

MicroLogix 1200 Controller



The MicroLogix 1200 controller provides more computing power and flexibility than the MicroLogix 1000 controller to solve a variety of application needs.

Available in 24- and 40-point versions, the I/O count can be expanded by using rackless I/O modules. This results in larger control systems, greater application flexibility and expandability at a lower cost and reduced parts inventory.

A field-upgradable flash operating system that helps to make sure 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 website download.

Advantages for the MicroLogix 1200 Controller

- Large 6 KB memory (4 KB User Program with 2 KB User Data) to solve a variety of applications.
- High performance expansion I/O options (up to six modules depending on current/power budget).
- Four high-speed inputs (for controllers with 24V DC inputs) that can be used individually as latching (pulse-catch) inputs, event interrupts, or alternately combined as one 20 kHz high-speed counter featuring eight modes of operation.
- One high-speed output that can be configured as 20 kHz pulse train output (PTO) or as pulse width modulated (PWM) output (available on controllers with embedded 24V DC outputs).
- One, 1 ms, selectable timed interrupt (STI).
- High-resolution, 1 ms timers.
- The same advanced communication options as the MicroLogix 1000 controller, including peer-to-peer and SCADA/RTU networks, DF1 full-duplex, DF1 half-duplex slave, DH-485, DeviceNet and EtherNet/IP, plus DF1 half-duplex master, Modbus master and slave, and DF1 radio modem protocols.
- ASCII read/write capability.
- An additional Programming/HMI Port, providing connectivity to a DF1 full-duplex compatible device such as an operator interface or programming terminal (MicroLogix 1200R controllers only, catalog number 1762-LxxxxxR).
- Communication toggle pushbutton that allows the controller's Channel 0 port to toggle between user configured communication parameters and factory default settings for an easy means to switch from Modbus RTU or ASCII protocols (which do not support programming) to DF1 full-duplex (to upload/download, monitor, or edit your program), so a programming computer is able to connect to a controller with an unknown or incorrect communication parameter settings for troubleshooting.
- Optional real-time clock, to allow control to be based on actual time of day, day of week, or other calendar related timing.
- Optional memory module, for external program backup, transport and transfer to another controller. Control program and data are securely backed up to internal flash memory when power is not applied.
- Data file download protection prevents critical user data from being altered via program downloads from programming computers or memory modules.
- Two built-in analog trim potentiometers.
- 32-bit signed integer math.
- Floating-point and double integer data file support.
- Built-in PID capabilities.
- 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 1 Division 2 Hazardous Location).

Select Family: MicroLogix 1000, 1200 or 1500 Controller

Review the Features, Programming Instructions, Controller Specifications, and Controller Dimensions to determine which level of MicroLogix controller is required.

Step 1 - Select:

- controller family - based on memory, I/O, added functionality, programming instructions and dimensions
- consider future expansion requirements
- consider requirement for online editing
- consider the need for networked communication

Features

MicroLogix Controllers Feature Comparison Chart

Controller	MicroLogix 1000	MicroLogix 1200/1200R	MicroLogix 1500 1764-LSP, 1764-LRP
Bulletin Number	1761	1762	1764
Memory (in user words) User Program/User Data			
Up to 1 KB	1 KB combined (preconfigured)		
Up to 6 KB		4 KB/2 KB	
Up to 7 KB			3.6 KB/4 KB 1764-LSP
Up to 8 KB			
Up to 14 KB			10 KB/4 KB 1764-LRP
Online editing			
Nonvolatile program and data	EEPROM	Flash	Battery back-up static RAM
Memory Module (for program back-up and transport)	Through hand-held programmer	Optional	Optional
I/O			
Embedded Digital I/O, max	32	40	28
Embedded Analog I/O	Two current and two voltage inputs with one current or voltage output on 20 pt. controllers		
Local Expansion I/O, max	None	96	512
Thermocouple/RTD	None	Expansion	Expansion
Networked Expansion I/O, max	None	None	DeviceNet network using 1769-SDN scanner can own 63 slave devices (such as a 1769-ADN adapter with up to 30 I/O modules per 1769-ADN adapter)
Added Functionality			
Trim Potentiometers		2	2
PID		✓	✓
High Speed Counters (embedded)	One @ 6.6 kHz	One @ 20 kHz	Two @ 20 kHz
High Speed Counters (expansion)			with 1769-HSC counter With two quadrature or four pulse/count @ 1 MHz
Real Time Clock		Optional	Optional
Motion: Pulse Width Modulated		1 @ 20 kHz	2 @ 20 kHz
Motion: Pulse Train Outputs		1 @ 20 kHz	2 @ 20 kHz
Data Access Tool			Optional
Data Logging			48 KB
Recipe Storage			Uses user program memory or 48 KB data logging memory
Floating Point Math		✓	✓
Programming			
Windows - RSLogix 500/Micro Software	✓	✓	✓
Hand-held Programmer	✓		
Communication			

MicroLogix Controllers Feature Comparison Chart

Controller	MicroLogix 1000	MicroLogix 1200/1200R	MicroLogix 1500 1764-LSP, 1764-LRP
Bulletin Number	1761	1762	1764
RS-232 Ports	(1) 8-pin mini DIN	(1) 8-pin mini DIN (1) 8-pin mini DIN Programming/HMI	(1) 8-pin mini DIN (1) 9-pin D-shell
DeviceNet Peer-to-Peer Messaging, slave I/O	With 1761-NET-DNI	With 1761-NET-DNI	With 1761-NET-DNI With 1769-SDN
DeviceNet Scanner			With 1769-SDN
EtherNet/IP	With 1761-NET-ENI or 1761-NET-ENIW	With 1761-NET-ENI or 1761-NET-ENIW	With 1761-NET-ENI or 1761-NET-ENIW
Web Server Capabilities	With 1761-NET-ENIW	With 1761-NET-ENIW	With 1761-NET-ENIW
DH-485	Network with 1761-NET-AIC	Network with 1761-NET-AIC	Network with 1761-NET-AIC
SCADA RTU - DF1 half-duplex slave	✓	✓	✓
SCADA RTU - DF1 radio modem		✓	✓
SCADA RTU - Modbus RTU slave		✓	✓
SCADA RTU - Modbus RTU master		✓	✓
ASCII - Read/Write		✓	✓
Operating Power			
120/240V AC	✓	✓	✓
24V DC	✓	✓	✓
12V DC			
Agency Certifications			
CE, C-Tick, UL, and C-UL (including Class I, Division 2 Hazardous Location)	✓	✓	✓

Programming Instructions

MicroLogix controllers have the range of functionality necessary to address diverse applications. The controllers use the following types of instructions:

- Basic instructions (for example, Examine if On, Examine if Off)
- Data Comparison instructions (for example, Equal, Greater than or Equal, Less than or Equal)
- Data Manipulation instructions (for example, Copy, Move)
- Math instructions (for example, Add, Subtract, Multiply)
- Program Flow Control instructions (for example, Jump, Subroutine)
- Application Specific instructions (for example, Programmable Limit Switch, Sequencer)
- High-speed Counter instruction
- High-speed pulse train output (PTO) and pulse width modulated (PWM) instructions (for MicroLogix 1200 and 1500 controllers only)
- Communication instruction (including ASCII for MicroLogix 1200 and 1500 controllers only)
- Recipe instruction (MicroLogix 1500 controllers only)
- Data Logging instruction (MicroLogix 1500 1764-LRP processor only)

Controller Specifications

Controller General Specifications

Attribute	MicroLogix 1000 (Bulletin 1761)	MicroLogix 1200 (Bulletin 1762)	MicroLogix 1500 (Bulletin 1764)
Memory Size and Type	1 KB EEPROM (approximately 737 instruction words, 437 data words)	6 KB flash memory: 4 KB user program, 2 KB user data	1764-LSP processor: 7 KB user memory (total user program plus data) 1764-LRP processor: 14 KB user memory (total user program plus data)
Data Elements	512 internal bits, 40 timers, 32 counters, 16 control files, 105 integer files, 33 diagnostic status	configurable, user-defined file structure, 2 KB max data size	configurable, user-defined file structure, 4 KB max data size
Throughput	1.5 ms (for a typical 500-instruction program) ⁽¹⁾	2 ms (for a typical 1 KB word user program) ⁽²⁾	1 ms (for a typical 1 KB word user program) ⁽²⁾

(1) A typical program contains 360 contacts, 125 coils, 7 timers, 3 counters, and 5 comparison instructions.

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

Environmental Specifications and Certifications

Attribute	1761 Controllers	1762 Controllers	1764 Controllers
Operating Temperature	Horizontal mounting: 0...55 °C (32...131 °F) Vertical mounting ⁽¹⁾ : 0 °C...45 °C (32 °F...113 °F) for digital I/O, 0 °C...40 °C (32 °F...104 °F) for analog I/O	0...55 °C (32...131 °F)	0...55 °C (32...131 °F)
Storage Temperature	-40...85 °C (-40...185 °F)	-40...85 °C (-40...185 °F)	-40...85 °C (-40...185 °F) ⁽²⁾
Relative Humidity	5...95%, noncondensing	5...95%, noncondensing	5...95%, noncondensing
Vibration	Operating: 5 Hz...2 kHz, 0.381 mm (0.015 in.) peak-to-peak, 2.5 g panel mounted ⁽³⁾ , 1 hr per axis Nonoperating: 5 Hz...2 kHz, 0.762 mm (0.030 in.) peak-to-peak, 5 g, 1 hr per axis	10...500 Hz, 5 g, 0.030 in. max peak-to-peak, 2 hours each axis (Relay Operation: 1.5 g)	10...500 Hz, 5 g, 0.030 in. max peak-to-peak (Relay Operation: 2 g)
Shock, Operating	10 and 16 Point Controllers: 10 g peak acceleration (7.5 g DIN rail mounted) (11 ± 1 ms duration) 3 times each direction, each axis 32 Point and Analog Controllers: 7.5 g peak acceleration (5.0 g DIN rail mounted) (11 ± 1 ms duration) 3 times each direction, each axis	30 g; 3 pulses each direction, each axis (Relay Operation: 7 g)	without Data Access Tool installed: 30 g panel mounted (15 g DIN Rail mounted) Relay operation: 7.5 g panel mounted (5 g DIN Rail mounted) with Data Access Tool installed: 20 g panel mounted (15 g DIN Rail mounted) Relay operation: 7.5 g panel mounted (5 g DIN Rail mounted)

