YASKAWA

ROBOT MANAGER
MANUAL

FOR YRC1000, YRC1000micro, DX200, DX100, FS100 OR NX100

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

MOTOMAN INSTRUCTIONS

CONTROLLER MANIPULATOR MANUAL
CONTROLLER OPERATOR'S MANUAL
CONTROLLER MAINTENANCE MANUAL

⚠ DANGER
• This manual explains the Robot Manager. Read this manual carefully and be sure to understand its contents before handling the controller.
• General items related to safety are listed in Section 1: Safety of the YRC1000, YRC1000micro, DX200, DX100, FS100, or NX100 CONTROLLER MANUAL. To ensure correct and safe operation, carefully read the YRC1000, YRC1000micro, DX200, DX100, FS100, or NX100 CONTROLLER MANUALS before reading this manual.

⚠ CAUTION
• Some drawings in this manual are shown with the protective covers or shields removed for clarity. Be sure all covers and shields are replaced before operating this product.
• 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 modification is made, the manual number will also be revised.
• If your copy of 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 your product's warranty.

NOTICE
This instruction manual is applicable to both FS100 (a controller for small-sized manipulators) and FS100L (controller for large and medium-sized manipulators).
The description of "FS100" refers to both FS100" and "FS100L" in this manual unless otherwise specified.

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We suggest that you obtain and review a copy of the ANSI/RIA National Safety Standard for Industrial Robots and Robot Systems (ANSI/RIA R15.06-2012). You can obtain this document from the Robotic Industries Association (RIA) at the following address:

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

Ultimately, well-trained personnel are the best safeguard against accidents and damage that can result from improper operation of the equipment. The customer is responsible for providing adequately trained personnel to operate, program, and maintain the equipment. NEVER ALLOW UNTRAINED PERSONNEL TO OPERATE, PROGRAM, OR REPAIR THE EQUIPMENT!

We recommend approved YASKAWA training courses for all personnel involved with the operation, programming, or repair of the equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Notes for Safe Operation

Read this manual carefully before maintenance or inspection of the YRC1000, YRC1000micro, DX200, DX100, FS100, or NX100 Controller.

In this manual, the Notes for Safe Operation are classified as "DANGER", "WARNING", "CAUTION", or "NOTICE".

⚠ **DANGER**	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ **WARNING**	Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.
⚠ **CAUTION**	Indicates a hazardous situation, which if not avoided, could result in minor or moderate injury. It may also be used without the safety alert symbol as an alternative to "NOTICE".
NOTICE	NOTICE is the preferred signal word to address practices not related to personal injury. The safety alert symbol should not be used with this signal word. As an alternative to "NOTICE", the word "CAUTION" without the safety alert symbol may be used to indicate a message not related to personal injury.

Even items described as "CAUTION" may result in a serious accident in

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

YRC1000, DX200, DX100 OR NX100:

⚠ WARNING

- Before operating the manipulator, check that servo power is turned off when the Emergency Stop button is pressed.
  When the servo power is turned off, the SERVO ON LED on the Programing Pendant is turned off.

Injury or damage to machinery may result if the E-stop circuit cannot stop the manipulator during an emergency. The manipulator should not be used if the Emergency Stop button does not function.

Fig. : Emergency Stop Button

- Once the Emergency Stop Button is released, clear the cell of all items which could interfere with the operation of the manipulator. Then turn the servo power ON.

Injury may result from unintentional or unexpected manipulator motion.

Fig. : Release of Emergency Stop Button

- Observe the following precautions when performing teaching operations within the P-point maximum envelope of the manipulator:

  – Be sure to use a lockout device to the safeguarding when going inside.
    Also, display the sign that the operation is being performed inside the safeguarding and make sure no one closes the safeguarding.

  – View the manipulator from the front whenever possible.

  – Always follow the predetermined operating procedure.

  – Keep in mind the emergency response measures against the manipulator's unexpected motion toward you.

  – Ensure there is a safe place to retreat in case of emergency.

Improper or unintended manipulator operation may result in injury.

- Confirm that no person is present in the P-point maximum envelope of the manipulator and that you are in a safe location before:

  – Turning on the power for the Controller.

  – Moving the manipulator with the Programming Pendant.

  – Running the system in check mode.

  – Performing automatic operations.

Injury may result if anyone enters the working envelope of the manipulator during operation. Always press an Emergency Stop Button immediately if there are problems.

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FS100 AND YRC1000micro:

<div style="border:2px solid orange; padding:10px;">

⚠️ **WARNING**

- Before operating the manipulator, check that servo power is turned off when the Emergency Stop button on the programing pendant is pressed.
  When the servo power is turned off, the SERVO ON LED on the programing pendant is turned off.

Injury or damage to machinery may result if the E-stop circuit cannot stop the manipulator during an emergency. The manipulator should not be used if the Emergency Stop button does not function.

Fig. : Emergency Stop Button

- In the case of not using the programming pendant, be sure to supply the Emergency Stop button on the equipment. Then before operating the manipulator, check to be sure that the servo power is turned OFF by pressing the Emergency Stop button.
  Connect the external Emergency Stop button to the 5-6 pin and 16-17 pin of the robot system signal connector (CN2).

- Upon shipment of the Robot Controller, this signal is connected by a jumper cable in the safety signal short circuit connector. To use the signal, make sure to prepare a new connector, and then input it.

If the signal is input with the jumper cable connected, it does not function, which may result in personal injury or equipment damage.

- Once the Emergency Stop button is released, clear the cell of all items which could interfere with the operation of the manipulator. Then turn the servo power ON.

Injury may result from unintentional or unexpected manipulator motion.

Fig. : Release of Emergency Stop Button

TURN

- Observe the following precautions when performing teaching operations within the P-point maximum envelope of the manipulator:
  – Be sure to use a lockout device to the safeguarding when going inside. Also, display the sign that the operation is being performed inside the safeguarding and make sure no one closes the safeguarding.
  – View the manipulator from the front whenever possible.
  – Always follow the predetermined operating procedure.
  – Ensure that you have a safe place to retreat in case of emergency.

