

Motoman® NX100 Controller

Arc Monitoring Function Manual

Part Number: 153886-1CD
Revision: 0



Motoman, Incorporated
805 Liberty Lane
West Carrollton, Ohio 45449 USA
937.847.6200 (Voice)
937.847.6277 (Fax)
937.847.3200 (24-Hour Support)
www.motoman.com
info@motoman.com

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Chapter 1

Introduction

1.1 About This Document

This manual provides information for the Arc Monitoring Function and contains the following sections:

CHAPTER 1 - INTRODUCTION

Provides general information about the structure of this manual, a list of reference documents, and customer service information.

CHAPTER 2 - SAFETY

This section provides information regarding the safe use and operation of Motoman products.

CHAPTER 3 - ARC MONITORING INSTRUCTIONS

Provides detailed information for the Arc Monitoring function.

1.2 Reference to Other Documentation

For additional information refer to the following:

- NX100 Controller Manual (P/N 149201-1)
- Concurrent I/O Manual (P/N 149230-1)
- Operator's Manual for your application
- Vendor manuals for system components not manufactured by Motoman

1.3 Customer Service Information

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

- Robot Type (SSA2000, EA1400N, etc.)
- Application Type (welding)
- Robot Serial Number (located on back side of robot arm)
- Robot Sales Order Number (located on back of controller)

Notes

Chapter 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 R15.06-1999. 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
INTERNET: www.roboticsonline.com

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

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

This safety section addresses the following:

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

2.2 Standard Conventions

This manual includes the following alerts – in descending order of severity – that are essential to the safety of personnel and equipment. As you read this manual, pay close attention to these alerts to insure safety when installing, operating, programming, and maintaining this equipment.



DANGER!

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



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

2.3 General Safeguarding Tips

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

- Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation of this robot, the operator's manuals, the system equipment, and options and accessories should be permitted to operate this robot system.
- Do not enter the robot cell while it is in automatic operation. Programmers must have the teach pendant when they enter the robot cell.
- Improper connections can damage the robot. All connections must be made within the standard voltage and current ratings of the robot I/O (Inputs and Outputs).
- The robot must be placed in Emergency Stop (E-STOP) mode whenever it is not in use.
- In accordance with ANSI/RIA R15.06-1999, 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).

2.4 Mechanical Safety Devices

The safe operation of the robot, positioner, auxiliary equipment, and system is ultimately the user's responsibility. The conditions under which the equipment will be operated safely should be reviewed by the user. The user must be aware of the various national codes, ANSI/RIA R15.06-1999 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 equipment is provided as standard:

- Safety fences and barriers
- Light curtains and/or safety mats
- Door interlocks
- Emergency stop palm buttons located on operator station, robot controller, and programming pendant

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

2.5 Installation Safety

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

- Be sure that only qualified personnel familiar with national codes, local codes, and ANSI/RIA R15.06-1999 safety standards are permitted to install the equipment.
- Identify the work envelope of each robot with floor markings, signs, and barriers.
- Position all controllers outside the robot work envelope.
- Whenever possible, install safety fences to protect against unauthorized entry into the work envelope.
- Eliminate areas where personnel might get trapped between a moving robot and other equipment (pinch points).
- Provide sufficient room inside the workcell to permit safe teaching and maintenance procedures.

2.6 Programming, Operation, and 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. 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 program, operate, and maintain the system. All personnel involved with the operation of the equipment must understand potential dangers of operation.

- Inspect the robot and work envelope to be sure no potentially hazardous conditions exist. Be sure the area is clean and free of water, oil, debris, etc.
- Be sure that all safeguards are in place. Check all safety equipment for proper operation. Repair or replace any non-functioning safety equipment immediately.
- Do not enter the robot cell while it is in automatic operation. Be sure that only the person holding the programming pendant enters the workcell.
- Check the E-STOP button on the programming pendant for proper operation before programming. The robot 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 PART 1, System Section, of the robot controller concurrent I/O program can cause severe personal injury or death, as well as damage to the robot! Do not make any modifications to PART 1, System Section. 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.
- The robot controller allows modifications of PART 2, User Section, of the concurrent I/O program and modifications to controller parameters for maximum robot performance. Great care must be taken when making these modifications. 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 and other parts of the system. Double-check all modifications under every mode of robot operation to ensure that you have not created hazards or dangerous situations.
- Check and test any new or modified program at low speed for at least one full cycle.
- 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 robot. All connections must be made within the standard voltage and current ratings of the robot I/O (Inputs and Outputs).

Notes

NX100 OPTIONS INSTRUCTIONS

FOR ARC MONITORING FUNCTION

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

MOTOMAN INSTRUCTIONS

MOTOMAN-□□□ INSTRUCTIONS

NX100 INSTRUCTIONS

NX100 OPERATOR'S MANUAL

NX100 MAINTENANCE MANUAL

The NX100 operator's manual above corresponds to specific usage.
Be sure to use the appropriate manual.





MANDATORY

- This manual explains the arc monitoring function of the NX100 system and general operations. Read this manual carefully and be sure to understand its contents before handling the NX100.
- General items related to safety are listed in Section 1: Safety of the NX100. To ensure correct and safe operation, carefully read the NX100 INSTRUCTIONS 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.

NOTES FOR SAFE OPERATION

Read this manual carefully before installation, operation, maintenance, or inspection of the NX100.

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. At any rate, be sure to follow these important items.



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 manipulator, check that servo power is turned off when the emergency stop buttons on the front door of the NX100 and the programming pendant are pressed. When the 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 circuit cannot stop the manipulator during an emergency. The manipulator should not be used if the emergency stop buttons do not function.



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.



Release of Emergency Stop

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

- Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe location before:
 - Turning on the NX100 power
 - Moving the manipulator with the programming pendant
 - Running the system in the check mode
 - Performing automatic operations

Injury may result if anyone enters the P-point maximum envelope of the manipulator during operation. Always press an emergency stop button immediately if there are problems. The emergency stop buttons are located on the right of the front door of the NX100 and the programming pendant.