Environmental Specifications and Certifications

Attribute	1761 Controllers	1762 Controllers	1764 Controllers
Shock, Nonoperating	10 and 16 Point Controllers: 20g peak acceleration (11 ± 1 ms duration), 3 times each direction, each axis 32 Point and Analog Controllers: 20g peak acceleration (11 ± 1 ms duration), 3 times each direction, each axis	50 g panel mounted (40 g DIN Rail mounted); 3 pulses each direction, each axis	without Data Access Tool installed: 40 g panel mounted (30 g DIN Rail mounted) with Data Access Tool installed: 30 g panel mounted (20 g DIN Rail mounted)
Agency Certification	<ul style="list-style-type: none"> • UL Listed Industrial Control Equipment for use in Class 1, Division 2, Hazardous Locations, Groups A, B, C, D • C-UL Listed Industrial Control Equipment for use in Canada • CE marked for all applicable directives • C-Tick marked for all applicable acts 		
Electrical/EMC	The controller has passed testing at the following level		
ESD Immunity	EN 61000-4-2 8 kV	EN 61000-4-2 4 kV contact, 8 kV air, 4 kV indirect	
Radiated Immunity			
Radiated RF Immunity	EN 61000-4-3 10 V/m, 27...1000 MHz, 3 V/m, 87...108 MHz, 174...230 MHz, and 470...790 MHz	EN 61000-4-3 10 V/m, 80...1000 MHz, 80% amplitude modulation, +900 MHz keyed carrier	
Electronic Fast Transient/Burst (EFT/B) Immunity	EN 61000-4-4 Power Supply, I/O: 2 kV Communication: 1 kV	EN 61000-4-4 Power Supply, I/O: 2 kV, 5 kHz Communication Cable: 1 kV, 5 kHz	
Surge Transient Immunity	EN 61000-4-5 Communication: 1 kV galvanic gun I/O: 2 kV CM (Common mode), 1 kV DM (Differential mode) AC Power Supply: 4 kV CM (Common mode), 1 kV DM (Differential mode)	EN 61000-4-5 Communication: 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)	
Conducted RF Immunity	EN 61000-4-6 Power Supply, I/O: 10V, 150 kHz...30 MHz Communication Cable 3V	EN 61000-4-6 Power Supply, I/O: 10V Communication Cable 3V	

(1) DC input voltage derated linearly from 30 °C (86 °F) (30...26.4V).

(2) Recommended storage temperature for maximum battery life (5 years typical with normal operating/storage conditions) of Real-time Clock modules is -40...40 °C (-40...104 °F). Battery life can be significantly shorter at elevated temperatures. Applies to 1762-RTC, 1762-MM1RTC, 1764-RTC, 1764-MM1RTC, and 1764-MM2RTC devices.

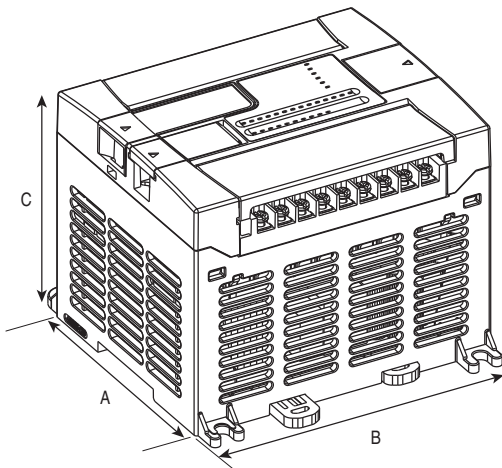
(3) DIN rail mounted controller is 1 g.

MicroLogix 1200 Controller

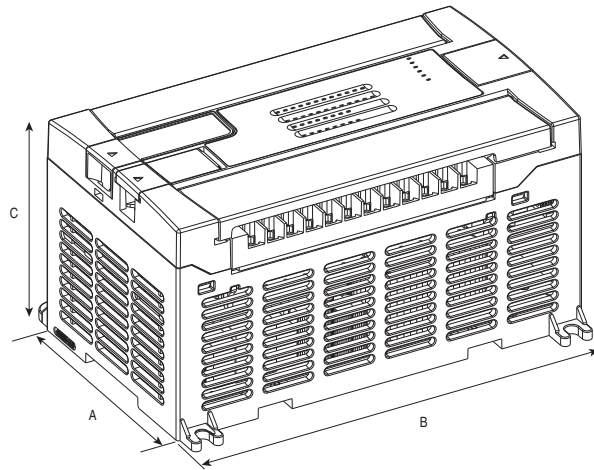
Dimensions are in millimeters (inches).

Controller Spacing = 50 mm (2 in.) on all sides for adequate ventilation.

MicroLogix 1200 Controller Dimension Drawing



1762-L24AWA, 1762-L24BWA, 1762-L24BXB
1762-L24AWAR, 1762-L24BWAR, 1762-L24BXBR



1762-L40AWA, 1762-L40BWA, 1762-L40BXB
1762-L24AWAR, 1762-L24BWAR, 1762-L24BXBR

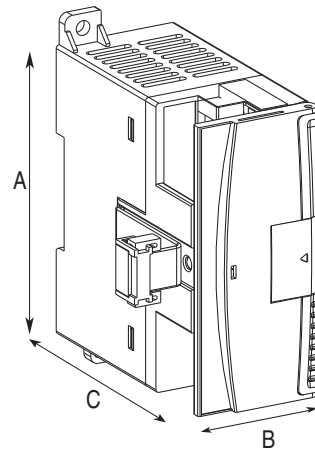
Controller Dimensions

Dimension	1762-L24AWA 1762-L24AWAR	1762-L24BWA 1762-L24BWAR	1762-L24BXB 1762-L24BXBR	1762-L40AWA 1762-L40AWAR	1762-L40BWA 1762-L40BWAR	1762-L40BXB 1762-L40BXBR
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.)		

1762 Expansion I/O Dimensions

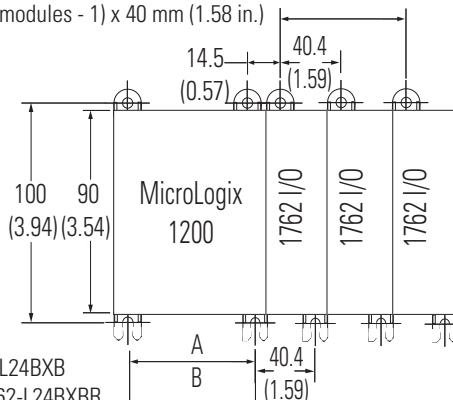
1762 I/O Dimensions

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



MicroLogix 1200 System Mounting Dimensions

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



A = 95.86 mm (3.774 in.)
 1762-L24AWA, 1762-L24BWA, 1762-L24BXB
 1762-L24AWAR, 1762-L24BWAR, 1762-L24BXBR

B = 145.8 mm (5.739 in.)
 1762-L40AWA, 1762-L40BWA, 1762-L40BXB
 1762-L40AWAR, 1762-L40BWAR, 1762-L40BXBR

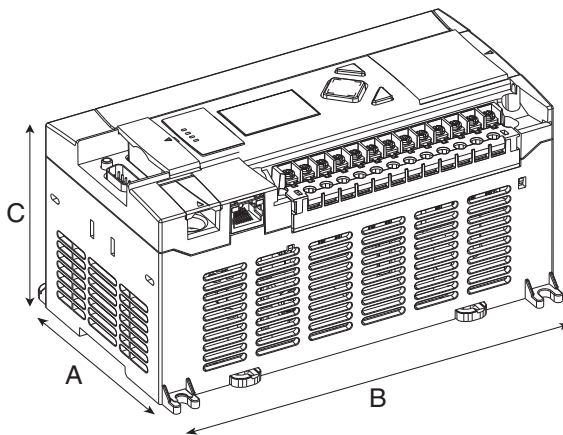
Important: All dimensions are in mm (inches). Hole spacing tolerance: ±0.4 mm (0.016 in.).

MicroLogix 1400 Controller

Dimensions are in millimeters (inches).

Controller Spacing = 50 mm (2 in.) on all sides for adequate ventilation. Refer to [page 27](#) for DIN rail mounting dimensions.

MicroLogix 1400 Controller Dimension Drawing



1766-L32BWA, 1766-L32AWA, 1766-L32BXB,
 1766-L32BWAA, 1766-L32AWAA, 1766-L32BXBA

Controller Dimensions

Dimension	Height
A	90 mm (3.5 in.)
B	180 mm (7.08 in.)
C	87 mm (3.43 in.)

Select Communication

Step 2 - Select:

- communication network - based on application requirements
- communication interface device - if required
- record your selection in the Selection Record (starts on [page 86](#))

Communication Networks

MicroLogix controllers allow you to choose the network that best meets your needs.

- Channel 0 Isolated RS-232/RS-485 Combo port (MicroLogix 1100 and 1400 controllers only)
- EtherNet/IP port (MicroLogix 1100 and 1400 controllers only)
- DNP3 over IP (MicroLogix 1400 controller only)
- Modbus TCP/IP (MicroLogix 1400 controller only)
- For RS-232 communication:
 - 300, 600, 1200, 4800, 9600 bps; 19.2 and 38.4 Kbps
 - 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, respectively (MicroLogix 1500 controllers also connect to DeviceNet network via the 1769-SDN DeviceNet Scanner Module)
 - Connection to modems for remote communication
 - ASCII messaging provides dial-out capability (except MicroLogix 1000 controller)
 - DF1 half-duplex slave
 - DF1 half-duplex master (except MicroLogix 1000 controller)
 - DNP3 slave (MicroLogix 1400 controller only)
 - Modbus RTU master/slave through the 1761-NET-AIC module (MicroLogix 1100 and 1400 controllers also connect to Modbus RTU master/slave directly through 1763-NC01 cable to Channel 0)

Important: The MicroLogix 1100 and 1400 controllers do not provide 24V DC power for network interface whereas all other MicroLogix controllers do. The 24V DC comms power must be provided externally when 1761-NET-AIC or 1761-NET-ENI or 1761-NET-ENIW modules are used with a MicroLogix 1100 and 1400 controller. MicroLogix 1100 and 1400 controllers provide direct connection to RS-485 networks by using the same pins used by other MicroLogix controllers for 24V DC communication power.

