

Software Product Description

PRODUCT NAME: IP11 Industrial I/O Subsystem Software Driver, Version 4.2

SPD 15.07.08

DESCRIPTION

The IP11 Industrial I/O Subsystem Software Driver (IP11 Driver) provides users of IP112, IPV12, DPM23/DPM50, and DYS50 I/O subsystems with the ability to access the subsystem hardware with its full complement of I/O module options from tasks written in MACRO-11, FORTRAN IV, FORTRAN-77, and Micro/RXS FORTRAN-77 under the RSX-11M, RSX-11S, RSX-11M-PLUS, and Micro/RXS Operating Systems.

The IP11 Driver is supplied and installed separately from the host operating system software. The product consists of an RSX I/O driver or handler (IPDRV) and a package of FORTRAN-callable subroutines.

Features

- Support of up to ten IP112 subsystems on a single UNIBUS-based PDP-11 CPU.
- Support of up to five IPV12 subsystems on a single Q-bus based PDP-11 CPU.
- Access to I/O modules from tasks written in FORTRAN IV, FORTRAN-77, and Micro/RXS FORTRAN-77 via a series of callable subroutines based on a superset of the Instrument Society of America (ISA) SP61.1 Standards.
- Access to I/O modules from tasks written in MACRO-11 takes place via a set of RSX QIO directives.
- Dynamic module address mapping is performed by the driver at system startup. At system generation time, the user specifies the generic module types to be supported. Additional modules of an already-specified generic module type do not require a new system generation.
- The driver has three options available when handling Digital interrupts (only the first two options are available for handling counter interrupts):
 - Interrupts can be entered into a user-specified circular buffer for further processing by the task.
 - A task can be linked to one or more specific interrupt points and scheduled for execution when these conditions are detected.

— A set of interrupt points in change-of-state or Digital-sense-interrupt modules can be linked to a contiguous range of local or common event flags in a one-to-one relationship, such that an interrupt on any of these linked points causes its corresponding event flag to be set.

- The driver can return appropriate error codes to the user task at runtime via an optional argument in the calling sequence.
- The driver can log hardware errors via the RSX Error Logging Subsystem. This makes easier detection of existing and potential hardware problems.

HARDWARE REQUIREMENTS

For IP112:

Any valid UNIBUS-based RSX-11M, RSX-11M-PLUS, or RSX-11S Operating System configuration.

For IPV12:

Any valid Q-bus based RSX-11M, RSX-11M-PLUS, RSX-11S, or Micro/RXS Operating System configuration.

For DYS50:

A configuration guide is available from Digital. It is recommended that Digital be consulted in the configuration of these systems.

OPTIONAL HARDWARE SUPPORTED

The hardware I/O subsystem modules supported include:

M5010	Nonisolated DC sense
M5011	Nonisolated DC interrupt
M5012	Isolated DC input
M5012-YA	Isolated DC input (TTL compatible)
M5013	Isolated AC input
M5014	Dual input counter
M5016	Quad input counter
M5031	Isolated DC interrupt
M6010	Nonisolated DC output
M6010-YA	Nonisolated DC output (TTL compatible)
M6011	Nonisolated DC one-shot output
M6012	Isolated DC output
M6013	Isolated AC output
M6014	Dual output counter
M6015	Isolated retentive DC output
A630	4-channel Digital/analog converter
A631	Isolated 4-channel Digital/analog converter
A020	Isolated 14-bit analog/Digital converter
A014	Solid state 12-bit analog/Digital converter
A156	Solid state analog multiplexer (for use with the A014 A/D converter only)
A157	Wide range solid state analog multiplexer (for use with the A014 A/D converter only)
AM158	RMS converter multiplexer (for use with the A014 A/D converter only)

SOFTWARE REQUIREMENTS

For IP112:

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

For IPV12:

RSX-11S, RSX-11M, RSX-11M-PLUS or Micro/RSX Base Kit and Advanced Programmer's Kit Operating System

For DYS50:

RSX-11S Operating System (included as part of DPM/DPM-PLUS host system)

Refer to the following appropriate Optional Software Cross Reference Table for the required versions:

- RSX-11M Optional Software Cross Reference Table (SPD 20.98.xx)

- RSX-11M-PLUS Optional Software Cross Reference Table (SPD 20.99.xx)
- Micro/RSX Optional Software Cross Reference Table (SPD 20.95.xx)

For Micro/RSX, the Advanced Programmer's Kit is a prerequisite to assemble the MACRO-11 programs included in this package or other MACRO-11 programs intended to run with this package.

OPTIONAL SOFTWARE

None

SOFTWARE LICENSING

This software is furnished under the licensing provisions of Digital Equipment Corporation's Standard Terms and Conditions. For more information about Digital's licensing terms and policies, contact your local Digital office.

SOFTWARE PRODUCT SERVICES

A variety of service options are available. For more information, please contact your local Digital office.

SOFTWARE WARRANTY

Warranty for this software product is provided by Digital with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

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., QJ655-X3 = sources on an RX50 Floppy Diskette.

- 3 = RX50 Floppy Diskette
 5 = TK50 Cartridge
 M = 9-track 1600 BPI Magtape (PE)
 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 Q-bus ¹ SYSTEMS	ORDER NUMBER UNIBUS ² SYSTEMS
LICENSE OPTIONS: A LICENSE IS REQUIRED FOR EACH CPU.		
IP11 System Kit and Single-Use Source License, Distribution and Documentation, Warranty	IPV12-AA	IP112-AA
	IP112-AD	IP112-AD
	IPV12-BA	IPUS1-AA
	IPV12-BD	IPUS1-AD
	IPUS1-AA	IPUS2-AA
	IPUS1-AD	IPUS2-AD
	IPUS2-AA	
	IPUS2-AD	
	IPUS2-BA	
	IPUS2-BD	
	IPUS3-AA	
	IPUS3-AD	
	IPUS3-BA	
IPUS3-BD		
Migration Option Single-Use Source License, Distribution and Documentation, Warranty	QJ655-X3	QJ655-XM
	QJ655-X3	
	QJ655-X5	
	QJ655-X5	
	QJ655-XM	
MATERIALS AND SERVICE OPTIONS:		
Sources Distribution and Documentation Update	QJ655-N3	QJ655-NM
	QJ655-N3	
	QJ655-N5	
	QJ655-N5	
	QJ655-NM	
Software Revision	QJ655-NZ	QJ655-NZ
Right-To-Copy Option		
Installation Service Option	QJ655-I3	QJ655-IM
	QJ655-I3	
	QJ655-I5	
	QJ655-I5	
	QJ655-IM	

OPTIONS	ORDER NUMBER Q-bus ¹ SYSTEMS	ORDER NUMBER UNIBUS ² SYSTEMS
DECsupport Service	QJ655-93 QJ655-93 QJ655-95 QJ655-95 QJ655-9M	QJ655-9M
Basic Service	QJ655-83 QJ655-83 QJ655-85	QJ655-85
Self-Maintenance Service	QJ655-33 QJ655-33 QJ655-35 QJ655-35 QJ655-3M	QJ655-3M

¹ A Microprocessor (Q-bus) system includes all PDP-11 systems having a Q-bus. For example, PDP-11/23-PLUS, PDP-11/73, MicroPDP-11/53, and MicroPDP-11/83.

² A UNIBUS system includes all PDP-11 systems having a UNIBUS. For example, PDP-11/24, PDP-11/34, PDP-11/44, PDP-11/70, and PDP-11/84.

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