

OWNER'S MANUAL

A SERIES, AC11 SERIES, ES SERIES, F SERIES, AND G SERIES MULTIPOINT CONTROLLERS

524A
524AP
528A
528AP
5218AP
524AC11
524AC11P
528 AC11
528 AC11P
5218AC11P
524ES
524ESP
528ES
528ESP
5218ESP
524F
524FP
525FP
528FP
5218FP
524G
525GP
528G
529GP
5218GP
524NB
524NBP
528NB
528NBP

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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 toll-free at 1-800-523-2702.

BayTech also manufactures other data communications devices that provide port sharing and expansion, networking, port contention, buffered and non-buffered printer sharing, and multiplexing. If you would like information on any of these models, please contact BayTech Customer Service.

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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.

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1

GENERAL INFORMATION

IMPORTANT: Please verify which specific model multiport controller you have purchased (i.e., Type A, Type AC11, Type ES, etc.). Please see the packing list that came with your unit for the specific model type. 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. Determine if you have purchased any options with your unit.

NOTE: If your multiport controller has a "P" suffix at the end of the model type, this indicates the unit is equipped with non-volatile memory and will be referred to as a *programmable* unit. If you change any factory default settings via the menu-driven configuration mode, the changes will be retained if power is lost. When a specific item in this manual applies to both programmable and non-programmable units, we will denote the model type with "(P)" (e.g., 524A(P), 528ES(P)).

NOTE: If your multiport controller does not have a label on the back panel indicating the series type, you may assume you have purchased a 524NB(P) or 528NB(P). Please see the packing list to confirm.

The following sections apply to all models: *Section 2* (Specifications), *Section 3* (Installation), *Section 4* (Cabling), *Section 7* (Maintenance), *Section 8* (Technical Support/Ordering), and *Section 9* (FCC Statement). You may skip subsections that do not pertain to the multiport you have purchased. Most subsections are titled with the specific model and/or hardware type. Please see *TABLE A* on the following page for a guide to which subsections apply to specific models.

TABLE A - MODEL/SUBSECTION GUIDE

Model	Applicable Subsections
524A(P)	1.1, 5.1.1, 5.2.1, 5.3.1, 6.1, 6.6
528A	1.1, 5.1.1, 5.1.1.1, 5.2.1, 5.3.1, 6.2
528AP	1.1, 5.1.1, 5.2.2, 5.3.1, 6.3, 6.6
5218AP	1.1, 5.1.1, 5.2.2, 5.3.1, 6.3, 6.6
524AC11(P)	1.2, 5.1.2, 5.2.1, 5.3.1, 6.1, 6.6
528AC11	1.2, 5.1.2, 5.2.1, 5.3.1, 6.2
528AC11P	1.2, 5.1.2, 5.2.2, 5.3.1, 6.3, 6.6
5218AC11P	1.2, 5.1.2, 5.2.2, 5.3.1, 6.3, 6.6
5218C	1.1, 5.1.1.3, 5.2.2, 5.3.1, 6.3, 6.6
524ES(P)	1.3, 5.1.3, 5.2.1, 5.3.1, 6.1, 6.6
528ES	1.3, 5.1.3, 5.2.1, 5.3.1, 6.2
528ESP	1.3, 5.1.3, 5.2.2, 5.3.1, 6.3, 6.6
5218ESP	1.3, 5.1.3, 5.2.2, 5.3.1, 6.3, 6.6
524F(P)	1.4, 5.1.4, 5.2.1, 5.3.1, 6.1.1, 6.1.3, 6.6
525FP	1.4, 5.1.4, 5.2.3, 5.3.3, 6.4
528FP	1.4, 5.1.4, 5.2.3, 5.3.1, 6.4
5218FP	1.4, 5.1.4, 5.2.2, 5.3.1, 6.5, 6.6
524G	1.5, 5.1.5, 5.2.1, 5.3.1, 6.1, 6.6
525GP	1.5, 5.1.5, 5.2.2, 5.3.3, 6.3
528G	1.5, 5.1.5, 5.2.1, 5.3.1, 6.2
529GP	1.5, 5.1.5, 5.2.2, 5.3.3, 6.3
5218GP	1.5, 5.1.5, 5.2.2, 5.3.1, 6.3
524NB(P)	1.1, 5.1.1, 5.2.1, 5.3.2, 6.1, 6.6
528NB	1.1, 5.1.1, 5.2.1, 5.3.2, 6.2
528NBP	1.1, 5.1.1, 5.2.2, 5.3.2, 6.3, 6.6

1.1 A SERIES

The A Series multiport controllers are microprocessor-controlled units that allow one EIA-232C serial port on a computer to access up to 17 devices on a single unit and up to 96 devices by cascading units. Separate input/output buffers and UARTS enable the user to receive and transmit data simultaneously on all ports, and mix and match devices of different configurations. Port selection is accomplished through software control.

The 524A(P) models have one host port and four peripheral ports. The 528A(P) models have one host port and eight peripheral ports. The Model 5218AP has one host port and seventeen peripheral ports. *Figure 1* below shows a typical application using an A Series multiport controller.

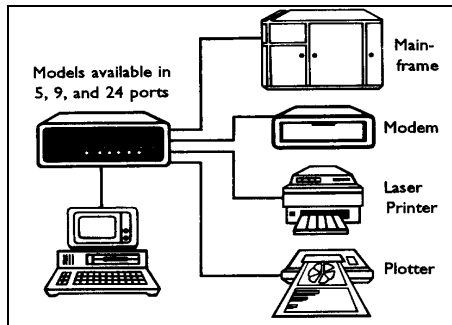


Figure 1: A Series Application

The serial port configuration (baud rates, word size, stop bits and parity) is user-selectable for each individual port on all A Series models. In addition, the control character and XON/XOFF handshaking are programmable on the 528AP and 5218AP models. These features are easily programmed via the menu-driven configuration mode or by DIP switch settings (see *Section 6*).

NOTE: The 524NB(P) and 528NB(P) models are virtually identical to the 524A(P) and 528A(P) models except they have no buffer and pass handshake lines through the unit (see *Section 5.3.2*).

NOTE: The control character and XON/XOFF handshaking are options to order (Option 2 and Option 6 respectively) on the 524A(P), 524NB(P), and 528A models if the factory default values are not acceptable. **The factory default control character is ASCII Control-T (14 hex) and XON/XOFF handshaking is disabled from the factory.**

Please contact BayTech for ordering information (See *Section 8*).

1.2 AC11 SERIES

BayTech's AC11 Series multiport controllers connect directly to a host computer and provide multiplexing of messages from peripheral devices. Data is buffered until a terminating character is received indicating the end of a message or until the buffer is full. The messages are then sent to the host device preceded by a port identification number.

The host device can select individual peripheral ports to transmit data to while simultaneously receiving messages from all peripheral ports.

The 524AC11(P) models have one host port and four peripheral ports. The 528AC11(P) models have one host port and eight peripheral ports. The Model 5218AC11P has one host port and seventeen peripheral ports. *Figure 2* on the following page shows a typical application using an AC11 Series multiport controller.

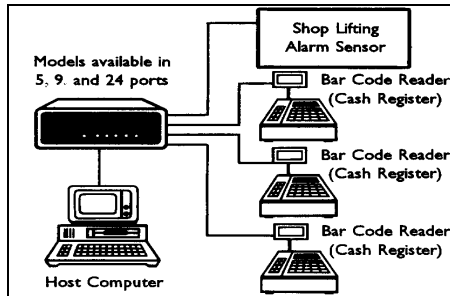


Figure 2: AC11 Series Application

The serial port configuration (baud rates, word size, stop bits and parity) is user-selectable for each individual port on all AC11 Series models. In addition, the message terminating character, the control character, and XON/XOFF handshaking are programmable on the 528AC11P and 5218AC11P models. These features are easily programmed via the menu-driven configuration mode or by DIP switch settings (see *Section 6*).

NOTE: The control character and XON/XOFF handshaking are options to order (Option 2, and Option 6 respectively) on the 524AC11(P) and 528AC11 models if the factory default values are not acceptable. **The factory default control character is ASCII Control T (14 hex) and XON/XOFF handshaking is disabled from the factory.** Please contact BayTech for ordering information (see *Section 8*).

1.3 ES SERIES

BayTech's ES Series multiplexers are designed to interface directly with a host computer and provide automatic time-division multiplexing of data from multiple peripheral devices thereby reducing the software overhead of the host system.

The 524ES(P) models have one host port and four peripheral ports. The 528ES(P) models have one host port and eight peripheral ports. The Model 5218ESP has one host port and seventeen peripheral ports. *Figure 3* below shows a typical application using an ES Series multiport controller.

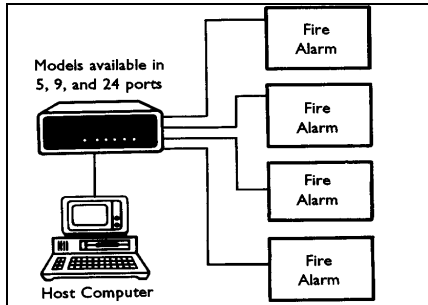


Figure 3: ES Series Application

The serial port configuration (baud rate, word size, stop bits, and parity) is user-selectable for each individual port on all ES Series models. In addition, the data block length, the control character, and XON/XOFF handshaking are programmable on the 528ESP and 5218ESP models. These features are easily programmed via the menu-driven configuration mode or by DIP switch settings (see *Section 6*).

NOTE: The control character, and XON/XOFF handshaking are options to order (Option 2 and Option 6 respectively) on the 524ES(P) and 528ES models if the factory default values are not acceptable. **The factory default control character is ASCII Control-T and XON/XOFF handshaking is disabled from the factory.** Please call BayTech for ordering information (see *Section 8*).

1.4 F SERIES

The F Series multiports allow you to create a local "star" network capable of any-port-to-any-port communication. A *full duplex* communication link is established between any two connected EIA-232 ports. The 525FP and 528FP also feature a host port control feature that will allow the host device to make or break any connection between two devices.

The 524F(P) and 525FP models have one host port and four peripheral ports. The Model 528FP has one host port and eight peripheral ports. The Model 5218FP has one host port and seventeen peripheral ports. *Figure 4* shows a typical application using an F Series multiport controller.

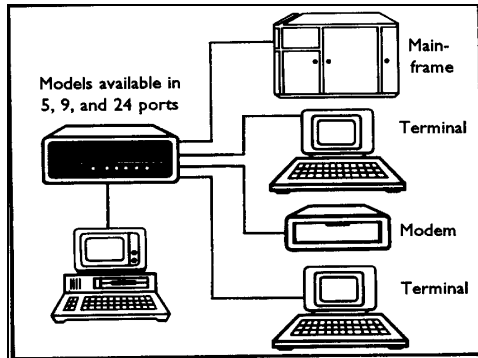


Figure 4: F Series Application

The serial port configuration (baud rate, word size, stop bits, and parity) is user-selectable for each individual port on all F Series models. In addition, XON/XOFF handshaking, the output message strings, and the sign-on/sign-off character are programmable on the 525FP and 528FP models. These features are easily programmed via the menu-driven configuration mode or by DIP switch settings (see *Section 6*).

