

TANDY®

**Technician Series
Diagnostics Software**

PIT16BIT

**Programmable Interval Timer
Diagnostic
for
MS-DOS™ Computers**

01-0220 Computer Technical Services

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PIT16BIT Diagnostics Software

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PIT16BIT DIAGNOSTICS

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TANDY COMPUTER PRODUCTS

GENERAL DESCRIPTION

PIT16BIT is used to test the Programmable Interval Timer (PIT) on 16-bit microprocessor based systems. The PIT provides many system timing functions and this test will exercise and report on the functionality of those functions.

FEATURES

- * Tests all three functions of Programmable Interval Timer
- * On-screen pass count, error count, and error log
- * Both single pass and continuous modes selectable
- * Single function test or all function test selectable

EQUIPMENT REQUIRED

AT-Class or Microchannel Compatible 16 or 32 bit Microprocessor Computer
Monitor
Display Adapter
Keyboard

LOADING PIT16BIT

There are two methods for loading the PIT16BIT diagnostics. The first is to select the PIT test function that appears on the main menu of our diagnostic software suite for your machine. Because PIT16BIT is a DOS executable program, you can also run it directly from DOS by typing:

PIT16BIT<ENTER>

You will then see the main display screen of the diagnostics.

OPERATING PIT16BIT

The PIT16BIT test is a single menu program. To select the test you want, simply press the letter displayed next to the test or <Q> to quit the program. The test may be interrupted at any time by pressing the <ESC> key.

DISPLAY DESCRIPTION**PROGRAMMABLE INTERVAL TIMER TEST**

xxxxxxx, 19xx Vx.xx

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TEST OPTIONS

```

<L>atch Test
<P>rogram Test
<O>utput Test

<A>ll Tests

<M>ode:          SINGLE

<Q>uit

```

ENTER SELECTION: _

ERROR LOG

Test	Chan	Mode	Wrote	Read

TEST OPTIONS SCREEN

The menu screen of the PIT16BIT test is shown above. This is where you select which test or tests you want performed and the testing mode. The mode can be switched between single test and continuous testing. Single test mode does one pass and stops whereas continuous mode will continue until the <ESC> key is pressed.

The last ten (10) errors will be displayed in the Error Log area. The columns are described as follows:

Test	This indicates which of the three tests failed.
Channel	The programmable interval timer (PIT) has three (3) channels. This indicates which one has failed.
Mode	There are up to five (5) modes the PIT uses. This shows which mode has failed.
Wrote	This is the test byte, in hex, that was written to the PIT.
Read	This is the byte read from the PIT.

After a test has been selected and completed, a message will appear to the right of the test item on the menu stating if the test **PASSED** or **FAILED**. These messages will stay on the screen if modes are switched or other tests are run. This will allow you to more readily see a **FAILED** message since it stays on the screen. Also, if the last test run had no errors, the message **LAST TEST HAD NO ERRORS** will be displayed at the bottom of the **ERROR LOG**.

TANDY COMPUTER PRODUCTS

{Selected Mode}	
Test in Progress:	
LATCH TEST	PASS NUMBER:
PROGRAM TEST	
OUTPUT TEST	ERROR COUNT:
PRESS <ESC> TO EXIT: _	

ERROR LOG					
Test	Pass	Channel	Mode	Written	Read

TEST SCREEN

The above screen appears while a test is being performed. The current testing mode, CONTINUOUS or SINGLE, will be displayed at the top of the screen. The arrow will point to whichever test is currently in progress. You may press the <ESC> key at any time to exit.

If there are any errors, the last ten (10) will be displayed in the Error Log area. For a description of the fields, see the "TEST OPTION SCREEN" Error Log description above. The Pass field is the pass number on which the test failed.

If the SINGLE mode has been selected, the message will change from "PRESS <ESC> TO EXIT:" to "TEST COMPLETED--PRESS ANY KEY TO CONTINUE:" to confirm that the test has been performed.

TEST DESCRIPTIONS**LATCH TEST:**

This tests the PIT by loading count values, latching the count, and then reading the count value. If the written value and the read value differ, this indicates a failure in the latch function of the PIT.

PROGRAM TEST:

This test exercises the various programming modes of the PIT. It attempts to program every mode of each counter, starts the counters, and verifies that the values read are in the correct range for the programmed mode.

A failure means that the PIT is either not accepting the programming or that it is not counting properly.

OUTPUT TEST:

This tests the PIT by checking to see if the devices connected to the PIT are responding to its output. First the program tests channel 0 by verifying the interrupt controller is seeing the PIT's interrupt. Next, on the machines that use PIT generated refresh, the program checks to be sure refresh is being done properly by channel 1. Finally, the test outputs data to the speaker via channel 2 of the PIT.

A failure in any of these areas may indicate an internal PIT problem, a connection problem, or a problem with the associated device.

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