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MasterIPS NUTRUNNER Configurator
Operation Manual



Ver No.	1.01
Date : 2007/07	

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Master IPS Nutrunner Configurator Operation Manual

Introduction

Thank you very much for purchasing the MasterIPS NUTRUNNER.
This Operation Manual describes creation of programs for MasterIPS and setting of respective parameters.
Make sure to thoroughly understand this content before use, and use the MasterIPS Nutrunner properly.

Request

We have made every effort to ensure the quality of this Manual, however, should your company have questions or find errors with the content of this Manual, we ask that you contact us and report any questions or discrepancies.

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*** Be sure to read in order to secure safety and quality.**

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Revision

Date	Ver	Contents
2005/09/10	1.00	Ver1.00 created.
2007/07	1.01	Picture in “IP address setting” is changed.

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1 Install

1-1 Operating environment

The following operating environment is required for installing the MasterIPS NUTRUNNER Configurator (hereinafter, referred to as MIN-CFG).

	Recommended specification
Applicable OS	Windows 98/2000/XP
CPU	200MHz or higher
Memory	64M byte or higher
HDD capacity*1	50M byte or higher
Communication Port	Ethernet port

1-2 Install

Use the following procedure to install.

1. Insert an install disk into the CD drive.
2. Open “CD drive” from “My computer,” and double-click “Setup.exe” among them.
3. When “Welcome” screen is displayed, click “Next.”
4. Input User information. At this time, enter “MasterIPS-NR” into “Serial.”
5. When “Choose Destination Location” is displayed, click “Next.”
   (Unless it is particularly necessary to change, leave the “Destination Folder” as default.)
6. When install is completed, take out the disk.

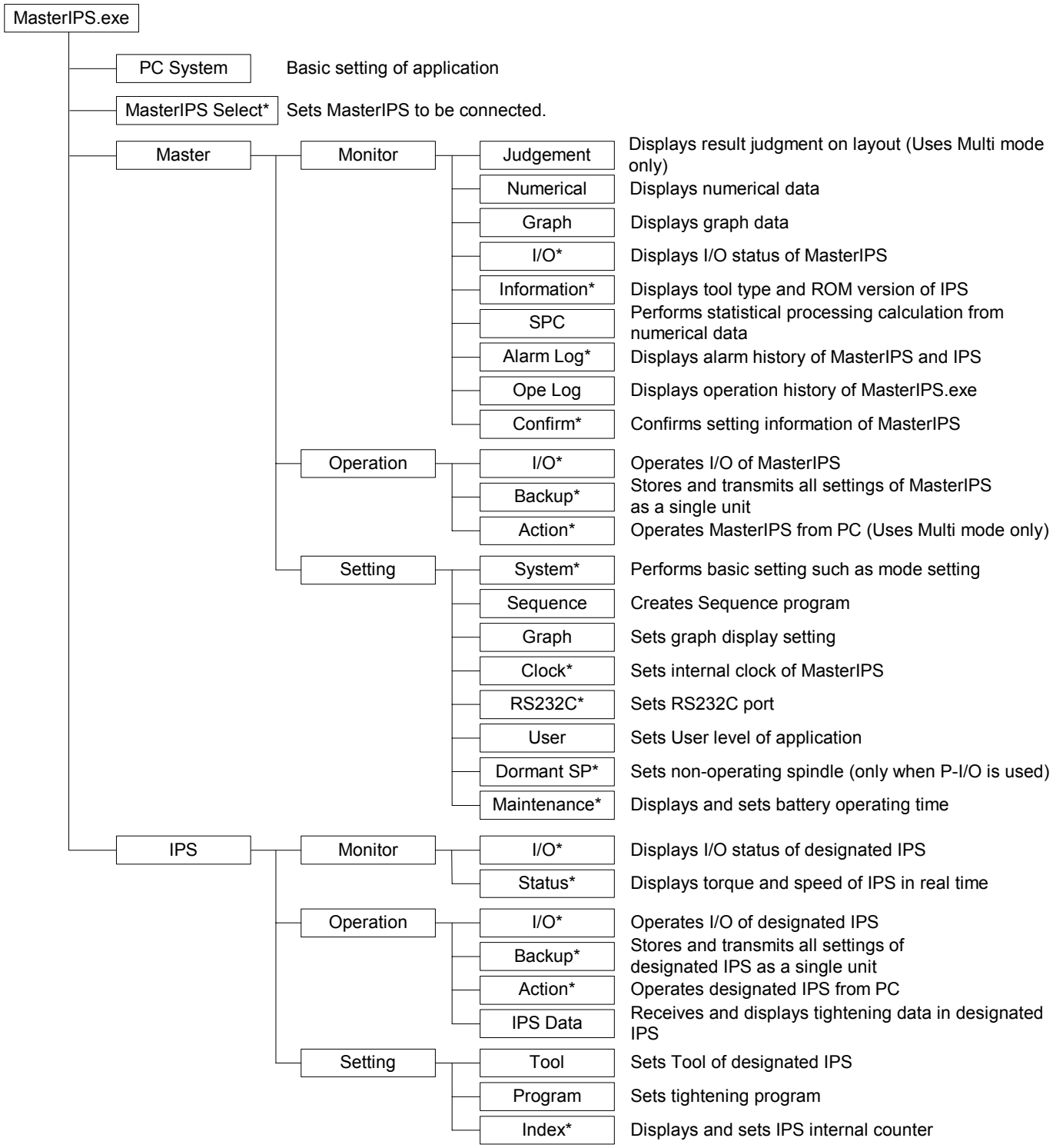
1-3 Uninstall

To uninstall, delete from “Add/Remove Application Programs” in the “Control panel” in the same way as general application.

* Folder may not be removed if uninstall is carried out. Remove individually at this time.

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2 Application configuration
2-1 Menu configuration
Menu configuration of this application is as follows.

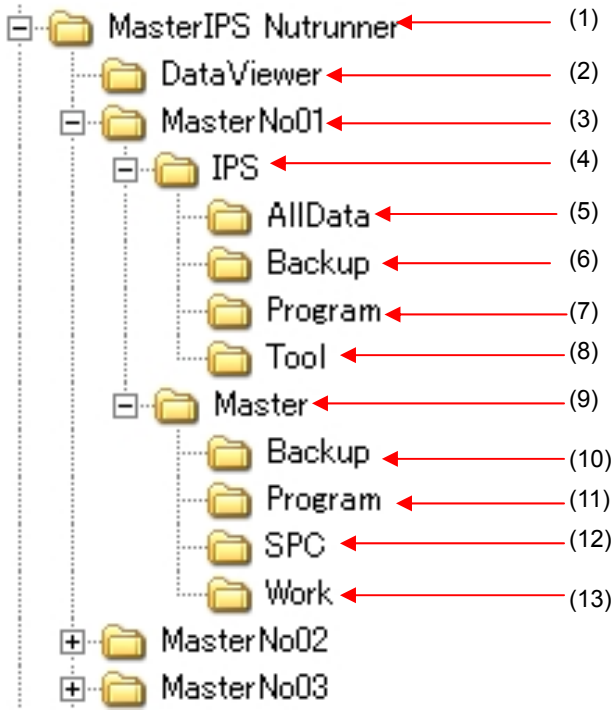


* Screens marked with * cannot be used during offline.

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2-2 Folder structure

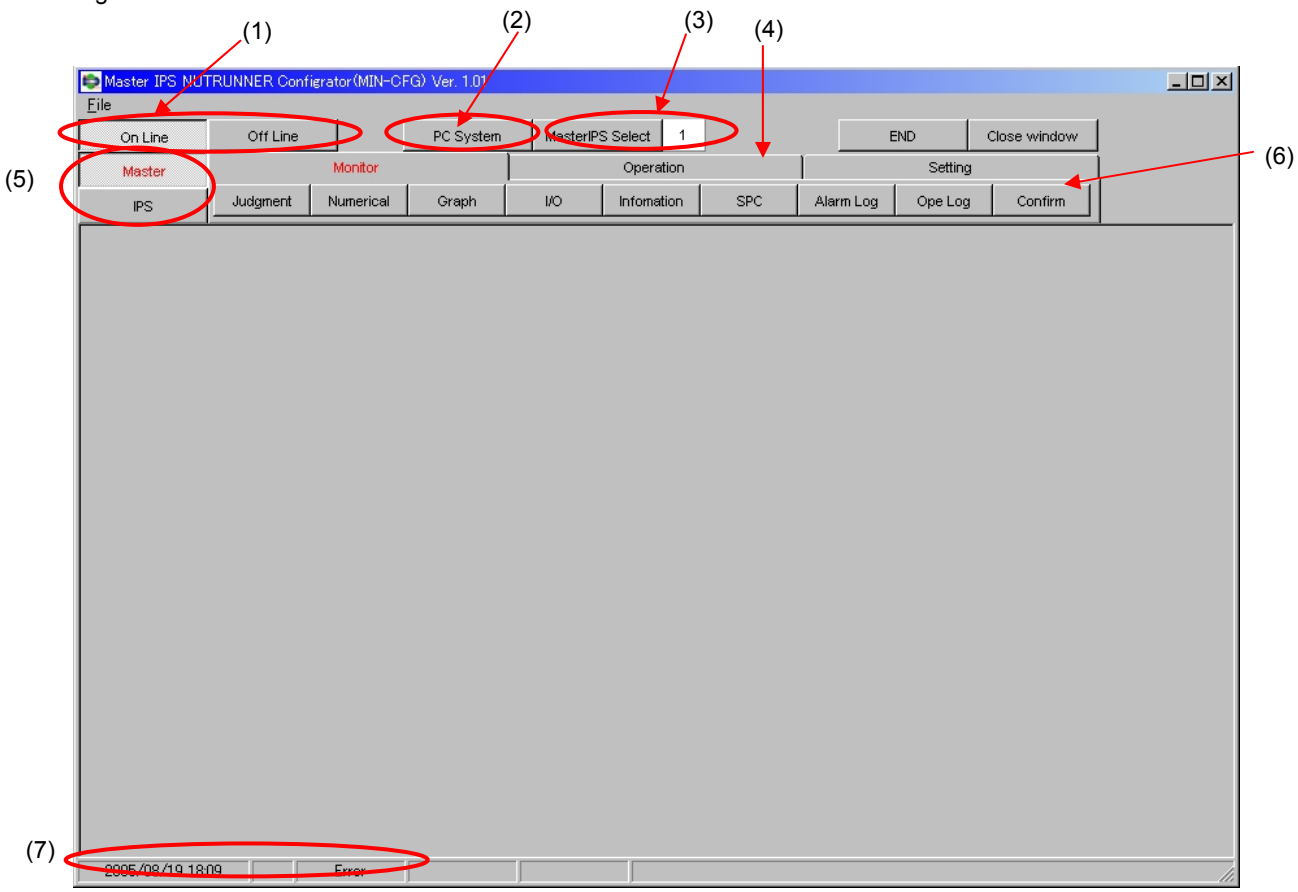
Folder structure of MIN-CFG is as follows.



	Folder Name	Contents
(1)	MasterIPS Nutrunner	System files of MIN-CFG such as MasterIPS.exe are stored.
(2)	DataViewer	DataViewer.exe is stored.
(3)	MasterNo**	Received data (numerical value, graph) are stored. Data are separately stored for every ID of MasterIPS. (Max. 16)
(4)	IPS	Folder related to IPS connected to MasterIPS is stored.
(5)	ALLData	Tightening data file received from within IPS is stored. (Refer to 6-2-4)
(6)	Backup	All setting files of IPS are stored. (Refer to 6-2-2)
(7)	Program	Program file of IPS is stored. (Refer to 6-3-2)
(8)	Tool	Tool setting file of IPS is stored. (Refer to 6-3-1)
(9)	Master	Folder related to setting of MasterIPS is stored.
(10)	Backup	All setting files of MasterIPS are stored. (Refer to 5-2-2)
(11)	Program	Sequence file of MasterIPS is stored. (Refer to 5-3-3, 5-3-4)
(12)	SPC	SPC (statistical processing) file is stored. (Refer to 5-1-7)
(13)	Work	Work file for Judgment is stored. (Refer to 5-1-1)

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3 Screen configuration

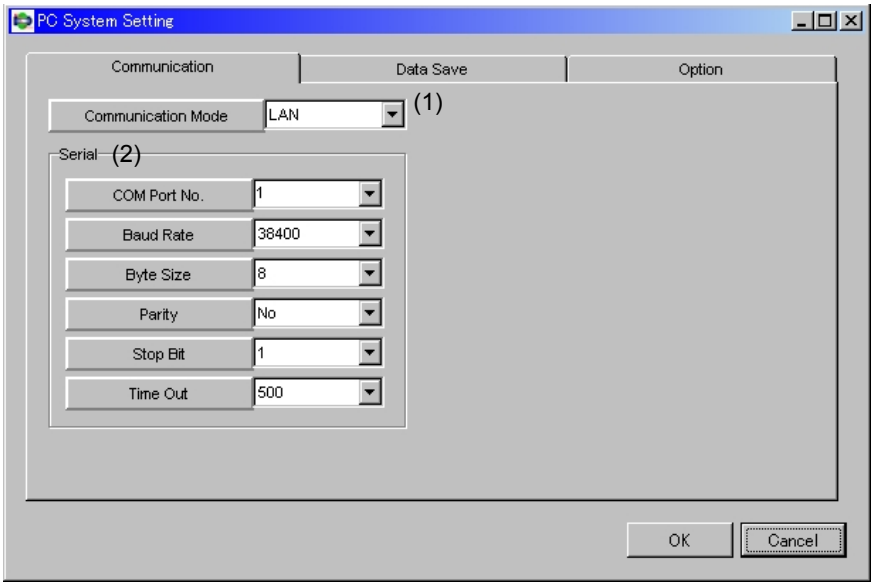


This is a screen configuration of MIN-CFG.

	Name	Function
(1)	Communication Button	Data is received from set MasterIPS, while this button is pressed.
(2)	PC System	Sets communication between PC and MasterIPS. (Refer to 4-1)
(3)	MasterIPS Select	Sets MasterIPS to communicate. (Refer to 4-2)
(4)	Main menu	This menu is divided into three menus for every function. Monitor: Monitors numerical value and graph. Operation: Performs I/O operation Setting: Performs various settings
(5)	Master、IPS mode select	Switches submenu of (6) with Master mode and IPS mode.
(6)	Sub-menu	Displays submenu in selected main menu.
(7)	Status bar	Displays communication status and time.

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4 MIN CFG setting
4-1 PC system
4-1-1 Communication (Communication setting)



Connection between MasterIPS and PC is set.
Communication with MasterIPS is allowed by using Ethernet port and Serial port.
Normally use the Ethernet port to communicate.

