

MicroLogix 1100 Programmable Controllers

Catalog Numbers 1763-L16AWA, 1763-L16BWA,
1763-L16BBB, 1763-L16DWD

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Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at <http://literature.rockwellautomation.com>) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.





In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

<p>WARNING</p> 	<p>Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.</p>
<p>IMPORTANT</p>	<p>Identifies information that is critical for successful application and understanding of the product.</p>
<p>ATTENTION</p> 	<p>Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attention symbols help you identify a hazard, avoid a hazard and recognize the consequences.</p>
<p>SHOCK HAZARD</p> 	<p>Labels may be on or inside the equipment (for example, drive or motor) to alert people that dangerous voltage may be present.</p>
<p>BURN HAZARD</p> 	<p>Labels may be on or inside the equipment (for example, drive or motor) to alert people that surfaces may reach dangerous temperatures.</p>

Additional Resources

Resource	Description
MicroLogix 1100 Programmable Controllers User Manual 1763-UM001	A more detailed description of how to install and use your MicroLogix 1100 programmable controller and expansion I/O system.
MicroLogix 1100 Instruction Set Reference Manual 1763-RM001	A reference manual that contains data and function files, instruction set, and troubleshooting information for MicroLogix 1100.
Installation Instructions 1762-INxxx	Information on installing and using 1762 expansion I/O modules.
Industrial Automation Wiring and Grounding Guidelines 1770-4.1	More information on proper wiring and grounding techniques.

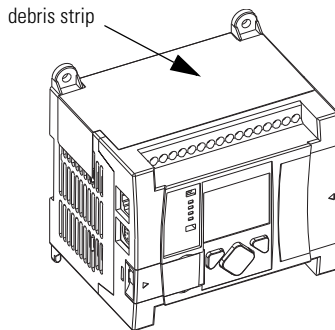
If you would like a manual, you can:

- download a free electronic version from the internet:
<http://literature.rockwellautomation.com>
- purchase a printed manual by contacting your local Allen-Bradley distributor or Rockwell Automation representative

Overview

MicroLogix 1100 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⁽¹⁾) and with circuits not exceeding Over Voltage Category II⁽²⁾ (IEC 60664-1).⁽³⁾

Install your controller using these installation instructions.



ATTENTION



Do not remove the protective debris strip until after the controller and all other equipment in the panel near the controller are mounted and wiring is complete. Once wiring is complete, remove protective debris strip. Failure to remove strip before operating can cause overheating.

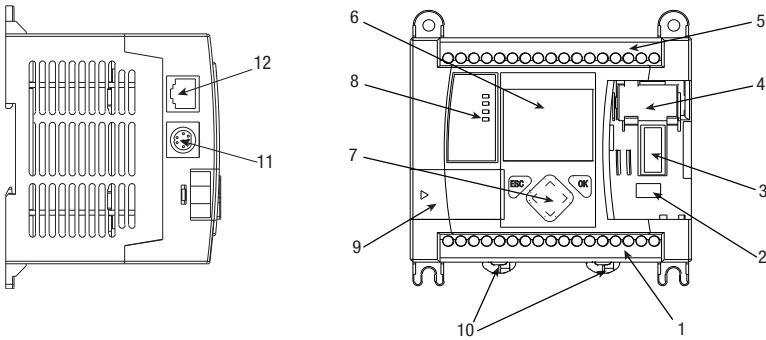
ATTENTION



Electrostatic discharge can damage semiconductor devices inside the controller. Do not touch the connector pins or other sensitive areas.

- (1) 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.
- (2) 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.
- (3) Pollution Degree 2 and Over Voltage Category II are International Electrotechnical Commission (IEC) designations.

Controller Description



Item	Description
1	Output Terminal Block
2	Battery Connector
3	Bus Connector Interface to Expansion I/O
4	Battery
5	Input Terminal Block
6	LCD Display
7	LCD Display Keypad (ESC, OK, Up, Down, Left, Right)
8	Status LEDs
9	Memory Module Port Cover ⁽¹⁾ -or- Memory Module ⁽²⁾
10	DIN Rail Latches
11	RS-232/485 Communication Port (Channel 0, isolated)
12	Ethernet Port (Channel 1)

⁽¹⁾ Shipped with controller.

⁽²⁾ Optional equipment.

Catalog Number	Description				Comm. Ports
	Input Power	Digital Inputs	Analog Inputs	Digital Outputs	
1763-L16AWA	120/240V ac	(10) 120V ac	(2) voltage input 0...10V dc	(6) relay All individually isolated	(1) RS-232/485 combo (isolated) (1) Ethernet
1763-L16BWA	120/240V ac	(6) 24V dc (4) high-speed 24V dc ⁽¹⁾	(2) voltage input 0 ...10V dc	(6) relay All individually isolated	(1) RS-232/485 combo (isolated) (1) Ethernet
1763-L16BBB	24V dc	(6) 24V dc (4) high-speed 24V dc ⁽¹⁾	(2) voltage input 0...10V dc	(2) relay (isolated) (2) 24V dc FET (2) high-speed 24V dc FET	(1) RS-232/485 combo (isolated) (1) Ethernet
1763-L16DWD	12/24V dc	(6) 12/24V dc (4) high-speed 12/24V dc ⁽¹⁾	(2) voltage input 0...10V dc	(6) relay All individually isolated	(1) RS-232/485 combo (isolated) (1) Ethernet

⁽¹⁾ The 4 high-speed inputs (inputs 0 through 3) can be used for pulse latching or higher speed counting. Refer to Input Specifications on page 25 and the MicroLogix 1100 Instruction Set Reference Manual, publication 1763-RM001, for more information.

Hazardous Location Considerations

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D or non-hazardous locations only. The following WARNING statement applies to use in hazardous locations.

