KANTRONICS 2400 MODEM OPERATOR'S GUIDE

GENERAL INFORMATION

The **Kantronics 2400 Modem** can be installed in either the KPC-4 or the Kantronics All Mode Communicator (KAM). When installed in the KPC-4 radio port 2 or the KAM VHF radio port, that port can be set to 2400 b/s operation.

Selection of the **Modem** is accomplished by use of the EXTmodem command in both units. Refer to the EXTmodem command in the basic unit operating manual. When installed in the KPC-4 ONLY, use of the Oneradio command can permit mixed 1200/2400 b/s data rates on a single frequency.

The **Kantronics 2400 Modem** board incorporates the hardware jumpers described below. Refer to the parts placement diagram and schematic for their location.

K-1 Equalization - This two position jumper provides three stages of signal equalization. With no jumper installed on the header pins, full equalization of the input signal is available. With the jumper installed in position 1, no equalization is performed. In position 2, partial equalization is effected. You should use the same setting which has been found to be best with the basic KAM or KPC-4.

Jumper X - This jumper provides for selection of the phase change to be used in the phase shift keying scheme. Position B establishes detection points at 45, 135, 225, and 315 degrees. These detection points are those specified by CCITT recommendation V.26, Alternative B. Position A gives respective detection points at 0, 90, 180 and 270 degrees. The unit is shipped with this jumper in position B.

Jumper Z - This jumper permits selection of 1200/2400 b/s PSK operation. The jumper is positioned for 2400 b/s at the factory. 1200/2400 b/s PSK is identified on the board with "12" and "24" markings. Note that 1200 b/s here is Biphase PSK.

The output AFSK signal level into your radio is set by the normal level settings of your KPC-4 or KAM, and should not be changed from the settings normally used with those units.

INSTALLATION

Installation of the **Kantronics 2400 Modem** requires the cutting of traces on the KPC-4 or KAM PC board and plugging in the modem board. Refer to the appropriate steps for your unit.

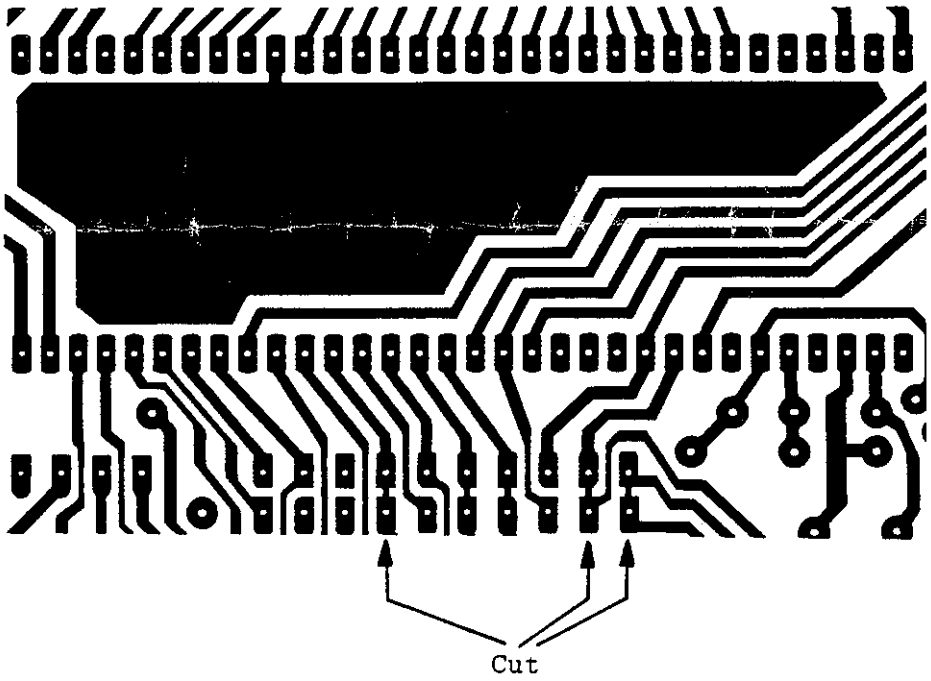
INSTALLING THE MODEM IN THE KPC-4

1. Remove the unit from its case. (Refer to the Assembly and Disassembly section in your KPC-4 manual.)

2. Locate the modem disconnect headers K8 and K9.

3. Turn the PC board over and locate the pins of the modem disconnect header K8.

4. Carefully cut the traces between pins 7 - 8, 17 - 18 and 19 - 20 on the PC board. Be sure no adjacent traces are cut. See illustration below.