Improper or unintended manipulator operation may result in injury.

</div>

<table>
<tr><td colspan="1">⚠ CAUTION</td></tr>
</table>

> ⚠ **CAUTION**
>
> • **Perform the following inspection procedures prior to conducting manipulator teaching. If problems are found, repair them immediately, and be sure that all other necessary processing has been performed.**
> -Check for problems in manipulator movement.
> -Check for damage to insulation and sheathing of external wires.
>
> • Always return the Programming Pendant to the hook on the Controller Cabinet after use.
>
> The Programming Pendant can be damaged if it is left in the P-point maximum envelope of the manipulator, on the floor, or near fixtures.
>
> • Read and understand the Explanation of Warning Labels in the CONTROLLER MANUAL before operating the manipulator.

Safeguarding Tips

All operators, programmers, maintenance personnel, supervisors, and anyone working near the system 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 equipment, the operator's manuals, the system equipment, and options and accessories should be permitted to operate this equipment.

- Improper connections can damage the equipment. All connections must be made within the standard voltage and current ratings of the equipment.

- The system must be placed in Emergency Stop (E-Stop) mode whenever it is not in use.

- In accordance with ANSI/RIA R15.06-2012, section 4.2.5, Sources of Energy, 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).

Mechanical Safety Devices

The safe operation of this equipment is ultimately the users 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 R15.06-2012 safety standards, and other local codes that may pertain to the installation and use of this equipment.

Additional safety measures for personnel and equipment may be required depending on system installation, operation, and/or location.

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

Programming, Operation, and Maintenance Safety

All operators, programmers, maintenance personnel, supervisors, and anyone working near the system must become familiar with the operation of this equipment. 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 equipment should be permitted to program, or maintain the system. All personnel involved with the operation of the equipment must understand potential dangers of operation.

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

- Check the E-Stop button on the operator station for proper operation before programming. The equipment must be placed in Emergency Stop (E-Stop) mode whenever it is not in use.

- Back up all programs and jobs onto suitable media before 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.

- Any modifications to the controller unit can cause severe personal injury or death, as well as damage to the robot! Do not make any modifications to the controller unit. Making any changes without the written permission from YASKAWA will void the warranty.

- Some operations require standard passwords and some require special passwords.

- The equipment allows modifications of the software for maximum performance. Care must be taken when making these modifications. All modifications made to the software will change the way the equipment operates and can cause severe personal injury or death, as well as damage parts of the system. Double check all modifications under every mode of operation to ensure that the changes have not created hazards or dangerous situations.

- This equipment has multiple sources of electrical supply. Electrical interconnections are made between the controller and other equipment. Disconnect and lockout/tagout all electrical circuits before making any modifications or connections.

• Do not perform any maintenance procedures before reading and understanding the proper procedures in the appropriate manual.

• Use proper replacement parts.

• Improper connections can damage the equipment. All connections must be made within the standard voltage and current ratings of the equipment.

Summary of Warning Information

This manual is provided to help users establish safe conditions for operating the equipment. Specific considerations and precautions are also described in the manual, but appear in the form of Dangers, Warnings, Cautions, and Notices.

It is important that users operate the equipment in accordance with this instruction manual and any additional information which may be provided by YASKAWA. Address any questions regarding the safe and proper operation of the equipment to a YASKAWA representative.

Registered Trademark

In this manual, names of companies, corporations, or products are trademarks, registered trademarks, or brand names for each company or corporation. The indications of (R) and TM are omitted.

Definition of Terms Used In this Manual

The MOTOMAN manipulator is a YASKAWA industrial robot product.

The MOTOMAN usually consists of a Controller, Programming Pendant, and manipulator cables.

In this manual, the equipment is designated as follows.

Equipment	Manual Designation
YRC1000, YRC1000micro, DX200, DX100, FS100 or NX100 Controller	Controller
YRC1000, YRC1000micro, DX200, DX100, FS100 or NX100 Programming Pendant	Programming Pendant
Cable between the manipulator and the controller	manipulator cable
FS100, YRC1000micro programming pendant safety signal short circuit connector	safety signal short circuit connector

Descriptions of the Programming Pendant keys, buttons, and displays are shown as follows:

Equipment		Manual Designation
Programming Pendant	Character Keys	The keys which have characters printed on them are denoted with [ ]. ex. [ENTER]
	Symbol Keys	The keys which have a symbol printed on them are not denoted with [ ] but depicted with a small picture. ex. page key The cursor key is an exception, and a picture is not shown.
	Axis Keys Numeric Keys	"Axis Keys" and "Numeric Keys" are generic names for the keys for axis operation and number input.
	Keys pressed simultaneously	When two keys are to be pressed simultaneously, the keys are shown with a "+" sign between them, ex. [SHIFT]+[COORD]
	Displays	The menu displayed in the programming pendant is denoted with { }. ex. {JOB}

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 the item is directly selected by touching the screen.

Customer Support Information

The following information is for a YASKAWA representative in America, for other locations refer to the back cover.

<div style="border:1px solid black; text-align:center;">

(937) 847-3200

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For **routine** technical inquiries, you can also contact a YASKAWA representative at the following e-mail address:

techsupport@motoman.com

When using e-mail to contact a YASKAWA representative, 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.

NOTICE
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 a YASKAWA representative at the telephone number shown above or on the back cover.

