digital

Software Product Description

PRODUCT NAME: RSX-11S, Version 2.1, Real Time Operating System   SPD 9.21.5

DESCRIPTION:

RSX-11S is a memory-based real-time operating system designed to operate on a PDP-11 processor with a minimum of 8K words of memory. The system is not dependent upon any mass storage media for execution. RSX-11S is based on the RSX-11M disk-based operating system and is fully subset compatible with it. The I/O driver interface is identical. Device drivers written for each system execute on the other. Further, any application program that executes under RSX-11S will execute under RSX-11M without change following a relink of the object program.

As a memory-based system, RSX-11S does not support a file system, non-resident tasks checkpointing (rollin/rollout), or overlays, or program development. It provides a run-time environment for execution of tasks on a memory-based processor. Since it is based on RSX-11M, RSX-11S enjoys most of the inherent features and generation capability of that system. RSX-11S supports all of the peripheral devices that are supported under RSX-11M, including other hardware features such as floating point processors, parity memory, and memory management.

Tasks written in MACRO, FORTRAN IV, FORTRAN IV-PLUS, or BASIC-PLUS-2 must be assembled or compiled and subsequently linked on the host system and transported to the target RSX-11S system for execution. Tasks written in FORTRAN require a minimum of 16K words of memory for the RSX-11S target system. Transportation of tasks between the RSX-11M host and the RSX-11S target is provided via the File Exchange Utility (FLX) on the host system and the On-line Task Loader (OTL) on the target system.

RSX-11S requires an RSX-11M or RSX-11D, Version 6.2, system for host support and system generation. The software components contained in the RSX-11S distribution kit include the following:

Binary and Source Modules:
Monitor Console Routine - RSX-11M Subset
On-line Task Loader
System Image Preservation Program
File Control Services (FCS) for record devices (does not include directory support)

MINIMUM HARDWARE REQUIRED:

An RSX-11M, Version 3.1, or RSX-11D, Version 6.2, system is required for system generation and program development.

- Any PDP-11 processor (including the LSI-11 and PDP-11/03) with at least 8K words of memory. (Note: Only those devices marked by an asterisk (*) are supported on the LSI-11 and PDP-11/03.)
- KW11-L, KW11-P, DL11-W clock (other than PDP-11/03 and LSI-11 only)
- *DLV11 line interface (PDP-11/03 and LSI-11 only)
- Hardware bootstrap loader
- One of the following load devices:
  1. TA11 cassette tape
  2. PR11 paper tape reader
  3. PC11 paper tape reader/punch
  4. TC11 DECtape
  5. RX11 floppy disk system
  6. *RXV11 floppy disk system (PDP-11/03 and LSI-11 only)
  7. Tape system from Table T

Table T
Tape System

PROCESSOR	TAPE Controller	Transport
All UNIBUS	TM11	TU10
PDP-11 processors	TMA11	TU10
		TS03
	TMB11	TS03
		TU10W
	TME11	TE10
	TJU16	TU16
	TJE16	TE16
	TJU45	TU45
PDP-11/70	TWE16	TE16
	TWU45	TU45

OPTIONAL HARDWARE:

Additional memory to a system total of 28K words on systems that do not include the hardware memory management unit, 124K words on other than PDP-11/70 systems which include the hardware memory management unit, or 1920K words on PDP-11/70 systems.

KT11 memory management unit (requires a minimum of 24K words of memory)

E11-A, B Extended Arithmetic Element (supported only on systems which do not include a memory management unit)
KE11-E Extended instruction set
KE11-F Floating instruction set
FP11 Floating point processor
KW11-Y Watch-dog timer clock
*KEV11 Extended arithmetic chip

I/O Peripherals:
PR11 paper tape reader or PC11 paper tape reader/punch
CR11 or CM11 card reader
VT11/VS60 Graphics Display processor scope, except on PDP-11/70 when 22 bit addressing mode is enabled. VT11 data buffers must reside in first 28K words of physical memory.
*LA35, LA180 line printer
LS11, LP11 or LV11 line printer (no plotter support)

NOTE:

No directory support for any magnetic tape or disk systems.

