



MicroLogix 1200 Programmable Controllers

Bulletin 1762 Controllers and Expansion I/O Modules



Allen-Bradley

by **ROCKWELL AUTOMATION**

User Manual

Original Instructions

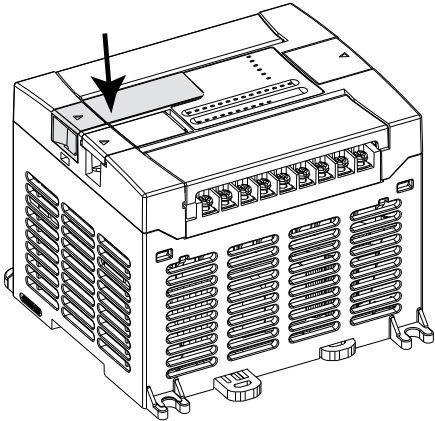
Controller Input Power and Embedded I/O (Continued)

Catalog Number	Description		
	Input Power	Inputs	Outputs
1762-L40AWA, 1762-L40AWAR	120/240V AC	24 120V AC	16 relay
1762-L40BWA, 1762-L40BWAR	120/240V AC	20 24V DC 4 fast 24V DC	16 relay
1762-L40BXB, 1762-L40BXBR	24V DC	20 24V DC 4 fast 24V DC	8 relay, 7 24V DC FET 1 high-speed 24V DC FET

Component Descriptions

MicroLogix 1200 Memory Module and/or Real-time Clock

The controller is shipped with a memory module port cover in place. You can order a memory module, real-time clock, or memory module and real-time clock as an accessory.



Memory Module and/or Real-time Clock

Catalog Number	Description
1762-MM1	Memory module only
1762-RTC	Real-time clock only
1762-MM1RTC	Memory module and real-time clock

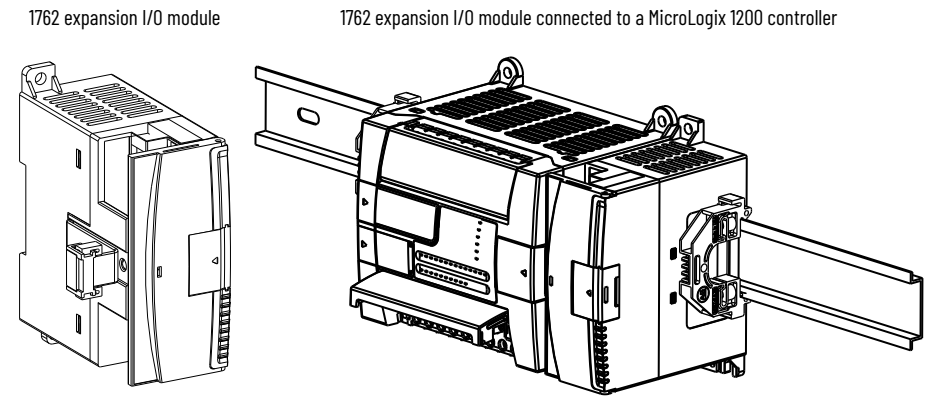
1762 Expansion I/O Modules

1762 expansion I/O modules can be connected to the MicroLogix 1200 controller, as shown in [Figure 2](#).



A maximum of six I/O modules, in certain combinations, may be connected to a controller. See [System Loading and Heat Dissipation on page 105](#) to determine valid combinations.