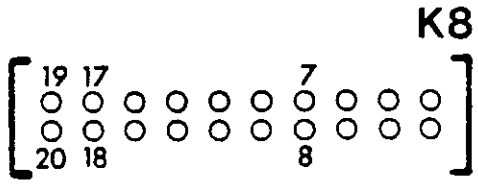


NOTE:
Only cut vertical lines between pads indicated by the arrows above.

Be careful not to cut any other lines adjacent to the pads.

5. Carefully align the plugs on the 2400 Modem board with the modem disconnect headers K8 and K9. Apply firm pressure to the board to seat it fully on top of the KPC-4 board. Your 2400 Modem is now installed.

NOTE: Should you remove the 2400 Modem from the KPC-4, you must install jumpers between the modem connector pins of K8 where traces have been cut. The diagram below illustrates that connector. The jumpers are included with your 2400 Modem board.



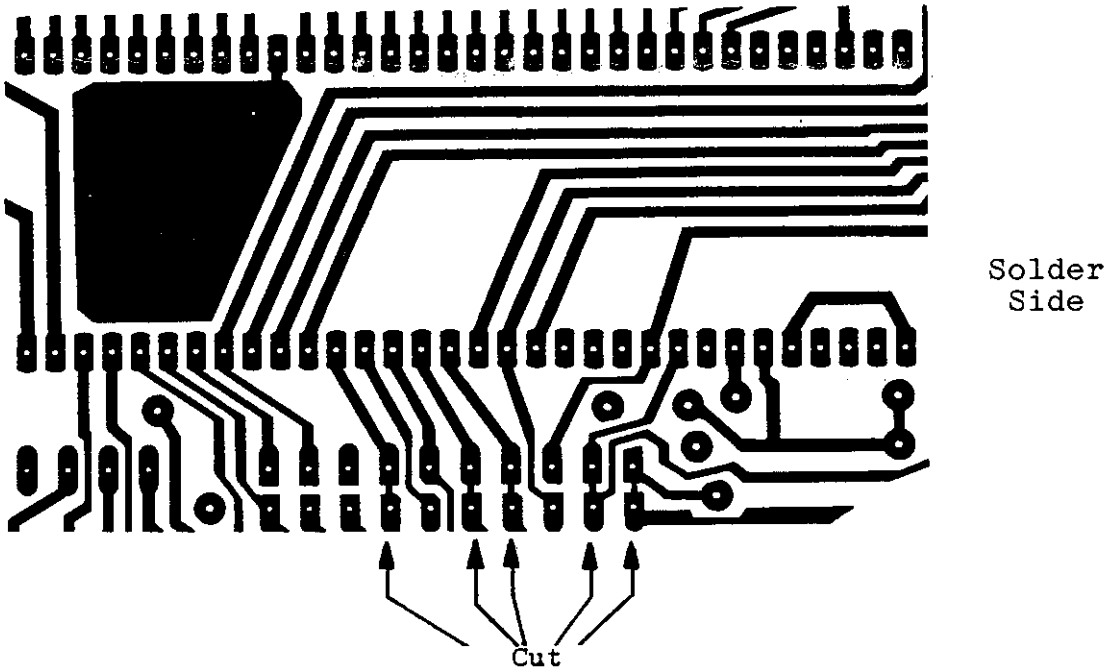
INSTALLING THE MODEM IN THE KAM

1. Remove the unit from its case. (Refer to the Assembly and Disassembly section in your KAM manual.)

2. Locate the modem disconnect headers K8 and K9.

3. Turn the PC board over and locate the pins of the modem disconnect header K8.

4. Carefully cut the traces between pins 7 - 8, 11 - 12, 13 - 14, 17 - 18 and 19 - 20 on the PC board. Be sure no adjacent traces are cut. See illustration below.



