

# XM-124 Standard Dynamic Measurement Module

Catalog Numbers 1440-SDM02-01RA, 1440-TB-A/C

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The XM-124 standard dynamic measurement module is part of the Allen-Bradley® XM® Series, a family of distributed machine condition monitoring and protection devices. The 1440-SDM02-01RA is a 2-channel general purpose monitor that supports measurements of dynamic inputs such as vibration, pressure, and strain as well as position measurements. The module is typically used to monitor shaft, casing, and pedestal vibration in rotating equipment.



**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、稼働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ー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, yapılındırılması, işletilmesi veya bakımı öncesinde bu dokümanı ve bu ekipmanın kurulumu, yapılındırılması ve işletimi ile ilgili ilave 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 eğitimli almış kişiler tarafından yürürlükteki uygulama yönetmeliklerine uygun şekilde yapılabilir.

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

**注意事項:** 在安装、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 vhodné 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.

**OB!** 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 bedringsinstructies, 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.

**Table 1 - North American Hazardous Location Approval**

The following information applies when operating this equipment in hazardous locations:	Informations sur l'utilisation de cet équipement en environnements dangereux:
<p>Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local authority having jurisdiction at the time of installation.</p>	<p>Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.</p>
<div style="display: flex; align-items: center;">  <div> <p><b>WARNING: EXPLOSION HAZARD</b></p> <ul style="list-style-type: none"> <li>• Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.</li> <li>• Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.</li> <li>• Substitution of components may impair suitability for Class I, Division 2.</li> </ul> </div> </div>	<div style="display: flex; align-items: center;">  <div> <p><b>WARNING: RISQUE D'EXPLOSION</b></p> <ul style="list-style-type: none"> <li>• Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement.</li> <li>• Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit.</li> <li>• La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2.</li> </ul> </div> </div>

**Table 2 - European Hazardous Location Approval**

<p>The following applies to products marked  . Such modules:</p> <ul style="list-style-type: none"> <li>• Are Equipment Group II, Equipment Category 3, and comply with the Essential Health and Safety Requirements relating to the design and construction of such equipment given in Annex II to Directive 94/9/EC. See the EC Declaration of Conformity at <a href="http://www.rockwellautomation/products/certification.com">http://www.rockwellautomation/products/certification.com</a> for details.</li> <li>• The type of protection used for the 1440-SDM02-01RA is &lt;"Ex nA nC IIC T4 Gc"&gt; according to EN 60079-15:2010 and EN 60079-0:2012.</li> <li>• The type of protection used for the 1440-TB-A Series C is &lt;"Ex nA IIC T4 Gc"&gt; according to EN 60079-15:2010 and EN 60079-0:2012.</li> <li>• The 1440-SDM02 01RA complies to Standards &lt;EN 60079-0:2012, EN 60079-15:2010&gt;, reference certificate number ITS13ATEX47876X.</li> <li>• The 1440-TB-A Series C complies to Standards &lt;EN 60079-0:2012, EN 60079-15:2010&gt;, reference certificate number ITS13ATEX47877X.</li> <li>• Are intended for use in areas in which explosive atmospheres caused by gases, vapors, mists, or air are unlikely to occur, or are likely to occur only infrequently and for short periods. Such locations correspond to Zone 2 classification according to ATEX directive 1999/92/EC.</li> </ul>
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**Table 3 - IEC Hazardous Location Approval**

<p>The following applies to products with IECEx certification:</p> <ul style="list-style-type: none"> <li>• Are intended for use in areas in which explosive atmospheres caused by gases, vapors, mists, or air are unlikely to occur, or are likely to occur only infrequently and for short periods. Such locations correspond to Zone 2 classification to IEC 60079-0.</li> <li>• The type of protection used for the 1440-SDM02-01RA is &lt;"Ex nA nC IIC T4 Gc"&gt; according to EN 60079-15.</li> <li>• The type of protection used for the 1440-TB-A Series C is &lt;"Ex nA IIC T4 Gc"&gt; according to EN 60079-15.</li> <li>• The 1440-SDM02 01RA complies to Standards IEC 60079-0, IEC-60079-15, reference IECEx certificate number IECEx ETL 15.0053X.</li> <li>• The 1440-TB-A Series C complies to Standards IEC 60079-0, IEC-60079-15, reference IECEx certificate number IECEx ETL 15.0054X.</li> <li>• May have catalog numbers followed by a "K" to indicate a conformal coating option.</li> </ul>
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**ATTENTION:** This product is grounded through the DIN rail to chassis ground. Use zinc plated yellow-chromate steel DIN rail to assure proper grounding. The use of other DIN rail materials (for example, aluminum or plastic) that can corrode, oxidize, or are poor conductors, can result in improper or intermittent grounding. Secure DIN rail to mounting surface approximately every 200 mm (7.8 in.) and use end-anchors appropriately. Be sure to ground the DIN rail properly. Refer to Industrial Automation Wiring and Grounding Guidelines, Rockwell Automation publication [1770-4.1](#), for more information.