NOTE: The control character and XON/XOFF handshaking are options to order (Option 2 and Option 6 respectively) for the 524F(P) and 5218FP models if the factory default values are not acceptable. **The factory default control character is ASCII Control-T and XON/XOFF handshaking is disabled from the factory.** Please see *Section 8* for ordering information.

NOTE: For all models, there is a *disconnect time guard* option to order (Option 7). This option will prevent an erroneous disconnect in the case that the sign-off character followed by a *carriage return* is sent as data. The *disconnect time guard* option requires a two (2) second delay between the last transmitted character and the sign-off character. Please see *Section 8* for ordering information.

1.5 G SERIES

The G Series multiports allow a host computer device to simultaneously broadcast the same message out to multiple peripheral ports while receiving data from an individual selected peripheral port. The G Series multiports can also operate in a mode identical to the A Series (i.e., a port expansion mode where the host device can individually select a single peripheral at time to communicate with in full duplex).

The 524G and 525GP models have one host port and four peripheral ports. The 528G and 529GP models have one host port and eight peripheral ports. The Model 5218GP has one host port and seventeen peripheral ports. *Figure 5* below shows a typical application using a G Series multiport controller.

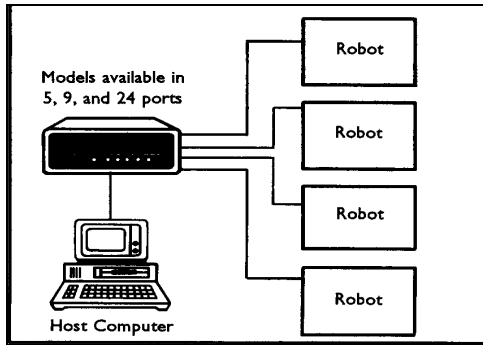


Figure 5: G Series Application

The serial port configuration (baud rate, word size, stop bits, and parity) are user-selectable for each individual port on all G Series models. In addition, XON/XOFF handshaking and the control character are programmable for the 525GP and 529GP models. These features are easily programmed via the menu-driven configuration mode or by DIP switch setting (see *Section 6*).

NOTE: The control character and XON/XOFF handshaking are options to order (Options 2 and 6 respectively) on the 524G and 5218GP models if the factory default values are not acceptable. **The factory default control character is ASCII Control-T (14 hex) and XON/XOFF handshaking is disabled from the factory.** Please see *Section 8* for ordering information.

2

SPECIFICATIONS

INTERFACE: EIA-232C (CCITT V.24), -12v mark, +12v space. Optional EIA-422A (Option 17) and Current Loop (Option 12).

TRANSMISSION: Asynchronous.

FACTORY-SET POWER-UP DEFAULT CONFIGURATION - ALL MODELS EXCEPT AS NOTED:

Baud rate: 9600.

Word size: 8 bits.

Parity: None.

Stop bits: 1.

XON/XOFF: Disabled.

Control character: ^T (14 Hex).

Data block length (ES only): 32 characters.

Terminating character (AC11 Series only): Carriage Return (0D Hex) .

Sign-On/Sign-off character (F Series only): ^T (14 Hex).

Output Messages (F Series only):

On Line Message: ^M^JOn line^G^M^J;

Off Line Message: ^M^JOff line^M^J;

Busy Message: ^M^JBusy^M^J.

NOTE: The ^ symbol represents a control character.

USER-PROGRAMMABLE CONFIGURATION - ALL MODELS EXCEPT AS NOTED:

Reconfigurable in menu-driven mode through the host port: Port 5 of the 524 and 525 units, Port 9 of the 528 and 529 units, and Port 18 of the 5218 units. Saved in non-volatile memory to become the new power-up default configuration for all programmable units.

NOTE: Baud rate, word size, parity, and stop bits for the host port of 524 and non-programmable 528 units are programmed via DIP-switch settings.

Baud rate: 110, 135, 300, 600, 1200, 2400, 4800, 9600. 19,200 is available on 524 and 525 units only. Other rates optional.

Word size: 5, 6, 7 or 8 bits (7 or 8 bits for 524 models).

Parity: Even, odd or none.

Stop bits: 1, 1 1/2 or 2 (1 or 2 for 524 models).

XON/XOFF: Enabled or disabled (Option to order on 524 models).

Control character: Any code from 00 Hex to 7F Hex (option to order on 524 units).

Terminate character (528AC11P and 5218AC11P models only): Any code from 00 Hex to 7F Hex.

Data block length (528ESP and 5218ESP models only): 1 to 250 characters.

AVAILABLE OPTIONS:

Option 2: Custom Control Character - Control character required to select between ports. Available on all 524 models, all non-programmable 528 models, 5218FP, and 5218GP. Programmable feature on all other models.

Option 2H: Request for Message Command: ^T followed by capital S releases a message from any one of the peripheral ports. Available on 524AC11P only.

Option 2E: Same Control and Configuration Character - Single control character to switch between ports and to configure peripheral ports. Available on all 524 models except 524F(P). Standard feature on all other models.

Option 3C: Custom Connectors - DTE, DB-25 male connectors available per port. Available on all models.

Option 4: 230 VAC power - Power supply to use 230 VAC power. Available on all models.

Option 6: XON/XOFF Flow Control - Enables XON/XOFF handshaking on all ports. Available on 524AP, 524AC11P, 524ESP, 524FP, 5218FP, and 5218GP.

Option 7: Disconnect Time Guard - With this option, a 2-second delay is required before the disconnect sequence. Available on 524FP, 525FP, and 528FP.

Option 12: Current Loop - EIA-232 Current Loop interface available per port. Please specify active or passive transmit and active or passive receive. Available on all models.

Option 17: EIA-422 interface available per port.
Available on all models.

Option 20: 525 Buffer Expansion - Receive buffer expansion to 7.7K per port.
Available on 525FP and 525GP only.

BUFFER SIZE:

525/529 - 3.7K Rx/256 byte Tx per port standard;
525 units optionally available with 7.7K Rx/256 byte Tx per port (Option 20).

524/528/5218 - 256-byte Rx/256-byte Tx per port.

POWER:

524/525 - 115 VAC, 50/60 Hz, maximum .2A.;
optional 230 VAC, 50/60 Hz, maximum .1A;

528/529/5218 - 115 VAC, 50/60 Hz., maximum .3A.;
optional 230 VAC, 50/60 Hz., maximum .2A.

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

DIMENSIONS: 524 and 525 - 8 x 7 1/2 x 2 1/4 inches;

528/529 - 10 1/8 x 8 x 3 inches;

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

WEIGHT: 524/525 - 3 lbs.; 528/529 - 5 lbs.,
5218 - 9 1/2 lbs.

INDICATORS: 1 green power LED; red port-activity LEDs.

CONNECTORS: DB-25s with DCE (female) ports.

HANDSHAKING: CTS/DTR; selectable XON/XOFF on some models (XON/XOFF optional on 524 units and certain 5218 units).

MOUNTING: Desk-top standard; rack-mount accessories optional.

WARRANTY: One full year.

3 **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 and to determine the specific multiport model number you have purchased. At a minimum, you should have received the unit, this manual, and any applicable addendums. Also check the unit to make certain that it did not receive damage during shipping. If items are missing or damage did occur, please contact BayTech technical support at 1-800-523-2702.

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 "1". Power-on is indicated on the front panel by the illuminating of a green LED .

CAUTION: Power should be turned off anytime cables are to be installed or removed. Make sure the power is turned off and the unit is unplugged before removing the cover and attempting to make any internal changes.

3.3 **FACTORY DEFAULT CONFIGURATION**

NOTE: Before you proceed with installation, make certain that the device connected to the host port is setup to have the same configuration as the multiport's host port. The host port and all other ports on all series of multiports are factory configured as follows except as noted:

Serial ports power up from the factory at:

9600 baud rate
8 word size
1 stop bit
No parity
XON/XOFF disabled (optional for 524 units and some
5218 units)

Control character: ^T (14 Hex).

Sign-On/Sign-off character (F Series only): ^T (14 Hex).

Output Messages (F Series only):

On Line Message: *^M^JOn line^G^M^J;*

Off Line Message: *^M^JOff line^M^J;*

Busy Message: *^M^JBusy, no port available^M^J.*

Data block length (ES Series units only): 32 characters.

If the factory default configuration for all ports is not satisfactory for your application, you may then reconfigure the multiport by entering the configuration mode (see *Section 6*).

The controlling or host device is connected via cable to the host port on all models. This is Port 5 of the 524 and 525 units, Port 9 of the 528 and 529 units, and Port 18 of the 5218 units.

Peripheral devices are connected via cable to any of the remaining ports. They need not be installed in any specific order. Peripheral ports not used may be left empty.

4 CABLING

IMPORTANT: Before you proceed with cabling, you must know whether the devices you are connecting to 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 transmits data on Pin 2 and receives data on Pin 3, it is DTE. If your device receives data on Pin 2 and transmits data on Pin 3, it is DCE. However, to verify the interface requirements for your device, please refer to the Owner's Manual for that device.

BayTech's standard configuration of its multiports is all ports DCE with DB-25 female connectors. DCE ports use the following signals for communication:

DCE PORT SIGNALS			
Pin	EIA-232 Signal	Direction	Description
1	PGND	----	Protective ground
2	TX	Input	Data in
3	RX	Output	Data out
4	RTS	Input	Internally enabled if no wire connected (normally not used).
5	CTS	Output	-12V when DCE device's buffer is full.
6	DSR	Output	+12V when DCE device powers-up.
7	SGND	----	Signal ground
20	DTR	Input	Transmit enabled when +12 V.

If you are interfacing a DCE device to a DTE device, you must use a one-to-one straight cable as in *Figure 6*. 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 7*. Input handshaking lines are enabled if nothing is connected, allowing the system to operate with only Tx, Rx and GND connected.

500 MODEL - DCE
MALE DB-25

DTE DEVICE
FEMALE DB-25

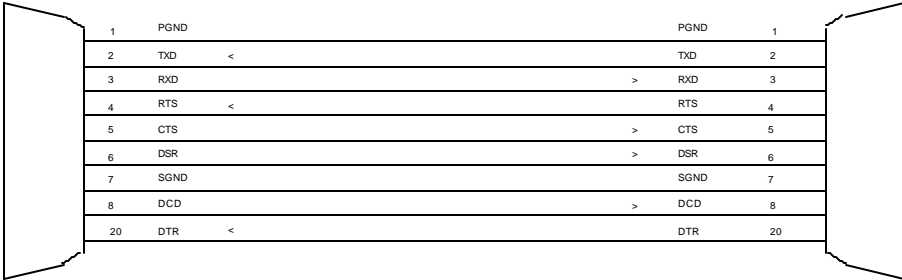


Figure 6 - 500 Series (DCE) to DTE Device

500 MODEL - DCE
MALE DB-25

DCE DEVICE
FEMALE DB-25

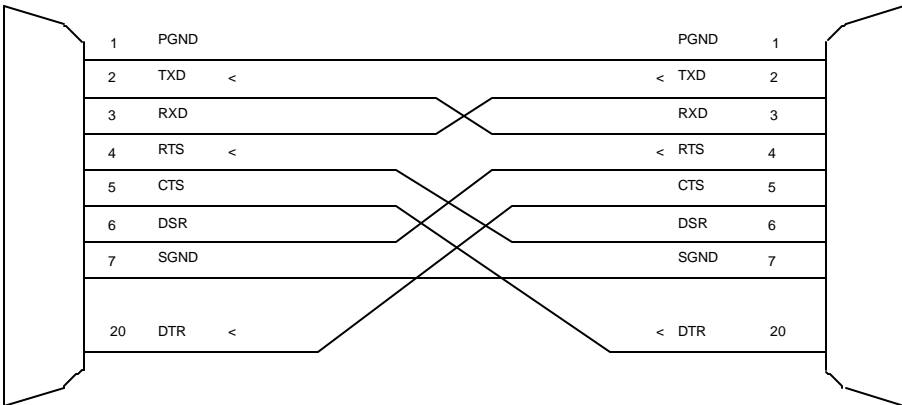


Figure 7 - 500 Series (DCE) to DCE Device

5 OPERATION

BayTech's A, AC11, ES, F, and G Series are user-programmable, multi-function devices that allow serial port expansion/software activated switching (A Series), message multiplexing (AC11 Series), time division multiplexing (ES Series), star networking (F Series), and message broadcasting (G Series).

