Product Information

# EtherNet/IP to DeviceNet Linking Device

**ATTENTION:** Read this document and the documents listed in the Additional Resources section about installation, configuration and operation of this equipment before you install, configure, operate or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

**注意：** 在安装、配置、操作和维护本产品前，请阅读本文档以及 " 其他资源 " 部分列出的有关设备安装、配置和操作的相应文档。除了所有适用规范、法律和标准的相关要求之外，用户还必须熟悉安装和接线说明。

安装、调整、投运、使用、组装、拆卸和维护等各项操作必须由经过适当训练的专业人员按照适用的操作规范实施。

如果未按照制造商指定的方式使用该设备，则可能会损害设备提供的保护。

**ATENCIÓN:** Antes de instalar, configurar, poner en funcionamiento o realizar el mantenimiento de este producto, lea este documento y los documentos listados en la sección Recursos adicionales acerca de la instalación, configuración y operación de este equipo. Los usuarios deben familiarizarse con las instrucciones de instalación y cableado y con los requisitos de todos los códigos, leyes y estándares vigentes.

El personal debidamente capacitado debe realizar las actividades relacionadas a la instalación, ajustes, puesta en servicio, uso, ensamblaje, desensamblaje y mantenimiento de conformidad con el código de práctica aplicable.

Si este equipo se usa de una manera no especificada por el fabricante, la protección provista por el equipo puede resultar afectada.

**ATENÇÃO:** Leia este e os demais documentos sobre instalação, configuração e operação do equipamento que estão na seção Recursos adicionais antes de instalar, configurar, operar ou manter este produto. Os usuários devem se familiarizar com as instruções de instalação e fiação além das especificações para todos os códigos, leis e normas aplicáveis.

É necessário que as atividades, incluindo instalação, ajustes, colocação em serviço, utilização, montagem, desmontagem e manutenção sejam realizadas por pessoal qualificado e especializado, de acordo com o código de prática aplicável.

Caso este equipamento seja utilizado de maneira não estabelecida pelo fabricante, a proteção fornecida pelo equipamento pode ficar prejudicada.

**ВНИМАНИЕ:** Перед тем как устанавливать, настраивать, эксплуатировать или обслуживать данное оборудование, прочитайте этот документ и документы, перечисленные в разделе «Дополнительные ресурсы». В этих документах изложены сведения об установке, настройке и эксплуатации данного оборудования. Пользователи обязаны ознакомиться с инструкциями по установке и прокладке соединений, а также с требованиями всех применимых норм, законов и стандартов.

Все действия, включая установку, наладку, ввод в эксплуатацию, использование, сборку, разборку и техническое обслуживание, должны выполняться обученным персоналом в соответствии с применимыми нормами и правилами.

Если оборудование используется не предусмотренным производителем образом, защита оборудования может быть нарушена.

**注意：** 本製品を設置、構成、稼動または保守する前に、本書および本機器の設置、設定、操作についての参考資料の該当箇所に記載されている文書に目を通してください。ユーザは、すべての該当する条例、法律、規格の要件に加えて、設置および配線の手順に習熟している必要があります。

設置調整、運転の開始、使用、組立て、解体、保守を含む諸作業は、該当する実施規則に従って訓練を受けた適切な作業員が実行する必要があります。

本機器が製造メーカにより指定されていない方法で使用されている場合、機器により提供されている保護が損なわれる恐れがあります。

**ACHTUNG:** Lesen Sie dieses Dokument und die im Abschnitt „Literaturverweise" genannten Dokumente zur Installation, Konfiguration und Bedienung dieser Ausrüstung sorgfältig durch, bevor Sie dieses Produkt installieren, konfigurieren, bedienen oder instandsetzen. Benutzer müssen sich mit den Anweisungen zur Installation und Verdrahtung vertraut machen und müssen die Anforderungen aller geltenden Vorschriften, Gesetze und Normen kennen.

Aktivitäten wie Installation, Einstellung, Inbetriebnahme, Verwendung, Montage, Demontage und Instandsetzung müssen durch ausreichend geschultes Personal in Übereinstimmung mit den geltenden Durchführungsvorschriften ausgeführt werden.