**Table 4 - Special Conditions for Safe Use**



**WARNING:**

- This equipment is not resistant to sunlight or other sources of UV radiation.
- This equipment shall be mounted in an ATEX/IECEx Zone 2 certified enclosure with a minimum ingress protection rating of at least IP54 (as defined in EN/IEC 60529) and used in an environment of not more than Pollution Degree 2 (as defined in EN/IEC 60664-1) when applied in Zone 2 environments. The enclosure must be accessible only by the use of a tool.
- This equipment shall be used within its specified ratings defined by Rockwell Automation.
- Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 140% of the rated voltage when applied in Zone 2 environments.
- Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.
- Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.
- This equipment must be used only with ATEX/IECEx-certified Rockwell Automation backplane.

**Table 5 - Electrical Safety Considerations**



**ATTENTION:**

Power to this equipment must be powered from a source compliant with the following:

- SELV Limited Energy Supply compliant with IEC61010-1
- Limited Power Source (LPS) approved to IEC60950



**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.
- Installation, adjustments, putting into service, use, assembly, disassembly, and maintenance shall 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.
- If this equipment is used in a manner not specified by the manufacturer, the protection that is provided by the equipment may be impaired.
- This equipment is certified for use only within the surrounding air temperature range of -20...70 °C (-4...158 °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 cleaning agents.
- Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control, publication [SGI-1.1](#), available from your local Rockwell Automation sales office or online at <http://www.rockwellautomation.com/literature> describes some important differences between solid-state equipment and hard-wired electromechanical devices.

**IMPORTANT**

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

**Table 6 - Environment and Enclosure**

**ATTENTION:** This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC 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 open-type equipment for indoor use. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The enclosure must have suitable flame-retardant properties to prevent or minimize the spread of flame, complying with a flame spread rating of 5VA, V2, V1, V0 (or equivalent) if non-metallic. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain more information regarding specific enclosure type ratings 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 more installation requirements.
- NEMA 250 and IEC 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosures.

**WARNING:**

- Do not replace components or disconnect equipment unless power has been switched off or the area is known to be free of ignitable concentrations.
- This product must be installed in a suitable weatherproof metal enclosure.

**Table 7 - Prevent Electrostatic Discharge****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.

Note that all module circuits and connections (including the PE terminals) are isolated from ground and the DIN mounting rail!

When it is necessary to provide a ground reference, appropriate connections have to be made by the installer.

## Requirements for Wiring

Use solid or stranded wire. All wiring must meet the following specifications:

- 14...22 AWG copper conductors without pretreatment; 8 AWG required for grounding the DIN rail for electromagnetic interference (EMI) purposes
- Recommended strip length 8 mm (0.31 in.)
- Minimum insulation rating of 300V
- Soldering the conductor is forbidden
- Wire ferrules can be used with stranded conductors; copper ferrules recommended

## Install the Module

To install the XM-124 Standard Dynamic Measurement Module, follow these steps.

1. Mount the terminal base.
2. Wire the module.
3. Mount the module.
4. Connect the power supply.
5. Connect the channel outputs.
6. Establish a serial port connection.
7. Establish a DeviceNet connection.



**ATTENTION:** The XM-124 Dynamic Measurement Module is certified and approved for use only in the 1440-TB-A/C terminal base. Do not install the XM-124 module in any other terminal base.

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## Mount the Terminal Base

The XM family includes several terminal bases to serve all XM modules. The 1440-TB-A/C terminal base is the only terminal base that is used with the Standard Dynamic Measurement Module (catalog number 1440-SDM02-01RA).

The terminal base can be DIN rail or panel mounted.