WARNING**EXPLOSION HAZARD**

- Substitution of components may impair suitability for Class I, Division 2.
- Do not replace components or disconnect equipment unless power has been switched off.
- Do not connect or disconnect components unless power has been switched off.
- This product must be installed in an enclosure. All cables connected to the product must remain in the enclosure or be protected by conduit or other means.
- All wiring must comply with N.E.C. article 501-10(b).
- The interior of the enclosure must be accessible only by the use of a tool.
- For applicable equipment (for example, relay modules), exposure to some chemicals may degrade the sealing properties of the materials used in these devices:
 - Relays, epoxy

It is recommended that you periodically inspect these devices for any degradation of properties and replace the module if degradation is found.

Use only the following communication cables in Class I, Division 2 hazardous locations.

Environment Classification	Communication Cables
Class I, Division 2 Hazardous Environment	1761-CBL-AC00 Series C or later
	1761-CBL-AM00 Series C or later
	1761-CBL-AP00 Series C or later
	1761-CBL-PM02 Series C or later
	1761-CBL-HM02 Series C or later
	1761-CBL-PH02 Series A or later
	1761-CBL-AH02 Series A or later
	2707-NC9 Series C or later
	1763-NC01 Series A or later

ATTENTION



UNSUPPORTED CONNECTION

Do not connect a MicroLogix 1100 controller to another MicroLogix family controller such as MicroLogix 1000, MicroLogix 1200, or MicroLogix 1500 using a 1761-CBL-AM00 (8-pin mini-DIN to 8-pin mini-DIN) cable or equivalent.

This type of connection will cause damage to the RS-232/485 communication port (Channel 0) of the MicroLogix 1100 and/or the controller itself. Communication pins used for RS-485 communications are alternately used for 24V power on the other MicroLogix controllers.

Mounting the Controller

General Considerations

Most applications require installation in an industrial enclosure to reduce the effects of electrical interference and environmental exposure. Locate your controller as far as possible from power lines, load lines, and other sources of electrical noise such as hard-contact switches, relays, and ac motor drives. For more information on proper grounding guidelines, see the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

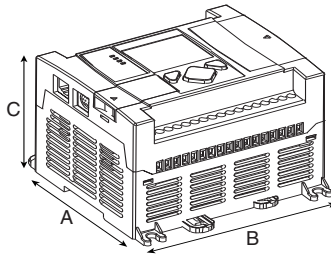
ATTENTION

Vertical mounting is not supported due to thermal considerations.

ATTENTION

Be careful of metal chips when drilling mounting holes for your controller or other equipment within the enclosure or panel. Drilled fragments that fall into the controller could cause damage. Do not drill holes above a mounted controller if the protective debris strips have been removed.

Mounting Dimensions

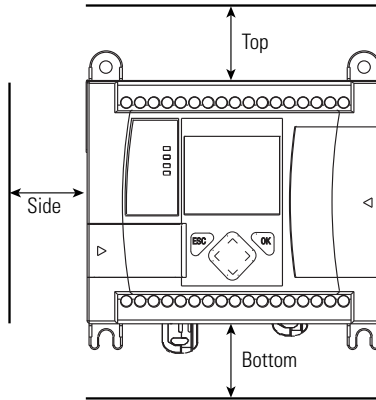


1763-L16AWA, 1763-L16BWA, 1763-L16BBB, 1763-L16DWD

Dimension	1763-			
	L16AWA	L16BWA	L16BBB	L16DWD
A	90 mm (3.5 in.)			
B	110 mm (4.33 in.)			
C	87 mm (3.43 in.)			

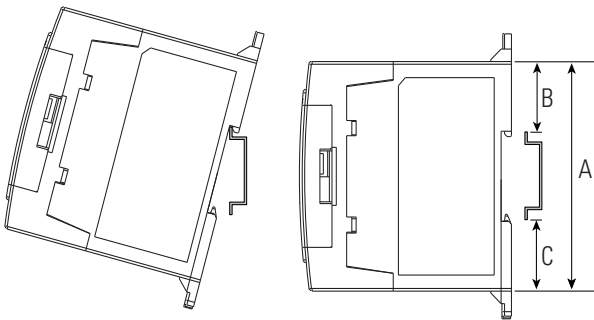
Controller Spacing

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 but the right side for adequate ventilation, as shown below.



DIN Rail Mounting

The maximum extension of the latch is 14 mm (0.55 in.) in the open position. A flat-blade screwdriver is required for removal of the controller. The controller can be mounted to EN50022-35x7.5 or EN50022-35x15 DIN rails. DIN rail mounting dimensions are shown below.



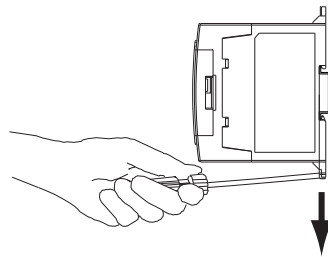
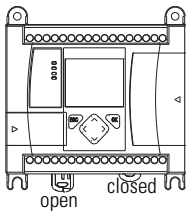
Dimension	Height
A	90 mm (3.5 in.)
B	27.5 mm (1.08 in.)
C	27.5 mm (1.08 in.)

Follow these steps to install your controller on the DIN rail.

1. Mount your DIN rail. (Make sure that the placement of the controller on the DIN rail meets the recommended spacing requirements. See Controller Spacing on page 12. Refer to the mounting template inside the back cover of this document.)
2. If it is open, close the DIN latch.
3. Hook the top slot over the DIN rail.
4. While pressing the controller down against the top of the rail, snap the bottom of the controller into position.
5. Leave the protective debris strip attached until you are finished wiring the controller and any other devices.

Follow these steps to remove your controller from the DIN rail.

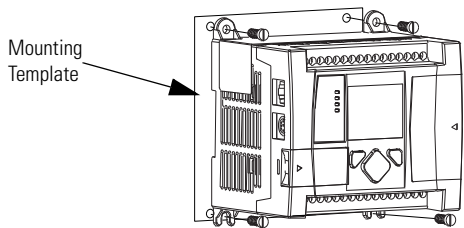
1. Place a flat-blade screwdriver in the DIN rail latch at the bottom of the controller.
2. Holding the controller, pry downward on the latch until the latch locks in the open position.
3. Repeat steps 1 and 2 for the second DIN rail latch.
4. Unhook the top of the DIN rail slot from the rail.