IMPORTANT

When using Ethernet, set IP address of port used on the TCP/IP property screen.

	Name	Function
(1)	Communication Mode	Sets connecting method between MasterIPS and PC. “LAN”: Uses Ethernet port of PC. “Serial”: Uses Serial port of PC.
(2)	Serial setting	Sets Serial port when “Serial” is selected in □. Necessary to switch Ch1 to “Maker Mode” at RS-232C port setting of MasterIPS. (Refer to 5-3-6-1) “COM Port No.”: Serial port No. of PC “Baud Rate”: 38400 (Adjust to setting on MasterIPS) “Byte Size”: 8 (Fixed) “Parity”: No (Fixed) “Stop Bit”: 1 (Fixed) “Time Out”: 100 (Recommended)

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♦ IP address setting (for Win2000 or XP)

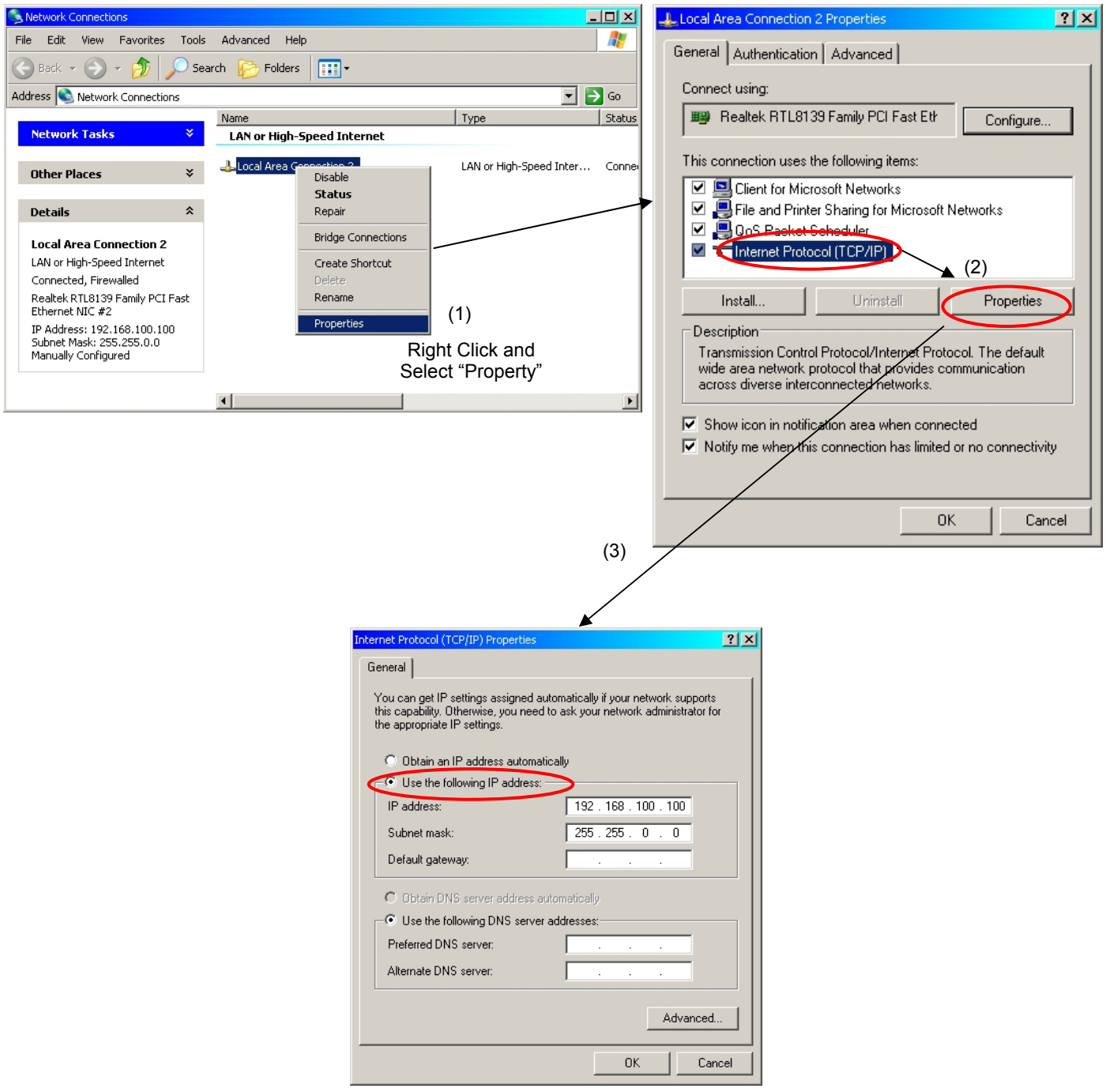
Procedure

My Network ⇒ Property ⇒ (1): Local Area Connection (LAN port for MasterIPS) ⇒ Property ⇒ (2): Internet Protocol ⇒ (3): TCP/IP ⇒ Setup

Set value

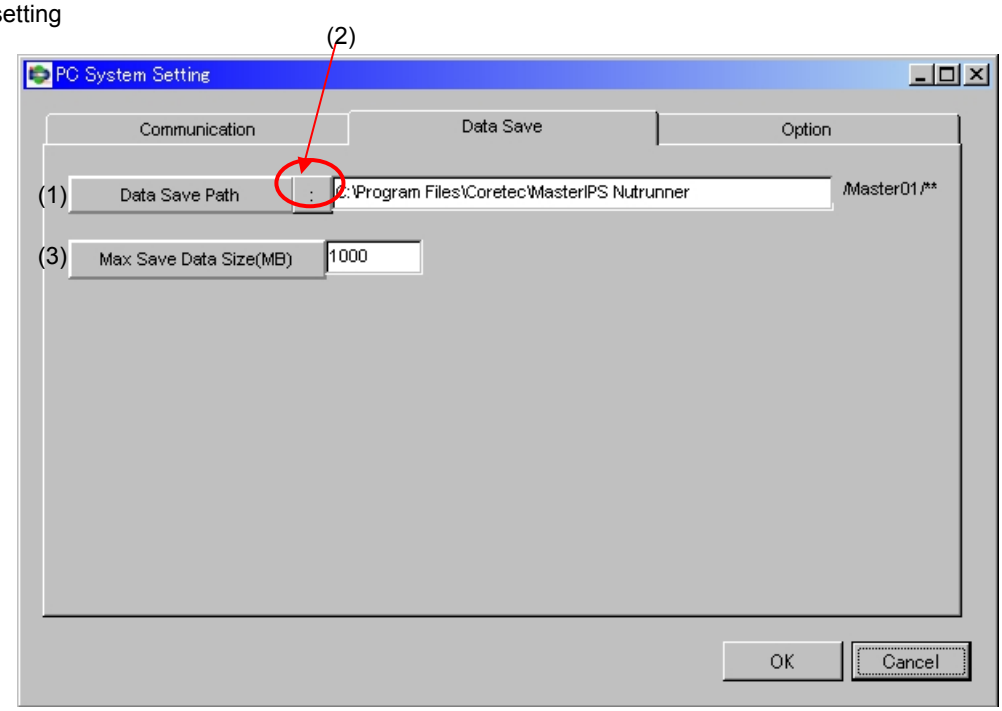
IP address = 192. 168. 100. 100

Subnet mask = 255. 255. 0. 0.



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4-1-2 Data save setting



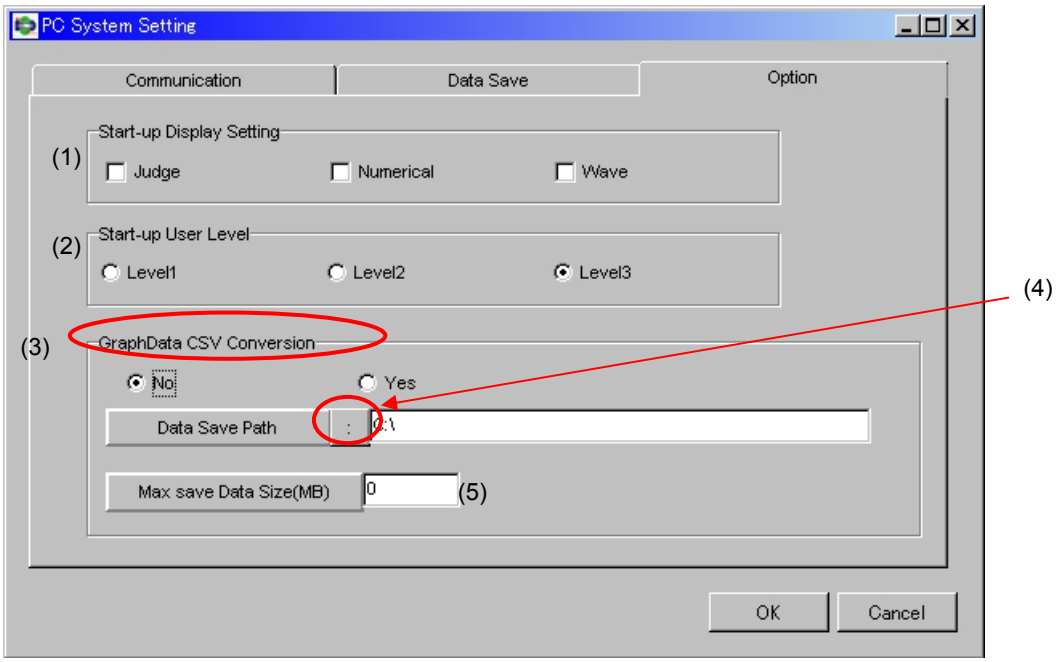
Sets storage destination for numerical value and graph data received from MasterIPS.
(As the storage destination is set when install is completed, it is not required to change it.)

Default storage directory is C:¥Program Files¥Coretec¥MasterIPS Nutrunner¥Master**
** is a spindle No. of connected and set MasterIPS. (For MasterIPS connection change, refer to the next page.)
(Number of MasterIPS is automatically changed when connection setting is changed.)

	Name	Function
(1)	Data Save Path	Displays the current data storage directory.
(2)	Path Select	When this is pressed, the directory selection screen is displayed and storage destination can be changed. (Use default value.)
(3)	Max Data Size	In a case where the capacity of storage destination exceeds the set value (MB unit), the old file is automatically deleted when the date is changed with MIN-CFG being operated. (File is deleted from the chronologically oldest file so that data can be stored within the set value.)

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4-1-3 Option setting



Sets other settings of MIN-CFG.

	Name	Function
(1)	Start-up Display Setting	Checked screen is automatically displayed when MIN-CFG is started.
(2)	Start-up User Level	Sets user level when MIN-CFG is started. For User Level, refer to 5-3-7.
(3)	Graph Data CSV Conversion	Received graph data can be CSV converted. One CSV file is created per one graph data. For details, refer to the next page. “No”: Does not perform CSV conversion. “Yes”: Performs CSV conversion.
(4)	Path Select	When this is pressed, the directory selection screen is displayed and storage destination can be designated.
(5)	Max Data Size	In a case where capacity of storage destination exceeds the set value (MB unit), the old file is automatically deleted when the date is changed with MIN-CFG being operated. (File is deleted from the chronologically oldest file so that data can be stored within the set value.)

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§ About CSV file

1. Creating timing
   As soon as MIN-CFG receives data from MasterIPS, CSV file stores 1 graph data into the designated directory as 1 CSV file.

2. File name
   Name of CSV file to be created is as follows.

   CSV file name: Master IPS No.- Work position No.- Step No. – YY_MM_DD_HH_MM_SS.CSV
   Example: M01-W03-S01-05_06_15_12_45_56.csv

3. Content of file

   Content of the actual CSV file is as follows.
   Graph displayed in MIN-CFG is reproduced by representing “Graph point data” in graph.

WP	SP	Seq	Grp	Torque	Angle	Time	Judge	Index	Hour	Product No.
1	1	1	0	10.1	1041	1.8	OK	1	14:51	ABCDEFG12345

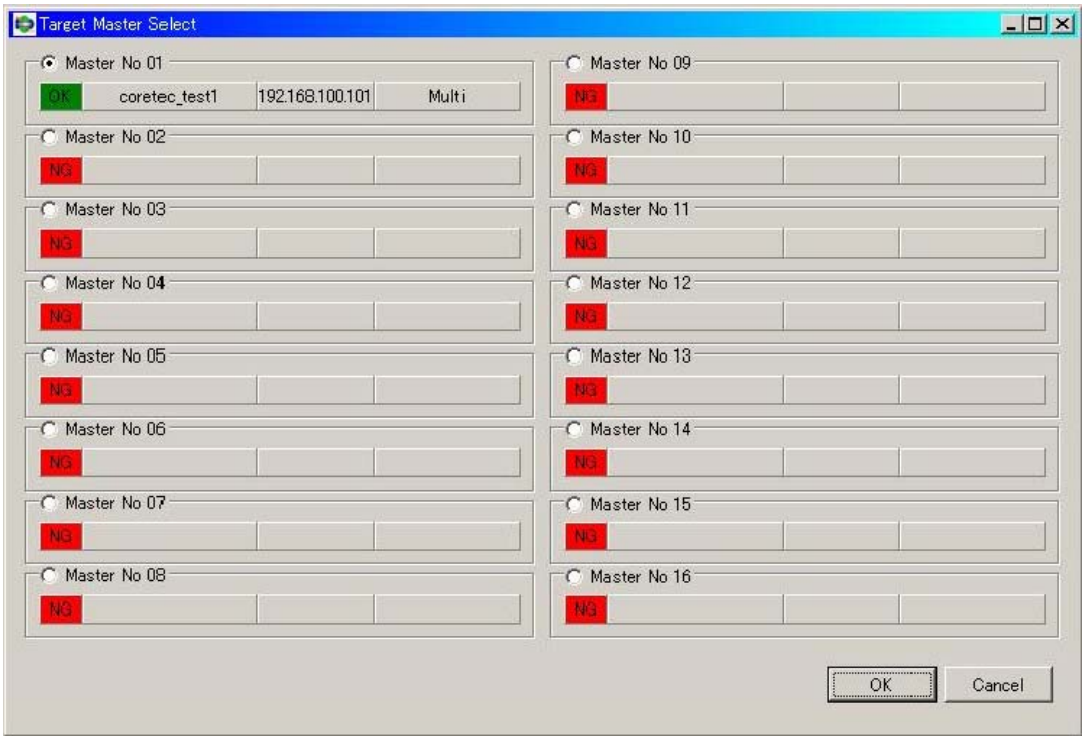
Fastening data

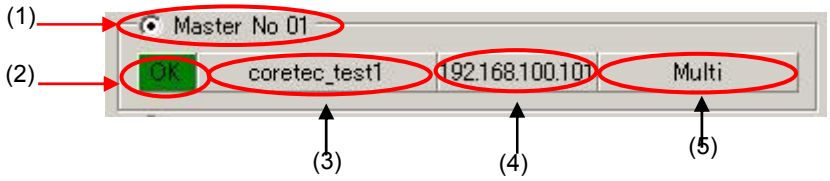
Time	Torque	Angle
0	10.17	0
20	0	-2
40	-0.04	-6
60	0	-9
80	0	-13
100	0	-17
120	0	-20
140	-0.04	-24
160	-7.51	-27
180	-6.39	-31
200	-4.14	-34
220	-2.71	-38
240	-1.69	-42
260	-1.13	-45
280	-0.94	-49
300	-0.87	-53
320	-0.87	-56
340	-0.87	-60
360	-0.91	-63
380	-0.91	-67
400	-0.94	-71
420	-0.98	-74
440	-0.98	-78
460	-1.02	-81
480	-1.06	-85
500	-1.06	-89
520	-1.06	-5
540	-0.98	-18