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 NX100 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 before operating the manipulator.

Definition of Terms Used Often in This Manual


The MOTOMAN manipulator is the YASKAWA industrial robot product.

The manipulator usually consists of the controller, the programming pendant, and supply cables.

In this manual, the equipment is designated as follows.

Equipment	Manual Designation
NX100 Controller	NX100
NX100 Programming Pendant	Programming Pendant
Cable between the manipulator and the NX100	Manipulator Cable

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 Number Keys	“Axis Keys” and “Number 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}
Playback Panel	Buttons	Playback panel buttons are enclosed in brackets. ex. [TEACH] on the playback panel

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.

Registered Trademarks

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

Explanation of Warning Labels

The following warning labels are attached to the manipulator and NX100.
Fully comply with the precautions on the warning labels.

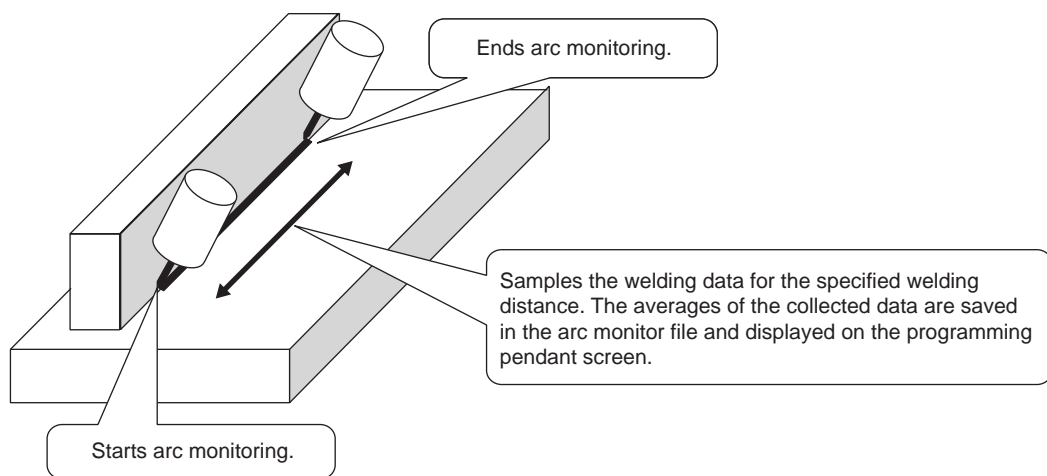
 WARNING		
<ul style="list-style-type: none"> The label described below is attached to the manipulator. <p>Observe the precautions on the warning labels. Failure to observe this caution may result in injury or damage to equipment.</p>		
	 WARNING Moving parts may cause injury	
 WARNING Do not enter robot work area.		
<p>Refer to the manipulator manual for the warning label location.</p>		
<ul style="list-style-type: none"> The following warning labels are attached to NX100. <p>Observe the precautions on the warning labels. Failure to observe this warning may result in injury or damage to equipment.</p>		
 WARNING	 WARNING	 WARNING
		
<p>High Voltage Do not open the door with power ON.</p>	<p>High Voltage Do not open the cover.</p>	<p>May cause electric shock. Ground the earth terminal based on local and national electric code.</p>
<p>Refer to the NX100 INSTRUCTIONS for the warning label location.</p>		

1	Outline	
1.1	Arc Monitoring Function	1-1
1.2	Arc Monitoring Function (Sampling Window)	1-2
2	Specifications of Arc Monitoring	
2.1	Requirements	2-1
2.2	Specifications of JANCD-XEW02 Board Signal	2-1
2.3	Connection	2-1
3	Registration of Instructions	
3.1	ARCMONON	3-2
	■ Registering of the ARCMONON Instruction	3-2
3.2	ARCMONOF	3-3
	■ Registering of the ARCMONOF Instruction	3-3
3.3	GETFILE	3-4
	■ Registering of the GETFILE instruction	3-4
	■ File Data and Element Number	3-5
4	Arc Monitor File	
4.1	Arc Monitor File	4-1
4.2	File Operation	4-2
4.2.1	Display of the Arc Monitor File	4-2
4.2.2	Initialization of the Arc Monitor File	4-3
	■ Initialization of the Selected Arc Monitor File	4-3
	■ Initialization of All the Arc Monitor Files	4-4
5	Parameters	
6	Alarm Message	

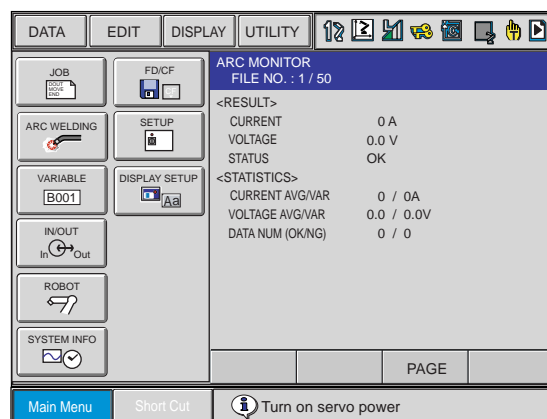
1 Outline

1.1 Arc Monitoring Function

The arc monitoring function takes samples of the welding conditions, such as the welding current and the welding voltage for the specified welding distance, and displays the averages of the collected data on the programming pendant screen. The averages are saved in the arc monitor file.



