

MotoSoft™

Motoman Device Server User's Manual

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SECTION 1

INTRODUCTION

1.1 About this Document

The Motoman Device Server (MDS) User's Manual provides instructions for using the Motoman Device Server application and contains the following sections:

SECTION 1 – INTRODUCTION

General information about this manual, a list of reference documents, and customer service information.

SECTION 2 – SAFETY

Provides information for the safe use and operation of Motoman products.

SECTION 3 – FILE MANAGEMENT SYSTEM MANUAL

Provides instructions for the use of the Motoman Device Server application.

1.2 Reference to Other Documentation

For additional information refer to the following:

- Motoman manipulator manual that was shipped with your system

1.3 Customer Service Information

If you are in need of technical assistance, contact the Motoman service staff at (937) 847-3200. Please have the following information ready before you call:

- Robot Type (UP6, UP130, UP165, etc.)
- Application Type (welding, handling, etc.)
- Robot Serial Number (located on the back side of the robot arm)
- Robot Sales Order Number (located on back side of XRC controller)

NOTES

SECTION 2

SAFETY

2.1 Introduction

It is the purchaser's responsibility to ensure that all local, county, state, and national codes, regulations, rules, or laws relating to safety and safe operating conditions for each installation are met and followed.

We suggest that you obtain and review a copy of the ANSI/RIA National Safety Standard for Industrial Robots and Robot Systems. This information can be obtained from the Robotic Industries Association by requesting ANSI/RIA R15.06. The address is as follows:

Robotic Industries Association
900 Victors Way
P.O. Box 3724
Ann Arbor, Michigan 48106
TEL: (734) 994-6088
FAX: (734) 994-3338

Ultimately, the best safeguard is trained personnel. The user is responsible for providing personnel who are adequately trained to operate, program, and maintain the robot cell. **The robot must not be operated by personnel who have not been trained!**

We recommend that all personnel who intend to operate, program, repair, or use the robot system be trained in an approved Motoman training course and become familiar with the proper operation of the system.

This safety section addresses the following:

- Standard Conventions (Section 2.2)
- General Safeguarding Tips (Section 2.3)
- Mechanical Safety Devices (Section 2.4)
- Installation Safety (Section 2.5)
- Programming Safety (Section 2.6)
- Operation Safety (Section 2.7)
- Maintenance Safety (Section 2.8)

2.2 **Standard Conventions**

This manual includes information essential to the safety of personnel and equipment. As you read through this manual, be alert to the four signal words:

- DANGER
- WARNING
- CAUTION
- NOTE

Pay particular attention to the information provided under these headings which are defined below (in descending order of severity).



DANGER!

Information appearing under the DANGER caption concerns the protection of personnel from the immediate and imminent hazards that, if not avoided, will result in immediate, serious personal injury or loss of life in addition to equipment damage.



WARNING!

Information appearing under the WARNING caption concerns the protection of personnel and equipment from potential hazards that can result in personal injury or loss of life in addition to equipment damage.



CAUTION!

Information appearing under the CAUTION caption concerns the protection of personnel and equipment, software, and data from hazards that can result in minor personal injury or equipment damage.

NOTE: *Information appearing in a NOTE caption provides additional information which is helpful in understanding the item being explained.*

2.3 General Safeguarding Tips

All operators, programmers, plant and tooling engineers, maintenance personnel, supervisors, and anyone working near the robot must become familiar with the operation of this equipment. All personnel involved with the operation of the equipment must understand potential dangers of operation. General safeguarding tips are as follows:

- Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation of this robot, the operator's manuals, the system equipment, and options and accessories should be permitted to operate this robot system.
- Do not enter the robot cell while it is in automatic operation. Programmers must have the teach pendant when they enter the robot cell.
- Improper connections can damage the robot. All connections must be made within the standard voltage and current ratings of the robot I/O (Inputs and Outputs).
- The robot must be placed in Emergency Stop (E-STOP) mode whenever it is not in use.
- In accordance with ANSI/RIA R15.06, section 6.13.4 and 6.13.5, use lockout/tagout procedures during equipment maintenance. Refer also to Section 1910.147 (29CFR, Part 1910), Occupational Safety and Health Standards for General Industry (OSHA).

2.4 Mechanical Safety Devices

The safe operation of the robot, positioner, auxiliary equipment, and system is ultimately the user's responsibility. The conditions under which the equipment will be operated safely should be reviewed by the user. The user must be aware of the various national codes, ANSI/RIA R15.06 safety standards, and other local codes that may pertain to the installation and use of industrial equipment. Additional safety measures for personnel and equipment may be required depending on system installation, operation, and/or location. The following safety measures are available:

- Safety fences and barriers
- Light curtains
- Door interlocks
- Safety mats
- Floor markings
- Warning lights

Check all safety equipment frequently for proper operation. Repair or replace any non-functioning safety equipment immediately.

2.5 **Installation Safety**

Safe installation is essential for protection of people and equipment. The following suggestions are intended to supplement, but not replace, existing federal, local, and state laws and regulations. Additional safety measures for personnel and equipment may be required depending on system installation, operation, and/or location. Installation tips are as follows:

- Be sure that only qualified personnel familiar with national codes, local codes, and ANSI/RIA R15.06 safety standards are permitted to install the equipment.
- Identify the work envelope of each robot with floor markings, signs, and barriers.
- Position all controllers outside the robot work envelope.
- Whenever possible, install safety fences to protect against unauthorized entry into the work envelope.
- Eliminate areas where personnel might get trapped between a moving robot and other equipment (pinch points).
- Provide sufficient room inside the workcell to permit safe teaching and maintenance procedures.

2.6 **Programming Safety**

All operators, programmers, plant and tooling engineers, maintenance personnel, supervisors, and anyone working near the robot must become familiar with the operation of this equipment. All personnel involved with the operation of the equipment must understand potential dangers of operation. Programming tips are as follows:

- Any modifications of the controller PLC can cause severe personal injury or death, as well as damage to the robot! Do not make any modifications to the PLC. Making any changes without the written permission of Motoman will **VOID YOUR WARRANTY!**
- Some operations require standard passwords and some require special passwords. Special passwords are for Motoman use only. **YOUR WARRANTY WILL BE VOID** if you use these special passwords.
- Back up all programs and jobs onto a floppy disk whenever program changes are made. To avoid loss of information, programs, or jobs, a backup must always be made before any service procedures are done and before any changes are made to options, accessories, or equipment.
- The concurrent I/O (Input and Output) function allows the customer to modify the internal ladder inputs and outputs for maximum robot performance. Great care must be taken when making these modifications. Double-check all modifications under every mode of robot operation to ensure that you have not created hazards or dangerous situations that may damage the robot or other parts of the system.
- Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation, manuals, electrical design, and equipment interconnections of this robot should be permitted to operate the system.

- Inspect the robot and work envelope to be sure no potentially hazardous conditions exist. Be sure the area is clean and free of water, oil, debris, etc.
- Be sure that all safeguards are in place.
- Check the E-STOP button on the teach pendant for proper operation before programming.
- Carry the teach pendant with you when you enter the workcell.
- Be sure that only the person holding the teach pendant enters the workcell.
- Test any new or modified program at low speed for at least one full cycle.

