Installation Instructions

Original Instructions

Allen-Bradley
by ROCKWELL AUTOMATION

ControlLogix Redundancy Modules

Catalog Number 1756-RM3, 1756-RM3-2SFP, 1756-RM3XT

A redundancy system has a pair of identical ControlLogix® redundancy modules that provide the following functionality:

- Supervise the operating states and state transitions of redundancy operations
- Provide a bridge between redundant chassis that exchange control data and synchronize operations

You can use the 1756-RM3 redundancy module in redundancy applications. The 1756-RM3-2SFP module is functionality equivalent to a 1756-RM3 module. The difference is that two small form-factor pluggable (SFP) fiber-optic transceivers ship with the 1756-RM3-2SFP module. The 1756-RM3-2SFP module is intended to be one catalog number for a functional replacement of a 1756-RM2 module in an existing redundancy system.

You can use the 1756-RM3XT module in harsh environments.

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.

Topic	Page
Added catalog number 1756-RM3XT	throughout
Added Install or Remove an SFP Transceiver	9

IMPORTANT When a ControlLogix product that is rated for harsh environments, such as corrosive atmosphere or extended temperature, is used in a system with other ControlLogix products that have lower specification values, the system is derated to the lowest common value.

EXAMPLE: If the maximum operating temperature specification found in the specifications for your ControlLogix-XT™ module is 70 °C (158 °F) and you pair it with a ControlLogix chassis that is temperature rated to 60 °C (140 °F), your system is derated to 60 °C (140 °F).

To ensure that your system is equipped for harsh environments, compare the corrosive atmosphere, temperature, and other specifications found in the Technical Data publication for each product.

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, 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.

Product Advisories

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 EN 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. 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 or be approved for the application if nonmetallic. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional 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, Rockwell Automation publication 1770-4.1, for additional installation requirements
- NEMA Standard 250 and IEC 60529, as applicable, for explanations of the degrees of protection provided by enclosure

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.

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.	**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.

UK and European Hazardous Location Approval

The following applies to products marked Ⓔx, II 3 G. Such modules:

- 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 EU Directive 2014/34/EU and Schedule 1 of the UKEX Regulation 2016 No.1107. See the UKEX and EU Declaration of Conformity at rok.auto/certifications for details.
- The type of protection is <Ex ec IIC T4 Gc>. Equipment protection by increased safety "e".
- Equipment protection by increased safety "e" , reference certificate number UL 24 ATEX 3261X and UL24UKEX2995X.
- 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 UKEX Regulation 2016 No. 1107 and ATEX directive 2014/34/EU.

IEC Hazardous Location Approval

The following applies to products with IECEx certification. Such products:

- 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.
- The type of protection is Ex EC IIC T4 Gc.
- IECEx certificate number IECEx UL 24.0059X.

Special Conditions of Use

WARNING:
- This equipment is not resistant to sunlight or other sources of UV radiation.
- This equipment shall be mounted in an UKEX, ATEX, IECEx 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 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 that are defined by Rockwell Automation.
- Transient protection shall be provided that is set at a level not exceeding 140% of the peak-rated voltage at the supply terminals to the equipment.
- The instructions in the user manual shall be observed.
- This equipment must be used only with UKEX, ATEX, IECEx certified Rockwell Automation backplanes.
- Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.
- Devices shall be used in an environment of not more than Pollution Degree 2.
- Use only a soft dry anti-static cloth to wipe down equipment. Do not use any cleaning agents.

Removal and Insertion Under Power

WARNING: When you insert or remove the module while backplane power is on, an electric 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. Repeated electric arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

ATTENTION: Personnel responsible for the application of safety-related programmable electronic systems (PES) shall be aware of the safety requirements in the application of the system and shall be trained in using the system.