**WARNING:**

- If you insert or remove the module while backplane power is on, an electric arc can occur. An electric arc could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.
  - If you connect or disconnect wiring while the field-side power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.
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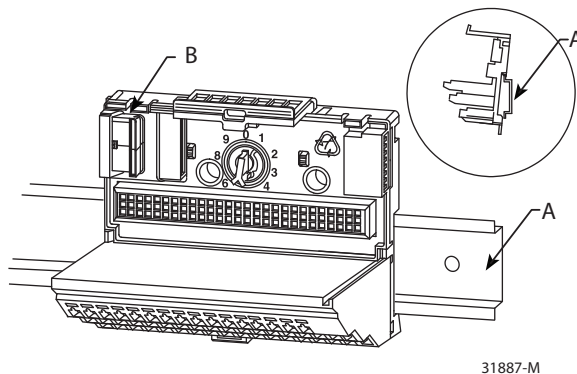
**ATTENTION:** Do not remove or replace a terminal base while power is applied. Interruption of the backplane can result in unintentional operation or machine motion.

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## DIN Rail Mounting

To mount the terminal base on a DIN rail (Allen-Bradley catalog number 199-DR1 or 199-DR4), use the following steps.

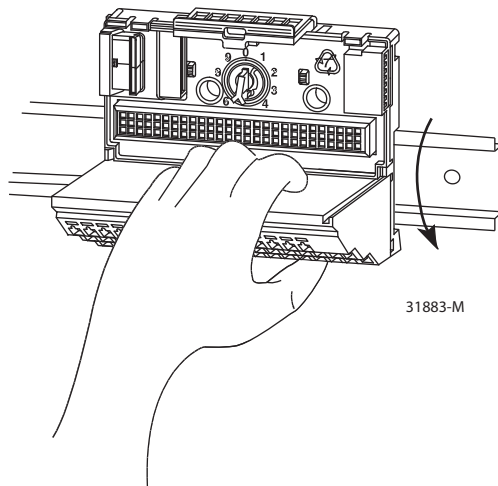
1. Position the terminal base on the 35 x 7.5 mm DIN rail (A).



2. Slide the terminal base over.

Leave room for the side connector (B).

3. Rotate the terminal base onto the DIN rail with the top of the rail hooked under the lip on the rear of the terminal base.



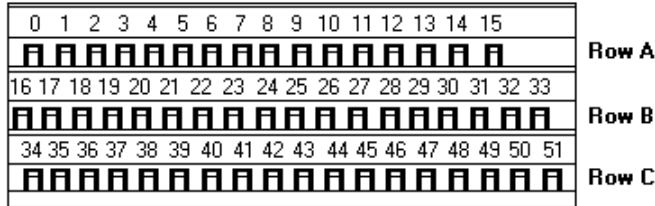
4. Press down on the terminal base to lock it onto the DIN rail.

If the terminal base does not lock into place, use a screwdriver or similar device to open the locking tab, press down on the terminal base until it is flush with the DIN rail, and release the locking tab to lock the base in place.

## Wire the Module

Wire the module through the terminal base on which the module mounts. The XM-124 module is compatible only with the XM-940 terminal base, catalog number 1440-TB-A.

**Figure 1 - XM-940 Terminal Base**

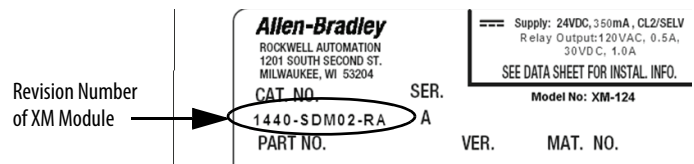


XM-940 (catalog number 1440-TB-A)

### Terminal Block Assignments

The terminal block assignments for the XM-124 Standard Dynamic Measurement Module are detailed in this section.

**TIP** The revision number for the XM module appears on the product label, which is on the front of the XM module, as shown in this example (actual product label can have different ratings).



**WARNING: EXPLOSION HAZARD.** Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means that are provided with this product.

