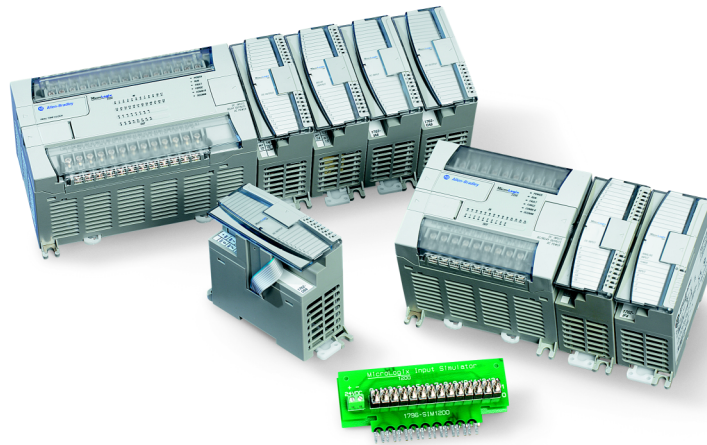## MicroLogix 1200 Controller

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 (availableon 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-L*xxxxx*R).
- 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).

MicroLogix Controller System-selection Checklist

Use the following checklist as a guide to completing your own system specification. Skip any sections that do not apply.

✔	Step	See
1	**Select Family: MicroLogix 1000, 1200 or 1500 Controller** • 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	**page 17**
	Select Family: MicroLogix 1100 or 1400 Controller • 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	**page 21**
2	**Select Communication** • communication network - based on application requirementscommunication network - based on application requirements • communication interface device - if required	**page 33**
3	**Select Programming Tools and Software** • programming tools - hand-held programmer with optional memory module (available for MicroLogix 1000 only) • software - the appropriate RSLogix package for your application	**page 38**
4	**Select Network and Programming Cables** cables - review device port identification to find cable in the selection chart)	**page 39**
5	**Select MicroLogix 1000 Controllers** controller - review power and I/O configurations to select a controller catalog number; see power supply and I/O specification for more detailed information	**page 41**
6	**Select MicroLogix 1100 Controllers** • controller - review power and I/O configurations to select a controller catalog number; see power supply and I/O specification for more detailed information • accessories - memory modules	**page 46**
7	**Select MicroLogix 1100 Expansion I/O** I/O modules - digital, analog, and temperature	**page 50**
8	**Select MicroLogix 1200 Controllers** • 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	**page 58**
9	**Select MicroLogix 1200 Expansion I/O** • I/O modules - digital, analog, and temperature • perform system expansion calculations	**page 61**
10	**Select MicroLogix 1400 Controllers** • I/O modules - digital, analog, and temperature • perform system expansion calculations	**page 64**
11	**Select MicroLogix 1400 Expansion I/O** I/O modules - digital, analog, and temperature	**page 69**
12	**Select MicroLogix 1500 Controllers** • base unit - review power and I/O configurations to select a catalog number; see power supply and I/O specifications for more detailed information • processor - see notes at Step 1 • accessories - data access tool; real-time clock and memory modules	**page 70**
13	**Select MicroLogix 1500 System Expansion Components** • I/O modules - digital, analog, temperature and high-speed counter • communication modules - DPI SCANport and DeviceNet • power supplies, cables and end caps • perform system expansion calculations	**page 74**

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.

Features

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

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 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.

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-IQ8OW6 (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 kΩ @ 50 Hz 10 kΩ @ 60 Hz	3 kΩ	3 kΩ	3 kΩ	4.7 kΩ
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-OV32T
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-IQ8OW6 (outputs)	1762-OW8	1762-OW16	1762-OX6I
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-IF2OF2	1762-OF4
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-IF2OF2
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-IF2OF2	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	°C or °F	°C or °F
Data Formats	Raw/Proportional, Engineering Units, Engineering Units x 10, Scaled-for-PID, Percent Range	
Accuracy at 25 °C (77 °F)	Thermocouple Inputs: ±0.5…±3.0 °C (±0.9…±5.4 °F) depending on thermocouple type Millivolt Inputs: ±15…±20 mV	With Autocalibration enabled… RTD Inputs: ±0.2…±0.6 °C (±0.36…±1.08 °F) depending on RTD type Resistance Inputs: ±0.5…±1.5 Ω depending on resistance value
Accuracy at 0…55 °C (32…131 °F)	±0.8…±10 °C (±1.5…±18 °F) depending on thermocouple type Millivolt Inputs: ±25…±30 mV	With Autocalibration enabled… RTD Inputs: ±0.4…±1.1 °C (±0.72…±1.98 °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 Hz or 50 Hz filter) 110 dB min @ 60 Hz (with 10 Hz 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	±10V DC	±10V DC
Repeatability[1]	Thermocouples at 25 °C (77 °F) and 10 Hz filter selected: ±0.1…±2.0 °C (±0.18…±3.6 °F) depending on thermocouple type Millivolt Inputs: ±6 µV	±0.1 °C (±0.18 °F) for Nickel and Nickel-Iron ±0.2 °C (±0.36 °F) for other RTD inputs ±0.04 Ω for 150 Ω resistances ±0.2 Ω for other resistances
Input Impedance	>10 MΩ	>10 MΩ

(1)   Repeatability is the ability of the input module to register the same reading in successive measurements for the same input signal.
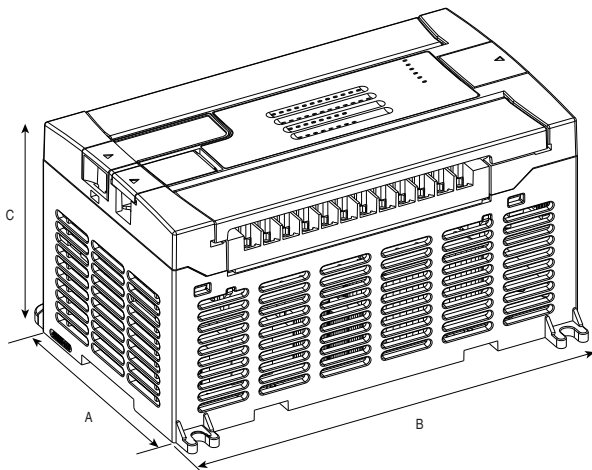
MicroLogix 1200 Controller

Dimensions are in millimeters (inches).

