



MicroLogix™ 1200 Isolated Relay Output Module

(Catalog Number 1762-OX6I)

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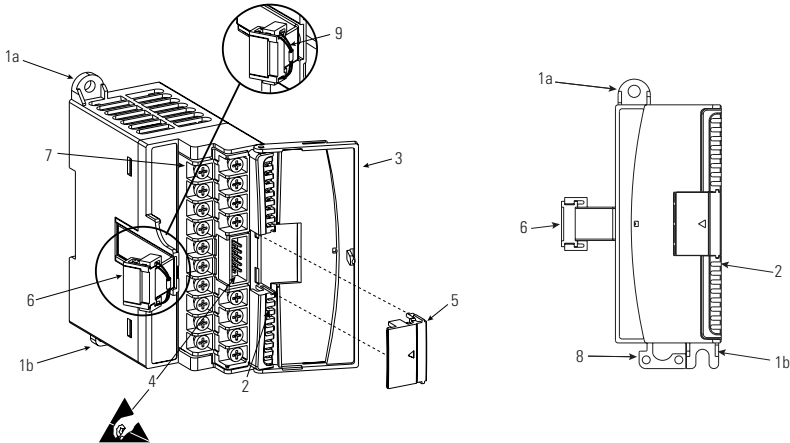
For More Information

| For | Refer to this Document | Pub. No. |
|--|---|-----------------|
| Information on installing, wiring, and operating a MicroLogix 1200 Programmable Controller | MicroLogix 1200 Programmable Controllers User Manual | 1762-UM001 |
| Installation guide for the MicroLogix 1200 Programmable Controller. | MicroLogix 1200 Programmable Controllers Installation Instructions | 1762-IN006 |
| Installation guide for the MicroLogix 1200 Memory Module and Real Time clock. | MicroLogix 1200 Memory Module and/or Real Time Clock Installation Instructions | 1762-IN001 |
| In-depth information on the MicroLogix 1200 controllers instruction set | MicroLogix 1200 and MicroLogix 1500 Programmable Controllers Instruction Set Reference Manual | 1762-RM001 |
| More information on proper wiring and grounding techniques. | Industrial Automation Wiring and Grounding Guidelines | 1770-4.1 |

If you would like a manual, you can:

- download a free electronic version from the internet:
www.ab.com/micrologix or www.theautomationbookstore.com
- purchase a printed manual by:
 - contacting your local distributor or Rockwell Automation representative
 - visiting www.theautomationbookstore.com and placing your order
 - calling 1.800.963.9548 (USA/Canada)
or 001.330.725.1574 (Outside USA/Canada)

Description



| Item | Description | Item | Description |
|------|--|------|---|
| 1a | upper panel mounting tab | 5 | bus connector cover |
| 1b | lower panel mounting tab | 6 | flat ribbon cable with bus connector (female) |
| 2 | power diagnostic LED | 7 | terminal block |
| 3 | module door with terminal identification label | 8 | DIN rail latch |
| 4 | bus connector with male pins | 9 | pull loop |

Installation

1762 I/O is 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 to circuits not exceeding Over Voltage Category II⁽²⁾ (IEC 60664-1).⁽³⁾

- (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.

Prevent Electrostatic Discharge

ATTENTION



Electrostatic discharge can damage integrated circuits or semiconductors if you touch bus connector pins. Follow these guidelines when you handle the module:

- Touch a grounded object to discharge static potential.
 - Wear an approved wrist-strap grounding device.
 - Do not touch the bus connector or connector pins.
 - Do not touch circuit components inside the module.
 - If available, use a static-safe work station.
 - When not in use, keep the module in its static-shield box.
-

Remove Power

ATTENTION



Remove power before removing or installing this module. When you remove or install a module with power applied, an electrical arc may occur. An electrical arc can cause personal injury or property damage by:

- sending an erroneous signal to your system's field devices, causing unintended machine motion
- causing an explosion in a hazardous environment
- causing permanent damage to the module's circuitry

Electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance.

