Upon receipt of the product and prior to installation, initial operation, or maintenance read these instructions thoroughly and retain for future reference.

MOTOMAN INSTRUCTIONS

DX100, NX100, or XRC INSTRUCTIONS
DX100, NX100, or XRC OPERATOR’S MANUAL
DX100, NX100, or XRC MAINTENANCE MANUAL

The DX100, NX100, or XRC operator’s manual above corresponds to specific usage. Be sure to use the appropriate manual.

Part Number: 150880-1CD
Revision: 1
MANDATORY

General items related to safety are listed in Section 2 of the DX100, NX100, or XRC Controller Manual. To ensure correct and safe operation, carefully read the DX100, NX100, or XRC Controller Manual before reading this manual.

CAUTION

- The drawings and photos in this manual are representative examples, and differences may exist between them and the delivered product.
- YASKAWA may modify this model without notice when necessary due to product improvements, modifications, or changes in specifications.
- If such a modification is made, the manual number will also be revised.
- If the manual is damaged or lost, contact a YASKAWA representative to order a new copy. The representatives are listed on the back cover. Be sure to tell the representative the manual number listed on the front cover.
- YASKAWA is not responsible for incidents arising from unauthorized modification of its products. Unauthorized modification voids the products warranty.
Notes for Safe Operation

Read this manual carefully before installation, operation, maintenance, or inspection of the MotoAdmin Program.

In this manual, the Notes for Safe Operation are classified as “WARNING,” “CAUTION,” “MANDATORY,” or “PROHIBITED.”

⚠️ WARNING
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to personnel.

⚠️ CAUTION
Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury to personnel and damage to equipment. It may also be used to alert against unsafe practices.

⚠️ MANDATORY
Always be sure to follow explicitly the items listed under this heading.

🚫 PROHIBITED
Must never be performed.

Even items described as “CAUTION” may result in a serious accident in some situations.

To ensure safe and efficient operation at all times, be sure to follow all instructions, even if not designated as “CAUTION” and “WARNING.”
WARNING

• Before operating the MotoAdmin Program, check that servo power is turned OFF by pressing the EMERGENCY STOP button on the operator station or Programming Pendant (refer to Figure 1). When servo power is turned OFF, the SERVO ON LED on the Programming Pendant is turned OFF.

Injury or damage to machinery may result if the Emergency Stop button cannot stop the positioner during an emergency. The positioner should not be used if the EMERGENCY STOP buttons do not function.

Figure 1: EMERGENCY STOP Button

• Release the EMERGENCY STOP button (refer to Figure 2). Once this button is released, clear the cell of all items which could interfere with the operation of the positioner then, turn servo power ON.

Injury may result from unintentional or unexpected positioner motion.

Figure 2 : Release of EMERGENCY STOP Button

• Observe the following precautions when performing teaching operations within the working envelope of the positioner:
  – View the positioner from the front whenever possible.
  – Always follow the predetermined operating procedure.
  – Ensure that there is a safe place to retreat to in case of emergency.

Improper or unintended manipulator operation may result in injury.

• Confirm that no person is present in the working envelope of the positioner and that you are in a safe location before:
  – Turning on the power for the DX100, NX100, or XRC controller.
  – Moving the positioner with the Programming Pendant.
  – Running the system in the check mode.
  – Performing automatic operations.

Injury may result if anyone enters the working envelope of the positioner during operation. Always press an EMERGENCY STOP button immediately if there is a problem. The EMERGENCY STOP buttons are located on the operator station and on the Programming Pendant.
Definition of Terms Used Often in This Manual

The MOTOMAN is the YASKAWA industrial robot product.

The MOTOMAN usually consists of the manipulator, the DX100, NX100, or XRC controller, manipulator cables, the DX100, NX100, or XRC programming pendant (optional), and the DX100, NX100, or XRC programming pendant dummy connector (optional).

