

INTRODUCTION

The ODRA 1204 computers are a fast digital computers designed for scientific, technical and economic applications.

- ODRA 1204 is based upon a 24-bit word
- instructions allow to manipulate 24-bit and 48-bit numbers
- one-address format of an instruction makes possible:
 - index modification (3 index registers in each program) and indirect addressing
 - recursive indexing and indirect addressing
- each memory cell or each program register can function as a modifier
- modification can be accomplished by means of single or double contents of modifier
- floating point operations are fully automatic
- each program containing 8 extracode instructions
- information flow through channel is fully automatic
- all information transfers are checked
- priority system of interrupting and resuming the program execution is built-in
- 4 levels of priority interrupt in a channel
- internal interrupt indicates the program errors or malfunctions

ODRA 1204 CENTRAL PROCESSOR

INTEGRAL PARTS

- arithmometer
- core storage
- permanent memory
- operations channel
- channel coordinating unit

EXTERNAL PARTS

- operator's desk
- console typewriter

Arithmetic — binary

Word length — 24 information bits

Core store — 16 K words, cycle time 6 μ sec

Speed of basic informations:

- fixed point:
 - addition — 16 μ sec
 - multiplication — 80 μ sec
- floating point:
 - addition — 145 μ sec
 - multiplication — 360 μ sec

ODRA 1204 PERIPHERAL EQUIPMENT

INPUT/OUTPUT DEVICES

- paper tape readers
1000 ch/sec (8-track)
- paper tape punch
100 ch/sec (8-track)
- line printer
1350 lin/min (maximum)
print positions — 120 per line
64 characters:
 - alphabetic
 - numeric
 - special

EXTERNAL STORAGE

- 2 to 4 magnetic drums, capacity of each drum
64 K words

EQUIPMENT FOR THE PREPARATION OF PAPER TAPE

- typewriter with reader and punch

OPERATING SYSTEMS

S O W

This system performs:

1. Detecting - diagnostic functions, that is, it displays the possible malfunctions in:
 - peripheral equipment
 - central processor arithmetic unit
 - simultaneous running object programs of translator and system without mutual interference
 - object program operation
2. Executing - monitoring function which consists in starting and monitoring data transmission from (to) input/output equipment:
 - from the paper tape reader
 - to the paper tape punch
 - from the monitor as an input or supervisory device
 - to the monitor as an output or monitoring device
3. Communicating function between the operator and the Central Processor of the operating - executing system allows:
 - to record the operators actions and the program running
 - to intervene during the program running for the purposes of program debbuging, suspending, resuming
 - to analyse precisely the causes of the program failures.

S O D A

SODA is operating system attended for ODRA 1204 computer configuration with the drum storage having minimum capacity of 128 K words.

System SODA has the following functions:

- organises and supervises the preparing (compilation) of one use program and in the same time executes one use program (programs may wait in drum storage for executing)
- initiates and executes data transmission from (or to) central processor units to (or from) input/output peripherals and drumx storage
- executives communication operations between the operator and the centrall Unit:
 - decode and executives differents operator's input directives,
 - prints messages (program errors, and of transmissions, and of compilation program, etc.)

PROGRAMMING LANGUAGES

J A S — THE SYMBOLIC ASSEMBLY LANGUAGE

The Symbolic Assembly Language facilitates writing programs in the machine language and permits to utilize in full the machine potentialities.

Programs written in the Symbolic Assembly Language comprises:

- mnemonic code instructions
- macroinstructions
- pseudo-instructions
- constants
- texts

Macroinstructions are intended to abbreviate writing of complex operations, to call down standard sub-routines in a simple manner and to communicate more closely with the operating system.

The pseudoinstructions allow more powerful coding techniques by easy declaration of symbols, division into sections within which it is possible to utilize the symbols appearing in other sections.

Symbolic addresses can be:

- numerical
- symbolic
- combinations of symbols and constants (alphanumeric).

M O S T - 2 AUTOCODE

The autocode MOST-2 is a simple of automatic programming.

When using the MOST-2, it is possible to write programs by means of readable formulas. This autocode facilitates the organization of cyclic and iterative programs. Arithmetic instructions of the autocode MOST-2 can contain:

- unindexed and indexed variables
- arithmetic expressions written in a full line
- all standard functions

The instructions of conditional jumps possess:

- three branch points for negative and positive values and for zero
- two branch points with depressed or undepressed key on the console.

The instructions of conditional jumps compare of two arithmetic expressions.

Program cycles can be executed from a given value to another one with a prescribed step:

- from a given value with a prescribed step and a predetermined multiple
- for specified values.

Programs written in the autocode MOST-1 run on the digital computer ODRA 1204 without changes.

A L G O L 60

This an algorithmic language commonly used to write the programs for solving numerical problems. The full version of the ALGOL is implemented in the digital Computer ODRA 1204.