



DeviceNet Analog Base Terminal Block CompactBlock LDX I/O

Catalog Numbers 1790D-TN4C0, 1790D-TNOC2, 1790D-TN4V0, 1790D-TNOV2

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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
Corrected DeviceNet connector in diagram	7
Updated certification-related specifications	9, 10, and 11
Removed obsolete catalog numbers	throughout

EDS File Requirements

Current functionality of CompactBlock™ LDX I/O blocks requires current modular EDS file for RSNetWorx™ for DeviceNet® version 3.0 or later software.

These files are easy to install and are available online at: rok.auto/pcdc.

EDS files for blocks with matching catalog numbers, for both D-shell and removable terminal block versions, are the same. Thus, on the website and in RSNetWorx for DeviceNet, there is only one EDS file for both versions of the blocks. For example, if you want the EDS file for 1790D-T8BV8B, use the EDS file labeled 1790D-8BV8B.

Overview

This document describes how to install your CompactBlock LDX I/O blocks.



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。ユーザーは、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 „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, 설치 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.

DIKKAT: Bu ürünün kurulumu, yapılandırılması, işletilmesi veya bakımı öncesinde bu dokümanı ve bu ekipmanın kurulumu, yapılandırılması ve işletimi ile ilgili ilave Kaynaklar bölümünde yer listelenmiş dokümanları okuyun. Kullanıcılar yürürlükteki tüm yönetmelikler, yasalar ve standartların gereksinimlerine ek olarak kurulum ve kablolarla 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, konfiguration och drift av denna utrustning innan du installerar, konfigurerar eller börjar använda eller utföra underhållsarbete på produkten. Användare måste bekanta sig med instruktioner för installation och kabeldragning, förutom krav enligt gällande koder, lagar och standarder.

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

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

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

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

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

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 publication 60664-1), at altitudes up to 2000 meters (6562 ft) without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

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, 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 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, publication [1770-4.1](#), for more installation requirements.
 - NEMA Standard 250 and EN/IEC 60529, as applicable, for explanations of the degrees of protection provided by enclosures.
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ATTENTION:

- Make sure that all connectors and caps are securely tightened to properly seal the connections against leaks and maintain Type 1 and IP enclosure type requirements.
 - Read this document and the documents that are 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 are required to be carried out by suitably trained personnel in accordance with applicable code of practice.
 - In case of malfunction or damage, no attempts at repair should be made. The module should be returned to the manufacturer for repair. Do not dismantle the module.
-

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.
-

Electrical Safety Considerations





ATTENTION: This device is intended only for installation on Industrial Machines in accordance with NFPA79. Due to the nature of these devices (fixed equipment using cable connections), they are not suitable for installation in accordance with the NEC (NFPA70).

IMPORTANT


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

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 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.</p>
<div style="display: flex; align-items: center;">  <div> <p>EXPLOSION HAZARD</p> <ul style="list-style-type: none"> 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. </div> </div>	<div style="display: flex; align-items: center;">  <div> <p>RISQUE D'EXPLOSION</p> <ul style="list-style-type: none"> 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. </div> </div>

Install Your Module

Follow these steps to install the block:



ATTENTION: During mounting of all devices, be sure that all debris (for example, metal chips, wire strands) is kept from falling into the module. Debris that falls into the module could cause damage on power-up.



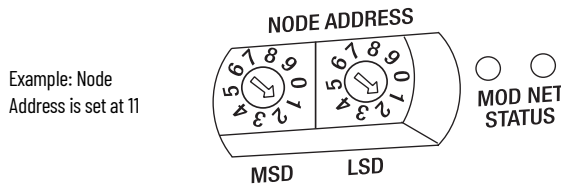
ATTENTION: Allow 25.4 mm (1 in.) of space between adjacent equipment for adequate ventilation.

1. Set the node address on the base block.
2. Mount the base block.
3. Mount the optional expansion blocks.
4. Wire the terminal blocks.
5. Connect the DeviceNet cable.

Set the Node Address on the Base Block

Each base block comes with its internal program set for node address 63. To reset the node address, adjust the switches on the front of the block. The two switches are most significant digit (MSD) and least significant digit (LSD). The switches can be set from 00 to 63.

The base block reads the rotary switches at power-up only. Switch settings from 64 to 99 cause the block to use the last valid node address stored internally.