2.7 Operation Safety

All operators, programmers, plant and tooling engineers, maintenance personnel, supervisors, and anyone working near the robot must become familiar with the operation of this equipment. All personnel involved with the operation of the equipment must understand potential dangers of operation. Operation tips are as follows:

- Be sure that only trained personnel familiar with the operation of this robot, the operator's manuals, the system equipment, and options and accessories are permitted to operate this robot system.
- Check all safety equipment for proper operation. Repair or replace any non-functioning safety equipment immediately.
- Inspect the robot and work envelope to ensure no potentially hazardous conditions exist. Be sure the area is clean and free of water, oil, debris, etc.
- Ensure that all safeguards are in place.
- Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation, manuals, electrical design, and equipment interconnections of this robot should be permitted to operate the system.
- Do not enter the robot cell while it is in automatic operation. Programmers must have the teach pendant when they enter the cell.
- The robot must be placed in Emergency Stop (E-STOP) mode whenever it is not in use.
- This equipment has multiple sources of electrical supply. Electrical interconnections are made between the controller, external servo box, and other equipment. Disconnect and lockout/tagout all electrical circuits before making any modifications or connections.
- All modifications made to the controller will change the way the robot operates and can cause severe personal injury or death, as well as damage the robot. This includes controller parameters, ladder, and I/O (Input and Output) modifications. Check and test all changes at slow speed.

2.8 Maintenance Safety

All operators, programmers, plant and tooling engineers, maintenance personnel, supervisors, and anyone working near the robot must become familiar with the operation of this equipment. All personnel involved with the operation of the equipment must understand potential dangers of operation. Maintenance tips are as follows:

- Do not perform any maintenance procedures before reading and understanding the proper procedures in the appropriate manual.
- Check all safety equipment for proper operation. Repair or replace any non-functioning safety equipment immediately.
- Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation, manuals, electrical design, and equipment interconnections of this robot should be permitted to operate the system.
- Back up all your programs and jobs onto a floppy disk whenever program changes are made. A backup must always be made before any servicing or changes are made to options, accessories, or equipment to avoid loss of information, programs, or jobs.
- Do not enter the robot cell while it is in automatic operation. Programmers must have the teach pendant when they enter the cell.
- The robot must be placed in Emergency Stop (E-STOP) mode whenever it is not in use.
- Be sure all safeguards are in place.
- Use proper replacement parts.
- This equipment has multiple sources of electrical supply. Electrical interconnections are made between the controller, external servo box, and other equipment. Disconnect and lockout/tagout all electrical circuits before making any modifications or connections.
- All modifications made to the controller will change the way the robot operates and can cause severe personal injury or death, as well as damage the robot. This includes controller parameters, ladder, and I/O (Input and Output) modifications. Check and test all changes at slow speed.
- Improper connections can damage the robot. All connections must be made within the standard voltage and current ratings of the robot I/O (Inputs and Outputs).

A guide to using

Motoman Server

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Chapter One - Introduction

Overview

Welcome to the *Motoman Server* application manual. This guide will help you become familiar with the usage of *Motoman Server* and provide you with all the information you will need to use this application with ease.

Motoman Server (in the following text referred to as **MManSrv** or simply **the server**) is an application designed to allow COM-based applications to communicate over the network, using DCOM with ERC, MRC and XRC Motoman robot controllers. While the client applications perform the communication using simple, easy to use automation enabled objects, the server in turn communicates directly with the robot controller via a cable (RS232 or RS485) or network (TCP/IP).

One instance of the server can provide simultaneous connectivity to multiple robots or in other words it can serve multiple connections. A connection represents a link between the server and the robot controller. A connection can be shared between multiple client applications. Each connection object provides several COM based interfaces, which can be used by the client applications.

Each connection object exposes the following functionality:

Host Control Function

File Data Transmission

- Jobs can be transmitted in Single Job or Related Job modes
- Transmittable Data: Tool data, Weaving data, User coordinate data, arc welding related data, variable data, system information or alarm history

Robot Control

- Read errors and alarms
- Read current position in a Cartesian coordinate system
- Read current position in a joint coordinate system
- Read, cycle, operation, alarm errors, and servostatus
- Read current job names, line number, and step number
- Read all job names or related job names
- Read current position in a specified Cartesian coordinate system
- Monitor completion of manipulator operation

- Read specified user coordinate data
- Read control group and task selectedstatus
- Read variable data
- Start, hold
- Reset, cancel
- Job deletion
- Master job setup
- Job, line number, and step number setup
- Modes and Cycle selection
- Servo power ON/OFF
- Programming pendant and playback box interlock setup/release
- Message display
- Joint operation and linear operation using a specified Cartesian coordinate system
- Linear operation by incrementing a specified coordinate system
- Joint operation and linear operation using a specified joint coordinate system
- Conversion/reverse conversion of related jobs of a specified job (Requires Relative Job Function)
- Write specified user coordinate data
- Modification of control group
- Modification of task to be controlled
- Write variable data

DCI Function

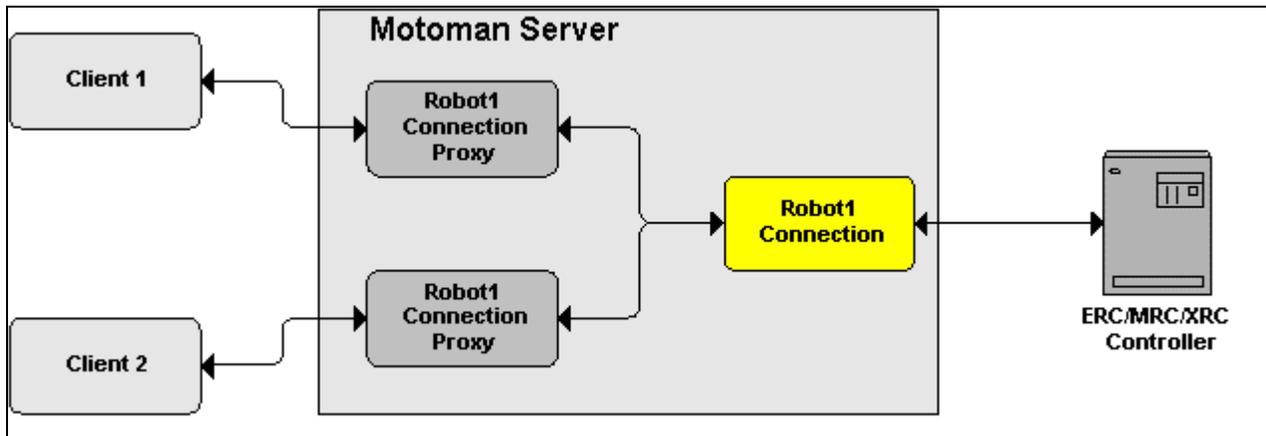
Job Transmission

- Jobs can be transmitted in Single Job or Related Job modes

Variable Transmission

- Transmittable variables: Byte-type global variables, Integer-type global variables, Double precision-type global variables, Real-type global variables, or Position-type global variables (Robot, base, and station axes)

The server creates one connection object per connected controller, although each connected client application receives a private copy of a proxy object. The proxy object in return is connected to the real connection object. This is depicted on the following diagram:



The first section of this manual will give you some general information about the *Motoman Server* application, & how it relates to the entire **i Open Factory** product family.

