MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

ALLEN-BRADLEY

1794-ACN15

SINGLE MEDIA CONTROLNET ADAPTER

Used with the applicable FLEX I/O ControlNet configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Rockwell1794-IN128J-EN-P,11/2024;ACN15 SeriesD,pp.5 to 9

Installation Instructions

Original Instructions

Allen-Bradley
by ROCKWELL AUTOMATION

FLEX I/O ControlNet Adapters

Catalog Numbers 1794-ACN15, 1794-ACNR15, 1794-ACNR15XT, series D

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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
Updated minimum temperature rating for wire conductor and insulation	3

Rockwell Automation

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 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 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 more information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

In addition to this publication, see:

- 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.

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.

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. See Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for more information.

ATTENTION: Electrical Safety Considerations
Power to this equipment and all connected I/O must be supplied from a source compliant with the following:

- SELV source approved to EN/IEC60950-1, EN/IEC61010-2-201, or EN/IEC62368-1 (ES1)
- PELV source approved to EN/IEC60950-1, EN/IEC61010-2-201, or EN/IEC62368-1 (ES1)

Note: A power source approved to a U.S.A. or Canadian version of the above listed standards is required for system approval in the U.S.A. or Canada.

- All wiring must comply with applicable electrical installation requirements (for example, N.E.C. article 501-4(b)).
- Wire conductor and insulation ratings shall support minimum temperature rating of 105 °C (221 °F).

WARNING:

- For Class I Division 2 applications, use only Class I Division 2 listed or recognized accessories and modules approved for use within the FLEX™ I/O platform.
- If 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.
- If you connect or disconnect the communications cable with power applied to this module or any device on the network, 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.
- If you connect or disconnect wiring while the field-side 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.
- When used in a Class I Division 2, hazardous location, this equipment must be mounted in a suitable enclosure with proper wiring method that complies with the governing electrical codes.

ATTENTION: Use only a soft dry anti-static cloth to wipe down equipment. Do not use any cleaning agents.

WARNING: Special Conditions for Safe Use:

- 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 defined by Rockwell Automation.
- Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value 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.
- Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.
- Earthing is accomplished through mounting of modules on rail.

UK and European Hazardous Location Approval

The following applies to products marked Ⓔx II 3 G:

- 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 Schedule 1 of UKEX and Annex II of EU Directive 2014/34/EU. See the UKEx and EU Declaration of Conformity at rok.auto/certifications for details.
- The type of protection is Ex ec IIC T4 Gc according to EN IEC 60079-0:2018, EXPLOSIVE ATMOSPHERES - PART 0: EQUIPMENT - GENERAL REQUIREMENTS, Issue Date 07/2018 and EN IEC 60079-7:2015+A1:2018, Explosive atmospheres. Equipment protection by increased safety "e".
- Comply with Standard EN IEC 60079-0:2018, EXPLOSIVE ATMOSPHERES - PART 0: EQUIPMENT - GENERAL REQUIREMENTS, Issue Date 07/2018, EN IEC 60079-7:2015+A1:2018 Explosive atmospheres. Equipment protection by increased safety "e", reference certificate number DEMKO 14 ATEX 1342501X and UL22UKEX2378X.
- 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 marked with IECEx certification:

- Are intended for use in areas in which explosive atmospheres caused by gases, vapors, mists, or air are unlikely to occur, or are likely to occur only infrequently and for short periods. Such locations correspond to Zone 2 classification to IEC 60079-0.
- The type of protection is Ex ec IIC T4 Gc according to IEC 60079-0 and IEC 60079-7.
- Comply with Standards IEC 60079-0, Explosive atmospheres Part 0: Equipment - General requirements, Edition 7, Revision Date 2017, IEC 60079-7, 5.1 Edition revision date 2017, Explosive atmospheres - Part 7: Equipment protection by increased safety "e", reference IECEx certificate number IECEx UL 14.0066X.

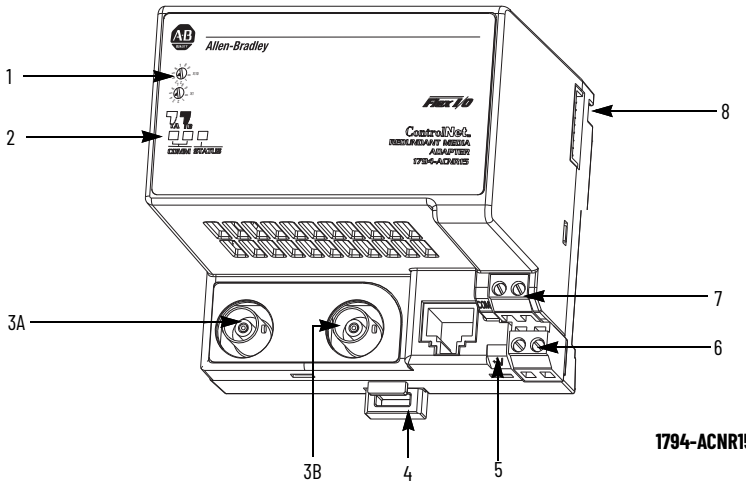
North American Hazardous Location Approval

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.