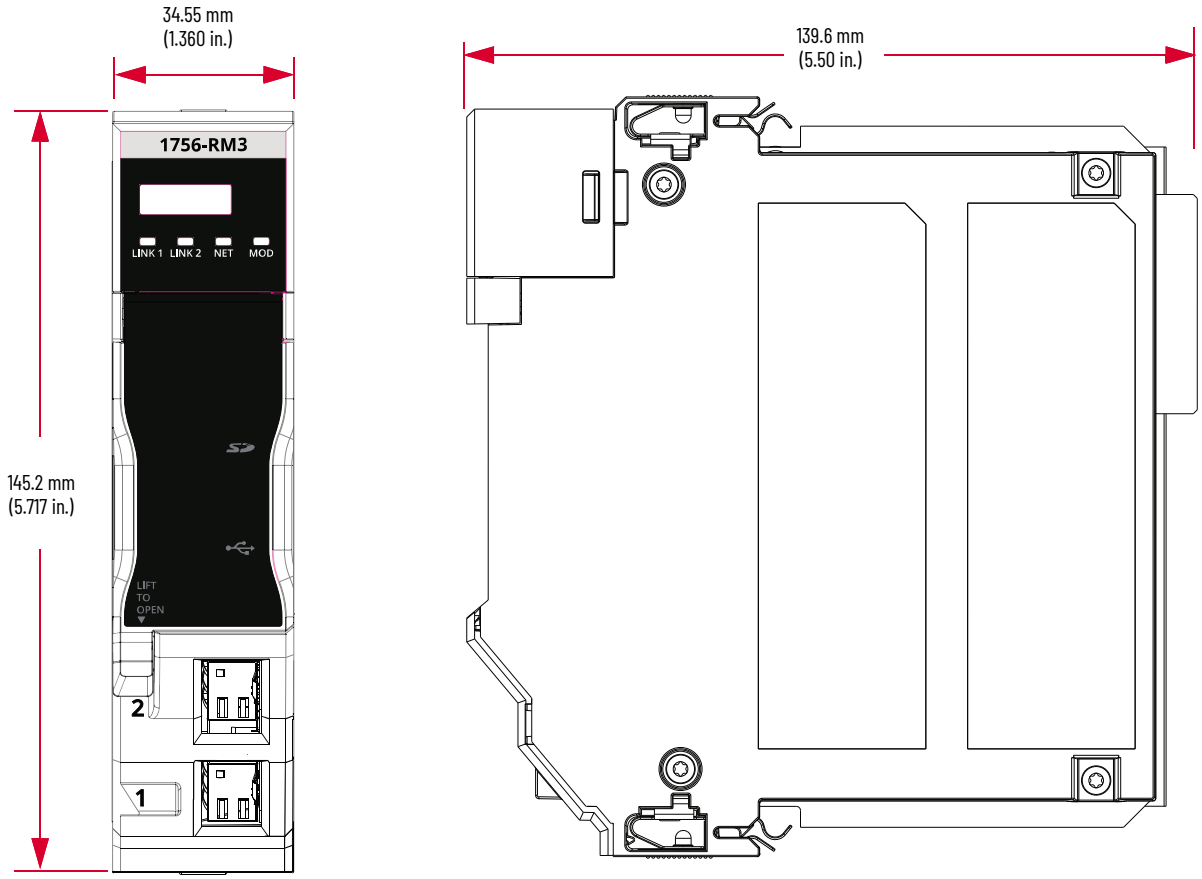
ATTENTION: Under certain conditions, viewing the optical port may expose the eye to hazard. When viewed under some conditions, the optical port may expose the eye beyond the maximum permissible-exposure recommendations.

ATTENTION: SFP modules comply with Class 1 limits per IEC 60825-1. Laser radiation is present when the system is open and interlocks bypassed. Only trained and qualified personnel are allowed to install, replace, or service this equipment.

ATTENTION: 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.