The second section deals with all the information you require to get started with the application. This includes:

- An introduction to the application
- System Requirements
- Installation Process
- Licensing Guidelines

The third section will discuss specific details regarding usage of the application. At the back of this manual, you will also find a complete glossary of terms used throughout the documentation & application. The contents of this manual are also contained in a context sensitive help file, which can be accessed while using the application.

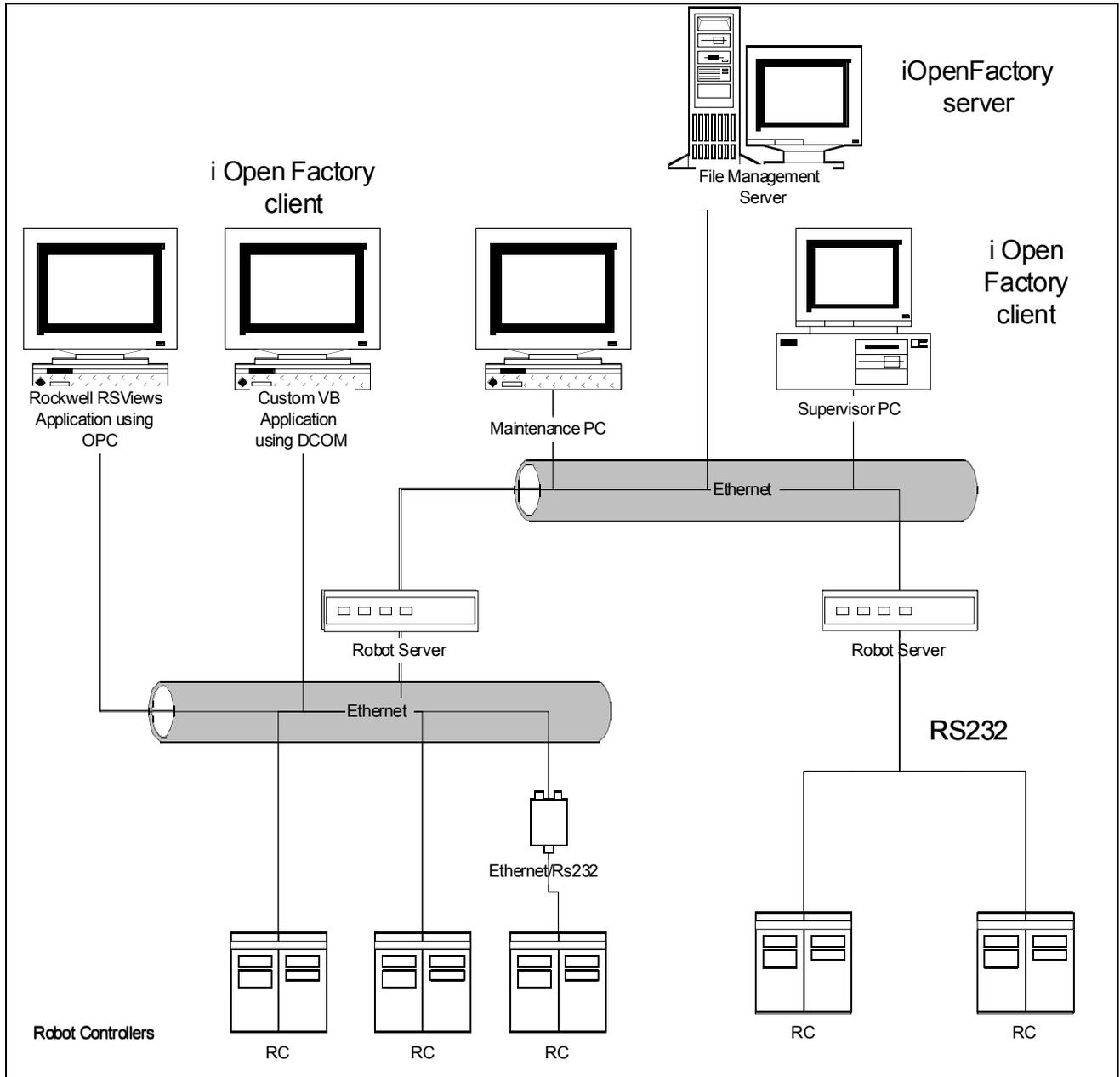
Introduction

Motoman Server was created to provide connectivity and access to one or more *Motoman* controllers. Complete exposure to the functionality of the robot and simultaneous access to multiple robot controllers form the key strengths of the *Motoman Server* application.

Following the connection with robot controllers that this application enables, the full set of functionalities of the **i Open Factory** product line can be accessed. The concept of open architecture for manufacturing devices, & the application of device independent communication, are the building blocks of **i Open Factory**. Thus, the low level connections to *Motoman* robot controllers that are enabled by the *Motoman Server* application, are the cornerstone of open architecture systems for robotics, &, further, for manufacturing systems. Seamless access to operating information, the ability to up- and down-load programs over a plant network and program version control are functionalities that are made possible by the connections established by *Motoman Server*.

The application has been designed following the standards established for network computing, i.e. clients accessing a server, which manages the access to a network of devices. In the case of *Motoman Server*, the devices are either MRC, XRC or ERC controllers for *Motoman* robots. The server is the computer with the *Motoman Server* application installed, & the host channel for the communication management. A remote client could be a desktop computer in Plant Engineering, which has been configured with the software necessary to perform robot program version control, or to display specific operating data from the robot unit.

An example of a typical client/server/robot controller configuration is shown below:



For more information on the **i Open Factory** product line, please visit our web site at <http://www.iOpenFactory.com> or call 1-877-467-2349 to order a free trial version of any of our products.

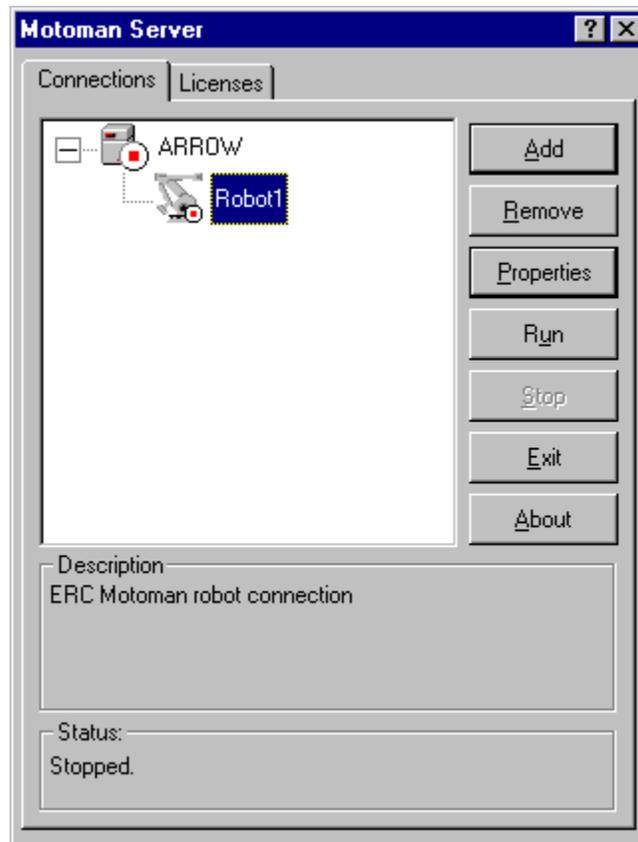
Motoman Server Overview

The main *Motoman Server* application window contains two tabs you can choose from, labelled **Connections** and **Licenses**.