Arc Monitor File (Programming Pendant Screen)





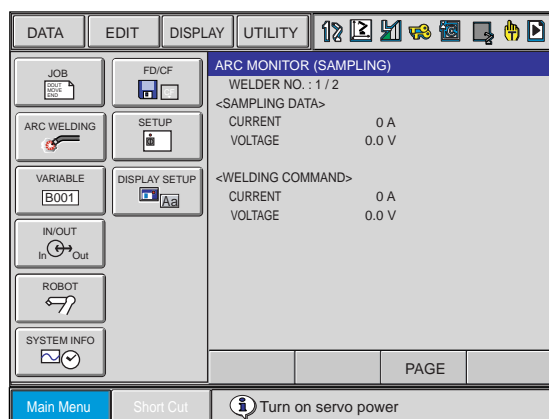
- The arc monitoring function displays the average welding current and voltage of the specified welding distance but does not display the real-time welding current or voltage. " 1.2 Arc Monitoring Function (Sampling Window) " explains the window displayed in real time.
- Due to variation of the electric resistance of the welding power supply cable and the detector, the displayed value may differ from the actual average welding current or voltage.
To obtain the exact averages, measure the actual welding current and voltage by a regulated instrument for measurement and adjust the conversion ratio and offset according to the measured values. Refer to "5 Parameters".

1.2 Arc Monitoring Function (Sampling Window)

The arc monitoring function (sampling window) displays, regardless of whether the manipulator is welding workpieces or being used for applications other than welding, the command positions of welding current and welding voltage that are output from the NX100, and the command positions of welding current and welding voltage that are input from the welding source to the NX100.



- Due to variation of the electric resistance of the welding power supply cable and the detector, the displayed value may differ from the actual welding current or voltage.
- To obtain the exact values, measure the actual welding current and voltage by a regulated instrument for measurement and adjust the conversion ratio and offset according to the measured values. Refer to "5 Parameters".



Arc Monitoring Window

2 Specifications of Arc Monitoring

2.1 Requirements

NX100 software version	NS3.00.00A (**)-00 or later
Welding I/F board	JANCD-XEW02



Be sure to use the specified NX100 software and welding I/F board when using the arc monitoring function.

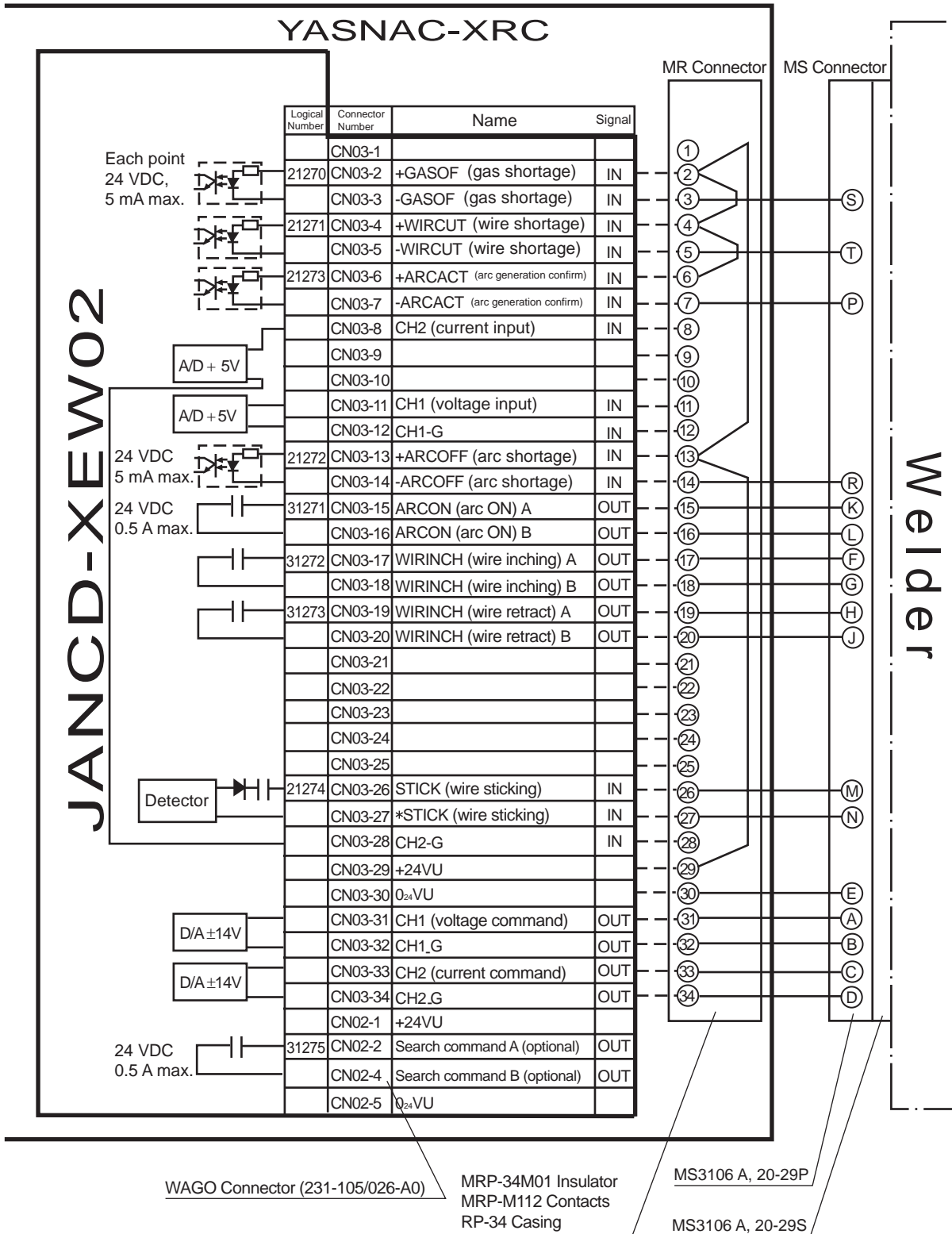
2.2 Specifications of JANCD-XEW02 Board Signal

Number of channels (Analog I/O)	Output: 2 channels (CH1: voltage, CH2: current) Input: 2 channels (CH1: voltage, CH2: current)
Analog voltage	Output: -14.00 V to +14.00 V Input: 0 V to +5 V
Voltage and current conversion ratio	10.0 V/V, 100 A/V (Can be changed by changing the parameter setting.)
Monitoring minimum unit	Voltage: 0.1 V, Current: 1 A