MicroLogix Controller Network Options (RS-232 unless otherwise noted)

If your application requires	Use this network
<ul style="list-style-type: none"> • 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 • Program upload, download, and monitoring 	DF1 full-duplex DF1 half-duplex slave/master DF1 radio modem
<ul style="list-style-type: none"> • Plant-wide and cell-level data sharing with program maintenance • Data sharing between 32 controllers • Peer-to-peer communication • Program upload, download, and monitoring • Compatibility with multiple Allen-Bradley HMI devices 	DH-485 directly through channel 0 RS-485 port using 1763-NC01 cable ⁽¹⁾ DH-485 via the 1761-NET-AIC Advanced Interface Converter ⁽²⁾
<ul style="list-style-type: none"> • 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 • Program upload, download, and monitoring • Peer-to-peer communication • Connection of low-level multi-vendor devices directly to plant floor controllers (when using the 1769-SDN scanner) 	DeviceNet network via the 1761-NET-DNI DeviceNet Interface
<ul style="list-style-type: none"> • Program upload, download, and monitoring • Peer-to-peer communication • E-mail communication • 10/100 Base-T port with embedded status indicators • Web server capability via the 1761-NET-ENIW module 	EtherNet/IP network directly through Channel 1 10/100 Mbps communication port ⁽³⁾ EtherNet/IP network via the 1761-NET-ENI Ethernet Interface or 1761-NET-ENIW Web-Enabled Ethernet Interface ⁽²⁾
<ul style="list-style-type: none"> • Connection to third party devices for remote data collection in a SCADA system (for example, telephone modems, radio modems, and leased lines.) • Remote Terminal Unit (RTU) functions 	Modbus RTU master/slave directly through channel) RS-485 port using 1763-NC01 cable ⁽²⁾ Modbus RTU slave via the 1761-NET-AIC Advanced Interface Converter ⁽²⁾ Modbus RTU master via the 1761-NET-AIC Advanced Interface Converter ⁽²⁾ DNP3 slave via RS-232 ⁽⁴⁾ DNP3 over IP ⁽⁴⁾ Modbus TCP/IP ⁽⁴⁾

(1) MicroLogix 1100 and 1400 controllers only.

(2) MicroLogix 1100 and 1400 controllers do not provide 24V DC power for network interface devices. External 24V DC module power must be supplied.

(3) Direct EtherNet/IP connections through MicroLogix 1100 and 1400 controllers provide web server capabilities as well as support for email communication.

(4) MicroLogix 1400 controllers only.

MicroLogix Network Interface Devices

The following information describes the functionality of the MicroLogix interface modules. For most applications, the embedded RS-485 and Ethernet/IP functionality of the MicroLogix 1100 and 1400 communication ports replaces the 1761-NET-AIC, 1761-NET-ENI, and the 1761-NET ENIW (or AIC+, ENI, and ENIW) modules.

The network interface devices can be mounted on a panel or DIN rail.

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

The AIC+ is an isolated, RS-232 to RS-485 electrical signal converter for supporting serial, half-duplex, multi-drop protocols, such as:

- DH-485.
- DF1 half-duplex master/slave.
- Modbus RTU (a single master can communicate with a maximum of 31 slave devices).

Since RS-232 ports can only be connected point-to-point between two devices, an AIC+ (or similar device) is required whenever a MicroLogix controller is configured for one of these protocols and needs to communicate with more than one other device at a time. The AIC+ also provides electrical isolation between each of its three ports for a more stable network and protection for connected devices.

When using the 1763-NC01 cable, the MicroLogix 1100 and 1400 controller provides isolated connection to RS-485 networks directly from the Channel 0 combo port.

Any MicroLogix controller can connect to either of the two RS-232 ports on the AIC+. When Channel 0 on a MicroLogix controller is connected to Port 2 (RS-232 8-pin mini-DIN) of the AIC+, the interface module can draw its power from the MicroLogix controller. In all other cases, including using MicroLogix 1100 and 1400 controllers, the AIC+ must be powered from an external, 24V DC power supply. The AIC+ can also be used as an RS-232 to RS-485 converter and port isolator for any other Allen-Bradley controller or terminal with an RS-232 port.

Since the AIC+ is not a protocol converter, all devices connected to a single AIC+ (or a network of AIC+s) must be configured for the same communication protocol.

DH-485 Network Specifications

Attribute	1761-NET-AIC
Number of Nodes, max	32 per multidrop network
Length, max	1219 m (4000 ft) per multidrop network

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 online 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

DeviceNet Specifications

Attribute	1761-NET-DNI
Number of Nodes, max	64
Length, max	500 m @ 125 Kbps or 100 m @ 500 Kbps
DeviceNet Agency Certification	ODVA conformance 2.0-A12

ENI Ethernet Interface (1761-NET-ENI) and ENIW Ethernet Interface with Web Server Capabilities (1761-NET-ENIW)

The ENI provides EtherNet/IP connectivity for all MicroLogix controllers and other DF1 full-duplex devices. The ENI lets you 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).

The ENIW adds web server capabilities, enabling the display of 4 standard data web pages with user-configurable data descriptions, and 10 user-configurable web-page links on the ENIW home page.

MicroLogix 1100 and 1400 controllers also provide EtherNet/IP connectivity, web server, and email capabilities directly through Channel 1.

Ethernet Specifications

Attribute	1761-NET-ENI
Communication Rate	100 MHz (series C and D), 10 MHz (series A and B)
Connector	100Base-T (series C and D), 10Base-T (series A and B)

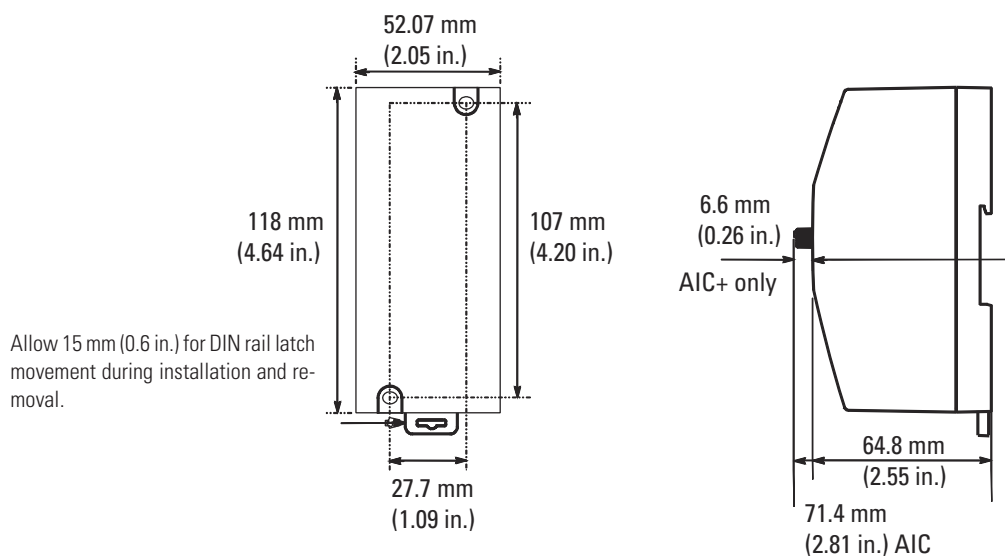
AIC+, DNI, and ENI /ENIW Specifications

Network Modules Specifications

Attribute	1761-NET-AIC	1761-NET-DNI	1761-NET-ENI, 1761-NET-ENIW
Power Supply DC Voltage Range ⁽¹⁾	20.4...28.8V DC	11...25V DC	20.4...26.4V DC
Backplane Current (mA) at 24V	120 mA	200 mA	50 mA
Inrush Current, max	200 mA	400 mA	200 mA
Isolation Voltage	500V DC for 1 minute	500V DC for one minute	710V DC for one minute
Operating Temperature	0...60 °C (32...140 °F)		
Storage Temperature	-40...85 °C (-40...185 °F)		
Relative Humidity	5...95% noncondensing		
Vibration	operating: 10...500 Hz, 5.0 g, 0.030 in. peak-to-peak, 2 hour each axis	operating: 5...2000 Hz, 2.5 g, 0.015 in. peak-to-peak, 1 hour each axis nonoperating: 5...2000 Hz, 5.0g, 0.030 in. peak-to-peak, 1 hour each axis	operating: 10...500 Hz, 5.0 g, 0.030 in. peak-to-peak, 2 hour each axis
Shock, Operating	30 g, ±3 times each axis	30 g, ±3 times each axis	30 g, ±3 times each axis
Shock, Nonoperating	50 g, ±3 times each axis	50 g, ±3 times each axis	35 g (DIN rail mount) 50 g (panel mount) ±3 times each axis
Certifications	<ul style="list-style-type: none"> • UL Listed Industrial Control Equipment for use in Class 1, Division 2, Hazardous Locations, Groups A, B, C, D • C-UL Listed Industrial Control Equipment for use in Canada • CE marked for all applicable directives • C-Tick marked for all applicable acts 		

(1) When the device is connected to a MicroLogix 1000, 1200, or 1500 controller, power is provided by the MicroLogix controller's communication port. Power is not supplied by the MicroLogix 1100 and 1400 controllers. External 24V DC module power must be supplied.

Network Interface Devices Dimensions



Select Programming Tools and Software

Step 3 - Select:

- programming tools - hand-held programmer with optional memory module (available for MicroLogix 1000 only)
- software - the appropriate RSLogix package for your application
- record your selection in the Selection Record (starts on [page 86](#))

Programming Software

The RSLogix 500 and RSLogix Micro ladder-logic programming packages help you maximize performance, save project development time, and improve productivity. These products have been developed to operate on Windows operating systems. RSLogix 500 software can be used for programming both the SLC 500 and MicroLogix controller families. RSLogix Micro software is for programming MicroLogix controller families only.