The **Connections** tab will provide the functionality necessary to add, delete, set properties and run the connections to robot controllers, in addition to viewing the state of the current connection. This will be described in more detail in Chapter 3.

The **Licenses** tab will give you access to licensing information for the *Motoman Server* application. This will be discussed in Chapter 2 of this manual.

The user interface of the application has been designed using general guidelines for user interface layout in the Windows environment. For example, context sensitive help can be accessed by clicking over the ? and then clicking over the area in the window which you would like more information. Selecting the X will minimize your application into the Windows "tray" in the bottom right corner, and holding down the ALT key at the same time as the letter underlined in an operation will execute the operation.



Chapter Two - Getting Started

System Requirements

Motoman Server has been designed following the client/server structure for standard network protocols. In addition, it has been specifically designed for Microsoft's Windows family of operating systems. The hardware & operating software requirements are standard for it's class of applications.

The basic system requirements for *Motoman Server* are:

- Pentium based computer, with a CD ROM or 1.44 disk drive
- Minimum graphical resolution of 800 x 600
- 64MB RAM (the minimum requirement for a single robot connect; may increase depending on the number of connections created)
- Network Card (for Ethernet connection to robot controller)
- Windows NT 4.0 Service pack 6 or Windows 2000

Of course, to use the *Motoman Server* application, a robot controller must also be physically connected on the network to a client PC, or using a direct cable connection. The application has been designed to function with the MRC, ERC, and XRC robot controllers from *Motoman*.

In order to have source code control & program management capabilities, *Radix's File Management System* software is required. Please contact *Radix* at 1-877-467-2349 to order this application.

Installation

The *Motoman Server* application's installation files are located on the CD or 3.5" diskettes labeled "Motoman Server". You will need to be running the operating system indicated in the System Requirements section in order to successfully install the application.

Insert the first diskette or the CD ROM into the appropriate drive on the computer. If you are installing the application from a CD, the installation procedure should begin automatically. If the installation does not start automatically, or if you are installing from a 1.44 MB diskette, please select **Start** and then **Run**. Click on the Browse button and locate the **SETUP.EXE** file. Double-click on **SETUP.EXE**. The installation procedure should start. Please follow the instructions provided.

The installation sequence will proceed as described in the next section.

Installation Sequence

Once the installation has been successfully completed, the application will be added to your Start menu under the Programs tab with the heading IOpen Factory Motoman Server. You now have all the files necessary to run the Motoman Server application and can proceed to start your application.

Starting the Motoman Server Application

There is a very simple process to begin using *Motoman Server*:

- Click the **Start** button on the Windows desktop
- Move up to **Programs**
- Move over to **IOpen Factory Motoman Server**
- Once you've selected the application from the menu, the application will put an icon that looks like a robot controller in your **tray** in the bottom right-hand corner.



- Double click the icon, and the main dialog box for *Motoman Server* will open

Licensing

Since *Motoman Server* requires a valid license for every active robot controller connection, software licensing is managed directly from the application window. A tab, called **Licenses**, is dedicated to the management of licensing of connections, & gives the user a good summary of the types of licenses active in the application

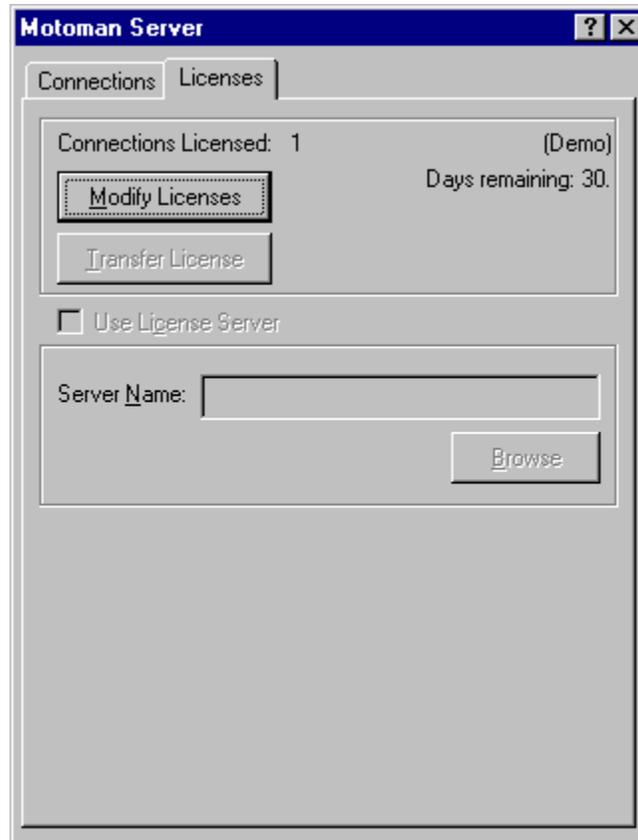
One installation of *Motoman Server* can support as many licensed connections to a robot controller as the server computer's memory can actively handle.

There are two general types of licenses available for the application. The first is a time limited trial version license, or demo license, and the second is a license for a full version of *Motoman Server*, or runtime license.

The demo license is generally limited to 30 days, and is available free of charge. When started in demo mode, the application will run for two hours. After this period of time has elapsed, it will disconnect from the connected clients and shut down. However, there is a fee for a full, runtime version of the software. Please contact *Radix* at 1-877-467-2349 in order to obtain product pricing information, or visit our web site at <http://www.iOpenFactory.com>.

Licenses Overview

The **Licenses** tab in the *Motoman Server* application displays a variety of information regarding the current licenses available for the software. For example, the number of Connections Licensed and the Mode of the application are displayed. The dialog box below shows a 30 day demonstration version of the software with one connection licensed.



From this tab, you can manage changes to the number and type of licenses by using the **Modify Licenses** function.

If you require additional connections, you would use **Modify Licenses**, and contact *Radix* at 1-877-467-2349. They will supply you with the necessary codes for additional licenses.

Modify a License

The purpose of the **Modify Licenses** function is to permit adding, removing or purchasing of licenses or to extend a demo period; in other words, it allows license management.