The node address may also be set through RSNetWorx for DeviceNet or a similar configuration tool. When software configuration is used for the node address, the switches must be set from 64 to 99.

Mount the Base Block

You can mount the base block to a panel or DIN rail. We recommend that you ground the panel or DIN rail before mounting the block.

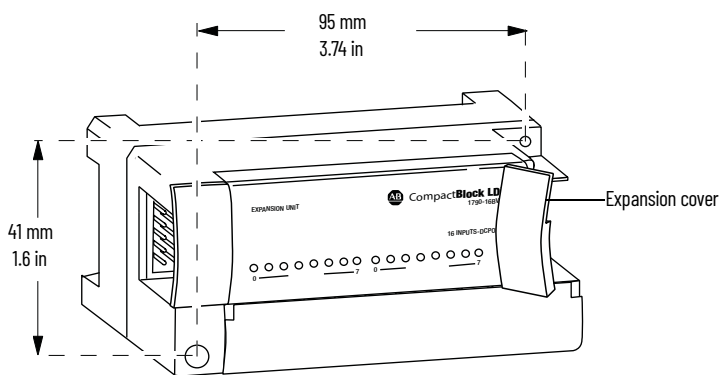
IMPORTANT The analog base module can accommodate a maximum of two discrete expansion modules.



WARNING: When used in a Class I, Division 2, hazardous location, this equipment must be mounted in a suitable enclosure with the proper wiring method that complies with the governing electrical codes.

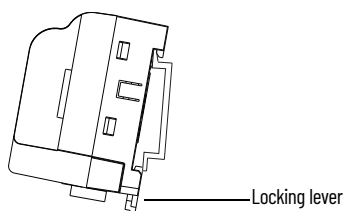
Panel Mounting

1. Place the block against the panel where you want to mount it.
2. Gently pull and position the expansion cover to the left.
3. Place a center punch, nail, or similar device through the mounting holes in the block and make two marks on the panel (lower left and upper right corners of the module).
4. Remove the block and drill two holes in the panel to accommodate each of the mounting screws.
5. Replace the block on the panel and place a screw through each of the two mounting holes. Tighten the screws until the block is firmly in place.



DIN Rail Mounting

1. Hook the top slot of the block over the DIN Rail.
2. Pull down on the locking lever while pressing the block against the rail.



3. Push up on the locking lever to secure the block to the rail when block is flush against the rail.

Mount the Optional Expansion Blocks

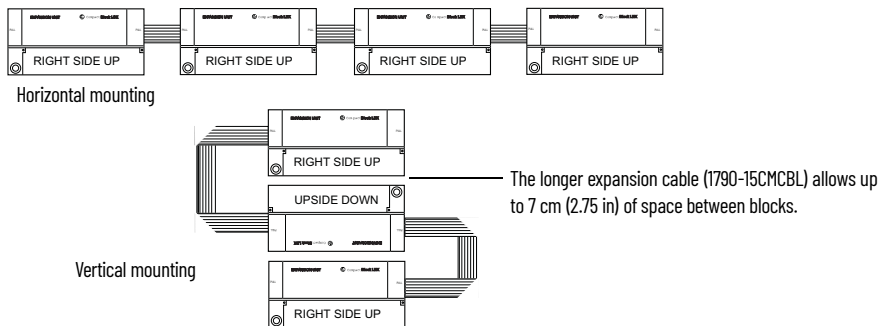
Mount the expansion block by connecting it to a previously installed CompactBlock LDX I/O base or expansion block.

IMPORTANT Each analog base module can accommodate a maximum of two discrete expansion modules.

Beginning with the base block, you can mount your expansion blocks either horizontally or vertically:

- **horizontally (left to right)** - add expansion blocks in an end-to-end configuration
- **vertically (up or down)** - add expansion blocks either up or down in a back-to-back configuration. In this configuration, you must use the optional 15 cm (5.90 in) ribbon cable (1790-15CMCBL) and alternately position the blocks in a right-side up, upside-down fashion.

You can mount your blocks on a panel or DIN rail as described in the previous section.