Graph point data

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4-2 Master Select





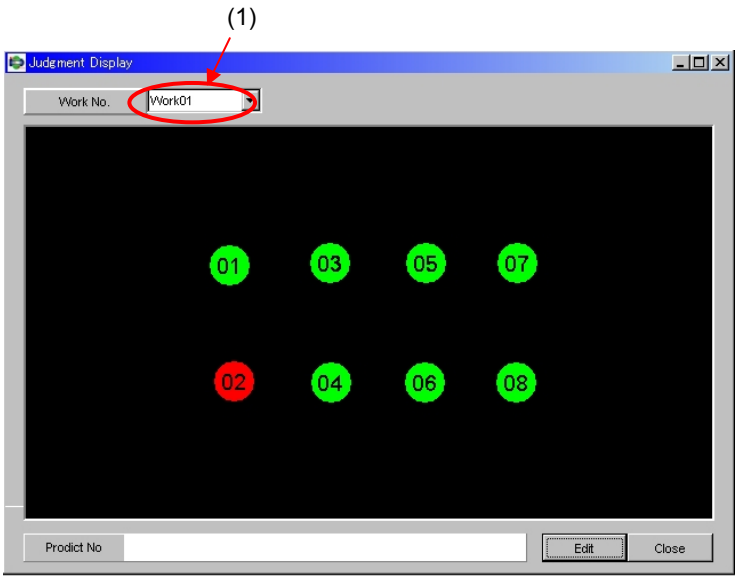
This is a MasterIPS selection screen.
As MasterIPS always communicates with MIN-CFG one to one, it is necessary to set the ID of the MasterIPS to be communicated.

For only MasterIPS which is communicating, various settings and data receiving can be allowed.

	Name	Function
(1)	Master No**	ID of MasterIPS to be connected. ID is set by rotary switch on the MasterIPS main body.
(2)	Communication Status indicator	Indicates communicating status between MasterIPS and MIN-CFG.
(3)	MasterIPS Name	Names of MasterIPS set on “System” setting screen (refer to 5-3-1) are displayed.
(4)	IP Address	IP address of MasterIPS is displayed.
(5)	Control Mode	Control mode of MasterIPS is displayed. (For setting method, refer to 5-3-1) Multi: Multi-spindle control mode Data: Data collecting mode

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5 MasterIPS edition
5-1 MasterIPS Monitor
5-1-1 Judgment
5-1-1-1 Judgment Display



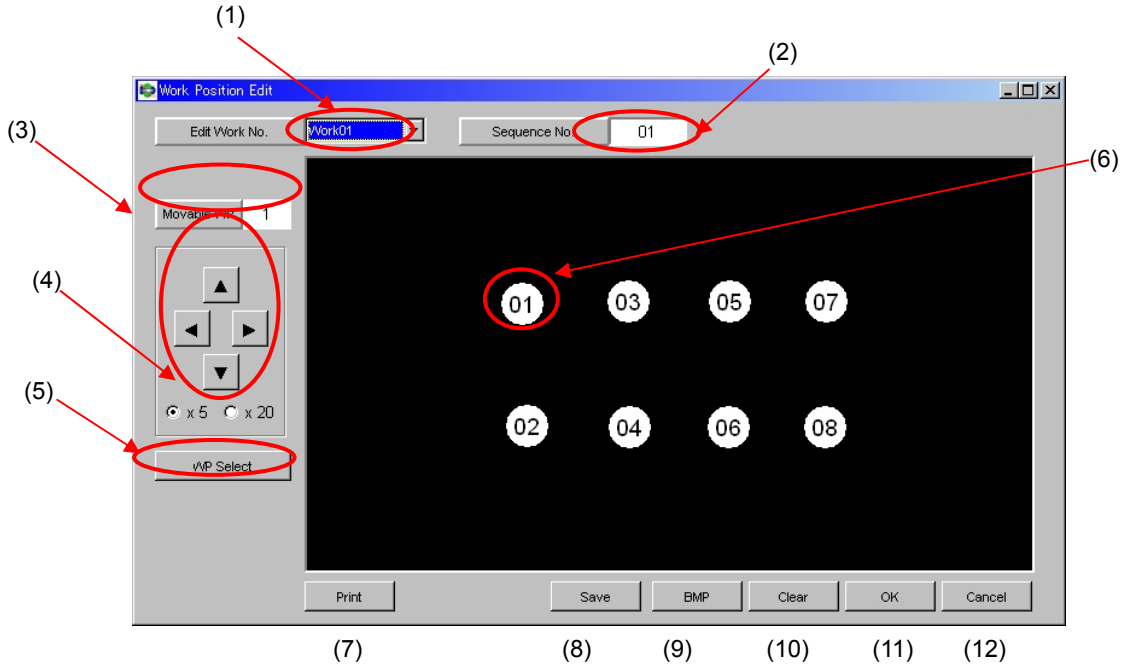
Displaying method: Master > Monitor > Judgment (Only in Multi mode)
Function : Result on each Work Position is displayed in color from the received result.
(OK: Green NG: Red Dormant spindle: Yellow)

Work Position No. can be freely laid out, and bit map (BMP) can also be pasted on the background.
If this screen is displayed, it can be used as simplified judging display.

	Name	Function
(1)	Work No	This is currently displayed work No. (file No.). Sequence No. (1 to 31) and Work No. (1 to 31) are respectively selected, when Sequence is executed on the PLC side, the screen is automatically switched. (EX) Sequence No. 1 is executed Work No. 01 is displayed Sequence No. 20 is executed Work No. 20 is displayed
(2)	Product No.	Displays product No. input into MasterIPS (through RS-232C)
(3)	「Edit」	Displays Edit screen.
(4)	「Close」	Closes this screen.

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5-1-1-2 Edit



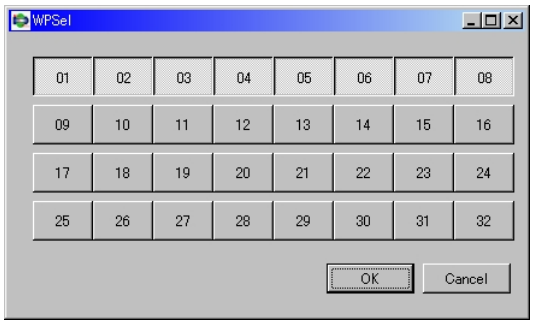
Displaying method: Master > Monitor > Judgment > Edit
Function : Judgment screen is edited.

BMP file can be pasted to layout and background of each work No.
While layout can also be changed by using cursor (4) on the left side of the screen, it can also be changed by dragging and dropping each Work Position.

	Name	Function
(1)	Work No.	Selects Work No. to be edited (No. 1 to 31).
(2)	Sequence No.	Sequence No. corresponding to Work No. is displayed (No. 1 to 31).
(3)	Movable WP(Work Position)	No. of Work Position which can be moved by (4). When each Work Position is clicked, the No. is changed to its No.
(4)	Cursor	Moves Work Position No. (WP01 in this case) selected by (3) to any position.Moving scale factor can also be changed.
(5)	WP Select	Sets what Work Position is displayed. (Refer to the next page)
(6)	Work Position	Layout can be freely made by dragging and dropping.
(7)	Print	Prints data which is being displayed.
(8)	Save	Saves edited Work No. file. Before pressing “OK,” be sure to save.
(9)	BMP	Captures image file of BMP format. (Approximately 600 x 340)
(10)	Clear	Erases displayed screen.
(11)	OK	Reflects setting and returns. Before pressing “OK,” be sure to press “Save” to save.
(12)	Cancel	Returns without reflecting setting.

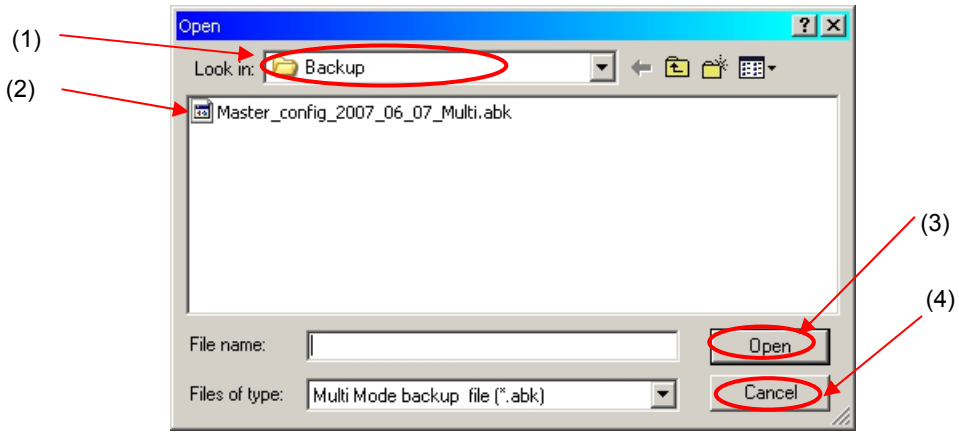
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♦ Number setting screen



This is displayed when sequence No. or Work Position is selected.
Select intended No. and press “OK” button.

♦ File selection screen

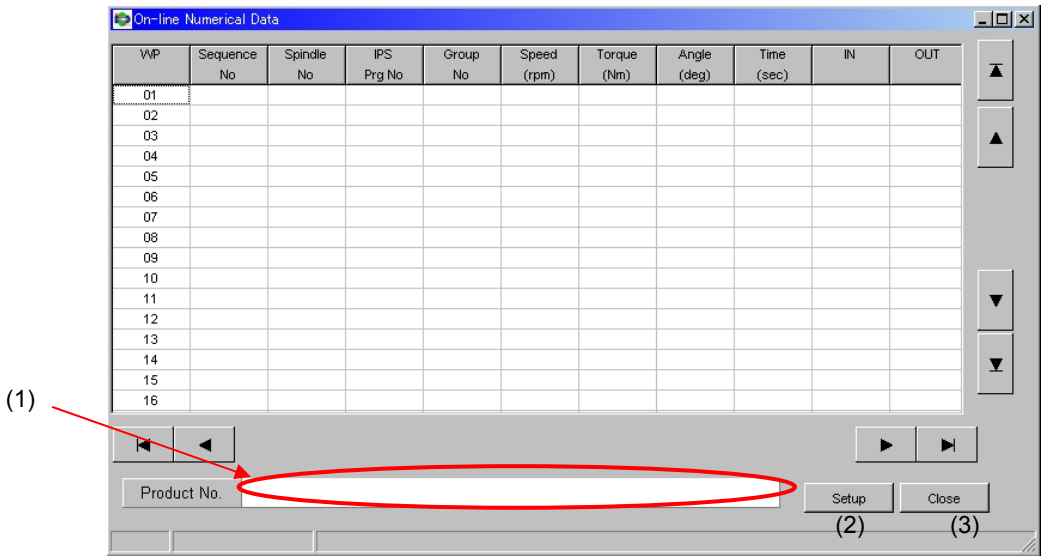


This screen is displayed when file is opened or saved.

	Name	Function
(1)	Directory	Sets saving destination for file.
(2)	Saved files	Displays saved file.
(3)	Open	Opens selected file.
(4)	Cancel	Closes this screen.

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5-1-2 Numerical
5-1-2-1 Online

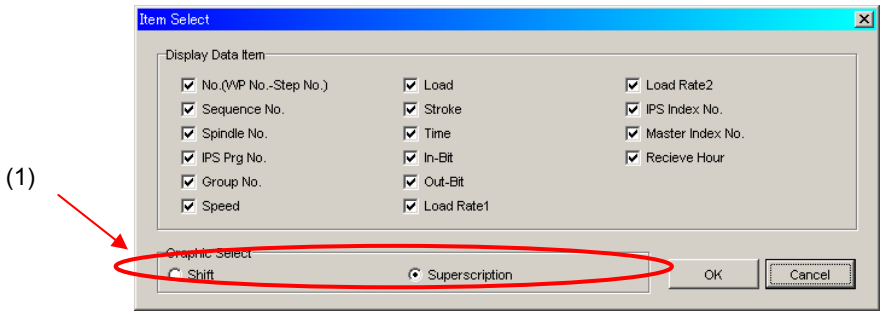


Displaying method: Online > Master > Monitor > Numerical
Function :Numerical data received from MasterIPS is displayed. (Only during online)

This is a numerical result displaying screen during online. Result data is displayed for every Work Position.
Received data is saved on hard disk, and can be monitored during offline.
The displayed data automatically disappears at the timing of Sequence start or Data collection start.

	Name	Function
(1)	Product No.	Displays product No. input to MasterIPS (through RS-232C).
(2)	Setup	Sets data to be displayed.
(3)	Close	Closes this screen.