The A, AC11, ES, F, and G Series are ideal for adapting small computers like the IBM PC to industrial process control and data gathering applications.

5.1 OPERATING PROCEDURE

5.1.1 A SERIES

BayTech's A-series multiport controllers are designed for those computer system applications requiring serial port expansion. These are code-activated, switching devices that increase input/output capabilities by interfacing EIA-232C peripheral devices to a single port on a computer device.

An A-model has one host or common controlling port and either 4, 8 or 17 peripheral ports. The host port is usually connected to a computer, and the peripheral ports are usually connected to devices such as printers, modems, terminals, cash registers, digital instruments, bar code readers, digital scales, numerical machines, etc.

5.1.1.1 PERIPHERAL PORT SELECTION

To connect to a particular peripheral device, the host device sends to the multiport the current control character (factory default is *Control-T*) followed by the peripheral port number to which the desired peripheral device is connected. This is a one-digit number for the 524A(P) and 528A(P) and a two-digit number for the 5218AP. After receiving the control character and the port number, the multiport will provide full duplex communication between the host device and the selected peripheral device.

NOTE: The control character and the port number are trapped and not transmitted to the peripheral device. If you wish to send the control character to the peripheral device, it must be sent twice. The first control character is trapped and the second is passed through the multiport.

Another method of passing the control character to the selected peripheral device is to enter the binary mode of operation (see *Section 5.1.1.2*).

The host device and the selected peripheral device will remain connected until another port is selected. This is accomplished by sending from the PC the control character followed by the new port number.

When switching ports, there may be some question as to which is the last character received from the current port and which is the first character received from the new port.

A way to avoid this confusion when selecting a new port is to wait two character times between the control character and the port number. When the multiport receives control character, it stops the transmitting of data to the host UART from the current peripheral port. However, since the UART has some buffer, up to two characters may still be sent to the host device. The multiport does not start loading data from the new peripheral port into the host UART until the new port number is received.

A method of accomplishing this delay is to send a string of ASCII zeros (30 Hex) between the control character and the new peripheral port number.

For example, suppose you are transmitting and receiving data from Port 1 of a 524A-P, and you wish to switch to Port 2.

1. Send from the host device the control character.
2. Wait two character times.
3. Read host device input buffer.
4. If there are no characters in the host device's input buffer, send ASCII "2". This will switch the host device to Port 2. If there are characters in the host device's input buffer (which come from Port 1), you may send ASCII "1" to continue communicating with Port 1 or "2" to switch to Port 2. Any characters received after sending the new port number will be from the new port.

NOTE: When looking for a control character, the multiport masks the 8th or parity bit. Therefore, either *Control-T* with parity bit off (14 Hex) or *^T* with parity bit on (94 Hex) will appear the same (assuming the factory default control character is used).

5.1.1.2 BINARY MODE

NOTE: Only the 528AP and 528NBP models support binary mode.

The binary mode allows all data entered through the host port, including the control character, to be transparent to the multiport and passed through to the peripheral device. Note that in both the normal and binary modes, data is transparent in the opposite direction - from a peripheral device to the host device.

To access the binary mode, send through the host port *Control-T* (or the current control character) followed by ASCII capital *B*.

Note that while in the binary mode, the configuration mode cannot be accessed nor can the user select a new port. The host device will remain connected to the last peripheral port selected while in the binary mode of operation.

To get back to the normal mode of operation, a *Break* condition must be detected by the host port of the multiport.

5.1.1.3 CASCADING - THE MODEL 5218C

The Model 5218C is a cascading unit allowing a single user to access up to 96 peripheral ports.

Ports 1 through 16 operate the same as a basic Model 5218AP. Port 17 is the cascading port and is hooked to Port 18 of the next cascaded unit. Port 18, the host port, of the first unit is connected to the host device.

To select any port up to 96, the user sends the control character (*Control-T*) followed by the desired port number (01 to 96). The host port will examine the port number. If it is 16 or less, that port will be selected. If it is greater than 16, the cascaded multiport will subtract 16 and transmit *Control-T* and the remainder of the port number onto the next cascaded unit.

For example, if the host port receives a *Control-T* followed by a "34", the first multiport subtracts 16 and transmits *Control-T* followed by an "18" to the second multiport. The second multiport subtracts 16 and transmits *Control-T* followed by "2" to the third multiport. The third multiport connects to Port 2.

After a port has been selected and the user wishes to be connected to another port, he sends *Control-T* to the host port of the first cascaded unit. If that unit is connected to Port 17, it will pass the *Control-T* through with no further action until it reaches a unit that is not connected to Port 17. That unit will disconnect its host UART from the input port. The user must now wait until all data has been transmitted to the host device prior to sending the new port number. This allows the cascading multiports to clear all data from their buffers and UARTs. Once all buffers are clear, the user may send the new port number.

NOTE: If any characters are in the transmit buffers when the *Control-T* is sent, the *Control-T* is stacked behind these characters and will not disconnect until all data has been transmitted through.

5.1.2 AC11 SERIES

The AC11 models allow communication by interfacing a single port on a computer to 4, 8 or 17 EIA-232C serial peripheral devices. They provide multiplexing to the host port of messages from all peripheral ports. These units also allow the host port to select and send data to individual peripheral ports

The host or common port is usually connected to a computer, and the peripheral ports are usually connected to devices such as cash registers, digital instruments, bar code readers, digital scales, numerical machines, printers, modems, terminals, etc.

To transmit data from the host device to a peripheral device, send the control character followed by the desired port number (single-digit number for the 524AC11(P) and 528AC11(P); two-digit number for the 5218AC11). The host device remains connected to that peripheral device for communication until another device is selected.

The control character and the port number are trapped and, therefore, not transmitted to the peripheral device. If you wish to send the control character to the peripheral device, you must send it twice. The first control character is trapped; the second is passed through the multiport.

The 8th or parity bit is masked from the control character before it is examined, allowing you to send the control character with odd or even parity. Therefore, in a binary mode, when 8 data bits are being sent, a 94 Hex will appear as a control character and must be sent twice to pass through the multiport (assuming the factory default value is used).

Data received from the peripheral devices is treated as a message. A message begins when a peripheral port receives a character and is completed when a terminating character (factory set to *Carriage Return*) is received or when the buffer is full. Either condition will cause data to be transferred to the host device a message at a time, with the multiport inserting the port number as the first character of the message for port identification.

Messages will be sent to the host device in a round-robin fashion (i.e., if the multiport is sending a message from Port 1, Port 2 will be examined next for a complete message, then Port 3, etc.).

5.1.3 ES SERIES

The ES Series provides time-division multiplexing.

The internal processor continuously scans all peripheral ports checking for characters in the receive buffers. If a receive buffer contains characters, the data is transmitted through the host port preceded by a port identification code (the current control character followed by the port number).

Transmission continues until the buffer is empty or until a user-defined maximum data block length has been transmitted. After transmission is completed, the multiport will continue its scanning sequence.

If the current control character is received by the multiport from a peripheral device, a second control character is added automatically. This technique allows you to detect the control character as a data character when it is sent through the multiport.

NOTE: Transmitting and receiving of data is totally independent. Therefore, the multiport may be receiving data on any port regardless of which port is transmitting.

To transmit data from the host device to a peripheral device, send the control character followed by the desired port number (single-digit number for the 524ESP and 528ES;

two-digit number for the 5218ES). The host device remains connected to that peripheral device with communication until another device is selected.

NOTE: The control character and the port number are trapped and not transmitted to the selected peripheral device. If you wish to send the control character to the peripheral device, you must send it twice. The first control character is trapped; the second is passed through the multiport.

When looking for a control character, the multiport masks the 8th or parity bit. Therefore, either *Control-T* with parity bit off (14 Hex) or *Control-T* with parity bit on (94 Hex) will appear the same (assuming the factory default control character is used). The 94 Hex must still be sent twice by the host device to enable one 94 Hex to be sent out to the connected peripheral port.

5.1.4 F SERIES

Any of the ports on the F-Series multiport may have full duplex communication with any one of the other ports. With the 524F(P) and the 525FP, as many as two pairs of ports may be communicating simultaneously. With the 528FP, as many as four pairs of ports may be communicating simultaneously. The 5218FP will allow up to nine pairs of ports to communicate simultaneously.

A connection between two ports may be initiated by either device that wishes to communicate. Either device must send the sign-on character (factory default is *Control-T*) followed by the desired port number. An *On Line* message is sent back to the device requesting connection. The connection will remain until a sign-off request is received by the multiport by either device.

If a device requests a connection and the desired port is busy, a *Busy* message is sent back to the requesting device.

Disconnection may be accomplished by either of the two connected devices. The device requesting disconnection sends to the multiport the sign-off character (factory default is *Control-T*) followed by *Carriage Return*. An *Off line* message is sent back to the device requesting disconnection.

A Disconnect Time Guard option (Option 7) is available to prevent erroneous disconnections in case the sign-off character is transmitted as data. The disconnect time guard requires a delay of two seconds before the sign-off character and *Carriage Return* are sent.

In addition, the 525FP and the 528FP feature host port control in which the host device (the device connected to the host port - Port 5 on the 525FP, Port 9 on the 528FP) may also connect or disconnect between other ports at any time.

To make a connection between two ports, the host device sends to the multiport through the host port the current sign-on character followed by ASCII capital *T* and the two port

numbers. For example, if the host device wishes to connect Ports 2 and 5, it would send the current sign-on character followed by *T25*.

To force two ports to disconnect, the host device sends to the multiport through the host port the current sign-off character followed by ASCII capital *D* and the two port numbers.

NOTE: When the host device has initiated a connection, the connected devices make also break the connection themselves by following the standard disconnect procedure.

If any non-connected device wishes to review the connection status of all ports, it may send the current sign-on character followed by ASCII capital *S*. The multiport will respond with a graphic similar to the following depicting port connection. Note that "N" equals no connection.

Port	1	2	3	4	5
Connect	2	1	N	5	4

5.1.5 G SERIES

The G Series units power-up in the broadcast mode. Any data received by the host port is transmitted to all of the peripheral port buffers simultaneously. In the other direction, only one peripheral port can send data to the host port.