RSLogix 500 and RSLogix Micro Selection Chart

Cat. No.	Description
9324-RL0100ENE	RSLogix 500 Starter Edition Programming Software for MicroLogix controller families. (CD-ROM)
9324-RL0300ENE	RSLogix 500 Standard Edition Programming Software for SLC 500 and MicroLogix controller families. (CD-ROM)
9324-RL0700NXENE	RSLogix 500 Professional Edition. CD-ROM also includes RSLogix Emulate 500, RSNetworx for DeviceNet and RSNetworx for ControlNet software.
9324-RLM0100ENE	RSLogix Micro Starter software
9324-RLM0800ENE	RSLogix Micro Developer software

TIP

Download Free Lite Version of RSLogix Micro Starter Software

Now you can download free RSLogix Micro Starter Lite software and RSLinx Lite software to program, upload, and download all MicroLogix 1000 and MicroLogix 1100 controllers.

RSLogix Micro Starter Lite software, when used together with RSLinx Lite software, is fully-functional with all MicroLogix 1000 and MicroLogix 1100 controllers.

Go to

<http://www.ab.com/programmablecontrol/plc/micrologix/downloads.html> for details.

Hand-Held Programmer (MicroLogix 1000 controller only)

The 1761-HHP-B30 lets you create, edit, monitor, and troubleshoot Instruction List (Boolean) programs for your MicroLogix 1000 controller. This device also lets you store programs and to transfer programs through the use of an optional removable memory module.

There are 2 memory modules:

- 1761-HHM-K08 - 8 KB, stores 1 program.
- 1761-HHM-K64 - 64 KB, stores 8 programs.



Select Network and Programming Cables

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.

Step 4 - Select:

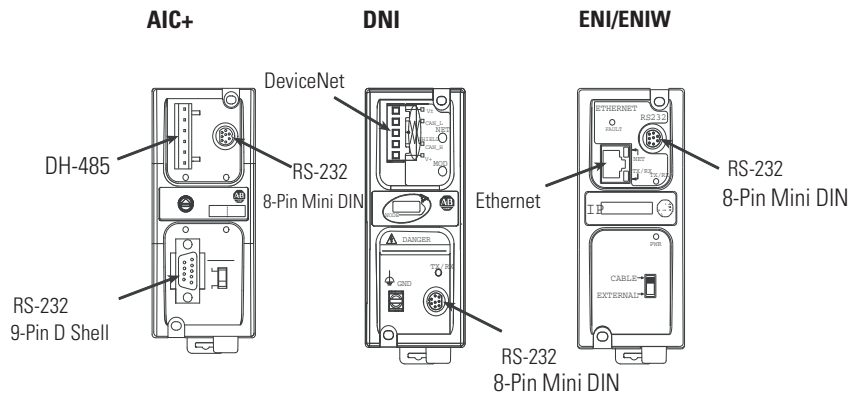
- cables - review device port identification to find cable in the selection chart
 - record your selection in the Selection Record (starts on [page 86](#))

Network Cable Selection

Controller and PC Port Identification

Device	Communication Port Description	Connector Type
MicroLogix 1000	Communication Port (Channel 0) with 24V DC power for communication device	8-pin Mini DIN
MicroLogix 1100	RS-232/RS-485 Communication Port (Channel 0, no 24V DC power for communication Interface Modules)	8-pin Mini DIN (isolated)
	10/100Mbps EtherNet/IP Communication Port (Channel 1)	RJ-45
MicroLogix 1200	Communication Port (Channel 0) with 24V DC power for communication device	8-pin Mini DIN
MicroLogix 1200R	Programming/HMI Port (no 24V DC power)	8-pin Mini DIN
MicroLogix 1400	RS-232/RS-485 Communication Port (Channel 0, no 24V DC power for communication Interface Modules)	8-pin Mini DIN (isolated)
	10/100Mbps EtherNet/IP Communication Port (Channel 1)	RJ-45
	Communication Port (Channel 2)	9-pin D Shell
MicroLogix 1500	Base Unit Communication Port (Channel 0) with 24V DC power for communication device	8-pin Mini DIN
MicroLogix 1500 with 1764-LRP Processor	Processor Communication Port (Channel 1)	9-Pin D Shell (isolated)
Personal Computer	Personal Computer Serial Communication Port	9-Pin D Shell
	Personal Computer Ethernet Communication Port	RJ-45

Network Interface Devices Communication Port Identification



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

Network Cable Selection Chart

Connectors	Length	Cat. No.	Connectors	Length	Cat. No.
8-pin Mini DIN to 8-pin Mini DIN	0.5 m (1.5 ft)	1761-CBL-AM00 ⁽¹⁾	8-pin Mini DIN to 9-pin D Shell	5 m (16 ft)	2711-CBL-PM05
8-pin Mini DIN to 8-pin Mini DIN	2 m (6.5 ft)	1761-CBL-HM02 ⁽¹⁾	8-pin Mini DIN to 9-pin D Shell	10 m (32 ft)	2711-CBL-PM10
8-pin Mini DIN to 8-pin Mini DIN	5 m (16 ft)	2711-CBL-HM05	6-pin Phoenix to RJ45 (DH-485)	3 m (10 ft)	1761-CBL-AS03
8-pin Mini DIN to 8-pin Mini DIN	10 m (32 ft)	2711-CBL-HM10	6-pin Phoenix to RJ45 (DH-485)	9 m (30 ft)	1761-CBL-AS09
9-pin D Shell to 9-pin D Shell	0.5 m (1.5 ft)	1761-CBL-AC00	8-pin Mini DIN to 8-pin Mini DIN	15 m (49.2 ft)	2707-NC9 ⁽¹⁾
9-pin D Shell to 9-pin D Shell	3 m (10 ft)	1747-CP3	8-pin Mini DIN to 6-pin DH-485 terminal	30 cm (11.8in.)	1763-NC01 series A
8-pin Mini DIN to 9-pin D Shell	0.5 m (1.5 ft)	1761-CBL-AP00 ⁽¹⁾	RJ-45 to RJ-45	100 m (328 ft), max	Ethernet Cable ⁽²⁾
8-pin Mini DIN to 9-pin D Shell	2 m (6.5 ft)	1761-CBL-PM02 ⁽¹⁾			

(1) Series C or later for Class 1 Div 2 applications.

(2) Commercially available.

Programming Cable Selection

Programming Cable Selection Chart - Programming Device to Controller

Programming Device	MicroLogix 1000, 1100, 1200, 1400, and 1500 Channel 0 (8-pin Mini DIN)		MicroLogix 1100 and 1400 Channel 1 (RJ-45)		MicroLogix 1400 Channel 2	
	MicroLogix 1200 Programming/HMI Port (8-pin Mini DIN)		MicroLogix 1500 with 1764-LRP Processor Channel 1 (9-pin RS-232)			
	Cat. No.	Length	Cat. No.	Length	Cat. No.	Length
Personal Computer (9-pin D Shell)	1761-CBL-PM02	2 m (6.5 ft)	---	---	1747-CP3	3m (10 ft)
Personal Computer (RJ-45)	---	---	Ethernet Cable ⁽¹⁾	100 m (328 ft), max	---	---
Hand-Held Programmer (1761-HHP)	1761-CBL-HM02	2 m (6.5 ft)	---	---	---	---

(1) Commercially available.

1747-UIC Universal Serial Bus to DH-485 Interface Converter

This device allows a computer with a USB port to interface to DH-485 ports on an SLC 500, MicroLogix, or other Rockwell Automation controllers and on PanelView terminals. The 1747-UIC features a USB connector as well as both an RS-232 and an RS-485 port. Use the RS-232 port to connect to SLC 5/03, 5/04, 5/05 (Channel 0), MicroLogix, CompactLogix, FlexLogix, ControlLogix controllers, PanelView 300 or higher terminals, or the AIC+ interface. Use the RS-485 port to connect to SLC 5/01, 5/02, 5/03 controllers (Channel 1), PanelView 300 or higher terminals, or the 1747-AIC isolated link coupler.

USB to DH-485 Interface Converter Specifications

Cat. No.	1747-UIC
USB Power Consumption	<100 mA (low power)
USB Speed	USB 1.1 (12 Mbps)
DH-485 Baud Rate	19.2 Kbps

Programming Cable Selection Chart - Programming Device to AIC+ (DH-485 only)

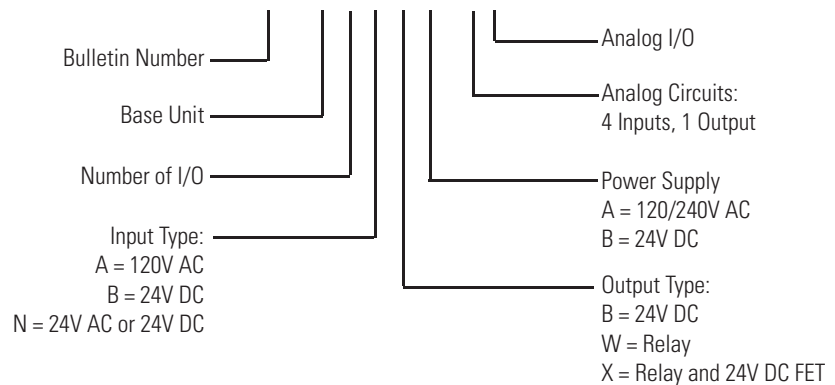
Programming Device	1761-NET-AIC (8-pin Mini DIN) to PC via 1747-UIC Universal Serial Bus to DH-485 Interface Converter		1761-NET-AIC (9-pin D Shell) to PC via 1747-UIC Universal Serial Bus to DH-485 Interface Converter	
	Cat. No.	Length	Cat. No.	Length
Personal Computer (USB Port)	1761-CBL-PM02	2 m (6.5 ft)	1747-CP3	3 m (10 ft)

Select MicroLogix 1000 Controllers

MicroLogix 1000 Controller Catalog Number Detail

1761 - L 20 A W A - 5 A
Step 5 - Select:

- controller - review power and I/O configurations to select a controller catalog number; see power supply and I/O specification for more detailed information
- record your selection in the Selection Record (start on [page 86](#))