♦ Data Select screen

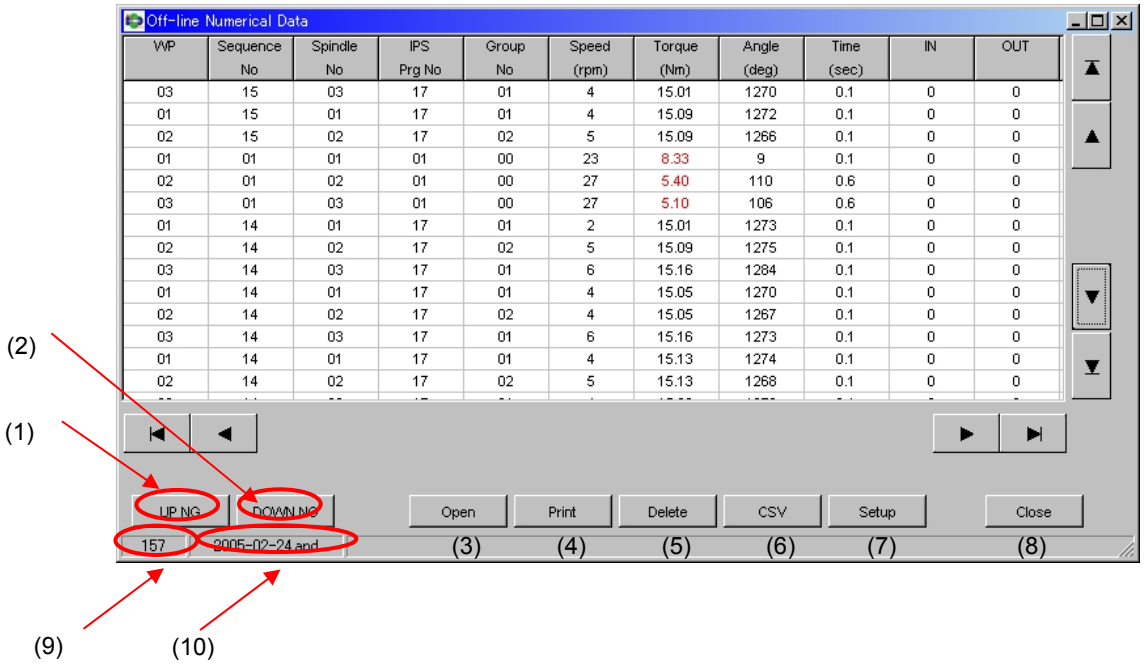


When “Setup” on (2) is pressed, Data Select screen is displayed. Now, set the data item you want to display.

	Name	Function
(1)	Graphic Select	Selects Displaying method for numerical data. Shift: Classifies received data for every step, and displays on individual screens. Superscription: Displays updated data every time data is received.

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5-1-2-2 Off-Line



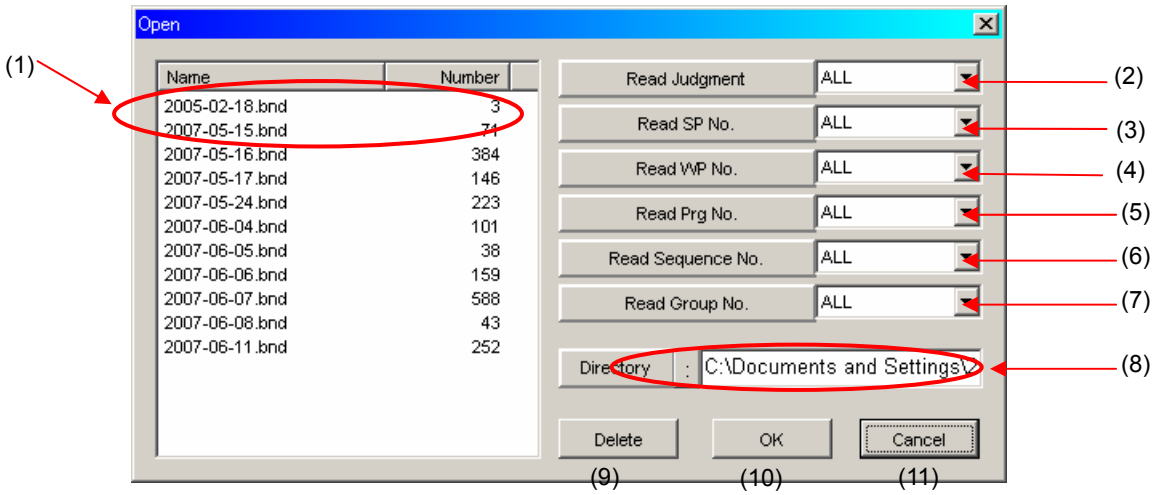
Displaying method: Offline > Master > Monitor > Numerical
Function : Numerical data saved on HD in PC is displayed (Only during offline).

NG items are displayed in red letters.
Sort of NG data and displayed data can be converted into CSV.

	Name	Function
(1)	UP NG	Retrieves NG data above cursor (clicked data) position.
(2)	DOWN NG	Retrieves NG data below cursor (clicked data) position.
(3)	Open	Numerical data file selection screen is displayed. (Refer to the next page.)
(4)	Print	Prints displayed data.
(5)	Delete	Deletes record on cursor (clicked data) position.
(6)	CSV	Displayed data is converted into CSV.
(7)	Setup	Sets data to be displayed.
(8)	Close	Closes this screen.
(9)	Number of Data	Displays number of data in file.
(10)	File Name	Displays name of opened file.

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♦ Opening numerical (graph) file



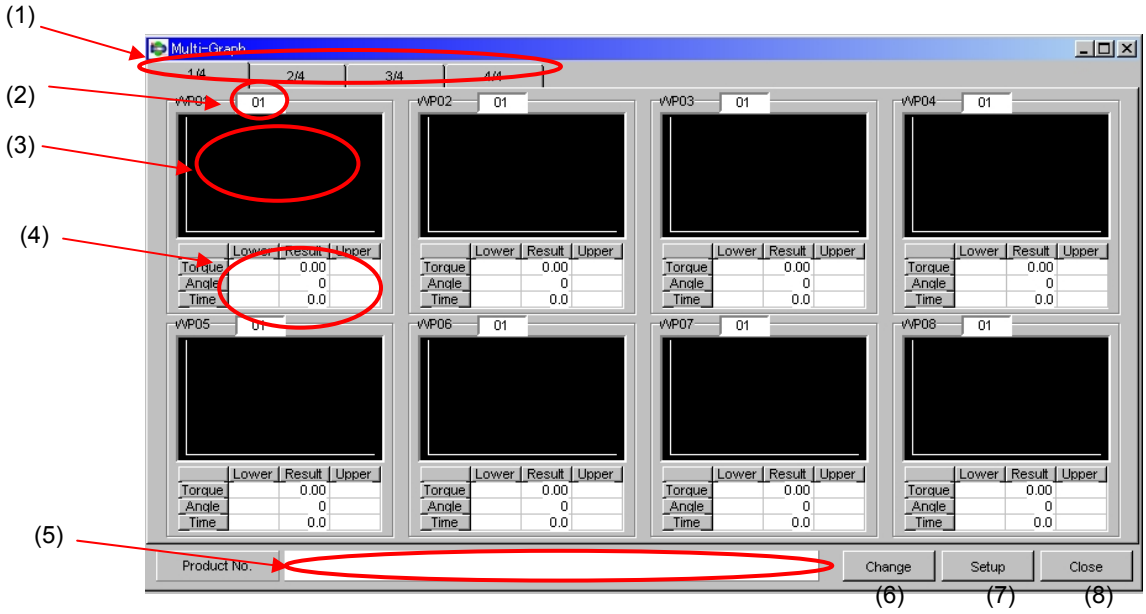
]

When numerical data files are developed, they can be filtered under each condition.

	Name	Function
(1)	File Name & Number of Data	Displays names and data item number of numerical data files in directory set in (8).
(2)	Read Judgment	Sets under what judging condition data is developed when selected file is developed. All: Displays both of OK and NG data OK: Displays OK data only NG: Displays NG data only
(3)	Read SP No.	Sets what spindle No. data is developed when selected file is developed. All: Displays all spindle No. data Select: Designates spindle No. data
(4)	Read WP No.	Sets what Work Position No. data is developed when selected file is developed. All: Displays all Work Position No. data Select: Designates Work Position No. data
(5)	Read Prg No.	Sets what IPS program No. data is developed when selected file is developed. All: Displays all IPS program No. data Select: Designates IPS program No.
(6)	Read Sequence No.	Sets what sequence No. data is developed when selected file is developed. All Displays all sequence No. data Select: Designates Sequence No.
(7)	Read Group No.	Sets what group No. data is developed when selected file is developed. All: Displays all group No. data Select: Designates group No. data
(8)	Directory	Displays reference directory for numerical data file. When clicked, this can be changed.
(9)	Delete	Deletes numerical data file selected in (1).
(10)	OK	Develops file under condition set as above.
(11)	Cancel	Closes this screen.

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5-1-3 Graph (On-Line)
5-1-3-1 Multi-Graph



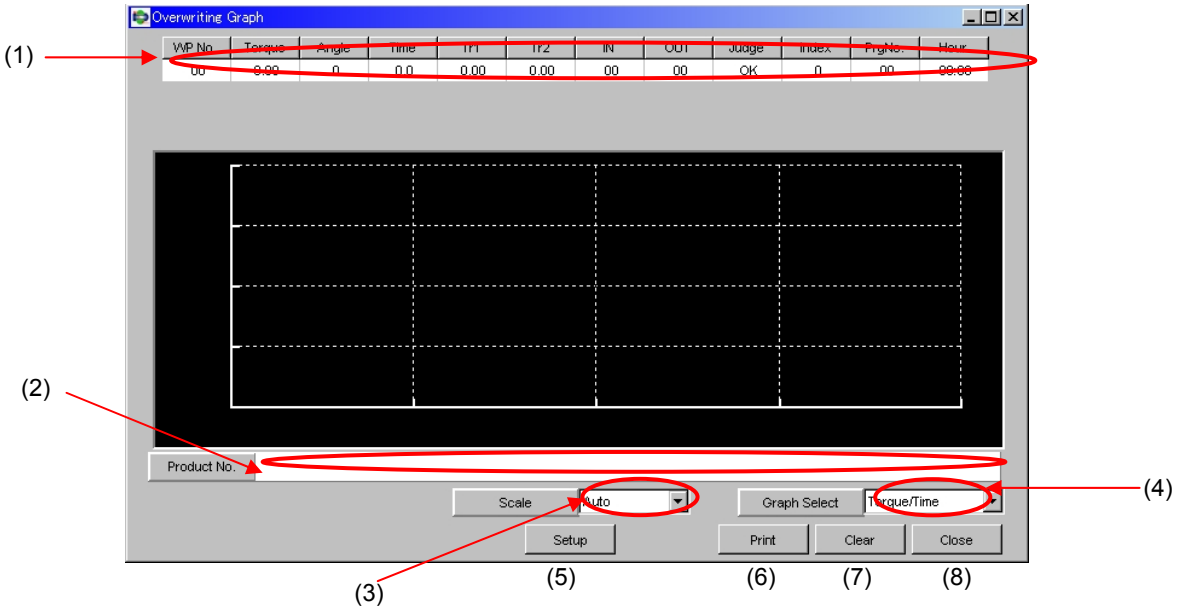
Displaying method: Online > Master > Monitor > Ope Log
Function : Graph data received from MasterIPS is displayed (Only during online).

Graph data for one process on eight Work Positions are simultaneously displayed.
When each graph is clicked, the graph on the Work Position is magnified to be displayed.
The displayed data automatically disappeared at Sequence start or Data collection start.
(It is not saved on HD in PC.)

	Name	Function
①	Page switching	Switches displayed page.
②	Step No.	Sets step No. to be displayed when there are some steps in one process.
③	Graph Display	Displays graph of the designated step No. (Numerical value set in ②). And, when clicked, the graph is magnified to be displayed. (Refer to the next page.)
④	Numerical result	Displays results of torque, angle and time. For “Upper” and “Lower,” judged value of executing program is displayed.
⑤	Product No.	Displays Product No. input into MasterIPS (through RS-232C).
⑥	「Change」	Switches between Multi graph display and superposed graph display screen (refer to 5-1-3).
⑦	「Setup」	Sets the display.
⑧	「Close」	Closes this screen.

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5-1-3-2 Expansion Graph

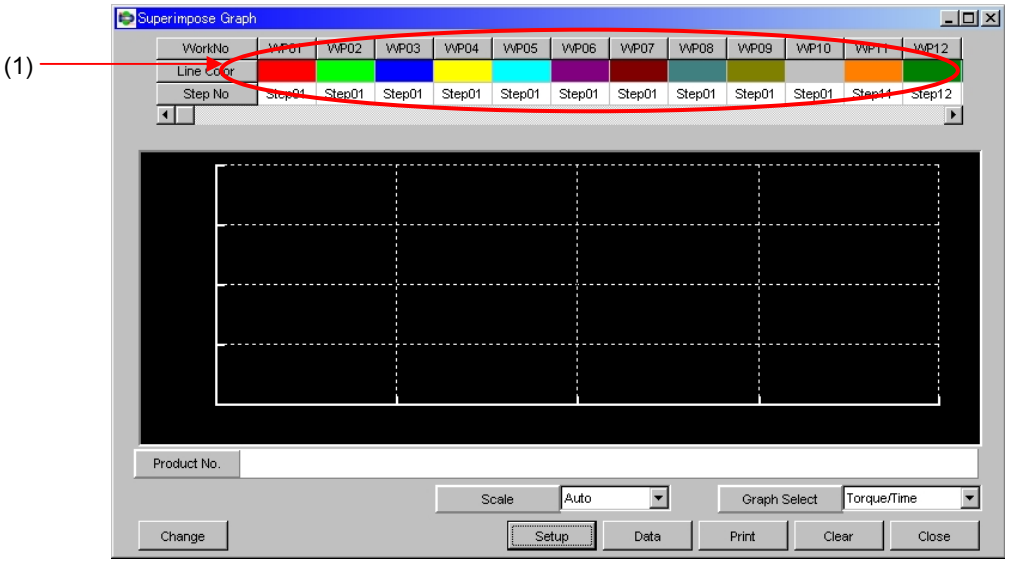


When graph part in 5-1-3-1 is clicked, graph on the Work Position is magnified to be displayed.

	Name	Function
(1)	Numerical Data	Displays numeric value data of graph. Displayed content is a value of final judging value.
(2)	Product No.	Displays product No. input into MasterIPS (through RS-232C).
(3)	Scale	Changes the scale. “Auto”: Performs automatic scaling. “Data”: Performs scaling by using maximum and minimum values of data. “User”: Changes the scale to scale set by user.
(4)	Graph Select	Selects type of graph (Torque/Time, Torque/Angle).
(5)	「Setup」	Sets the displaying (refer to 5-3-4-2).
(6)	「Print」	Prints the displayed content.
(7)	「Clear」	Clears the displayed content. (When Sequence or Data collection starts, previous content is automatically cleared.)
(8)	「Close」	Closes this screen.

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5-1-3-3 Superimpose Graph

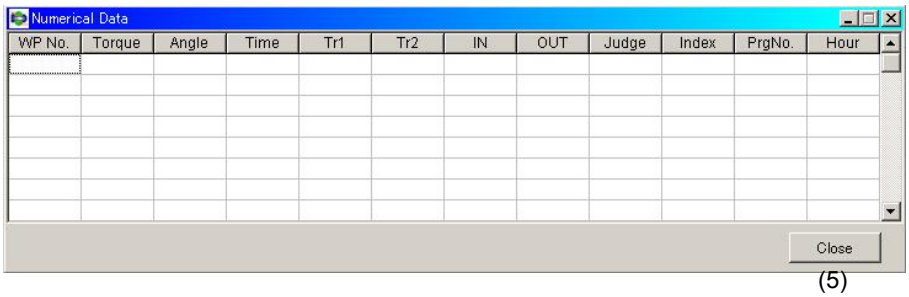


This screen is displayed when “Change” button is pressed in 5-1-3-1.
Graph is superimposed to be displayed on one screen.