Panel Mounting

Mount to panel using #8 or M4 screws. Follow these steps to install your controller using mounting screws.

1. Remove the mounting template from inside the back cover of this document.
2. Secure the template to the mounting surface. (Make sure your controller is spaced properly. See Controller Spacing on page 12.)
3. Drill holes through the template.
4. Remove the mounting template.
5. Mount the controller.
6. Leave the protective debris strip in place until you are finished wiring the controller and any other devices



Using the Battery

The MicroLogix 1100 controller is equipped with a replaceable battery. The Battery Low indicator on the LCD display of the controller shows the status of the replaceable battery. When the battery is low, the indicator is set (displayed as a solid rectangle). This means that either the battery wire connector is disconnected, or the battery may fail within 2 days if it is connected.

IMPORTANT

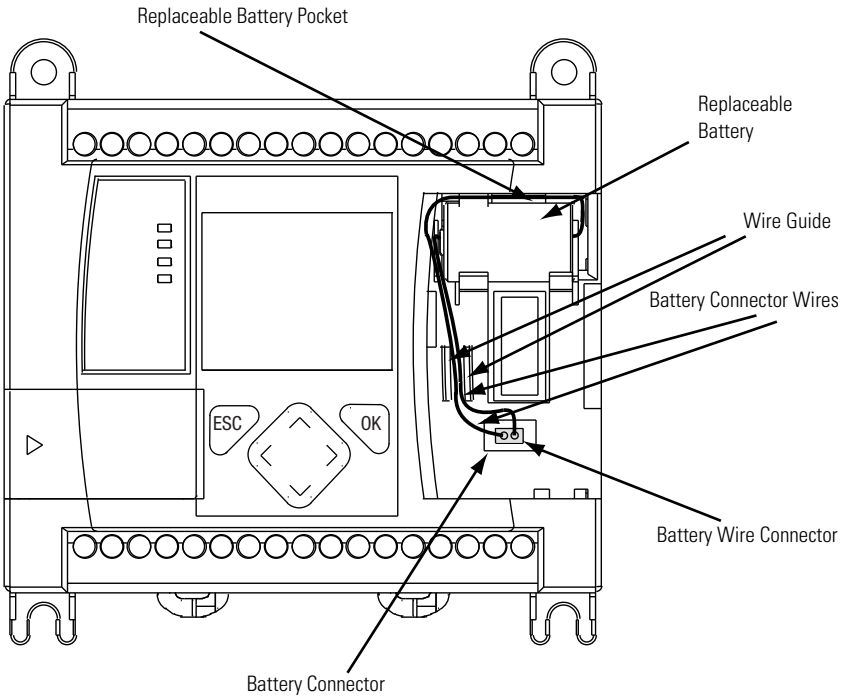
The MicroLogix 1100 controller ships with the battery wire connector connected.

Ensure that the battery wire connector is inserted into the connector port if your application needs battery power. For example, when using a real-time clock (RTC), or to store the program in the controller's memory for an extended period of time while the power is removed.

Refer to the MicroLogix 1100 Programmable Controller User Manual, publication 1763-UM001, for more information on installation, handling, usage, storage, and disposal of the battery.

Follow these steps to connect the replaceable battery.

1. Insert the replaceable battery wire connector into the battery connector.
2. Secure the battery connector wires along the wire guide as shown below.



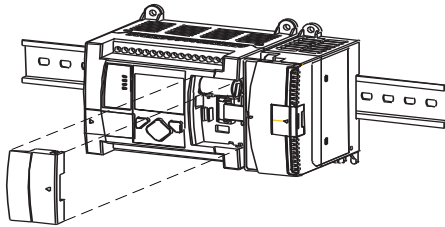
Connecting 1762 I/O Expansion Modules

ATTENTION

Remove power to the system before installing or removing expansion I/O or damage to the controller may result.

Connect 1762 I/O after mounting the controller.

1. Remove the expansion port cover to install expansion I/O modules.
2. Plug the ribbon cable connector into the bus connector.
3. Replace the cover as shown below.



The MicroLogix 1100 controller is designed to support up to any four 1762 expansion I/O modules.

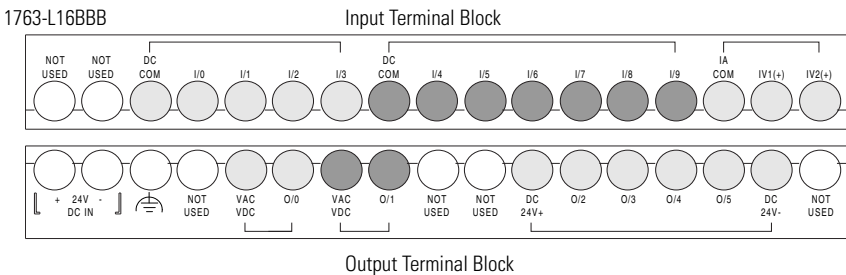
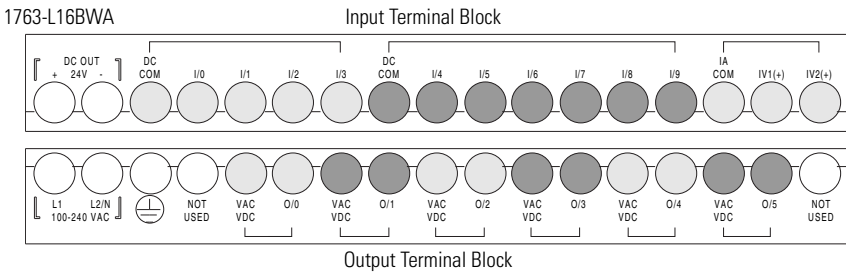
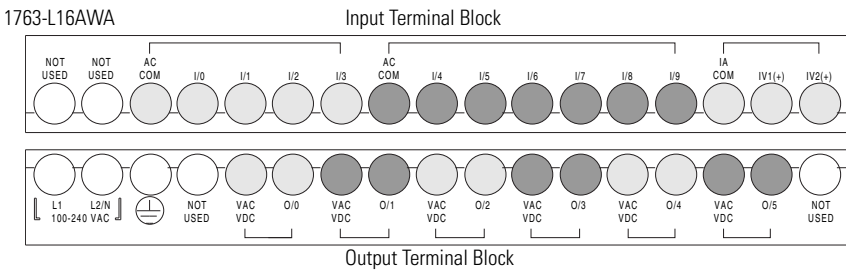
For detailed information on using expansion I/O, refer to the installation instructions for your expansion module.