Obtaining a Demo or Runtime License

When **Modify Licenses** is chosen, a dialog box will appear requesting information about the license. If you are adding a license, or making a change that will require authorization codes, you will need to contact a *Customer Service Representative* at *Radix* to do so.

However, if the connection is "active" when attempting to modify a license, a warning message to close the connection before making modifications will appear to remind you. Click the **Modify Licenses** button again.

On the **Modify Licenses** dialog box (shown below), you will see a unique Registration Number & Computer ID number. You will need to provide the Registration Number and Computer ID to *Radix's Customer Service Representative* in order to receive your Authorization Code and Additional Code for a license.

In the spaces provided:

- Enter the User Name
- Enter the CompanyName for your organization
- Enter the Authorization Code and Additional Code assigned by *Radix*

Modify Licenses

Product: **MManSrv**
 Version: **1.0.00**
 Copyright © 2000 Radix Controls Inc.

OK
 Cancel

Instructions:
 Thank you for purchasing this resourcefull addition to your development toolkit from Radix Controls.
 For the authorization code necessary to access this tool, please contact the License Support department at (519) 737-1012 or toll free at 1-877-GO RADIX.

Registration Number: 279615942
 Computer Id: 272898350
 User Name:

 Company Name:

 Authorization Code:

 Additional Code:

Days remaining: 30.

Deleting a License

When **Modify Licenses** is chosen in order to delete a license, a dialog box will appear requesting information about the license. You will need to contact a *Customer Service Representative at Radix* to complete the process.

However, if the connection is "active" when attempting to modify a license, a warning message to close the connection before making modifications will appear to remind you. Click the **Modify Licenses** button again.

On the **Modify Licenses** dialog box (shown below), you will see a unique Registration Number & Computer ID number. You will have to provide that number to *Radix's Customer Service Representative* in order to receive your Authorization Code and Additional Code to delete the license. Once both codes have been entered, another dialog box will pop up with a verification number that the connection was removed. You will have to provide that verification number to *Radix's Customer Service Representative*. The Connections Licensed value that is displayed in your **Licenses** dialog box should show one less license value then you had before you removed this connection.

In the spaces provided:

- Enter the User Name
- Enter the CompanyName for your organization
- Enter the Authorization Code and Additional Code assigned by *Radix*

Modify Licenses [X]

Product: **MManSrv**
 Version: **1.0.00**
 Copyright © 2000 Radix Controls Inc.

OK
 Cancel

Instructions:
 Thank you for purchasing this resourcefull addition to your development toolkit from Radix Controls.
 For the authorization code necessary to access this tool, please contact the License Support department at (519) 737-1012 or toll free at 1-877-GO RADIX.

Registration Number: 279615942
 Computer Id: 272898350
 User Name:
 Company Name:
 Authorization Code:
 Additional Code:

 Days remaining: 30.

Chapter Three - Using Motoman Server

Connections

All of the administration of the connections for the *Motoman Server* application is contained within the **Connections** tab of the application window, or dialog box.

Connections Overview

From this dialog box, you can view, control and manage the communication between the *Motoman Server* application and the robot controller(s). Each *Motoman Server* application, or each computer, can manage a large number of robot connections.

From this dialog box you can choose from:

- adding a new connection
- removing an existing connection
- viewing or editing properties for a connection

As well, you can:

- establish communication for a connection
- close an active connection
- exit the application
- view information about the *Motoman Server* application

Each of these will be discussed in more detail in this chapter.

Description of the Connections Dialog Box

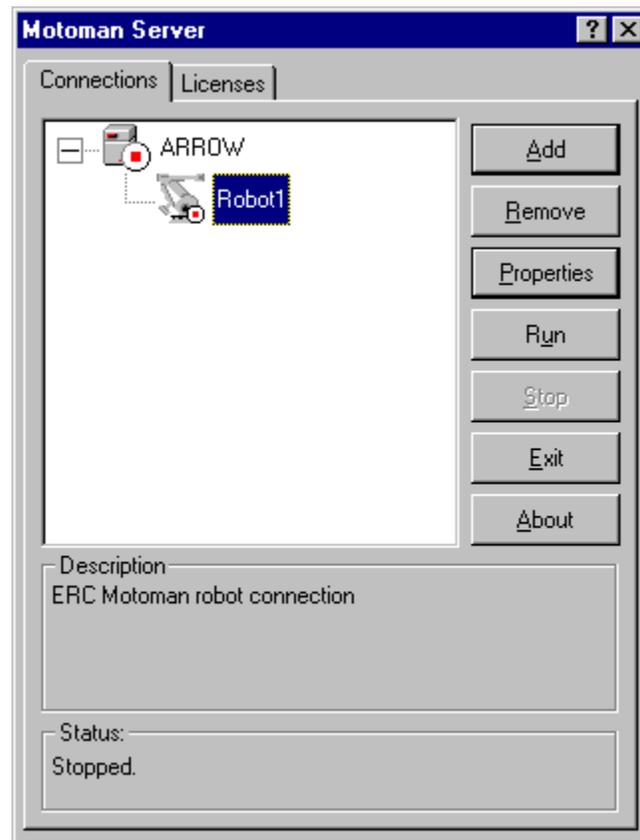
When your application starts, the **Connections** dialog box should be open. Or, you can click on the tab called **Connections**. The **Connections** dialog box will appear as shown below. It has a number of different display areas & functions.

All functions are accessed through their respective buttons along the right hand side of the dialog box.

There is a **Description** box which gives a brief description of the identity of the connection selected.

The **Status** box displays any messages regarding the Status of the connection with the robot controller(s).

In the general display area of the dialog box, a graphical representation of the status of the connection between a given robot controller and the server is shown. The server, or computer hardware, is shown with the generally accepted graphic for a server, while the robot controller is represented by a simple robot image. For each, status information is communicated with a small image contained in a circle on the lower right hand edge of the graphic.



Graphic Representations of Communication Status

A variety of communication information is represented in the general display area of the connections dialog box.

Server/Robot Not Communicating

This graphic appears when the server is not presently communicating with any robot controller. A red square will appear in the lower right-hand circle.



The same red square will appear in the robot icon if it has closed the communication channel with the server. The Status box for that connection will display the message "Stopped".

In Process of Connecting

When the server is in the process of establishing communication with the robot controller, for a short period of time the robot icon will contain two blue figures in the lower circle.



Communication is Active

When the robot and server have successfully established an "active" connection, the icon changes to the green pointer in the lower circle.



Error in Communication

The lower circle changes to a red circle with an "x" in the middle if an error occurred when trying to establish communication. The Status box will indicate an error message specifying what error occurred during the process.



Add a Connection

The first step to establishing communication with a new robot controller is to add a new connection object in the application. This can be accomplished by clicking on the **Add** button on the **Connections** tab.

The purpose of the **Add** button is to establish the connection between an additional robot and server. To create a new connection, *Motoman Server* provides easy-to-follow Wizard dialog boxes to guide the user and ensure all the necessary information is entered. Simply click the **Add** button and "Add Connection" Wizard will be launched.