Mounting

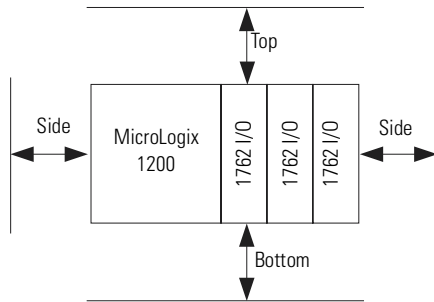
ATTENTION



Do not remove protective debris strip until after the module and all other equipment near the module is mounted and wiring is complete. Once wiring is complete and the module is free of debris, carefully remove protective debris strip. Failure to remove strip before operating can cause overheating.

Minimum Spacing

Maintain spacing from enclosure walls, wireways, adjacent equipment, etc. Allow 50.8 mm (2 in.) of space on all sides for adequate ventilation, as shown:



TIP

1762 expansion I/O may be mounted horizontally only.

ATTENTION



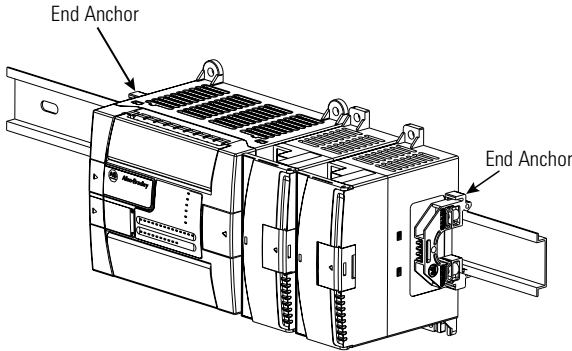
During panel or DIN rail mounting of all devices, be sure that all debris (metal chips, wire strands, etc.) is kept from falling into the module. Debris that falls into the module could cause damage when power is applied to the module.

DIN Rail Mounting

The module can be mounted using the following DIN rails: 35 x 7.5 mm (EN 50 022 - 35 x 7.5) or 35 x 15 mm (EN 50 022 - 35 x 15).

Before mounting the module on a DIN rail, close the DIN rail latch. Press the DIN rail mounting area of the module against the DIN rail. The latch will momentarily open and lock into place.

Use DIN rail end anchors (Allen-Bradley part number 1492-EA35 or 1492-EAH35) for environments with vibration or shock concerns.



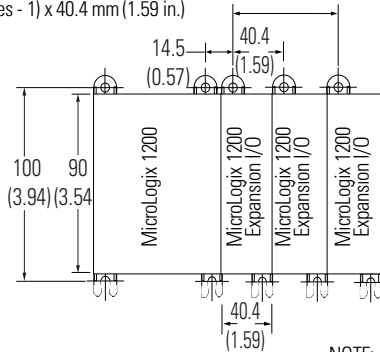
TIP

For environments with extreme vibration and shock concerns, use the panel mounting method described below, instead of DIN rail mounting.

Panel Mounting

Use the dimensional template shown below to mount the module. The preferred mounting method is to use two M4 or #8 panhead screws per module. M3.5 or #6 panhead screws may also be used, but a washer may be needed to ensure a good ground contact. Mounting screws are required on every module.

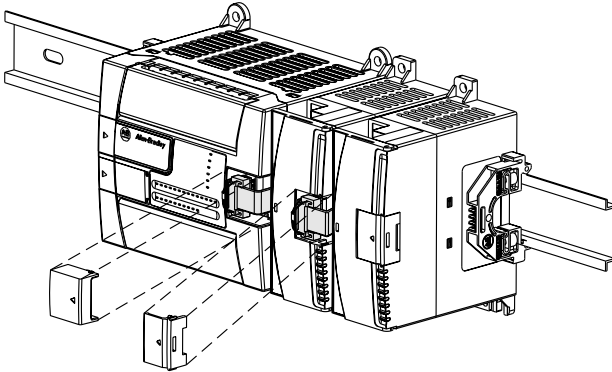
For more than 2 modules: (number of modules - 1) x 40.4 mm (1.59 in.)