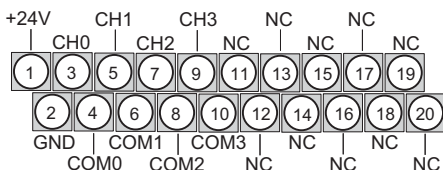


Wire the Terminal Blocks

The following figures show how to wire the terminal blocks.

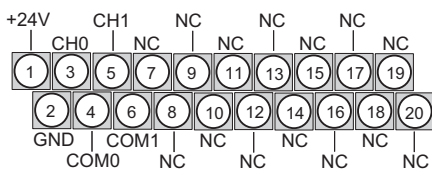
IMPORTANT Input and output wiring must be in accordance with Class 1, Division 2 wiring methods and in accordance with the authority having jurisdiction.

1790D-TN4C0 Current Analog Input Module Terminal Block Wiring



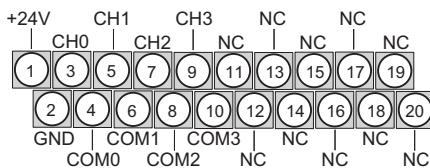
- Wire pin 1 to Field Power (+) 24V DC
Wire pin 2 to Field Power (-) GND

1790D-TN0C2 Current Analog Input Module Terminal Block Wiring



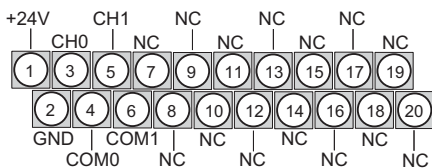
- Wire pin 1 to Field Power (+) 24V DC
Wire pin 2 to Field Power (-) GND

1790D-TN4V0 Voltage Analog Input Module Terminal Block Wiring



- Wire pin 1 to Field Power (+) 24V DC
Wire pin 2 to Field Power (-) GND

1790D-TN0V2 Voltage Analog Output Module Terminal Block Wiring



- Wire pin 1 to Field Power (+) 24V DC
Wire pin 2 to Field Power (-) GND

Connect the DeviceNet Cable

Follow these procedures when connecting the DeviceNet cable to the base block.

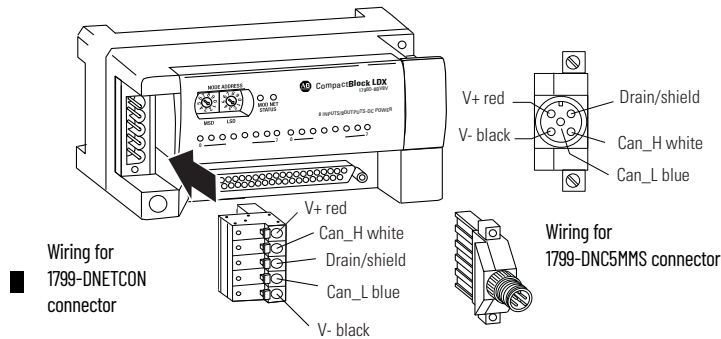
The required DeviceNet connector **is not supplied** with the block; you must purchase it separately. There are three types of connectors that you can order directly from Rockwell Automation or your local distributor:

- **1799-DNETCON** - 5-position open style connector
- **1799-DNETSCON** - 5-position open style connector with locking screws
- **1799-DNC5MMS** - 5-position open style to 12 mm (4.72 in) connector with locking screws



WARNING: If you connect or disconnect the DeviceNet cable with power applied to this module or any device on the network, 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.

Connect the DeviceNet wiring (drop line) to one of the DeviceNet connectors as shown. A color-coded wiring diagram is also printed next to the connector on the left side of the module.



Once you have properly wired the drop line to the connector, attach the connector to the block. If applicable, use the locking screws on the connector to fasten it to the block.

I/O Memory Mapping

1790D-TN4C0, 1790D-TN4V0 Input Data File

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Not used				Analog Input Data Channel 0											
1	Not used				Analog Input Data Channel 1											
2	Not used				Analog Input Data Channel 2											
3	Not used				Analog Input Data Channel 3											
4	Not used											S3	S2	S1	S0	