Wenn diese Ausrüstung in einer Weise verwendet wird, die nicht vom Hersteller angegeben wurde, kann der von der Ausrüstung bereitgestellte Schutz beeinträchtigt sein..

**ATTENTION :** Lisez ce document et les documents listés dans la section Ressources complémentaires relatifs à l'installation, la configuration et le fonctionnement de cet équipement avant d'installer, configurer, utiliser ou entretenir ce produit. Les utilisateurs doivent se familiariser avec les instructions d'installation et de câblage en plus des exigences relatives aux codes, lois et normes en vigueur.

Les activités relatives à l'installation, le réglage, la mise en service, l'utilisation, l'assemblage, le démontage et l'entretien doivent être réalisées par des personnes formées selon le code de pratique en vigueur.

Si cet équipement est utilisé d'une façon qui n'a pas été définie par le fabricant, la protection fournie par l'équipement peut être compromise.

**주의:** 본 제품 설치, 설정, 작동 또는 유지 보수하기 전에 본 문서를 포함하여 설치, 설정 및 작동에 관한 참고 자료 섹션의 문서들을 반드시 읽고 숙지하십시오. 사용자는 모든 관련 규정 , 법규 및 표준에서 요구하는 사항에 대해 반드시 설치 및 배선 지침을 숙지해야 합니다 .

설치 , 조정 , 가동 , 사용 , 조립 , 분해 , 유지보수 등 모든 작업은 관련 규정에 따라 적절한 교육을 받은 사용자를 통해서만 수행해야 합니다 .

본 장비를 제조사가 명시하지 않은 방법으로 사용하면 장비의 보호 기능이 손상될 수 있습니다 .

**ATTENZIONE** Prima di installare, configurare ed utilizzare il prodotto, o effettuare interventi di manutenzione su di esso, leggere il presente documento ed i documenti elencati nella sezione "Altre risorse", riguardanti l'installazione, la configurazione ed il funzionamento dell'apparecchiatura. Gli utenti devono leggere e comprendere le istruzioni di installazione e cablaggio, oltre ai requisiti previsti dalle leggi, codici e standard applicabili.

Le attività come installazione, regolazioni, utilizzo, assemblaggio, disassemblaggio e manutenzione devono essere svolte da personale adeguatamente addestrato, nel rispetto delle procedure previste.

Qualora l'apparecchio venga utilizzato con modalità diverse da quanto previsto dal produttore, la sua funzione di protezione potrebbe venire compromessa.

**DİKKAT:** Bu ürünün kurulumu, yapılandırılması, işletilmesi veya bakımı öncesinde bu dokümanı ve bu ekipmanın kurulumu, yapılandırılması ve işletimi ile ilgili İlave Kaynaklar bölümünde yer listelenmiş dokümanları okuyun. Kullanıcılar yürürlükteki tüm yönetmelikler, yasalar ve standartların gereksinimlerine ek olarak kurulum ve kablolama talimatlarını da öğrenmek zorundadır.

Kurulum, ayarlama, hizmete alma, kullanma, parçaları birleştirme, parçaları sökme ve bakım gibi aktiviteler sadece uygun eğitimleri almış kişiler tarafından yürürlükteki uygulama yönetmeliklerine uygun şekilde yapılabilir.

Bu ekipman üretici tarafından belirlenmiş amacın dışında kullanılırsa, ekipman tarafından sağlanan koruma bozulabilir.

**注意事項：** 在安裝、設定、操作或維護本產品前，請先閱讀此文件以及列於 「其他資源」章節中有關安裝、設定與操作此設備的文件。使用者必須熟悉安裝和配線指示，並符合所有法規、法律和標準要求。

包括安裝、調整、交付使用、使用、組裝、拆卸和維護等動作都必須交由已經過適當訓練的人員進行，以符合適用的實作法規。

如果將設備用於非製造商指定的用途時，可能會造成設備所提供的保護功能受損。

**POZOR:** Než začnete instalovat, konfigurovat či provozovat tento výrobek nebo provádět jeho údržbu, přečtěte si tento dokument a dokumenty uvedené v části Dodatečné zdroje ohledně instalace, konfigurace a provozu tohoto zařízení. Uživatelé se musejí vedle požadavků všech relevantních vyhlášek, zákonů a norem nutně seznámit také s pokyny pro instalaci a elektrické zapojení.

