Yasnac MRC Controller

ERC-to-MRC JOB TRANSLATOR MANUAL

Part Number 133110-1

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*ERC-to-MRC Job
Translator Manual*

Part Number 133110-1

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1.0   INTRODUCTION

The ERC-to-MRC Job Translator is a Windows based program designed to help the user convert jobs written for ERC controllers into jobs that can be used with MRC controllers. The Job Translator is designed to save the user much of the programming time that would be necessary to teach new programs on an MRC controller.

This manual tells how to install the program and how to use it to convert jobs.

Note that this program can only be used if your ERC controlled robot is configured in exactly the same way as your MRC controlled robot. Both robots must have the same type of positioners and the same type of robot bases.

Also please note that the translated job must be thoroughly checked before it is used. Section 4.0, Operation, tells how to edit the job after it is translated and how to step through the new job slowly to ensure that it will function correctly.

The ERC-to-MRC Job Translator requires a basic comprehension of Microsoft Windows applications. If you are unfamiliar with these procedures, please refer to a Microsoft Windows manual and become acquainted with these actions before you continue.

1.1   TERMINOLOGY

The terms *click*, *double-click* and *select* are used throughout this manual. Each term is described below:

Click

Press and release the mouse button quickly.

Double-click

Click the mouse button twice quickly.

Select

Selecting an item does not initiate an action. Selecting only marks an item with a selection cursor; for example, highlight, dotted rectangle, or check mark.

1.2   REQUIREMENTS

To run the Job Translator program, you need the minimum hardware and software listed below:

Computer	IBM personal computer (PC) or compatible
Processor	Intel 80386SX25 (or equivalent)
Memory	4MB
Hard Disk	> 2 MB Free
Floppy Disk	3.5 inch
Monitor	VGA Graphics
Input Device	Mouse
Operating System	MS-DOS Version 5.0 or higher
Environment	Microsoft Windows Version 3.1 or higher
Software	A program such as Motoman's Floppy Disk Emulator (FDE) for Windows to transfer files to and from the controllers and the PC.

For improved performance, you can install the Job Translator program on an 80486DX computer with 4 to 8

MB of memory running at 33 MHz or above, and a Super-VGA style monitor.

1.3 *JOB TRANSLATOR COMPONENTS*

The Job Translator package (Motoman Part Number 133220-1) includes the items listed below:

- Job Translator Program Disk (Motoman Part Number 133004-1)

- Job Translator Hardware Key (Motoman Part Number 133219-1)

- Job Translator Instruction Manual (Motoman Part Number 133110-1)

1.4 *CUSTOMER SERVICE INFORMATION*

If you are in need of technical assistance, contact the Motoman service staff at (513) 847-3200 . Have the following information ready before you call:

- Robot Type (K3, K6, K10, etc.)

- System Number (located on the cover page of this manual)

- Robot Serial Number (located on the back side of the robot arm)

- Application Type (palletizing, welding, handling, etc.)

1.5 *TRADEMARK ACKNOWLEDGMENTS*

The trademarks used in this document are the property of the respective manufacturers.

2.0 SAFETY

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.

Read this section in its entirety and refer to the Safety Section in the Robot Operator's Manual for further cautions and warnings.

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: 313/994-6088
FAX: 313/994-3338

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:

2.1   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 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.

2.2 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 damage 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 operation. Place the robot in Emergency Stop (E-Stop) mode and ensure that all motion has stopped before entering the 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.

2.3   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. General safeguarding tips are as follows:

- Any modifications to NODE 2 of the controller PLC can cause severe personal injury or death, as well as damage to the robot! Do not make any modifications to NODE 2. 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 damage 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 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.

- Check the E-STOP button on the teach pendant for proper operation before programming.

- Keep the teach pendant with you when you enter the workcell.

- Ensure 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.

2.4   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. In addition to the above instructions, general safeguarding tips are as follows:

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

- 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.

3.0 INSTALLATION

To install the ERC-to-MRC Job Translator, complete the following steps.

1. Install the hardware key (Motoman Part Number 133220-1) in the parallel port of the PC. If another hardware key is installed in the parallel port, remove the existing key, install the new one, and then install the old key on top of the new one.

2. Run Windows.

3. Insert the Job Translator diskette into an available floppy drive.

4. Pull down the FILE menu in Program Manager, and release the mouse button when RUN is highlighted.

5. Type *drive*:\SETUP, where *drive* is the name of the floppy drive with the Job Translator diskette. For example: A:\SETUP.