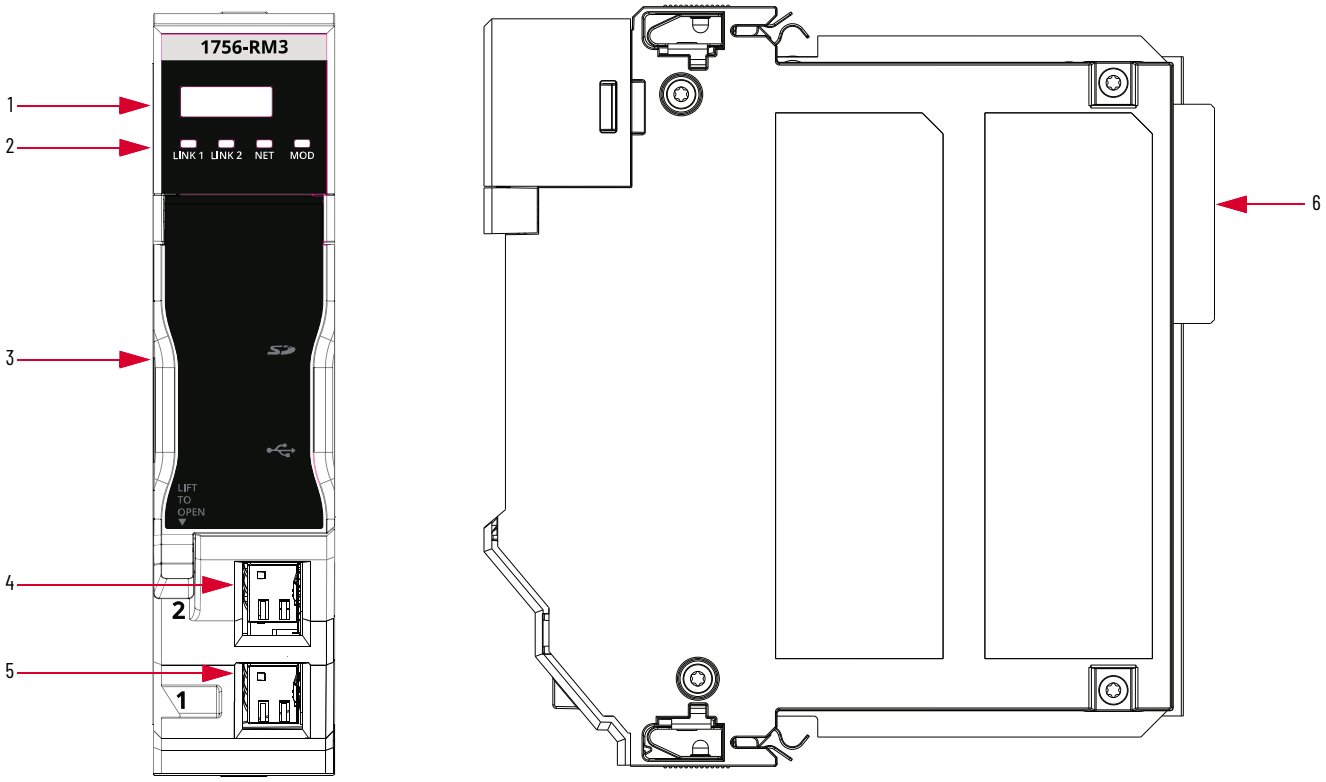
Product Dimensions

The product dimensions are the same for the 1756-RM3, 1756-RM3-2SFP, and 1756-RM3XT catalog numbers.



Module Overview

The following items are the same for the 1756-RM3, 1756-RM3-2SFP, and 1756-RM3XT catalog numbers.



Item	Description
1	Status display
2	Status indicators
3	Slot for microSD™ card behind door
4	Link 2 SFP port
5	Link 1 SFP port
6	Backplane connector

Before You Begin

Before you install redundancy modules, complete these tasks:

- Order compatible SFP fiber-optic transceivers for your application. Various SFP fiber-optic transceivers are available, but you **must** use singlemode or multimode SFP fiber-optic transceivers that are compatible with redundancy modules. Not all SFP fiber-optic transceivers work with the modules.

  For more information, see Use a Compatible SFP Fiber-optic Transceiver and the Maximum Cable Length for Intended Application.
- Order a 1756-RMC*x* fiber-optic communication cable if you don't have one. For more information, see Use Fiber-optic Cable Compatible with Selected SFP Fiber-optic Transceivers.
- Read and understand the safety and environmental considerations explained in each component's installation instructions.

Secure Digital Card Considerations

A 1784-MSD8 (8 GB) microSD card ships with the 1756-RM3 and 1756-RM3-2SFP modules. A 1784-MSD8XT (8 GB) microSD card ships with the 1756- RM3XT redundancy module. The microSD card slot is behind the door on the front of the redundancy module.

You can use third-party microSD cards with the redundancy module. However, Rockwell Automation does not test the use of third-party microSD cards. If you use a microSD card other than those cards that are available from Rockwell Automation, unexpected results can occur. For example, you could experience data corruption or data loss.

The microSD cards that are not provided by Rockwell Automation can have different industrial, environmental, and certification ratings as those cards that are available from Rockwell Automation. These microSD cards can have difficulty with survival in the same industrial environments as the industrially rated versions available from Rockwell Automation.