Please have the following information ready before calling a YASKAWA representative:

• System   Robot Manager
_____

• Robots
_____

• Primary Application
_____

• Controller
_____
YRC1000, YRC1000micro, DX200, DX100, FS100, or NX100

• Software Version
_____
Access this information on the Programming Pendant's LCD display screen by selecting {MAIN MENU} - {SYSTEM INFO} - {VERSION}

• Robot Serial Number
_____
Located on the robot data plate

• Robot Sales Order Number
_____
Located on the YRC1000, YRC1000micro, DX200, DX100, FS100, or NX100 controller data plate

• Warranty ID:
_____
Located on Controller

Table of Contents

1   Introduction

Robot Manager is a PC application designed to communicate with a range of YASKAWA Robot controllers.

Robot Manager gives the ability to:

- View, download, and edit robot files (editing requires password access).

- Monitor live changes to a specific selection of I/O and variables (editing requires password access)

- View all robot I/O as well as force Network Inputs (forcing requires password access)

- View and edit robot variables (editing requires password access)

- View and reset current and past alarms/errors (reset requires password access)

- Create backup sets that run autonomously under the Windows Task Scheduler (backup creation requires password access)

- Restore files from previous backups (requires password access)

- View real time job execution
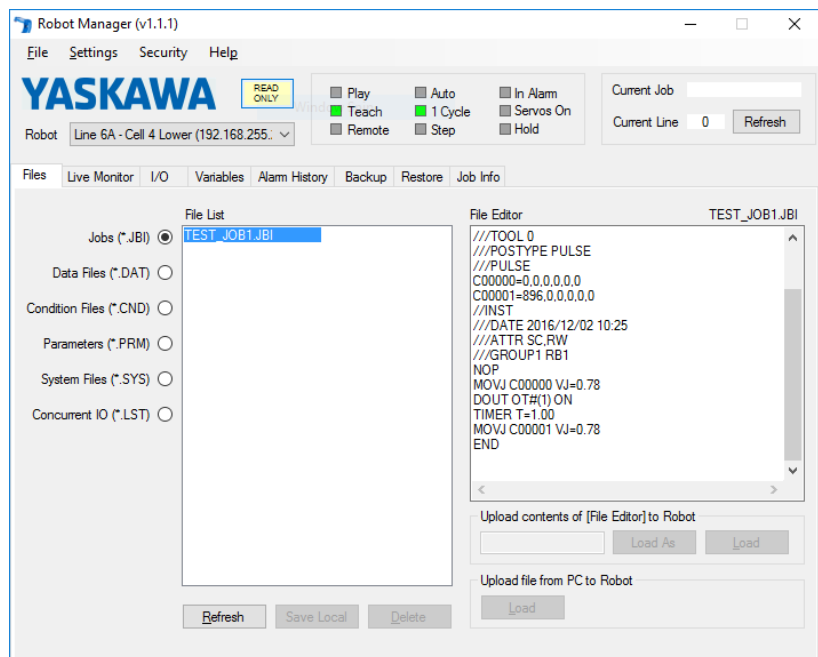
2   Installation

2.1   Components

The Robot Manager package consists of the following:

- Installation Program
- Hardware Key
- User Manual

2.1.1   System Requirements

Robot Manager is compatible with:

- Operating System:
  - Windows 7
  - Windows 10
- Controller:
  - NX100 (with Ethernet Server function)
  - DX100 controllers with system software version DS2.07.00A-00 and above
  - FS100
  - DX200
  - YRC1000
  - YRC1000micro
- The user account used to load and operate Robot Manager must have administrator privileges.

Additional controller models that support Robot Manager may be released in the future.

2.1.2   Installation

To install Robot Manager, run the install application provided. The installation program will determine the particular version of the application required, 32 bit or 64 bit, and install the hardware key driver.

2.1.3   Uninstall

To uninstall the application follow the standard Windows uninstall process.

3   Setup

Robot Manager requires the High-Speed Ethernet function enabled on the Robot Controller. Most robots have this enabled by default. If the High-Speed Ethernet function is not enabled it must be enabled by YASKAWA. (If using a NX100 the regular Ethernet Server function needs enabled.)

The following table shows the additional parameters that need to be set for Robot Manager.

Parameter	Description	Setting
RS000	Port Protocol	2
RS004	Automatic backup function destination RAMDISK (Required for CMOS)	21
RS005	Host Control	1
RS006	Data Transmission	1
RS007	Allow actions outside of REMOTE mode	0 = None 1 = Read 2 = Read/Write
RS022	Instance 0 permitted	1
RS029	Variable access during job execution	1
RS034	Reply timeout	200
RS035	End-of-text timeout	200
RS214	Allow job overwrite during operation	2
S2C541	Permission to write I/O and variables during PLAY	0
S2C542	Permission to write I/O and variables during EDIT-LOCK	0
S2C680	Permission to use batch data backup function	1
S2C737	Automatic backup function extension (Required for CMOS)	1

3.1   Network Requirements

The following ports are used for communication between the Robot Manager and the Robot Controller. These ports may need to be opened for the Robot Manager to work through a firewall or VPN connection.

3.1.1   NX100 Robot Controller Ports

- TCP 80
- TCP 20
- TCP 21

3.1.2   DX100 and Newer Robot Controller Ports

- UDP 10040
- UDP 10041

NOTICE

If the connection fails, the Robot Manager attempts to establish a backup connection using the NX100 ports.

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4   Robot Configuration

4.1   Command Remote

To enable full functionality of Robot Manager the robot control needs to be in Command Remote mode. Command Remote mode is a combination of enabling the special pseudo-input signals and placing the Robot in remote mode by turning the pendant key switch to "Remote".

To set the command remote signal select {IN/OUT} from the pendant Main Menu.
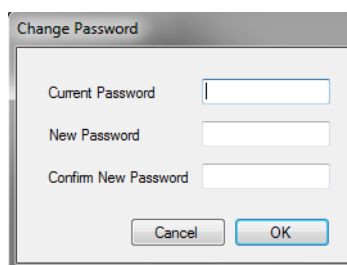
Select {PSEUDO INPUT SIG}. Activate the "CMD REMOTE SEL" by selecting the line and pressing [INTERLOCK] + [SELECT] to activate.

