

HP 2100 INTERRUPT TEST



HP Product No. HP 24215



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HP 2100 INTERRUPT TEST

This diagnostic program tests the 2100 interrupt priority structure, the interrupt capability of any of the I/O slots, and the Central Interrupt Register.



HARDWARE CONFIGURATION

This diagnostic requires any core size 2100 computer (a minimum of 4K memory if a teleprinter is included), I/O interface cards, and optionally, a teleprinter and priority jumper cards.

FUNCTIONAL AND OPERATIONAL CHARACTERISTICS

The switch register is used to select options and control the program.

Errors and program messages are indicated by teleprinter messages, by program halts, or both. When appropriate, after a program halt, information about program errors is contained in the A- and B-Registers (see Table INT-2).

The select codes of the I/O slots to be tested are user-defined. They are entered by the teleprinter or the switch register.

PROGRAM ORGANIZATION

Initially four tests are run to check the ability to clear, set, and test the interrupt system.

Then the program decides whether or not to accept new slot parameters, i.e., the select codes of all I/O slots to be tested. A halt or message for new slot parameters occurs if the slot parameter buffer is empty (after loading the program) and/or if switch register bit 15 is set. See "OPERATING INSTRUCTIONS, *NOTE*" and the procedure, "To Load And Execute The Diagnostic."

Next the program checks that no interrupt occurs if the flags and control flip-flops of each given select code are set, but the interrupt system is off. An unexpected interrupt results in a halt with 1030xx displayed; (xx) is the select code of the bad slot. The user should not continue if this happens.

Each select code in the slot buffer is then checked individually to see that each slot interrupts, that a second interrupt does not occur, and that no unexpected interrupts occur. The contents of the central interrupt register are also checked following the interrupt unless switch register bit 13 is set.

The failure of a slot to interrupt results in a halt with 102005₈ displayed. Incorrect contents in the central interrupt register results in a halt with 102006₈ displayed. A double interrupt results in an irrecoverable halt with 102007₈ displayed. An unexpected interrupt results in a halt with 1060xx displayed; the user should not continue if this happens.

Then all select codes in the slot buffer are tested as a group. All given flag and control flip-flops are set and the interrupt system is turned on. The interrupts should occur in the order expected: lowest select code first, next lowest second, etc. If an expected interrupt does not occur, the computer halts with 102010₈ displayed. An unexpected interrupt results in an irrecoverable halt with 102011₈ displayed.

Following the last interrupt, an end-of-pass message is printed (unless switch register bit 14 or 10 are set) and an end-of-pass halt occurs (unless switch register bit 9 is set). A pass is one diagnostic cycle since the last input of slot parameters. The program then loops back and repeats all tests.

OPERATING INSTRUCTIONS

NOTE: All I/O slots to be tested must be specified by the user and contain an interface card with control and flag logic capable of generating interrupts. Empty I/O slots between the highest and lowest priority interrupt and capable interface cards must be filled with priority jumper cards. If switch register bit 14 is clear, input of I/O slot select codes is by teleprinter. If switch register bit 14 is set, input of I/O slot select codes is via the switch register.

To Configure The Diagnostic

- a. Load the SIO teleprinter driver (if available) with the Basic Binary Loader and configure the driver.
- b. Load the HP 2100 Computer Interrupt Test with the Basic Binary Loader.

To Make A Tape Of The Configured Diagnostic

NOTE: This procedure may also be used after completing the procedure, "To Load and Execute The Diagnostic" and one pass of the diagnostic.

- a. If a High Speed Tape Punch is available, load the SIO Tape Punch driver with the Basic Binary Loader and configure the driver.
- b. If a High Speed Tape Punch is not available, turn on the teleprinter tape punch.
- c. Load the SIO System Dump.
- d. Set Starting Address 2_8 .
- e. Set switch register bit 15.
- f. Press RUN.
- g. A configured HP 2100 Interrupt Test tape is punched. The computer halts with 102077_8 displayed in MEMORY DATA. To make additional copies of the configured HP 2100 Interrupt Test Tape, press RUN.



To Load And Execute The Diagnostic

NOTE: Eliminate step a if continuing from step b, To Configure The Diagnostic.

- a. Load the configured HP 2100 Interrupt Test with the Basic Binary Loader.
- b. Set the switch register to the desired options. (See Table INT-1.)
- c. Set Starting Address 100_8 .

- d. Press RUN. The computer either halts with 107000_8 displayed in MEMORY DATA, or the teleprinter types a "?". The user must now enter the select codes of all I/O slots to be tested.
- e. If a 107000_8 halt is received, enter the select codes via the switch register as follows:

- 1. Enter each select code by setting the value in switch register bits 5-0 and press RUN. An accepted input is indicated by a halt with 107001_8 displayed.
- 2. Each select code must be in the range of 10_8-77_8 and does not have to be in sequence.

NOTE: If a select code entered is less than 10_8 (but not 00_8) or is duplicated, the computer halts with 107000_8 displayed in MEMORY DATA. The user must re-enter all select codes.

- 3. Terminate the input by entering a select code 00 in switch register bits 5-0. Successful input is indicated by a halt and 107077_8 displayed in MEMORY DATA.
- 4. Press RUN to continue the program.

- f. If a "?" was typed, enter the select codes via the teleprinter as follows:

- 1. Type, in any order, the select codes of all I/O slots to be tested, terminating each line by CARRIAGE RETURN, LINEFEED.
- 2. Each select code entry must be in the range 10_8-77_8 and up to 72 characters can be input on one line. CARRIAGE RETURN, LINEFEED, commas, and spaces are ignored in scanning.

NOTE: If a select code entered is less than 10_8 (but not 00) or is duplicated, the teleprinter responds with "INP?". The user must re-enter all select codes.

- 3. Terminate input by typing a select code of 00.



Table INT-1

Switch Register Settings

<u>Switch</u>	
15	Enter new slot parameters.
14	If set, indicates that a teleprinter is <u>not</u> being used. If not set, indicates use of a teleprinter.
13	Suppress testing of central interrupt register.
12	Suppress error messages.
11	Suppress error halts.
10	Suppress end-of-pass message.
9	Suppress end-of-pass halt.
8-6	Spares.
5-0	Select code of slots to be tested (entry field).