In this manual, the equipment is designated as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX100, NX100, or XRC controller</td>
<td>DX100, NX100, or XRC</td>
</tr>
<tr>
<td>DX100, NX100, or XRC programming pendant</td>
<td>Programming pendant</td>
</tr>
<tr>
<td>Cable between the manipulator and the controller</td>
<td>Manipulator Cable</td>
</tr>
</tbody>
</table>

CAUTION

- Perform the following inspection procedures prior to conducting positioner teaching. If problems are found, repair them immediately and be sure that all other necessary processing has been performed.
  - Check for problems in positioner movement.
  - Check for damage to insulation and sheathing of external wires.
- Always return the Programming Pendant to the hook on the cabinet of the DX100, NX100, or XRC controller after use.
- The Programming Pendant can be damaged if it is left in the work area, on the floor, or near fixtures.
- Read and understand the Explanation of Warning Labels in the DX100, NX100, or XRC Controller Manual before operating the MotoAdmin Program.
Descriptions of the programming pendant keys, buttons, displays and keyboard of the PC are shown as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming Pendant</td>
<td>Character Keys</td>
</tr>
</tbody>
</table>
|                         | The keys which have characters printed on them are denoted with [ ].
|                         | e.g. [ENTER]       |
| Symbol Keys             | The keys which have a symbol printed on them are not denoted with [ ] but depicted with a small picture. |
|                         | e.g. PAGE key      |
|                         | The cursor key is an exception, and a picture is not shown. |
| Axis Keys               | “Axis keys” and “Numeric keys” are generic names for the keys for axis operation and number input. |
| Numeric Keys            | Keys Pressed       |
| Simultaneously          | When two keys are to be pressed simultaneously, the keys are shown with a “+” sign between them. |
|                         | e.g. SHIFT key + COORD key |
| Mode Key                | Three kinds of modes that can be selected by the mode key are denoted as follows: REMOTE, PLAY, or TEACH |
| Button                  | Three buttons on the upper side of the programming pendant are denoted as follows: HOLD button START button EMERGENCY STOP button |
| Displays                | The menu displayed in the programming pendant is denoted with { }. e.g. {JOB} |
| PC Keyboard             | The name of the key is denoted. e.g. Ctrl key on the keyboard |

**Description of the Operation Procedure**

In the explanation of the operation procedure, the expression “Select • • • ” means that the cursor is moved to the object item and the SELECT key is pressed, or that the item is directly selected by touching the screen.

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1 Introduction

1.1 About this Document

This manual provides general information about the MotoAdmin Program, and contains the following chapters:

- **Chapter 1 Introduction**
  This chapter provides a list of reference documents, and customer service information.

- **Chapter 2 Safety**
  This chapter provides information regarding the safe use and operation of the MotoAdmin Program.

- **Chapter 3 MotoAdmin**
  This chapter provides detailed descriptions of the MotoAdmin Program.

1.2 Reference to Other Documentation

For additional information refer to the following manuals:

- DX100 Required Operations Manual
- DX100 Maintenance Manual (P/N 155492-1CD)
- DX100 Controller Manual (P/N 155494-1CD)
- DX100 Concurrent I/O Interface Manual (P/N 155491-1CD)
- NX100 Required Operations Manual
- NX100 Maintenance Manual (P/N 150133-1CD)
- NX100 Controller Manual (P/N 149201-1CD)
- NX100 Concurrent I/O Interface Manual (P/N 149230-1CD)
- Vendor manuals for system components not manufactured by Yaskawa Motoman
If you need assistance with any aspect of your MotoAdmin Program system, please contact Yaskawa Motoman Customer Support at the following 24-hour telephone number:

(937) 847-3200

For routine technical inquiries, you can also contact Yaskawa Motoman Customer Support at the following e-mail address:

techsupport@motoman.com

When using e-mail to contact Yaskawa Motoman Customer Support, please provide a detailed description of your issue, along with complete contact information. Please allow approximately 24 to 36 hours for a response to your inquiry.

Please use e-mail for routine inquiries only. If you have an urgent or emergency need for service, replacement parts, or information, you must contact Yaskawa Motoman Customer Support at the telephone number shown above.

Please have the following information ready before you call:

<table>
<thead>
<tr>
<th>• System</th>
<th>MotoAdmin Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Robots</td>
<td></td>
</tr>
<tr>
<td>• Positioner</td>
<td></td>
</tr>
<tr>
<td>• Primary Application</td>
<td></td>
</tr>
<tr>
<td>• Controller</td>
<td></td>
</tr>
<tr>
<td>• Software Version</td>
<td>Access this information on the Programming Pendant’s LCD display screen by selecting (MAIN MENU) - (SYSTEM INFO) - (VERSION)</td>
</tr>
<tr>
<td>• Robot Serial Number</td>
<td>Located on the robot data plate</td>
</tr>
<tr>
<td>• Robot Sales Order Number</td>
<td>Located on the controller data plate</td>
</tr>
</tbody>
</table>
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:

- Section 2.2 - "General Safeguarding Tips"
- Section 2.3 - "Safety Devices"
- Section 2.4 - "Installation Safety"
- Section 2.5 - "Programming Safety"
- Section 2.6 - "Operation Safety"
- Section 2.7 - "Maintenance Safety"
2.2 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).