5   Password Management

By default, all data in Robot Manager is read-only. Enable write access by entering the password. The default password is "yaskawa".

5.1   Changing Password

To access the password management form select {Security}, {Change Password} from the Main Menu.
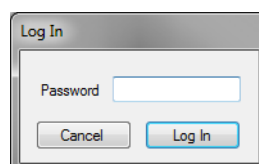
The default password on installation is "yaskawa".

Passwords are case sensitive and must be at least five characters long.

5.2   Logging In

Access the login form by selecting {Security}, {Log In} from the Main Menu

The user will remain logged in until manually logging out by selecting {Security}, {Log Out} from the Main Menu.

6   Robot Manager Functions
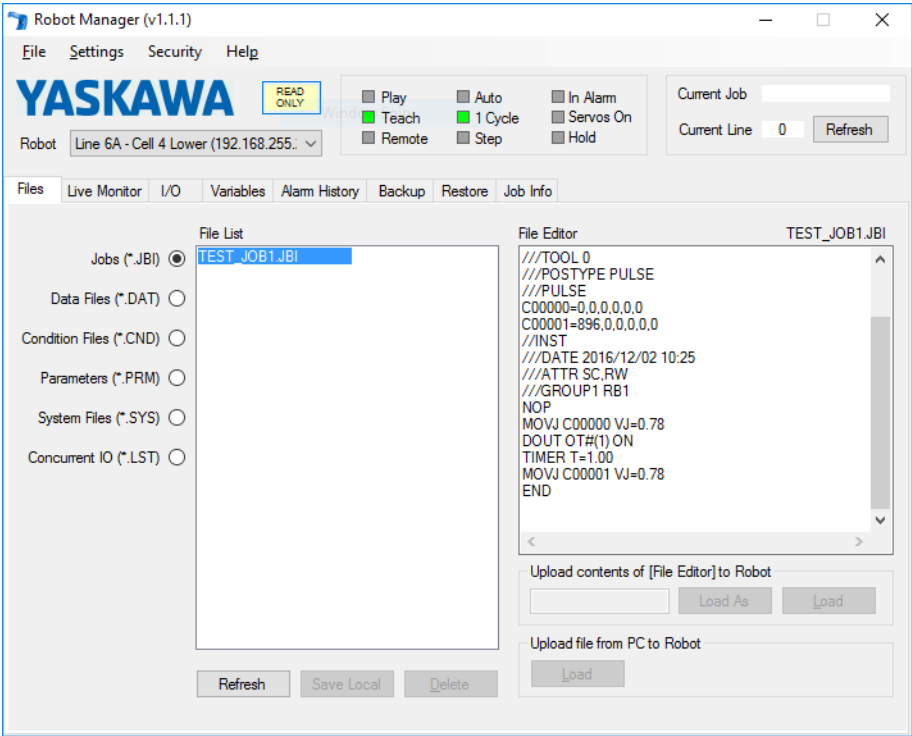
6.1   Robot Manager

The top panel gives the ability to see if the data is read-only or write enabled for a particular robot.
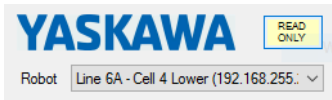
6.1.0.1   Robot drop down box

The {Robot} drop down box allows the ability to make a selection between connected robots.

6.1.0.2   READ ONLY/READ WRITE button

The [READ ONLY/READ WRITE] button indicates whether data in Robot Manager is writable. The default status is read-only. To enable write access press the [READ ONLY] button and refer to *section 5.2 "Logging In" on page 5-1*.

6.2   Status

The "Status" panel indicates the current real time status of the selected robot control.

☐ Play	☐ Auto	☐ In Alarm
◼ Teach	◼ 1 Cycle	☐ Servos On
☐ Remote	☐ Step	☐ Hold
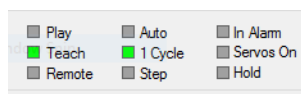
6.3   Job Information

The "Job Info" panel displays the current job and line number at application startup. To update the job info display, click the [Refresh] button.

Current Job _____

Current Line   0   Refresh
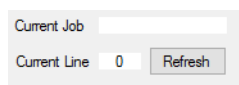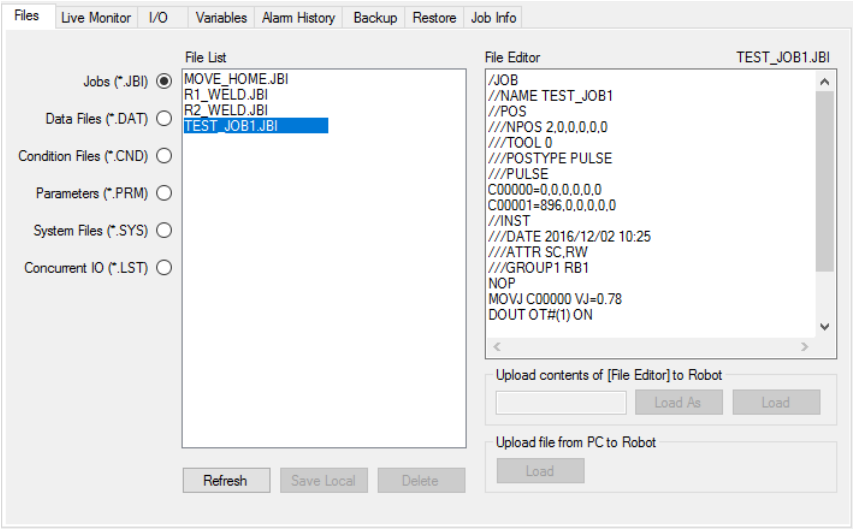
6.4   Files Tab

