5 on the 525DB, Port 9 on the 528DB, and Port 18 on the 5218DB - and send the following two control characters: ASCII *Control-T* (14HEX) followed by an ASCII capital *C* (43HEX).

If you do not have a dumb terminal or terminal emulation software, BayTech provides a utility diskette which includes a terminal emulation package. Please see *Appendix B*.

6.3.1 MAIN CONFIGURATION MENU

The multiport will respond to the receiving of *Control-T* and Capital *C* with an identification block and a menu of the configuration options available similar to the following for the Model 528DB:

```
Bay Technical Associates
Model 528DB Printer Sharing Controller
Copyright 1985
Revision x.xx
```

```
Status.....1
Set Serial Port Configuration.....2
Set Printer Time-out.....3
Set Number of Printers.....4
Program Printer Select Code.....5
Set Printer Select Mode.....6
Set Form Feed Mode.....7
Program Header Page Message.....8
Exit.....X
```

```
Enter Request:
```

NOTE: The only difference in the configuration menus between the 525DB, 528DB and 5218DB is the actual number ports shown.

6.3.2 STATUS

By responding to the *Enter Request:* message at the end of the configuration menu with a "1" (Status), you may review the status of the current configuration of the multiport.

The multiport will respond with the following:

Port	Baud Rate	Word Size	Stop Bits	Parity	Logical Name	Xon Xmit	Prnt Assn
1	9600	8	1	None	Device A	Off	01

Current Printer Port Configuration

Port	Baud Rate	Word Size	Stop Bits	Parity	Logical Name	Xon Xmit	Prnt Assn
1	9600	8	1	None	Device A	Off	00
2	9600	8	1	None	Device	Off	00
3	9600	8	1	None	Device	Off	00
4	9600	8	1	None	Device	Off	00
5	9600	8	1	None	Device	Off	00
6	9600	8	1	None	Device	Off	00
7	9600	8	1	None	Device	Off	00
8	9600	8	1	None	Device	Off	00
9	9600	8	1	None	Device	Off	00

Press any Key to continue

```
Time-out is .....20 Seconds
Number of Printers is.....1
Printer Select Code is.....$PRINTER
Printer Select Mode is.....2
Form Feed Mode is.....1
Header Page Message is (OFF):
```

This Print Job is for:

The multiport will now return to the configuration menu (see *Section 6.3.1*).

6.3.3 SET SERIAL PORT CONFIGURATION

By responding to the *Enter Request:* message at the end of the configuration menu with a "2" (Set Serial Port Configuration), you may change the serial port configuration of each port, i.e. baud rate, word size, stop bits, parity, and XON/XOFF. Note that each port may be configured individually.

You may also assign or change the Logical Name for each port. Note that these names are simply an aid to identifying port assignment; they have no other function.

The multiport will respond with:

Enter Port Number (0 = exit), return:

You should then enter the number of the port that you wish to reconfigure. This will be a one-digit number on the 525DB and 528DB, and a two-digit number on the 5218DB.

For instance, if you entered a "3" (or "03" for the 5218DB), the multiport will respond with the current status of Port 3 and a menu of the available options:

Port	Baud Rate	Word Size	Stop Bits	Parity	Xon/Xoff
1	9600	8	1	None	Off

```
Exit/Save.....1  Set stop bits....4
Set baud rate.....2  Set parity.....5
Set word size.....3
```

Enter request:

You may now reconfigure Port 3 by selecting the appropriate option (1-7) from the menu. For example, to change the baud rate to 2400 baud, send character "2" (Set baud rate).

The multiport will respond with the following:

1	For	110
2	For	135
3	For	300
4	For	600
5	For	1200
6	For	2400
7	For	4800
8	For	9600

Enter request:

Send a "6" for 2400 baud rate, and the multiport will respond with the reconfigured status of the port:

If there are no other changes for this port, send a "1" Exit/Save) and the multiport will respond with:

Save Changes Permanently? (Y/N):

NOTE: When changing the configuration of the host port, the multiport will also respond with:

Change Device to NEW Configuration
Before Answering This Request.

This reminds you to make sure that the new configuration of the host port matches the configuration of the host device.

CAUTION: If the configuration does not match, you will be locked out of the multiport and unable to access any of its functions.

Make any necessary changes to Host Device now before answering "Y" (yes) if you wish to make the changes permanent.

If you answer "Y" (yes), the new configuration for that port will be stored permanently in non-volatile memory, and the multiport will subsequently power-up at that configuration.

If you answer "N" (no), the new configuration will be stored in RAM, and on the next power-up, the multiport will revert to the previous configuration.

NOTE: The "Y" and "N" responses must be in upper case. If a lower case "y" is entered, the DB Series unit will interpret it as "no", and the changes you have made will not be saved permanently in memory.

The multiport will respond with:

Enter Port Number (0 = exit), return:

If you enter "0", the multiport will return to the configuration main menu (see *Section 6.3.1*).

6.3.4 SET PRINTER TIME-OUT

By responding to the *Enter Request:* message at the end of the configuration menu with a "3" (Set Printer Time-out), you may set the disconnect time-out. The multiport will disconnect the computer and printer if no characters are received from the computer for the time-out period.

The multiport will respond with the following:

```
Time-out is.....20 seconds
Enter Time-out (0 to 200).....:
```

Enter the number of time-out seconds that you wish from 1 to 200. The multiport will then respond with:

```
Save Changes Permanently? (Y/N):
```

If you enter a "Y" (yes), the new time-out period will be stored permanently in non-volatile memory, and the multiport will subsequently power-up with the new time-out period.

If a "N" (no) is entered, the new time-out period will be stored in RAM and lost upon next power-up.

The multiport will now return to the configuration menu (see *Section 6.3.1*).

6.3.5 SET NUMBER OF PRINTERS

By responding to the *Enter Request:* message at the end of the configuration menu with a "4" (Set Number of Printers), you may change the arrangement of number of computers to number of printers.