**Table 8 - Terminal Block Assignments**

No.	Name	Description
0	Xducer 1 (+)	Vibration transducer 1 connection
1	Xducer 2 (+)	Vibration transducer 2 connection
2	Buffer 1 (+)	Vibration signal 1 buffered output
3	Buffer 2 (+)	Vibration signal 2 buffered output
4	Tach/Signal In (+)	Tachometer transducer/signal input, positive side
5	Buffer Power 1 IN	Channel 1 buffer power input Connect to terminal 6 for positive bias transducers or terminal 21 for negative bias transducers
6	Positive Buffer Bias	Provides positive (-5...24V) voltage compliance to buffered outputs Connect to terminals 5 (CH 1) and 22 (CH 2) for positive bias transducers
7	TxD	Personal computer serial port, transmit data
8	RxD	Personal computer serial port, receive data
9	XRTN <sup>1</sup>	Circuit return for TxD and RxD
10	Chassis	Connection to DIN-rail ground spring or panel mounting hole



**Table 8 - Terminal Block Assignments (continued)**

No.	Name	Description
11	4...20 mA 1 (+)	4...20 mA output 300 Ω maximum load
12	4...20 mA 1 (-)	
13	Chassis	Connection to DIN-rail ground spring or panel mounting hole
14	Chassis	Connection to DIN-rail ground spring or panel mounting hole
15	Chassis	Connection to DIN-rail ground spring or panel mounting hole
16	Xducer 1 (-) <sup>1</sup>	Vibration transducer 1 connection
17	Xducer 2 (-) <sup>1</sup>	Vibration transducer 2 connection
18	Signal Common <sup>1</sup>	Vibration buffered output return
19	TACH Buffer	Tachometer transducer/signal output
20	Tachometer (-)	Tachometer transducer/signal return, TACH Buffer return
21	Buffer/Xducer Pwr (-)	Provides negative (-24...9V) voltage compliance to buffered outputs Connect to terminals 5 (CH 1) and 22 (CH 2) for negative bias transducers Transducer power supply output, negative side; used to power external sensor (40 mA maximum load)
22	Buffer Power 2 IN	Channel 2 buffer power input Connect to terminal 6 for positive bias transducers or terminal 21 for negative bias transducers
23	CAN_High	DeviceNet bus connection, high differential (white wire)
24	CAN_Low	DeviceNet bus connection, low differential (blue wire)
25	+24V Out	Internally connected to 24V In (terminal 44) If XM modules are not plugged into each other, this terminal is used to daisy chain power If power is not present on terminal 44, there is no power on this terminal
26	DNet V (+)	DeviceNet bus power input, positive side (red wire)
27	DNet V (-)	DeviceNet bus power input, negative side (black wire)
28	24V Common <sup>1</sup>	Internally connected to 24V Common (terminals 43 and 45) If XM modules are not plugged into each other, this terminal is used to daisy chain power
29	4...20 mA 2 (+)	4...20 mA output 300 Ω maximum load
30	4...20 mA 2 (-)	
31	Chassis	Connection to DIN-rail ground spring or panel mounting hole
32	Chassis	
33	Chassis	
34	Chassis	
35	Chassis	
36	Chassis	
37	Chassis	
38	Chassis	
39	SetPtMult	Switch input to activate Set Point Multiplication (active closed)
40	Switch RTN	Switch return, shared between SetPtMult and Reset Relay
41	Reset Relay	Switch input to reset internal relay (active closed)
42	Reserved	
43	24V Common <sup>1</sup>	Internally DC-coupled to circuit ground
44	+24V In	Connection to primary external +24V power supply, positive side
45	24V Common <sup>1</sup>	Connection to external +24V power supply, negative side (internally DC-coupled to circuit ground)
46	Reserved	

**Table 8 - Terminal Block Assignments (continued)**

No.	Name	Description
47	Relay Common	Relay Common contact
48	Relay N.O.	Relay Normally Open contact
49	Reserved	
50	Reserved	
51	Reserved	

1 Terminals are internally connected and isolated from the chassis terminals.

## Mount the Module

The XM-124 Standard Dynamic Measurement Module (catalog number 1440-SDM02-01RA) is used only with the 1440-TB-A/C terminal base.



