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 software - the appropriate RSLogix package for your application • programming 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 47
	7 Select MicroLogix 1100 Expansion I/O I/O modules - digital, analog, and temperature	page 51
	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 59
	9 Select MicroLogix 1200 Expansion I/O • I/O modules - digital, analog, and temperature • perform system expansion calculations	page 62
	10 Select MicroLogix 1400 Controllers • I/O modules - digital, analog, and temperature • perform system expansion calculations	page 65
	11 Select MicroLogix 1400 Expansion I/O I/O modules - digital, analog, and temperature	page 70
	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 71
	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 75

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 • RCM marked for all applicable acts • EAC certified for all applicable directives		
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 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 73.)			7 A (Also see MicroLogix 1500 Controller Relay Contact Rating on page 73.)
Continuous Current per Common, max	8 A	8 A	8 A	7 A (Also see MicroLogix 1500 Controller Relay Contact Rating on page 73.)
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 73.			

(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.

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-suppled, 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.