NOTE: The lowest-numbered ports on the multiport are reserved as the printer ports. The Model 5218DB has a total of 18 available ports of which as many as 8 may be printer ports with the remainder reserved as computer ports. For example, if the user configures 8 printer ports, on the multiport these would be ports 1, 2, 3, 4, 5, 6, 7, 8. If the user configures 4 printer ports, on the multiport these would be ports 1, 2, 3, 4. *They may not be configured in any other order.*

On the Model 5218DB, ports 1 through 8 may be printer ports. On the Model 528DB, ports 1 through 8 may be printer ports. On the Model 525DB, ports 1 through 4 may be printer ports. The multiport will respond with the following:

```
Number of printers is.....1  
Enter Number of Printers (1 to 8).....:
```

Enter the number of printers that you desire. The multiport will respond with:

```
Save Changes Permanently? (Y/N):
```

By entering a "Y" (yes), the new number of printers will be saved in non-volatile memory, and the multiport will subsequently power-up at that number. If a "N" (no) is entered, the new number of printers will be stored in RAM and will be lost upon next power-up.

NOTE: When the number of printers is changed, the printer assignment number on all printer ports automatically resets to 0 (zero), putting the computers in the printer contention mode.

The multiport will now return to the configuration menu (see *Section 6.3.1*).

6.3.6 PROGRAM PRINTER SELECT CODE

By responding to the *Enter Request:* message at the end of the configuration menu with a "5" (Program Printer Select Code), you may change the printer select code to a user-defined code. The printer select code consists of from 1 to 8 ASCII characters.

The multiport will respond with the following:

Printer Select Code is.....\$PRINTER

Enter Printer Select Code
(0 to 8 Chrs, Return=Terminate).....:

Enter the new printer select code, followed by a *Carriage Return*.

NOTE: By entering a *Carriage Return* only, the current Printer Select Code will be retained.

The multiport will respond with:

Save Changes Permanently? (Y/N):

If you enter a "Y" (yes), the new printer select code will be saved in non-volatile memory, and the multiport will subsequently power-up with that code. If a "N" (no) is entered, the new printer select code will be stored in RAM and lost upon next power-up.

The multiport will now return to the configuration menu (see *Section 6.3.1*).

6.3.7 SET PRINTER SELECT MODE

By responding to the *Enter Request:* message at the end of the configuration mode with a "6" (Set Printer Select Mode), you may change the method of selecting printers.

The multiport will respond with the following:

```
Select Printer -  
At the Beginning of Printing Only...1  
Any Time While Printing.....2  
  
Printer Select Mode is.....2  
Enter Printer Select Mode.....:  
  
Enter the new Printer Select Mode.
```

The multiport will respond with:

```
Save Changes Permanently? (Y/N):
```

If you enter a "Y" (yes), the new printer select mode will be saved in non-volatile memory and will become the new power-up printer select mode. If a "N" (no) is sent, the new mode of operation will be stored in RAM and will be lost upon next power-up.

The multiport will now return to the configuration menu (see *Section 6.3.1*).

6.3.8 SET FORM FEED MODE

By responding to the *Enter Request:* message at the end of the configuration menu with a "7" (Set Form Feed Mode), you may select one of four form feed modes.

The multiport will respond with:

```
No Form Feed.....1
  Form Feed at the Beginning of Printing..2
  Form Feed at the End of Printing.....3
  Form Feed at the Beginning and End.....4

  Form Feed Mode is.....1
  Enter Form Feed Mode.....

  Enter the new Form Feed Mode.
```

The multiport will respond with:

```
Save Changes Permanently? (Y/N):
```

If you enter a "Y" (yes), the new Form Feed Mode will be saved in non-volatile memory, and the multiport will subsequently power-up at the new mode. If a "N" (no) is sent, the new mode will be stored in RAM and will be lost upon next power-up.

The multiport will now return to the configuration menu (see *Section 6.3.1*).

6.3.9 PROGRAM HEADER PAGE MESSAGE

By responding to the Enter request: message at the end of the configuration menu with an "8" (Program Header Page Message), you may enable or disable this message and program its content.

The multiport will respond with the following:

```
Header Page Message is (OFF):  
  
This print job is for:  
  
Enter Header Page Message  
(0 to 80 chrs, Ctrl C = Terminate):
```

Enter the message that you wish, followed by a *Control-C*. Note that the message will print on paper exactly as it is placed on the screen. The message may appear on one line or several lines. If several lines are desired, each line must be ended by a *Carriage Return* and a *Line Feed*.

If no change in the message is desired, send a *Control-C* only, and the current message will be retained.

The multiport will respond with:

```
Print Header Page (R/Y/N)?.....:
```

If you enter a "R" (repeat), the entire sequence will be repeated.

If you enter a "Y" (yes), the new header page message will be stored in non-volatile memory and will print on all subsequent print jobs. If you enter a "N" (no), the header page message will be disabled and will not print. The new message, however, will be stored in non-volatile memory. The multiport will now return to the configuration menu.

6.3.10 EXIT

To exit the configuration mode, send an "X", in response to the prompt at the end of the main configuration menu and the multiport will return to the operating mode.

7.0 MAINTENANCE

Since there are no adjustments and no moving parts in a multiport, preventative maintenance is unnecessary.

If you find it necessary to return your multiport to the factory for warranty work or factory-set changes, follow the procedure listed in *Section 8.0* for repacking.

Before you ship your unit, please call BayTech to get a return authorization number. BayTech cannot accept warranty or no-charge returns without this number.

8.0 REPACKING FOR SHIPPING

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.

If you are returning your unit for warranty work or repair, please call BayTech to get a Return Authorization number. BayTech cannot accept no-charge returns without this number.

Ship your unit to the address listed below under *Section 9.0*.

9.0 TECHNICAL SUPPORT

In the event that you have problems with your multiport, BayTech has a staff of applications engineers on duty to assist you from 7 AM to 6 PM (CST or CDT), Monday through Friday. When you call BayTech Tech Support, please have the following information available:

1. Identify which modules you are using and have the serial number (located on the back of the unit) handy.
2. Identify what computers, printers or other peripherals you have.
3. Identify any special equipment you are using (for example, in-line spoolers, networks, software drivers, etc.).
4. Identify what cables you are using, what the lengths of the cables are, and who sold you the cables.
5. Identify any special options you may have ordered with your multiport.
6. Identify the software packages you are using.
7. If possible, have a listing of the multiport's configuration status ready when you call.