To operate properly in the broadcast mode, it is recommended that all ports have the same baud rate, word size, stop bits and parity. If the baud rates on the peripheral ports need to be different, have the host device select the peripheral port with the slowest baud rate so no transmitted characters will be lost. Or, limit the number of characters you transmit at one time to 240, then delay before sending more characters.

The host device may select which port it will receive data from (power-up default is Port 1). The selected port is indicated by the red LED that is lit under the corresponding port number.

For the host device to select a peripheral port, it must send *Control-T* (or current control character) followed by the desired port number (single digit for the 524G, 525GP, 528G, and 529GP, and a double digit number for the 5218GP). Any data received by this port will be transmitted to the host device.

The host device may instruct the G Series multiport to enter into a non-broadcast mode. In this mode, the unit operates identically to an A Series unit (see *Section 5.1.1*).

To enter the non-broadcast mode, send a *Control-T* (or current control character) followed by the capital letter *M*.

To exit the non-broadcast mode and return to the broadcast mode, send a *Control-T* (or current control character) followed by the capital letter *O*.

5.2 USER-PROGRAMMABLE OPERATIONS

5.2.1 ALL 524 AND NON-PROGRAMMABLE 528 MODELS

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

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

NOTE: The serial port parameters for the host port is configured via DIP-switches (baud rate, word size, stop bits, and parity; please see *Section 6.1.1*). The peripheral ports are software programmable from the host port (see *Sections 6.1.2 and 6.2.2*). The baud rate for the peripheral ports of non-programmable 528 models may be set via DIP switch.

5.2.2 ALL 525, 528, 529, AND 5218 MODELS (EXCEPT 525FP AND 528FP)

5.2.2.1 THE SERIAL PORT CONFIGURATION

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

NOTE: The 5218FP and 5218GP do not support XON/XOFF handshaking as a standard feature. You may purchase Option 6 for the 5218FP or 5218GP to enable XON/XOFF handshaking.

Factory default configuration on all ports is 9600 baud rate, 8 bit word size, 1 stop bit, parity, and XON/XOFF handshaking disabled.

5.2.2.2 THE CONTROL CHARACTER

To select a peripheral port, the host device sends the control character to the multiport followed by the peripheral port number. The control character is also used to access the configuration mode. The control character may consist of any single character from 00 Hex to 7F Hex.

NOTE: The control character is not a programmable feature for the 5218FP.

The Factory default is *Control-T* (14 Hex).

5.2.2.3 528AC11P AND 5218AC11P - THE MESSAGE TERMINATING CHARACTER

This is a single character that indicates a completed message to the multiport for the AC11 Series. Data is held in the buffer of the multiport until either this message terminating character is received from the peripheral device or the buffer fills, causing the data to be transmitted out of the host port of the multiport preceded by a port identification number. The single message terminating character is in the form of any two-digit hexadecimal character from 00 Hex to 7F Hex.

Factory default is Carriage Return (0D Hex).

5.2.2.4 528ESP AND 5218ESP - SET DATA BLOCK LENGTH

The data block length is the maximum number of characters per message transmitted out of the host port of the ES Series. You may select a data block length of 1 to 250 characters.

The factory default data block length is 32 characters.

5.2.3 525FP AND 528FP

5.2.3.1 THE SERIAL PORT CONFIGURATION

The multiport will translate for devices using different configurations, allowing you to mix-and-match devices of different configurations. You 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 bit word size, 1 stop bit, parity, and XON/XOFF handshaking disabled.

5.2.3.2 THE SIGN ON/SIGN OFF CHARACTER

To select a peripheral port, the host device sends the sign-on/sign-off character to the multiport followed by the peripheral port number. The sign-on/sign-off character is also used to access the configuration mode. The sign-on/sign-off character may consist of any single character from 00 Hex to 7F Hex.

The Factory default is *Control-T* (14 Hex).

5.2.3.3 OUTPUT MESSAGE STRINGS

The output message strings are messages sent from the multiport to a device requesting connection or disconnection. They include the On line message, which is sent when a connection takes place; the Off line message, which is sent when a disconnection takes place; and the Busy message, which is sent when the requested port is busy. The multiport may also be programmed to send no message.

These message strings may consist of up to 32 characters maximum, entered in hex notation or ASCII string.

Factory default on the output message strings are:

sign-on message - ^M^JOn line^G^M^J;

sign-off message - ^M^JOff line^M^J;

busy message - ^M^JBusy^M^J.

NOTE: The ^ symbol represents a control character. ^M gives a carriage return, ^J gives a line feed, and ^G gives a warning bell.

5.3 DATA FLOW CONTROL

NOTE: When XON/XOFF is enabled, the multiport will continue to support hardware handshaking lines. If this is not desired, you may disconnect the handshaking lines entirely.

5.3.1 All 524, 528, 5218 MODELS

Host-to-multiport-to-peripheral communication

When the host device transmits data to a peripheral device through the multiport's host port, the data is received and stored in a 256-character transmit buffer which in turn retransmits it to a peripheral device through a peripheral port. During transmission, after the buffer receives 236 characters, the multiport will make the host port's CTS (Clear-To-Send) line low (negative voltage), signaling the host device that it cannot accept more data (however, in reality it can accept another 20 characters before overflowing the buffer).

If XON/XOFF handshaking is enabled and the host device does not respond, 8 characters later the multiport will send an XOFF character, signaling the computer that it cannot accept more data (however, in reality it can accept another 12 characters before overflowing the buffer).

When the multiport's buffer empties, the multiport will make the CTS line high (positive voltage) and send an XON character (if XON/XOFF is enabled), signaling the host device that it can accept more data.

When the multiport retransmits the data to the peripheral device through a peripheral port, and the peripheral device cannot receive any more data, the multiport will expect to see a low on the DTR (Data Terminal Ready) line or receive an XOFF character (if XON/XOFF is enabled). When the peripheral device can receive more data, the multiport will expect to see a high on the DTR line or receive an XOFF character (if XON/XOFF is enabled).

Peripheral-to-multiport-to-host communication

When a peripheral device transmits data to host device through the multiport's peripheral port, the data is received and stored in a 256-character receive buffer which in turn retransmits it to the computer through the host port. After the buffer receives 236-characters, the multiport will make the peripheral port CTS (Clear-To-Send) line low (negative voltage), signaling the peripheral device that it cannot accept more data (however, in reality it can accept another 20 characters before overflowing the buffer).

If XON/XOFF is enabled and the peripheral device does not respond, 8 characters later the multiport will send an XOFF character, 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 make the CTS line high (positive voltage) and send an XON character, signaling the peripheral device that it can accept more data.

When the multiport is sending data to the host device through the host port and the host device cannot receive any more data, the multiport will expect to see a low on the DTR line or receive an XOFF character (if XON/XOFF is enabled).

NOTE: The Model 525FP and 528FP pass certain handshake lines through the unit. In particular, the RTS line of a connected port is passed through to the DSR line of the other connected port and vice-versa.

5.3.2 524NB(P) AND 528NB(P) NON-BUFFERED UNITS

The 524NB(P) and 528NB(P) units do not have any buffer and pass data flow control lines through the unit.

Host-to-multiport-to-peripheral communication:

When the multiport is transmitting data from the host device to a peripheral device and the peripheral port detects a low (negative voltage) on the DTR line, the multiport will stop transmitting data to the peripheral device. In addition, the multiport will make the host port's CTS line low and send an XOFF character (if XON/XOFF is enabled).

When the peripheral port detects a high (positive voltage) on the DTR line, the multiport will resume transmitting data to the peripheral device. In addition, the multiport will

make the host port's CTS line high and send an XON character (if XON/XOFF is enabled).

Peripheral-to-multiport-to-host communication:

When a peripheral device is transmitting data to the host device and the host port detects a low (negative voltage) on the DTR line, the multiport will stop transmitting data to the host device. In addition, the multiport will make the peripheral port's CTS line low and send an XOFF character (if XON/XOFF is enabled).

When the host port detects a high (positive voltage) on the DTR line, the multiport will resume transmitting data to the host device. In addition, the multiport will make the peripheral port's CTS line high and send an XON character (if XON/XOFF is enabled).

5.3.3 STANDARD 525/529 MODELS

Host-to-multiport-to-peripheral communication:

When the host device transmits data to a peripheral device through the multiport's host port, the data is received and stored in a 256-character transmit buffer which in turn retransmits it to a peripheral device through a peripheral port. During transmission, after the buffer receives 236 characters, the multiport will make the host port CTS (Clear-To-Send) line low (negative voltage), signaling the host device that it cannot accept more data (however, in reality it can accept another 20 characters before overflowing the buffer).

If XON/XOFF handshaking is enabled and the host device does not respond, 8 characters later the multiport will send an XOFF character, signaling the computer that it cannot accept more data (however, in reality it can accept another 12 characters before overflowing the buffer).

When the multiport's buffer empties, the multiport will make the CTS line high (positive voltage) and send an XOFF character (if XON/XOFF is enabled), signaling the host device that it can accept more data.

When the multiport retransmits the data to the peripheral device through a peripheral port, and the peripheral device cannot receive any more data, the multiport will expect to see a low on the DTR (Data Terminal Ready) line or receive an XOFF character (if XON/XOFF is enabled). When the peripheral device can receive more data, the multiport will expect to see a high on the DTR line or receive an XOFF character (if XON/XOFF is enabled).

Peripheral-to-multiport-to-host communication:

When a peripheral device transmits data to the host device through a peripheral port, the data is received and stored in a 3740-character receive buffer (or 7740 receive buffer for 525 units with Option 20) which in turn retransmits it to the host device through the host port. After the buffer receives 3720 characters (or 7720 characters for 525 units with

Option 20), the multiport will make the peripheral port CTS (Clear-To-Send) line low (negative voltage), signaling the peripheral device that it cannot accept more data (however, in reality it can accept another 20 characters before overflowing the buffer).

If XON/XOFF is enabled and the peripheral device does not respond, 8 characters later the multiport will send an XOFF character, 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 make the CTS line high (positive voltage) and send an XOFF character (if XON/XOFF is enabled), signaling the peripheral device that it can accept more data.

When the multiport is sending data to the host device through the host port and the host device cannot receive any more data, the multiport will expect to see a low on the DTR line or receive an XOFF character.

6 CONFIGURATION

NOTE: Most ports on all models may be configured via software commands by following a menu-driven configuration procedure (verbose mode). Some models also allow you to download a character string to configure the multiport without having to follow configuration menus (non-verbose mode). Please see *Section 6.6* for a list of models that support non-verbose mode and instructions.

6.1 ALL 524 MODELS - CONFIGURATION PROCEDURE

IMPORTANT: Before you proceed, you must know the configuration of the devices that you are going to connect to your 524 unit (i.e., baud rate, word size, stop bits and parity). For your devices to communicate properly, the configuration of each port must match exactly the configuration of the device connected to that port.

6.1.1 HOST PORT CONFIGURATION

The host port of the 524 units are factory-configured at 9600 baud, 8 bit word size, 1 stop bit and no parity. If the device you connect to the host port does not match this configuration, then you may reconfigure the host port via a set of internal DIP-switches.

