Installation Instructions

Original Instructions

Allen-Bradley
by ROCKWELL AUTOMATION

XM-124 Standard Dynamic Measurement Module

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

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The XM-124 standard dynamic measurement module is part of the XM® Series, a family of distributed protection devices that monitor machine condition. The XM-124 module is a 2-channel, general-purpose monitor that supports measurements of both position and dynamic inputs such as vibration, pressure, and strain. The module is typically used to monitor shaft, casing, and pedestal vibration in equipment that rotates. Install the XM-124 module with the 1440-TB-A terminal base.

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

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Updated the European hazardous location information.	3

Rockwell Automation

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 „Weitere Informationen“aufgeführten Dokumente, die Informationen zu Installation, Konfiguration und Bedienung dieses Produkts enthalten, bevor Sie dieses Produkt installieren, konfigurieren, bedienen oder warten. Anwender müssen sich neben den Bestimmungen aller anwendbaren Vorschriften, Gesetze und Normen zusätzlich mit den Installations- und Verdrahtungsanweisungen vertraut machen.

Arbeiten im Rahmen der Installation, Anpassung, Inbetriebnahme, Verwendung, Montage, Demontage oder Instandhaltung dürfen nur durch ausreichend geschulte Mitarbeiter und in Übereinstimmung mit den anwendbaren Ausführungsvorschriften vorgenommen werden.

Wenn das Gerät in einer Weise verwendet wird, die vom Hersteller nicht vorgesehen ist, kann die Schutzfunktion 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。

包括安装、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, bediend 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.

Rockwell Automation recognizes that some of the terms that are currently used in our industry and in this publication are not in alignment with the movement toward inclusive language in technology. We are proactively collaborating with industry peers to find alternatives to such terms and making changes to our products and content. Please excuse the use of such terms in our content while we implement these changes.

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.
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.	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 utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.
WARNING: **Explosion Hazard –** • Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous. • 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. • Substitution of components may impair suitability for Class I, Division 2. • If this product contains batteries, they must only be changed in an area known to be nonhazardous.	**AVERTISSEMENT:** **Risque d'Explosion –** • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement. • 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. • La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2. • S'assurer que l'environnement est classé non dangereux avant de changer les piles.

European Hazardous Location Approval

The following applies to products marked **II 3 G**:

- Are Equipment Group II, Equipment Category 3. See the EU Declaration of Conformity at rok.auto/certifications for details.
- For 1440-SDM02-01RA: the type of protection is Ex ec IIC T4 Gc and Ex nC IIC T4 Gc.
- For 1440-TB-A Series C: the type of protection is Ex ec IIC T4 Gc.
- Equipment protection by increased safety "e", reference certificate number DEMKO 17ATEX1915X.
- Equipment protection "n", reference certificate number DEMKO 17ATEX1915X.
- 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 2014/34/EU.
- May have catalog numbers followed by a "K" to indicate a conformal coating option.

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.

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 Zone 2 certified enclosure with a minimum ingress protection rating of at least IP54 (in accordance with EN IEC 60079-0) and used in an environment of not more than Pollution Degree 2 (as defined in EN 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 peak rated voltage when applied in Zone 2 environments.
- The instructions in the user manual shall be observed.
- This equipment must be used only with ATEX certified Rockwell Automation® backplanes.
- Secure any external connections to this equipment with 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.

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.

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:
- 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 on the examples that are shown in this publication.

Install the Terminal Base

The terminal base can be mounted on a DIN rail or on a wall/panel.

WARNING: If you insert or remove the terminal base while backplane 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.