Overview

FLEX I/O ControlNet® single and redundant adapters (1794-ACN15, 1794-ACNR15, 1794-ACNR15XT, series D, firmware revision 10.3) function as drop-in replacements for series C adapters and continue to support 32-bit modules and numerical display of the firmware revision in RSNetWorx™ for ControlNet (revision 3.21 or later).

FLEX I/O ControlNet Adapter – 1794-ACN15, 1794-ACNR15, 1794-ACNR15XT, Series D



1794-ACNR15 shown

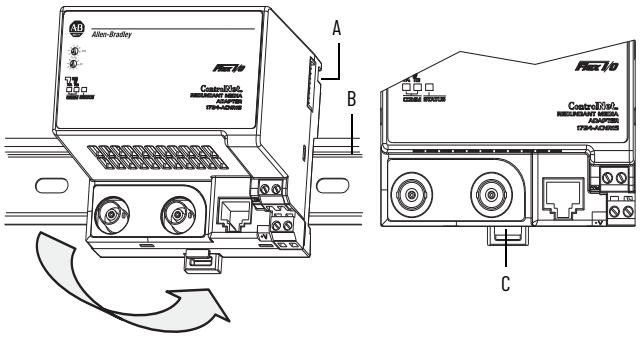
Component Identification

	Description		Description
1	ControlNet node selection dial	5	ControlNet programming terminal network access port (NAP)
2	Indicators	6	+24V DC connections
3A	ControlNet network cable BNC connector A	7	24V common connections
3B	ControlNet network cable BNC connector B(1)	8	Flexbus connector
4	Adapter locking tab		

(1) The ControlNet network cable BNC connector B is available on 1794-ACNR15 and 1794-ACNR15XT adapters only.

Install Your Adapter

Read this for information on how to install the FLEX ControlNet adapter.

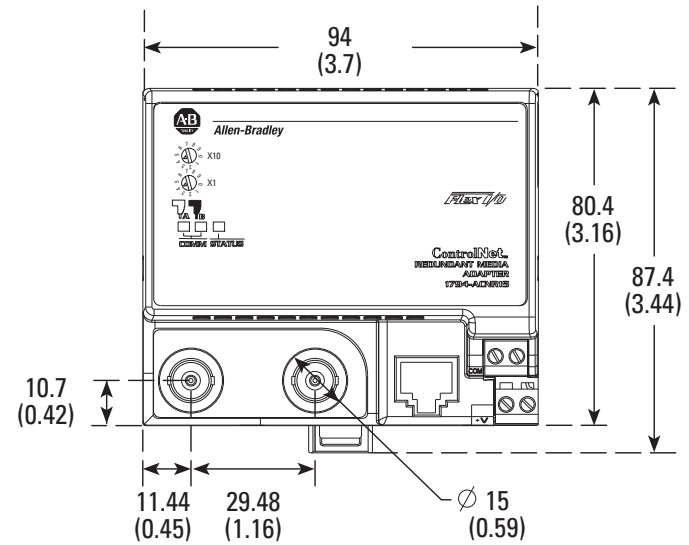


ATTENTION: During mounting of all devices, be sure that all debris (metal chips, wire strands, and so on) is kept from falling into the module. Debris that falls into the module could cause damage on power-up.

Mounting Dimensions

The adapters have the following mounting dimensions:

1794-ACNR15 shown



HxWxD:
87.4 x 94 x 92 mm
(3.44 x 3.7 x 3.6 in.)

Millimeters
(inches)

Mount on a DIN Rail

1. Position the ControlNet adapter (A) on an IEC standard (35 x 7.5 x 1 mm) top-hat DIN rail (B), Allen-Bradley® part number 199-DR1; 46277-3; EN50022, at a slight angle.
2. Hook the lip on the rear of the adapter onto the top of the DIN rail, and rotate the adapter onto the rail.
3. Press the adapter down onto the DIN rail until flush. Locking tab (C) snaps the adapter into position and locks it onto the DIN rail.
4. If the adapter does not lock in place, use a screwdriver or similar device to move the locking tab down while pressing the adapter flush onto the DIN rail, and release the locking tab to lock the adapter in place. If necessary, push up on the locking tab to lock.
5. Connect the adapter wiring. See Wire the Adapter on page 7.