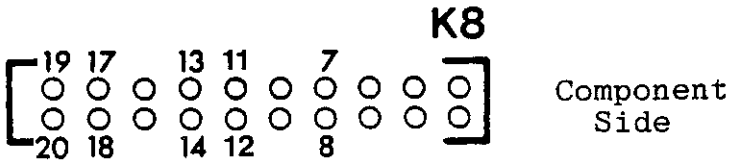
NOTE:
Only cut vertical lines between pads indicated by the arrows above.

Be careful not to cut any other lines adjacent to the pads.

5. Verify that resistors R80 and R82 on the KAM PC board are 2.2K. These values were implemented in units with serial number 61540 or higher. If your unit is below that serial number you MUST change R80 and R82 for the 2400 Modem to operate properly.

6. Carefully align the plugs on the 2400 Modem board with the modem disconnect headers K8 and K9. Apply firm pressure to the board to seat it fully on top of the KAM board. Your 2400 Modem board is now installed.

NOTE: Should you remove the 2400 Modem from the KAM, you must install jumpers between the modem connector pins of K8 where traces have been cut. The diagram below illustrates that connector. The jumpers are included with your 2400 Modem board.



CHECKOUT

Before returning the unit to its case, you should apply power to be sure the unit will sign-on to your computer. You may also wish to connect to your radios and perform a complete system checkout. Should your unit fail to operate, carefully recheck your work.

OPERATION

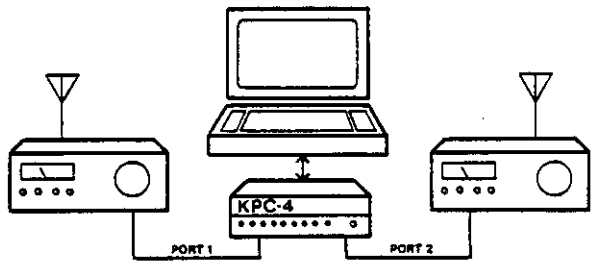
Use of the EXTmodem command will allow software selection of 1200 or 2400 b/s operation of the port on which the modem board is installed. Additional flexibility is available on the KPC-4 with the Oneradio command. The use of the Oneradio command requires that both radio ports be connected in parallel to the mic input and external speaker jacks of the radio used. Refer to the attached KPC-4 Application Note for more information.

When the 2400 Modem is installed in the KAM, MAXUsers must be set to zero for the HF port. This allows the KAM to operate at 2400 b/s via the VHF port. Also set EXTmodem command to "ON" for 2400 b/s operation. You can return the VHF port to 1200 baud by resetting MAXUsers command to any number than zero.

KPC-4 USES - APPLICATION NOTE 8701

Shown here are several possibilities for multi-functional employment of the KPC-4. Possible set-ups include both configuration diagrams and command settings to be used to obtain the capabilities illustrated.

Set-up #1
Operating in 2 Separate LANs on 2 Frequencies @ 1200 b/s



COMMAND SETTINGS

MYCALL	xxxx	MYPBBS	xxxx-4
MYGATE	xxxx-1	GATEWAY	ON
MYALIAS	xxxx-2/xxxx-3	EXTMODEM	OFF
		ONERADIO	OFF

CAPABILITIES

1. Stations may digipeat to other stations within their own LAN via MYALIAS-call.

2. Stations in one LAN may connect to stations in the other LAN via MYGATE call.

3. KPC-4 station may connect any station in either LAN using streamswitching.

4. Personal Packet Mailbox accessible from either port using MYPBBS call.

5. All above functions available simultaneously.

Set-up #2
Operating in 2 Separate LANs on Two Frequencies with Port 1 @ 1200 b/s and Port 2 @ 2400 b/s (Requires optional plug-in Modem) Reference Configuration #1