Word/Bit Descriptions

Word	Decimal Bit	Description
Read Word 0	Bits 00...11	Channel 0 input data
	Bits 12...15	Not used: Set to 0
Read Word 1	Bits 00...11	Channel 1 input data
	Bits 12...15	Not used: Set to 0
Read Word 2	Bits 00...11	Channel 2 input data
	Bits 12...15	Not used: Set to 0
Read Word 3	Bits 00...11	Channel 3 input data
	Bits 12...15	Not used: Set to 0
Read Word 4	Bits 00...03	Status bits for individual channels - Bit 00 corresponds to input channel 0, bit 01 corresponds to input channel 1 and so on. When set (1) indicates: <ul style="list-style-type: none"> • No field power • Open wire (4...20 mA current input only) • Under range (4...20 mA current input only) • Recoverable module fault (whole channel to be set) • Unrecoverable module fault (whole channel to be set)
	Bits 04...15	Not used: Set to 0

1790D-TNOC2, 1790D-TNOV2 Output Data File

Word	Bit Position														
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
0	Not used				Analog Output Data Channel 0										
1	Not used				Analog Output Data Channel 1										

Word/Bit Descriptions

Word	Decimal Bit	Description
Write Word 0	Bits 00...11	Channel 0 output data
	Bits 12...15	Not used: Set to 0
Write Word 1	Bits 00...11	Channel 1 output data
	Bits 12...15	Not used: Set to 0

Troubleshoot with the Indicators

The 1790D I/O block has the following indicators:

- Module status
- Network status
- I/O status

Indicator Status for Modules

Indicator	Status	Description
Module status	Steady red	Unrecoverable fault in base unit
	Flashing red	Recoverable fault
	Steady green	Normal operation - OK
	Flashing green	Standby
	Off	No power applied to device
Network status	Steady red	Unrecoverable communication fault
	Flashing red	Recoverable communication fault
	Steady green	Communication path complete - OK
	Flashing green	Communication path incomplete
	Off	Device not initialized. The module does not have an IP address.
I/O channel status	Flashing green/red	Power up
	Off	Off line
	Off	1790D-TNOV2, 1790D-TNOC2 - On line and no field power
	Steady red	1790D-TN4V0, 1790D-TN4C0 - On line and no field power 1790D-TN4V0, 1790D-TN4C0 - DeviceNet connection and no field power
	Steady green	Field power and valid input/output
	Steady green	Field power and open wire - Except 1790D-TN4C0
	Steady green	1790D-TN4V0 only - Input under range
I/O channel status	Steady green	1790D-TN4V0, 1790D-TN4C0 - Input over range 1790D-TNOV2, 1790D-TNOC2 - DeviceNet connection and no field power
	Flashing green	1790D-TNOV2, 1790D-TNOC2 - Output idle
	Flashing red ⁽¹⁾	1790D-TN4C0 only - Field power and open wire (4...20 mA range only) ⁽²⁾ 1790D-TNOV2, 1790D-TNOC2 - Field power and output out of range
	Flashing red ⁽¹⁾	1790D-TN4C0 only - Input under range <3 mA (4...20 mA range only) ⁽²⁾
	Flashing red	Recoverable fault

(1) Green for 0...20 mA range.

(2) Can be determined from the data table.

Specifications

The following table contains specifications that are common to all blocks in this document. Individual base block specifications are detailed after this table.

Input Module Specifications

Attribute	1790D-TN4CO	1790D-TN4VO
Number of inputs per module	4 channel single-ended, non-isolated	
Indicators	4 red/green I/O status	
Resolution	12 bits unipolar 1/4096 max 3.90 μ A/bit (4...20 mA) 4.88 μ A/bit (0...20 mA)	12 bits-unipolar 1/4096 max 2.44 mV/bit
Converted data	Binary data 0000...0fff (max scale)	
Conversion time	10 μ s per channel	
Input current	4...20 mA (default) 0...20 mA (user configurable)	—
Input voltage	—	0...10 V
Conversion time, per channel	10 ms	
Input impedance	249 Ω	500 k Ω min
Insulation resistance	20 M Ω @ 250V DC (between isolated circuits)	
Overall accuracy ⁽¹⁾	0.2% Full Scale @ 0...55 °C	
Calibration	None required	

(1) Includes offset, gain, nonlinearity, and repeatability error terms.