Činnosti zahrnující instalaci, nastavení, uvedení do provozu, užívání, montáž, demontáž a údržbu musí vykonávat vhodně proškolený personál v souladu s příslušnými prováděcími předpisy.

Pokud se toto zařízení používá způsobem neodpovídajícím specifikaci výrobce, může být narušena ochrana, kterou toto zařízení poskytuje.

**UWAGA:** Przed instalacją, konfiguracją, użytkowaniem lub konserwacją tego produktu należy przeczytać niniejszy dokument oraz wszystkie dokumenty wymienione w sekcji Dodatkowe źródła omawiające instalację, konfigurację i procedury użytkowania tego urządzenia. Użytkownicy mają obowiązek zapoznać się z instrukcjami dotyczącymi instalacji oraz oprzewodowania, jak również z obowiązującymi kodeksami, prawem i normami.

Działania obejmujące instalację, regulację, przekazanie do użytkowania, użytkowanie, montaż, demontaż oraz konserwację muszą być wykonywane przez odpowiednio przeszkolony personel zgodnie z obowiązującym kodeksem postępowania.

Jeśli urządzenie jest użytkowane w sposób inny niż określony przez producenta, zabezpieczenie zapewniane przez urządzenie może zostać ograniczone.

**OBS!** Läs detta dokument samt dokumentet, som står listat i avsnittet Övriga resurser, om installation, konfigurering och drift av denna utrustning innan du installerar, konfigurerar eller börjar använda eller utföra underhållsarbete på produkten. Användare måste bekanta sig med instruktioner för installation och kabeldragning, förutom krav enligt gällande koder, lagar och standarder.

Åtgärder som installation, justering, service, användning, montering, demontering och underhållsarbete måste utföras av personal med lämplig utbildning enligt lämpligt bruk.

Om denna utrustning används på ett sätt som inte anges av tillverkaren kan det hända att utrustningens skyddsanordningar försätts ur funktion.

**LET OP:** Lees dit document en de documenten die genoemd worden in de paragraaf Aanvullende informatie over de installatie, configuratie en bediening van deze apparatuur voordat u dit product installeert, configureert, bedient of onderhoudt. Gebruikers moeten zich vertrouwd maken met de installatie en de bedradingsinstructies, naast de vereisten van alle toepasselijke regels, wetten en normen.

Activiteiten zoals het installeren, afstellen, in gebruik stellen, gebruiken, monteren, demonteren en het uitvoeren van onderhoud mogen uitsluitend worden uitgevoerd door hiervoor opgeleid personeel en in overeenstemming met de geldende praktijkregels.

Indien de apparatuur wordt gebruikt op een wijze die niet is gespecificeerd door de fabrikant, dan bestaat het gevaar dat de beveiliging van de apparatuur niet goed werkt.

Catalog Number 1788 - EN2DNROM

## Installation

⚠ **ATTENTION:**
- Read this document and the documents listed in the Additional Resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.
- Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.
- In case of malfunction or damage, no attempts at repair should be made. The module should be returned to the manufacturer for repair. Do not dismantle the module.
- This equipment is certified for use only within the surrounding air temperature range of 0…60 °C (32…140 °F). The equipment must not be used outside of this range.
- Use only a soft dry anti-static cloth to wipe down equipment. Do not use any cleaning agents.

⚠ **ATTENTION:**
Power to this equipment must be supplied from a source compliant with the following:
- SELV source approved to IEC60950-1, IEC61010-2-201 or IEC62368-1 (ES1)
- PELV source approved to IEC60950-1, IEC61010-2-201 or IEC62368-1 (xyz)
If multiple power sources are used, do not exceed the specified isolation voltage.

