



Allen-Bradley Main Processor Module

(Cat. No. 1775-L1, -L2)

Product Data



Description

The main processor module is used in PLC-3 programmable controller systems to provide:

- program execution
- memory management

The module occupies two slots in the processor chassis. We recommend that you install the module in the two, left-most slots. The module receives its power and communicates with other modules through the PLC-3 chassis backplane.

Two main processor modules are available for your PLC-3 system:

- cat. no. 1775-L1
- cat. no. 1775-L2

Allen-Bradley HMIs

Both main processor modules contain many of the same features (table A). One of the major differences between the two modules is the level of program instructions they are able to execute. The cat. no. 1775-L1 processor module uses the “level 1” instruction set; the 1775-L2 uses the “level 2” instruction set. Refer to table B for a listing of the level 1 and 2 instructions sets.

Table A
Benefits, Features, and Functions

Benefits	Features	Functions
provides over 70 instructions for efficient programming	multiple instruction types	9 categories of instructions
The amount of data you can use is limited only by available memory	completely flexible data table	expandable to accommodate data
highly efficient program scan time	high-speed program scan	quickly determines if outputs are: <ul style="list-style-type: none"> ▪ true ▪ false
complete control over program execution	program control: <ul style="list-style-type: none"> ▪ JMP ▪ JSR ▪ MCR 	enables you to change order of program execution
performs real-time events	real-time interrupt routine	requests a subroutine on real-time basis
allows you to react to a major fault, possibly preventing processor from halting	programmable fault response	executes a routine before processor halts
extended computational ability	data tables: <ul style="list-style-type: none"> ▪ floating point ▪ high order integer ▪ integer 	handles extremely large and small numbers
enables you to quickly change from one program to another	multiple contexts	stores multiple programs in one processor
does not require an external means for timed programs and reports	real-time: <ul style="list-style-type: none"> ▪ clock ▪ calendar 	programs and procedures access: <ul style="list-style-type: none"> ▪ time ▪ date
easy troubleshooting	diagnostic indicators: <ul style="list-style-type: none"> ▪ green (pass) ▪ red (fail) 	indicates pass/fail status of modules

Table B
PLC-3 Level 1 and 2 Instruction Sets

Instruction	1775-L1 (Level 1)	1775-L2 (Level 2)	Instruction	1775-L1 (Level 1)	1775-L2 (Level 2)
Relay Type			Comparison		
Examine input closed	X	X	Equal	X	X
Examine indexed bit ON		X	Search file for equal	X	X
Examine input open	X	X	Search file for not equal	X	X
Examine indexed bit OFF		X	Less than	X	X
Output energize	X	X	Search file for less than		X
Set indexed bit ON		X	Less than or equal	X	X
Output latch	X	X	Search file for less than or equal		X
Latch indexed bit		X	Greater than	X	X
Output unlatch	X	X	Search file for greater than		X
Unlatch indexed bit		X	Greater than or equal	X	X
Input branch start	X	X	Search file for greater than or equal		X
Output branch start	X	X	Limit test	X	X
Branch end	X	X			
Timer/Counter			Data Transfer		
ON delay timer	X	X	Block transfer read	X	X
OFF delay timer	X	X	Block transfer write	X	X
Retentive timer	X	X	Move	X	X
Timer one-shot	X	X	Move with mask	X	X
Up counter	X	X	Move file	X	X
Down Counter	X	X	Move file with mask	X	X
Counter/timer reset	X	X	Move status	X	X
Arithmetic			Shift Register		
Add	X	X	Bit shift right	X	X
File Add		X	Bit shift left	X	X
Subtract	X	X	FIFO load		X
File subtract		X	FIFO unload		X
Multiply	X	X	Program Control		
File multiply		X	Jump to label	X	X
Divide	X	X	Jump to subroutine	X	X
File divide		X	Return from subroutine	X	X
Square root	X	X	Label	X	X
File square root		X	Master control reset	X	X
Negate	X	X			
File negate		X			
Logical			Communication/ Diagnostic		
Logical AND	X	X	Message	X	X
Logical AND with files	X	X	Diagnostic detect	X	X
Logical OR	X	X	File bit compare	X	X
Logical OR with files	X	X			
Logical exclusive OR	X	X			
Logical exclusive OR with files	X	X			
Logical complement	X	X			
Logical complement with files	X	X			

Program Execution

To provide effective program execution, the main processor module:

- uses AMD 2903 bit-slice microprocessors
- maintains an on-board I/O image table for high-speed processing of I/O points
- quickly determines if the outputs are true or false using a high-speed program scanning technique

Memory Management

The memory in the main processor module is divided into dedicated, expandable areas:

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

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
- input image
- timer
- counter
- integer

- floating point (available on the cat. 1775-L2 module only)
- decimal
- binary
- ASCII
- high order integer (available on the cat. no. 1775-L2 module only)
- pointer
- status

Specifications

Location

- Two, left-most slots
(recommended location)

Microprocessors

- 4 AMD 2903's (bit slice)

Current Requirements

- 9.4A 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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