6. Click the OK button (or press ENTER).

The Setup program will perform a file initialization routine, and then display the Setup dialog box (see Figure 3-1). The dialog box will ask you to identify the drive and directory where you want to install Job Translator. The default directory is C:\ERCTOMRC.
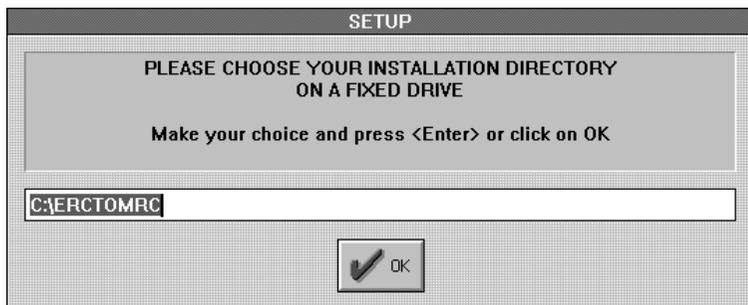

SETUP

PLEASE CHOOSE YOUR INSTALLATION DIRECTORY
ON A FIXED DRIVE

Make your choice and press <Enter> or click on OK

C:\ERCTOMRC

✔ OK

Figure 3-1   The Setup Dialog Box

7. Type the drive and directory where you want to install Job Translator and press ENTER. If the directory does not already exist, the Setup program will create it for you. If you want to use the default directory, click the OK button.

The installation procedure will continue. The Setup program will create a MOTOMAN Group Window in the Program Manager and an icon for the ERC-to-MRC Translator.

When the installation is complete, a dialog box will appear telling you that the installation is complete.

8. Click OK to end the installation procedure and return to the Windows Program Manager.

9. Remove the diskette from the PC, and store the diskette in a safe place.

Job Translator is now installed. To use the program, refer to Section 4.0, Operation.

4.0   OPERATION

To use the Job Translator program, perform the following steps.

1. Load the jobs to be translated from the ERC controller to the PC. You can use Motoman's Floppy Disk Emulator (FDE) for Windows to do this.

2. Take note of the drive and directory where the ERC job files are saved.

3. Check to make sure that the hardware key (Motoman Part Number 133220-1) is installed in the parallel port of the PC.

4. From the Windows Program Manager, double-click the MOTOMAN icon.

5. Double-click the Translator icon (Figure 4-1).

Figure 4-1   The Translator Icon

The Job Translator screen (Figure 4-2) will appear. This screen is used to perform the translator functions. The left half of the screen is for the ERC jobs to be translated. The right half of the screen is for the MRC jobs that the Job Translator creates.
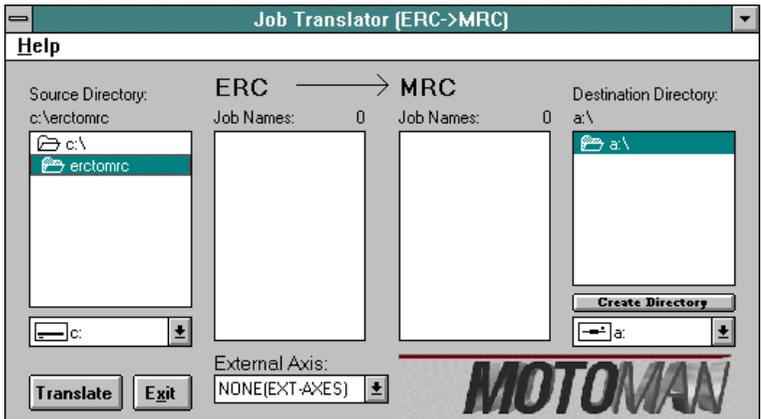
Figure 4-2   The Job Translator Screen

6. In the Source Directory box, select the drive and directory that contains the ERC jobs.

The job file names within the selected directory will be displayed in the ERC Job Names box.

7. In the Destination Directory box, select the drive and directory where you want to store the MRC jobs that the program creates. You can click the Create Directory box and enter the name of a new directory, if necessary.

8. Use the mouse to select the jobs to be translated. You can select more than one job at a time by pressing the Ctrl key while you select the desired jobs. Or, you can select a group of files by pressing the Shift key while you select the first and last jobs. The jobs to be translated will be highlighted when selected.