Wiring the Controller

Terminal Block Layouts

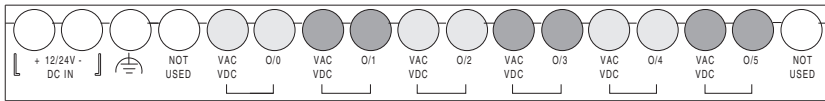
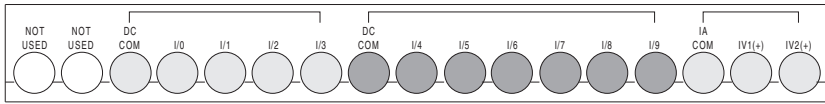
TIP

The shading in the following terminal block illustrations indicates which terminals are tied to which commons.



1763-L16DWD

Input Terminal Block



Output Terminal Block

Wire Requirements

Wire Type		Wire Size (2 wire maximum per terminal)	
		1 wire per terminal	2 wire per terminal
Solid	Cu-90 °C (194 °F)	12...20 AWG	16...20 AWG
Stranded	Cu-90 °C (194 °F)	14...20 AWG	18...20 AWG

Wiring torque = 0.56 Nm (5.0 in-lb) rated.

ATTENTION



Be careful when stripping wires. Wire fragments that fall into the controller could cause damage. Once wiring is complete, be sure the controller is free of all metal fragments before removing the protective debris strip. Failure to remove the strip before operating can cause overheating.

Wiring Recommendation

The MicroLogix 1100 controllers have screw-cage clamps on the input and output terminal blocks. With screw-cage clamp terminal blocks, there is no need to attach additional hardware such as a spade lug to the wire, or use a finger-safe cover.

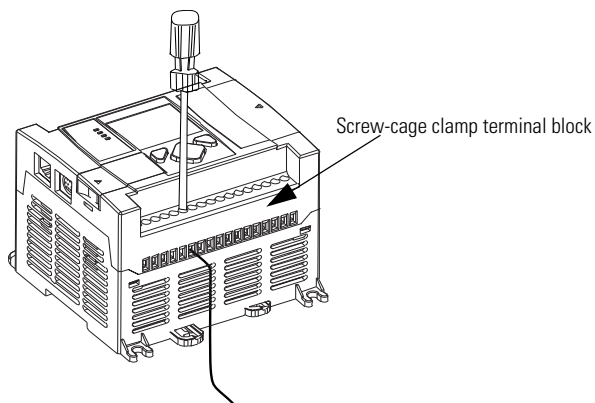
Follow these steps to wire the terminal block.

1. Strip the end of the wire.

The recommended length for the stripped end of the wire is 11.0 mm (0.440 in.).

2. Insert it into an open clamp.
3. Using a small, flat-blade screwdriver, tighten the terminal screw. To ensure that the wire conductor is secured inside the clamp, tighten it to the rated torque, 0.56 Nm (5.0 in-lb).

The diameter of the terminal screw head is 5.5 mm (0.220 in.).



Surge Suppression

ATTENTION



Inductive load devices such as motor starters and solenoids require the use of some type of surge suppression to protect the controller output. Switching inductive loads without surge suppression can significantly reduce the life of relay contacts or damage transistor outputs. By using suppression, you also reduce the effects of voltage transients caused by interrupting the current to that inductive device, and prevent electrical noise from radiating into system wiring. Refer to the MicroLogix 1100 Programmable Controller User Manual, publication 1763-UM001, for more information on surge suppression.

Grounding the Controller

In solid-state control systems, grounding and wire routing helps limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw of the controller to the ground bus prior to connecting any devices. Use AWG #14 wire. For ac-powered controllers, this connection must be made for safety purposes.

ATTENTION

All devices connected to the RS-232/485 communication port must be referenced to controller ground, or be floating (not referenced to a potential other than ground). Failure to follow this procedure may result in property damage or personal injury.

- For the 1763-L16BWA controller:

The COM of the sensor supply is also connected to chassis ground internally. The 24V dc sensor power source should not be used to power output circuits. It should only be used to power input devices.

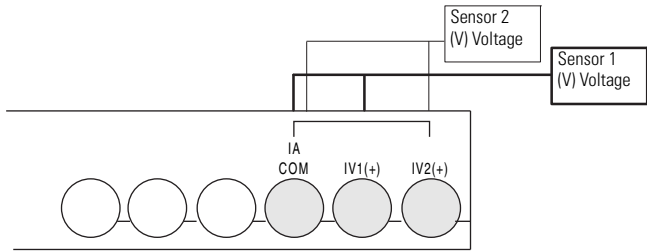
- For 1763-L16BBB and 1763-L16DWD controllers:

The VDC NEUT or common terminal of the power supply is also connected to chassis ground internally.

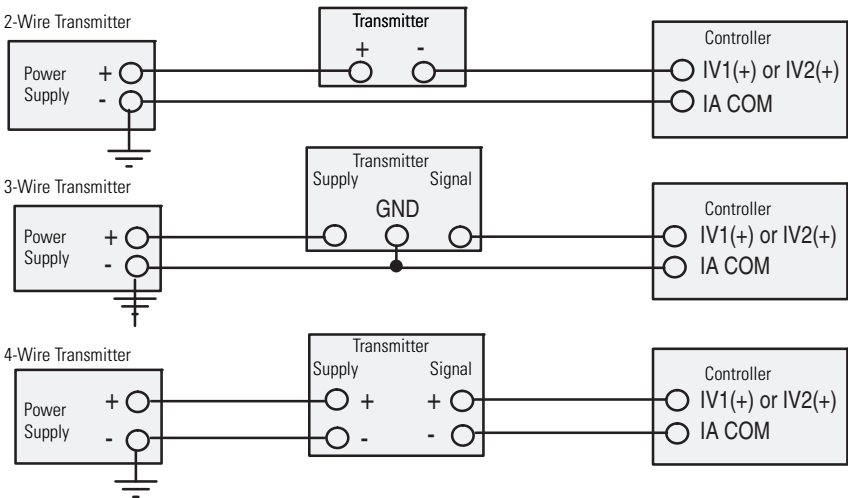
You must also provide an acceptable grounding path for each device in your application. For more information on proper grounding guidelines, refer to the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Wiring Your Analog Channels

Analog input circuits can monitor voltage signals and convert them to serial digital data.



