



Allen-Bradley

Technical Data

MicroLogix 1200 Programmable Controllers

Bulletin 1762

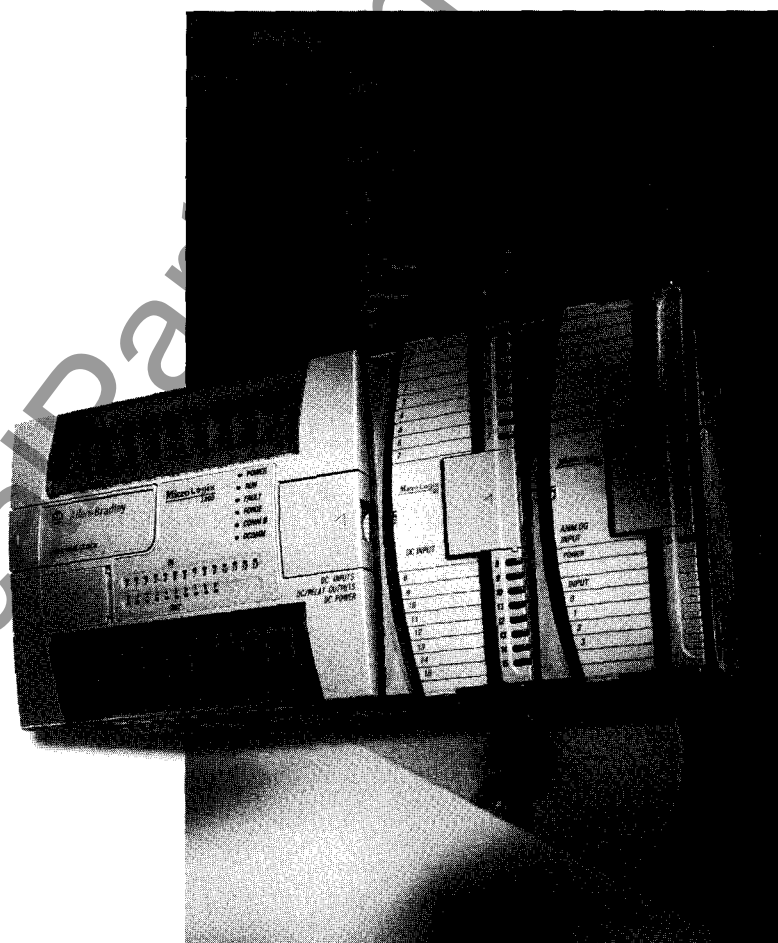
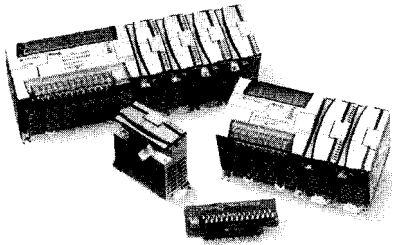


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MicroLogix 1200 System



MicroLogix 1200 controllers provide the computing power and flexibility to solve a variety of applications utilizing the proven MicroLogix and SLC family architecture.

Available in 24 and 40-point versions, the I/O count can be expanded using rackless I/O modules resulting in lower system cost and reduced parts inventory.

A field-upgradable flash operating system ensures you will always be up-to-date with the latest features, without having to replace hardware. The controller can be easily updated with the latest firmware via a web site download.

The MicroLogix 1200 controller utilizes Rockwell Software RSLogix 500 programming software and shares a common instruction set with the MicroLogix 1000, MicroLogix 1500 and SLC families of controllers.

Advantages

- Large 6K memory to solve a variety of applications
- Field-upgradable flash operating system
- High performance expansion I/O options (up to 6 modules depending on power budget)
- Advanced communications options including peer-to-peer and SCADA/RTU networks, DH-485, DeviceNet, and Ethernet
- Communications toggle push button
- Data file download protection prevents critical user data from being altered via communications
- Two built-in analog trim potentiometers
- Optional real-time clock
- Optional memory module
- 20 kHz high-speed counter, featuring 8 modes of operation
- One high-speed output that can be configured as 20 kHz PTO (Pulse Train Output) or as PWM (Pulse Width Modulated) outputs
- Four high-speed latching (pulse-catch) inputs
- 32-bit signed integer math
- Floating point data file
- Built-in PID capabilities
- ASCII read/write capability
- Four event interrupt inputs (EII)
- 1 ms high-resolution timers
- 1 ms selectable timed interrupt (STI)
- Finger-safe terminal blocks meet global safety standards
- Removable terminal blocks on 40-point controllers allow pre-wiring
- Regulatory agency certifications for world-wide market (CE, C-Tick, UL, c-UL, including Class I Division 2 Hazardous Location)

MicroLogix 1200 Controllers

Controller Specifications

The following tables summarize the specifications for MicroLogix 1200 controllers.

Table 1 Controller General Specifications

Specification	All 1762 Controllers
Memory Size and Type	6K flash memory: 4K user program, 2K user data
Data Elements	configurable, user-defined file structure, 2K max. data size
Throughput	2 ms (for a typical 1K word user program) ⁽¹⁾

(1) A typical user program contains bit, timer, counter, math and file instructions.