9. Pull down the External Axis dialog box and select the type of external axes applicable to your robot configuration (see Figure 4-3).
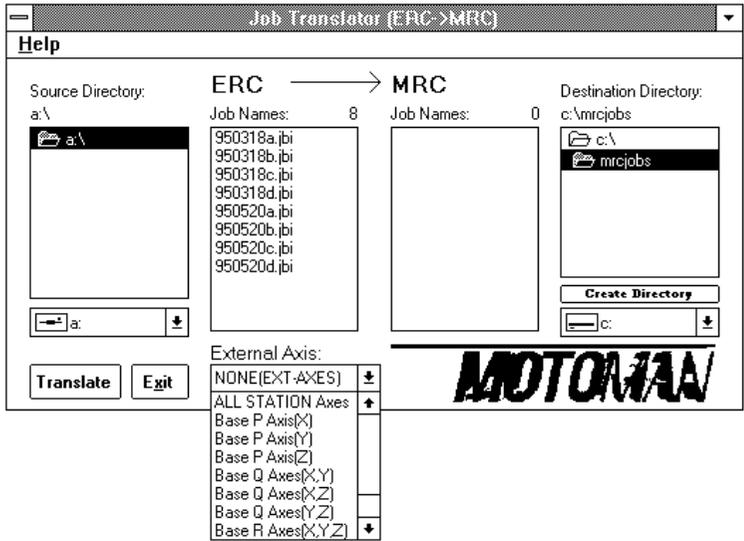
Job Translator (ERC->MRC)

Help

ERC ⟶ MRC

Source Directory:
a:\

Job Names: 8   Job Names: 0

950318a.jbi
950318b.jbi
950318c.jbi
950318d.jbi
950520a.jbi
950520b.jbi
950520c.jbi
950520d.jbi

Destination Directory:
c:\mrcjobs

c:\
mrcjobs

Create Directory

a: c:

Translate   Exit

External Axis:

NONE(EXT-AXES)
ALL STATION Axes
Base P Axis(X)
Base P Axis(Y)
Base P Axis(Z)
Base Q Axes(X,Y)
Base Q Axes(X,Z)
Base Q Axes(Y,Z)
Base R Axes(X,Y,Z)

MOTOMAN

Figure 4-3   External Axis Selections

NOTE: The external axes refer to the positioner axes and the base axes - not the six primary axes of motion on the robot.

- If you have no external axes, select NONE. This is the correct selection if your robot is not mounted on a translating base, and you have either no positioner or a stationary positioner (a table).

- If you have a positioner with one or more external axes, select ALL STATION Axes. This is the correct selection if your robot is not mounted on a translating base, and you have a motorized positioner.

- If you have a translating manipulator base, select the applicable type of base from the remaining choices in the dialog box.

10. Click the TRANSLATE box to translate the selected jobs.

As the MRC jobs are created, they will appear in the MRC Job Names box.

11. If you want to view a new MRC job or an old ERC job, use the mouse to move the arrow to the job file name and double-click. This will display the job file in Microsoft Notepad.

12. Go back to Step 1 to translate more jobs, or click EXIT to quit the Job Translator program.

13. Load the translated jobs from the PC to the MRC controller. You can use Motoman's FDE for Windows to do this.

⇨ *CAUTION!*

Be sure that you check each translated job on the MRC programming pendant before you use the job. The job may contain instructions that could injure personnel or damage equipment.

14. View each new job using the programming pendant on the MRC controller. Look for any programming errors. Review the settings and memory requirements. Correct any syntax errors. For complete programming instructions, refer to the robot Operator's Manual.

Some ERC commands cannot be translated into MRC commands. In these cases, Job Translator will include the command in the MRC job as a comment. The comment can be readily identified by the apostrophe (') at the beginning of the line.

15. Search through the job for any ERC commands that are written as comments. Convert such comments to MRC commands. For complete programming instructions, refer to the robot Operator's Manual.

⇨   *CAUTION!*

Be sure that you check each translated job VERY SLOWLY and correct any problems before you run the job in normal operation. The job may contain instructions that could injure personnel or damage equipment.

16. Use the programming pendant to step through the entire job in teach mode before running the job in normal operation.

5.0   TROUBLESHOOTING

If an error occurs during translating, an icon labeled JCVWIN will appear and an error message will be displayed in the Job Translator screen. If this occurs, perform the following steps.

1. Click OK to close the error message box.

2. Double-click the icon to open JCVWIN.

3. Click the UP arrow to maximize the STDIN/STDOUT/ STDERR screen.

This screen will display a message indicating the type of problem and the name of the job file that could not be translated. Use this information to make the appropriate corrections.

4. Press Alt F4 (or double-click the system control box in the upper left corner of the screen) to close JCVWIN and return to the Job Translator screen.

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