

# 37212B-02C

## S E R V I C E N O T E

SUPERSEDES: 37212B-01  
 37212B-02B  
 37212B-03B

**HP 37212B Modem**

**Serial Numbers:** 0000U00000 / 2929U99999  
 excluding HP 37212B option H02.

**Firmware Upgrade**

(This Service Note introduces new firmware parts to replace parts now unavailable. It does not add to the list of problems given in 37212B-02B.)

**To Be Performed By:** Customer

**Parts Required:**

ROM 37224-80024; microprocessor chip 1820-4624.

**Situation:**

The HP 37212B has gone into a wide variety of applications. A few of these have caused difficulties for the modem. This Service Note describes these problems and gives workarounds. In some cases, it may be that only a firmware update will fix the problem satisfactorily.

Problems 5, 7, 10 and 12 have easy workarounds and problem 11 is really a no problem. Table 1 shows which problems have been fixed by a firmware update.

Up to ROM chip 37224-80023, the firmware is contained in a pair of parts: a microcomputer chip with on-board ROM and a ROM chip. The parts are paired. To work properly, the ROM chip must have the same revision date as the programmed microcomputer chip.

*Continued*

DATE: 30 August 1991

**ADMINISTRATIVE INFORMATION**

SERVICE NOTE CLASSIFICATION:		
<b>MODIFICATION AVAILABLE</b>		
ACTION CATEGORY:	AGREEABLE TIME	<input checked="" type="checkbox"/> PERFORMANCE ENHANCEMENT <input type="checkbox"/> SERVICE/RELIABILITY ENHANCEMENT
LOCATION CATEGORY:	<input checked="" type="checkbox"/> CUSTOMER INSTALLABLE <input type="checkbox"/> ON-SITE <input type="checkbox"/> HP LOCATION	AVAILABLE UNTIL: End of Support Life
AUTHOR: MFK	ENTITY: 1400	ADDITIONAL INFORMATION:



With the introduction of ROM chip 37224-80024, the firmware is contained on a single part, the microcomputer with on-board ROM now being replaced by microprocessor 1820-4624.

Table 1: Problem Number vs Firmware Revision

Firmware Revision	Problem											
	1	2	3	4	5	6	7	8	9	10	11	12
37224-80008 (cmptr) 37224-80009 (ROM) or earlier	P r o b l e m P r e s e n t											
37224-80010 (cmptr) 37224-80011 (ROM)												
37224-80012 (cmptr) 37224-80013 (ROM)	P r o b l e m F i x e d											
37224-80022 (cmptr) 37224-80023 (ROM)												
37224-80024 (ROM) 1820-4624 (micro)												

**Other revisions (no bug fixes):**

- 37224-80014 & 37224-80015 (now superseded by 37224-80024 and 1820-4624) added the personality required for the Swedish option.
- 37224-80016 & 37224-80017 is special option H02 (this keeps R45 = 0 when the modem powers up in computer mode or after the "" command). This firmware is NOT superseded by later revisions.
- 37224-80018 & 37224-80019 (now superseded by 37224-80024 and 1820-4624) added the personality required for the Australian option.

To identify the firmware parts (which are prominently labelled and in sockets), remove the plastic end mouldings and the top cover of the modem. Alternatively, if connected to a terminal, enter TEST [RETURN]. The part number of the programmed microcomputer is displayed after "ROM" (and is followed by the firmware date code).

**PROBLEM 1: CONTENTS OF INTERNAL REGISTERS STUCK AT THEIR DEFAULT VALUES**

Bug makes it impossible to change the contents of internal registers 4, 8, 9, 10, 13, 14 and 15 from their default values. (See section 10 of the User Manual).

Note: The default values suit the majority of applications so the problem is transparent to most users.

**PROBLEM 2: MODEM DOES NOT RESPOND TO DTR GOING TRUE AFTER RINGING**

Bug causes a problem for computers which hold DTR false until the modem indicates to the computer (by pulsing RI on the RS-232 interface) that it has received a call from the outside world.

When the computer raises DTR, the 37212B goes off hook but never sends answer tone to the far end modem. Hence the call fails.

**Temporary workaround:** Set DTR true before getting the 37212B to answer a call (if necessary, force this on the modem via CONFIGURATION switch 12).

**PROBLEM 3: WITH REGISTER R3 = 1, MODEM POWERS UP WITH DSR/CD/CTS ALWAYS TRUE**

Bug is a consequence of setting internal register R3 = 1, the effect being that, at the next power up (and regardless of the setting of CONFIGURATION switches 10 and 11 on the rear panel), DSR, CD, CTS on the RS-232 interface are forced true.

**Temporary workaround:** Leave R3 = 0 or if R3 = 1, write to register R14 after power up.

**PROBLEM 4: WITH REGISTER 3 = 1, MODEM POWERS UP WITH ENQ/ACK FLOW CONTROL ENABLED WHEN IN ERROR CORRECTING MODE**

Bug is a consequence of setting internal register R3 = 1, the effect being that, at the next power up (and regardless of the setting of CONFIGURATION switches 8 and 9 on the rear panel), enq/ack flow control is enabled if error correction is selected.