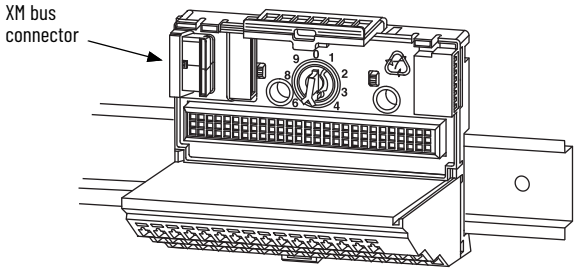
WARNING: Do not remove or replace a terminal base while power is applied. Interruption of the backplane can result in unintentional operation or machine motion.

Mount on a DIN Rail

Use an EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail to mount the terminal base.

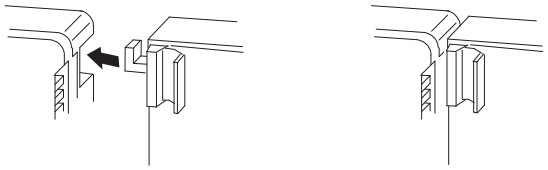
ATTENTION: This product is grounded through the DIN rail to chassis ground. Use zinc-plated chromate-passivated steel DIN rail to assure proper grounding. The use of other DIN rail materials (for example, aluminum or plastic) that can corrode, oxidize, or are poor conductors, can result in improper or 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.

1. Verify that the XM bus connector on the terminal base is fully retracted into the base.

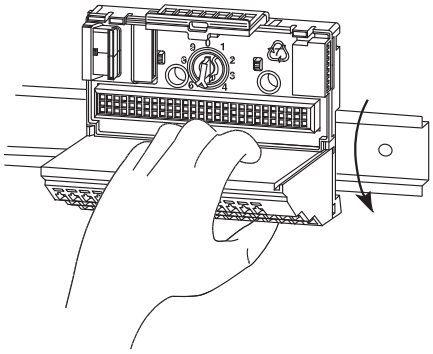


2. Hold the terminal base at a slight angle and hook the top DIN rail latch over the DIN rail.
3. Slide the terminal base over until it is tight against the adapter.

   Make sure that the hook on the terminal base slides under the edge of the adapter.



4. Rotate the terminal base down onto the DIN rail and press back until it locks into place.



   If the terminal base does not lock in place, use a screwdriver or similar device to move the locking tab down while you press the terminal base back onto the DIN rail. Release the locking tab to lock the terminal base into place.
5. To complete the backplane connection, gently push the XM bus connector to the left.

Install Additional Terminal Bases

Follow these steps to install another terminal base.

IMPORTANT Terminal bases are mounted left to right on the DIN rail.

1. Verify that the XM bus connector is fully retracted into the terminal base.
2. Position the terminal base on the DIN rail.
3. Slide the terminal base over until it is tight against the neighboring terminal base.

   Make sure that the hook on the additional terminal base slides under the edge of the initial terminal base.
4. To lock the terminal base on the DIN rail, press down on the terminal base.

   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.
5. To complete the backplane connection, gently push the XM bus connector to the left.

Install the Terminal Base on a Panel or Wall

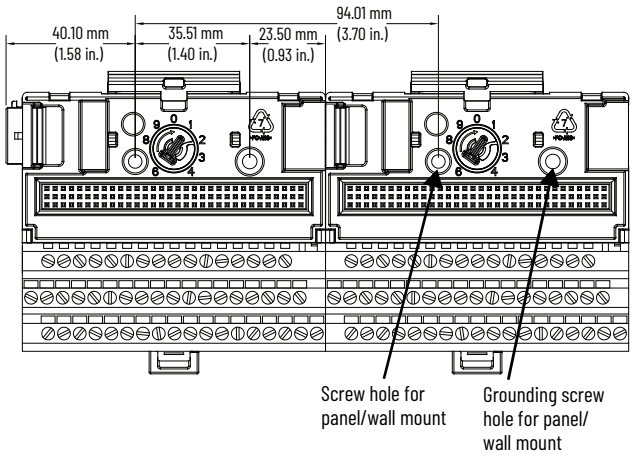
To install on a wall or panel, you must:

- Lay out the drilling points on the wall or panel.
- Drill the pilot holes for the mounting screws.
- Install the terminal bases onto the wall or panel.