The "Add Connection" Wizard goes through a series of dialog boxes and requests specific information from the user. The **Back** and **Next** buttons can be used to scroll backwards or forward through the dialog boxes if any of the information needs to be corrected. At any time, **Cancel** can be selected to exit the "Add Connection" Wizard. Let's take a quick look at the simple process of adding a new connection.

- Select **Add** to launch the wizard.

To continue, click "Add Connection Wizard - Step 1" below.

Add Connection Wizard - Step 1

The first dialog box will prompt you to enter general information pertaining to the new connection.

The **Device Manufacturer** is by default *Motoman*.

- You must then assign a mandatory **Name** to the robot controller.
This name will be used to uniquely identify the robot controller in the application.
- You must also select a *Motoman* robot controller **Model**: XRC, MRC or ERC.
This provides controller specific settings to the application.
- You then have the option to key in the robot's **Serial Number**, as well as a short **Description**.
While these are not required, they are recommended.

- Click **Next** to continue to the next dialog box.

Continue...

Add Connection Wizard - Step 2

Below is the next dialog box for the "Add Connection" Wizard. On this dialog box you are asked to enter information specific to the communication methods for the connection to the robot controller.

- Lock Time must also be entered directly
- ConnectionMode must be indicated. Choose between: 1) **Synchronous**
OR
2) **Asynchronous**
- All items in this dialog box are set with default values that you can alter if necessary.



- Select **Next** to proceed to the next dialog box.

Continue...

Add Connection Wizard - Step 3

This is an example of the third "Add Connection" dialog box. Specific information relating to the communication between the server computer & the robot controller must also be entered here.

- Select a Connection Type: 1) **Serial**
OR
2) **Ethernet**

- Enter the Comport, baudrate, databits, parity & stop bits for Serial setting

OR

- IP address & port number for Ethernet setting

- Enter Timeout 1 and 2 values (Protocol specific settings. Please refer to the Data Communication Manual for your robot controller under the topic Transmission or Communication Parameters for further explanation on this setting)
- Enter the Number of Retries value

Add Connection - Communication

Please select the communication type and enter the appropriate settings.

Serial
 Ethernet

Serial Settings:
 comport, baudrate, data bits, parity, stop bits
 Example: COM1, 19200, 8, N, 1

Ethernet Settings:
 ip address, port number
 Example: 193.168.0.115, 3001

Timeout 1/2: ms.

Number of Retries:

< Back Next > Cancel

When entering your communication settings, a sample entry is shown below the field to guide you on how the information should be entered. The **Timeout** and **Number of Retries** fields have default values but can be altered if desired.

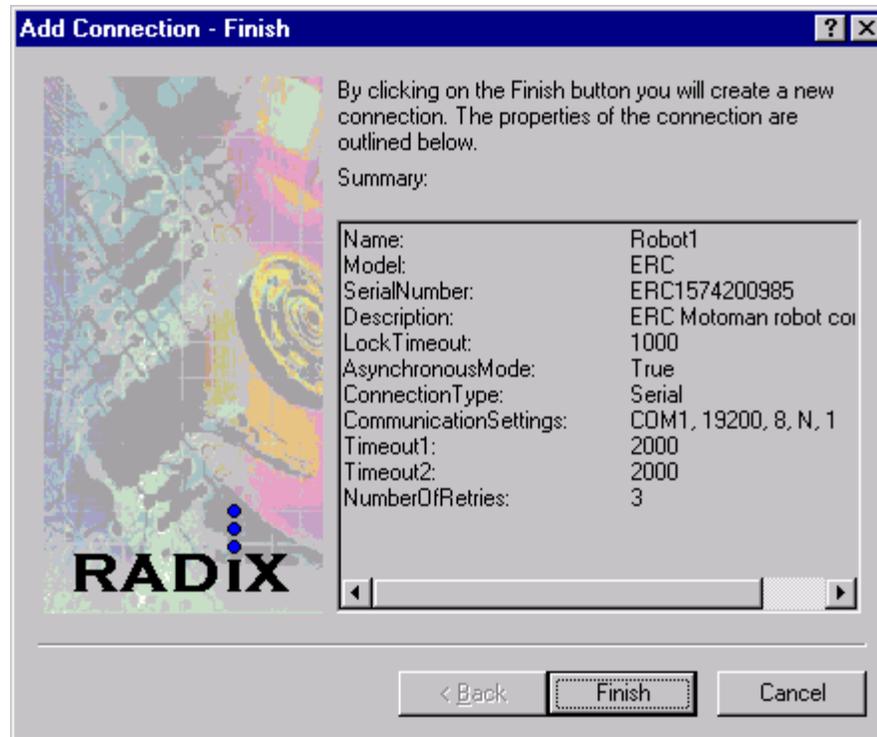
- Select **Next** to continue.

Continue...

Add Connection Wizard - Step 4

The last dialog box allows you to view all the information that was entered. Select **Finish** and the new connection will be created.

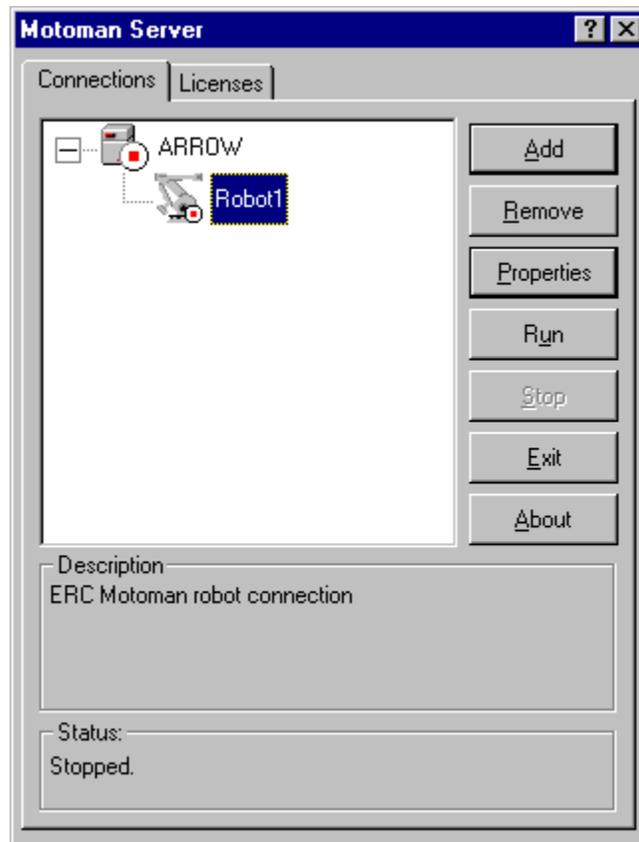
The connection will appear on the tree view. In the example below, a serial connection for an ERC robot, named "Robot1" will be added.



- Select **Finish** to complete the connection.

As shown below the icon for a "Robot1" appears in the tree view.

If you need to alter any information after the connection has been created, see the **View and Edit Properties** section for recommendations on changing the settings created during "Add connection" process.