The controller does not provide loop power for analog inputs. Use a power supply that matches the transmitter specifications as shown below.



Minimizing Electrical Noise on Analog Channels

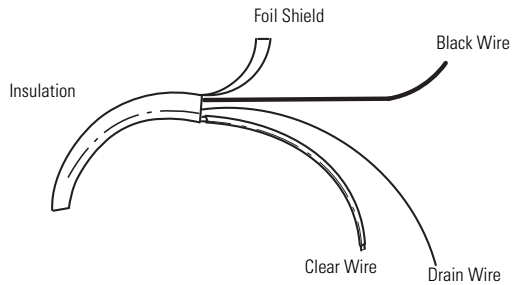
Inputs on analog channels employ digital high-frequency filters that significantly reduce the effects of electrical noise on input signals. However, because of the variety of applications and environments where analog controllers are installed and operated, it is impossible to ensure that all environmental noise will be removed by the input filters.

Several specific steps can be taken to help reduce the effects of environmental noise on analog signals:

- install the MicroLogix 1100 system in a properly rated (NEMA) enclosure. Make sure that the MicroLogix 1100 system is properly grounded.
- use Belden cable #8761 for wiring the analog channels, making sure that the drain wire and foil shield are properly earth grounded.
- route the Belden cable separately from any ac wiring. Additional noise immunity can be obtained by routing the cables in grounded conduit.

Grounding Your Analog Cable

Use shielded communication cable (Belden #8761). The Belden cable has two signal wires (black and clear), one drain wire, and a foil shield. The drain wire and foil shield must be grounded at one end of the cable.



IMPORTANT

Do not ground the drain wire and foil shield at both ends of the cable.

Specifications

General Specifications

Description	1763-			
	L16AWA	L16BWA	L16BBB	L16DWD
Dimensions	Height: 90 mm (3.5 in.), 104 mm (4.09 in.) (with DIN latch open) Width: 110 mm (4.33 in.), Depth: 87 mm (3.43 in.)			
Shipping Weight	0.9 kg (2.0 lbs)			
Number of I/O	12 inputs (10 digital and 2 analog) and 6 outputs			
Power Supply Voltage	100...240V ac (-15%, +10%) at 47...63 Hz		24V dc (-15%, +10%) Class 2 SELV	12V to 24V dc (-15%, +10%) Class 2 SELV
Heat Dissipation	Refer to the MicroLogix 1100 Programmable Controllers User Manual, Publication 1763-UM001.			
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	
Power Consumption	46 VA	52 VA	35W	
24V dc Sensor Power	none	250 mA at 24V DC 400 μ F max.	none	
Input Circuit Type	Digital: 120V ac Analog: 0...10V dc	Digital: 24V dc sink/source (standard and high-speed) Analog: 0...10V dc	Digital: 24V dc sink/source (standard and high-speed) Analog: 0...10V dc	Digital: 12/24V dc sink/source (standard and high-speed) Analog: 0...10V dc
Output Circuit Type	Relay	Relay	Relay/FET	Relay
Pilot Duty Rating	Ordinary location – B300, R150 Hazardous location – C300, R150			
Temperature, Operating	-20... +65 °C (-4 ...+149 °F)			
Temperature, Storage	-40...+85 °C (-40... +185 °F)			
Relative Humidity	5...95% non-condensing			
Vibration	Operating: 10... 500 Hz, 5 g, 0.015 in. max. peak-to-peak, 2 hours each axis Relay Operation: 1.5 g			
Shock, Operating	30 g; 3 pulses each direction, each axis Relay Operation: 10 g			

General Specifications

Description	1763-			
	L16AWA	L16BWA	L16BBB	L16DWD
Shock, Nonoperating	50 g panel mounted (40 g DIN Rail mounted); 3 pulses each direction, each axis			
Terminal Screw Torque	0.56 Nm (5.0 in-lb) rated			
Certifications	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: Russian Customs Union TR CU 020/2011 EMC Technical Regulation, Russian Customs Union TR CU 004/2011 LV Technical Regulation			
ESD Immunity	EN 61000-4-2 4 kV contact, 8 kV air, 4 kV indirect			
Radiated RF Immunity	EN 61000-4-3 10V/m, 26 to 1000 MHz (alternatively, 80 to 1000 MHz), 80% amplitude modulation, +900 MHz keyed carrier			
Fast Transient Immunity	EN 61000-4-4 2 kV, 5 kHz communications cable such as EtherNet, RS-232, and RS-485: 1 kV, 5 kHz			
Surge Transient Immunity	EN 61000-4-5 Unshielded communications cable: 2 kV CM (common mode), 1 kV DM (differential mode) Shielded communications cable: 1 kV galvanic gun I/O: 2 kV CM (common mode), 1 kV DM (differential mode) ac Power Supply Input: 4 kV CM (common mode), 2 kV DM (differential mode) dc Power Supply Input: 500V CM (common mode), 500V DM (differential mode) ac/dc Auxiliary Output: 500V CM (common mode), 500V DM (differential mode)			
Conducted RF Immunity	EN 61000-4-6 10V, 150 kHz...80 MHz			