NOTE:
Hole spacing tolerance:
±0.4 mm (0.016 in.).

System Assembly

The expansion I/O module is attached to the controller or another I/O module by means of a ribbon cable *after* mounting as shown below.

**TIP**

Use the pull loop on the connector to disconnect modules. Do not pull on the ribbon cable.

WARNING**EXPLOSION HAZARD**

- In Class I, Division 2 applications, the bus connector must be fully seated and the bus connector cover must be snapped in place.
- In Class I, Division 2 applications, all modules must be mounted in direct contact with each other as shown on page 5. If DIN rail mounting is used, an end stop must be installed ahead of the controller and after the last 1762 I/O module.

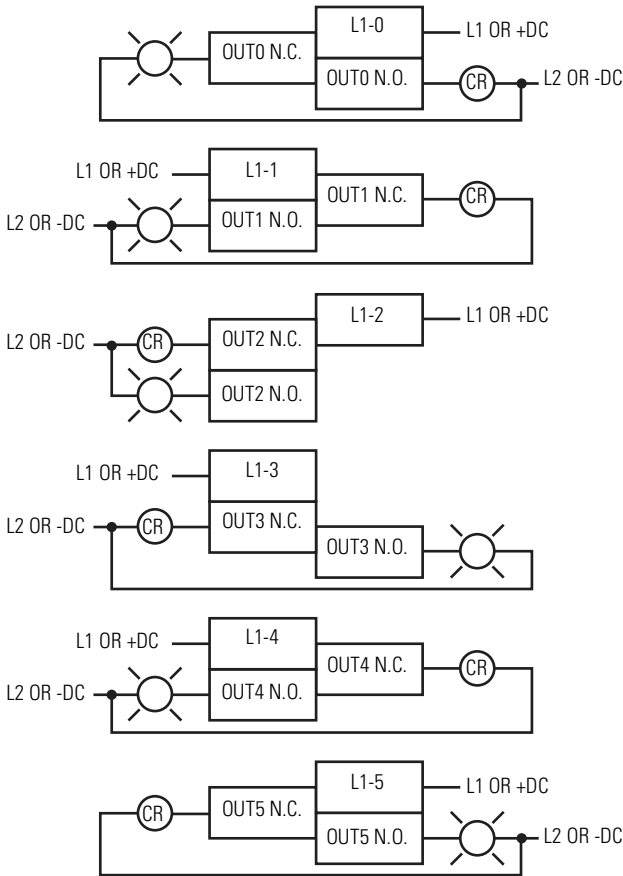
Field Wiring Connections

Grounding the Module

This product is intended to be mounted to a well-grounded mounting surface such as a metal panel. Additional grounding connections from the module's mounting tabs or DIN rail (if used) are not required unless the mounting surface cannot be grounded. Refer to *Industrial Automation Wiring and Grounding Guidelines*, Allen-Bradley publication 1770-4.1, for additional information.

Output Wiring

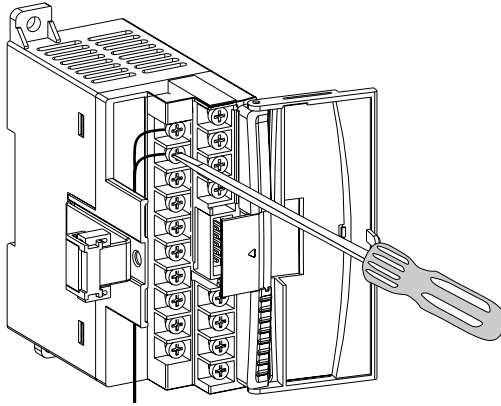
Basic wiring⁽¹⁾ of the 1762-OX6I is shown below.