Difference between Singlemode and Multimode Fiber-optic Cables

When you determine what fiber-optic cable to use in your application, consider the following:

- Each cable type requires a compatible SFP transceiver.
- Singlemode fiber-optic cables support one light mode and are commonly used in applications that require longer distances between chassis and high bandwidth.
- Multimode fiber-optic cables support multiple simultaneous light modes and are commonly used in applications that have shorter distances between chassis and when lower costs are a priority.

You can use third-party fiber-optic cables with your redundancy module. However, Rockwell Automation does not test the use of third-party fiber-optic cables with ControlLogix redundancy modules. If you use a fiber-optic cable other than the ones that are available from Rockwell Automation, unexpected results can occur.

Fiber-optic cables that are not provided by Rockwell Automation can have different industrial, environmental, and certification ratings than fiber-optic cables that are available from Rockwell Automation. These fiber-optic cables can have difficulty with survival in the same industrial environments as the industrially rated versions available from Rockwell Automation.

Use a Compatible SFP Fiber-optic Transceiver and the Maximum Cable Length for Intended Application

You must order an SFP fiber-optic transceiver that is compatible with the following:

- Whether you're using a singlemode or multimode fiber cable
- The distance between the chassis
- The corrosive atmosphere and temperature ratings of your redundancy module. For example, choose an SFP transceiver with an 'XT' in the catalog number for your 1756-RM3XT module to ensure that the combined module is rated for extended protection in corrosive gas environments.

Table 1 - Supported SFP Fiber-optic Transceivers

Cat. No.	Description	Core Size/ Cladding Size (micron)	Cable Length
1783-SFP1GSX	1000Base-SX multimode fiber	62.5/125	220 m (722 ft)
		62.5/125	275 m (902 ft)
		50/125	500 m (1640 ft)
		50/125	550 m (1804 ft)
1783-SFP1GLX	1000Base-LX/LH singlemode fiber	G.652	10 km (32,808 ft)
1783-SFP1GEXE	1000Base-EX singlemode fiber	G.652	40 km (131,234 ft)
1783-SFP1GZX	1000Base-ZX singlemode fiber	G.652	70 km (229,659 ft)
1783-SFP1GLX-XT	1000Base-LX/LH singlemode fiber	G.652	20 km (65,616 ft)
1783-SFP1GSX-XT	1000Base-SX multimode fiber	62.5/125	300 m (984 ft)
		50/125	550 m (1804 ft)

Two 1783-SFP1GLX SFP fiber-optic transceivers come with the 1756-RM3-2SFP redundancy module. Cables don't come with the module. You must order the fiber-optic cables separately.

You must order SFP fiber-optic transceivers and fiber-optic cables to use with 1756-RM3 or 1756-RM3XT modules.

Use Fiber-optic Cable Compatible with Selected SFP Fiber-optic Transceivers

If you don't already have a fiber-optic cable to connect the redundancy modules, you must order one. The following redundancy cables are available from Rockwell Automation.

These cables only support singlemode.

Table 2 - Available Fiber-optic Cable - Singlemode Only

Cat. No.	Length
1756-RMC1	1 m (3.28 ft)
1756-RMC3	3 m (9.84 ft)
1756-RMC10	10 m (32.81 ft)

Installation Requirements

ATTENTION: Select products that are rated for corrosive atmospheres ship with port plugs, covers, or memory cards installed, which provide connectors with a degree of protection in corrosive gas environments.
Once the factory packaging seal is broken, plugs or covers must remain installed in all unoccupied ports and memory cards must remain installed for the product to maintain its corrosive atmosphere rating.

If temporary access is required, port plugs, covers, memory cards, and so on can be removed, but must be reinstalled after temporary access is complete.

You must install ControlLogix components before you can install the redundancy modules.

Note the following:

- Understand redundancy systems and redundant media.
- Verify that the planned modules for each redundant chassis of the pair are identical, including firmware revisions.
  Firmware is available at the Product Compatibility and Download Center (PCDC) at rok.auto/pcdc.
- Verify that your redundancy firmware revision is compatible with your planned redundant chassis modules.
- You must install one redundancy module in each chassis that is planned for your system.
- You can only use 1756-RM3 modules with other 1756-RM3 modules and 1756-RM3XT modules with other 1756-RM3XT modules.
- You must use an XT chassis with XT modules.
- Standard modules can use a standard chassis or an XT chassis.
- We recommend that you use standard modules in a standard chassis because there is no advantage to use the XT chassis.