Figure 2 - 1762 Expansion I/O Modules



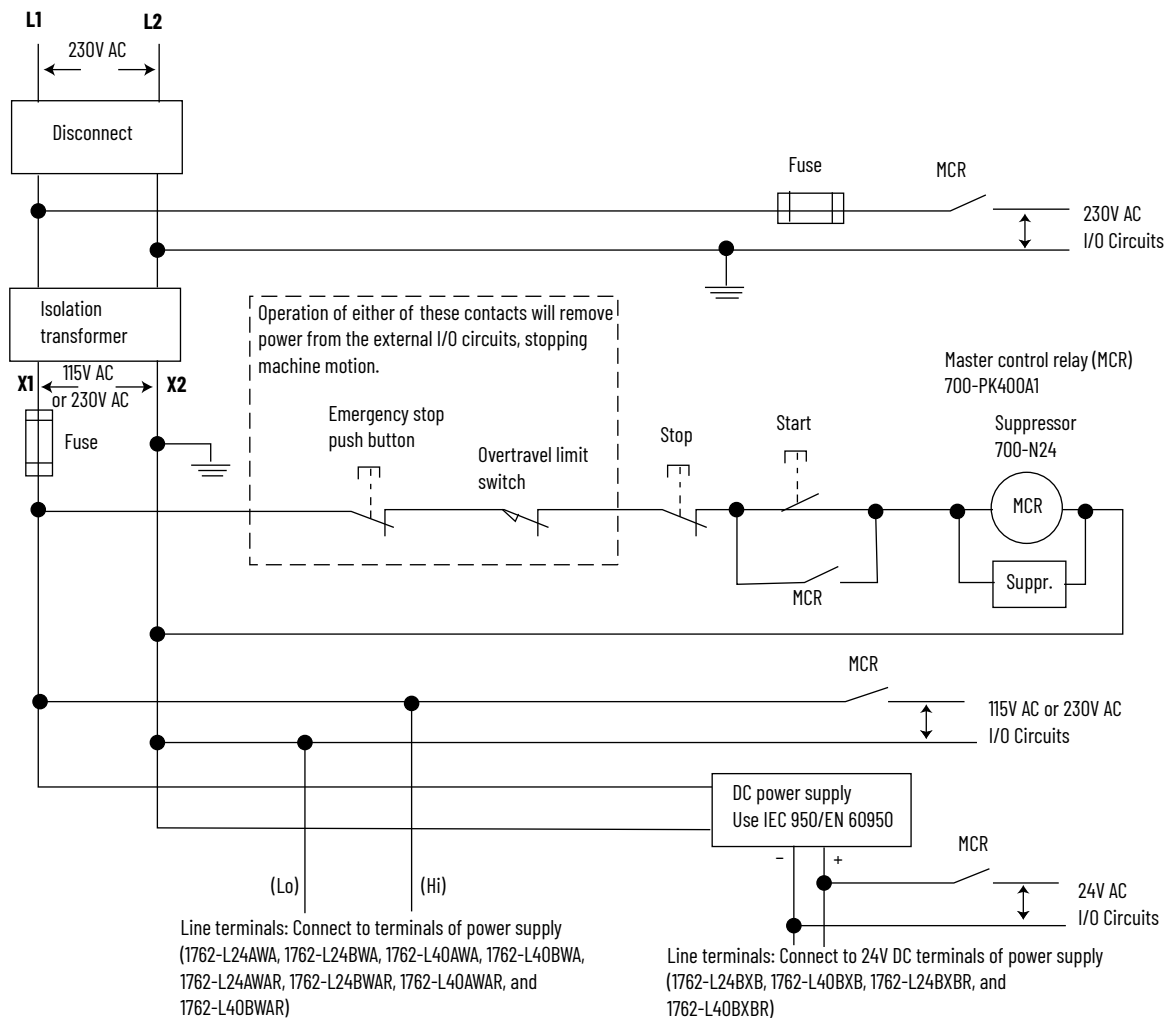
- Install emergency stop switches and the master control relay in your system. Verify that relay contacts have a sufficient rating for your application. Emergency stop switches must be easy to reach.
- In the following illustration, input and output circuits are shown with MCR protection. However, in most applications, only output circuits require MCR protection.

Figure 3 and Figure 4 show the master control relay wired in a grounded system.



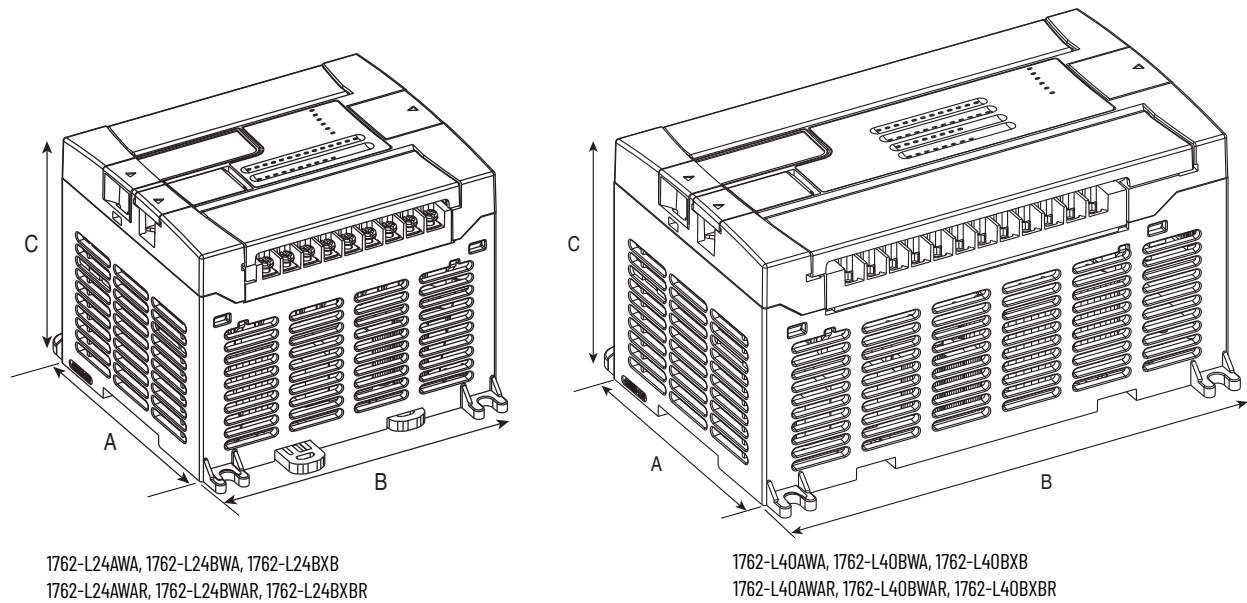
In most applications input circuits do not require MCR protection; however, if you must remove power from all field devices, you must include MCR contacts in series with input power wiring.