2.3 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.
2.4 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.

2.5 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 to PART 1 of the controller PLC can cause severe personal injury or death, as well as damage to the robot! Do not make any modifications to PART 1. 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.
2.6 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 parts 1 and 2, and I/O (Input and Output) modifications. Check and test all changes at slow speed.
2.7 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 parts 1 and 2, 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).
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e-mail: software-technology@yaskawa.eu.com

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1 Introduction

MotoAdmin is a software for controlling Motoman Yasnac XRC, NX100 and DX100 controllers from remote side. MotoAdmin runs on Windows PC with Windows2000/XP operating systems. Connection to robot controller is possible directly via serial interface, using com server device or Ethernet interface (recommended). The necessary hardware is not part of MotoAdmin.

![Main window MotoAdmin]

To get the full functionality of MotoAdmin, the robot controller must run in „CommandRemote“ mode.

MotoAdmin supports the following functions:

- File access, loading, saving and deleting of job files is possible. System data handling is limited.
- Backup profiles for One-Button-Backups can be used.
- Displaying and editing of global variables.
- Displaying of I/O signals (changing output signals is possible with modified ladder program).
Introduction

► Controlling job execution.
► Display and also reset alarm and errors. Watch alarm history.
► Get system information like software version data, installed functions, robot types, external axis, position data.
► Edit job data (without syntax checking).

The functions are grouped into 3 different security zones. It must be considered that depending on selected security level, there are some functions which can cause danger to human and machine. Therefore it is important that only well-trained staff members are consulted to work with MotoAdmin.

MotoAdmin base package is limited to 4 robot controllers. If more robot controllers should be managed by MotoAdmin additional licences must be purchased.
2 Installation and basic configuration

2.1 Components

MotoAdmin package contains:
► 1 CD-ROM
► 1 Hardware key
► 1 RS232 cable; robot controller (9pin) <-> pc (9pin)
► 1 user manual

2.2 System requirements

► Windows PC
   • WindowsXP/2000/7
   • Ethernet TCP/IP network interface or serial COM interface
   • 20 MByte free harddisk storage capacity
   • CDROM drive
► Robot controller XRC, NX100 or DX100

2.3 Installation of MotoAdmin

Installation of hardware key should be done after software installation. Otherwise there may be some problems in case of USB hardware keys.

Before starting software installation procedure, login to windows system with local administrative rights.

Insert CDROM into CDROM drive of computer. The installation now starts automatically. If not use windows explorer, change to CDROM drive letter and run „cdstarter.exe“ directly from CDROM. After splash screen is displayed select installation of MotoAdmin.

If corresponding message appears restart your computer.

Execution of MotoAdmin is only possible, if the hardware key is attached to the parallel port (optional USB port) of your computer. Please confirm selected interface is a parallel interface and not a 25pin serial one.

2.4 Uninstallation of MotoAdmin

To uninstall MotoAdmin software open windows control panel and select Add/Remove programs.
Select MotoAdmin out of the list of installed software and click on the Uninstall button.

2.5 Connection types

Data communication between pc and robot controller for exchanging data or for remote control is possible by using different communication channels.

**Serial communication**

For serial communication an appropriate cable is necessary. MotoAdmin package contains such a cable which is a standard null modem cable with 9pin female connectors on both sides. To connect robot and pc attach one end of the cable to a RS232 port of your pc, the other end of the cable connect to the serial port of robot controller. In case of XRC it is not possible to use RS232 port of Teachbox.

**Ethernet communication**

XRC robot controllers are not delivered with an Ethernet interface by default. Therefore to use Ethernet communication with XRC an additional extension board must be ordered. For installation of this board refer to „YASNAC XRC Ethernet I/F Board Instructions”. NX100 and DX100 controllers are always equipped with an Ethernet port.