General Specifications

Description	1763-			
	L16AWA	L16BWA	L16BBB	L16DWD
Conducted Emissions	EN 55011 ac Power Supply Input: 150 kHz...30 MHz			
Radiated Emissions	EN 55011 30...1000 MHz			
Line Related Tests	EN 61000-4-11 ac Power Supply Input: voltage drop: -30% for 10 ms, -60% for 100 ms voltage interrupt: at voltage greater than -95% for 5 secs. voltage fluctuation: +10% for 15 minutes, -10% for 15 minutes dc Power Supply Input: voltage fluctuation: +20% for 15 minutes, -20% for 15 minutes			

Input Specifications

Digital Inputs

Description	1763-L16AWA	1763-L16BWA, -L16BBB		
		Inputs 0 through 3 (4 high-speed dc inputs)	Inputs 4 and higher (6 standard dc inputs)	
On-State Voltage Range	79 ...132V ac	14...24V dc (14...26.4V dc (+10%) at 65 °C/149 °F) (14...30V dc (+25%) at 30 °C/86 °F)	10...24V dc (10...26.4V dc (+10%) at 65 °C/149 °F) (10...30V dc (+25%) at 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...40 kHz ⁽¹⁾	0 Hz...1 kHz (scan time dependent)	
On-State Current:	<ul style="list-style-type: none"> • minimum • nominal • maximum 	<ul style="list-style-type: none"> • 5.0 mA at 79V ac • 12 mA at 120V ac • 16.0 mA at 132V ac 	<ul style="list-style-type: none"> • 2.5 mA at 14V dc • 8.8 mA at 24V dc • 12.0 mA at 30V dc 	<ul style="list-style-type: none"> • 2.0 mA at 10V dc • 8.5 mA at 24V dc • 12.0 mA at 30V dc

Digital Inputs

Description	1763-L16AWA	1763-L16BWA, -L16BBB	
		Inputs 0 through 3 (4 high-speed dc inputs)	Inputs 4 and higher (6 standard dc inputs)
Off-State Leakage Current	2.5 mA max.	1.5 mA max.	
Nominal Impedance	12 k Ω at 50 Hz 10 k Ω at 60 Hz	3.1 k Ω	3.1 k Ω
Inrush Current (max.) at 120V ac	250 mA	Not Applicable	

⁽¹⁾ OS Series B FRN 4 or later

Digital Input Specifications for 1763-L16DWD

Description	1763-L16DWD	
	Inputs 0 through 3 (4 high-speed dc inputs)	Inputs 4 and higher (6 standard dc inputs)
On-State Voltage Range	10...24V dc at 65 °C/149 °F (10...30V dc at 30 °C/86 °F)	
Off-State Voltage Range	0...5V dc	
Operating Frequency	0 Hz...40 kHz ⁽¹⁾	0 Hz...1 kHz
On-State Current:	<ul style="list-style-type: none"> • minimum • nominal • maximum 	
	<ul style="list-style-type: none"> • 2.0 mA at 10V dc • 8.5 mA at 24V dc • 12.0 mA at 30V dc 	
Off-State Leakage Current	1.5 mA max.	
Nominal Impedance	2.61 k Ω	3.1 k Ω
Maximum Inrush Current	Not Applicable	

⁽¹⁾ OS Series B FRN 4 or later.

Analog Inputs

Description	1763-L16AWA, -L16BWA, -L16BBB, -L16DWD
Voltage Input Range	0 ...10.0V dc - 1 LSB
Type of Data	10-bit unsigned integer
Input Coding (0 to 10.0V dc - 1 LSB)	0 ...+1,023
Voltage Input Impedance	210 k Ω
Input Resolution	10 bit
Non-linearity	$\pm 0.5\%$ of full scale
Overall Accuracy -20...+65 °C (-4...+149 °F)	$\pm 0.5\%$ of full scale
Voltage Input Overvoltage Protection	10.5V dc
Field Wiring to Logic Isolation	Non-isolated with logic

Output Specifications For Hazardous Locations Applications (Class I, Division 2, Groups A, B, C, D)

General

Description	1763	-L16BBB
	-L16AWA, -L16BWA, -L16DWD	

Relay and FET Outputs

Maximum Controlled Load	1080 VA	360 VA
Maximum Continuous Current:		
Current per Group Common	3A	3A
Current per Controller	at 150V max	18 A or total of per-point loads, whichever is less
	at 240V max	18 A or total of per-point loads, whichever is less

Relay Outputs

Turn On Time/Turn Off Time	10 msec (maximum) ⁽¹⁾
Relay life - Electrical (Resistive Load)	Refer to Relay Life Chart
Relay life - Mechanical	10,000,000 cycles
Load Current	10 mA (minimum)

⁽¹⁾ Scan time dependent.

Relay Contact Ratings⁽¹⁾

Maximum Volts	Amperes		Amperes Continuous	Volt-Amperes	
	Make	Break		Make	Break
240V AC ⁽²⁾	7.5 A	0.75 A	2.5 A	1800 VA	180 VA
120V AC ⁽³⁾	15.0 A	1.5 A	2.5 A	1800 VA	180 VA
125V DC ⁽⁴⁾	0.22 A		1.0 A	28 VA	

(1) Pilot Duty Rating: (ordinary location) – B300, R150. (hazardous location) – C300, R150.

(2) For AC voltage applications lower than 240V AC but higher than 120V AC, the maximum make and break ratings are to be obtained by dividing the volt-amperes rating by the application voltage.

(3) For AC voltage applications lower than 120V AC, the maximum make current is to be the same as for 120V AC, and the maximum break current is to be obtained by dividing the break volt-amperes rating by the application voltage, but the currents are not to exceed the thermal continuous current.

(4) For DC voltage applications lower than 125V DC, the make/break ampere rating for relay contacts can be determined by dividing the volt-ampere rating by the applied DC voltage but the current values are not to exceed the thermal continuous current.

ATTENTION



Do not exceed the “Current per group common” specification.