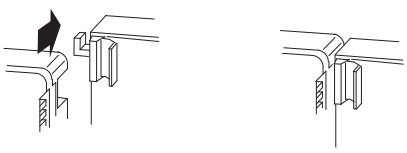
Mount on a Panel or Wall

To mount the adapter to a panel or wall, see Panel Mounting Kit Cat. No. 1794-NM1/B Installation Instructions, publication 1794-IN135.

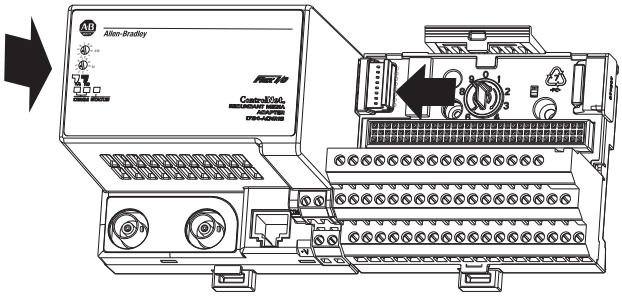
Mount or Replace the Adapter on an Existing System

1. Disconnect any wiring jumpered to the adjacent terminal base.
2. Disconnect the BNC connectors from the front of the adapter.
3. Open the module latching mechanism and remove the module from the base unit to which the adapter is attached.
4. Push the Flexbus connector toward the right side of the terminal base to unplug the backplane connection.
5. Release the locking tab and remove the adapter.

   Before installing the new adapter, notice the notch on the right rear of the adapter. This notch accepts the hook on the terminal base unit. The notch is open at the bottom. The hook and adjacent connection point keep the terminal base and the adapter tight together, reducing the possibility of a break in communication over the backplane.

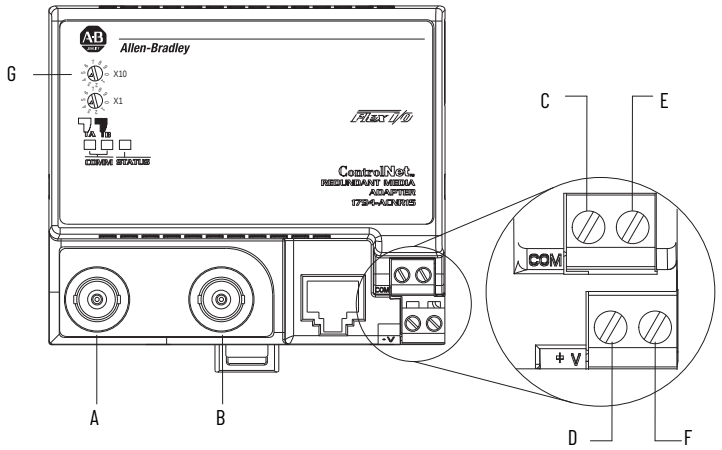


6. Push down and in at the same time to lock the adapter to the DIN rail.
   If the adapter does not lock in place, use a screwdriver or similar device to move the locking tab down while pressing the adapter flush onto the DIN rail, and release the locking tab to lock the adapter in place. If necessary, push up on the locking tab to lock.



   When the adapter is locked onto the DIN rail, gently push the Flexbus connector into the adapter to complete the backplane.
7. Reinstall the module in the adjacent terminal base unit.

Wire the Adapter

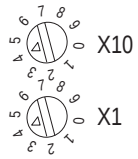


1794-ACNR15 shown

1. Connect the ControlNet network cable to connector, terminal A.
2. **For 1794-ACNR15, 1794-ACNR15XT only:** Connect the redundant ControlNet network cable to connector B.

WARNING:
- If you connect or disconnect the ControlNet cable with power applied to this adapter or any device on the network, an electric arc can occur. This could cause an explosion in hazardous installations. Be sure that power is removed or the area is nonhazardous before proceeding.
- If you connect or disconnect wiring while the field side power is on, an 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.
- When connecting wiring, torque terminal screws C, D, E, and F to 0.8 N•m (7 lb•in.).
- Power wiring must be less than 10 m (32.8 ft) in length.
- Do not wire more than 2 conductors on any single terminal.

3. Connect +V DC power to the left side of the lower connector, terminal D.
4. Connect -V common to the left side of the upper connector, terminal C.
5. Connections E and F are used to pass -V common (E) and +V DC power (F) to the next module in the series (if necessary).
6. Set the network address using the selection dials G. Valid settings range from 01...99.