COMMAND SETTINGS

MYCALL	xxxx	MYPBBS	xxxx-4	ONERADIO OFF
MYGATE	xxxx-1	GATEWAY	ON	
MYALIAS	xxxx-2/xxxx-3	EXTMODEM	ON	

CAPABILITIES

1. Stations may digipeat to other stations within their own LAN via the MYALIAS call.

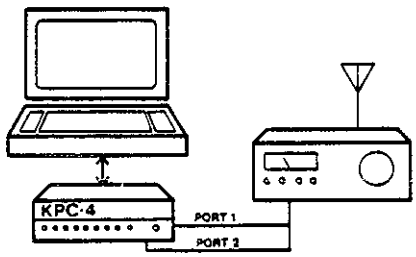
2. Stations in LAN operating at 1200 b/s may connect to stations in LAN operting at 2400 b/s via MYGATE call. The KPC-4 changes speed between ports automatically. The converse is also true.

3. KPC-4 station may connect any station in either LAN using streamswitching.

4. Personal Packet Mailbox accessible from either port at either speed using MYPBBS call.

5. All functions available simultaneously.

Set-up #3
Operating in one LAN on a single frequency with mixed baud rates (Requires optional plug-in Modem for higher rate at port 2.)



COMMAND SETTINGS

MYCALL	xxxx	MYPBBS	xxxx-4
MYGATE	xxxx-1	GATEWAY	ON
MYALIAS	xxxx-2/xxxx-3	EXTMODEM	ON
		ONERADIO	ON

CAPABILITIES

1. Any station may connect to any other at the same baud rate. Use routing via MYALIAS where necessary.

2. Any station may connect to any other station at a different baud rate via MYGATE callsign.

3. KPC-4 can connect to any station at either baud rate using streamswitching.

4. Personal Packet Mailbox accessible at either baud rate using MYPBBS call.

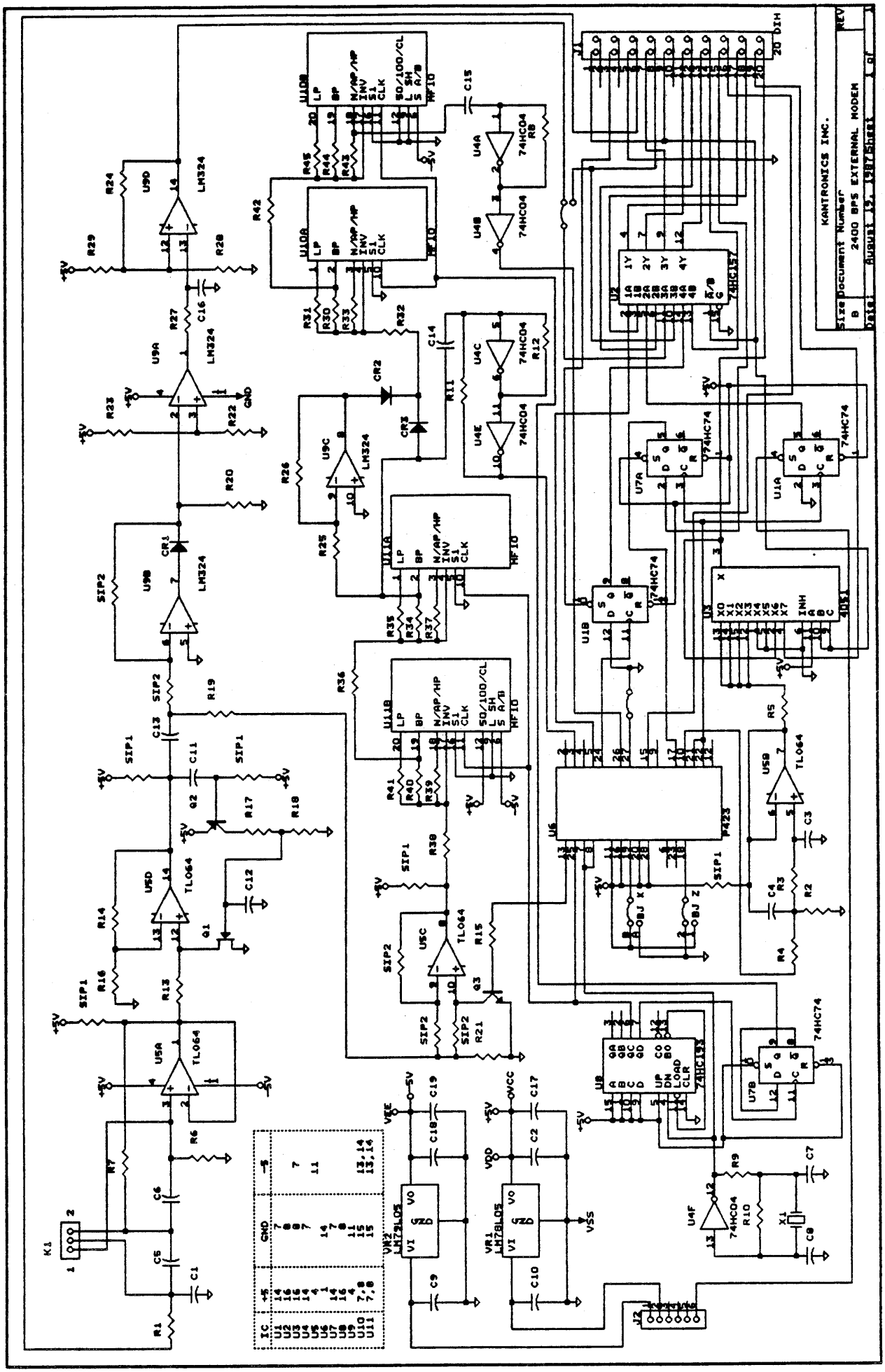
5. All functions available simultaneously.