	Name	Function
(1)	Color & Step No.	Displays color of each graph and step No. of the displayed graph. Step No. can be changed by setting on (3).
(2)	Change	Switches Multi display (5-1-3-1) and screen.
(3)	Setup	Performs display setting (refer to 5-3-4-1).
(4)	Data	Displays numeric value data of the currently displayed graph.

* Functions of the other buttons are same as described in 5-1-3-2.

♦ Numerical Data Screen

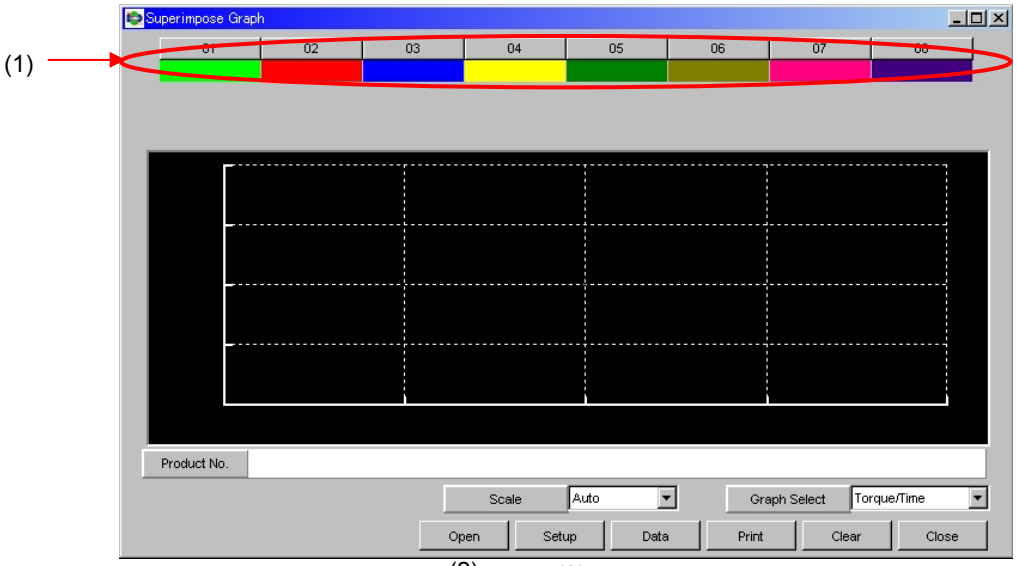


Displays numerical value data of the displayed graph.

	Name	Function
(5)	Close	Closes this screen.

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5-1-4 Graph (Off-Line)



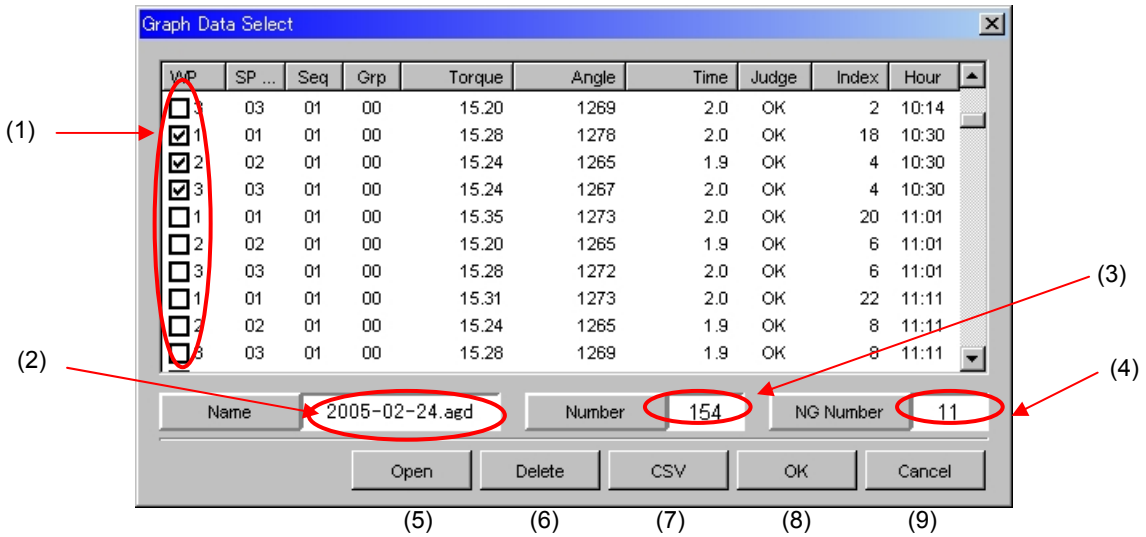
Displaying method: Offline > Master > Monitor > Graph
Function : Saved graph data file is opened and up to eight spindles are simultaneously displayed (only during offline).

	Name	Function
(1)	Graph Color	Color of each graph Graph is sequentially allotted from that which is received at an earlier time.
(2)	Open	Displays graph file selection screen (refer to the next page).
(3)	Setup	Performs display setting (refer to 5-3-4-3).

* Functions of the other buttons are the same as described in 5-1-3-2 and 5-1-3-3.

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♦ Opening graph data file



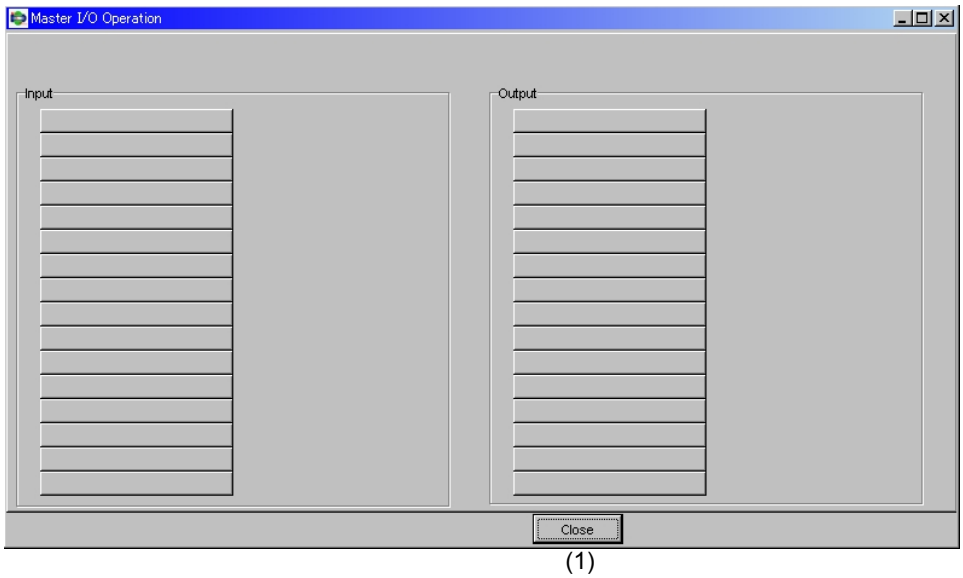
When “Open” is pressed in 5-1-4, the above screen is displayed.
Open file on this screen, and place a check mark on the record(s) you want to display, then a graph is displayed.
The checked record(s) can also be converted into a CSV file.

When more than eight records are displayed, eight records from an earlier time are displayed on a graph.
Even if more than eight records are selected, all of them can be converted into CSV.

	Name	Function
(1)	Check Box	When this Box is clicked, ✓ is displayed. Record with a ✓ can be displayed on a graph or can be converted into a CSV file.
(2)	File Name	Displays currently opened graph file name.
(3)	Number of Data	Displays number of graph data in graph file.
(4)	Number of NG Data	Displays number of NG data in (3).
(5)	Open	Selects graph file (Screen of Page 22 is displayed)
(6)	Delete	Deletes selected record.
(7)	CSV	Converts selected record into a CSV file, and saves in designated directory.
(8)	OK	Displays selected record.
(9)	Cancel	Closes this screen.

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5-1-5 Master I/O Monitor



(1)

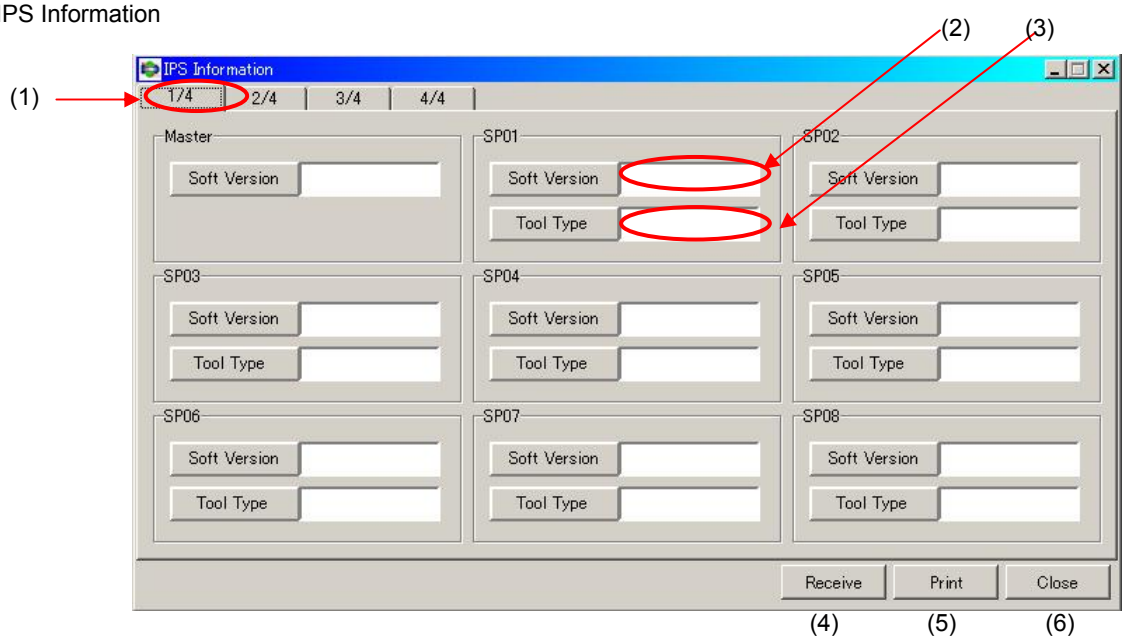
Displaying method: Master > Monitor > I/O
Function : Status of input and output signal to MasterIPS from PLC is monitored.

If MasterIPS is connected, signal name is displayed on each button, and letters for bit in ON status change to a red color.
Input is an input into MasterIPS from PLC, and output is an output to PLC from MasterIPS.
Signals to be used and displayed depend on control mode (Multi/Data).

	Name	Function
(1)	Close	Closes this screen.

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5-1-6 IPS Information



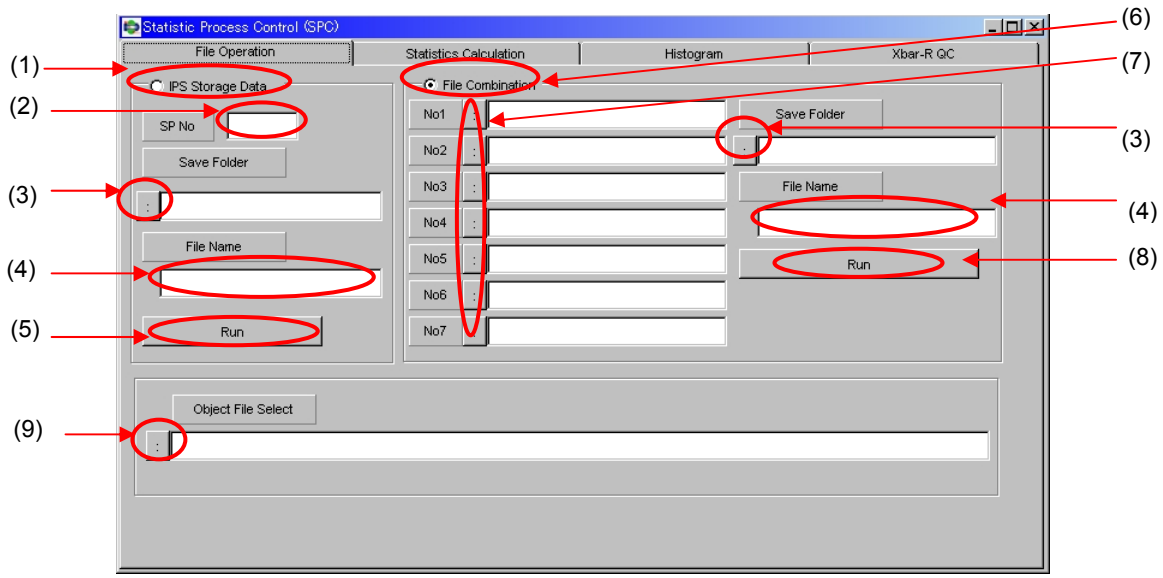
Displaying method: Master > Monitor > Information
Function : Firmware version of MasterIPS and IPS controller, and tool model connected to IPS controller are displayed.

Monitor for 32 spindles can be performed by switching pages by tab.

	Name	Function
(1)	Tab	Switches page.
(2)	Software Version	Displays firmware version.
(3)	Tool Type	Displays tool model connected to IPS controller.
(4)	Receive	Receives data.
(5)	Print	Prints received content.
(6)	Close	Closes this screen.

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5-1-7 SPC
5-1-7-1 File Operation



Displaying method: Master > Monitor > SPC
Function : Statistical calculation is performed from numerical results data, and the calculation result is displayed.