Also PC system needs to have an Ethernet interface. Connection between PC and controller is established by using standard Ethernet hardware.
2.6 Configuration of robot controller

For establishing a connection between robot controller and PC, some configuration is necessary at controller side:

2.6.1 NX100 and DX100

Table 1 shows the basic settings necessary for MotoAdmin and NX100/DX100.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Possible values</th>
<th>RS232C</th>
<th>Ethernet</th>
</tr>
</thead>
<tbody>
<tr>
<td>FD003</td>
<td>Computer Communication</td>
<td>0:disable 1:enable</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>FD042</td>
<td>Ethernet Function</td>
<td>0:disable 1:enable</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>RS000</td>
<td>Port Protocol</td>
<td>2:BSC Protocol 3:FC1 Protocol</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>RS006</td>
<td>Data Transm. Ext.</td>
<td>0:Disable 1:Enable</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>RS029</td>
<td>Data loading during Playback</td>
<td>0:disable 1:enable</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>RS030</td>
<td>Data Bits</td>
<td>8:8 data bits</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>RS031</td>
<td>Stop Bits</td>
<td>0:1 stop bit</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>RS032</td>
<td>Parity</td>
<td>2:even parity</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>RS033</td>
<td>Baud Rate</td>
<td>8: 19200 Baud 7: 9600 Baud 6: 4800 baud 5: …..</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>RS034</td>
<td>Timer A</td>
<td>No. in 0.1s</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>RS035</td>
<td>Timer B</td>
<td>No. in 0.1s</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>RS036</td>
<td>ENQ Retry Count</td>
<td>No.</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>RS037</td>
<td>Data Retry Count</td>
<td>No.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>RS038</td>
<td>Block Check Meth.</td>
<td>0: Checksum</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>RS070</td>
<td>IP address</td>
<td></td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>RS071</td>
<td></td>
<td></td>
<td>168</td>
<td></td>
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<tr>
<td>RS072</td>
<td></td>
<td></td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>RS073</td>
<td></td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>RS074</td>
<td>Subnet mask</td>
<td></td>
<td>255</td>
<td></td>
</tr>
<tr>
<td>RS075</td>
<td></td>
<td></td>
<td>255</td>
<td></td>
</tr>
<tr>
<td>RS076</td>
<td></td>
<td></td>
<td>255</td>
<td></td>
</tr>
<tr>
<td>RS077</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>RS078</td>
<td>Default Gateway</td>
<td></td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>RS079</td>
<td></td>
<td></td>
<td>168</td>
<td></td>
</tr>
<tr>
<td>RS080</td>
<td></td>
<td></td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>RS081</td>
<td></td>
<td></td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 Basic settings NX100/DX100

Ethernet or serial RS232

Parts of the table are marked grey. These are additional settings for Ethernet communication. If serial communication is to be used, Ethernet function must be disabled. If software version of robot controller supports Ethernet/http this protocol can be used instead of Ethernet/Bsc. To activate Ethernet/Http some additional configuration must be done.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Possible values</th>
<th>RS232C</th>
<th>Ethernet</th>
</tr>
</thead>
<tbody>
<tr>
<td>FD077</td>
<td>Ethernet/Http Function</td>
<td>0:disable 1:enable</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

22.08.2011  Yaskawa Europe GmbH
Table 2 Ethernet/http function

Ethernet/http must also be selected during setup of robot profiles in MotoAdmin (see Figure 2).

**Ethernet configuration dialog im maintenance mode**

Current software versions of NX100 robot controller and DX100 controllers support Ethernet configuration in maintenance mode with special user interface. This dialog is accessible by executing the following steps:

- Start maintenance mode.
  
  Maintenance mode is executed, if the *MainMenu* key is pressed during power on of controller.

- Login to *Extended Mode*.
  
  (For TCP/IP configuration ExtendedMode is suitable. For activating Ethernet function manufacturer mode („Yaskawa Modus“) is necessary. This mode can only be accessed by Motoman service staff members.)

  Execute System=>Security=>Select mode and Insert ID.

- Configuration dialog can be accessed by executing:
  
  System=>Setup=>Optional Functions=>Network
  
  (System=>Setup=>Optional Functions=>Ethernet Detail)

**Using right TCP/IP address data**

The displayed TCP/IP data should be seen as an example. If PC has the address 192.168.100.11 and a subnet mask of 255.255.255.0 a communication would be possible, if proper cabling (Hub, Switch or direct connection with crosslink cable) is assumed. Physical connection is properly established, if ping command is successful.

**CommandRemote settings**

To access robot controller by MotoAdmin, controller must run in host mode. Besides the basic settings there are four more parameters which influence host mode.

- CommandRemote mode:
  
  CommandRemote mode is activated by enabling special pseudo input signal: *MainMenu=>In/Out=>Pseudo Input Signal=>Command remote selection.*

- Remote Mode:
  
  To enable remote mode, put rotary switch on teachbox to position *Remote.*

- RS005/RS007-Parameter:
  
  Parameter section.

