

XR Series, RFID Reader Quick Reference Guide



Introduction

This Quick Reference Guide (QRG) provides the required information for all the XR Series RFID Reader products (part numbers include RD11320, RD11230 and RD11410). The user documents use the XR Series to reference all of the XR Series RFID readers. The QRG includes LED definitions, port descriptions, and mounting information. References to the readers apply to all versions except where the version is explicitly identified. For details, refer to the *XR Series Reader Integrator Guide P/N 72E-71773-XX*, available at: <http://www.symbol.com/support>.

This device is approved under the Symbol Technologies brand; Symbol Technologies, Inc., is the Enterprise Mobility business of Motorola, Inc. ("Motorola").

Product Description

The Motorola XR Series RFID Reader is an intelligent, multi-protocol UHF RFID reader with RFID read performance that provides real-time, seamless EPC-compliant tags processing. Features:

- EPC Generation 2 support is standard
- Intel XScale® processor with Windows® CE
- Support for custom or third-party applications
- Feature set for event and tag management.

Firmware Updates

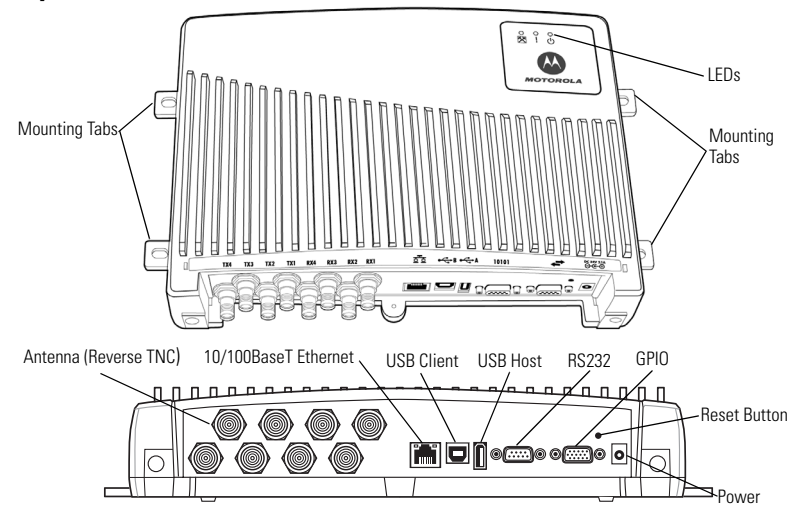
The reader is shipped with the current firmware version. To install the latest upgrade refer to the *XR Series Integrator Guide P/N 72E-71773-XX*, available from: <http://www.symbol.com/support>
 Note: Ensure that power is not interrupted during a firmware upgrade.

LED Definitions

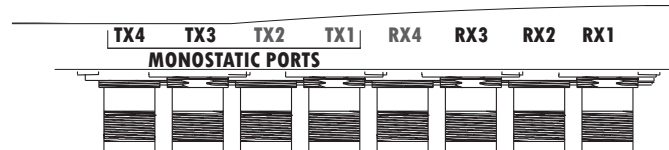
LEDs indicate reader status as described in the following table.

LED	Indication
Green	Reader is powered on.
Red	Error condition or non-operational mode, e.g., boot-up.
Yellow	Successful tag read.

Physical Connections



XR450 Mono-Static Ports



Service

If a problem using the equipment occurs, contact the facility Technical or Systems Support. If there is a problem with the equipment, they will contact the Motorola Enterprise Mobility Support at: <http://www.symbol.com/support>.