**IMPORTANT**   Any illustrations, charts, sample programs, and layout examples shown in this publication are intended solely for the purposes of example. Since there are many variables and requirements associated with any particular installation, Rockwell Automation does not assume responsibility or liability for actual use based upon the examples shown in this publication.

## Install the Module

To install the module, do the following:

- Set the EtherNet/IP node address using the node address switches.
  Remember to cover the switches with the dust caps (finger-tight and secure) after the IP address has been set.
- Set the DeviceNet station number using the station number switches.
  Remember to cover the switches with the dust caps (finger-tight and secure) after the node address has been set.
- Set the DeviceNet baud rate using the baud rate switch.
  Remember to cover the switch with the dust cap (finger-tight and secure) after the baud rate has been set.
- Mount the module.
  Two sets of mounting holes are used to mount the module directly to a panel or machine. Mounting holes accommodate #8 (M4) pan head screws. The torque specification is 1.13 Nm (10 in-lb). The top mounting hole is the Functional Earth (FE) ground connection. Connect using a lug or a fork.
- Connect the module to the EtherNet/IP network.
- Connect the module to the DeviceNet network.
- Connect the power cable and turn on the module (24V DC SELV/PELV (-15…20%)).

## Environment and Enclosure

⚠ **ATTENTION:** This equipment is intended for use in overvoltage Category II applications (as defined in EN 60664-1), at altitudes up to 2000 m (6562 ft) without derating.
This equipment is not intended for use in residential environments and may not provide adequate protection to radio communication services in such environments.
This equipment is supplied as enclosed equipment. It should not require additional system enclosure when used in locations consistent with the equipment Enclosure Type Ratings. Subsequent sections of this publication may contain more information regarding specific enclosure type ratings, beyond what this product provides, that are required to comply with certain product safety certifications.
In addition to this publication, see the following:
- Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for additional installation requirements
- NEMA 250 and EN/IEC 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure

⚠ **ATTENTION:**
This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:
- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- Use a static-safe workstation, if available.
- Store the equipment in appropriate static-safe packaging when not in use.

⚠ **ATTENTION:**
Make sure all connectors and caps are securely tightened to properly seal the connections against leaks and maintain IP enclosure type requirements.
The USB port is intended for temporary local programming purposes only and not intended for permanent connection.
The USB cable is not to exceed 3.0 m (9.84 ft) and must not contain hubs.

## Certifications

| Certification (when product is marked)[1] | Value |
|---|---|
| c-UL-us | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. |
| CE | European Union 2004/108/EC EMC Directive, compliant with:<br>• EN 61000-6-4, Emission standard for industrial environment<br>• EN 61000-6-2, Immunity for industrial environment<br>• EN61326-1, Meas./Control/Lab., Industrial Requirements<br>• EN61131-2, Programmable Controllers (Clause 8, Zone A & B)<br>European Union 2011/65/EU RoHS, compliant with:<br>• EN50581, Technical documentation |
| RCM | Australian Radiocommunications Act, compliant with:<br>• EN 61000-6-4; Industrial Emissions |
| KC | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>• Article 58-2 of Radio Waves Act, Clause 3 |
| EtherNet/IP | ODVA conformance tested to EtherNet/IP specifications. |
| DeviceNet | ODVA conformance tested to DeviceNet specifications. |

(1)   See the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.

## Module Information
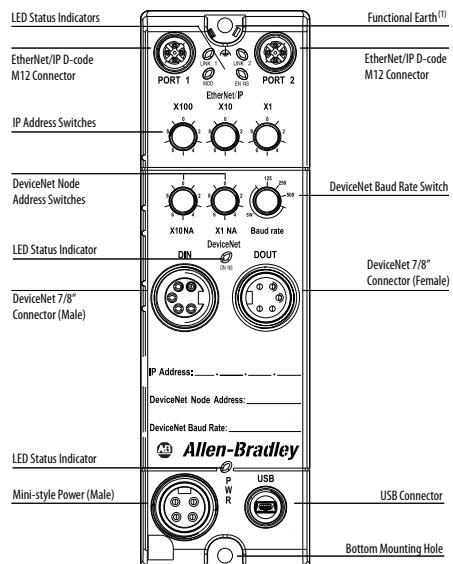


(1) Functional earth grounds the module's EtherNet/IP communication circuitry which is designed to mitigate the effect of noise on the network.