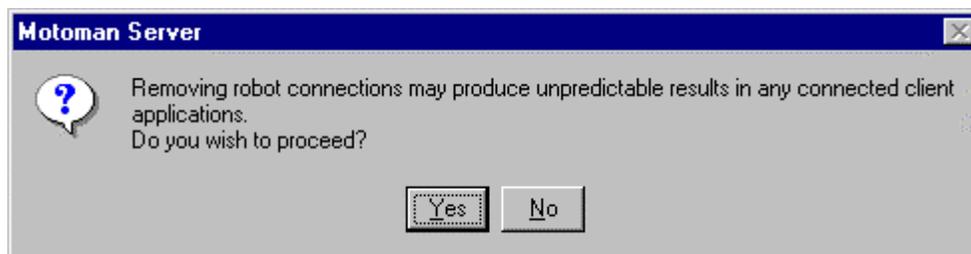


Remove a connection

The purpose of the **Remove** button is to allow users to remove a robot connection in the application. The process is very simple. With one click of a button, your connection will be removed, and the icon representing that connection on the tree view will disappear.

- Select the connection you wish to remove
- Click the **Remove** button
- The system will display a message box verifying removal of the connection
- If the proper connection is selected and should be removed, simply click the **Yes** button
- Clicking on **No** will cancel the operation

An example of the warning message box that appears when removing a connection is shown below.

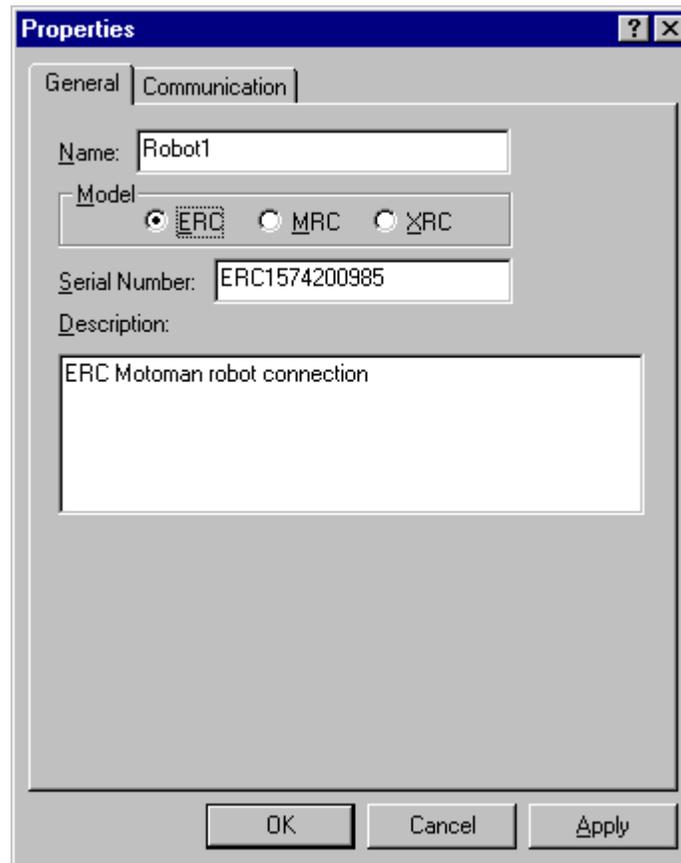


View or Edit Properties

The **Properties** button is used to edit or view the properties for a specific connection.

- Select the connection to be changed and click the **Properties** button
- There are two tabs to choose: one labeled **General** and the other labeled **Communication**
- All the information you originally typed when you created your connection was created through the "Add Connection" Wizard will be split between the two dialog boxes
- Click on the item you wish to change and type in the new information
- Once editing is complete, click the **Apply** button
- The dialog box will remain open until you click the **OK** button

Examples of both dialog boxes used in *Properties* are shown below.



Properties [?] [X]

General | **Communication**

Lock Time: ms.

Connection Mode

Synchronous Asynchronous

Connection Type

Serial Ethernet

Serial Settings:
comport, baudrate, data bits, parity, stop bits
Example: COM1, 19200, 8, N, 1

Ethernet Settings:
ip address, port number
Example: 193.168.0.115, 3001

Timeout 1/2: ms.

Number of Retries:

OK Cancel Apply

Run connections

The **Run** button gives you the option to open one connection or multiple connections at one time.

- To open a connection, select it and then click on the **Run** button. Once the connection is open, the **Run** button will become disabled
- To open all of the connections at once, select the server icon in the tree view and click on **Run**

The icon of the connection will first show two blue figures in its lower circle to indicate it is establishing connection with the server, but that is only for a very short period of time.



Once the connection is established, the icon will change to an open connection icon for the server and the robot, to show "active" connections. The **Status** box should have message "OK".



If an error occurred at any time during this process, the icon will change to a red circle with an "x" in the middle. The **Status** box will contain what error occurred while attempting to open the connection.



Stop connections

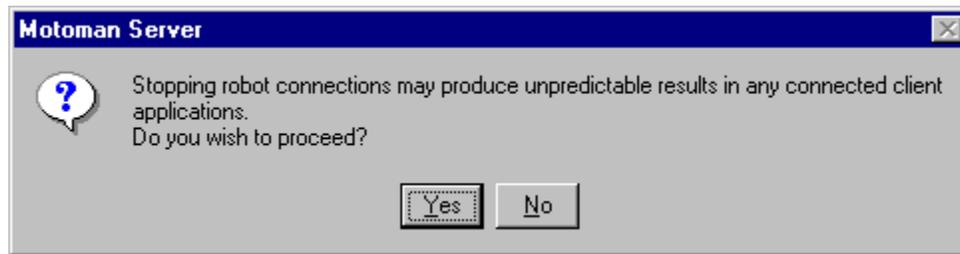
The purpose of **Stop** button is to close an "active" connection or to close the communication channel between the robot and the server.

- To close only one connection, just highlight that connection and press the **Stop** button

OR

- To close all connections, you would highlight the server and press **Stop** button
- A warning message box will pop up verifying that you wish to close the connection
- If the connection or connections should be closed, press the **Yes** button
- Clicking the **No** button will cancel the request, and the connection or connections will remain "active"
- When you close connections, you will notice that the **Run** button becomes enabled

An example of the warning message box for closing connections is shown below.



Once you've closed a connection or connections, the icon should change to show a red square, as shown, and there should be a message in the **Status** box showing "Stopped".



When all connections are closed, the server icon will change to a red square in the lower circle as shown.



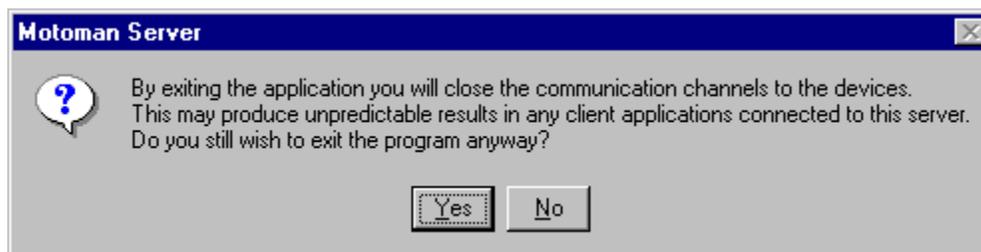
Exit Motoman Server

The **Exit** button is used when you want to exit the *Motoman Server* application.