IMPORTANT If you are adding redundancy to an already operational ControlLogix system, shut off your process to install the redundancy module. The first chassis that you install the redundancy module into and turn on becomes the primary chassis.
You also have to enable redundancy in the programming software and remove any I/O modules from the chassis.

Install the Redundant Chassis Pair and Its Components

When you install a redundancy system, install the first chassis and its components followed by the second chassis and its components. Each chassis must have compatible partner modules. Two modules in the same slot of each chassis are considered compatible partners only if they contain compatible hardware and firmware and other rules that the module itself can enforce. Either the module in the primary chassis or its partner in the secondary chassis determines whether the compatibility status is compatible or incompatible.

The redundancy module pair must occupy the same slots in their respective chassis. The redundancy module pair does not consider the chassis pair to be partnered if the redundancy modules are placed in different slots, even if the partners of other modules are present in the same slot. The redundancy module prevents certain redundancy operations, such as qualification, if incompatible modules reside in the redundant chassis pair.

IMPORTANT For the best performance, place the redundancy module in the chassis as close as possible to the controller.

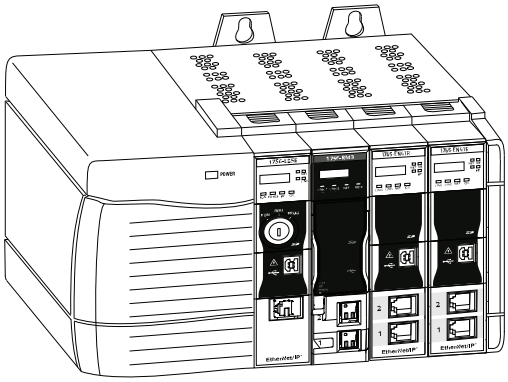
Do not apply power to the system until both chassis and their components are installed.

To install the first chassis and its components, follow these steps.

1. Install the chassis and power supply.
2. If you are using a ControlLogix-ZXT chassis, remove the backplane connector cover from the slot into which you are installing the controller.

   ATTENTION: Select ControlLogix chassis are shipped with backplane connector covers installed to provide a degree of protection from corrosive atmospheres. Once the factory packaging seal is broken, these covers must remain installed in unused slots at all times for the chassis to maintain its corrosive atmosphere rating. If components installed into the chassis are later removed, reinstall a backplane connector cover in the vacated slot to maintain the corrosive atmosphere rating of the chassis.
3. Install the controller.
4. Install the communication modules.

5. Install the redundancy module.
   a. Align the circuit board with top and bottom guides in the chassis.
   b. Slide the module into the chassis and make sure that the module backplane connector properly connects to the chassis backplane.
      Make sure that the module appears flush with other installed modules.



   The first chassis and its components are now installed. **Chassis power must remain off.**
6. Install the SFP transceivers into each port on the redundancy module as described in Install or Remove an SFP Transceiver.
7. Install the remaining modules in the chassis.

Once the first chassis and its components are installed, follow the same steps to install the second chassis of the redundant chassis pair.

IMPORTANT
- The components that are installed in both chassis must match exactly in type and slot number for the system to synchronize successfully.
- To remove modules, push the locking clips at the top and bottom of each module and slide the module out of the chassis.

Install or Remove an SFP Transceiver

Note the following requirements and restrictions:

- Each SFP transceiver must be of the same type as the SFP transceiver on the other end of the cable. We recommend that you use the same SFP transceiver in every slot to simplify troubleshooting or replacement.
- The cable must not exceed the stipulated cable length for reliable communications.
- Once you install SFP transceivers in the redundancy module, the overall temperature rating of the combined modules (redundancy module and SFP transceivers) is limited to the lowest maximum temperature rating and the highest minimum temperature rating.

To insert an SFP transceiver into a port on the redundancy module, follow these steps.

1. Attach an ESD-preventive wriststrap to your wrist and to a grounded bare metal surface.
2. Push the locking bale clasp on the right side of the SFP transceiver to the left until it clicks into place.
3. Grasp both sides of the SFP transceiver and align it sideways in front of the slot opening.

ATTENTION: If the SFP transceiver cannot be fully inserted, stop! Do not force the transceiver into the slot. Rotate the SFP transceiver 180° and try again.

4. Insert the SFP transceiver into the slot until you feel the connector on the transceiver snap into place in the rear of the slot.
5. Remove the dust plugs from the SFP transceiver optical ports, store them for later use.

To remove an SFP transceiver from a port on the redundancy module, follow these steps.