6.4.1   Files List

The "Files" tab allows access to all the various types of files contained in the robot control. Select the file type on the left using the radio buttons.
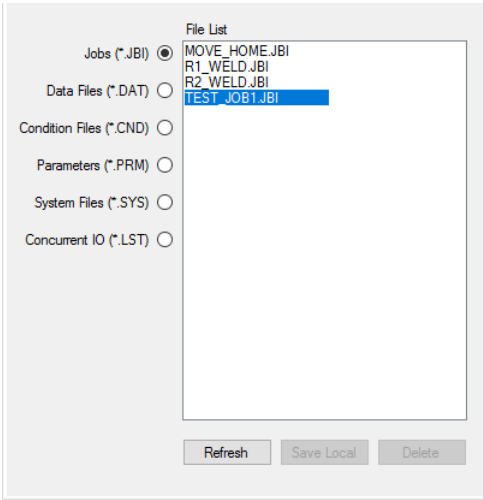
6.4.1.1 Refresh button

Selecting the "Files" tab updates the files list. To get the current file list from the robot control while staying on the "Files" tab, clicking [Refresh] will force the current list to be pulled from the robot control.

6.4.1.2 Save Local button

Clicking [Save Local] button will present the user with a folder save dialog allowing the user to save a local copy of the selected file.

6.4.1.3 Delete button

Clicking the [Delete] button will present the user with a delete confirmation message. Clicking [Yes] will delete the file from the robot control.

6.4.2   File Editor

Clicking any file in the file list will load the chosen file into the "File Editor".
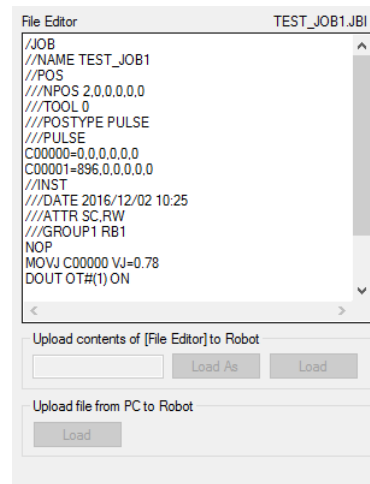
6.4.2.1   Load As button (JBI Files)

To create a new file based on an existing file, enter a new name in the text box, and click the [Load As] button. The updating of the internal name updates automatically. This option is only available for robot jobs (*.JBI).

6.4.2.2   Load button (Upload contents of "File Editor" to robot]

Files are loaded into the robot controller by clicking the [Load] button, overwriting the existing file. The "File Editor" does not contain any syntax checking. It is recommended that editing be done by only experienced personnel.

Trying to load a file that has a syntax error will not result in the loss of the original file. If the file will not load, the user will receive a message alerting them to that fact without any changes to the original file.

NOTICE

Incorrectly editing files may result in unintended changes to the robot control. It is the responsibility of the user to verify the loaded files are correct and suitable for use

6.4.2.3   Load button (Upload file from PC to Robot)

To upload a file from the local PC to the robot controller, click the [Load] button and select the robot file from the PC. If a file already exists, the new uploaded file overwrites the existing.

6.5   Live Monitor Tab

The "Live Monitor" tab will allow the user to monitor a specific selection robot data in real time. From this screen, the user can monitor robot variables (B, I, D, R, P), I/O signals, and register data. This screen allows monitored item values to be changed.

<table>
<tr><td style="background:blue;color:white;text-align:center;font-size:large">NOTICE</td></tr>
<tr><td>• I/O signals: only Network Inputs are write enabled.

• M registers: only M000 - M500 are write enabled.</td></tr>
</table>

Live view of select I/O and Variables.

6.5.0.1   Item to monitor

Use this drop-down to select the type of variable or I/O signal to monitor.

6.5.0.2   Item index/address

Use this box to type the address of the item to monitor.

For I/O bits, this value must be the full 5-digit relay address. For example, OT#9 has an address of 10020.

For I/O groups, this value must be the first four digits of a relay address. For example, OG#2 has an address of 1002.

6.5.0.3   Assigned Name

If the variable or I/O point has a name assigned to it on the pendant, it will display to the right of the {Item index/address}. Names do not update in real time. These names are loaded when connecting to the robot.

6.5.0.4   Value

This box shows the value of the monitored item. If data is typed into this box, the value will stop being updated in real time until either the [Set Value] or [Cancel Change] button is pressed. The background color of the box will change to indicate that the user has modified the value.

6.5.0.5   Robot Position Variable Detail - {Variable Index}

The {Variable Index} drop-downs are used to select a robot position variable to monitor. Only robot position variables are available; base position and external-axis position variables are not available on this screen.

If data is typed into these boxes, the value will stop being updated in real time until either the [Set Value] or [Cancel Change] button is pressed.

NOTICE
Only axes values are editable. The position variable attributes (frame, tool, posture/figure) can only be modified on the Programming Pendant.

6.6   I/O Tab

The "I/O" tab will present the user with a table of the selected I/O words with bit status shown at the time of selecting type using radio buttons.

6.6.0.1   I/O Word window

Clicking any I/O word will show that word in the right side display making it easier to view the individual bit status.

Network inputs are the only values forcible by clicking the corresponding "0" or "1"

Universal Input and
Output Names

Modify Network
Inputs

Clicking of a "Universal Input" or "Universal Output" will display the I/O Name associated with that I/O point on the right side.

Names that exceed the display box length are viewable by hovering the pointer over the box, the full name then displays in the tool tip.

6.6.0.2   Refresh button

The [Refresh] button updates the display with the current values.

6.7   Variables Tab

Clicking the "Variables" tab will display the variable display table. Select the available variable types by clicking the appropriate radio button on the left side.

6.7.0.1   Update button

The user can also modify a Variable value from this screen. Choose a Variable index from the list box. The selected variable displays on the bottom. Edit the value and click [Update] button to modify the robot value. When editing a Position Variable, note that only the axes values are editable. The position variable attributes (frame, tool, posture/figure) can only be modified on the Programming Pendant.