<table>
<thead>
<tr>
<th>Command Remote</th>
<th>Remote</th>
<th>RS005+RS007</th>
<th>Available Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>X X</td>
<td>1</td>
<td>1</td>
<td>Host All-Commands</td>
</tr>
<tr>
<td>X X</td>
<td>0</td>
<td>0</td>
<td>Host All-Commands</td>
</tr>
<tr>
<td>X O</td>
<td>1</td>
<td>1</td>
<td>Host Read-Only</td>
</tr>
<tr>
<td>O X</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
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<td>Host Read-Only</td>
</tr>
</tbody>
</table>

Table 3 CommandRemote mode settings NX100/DX100
2.6.2 XRC

Table 1 shows the basic settings necessary for MotoAdmin and XRC.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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<td>FD042</td>
<td>Ethernet Function</td>
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<td>Subnet mask¹</td>
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<td>RS075</td>
<td></td>
<td></td>
<td>255</td>
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<td>RS076</td>
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<td>255</td>
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<tr>
<td>RS077</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>RS078</td>
<td>Default Gateway</td>
<td></td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>RS079</td>
<td></td>
<td></td>
<td>168</td>
<td></td>
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<td>RS080</td>
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<td></td>
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</tr>
<tr>
<td>RS081</td>
<td></td>
<td></td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 Basic settings XRC

**Ethernet or serial RS232**

Parts of the table are marked grey. These are additional settings for Ethernet communication. If serial communication is to be used, Ethernet function must be disabled. XRC robot controllers are not delivered with an Ethernet interface by default. Therefore to use Ethernet communication with XRC an additional extension board must be ordered. For installation of this board refer to „YASNAC XRC Ethernet I/F Board Instructions”. If serial communication is to be used, Ethernet function must be disabled.

**Ethernet configuration dialog in maintenance mode**

XRC robot controller support Ethernet configuration in maintenance mode with special user interface. This dialog is accessible by executing the following steps:

- Start maintenance mode.

Maintenance mode is executed, if the TopMenu key is pressed during power on of controller.
Login to Extended Mode.
(For TCP/IP configuration ExtendedMode is suitable. For activating Ethernet function manufacturer mode („Yaskawa Modus“) is necessary. This mode can only be accessed by Motoman service staff members.)
Execute Area key=> Security=>Select mode and Insert ID.
Configuration dialog can be accessed by executing:
System=>Einstellungen=>Optionale Funktionen=>Ethernet Detail.

Using right TCP/IP address data
The displayed TCP/IP data should be seen as an example. If PC has the address 192.168.100.11 and a subnet mask of 255.255.255.0 a communication would be possible, if proper cabling (Hub, Switch or direct connection with crosslink cable) is assumed. Physical connection is properly established, if ping command is successful.

CommandRemote settings
To access robot controller by MotoAdmin, controller must run in host mode. Besides the basic settings there are four more parameters which influence host mode.
CommandRemote mode:
CommandRemote mode is activated by enabling special pseudo input signal: Top-Menu=>In/Out=>Pseudo Input Signal=>Command remote selection.
Remote Mode:
To enable remote mode, hit remote key on controller cabinet.
3 Management functions in main menu

3.1 File menu

To close MotoAdmin application select File=>Exit.

3.2 Settings menu

Settings menu contains Robot Setup… menu, where robot profiles can be created, edited or removed.

3.2.1 Robot Setup…

After selecting Robot Setup… menu, the following dialog appears.

With the Add and Delete buttons robot profiles can be added or removed. For each profile a unique name must be inserted.

In the second step the transfer type must be selected. Basically Ethernet or serial communication can be used, dependent on how the robot controller is connected to the MotoAdmin PC.

In case of serial communication the parameters of serial interface must be specified. This can be done by selecting Setup… button. These settings must correspond with the settings on robot controller side. Refer to Figure 3 for the default (factory) settings of Yasnac controllers serial port.
In case of Ethernet communication the IP address of robot controller must be inserted.

In the last step controller type and a working directory must be specified. It is recommended to create a new working directory for every robot controller, because all data is stored in this directory.
E.g.
C:\Cell1\Robot1
C:\Cell1\Robot2
C:\Cell2\Robot1

All configuration data is stored in a file named robot.ini. So after application is closed data is still present.

The name of the currently selected robot profile can be seen in the toolbar of MotoAdmin. The list contains all available robot profiles, which are created in previous steps. To connect to another robot controller, stop current session, select desired robot profile out of the list and push the connect button again. Only one connection per time is possible in MotoAdmin. The name of the last selected profile is automatically stored in MotoAdmin.