Figure 3 - Schematic (Using IEC Symbols)



Controller Mounting Dimensions

Figure 5 - Controller Dimensions

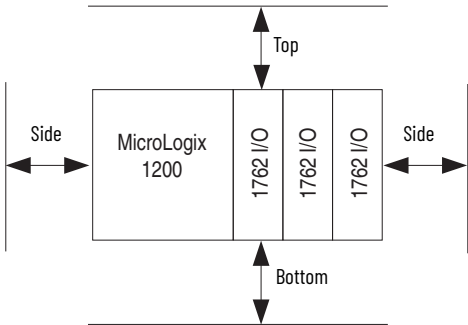


Dimension	1762-L24AWA 1762-L24AWAR	1762-L24BWA 1762-L24BWAR	1762-L24BXB 1762-L24BXBR	1762-L40AWA 1762-L40AWAR	1762-L40BWA 1762-L40BWAR	1762-L40BXB 1762-L40BXBR
A	90 mm (3.5 in.)			90 mm (3.5 in.)		
B	110 mm (4.33 in.)			160 mm (6.30 in.)		
C	87 mm (3.43 in.)			87 mm (3.43 in.)		

Controller and Expansion I/O Spacing

The controller mounts horizontally, with the expansion I/O extending to the right of the controller. Allow 50 mm (2 in.) of space on all sides of the controller system for adequate ventilation. Maintain spacing from enclosure walls, wireways, and adjacent equipment, as shown in [Figure 6](#).

Figure 6 - Controller and Expansion I/O Spacing

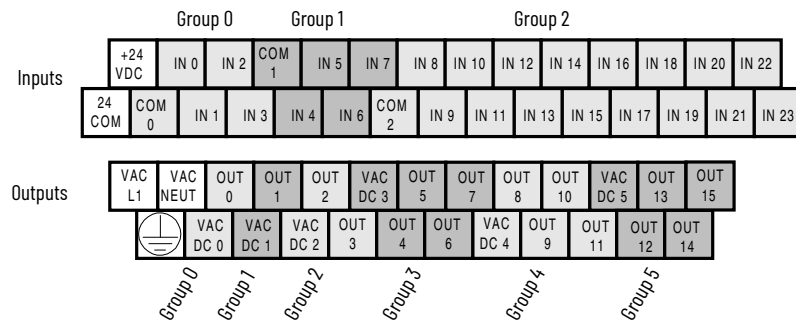


Mount the Controller

MicroLogix 1200 controllers are suitable for use in an industrial environment when installed in accordance with these instructions. Specifically, this equipment is intended for use in clean, dry environments (Pollution degree 2^(a)) and to circuits not exceeding Over Voltage Category II^(b) (IEC 60664-1)^(c).