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

MicroLogix 1200 Controller Dimension Drawing
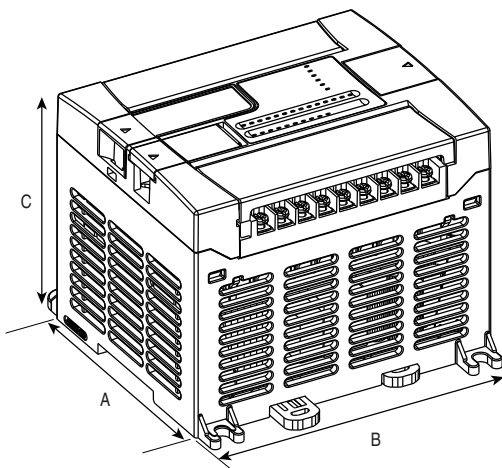
1762-L24AWA, 1762-L24BWA, 1762-L24BXB
1762-L24AWAR, 1762-L24BWAR, 1762-L24BXBR

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.)
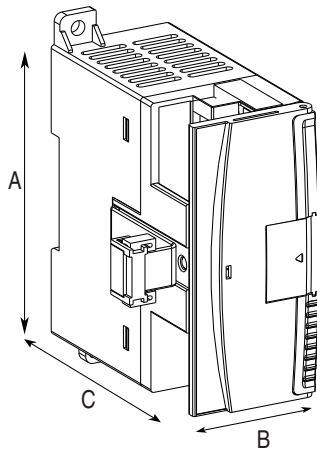
MicroLogix 1200 System Mounting Dimensions

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

A = 95.86mm (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 for DIN rail mounting dimensions.

MicroLogix 1400 Controller Dimension Drawing

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

Controller Dimensions

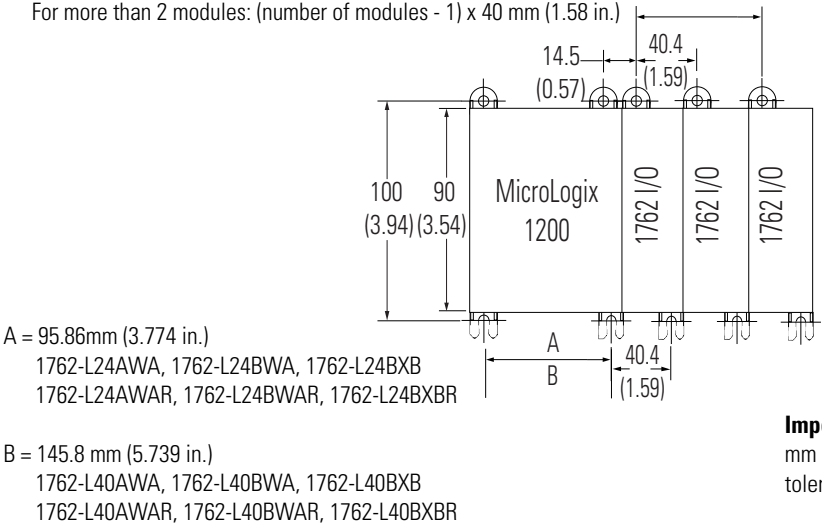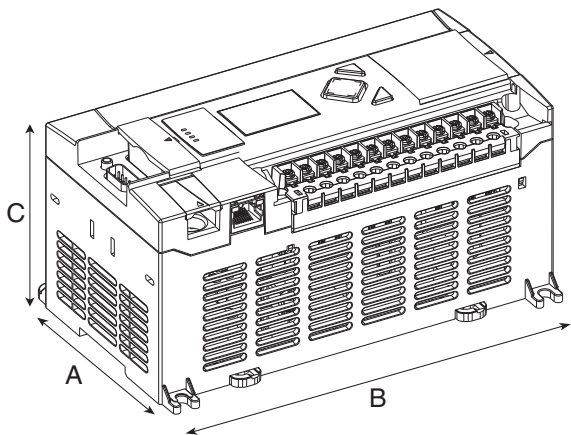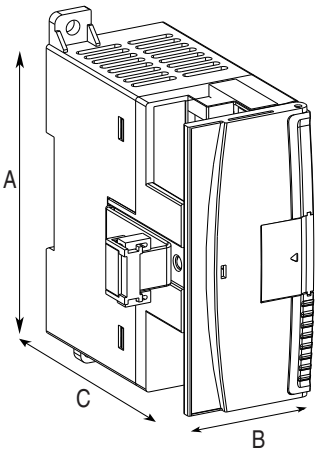| Dimension	Height
A	90 mm (3.5 in.)
B	180 mm (7.08 in.)
C	87 mm (3.43 in.)

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 1400 System Mounting Dimension

180.0 mm
(7.08 in.)

165.8 mm
(6.52 in.)

25.81 mm
(1.016 in.)

⌀ 0.164

100.0 mm
(3.93 in.)

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