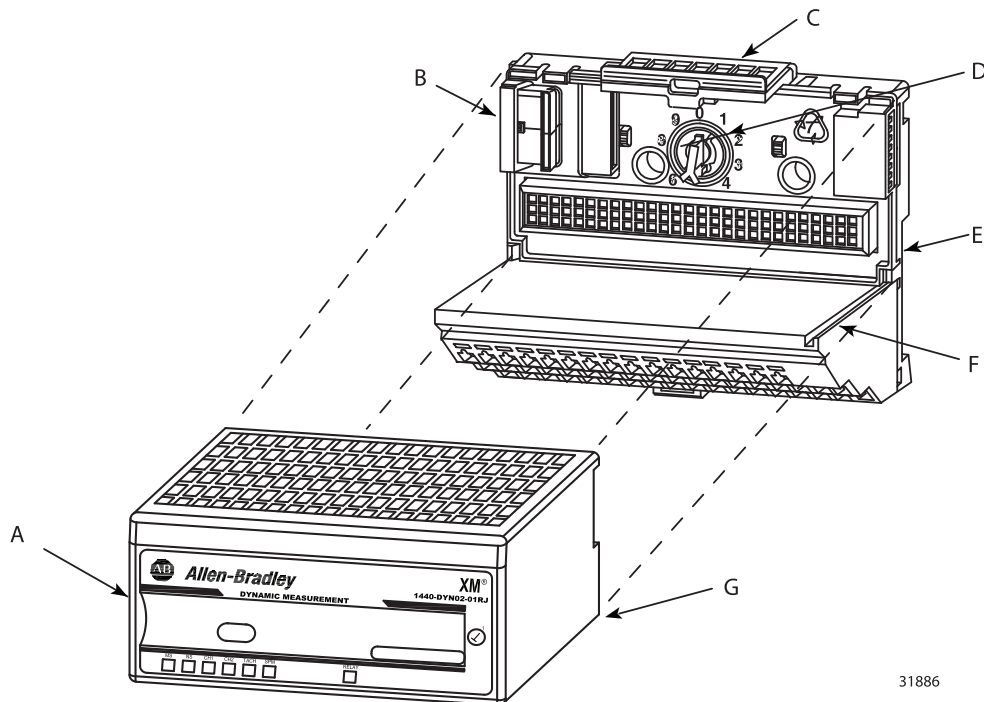
**WARNING:** An electric arc can occur if you do the following:

- Insert or remove the module while backplane power is on
- Connect or disconnect wiring while the field-side power is on

An electric arc can cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

**IMPORTANT** To help protect the serial connector and electronics when the serial port is not in use, install the overlay slide label.

1. Make sure the keyswitch (D) on the terminal base (E) is at position 1 as required for the module.



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2. Make sure the side connector (B) is pushed fully to the left.

**You cannot install the module unless the connector is fully extended.**

3. Make sure that the pins on the bottom of the module are straight so they align properly with the connector in the terminal base.
4. Position the module (A) with the alignment bar (G) so that it is aligned with the groove (F) on the terminal base.
5. Press firmly and evenly to seat the module in the terminal base.

**The module is seated when the latching mechanism (C) is locked into the module.**

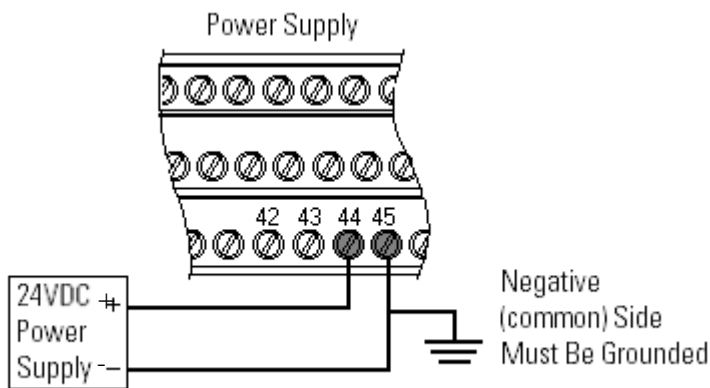
6. To install the next module in its terminal base, repeat steps [1](#) to [5](#).

## Connect the Power Supply

Power that is supplied to the module must be 24V DC nominally ( $\pm 10\%$ ) and must be a Class 2 rated source.

Wire the DC-input power supply to the terminal base as shown in [Figure 2](#).

**Figure 2 - DC Input Power Supply Connection**



### IMPORTANT

A Class 2 circuit can be provided by use of an NEC Class 2 rated power supply, or by using a SELV or PELV rated power supply with a 5 A current limiting fuse that is installed before the XM module.

24V DC must be wired to terminal 44 (+24V In) to provide power to the device and other XM modules that are linked to the wired terminal base via the side connector.



**ATTENTION:** The power connections vary for different XM modules. See the installation instructions for your specific XM module for complete information regarding wiring.

## Serial Port Connection

The XM-124 module includes a serial port connection, which lets you connect a personal computer and configure module parameters via the Serial Configuration software utility.