6.7.0.2   Refresh button

The [Refresh] button updates the display with the current values.

6.8   Alarm History Tab

The "Alarm History" tab allows the user to view, reset and clear alarms and errors. Select the category of interest with the "Alarm Selection" drop down box.
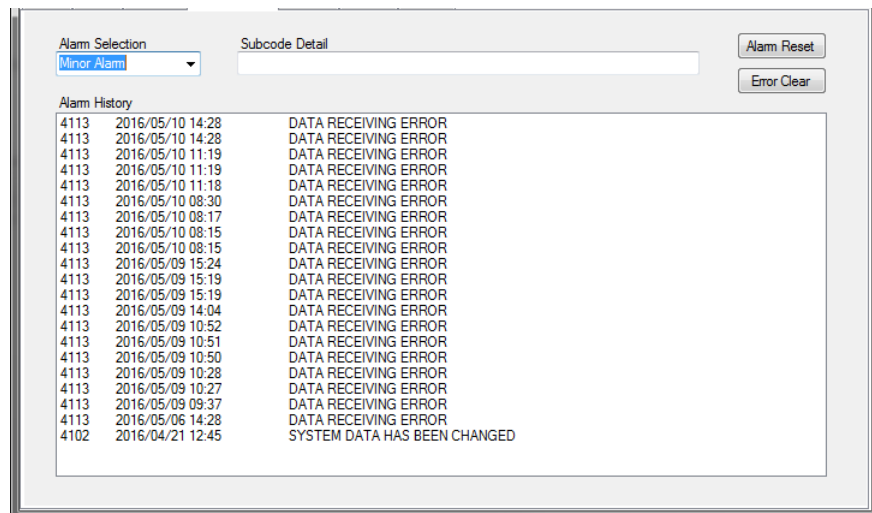
Clicking any alarm will display any associated subcode information in the "Subcode Detail" text box.

NOTICE
Subcode information is not available when connected to an NX100 controller.

6.8.0.1   Alarm Reset button

The [Alarm Reset] button will attempt to reset any active alarm(s) on the pendant. Note that Major alarms cannot be reset remotely.

6.8.0.2   Error Clear button

The [Error Clear] button will attempt to clear any active error displayed on the pendant.

6.9   Backup Tab

The "Backup" tab allows the user to create an unlimited number of "backup sets". A backup set is a collection of specified files, saved at a set frequency, and to a specified location.

Saving a backup set will configure Windows Task Scheduler to launch automatically the robot backup utility.

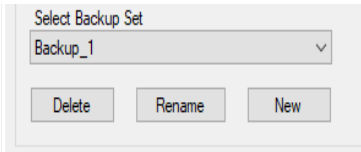<div style="background-color:blue; color:white; text-align:center;">

NOTICE

</div>

Windows Task Scheduler is ultimately responsible for triggering the backup routine. Make sure power is on and connected to the network with robot controller(s) to back up. The Robot Manager application does not need to be running for the backup to complete.
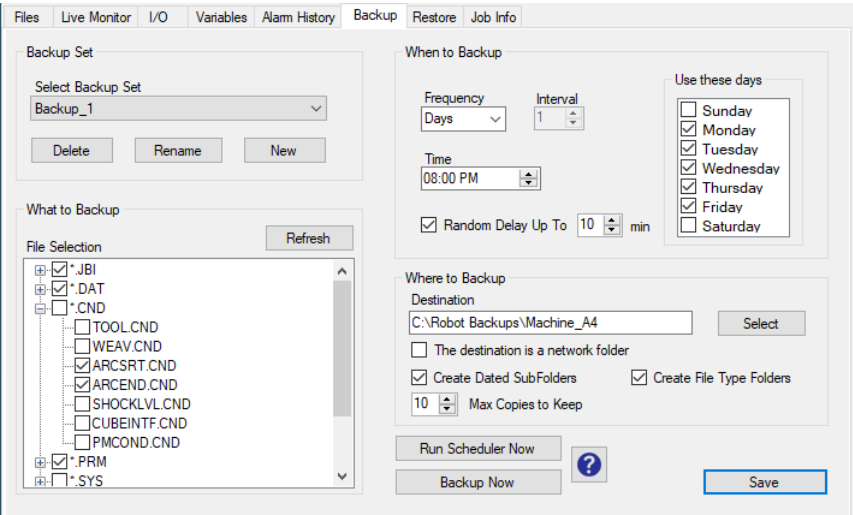
6.9.1   Backup Set

An empty backup set is created when the robot is initially defined.

New button

Creation of an additional backup set is available by clicking the [New] button.

6.9.1.1   Rename button

The user can change the name of a backup set when creating or by clicking the [Rename] button.

6.9.1.2   Delete button

Clicking the [Delete] button will prompt the user for confirmation and if approved, the selected backup deletes. Deleting a backup set does not remove any existing backup files.

6.9.2   What to Backup

The file selection list populates when clicking the "Backup" tab.
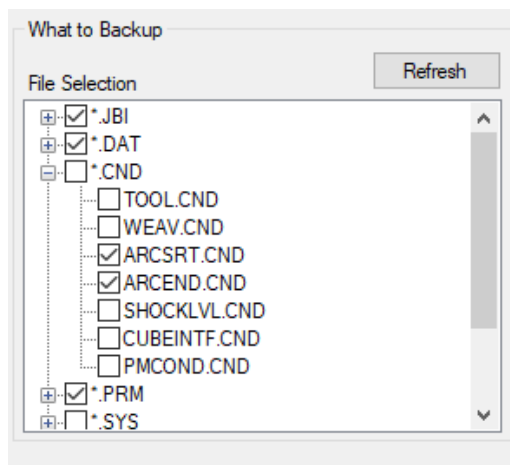
6.9.2.1   Refresh button

Press the [Refresh] button to update the list with the current robot file contents available.