Figure 2 Catalog Number Detail

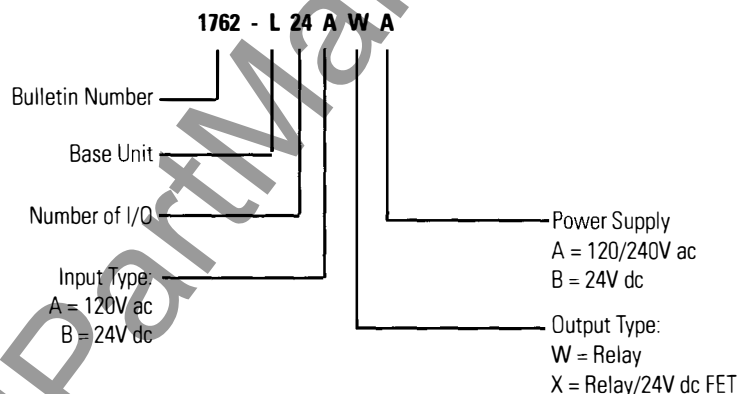


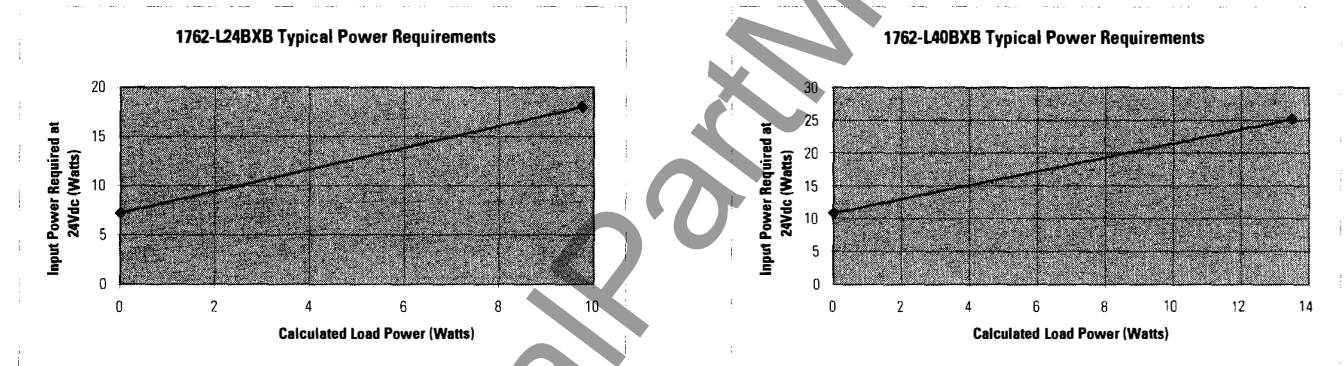
Table 3 Controller Power and I/O Configuration

Line Power	Inputs	Outputs	High Speed I/O	Catalog Number
120/240V ac	(14) 120V ac	(10) Relay	n/a	1762-L24AWA
120/240V ac	(24) 120V ac	(16) Relay	n/a	1762-L40AWA
120/240V ac	(10) Standard 24V dc (4) Fast 24V dc	(10) Relay	(4) 20 kHz input	1762-L24BWA
120/240V ac	(20) Standard 24V dc (4) Fast 24V dc	(16) Relay	(4) 20 kHz input	1762-L40BWA
24V dc	(10) Standard 24V dc (4) Fast 24V dc	(5) Relay (4) Standard 24V dc FET (1) Fast 24V dc FET	(4) 20 kHz input (1) 20 kHz output	1762-L24BXB
24V dc	(20) Standard 24V dc (4) Fast 24V dc	(8) Relay (7) Standard 24V dc FET (1) Fast 24V dc FET	(4) 20 kHz input (1) 20 kHz output	1762-L40BXB

Table 4 Controller Power Supply Specifications

Specification		1762-					
		L24AWA	L40AWA	L24BWA	L40BWA	L24BXB	L40BXB
Power Supply Voltage		85 to 265V ac at 47 to 63 Hz				20.4 to 26.4V dc Class 2 SELV	
Power Consumption		68 VA	80VA	70 VA	82 VA	27W	40W
Power Supply Inrush Current (max.)		120V ac: 25A for 8 ms 240V ac: 40A for 4 ms				24V dc: 15A for 20 ms	24V dc: 15A for 30 ms
Maximum Load Current ⁽¹⁾	5V dc	400 mA	600 mA	400 mA	600 mA	400 mA	600 mA
	24V dc	350 mA	500 mA	350 mA	500 mA	350 mA	500 mA
Maximum Load Power		10.4W	15W	12W	16W	10.4W	15W
24V dc Sensor Power		n/a	n/a	250 mA, 400 μ F capacitance max.	400 mA, 400 μ F capacitance max.	n/a	n/a

(1) See System Expansion Calculations on page 21 for an example system validation worksheet to calculate expansion I/O power usage.

Figure 5 DC Input Power Requirements for BXB Units**Table 6 Controller Input Specifications**

Specification	1762-L24AWA 1762-L40AWA	1762-L24BWA, -L24BXB, -L40BWA, -L40BXB	
		Inputs 0 through 3	Inputs 4 and higher
On-State Voltage Range	79 to 132V ac 47 Hz to 63 Hz	14 to 26.4V dc at 55°C (131°F) 14 to 30.0V dc at 30°C (86°F)	10 to 26.4V dc at 55°C (131°F) 10 to 30.0V dc at 30°C (86°F)
Off-State Voltage Range	0 to 20V ac	0 to 5V dc	
Operating Frequency	n/a	0 Hz to 20 kHz	0 Hz to 1 kHz (scan time dependent)
Signal Delay (max.)	ON Delay = 20 ms OFF Delay = 20 ms	standard inputs: selectable from 0.5 to 16 ms high-speed inputs: selectable from 0.025 to 16 ms	
On-State Current:			
Minimum	5.0 mA at 79V ac	2.5 mA at 14V dc	2.0 mA at 10V dc
Nominal	12 mA at 120V ac	7.3 mA at 24V dc	8.9 mA at 24V dc
Maximum	16.0 mA at 132V ac	12.0 mA at 30V dc	12.0 mA at 30V dc
Off-State Leakage Current (max.)	2.5 mA max.	1.5 mA min.	
Nominal Impedance	12K Ω at 50 Hz 10K Ω at 60 Hz	3.3K Ω	2.7K Ω
Maximum Inrush Current	250 mA at 120V ac	n/a	

