

MicroLogix™ 1500 Programmable Controllers

MicroLogix™ 1500 Programmable Controller

The MicroLogix 1500 is a completely new packaged controller platform with world class features and performance. Many of these new features allow this packaged controller to be used in applications where much larger controllers were required in the past.

- High-performance I/O expansion through Compact™ I/O
- Greater than 7K user memory (configurable)
- 32-bit signed integer math
- Embedded I/O provides enhanced high-speed inputs and outputs
- Optional Data Access Tool (removable and insertable under power)
- Trim Potentiometers
- Memory Modules and Real Time Clock

Compact™ I/O Modular Input/Output System

Compact I/O is a new "PLC style" I/O platform offering industry-leading price and performance. It utilizes the latest design technology for superior performance, excellent functionality and ease of use, including:

- Innovative rackless design, which reduces system cost and inventory
- Modular, high-density I/O termination to reduce panel space requirements
- Integrated high-performance serial I/O bus
- Feature-rich I/O functionality to address a wide range of applications
- Front removal/insertion, which reduces time for initial system assembly and product replacement
- Broad application coverage through 24V dc sink/source and 120/240V ac I/O, relay, and analog I/O

Note: For fast access to related publications, visit the MicroLogix Internet site <http://www.ab.com/micrologix>. Electronic versions of our manuals are available for you to search and download

New High-Performance System Features

- Approximate scan time for a typical 1K user program (includes timers, counters, math instructions, etc.): 1 millisecond
- Simple bit instruction execution: 0.7 microseconds
- 1 millisecond selectable timed interrupt
- 1 millisecond timers
- Two 20 kHz high-speed counters each with eight modes of operation (up, down, up/down, quadrature, etc.)
- Two high-speed outputs that can be configured as 20 kHz PTO (Pulse Train Outputs) with acceleration / deceleration profiles, or as PWM (Pulse Width Modulated) outputs
- Rugged tongue-and-groove package design, to provide strength and system reliability
- Up to eight expansion Compact I/O modules per MicroLogix 1500

Industry Standard Compatibility

The MicroLogix 1500 and Compact I/O products incorporate world-class technology and features while maintaining compatibility with MicroLogix and SLC architectures.

- World Class RSLogix 500 programming environment with an instruction set compatible with MicroLogix 1000 and SLC controllers
- Removable, NEMA-style "finger-safe" terminal blocks on controller and I/O, to satisfy worldwide market requirements
- DIN rail or panel mount controller and I/O without additional hardware
- DH485 networking, using the 1761-NET-AIC
- DeviceNet compatibility, using the 1761-NET-DNI
- DF1 Full-Duplex, Half-Duplex slave for SCADA-based applications
- Ethernet and ControlNet connectivity through a wide range of bridge products
- UL and C-UL (Canada) Listed, and CE certified

AB Parts

MicroLogix 1500 Programmable Controllers (Bulletin 1764)

Use the **H1** discount schedule for the following:

Description	Catalog Number	Price (\$ US)
Processor Unit (must select one of the following base units in addition to the processor unit)	1764-LSP	225
Base Units:		
AC Powered, 12 AC IN / 12 Relay Out	1764-24AWA	475
AC Powered, 12 DC IN / 12 Relay Out	1764-24BWA	475
24V DC Powered, 16 DC IN / 6 Relay and 6 FET Out	1764-28BXB	475
Accessories:		
Data Access Tool	1764-DAT	125
Memory Module	1764-MM1	115
Real Time Module	1764-RTC	50
Memory Module with Real Time Clock	1764-MM1RTC	135

Compact Input / Output Modules (Bulletin 1769)

Use the **H5** discount schedule for the following:

