Software Product Description

PRODUCT NAME: PDP-11 PASCAL/RSX, Version 1.3 **SPD 14.18.08**

DESCRIPTION

PDP-11 PASCAL/RSX is an implementation of the PASCAL language that accepts programs compatible with Level 0 of the ISO Specification for the Computer Programming Language PASCAL [ISO 7185-1983 (E)] as well as ANSI/IEEE 770X3.97-1983 (December, 1983). PDP-11 PASCAL/RSX is a multipass optimizing compiler that provides all standard PASCAL data types and statements as well as extensions.

PDP-11 PASCAL/RSX provides user mode instruction and data space (I & D Space) support on processors where both the hardware and software support this feature.

Major PASCAL Language Elements

The data types, control statements, and predeclared functions and procedures provided by PASCAL include:

- INTEGER, REAL, CHAR, BOOLEAN, enumerated and subrange data types
- ARRAY, RECORD, SET and FILE structured data types
- FOR, REPEAT, WHILE repetitive control statements
- CASE, IF-THEN, and IF-THEN-ELSE conditional statements
- BEGIN...END compound statement
- GOTO statement
- READ, WRITE, READLN, and WRITELN input and output procedures
- FORWARD procedure and function directive

PDP-11 PASCAL/RSX Extensions

- Support for RSX File Control System (FCS) sequential files with fixed or variable length records
- Sequential access to fixed or variable length records, and both direct and sequential access to fixed length records
- User-Mode Instruction and Data space support on processors where both the hardware and software support this feature.
- EXTERNAL procedure and function directive
- OTHERWISE clause in case statements
- REM operator to supply the remainder in division operations
- GLOBAL, LOCAL, and EXTERNAL attributes on variables and subprograms
- MODULE reserved word for separate and independent compilation
- STATIC and AUTOMATIC allocation attributes
- %INCLUDE directive to allow multiple compilation units to access the same program text
- Binary, hexidecimal, and octal constants
- Exponential operator
- Dollar sign ($) and underscore (_) characters in identifiers
- Value initialization in declaration section at program level
- Predefined procedures CLOSE, DATE, OPEN, TIME, and HALT

Compilation

PDP-11 PASCAL/RSX programs can be compiled in interactive mode or with an indirect command file. The PDP-11 PASCAL/RSX compiler performs optimizations designed to improve execution speed, including constant conversion, constant pooling, and global register assignment. Optional instruction to the compiler and input and output file attributes are specified by compiler switches that:

- Perform run-time checks of array bound, case selectors, pointers, string bounds, and subrange bounds
- Limit the number of error messages printed and allow compilation to continue regardless of the number of errors
- Cause code to be generated that provides source line numbers at run-time
- Determine whether to generate EIS or FPP instructions
- Produce a machine-code listing

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- Identify the PDP-11 PASCAL/RSX compiler version number
- Print warning-level messages that identify the use of PDP-11 PASCAL/RSX extensions
- Provide automatic spooling of the listing file
- Maintain qualifier settings for subsequent compilations in interactive mode or in the same indirect command file

Task Building

After compilation, the RSX Task Builder is used to produce an executable image file, and to provide support for both relocatable and resident object libraries. Task builder options create checkpointable tasks, identify the use of floating point hardware, provide On-line Debugging Technique (ODT) support and allow simultaneous execution of multiple versions of a single task.

RSX Environment

PDP-11 PASCAL/RSX allows use of the FORTRAN standard calling sequence,permitting Pascal programs to communicate with FORTRAN callable system routines for real-time applications. However, routines written in FORTRAN cannot be called from PDP-11 PASCAL/RSX. In addition, PDP-11 PASCAL/RSX programs can call RSX system services for process-control operations, system directives, and special peripheral access.

HARDWARE REQUIREMENTS

Any valid mapped RSX-11M or RSX-11M-PLUS system configuration that includes:

- Extended Instruction Set (EIS)
- A minimum of 30K words of available memory, with approximately 2050 free blocks of disk space required for the compiler and OTS files. Of the 2050 free blocks required, 585 blocks must be contiguous.

Additional disk space is required during compiler execution. The amount of additional space required varies with the size and complexity of the source program.

OPTIONAL HARDWARE

- Floating Point Processor as supported by the system configuration

SOFTWARE REQUIREMENTS

RSX-11M or RSX-11M-PLUS Operating System

Refer to the RSX-11M and RSX-11M-PLUS Optional Software Cross Reference Tables (SPD 20.98.xx and SPD 20.99.xx) for the required versions.

OPTIONAL SOFTWARE

None

GROWTH CONSIDERATIONS

The minimum hardware/software requirements for any future version of this product may be different from the minimum requirements for the current version.

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SOFTWARE PRODUCT SERVICES

A variety of service options are available. For more information on these or other services, please contact your local DIGITAL office.

SOFTWARE OPTIONS CHART

The distribution Media Codes used in the Software Options Chart are described below. You specify the desired Media Code at the end of the Order Number, e.g., QJ128-HD = binaries on 9-track 800 BPI Magtape (NRZI).

5 = TK50 Tape Cartridge
D = 9-track 800 BPI Magtape (NRZI)
H = RL02 Disk Cartridge
M = 9-track 1600 BPI Magtape (PE)
V = RK07 Disk Cartridge
Z = No hardware dependency

Note: The availability of these software product options and services may vary by country. Customers should contact their local DIGITAL office for information on availability.

OPTIONS	ORDER NUMBER CLASS H[1] SYSTEMS	ORDER NUMBER CLASS L[2] SYSTEMS
LICENSE OPTIONS: A LICENSE IS REQUIRED FOR EACH CPU.		
Single-Use License	QJ128-UZ	QY128-UZ
MATERIALS AND SERVICE OPTIONS:		
Distribution and Documentation Option	QJ128-H5 QY128-HD QJ128-HH QJ128-HM QJ128-HV	128-H5 QY128-HH QY128-HM
Software Revision Right-To-Copy Option	QJ128-HZ	QY128-HZ
Documentation-Only Option	QJ128-GZ	QY128-GZ
Installation Service Option	QJ128-I5 QJ128-ID QJ128=IH QJ128-IM QJ128-IV	QY128-I5 QJ128-IH QY128-IM
DECsupport Service	QJ128-95 QJ128-9D QJ128-9H QJ128-9M QJ128-9V	QY128-95 QY128-9H QY128-9M

OPTIONS	**ORDER NUMBER CLASS H[1] SYSTEMS**	**ORDER NUMBER CLASS L[2] SYSTEMS**
Basic Service	QJ128-85 QJ128-8D QJ128-8H QJ128-8M QJ128-8V	QY128-85 QY128-8H QY128-8M
Self-Maintenance Service	QJ128-35 QJ128-3D QJ128-3H QJ128-3M QJ128-3V	QY128-35 QY128-3H QY128-3M

[1] Class H (high-end systems):

— All UNIBUS PDP-11 models and systems

[2] Class L (low-end systems):

— All Q-bus models and systems INCLUDING MicroPDP-11/83

— KD11, KDF11, KDJ11 CPU modules

— DCT11, DCF11, DCJ11 microprocessor chips