Follow these steps to install the terminal base on a wall or panel.

1. Lay out the required points on the wall/panel as shown on this diagram.

   IMPORTANT Maintain at least 25.4 mm (1.0 in.) around the XM system.



2. Drill the necessary holes for the #6 self-tapping mounting screws.
3. Use two, #6 self-tapping screws to attach the terminal base.

   For information about grounding, see the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.
4. To install another terminal base, verify that the XM bus connector on the next terminal base is fully retracted.
5. Position the terminal base tight against the neighboring terminal base; verify that the hook on the terminal base slides under the edge of the terminal base.
6. Use two, #6 self-tapping screws to attach the terminal base.
7. To complete the backplane connection, gently push the XM bus connectors to the left.

Wire the Terminal Base

Use the following information to wire the terminal base for the XM-124 module. For wire and power requirements, see the Specifications on page 10.

IMPORTANT The terminal block assignments are different for each module. See the installation instructions for each terminal base for the terminal assignments.

WARNING: 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.

Terminal Assignments - XM-124 (1440-SDM02-01RA)

#	Name	Description	#	Name	Description	#	Name	Description
0	Xducer 1 (+)	Vibration transducer 1 connection	20	Tachometer (-)	Tachometer transducer/signal return, TACH Buffer return	39	SetPtMult	Switch input to activate Set Point Multiplication (active closed)
1	Xducer 2 (+)	Vibration transducer 2 connection	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)	40	Switch RTN	Switch return, shared between SetPtMult and Reset Relay
2	Buffer 1 (+)	Vibration signal 1 buffered output	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	41	Reset Relay	Switch input to reset internal relay (active closed)
3	Buffer 2 (+)	Vibration signal 2 buffered output	23	CAN_High	DeviceNet® bus connection, high differential (white wire)	42	-	
4	Tach/Signal In (+)	Tachometer transducer/signal input, positive side	24	CAN_Low	DeviceNet bus connection, low differential (blue wire)	43	24V Common[1]	Internally DC-coupled to circuit ground
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	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	44	+24V In	Connection to primary external +24V power supply, positive side
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	26	DNet V (+)	DeviceNet bus power input, positive side (red wire)	45	24V Common[1]	Connection to external +24V power supply, negative side (internally DC-coupled to circuit ground)
7	TxD	Personal computer serial port, transmit data	27	DNet V (-)	DeviceNet bus power input, negative side (black wire)	46	Reserved	
8	RxD	Personal computer serial port, receive data	28	24V Common[1]	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	47	Relay Common	Relay Common contact
9	XRTN[1]	Circuit return for TxD and RxD	29	4...20 mA 2 (+)	4...20 mA output 300 Ω maximum load	48	Relay N.O.	Relay Normally Open contact
10	Chassis	Connection to DIN rail ground spring or panel mounting hole	30	4...20 mA 2 (-)		49	Reserved	
11	4...20 mA 1 (+)	4...20 mA output 300 Ω maximum load	31	Chassis	Connection to DIN rail ground spring or panel mounting hole	50	Reserved	
12	4...20 mA 1 (-)		32	Chassis		51	Reserved	
13	Chassis	Connection to DIN rail ground spring or panel mounting hole	33	Chassis				
14	Chassis	Connection to DIN rail ground spring or panel mounting hole	34	Chassis				
15	Chassis	Connection to DIN rail ground spring or panel mounting hole	35	Chassis				
16	Xducer 1 (-)[1]	Vibration transducer 1 connection	36	Chassis				
17	Xducer 2 (-)[1]	Vibration transducer 2 connection	37	Chassis				
18	Signal Common[1]	Vibration buffered output return	38	Chassis				
19	TACH Buffer	Tachometer transducer/signal output						

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

For detailed information about how to wire the terminals, see the XM-124 Dynamic Measurement Module User Manual, publication 1440-UM001.