3.3 View menu

Use View menu to enable/disable Toolbar or Statusbar.
3.4 Tools menu

3.4.1 Check connection...

The Check connection... menu allows to establish a test connection to the selected controller. If the connection is successful the following message is displayed.

![Check connection](image)

Figure 5 Check connection

After confirming the message connection is closed.

3.4.2 Select language

MotoAdmin supports multiple languages. For installing a new language an new language file (*.lng) must be created. The currently present languages file can be edited, if the structure is not changed. Language selection dialog is shown at application start by default.

![Language selection](image)

Figure 6 Language selection

To prevent MotoAdmin from displaying the language selection dialog at every application start, select option Ignore language selection at program start on dialog. Changing language is still possible by selecting menu item Select language... in Tools menu.

3.4.3 Register licenses...

In the standard package of MotoAdmin 4 licenses are included. That means a maximum of 4 robot profiles can be created. If more robots are neccessary additional licenses are available. The dialog is neccessary to update license information. Fill in the serial number of your product and a check number, which you will get after purchasing the license fee.
3.5 Mode menu

The current security level can be changed by selecting the Change security level menu item.

To change to a different level select desired level and enter password.

If the entered password is valid for the selected security level the level will be changed. You can see the current security level in the title bar of the main window.

Es existieren in MotoAdmin 3 Sicherheitsmodi:

- Operator Mode:
The operator is allowed to do control functions. He can connect to robots (if the robot configuration is already available), he has the rights to get status information, to read inputs and outputs, to read variables and to save robot data files. The Operator Level is the default level. So no password is needed.

► Programmer Mode:
In addition to the functions the operator can execute, the programmer is allowed to start robot jobs and to load robot data files.

► Administrator Mode:
The administrator is allowed to do everything which is possible in MotoAdmin.

The passwords can be changed by clicking on the Change password menu item. In the displayed dialog the new password must be entered twice. The new password must be entered twice.

![Change Password](image)

**Figure 10 Change password**

To change the password your security level must be higher then the level you want to change the password. So the operator is not allowed to change a password, while the administrator can change all passwords.

Das erfolgreiche Ändern des Passworts wird mit einer entsprechenden Meldung bestätigt.

**Wichtig:**
The actions which can be made in operator mode are safe. But if you are logged on with higher security level keep in mind that you are able to move the robot. Do not move the robot if you cannot see the robot manipulator.
Motoman robotec GmbH is not responsible for damages caused by using MotoAdmin.

**Info:**
The initial passwords of administrator and programmer level are set to `motoadmin`. 
3.6 Menü Hilfe

The help menu should be accessed if there are problems or questions concerning the functions of MotoAdmin.
4 Working with MotoAdmin

4.1 Starting MotoAdmin

If the default settings are used during installation of MotoAdmin you can start it as follows:

- search for group Motoman\MotoAdmin in MS Windows program manager
- click on MotoAdmin

If the language selection dialog is displayed after starting application, select desired language.

4.2 Multiple Instances of MotoAdmin

It depends on the selected connection protocol if one or multiple instances can access a robot controller at the same time. It makes no difference if these instances are running on the same or different PC’s.

If the connection protocol is (siehe Figure 2) Ethernet/http, multiple instances can connect to the same robot controller. In contrast Ethernet/Bsc allows only one client.

Innerhalb einer Instanz von MotoAdmin kann gleichzeitig nur auf eine Robotersteuerung zugriffen werden.

If you want to connect your PC to multiple robot controller at the same time you have to open multiple instances of MotoAdmin.

4.3 Establish a connection

Select one robot profile out of the list of already defined robot profiles and push corresponding toolbar button.

![Figure 11 Establish connection](image)

In the status bar a message Connected is displayed.

4.4 Close a connection

An active connection can be closed with the Disconnect button.
4.5 Exit application

To close application select menu item *File=>Exit*.

4.6 Display working directory

In the working directory all data of the robot is stored. To display contents of working directory in a windows explorer window, push the corresponding button. The working directory can be changed in the robot profile configuration dialog (Figure 2).

In the status bar *Not Connected* is displayed.
4.7 Refresh status

Basically the display of MotoAdmin is of static nature.

![Status display](image)

**Figure 14 Status**

The status of the robot is not displayed continuously. So changings are not displayed automatically. But there are also some functions in MotoAdmin, which refresh the status display. To display the current status of the robot you can click on the *Refresh* button.

The status information contains error or alarm status information for example. MotoAdmin signals an alarm or an error graphically. You have to click on the *Reset* button to reset an alarm. To confirm an error you have to click the *Cancel* button.