MicroLogix 1000 Controller Power and I/O Configuration

Cat. No.	Line Voltage	Number of Inputs	Number of Outputs ⁽¹⁾	High Speed I/O
1761-L16AWA	120/240V AC	(10) 120V AC	(6) Relay	N/A
1761-L32AWA	120/240V AC	(20) 120V AC	(12) Relay	N/A
1761-L20AWA-5A	120/240V AC	(12) 120V AC, (4) Analog	(8) Relay, (1) Analog	N/A
1761-L32AAA	120/240V AC	(20) 120V AC	(10) Triac, (2) Relay	N/A
1761-L16NWA	120/240V AC	(10) 24V AC or DC	(6) Relay	N/A
1761-L10BWA	120/240V AC	(6) 24V DC	(4) Relay	(1) 6.6 kHz input
1761-L16BWA	120/240V AC	(10) 24V DC	(6) Relay	(1) 6.6 kHz input
1761-L20BWA-5A	120/240V AC	(12) 24V DC, (4) Analog	(8) Relay, (1) Analog	(1) 6.6 kHz input
1761-L32BWA	120/240V AC	(20) 24V DC	(12) Relay	(1) 6.6 kHz input
1761-L10BWB	24V DC	(6) 24V DC	(4) Relay	(1) 6.6 kHz input
1761-L16BWB	24V DC	(10) 24V DC	(6) Relay	(1) 6.6 kHz input
1761-L20BWB-5A	24V DC	(12) 24V DC	(8) Relay	(1) 6.6 kHz input
1761-L32BWB	24V DC	(20) 24V DC	(12) Relay	(1) 6.6 kHz input
1761-L10BXB	24V DC	(6) 24V DC	(2) MOSFET sourcing, (2) relay	(1) 6.6 kHz input
1761-L16BBB	24V DC	(10) 24V DC	(4) MOSFET sourcing, (2) relay	(1) 6.6 kHz input
1761-L32BBB	24V DC	(20) 24V DC	(10) MOSFET sourcing, (2) relay	(1) 6.6 kHz input
1761-L16NWB	24V DC	(10) 24V AC or DC	(6) Relay	N/A

(1) Two individually isolated relays per unit.

Available Modules



1762 Expansion I/O Modules

Cat. No.	Description
Digital	
1762-IA8	8-Point 120V AC Input Module
1762-IQ8	8-Point Sink/Source 24V DC Input Module
1762-IQ8OW6	8 Point Sink/Source 24V DC Input/6-Point AC/DC Relay Output Combination Module
1762-IQ16	16-Point Sink/Source 24V DC Input Module
1762-OA8	8-Point 120/240V AC Triac Output Module
1762-OB8	8-Point Sourcing 24V DC Output Module
1762-OB16	16-Point Sourcing 24V DC Output Module
1762-OW8	8-Point AC/DC Relay Output Module
1762-OW16	16-Point AC/DC Relay Output Module
1762-OX6I	6-Point Isolated AC/DC Relay Output Module
1762-OV32T	32-Point Solid State 24V DC Sink Output Module
1762-OB32T	32-Point Solid State 24V DC Source Output Module
1762-IQ32T	32-Point DC Input Module
Analog	
1762-IF4	4-Channel Voltage/Current Analog Input Module
1762-OF4	4-Channel Voltage/Current Analog Output Module
1762-IF2OF2	Combination 2-Channel Input 2-Channel Output Voltage/Current Analog Module
Specialty	
1762-IR4	4-Channel RTD/Resistance Input Module
1762-IT4	4-Channel Thermocouple/mV Input Module

1762 Digital I/O

1762 Digital Expansion Input Modules Specifications

Attribute	1762-IA8	1762-IQ8	1762-IQ80W6 (inputs)	1762-IQ16	1762-IQ32T
Voltage Category	100/120V AC	24V DC (sink/source) ⁽¹⁾	24V DC (sink/source) ⁽¹⁾	24V DC (sink/source) ⁽¹⁾	24V DC sink/source ⁽¹⁾
Operating Voltage Range	79...132V AC @ 47...63 Hz	10...26.4V DC @ 55 °C (131 °F) 10...30V DC @ 30 °C (86 °F)	10...26.4V DC @ 65 °C (149 °F) 10...30V DC @ 30 °C (86 °F)	10...26.4V DC 10...30V DC ⁽³⁾⁽²⁾	10...26.4V DC 10...30V DC
Number of Inputs	8	8	8	16	32
Number of Commons	1	1	inputs: 2 outputs: 1	2	4
Bus Current Draw, max	50 mA @ 5V DC (0.25 W)	50 mA @ 5V DC (0.25 W)	110 mA @ 5V DC (0.55 W) 80 mA @ 24V DC (1.92 W)	70 mA @ 5V DC (0.35 W) ⁽³⁾	170 mA @ 5V DC 0 mA @ 24V DC
Heat Dissipation, max	2.0 Total Watts	3.7 Total Watts	5.0 Total Watts @ 30V 4.4 Total Watts @ 26.4V	5.4 Total Watts @ 30V 4.3 Total Watts @ 26.4V ⁽³⁾	5.4 Total Watts @ 26.4V 6.8 Total Watts @ 30.0V
Signal Delay, max	On Delay: 20.0 ms Off Delay: 20.0 ms	On Delay: 8.0 ms Off Delay: 8.0 ms	On Delay: 8.0 ms Off Delay: 8.0 ms	On Delay: 8.0 ms Off Delay: 8.0 ms	On Delay: 8.0 ms Off Delay: 8.0 ms
Off-state Voltage, max	20V AC	5V DC	5V DC	5V DC	5V DC
Off-state Leakage Current, max	2.5 mA	1.5 mA	1.5 mA	1.5 mA	1.0 mA
On-state Voltage, min	79V AC, min, 132V AC, max	10V DC	10V DC	10V DC	10V DC
On-state Current min nom max	5.0 mA @ 79V AC 47 Hz 12.0 mA @ 120V AC 60 Hz 16.0 mA @ 132V AC 63 Hz	2.0 mA @ 10V DC 8.0 mA @ 24V DC 12.0 mA @ 30V DC	2.0 mA @ 10V DC 8.0 mA @ 24V DC 12.0 mA @ 30V DC	2.0 mA @ 10V DC 8.0 mA @ 24V DC 12.0 mA @ 30V DC	1.6 mA @ 10V DC (min) 2 mA @ 15V DC (min) 5.7 mA @ 26.4V DC (max) 6.5 mA @ 30.0V DC (max)
Inrush Current, max	250 mA	---	250 mA	---	--

Attribute	1762-IA8	1762-IQ8	1762-IQ8OW6 (inputs)	1762-IQ16	1762-IQ32T
Impedance, nom	12 k Ω @ 50 Hz 10 k Ω @ 60 Hz	3 k Ω	3 k Ω	3 k Ω	4.7 k Ω
Isolated Groups	Group 1: inputs 0...7 (internally connected commons)	Group 1: inputs 0...7 (internally connected commons)	Group 1: inputs 0...3 Group 2: inputs 4...7 Group 3: outputs 0...5	Group 1: inputs 0...7 Group 2: inputs 8...15	Group 1: Inputs 0...7 Group 2 : Inputs 8...15 Group 3 : Inputs 16...23 Group 4 : Inputs 24...31
Input Group to Backplane Isolation	Verified by one of the following dielectric tests: 1517V AC for 1 s or 2145V DC for 1 s 132V AC working voltage (IEC Class 2 reinforced insulation)	Verified by one of the following dielectric tests: 1200V AC for 1 s or 1697V DC for 1 s 75V DC working voltage (IEC Class 2 reinforced insulation)	Verified by one of the following dielectric tests: Input Group to Backplane isolation - 1200V AC for 1 s or 1697V DC for 1 s 75V DC working voltage (IEC Class 2 reinforced insulation) Output Group to Backplane isolation - 1836V AC for 1 s or 2596V DC for 1 s 265V AC working voltage (IEC Class 2 reinforced insulation) Input Group to Output Group isolation - 1836V AC for 1 s or 2596V DC for 1 s 265V AC working voltage (basic insulation) 150V AC working voltage (IEC Class 2 reinforced insulation)	Verified by one of the following dielectric tests: 1200V AC for 1 s or 1697V DC for 1 s 75V DC working voltage (IEC Class 2 reinforced insulation)	Verified by one of the following dielectric tests: 1,200V AC for 2 s or 1,697V DC for 2 s 75V DC working voltage (IEC Class 2 reinforced insulation)

- (1) Sinking/Sourcing Inputs - Sourcing/sinking describes the current flow between the I/O module and the field device. Sourcing I/O circuits supply (source) current to sinking field devices. Sinking I/O circuits are driven by a current sourcing field device. Field devices connected to the negative side (DC Common) of the field power supply are sinking field devices. Field devices connected to the positive side (+V) of the field supply are sourcing field devices.
- (2) Refer to Publication [1762-IN10](#), MicroLogix 1762-IQ16 DC Input Module Installation Instructions, for the derating chart.
- (3) Only applicable to Series B I/O modules

1762 Digital Expansion Output Modules Specifications

Attribute	1762-OA8	1762-OB8	1762-OB16	1762-OB32T	1762-0V32T
Voltage Category	100...240V AC	24V DC	24V DC	24V DC source	24V DC sink
Operating Voltage Range	85...265V AC @ 47...63 Hz	20.4...26.4V DC	20.4...26.4V DC	10.2...26.4V DC	
Number of Outputs	8	8	16	32	
Number of Commons	2	1	1	2	
Bus Current Draw, max	115 mA @ 5V DC (0.575 W)	115 mA @ 5V DC (0.575 W)	175 mA @ 5V DC (0.88 W)	175 mA @ 5V DC 0 mA @ 24V DC	
Heat Dissipation, max	2.9 Total Watts	1.61 Total Watts	2.9 Total watts @ 30 °C (86 °F) 2.1 Total watts at 55 °C (131 °F)	3.4W @ 26.4V DC	2.7 W @ 26.4 V DC
Signal Delay, max - resistive load	On Delay: 1/2 cycle Off Delay: 1/2 cycle	On Delay: 0.1 ms Off Delay: 1.0 ms	On Delay: 0.1 ms Off Delay: 1.0 ms	On Delay: 0.5 ms Off Delay: 4.0 ms	
Off-state Leakage, max	2 mA @ 132V 2.5 mA @ 265V	1.0 mA	1.0 mA	0.1 mA @ 26.4V DC	
On-state Current, min	10 mA	1.0 mA	1.0 mA	1.0 mA	
On-state Voltage Drop, max	1.5V @ 0.5 A	1.0V DC	1.0Vdc	0.3V DC @ 0.5 A	
Continuous Current per Point, max	0.25 A @ 55 °C (131 °F) 0.5 A @ 30 °C (86 °F)	0.5 A @ 55 °C (131 °F) 1.0 A @ 30 °C (86 °F)	0.5 A @ 55 °C (131 °F) 1.0 A @ 30 °C (86 °F)	0.5 A @ 60 °C (140 °F)	
Continuous Current per Common, max	1.0 A @ 55° (131 °F) 2.0 A @ 30 °C (86 °F)	4.0 A @ 55 °C (131 °F) 8.0 A @ 30 °C (86 °F)	4.0 A @ 55 °C (131 °F) 8.0 A @ 30 °C (86 °F)	2.0 A @ 60 °C (140 °F)	
Continuous Current per Module, max	2.0 A @ 55 °C (131 °F) 4.0 A @ 30 °C (86 °F)	4.0 A @ 55 °C (131 °F) 8.0 A @ 30 °C (86 °F)	4.0 A @ 55 °C (131 °F) 8.0 A @ 30 °C (86 °F)	4.0 A @ 60 °C (140 °F)	
Surge Current, max	5.0 A ⁽¹⁾	2.0 A ⁽²⁾	2.0 ⁽²⁾	2.0 A (Repeatable every 2 s @ 60 °C (140 °F) for 10 ms)	

(1) Repeatability is once every 2 seconds for a durations of 25 ms.