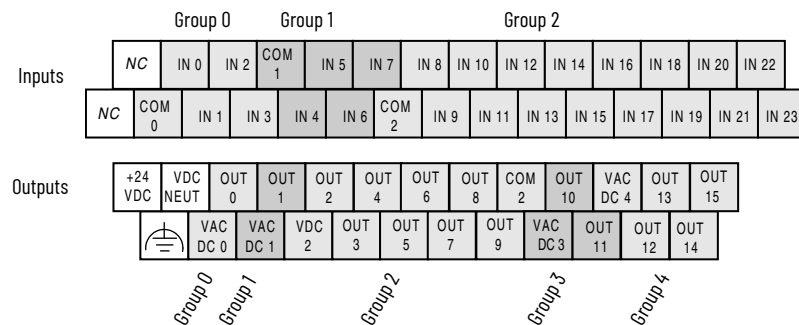
(a) Pollution Degree 2 is an environment where, normally, only non-conductive pollution occurs except that occasionally a temporary conductivity caused by condensation shall be expected.
(b) Over Voltage Category II is the load level section of the electrical distribution system. At this level transient voltages are controlled and do not exceed the impulse voltage capability of the product's insulation.
(c) Pollution Degree 2 and Over Voltage Category II are International Electrotechnical Commission (IEC) designations.

Figure 19 - 1762-L40BWA and 1762-L40BWAR



ATTENTION: The 24V DC sensor supply of the 1762-L40BWA and 1762-L40BWAR should not be used to power output circuits. It should only be used to power input devices (for example sensors and switches). See [Master Control Relay on page 16](#) for information on MCR wiring in output circuits.

Figure 20 - 1762-L40BXB and 1762-L40BXBR



Terminal Groupings

Table 4 - Input Terminal Grouping

Controller	Inputs		
	Input Group	Common Terminal	Input Terminal
1762-L24AWA 1762-L24AWAR	Group 0	AC COM 0	I/0...I/3
	Group 1	AC COM 1	I/4...I/13
1762-L24BWA 1762-L24BWAR	Group 0	DC COM 0	I/0...I/3
	Group 1	DC COM 1	I/4...I/13
1762-L24BXB 1762-L24BXBR	Group 0	DC COM 0	I/0...I/3
	Group 1	DC COM 1	I/4...I/13
1762-L40AWA 1762-L40AWAR	Group 0	AC COM 0	I/0...I/3
	Group 1	AC COM 1	I/4...I/7
	Group 2	AC COM 2	I/8...I/23
1762-L40BWA 1762-L40BWAR	Group 0	DC COM 0	I/0...I/3
	Group 1	DC COM 1	I/4...I/7
	Group 2	DC COM 2	I/8...I/23
1762-L40BXB 1762-L40BXBR	Group 0	DC COM 0	I/0...I/3
	Group 1	DC COM 1	I/4...I/7
	Group 2	DC COM 2	I/8...I/23

Table 5 - Output Terminal Grouping

Controller	Outputs			
	Output Group	Voltage Terminal	Output Terminal	Description
1762-L24AWA 1762-L24AWAR	Group 0	VAC/VDC 0	0/0	Isolated Relay outputs
	Group 1	VAC/VDC 1	0/1	
	Group 2	VAC/VDC 2	0/2...0/3	
	Group 3	VAC/VDC 3	0/4...0/5	
	Group 4	VAC/VDC 4	0/6...0/9	
1762-L24BWA 1762-L24BWAR	Group 0	VAC/VDC 0	0/0	Isolated Relay outputs
	Group 1	VAC/VDC 1	0/1	
	Group 2	VAC/VDC 2	0/2...0/3	
	Group 3	VAC/VDC 3	0/4...0/5	
	Group 4	VAC/VDC 4	0/6...0/9	
1762-L24BXB 1762-L24BXBR	Group 0	VAC/VDC 0	0/0	Isolated Relay outputs
	Group 1	VAC/VDC 1	0/1	Isolated FET outputs
	Group 2	VDC 2, VDC COM 2	0/2...0/6	
	Group 3	VAC/VDC 3	0/7...0/9	Isolated Relay outputs
1762-L40AWA 1762-L40AWAR	Group 0	VAC/VDC 0	0/0	Isolated Relay outputs
	Group 1	VAC/VDC 1	0/1	
	Group 2	VAC/VDC 2	0/2...0/3	
	Group 3	VAC/VDC 3	0/4...0/7	
	Group 4	VAC/VDC 4	0/8...0/11	
	Group 5	VAC/VDC 5	0/12...0/15	
1762-L40BWA 1762-L40BWAR	Group 0	VAC/VDC 0	0/0	Isolated Relay outputs
	Group 1	VAC/VDC 1	0/1	
	Group 2	VAC/VDC 2	0/2...0/3	
	Group 3	VAC/VDC 3	0/4...0/7	
	Group 4	VAC/VDC 4	0/8...0/11	
	Group 5	VAC/VDC 5	0/12...0/15	
1762-L40BXB 1762-L40BXBR	Group 0	VAC/VDC 0	0/0	Isolated Relay outputs
	Group 1	VAC/VDC 1	0/1	Isolated FET outputs
	Group 2	VDC 2, VDC COM 2	0/2...0/9	
	Group 3	VAC/VDC 3	0/10...0/11	Isolated Relay outputs
	Group 4	VAC/VDC 4	0/12...0/15	

Sinking and Sourcing Wiring Diagrams

Any of the MicroLogix 1200 controller DC embedded input groups can be configured as sinking or sourcing depending on how the DC COM is wired on the group.