Table 7 Controller Digital Output Specifications

Specification	1762-		
	L24AWA, L24BWA, L24BXB, L40AWA, L40BWA, L40BXB	L24BXB, -L40BXB	
	Relay	FET Standard Operation	FET High-Speed Operation (Output 2 only)
Operating Voltage Range	5 to 125V dc 5 to 264V ac	21.6 to 27.6V dc	21.6 to 27.6V dc
Continuous Current per Point (max.)	See Table 8, Relay Contact Rating.	See Figure 9, FET Standard Outputs Continuous Current per Point (max.).	100 mA
Continuous Current per Common (max.)	8.0A	7.5A for L24BXB 8.0A for L40BXB	
Continuous Current per Controller (max.)	30A or total of per-point loads, whichever is less at 150V max. 20A or total of per-point loads, whichever is less at 240V max.		
On-State Current (min.)	10.0 mA	1 mA	10.0 mA
Off-State Leakage Current (max.)	0 mA	1 mA	
Signal Delay (max.) - resistive load	ON Delay = 10 ms OFF Delay = 10 ms	ON Delay = 0.1 ms OFF Delay = 1.0 ms	ON Delay = 6 μ s OFF Delay = 18 μ s
Surge Current per Point (peak)	n/a	4A for 10 ms ⁽¹⁾	

(1) Repeatability is once every 2 seconds at +55°C (+131°F), once every 1 second at +30°C (+86°F).

Table 8 Relay Contact Rating

Maximum Voltage	Amperes		Amperes Continuous	Voltamperes	
	Make	Break		Make	Break
240V ac	7.5A	0.75A	2.5A	1800 VA	180 VA
120V ac	15A	1.5A			
125V dc	0.22A ⁽¹⁾		1.0A	28 VA	
24V dc	1.2A ⁽¹⁾		2.0A		

(1) For dc voltage applications, the make/break ampere rating for relay contacts can be determined by dividing 28 VA by the applied dc voltage. For example, 28 VA/48V dc = 0.58A. For dc voltage applications less than 48V, the make/break ratings for relay contacts cannot exceed 2A. For dc voltage applications greater than 48V, the make/break ratings for relay contact cannot exceed 1A.

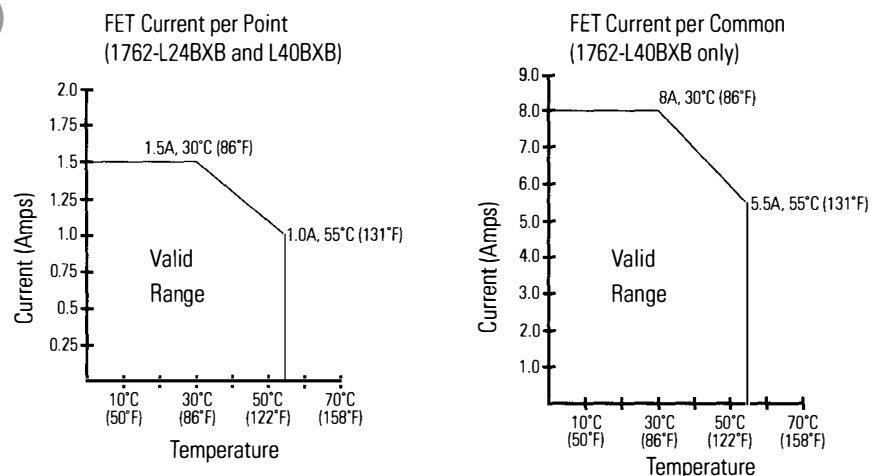
Figure 9 FET Standard Outputs Continuous Current per Point (max.)

Table 10 Environmental Specifications

Specification	1762 Controllers
Operating Temperature	0°C to +55°C (+32°F to +131°F)
Storage Temperature	-40°C to +85°C (-40°F to +185°F)
Operating Humidity	5 to 95% non-condensing
Vibration	Operating: 10 to 500 Hz, 5G, 0.030 in. max. peak-to-peak, 2 hours each axis Relay Operation: 1.5G
Shock	Operating: 30G; 3 pulses each direction, each axis Relay Operation: 7G Non-Operating: 50G panel mounted (40G DIN Rail mounted); 3 pulses each direction, each axis
Agency Certification	 UL Listed Industrial Control Equipment  UL Listed Industrial Control Equipment for use in Canada  UL Listed Industrial Control Equipment for use in Class I, Division 2 Hazardous Locations Groups A, B, C, D  Marked for all applicable directives  Marked for all applicable acts N223
Electrical/EMC	The controller has passed testing at the following levels: • EN 61000-4-2: 4 kV contact, 8 kV air, 4 kV indirect • EN 61000-4-3: 10V/m, 80 to 1000 MHz, 80% amplitude modulation, +900 MHz keyed carrier • EN 61000-4-4: 2 kV, 5 kHz; communications cable: 1 kV, 5 kHz • EN 61000-4-5: communications cable 1 kV galvanic gun I/O: 2 kV CM (common mode), 1 kV DM (differential mode) AC Power Supply: 4 kV CM (common mode), 2 kV DM (differential mode) DC Power Supply: 500V CM (common mode), 500V DM (differential mode) • EN 61000-4-6: 10V, communications cable 3V

Memory and Real-Time Clock Modules



The controller is shipped with a memory module port cover in place. You can order the memory module, real-time clock, or combination module to suit your needs.

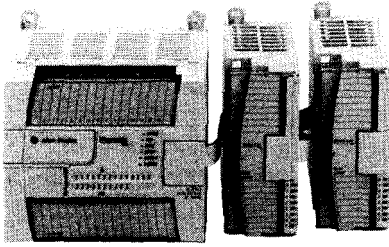
Real-Time Clock (1762-RTC)

- Allows for time/date scheduling
- Self-contained battery provides long-term time base

Memory Modules (1762-MM1, 1762-MM1RTC)

- User program and data back-up
- Program compare
- Data file protection
- Memory module write protection
- Removal/insertion under power
- Memory back-up and real-time clock combination module

Expansion I/O



MicroLogix 1200 I/O expansion modules provide superior functionality at a low cost. With a variety of modules, they complement and extend the capabilities of the MicroLogix 1200 controllers by maximizing flexibility of the I/O count and type.