For the latest version of this guide go to: <http://www.symbol.com/manuals>



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72-71466-07
 Rev. A - September 2008

This product is covered by one or more patents. For patent information go to: <http://www.symbol.com/patents>

Patents

<http://www.symbol.com/warranty>

For the complete Motorola hardware product warranty statement, go to:

Warranty

<http://www.symbol.com>

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Ports

Port	Description
Antenna (Reverse TNC)	All XR Series - Supports up to eight antennas (four transmit and four receive). XR450 (only) - Supports the XR Series configuration or supports four monostatic antenna ports and four bistatic antenna ports (default). XR480 (only) - Supports the XR Series configuration, or supports up to eight transceiver antennas.
10/100BaseT Ethernet	Insert a standard RJ45 Ethernet cable for connection to an Ethernet network. Insert a cross-connect Ethernet cable for connection to a local PC.
USB Client	For future expansion.
USB Host	Support for USB Flash drives, USB screen.
RS232	For serial console only.
GPIO	Insert a DB15 serial cable for connection to an external device.
Power	Connect the Motorola approved power supply (see Power Supply for the Motorola approved power supply). The power supply uses an AC adapter that varies depending on the country. Maximum power consumption: 24 VDC, 1.2 A.

Regulatory Certification

The device is compliant with the following values and antenna characteristics:

XR Series Products	XR400	XR440	XR450	XR480EU
	Model No.	RD11320	RD11410	RD11410
Max Conducted RF Power Allowed		+ 30dBm		N/A
Max Antenna Gain Allowed (including cable loss)		+ 6dBIL		+5.5dBIL
Max Radiated Power Allowed		4W EIRP		2W ERP
Max Antenna Horizontal Beamwidth (3dB) Allowed		N/A		70 Degrees

Note: XR480JP (model no. RD11230) must only use Motorola antenna(s) approved by Japanese Regulatory Agency.

Antennas

When using antennas not supplied by Motorola, the antennas must comply with all of the appropriate specifications and criteria listed in the **Regulatory Certification** table.

XR450

The XR450 RFID reader supports four mono-static antenna ports and four bi-static antenna ports.

In mono-static configuration, the four ports labeled TX1, TX2, TX3 and TX4 allows the RFID reader to transmit and receive from the same antenna port or read point. This flexibility helps to reduce deployment complexity and system cost.

In bi-static configuration, the four ports labeled TX1, TX2, TX3 and TX4 act as transmit only ports and the four ports labeled RX1, RX2, RX3 and RX4 enable only the receive operation. The bi-static configuration offers the maximum isolation and highest possible performance in the most challenging RF environments.

The reader also provides dense reader mode operation in either bi-static or mono-static mode. This enables reliable and efficient tag reads, in challenging RF environments and eliminates interference associated with multiple RFID readers in close proximity.

Mounting

For installation instructions refer to the *XR Series Integrator Guide P/N 72E-71773-XX*, available from:

<http://www.symbol.com/support>.

- Position the reader on the wall or shelf, ensuring a minimum clearance of five inches on all sides. Orient the reader vertically with the ports at the bottom and ensure that all connected cables hang straight down.
- Mark the hole locations using the mounting tabs as a guide. Remove the reader and drill four mounting holes at the marked locations.
- Reposition the reader over the mounting holes and secure using fasteners appropriate for the surface material.

Regulatory Information

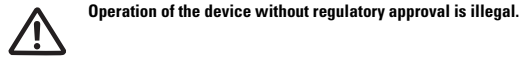
All Motorola devices are designed to be compliant with rules and regulations in locations they are sold and will be labeled as required. Regulatory information is available from: <http://www.symbol.com/support> Any changes or modifications to Motorola equipment, not expressly approved by Motorola, could void the authority to operate the equipment.

Antennas: Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications, or attachments could cause damage and may violate regulations.

Country Approvals

Regulatory markings are applied to the device signifying the radio(s) are approved for use in the following countries: United States, Canada, Europe and Japan.

Please refer to the Motorola Declaration of Conformity (DoC) for details of other country markings. This is available at: <http://www2.symbol.com/doc>.



Operation of the device without regulatory approval is illegal.

Health and Safety Recommendations

Warning for Use of Wireless Devices

Please observe all warning notices with regard to the usage of wireless devices.

Potentially Hazardous Atmospheres

You are reminded of the need to observe restrictions on the use of radio devices in fuel depots, chemical plants etc. and areas where the air contains chemicals or particles (such as grain, dust, or metal powders) and any other area where you would normally be advised to turn off your vehicle engine.