IMPORTANT: Always call BayTech before dismantling your equipment or returning the multiport for repair.

Bay Technical Associates
200 N. Second St., P.O. Box 387
Bay Saint Louis, Mississippi 39520
Phone: 228/467-8231 or
800/523-2702 (Outside Mississippi)
Web Site: www.baytechdcd.com
Fax: 228/467-4551

10.0 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 business environment. 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 - CABLING TO DSP AND DB SERIES

A.1 BETWEEN IBM PC, IBM PC XT OR IBM PS/2 AND MULTIPOINT

RECOMMENDED CABLING USING HARDWARE OR XON/XOFF HANDSHAKING

PC FEMALE DB-25		MULTIPOINT MALE DB-25
1	PGND	1
2	TXD	2
3	RXD	3
4	RTS	4
5	CTS	5
6	DSR	6
7	SGND	7
8	DCD	8
20	DTR	20

MINIMUM CABLING USING XON/XOFF HANDSHAKING

PC FEMALE DB-25		MULTIPOINT MALE DB-25
1	PGND	1
2	TXD	2
3	RXD	3
4		
5		
7	SGND	7
6		
8		
20		

MINIMUM CABLING USING HARDWARE HANDSHAKING

PC		MULTIPOINT
FEMALE DB-25		MALE DB-25
2	TXD	2
3	RXD	3
5	CTS	5
6		
7	SGND	7
8		
20		

A.2 BETWEEN IBM PC AT AND MULTIPORT

RECOMMENDED CABLING USING HARDWARE OR XON/XOFF HANDSHAKING

AT		MULTIPORT
FEMALE DB-9		MALE DB-25
3	TXD	2
2	RXD	3
7	RTS	4
8	CTS	5
6	DSR	6
5	SGND	7
1	DCD	8
4	DTR	20

MINIMUM CABLING USING XON/XOFF HANDSHAKING

AT		MULTIPORT
FEMALE DB-9		MALE DB-25
3	TXD	2
2	RXD	3
7		
8		
5	SGND	7
6		
1		
4		

MINIMUM CABLING USING HARDWARE HANDSHAKING

AT		MULTIPOINT
FEMALE DB-9		MALE DB-25
3	TXD	2
2	RXD	3
8	CTS	5
6		
5	SGND	7
4		
1		

A.3

BETWEEN MULTIPOINT AND HEWLETT PACKARD LASERJET

RECOMMENDED CABLING USING HARDWARE OR XON/XOFF HANDSHAKING

MULTIPOINT		HP LASERJET
MALE DB-25		MALE DB-25
1	PGND	1
2	TXD	2
3	RXD	3
4	RTS	4
5	CTS	5
6	DSR	6
7	SGND	7
8	DCD	8
20	DTR	20

MINIMUM CABLING USING XON/XOFF HANDSHAKING

MULTIPOINT		HP LASERJET
MALE DB-25		MALE DB-25
1	PGND	1
2	TXD	2
3	RXD	3
		4
		5
7	SGND	7
		6
		20

MINIMUM CABLING USING HARDWARE HANDSHAKING

MULTIPORT		HP LASERJET
MALE DB-25		MALE DB-25
2	TXD	2
3	RXD	3
		4
		5
		6
7	SGND	7
20	DTR	20

APPENDIX B - INSTRUCTIONS FOR USE OF 500 DB SERIES SUPPORT SOFTWARE

The diskette supplied by BayTech contains several programs. However not all the software programs on this diskette are for use with the DB Model. BayTech manufactures several different models of printer sharing devices and many of these devices share the same diskette but not the software programs on this common diskette.

The DB Model Multiports utilize only the "TERM", "SETUP", "RAMEXEC" and "README" software programs.

IMPORTANT: Copy the supplied master utility diskette onto a blank diskette, and store the original in a safe place. Please read your operating systems manual for copying instructions.

B.1 README

The **README** program contains the most current information on the DB Model Multiport.

To access README, at the system prompt enter *TYPE README*. The README program will appear on your CRT screen. If you wish to print a copy of the README program, consult your DOS manual for instructions on printing text files or printing using word processing programs.

B.2 TERMINAL EMULATION PROGRAM (TERM)

NOTE: For use with IBM-DOS or MS-DOS on IBM PC, AT, XT and compatibles.

IMPORTANT NOTE: The TERM program is supplied only as an aid for initial setup of the DB Series multiport and is not used in operations.

IMPORTANT NOTE: The TERM program is supplied only as an aid for initial setup of the DB-series multiport controller and is not used in operations. This short program allows an IBM-PC compatible to emulate a dumb terminal in the event that you do not have your own terminal emulation software. This allows easy communication with the configuration mode of the multiport. Once any necessary configuration changes have been completed, this program is no longer needed. However if configuration changes of the unit are required at a later date it may be used again.

TERMINAL EMULATION INSTRUCTIONS

Connect a cable between the COMX port of the PC (X = 1 or 2) and the host port of the DB-series multiport. This is Port 5 on the 525DB, Port 9 on the 528DB, and Port 18 on the 5218DB. For pinout and recommended cabling, see figures below.

IBM PC/XT	MODEL DB	IBM AT	MODEL
DB	DB-25	DB-9	
DB-25			
PIN	PIN	PIN	PIN
1 ----- 1	2 ----- 2	3 ----- 2	
2 ----- 2	3 ----- 3	2 ----- 3	
3 ----- 3	4 ----- 4	7 ----- 4	
4 ----- 4	5 ----- 5	8 ----- 5	
5 ----- 5	6 ----- 6	6 ----- 6	
6 ----- 6	7 ----- 7	5 ----- 7	
7 ----- 7	20 ----- 20	4 ----- 20	
20 ----- 20			
Straight cable with female DB-25 to male DB-25		AT cable with female DB-9 to male DB-25	

Load DOS into system. Place the BayTech diskette into disk drive and type *TERM* followed by *Carriage Return*.

The program will respond with an identification block and then a configuration menu for the PC COM port. You are now in the dumb terminal mode.