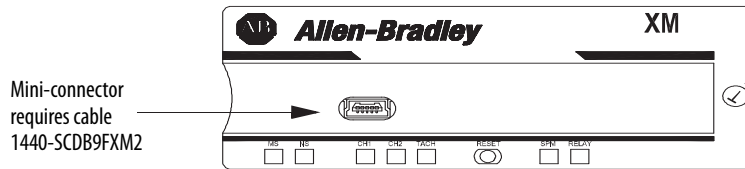
There are two methods of connecting an external device to the serial port:

- **Terminal base** - There are three terminals on the terminal base that you can use for the serial port connection. They are TxD, RxD, and RTN (terminals 7, 8, and 9, respectively). If these three terminals are wired to a DB-9 female connector, then a standard RS-232 serial cable with 9-pin (DB-9) connectors can be used to connect the module to a personal computer (no null modem is required). The DB-9 connector must be wired to the terminal block as follows.

Product Name/Title Terminal Base (catalog number 1440-TB-A)	DB-9 Female Connector
TX Terminal (terminal 7) -----	Pin 2 (RD - receive data)
RX Terminal (terminal 8) -----	Pin 3 (TD - transmit data)
RTN Terminal (terminal 9) -----	Pin 5 (SG - signal ground)

- **Mini-connector** - The mini-connector is on the top of the module as shown in [Figure 3](#).

Figure 3 - Mini-connector



Attach a DB-9 female connector into the personal computer and a USB mini-B male connector to the module. The default communication rate is 19.2 Kbps.



**WARNING:** If you connect or disconnect the serial cable with power applied to the module or the serial device on the other end of the cable, an electric arc can occur. An electric arc could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

### IMPORTANT

If 24V Common is not referenced to earth ground, we recommend that you use an RS-232 isolator, such as Phoenix™ PSM-ME-RS232/RS232-P (catalog number 1440-ISO-232-24), to help protect both the XM module and the computer.

## DeviceNet Connection

The DeviceNet network is an open, global, industry-standard communication network that is designed to provide an interface through a cable from a programmable controller to a smart device, such as the XM-124 module. As multiple XM modules are interconnected, the DeviceNet network also serves as the communication bus and protocol that efficiently transfers data between the XM modules.

The XM-124 module includes a DeviceNet connection that lets the modules communicate with a programmable logic controller (PLC), distributed control system (DCS), or another XM module.

Connect the DeviceNet cable to the terminal base as shown in this table.

**Table 9 - DeviceNet Cable Connections**

Connect	To	Terminal
Red wire	DNet V+	26 (optional)
White wire	CAN High	23
Bare wire	Shield (Chassis)	10
Blue wire	CAN Low	24
Black wire	DNet V-	27

**IMPORTANT** The DeviceNet power circuit through the XM module interconnect, which is rated at only 300 mA, is not intended or designed to power DeviceNet loads. Doing so could damage the module or terminal base.

**IMPORTANT** If the module is configured to operate in Normal mode (fully ODVA-compliant), DNet V+ must be connected. See XM-124 Standard Dynamic Measurement Module User Manual, publication [1440-UM001](#).



**ATTENTION:**

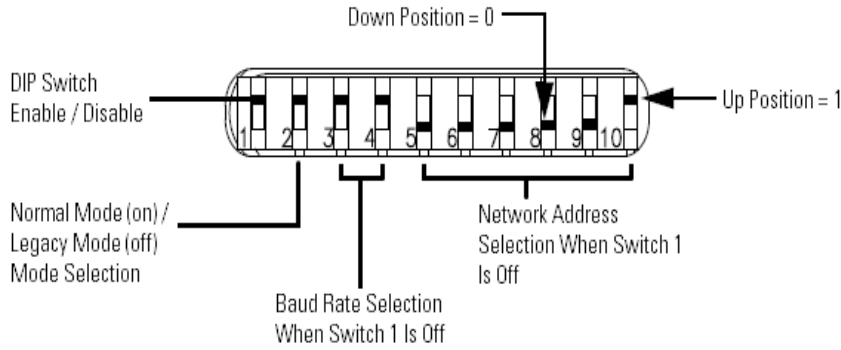
- You must ground the DeviceNet shield at only one location. Connecting the DeviceNet shield to terminal 10 grounds the DeviceNet shield at the XM module. If you intend to terminate the shield elsewhere, do not connect the shield to terminal 10.
- The DeviceNet network must also be referenced to earth ground at only one location. Connect DNet V- to earth ground or chassis at one of the XM modules.
- The DNet V+ and DNet V- terminals are inputs to the XM module. Do not attempt to pass DeviceNet power through the XM terminal base to other non-XM equipment by connecting to these terminals. Failure to comply can result in damage to the XM terminal base and/or other equipment.