Magnetic tape devices:
TA11 Dual drive cassette tape system
TC11 DECtape controller and dual transport
Tape system from Table T
Disk devices:
RX11 floppy disk system
*RXV11 floppy disk system (PDP-11/03 and LSI-11 only)
RF11 fixed-head disk system
RL11 disk cartridge controller with RL01 disk drives
RK11 or *RKV11 disk cartridge controller with RK05J or RK05F disk drives
RK611 disk cartridge controller with RK06 disk drives
RPR02 disk pack drives (with appropriate controller)
RP03 disk pack drives (with appropriate controller)
RP04, RP05, or RP06 disk pack drives (with appropriate controller)
RS03 or RS04 fixed-head disks (with appropriate controller)
RM02/03 disk pack drives (with appropriate controller)

Terminals:
*LA30, LA36, LA180S, LT33, LT35, VT05, VT50, VT52, VT55 terminals (MCR provides no escape sequence support on VT50, VT52, VT55). These terminals are supported when connected to DH11 (with or without DM11-BB), DZ11, DJ11, DL11-A, B, C, D or W, or, * DLV11, *DLV11-J or DZV11.
*RT02 Alphanumeric Display
*RT02-C Alphanumeric Display and badge reader

Communications:
DL11-E and *DLV11-E single line interfaces
DP11 synchronous line interface
DU11 synchronous line interface
DUP11 synchronous line interface
DQ11 DMA synchronous line interface
DA11-B DMA UNIBUS link
DMC11 interprocessor link
*DUV11 synchronous line interface
Laboratory/Industrial Control:

AD01-D A/D converter
AFC11 A/D converter
DRS/DSS11 industrial control system modules
UDC11 Universal Digital Controller
   IDA11-AA Contact sense module
   IDA11-AB Contact sense module
   IDA11-BA Contact interrupt module
   IDA11-BB Contact interrupt module
   IDA11-CA I/O converter
   IDA11-DA Solid state AC/DC driver
   IDA11-EA Flip-flop DC driver
   IDA11-FA Single shot driver
   IDA11-GA Latching output relay
   IDA11-HA Flip-flop output relay
   IDA11-JA Single shot output relay
   IAA11-AA Multi-range A/D converter
   IAA11-BA D/A converter
   IAA11-BB D/A converter
   IAA11-BC D/A converter
   IAA11-BD D/A converter

ICS11/ICR11 Industrial Control subsystem
   IDC-IA Isolated DC sense
   IDC-IB Isolated DC interrupt
   IDC-IC I/O counter
   IDC-ID Non-isolated DC sense
   IDC-IE Non-isolated DC interrupt
   IAC-IA Isolated AC sense
   IAC-IB Isolated AC interrupt
   IDC-OA DC flip-flop driver
   IDC-OB DC single shot driver
   IAC-OA AC flip-flop driver
   IAC-OB AC single shot driver
   IRL-OA Latching output relay
   IRL-OB Flip-flop output relay
   IDA-OB 4 channel D/A converter
   IAD-IA 8 channel A/D converter
   IMX-IA 16 channel multiplexer for IAD-IA

Data Acquisition:
One or more of the following subsystems:
● LPS11 Laboratory Peripheral Systems. Requires: LPS11-S, LPSAD-12, and LPSKW options:
   1. LPSDR-A 16-bit digital I/O registers and relays (bit interrupt capability not supported)
   2. BA408/LPSAM-SG switch gain OR LPSAM/LPSAM-E multiplexer
   3. LPSVC 12-bit D/A converter
   4. LPSDA D/A expander
● AR11 Analog Real-time Systems Options: DR11-K 16-bit digital I/O option. One per subsystem (bit interrupt capability not supported)
● LPA11-K Laboratory Peripheral Accelerator
● Laboratory I/O Subsystem configured using the following options:
   1. ADK11-KT 12-bit A/D converter with 16-channel multiplexer and dual clock; one per subsystem.
   2. AD11-K 12-Bit A/D converter with 16-channel multiplexer; 16 per subsystem (15 if ADK11-KT is part of same subsystem).

3. KW11-K Dual real-time clock with Schmitt trigger; one per subsystem (clock already included in ADK11-KT, no KW11-K required if one is present).

4. AM11-K 48-channel A/D multiplexer with gain ranging; 1 per AD11-K or ADK11-KT.

5. DR11-K 16-bit digital I/O option; 16 per subsystem.

6. AA11-K 4-Channel 12-bit D/A converter with scope control, 16 per subsystem.

7. *AAV11-A, *ADV11-A, *KWV11-A and *DRV11 real time options

PREREQUISITE SOFTWARE:

RSX-11M, Version 3.1, operating system or
RSX-11D, Version 6.2, operating system

OPTIONAL SOFTWARE:

DECNET-11S

CTS11 card reader/punch and XY11 or XY311 plotter device drivers.

IP11 Process Control Subsystem (hardware and software available from Industrial Products Group).

TRAINING CREDITS:

None

SUPPORT CATEGORY:

A — Software Support will be provided as stated in the Software Support Categories Addendum to this SPD.

UPDATE POLICY:

Software Updates, if any, released by DIGITAL during the one (1) year period following installation, will be provided to the customer for a media charge (includes no installation). After the first year, updates, if any, will be made available according to then prevailing DIGITAL policies.