Safety in Hospitals

Wireless devices transmit radio frequency energy and may affect medical electrical equipment. When installed adjacent to other equipment, it is advised to verify that the adjacent equipment is not adversely affected.

Hearing Aids

The wireless device may interfere with some hearing aids. In the event of interference you may want to consult your hearing aid supplier to discuss solutions.

Other Medical Devices

Please consult your physician or the manufacturer of the medical device, to determine if the operation of your wireless product may interfere with the medical device.



FCC / EU RF Exposure Guidelines

Safety Information

Reducing RF Exposure - Use Properly

It is advisable to use the device only in the normal operating position.

The device complies with Internationally recognized standards covering Specific Absorption Rate (SAR) related to human exposure to electromagnetic fields from radio devices.

Remote and Standalone Antenna Configurations.

To satisfy FCC RF exposure requirements, a transmitting device must operate with a minimum separation distance of 25cm or more from a person’s body.

Power Supply

Use only a Motorola approved power supply output rated 24 Vdc and minimum 3 A. The power supply is certified to EN60950-1 with SELV outputs. Use of alternative power supply will invalidate any approval given to this device and may be dangerous.

Wireless Devices - Countries

Country Selection

Select only the country in which you are using the device. Any other selection will make the operation of this device illegal.

Frequency of Operation - FCC and IC (US/Canada versions)

The range of channels is limited by firmware.

Radio Frequency Interference Requirements - FCC



Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause

harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

Radio Transmitters (Part 15)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Radio Frequency Interference Requirements - Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Radio Transmitters

This device complies with RSS 210 of Industry & Science Canada. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Label Marking: The Term "IC:" before the radio certification only signifies that Industry Canada technical specifications were met.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than the 6dBi permitted for successful communication.

This device has been designed to operate with antennas having a maximum gain of 6dBi. Antennas having a gain greater than 6dBi are strictly prohibited for use with this device. The required antenna impedance is 50ohms.

Marking and European Economic Area (EEA)

Statement of Compliance

Motorola Inc., hereby, declares that this device is in compliance with the essential requirements and other relevant provisions of Directives 1999/5/EC, 89/336/EEC and 73/23/EEC. Declaration of Conformities may be obtained from <http://www2.symbol.com/doc/>.

Waste Electrical and Electronic Equipment (WEEE)

English: For EU Customers: All products at the end of their life must be returned to Motorola for recycling. For information on how to return product, please go to: http://www.symbol.com/environmental_compliance.

Bulgarian: За клиенти от ЕС: След края на полезния им живот всички продукти трябва да се връщат на Motorola за рециклиране. За информация относно връщането на продукти, моля отидете на адрес: <http://www.symbol.com/weelink>.

Čeština: Pro zákazníky z EU: Všechny produkty je nutné po skončení jejich životnosti vrátit společnosti Motorola k recyklaci. Informace o způsobu vrácení produktu najdete na webovė stránce: http://www.symbol.com/environmental_compliance.

Dansk: Til kunder i EU: Alle produkter skal returneres til Motorola til recirkulering, når de er udtjent. Læs oplysningerne om returnering af produkter på: http://www.symbol.com/environmental_compliance.

Deutsch: Für Kunden innerhalb der EU: Alle Produkte müssen am Ende ihrer Lebensdauer zum Recycling an Motorola zurückgesandt werden. Informationen zur Rücksendung von Produkten finden Sie unter http://www.symbol.com/environmental_compliance.

Eesti: EL klientidele: kõik tooted tuleb nende eluea lõppedes tagastada taaskasutamise eesmärgil Motorola'ile. Lisainformatsiooni saamiseks toote tagastamise kohta külastage palun aadressi: http://www.symbol.com/environmental_compliance.

Español: Para clientes en la Unión Europea: todos los productos deberán entregarse a Motorola al final de su ciclo de vida para que sean reciclados. Si desea más información sobre cómo devolver un producto, visite: http://www.symbol.com/environmental_compliance.