(2) Repeatability is once every 2 seconds @ 55 °C (131 °F), once every second @ 30 °C (86 °F) for a duration of 10 ms.

1762 Digital Expansion Relay Output Modules Specifications

Attribute	1762-IQ80W6 (outputs)	1762-OW8	1762-OW16	1762-0X6I
Voltage Category	AC/DC normally open relay	AC/DC normally open relay	AC/DC normally open relay	AC/DC Type C Relay
Operating Voltage Range	5...265V AC 5...125V DC	5...265V AC 5...125V DC	5...265V AC 5...125V DC	5...265V AC 5...125V DC
Number of Outputs	6	8	16	6 (N.C., N.O.)
Number of Commons	inputs: 2 outputs: 1	2	2	6
Bus Current Draw, max	110 mA @ 5V DC (0.55 W) 80 mA @ 24V DC (1.92 W)	80 mA @ 5V DC (0.40 W) 90 mA @ 24V DC (2.16 W)	140 mA @ 5V DC (0.70 W) 180 mA @ 24V DC (4.32 W) ⁽¹⁾	110 mA @ 5V DC (0.55 W) 110 mA @ 24V DC (2.64 W)
Heat Dissipation, max	5.0 Total Watts @ 30V 4.4 Total Watts @ 26.4V	2.9 Total Watts	6.1 Watts ⁽¹⁾	2.8 Watts
Signal Delay, max - resistive load	On Delay: 10 ms Off Delay: 10 ms	On Delay: 10 ms Off Delay: 10 ms	On Delay: 10 ms Off Delay: 10 ms	On Delay: 10 ms Off Delay: 20 ms
Off-state Leakage, max	0 mA	0 mA	0 mA	0 mA
On-state Current, min	10 mA @ 5V DC	10 mA @ 5V DC	10 mA	100 mA
On-state Voltage Drop, max	N/A	N/A	N/A	N/A
Continuous Current per Point, max	2.5 A (Also see MicroLogix 1500 Controller Relay Contact Rating on page 72.)			7 A (Also see MicroLogix 1500 Controller Relay Contact Rating on page 72.)
Continuous Current per Common, max	8 A	8 A	8 A	7 A (Also see MicroLogix 1500 Controller Relay Contact Rating on page 72.)
Continuous Current per Module, max	8 A	16 A	16 A	30 A
Surge Current, max	See MicroLogix 1500 Controller Relay Contact Rating on page 72.			

(1) Only applicable to Series B I/O modules

1762 Analog Modules

1762 Analog Expansion Modules Common Specifications

Attribute	1762-IF4	1762-IF20F2	1762-0F4
Bus Current Draw, max	40 mA @ 5V DC 50 mA @ 24V DC	40 mA @ 5V DC 105 mA @ 24V DC	40 mA @ 5V DC 165 mA @ 24V DC
Analog Normal Operating Range	Voltage: -10...10V DC Current: 4...20 mA	Voltage: 0...10V DC Current: 4...20 mA	Voltage: 0...0V DC Current: 4...20 mA
Full Scale ⁽¹⁾ Analog Ranges	Voltage: -10.5...10.5V DC Current: -21...21 mA	Voltage: 0...0.5V DC Current: 0...21 mA	Voltage: 0...0.5V DC Current: 0...21 mA
Resolution	15 bits (bipolar) ⁽²⁾	12 bits (unipolar)	12 bits (unipolar)
Repeatability ⁽³⁾	±0.12% ⁽²⁾	±0.12% ⁽²⁾	±0.12% ⁽²⁾
Input and Output Group to System Isolation	30V AC/30V DC rated working voltage ⁽⁴⁾ (N.E.C. Class 2 required) (IEC Class 2 reinforced insulation) type test: 500V AC or 707V DC for 1 minute		30V AC/30V DC rated working voltage (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) Only applicable to Series B I/O modules.

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

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

1762 Analog Expansion Input Modules Specifications

Attribute	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 @ 50 and 60 Hz	> 55 dB @ 50 and 60 Hz
Non-linearity (in percent full scale)	±0.12% ⁽²⁾	±0.12% ⁽²⁾
Typical Overall Accuracy ⁽³⁾	±0.32% full scale @ -20...65 °C (-4...149 °F) ⁽⁴⁾ ±0.24% full scale @ 25 °C (77 °F)	±0.55% full scale @ -20...65 °C (-4...149 °F) ⁽⁴⁾ ±0.3% full scale @ 25 °C (77 °F)
Input Impedance	Voltage Terminal: 200 kΩ, Current Terminal: 275 Ω	Voltage Terminal: 200 kΩ, 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).

(4) Only applicable to Series B I/O modules

1762 Analog Expansion Output Modules Specifications

Attribute	1762-IF20F2	1762-OF4
Number of Outputs	2 single-ended (unipolar)	4 single-ended (unipolar) ⁽²⁾
Update Time (typical)	4.5 ms	2.5 ms
D/A Converter Type	Resistor string	R-2R Ladder Voltage Switching
Resistive Load on Current Output	0...500 Ω (includes wire resistance)	0...500 Ω (includes wire resistance)
Load Range on Voltage Output	> 1 kΩ	> 1 kΩ
Reactive Load, Current Output	< 0.1 mH	< 0.1 mH
Reactive Load, Voltage Output	< 1 μF	< 1 μF
Typical Overall Accuracy ⁽¹⁾	±1.17% full scale @ -20...65 °C (-4...149 °F) ⁽²⁾ , ±0.5% full scale @ 25 °C (77 °F)	±1.17% full scale @ -20...65 °C (-4...149 °F) ⁽²⁾ , ±0.5% full scale @ 25 °C
Output Ripple, range 0...500 Hz (referred to output range)	< ±0.1%	< ±0.1%
Non-linearity (in percent full scale)	< ±0.59% ⁽²⁾	< ±0.59% ⁽²⁾
Open and Short-circuit Protection	Continuous	Continuous
Output Protection	±32 mA	±32 mA

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

(2) Only applicable to Series B I/O modules.

1762 Temperature Input Modules

Use these modules as a cost effective means of addressing process applications that require temperature measurement and control. Each channel can be individually configured by using RSLogix 500 programming software. On-screen configuration lets you choose the input type, filtering frequency, data format, and status data. On-board scaling is also provided.

1762 Temperature Expansion Input Modules Specifications

Attribute	1762-IT4	1762-IR4
Bus Current Draw, max	40 mA @ 5V DC 50 mA @ 24V DC	40 mA @ 5V DC 50 mA @ 24V DC
Number of Channels	4 input channels plus a CJC sensor	4 input channels
Accepted Inputs	Thermocouples Types: J, K, T, E, R, S, B, N, C Millivolt Input Ranges: ± 50 mV and ± 100 mV	RTDs: Platinum (385 and 3916), Copper (426), Nickel (672 and 618), Nickel-Iron (518) Resistance Ranges: 0...3000 Ω
Filter Frequency	10 Hz...1 kHz	10 Hz...1 kHz
Temperature Units	$^{\circ}\text{C}$ or $^{\circ}\text{F}$	$^{\circ}\text{C}$ or $^{\circ}\text{F}$
Data Formats	Raw/Proportional, Engineering Units, Engineering Units x 10, Scaled-for-PID, Percent Range	
Accuracy at 25 $^{\circ}\text{C}$ (77 $^{\circ}\text{F}$)	Thermocouple Inputs: ± 0.5 ... ± 3.0 $^{\circ}\text{C}$ (± 0.9 ... ± 5.4 $^{\circ}\text{F}$) depending on thermocouple type Millivolt Inputs: ± 15 ... ± 20 mV	With Autocalibration enabled... RTD Inputs: ± 0.2 ... ± 0.6 $^{\circ}\text{C}$ (± 0.36 ... ± 1.08 $^{\circ}\text{F}$) depending on RTD type Resistance Inputs: ± 0.5 ... ± 1.5 Ω depending on resistance value
Accuracy at 0...55 $^{\circ}\text{C}$ (32...131 $^{\circ}\text{F}$)	± 0.8 ... ± 10 $^{\circ}\text{C}$ (± 1.5 ... ± 18 $^{\circ}\text{F}$) depending on thermocouple type Millivolt Inputs: ± 25 ... ± 30 mV	With Autocalibration enabled... RTD Inputs: ± 0.4 ... ± 1.1 $^{\circ}\text{C}$ (± 0.72 ... ± 1.98 $^{\circ}\text{F}$) depending on RTD type Resistance Inputs: ± 0.25 ... ± 2.5 Ω depending on resistance value
Channel Update Time (typical)	7...303 ms per enabled channel + CJC update time, depending on filter selection (CJC update time is equal to the largest enabled channel's update time.)	6...303 ms per enabled channel, depending on filter selection
Channel Diagnostics	Over- or under-range and open-circuit by bit reporting	Over- or under-range or broken input by bit reporting
Calibration	The module performs autocalibration on channel enable and on a configuration change between channels. You can also program the module to calibrate every five minutes.	
Common Mode Noise Rejection	115 dB min @ 50 Hz (with 10 Hz or 50 Hz filter) 115 dB min @ 60 Hz (with 10 Hz or 60 Hz filter)	110 dB min @ 50 Hz (with 10 or 50 Hz filter) 110 dB min @ 60 Hz (with 10 or 60 Hz filter)
Normal Mode Noise Rejection	85 dB min @ 50 Hz (with 10 Hz or 50 Hz filter) 85 dB min @ 60 Hz (with 10 Hz or 60 Hz filter)	70 dB min @ 50 Hz (with 10 or 50 Hz filter) 70 dB min @ 60 Hz (with 10 or 60 Hz filter)
Input Group to System Isolation	720V DC for 1 minute	707V DC for 1 minute
Channel-to-Channel Isolation	± 10 V DC	± 10 V DC
Repeatability ⁽¹⁾	Thermocouples at 25 $^{\circ}\text{C}$ (77 $^{\circ}\text{F}$) and 10 Hz filter selected: ± 0.1 ... ± 2.0 $^{\circ}\text{C}$ (± 0.18 ... ± 3.6 $^{\circ}\text{F}$) depending on thermocouple type Millivolt Inputs: ± 6 μV	± 0.1 $^{\circ}\text{C}$ (± 0.18 $^{\circ}\text{F}$) for Nickel and Nickel-Iron ± 0.2 $^{\circ}\text{C}$ (± 0.36 $^{\circ}\text{F}$) for other RTD inputs ± 0.04 Ω for 150 Ω resistances ± 0.2 Ω for other resistances
Input Impedance	>10 M Ω	>10 M Ω