The MicroLogix 1200 system design allows modules to be either DIN rail or panel mounted. The DIN latches and screw mounting holes are an integral part of the package design.

Controller I/O can be expanded using up to 6 expansion modules per controller (depending on power budget).

Advantages

- Rackless design, eliminating added system costs and inventory
- Small footprint with high density I/O, shrinking panel space requirements
- Integral high-performance I/O bus
- Software keying to prevent incorrect positioning within the system
- Feature-rich I/O functionality addresses a wide range of applications
- AC/DC relay, 24V dc, 120V ac, and 240V ac voltages

Available Modules

Table 11 1762 Expansion I/O Modules

Catalog Number	Descriptions
1762-IA8	8-point 120V ac input
1762-IQ8	8-point sink/source 24V dc input
1762-IQ16	16-point sink/source 24V dc input
1762-OA8	8-point AC triac output
1762-OB8	8-point sourcing 24V dc output
1762-OB16	16-point sourcing 24V dc output
1762-OW8	8-point AC/DC relay output
1762-OW16	16-point AC/DC relay output
1762-IF4	4-channel analog voltage/current input
1762-IF2OF2	2-channel analog voltage/current input 2-channel analog voltage/current output

Analog Modules Specifications

Table 14 Analog Expansion Modules Common Specifications

Specification	1762-IF4	1762-IF20F2
Bus Current Draw (max.)	40 mA at 5V dc, 50 mA at 24V dc	40 mA at 5V dc, 105 mA at 24V dc
Analog Normal Operating Range	Voltage: -10 to +10V dc, Current: 4 to 20 mA	Voltage: 0 to 10V dc, Current: 4 to 20 mA
Full Scale ⁽¹⁾ Analog Ranges	Voltage: -10.5 to +10.5V dc, Current: -21 to +21 mA	Voltage: 0 to 10.5V dc, Current: 0 to 21 mA
Resolution	15 bits	12 bits (unipolar)
Repeatability ⁽²⁾	±0.1%	±0.1%
Input and Output Group to System Isolation	30V ac/30V dc rated working voltage ⁽³⁾ (N.E.C. Class 2 required) (IEC Class 2 reinforced insulation) type test: 500V ac or 707V dc for 1 minute	

(1) The over- or under-range flag is set when the normal operating range is exceeded. The module continues to convert the analog input up to the maximum full scale range.

(2) Repeatability is the ability of the input module to register the same reading in successive measurements for the same input signal.

(3) Rated working voltage is the maximum continuous voltage that can be applied at the terminals with respect to earth ground.

Table 15 Analog Expansion Input Modules Specifications

Specification	1762-IF4	1762-IF20F2
Number of Inputs	4 differential (bipolar)	2 differential (unipolar)
Update Time (typical)	130, 250, 290, 450, 530 ms (selectable)	2.5 ms
A/D Converter Type	Successive approximation	Successive approximation
Common Mode Voltage Range ⁽¹⁾	±27V	±27V
Common Mode Rejection ⁽²⁾	> 55 dB at 50 and 60 Hz	> 55 dB at 50 and 60 Hz
Non-linearity (in percent full scale)	±0.1%	±0.1%
Typical Overall Accuracy ⁽³⁾	±0.3% full scale at 0 to 55°C (0 to 131°F) ±0.24% full scale at 25°C (77°F)	±0.5% full scale at 0 to 55°C (0 to 131°F) ±0.3% full scale at 25°C (77°F)
Input Impedance	Voltage Terminal: 200K Ω Current Terminal: 275 Ω	Voltage Terminal: 200K Ω Current Terminal: 250 Ω
Current Input Protection	±32 mA	±32 mA
Voltage Input Protection	±30V	±30V
Channel Diagnostics	Over or under range or open circuit condition by bit reporting for analog inputs.	

(1) For proper operation, both the plus and minus input terminals must be within ±27V of analog common.

(2) $V_{cm} = 1 V_{pk-pk}$ AC

(3) $V_{cm} = 0$ (includes offset, gain, non-linearity and repeatability error terms)

Table 16 Analog Expansion Output Module Specifications

Specification	1762-IF20F2
Number of Outputs	2 single-ended (unipolar)
Update Time (typical)	4.5 ms
D/A Converter Type	Resistor string
Resistive Load on Current Output	0 to 500 Ω (includes wire resistance)
Load Range on Voltage Output	> 1K Ω
Reactive Load, Current Output	< 0.1 mH
Reactive Load, Voltage Output	< 1 μ F
Typical Overall Accuracy ⁽¹⁾	$\pm 1\%$ full scale at 0 to 55°C (0 to 131°F), $\pm 0.5\%$ full scale at 25°C (77°F)
Output Ripple, range 0 to 500 Hz (referred to output range)	< $\pm 0.1\%$
Non-linearity (in percent full scale)	< $\pm 0.5\%$
Open and Short-Circuit Protection	Continuous
Output Protection	± 32 mA

(1) Includes offset, gain, non-linearity and repeatability error terms.

Communications

MicroLogix 1200 Communications Advantages

- Enhanced RS-232 port (includes 24V dc power for network interface devices)
- 300; 600; 1200; 4800; 9600; 19,200 and 38,400 baud rates
- RTS/CTS hardware handshake signals
- Connection to DH-485, DeviceNet and Ethernet networks through the 1761-NET-AIC, 1761-NET-DNI and 1761-NET-ENI interface modules
- Connection to modems for remote communications
- ASCII messaging provides dial-out capability

The MicroLogix 1200 allows you to choose the network that best meets your needs.