Labeling the Terminals

A write-on label is provided with the module. Mark the identification of each terminal with permanent ink, and slide the label back into the door.

(1) **Surge Suppression** – Connecting surge suppressors across your external inductive load will extend the life of the relay contacts. For additional details, refer to *Industrial Automation Wiring and Grounding Guidelines*, publication 1770-4.1.



Wiring the Finger-Safe Terminal Block

ATTENTION



Be careful when stripping wires. Wire fragments that fall into a module could cause damage when power is applied. Once wiring is complete, ensure the module is free of all metal fragments.

When wiring the terminal block, keep the finger-safe cover in place.

1. Route the wire under the terminal pressure plate. You can use the stripped end of the wire or a spade lug. The terminals will accept a 6.35 mm (0.25 in.) spade lug.
2. Tighten the terminal screw making sure the pressure plate secures the wire. Recommended torque when tightening terminal screws is 0.904 Nm (8 in-lbs).
3. After wiring is complete, remove the debris shield.

TIP

If you need to remove the finger-safe cover, insert a screw driver into one of the square wiring holes and gently pry the cover off. If you wire the terminal block with the finger-safe cover removed, you will not be able to put it back on the terminal block because the wires will be in the way.

Wire Size and Terminal Screw Torque

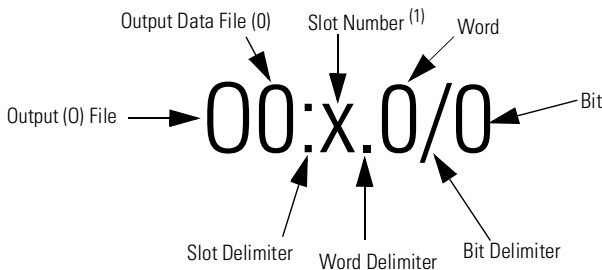
Each terminal accepts up to two wires with the following restrictions:

| Wire Type | | Wire Size | Terminal Screw Torque |
|-----------|-----------------|----------------|-----------------------|
| Solid | Cu-90°C (194°F) | #14 to #22 AWG | 0.904 Nm (8 in-lbs) |
| Stranded | Cu-90°C (194°F) | #16 to #22 AWG | 0.904 Nm (8 in-lbs) |

I/O Memory Mapping

Addressing

The addressing scheme for 1762-OX6I is shown below.



(1) I/O located on the controller (embedded I/O) is slot 0. I/O added to the controller (expansion I/O) begins with slot 1.

Output Data File

Relay outputs are controlled using the bit positions in Word 0, as follows:

- 1 = relay energized (normally-open contact ON)
- 0 = relay not energized (normally-closed contact ON)

For each module, the output data file contains the controller-directed state of the discrete output points. Bit positions 0 through 5 correspond to output points 0 through 5.

| Word | Bit Position | | | | | | | | | | | | | | | |
|------|--------------|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|
| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | w | w | w | w | w | w |