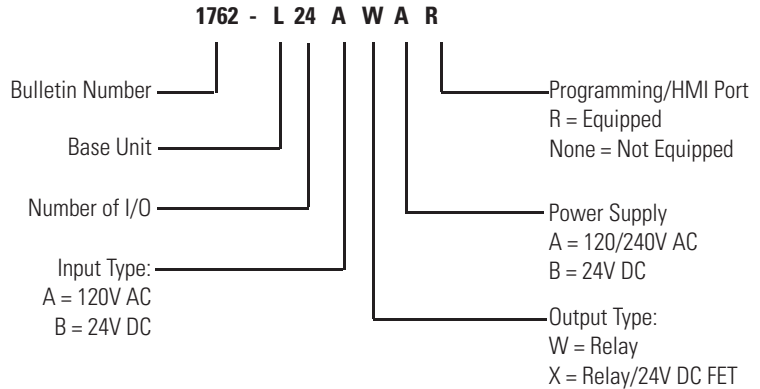
(1) Repeatability is the ability of the input module to register the same reading in successive measurements for the same input signal.

Select MicroLogix 1200 Controllers

MicroLogix 1200 Controllers Catalog Number Detail

Step 8 - Select:

- controller - review power and I/O configurations to select a controller catalog number; see power supply and I/O specifications for more detailed information
- accessories - memory and real-time clock modules
- record your selections in the Selection Record (start on [page 86](#))



MicroLogix 1200 Controller Power and I/O Configuration

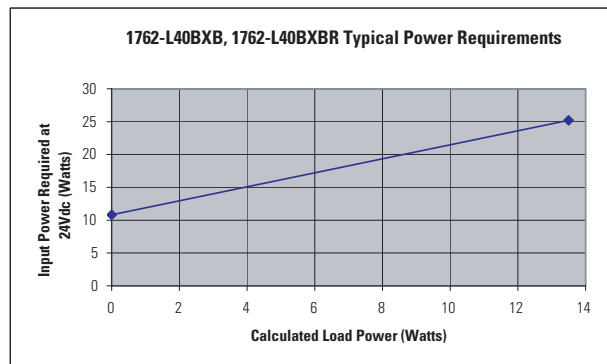
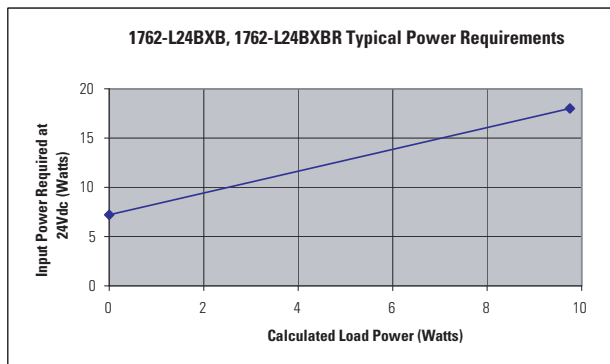
Cat. No.	Line Voltage	Number of Inputs	Number of Outputs	High Speed I/O
1762-L24AWA, -L24AWAR	120/240V AC	(14) 120V AC	(10) Relay	N/A
1762-L40AWA, -L40AWAR	120/240V AC	(24) 120V AC	(16) Relay	N/A
1762-L24BWA, -L24BWAR	120/240V AC	(10) Standard 24V DC (4) Fast 24V DC	(10) Relay	(4) 20 kHz input
1762-L40BWA, -L40BWAR	120/240V AC	(20) Standard 24V DC (4) Fast 24V DC	(16) Relay	(4) 20 kHz input
1762-L24BXB, -L24BXBR	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-L40BXB, -L40BXBR	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

MicroLogix 1200 Controller Power Supply Specifications

Attribute	1762-					
	L24AWA, L24AWAR	L40AWA, L40AWAR	L24BWA, L24BWAR	L40BWA, L40BWAR	L24BXB, L24BXBR	L40BXB, L40BXBR
Power Supply Voltage	85...265V AC @ 47...63 Hz				20.4...26.4V DC Class 2 SELV	
Power Consumption	68 VA	80 VA	70 VA	82 VA	27 W	40 W
Power Supply Inrush Current, max	120V AC: 25 A for 8 ms 240V AC: 40 A for 4 ms				24V DC: 15 A for 20 ms	24V DC: 15 A for 30 ms
Load Current ⁽¹⁾ , max	5V DC	400 mA	600 mA	400 mA	600 mA	400 mA
	24V DC	350 mA	500 mA	350 mA	500 mA	350 mA
Load Power, max	10.4 W	15 W	12 W	16 W	10.4 W	15 W
24V DC Sensor Power	---	---	250 mA, 400 µF capacitance, max	400 mA, 400 µF capacitance, max	---	---

(1) See [Perform MicroLogix 1200 Controller System Expansion Calculations](#) on [page 62](#) for an example system validation worksheet to calculate expansion I/O power usage.

MicroLogix 1200 Controller DC Input Power Requirements for BXB Units



MicroLogix 1200 Controller Input Specifications

Attribute	1762-L24AWA, 1762-L24AWAR 1762-L40AWA, 1762-L40AWAR	1762-L24BWA, 1762-L24BXB, 1762-L40BWA, 1762-L40BXB 1762-L24BWAR, 1762-L24BXBR, 1762-L40BWAR, 1762-L40BXBR	
		Inputs 0 through 3	Inputs 4 and higher
On-state Voltage Range	79...132V AC @ 47 Hz...63 Hz	14...26.4V DC @ 55 °C (131 °F) 14...30.0V DC @ 30 °C (86 °F)	10...26.4V DC @ 55 °C (131 °F) 10...30.0V DC @ 30 °C (86 °F)
Off-state Voltage Range	0...20V AC	0...5V DC	
Operating Frequency	N/A	0 Hz...20 kHz	0 Hz...1 kHz (scan time dependent)
Signal Delay, max	ON Delay = 20 ms OFF Delay = 20 ms	Standard inputs: selectable from 0.5...16 ms high-speed inputs: selectable from 0.025...16 ms	
On-state Current: min nom max	5.0 mA @ 79V AC 12 mA @ 120V AC 16.0 mA @ 132V AC	2.5 mA @ 14V DC 7.3 mA @ 24V DC 12.0 mA @ 30V DC	2.0 mA @ 10V DC 8.9 mA @ 24V DC 12.0 mA @ 30V DC
Off-state Leakage Current, max	2.5 mA, max	1.5 mA, min	
Impedance, nom	12 kΩ @ 50 Hz 10 kΩ @ 60 Hz	3.3 kΩ	2.7 kΩ
Inrush Current, max	250 mA at 120V AC	---	

MicroLogix 1200 Controller Digital Output Specifications

Attribute	1762-		
	L24AWA, L24BWA, L24BXB, L40AWA, L40BWA, L40BXB, L24AWAR, L24BWAR, L24BXHR, L40AWAR, L40BWAR, L40BXHR	L24BXB, L40BXB, L24BXHR, L40BXHR	
	Relay	FET Standard Operation	FET High-speed Operation (Output 2 only)
Operating Voltage Range	5...125V DC 5...264V AC	21.6...27.6V DC	21.6...27.6V DC
Continuous Current per Point, max	See MicroLogix 1500 Controller Relay Contact Rating on page 72.	See below, MicroLogix 1200 Controller FET Standard Outputs Continuous Current per Point, max.	100 mA
Continuous Current per Common, max	8.0 A	7.5 A for L24BXB, L24BXHR 8.0 A for L40BXB, L40BXHR	
Continuous Current per Controller, max	30 A or total of per-point loads, whichever is less at 150V max 20 A 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 µs OFF Delay = 18 µs
Surge Current per Point (peak)	---	4 A for 10 ms ⁽¹⁾	

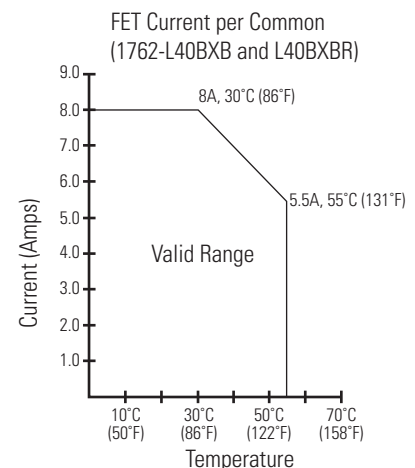
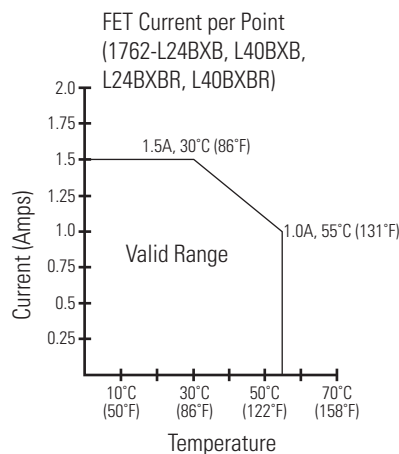
(1) Repeatability is once every 2 seconds @ 55 °C (131 °F), once every 1 second @ 30 °C (86 °F).