KANTRONICS 2400 MODEM PARTS LIST

R1 - 2.2K	C1 - .01
R2 - 68K	C2 - .1
R3 - 47K	C3 - .001
R4 - 100K	C4 - .001
R5 - 33K	C5 - .001
R6 - 100K	C6 - .001
R7 - 47K	C7 - 33pf
R8 - 1M	C8 - 25pf
R9 - 2.2K	C9 - .1
R10 - 1M	C10 - .1
R11 - 1M	C11 - .1
R12 - 1M	C12 - 1uf tant
R13 - 10K	C13 - .1
R14 - 47K	C14 - .01
R15 - 10K	C15 - .1
R16 - 470 ohm	C16 - .1
R17 - 2.2K	C17 - 1uf tant
R18 - 1M	C18 - .1
R19 - 2.2K	C19 - .1
R20 - 1M	
R21 - 4.7K	CR1 - 1N914
R22 - 910 ohm	CR2 - 1N914
R23 - 18K	CR3 - 1N914
R24 - 470K	
R25 - 100K	
R26 - 100K	Q1 - 2N7000
R27 - 100K	Q2 - PN2907A
R28 - 8.2K	Q3 - PN2222
R29 - 10K	
R30 - 100K	VR1 - 78L05
R31 - 15K	VR2 - 79L05
R32 - 33K	
R33 - 9.09K MF	U1 - 74HC74
R34 - 68K	U2 - 74HC157
R35 - 18K	U3 - 4051
R36 - 33K	U4 - 74HC04
R37 - 9.53K MF	U5 - TL064CN
R38 - 15K	U6 - P423
R39 - 9.53K MF	U7 - 74HC74
R40 - 68K	U8 - 74HC193
R41 - 18K	U9 - LM324
R42 - 33K	U10 - MF-10 (LT)
R43 - 9.09K MF	U11 - MF-10 (LT)
R44 - 100K	
R45 - 15K	XTAL1 - 4.608 MHz

S1P1 - 10K
S1P2 - 100K

Kantronics 2400 Modem SCHEMATIC DIAGRAM



Kantronics 2400 Modem COMPONENT PLACEMENT DIAGRAM