Use the following procedure to program the host port on 524 units:

- 1) Turn off the power switch and disconnect the AC power cord;
- 2) Lift the cover of your 524 unit by removing the screw in each corner;
- 3) Locate the internal DIP-switches.
- 4) Consult Table B on the following page to determine the correct setting of the DIP-switches.
NOTE: If Switch 6 is "on" (parity disabled), the setting of Switch 5 (parity even or odd) will have no effect on the operation of the 524.
- 5) Replace Cover;
- 6) Host port configuration is now complete. The 524 will read the positions of the DIP-switches upon power-up. You may now reconfigure your peripheral ports if necessary.

TABLE B - 524 HOST PORT DIP-SWITCH SETTINGS			
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 7		
8 Bits	Off		
7 Bits	On		

NOTE: Switch #8 has no effect on the host port's configuration.

6.1.2 ALL 524 MODELS EXCEPT 524F(P) - PERIPHERAL PORT CONFIGURATION

To access the configuration mode of the multiport, connect a dumb terminal (or a PC running a terminal emulation program) to the host port, Port 5 of the 524.

You may review the 524's current status by sending an ASCII *Control-R* followed by 0. You may also reconfigure an individual peripheral port's serial port parameters by sending ASCII *Control-R* followed by the desired peripheral port number, i.e., 1 through 4, depending on which peripheral port you want to reconfigure.

6.1.2.1 STATUS

The 524 unit will respond to the receiving of Control-R followed by 0 with a table similar to the following which shows the current serial port configuration for the peripheral ports:

Bay Technical Associates
Model 524 Port Expander, Rev. x.xx
Copyright 198x

CURRENT PORT CONFIGURATION				
PORT	BAUD RATE	WORD SIZE	STOP BITS	PARITY
1	9600	8	1	NONE
2	9600	8	1	NONE
3	9600	8	1	NONE
4	9600	8	1	NONE

If the current port configuration does not match your application, then you must reconfigure the appropriate peripheral port as described in *Section 6.1.2.2*.

6.1.2.2 SET SERIAL PORT CONFIGURATION

You may reconfigure individual peripheral ports by sending ASCII *Control-R* followed by the desired peripheral port number (1 through 4).

The 524 will respond to the receiving of *Control-R* and the desired peripheral port number with a current status of that peripheral port and a list of options.

For example, if you wish to reconfigure peripheral Port 3, send *Control-R* followed by "3". The 524 will respond back with the following menu:

CURRENT PORT CONFIGURATION				
PORT	BAUD RATE	WORD SIZE	STOP BITS	PARITY
3	9600	8	1	NONE

```
QUIT.....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 (1-5) from the menu. For example, to change the baud rate to 300 baud, send character 2 (set baud rate). The 524 will respond with the following menu:

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

ENTER REQUEST:

NOTE: A colon (:) always precedes a request for data from the 524 unit.

Send a "1" for 300 baud rate and the 524 will respond with the following menu:

CURRENT PORT CONFIGURATION				
PORT	BAUD RATE	WORD SIZE	STOP BITS	PARITY
3	300	8	1	NONE

```
QUIT.....1          SET STOP BITS.....4
SET BAUD RATE.....2  SET PARITY.....5
SET WORD SIZE.....3
```

ENTER REQUEST:

If there are no other changes for this port, send a "1" to exit the serial port configuration mode for Port 3. The programmable 524s (i.e., 524s with a "P" suffix) will respond with the following message:

Save Changes Permanently? (Y/N):

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: Menu selection is case sensitive. Be sure to enter *Capital Y* or *Capital N* in response to the prompt.

The programmable 524 will now return to the operations mode.

NOTE: Non-programmable 524s (i.e., 524s without a "P" suffix) will return to operations mode immediately after you respond with "1" (Quit) from the Current Port Configuration menu above.

NOTE: Please see *Section 2* for a list of available options on the 524AP, 524AC11P, and 524ESP.

6.1.3 524F(P) PERIPHERAL PORT CONFIGURATION

To access the configuration mode of the multiport, connect a dumb terminal (or a PC running a terminal emulation program) to the host port, Port 5 of the 524F(P).

To review the configuration of all peripheral ports on the Model 524(F), send from the Host Port an ASCII *Control-T* followed by a capital "K".

To reconfigure peripheral Port 1, send a *Control-T* followed by an "A". To reconfigure peripheral Port 2, send a *Control-T* followed by a "B". To reconfigure peripheral Port 3, send a *Control-T* followed by a "C". To reconfigure peripheral Port 4, send a *Control-T* followed by a "D".

6.1.3.1 STATUS

The 524F(P) will respond to the receiving of *Control-T* followed by capital K with a table similar to the following which shows the current serial port configuration for the peripheral ports:

CURRENT PORT CONFIGURATION				
PORT	BAUD RATE	WORD SIZE	STOP BITS	PARITY
1	9600	8	1	NONE
2	9600	8	1	NONE
3	9600	8	1	NONE
4	9600	8	1	NONE

If the current port configuration does not match your application, then you must reconfigure the appropriate peripheral port as described in *Section 6.1.3.2*.

6.1.3.2 SET SERIAL PORT CONFIGURATION

You may reconfigure individual peripheral ports by sending ASCII *Control-T* followed by ASCII Capital *A, B, C, or D* for peripheral ports 1 through 4 respectively.

The 524F(P) will respond to the receiving of *Control-T* and the appropriate peripheral port letter with a current status of that peripheral port and a list of options.

For example, if you wish to reconfigure peripheral Port 3, send *Control-T* followed by "C". The 524F(P) will respond back with the following menu:

CURRENT PORT CONFIGURATION				
PORT	BAUD RATE	WORD SIZE	STOP BITS	PARITY
3	9600	8	1	NONE

```
QUIT.....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 (1-5) from the menu. For example, to change the baud rate to 300 baud, send character 2 (set baud rate). The 524F(P) will respond with the following menu:

- 1 FOR 300
- 2 FOR 600
- 3 FOR 1200
- 4 FOR 2400
- 5 FOR 4800
- 6 FOR 9600
- 7 FOR 19200

ENTER REQUEST:

NOTE: A colon (:) always precedes a request for data from the 524F(P) unit.

Send a "1" for 300 baud rate and the 524F(P) will respond with the following menu:

CURRENT PORT CONFIGURATION				
PORT	BAUD RATE	WORD SIZE	STOP BITS	PARITY
3	300	8	1	NONE

- QUIT.....1
- SET STOP BITS.....4
- SET BAUD RATE.....2
- SET PARITY.....5
- SET WORD SIZE.....3

ENTER REQUEST:

If there are no other changes for this port, send a "1" to exit the serial port configuration mode for Port 3. The 524FP will respond with the following message:

Save Changes Permanently? (Y/N):

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: Menu selection is case sensitive. Be sure to enter *Capital Y* or *Capital N* in response to the prompt.

The 524FP will now return to the operations mode.

NOTE: The 524F (non-programmable) will return to operations mode immediately after entering "1" (Quit) from the Current Port Configuration menu.

NOTE: Please see *Section 2* for available options on the 524F(P).

6.2 ALL 528 NON-PROGRAMMABLE MODELS - CONFIGURATION PROCEDURE

IMPORTANT: Before you proceed, you must know the configuration of the devices that you are going to connect to your 528 unit, i.e., baud rate, word size, stop bits and parity. For your devices to communicate properly, the configuration of each port must match exactly the configuration of the device connected to that port.

6.2.1 HOST PORT CONFIGURATION

The host port of the 528 units are factory-configured at 9600 baud, 8 bit word size, 1 stop bit and no parity. If the device you connect to the host port does not match this configuration, then you may reconfigure the host port via a set of internal DIP-switches.

Use the following procedure to program the host port on 528 units:

- 1) Turn off the power switch and disconnect the AC power cord;
- 2) Lift the cover of your 528 unit by removing the screw in each corner;
- 3) Locate the DIP-switches on the back panel. DIP switch bank A is used to configure the host port.
- 4) Consult Table C on the following page to determine the correct settings of the DIP-switch bank A.
NOTE: If Switch A7 is "on" (parity disabled), the setting of Switch 5 (parity even or odd) will have no effect on the operation of the 528.
- 5) Replace Cover;
- 6) Host port configuration is now complete. The 528 will read the positions of the DIP-switches upon power-up. You may now reconfigure your peripheral ports if necessary.

TABLE C - 528 HOST PORT DIP-SWITCH SETTINGS			
Baud Rate	Switch A1	Switch A2	Switch A3
110	Off	Off	Off
135	Off	Off	On
300	Off	On	Off
600	Off	On	On
1200	On	Off	Off
2400	On	Off	On
4800	On	On	Off
9600	On	On	On
Word Size	Switch A5		
8 Bits	On		
7 Bits	Off		
Stop bits	Switch A6		
2	On		
1	Off		
Parity	Switch A7		
Enable	On		
Disable	Off		
Parity	Switch A8		
Odd	Off		
Even	On		

6.2.2 PERIPHERAL PORT CONFIGURATION

The peripheral ports of the non-programmable 528 units may be configured via DIP switch settings or by software configuration.

NOTE: Only the baud rate for the peripheral ports may be configured by DIP switch settings. You are given four possible baud rate selections using this method: 300, 1200, 4800, and 9600. If you wish to reconfigure the baud rate to a value other than the four specified or if you wish to change the word size, stop bits, or parity, you must use the software method.

NOTE: If you change the baud rate for any of the peripheral port by using DIP switch settings, the multiport will power up with those baud rates in effect. If you change any serial port settings using the software method, the changes will be lost when the multiport is powered off.

Peripheral Port Configuration Using DIP Switches

If you wish to reconfigure the peripheral ports using DIP switch settings, use the following procedure:

- 1) Turn off the power switch and disconnect the AC power cord;
- 2) Lift the cover of your 528 unit by removing the screw in each corner;
- 3) Locate the DIP-switches on the back panel. DIP switch banks B and C are used to configure the peripheral ports.
- 4) Consult Table D to determine the correct settings of the DIP-switch banks B and C.
- 5) Replace Cover;
- 6) Peripheral port configuration is now complete. The 528 will read the positions of the DIP-switches upon power-up.

TABLE D
528 PERIPHERAL PORT BAUD RATE DIP-SWITCH SETTINGS

Baud Rate	Port 1		Port 2		Port 3		Port 4	
	Switch		Switch		Switch		Switch	
	B1	B2	B3	B4	B5	B6	B7	B8
300	Off	Off	Off	Off	Off	Off	Off	Off
1200	Off	On	Off	On	Off	On	Off	On
4800	On	Off	On	Off	On	Off	On	Off
9600	On	On	On	On	On	On	On	On
Baud Rate	Port 5		Port 6		Port 7		Port 8	
	Switch		Switch		Switch		Switch	
	C1	C2	C3	C4	C5	C6	C7	C8
300	Off	Off	Off	Off	Off	Off	Off	Off
1200	Off	On	Off	On	Off	On	Off	On
4800	On	Off	On	Off	On	Off	On	Off
9600	On	On	On	On	On	On	On	On

528 Peripheral Port Software Configuration

To access the software configuration mode of the 528 multiport, connect a dumb terminal (or a PC running a terminal emulation program) to the host port, Port 9.