Description	Catalog Number	Price (\$ US)
Discrete Inputs		
16-point 120 Vac Input Module	1769-IA16	225
16-point 24 Vdc Sink/Source Input	1769-IQ16	180
12-point 240 Vac Input	1769-IM12	190
Discrete Outputs		
8-point 120/240 Vac Output	1769-OA8	215
16-point 24 Vdc Sourcing Output	1769-OB16	220
16-point 24 Vdc Sinking Output	1769-OV16	220
8-point Vac/Vdc Relay Output	1769-OW8	170
Combination Discrete		
Combination Module, 6-point 24 Vdc Sink/Source Input, 4-point Vac/Vdc Relay Output	1769-IQ6XOW4	180
Analog Inputs (available in June, 1999)		
4 Channel Analog Current/Voltage Input	1769-IF4	410
Analog Outputs (available in June, 1999)		
2 Channel Analog Current/Voltage Output	1769-OF2	410
End Caps		
Right End Cap Terminator (One required per system when using Compact expansion I/O)	1769-ECR	25

Documentation

Description	Catalog Number	Price (\$ US)
MicroLogix™ 1500 Programmable Controllers User Manual	1764-6.1	30 (H1 Discount)
MicroLogix™ 1500 Programmable Controllers Base Unit Installation Instructions	1764-5.1	Included with product
MicroLogix™ 1500 Processor Installation Instructions	1764-5.2	Included with product
MicroLogix™ 1500 Data Access Terminal Installation Instructions	1764-5.3	Included with product
MicroLogix™ 1500 Memory Module and/or Real Time Clock Installation Instructions	1764-5.4	Included with product
Compact™ 1769-IA16 120V ac Input Module Installation Instructions	1769-5.1	Included with product
Compact™ 1769-OW8 AC/DC Relay Output Module Installation Instructions	1769-5.2	Included with product
Compact™ 1769-IQ16 Solid State 24V dc Sink/Source Input Module Installation Instructions	1769-5.3	Included with product
Compact™ 1769-OB16 Solid State 24V dc Source Output Module Installation Instructions	1769-5.4	Included with product
Compact™ 1769-OB16 100 to 240V ac Input Module Installation Instructions	1769-5.5	Included with product
Compact™ 1769-OV16 Solid State 24V dc Sink Output Module Installation Instructions	1769-5.6	Included with product
Compact™ 1769-IQ6XOW4 24V dc Sink/Source Input & AC/DC Relay Output Module Installation Instructions	1769-5.7	Included with product
Compact™ 1769-IM12 240V ac Input Module Installation Instructions	1769-5.8	Included with product
Compact™ 1769-ECR Right End Cap/Terminator Installation Instructions	1769-5.9	Included with product

Considerations for System Expansion

The following example is provided to illustrate system expansion validation. The table below accounts for the amount of 5V dc and 24V dc current consumed by controller, expansion I/O, and user supplied equipment. Use the worksheet on the next page to validate your specific configuration. Current consumed by the Base Units, Memory Modules, Real Time Clock Modules, and the Right End Cap Terminator (for systems utilizing Compact I/O expansion) has already been factored into the calculations below.

Catalog Number		Device Current Requirements @ 5V dc (in mA)	Device Current Requirements @ 24V dc (in mA)	5V dc Current Consumed	24V dc Current Consumed
1764-LSP		300	0	300	0
1764-DAT*		350	0	350	0
1761-NET-AIC*		0	120**	0	120**
Subtotal:				650	120**

Catalog Number	Number of Modules (Can not exceed eight total)	Device Current Requirements @ 5V dc (in mA)	Device Current Requirements @ 24V dc (in mA)	Calculated 5V dc Current = # of Modules x 5V current	Calculated 24V dc Current = # of Modules x 24V current
1769-IQ16	1	115	0	115	0
1769-OB16	1	200	0	200	0
1769-IA16		115	0		
1769-OW8	2	125	100	250	200
1769-OA8		145	0		
1769-IM12		100	0		
1769-OV16		200	0		
1769-IQ6XOW4	1	105	50	105	50
1769-IF4		TBD	TBD		
1769-OF2		TBD	TBD		
Total Modules	5			670	250

*These are optional accessories. Current is consumed only if the accessory is installed.

**Current for the 1761-NET-AIC may be supplied from the controller communications port, as seen in this example, or from an external 24V dc source. No current is consumed from the controller when an external source is used.