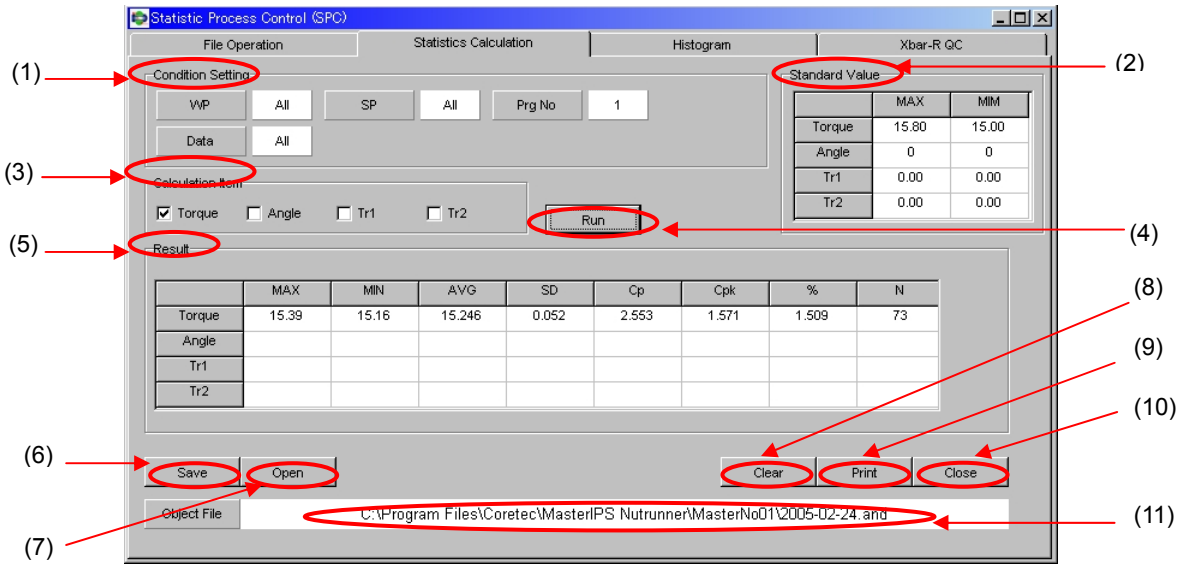
MIN-CFG can use numerical data file (“AND” file: ***.bnd) to perform statistical processing calculation.
(Actual statistical calculation is performed by using only judgment OK data of target “AND” file.)
This screen creates and selects calculation target file.

One “AND” file is created for one day.
In order to perform statistical processing in a unit of a week/a month, it is required to combine files.

	Name	Function
(1)	IPS Storage Data (Selectable only during online)	Receives the result data of 2000 items stored in IPS, and selects when creating “AND” file.
(2)	SP No.	Selects IPS spindle No. to receive data of 2000 items.
(3)	destination to save	Designates storage destination for created “AND” file.
(4)	File name	Inputs name of “AND” file to be created. Extension is automatically added.
(5)	Run	Receives data from IPS selected in (2). **Reception cannot be performed while MasterIPS is in operation.**
(6)	File Combination	Combines AND files, and selects when creating new “BND” file.
(7)	Selects “AND” files to be combined.	Up to 7 “AND” files can be simultaneously combined.
(8)	Run	Executes combination of “AND” files.
(9)	Open file	Selects “AND” file for which statistical processing calculation is performed.

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5-1-7-2 Statistic Calculation



Statistical calculation is performed from target numerical value with respect to standard value, and the result is displayed.
Only OK data in the file is subject to calculation. (NG data is disregarded)
The calculation result can be stored as a file.

This screen can derive the following numerical values respectively for data of Torque, Angle, Tr1 and Tr2.

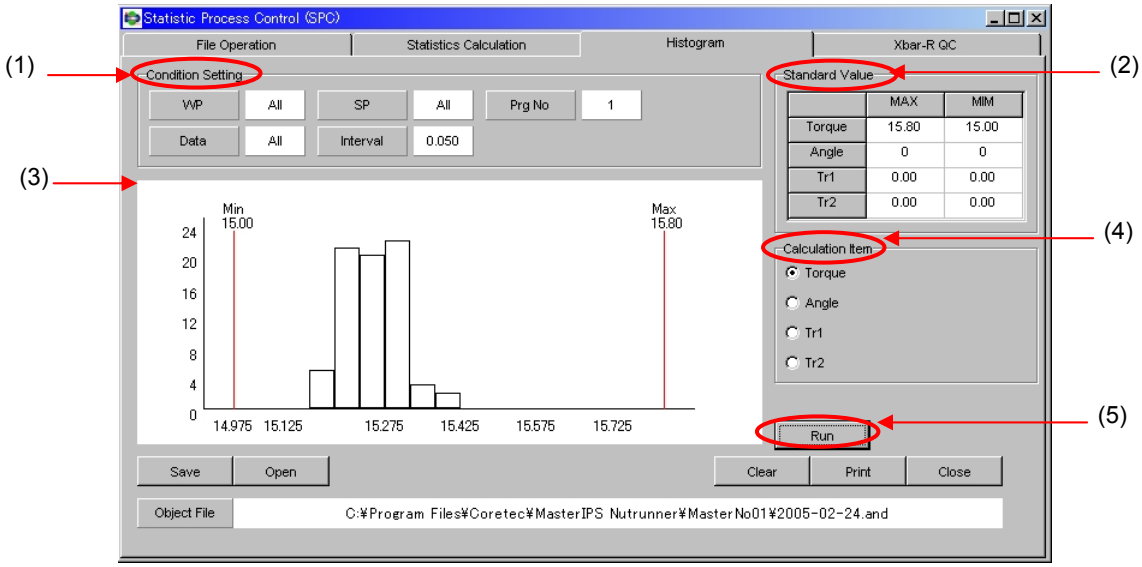
"MAX": Displays maximum value of target data.
"MIN": Displays minimum value of target data.
"AVG": Displays average value of target data.
"SD": Displays standard deviation of target data.
"Cp": Displays process capacity index.
"Cpk": Displays process capacity index also taking deviation into account.
"%": Displays ratio of difference between maximum value (MAX) and minimum value (MIN) with respect to average value (AVG).
"N": Number of samples

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	Name	Function
(1)	Condition Setting	Performs filtering for statistical calculation target data. WP > “ALL”: Targets data on all Work Positions. “01 to 32”: Targets data on designated Work Position. SP > “ALL”: Targets data of all spindle Nos. “01 to 32”: Targets data of designated spindle No. Prg > “ALL”: Targets data of all program Nos. “01 to 32”: Targets data of designated program No. Data > “ALL”: Targets all data. “01 to 99999”: Targets data of designated number from newest target file.
(2)	Standard Value	Inputs standard value of items (Torque, Angle, Tr1, Tr2) for calculation target. **Note that correct calculation cannot be performed unless input.**
(3)	Calculation Item	Selects items for which statistical calculation is performed.
(4)	Run	Calculates based on setting on (1) to (3).
(5)	Result	Displays calculation result.
(6)	Save	Stores calculation result.
(7)	Open	Opens stored result file (*.asc file).
(8)	Clear	Clears displayed data.
(9)	Print	Prints displayed data.
(10)	Close	Closes this screen.
(11)	File directory and name	Displays statistical calculation target file name and reference directory.

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5-1-7-3 Histogram



Histogram of designated item is created from target numerical value file, and displayed.
Displayed histogram can be stored as a file (*.ahg file).

	Name	Function
(1)	Condition Setting	Performs filtering for target data for which histogram is created. “Interval” Sets width of histogram interval. The other items are the same as those in “5-1-7-2 Statistic Calculation.”
(2)	Standard Value	Inputs standard values of calculation target items (Torque, Angle, Tr1, Tr2). (When set by calculation in 5-1-7-2, same value is set.) Unless input, histogram is not displayed. Inputted numerical value is displayed on graphic screen as standard value.
(3)	Histogram	Displays created histogram. (Numerical values on abscissa are values for calculation, and there is no meaning.)
(4)	Calculation Item	Selects item displayed in histogram.
(5)	Run	Calculates based on setting.

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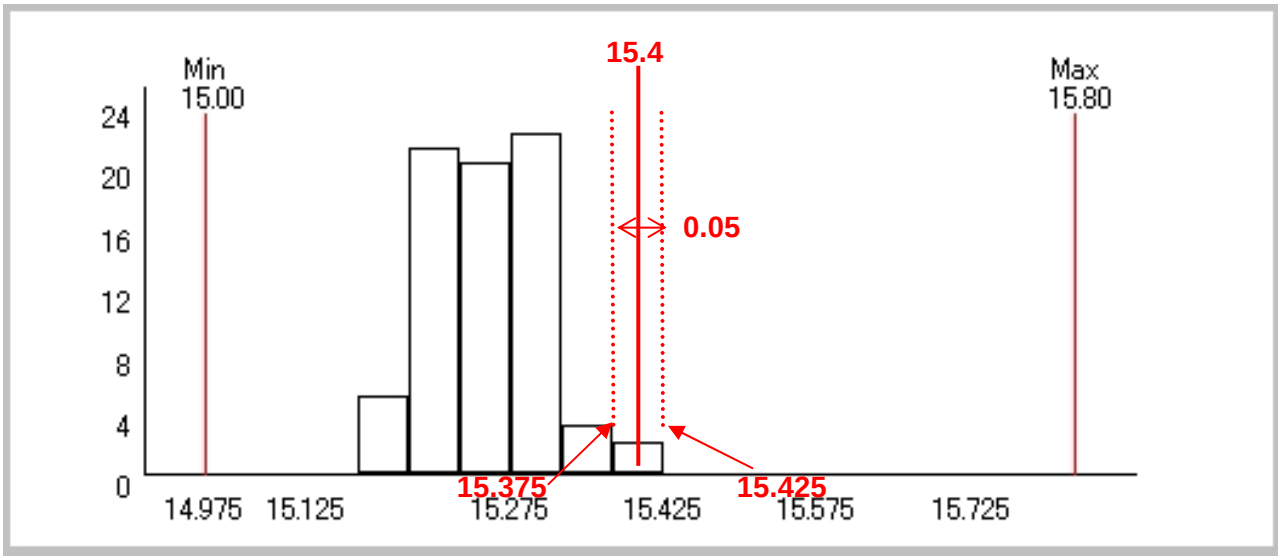
♦ About histogram display

Histogram is displayed with reference to median [(MAX+MIN)/2] of standard and median of “Interval.”

Sample on the following histogram shows,

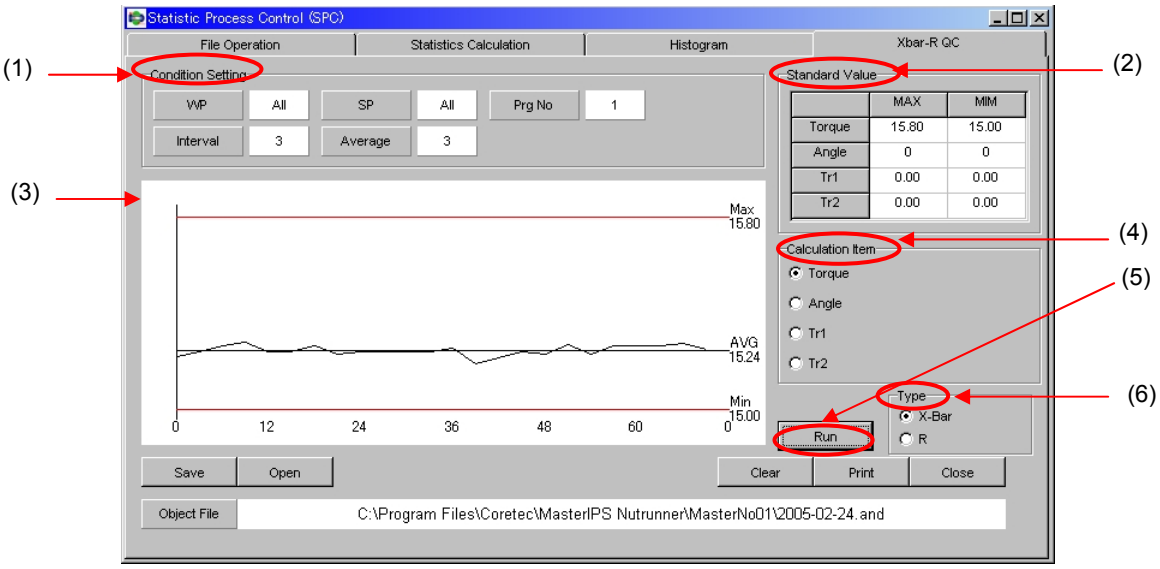
Standard upper limit value (MAX)	Standard lower limit value (MIN)	Median Interval	Interval
15.8	15.0	15.4	0.05

and how to view histogram is as follows.

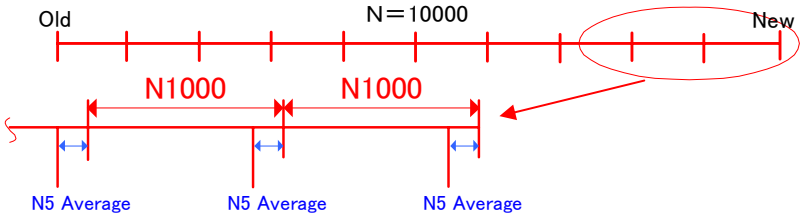


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5-1-7-4 Xbar-R QC

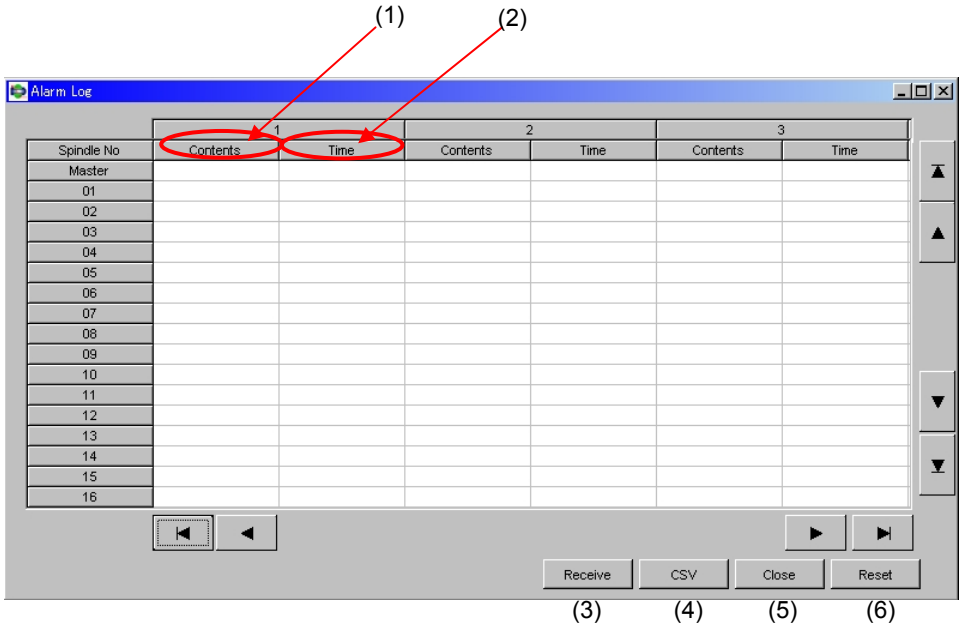


X bar control chart and R control chart of designated item are created from target numerical value file, and displayed. Displayed control chart can be stored as file (*.axr file).