NOTE: All DB-Series models power-up from the factory at 9600 baud rate, 8 word size, 1 stop bit, no parity, and XON/XOFF disabled. If the PC COM port does not match this configuration, you may reconfigure the COM port by entering Alt-C and following the menu to set the port to match the baud rates, word size, stop bits, parity of the multiport. (COM1 or COM2 may be selected. If no COM2 card is installed, the terminal emulation program will prevent you from selecting COM2.)

Once configuration of the PC COM port is complete, press *Enter*, and you will return to the dumb terminal mode.

Handshaking lines - RTS, CTS, DSR, DTR - between the PC and the multiport should be high. (Refer to upper right hand corner of the CRT for interface line status.) If these signals are not high at this point, check the cable.

You are now in a dumb terminal or terminal emulation mode with full duplex communication. Any characters you type from the keyboard will be transmitted out of the PC COM port to the multiport. They will not appear on the CRT screen.

Any characters received by the PC COM port from the multiport will be displayed on the CRT screen.

You may now reconfigure the multiport from the keyboard of the PC. This is accomplished by sending the control character (factory default is *Control-T*) followed by ASCII capital *C*.

NOTE: Depressing the *F1* key will automatically send *Control-T* and capital *C* to the multiport. However, if the control character of the multiport has been changed in the configuration mode to some character other than *Control-T*, the *F1* key should not be used as it will not send the correct connect sequence.

The control character and capital *C* will not appear on the CRT screen, but the multiport will respond with a configuration menu. If the multiport gives no response (no menus appear), this indicates that an incorrect character sequence has been received. If this occurs resend the control character and capital *C* manually, or depress *F1* key if applicable.

From this point on, configuration of the multiport will be accomplished by following the menus that will prompt you. If you have any questions about the configuration procedure, refer to *Section 6.0* of this manual. While in the configuration mode of the DB-series multiport, send *Control-S* to stop scrolling and *Control-Q* to continue scrolling.

B.3 MEMORY RESIDENT PORT SELECT PROGRAM

If you are running an application program such as a spreadsheet or word processing program where manually sending a Printer Select Code may be cumbersome, BayTech provides a Memory Resident Program that allows selection of a printer via a keyboard sequence. In this RAMEXEC program, a window appears displaying a menu of devices. Once selection of a device has been made, the window goes off-screen and the application program continues uninterrupted.

IMPORTANT: This program is supplied only as an aid for sending the Printer Select Code to the Model DB. It does not reconfigure the Model DB. However, the program must match the configuration of the Model DB.

During initial setup of the Model DB or whenever you wish to make a change to the configuration, you must first access the configuration mode of the Model DB. After configuring the Model DB to suit your application, you must then use SETUP to set the RAMEXEC program to match.

For example, if you configure the Model DB with ports 4, 5 and 6 designated as printer ports, you must use SETUP to set the RAMEXEC program with ports 4, 5 and 6 designated as printer ports. If you configure the Model DB with a Printer Select Code of @SELECT, you must use SETUP to set the RAMEXEC program with a Printer Select Code of @SELECT. The printer or logical name does not need to match. This program may be used with any IBM PC, AT, XT or compatible

IMPORTANT NOTE: When using the serial port of a PC as a printer port, you must reroute the parallel output to the serial port via the mode command, i.e.

MODE LPT1: = COMX (where X = 1 or 2). See Mode Command section of your DOS manual for complete instructions.

The supplied diskette contains two routines for the Port Select Program: SETUP and RAMEXEC. Note that SETUP needs to be run only once during initial setup or whenever you reconfigure the Model DB, i.e. add a device, change a printer, change the Printer Select Code, etc.

IMPORTANT: When RAMEXEC is already loaded into memory, anytime you make changes in SETUP, you must reboot DOS and then reboot RAMEXEC for the new version to be in effect. Only one copy of RAMEXEC should be loaded into system at one time.

It is recommended that the RAMEXEC program be part of your AUTOEXEC file.

B.4 SETUP INSTRUCTIONS

Load working diskette into appropriate disk drive. You must be working on the same drive into which the diskette is loaded. Enter SETUP from the keyboard to execute SETUP program. The program will respond with:

Main Menu

```
Change hot key
Change LPTx:
Change devices
Status
Exit
```

Setup V3.01 Bay Technical Associates

NOTE: Version numbers may change for RAMEXEC.COM.

Using the up and down arrow keys on your keyboard, position the cursor to the menu selection you desire and then depress the *Enter* key.

CHANGE HOT KEY

If you selected Change hot key from the Main Menu, the program will respond with:

Hot keys

```
Alt-left shift
Alt-right shift
Ctrl-left shift
Ctrl-right shift
Exit
```

Using the up and down arrow keys, position the cursor to the hot key selection that you desire and then depress the Enter key. The program will respond by changing the functioning hot keys and by returning you to the Main Menu. The Exit selection will return you to the main menu without making any changes.

CHANGE LPTX

If you selected Change LPTx: from the Main Menu, the program will respond with:

Menu

```
LPT1
LPT2
LPT3
Exit
```

Using the up and down arrow keys, position the cursor to the LPT selection that you desire and then depress the *Enter key*. The program will respond by changing the output to the selected LPT and by returning you to the Main Menu. The Exit selection will return you to the main menu without making any changes.

CHANGE DEVICES

If you selected Change devices from the Main Menu, the program will respond with:

Devices

```
Add device
Delete device
Exit
```

Using the up and down arrow keys, position the cursor to the device selection you desire and then depress the *Enter key*. The Exit selection will return you to the Main Menu without making any changes.

ADD DEVICE

If you selected Add device from the Changes Devices menu, the program will respond with graphics similar to:

Device name

```
Printer
HP LaserJet
Label printer
```

Printer Select Code

```
$PRINTER4
$PRINTER5
$PRINTER6
```

Hit any key: >.....<

The menu displayed will show current status of devices and Printer Select Codes. Depress any key to continue.

The program will respond with:

Device name: >.....<

Enter the type of output device connected to the BayTech unit.

You should now enter the device name (or any identifying logical name) in the field provided. There is space in the field for 30 characters. If less than 30 characters are entered, your entry must be followed by depressing the Enter key. After your entry is completed, the program will respond with:

```
Printer select code(s): >.....<
```

Enter the printer select code(s) followed by port number.