NOTE: 1769-ECR (Right End Cap Terminator) is needed for any system using Compact expansion I/O.

For validating systems using 1764-24AWA and 1764-28BXB Base Units:		
Total 5V current (can not exceed 2250 mA)	Total 5V dc Current Consumed	Total 24V dc Current Consumed
Total 24V current from sources above (can not exceed 400 mA)	650 + 670 =	120 + 250 =
	1320	370
For 1764-24AWA and 1764-28BXB base units, total power can not exceed 16 watts max :	1320mA x 5V + 370mA x 24V = 15,480 milliwatts = 15.5 watts	

For validating systems using 1764-24BWA Base Units:		
User 24V Sensor Current for applications with DC input sensors (1764-24BWA base units only) 400 mA max.	User 24V Sensor Current	
User 24V Sensor Current Subtotal (sum of all sensors):	150	
Total 5V current from all sources (can not exceed 2250 mA)	Total 5V dc Current Consumed	Total 24V dc Current Consumed
Total 24V current from controllers, accessories and expansion I/O above (can not exceed 400 mA)	650 + 670 =	120 + 250 =
	1320	370
Total User 24V Sensor Current (can not exceed 400 mA)	0	150
For 1764-24BWA base units, total power can not exceed 22 watts	1320mA x 5V + 370mA x 24V + 150mA x 24 = 19,080 milliwatts = 19.1 watts	

AB Parts

System Expansion Worksheet

Refer to the example on the preceding page for an illustration of system expansion validation. Use the worksheet below to account for the amount of 5V dc and 24V dc current consumed by your controller, expansion I/O, and user supplied equipment. Current consumed by the Base Units, Memory Modules, Real Time Clock Modules, and the Right End Cap Terminator (for systems utilizing Compact I/O expansion) has already been factored into the calculations below. A system is valid if the current and power requirements are satisfied.

Catalog Number	Device Current Requirements @ 5V dc (in mA)	Device Current Requirements @ 24V dc (in mA)	5V dc Current Consumed	24V dc Current Consumed	
1764-LSP	300	0			
1764-DAT*	350	0			
1761-NET-AIC*	0	120**			
Subtotal:					
Catalog Number	Number of Modules (Can not exceed eight total)	Device Current Requirements @ 5V dc (in mA)	Device Current Requirements @ 24V dc (in mA)	Calculated 5V dc Current = # of Modules x 5V current	Calculated 24V dc Current = # of Modules x 24V current
1769-IQ16		115	0		
1769-OB16		200	0		
1769-IA16		115	0		
1769-OW8		125	100		
1769-OA8		145	0		
1769-IM12		100	0		
1769-OV16		200	0		
1769-IQ6XOW4		105	50		
1769-IF4		TBD	TBD		
1769-OF2		TBD	TBD		
Total Modules		Subtotal:			

*These are optional accessories. Current is consumed only if the accessory is installed.

**Current for the 1761-NET-AIC may be supplied from the controller communications port, as seen in this example, or from an external 24V dc source. No current is consumed from the controller when an external source is used.

NOTE: 1769-ECR (Right End Cap Terminator) is needed for any system using Compact expansion I/O.

For validating systems using 1764-24AWA and 1764-28BXB Base Units:		
Total 5V current (can not exceed 2250 mA) Total 24V current from sources above (can not exceed 400 mA)	Total 5V dc Current Consumed	Total 24V dc Current Consumed
For 1764-24AWA and 1764-28BXB base units, total power can not exceed 16 watts max :		

For validating systems using 1764-24BWA Base Units:		
User 24V Sensor Current for applications with DC input sensors (1764-24BWA base units only) 400 mA max. User 24V Sensor Current Subtotal (sum of all sensors):	User 24V Sensor Current	
Total 5V current from all sources (can not exceed 2250 mA) Total 24V current from controllers, accessories and expansion I/O above (can not exceed 400 mA) Total User 24V Sensor Current (can not exceed 400 mA)	Total 5V dc Current Consumed	Total 24V dc Current Consumed
For 1764-24BWA base units, total power can not exceed 22 watts		