1. Disconnect the fiber LC connector from the SFP transceiver.
2. Insert a dust plug into the optical ports of the SFP transceiver to keep the optical interfaces clean.
3. Unlock and remove the SFP transceiver.
4. If the transceiver has a bale-clasp latch, swing the bale toward you and pull it gently to eject the transceiver. If the bale-clasp latch is obstructed and you cannot use your index finger to open it, use a small, screwdriver or other long, narrow instrument to open the latch.
5. Grasp the SFP transceiver between your thumb and index finger, and carefully remove it from the slot.
6. Place the removed SFP transceiver in an anti-static bag or other protective environment.

Connect the Redundancy Modules via Fiber-optic Cable

IMPORTANT Do not connect the primary redundancy module to the secondary redundancy module until all other components that are used in the redundant chassis pair are installed, updated to the correct firmware revision, and configured.

Once the **first and second chassis and their components are installed**, connect the redundancy modules via the fiber-optic cable.

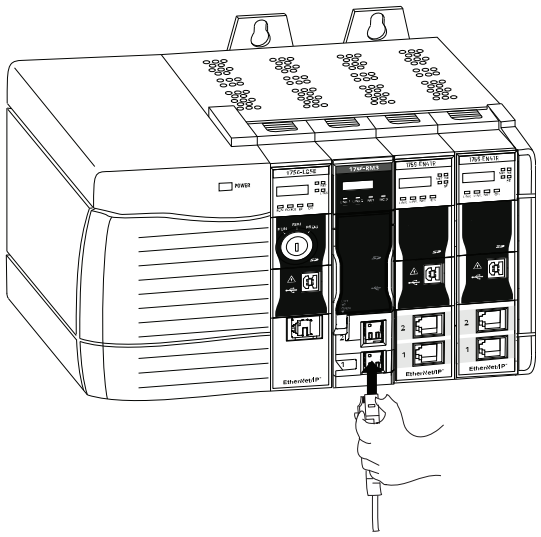
The cable connection is made at the bottom of the module in an angled orientation. If you use the LC connector coupler, there is enough space between the transmit and receive connectors to make the connection.

The LC connector coupler keeps the fiber-optic cable from bending so you can connect and disconnect the cable without removing the module from the chassis. You are **not required** to use the LC connector.

ATTENTION: Consider these points when connecting the fiber-optic cable:
- The redundancy module communication cable contains optical fibers. Don't violate the minimum bend radius of the cable. Install the cable in a location where it won't be cut, run over, abraded, or otherwise damaged.
- If you connect a multimode cable to a singlemode SFP transceiver, it can damage multimode devices.
- Under certain conditions, viewing the optical port can expose the eye to hazards. When viewed under some conditions, the optical port can expose the eye beyond the maximum permissible-exposure recommendations.
- Media redundancy is achieved when you install modules with redundant ports and install a redundant fiber cable system. If a cable failure occurs, or a cable is degraded, the system uses the redundant network.
- When using a redundant system, route the two trunk cables (A and B) so that damage to one cable won't damage the other cable. This reduces the risk of both cables being damaged simultaneously.
- Redundant cabling can tolerate one or more faults on a channel. If a fault occurs on both channels, the network operation is unpredictable.

To connect the fiber-optic cable to the ports on the redundancy module, follow this procedure.

1. Remove the protective port cover on the first redundancy module in the redundant chassis pair.
2. Remove the protective caps from the cable ends.
3. Plug the cable connector into the Link 1 or Link 2 port on the first redundancy module.
4. Plug the other end of the cable into the matching Link 1 or Link 2 port on the secondary module.



IMPORTANT The redundancy module cable contains optical fibers. Avoid making sharp bends in the cable. Install the cable in a location where it cannot be cut, run over, abraded, or otherwise damaged.

5. Repeat the installation process for the other port (Link 1 or Link 2) with another fiber-optic cable.
   You are not required to use both links, but we recommend that you use both links to provide full redundancy.