Another status item is the Emergency Stop signal, which is displayed in the upper right corner (refer to Figure 14) of MotoAdmin.

4.8 Switch on Servo Power

If the controller is in play mode you can switch on the servo power by selecting the *Servo* button. It is necessary to have servos on before moving the robot.

A special wiring is required for starting servo power from remote.

**XRC:**

At XRC controller connect: pin 5 - EXVON1+ and pin 6 - EXVON1 as well as pin 7 - EXVON2+ and pin 8 – EXVON2 on XC001 board, connector CN05.
**NX100:**
In case of NX100 controller two pins on MTX connector block (-X18, see cabinet door) have to be connected. There are two different types of MTX block:

MTX block old version:
Connect pin 29 - EXSVON+ and pin 30 - EXSVON- on MTX-connector block -X18.

MTX block new version:

**DX100:**
No special wiring is necessary.

### 4.9 Change operation mode

To set robot controller in teach or play mode use the *Play* or *Teach* button. Please notify that it is not possible to use each function in each operation mode..

In case of NX100 and DX100 controller full functionality is only available if rotary switch at programming pendant is set to *Remote*. This mode is called Remote/Play mode. In MotoAdmin it is possible to change to Remote/Teach mode, if parameter S2C177 (NX100) respectively S2C225 (DX100) is set to 0.

### 4.10 Cycle mode

There are 3 different Cycle modes. Die Zyklus-Auswahl gestattet die Auswahl des Operationszyklus, d.h. sie legt fest, ob nach Betätigen von *Start* ein Job einmal ausgeführt wird (Cycle), permanent (Auto) bzw. ob jeweils nur ein Schritt ausgeführt wird (Step).

### 4.11 Job execution / Job control

With MotoAdmin a job can be started remotely. Therefore the controller must be in Play mode (see chapter 4.9) and the Servo power must be switched on (see chapter 4.8).

By pushing *Start* button the job is executed. Job execution can be stopped at each time by selecting *Hold* button. To exit job execution *Hold* button must be selected again. With *Start* button job execution can be resumed. Different button colors show the current status of job execution.

### 4.12 Display Jobs

After connecting to MotoAdmin the current job of the main task is displayed. The job window is called by selecting *Job* button.
Task:
Dependent on the job structure there might be some jobs running in parallel SUB tasks. By selecting the desired task the corresponding job is displayed, if available.

Job status line
The job status line shows the active job of the selected task in addition to current line and Step number.

Job window context menu
Context menu of job window is displayed by pushing right mouse button. Some of the following commands are available, dependent on the current selected job line.

<table>
<thead>
<tr>
<th>Befehle</th>
<th>Aktion</th>
</tr>
</thead>
</table>

22.08.2011   Yaskawa Europe GmbH
Back: Calls previous job in job history
Next: Calls next job in job history
Edit: Opens job in job editor window
Goto Var: Opens displayed variable directly
Goto IN#: Opens displayed input directly
Goto OT#: Opens displayed output directly
Goto Job: Opens displayed job directly

Table 5 Context menu job window

Displayed job
The jobname of the currently displayed job in job window is written below the job window.

4.13 Edit Jobs

Editing job, which can be initiated by selecting menu Edit... in context menu of job window is done without checking syntax. Therefore it is only suitable for experienced programmers. Other less experienced programmers can use MotoAdmin for downloading/uploading job files to PC. Then they should use JobEditor software to edit file with automatic syntax check.

In the Edit window job content and also job header can edited without limitations. To store modified job on robot controller select Save button.

Figure 17 Job Editor window for ascii based editing of jobs
4.14 Job Liste laden

To display a list of jobs stored in the robot controller click on the Job List button.

Figure 18 Display Job list

Context menu of job list
Context menu of job list can be used to select a job for execution or to display job content.
4.15 Access variables

Select *Disp Var* to open the variable dialog.

![Variable Dialog](image)

**Figure 19  Global variables**

In the upper part of the window you can specify the variable type. The following types are available:

- **Byte**
- **Integer**
- **Real**
- **Double Integer**
- **Position variable Robot**
- **Position variable Base**
- **Position variable Station**
- **String**

To navigate through the variables use the arrow button or click on variable and insert desired variable number.

You can edit the values of the variables. To do so, click on the value of the variable. An input box appears at the bottom of the window. You can now enter the new value. To stop editing and transmit the new value to the controller press *Enter*. If you want to cancel editing without transmitting the entered value to the robot press *Escape*. 
If a position variable is not yet initialized asterisks will appear instead of the values.