2.3 Connection

Voltage (CH1)	CN03-11 (voltage input) CN03-12 (GND)
Current (CH2)	CN03-8 (current input) CN03-28 (GND)

• JANCD-XEW02 Board



3 Registration of Instructions

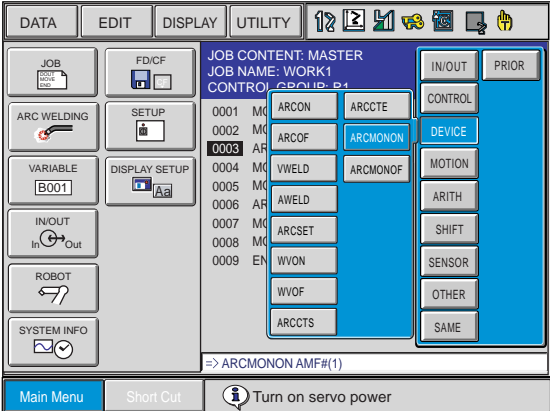
The following instructions are used for the arc monitoring function.
 < > indicates numerical or alphabetical data.

Work Instructions			
ARCMONON	Function	Starts the arc monitoring function.	
	Instruction items	AMF# < File number>	1 to 50
ARCMONOF	Function	Ends the arc monitoring function.	
	Instruction items	None	-
Operating Instruction			
GETFILE	Function	Registers the arc monitor file data in the D variable.	
	Instruction items	Data 1	D <Variable number>
		Data 2	AMF# <File number> (<Element number>)

3.1 ARCMONON

The ARCMONON instruction starts sampling the data.

■ Registering of the ARCMONON Instruction

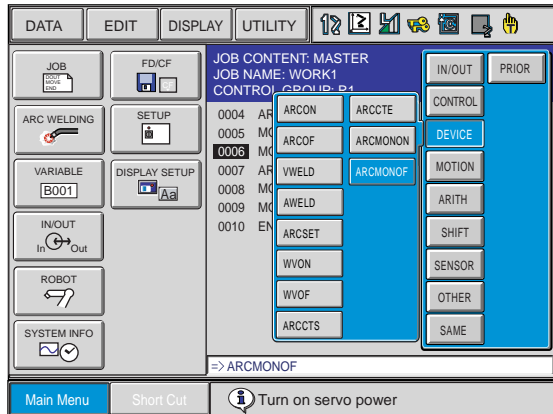
	Operation	Explanation
1	Move the cursor to the address area.	
2	Press [INFORM LIST].	
3	Select {DEVICE}.	
4	Select {ARCMONON}.	<p>The ARCMONON instruction appears with the previously registered additional items in the input buffer line. Change the file number if necessary.</p> 
5	Press [ENTER].	The settings are registered in the job.

3.2 ARCMONOF

The ARCMONOF instruction ends the sampling of the data and computes the average current and voltage.

The data is written into the arc monitor file specified by the ARCMONON instruction.

■ Registering of the ARCMONOF Instruction

	Operation	Explanation
1	Move the cursor to the address area.	
2	Press [INFORM LIST].	
3	Select {DEVICE}.	
4	Select {ARCMONOF}.	<p>The ARCMONOF instruction appears in the input buffer line.</p>  <p>The screenshot shows a control panel with various function buttons on the left and a central display area. The display area shows a list of instructions: 0004 AR ARCON, 0005 MC ARCCTE, 0006 MC ARCMONON, 0007 AR VWFELD, 0008 MC ARCMONOF, 0009 MC AWELD, and 0010 EN ARCSET. The ARCMONOF instruction is highlighted in blue. Below the list, the text '-> ARCMONOF' is visible. At the bottom of the screen, there are buttons for 'Main Menu', 'Short Cut', and 'Turn on servo power'.</p>
5	Press [ENTER].	The ARCMONOF instruction is registered in the job.

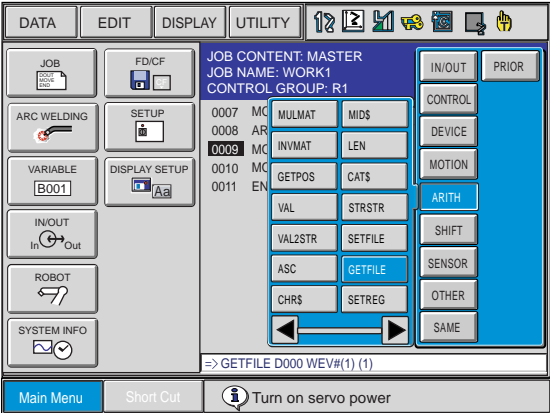
NOTE

- The arc monitoring function samples the analog inputs from the XEW02 board only when the ARCON signal (a startup command to the welding source) is ON. When the ARCON signal is turned OFF during the execution of the ARCMONON instruction, the sampling is interrupted. The collected data are saved as erroneous data and not used when computing the averages and standard deviations.
- If the check run is enabled, issuing an ARCMONON instruction does not start the arc monitoring function.

3.3 GETFILE

The GETFILE instruction registers the specified arc monitor file data in the D variable.