ORDERING INFORMATION:

All binary licensed software, including any subsequent updates, is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions of Sale, which provide in part that the software and any part thereof may be used on only the single CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of the DIGITAL copyright notice and any DIGITAL proprietary notices on the software) only for use on such CPU. All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources Agreement between Purchaser and DIGITAL.

Standard options with no support services are only available after the purchase of one supported license. When a software license is ordered without support services, the category of support applicable to such software is Category C.

The following key (C, D, E, N, T, Y, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJ642-AD = binaries on 9-track magnetic tape. Users using

RSX-11D as the RSX-11S host can order the kit only on RK05, RK06, or 9-track magtape.

C = DECtape
D = 9-track Magnetic Tape
E = RK05 Disk Cartridge
N = TU60 Cassette
T = RK06 Disk Cartridge
Y = RX01 Floppy Diskette
Z = No hardware dependency

Standard Options

QJ642 -A— Single-use license, binaries, documentation, support services (media: C, D, E, N, T, Y)

QJ642 -C— Single-use license, binaries, documentation, no support services (media: C, D, E, N, T, Y)

Update Options

Users of RSX-11S, whose specified Support Category warranty has expired may order under license the following software update at the then current charge for such update. The update is distributed in binary form on the appropriate medium and includes no installation or other services unless specifically stated otherwise.

QJ642 -H— Binaries, documentation (media: C, D, E, N, T, Y)

Users of RSX-11S, Version 2, whose specified Support Category warranty has not expired may order under license the following software update for the then current media charge. The update is distributed in binary form on the appropriate medium and includes no installation or other services unless specifically stated otherwise.

QJ642 -W— Binaries, documentation (media: C, D, E, N, T, Y)

Miscellaneous Options

QJ642 -G— Pre-delivery kit (media: Z)

ADDITIONAL SERVICES:

None

ADDENDUM
SOFTWARE SUPPORT CATEGORIES

Each software product (hereinafter 'SOFTWARE') with a designated Support Category A or B in the applicable Software Product Description (SPD) existing at the time of order will be the current release at the time of delivery and will conform to the SPD. DIGITAL's sole obligation shall be to correct defects (nonconformance of the SOFTWARE to the SPD) as described below. Any SOFTWARE with a designated Support Category C will be furnished on an 'as is' basis.

For SOFTWARE with a designated Support Category A or B, DIGITAL will provide the services set forth below without additional charge.

CATEGORY A

1. Upon notification by customer to the nearest DIGITAL office that the computer system, including all required prerequisite hardware and software, is ready for the installation of the SOFTWARE, DIGITAL will install such SOFTWARE in any location within the contiguous forty-eight (48) United States, the District of Columbia, or a country in which DIGITAL or a subsidiary of DIGITAL has a software service facility. The notification must be received by DIGITAL and the system must be ready for installation within thirty (30) days after the delivery of the SOFTWARE to customer or DIGITAL will have no obligation to install. Installation will consist of: (1) verification that all components of the SOFTWARE have been received by customer, (2) loading the SOFTWARE, and (3) executing a DIGITAL sample procedure.

2. During the ninety (90) day period after installation, if the customer encounters a problem with the current unaltered release of the SOFTWARE which DIGITAL determines to be a defect in the SOFTWARE, DIGITAL will provide the following remedial service (on site where necessary): (1) if the SOFTWARE is inoperable, apply a temporary correction (TC) or make a reasonable attempt to develop an emergency by-pass, and (2) assist the customer to prepare a Software Performance Report (SPR) and submit it to DIGITAL.

3. During the one (1) year period following installation, if the customer encounters a problem with the SOFTWARE which his diagnosis indicates is caused by a SOFTWARE defect, the customer may submit an SPR to DIGITAL. DIGITAL will respond to problems reported in SPRs which are caused by defects in the current unaltered release of the SOFTWARE via the Maintenance Periodical for the SOFTWARE, which reports SPRs received, code corrections, temporary corrections, generally useful emergency by-passes and/or notice of the availability of corrected code. Software Updates, if any, released by DIGITAL during the one (1) year period, will be provided to the customer on DIGITAL's standard distribution media as specified in the applicable SPD. The customer will be charged only for the media on which such updates are provided, unless otherwise stated in the applicable SPD, at DIGITAL's then current media prices.

CATEGORY B

During the one (1) year period following delivery, the services provided to the customer will be the same as set forth in 3 above.

CATEGORY C

SOFTWARE is provided on an 'as is' basis. Any software services, if available, will be provided at the then current charges.

DIGITAL shall have the right to make additional charges for any additional effort required to provide services resulting from customer use of other than current unaltered release of the SOFTWARE operated in accordance with the SPD.