Type	Definition
Sinking Input	The input energizes when high-level voltage is applied to the input terminal (active high). Connect the power supply VDC (-) to the input group's COM terminal.
Sourcing Input	The input energizes when low-level voltage is applied to the input terminal (active low). Connect the power supply VDC (+) to the input group's COM terminal.



ATTENTION: The 24V DC sensor power source must not be used to power output circuits. It should only be used to power input devices (for example sensors and switches). See [Master Control Relay on page 16](#) for information on MCR wiring in output circuits.

Figure 29 - 1762-L40BWA and 1762-L40BWAR Sinking Input Wiring Diagram

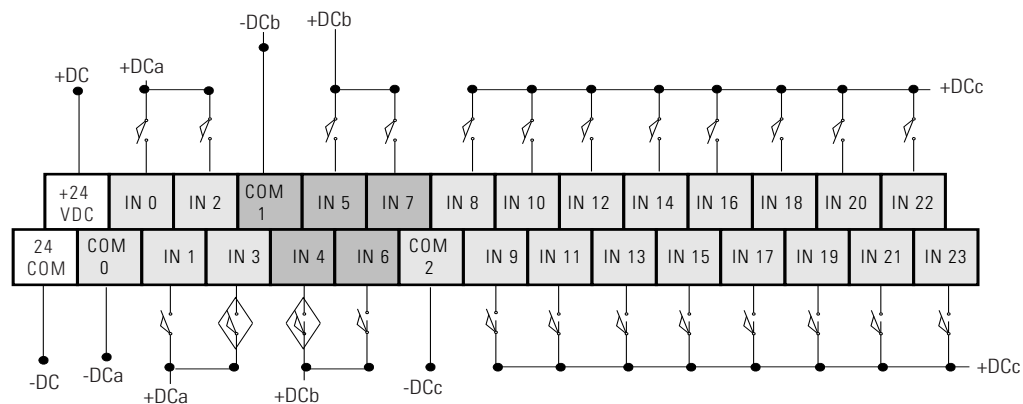


Figure 30 - 1762-L40BWA and 1762-L40BWAR Sourcing Input Wiring Diagram

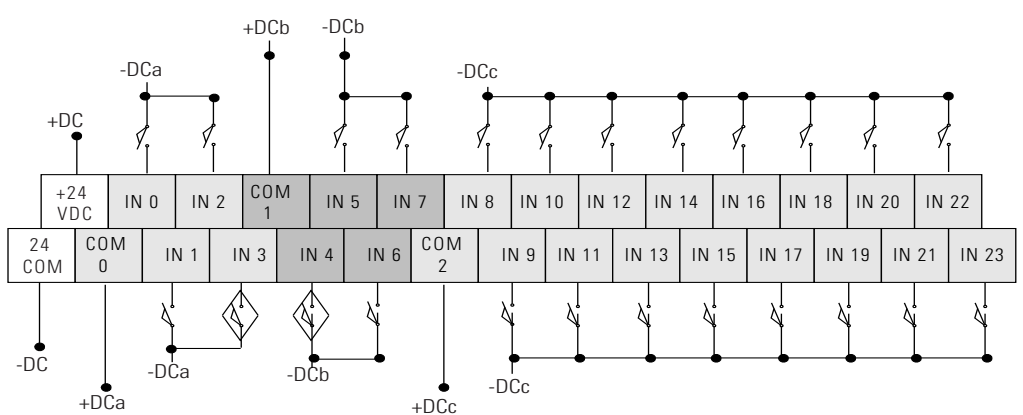


Figure 31 - 1762-L40BWB and 1762-L40BWB-R Sinking Input Wiring Diagram

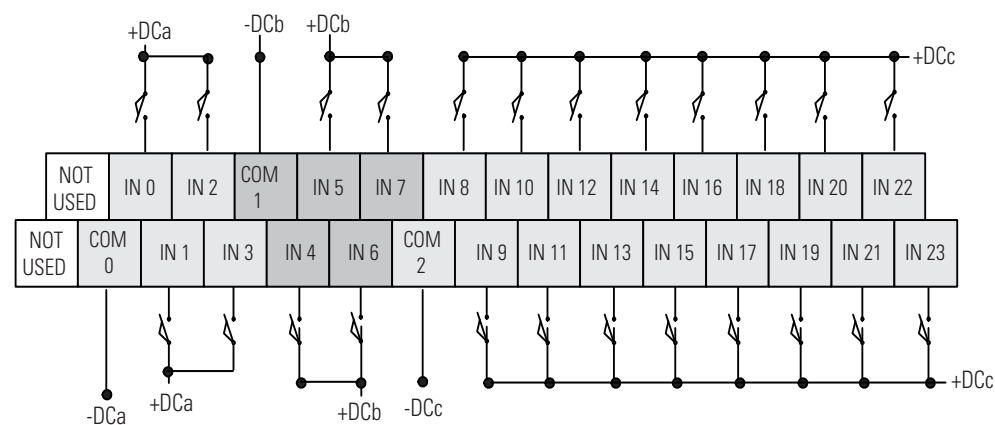


Figure 32 - 1762-L40BXB and 1762-L40BXR Sourcing Input Wiring Diagram

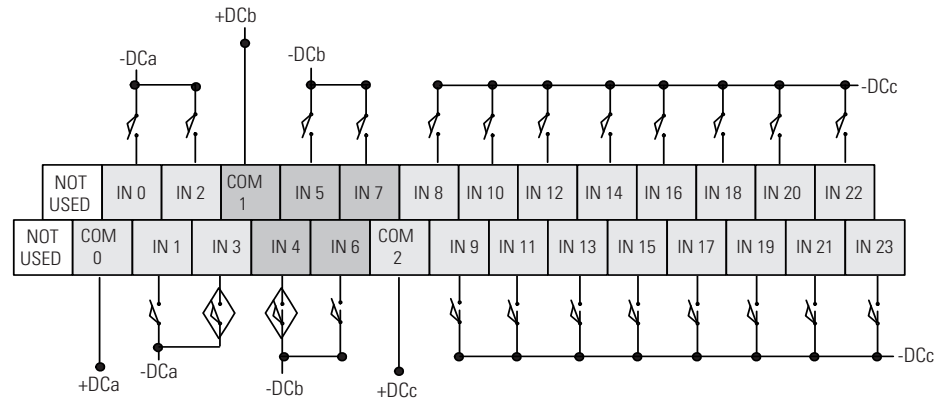


Figure 33 - 1762-L40AWA, 1762-L40BWA, 1762-L40AWAR, and 1762-L40BWAR Output Wiring Diagram

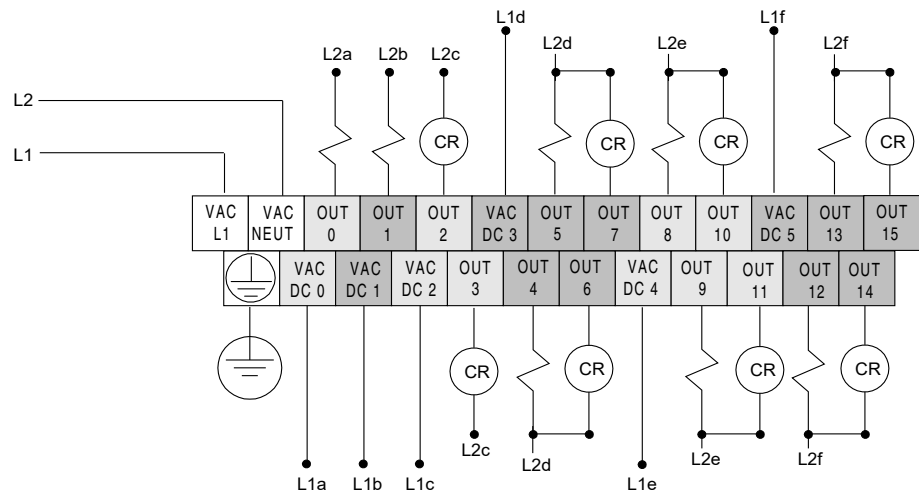
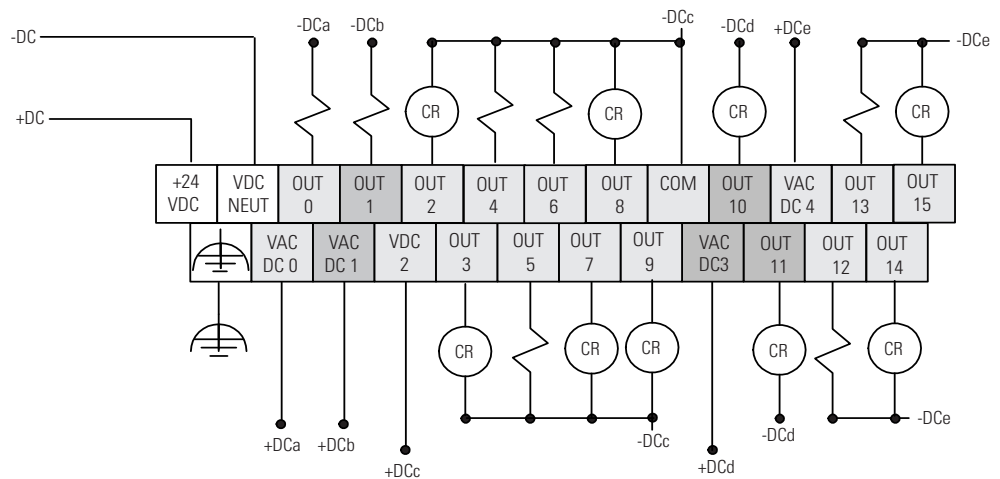


