RC3502 DATASHEET

REAL-TIME PASCAL, SW2001/2, SW2101/2

- High Level Systems Programming
- Mutual Exclusive Data Access
- Strong Data Typing
- Fully Dynamic Process Control
- Interprocess Communication by Message Passing
- Separate Compilation

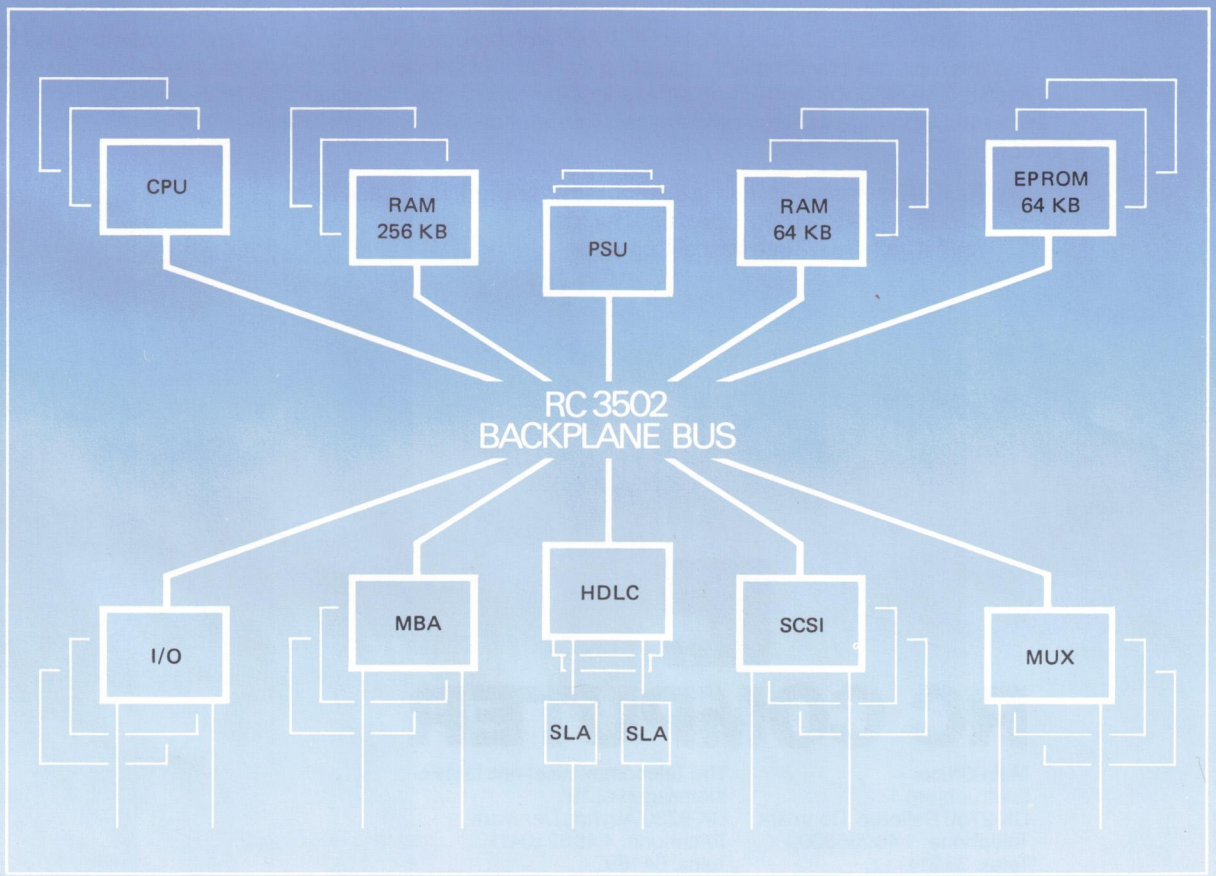
Short Description

Real-Time Pascal is intended to be a well-suited programming tool in situations characterized by two requirements:

- the software must provide rapid response to external events ("real-time"),
- programmers wish to utilize the organization of software into parallel cooperating processes as a fundamental structuring tool.

The principal use of Real-Time Pascal has been and is foreseen to remain in the basic software of distributed processing systems and data communications network nodes.

Although Real-Time Pascal aims at low level programming it is very much a high level language. This is true in terms of syntax, in terms of programming facilities, and in particular in terms of the amount of consistency enforcement which is embodied in the language. This offers high reliability, low maintenance costs, and flexible and easy understandable system solutions.



SW2001/2
SW2101/2

Main Features

In many respects Real-Time Pascal is, as one might anticipate, similar to standard Pascal. The major difference is that Real-Time Pascal includes facilities for starting and controlling multiple processes as well as for the orderly synchronization and intercommunication between such processes. Moreover input/output to external devices may be expressed in the language.

Processes

A process is a description of sequential actions performed on a private data structure. The process concept implies well-structured modular system solutions.

Interprocess Communication

An essential feature of Real-Time Pascal is, that a number of special types and operations on variables of these types are directly tailored to perform synchronization and exchange of access to shared data between processes in a well-defined and secure fashion.

To every buffer there exists at any given time precisely one reference, allowing at most one process to access the buffer contents. Exchange of access to a buffer is achieved by passing the (contents of the) buffer as a massage. To increase performance message passing is directly supported by the instruction set.

Data Typing

Like standard Pascal, Real-Time Pascal is a strongly typed language. Types, in the abstract, provide important assistance to structured programmer thinking, and the enforcement of strong typing is a useful tool in the detection of many kinds of errors. Real-Time Pascal allows families of conformal types as well as dynamic types e.g. having parameters which cannot be evaluated at compilation-time. Both of these features support the construction of dynamically configurable software. Intensive type check at both compilation- and run-time implies a high degree of security and minimizes maintenance costs.

Realization

Real-Time Pascal is realized on the RC3502 minicomputer. The compiler is a cross compiler on RC8000 and the run-time environment, operating system and standard I/O drivers are progammed in Real-Time Pascal. The RC3502 instruction set is specially constructed to support the realization of a high level block oriented language as Real-Time Pascal. This implies increased performance and an effective and correct compiler.

The Real-Time Pascal System is distributed as two software packages:

SW2001/2: RC3502/2 Operating System
SW2101/2: Real-Time Pascal Compiler

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