	Name	Function
(1)	Condition Setting	Performs filtering for target data for which control chart is created, and extracts data. “Interval” Sets data interval. “Average” Calculates average value of the set N number. (Ex) In a case where total data number is 10000, “Interval”=1000 and “Average”=5, 
(2)	Standard Value	Inputs standard values of calculation target items (Torque, Angle, Tr1, Tr2). (When set by calculation in 5-1-7-2, the same value is set.) Unless input, control chart is not displayed. Inputted numerical value is displayed on graphic screen as standard value.
(3)	Control chart	Displays created control chart.
(4)	Calculation Item	Selects an item to be displayed on control chart.
(5)	Run	Calculates based on setting.
(6)	Type	Selects either X bar control chart or R control chart to be displayed.

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5-1-8 Alarm Log



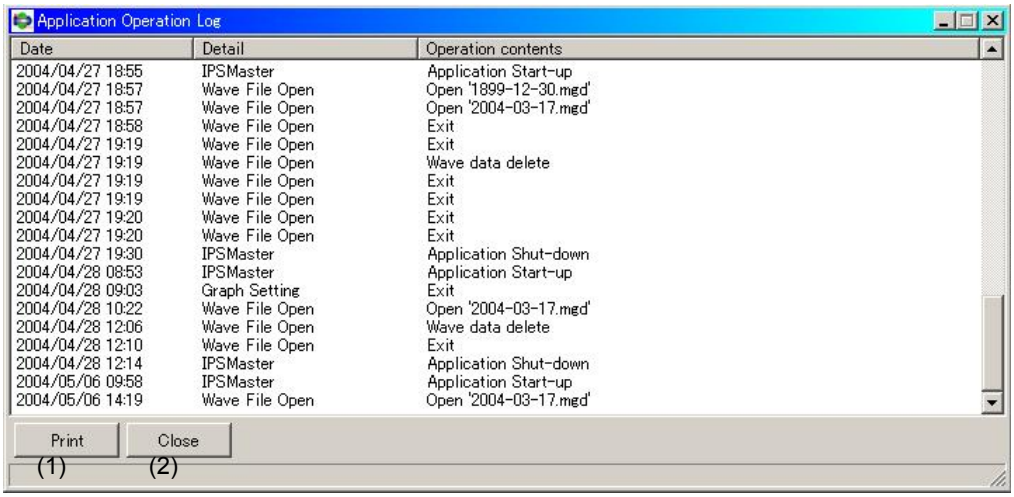
Displaying method: Master > Monitor > Alarm Log
Function : Displays the newest 30 alarms of MasterIPS and each IPS.

This is an alarm log check screen.
This screen receives the newest 30 items of MasterIPS stored in the MasterIPS and abnormal content of IPS and occurring time, and displays them.

	Name	Function
(1)	Contents	Displays alarm No. of abnormal content.
(2)	Time	Displays occurring time of alarm.
(3)	Receive	Receives abnormality history.
(4)	CSV	Converts displayed content into CSV file.
(5)	Close	Closes this screen.
(6)	Reset	Resets abnormality history in MasterIPS.

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5-1-9 Application Operation Log

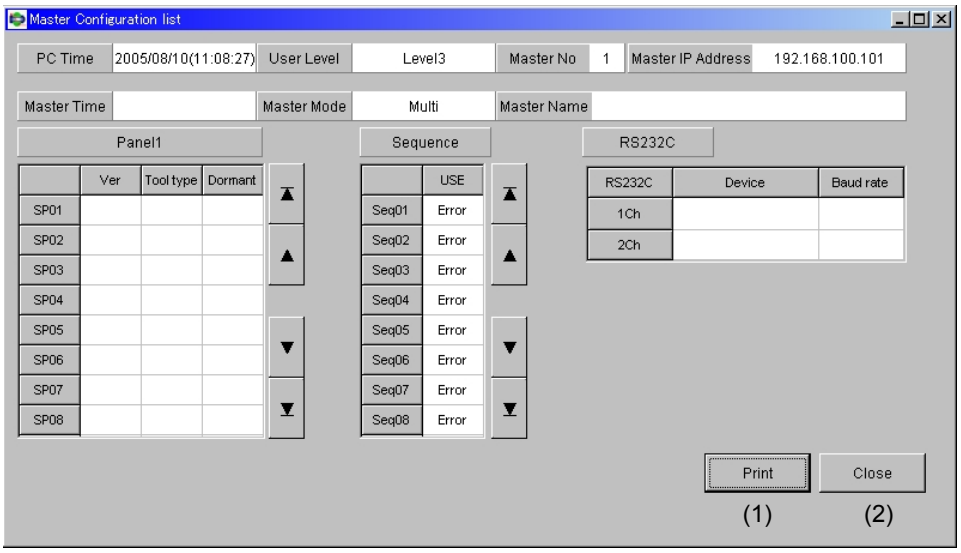


Displaying method: Master > Monitor > Ope Log
Function : When parameter or program is transmitted to MasterIPS or IPS, or when set content of MIN-CFG is changed, the time and the content are displayed.

	Name	Function
(1)	Print	Prints displayed content.
(2)	Close	Closes this screen.

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5-1-10 Confirm



Displaying method: Master > Monitor > Confirm
Function : Setting information of MasterIPS and tool information of IPS are displayed in a list.

When “Confirm” is pressed with MasterIPS and PC being connected, set information is received from MasterIPS. (It takes some time)

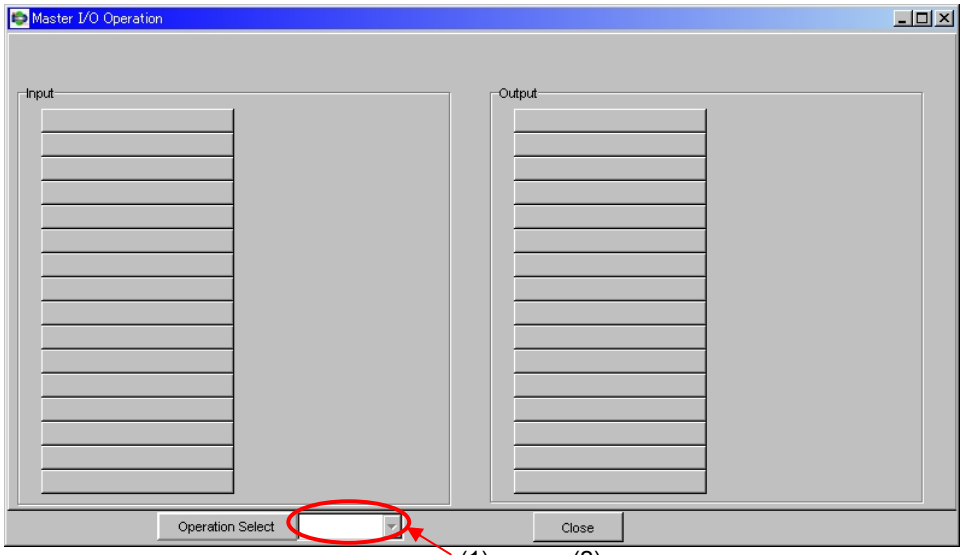
♦ Displaying items

1. PC time: Displays time on PC in which MIN-CFG is installed.
2. User level: Displays current user level of MIN-CFG.
3. Master No.: Displays ID No. of connected MasterIPS.
4. Master IP address: Displays AP address of connected MasterIPS.
5. Master Time: Displays time in MasterIPS.
6. Master Mode: Displays current control mode (Multi/Data) of MasterIPS.
7. Master Name: Letters input by System setting (refer to 5-3-1).
8. IPS Connection: Information of IPS connected to MasterIPS is displayed.
9. Sequence: Use status of Sequence (program) of MasterIPS is displayed.
10. RS-232C: Device setting and baud rate of RS-232C port of MasterIPS are displayed.

	Name	Function
(1)	Print	Prints displayed content.
(2)	Close	Closes this screen.

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5-2 MasterIPS Operation
5-2-1 Master I/O Operation



Displaying method: Master > Operation > I/O
Function : I/O of MasterIPS is compulsorily operated from PC.

When each button is pressed (clicked) once, they are turned ON, and when they are pressed once again, it is turned OFF.
When MasterIPS and MIN-CFG are connected, name of each bit is displayed.

This function is used when operation cannot be performed from PLC or when wiring is checked.

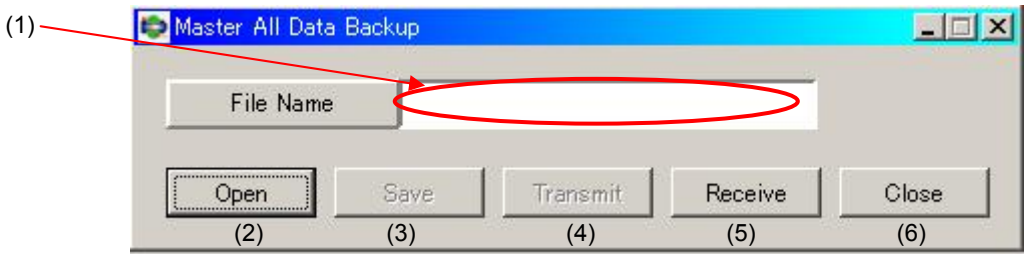
	Name	Function :
(1)	Operation Select	Selects which operation of input or output is performed. No Only monitoring is performed. Input Designated bit is input from PC to MasterIPS instead of PLC. Output Designated bit is compulsorily output from MasterIPS to PLC.
(2)	Close	Closes this screen.

Caution

When inputting into MasterIPS, thoroughly check bit No. and peripheral status.
In case of Multi mode, Nutrunner operates when sequence is executed.

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5-2-2 Master All Data Backup



Displaying method: Master > Operation > Backup
Function : All set data (such as System setting, Sequence) of MasterIPS are received as a single unit and stored.

♦ Operating method

(Receiving backup file)

1. Press “Receive” on (5). (It takes some time to receive)
2. When receiving is completed, press “Save” on (3), and name the received file to store.

(Transmitting backup file)

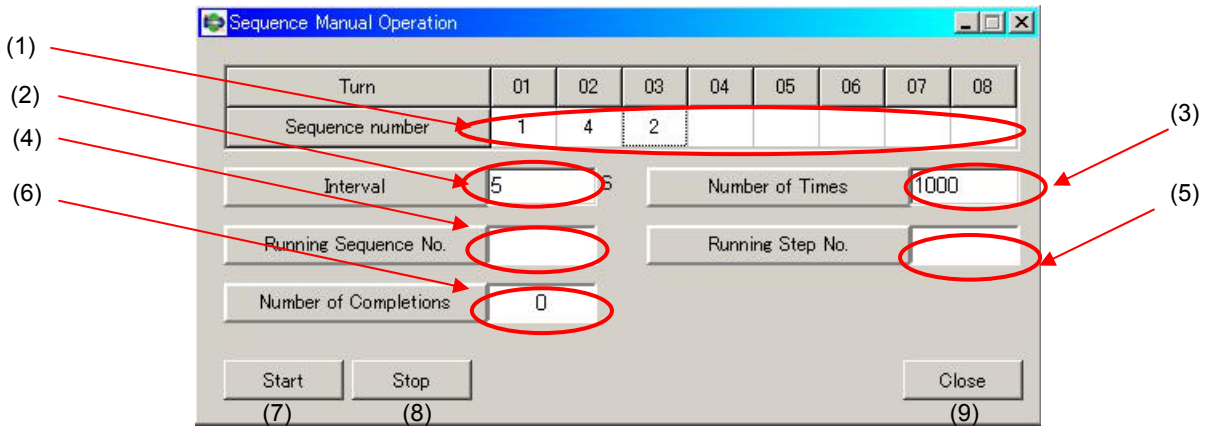
1. Press “Open” on (2) to open the stored backup file (*.abk).
2. Check that same name as the opened file is displayed in (1), and press “Transmit” on (4) to transmit to MasterIPS.

* **The received backup file (***.abk) cannot be opened.**
* **Power must be cycled for transmitted data to take effect.**

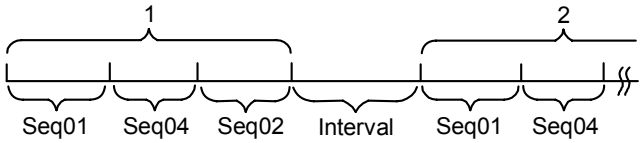
	Name	Function
(1)	File Name	Displays backup file name when the backup file is stored on (2) is displayed.
(2)	Open	Opens stored backup file.
(3)	Save	Stores received backup file.
(4)	Transmit	Transmits backup file displayed in (1) to MasterIPS.
(5)	Receive	Receives backup file from MasterIPS.
(6)	Close	Closes this screen.

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5-2-3 Sequence Manual Operation

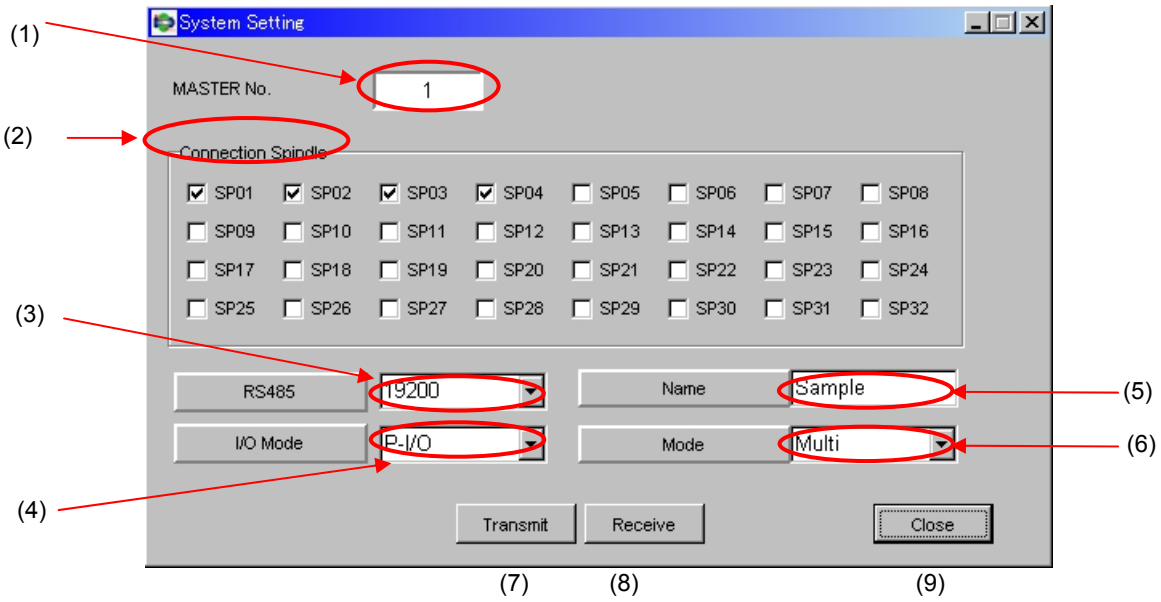


Displaying method: Master > Operation > Action
Function : Sequence is executed from PC. Even if there exists no control device such as PLC, Sequence can be operated. (Only in Multi mode)

	Name	Function
(1)	Sequence number	Sets “Sequence No.” executed by one operation. The above diagram represents the following operation. 
(2)	Interval	Inputs stop time in units of seconds.
(3)	Number of Times	Inputs executing times.
(4)	Running Sequence No.	Currently executing “Sequence No.” is displayed.
(5)	Running Step No.	Step No. of Sequence displayed in (4) is displayed.
(6)	Number of Completion	How many times of number set in (3) is completed is displayed.
(7)	Start	Starts operation.
(8)	Stop	Stops operation.
(9)	Close	Closes this screen. (If being executed, operation is stopped.)