If connections are running while exiting, *Motoman Server* will show a dialog box verifying you wish to exit the application.

- If you want to exit, click the **Yes** button
- If not, hit the **No** button and it will cancel the request

An example of the dialog box that appears when exiting is shown below.



About Motoman Server

The **About** Button supplies information about the copyright and version of *Motoman Server*, and show contact information.



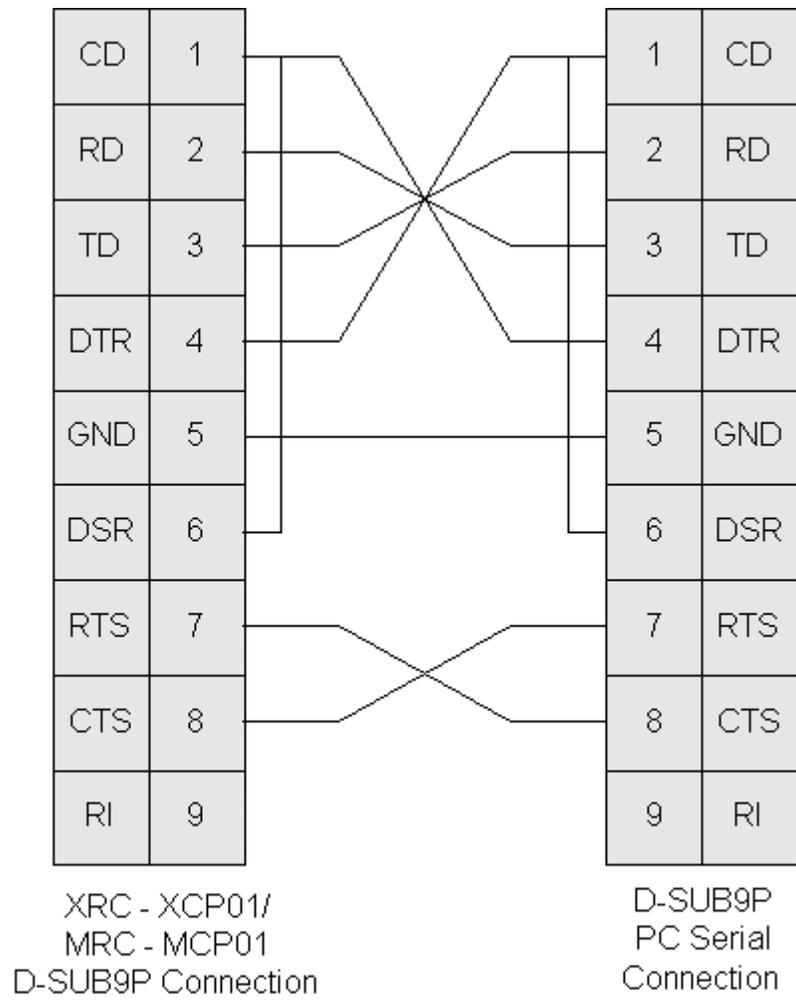
Controller to Host Computer Connection

In order to communicate with the robot controller a hardware connection must be established between the host computer and the controller.

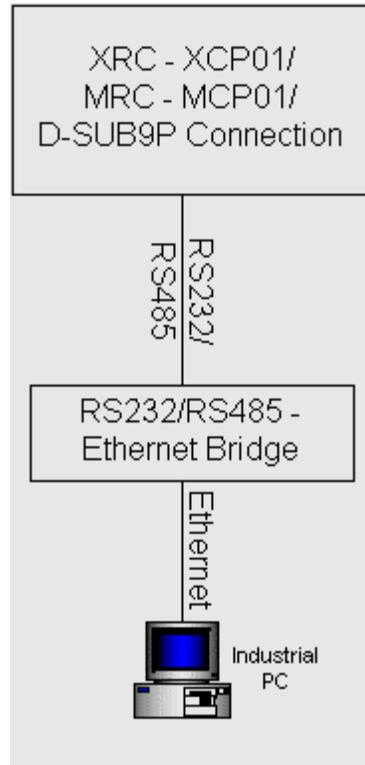
Even though the hardware communication is established, the controller may still not communicate. The host communication option must be enabled in the controller and the controller communication parameters RS030 to RS038 for MRC and XRC controllers must be properly set. Consult the communication manual for your controller in order to set these parameters.

The Motoman Device Server supports three types of hardware configurations:

1. Serial Connection



2. Industrial Device Servers (reliable, low cost RS232-TCP/IP bridge device)



3. Motoman's native network card (under testing)

Chapter Four - Technical Support

Technical Support

With the purchase of a runtime license, a full year of toll free technical support is provided.

If you require Technical Support at any time, you can contact Motoman Inc. at:

1-937-847-3200.

For licensing information, please contact Radix directly at 1-877-467-2349.

Glossary of Terms

Additional Code

The Additional Code is supplied by Radix when modifying a license

Asynchronous

The method will return immediately returning a task id. Later an event is fired with the same task id

Authorization Code

Supplied by Radix Controls Inc. when modifying a license

Company Name

The company that the license was issued

Computer ID

A unique, encrypted number assigned by Motoman Server application.

Connections Licensed

The number of connections that are licensed

Connection Mode

The type of communication used with your controller. You can choose Synchronous or Asynchronous settings.

Connection Type

The type of communication used with your controller. You can choose either Serial or Ethernet settings.

Days remaining

The amount of days remaining before your demonstration version of the software will expire

Demo

A 30 day demonstration version of the software

Description

A brief statement on the identity of the connection. The description can be seen by the client application connected to the particular connection

ERC

A type of Motoman controller

Ethernet

The type of connection used when communication will be on a network to a client PC

Ethernet Setting

The values you must enter to specify the address of the server and port number so it will properly communicate with the new connection

Lock Time

The amount of time the user is willing to wait for a request to be processed before a message is displayed that the connection is busy

Serial Number

The number from your robot

MRC

A type of Motoman controller

Serial Setting

The values you must enter to specify the port and communication information for the server to properly communicate with the new connection

Mode

The mode of the application can be running in Demo mode or Runtime mode

Status

The current state of the connection. In this box, the user can see if the connection is running, stopped or if there was an error message while starting the connection

Model

The model type of your Motoman controller

Name

The name you wish to give to the new connection. All the names used for each connection must be unique, or you will receive an error message that the connection name already exists and another must be chosen

Synchronous

The method will block until the communication with the controller is finished

Number of Retries

The value that specifies how many times you would like to retry to establish communication before aborting the request

Timeout 1 and 2

Timeout 1 and 2 are protocol specific settings. Please refer to the Data Communications Manual for your robot controller under the topic Transmission or Communication Parameters for further explanation on this setting

Registration Number

A unique, encrypted number assigned by Motoman Server application

User Name

The person who the connection is licensed

Runtime

When you have purchased the software application

XRC

A type of Motoman controller

Serial

The type of connection used when communication will be through a direct cable connection