■ Registering of the GETFILE instruction

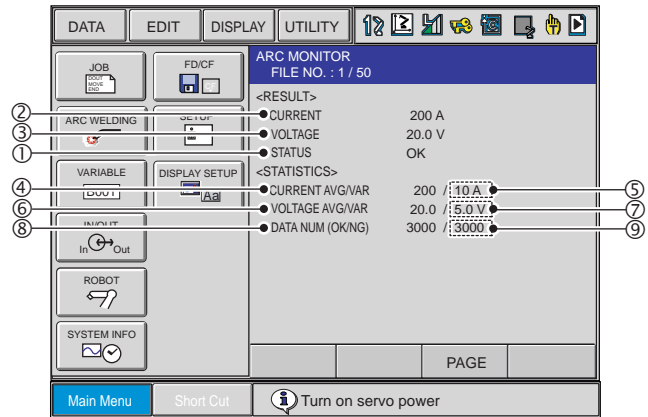
	Operation	Explanation
1	Move the cursor to the address area.	
2	Press [INFORM LIST].	
3	Select {ARITH}.	
4	Select {GETFILE}.	<p>The GETFILE instruction appears with the previously registered additional items in the input buffer line.</p>  <p>The screenshot shows a control panel with a menu on the left and a main display area. The menu includes options like JOB, FD/CF, ARC WELDING, SETUP, VARIABLE, DISPLAY SETUP, IN/OUT, ROBOT, and SYSTEM INFO. The main display shows 'JOB CONTENT: MASTER', 'JOB NAME: WORK1', and 'CONTROL GROUP: R1'. Below this, there is a list of instructions: 0007 MC MULMAT MIDS, 0008 AR INV, 0009 MC INV, 0010 MC GETPOS CAT\$, and 0011 EN. A right-hand menu contains options like CONTROL, DEVICE, MOTION, ARITH, SHIFT, SENSOR, OTHER, and SAME. The 'GETFILE' option is highlighted in blue. At the bottom, a status bar shows '=> GETFILE D000 WEV#(1) (1)'.</p>
5	Press [ENTER].	The settings are registered in the job.

■ File Data and Element Number

The following table shows the relation between the element number of GETFILE instruction and the arc monitor file.

The circled numbers indicate the element numbers.

Arc monitor file data	Element number
CURRENT	②
VOLTAGE	③
STATUS	①
CURR AVG	④
CURR VAR	⑤
VOLT AVG	⑥
VOLT VAR	⑦
DATA NUM (OK)	⑧
DATA NUM (NG)	⑨

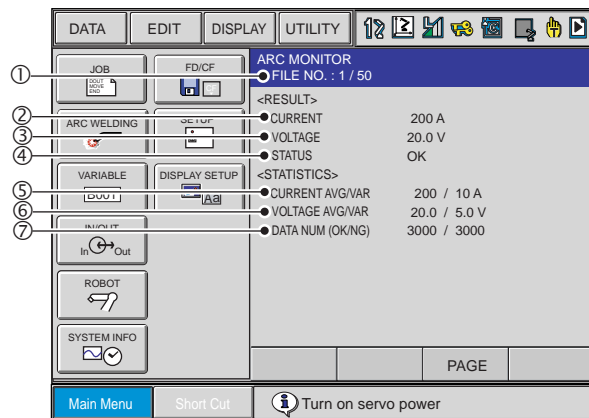


4 Arc Monitor File

Fifty arc monitor files are available for the arc monitoring function.

The arc monitor files can be saved in external memory by using the FD/CF. (The files however cannot be loaded.)

4.1 Arc Monitor File



① FILE NO.

Displays the arc monitor file number.

② CURRENT

Displays the average current that is computed from the data collected by the arc monitoring function most recently carried out by ARCMONON and ended by ARCMONOF.

③ VOLTAGE

Displays the average voltage that is computed from the data collected by the arc monitoring function most recently carried out by ARCMONON and ended by ARCMONOF.

④ STATUS

Displays the result of the arc monitoring function most recently executed (OK: normal; NG: erroneous).

⑤ CURR AVG/VAR

Displays the average and standard deviation of the computed average current.

⑥ VOLT AVG/VAR

Displays the average and standard deviation of the computed average voltage.

⑦ DATA NUM (OK/NG)


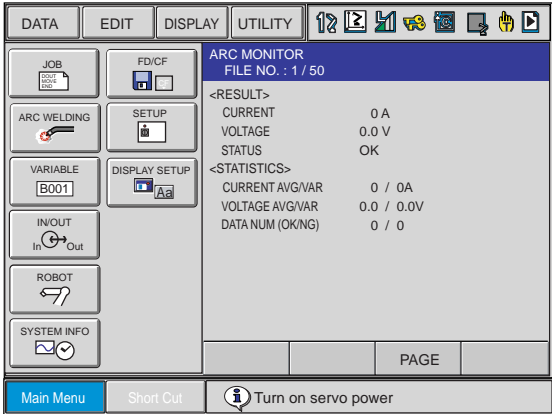
Displays the number of samples of data computed (the number of normal samples/the number of erroneous samples).

4.2 File Operation

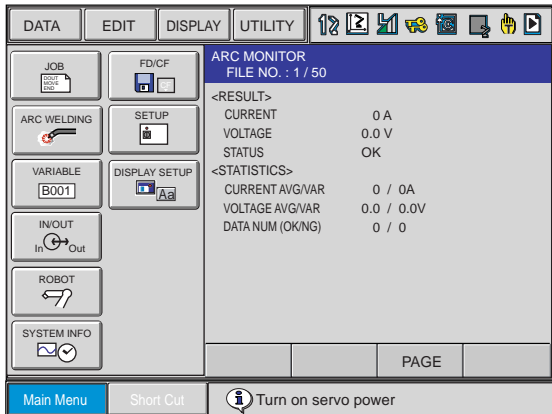
4.2.1 Display of the Arc Monitor File

Use either of the following procedures to open the ARCMONITOR display.