You should now enter in the field provided the Printer Select Code for the device you entered above, followed by the port number. Note that this Printer Select Code can be followed by printer setup strings, font requests, or other initializations as required by the device. There is space in the field for 30 characters. If less than 30 characters are entered, your entry must be followed by depressing the Enter key.

Up to 15 devices may be listed in the program.

The program will respond by adding the device and Printer Select Code you entered to memory and by returning you to the Main Menu.

DELETE DEVICE

If you selected Delete device from the Change Devices menu, the program will respond with graphics similar to:

Device list

HP LaserJet Label Printer

Position the cursor to the device you want to delete from the device list and hit the carriage return.

Using the up and down arrow keys, position the cursor to the device that you wish to delete and then depress the *Enter key*. The program will respond by deleting that device and Printer Select Code from memory and by returning you to the Main Menu.

STATUS

If you selected Status from the Main Menu, the program will respond with graphics similar to:

Device name

Printer Select Code

```
Printer
HP LaserJet
Label printer
```

```
$PRINTER4
$PRINTER5
$PRINTER6
```

Hot key selection

LPT assignment

```
Ctrl - left shift
```

```
LPT1
```

Hit any key: >.....<

These menus will display the current status of the memory resident program. Depress any key, and the program will respond by returning you to the Main Menu.

EXIT

If you selected Exit from the Main Menu, the program will exit from SETUP and return you to the system prompt.

B.5 RAMEXEC INSTRUCTIONS

To load RAMEXEC, at the DOS or system prompt enter RAMEXEC and then depress the *Enter key*. The program will respond with:

BayTech

```
Ramexec V3.01  
Hot key is <Alternate> & <Left Shift>
```

RAMEXEC has now been loaded into memory and will remain there will power is applied to your computer. To execute RAMEXEC, i.e. to select a printer while running a program, depress the hot keys simultaneously.

A window will appear on the CRT screen over the currently running program. For example, the menu may appear similar to:

BayTech

```
Printer  
HP LaserJet  
Label printer
```

Using the up and down arrow keys on your keyboard, position the cursor to the printer that you want to select and then depress the Enter key.

The printer has now been selected.

Note that while this menu appears on the CRT screen, all keys except the up and down arrow keys and the *Enter key* are inoperative. If you depress any other key, you will be warned by a bell. If you wish to exit RAMEXEC without selecting a device, this can be accomplished by selecting Exit from the menu. After you have selected a device, the window will go off-screen until you again need to access this function. The running program will continue unaltered.

APPENDIX C - 524DSP, 528DSP, 525DB, AND 528DB EPROM/RAM UPGRADE

Before attempting to modify your unit, please read the instructions below. Refer to *Appendix E* (524DSP), *Appendix F* (525DB), or *Appendix G* (528DSP and 528DB) of this manual for the mechanical layouts of the various models.

1. The materials you will receive with your upgrade kit are:
 - One EPROM (chips with labels) and/or
 - One EEPROM or one non-volatile RAM chip (chip without label).The materials you will need to supply are:
 - Phillips-head screwdriver,
 - IC DIP extractor or a pair of curved needle-nose pliers.
2. **IMPORTANT:** Remove power from the multiport.
3. Remove the cover of the unit by unscrewing with the phillips-head screwdriver the 4 screws located on the top panel.
4. With the front of the unit (LED side) facing you, locate sockets A and B. See *Appendix E* (524DSP - U13 and U3 respectively), *Appendix F* (525DB - U10 and U7 respectively) or *Appendix G* (528DSP or 528DB - U5 and U7 respectively).
5. Remove existing EPROM from socket A (U13 for 524DSP, U10 for 525DB, or U5 for 528DSP and 528DB) with IC extractor or needle-nose pliers. Gradually loosen each side of the chip, alternating pliers from side to side, so as not to bend chip pins. Pull loosened EPROM all the way out.

6. Install new EPROM (chip with Label) into socket A. The EPROM is notched; the notch on the EPROM will point towards the LEDs for the 524DSP and towards the center of the unit for the 525DB, 528DSP and 528DB. When installing the new chips, be careful not to bend any of the pins. Also make sure all pins fit their sockets.
7. **NOTE:** If a RAM chip is not sent with this kit, skip this item and go on to Item 8.

Remove the existing RAM from socket B (U3 for 524DSP, U7 for 525DB, or U7 for 528DSP and 528DB), following the instructions in Item 5. The RAM chip will be shorter than the socket and have a round dot on one corner. Install the RAM chip in the end of the socket so that it is as close to the edge of the printed circuit board as possible and so the that empty pin holes are between the dot on the RAM chip and the notch on the socket. When installing the new chips, be careful not to bend any of the pins. Also make sure all pins fit their sockets.

8. Replace the cover; the upgrade is now complete.
9. Before you begin operations, check the multiport's configuration status to make certain it matches your application. If configuration changes (baud rates, handshaking, etc.) are required, you must make these changes in the configuration mode.

APPENDIX D - 5218DB EPROM/RAM UPGRADE

Before attempting to modify your unit, please read the instructions below. Refer to *Appendix G* and *Appendix H* of this manual for the Main Board Mechanical Layout and Unit Assembly Layout of the 528DSP/528DB and 5218DB respectively.

1. The materials you will receive with your upgrade kit are:
 - Two EPROMs (chips with labels) and/or
 - One EEPROM or one non-volatile RAM chip (chip without label).

The materials you will need to supply are:

- Phillips-head screwdriver,
 - IC DIP extractor or a pair of curved needle-nose pliers.
2. **IMPORTANT:** Remove power from your multiport controller.
 3. Remove the cover of the unit by unscrewing with the phillips-head screwdriver the 4 screws located on the top panel.
 4. With the front of the unit (LED side) facing you, locate the positions of both the A board and B board (see *Appendix H*) and. Then locate the position of socket U5 on both boards (see *Appendix G*).
 5. Remove the existing EPROM from socket U5 on the A board with IC extractor or needle-nose pliers. Gradually loosen each side of the chip, alternating pliers from side to side, so as not to bend chip pins. Pull loosened EPROM all the way out.
 6. Install the new EPROM chip with label marked "A" into socket U5 on the A board. The EPROM is notched; the notch on the EPROM will point towards the rear of the unit. When installing the new EPROM, be careful not to bend any of the pins. Also make sure none of the pins miss their sockets.