Output Specifications For Ordinary (Non-Hazardous) Locations only

General

Description	1763	
	-L16AWA, -L16BWA, -L16DWD	-L16BBB
Relay and FET Outputs		
Maximum Controlled Load	1440 VA	720 VA
Maximum Continuous Current:		
Current per Group Common	5A ⁽¹⁾	5A
Current per Controller	at 150V max	30 A or total of per-point loads, whichever is less
	at 240V max	20 A or total of per-point loads, whichever is less

General

Description	1763 -L16AWA, -L16BWA, -L16DWD	-L16BBB
Relay Outputs		
Turn On Time/Turn Off Time	10 msec (maximum) ⁽²⁾	
Relay life - Electrical (Resistive Load)	Refer to Relay Life Chart	
Relay life - Mechanical	10,000,000 cycles	
Load Current	10 mA (minimum)	

(1) 3.0 A above 40 °C.

(2) Scan time dependent.

Relay Contact Ratings⁽¹⁾

Maximum Volts	Amperes		Amperes Continuous	Volt-Amperes	
	Make	Break		Make	Break
240V AC ⁽²⁾	15.0 A	1.5 A	5.0 A ⁽⁵⁾	3600 VA	360 VA
120V AC ⁽³⁾	30.0 A	3.0 A		3600 VA	360 VA
125V DC ⁽⁴⁾	0.22 A		1.0 A	28 VA	

(1) Pilot Duty Rating: (ordinary location) – B300, R150. (hazardous location) – C300, R150.

(2) For AC voltage applications lower than 240V AC but higher than 120V AC, the maximum make and break ratings are to be obtained by dividing the volt-amperes rating by the application voltage.

(3) For AC voltage applications lower than 120V AC, the maximum make current is to be the same as for 120V AC, and the maximum break current is to be obtained by dividing the break volt-amperes rating by the application voltage, but the currents are not to exceed the thermal continuous current.

(4) For DC voltage applications lower than 125V DC, the make/break ampere rating for relay contacts can be determined by dividing the volt-ampere rating by the applied DC voltage but the current values are not to exceed the thermal continuous current.

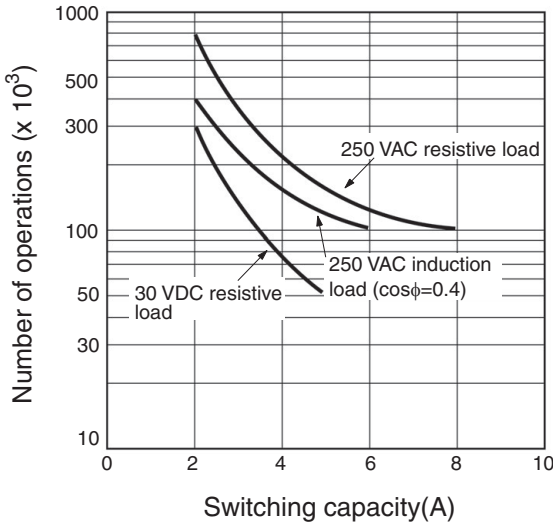
(5) 3.0 A above 40 °C.

ATTENTION



Do not exceed the "Current per group common" specification.

Relay Life Chart



BBB FET Output Specifications

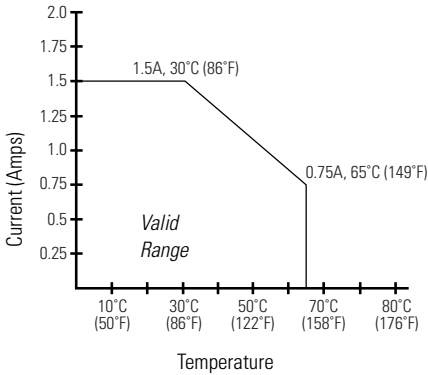
Description	General OperationI	High Speed Operation ⁽¹⁾ (Output 2 and 3 Only)
Power Supply Voltage	24V dc (-15%, +10%)	
On-State Voltage Drop:		
<ul style="list-style-type: none"> at maximum load current at maximum surge current 	<ul style="list-style-type: none"> 1V dc 2.5V dc 	<ul style="list-style-type: none"> Not Applicable Not Applicable
Current Rating per Point		
<ul style="list-style-type: none"> maximum load minimum load maximum leakage 	<ul style="list-style-type: none"> See graphs below 1.0 mA 1.0 mA 	<ul style="list-style-type: none"> 100 mA 10 mA 1.0 mA

BBB FET Output Specifications

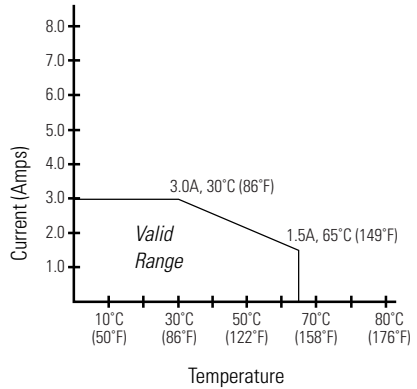
Description	General Operation	High Speed Operation ⁽¹⁾ (Output 2 and 3 Only)
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Maximum Output Current (temperature dependent):

FET Current per Point
(1763-L16BBB)



FET Total Current
(1763-L16BBB)



Surge Current per Point:		
<ul style="list-style-type: none"> • peak current • maximum surge duration • maximum rate of repetition at 30 °C (86 °F) • maximum rate of repetition at 65 °C (149 °F) 	<ul style="list-style-type: none"> • 4.0 A • 10 ms • once every second • once every 2 seconds 	<ul style="list-style-type: none"> • Not Applicable • Not Applicable • Not Applicable • Not Applicable
Turn-On Time (maximum)	0.1 ms	6 μs
Turn-Off Time (maximum)	1.0 ms	18 μs
Repeatability (maximum)	Not Applicable	2 μs
Drift (maximum)	Not Applicable	1 μs per 5 °C (9 °F)

⁽¹⁾ Output 2 and 3 are designed to provide increased functionality over the other FET outputs. Output 2 and 3 may be used like the other FET transistor outputs, but in addition, within a limited current range, they may be operated at a higher speed. Output 2 and 3 also provide a pulse train output (PTO) or pulse width modulation output (PWM) function.