Figure 34 - 1762-L40BXB and 1762-L40BXR Output Wiring Diagram



Specifications

Controller Specifications

General Specifications

Attribute	1762-L24AWA 1762-L24AWAR	1762-L24BWA 1762-L24BWAR	1762-L24BXB 1762-L24BXHR	1762-L40AWA 1762-L40AWAR	1762-L40BWA 1762-L40BWAR	1762-L40BXB 1762-L40BXHR
Dimensions	Height: 90 mm (3.54 in.), 104 mm (4.09 in.) (with DIN latch open) Width: 110 mm (4.33 in.) Depth: 87 mm (3.42 in.)			Height: 90 mm (3.54 in.), 104 mm (4.09 in.) (with DIN latch open) Width: 160 mm (6.30 in.) Depth: 87 mm (3.42 in.)		
Shipping weight	0.9 kg (2.0 lbs)			1.1 kg (2.4 lbs)		
Number of I/O	14 inputs, 10 outputs			24 inputs, 16 outputs		
Power supply voltage	100...240V AC (-15%, +10%) @ 47...63 Hz		24V DC (-15%, +10%) Class 2, SELV	100...240V AC (-15%, +10%) @ 47...63 Hz		24V DC (-15%, +10%) Class 2, SELV
Heat dissipation	15.2 W	15.7 W	17.0 W	21.0 W	22.0 W	27.9 W
Power supply inrush current	120V AC: 25 A for 8 ms 240V AC: 40 A for 4 ms		24V DC: 15 A for 20 ms	120V AC: 25 A for 8 ms 240V AC: 40 A for 4 ms		24V DC: 15 A for 30 ms
Power supply usage	68VA	70VA	27 W	80VA	82VA	40 W
Power supply output	5V DC	400 mA	400 mA ⁽¹⁾	600 mA	600 mA ⁽²⁾	600 mA
	24V DC	350 mA	350 mA ⁽¹⁾	500 mA	500 mA ⁽²⁾	500 mA
Sensor power output	none	250 mA @ 24V DC AC Ripple < 500 mV peak-to-peak 400 µF max. ⁽¹⁾	none	none	400 mA @ 24V DC AC Ripple < 500 mV peak-to-peak 400 µF max. ⁽²⁾	none
Input circuit type	120V AC	24V DC sinking/sourcing	24V DC sinking/sourcing	120V AC	24V DC sinking/sourcing	24V DC sinking/sourcing
Output circuit type	Relay	Relay	Relay/FET	Relay	Relay	Relay/FET
Terminal screw torque	0.791 N•m (7 lb•in) rated					

(1) Do not allow the total load power consumed by the 5V DC, 24V DC, and sensor power outputs to exceed 12 W.

(2) Do not allow the total load power consumed by the 5V DC, 24V DC, and sensor power outputs to exceed 16 W.

See [System Loading and Heat Dissipation on page 105](#) for system validation worksheets.