Table 17 MicroLogix 1200 Network Options

If your application requires:	Use this network:
• Connection to dial-up modems for remote program maintenance or data collection • Connection to leased-line or radio modems for use in SCADA systems • Remote Terminal Unit (RTU) functions	DF1 Full-Duplex DF1 Half-Duplex Slave
• Plant-wide and cell-level data sharing with program maintenance • Data sharing between 32 controllers • Program upload, download, and monitoring to all controllers • Compatibility with multiple Allen-Bradley HMI devices	DH-485 via the 1761-NET-AIC
• Connection of low-level multi-vendor devices directly to plant floor controllers • Data sharing between 64 devices • Better diagnostics for improved data collection and fault detection • Less wiring and reduced start-up time than traditional, hard-wired systems	DeviceNet via the 1761-NET-DNI
• Program upload/download • Peer-to-peer communication • E-mail communication • 10 base T-port with embedded LEDs	EtherNet/IP via the 1761-NET-ENI
• Connection to modems for remote data collection in a SCADA system • Remote Terminal Unit (RTU) functions	Modbus RTU Slave

The following section provides information about the network interface devices:

- AIC+ Advanced Interface Converter (1761-NET-AIC)
- DNI DeviceNet Interface (1761-NET-DNI)
- ENI Ethernet Interface (1761-NET-ENI)

Network Interface Devices

The network interface devices can be mounted on a panel or DIN rail. See Figure 24 on page 18 for device drawings.

AIC+ Advanced Interface Converter (1761-NET-AIC)

The AIC+ provides an interface to DH-485 networks from an RS-232 port. It can be used with all MicroLogix controllers, SLC 5/03 and higher, and a number of PanelView terminals. *All devices communicating on the network must be using DH-485 protocol. Do not use DH-485 protocol to communicate with modems.*

The AIC+ also provides isolation between all ports for a more stable network and protection for connected devices.

Table 18 DH-485 Network Specifications⁽¹⁾

Specification	1761-NET-AIC
Maximum Number of Nodes	32 per multidrop network
Maximum Length	1219m (4000 ft) per multidrop network

(1) See Table 21, Network Modules Specifications, for more 1761-NET-AIC specifications.

DNI DeviceNet Interface (1761-NET-DNI)

DNI capabilities:

- Peer-to-peer messaging between Allen-Bradley controllers and other devices using the DF1 Full-Duplex protocol
- Programming and on-line monitoring over the DeviceNet network
- With a DNI connected to a modem, you can dial in to any other DNI-controller combination on DeviceNet
- Other DeviceNet products can send explicit (Get or Set) messages with the DNI at any time
- The controller can initiate an explicit message to a UCMM (Unconnected Message Manager) compatible device on DeviceNet

Table 19 DeviceNet Specifications⁽¹⁾

Specification	1761-NET-DNI
Maximum Number of Nodes	64
Maximum Length	500m at 125K baud or 100m at 500K baud
DeviceNet Agency Certification	ODVA conformance 2.0-A12

(1) See Table 21, Network Modules Specifications, for more 1761-NET-DNI specifications.

ENI Ethernet Interface (1761-NET-ENI)

The ENI provides EtherNet/IP connectivity for all MicroLogix controllers and other DF1 Full-Duplex devices. The ENI allows you to easily connect a MicroLogix controller to a new or existing Ethernet network to update/download programs, communicate between controllers, and generate e-mail messages via SMTP (simple mail transport protocol).

Table 20 Ethernet Specifications⁽¹⁾

Specification	1761-NET-ENI
Communication Rate	10 MHz
Connector	10Base-T (RJ45)

(1) See Table 21, Network Modules Specifications, for more 1761-NET-ENI specifications.

AIC+, DNI, and ENI Specifications

Table 21 Network Modules Specifications

Specification	1761-NET-AIC	1761-NET-DNI	1761-NET-ENI
24V dc Power Source Requirements ⁽¹⁾	20.4 to 28.8V dc	11 to 25V dc	20.4 to 26.4V dc
24V dc Current Draw	120 mA	200 mA	100 mA
Inrush Current (max.)	200 mA	400 mA	200 mA
Internal Isolation	500V dc for 1 minute	500V dc for one minute	710V dc for one minute
Operating Temperature	0°C to +60°C (+32°F to +140°F)		(0°C to +55°C (+32°F to +131°F))
Storage Temperature	-40°C to +85°C (-40°F to +185°F)		
Humidity	5% to 95% non-condensing		
Vibration	operating: 10 to 500 Hz, 5.0g, 0.030 in. peak-to-peak, 2 hour each axis	operating: 5 to 2000 Hz, 2.5g, 0.015 in. peak-to-peak, 1 hour each axis non-operating: 5 to 2000 Hz, 5.0g, 0.030 in. peak-to-peak, 1 hour each axis	operating: 10 to 500 Hz, 5.0g, 0.030 in. peak-to-peak, 2 hour each axis
Shock	operating: 30g, ± 3 times each axis non-operating: 50g, ± 3 times each axis	operating: 30g, ± 3 times each axis non-operating: 50g, ± 3 times each axis	operating: 30g, ± 3 times each axis non-operating: 35g (DIN rail mount) 50g (panel mount) ± 3 times each axis
Agency Certification	 UL Listed Industrial Control Equipment UL Listed Industrial Control Equipment for use in Canada UL Listed Industrial Control Equipment for use in Class I, Division 2 Hazardous Locations Groups A, B, C, D  Marked for all applicable directives  Marked for all applicable acts N223		

(1) When the device is connected to a MicroLogix controller, power is provided by the MicroLogix controller's communication port.