Position variables can be initialized by clicking on the type of the variable (****, Pulse, Robot, Base etc.). If a position variable is reinitialized the old values get lost. The following message appears:
In the next step the type of position variable has to be selected.

![Select type of position variable](image)

The display is static. To update the variable values you have to click on the *Refresh* button.

Press *Close* to return to main window.
4.16 Watch I/O Signals

To display I/O signals select [Disp I/O] from the main window. This opens a new window where you can select the type of I/O signals you want to check. The following signal types are available:

- External Inputs
- External Outputs
- Universal Inputs
- Universal Outputs
- Special Inputs
- Special Outputs
- ·AUX Relais
- ·System Status
- ·Pseudo Input Signald
- ·Network Inputs
- ·Network Outputs

Use the arrow buttons to navigate through the outputs or inputs. All outputs are read-only. You can only write "Network IN" signals. So if there are some other signals you want to set by MotoAdmin, you have to map these signals to "Network IN" signals by changing the ladder program of the controller (see LadderEditor software).

![I/O Signals](image.png)

Figure 24 I/O Signals

The display of the I/O signals is static. To update the displayed values you have to click on the Refresh button. Select Close to return to the main window of the application.

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4.17 Saving, Loading and Deleting files

MotoAdmin can transmit jobs and system data from robot to PC and from PC to robot. Saving and loading data is available after selecting the Floppy button. Dependent on the current security level the following operations are possible.

In the first step you have to select the desired operation:

- Save: Transmit data from Robot to PC.
- Load: Transmit data from PC to Robot.
- Delete: Delete data on PC or Robot (only jobs).

Loading data is only accessible in programmer or administrator mode.

In the second step you have to select the data type.
34 Working with MotoAdmin

4.17.1 Jobs

If Jobs is selected all available jobs in the robot controller (save) or all available jobs in the working directory of the current robot configuration (load) are displayed.

You can select the desired jobs by clicking on the job name in the list. Hold the Shift or Ctrl key to select multiple jobs.

Figure 26 File group

Figure 27 Job selection for saving jobs
4.17.2 System data

To load or save system data like parameter, tool data, condition data etc. you have to select file group first. In the following dialog you can mark the available files. You have to take into account that depending on the Robot controller (software, installed options) there might be files which cannot be loaded or saved.

A window is displayed where you can see if operation was successful or not.
4.17.3 One-Button Backup

MotoAdmin can also work with backup definition files. These files contain a list of those files, which should be integrated in the backup of the selected robot controller.

![Backup definition files](image)

Figure 30 Backup definition files

Beside the full filename also *.JBI can be used as a placeholder for all available jobs on controller. Backup definition files can only be used in case of saving data. For one controller multiple backup definition files can be defined (see Figure 26). The files must be stored in the working directory of the robot controller. The files can be created with an ascii editor and must have *.bkp file extension. The saved data is stored in subfolders of the working directory. The folder names contain a time and data information in addition to the backup definition file name.

![Naming of One-Button-Backup folders](image)

Figure 31 Naming of One-Button-Backup folders
4.17.4 Deleting data

If the Floppy menu item *Delete* is selected, you can choose whether to delete a file on Robot or on PC:

![Deleting data](image)

**Figure 32 Deleting data**

Only jobs can be deleted on Robot side.
4.18 System Information

The System Information dialog is displayed after selecting the *Info* button. This dialog contains basic information of the selected robot controller.

- Software version,
- Robot type,
- Base axis and external axis,
- Current pulse and cartesian position,
- Installed functions.

![System Information](image)
4.19 Read Alarm History

Alarm History can be accessed by selecting *AlarmHistory* button. The Alarm History is sorted by date/time so that newest item are listed on top.

![Alarm History](image)

**Figure 34** Alarm History
5 Known Limitations

5.1 Linenumber display shows “?”

Due to a bug in some versions of DX100 controller firmware correct linenumber cannot be reported. To prevent strange application behaviour linenumber display of DX100 controllers is disabled by default.

To enable linenumber display a specific entry has to be added to the corresponding configuration section in file robot.ini:

```ini
[Boot]
Name=default

[Robot0]
Name=default
IPaddr=HTTP.192.168.11.230
Path=\motoman.local\Data\MMU-Develop\MotoSoft_Standard\MotoAdmin\V2.10_beta\Source
Controller=4
ShowLinenumber=true

[Robot1]
...
```

...
Imprint

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