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Allen-Bradley
PLC-3/10 Processor Module

(Cat. No. 1775-L4)

Product Data

Getting More Control From the PLC-3/10 Controller

When it comes to programmable controllers, the more power you can put into a chassis slot, the more control potential you have. The PLC-3/10 Programmable Controller Processor Module (cat. no. 1775-L4) gives you the control you need.

Like the Main Processor Module (cat. no. 1775-L3) for the PLC-3 controller, the 1775-L4 module is a single-slot processor module that controls the program execution and memory management functions for the PLC-3/10 controller.

The benefits, features, and functions for the 1775-L4 module are outlined below:

Features	Benefits	Functions
Over 70 programming instructions	Efficient programming	Makes PLC-3/10 controller a powerful processor
Completely flexible data table	Amount of data table that you can use is limited only by available memory	Expandable to accommodate data
High-speed program scan	Efficient use of microprocessor time	Processes only the parts of the control program that are currently needed
Program control instructions: ▪ JMP ▪ JSR ▪ MCR	Efficient use of processor time through the control program	Enables you to change order of program execution Requests a subroutine at selected timed intervals Executes a routine before processor faults
Timed interrupt routine	Allows you to examine specific information at a specified time	Executes arithmetic functions in decimal ranging from -32,768 to 32,767
Programmable fault response	Allows you to react to a major fault, possibly preventing processor from faulting	Executes arithmetic functions in scientific notation ranging from ±2.939 E -39 to ±1.701 E +38
Integer math	Allows you to retain and make calculations with extremely large and small numbers	Handles values stored as 32-bit signed integers ranging from -2,147,483,648 to +2,147,483,647
Floating point math	Allows you to retain accuracy for precise calculations	Stores multiple programs in one processor
Double-precision integer math	Allows you to record and handle numbers for your production counts and inventory	Programs and procedures access: ▪ time ▪ date
Multiple contexts (not offered on any other programmable controller)	Enables you to quickly change from one program to another by changing contexts	Continuously checks modules to determine if the processor is functioning properly
Real-time: ▪ clock ▪ calendar	Does not require an external means for timed programs and reports	
On-board diagnostics and diagnostic indicators: ▪ green (pass) ▪ red (fail)	Easy troubleshooting	

Using the PLC-3/10 Instruction Set

The 1775-L4 processor module supports the same instruction set supported by the Main Processor Module (cat. no. 1775-L3).

WARNING: Remove system power before removing or inserting the 1775-L4 processor module in the PLC-3/10 chassis. Failure to observe this warning could result in damage to PLC-3/10 components and/or undesired operation with injury to personnel.

Important: Do not insert the 1775-L4 processor module into the PLC-3 Main Processor Chassis (cat. no. 1775-Al, -A2). The 1775-L4 processor module is not compatible with the PLC-3 programmable controller.

The PLC-3/10 instruction set includes:

▪ **relay type instructions:**	
– examine on	– branch end
– examine off	– examine indexed bit ON
– output energize	– examine indexed bit OFF
– output latch	– set indexed bit ON l
– output unlatch	– atch indexed bit
– nput branch start	– unlatch indexed bit
– output branch start	
▪ **timer and counter instructions:**	
– ON delay timer	– up counter
– OFF delay timer	– down counter
– retentive timer	– counter/timer reset
– timer reset	
▪ **arithmetic instructions:**	
– add	– file add
– multiply	– file multiply
– subtract	– file subtract
– divide	– file divide
– square root	– file square root
– negate	– file negate
▪ **logical instructions:**	
– logical AND	– logical AND with files
– logical OR	– logical OR with files
– logical exclusive OR	– logical exclusive OR with files
– logical complement	– logical complement with files

▪ **comparison instructions:**	
– equal	– search file for equal
– not equal	– search file for not equal
– less than	– search file for less than
– less than or equal	– search file for less than or equal
– greater than	– search file for greater than
– greater than or equal	– search file for greater than or equal
– limit test	
▪ **data transfer instructions:**	
– block transfer read	– move with mask
– block transfer write	– files move with mask
– move status	– move with files
– move word	
▪ **shift register instructions:**	
– bit shift right	– FIFO load
– bit shift left	– FIFO unload
▪ **program control instructions:**	
– jump to label	– program control instructions:
– jump to subroutine	– master control reset
– return from subroutine	– no operation
– label	– end
▪ **communication and diagnostic instructions:**	
– message	– file bit compare
– diagnostic detect	

Program Execution

To provide effective program execution, the processor module:

- uses four AMD 2903 bit-slice microprocessors
- provides high-speed program scanning that can quickly determine if a rung is true or false. If an input condition on the rung is determined to be false, the output is set off, and the main processor module proceeds to the next rung.
- provides for high-speed I/O processing because the I/O image table resides on the main processor module. No backplane accessing is necessary.

Memory Management

The processor module assigns the following dedicated, expandable areas to the memory module:

- system status
- user program
- system pointers
- messages
- module status
- system symbols
- data table
- force tables

This type of memory configuration allows you to:

- effectively handle a wide variety of applications
- easily increase the size of memory as your application needs change

Flexible Data Table

The data table is one of the most important areas of memory. It is completely expandable provided the memory space is available. The data table consists of the following sections:

- output image
- decimal
- input image
- binary
- timer
- ASCII
- counter
- high order integer
- integer
- pointer
- floating point
- status

Product Data
PLC-3/10 Processor Module

Related Publications

For detailed information on the 1775-L4 processor module and the PLC-3/10 instruction set, refer to the PLC-3 Programming Manual (publication 1775-6.4.1)

Specifications

Microprocessors

- 4 AMD 2903's (bit slice)

Current Requirements

- 6A at +5V DC
- 40mA at +15V DC

Environmental Conditions

- Operating Temperature: 0 to 60°C (32 to 140°F)
- Storage Temperature: -40 to 85°C (-40 to 185° F)
- Relative Humidity: 5 to 95% (without condensation)

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