7. Locate socket U5 on the B board.
8. Remove existing EPROM from socket U5 on the B board following the same instructions in item 5.
9. Install the new EPROM chip with label marked "B" into socket U5 on the B board following the same instructions as in Item 6.
10. **NOTE:** If a RAM chip is not sent with this kit, skip Items 10 and 11 and go to Item 12.

With the front of the unit (LED side) facing you, locate socket U7 on the B board (see *Appendix G* and *Appendix H*).

11. Install the EEPROM or non-volatile RAM (chip without label) into socket U7 on the B board. The EEPROM is notched; the non-volatile RAM has a dot at one end. The notch or dot will point towards the rear of the unit.
NOTE: The socket will be larger than the EEPROM or RAM. The EEPROM or RAM should be placed in the socket as far forward (close to the LEDs) as possible. The unused socket holes will be towards the rear of the unit.
12. Replace the cover and apply power to the unit. The upgrade is now complete.
13. Before you begin operations, check the multiport's configuration status to make certain it matches your application. If configuration changes are required, you must make these changes in the configuration mode. See *Section 6.3* for complete instructions.

APPENDIX E - 524DSP MAIN BOARD MECHANICAL LAYOUT

**APPENDIX F - 525DB MAIN BOARD MECHANICAL
LAYOUT**

**APPENDIX G - 528DSP/528DB/5218DB MAIN BOARD(S)
MECHANICAL LAYOUT**

APPENDIX H - 5218DB UNIT ASSEMBLY LAYOUT

APPENDIX I - TROUBLESHOOTING

Please check this troubleshooting guide before calling BayTech Tech support.

NOTE: This troubleshooting guide is written for users of IBM PC compatible equipment; the term "PC" used below refers to any IBM PC, AT, XT or compatible.

PROBLEM: DATA DOES NOT PRINT

SYMPTOM: POWER LED DOES NOT ILLUMINATE

CAUSE: A/C Power cord is not plugged in.

SOLUTION: Plug power cord into proper A/C power outlet.

CAUSE: Fuse Blown.

SOLUTION: Unplug A/C power cord and check internal fuse. If blown, replace with same type and rating of fuse.

SYMPTOM: ON POWER-UP, ALL LEDS COME ON AND STAY ON

CAUSE: DB Model failure.

SOLUTION: Call BayTech tech support.

SYMPTOM: NO PORT LEDS LIGHT

CAUSE: PC serial cable.

SOLUTIONS:

- 1) Check cabling between PC and multiport.
- 2) Check handshaking lines using TERM program. All lines (except DCD which is not used) should be high. If lines are high, turn your multiport off. You should notice CTS and DSR lines go low. If they do not go low, there is a good chance cable is straight. Typing characters from TERM should illuminate PC LED on the multiport.

- 3) Check installation procedures for PC's serial port. COM1 must generate an interrupt on IRQ4 (COM2 on IRQ3). Also, check any jumpers for continued defining port configuration which should be jumpered for DTE, not DCE.

CAUSE: The multiport is connected to a non-designated COM port.

SOLUTION: Make sure multiport is connected to a designated PC COM port. Check using TERM program. Turn multiport off, and you should not see CTS/DSR lines go low if you are on a non-designated COM port.

CAUSE: PC is connected to multiport port which is configured as a printer port.

SOLUTION: Enter multiport's configuration mode and in the Status menu, check the port assignment.

CAUSE: LPTX not rerouted to COMX port for PC serial communication.

SOLUTION: Reroute COM port as follows:
MODE LPTX:=COMY (X = 1, 2 or 3)(Y = 1, 2)

CAUSE: Multiport is in configuration mode (all LEDs will be illuminated).

SOLUTION: Exit configuration mode or recycle power.

SYMPTOM: COMPUTER AND PRINTER PORT LEDS LIGHT

CAUSE: Printer cable.

SOLUTION: Correct serial cable between multiport and printer.

CAUSE: Printer is off-line.

SOLUTION: Make sure printer is on-line.

CAUSE: Multiport's computer port does not match the configuration of the PC.

SOLUTION: Enter multiport's configuration mode and match to the PC the baud rate, word size, stop bits, parity and handshaking.

PROBLEM: CANNOT CONFIGURE

SYMPTOM: CONTROL-T (OR F1 IN TERM PROGRAM) SENT IN DUMB TERMINAL MODE DOES NOT INVOKE CONFIGURATION MENUS.

CAUSE: Cable.

SOLUTION: Use correct serial cable between PC and multiport. Check handshaking lines in TERM program.

CAUSE: Port configuration.

SOLUTION: Match baud rate, word size, stop bits, parity and handshaking lines between multiport and PC. This can be done using TERM program.

CAUSE: Port selection.

SOLUTION: Be sure PC COM port is connected to configuration port of the multiport.

CAUSE: Software.

SOLUTION: Use dumb terminal or a PC running a terminalemulation program: TERM supplied by BayTech, or another program such as CrossTalk.

CAUSE: User activity.

SOLUTION: Wait until current activity between PC and printer is completed. There should be no red LEDs illuminated when trying to enter the configuration mode.

CAUSE: Bad PC COM port.

SOLUTION: Try a different COM port or PC.

CAUSE: PC serial card uses IRQ4 instead of IRQ3.

SOLUTION: Reconfigure serial card, use different serial card or different terminal emulation program.

PROBLEM: PRINTS GARBAGE

SYMPTOM: MISSING CHARACTERS

CAUSE: Incorrect cable type.

SOLUTION: Check manual for correct pin-outs between PC and multiport, and between DB Model and printer. Check handshaking. A way to check is to force an error condition at the printer, i.e., remove paper tray from laser printer or turn off-line with power still applied). Send print job to printer. If printer LED goes off, you can conclude no handshaking was done. On serial ports, check multiport's configuration to match handshaking (i.e. you must be using CTS/DTR or XON/XOFF for both the multiport and printer). Also check pin 20 of peripheral to pin 5 of DB Model continuity by using an ohm meter to check resistance from end to end.