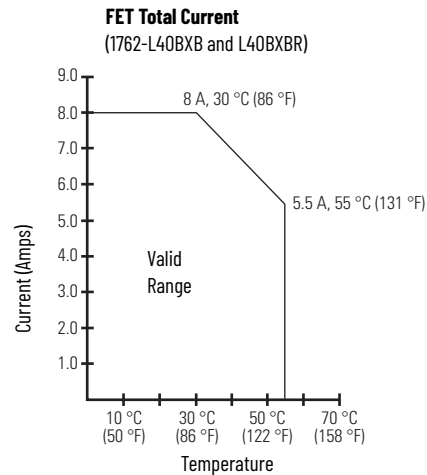
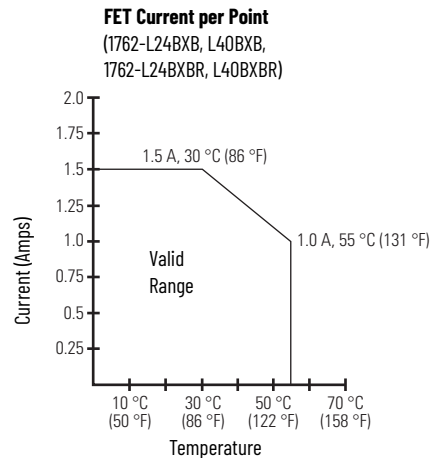
Input Specifications

Attribute	1762-L24AWA 1762-L40AWA 1762-L24AWAR 1762-L40AWAR	1762-L24BWA, 1762-L24BXB, 1762-L40BWA, 1762-L40BXB 1762-L24BWAR, 1762-L24BXHR, 1762-L40BWAR, 1762-L40BXHR	
		Inputs 0...3	Inputs 4 and Higher
On-state voltage range	79...132V AC	14...24V DC (+10% @ 55 °C/131 °F) (+25% @ 30 °C/86 °F)	10...24V DC (+10% @ 55 °C/131 °F) (+25% @ 30 °C/86 °F)
Off-state voltage range	0...20V AC	0...5V DC	
Operating frequency	47...63 Hz	0 Hz...20 kHz	0 Hz...1 kHz (scan time dependent)
On-state current: Minimum Nominal Maximum	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	2.5 mA max.	1.5 mA min.	
Nominal impedance	12 kΩ @ 50 Hz 10 kΩ @ 60 Hz	3.3 kΩ	2.7 kΩ
Inrush current @ 120V AC, max	250 mA	Not applicable	

BXB FET Output Specifications

Attribute	General Operation	High Speed Operation ⁽¹⁾ (Output 2 Only)
Power supply voltage	24V DC (-15%, +10%)	
On-state voltage drop: At maximum load current At maximum surge current	1V DC 2.5V DC	Not applicable Not applicable
Current rating per point: Maximum load Minimum load Maximum leakage	See graphs below. 1.0 mA 1.0 mA	100 mA 10 mA 1.0 mA

Maximum output current (temperature dependent):



Surge current per point: Peak current Maximum surge duration Maximum rate of repetition @ 30 °C (86 °F) Maximum rate of repetition @ 55 °C (131 °F)	4.0 A 10 ms Once every second Once every 2 seconds	Not applicable Not applicable Not applicable Not applicable
Turn-on time, max	0.1 ms	6 µs
Turn-off time, max	1.0 ms	18 µs
Repeatability, max	Not applicable	2 µs
Drift, max	Not applicable	1 µs per 5 °C (41 °F)

(1) Output 2 is designed to provide increased functionality over the other FET outputs. Output 2 may be used like the other FET transistor outputs, but in addition, within a limited current range, it may be operated at a higher speed. Output 2 also provides a pulse train output (PTO) or pulse width modulation output (PWM) function.

AC Input Filter Settings

Nominal Filter Setting (ms)	On-delay (ms)		Off-delay (ms)	
	Minimum	Maximum	Minimum	Maximum
8	2	20	10	20

Fast DC Input Filter Settings (Inputs 0...3)

Nominal Filter Setting (ms)	On-delay (ms)		Off-delay (ms)		Maximum Counter Frequency 50% Duty Cycle
	Minimum	Maximum	Minimum	Maximum	
0.025	0.005	0.025	0.005	0.025	20.0 kHz
0.075	0.040	0.075	0.045	0.075	6.7 kHz
0.100	0.050	0.100	0.060	0.100	5.0 kHz
0.250	0.170	0.250	0.210	0.250	2.0 kHz
0.500	0.370	0.500	0.330	0.500	1.0 kHz
1.00	0.700	1.000	0.800	1.000	0.5 kHz
2.000	1.700	2.000	1.600	2.000	250 Hz