Note: Internal register R34 controls Enq/Ack handshaking when in the command state only.

**Temporary workaround:** Leave R3 = 0.

**PROBLEM 5: IN TERMINAL MODE, "ON LINE" MESSAGE IS NOT TERMINATED CONSISTENTLY**

Bug occurs only in terminal mode and only if error correction is not selected. The "ON LINE" message should be followed by CR LF CR LF but, instead, the last CR LF or last LF is missing or corrupted.

Bug is a problem only for customers who use terminal mode when the 37212B is connected to a computer. This configuration is not advised because the computer has to cope with the friendly (but unsolicited) messages coming back from the 37212B.

The bug is trivial when using terminal mode with a terminal - a missing LF out of 2 LFs is hardly noticeable.

**Workaround:** Use computer mode when the 37212B is connected to a computer or look for just one CR LF after the "ON LINE" message.

**PROBLEM 6: TIP-RING POLARITY CAN PREVENT ERROR CORRECTING PROTOCOL FROM ESTABLISHING**

The problem is not likely to be seen in N. America (where the polarity of the local loop is tip positive with respect to ring) but may be seen in the UK where the local loop polarity can vary.

When the loop polarity is "wrong", a false ring detect signal can be generated in the answering modem when it connects to the line. Depending on circumstances (one of which is that the answering modem's speed - set, for example, by a previous call - is different from the speed of the originating modem), the error correcting protocol will not establish.

The problem results in CTS on the RS-232 interface remaining false (internal CTS, however, does go true). In terminal mode, the display never comes up with the "ON LINE" message. Eventually, the call times out and fails.

**Temporary workaround:** Rewire tip and ring the "correct" way round; or avoid the answering modem taking calls at different speeds.

**PROBLEM 7: DIFFICULTY IN SETTING UP SECONDARY CHANNEL CONTROL**

To obtain synchronous transmission, the user sets CONFIGURATION switches 5 and 6 to 1. This mode requires secondary channel control which implies that the user must also set CONFIGURATION switch 4 to 1. However, setting switch 4 to 1 makes the modem endlessly perform power-on self test.

**Workaround:** set CONFIGURATION switches 5 and 6 to 1 and switch 4 to 0.

**PROBLEM 8: CTS FREEZE (ERROR CORRECTION WITH REGISTER R15=2)**

The conditions for this bug to occur are:

- Internal register R15=2 (adaptive error correction selected).
- On the rear panel, S8=1, S9=0 (CTS flow control selected).
- The HP 37212B is called by a modem offering no error correction.

The answering HP 37212B handshakes properly and brings up DSR and CD. It also detects that the originating modem has not offered error correction and brings up CTS as expected. However, if the HP 37212B now receives a large block of data from its DTE, it eventually turns off CTS and never turns it on again.

**PROBLEM 9: USER CALLING TONE PREVENTS CALLS FROM COMPLETING**

This problem only applies if internal register R29=1 (the default state is R29=0).

**PROBLEM 10: REPEATED STATUS REQUEST CAUSES CALL FAIL**

The conditions for this bug to occur are:

- The HP 37212B is in computer mode and internal register R45=1.
- The computer sends the HP 37212B a dial string ending with the command K. The computer then goes on to poll repeatedly for status while the modem is setting up the call. If the status requests occur more frequently than about 1 per second, the call never gets completed.

**Workaround:** Make the computer detect status a status reply (the string ends with CR) before making the next request. Alternatively, set register R45=0 beforehand (this will safely allow a status request frequency as fast as 1 per 0.25 seconds).

**PROBLEM 11: USING THE "" COMMAND MAY RESET SOME REGISTER VALUES**

This is not a bug but some users may see it as one.

Use of the "" command (which switches from terminal to computer mode) changes any terminal mode values set in the registers back to the default values for computer mode.

**Workaround:** Reset the appropriate register values after use of the "" command.

**PROBLEM 12: NO MEMORY JUMP FOLLOWING STORED DIAL STRINGS**

This problem applies to the user memory facilities described in Para 5-11 of the user manual. If the user enters a dial string ending with a command to jump to another memory location (e.g. S1, 031-331-1000:M2), the modem will dial the number but ignore the jump command.

**Workaround:** Enter the dial string followed by any subsequent command (e.g. log-on string) in the same memory location (which can accommodate up to 74 characters).

**Action/Solution:**

For a permanent fix to all but problems 10, 11 and 12, replace firmware parts with ROM 37224-80024 in U6 microprocessor chip 1820- 4624 in U1. This fix also requires a link from U1(1) to U1(5) and TL1 in the SA position.

**IMPORTANT**

In many countries, it is unlawful to connect a modem to the | | telephone network unless the local telephone authority has | | approved the type. | |

| | You may have to restore the HP 37212B's country personality (to| | make it comply with the approved type) before reconnecting it | | to the network. |

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To install the firmware revision and restore the HP 37212B's country personality, see Service Note 37212B-04.