To review the configuration of all peripheral ports on the Model 528, send from the Host Port an ASCII *Control-T* followed by a capital "K".

To reconfigure peripheral Port 1, send a *Control-T* followed by an "A"; to reconfigure peripheral Port 2, send a *Control-T* followed by a "B"; ...; to reconfigure peripheral Port 8, send a *Control-T* followed by a "H".

6.2.2.1 528 PERIPHERAL PORT - STATUS

The 528 will respond to the receiving of *Control-T* followed by capital K with a table similar to the following which shows the current serial port configuration for the peripheral ports:

CURRENT PORT CONFIGURATION				
PORT	BAUD RATE	WORD SIZE	STOP BITS	PARITY
1	9600	8	1	NONE
2	9600	8	1	NONE
3	9600	8	1	NONE
4	9600	8	1	NONE
5	9600	8	1	NONE
6	9600	8	1	NONE
7	9600	8	1	NONE
8	9600	8	1	NONE

If the current port configuration does not match your application, then you must reconfigure the appropriate peripheral port as described in *Section 6.2.2.2*.

6.2.2.2 528 PERIPHERAL PORT - SET SERIAL PORT CONFIGURATION

You may reconfigure individual peripheral ports by sending ASCII *Control-T* followed by ASCII Capital *A, B, C, D, E, F, G, or H* for peripheral ports 1 through 8 respectively.

The 528 will respond to the receiving of *Control-T* and the appropriate peripheral port letter with a current status of that peripheral port and a list of options.

For example, if you wish to reconfigure peripheral Port 3, send *Control-T* followed by "*C*". The 528 will respond back with the following menu:

CURRENT PORT CONFIGURATION				
PORT	BAUD RATE	WORD SIZE	STOP BITS	PARITY
3	9600	8	1	NONE

QUIT.....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 (1-5) from the menu. For example, to change the baud rate to 300 baud, send character 2 (set baud rate). The 528 will respond with the following 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 REQUEST:

NOTE: A colon (:) always precedes a request for data from the 528 unit.

Send a "1" for 300 baud rate and the 528 will respond with the following menu:

CURRENT PORT CONFIGURATION				
PORT	BAUD RATE	WORD SIZE	STOP BITS	PARITY
3	300	8	1	NONE

QUIT.....1 SET STOP BITS.....4
 SET BAUD RATE.....2 SET PARITY.....5
 SET WORD SIZE.....3

ENTER REQUEST:

If there are no other changes for this port, send a "1" to exit the serial port configuration mode for Port 3 and the 528 will now return to the operations mode.

6.3 ALL 525, 528(x)P, 529, AND 5218 MODELS (EXCEPT 525FP, 528FP, AND 5218FP) - CONFIGURATION PROCEDURE

All configuration changes must be made through the host port. This is Port 9 on the 528 models and Port 18 on the 5218 models.

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 ASCII capital *C* (43 Hex).

NOTE: For illustration purposes, we will use the configuration menus of the 528AP, 528AC11P, 528ESP, and 529GP.

6.3.1 528AP, 5218AP - 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, similar to the following:

Bay Technical Associates
Model 528A Multiport Controller
Copyright 1984
Revision 2.05

Status.....1
Set Serial Port Configuration.....2
Set Control Character.....3
Set XON/XOFF Handshaking.....4
ExitX

Enter Request:

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

6.3.2 528AC11P, 5218AC11P - 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, similar to the following:

Bay Technical Associates
Model 528AC11 Multiport Controller
Copyright 1984
Revision 2.05

Status.....1
Set Serial Port Configuration.....2
Set Control Character.....3
Set Message Terminate Character.....4
Set XON/XOFF Handshaking.....5
ExitX

Enter Request:

NOTE 1: Menu selection is case sensitive. It is recommended that your keyboard be in the CAPS LOCK position.

NOTE 2: In the configuration mode, some characters are displayed with a Hex notation since all combinations from 00 Hex to 7F Hex may be selected, some of which are not printable characters.

6.3.3 528ESP, 5218ESP - 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, similar to the following:

Bay Technical Associates
Model 528ES Multiport Controller
Copyright 1984
Revision 2.05

Status.....1
Set Serial Port Configuration.....2
Set Data Block Length.....3
Set Control Character.....4
Set XON/XOFF Handshaking.....5
ExitX

Enter Request:

NOTE 1: Menu selection is case sensitive. It is recommended that your keyboard be in the CAPS LOCK position.

NOTE 2: In the configuration mode, some characters are displayed with a HEX notation since all combinations from 00 Hex to 7F Hex may be selected, some of which are not printable characters.

6.3.4 525GP/529GP/5218GP - MAIN CONFIGURATION MENU

The multiport will respond to the receiving of the control character and capital C with an identification block similar to the following and a menu of the configuration options available:

Bay Technical Associates
 Model 525G Broadcast Controller
 Copyright 1986
 Revision 2.01

Status.....1
 Set Port Configuration.....2
 Set Control Character.....3
 ExitX

Enter Request(1-3,X):

6.3.5 STATUS

By responding to the *Enter Request:* message at the end of the main configuration menu with "I" (Status), you may see the status of all ports and the current operation protocol.

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

Press Any Key to Continue

The 528AP and 5218AP will also show the following information:

Control Character is14H
XON/XOFF Handshaking is.....(Off)

Status.....1
Set Serial Port Configuration.....2
Set Control Character.....3
Set XON/XOFF Handshaking.....4
ExitX

Enter Request:

The 528AC11P and 5218AC11P will also show the following information:

Current Control Character is14H
Current Terminate Character is0DH
XON/XOFF Handshaking is.....(Off)

Status.....1
Set Serial Port Configuration.....2
Set Control Character.....3
Set Message Terminate Character.....4
Set XON/XOFF Handshaking.....5
ExitX

Enter Request:

The 528ESP and 5218ESP will also show the following information:

Current Block Length is.....32
Current Control Character is14H
XON/XOFF Handshaking is.....(Off)

Status.....1
Set Serial Port Configuration.....2
Set Data Block Length.....3
Set Control Character.....4
Set XON/ XOFF Handshaking.....5
ExitX

Enter Request:

The 525G and 529G will also show the following information:

Control Character is14H

Bay Technical Associates
Model 525G Broadcast Controller
Copyright 1986
Revision 2.01

Status.....1
Set Port Configuration.....2
Set Control Character.....3
Exit.....X

Enter Request(1-3,X):

6.3.6 SET SERIAL PORT CONFIGURATION

By responding to the *Enter Request:* message at the end of the main configuration menu of any unit with "2" (Set Serial Port Configuration), you may change the configuration of each port (i.e. baud rate, word size, stop bits, and parity). Each port is configured individually.

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, followed by *Carriage Return*. On the 528 models, this will be a single-digit number. On the 5218 models, this will be a two-digit number.

For example, if you enter "3" (or "03" on a 5218 model), the multiport will respond with the current status of Port 3 and a menu of the available options:

Port	Baud	Word	Stop	Parity	Xon/
	Rate	Size	Bits		Xoff
3	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 (1-6) from the menu. For example, to change the baud rate to 2400 baud, send character "2" (Set baud rate).

NOTE: The 525GP or 529GP will show *Set XON/XOFF* as an additional item (6) in the submenu above which allows XON/XOFF handshaking to be enabled or disabled for individual ports.

The multiport will respond with:

- 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:

NOTE: The 525GP will a different set of baud rate options with the maximum being 19200.

Enter "6" for 2400 baud rate, and the multiport will respond with the reconfigured status of the port and the menu of options:

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

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

Enter request:

If there are no other changes for this port, enter "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. If they do not match, the multiport will be unable to

interpret the command, and, therefore, the user will be unable to access any multiport function.

Change the host device's serial parameters to match the new configuration of the host port before answering "Y" (yes) or "N" (no).

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.

The multiport will now return to the main configuration menu.

6.3.7 SET CONTROL CHARACTER

NOTE: This section does not pertain to the 5218GP.

By responding to the *Enter Request*: message at the end of the main configuration menu with "3" for the 528/5218AP or 528/5218AC11P or with "4" for the 528/5218ESP (Set Control Character), you may user-define the control character.

CAUTION: BayTech advises you to log your new control character. If it is forgotten, you will not be able to control the unit or access the configuration mode.

The multiport will respond with:

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

You may now enter the new control character that you want in Hex (00-7F Hex). For example, if you enter "15" (*Control-U*), the multiport will respond with:

```
Current Control Character is .....15H
Save Changes Permanently? (Y/N):
```

If you answer "Y" (yes), the new control character will be saved in non-volatile memory, and the multiport will respond only to that character.

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 you answer either question with "N" (no), the new control character will be stored in RAM and lost upon next power-up. The multiport will return to the main configuration menu.

6.3.8 528AC11P, 5218AC11P MODELS - SET MESSAGE TERMINATING CHARACTER

By responding to the *Enter Request*: message at the end of the configuration menu for the 528AC11P or 5218AC11P with a "4" (Set Terminate Character), you may custom set the terminating character.

The multiport will respond with:

Current Terminate Character is0DH
Enter Terminate Character in Hex.....:

Enter the terminating character that you wish in the form of a two-digit hexadecimal number. The multiport will then respond with:

Save Changes Permanently? (Y/N):

If you enter a "Y", the change will be saved in non-volatile memory, and the multiport will subsequently power-up with that terminating character in effect.

If you enter a "N" (no), the terminating character will be stored in RAM only, and on the next power-up, the multiport will revert to the previous terminating character.

The multiport will now return to the main configuration menu (see *Section 6.3.2*).

6.3.9 528ESP, 5218ESP MODELS - SET DATA BLOCK LENGTH

By responding to the *Enter Request*: message at the end of the main configuration menu for the 528ESP or 5218ESP with a "3" (Set Data Block Length), you may change the maximum length of the data block transmitted to the host device.

The multiport will respond with:

Current Block Length is32
Enter Block Length (1 to 250):

Enter the number of characters that you wish as a maximum length for the data block.

The multiport will respond with:

Save Changes Permanently? (Y/N):

If you enter "Y" (yes), the change will be saved in non-volatile memory and the multiport will subsequently power-up with the change(s) in effect.

If you enter "N" (no), the change 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 6.3.3*).

6.3.10 ALL 528/5218 AP, AC11P, ESP MODELS - SET XON/XOFF HANDSHAKING

By responding to the *Enter Request:* message at the end of the main configuration menu with "4" for the 528/5218AP or with "5" for the 528/5218AC11P or 528/5218ESP (Set Xon/Xoff Handshaking), you may enable or disable XON/XOFF.

NOTE: CTS/DTR handshaking will be in effect regardless of whether XON/XOFF is enabled or disabled.

The multiport will respond with:

Xon/Xoff handshaking is(OFF)
Xon/Xoff handshaking? (Y/N):

You should enter "Y" (yes) if you want XON/XOFF handshaking enabled on all ports. You should enter "N" (no) if you want XON/XOFF disabled on all ports.

The multiport will respond with:

Save Changes Permanently? (Y/N):

If you enter "Y" (yes), the change will be saved in non-volatile memory, and the multiport will subsequently power-up with the change in effect.

If you enter "N" (no), the change will be stored in RAM only and will be lost upon power-down.