Operation 1

	Operation	Explanation																				
1	Move the cursor to the ARC-MONON instruction.																					
2	Press DIRECT OPEN  .	 <p>The screenshot shows the ARCMONITOR interface with the following data:</p> <table border="1"> <thead> <tr> <th colspan="2">ARC MONITOR</th> </tr> <tr> <th colspan="2">FILE NO. : 1 / 50</th> </tr> </thead> <tbody> <tr> <td colspan="2"><RESULT></td> </tr> <tr> <td>CURRENT</td> <td>0 A</td> </tr> <tr> <td>VOLTAGE</td> <td>0.0 V</td> </tr> <tr> <td>STATUS</td> <td>OK</td> </tr> <tr> <td colspan="2"><STATISTICS></td> </tr> <tr> <td>CURRENT AVG/VAR</td> <td>0 / 0A</td> </tr> <tr> <td>VOLTAGE AVG/VAR</td> <td>0.0 / 0.0V</td> </tr> <tr> <td>DATA NUM (OK/NG)</td> <td>0 / 0</td> </tr> </tbody> </table>	ARC MONITOR		FILE NO. : 1 / 50		<RESULT>		CURRENT	0 A	VOLTAGE	0.0 V	STATUS	OK	<STATISTICS>		CURRENT AVG/VAR	0 / 0A	VOLTAGE AVG/VAR	0.0 / 0.0V	DATA NUM (OK/NG)	0 / 0
ARC MONITOR																						
FILE NO. : 1 / 50																						
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<STATISTICS>																						
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VOLTAGE AVG/VAR	0.0 / 0.0V																					
DATA NUM (OK/NG)	0 / 0																					

Operation 2

	Operation	Explanation																				
1	Select {ARC WELDING} from the main menu.																					
2	Select {ARC MONITOR} from the submenu.	 <p>The screenshot shows the ARCMONITOR interface with the following data:</p> <table border="1"> <thead> <tr> <th colspan="2">ARC MONITOR</th> </tr> <tr> <th colspan="2">FILE NO. : 1 / 50</th> </tr> </thead> <tbody> <tr> <td colspan="2"><RESULT></td> </tr> <tr> <td>CURRENT</td> <td>0 A</td> </tr> <tr> <td>VOLTAGE</td> <td>0.0 V</td> </tr> <tr> <td>STATUS</td> <td>OK</td> </tr> <tr> <td colspan="2"><STATISTICS></td> </tr> <tr> <td>CURRENT AVG/VAR</td> <td>0 / 0A</td> </tr> <tr> <td>VOLTAGE AVG/VAR</td> <td>0.0 / 0.0V</td> </tr> <tr> <td>DATA NUM (OK/NG)</td> <td>0 / 0</td> </tr> </tbody> </table>	ARC MONITOR		FILE NO. : 1 / 50		<RESULT>		CURRENT	0 A	VOLTAGE	0.0 V	STATUS	OK	<STATISTICS>		CURRENT AVG/VAR	0 / 0A	VOLTAGE AVG/VAR	0.0 / 0.0V	DATA NUM (OK/NG)	0 / 0
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CURRENT AVG/VAR	0 / 0A																					
VOLTAGE AVG/VAR	0.0 / 0.0V																					
DATA NUM (OK/NG)	0 / 0																					



The data in the arc monitor file cannot be edited.

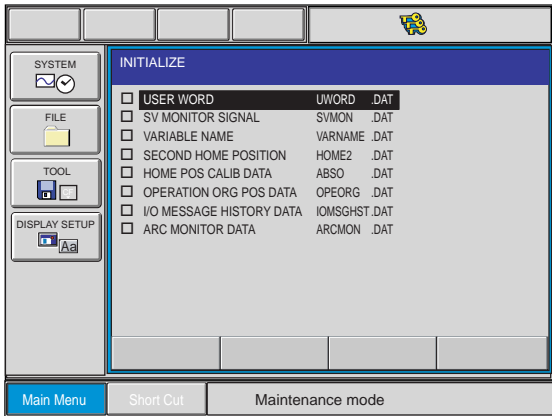
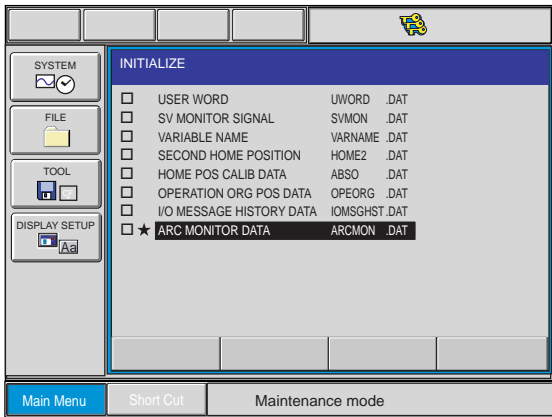
4.2.2 Initialization of the Arc Monitor File

■ Initialization of the Selected Arc Monitor File

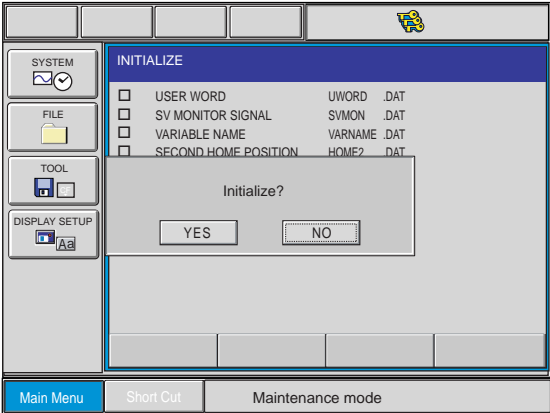
Initializing a file resets all the data in the file to "0."

	Operation	Explanation
1	Call the ARCMONITOR display.	
2	Select {CLEAR DATA} from {DATA} in the pull-down menu.	<p>Select {CLEAR DATA} and a message appears if you want to clear the data. Select "YES".</p> <p>If {CLEAR DATA} is selected in the arc monitor file display, only the data of the displayed file number is initialized. To initialize all the arc monitor files in the maintenance mode, refer to " Initialization of All the Arc Monitor Files ".</p> <div data-bbox="699 853 1251 1263" data-label="Image"> </div> <div data-bbox="699 1339 1251 1749" data-label="Image"> </div>