CAUSE: Configuration problem.

SOLUTION: Check baud rate, word size, stop bits and parity on serial ports. It is best to be at 8 word size and no parity. BayTech does not recommend a configuration of 7 word size with even or odd parity.

SYMPTOM: RANDOM GARBAGE CHARATERS.

CAUSE: Serial port configuration.

SOLUTION: In multiport's configuration mode, match baud rates, word size, stop bits, parity, and handshaking with the connected device.

CAUSE: Cable length.

SOLUTION: Serial cable, length should not exceed 150 feet. Use shorter cable.

PROBLEM: CANNOT SELECT PRINTER (DB SERIES ONLY)

CAUSE: Port selection.

SOLUTION: Port Select Code may be going out on wrong port; e.g. Port Select Code is going out LPT1 and DB Model is connected to COM1. Also make sure selected port is designated as a printer port and not as a computer port.

CAUSE: Improper Port Select Code.

SOLUTION: Match Port Select Code you are sending to Port Select Code specified in configuration mode. Check case of Port Select Code (upper or lower). Also, remove any spaces between Port Select Code and port number.

CAUSE: You are in Port Select Mode B with zero (0) time-out.

SOLUTION: Switch to Port Select Mode A or enter a time-out value, both via configuration mode.

SYMPTOM: SOME SORT OF PRINTER SELECT CODE PRINTS ON DOCUMENT WHEN USING RAMEXEC.

CAUSE: Port Select Code in SETUP does not match Port Select Code configured in DB Model.

SOLUTION: Match the Port Select Code in SETUP exactly with that configured in DB Model.

PROBLEM: CANNOT SELECT PRINTER DURING PRINT JOB (DB SERIES ONLY)

CAUSE: You are using Port Select Mode B (port selection at beginning of sending only).

SOLUTION: Switch to Port Select Mode A in configuration (port selection anytime while sending).

PROBLEM: RAMEXEC HANGS UP COMPUTER WHEN EXECUTED (DB SERIES ONLY)

CAUSE: LPTX not rerouted for serial communication.

SOLUTION: Reroute LPTX using this command:
MODE LPTX:=COMY (X = 1, 2 or 3)(Y = 1, 2)

CAUSE: Floating condition on DSR or CTS lines.

SOLUTION: Using TERM program, check hand-shaking line. Power down DB Model. If DSR, DCD and CTS lines do not go low, cable wiring needs to be checked.

PROBLEM: PRINT JOB SWITCHES PRINTERS IN THE MIDDLE OF A PRINT JOB (DB SERIES ONLY)

CAUSE: Time-out period too short.

SOLUTION: Increase input inactivity time-out period via configuration mode.

CAUSE: Characters used in Port Select Code are too common and may inadvertently appear somewhere in print job.

SOLUTION: Change Port Select Code to a unique character sequence.

PROBLEM: PRINT JOBS INTERMIX (DB SERIES ONLY)

CAUSE: Time-out period is too short.

SOLUTION: Increase input inactivity time-out period via configuration mode.

PROBLEM: DB MODEL DOES NOT TIME-OUT

CAUSE: Time-out is set to zero (0).

SOLUTION: Increase input inactivity time-out period via configuration mode.

CAUSE: Port selected is designated as computer port.

SOLUTION: Send the Port Select Code followed by a terminating character: OD Hex (Enter/Return) or OA Hex (Line Feed).

PROBLEM: PRINT JOBS ARE LOST WHEN MORE THAN ONE USER IS SENDING PRINT JOBS (DB SERIES ONLY)

CAUSE: Printer port is not connected or is connected to a powered-down printer. Data is being routed to a powered-down printer and is lost (going to the bit bucket).

SOLUTION: Pull DTR line low by powering up printer and putting printer off-line. Or, DB Model could be in contention mode, and when first printer is busy, print job is routed to the next available printer which is turned off or is not connected.

APPENDIX J

INDEX

A _____

Antenna 56
Appendix 6, 7, 9, 15, 27, 43, 57, 62, 72, 74-80, 87
ASCII 4, 16, 18, 20, 29, 35, 43, 50, 64
Asynchronous 1-3

B _____

Baud rate 1-4, 7, 13, 17-19, 27, 28, 31, 32, 37, 38, 45, 46, 64, 82, 83
Buffer 5, 8, 9, 15, 22-26

C _____

Cable 9, 11, 55, 56, 63, 64, 80-83, 85
Cabling 2, 4, 6, 8, 9, 57-60, 63, 80
Case sensitive 29, 36
CCITT 3
Clear-to-Send 23
Com port 64, 81, 82
Computer port 11, 12, 24, 25, 44, 49, 82, 84, 86
Configuration 1-8, 11, 13, 17-19, 27-53, 55, 63-65, 73, 75, 81-85
Configuration mode 1, 2, 7, 18, 27, 29, 34, 35, 40, 42, 43, 51, 53, 63, 64, 65, 73, 75, 81-85
Configuration port 82
Configuration status 55, 73, 75
Contention mode 14, 49, 86
Control-C
Control character 1, 3-6, 18, 35, 36, 40, 64, 65
Control-T 3, 18, 29, 35, 43, 64, 82
CSA 6
CTS 5, 8-12, 22-25, 57-61, 64, 80, 81, 83, 85

D _____

Data Communication Equipment 8
Data flow control 5, 22
Data Terminal Equipment 8
DCD 57, 59-61, 80, 85
DCE 5, 8-10, 81
Desk-top 1, 2, 6
Dimensions 5
Dip-Switch 1, 3, 7, 27
Diskette 43, 62, 63, 66
DSR 8-10, 57, 59-61, 64, 80, 81, 85
DTE 5, 8-10, 81
DTR 5, 8-11, 15, 22-25, 57, 59-61, 64, 83, 86
Dumb terminal mode 64, 82