The multiport will now return to the main configuration menu.

6.3.11 EXIT

By responding to the *Enter Request:* message at the end of the main configuration menu with "X" (exit), you may exit the configuration mode and return to the operation mode.

6.4 525FP AND 528FP - CONFIGURATION PROCEDURE

All configuration changes must be made through the host port. This is Port 5 on the 525FP and Port 9 on the 528FP.

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 sign-on/sign-off character (factory default is *Control-T*) followed by ASCII capital C (43 Hex).

NOTE: For illustration purposes, we will use the 528FP's configuration menus. The only differences between models is the actual number of ports shown, the title block preceding the configuration options, and noted differences.

6.4.1 MAIN CONFIGURATION MENU

The multiport will respond to the receiving of the sign-on/sign-off character and Capital C with an identification block and a menu of the configuration options available, similar to the following which applies to the 528FP:

Bay Technical Associates
Model 528F Multiport Controller
Copyright 1983, 1986, 1987
Revision 2.08

Configuration status.....1
Port configuration.....2
Output message strings3
Sign-on/sign-off character....4
ExitX

Enter request(1-4,X):

6.4.2 STATUS

By responding to the *Enter Request(1-4,X)*: message at the end of the configuration menu with "1" (Configuration status), you may review the current configuration of the multiport.

Note: This status is not to be confused with the port connection status (see *Section 5.1.4*).

The multiport will respond with:

Port	Baud Rate	Word Size	Stop Bits	Pariity	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

Hit any key to continue

Current Sign-on/sign-off character is: 14H

Output messages

On-line message : ^M^JOn line^G^M^J

Off-line message: ^M^JOff line^M^J

Busy message : ^M^JBusy^M^J

Hit any key to continue

Configuration status.....1

Port configuration.....2

Output message strings3

Sign-on/sign-off character...4

ExitX

Enter request(1-4,X):

You may now make whatever changes are necessary by responding to the above menu. The Exit function will return you to the Operations mode.

6.4.3 PORT CONFIGURATION

By responding to the *Enter Request(1-4,X)*: message at the end of the configuration menu with "2" (Port configuration), you may change the baud rate, word size, stop bits and parity and also enable or disable XON/XOFF for each port. Each port is configured individually, allowing the user to mix devices of different configurations.

The multiport will respond with:

Enter the port number(0-9,X):

Enter the number of the port that you wish to reconfigure, followed by *Carriage Return*. If you enter "0" (zero), you may review the configuration status of all ports.

If, for example, you entered "3" and *Carriage Return*, the multiport will respond with the current configuration status of Port 3 and a menu of the available options:

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

Exit/Save.....1 Set Stop Bits4
 Set Baud rate.....2 Set Parity.....5
 Set Word Size.....3 Set XON/XOFF.....6

Enter request:

You may now reconfigure Port 3 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:

NOTE: If you are configuring a 525FP, this configuration menu will show different choices for baud rates with 19,200 being the maximum. Please see *Section 2* for a list of supported baud rates for the 525FP.

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

Port	Baud	Word	Stop	Pariity	Xon/
	Rate	Size	Bits		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 proceed to make whatever other changes are necessary for Port 3.

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

Save permanently? (Y/N):

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

Change Host Device to NEW Configuration
Before Answering This Request.

Change the host device's serial parameters to match the new configuration of the host port before answering "Y" (yes) or "N" (no).

If you answer the *Save permanently? (Y/N)*: prompt with "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.

The multiport will now return to the main configuration menu (see *Section 6.4.1*).

6.4.4 OUTPUT MESSAGE STRINGS

By responding to the *Enter request(1-4,X)*: message at the end of the configuration menu with "3" (Output message strings), you may change the on-line, off-line and busy messages that the multiport sends to a device.

The multiport will respond with:

On line message.....1
Off line message.....2
Busy message.....3
Return to main menu.....X

Enter request(1-3,X):

NOTE: The "On line" message indicates the message sent from the multiport to a device requesting connection. The "Off line" message indicates the message sent from the multiport to a device requesting disconnection. The "Busy" message indicates the message sent from the multiport to a device requesting connection when the requested port is busy.

Enter the number (1-3) of the message that you wish to change.

For example, if you enter "1" (On line message), the multiport will respond with:

Current message: ^M^JOn line^G^M^J

Modify (Y/N)?:

NOTE: The ^ symbol represents a control character. ^M or OD Hex indicates line feed. ^J or 0A Hex indicates carriage return. ^G or 07 Hex indicates a warning bell.

If you enter a "N" (no), the current message will be retained, and the multiport will return you to the Output Message Strings menu.

If you enter a "Y" (yes), the multiport will respond with:

Enter characters in hex notation or by an ASCII string
(32 characters maximum, 00H-FEH, FFH-End or 'string'):

Current character: ODH

Enter character or string:

The multiport will prompt you character by character until the message is completed. Enter the character or string that you wish. Characters may be entered by sending two ASCII Hex characters (00-FF Hex), followed by a *Carriage Return*. A string may also be entered, but it must be delimited by apostrophes at the beginning and at the end of the string, followed by a *Carriage Return*.

NOTE: If you wish to have no message sent, enter an *FF Hex* only, which programs no characters into that message.

When you are finished, you must enter *FF Hex* to terminate the configuration of the on-line message. The multiport will respond with:

Save permanently? (Y/N):

If you enter "Y" (yes), the new message will be saved in non-volatile memory, and the multiport will subsequently power-up with the new message in effect.

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

The multiport will then return you to the Output Message Strings menu. If you wish to change another message, answer the *Enter request (1-3,X)*: prompt with the appropriate number. If you do not wish to make additional changes, enter an "X" (Return to main menu), and the multiport will return you to the main configuration menu (see *Section 6.4.1*).

6.4.5 SIGN ON/SIGN OFF CHARACTER

By responding to the *Enter request(1-4, X)*: message at the end of the configuration menu with a "4" (Sign-on/sign-off character), you may change the sign-on/sign-off character to a user-defined character.

The multiport will respond with:

Current Sign-on/Sign-off character is: 14H
Modify (Y/N)?:

If you enter a "N" (no), the current sign-on/sign-off character will be retained, and the multiport will return to the main configuration menu (see *Section 6.4.1*).

If you enter a "Y" (yes), the multiport will respond with:

Remember, sign-off also requires a carriage return to complete the disconnect sequence.

Enter the new character in hex format(00H-7FH):

Enter the new sign-on/sign-off character that you want in hex. Any single-digit character from 01 Hex to 7F Hex may be selected. The multiport will respond with:

Save permanently? (Y/N):

CAUTION: BayTech advises you to log your new sign-on/sign-off character. If it is forgotten, you will be unable to control the unit or access the configuration mode.

SIGN-ON/SIGN-OFF CHARACTER _____ DATE _____ BY _____

SIGN-ON/SIGN-OFF CHARACTER _____ DATE _____ BY _____

SIGN-ON/SIGN-OFF CHARACTER _____ DATE _____ BY _____

If you enter "Y" (yes), the new sign-on/sign-off character will be saved in non-volatile memory, and the multiport will subsequently respond to that character only.

If you enter "N" (no), the new sign-on/sign-off character will be stored in RAM, and on the next power-up, the multiport will revert to the previous sign-on/sign-off character.

The multiport will now return to the main configuration menu (see *Section 6.4.1*).

6.4.6 EXIT

To exit the configuration mode, send an "X", and the multiport will return to the operating mode.

6.5 5218FP CONFIGURATION PROCEDURE

All configuration changes must be made through the host port. This is Port 18.

To access the configuration mode of the multiport, connect a terminal (or a PC running a terminal emulation program) to the host port. To review the configuration status of all ports, send from this device ASCII *Control-T* (14 Hex), capital C, followed by 00. To reconfigure a particular port, send ASCII *Control-T*, capital C, followed by the desired peripheral port number (01 to 18).

6.5.1 5218FP - STATUS

The 5218FP will respond to the receiving of *Control-T*, capital C, and 00 from the host device with the following menu:

Bay Technical Associates
Model 5128F Network Controller
Copyright 1983
Revision 2.03

PORT	BAUD RATE	WORD SIZE	STOP BITS	PARITY
1	9600	8	1	NONE
2	9600	8	1	NONE
3	9600	8	1	NONE
4	9600	8	1	NONE
5	9600	8	1	NONE
6	9600	8	1	NONE
7	9600	8	1	NONE
8	9600	8	1	NONE
9	9600	8	1	NONE
10	9600	8	1	NONE
11	9600	8	1	NONE
12	9600	8	1	NONE
13	9600	8	1	NONE
14	9600	8	1	NONE
15	9600	8	1	NONE
16	9600	8	1	NONE
17	9600	8	1	NONE
18	9600	8	1	NONE

6.5.2 5218FP - SERIAL PORT CONFIGURATION

You may reconfigure individual peripheral ports by sending ASCII *Control-T* (14 Hex), capital C, followed by a two-digit port number (01 to 18).

CURRENT PORT CONFIGURATION				
PORT	BAUD RATE	WORD SIZE	STOP BITS	PARITY
3	300	8	1	NONE

QUIT.....1 SET STOP BITS.....4
 SET BAUD RATE.....2 SET PARITY.....5
 SET WORD SIZE.....3

ENTER REQUEST:

If there are no other changes for this port, send a "1" to exit the serial port configuration mode for Port 3. The 5218FP will respond with the following message:

Save Changes Permanently? (Y/N):

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

Change Host Device to NEW Configuration
 Before Answering This Request.

Change the host device's serial parameters to match the new configuration of the host port before answering "Y" (yes) or "N" (no).

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: Menu selection is case sensitive. Be sure to enter *Capital Y* or *Capital N* in response to the prompt.

The 5218FP will now return to the operations mode.

6.6 NON-VERBOSE MODE

Multiports power-up in the verbose or menu-driven mode. Only in the menu-driven mode can changes be saved permanently in non-volatile memory.

The non-verbose mode, however, may be preferable in some instances. When configuring a multiport using non-verbose mode, no menus are sent from the multiport which allows you to program the unit by downloading an ASCII character string. This mode applies only to configuration and does not affect operations.

NOTE: Changes made using non-verbose mode are not saved in non-volatile memory and will be lost upon power-down, whereupon the power-up default configuration will again be in effect.

The following models support non-verbose mode: 524x(P), 524F(P), 524G, 528G, all 528x(P) units (x = A, AC11, ES, or NB), 5218AP, 5218AC11P, 5218ESP, and the 5218FP.

6.6.1 ALL 524 MODELS EXCEPT 524F(P) - NON-VERBOSE MODE CONFIGURATION PROCEDURE

For these models, non-verbose mode is selected by sending ASCII *Control-R* followed by "5" to the host port. Your ASCII character string would start off with: **^R5^RX<...>**, where ^R represents *Control-R*, X is the number of the port (1 to 4) you wish to configure, and ... indicates the remainder of your character string which would consist of choices selected from the following menus:

A. MAIN MENU

- Quit.....1
- Set Baud Rate.....2
- Set Word Size.....3
- Set Stop Bits.....4
- Set Parity.....5
- Exit.....X

B. SET BAUD RATE MENU

- 300.....1
- 600.....2
- 1200.....3
- 2400.....4
- 4800.....5
- 9600.....6
- 19200.....7

C) SET WORD SIZE MENU

- 5.....1
- 6.....2
- 7.....3
- 8.....4

D) SET STOP BITS MENU

- 1.....1
- 1 1/2.....2
- 2.....3

E) SET PARITY MENU

None.....1
Even.....2
Odd.....3

To return to the verbose mode, send the multiport *Control-R* followed by ASCII "6". If no other changes are needed, you may begin operations with your multiport controller.