Install the Module

The XM-124 module inserts into a 1440-TB-A terminal base. We recommend that you install the module after you have wired the terminal base.

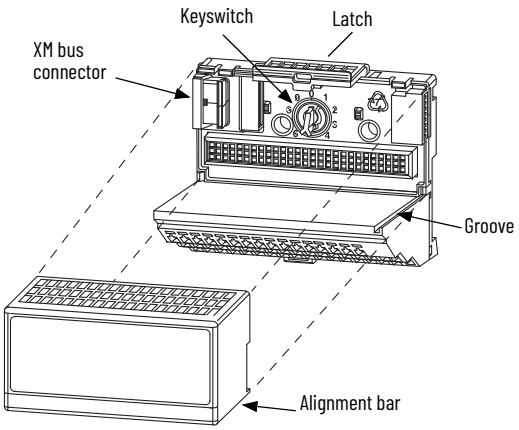
ATTENTION: The XM-124 module is compatible only with the 1440-TB-A/C terminal base. The keyswitch on the terminal base must be set at position 1 for the module.

Do not attempt to insert the XM-124 module into other terminal bases.

Do not change the position of the keyswitch after wiring the terminal bases.

WARNING: If you insert or remove the module while backplane 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.

1. Verify that the keyswitch on the terminal base is at position 1.



2. Verify that the XM bus connector is pushed to the left.
   You cannot insert the module unless the connector is fully extended.
3. Verify that the pins on the bottom of the module are straight so they align properly with the connectors in the terminal base.
4. Position the module with its alignment bar aligned with the groove on the terminal base.
5. Press firmly and evenly to seat the module in the terminal base. The module is seated when the latch is locked into the module.
6. To insert the next module into the next terminal base, repeat steps 1...5.

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

Connect to DeviceNet

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.

DeviceNet Cable Connections

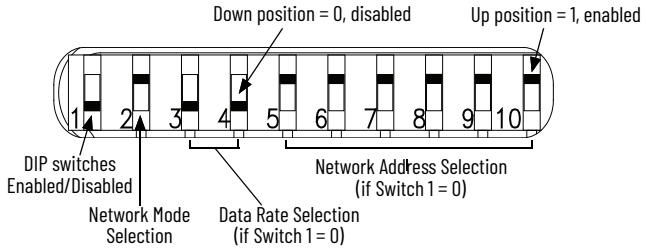
Connect	To	Terminal
Red wire	DeviceNet V+	26 (optional)
White wire	CAN High	23
Bare wire	Shield (Chassis)	10
Blue wire	CAN Low	24
Black wire	DeviceNet V-	27

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.
- If the module is configured to operate in Normal mode (fully ODVA-compliant), DeviceNet V+ must be connected. See the XM-222 Dual Speed Module User Guide, publication GMSI10-UM004.
- 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.

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 ground 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 DeviceNet V- to earth ground or chassis at one of the XM modules.
- The DeviceNet V+ and DeviceNet 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.

Set the DIP Switches

Use the DIP switches to set DeviceNet behavior, node address, and communication rate for the module.



#	Purpose	Description	Out-of-box	
			Setting	Value
1	DIP switches enable/ disable	Determines whether DIP switches 3...10 are enabled. When this switch off, DIP switches 3...10 set the node address and communication rate for the module. When this switch is on, DIP switches 3...10 are not used and the network address and communication rate that are programmed in nonvolatile storage are used instead.	Off (0)	DIP switches enabled
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.	On (1)	Normal
3, 4	Data rate	When switch 1 is off (0), these switches set the DeviceNet communication rate.	Both off	125 Kbps
5...10	Node address	When switch 1 is off (0), these switches set the DeviceNet node address, see the table that follows.	All on	63