## Set the EtherNet/IP Node Address

Example shows default node address set at 163.
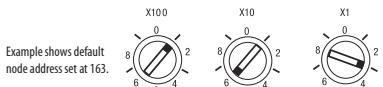


| Switch Value | IP Address |
|---|---|
| 000 | Administrative mode. See user manual for more information. |
| 001 - 254 | 192.168.1.XYZ where XYZ = values of the three switches. Subnet mask: 255.255.255.0 Gateway address: 0.0.0.0 |
| 888 | Reset module to initial out-of-box settings. Do not use for normal operation. |
| Other value | Selected via configuration software. Selection choices: - BootP (initial out-of-box setting) - DHCP - User entered See user manual for more information. |

Note: The module will reset to initial settings when all three switches are set to 8. Do not use for normal operation.
Note: Remember to cover the switch with the dust cap after use.

## Set the DeviceNet Node Address and Baud Rate
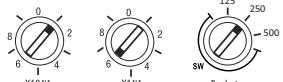


| Switch Value | Node Address |
|---|---|
| 00 - 63 | DeviceNet node address |
| Other value | Node address selected via configuration software. See manual. |

| Switch Value | Baud Rate |
|---|---|
| 125 | 125 kbps |
| 250 | 250 kbps |
| 500 | 500 kbps |
| Other value | Data rate selected via configuration software. See manual. |

Note: Remember to cover the switch with the dust cap after use.

## Status Indicators

| Status | Indicator | Description |
|---|---|---|
| MOD (Module Status) | Off | Power off |
| | Green | Normal operation |
| | Flashing green | The module is not configured |
| | Red | Unrecoverable error |
| | Flashing red | Recoverable error |
| | Alternating red/green | Power-on self-test (POST) |
| | Orange | Unrecoverable error: firmware has crashed |
| | Repeating one flash orange | Unrecoverable error |
| | Repeating two flashes orange | Unrecoverable error |
| | Repeating three flashes orange | Unrecoverable error: firmware is not started |
| EN NS (EtherNet/IP Status) | Off | Power off, or no IP address |
| | Green | Connected |
| | Flashing green | Not connected |
| | Red | Duplicate IP address |
| | Flashing red | Connection timeout |
| | Alternating green/red | Power-on self-test (POST) |
| DN NS (DeviceNet Status) | Off | No power |
| | Green | Online, connected |
| | Flashing green | Online, not connected |
| | Red | Unrecoverable fault |
| | Flashing red | Recoverable fault |
| | Alternating green/red | Communication faulted |
| LINK 1, LINK 2 (Ethernet Link 1, 2) | Off | No link |
| | Flashing green | Receiving/transmitting Ethernet packets at 100 Mbit |
| | Flashing yellow | Receiving/transmitting Ethernet packets at 10 Mbit |
| PWR | Off | Power off |
| | Green | Power on |

## EtherNet/IP D-Code M12 Connectors



(View into connector 1)
Pin 1   M12_Tx+
Pin 2   M12_Rx+
Pin 3   M12_Tx-
Pin 4   M12_Rx-
Pin 5   Connector shell shield GND

(View into connector 2)
Pin 1   M12_Tx+
Pin 2   M12_Rx+
Pin 3   M12_Tx-
Pin 4   M12_Rx-
Pin 5   Connector shell shield GND
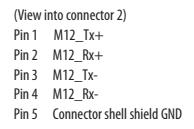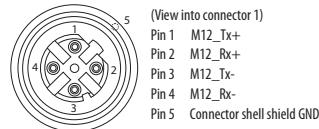
## DeviceNet 7/8" Connectors



Pin 1   Bare (Shield)
Pin 2   Red (+ Voltage)
Pin 3   Black (- Voltage)
Pin 4   White (CAN_H)
Pin 5   Blue (CAN_L)