MicroLogix 1200 Controller Relay Contact Rating

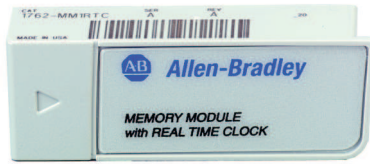
Voltage, max	Amperes		Amperes Continuous	Voltamperes	
	Make	Break		Make	Break
240V AC	7.5 A	0.75 A	2.5 A	1800 VA	180 VA
120V AC	15 A	1.5 A			
125V DC	0.22 A ⁽¹⁾		1.0 A	28 VA	
24V DC	1.2 A ⁽¹⁾		2.0 A		

(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 = 0.58 A. For DC voltage applications less than 48V, the make/break ratings for relay contacts cannot exceed 2 A. For DC voltage applications greater than 48V, the make/break ratings for relay contact cannot exceed 1 A.

MicroLogix 1200 Controller FET Standard Outputs Continuous Current per Point, max



MicroLogix 1200 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 Module (1762-MM1)

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

Combination Memory and Real-time Clock Module (1762-MM1RTC)

Provides all real-time clock and memory back-up functions of the 1762-RTC and 1762-MM1 modules

Select MicroLogix 1200 Expansion I/O

Step 9 - Select:

- I/O modules - digital, analog, and temperature
- perform system expansion calculations
- record your selections in the Selection Record (start on [page 86](#))

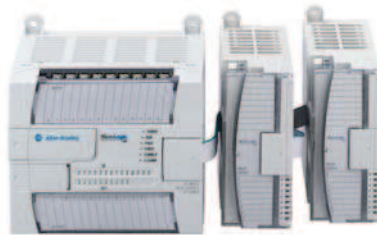
MicroLogix 1200 controllers expand by using the same 1762 I/O platform as MicroLogix 1100 controllers. The 1762 I/O expansion modules provide superior functionality in a small sized low-cost package. A variety of modules complement and extend the capabilities of MicroLogix 1200 controllers by maximizing the flexibility of 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 by using up to six expansion modules per controller (depending on power budget).

See [Select MicroLogix 1100 Expansion I/O on page 50](#) for available modules and specifications.

1762 Expansion I/O Modules Connected to a MicroLogix 1200 Controller



Perform MicroLogix 1200 Controller System Expansion Calculations

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

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

Follow these steps to verify the controller power supply loading.

1. Use the following table 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**.

MicroLogix 1200 Controller Power Supply Loading - Calculate System Current

Cat. No.	Bus Current Draw Attribute		Calculated Current for System		
	at 5V DC (mA)	at 24V DC (mA)	at 5V DC (mA)	at 24V DC (mA)	
1761-NET-AIC ⁽¹⁾⁽²⁾	0	120 ⁽²⁾			
1761-NET-ENI, 1761-NET-ENIW ⁽¹⁾⁽²⁾	0	100 ⁽²⁾			
2707-MVH232 or 2707-MVP232 ⁽¹⁾⁽²⁾	0	80 ⁽²⁾			
Cat. No.	n = Number of Modules (6 max)	A	B	n x A	n x B
1762-IA8		50	0		
1762-IQ8		50	0		
1762-IQ8OW6		110	80		
1762-IQ16 (Series A)		60	0		
1762-OA8		115	0		
1762-OB8		115	0		
1762-OB16		175	0		
1762-OW8		80	90		
1762-OW16 (Series A)		120	140		
1762-OX6I		110	110		
1762-IF2OF2		40	105		
1762-IF4		40	50		
1762-OF4		40	165		
1762-IR4		40	50		
1762-IT4		40	50		
1762-OV32T		175	0		
1762-OB32T		175	0		
1762-IQ32T		170	0		
1762-IQ16 (Series B)		70	0		
1762-OW16 (Series B)		140	180		
TOTAL MODULES:		TOTAL CALCULATED CURRENT:		(C)	(D)
For 1762-L24BWA, 1762-L40BWA, 1762-L24BWAR, and 1762-L40BWAR only, add sum of any User 24V DC Sensor Current				(E)	

(1) These are optional accessories. Current is consumed only if the accessory is installed.

(2) Current for the 1761-NET-AIC or 1761-NET-ENI(W) can be supplied by the controller's communication port or from an external 24V DC source. No current is consumed from the controller when a user-supplied, external source is used. If an external source is to be used, do not select the device here. The current for a 2707-MVH232 or 2707-MVP232 MicroView Operator Interface is supplied from the controller's communication port, if directly connected.

3. Using the table below, 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.

MicroLogix 1200 Controller Maximum Load Current

Cat. No.	Load Current	5V DC	24V DC	User 24V DC Sensor Current
1762-L24AWA 1762-L24AWAR 1762-L24BXB, 1762-L24BXBR	Calculated Value	(C)	(D)	N/A
	MAXIMUM LIMIT	400 mA	350 mA	
1762-L24BWA 1762-L24BWAR	Calculated Value	(C)	(D)	(E)
	MAXIMUM LIMIT	400 mA	350 mA	250 mA
1762-L40AWA 1762-L40AWAR 1762-L40BXB, 1762-L40BXBR	Calculated Value	(C)	(D)	N/A
	MAXIMUM LIMIT	600 mA	500 mA	
1762-L40BWA 1762-L40BWAR	Calculated Value	(C)	(D)	(E)
	MAXIMUM LIMIT	600 mA	500 mA	400 mA

4. Use the table below to verify that the system is within the power loading limits of the controller.

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.

MicroLogix 1200 Controller Maximum Load Power

Cat. No.	5V Power Consumption			24V Power Consumption			Calculated Watts (sum of 5V and 24V)	MAXIMUM POWER LIMIT
	Calculated Watts			Calculated Watts				
1762-L24AWA 1762-L24AWAR	(C)	x 5V	= W	(D)	x 24V	= W	W	10.4 W
1762-L24BXB 1762-L24BXBR	(C)	x 5V	= W	(D)	x 24V	= W	W	10.4 W
1762-L24BWA 1762-L24BWAR	(C)	x 5V	= W	(D)+(E)	x 24V	= W	W	12 W
1762-L40AWA 1762-L40AWAR	(C)	x 5V	= W	(D)	x 24V	= W	W	15 W
1762-L40BXB 1762-L40BXBR	(C)	x 5V	= W	(D)	x 24V	= W	W	15 W
1762-L40BWA 1762-L40BWAR	(C)	x 5V	= W	(D)+(E)	x 24V	= W	W	16 W

Select Replacement Parts

Step 14 - Select:

- replacement parts
- record your selections in the Selection Record (start on [page 86](#))

MicroLogix 1000 Replacement Parts

Description	Cat. No.
Terminal Cover Doors for 1761-L32AWA, -L32BWA, or -L32AAA (2 doors per package)	1761-RPL-T32X
Replacement Terminal Block — 6-position DH-485 plug/connector used with the 1761-NET-AIC.	1746-RT30
Replacement Terminal Block — 5-position DeviceNet plug/connector used with the 1761-NET-DNI.	1761-RPL-RT00

MicroLogix 1100 Replacement Part

Description	Cat. No.
Replacement Battery	1763-BA

MicroLogix 1200 Replacement Parts

Description	Cat. No.
Replacement Removable Terminal Block — (1) 25-pt double row, (1) 29-point double row for 1762-L40AWA and -L40BWA	1762-RPLRTB40

MicroLogix 1400 Replacement Parts

Description	Cat. No.
Replacement Battery	1747-BA
Replacement Removable Terminal Block — (1) 25-pt double row, (1) 29-point double row for all 1766-L32xxxx	1762-RPLRTB40

MicroLogix 1500 Replacement Parts

Description	Cat. No.
Replacement Terminal Block — 17-pt for 1764-24AWA and 1764-24BWA inputs	1764-RPLTB1
Replacement Terminal Block — 21-pt for 1764-28BxB inputs and outputs for all base units	1764-RPLTB2
Replacement Battery	1747-BA

Select Training Materials

Step 15 - Select:

- training and promotional products - starter paks, demo units and simulators
- record your selections in the Selection Record (start on [page 86](#))

Training Materials for MicroLogix 1000, 1100, 1200, 1400, and 1500 Controllers

Description	Cat. No.
MicroLogix 1000 Integrated Demonstration Unit includes: 1761-L20BWA-5A controller; 1761-NET-AIC DH-485 Interface; 1761-NET-DNI DeviceNet Interface; quadrature encoder; 4 selector switches; 8 illuminated pushbuttons; 1 potentiometer; 1 analog meter	1796-MICROx ⁽¹⁾
MicroLogix 1500 Integrated Demonstration Unit includes: 1764-28BxB base unit; 1764-LSP processor unit; 1769-IF4 Analog Input Module; 1769-OF2 Analog Output Module; 1761-NET-AIC DH-485 Interface Module; 1761-NET-DNI DeviceNet Interface Module; quadrature encoder; 4 selector switches; 8 illuminated pushbuttons; 1 potentiometer; 1 analog meter; 1 frequency meter	1796-MICRO15x ⁽¹⁾ (series B)
MicroLogix 1000 Input Simulator. For use with 1761-L16BWA MicroLogix 1000 Controller.	1761-SIM-B16
MicroLogix 1200 Input Simulator. For use with 1762-L24BWA and 1762-L24BxB controllers.	1796-SIM1200
MicroLogix 1500 Input Simulator. For use with 1764-24BWA and 1764-28BxB base units.	1796-SIM1500
MicroLogix 1200/PanelView 300 Micro Integrated Demonstration Unit includes: 1762-L24BWA, 2711-M3A18L1, inductive proximity switch, photo-electric sensor, programming cable.	1796-PV300MICROx ⁽¹⁾
MicroLogix 1100 Input Simulator.	DEMO-SIM1100
MicroLogix 1400 Demonstration Unit.	DEMO-ML1400x ⁽¹⁾
Connected Components Demonstration Unit.	DEMO-MICROSOLx ⁽¹⁾

(1) The x equals the power cord option. Contact your local Allen-Bradley distributor for more information.