Node Address Switch Settings

Node Address	Switch Setting 5...10
0[1]	000000
1	000001
2	000010
3	000011
4	000100
5	000101
6	000110
7	000111
8	001000
9	001001
10	001010
11	001011
12	001100
13	001101
14	001110
15	001111
16	010000
17	010001
18	010010
19	010011
20	010100
21	010101
22	010110
23	010111
24	011000
25	011001
26	011010
27	011011
28	011100
29	011101
30	011110
31	011111

Node Address	Switch Setting 5...10
32	100000
33	100001
34	100010
35	100011
36	100100
37	100101
38	100110
39	100111
40	101000
41	101001
42	101010
43	101011
44	101100
45	101101
46	101110
47	101111
48	110000
49	110001
50	110010
51	110011
52	110100
53	110101
54	110110
55	110111
56	111000
57	111001
58	111010
59	111011
60	111100
61	111101
62	111110
63	111111

(1) Do not set the node address to 0. Node addresses start with 1 for the module closest to the adapter.

Configure the Module

The XM-124 module supports configuration via a serial cable, which lets you connect a personal computer and configure module parameters via the XM Serial Configuration Utility Software.

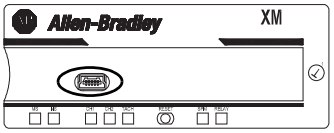
WARNING: If you connect or disconnect the serial cable with power applied to the module or the serial device on the other end of the cable, an electric arc can occur. An electric arc could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous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

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

- **Terminal base** - There are three terminals on the terminal base that are used for the serial port connection. You can use a standard RS-232 serial cable to connect these terminals to a personal computer (no null modem is required). Wire the DB-9 connector the terminal block as shown in this table.

Terminal		DB-9 Female Connector	
#	Name	Pin #	Name
7	TX Terminal	2	RD - receive data
8	RX Terminal	3	TD - transmit data
9	RTN Terminal	5	SG - signal ground

- **Mini-connector** - The mini-connector on the front of the module requires a 1440-SCDB9FXM2 cable with a USB mini-B male connector. The default communication rate is 19.2 Kbps.



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 interface converter (catalog number 1440-ISO-232-24), to help protect both the XM module and the computer.

For detailed configuration information, see the XM-124 Dynamic Measurement Module User Manual, publication 1440-UM001.

Install the Configuration Software

Install the XM Serial Configuration Utility Software from the CD that came in the box with your module, or download it from the Rockwell Automation Product Compatibility and Download Center (PCDC) at rok.auto/pcdc.

Self-test

The XM-124 module performs a self-test at powerup. The self-test includes a status indicator test followed by a device test. During the status indicator test, the indicators turn on independently and in sequence for approximately 0.25 seconds. The module status indicator indicates the status of the device test.

MS Indicator State	Description
Flashing red and green	Device self-test is in progress.
Steady green or Flashing green	Device self-test completed successfully, and the firmware is valid and running.
Flashing red	• Device self-test completed, the hardware is OK, but the firmware is invalid. • The firmware download is in progress.
Steady red	Unrecoverable fault, hardware failure, or Boot Loader program can be corrupted.

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 max	
	Relay: 24V DC, 1.5 A RES	Input: 30V DC, 1.5 A
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	–	0.25...2.5 mm^2 (22...14 AWG) solid or stranded shielded copper conductors without pretreatment, rated at 300V or greater and 75 °C (167 °F) or greater, 1.2 mm (3/64 in.) insulation max, 8 mm (0.31 in.) recommended strip length 8 AWG required for grounding the DIN rail for electromagnetic interference (EMI) purposes
Torque	–	0.8 N•m (7 lb•in)
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 1440-UM001	Provides information about the use of the XM-124 module.
XM Monitoring Modules Specifications Technical Data, publication 1440-TD001	Provides technical specifications for the 1440 series of monitoring modules.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at rok.auto/literature. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates.	rok.auto/support
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

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Waste Electrical and Electronic Equipment (WEEE)

At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

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