Working Voltage

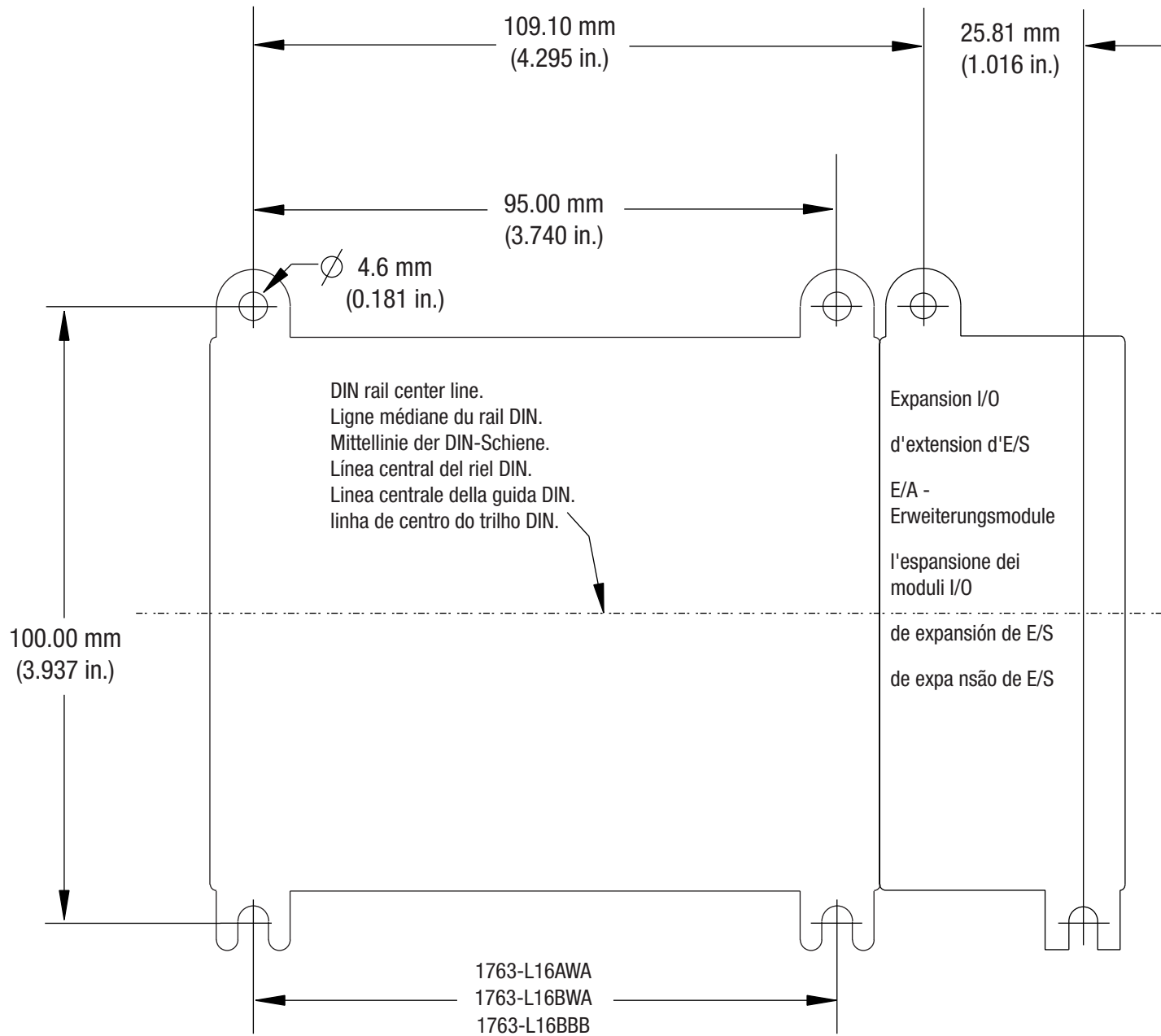
Working Voltage (1763-L16AWA)

Description	1763-L16AWA
Power Supply Input to Backplane Isolation	Verified by one of the following dielectric tests: 1836V ac for 1 second or 2596V dc for 1 second
	265V ac Working Voltage (IEC Class 2 reinforced insulation)
Input Group to Backplane Isolation	Verified by one of the following dielectric tests: 1517V ac for 1 second or 2145V dc for 1 second
	132V ac Working Voltage (IEC Class 2 reinforced insulation)
Input Group to Input Group Isolation	Verified by one of the following dielectric tests: 1517V ac for 1 second or 2145V dc for 1 second
	132V ac Working Voltage (basic insulation)
Output Group to Backplane Isolation	Verified by one of the following dielectric tests: 1836V ac for 1 second or 2596V dc for 1 second
	265V ac Working Voltage (IEC Class 2 reinforced insulation)
Output Group to Output Group Isolation	Verified by one of the following dielectric tests: 1836V ac for 1 second or 2596V dc for 1 second
	265V ac Working Voltage (basic insulation), 150V ac Working Voltage (IEC Class 2 reinforced insulation)

Working Voltage (1763-L16DWD)

Description	1763-L16DWD
Input Group to Backplane Isolation and Input Group to Input Group Isolation	Verified by one of the following dielectric tests: 1200V ac for 1 second or 1697V dc for 1 second
	75V dc Working Voltage (IEC Class 2 reinforced insulation)
Output Group to Backplane Isolation	Verified by one of the following dielectric tests: 1836V ac for 1 second or 2596V dc for 1 second
	265V ac Working Voltage (IEC Class 2 reinforced insulation).
Output Group to Output Group Isolation	Verified by one of the following dielectric tests: 1836V ac for 1 second or 2596V dc for 1 second
	265V ac Working Voltage (basic insulation) 150V Working Voltage (IEC Class 2 reinforced insulation)

Notes:



IP:
S/MASK:
G/WAY:

IP:
S/MASK:
G/WAY:

OUTPUTS											
0	1	2	3	4	5	6	7	8	9	10	11

INPUTS											
0	1	2	3	4	5	6	7	8	9	10	11

OUTPUTS											
0	1	2	3	4	5	6	7	8	9	10	11

INPUTS											
0	1	2	3	4	5	6	7	8	9	10	11

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If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3434 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

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Outside United States	Please contact your local Rockwell Automation representative for return procedure.

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Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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