Programming Instructions

The MicroLogix 1200 has the range of functionality necessary to address diverse applications. The controller uses the following types of instructions:

- Basic Instructions
- Comparison Instructions
- Data Instructions
- Communication Instruction, including ASCII
- Math Instructions
- Program Flow Control Instructions
- Application Specific Instructions
- High-Speed Counter Instruction
- High-Speed PTO (Pulse Train Output) and PWM (Pulse Width Modulated) Instructions

Programming Software

The RSLogix 500 ladder logic programming package helps you maximize performance, save project development time, and improve productivity. This product has been developed to operate on Windows® operating systems. RSLogix 500 can be used for programming both the SLC 500 and MicroLogix controller families.

Table 22 RSLogix 500 Selection Chart

Catalog Number	Description
9324-RL0300ENE	RSLogix 500 Standard Edition Programming Software for SLC 500 and MicroLogix controller families. (CD-ROM)
9324-RL0100ENE	RSLogix 500 Starter Edition Programming Software for MicroLogix controller families. (CD-ROM)
9324-RL0700NXENE	RSLogix 500 Professional Edition. CD-ROM also includes RSLogix Emulate 500, RSNetworkx for DeviceNet and RSNetworkx for ControlNet.

Network and Programming Cables

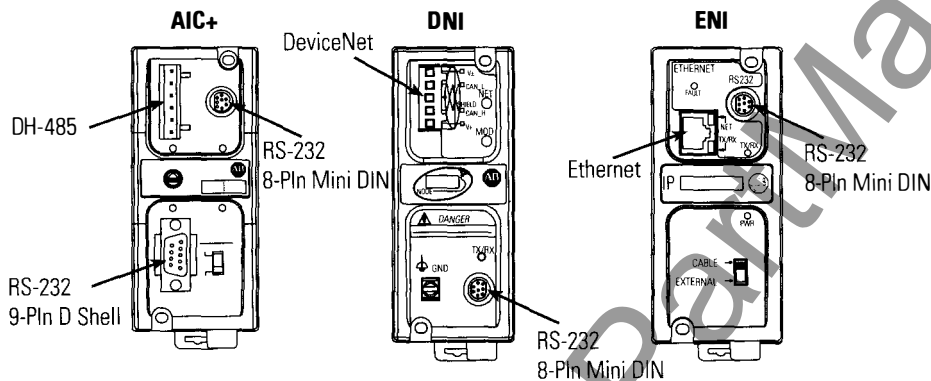
Use the communication cables listed below with MicroLogix 1200 controllers. Cables come in several lengths and connector styles to provide connectivity between MicroLogix controllers and other devices.

MicroLogix 1200 controllers require Series C versions of all 1761 cables.

Table 23 Controller and PC Port Identification

Device	Port
MicroLogix 1200 Controller Communications Port	8-pin Mini DIN
Personal Computer Communications Port	9-Pin D Shell

Figure 24 Network Interface Devices Communication Port Identification



NOTE: The AIC+ is recommended for isolation purposes when the controller and an operator interface device are not using the same power supply.

Table 25 Network Cable Selection Chart

Connectors	Length	Catalog Number	Connectors	Length	Catalog Number
8-pin Mini DIN to 8-pin Mini DIN	0.5m (1.5 ft)	1761-CBL-AM00	8-pin Mini DIN to 9-pin D Shell	0.5m (1.5 ft)	1761-CBL-AP00
8-pin Mini DIN to 8-pin Mini DIN	2m (6.5 ft)	1761-CBL-HM02	8-pin Mini DIN to 9-pin D Shell	2m (6.5 ft)	1761-CBL-PM02
8-pin Mini DIN to 8-pin Mini DIN	5m (16 ft)	2711-CBL-HM05	8-pin Mini DIN to 9-pin D Shell	5m (16 ft)	2711-CBL-PM05
8-pin Mini DIN to 8-pin Mini DIN	10m (32 ft)	2711-CBL-HM10	8-pin Mini DIN to 9-pin D Shell	10m (32 ft)	2711-CBL-PM10
9-pin D Shell to 9-pin D Shell	0.5m (1.5 ft)	1761-CBL-AC00	6-pin Phoenix to RJ45 (DH-485)	3m (10 ft)	1761-CBL-AS03
9-pin D Shell to 9-pin D Shell	3m (10 ft)	1747-CP3	6-pin Phoenix to RJ45 (DH-485)	9m (30 ft)	1761-CBL-AS09

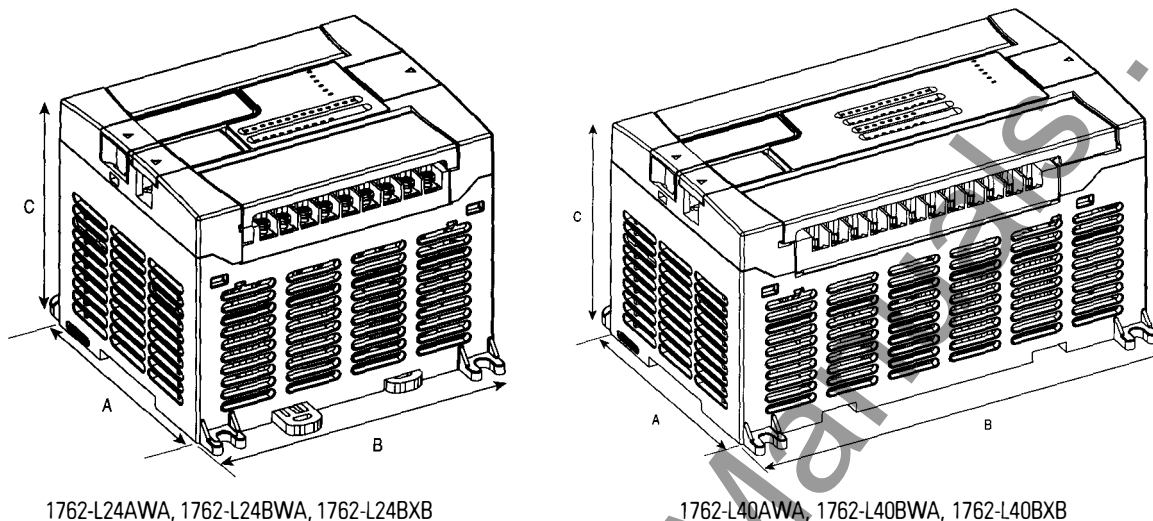
Table 26 Programming Cable Selection Chart

