

SYSTEMS ENGINEERING LABORATORIES PROGRAM LIBRARY

SOFTWARE DESCRIPTION

CATALOG NO. 303008C

DOCUMENTATION REV*

DATE June 15, 1970

PROGRAM TITLE: 810A/B Divide Test

PURPOSE: Divide uses a software divide which simulates the hardware exactly. Both hardware and software divide operands in single and double precision forms, the quotients and remainder are compared for accuracy

CONFIGURATION: Basic SYSTEMS 810A/B Computer

SOFTWARE ENVIRONMENT: Stand-Alone

PROGRAM LANGUAGE: SYSTEMS 810A/B Assembly Language

SIZE: 2000₈ - 3327₈

TIMING: Approx. 1050 microseconds/cycle

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REASON FOR CHANGE:

Changes were made to allow this program to run with the KEYTRAN System and output all messages to the selectric typewriter by setting Sense Switch 13.

USE:

Start at location 2000_g, the program will run until manually halted.

When running under the KEYTRAN System the Diagnostic Number for this program is nine (9). The program will automatically be started at location 2000_g and will continuously run until the Index Key is depressed on the selectric typewriter at which time control will be returned to the KEYTRAN Diagnostic Loader.

Sense Switch Settings:

SSW 0 up - Errors are ignored.

SSW 1 up - No error typeout, a halt will occur.

SSW 2 up - The same operands will be used continuously.

SSW 3 up - A halt will occur after an error typeout.

SSW 4 up - A bit pattern will be typed out.

SSW 13 up - Indicates program being run with the KEYTRAN System and that all output will be via the selectric typewriter.

Typeout Format:

Divide Error

| | |
|--------|--------|
| xxxxxx | yyyyyy |
| aaaaaa | bbbbbb |
| cccccc | dddddd |

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Single Precision Divide Error

xxxxxx = B-Accumulator Operand
yyyyyy = Memory Operand
aaaaaa = Quotient, Software
bbbbbb = Remainder, Software
cccccc = Quotient, Hardware
dddddd = Remainder, Hardware

mmmmmm nnnnnn xxxxxx
aaaaaa bbbbbb
cccccc dddddd

Double Precision Divide Error

mmmmmm = A-Accumulator Operand
nnnnnn = B-Accumulator Operand
xxxxxx = Memory Operand
a's, b's, c's, d's = Same as Single Precision

Note

If the letters "OVFL" are typed out on a double precision divide error in place of a quotient and remainder, this indicates that operation causes a divide overflow. The hardware should get overflow when the software does and the hardware should not get overflow when the software does not.

Example of Bit Pattern Type Out

AAAAAA BBBBBB MMMMMM
01 X XXX XXX XXX XXX XXX Y YYY YYY YYY YYY YYY YYY (C)

where AAAAAA = A-Register
BBBBBB = B-Register
MMMMMM = Memory
X XXX XXX = Bit-Pattern of A
Y YYY YYY = Bit-Pattern of B
C = Optional Typeout if Correction Has Been Made

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Note

To find operands that fail, set sense switch three. After the halt, set sense switches zero and two. This will repeat the operands and errors will be ignored which will aid troubleshooting. To get a bit pattern, after the halt, set sense switches two and four. When typeout begins, lower four to discontinue typeout.