# SW8500 ALGOL Package

## RESUME

A powerful high-level language for general applications programming is provided by the ALGOL Package, which represents a series of significant extensions to ALGOL 60. Here are some of the features of this package:

- Input/output system, which permits the programmer to work on varying levels of complexity.
- Dynamic field description for handling formatted records.
- Facilities for implementing multiterminal on-line systems and coroutine systems.
- Control structures include CASE, WHILE, and REPEAT-UNTIL statements.
- Rapid program compilation.
- Fast, virtual program execution with optimum paging.

## DESCRIPTION

The ALGOL Package comprises the compiler for the ALGOL 8 language and a library of standard procedures.

ALGOL 8 is a general-purpose programming language based on ALGOL 60. The most significant extensions to the reference language are as follows:

Input, output, and interprocess communication are programmed by means of zones, a language element that describes internal and external processes in the RC 8000. The programmer may employ standard high-level procedures for input/output or control the administration of data at the most basic level. The input/output system offers a sequential file system on backing storage.

Record fields within a file may be defined at run time by means of pointer variables.

Context blocks, an extension of the ALGOL block concept, permit the implementation of virtual data blocks, reentrant blocks, and record sets.

Activities permit procedures to act as coroutines concurrently executing input/output transfers via local zones.

Other important features of the ALGOL 8 language include CASE, WHILE, and REPEAT-UNTIL statements, pattern operators for bit operations and data packing, program control of hard run-time errors, and the locking of program and data segments in primary storage.

The ALGOL compiler performs an extensive syntax and type check on the program source text. All errors can be found in one compilation. The translation speed is approximately 75 statements per second. The object program is transferred to backing storage as a sequence of relocatable segments, together with an administration system for the automatic transfer of segments to primary storage at run time.

The execution time of an ALGOL 8 program depends on the size of the available storage area. Test output can be generated during program execution, and erroneous programs are executed until an error is encountered.

The ALGOL library contains standard procedures for general input/output handling, sequential access of files in record or character mode, and trigonometric functions. The ALGOL monitor procedures provide a means of performing the monitor process functions (see datasheet RCSL 42-i 1275) so that one can program operating systems in high-level language.

New procedures can be coded in ALGOL 8, RC FORTRAN, or assembly language (see datasheets RCSL 42-i 1294 and 1295), compiled separately, and included in the library, from which they are called directly and copied into the object program during compilation.

## SOFTWARE PREREQUISITES

SW8001 Basic System Package (datasheet RCSL 42-i 1275).
SW8010 System Utility Package (datasheet RCSL 42-i 1276).