MicroLogix 1000, 1200, and 1500 Channel 0 (8-pin Mini DIN)		MicroLogix 1500 with 1764-LRP Processor Channel 1 (9-pin RS-232)		Programming Device
Catalog Number	Length	Catalog Number	Length	
1761-CBL-PM02	2m (6.5 ft)	1747-CP3	3m (10 ft)	Personal Computer (9-pin D Shell)
1761-CBL-HM02	2m (6.5 ft)	n/a		Hand-Held Programmer (HHP)

Dimensions

Dimensions are in millimeters (inches).

Figure 27 MicroLogix 1200 Controller Dimension Drawing



controller spacing = 50 mm (2 in.) on all sides for adequate ventilation

Table 28 Controller Dimensions

Dimension	1762-L24AWA	1762-L24BWA	1762-L24BXB	1762-L40AWA	1762-L40BWA	1762-L40BXB
A	90 mm (3.5 in.)			90 mm (3.5 in.)		
B	110 mm (4.33 in.)			160 mm (6.30 in.)		
C	87 mm (3.43 in.)			87 mm (3.43 in.)		

Figure 29 1762 Expansion I/O Dimensions

Dimension	Expansion I/O Module
A	90 mm (3.5 in.)
B	40 mm (1.57 in.)
C	87 mm (3.43 in.)

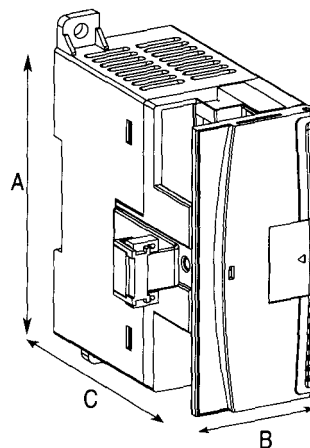
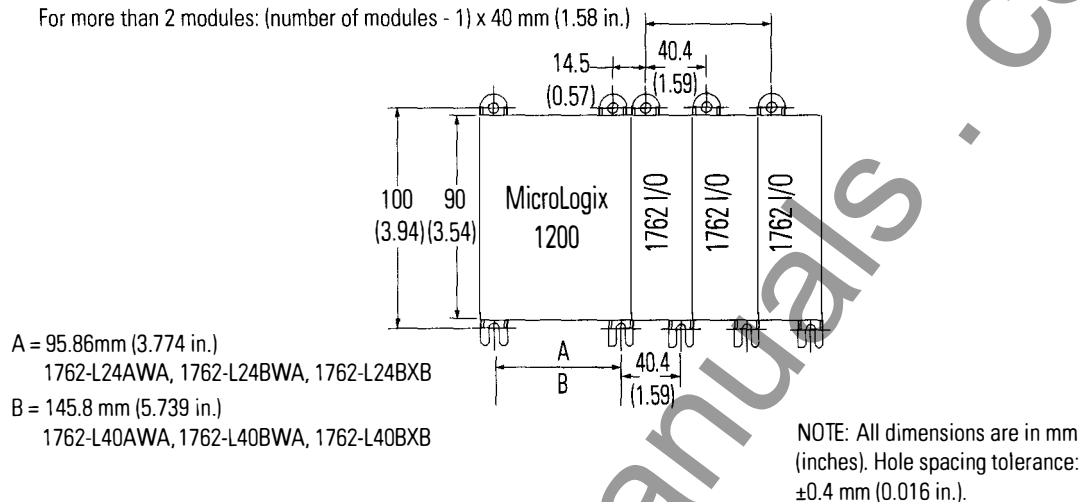
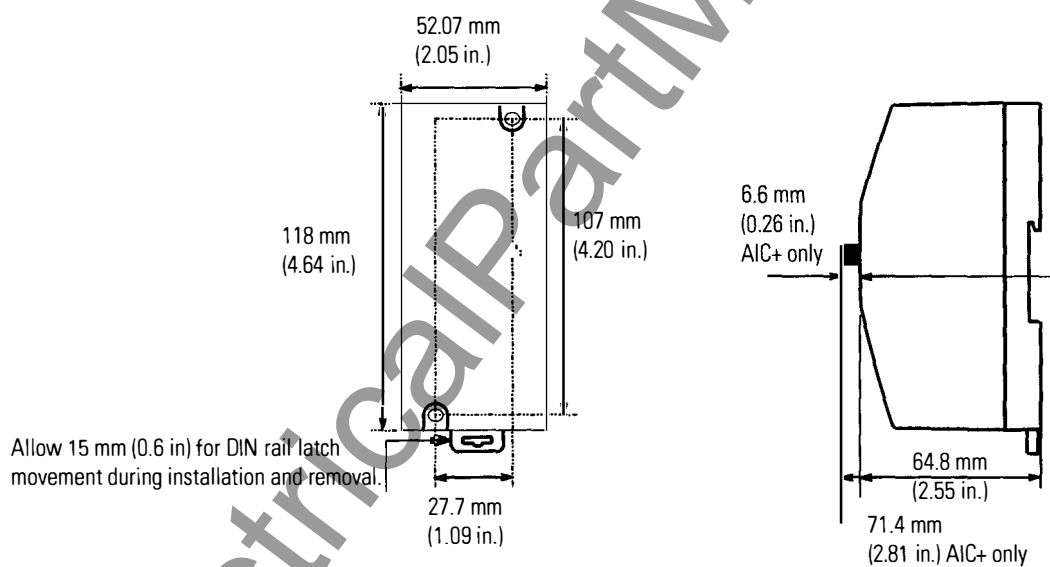


Figure 30 MicroLogix 1200 System Mounting Dimensions

For more than 2 modules: (number of modules - 1) x 40 mm (1.58 in.)

