

BASIC OPERATION OF INTERDATA 74

This document describes the use of the control panel display lights and switches in sufficient detail to enable programs to be loaded into the machine and started. Basically this must be achieved by, first of all, placing a small "bootstrap" program in memory from the control panel and then causing the processor to execute it. To do this it is sufficient to know how to switch the machine on and off, how to read and write memory locations and how to start or stop the processor.

Processor States

The processor can be in 1 of 3 states, 2 of which are indistinguishable at this stage. They are:-

RUNNING actively executing instructions

HALTED not executing instructions, as a result of explicit action taken by the program.

STOPPED not executing instructions as a result of action taken at the control panel.

Throughout this description it can be assumed that HALTED and STOPPED are identical states. Once in the stopped state the processor may only be put in the running state by action taken at the control panel.

Control Panel

The control panel consists of the following parts

- 1 key operated on/off switch
- 2 rows of 16 display lights
- 1 row of 16 data switches labelled 0-15
- 4 special switches labelled INT, EXE, SGL, and RUN
- 1 rotary switch having 12 labelled positions
- 1 power on indicator
- 1 wait indicator

General Principles of Operation

Whenever the spring loaded switch labelled INT is depressed the processor is stopped and all peripheral device controllers are initialised. The switch is used almost exclusively to achieve device initialisation.

The machine ignores the state of all other switches except at the moment when the switch labelled EXE is depressed. The machine then examines the state of the control panel to determine what function is to be performed.

The location counter (LOC) is the only processor register which can be loaded from the control panel. The value in LOC is a memory address which can be used either for transferring data between memory and the control panel or as the address of the first instruction to be executed when the processor is put in the run state.

The POWER indicator is illuminated while ever the machine is switched on.

The WAIT indicator is illuminated while ever the processor is STOPPED.

The 16 data switches represent a binary one when depressed and binary zero when raised. An illuminated display indicator represents a binary one.

Switching On and Off

Turn the key operated switch to the ON or OFF position!! When the machine is switched on, the processor will be stopped. It is necessary to depress INT to ensure devices are in their initial states.

Loading a value into LOC

1. Set rotary switch to ADR/MRD (address/memory read)
2. Set SGL and RUN up.
3. Set 16 bit LOC value on data switches.
4. Depress EXE.

The value from the data switches is placed in LOC and appears on the lower display lights.

Inspecting the value in LOC

1. Set the rotary switch to PSW (program status word)
2. Set SGL and RUN up.
3. Depress EXE.

The value currently in LOC will be displayed on the lower lights.

Reading a Value from a Memory Location

1. Set the memory address required into LOC.
2. Set the rotary switch to ADR/MRD.
3. Set SGL down.
4. Set RUN up.
5. Depress EXE.

The value from the required memory location will be displayed on the lower lights. The value in LOC is incremented by 2, ready to address the next memory location. The new value of LOC is displayed on the upper lights.

6. Repeated depression of EXE will display values from successive memory locations, along with the incremented LOC value.

Writing a Value into a Memory Location

1. Set the memory address required into LOC.
2. Set the rotary switch to MWR (memory write position).
3. Set SGL down.
4. Set RUN up.
5. Set value to be written on data switches.
6. Depress EXE.

The value written is displayed on the lower lights. The address in LOC is incremented by 2 to the address of the next memory location. This new value of LOC is displayed on the upper lights.

7. 5 & 6 may be repeated indefinitely to write values into successive memory locations.

Starting the Processor

1. Set the address of the first instruction into LOC.
2. Set the rotary switch to PSW.
3. Set SGL up.
4. Set RUN down.
5. Depress EXE.

The processor will commence executing instructions from the memory location addressed by LOC.

Stopping the Processor

1. Set RUN up.
2. Depress EXE.

The processor will be stopped.