Please see *Section 6.6.6* for an example using non-verbose mode.

6.6.2 524F(P) - NON-VERBOSE MODE CONFIGURATION PROCEDURE

Non-verbose mode for the 524F(P) is selected by sending ASCII *Control-T* followed by capital I. Your ASCII character string would start off with: **^TI^TX<...>**, where ^T represents *Control-T*, X is the letter corresponding to the desired peripheral port (A to D for Port 1 to Port 4) and ... indicates the remainder of your character string which would consist of choices selected from the menus shown on the previous page.

To return to the verbose mode, send the multiport ASCII *Control-T* followed by capital J. If no other changes are needed, you may begin operations with your multiport controller.

Please see *Section 6.6.6* for an example using non-verbose mode.

6.6.3 ALL NON-PROGRAMMABLE 528 MODELS

Non-verbose mode for all non-programmable 528 models is selected by sending ASCII *Control-T* followed by capital I. Your ASCII character string would start off with: **^TI^TX<...>**, where ^T represents *Control-T*, X is the letter corresponding to the desired peripheral port (A to H for Port 1 to Port 8) and ... indicates the remainder of your character string which would consist of choices selected from the following menus:

A. MAIN MENU

Quit.....1
Set Baud Rate.....2
Set Word Size.....3
Set Stop Bits.....4
Set Parity.....5
Exit.....X

B. SET BAUD RATE MENU

135.....	1
150.....	2
300.....	3
600.....	4
1200.....	5
2400.....	6
4800.....	7
9600.....	8

C) SET WORD SIZE MENU

5.....	1
6.....	2
7.....	3
8.....	4

D) SET STOP BITS MENU

1.....	1
1 1/2.....	2
2.....	3

E) SET PARITY MENU

None.....	1
Even.....	2
Odd.....	3

To return to the verbose mode, send the multiport ASCII *Control-T* followed by capital *J*. If no other changes are needed, you may begin operations with your multiport controller.

Please see *Section 6.6.6* for an example using non-verbose mode.

6.6.4 ALL 528 AP, AC11P, ESP, AND NBP MODELS - NON-VERBOSE MODE CONFIGURATION PROCEDURE

Non-verbose mode for these models is selected by sending ASCII *Control-T* followed by capital *I*. Your ASCII character string would start off with: **^TI^TC<...>**, where **^T** represents *Control-T* and **<...>** indicates the remainder of your character string which would consist of choices selected from the menus shown in the following subsections:

6.6.4.1 528AP, 528NBP, 5218AP - NON-VERBOSE MODE CONFIGURATION MENUS

Refer to the following menus to configure the 528AP, 528NBP, or 5218AP when using non-verbose mode.

A. MAIN MENU

Status.....	1
Set Serial Port Configuration....	2
Set Control Character.....	3
Set Xon/Xoff Handshaking.....	4
Exit	X

B. SET SERIAL PORT CONFIGURATION MENU

Enter port number.

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

a) SET BAUD RATE MENU

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

b) SET WORD SIZE MENU

5.....	1
6.....	2
7.....	3
8.....	4

c) SET STOP BITS MENU

1.....	1
1 1/2.....	2
2.....	3

d) SET PARITY MENU

None.....	1
Even.....	2
Odd.....	3

C. SET CONTROL CHARACTER

Enter control character in HEX.

D. SET XON/XOFF HANDSHAKING

Xon/Xoff Handshaking? (Y/N)

To return to the verbose mode, send the multiport ASCII *Control-T* (or current control character) followed by capital "J". If no other changes are needed, you may begin operations with your multiport controller.

Please see *Section 6.6.6* for an example using non-verbose mode.

6.6.4.2 528AC11P, 5218AC11P - NON-VERBOSE MODE CONFIGURATION MENUS

Refer to the following menus to configure the 528AC11P or 5218AC11P when using non-verbose mode.

A. MAIN MENU

Status.....1
Set Serial Port Configuration.....2
Set Control Character.....3
Set Message Terminate Character...4
Set Xon/Xoff Handshaking.....5
ExitX

B. SET SERIAL PORT CONFIGURATION MENU

Enter port number.

Exit/Save.....1
Set baud rate.....2
Set word size.....3
Set stop bits4
Set parity.....5

a) SET BAUD RATE MENU

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

b) SET WORD SIZE MENU

5.....1
6.....2
7.....3
8.....4

c) SET STOP BITS MENU

- 1.....1
- 1 1/2.....2
- 2.....3

d) SET PARITY MENU

- None.....1
- Even.....2
- Odd.....3

C. SET CONTROL CHARACTER

Enter control character in HEX (2-digit).

D. SET MESSAGE TERMINATE CHARACTER

Enter message terminate character in HEX (2-digit).

E. SET XON/XOFF HANDSHAKING

Xon/Xoff Handshaking? (Y/N)

To return to the verbose mode, send the multiport ASCII *Control-T* (or current control character) followed by capital "J". If no other changes are needed, you may begin operations with your multiport controller.

Please see *Section 6.6.6* for an example using non-verbose mode.

6.6.4.3 528ESP, 5218ESP - NON-VERBOSE MODE CONFIGURATION MENUS

Refer to the following menus to configure the 528ESP or 5218ESP when using non-verbose mode.

A. MAIN MENU

- Status.....1
- Set Serial Port Configuration....2
- Set Data Block Length.....3
- Set Control Character.....4
- Set Xon/Xoff Handshaking.....5
- Exit.....X

B. SET SERIAL PORT CONFIGURATION MENU

Enter port number.

- Exit/Save.....1
- Set baud rate.....2
- Set word size.....3
- Set stop bits4
- Set parity.....5

a) SET BAUD RATE MENU

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

b) SET WORD SIZE MENU

5.....1
6.....2
7.....3
8.....4

c) SET STOP BITS MENU

1.....1
1 1/2.....2
2.....3

d) SET PARITY MENU

None.....1
Even.....2
Odd.....3

C. SET DATA BLOCK LENGTH

Enter desired data block length (1 to 250 characters). Insert *Carriage Return* if less than three digits are entered.

D. SET CONTROL CHARACTER

Enter control character in HEX (2-digit).

E. SET XON/XOFF HANDSHAKING

Xon/Xoff Handshaking? (Y/N)

To return to the verbose mode, send the multiport ASCII *Control-T* (or current control character) followed by capital "J". If no other changes are needed, you may begin operations with your multiport controller.

Please see *Section 6.6.6* for an example using non-verbose mode.

6.6.5 5218FP - NON-VERBOSE CONFIGURATION PROCEDURE

Non-verbose mode for the 5218FP is selected by sending ASCII *Control-T* followed by capital I. Your ASCII character string would start off with: `^I^TCXX<...>`, where `^I` represents *Control-T*, `XX` represents the desired port number (01 to 18), and `...` indicates

the remainder of your character string which would consist of choices selected from the following menus:

A. MAIN MENU

Quit.....	1
Set Baud Rate.....	2
Set Word Size.....	3
Set Stop Bits.....	4
Set Parity.....	5

B. SET BAUD RATE

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

C. SET WORD SIZE

5.....	1
6.....	2
7.....	3
8.....	4

D. SET STOP BITS

1.....	1
1 1/2.....	2
2.....	3

E. PARITY

None.....	1
Even.....	2
Odd.....	3

To return to the verbose mode, send the multiport ASCII *Control-T* followed by capital "J". If no other changes are needed, you may begin operations with your multiport controller.

Please see *Section 6.6.6* for an example using non-verbose mode.

6.6.6 NON-VERBOSE MODE EXAMPLE

As an example, we will show how to configure a 528AP multiport controller using non-verbose mode. Please refer to *Section 6.6.3.1* for a listing of configuration menus for this example. Please refer to the appropriate subsection for the non-verbose mode

configuration menus and the control character sequence to program your multiport in non-verbose mode (i.e., *Control-R* followed by "5" or *Control-T* followed by "I").

Suppose you wish to reconfigure the 528AP multiport controller to have Port 2's serial parameters to 300 baud, 7 word size, 2 stop bits, even parity, reconfigure the control character to *Control-T*, and enable XON/XOFF handshaking, you would send the following ASCII character string: ^TI^TC222333435213144YX.

This breaks down as follows:

- ^T indicates *Control-T*
- I indicates non-verbose mode
- ^T indicates *Control-T*
- C indicates Configuration Mode.
- 2 indicates Set Serial Port Configuration.
- 2 indicates Port 2.
- 2 indicates Set baud rate.
- 3 indicates 300 baud.
- 3 indicates Set word size.
- 3 indicates 7 word size.
- 4 indicates Set stop bits.
- 3 indicates 2 stop bits.
- 5 indicates Set parity.
- 2 indicates Even parity.
- 1 indicates Exit to Main Menu.
- 3 indicates Set Control Character.
- 14 indicates 14HEX - Control-T.
- 4 indicates Set Xon/Xoff Handshaking.
- Y indicates Xon/Xoff enabled.
- X indicates Exit to Operation Mode.

7 MAINTENANCE

Since there are no adjustments and no moving parts in the 500 Series, preventive maintenance is unnecessary.

7.1 RETURNS TO THE FACTORY

If your Bay Tech unit needs service, upgrade, or repair, return it to BayTech. Before dismantling your equipment or before returning the unit for any reason, always call BayTech. The user should never attempt repairs on this unit. If you need to return the unit to the factory for repair, warranty work, or upgrade, follow the instructions below for repackaging and shipping.

7.2 REPACKING FOR SHIPPING

- a. Call BayTech to get a **Return Authorization Number**.

IMPORTANT: Without this number, BayTech will not accept returns.

- b. Use the original packaging if available or choose a heavy cardboard box.
- c. Surround your unit with a minimum of two inches of insulation.
- d. Be sure to seal the box securely with strapping or packing tape. We do not recommend masking tape or cellophane tape.
- e. On the outside of the box, please write the Return Authorization Number.
- f. Ship the unit to the following address:

**Bay Technical Associates, Inc.
200 N. Second Street
Bay St. Louis, MS 39520-1000, USA**

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TECHNICAL SUPPORT/ORDERING

In the event that you have problems with the multiport controller, 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 Technical Support, please have the following information available to help the applications engineers answer your questions more accurately and more quickly:

1. Identify { which modules you are using and have the serial number (located on the back of the unit) handy.
2. Identify what computers, peripherals or other peripherals you have connected to multiport controller.
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 controller.
6. Identify the software packages you are using.
7. If possible, have a print-out of the multiport controller's configuration status ready when you call.

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

9

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFACE STATEMENT*

This equipment generates and uses radio frequency energy and, if not installed and used properly (that is, in strict accordance with the manufacturer's instructions) may cause interference to radio and television reception. The equipment has been type tested and found to comply within the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference to radio or television reception will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

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

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

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

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

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