w = write only; 0 = always at 0 or OFF state

Specifications

General Specifications

| Specification | Value |
|---|---|
| Dimensions | 90 mm (height) x 87 mm (depth) x 40 mm (width) height including mounting tabs is 110 mm 3.54 in. (height) x 3.43 in. (depth) x 1.58 in. (width) height including mounting tabs is 4.33 in. |
| Approximate Shipping Weight (with carton) | 220 g (0.485 lbs.) |
| Storage Temperature | -40°C to +85°C (-40°F to +185°F) |
| Operating Temperature | 0°C to +55°C (-32°F to +131°F) |
| Operating Humidity | 5% to 95% non-condensing |
| Operating Altitude | 2000 meters (6561 feet) |
| Vibration | Operating: 10 to 500 Hz, 0.030 in. max. peak-to-peak DIN Rail Mounting: N.O. 2.5G, N.C. 2.5G Panel Mounting: N.O. 2.5G, N.C. 0.5G |
| Shock | Operating: 30G |
| Module Power LED | On: indicates power is applied. |
| Vendor I.D. Code | 1 |
| Product Type Code | 7 |
| Product Code | 124 |
| Agency Certification | C-UL certified (under CSA C22.2 No. 142) UL 508 listed CE compliant for all applicable directives C-Tick marked for all applicable acts |
| Hazardous Environment Class | Class I, Division 2, Hazardous Location, Groups A, B, C, D (C-UL under CSA C22.2 No. 213) |
| Noise Immunity | NEMA standard ICS 2-230 |
| Radiated and Conducted Emissions | EN50081-2 Class A |
| <i>Electrical /EMC:</i> | <i>The module has passed testing at the following levels:</i> |
| ESD Immunity (EN61000-4-2) | 4 kV contact, 8 kV air, 4 kV indirect |
| Radiated Immunity (EN61000-4-3) | 10 V/m, 80 to 1000 MHz, 80% amplitude modulation, |
| Fast Transient Burst (EN61000-4-4) | 2 kV, 5 kHz |
| Surge Immunity (EN61000-4-5) | 2 kV common mode, 1 kV differential mode |
| Conducted Immunity (EN61000-4-6) | 10V, 0.15 to 80 MHz ⁽¹⁾ |

(1) Conducted Immunity frequency range may be 150 kHz to 30 MHz if the Radiated Immunity frequency range is 30 MHz to 1000 MHz.

Output Specifications

| Specification | Value |
|--|---|
| Voltage Category | AC/DC Type C relay |
| Operating Voltage Range | 5 to 265V ac 5 to 125V dc |
| Number of Outputs | 6 |
| Bus Current Draw (max.) | 110 mA at 5V dc 110 mA at 24V dc |
| Heat Dissipation | 2.8 W |
| Signal Delay (max.) -Resistive Load ⁽¹⁾ | On Delay: 10 ms (max.), 6 ms (typical) Off Delay: 20 ms (max.), 12 ms (typical) |
| Off-State Leakage Current | 0 mA |
| On-State Current | 100 mA at 5V dc ⁽²⁾ |
| Continuous Current per Point | 7A max. (See Relay Contact Ratings below.) |
| Continuous Current Per Module (max.) | See Module Load Ratings on page 13. |
| Power Supply Distance Rating | 6 |
| Isolated Groups | Outputs 0 to 5: Individually isolated |
| Output Group to Backplane Isolation | Verified by one of the following dielectric tests: 1836V ac for 1 second or 2596V dc for 2 seconds. 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 2 seconds. 265V ac working voltage (basic insulation) 150V ac working voltage (IEC Class 2 reinforced insulation) |

(1) Relay on-delay time does not include contact bounce time.

(2) This value is for reference only.

Relay Contact Ratings

| Volts (max.) (ac:50/60 Hz) | Maximum Amps per Point (Resistive) ⁽¹⁾ | Pilot Duty ⁽³⁾ | | Voltamperes | |
|-------------------------------|--|---------------------------|-------|----------------------|--------|
| | | Make | Break | Make | Break |
| 240V ac | 5.0A | 15A | 1.5A | 3600 VA | 360 VA |
| 120V ac | 7.0A ⁽²⁾ | 30A | 3.0A | | |
| 125V dc | 0.4A | 0.4A | | 50 VA ⁽⁴⁾ | |
| 24V dc | 7.0A ⁽²⁾ | 3.0A | | 72 VA ⁽⁴⁾ | |

(1) The continuous current per module must be limited so the module power does not exceed 1440VA.

(2) 6 A in ambient temperatures above 40°C.

(3) **Surge Suppression** – Connecting surge suppressors across your external inductive load will extend the life of the relay contacts. For additional details, refer to *Industrial Automation Wiring and Grounding Guidelines*, publication 1770-4.1.