■ Initialization of All the Arc Monitor Files

	Operation	Explanation																											
1	Pressing [MAIN MENU], turn ON the power.																												
2	Change the security mode ("SECURITY") to "MANAGEMENT MODE".																												
3	Select {FILE} from the main menu.																												
4	Select {INITIALIZE}.																												
5	Select {SYSTEM DATA}.	<p>The system data selection display appears.</p>  <table border="1"> <thead> <tr> <th>Item Name</th> <th>File Name</th> <th>Extension</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> USER WORD</td> <td>UWORD</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> SV MONITOR SIGNAL</td> <td>SVMON</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> VARIABLE NAME</td> <td>VARNAME</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> SECOND HOME POSITION</td> <td>HOME2</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> HOME POS CALIB DATA</td> <td>ABSO</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> OPERATION ORG POS DATA</td> <td>OPEORG</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> I/O MESSAGE HISTORY DATA</td> <td>IOMSGHST</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> ARC MONITOR DATA</td> <td>ARCMON</td> <td>.DAT</td> </tr> </tbody> </table>	Item Name	File Name	Extension	<input type="checkbox"/> USER WORD	UWORD	.DAT	<input type="checkbox"/> SV MONITOR SIGNAL	SVMON	.DAT	<input type="checkbox"/> VARIABLE NAME	VARNAME	.DAT	<input type="checkbox"/> SECOND HOME POSITION	HOME2	.DAT	<input type="checkbox"/> HOME POS CALIB DATA	ABSO	.DAT	<input type="checkbox"/> OPERATION ORG POS DATA	OPEORG	.DAT	<input type="checkbox"/> I/O MESSAGE HISTORY DATA	IOMSGHST	.DAT	<input type="checkbox"/> ARC MONITOR DATA	ARCMON	.DAT
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<input type="checkbox"/> ARC MONITOR DATA	ARCMON	.DAT																											
6	Select "ARC MONITOR DATA".	<p>The ARC MONITOR DATA is marked with ★. The data marked with ■ cannot be selected.</p>  <table border="1"> <thead> <tr> <th>Item Name</th> <th>File Name</th> <th>Extension</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> USER WORD</td> <td>UWORD</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> SV MONITOR SIGNAL</td> <td>SVMON</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> VARIABLE NAME</td> <td>VARNAME</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> SECOND HOME POSITION</td> <td>HOME2</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> HOME POS CALIB DATA</td> <td>ABSO</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> OPERATION ORG POS DATA</td> <td>OPEORG</td> <td>.DAT</td> </tr> <tr> <td><input type="checkbox"/> I/O MESSAGE HISTORY DATA</td> <td>IOMSGHST</td> <td>.DAT</td> </tr> <tr> <td><input checked="" type="checkbox"/> ★ ARC MONITOR DATA</td> <td>ARCMON</td> <td>.DAT</td> </tr> </tbody> </table>	Item Name	File Name	Extension	<input type="checkbox"/> USER WORD	UWORD	.DAT	<input type="checkbox"/> SV MONITOR SIGNAL	SVMON	.DAT	<input type="checkbox"/> VARIABLE NAME	VARNAME	.DAT	<input type="checkbox"/> SECOND HOME POSITION	HOME2	.DAT	<input type="checkbox"/> HOME POS CALIB DATA	ABSO	.DAT	<input type="checkbox"/> OPERATION ORG POS DATA	OPEORG	.DAT	<input type="checkbox"/> I/O MESSAGE HISTORY DATA	IOMSGHST	.DAT	<input checked="" type="checkbox"/> ★ ARC MONITOR DATA	ARCMON	.DAT
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4.2 File Operation

	Operation	Explanation
7	Press [ENTER].	<p>The confirmation dialog box appears.</p> 
8	Select "YES".	
9	Turn OFF the power, then turn ON again.	



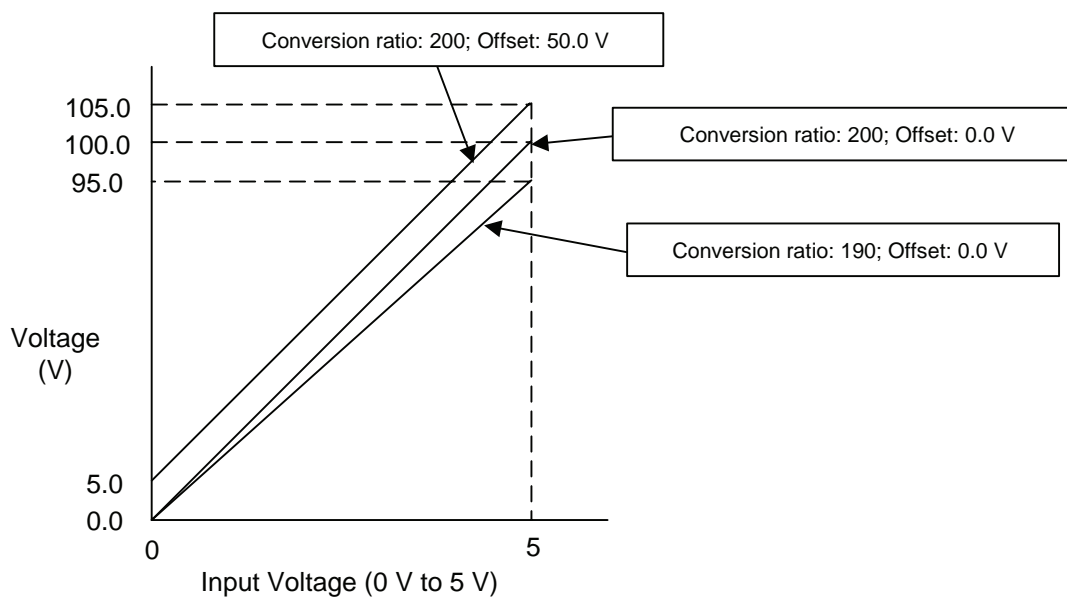
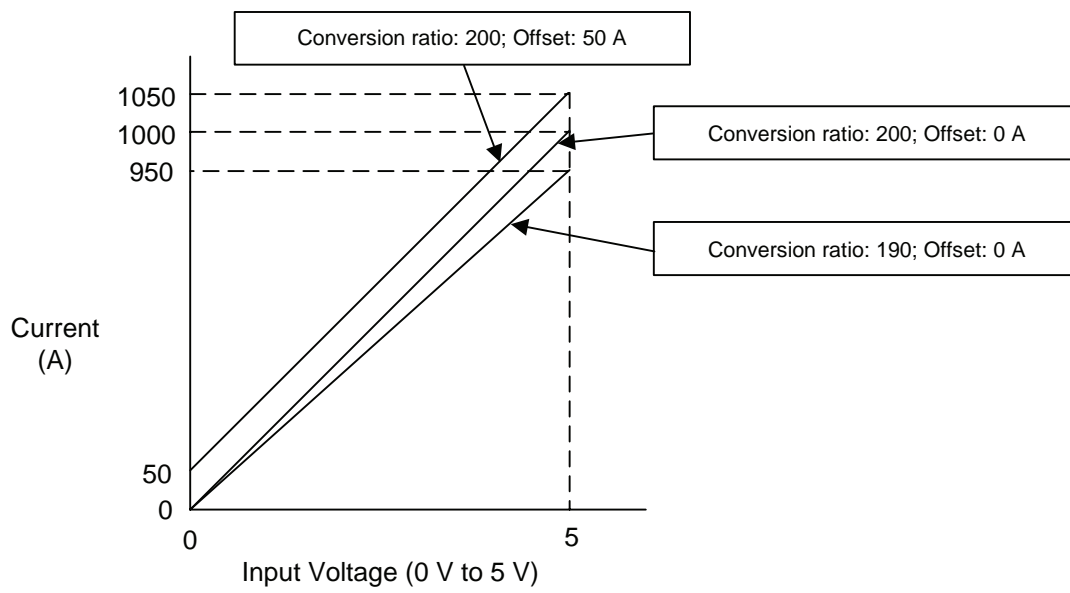
If the files are initialized in the maintenance mode, the data of all the files (1 to 50) are reset to "0."