Select files by checking the selection box next to each file. Wildcard group of like files are selectable by checking the file type header for each group.

Deletions of backup files are not possible but are over writable with the latest copy if not using dated folders. If adding new files to the robot control and if selecting a wildcard file type, any new files of that type backs up.
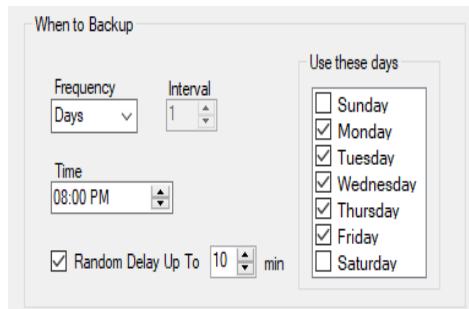
If a file no longer exists on the robot control, the previously backed up file will remain in the backup location.

The exception to this rule is when using dated folders. Dated folders will be deleted as outlined in *section 6.9.4 "Where to Backup"*.

6.9.3 When to Backup

The frequency selection drop down box allows the user to select between minutes, hours, days and weeks for the frequency selection.

If minutes or hours are selected the interval selector is enabled and the time and day selectors are disabled.
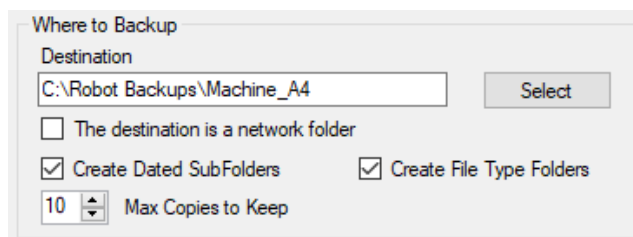
If selecting days, the interval selector is disabled and the day and time selectors enable.

If weeks is selected the interval, time, and day selectors are enabled.

The "Random Delay" selection will schedule the backup with a random start time within the specified time window. This may be useful when you are backing up a large number of robots at the same time. By selecting a random delay window, lessens the network traffic to the backup PC.

6.9.4   Where to Backup

The destination for the backup set is typed directly into the {Destination} text box or alternately you can select a folder location by clicking the [Select] button.
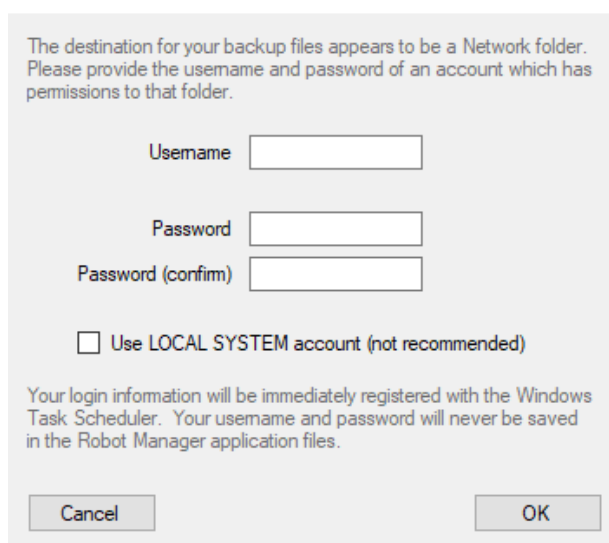
6.9.4.1   Destination is a Network Folder

If the destination folder exists on a network drive, then the backup service needs the credentials of a user account that has access to this folder.

When saving this backup set, it prompts for the username and password of an account with sufficient privileges to write to the destination folder.

The login information will immediately be registered with Windows Task Scheduler. The username and password will not be saved in the Robot Manager application files.

6.9.4.2   Create Dated SubFolders check box

Clicking the {Create Dated SubFolders} check box will create dated folders in the destination location selected. You can specify how many folders to keep with the numeric {Max Copies to Keep} option. When the number of folders exceeds the max number the oldest folder and all the files within it will be deleted.

6.9.4.3   Create File Type Folders check box

Checking the {Create File Type Folders} will create file type folders to group the backed up files by type. For example all the job files would be placed in a folder labeled "JBI". This option can be used with or without the dated folder option.

6.9.5   **Backup Now button**

This button will initiate the selected backup set immediately. The backup set must be previously saved for this option to work

6.9.5.1   Run Scheduler Now button

This button will trigger the Windows Task Scheduler to run MotoBackup in the background for the selected backup set. You may close Robot Manager or continue to it for other tasks while this backup is running.

NOTICE
Backing up a CMOSBK.BIN file can take 15 - 30 minutes. Therefore it is not recommended to use [Backup Now] for saving a CMOS.

6.9.5.2   Save button

Clicking this button will save the backup set and create the Windows Task Manager entries required to perform the actual backup. It does not perform a backup, it only schedules the backup using the selected options.

NOTICE
Windows Task Scheduler is ultimately responsible for triggering the backup routine. Make sure power is on and connected to the network with robot controller(s) to back up. The Robot Manager application does not need to be running for the backup to complete.

Robot Manager
6   Robot Manager Functions
6.9   Backup Tab

6.9.6   View Backup Status

Backups are completed in the background, invisible to the user. The Windows Event Viewer can be used to see success or failure messages related to the backup routine.