(4) DC Make/Break Voltamperes must be limited to 50 VA for DC voltages between 28V dc and 125V dc. DC Make/Break Voltamperes below 28V dc are limited by the 3 A Make/Break current limit.

IMPORTANT

Controller must be operated within Relay Contact Ratings (above) and Module Load Ratings (page 13).

Module Load Ratings

| Volts (max.) | Controlled Load (Current) per Module (max.) |
|--------------|---|
| 240V ac | 12A ⁽¹⁾ |
| 120V ac | 12A ⁽¹⁾ |
| 125V dc | 2.4A |
| 24V dc | 30A ⁽²⁾ |

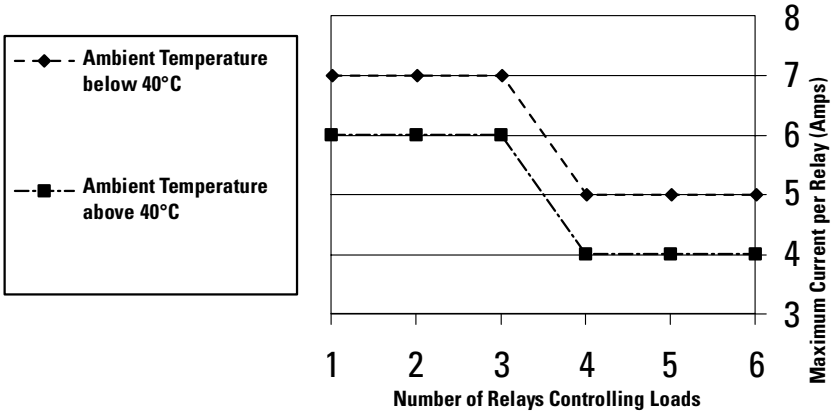
(1) Current per relay limited to 6A at ambient temperatures above 40°C.

(2) 24A in ambient temperatures above 40°C. Limited by ambient temperature and the number of relays controlling loads. See below.

IMPORTANT

Controller must be operated within Relay Contact Ratings (page 13) and Module Load Ratings (above).

Relays Used vs. Maximum Current per Relay (24V dc)



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 module is rated Class I, Division 2 by C-UL 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.
 - In Class I, Division 2 applications, the bus connector must be fully seated and the bus connector cover must be snapped in place.
 - In Class I, Division 2 applications, all modules must be mounted in direct contact with each other as shown on page 5. If DIN rail mounting is used, an end stop must be installed ahead of the controller and after the last 1762 I/O module.
 - All wiring must comply with N.E.C. article 501-4(b).
-

Environnements dangereux

Cet équipement est conçu pour être utilisé dans des environnements de Classe 1, Division 2, Groupes A, B, C, D ou non dangereux. The module is rated Class I, Division 2 by C-UL only.

La mise en garde suivante s'applique à une utilisation dans des environnements dangereux.

AVERTISSEMENT



DANGER D'EXPLOSION

- La substitution de composants peut rendre cet équipement impropre à une utilisation en environnement de Classe 1, Division 2.
- Ne pas remplacer de composants ou déconnecter l'équipement sans s'être assuré que l'alimentation est coupée.
- Ne pas connecter ou déconnecter des composants sans s'être assuré que l'alimentation est coupée.
- Ce produit doit être installé dans une armoire.
- Pour les applications de Classe I, Division 2, le connecteur de bus doit être correctement installé et son couvercle enclenché.
- Pour les applications de Classe 1, Division 2, tous les modules doivent être installés en contact direct les uns avec les autres, comme indiqué page 5. Si on utilise le montage sur rail DIN, une butée doit être placée à l'avant de l'automate et après la dernière unité d'E/S 1762.

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Publication 1762-IN017B-EN-P - March 2004

PN 40071-159-01(2)

Supersedes Publication 1762-IN017A-EN-P - January 2004

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