E _____

EIA 8, 9
Emulation 6, 7, 29, 35, 43, 63, 64, 82, 83
EPROM 7, 72-75
EPROMs 74

Exit 5, 6, 29, 30, 33-37, 39, 42, 43, 45-47, 53, 66-68, 70, 71, 81

F _____

Factory default 7, 17-21, 35, 64
FAX 55
Federal Communications Commission 56
Form feed mode 2-6, 21, 43, 44, 52
Full duplex communication 11, 12, 64

G,H _____

GND 9
Handshaking 1, 4, 5, 7-9, 11, 12, 17-19, 22-26, 33, 57-60, 64, 73, 80, 82, 83
Hardware handshaking 5, 22-25, 58-60
Header Page Message 2-7, 13, 21, 43, 44, 53
Hewlett Packard 6, 60
Hewlett Packard Laserjet 6, 60
Host port 5, 11, 22, 27-29, 35, 38, 43, 46, 63
Hot key 66, 67, 70, 71
Humidity 5

I _____

IBM 3, 6, 8, 15, 57, 59, 63, 66, 80
IC 72, 74, 75
Identification block 29, 35, 43, 64
In-line spoolers 55
Indicators 5
Input inactivity time-out 15, 85
Interface 3, 5, 6, 8, 56, 64
Interference 56

J,K,L _____

Juki 61
Keyboard 29, 35, 36, 64-66, 71
Laserjet 6, 60, 68-71
LED 5, 6, 11, 12, 29, 72, 74, 75, 80-83
Logical Name 2, 4, 21, 45, 65, 69

M _____

Main board mechanical layout 74
Main configuration menu 5, 6, 29-37, 40, 41, 43
Maintenance 6, 54
Memory resident program 65, 70
Menu 1, 3-6, 29-41, 43-45, 47-53, 64-71, 81
Menu-driven 1, 3-5, 29
MS-DOS 63

N _____

Non-volatile memory 1, 3, 4, 14, 32-34, 39-41, 46, 48-53

O _____

Okidata 61

Operating procedure 4, 11
Options 5

P

Parity 1-4, 7, 15, 17-20, 27, 28, 30-32, 36-38, 44, 45, 64, 82, 83
Power cord 6, 27, 80
Power switch 6
Power-on 6
Power-up default configuration 3
Printer assignment 14, 49
Printer contention 2, 29, 30, 35, 49
Printer port 11-17, 19, 20, 24-26, 30, 33, 44, 49, 66, 81, 84, 86
Printer select code 2-7, 13-16, 20, 21, 43, 44, 50, 65, 66, 68-70, 84
Printer select mode 2-7, 13, 15, 20, 43, 44, 51
Printer selection 2, 4, 15
Printer sharing 1, 2, 13, 43, 62
Protective Ground 9

R

Rack-mount 6
Radio frequency energy 56
RAM 7, 15, 39-41, 47-52, 72-75
Readme 6, 62
Recommended cabling 57, 59, 60, 63
Return authorization 54
RTS 8-10, 57, 59-61, 64
RX 5, 8, 9
RXD 10, 57-61

S

Serial number 55
Serial port configuration 1, 2, 4-6, 13, 17-19, 31, 32, 35-38, 43, 45, 83
Setup 7, 62, 63, 65, 66, 69, 70, 84
SGND 8-10, 57-61
Shipping 6, 54
Signal ground 8, 9
Software drivers 55
Specific printer selection 2
Specifications 3, 4, 56
Status 5, 6, 29-33, 35-38, 43-46, 55, 64, 66, 68, 70, 73, 75, 81
Stop bits 1-4, 17-19, 27, 28, 31, 32, 37, 38, 45, 64, 82, 83

T

Technical support 6, 55
Television 56
Telex 55
Temperature 5
TERM 6, 62, 63, 80-82, 85
Terminal 6-8, 11, 23, 29, 34, 35, 42, 43, 63, 64, 82, 83
Terminal emulation program 6, 29, 35, 63, 64, 83
Time-out 1-7, 12, 13, 15, 17-19, 29, 30, 34-36, 41, 48, 84, 85

Troubleshooting 7, 80
Tx 5, 8, 9
TXD 10, 57-61

U,V _____

UL 6
User-programmable 1, 2, 4, 17
VAC 5, 6
Voltage 22-25
Volts 8, 9

W _____

Warranty 6, 54
Weight 5
Word size 1-4, 7, 13, 17-19, 27, 28, 31, 32, 37, 38, 45, 64, 82, 83

X _____

XON/XOFF 1-5, 7, 9, 12, 13, 17-19, 22-27, 29-33, 37, 38, 45, 57, 59, 60, 64, 83
XON/XOFF handshaking 1, 4, 5, 7, 12, 17-19, 24-26, 57, 59, 60

OTHER PRODUCTS

We also manufacture these other peripheral sharing devices.

Print Master (700 Series) printer controllers are made in several different configurations satisfying various interface requirements. Each unit allow 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 512K, dynamically allocated buffer and may be expanded to two megabytes.

Print Master II (800 Series) is a smart controller that connects between your computers, printers, plotters, modems and other peripherals. It allows 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 an expandable 256K buffer.

Model 24 Data Exchange System is a state of the art computer peripheral sharing device that can be expanded from 4 to 24 ports using 4 port I/O modules. Any port can be configured as a input or output port. The standard 512 KB buffer can be increased to 4.5 MB by user installed memory chips. The buffer is increased in increments of either 256K or 1 Megabyte. Plus, using popular communications software, this unit allows for computer to computer high speed data transfer.

"H" Series Multiport Controllers are stand-alone units that connect between one host computer and up to 23 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 may be easily configured to your application. The **500 H** series units come in 5 and 9 port models. The **Model 24H** unit is expandable from 4 to 24 ports in 4-port modular increments.

500 SERIES MULTIPOINT CONTROLLERS

Also 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.

Time-Division Multiplexing (E-Series): Multiplexes and demultiplexes either 4 or 8 channels over a single communications channel such as a leased phone line. These units have to be purchased in pairs.

Star 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 RS-232C ports. RS-422A and Current Loop ports are optionally available.

If you have any questions concerning any of BayTech's products, please feel free to call a BayTech Applications Engineer at either (800)523-2702 (outside Mississippi) or (601)467-8231 (see *Section 9.0*).

NOTES

NOTES