**IMPORTANT** Terminate the DeviceNet network and adhere to the requirements and instructions in the ODVA Planning and Installation Manual - DeviceNet Cable System, which is available on the ODVA website <http://www.odva.org>.

## DeviceNet Mode, Communication Rate, and Address

Under the slide at the top of the module, is a 10-position DIP switch that is used to set DeviceNet behavior, node address, and communication rate for the module. The switches are numbered from left to right and are applied as shown in [Figure 4](#) and [Table 10](#).

**Figure 4 - DIP Switch Bank**



**Table 10 - DIP Switch Functions and Defaults**

Switch	Purpose	Function	Out-of-box Default Value	Out-of-box Switch Setting
1	DIP switch disable	Determines whether DIP switches 3...10 are enabled. <ul style="list-style-type: none"> <li>When this switch is in the off position, DIP switches 3...10 set the node address and communication rate for the module.</li> <li>When the switch is on, the device ignores DIP switches 3...10 and uses the network address and communication rate programmed in nonvolatile storage.</li> </ul>	Switches enabled	Off
2	Network mode	Sets the DeviceNet behavior of the module to either Normal mode (ODVA compliant) or Legacy mode, which is consistent with earlier XM module versions.	Normal (fully compliant)	On
3, 4	Data rate	When switch 1 is off (0), the DeviceNet communication rate is set.	125 Kbps	Both off
5...10	Node address	When switch #1 is off (0), the DeviceNet node address is set.	63	All on

**Table 11 - Specifications**

Attribute	1440-SDM02-01RA	1440-TB-A/C
Temperature, operating	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): -20 °C < Ta < +65 °C (-4 °F < Ta < +149 °F)	
Temperature, surrounding air, max.	65 °C (149 °F)	
Enclosure type rating	None (open-style)	
Voltage and current ratings	Supply: 24V DC (21.6...26.4V DC), 350 mA Relay: 24V DC, 1.5A Res	Supply: 24V DC (21.6...26.4V DC), 0.35A max Relay: 120V AC, 50/60Hz, 0.5A Res 110V DC, 0.3A Res 30V DC, 1.5A Res
Isolation voltage	50V (continuous), Basic Insulation Type between uninsulated live parts and the enclosure with the Relay contacts open and closed. 50V (continuous), Basic Insulation Type Between supply and output terminals.	Determined by installed module
Wire Size	Determined by installed terminal base	0.34...2.1 mm2 (22...14 AWG) solid or stranded copper wire rated at 75 °C (167 °F) or greater, 1.2 mm (3/64 in.) insulation max
Terminal block torque specs	N/A	0.8 N•m (7 lb•in)
North American Temp Code	T4	
ATEX Temp Code	T4	
IECEx Temp Code	T4	

## Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
XM-124 Dynamic Measurement Module User Manual, publication <a href="#">1440-UM001</a>	Provides details on the installation of the XM-124 as well as module configuration, operation, and technical specifications.
Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">1770-4.1</a>	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, <a href="http://www.ab.com">http://www.ab.com</a>	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at <http://www.rockwellautomation.com/literature/>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

# Rockwell Automation Support

Use the following resources to access support information.

<b>Technical Support Center</b>	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	<a href="http://www.rockwellautomation.com/knowledgebase">www.rockwellautomation.com/knowledgebase</a>
<b>Local Technical Support Phone Numbers</b>	Locate the phone number for your country.	<a href="http://www.rockwellautomation.com/global/support/get-support-now.page">www.rockwellautomation.com/global/support/get-support-now.page</a>
<b>Direct Dial Codes</b>	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	<a href="http://www.rockwellautomation.com/global/support/direct-dial.page">www.rockwellautomation.com/global/support/direct-dial.page</a>
<b>Literature Library</b>	Installation Instructions, Manuals, Brochures, and Technical Data.	<a href="http://www.rockwellautomation.com/literature">www.rockwellautomation.com/literature</a>
<b>Product Compatibility and Download Center (PCDC)</b>	Get help determining how products interact, check features and capabilities, and find associated firmware.	<a href="http://www.rockwellautomation.com/global/support/prdc.page">www.rockwellautomation.com/global/support/prdc.page</a>

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