Ελληνικά: Για πελάτες στην Ε.Ε.: Όλα τα προϊόντα, στο τέλος της διάρκειας ζωής τους, πρέπει να επιστρέφονται στην Motorola για ανακύκλωση. Για περισσότερες πληροφορίες σχετικά με την επιστροφή ενός προϊόντος, επισκεφθείτε τη διεύθυνση http://www.symbol.com/environmental_compliance στο Διαδίκτυο.

Français : Clients de l'Union Européenne : Tous les produits en fin de cycle de vie doivent être retournés à Motorola pour recyclage. Pour de plus amples informations sur le retour de produits, consultez : http://www.symbol.com/environmental_compliance.

Italiano: per i clienti dell'UE: tutti i prodotti che sono giunti al termine del rispettivo ciclo di vita devono essere restituiti a Motorola al fine di consentirne il riciclaggio. Per informazioni sulle modalità di restituzione, visitare il seguente sito Web: http://www.symbol.com/environmental_compliance.

Latviešu: ES klientiem: visi produkti pēc to kalpošanas mūža beigām ir jānogādā atpakaļ Symbol otrreizējai pārstrādei. Lai iegūtu informāciju par produktu nogādāšanu Motorola, lūdzu, skatiet: http://www.symbol.com/environmental_compliance.

Lietuvių: ES vartotojams: visi gaminiai, pasibaigus jų eksploatacijos laikui, turi būti gražinti utilizuoti į kompaniją „Motorola“. Daugiau informacijos, kaip gražinti gaminį, rasite: http://www.symbol.com/environmental_compliance.

Magyar: Az EU-ban vásárlóknak: Minden tönkrement terméket a Motorola vállalathoz kell eljuttatni újrahaznosítás céljából. A termék visszajuttatásának módjával kapcsolatos tudnivalóként látogasson el a http://www.symbol.com/environmental_compliance weboldalra.

Malti: Għal klijenti fl-UE: il-prodotti kollha li jkunu waslu fl-aħħar tal-ħajja ta' l-użu tagħhom, iridu jiġu rritornati għand Motorola għar-riċiklaġġ. Għal aktar tagħrif dwar kif għandek tirritorna l-prodott, jekk jogħġbok żur: http://www.symbol.com/environmental_compliance.

Nederlands: Voor klanten in de EU: alle producten dienen aan het einde van hun levensduur naar Motorola te worden teruggezonden voor recycling. Raadpleeg http://www.symbol.com/environmental_compliance voor meer informatie over het terugzenden van producten.

Polski: Klienci z obszaru Unii Europejskiej: Produkty wycofane z eksploatacji należy zwrócić do firmy Motorola w celu ich utylizacji. Informacje na temat zwrotu produktów znajdujĄ się na stronie internetowej http://www.symbol.com/environmental_compliance.

Portugués: Para clientes da UE: todos os produtos no fim de vida devem ser devolvidos à Motorola para reciclagem. Para obter informações sobre como devolver o produto, visite: http://www.symbol.com/environmental_compliance.

Românesc: Pentru clienții din UE: Toate produsele, la sfârșitul duratei lor de funcționare, trebuie returnate la Motorola pentru reciclare. Pentru informații despre returnarea produsului, accesați: <http://www.symbol.com/weelink>.

Slovenski: Za kupce v EU: vsi izdelki se morajo po poteku življenjske dobe vrniti podjetju Motorola za reciklažo. Za informacije o vračilu izdelka obiščite: http://www.symbol.com/environmental_compliance.

Slovenčina: Pre zákazníkov z krajín EU: Všetky výrobky musia byť po uplynutí doby ich životnosti vrátené spoločnosti Motorola na recykláciu. Bližšie informácie o vrátení výrobkov nájdete na: http://www.symbol.com/environmental_compliance.

Suomi: Asiakkaat Euroopan unionin alueella: Kaikki tuotteet on palautettava kierrätettäväksi Motorola-yhtiöön, kun tuotetta ei enää käytetä. Lisätietoja tuotteen palauttamisesta on osoitteessa http://www.symbol.com/environmental_compliance.

Svenska: För kunder inom EU: Alla produkter som uppnått sin livslängd måste returneras till Motorola för återvinning. Information om hur du returnerar produkten finns på http://www.symbol.com/environmental_compliance.