Output Module Specifications

Attribute	1790D-TNOC2	1790D-TNOV2
Number of outputs per module	2 channel single-ended, non-isolated	
Resolution	12 bits 1/4096 max 4.88 μ A/bit	12 bits-unipolar 1/4096 max 2.44 mV/bit
Converted data	Binary data 0000...0fff (max scale)	
Output current	0...20 mA	—
Output voltage	—	0...10 V
Conversion time, per channel	10 ms	
Isolation resistance	20 M Ω min @ 250V DC (between insulated circuits)	
Output impedance	—	0.5 Ω max
Output resistance, allowable external load	600 Ω max	1 K Ω min
Overall accuracy ⁽¹⁾	0.2% Full Scale @ 0...55 °C	
Calibration	None required	

(1) Includes offset, gain, nonlinearity, and repeatability error terms.

General Specifications

Attribute	Value
Mounting	DIN rail or screw
Dimensions (HxWxD), approx.	52 x 104 x 42 mm (2.03 x 4.07 x 1.64 in.)
Weight	100 g (3.53 oz)
Number of nodes max	64 - rotary switch type node address setting
Isolation voltage	I/O to logic: photocoupler isolation Type tested at 1250V AC for 60 s, between field power and DeviceNet (I/O to logic) DeviceNet to logic: non-isolated DeviceNet power: non-isolated Field power: non-isolated
Field Power, Voltage range	21.6...26.4V DC (\pm 10%)
Field Power, Supply voltage nom	24V DC
DeviceNet power, Voltage range	11...28.8V DC
DeviceNet power, Current supply nom	24V DC

General Specifications

Power dissipation	1.2 W max @ 28.8V DC (DeviceNet) 1.5 W max @ 26.4V DC (Field)
Network protocol	I/O Slave messaging: - Poll command - Bit Strobe command - Cyclic command - COS command
Network length max	500 m @ 125 Kbps 100 m @ 500 Kbps
Communication rate	125 Kbps, 250 Kbps, 500 Kbps - auto baud rate selection
Enclosure type rating	None (open-style)
Wiring Category ⁽¹⁾	2
Wiring terminal screw torque max	0.6 N•m (5.2 lb•in.)
Removable terminal block screw torque max	0.56 N•m (5.0 lb•in.)
North American temp code	T5

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

Environmental Specifications

Attribute	Value
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): 0 °C < Ta < +55 °C (+32 °F < Ta < +131 °F)
Temperature, nonoperating	IEC 60068-2-1 (Test Ab, Unpackaged nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged nonoperating Thermal Shock): -40...+85 °C (-40...+185 °F)
Relative humidity	IEC 60068-2-30 (Test Db, Unpackaged Damp Heat): 5...90% noncondensing
Operating altitude	2000 m
Vibration	IEC 60068-2-6 (Test Fc, Operating): 2 g @ 10...500 Hz
Operating shock	IEC 60068-2-27 (Test Ea, Unpackaged Shock): 10 g
Nonoperating shock	IEC 60068-2-27 (Test Ea, Unpackaged Shock): 30 g
Emissions	IEC 61000-6-4
ESD immunity	IEC 61000-4-2: 4 kV contact discharges 8 kV air discharges
Radiated RF immunity	IEC 61000-4-3: 10V/m with 1 kHz sine-wave 80% AM from 80...1000 MHz 3V/m with 1 kHz sine-wave 80% AM from 1400...6000 MHz
EFT/B immunity	IEC 61000-4-4: ±1 kV @ 5 kHz on signal ports
Surge transient immunity	IEC 61000-4-5: ±1 kV line-earth(CM) on shielded ports
Conducted RF immunity	IEC 61000-4-6: 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz

Certifications

Certification (when product is marked) ⁽¹⁾	Value
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E322657 UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E334470.
CE	European Union 2014/30/EU EMC Directive, compliant with: EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions
RCM	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
RoHS	European Union 2011/65/EU RoHS, compliant with: EN 50581; Technical documentation
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3

Certifications (Continued)

EAC	Russian Customs Union TRCU 020/2011 EMC Technical Regulation
Morocco	Arrêté ministériel n° 6404-15 du 29 ramadan 1436
ODVA	ODVA conformance tested to DeviceNet specifications

(1) See the Product Certification link at rok.auto/certifications for Declaration of Conformity, Certificates, and other certification details.

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, and product notification updates.	rok.auto/support
Knowledgebase	Access Knowledgebase articles.	rok.auto/knowledgebase
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
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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