Pin 1   Bare (Shield)
Pin 2   Red (+ Voltage)
Pin 3   Black (- Voltage)
Pin 4   White (CAN_H)
Pin 5   Blue (CAN_L)
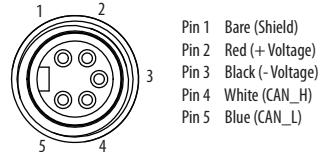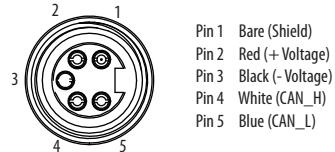
## Power Connector (Mini-style)



Pin 1   NC (Not connected)
Pin 2   V+ (Input +24V DC)
Pin 3   V- (Input Power Common)
Pin 4   NC (Not connected)

## USB Mini-B Connector



Pin 1   USB_5V
Pin 2   D-
Pin 3   D+
Pin 4   USB_GND
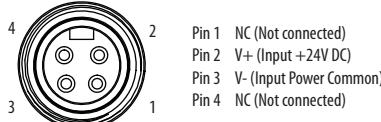
Note: The USB port should be used only for configuration, and must not be used during normal operation. Remember to cover the port with the dust cap after use.

## Specifications

| Attribute | 1788-EN2DNROM |
|---|---|
| Temperature, operating<br>• IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock) | 0…60 ℃ (32…140 ℉) |
| Temperature, nonoperating<br>• IEC 60068-2-1 (Test Ab, Nonoperating Cold), IEC 60068-2-2 (Test Bb, Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Nonoperating Thermal Shock) | -40…85 ℃ (-40…185 ℉) |
| Temperature, surrounding air, max | 60 ℃ (140 ℉) |
| Unit power supply | 24V DC SELV/PELV (-15…20%)<br>100 mA @ 24V DC, max |
| DeviceNet power | 24V DC SELV/PELV<br>20 mA @ 24V DC, max |
| Enclosure type rating | Meets IP67 and UL Type 4/4X: Use dust caps on unused switches and connectors |
| Shock, operating/nonoperating<br>• IEC60068-2-27 (Test Ea, Unpackaged Shock) | 30 g |
| Vibration<br>• IEC60068-2-6 (Test Fc, Operating) | 5 g @ 10...500 Hz |
| Relative humidity<br>• IEC60068-2-30 (TestDb, Unpackaged Damp Heat) | 5...95% noncondensing |
| Wiring category[1] | 3 - on USB ports<br>2 - on power ports<br>2 - on communication ports |
| ESD immunity<br>• IEC 61000-4-2 | 6 kV contact discharges; 8 kV air discharges |
| Radiated RF immunity<br>• IEC 61000-4-3 | 10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz<br>10V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz |
| EFT/B immunity<br>• IEC 61000-4-4 | ±3 kV at 5/100kHz on DC power ports<br>±3 kV at 5/100kHz on communications ports |
| Surge transient immunity<br>• IEC 61000-4-5 | ±500V line-line (DM) and ±1 kV line-earth (CM) on power ports<br>±2 kV line-earth(CM) on communications ports |
| Conducted RF immunity<br>• IEC 61000-4-6 | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz |
| Voltage variation<br>• IEC 61000-4-29 | 10ms interruption on DC power ports |

(1)    Use this Conductor Category information for planning conductor routing. Refer to Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

## Additional Resources

To view or download product publications, go to http://www.rockwellautomation.com/literature. For Release Notes and other publications specific to your module, search on the catalog number of the module. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

| Resource | Description |
|---|---|
| Linking Devices Specifications Technical Data, publication 1788-TD001 | Provides specifications for linking devices. |
| EtherNet/IP to DeviceNet Linking Device User Manual, publication 1788-UM059 | Provides information on the 1788-EN2DNROM linking device |
| DeviceNet Media Design and Installation Guide, publication DNET-UM072 | Provides information on creating DeviceNet networks. |
| EtherNet/IP Modules in Logix5000™ Control Systems User Manual, publication ENET-UM001 | Provides information on EtherNet/IP modules. |
| Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1 | Provides general guidelines for wiring an Allen-Bradley automation system. |
| Product Certifications website, http://www.ab.com | Provides declarations of conformity, certificates, and other certification details. |

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