To view the log, open Windows "Event Viewer". Select "Motoman Backup" from the "Applications and Services Logs".
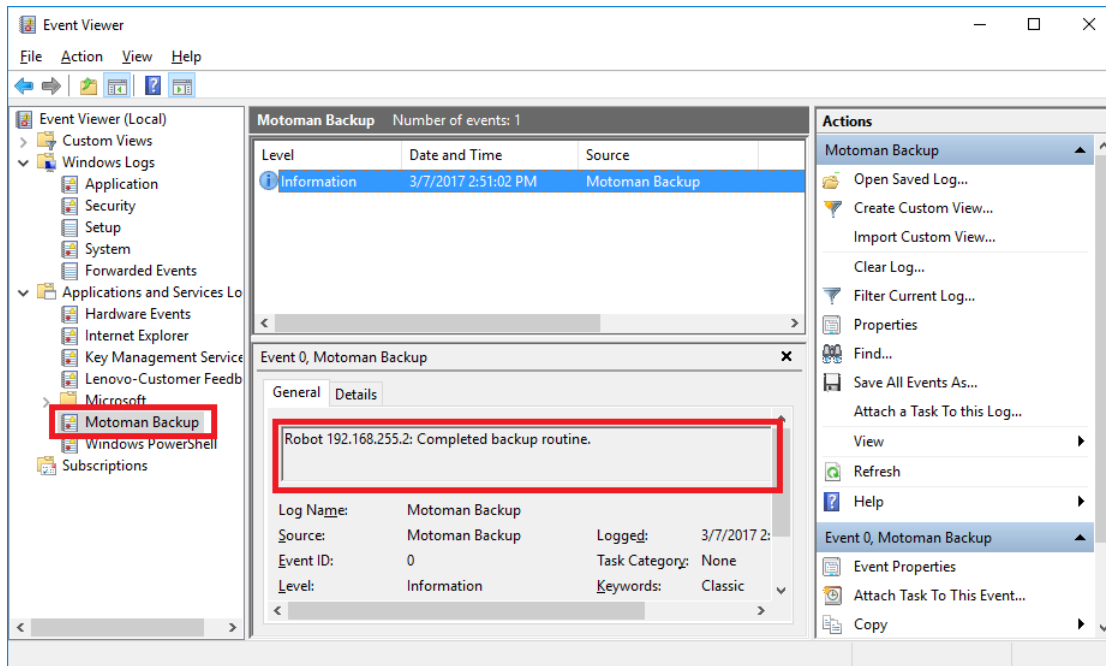
6.10   Restore Tab

The "Restore" tab allows the user to load the selected files into the robot control from a location on the computer.
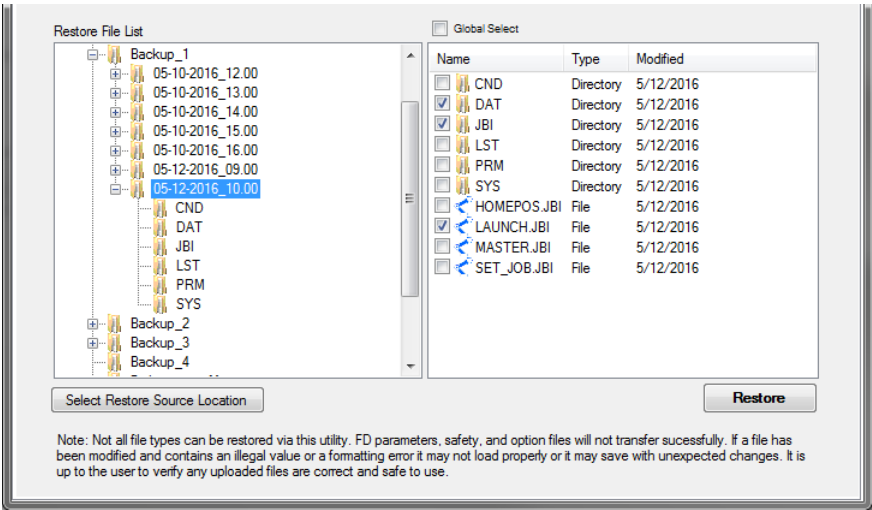
Click [Select Restore Source Location] to select the files and/or folders of the files to restore. Click [Restore] and the files will be transmitted to the robot control.

Restore operations must be done with the robot in "Remote" mode with the servos off.

NOTICE
Not all file types can be restored through this utility. FD parameters, safety and option files will not transfer successfully. If a file has been modified and contains an illegal value or a formatting error it may not load properly or it may save with unexpected changes. It is up to the user to verify any uploaded files that are correct and safe to use.

6.11   Job Info Tab

The "Job Info" tab will display the real time job execution status similar to watching the job on the pendant.

```
MASTER
                    0000 NOP
                    0001 *TOP
  ◉ Master Task     0002 '********DATA VALIDATION*********
                    0003 CLEAR STACK
  ○ Sub Task 1      0004 TIMER T=0.50
                    0005 '
  ○ Sub Task 2      0006 '*************SETUP**************
                    0007 ' move home
  ○ Sub Task 3      0008 CALL JOB:HOMEPOS
                    0009 ' run startup checks and
                    0010 '  initialize varibles and i/o
  ○ Sub Task 4      0011 CALL JOB:STARTUP
                    0012 '********************************
  ○ Sub Task 5      0013 '
                    0014 '*************ACTION*************
  ○ Sub Task 6      0015 ' prime action loop
                    0016 SET LB001 1
  ○ Sub Task 7      0017 ' action loop
                    0018 WHILE LB001>0
                    0019      ' check request eoc
                    0020      IFTHEN B022=1
```

Sub tasks may be monitored by using the radio buttons on the left.

7   Troubleshooting

Problem	Solution
Some files can not be restored.	Not all file types can be restored through this utility. Some files exist on the control but are not used. When restoring these files they may not be accepted by the control if the current control configuration does not require them. For example: A Weave condition file is always present but will not be accepted by a non-welding configured control.
Missed backups	Robot manager relies on UDP Ethernet communications. Excessive traffic or multiple concurrent backup operations could result in the robot control missing a particular request. Possible solutions include reducing overall network traffic, creating a separate network for backup communications, using managed switches, or adjusting conflicting backups by increasing the random delay value or staggering backup times.

ROBOT MANAGER
MANUAL

FOR YRC1000, YRC1000micro, DX200, DX100, FS100 OR NX100

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