Specifications

Table 3 - 1756-RM3, 1756-RM3-2SFP

Attribute	Value
Connector type	Dual LC-type (fiber-optic)
Cable types	8.5/125 µm singlemode fiber-optic cable 62.5/125 µm multimode fiber-optic 50/125 µm multimode fiber-optic cable **IMPORTANT**: Cable length depends on cable selection.
Channels	2 (transmit and receive fiber)
Transmission	1000 Mbps
SFP fiber-optic transceivers	Singlemode: • 1783-SFP1GLX • 1783-SFP1GEXE • 1783-SFP1GZX Multimode: • 1783-SFP1GSX
Wavelength	Singlemode SFP fiber-optic transceivers: • 1783-SFP1GLX, 1783-SFP1GEXE - 1310 nm • 1783-SFP1GZX - 1550 nm Multimode SFP fiber-optic transceivers: • 1783-SFP1GSX - 850 nm
Temperature, operating	0 °C ≤ Ta ≤ +60 °C (-32 °F ≤ Ta ≤ +140 °F)
Conformal coated	No
Optical output power	-3 dB
Temperature code	T4
Power from system backplane	1 A @ 5.1V DC 5 mA @ 1.2V DC

Table 4 - 1756-RM3XT

Attribute	Value
Connector type	Dual LC-type (fiber-optic)
Cable types	8.5/125 µm singlemode fiber-optic cable 62.5/125 µm multimode fiber-optic cable 50/125 µm multimode fiber-optic cable **IMPORTANT**: Cable length depends on cable selection.
Channels	2 (transmit and receive fiber)
Transmission	1000 Mbps
SFP fiber-optic transceivers(1)	Singlemode: 1783-SFP1GLX-XT Multimode: 1783-SFP1GSX-XT
Wavelength	Singlemode SFP fiber-optic transceivers: • 1783-SFP1GLX-XT - 1310 nm Multimode SFP fiber-optic transceivers: • 1783-SFP1GSX-XT - 850 nm
Temperature, operating	-25 °C ≤ Ta ≤ +70 °C (-13 °F ≤ Ta ≤ +158 °F)
Corrosive atmosphere ASTM B845-97 Method K Accelerated Test (30-day exposure) Plus Rockwell Automation proprietary accelerated corrosive environment test protocol for specific industries with sources of gaseous sulfur compounds	Severity Level GX(2) (3)per ANSI/ISA 71.04–2013, Airborne Contaminants—Gases Severity Level CX(2) per IEC 60721-3-3:2019, Chemically Active Substances
Conformal coated	Yes
Optical output power	-3 dB
Temperature code	T4
Power from system backplane	1 A @ 5.1V DC 5 mA @ 1.2V DC

(1) You can use the XT-rated SFP transceivers with standard modules. However, we recommend that you use the standard SFPs because there is no advantage to using the XT-rated SFP transceivers.
(2) Once the factory packaging seal is broken, plugs or covers must remain installed in all unoccupied ports and memory cards must remain installed for the product to maintain its corrosive atmosphere rating.
(3) Up to 2100 angstroms of film growth per 30 days of copper and/or silver reactivity.

Additional Resources

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

Resource	Description
ControlLogix and GuardLogix Controller Specifications Technical Data, publication 1756-TD001	Provides technical specifications for ControlLogix and GuardLogix® controllers.
Communication Module Specifications Technical Data, publication 1756-TD003	Provides technical specifications for EtherNet/IP™ communication modules.
ControlLogix 5590 High Availability Systems User Manual, publication 1756-UM901.	Describes how to set up, configure, program, monitor, and troubleshoot ControlLogix 5590 redundancy and Logix SIS.
Redundancy Systems User Manual, publication 1756-UM015	Describes how to set up, configure, program, monitor, and troubleshoot Logix SIS, ControlLogix 5580, and ControlLogix 5570 redundancy systems.
ControlLogix Power Supply Installation Instructions, publication 1756-IN619	Describes how to install standard power supplies.
ControlLogix Redundant Power Supply Installation Instructions, publication 1756-IN620	Describes how to install redundant power supplies.
ControlLogix Chassis Installation Instructions, publication 1756-IN621	Describes how to install ControlLogix chassis.
EtherNet/IP Communication Modules, publication 1756-IN050	Provides installation, configuration, and USB communication information for EtherNet/IP modules.
ControlLogix 5570 and 5560 Controllers User Manual, publication 1756-UM001	Provides instructions for installation and use of ControlLogix 5570 and 5560 controllers.
ControlLogix 5580 and GuardLogix 5580 Controllers User Manual, publication 1756-UM543	Provides information on how to configure, select I/O modules, manage communication, develop applications, and troubleshoot ControlLogix 5580 and GuardLogix 5580 controllers.

You can view or download publications at rok.auto/literature.

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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