**Figure 31 Network Interface Devices Dimensions**

System Expansion Calculations

A download is also available for system validation. On the Internet, go to <http://www.ab.com/micrologix> and navigate to MicroLogix 1200.

To have a valid system, both current and power requirements must be satisfied. Use the following worksheets to make your calculations.

Table 32 MicroLogix 1200 Power Supply Loading - Calculate System Current

Catalog Number		Bus Current Draw Specification		Calculated Current for System	
		at 5V dc (mA)	at 24V dc (mA)	at 5V dc (mA)	at 24V dc (mA)
1761-NET-AIC ⁽¹⁾		0	120 ⁽¹⁾		
1761-NET-ENI ⁽¹⁾		0	100 ⁽¹⁾		
2707-MVH232 or 2707-MVP232 ⁽¹⁾		0	80 ⁽¹⁾		
Catalog Number	n = Number of Modules (6 maximum)	A	B	n x A	n x B
1762-IA8		50	0		
1762-OA8		115	0		
1762-OB8		115	0		
1762-OB16		175	0		
1762-OW8		80	90		
1762-OW16		120	140		
1762-IQ8		50	0		
1762-IQ16		60	0		
1762-IF4		40	50		
1762-IF20F2		40	105		
TOTAL MODULES:		TOTAL CALCULATED CURRENT:		(C)	(D)
For 1762-L24BWA and 1762-L40BWA only, add sum of any User 24V dc Sensor Current				(E)	

(1) Current for the AIC+ may be supplied by controller communications port or from an external 24V dc source. No current is consumed from the controller when an external source is used. The current for a 2707-MVH232 or 2707-MVP232 MicroView Operator Interface is supplied from the controller communication port, if directly connected.

Table 33 MicroLogix 1200 Maximum Load Current

Catalog Number	Load Current	5V dc	24V dc	User 24V dc Sensor Current
1762-L24AWA 1762-L24BxB	Calculated Value	(C)	(D)	n/a
	MAXIMUM LIMIT	400 mA	350 mA	
1762-L24BWA	Calculated Value	(C)	(D)	(E)
	MAXIMUM LIMIT	400 mA	350 mA	250 mA
1762-L40AWA 1762-L40BxB	Calculated Value	(C)	(D)	n/a
	MAXIMUM LIMIT	600 mA	500 mA	
1762-L40BWA	Calculated Value	(C)	(D)	(E)
	MAXIMUM LIMIT	600 mA	500 mA	400 mA

To verify the Base Unit power supply loading:

1. Use Table 32 to select the components for your system. Do not exceed the MAXIMUM LIMIT for the number of I/O modules.
2. Fill in the current amounts and add up the TOTAL CALCULATED CURRENT.
3. Using Table 33, verify that (C), (D), and (E) do not exceed the MAXIMUM LIMITS. If the MAXIMUM LIMIT is exceeded, you will need to adjust your selections.
4. Use Table 34 to verify that the system is within the power loading limits of the controller.

To use Table 34, fill in the (C), (D), and (E) values where indicated. Then calculate Watts and add up the Total Watts. Verify that Total Watts does not exceed the MAXIMUM POWER LIMIT. If the MAXIMUM POWER LIMIT is exceeded, you will need to adjust your selections.

Table 34 MicroLogix 1200 Maximum Load Power

Catalog Number	5V Power Consumption Calculated Watts			24V Power Consumption Calculated Watts			Calculated Watts (sum of 5V and 24V)	MAXIMUM POWER LIMIT
1762-L24AWA	(C)	x 5V	= W	(D)	x 24V	= W	W	10.4W
1762-L24BxB	(C)	x 5V	= W	(D)	x 24V	= W	W	10.4W
1762-L24BWA	(C)	x 5V	= W	(D)+(E)	x 24V	= W	W	12W
1762-L40AWA	(C)	x 5V	= W	(D)	x 24V	= W	W	15W
1762-L40BxB	(C)	x 5V	= W	(D)	x 24V	= W	W	15W
1762-L40BWA	(C)	x 5V	= W	(D)+(E)	x 24V	= W	W	16W

For More Information

Available Documentation

MicroLogix 1200 user documentation presents information according to the tasks you perform and the programming environment you use. Refer to the table below for information on MicroLogix 1200 publications.

Table 35 Related Publications for MicroLogix 1200 Controllers

Title	Publication Number
MicroLogix™ 1200 Programmable Controllers User Manual	1762-UM001
MicroLogix™ 1200 and MicroLogix™ 1500 Instruction Set Reference Manual	1762-RM001
AIC+ Advanced Interface Converter User Manual	1761-6.4
DeviceNet™ Interface User Manual	1761-6.5
Ethernet Interface User Manual	1761-UM006
Allen-Bradley Programmable Controller Grounding and Wiring Guidelines	1770-4.1

If you would like a technical data for the MicroLogix 1200 or MicroLogix 1500 controllers, refer to the following table.

Table 36 MicroLogix 1000 and 1500 Technical Data Publications

See this Document	Publication Number
MicroLogix™ 1000 Technical Data	1761-TD001
MicroLogix™ 1500 Technical Data	1764-TD001

MicroLogix Downloads

Visit the MicroLogix web site at <http://www.ab.com/micrologix> to learn more about MicroLogix products and download MicroLogix software utilities and manuals. Software utilities are available for configuring the DNI and ENI network interface devices. System validation worksheets are available to determine I/O power usage.

Manuals are available in PDF format. To purchase a printed manual or download a free electronic version, visit us at <http://www.theautomationbookstore.com>. 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.

Rockwell Software Web Site

For more information on Rockwell Software products, such as RSLogix 500, please visit their web site at <http://www.rockwellsoftware.com>.

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