5 Parameters

The parameters listed in the table are the settings for the conversion ratio and the offset, and are used to obtain the current and the voltage from the analog input. The input voltage is converted to a value in amps for the currents and volts for the voltage as shown in the graphs on the next page (5-2).

Parameters

Parameter No.	Meaning	Initial Value
S2C355	Current conversion ratio (Welder 1)	200
S2C356	Current conversion offset (Welder 1) in units of 1A	0
S2C357	Voltage conversion ratio (Welder 1)	200
S2C358	Voltage conversion offset (Welder 1) in units of 1A	0
S2C359	Current conversion ratio (Welder 2)	200
S2C360	Current conversion offset (Welder 2) in units of 0.1V	0
S2C361	Voltage conversion ratio (Welder 2)	200
S2C362	Voltage conversion offset (Welder 2) in units of 0.1V	0
S2C363	Current conversion ratio (Welder 3)	200
S2C364	Current conversion offset (Welder 3) in units of 1A	0
S2C365	Voltage conversion ratio (Welder 3)	200
S2C366	Voltage conversion offset (Welder 3) in units of 0.1V	0
S2C367	Current conversion ratio (Welder 4)	200
S2C368	Current conversion offset (Welder 4) in units of 1A	0
S2C369	Voltage conversion ratio (Welder 4)	200
S2C370	Voltage conversion offset (Welder 4) in units of 0.1V	0



6 Alarm Message

Alarm	Cause	Remedy
4128 "ARC MONITOR ERROR" [Decimal data]	1: One ARCMONON instruction is started while another is being carried out. 10: The settings for the XEW02 analog input board have not been made. 11: A time-over error occurs while sampling.	1: Do not carry out an ARCMONON instruction while another is being carried out. After an ARCMONON instruction, be sure to issue an ARCMONOF instruction to end the arc monitoring function. 10: Make the settings for the XEW02 analog input board. 11: Shorten the monitoring distance.

NX100 OPTIONS INSTRUCTIONS

FOR ARC MONITORING FUNCTION

HEAD OFFICE

2-1 Kurosaki-Shiroishi, Yahatanishi-ku, Kitakyusyu-shi, 806-0004, Japan
Phone 81-93-645-7745 Fax 81-93-645-7746

MOTOMAN INC. HEADQUARTERS

805 Liberty Lane West Carrollton, OH 45449, U.S.A.
Phone 1-937-847-6200 Fax 1-937-847-6277

YASKAWA MOTOMAN CANADA LTD.

3530 Laird Road, Unit 3, Mississauga, Ontario, L5L 5Z7, Canada
Phone 1-905-569-6686 Fax 1-905-813-5911

MOTOMAN ROBOTICS EUROPE AB

Franska Vagen 1039854, Kalmar, Sweden
Phone 46-480-417800 Fax 46-480-417999

MOTOMAN ROBOTEC GmbH

Kammerfeld strasse 1, DE-85391 Allershausen, Germany
Phone 49-8166-90100 Fax 49-8166-90103

YASKAWA ELECTRIC KOREA CORPORATION

1F Samyang Bldg. 89-1, Shinchun-dong, Donk-Ku, Daegu, Korea
Phone 82-53-745-7844 Fax 82-2-784-8495

YASKAWA ELECTRIC (SINGAPORE) PTE. LTD.

151 Lorong Chuan, #04-01, New Tech Park, Singapore 556741, Singapore
Phone 65-6282-3003 Fax 65-6289-3003

YASKAWA ELECTRIC (MALAYSIA) SDN. BHD.

No.71, Jalan Bandar Rawang 2, 48000 Rawang, Selangor D.E., Malaysia
Phone 60-3-6092-1377 Fax 60-3-6092-6377

YASKAWA ELECTRIC TAIWAN CORPORATION

9F, 16 Nanking E. Rd., Sec. 3, Taipei, Taiwan
Phone 886-2-2502-5003 Fax 886-2-2505-1280

SHOUGANG MOTOMAN ROBOT CO., LTD.

7, Yongchang-North Road, Beijing Economic & Technological Development Area, Beijing 100076, China
Phone 86-10-6788-0541 Fax 86-10-6788-2878



YASKAWA ELECTRIC CORPORATION

YASKAWA