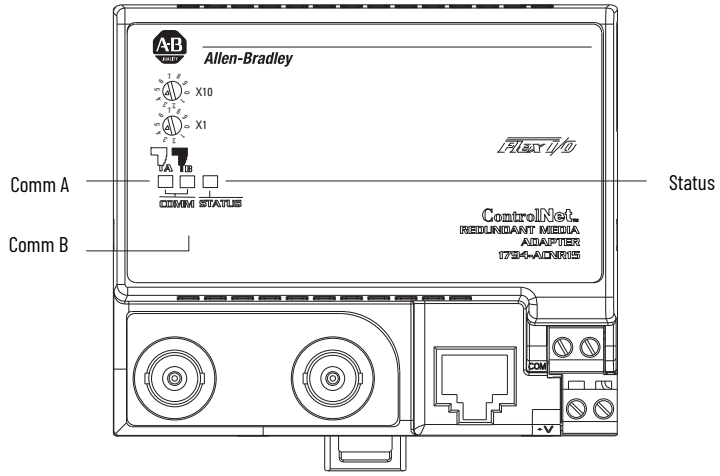


ATTENTION: Do not remove or replace a terminal base unit or an adapter while power is applied. Interruption of the backplane can result in unintentional operation or machine motion.

ATTENTION: To reduce susceptibility to noise, power the analog modules and digital modules from separate power supplies. Do not exceed a cable length of 3 m (9.8 ft) for DC power.

Interpret the Status Indicators

The adapter has LED indicators to specify its status and aid the user in troubleshooting.



Status Indicators

Status Indicator	Probable Cause
Comm A and Comm B Simultaneously	
Off	No power or reset
Red	The adapter is inoperative.
Red/green flashing alternately	The adapter is in self-test mode.
Red/off flashing alternately	Bad node configuration (duplicate address)
Comm A or Comm B (individually)	
Off	The channel is disabled.
Green	The channel is operational.
Flashing green/off	Temporary network errors
Flashing red/off	Cable fault, broken cable, or redundancy warning
Flashing red/green	Bad network configuration
Status	
Off	No power
Flashing green/off	The adapter is online but not connected.
Green	The adapter is online, link is ok and connected.
Flashing red	The I/O module is removed, a wrong I/O module is inserted, or a FLASH program update is in progress.
Red	Critical – Adapter failure

Specifications

General Specifications — FLEX I/O ControlNet Adapter

Attribute	Value
I/O capacity	8 modules
Supply voltage, input	19.2…31.2V DC, 400 mA
Supply voltage, output	5V DC, 640 mA
Inrush current	14 A for 2 ms
Communication rate	5 Mbps
Status indicators	I/O Status – Red/green Comm A – Red/green Comm B – Red/green
Isolation voltage	50V (continuous), Basic Insulation Type Type tested @ 860V AC for 60 s, power to system, power to ControlNet, and ControlNet to system No isolation between ControlNet channels
Power dissipation, max	3.4 W @ 19.2V DC
Terminal screw torque	0.8 N•m (7 lb•in)
Wire size	Power connections: Single wire connection: 0.33…2.5 mm^2 (22…12 AWG) solid or stranded copper wire rated at 105 °C (221 °F) or greater 1.2 mm (3/64 in.) insulation max Double wire connection: 0.33…1.3 mm^2 (22…16 AWG) solid or stranded (not intermixed) copper wire rated at 105 °C (221 °F) or greater 1.2 mm (3/64 in.) insulation max
Wire category(1)	3 – on power ports 2 – on communications ports
Dimensions, approx. (HxWxD)	87.4 x 94 x 92 mm (3.44 x 3.7 x 3.6 in.)
Weight, approx.	220 g (7.76 oz)
Enclosure type rating	None (open-style)
ControlNet cable	Belden RG-6/U
North American temp code	T4A
UKEX/ATEX temp code	T4
IECEx temp code	T4

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

Environmental Specifications

Attribute	1794-ACN15, 1794-ACNR15	1794-ACNR15XT
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): -25…+55 °C (-13…+131 °F)	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): -25…+70 °C (-13…+158 °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)	
Surrounding air temperature, max	55 °C (131 °F)	70 °C (158 °F)
Relative humidity	IEC 60068-2-30 (Test Db, Unpackaged Damp Heat): 5…95% noncondensing	
Vibration	IEC60068-2-6 (Test Fc, Operating): 5 g @ 10…500 Hz	
Shock, operating	IEC60068-2-27 (Test Ea, Unpackaged shock): 30 g	
Shock, nonoperating	IEC60068-2-27 (Test Ea, Unpackaged shock): 50 g	
Emissions	IEC 61000-6-4	
ESD immunity	IEC 61000-4-2: 6 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…6000 MHz	