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5-3 MasterIPS Setting
5-3-1 System Setting



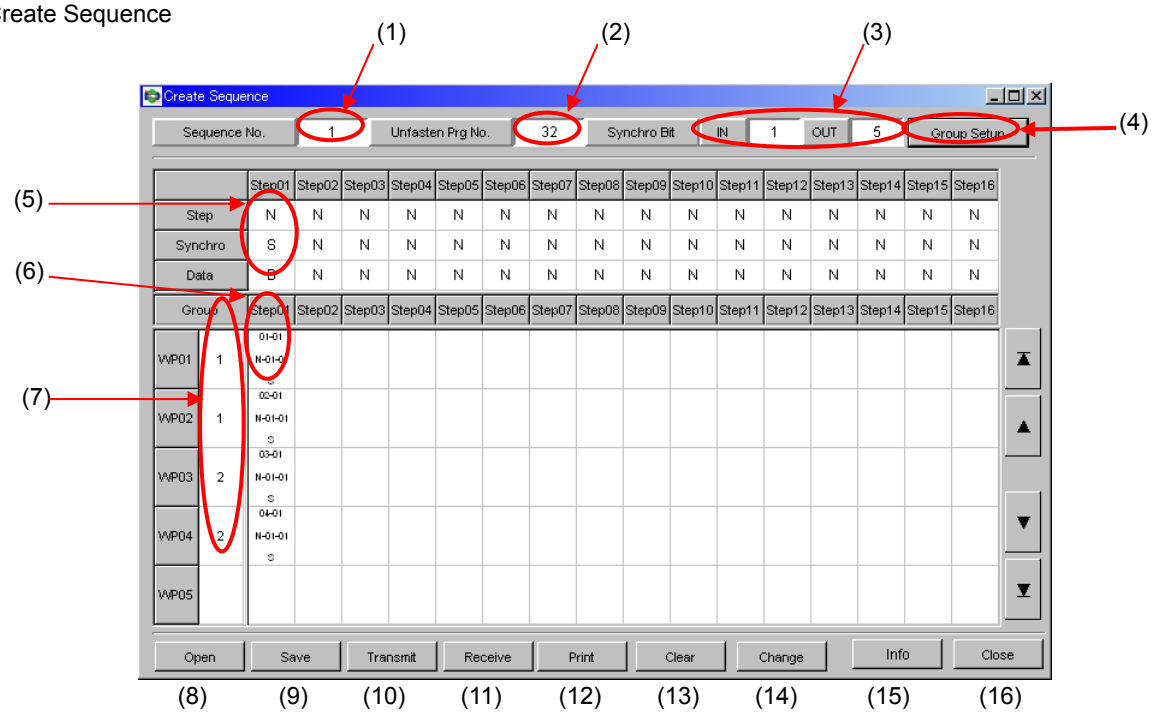
Displaying method: Master > Setting > System
Function : Initial setting of MasterIPS is performed.

	Name	Function :
(1)	MASTER No.	Displays ID No. of currently connected MasterIPS. (For setting method, refer to 4-2.)
(2)	Connection Spindle	Sets spindle No. of IPS connected to MasterIPS. Alarm occurs if MasterIPS cannot communicate with IPS set here.
(3)	RS485	Sets baud rate of RS485 for connecting MasterIPS and IPS. Normally select “19200” as default of IPS is 19200bps.
(4)	I/O Mode	Selects type of I/O for control. P-I/O: Uses P-I/O connector for MasterIPS main body. DeviceNet: Uses optional DeviceNet board. CC-Link: Uses optional CC-Link board. Profibus: Uses optional Profibus board.
(5)	Name	Specific letters can be input into MasterIPS. It is convenient that installation process place etc., are input.
(6)	Mode	Selects operating mode for MasterIPS. Multi: Performs control of IPS and data collection. Data: Performs data collection only. (Control of IPS is performed by PLC.)
(7)	Transmit	Transmits set content to MasterIPS.
(8)	Receive	Receives set content from MasterIPS.
(9)	Close	Cancels set content and closes screen.

*** Power must be cycled for settinh to take effect.**

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5-3-2 Sequence (Multi mode)
5-3-2-1 Create Sequence



Displaying method: Master > Setting > Sequence （at Multi mode）
Function : Tightening Sequence is created.

Synchronization control between spindles and group operation can be set.
Ordinate represents Work Positions (WP01 to 32), and abscissa represents steps (Step 01 to 16) in matrix.

	Name	Function
(1)	Sequence No.	Sets tightening Sequence No. to be created (01 to 31).
(2)	Unfasten Prg No.	Sets IPS program No. for unfastening executed when “R: Retry” is set for Sequence parameter setting. (Program No. is common to IPS all spindles.)
(3)	Synchro Bit	Sets I/O No. for synchronization set on IPS program when synchronizing between spindles. (I/O No. is common to IPS all spindles.)
(4)	Group Setup	Displays group setting screen (refer to 5-3-2-2).
(5)	Step condition	Displays various conditions for each step by parameter. When this is clicked, setting screen is displayed. (Refer to 5-3-2-3)
(6)	Sequence parameter	Displays Sequence parameter. When this is clicked, parameter setting screen is displayed and operation on that Work Position is set. (Refer to 5-3-2-4)
(7)	Group No.	Displays group No. set on (4).
(8)	「Open」	Opens stored Sequence file.
(9)	「Save」	Stores created Sequence file.
(10)	「Transmit」	Transmits Sequence to MasterIPS.
(11)	「Receive」	Receives Sequence from MasterIPS.
(12)	「Print」	Prints displayed Sequence.
(13)	「Clear」	Clears displayed Sequence.
(14)	「Change」	Changes Displaying method. (Content does not change.)
(15)	「Info」	Meaning of Sequence parameter is displayed.
(16)	「Close」	Closes this screen.

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♦ What is Sequence?

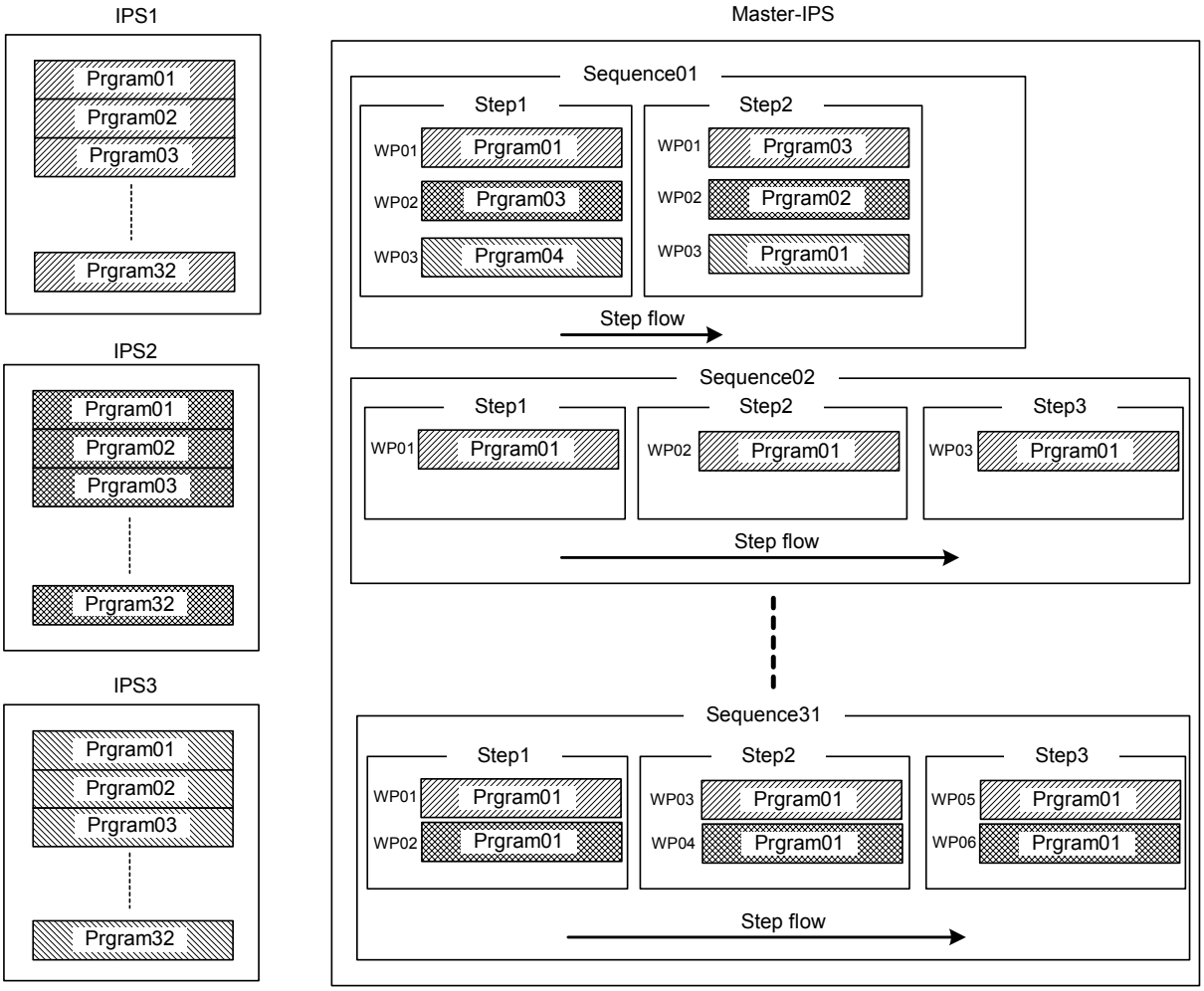
Sequence of MasterIPS is that in which executing sequence of each IPS program is decided.
There are 16 steps in one Sequence, and 32 Work Positions can be simultaneously executed in one step of the 16 steps.
When all operations set for the step are completed, the step proceeds to the next step.

The following diagram is an image of Sequence.
For example, three units of IPS are assumed to be connected.

(Sequence01)
Step 1 WP01 executes program 01 of IPS1, WP02 executes program 03 of IPS2, WP03 executes program 04 of IPS3, and when all programs are ended, Step 1 proceeds to Step 2

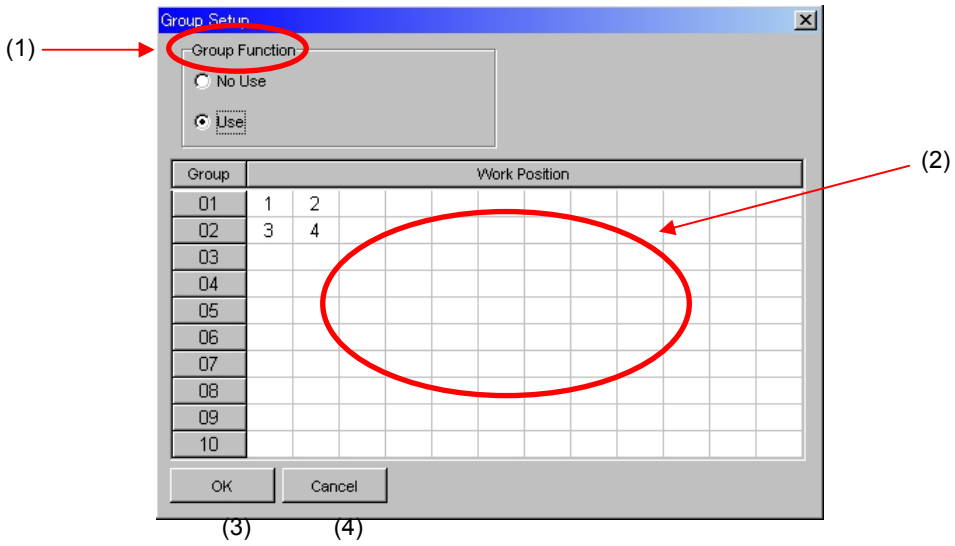
Step 2 WP01 executes program 03 of IPS1, WP02 executes program 02 of IPS2, WP03 executes program 01 of IPS3, and when all programs are ended, Sequence01 is ended.

(Sequence02)
Step 1 WP01 executes program 01 of IPS1. When the program is ended, Step 1 proceeds to Step 2.
Step 2 WP02 executes program 01 of IPS1. When the program is ended, Step 2 proceeds to Step 3.
Step 3 WP03 executes program 01 of IPS1. When the program is ended, Sequence02 is ended.



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5-3-2-2 Group Setup



Displaying method: Press (Click) “Group Setup” on Sequence screen (refer to 5-3-2-1).
Function :Group setting in Sequence is performed.

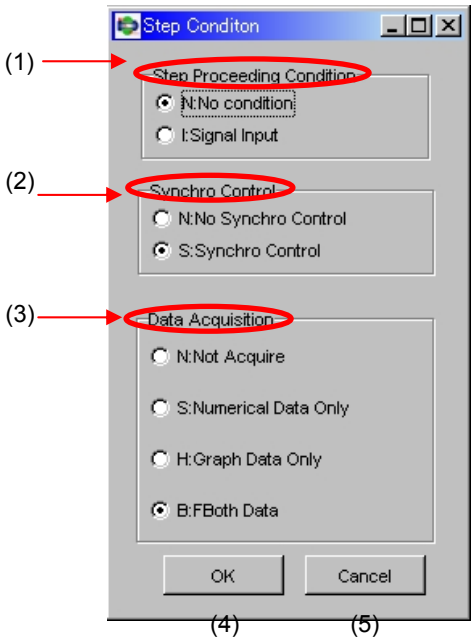
Synchronization action or retry in group unit are allowed by creating group.

	Name	Function and Explanation
(1)	Group Function	Selects whether group setting for each Work Position is performed or not. “No use”: Does not use group function. “Use”: Uses group function.
(2)	Group No. Setup	Inputs Work Position No. into each group No. (Up to 12 Work Positions in one group)
(3)	OK	Reflects setting.
(4)	Cancel」	Cancels setting.

* In the case of the above diagram, WP01 and 02 are in Group01, and WP03 and 04 are in Group02.
* The same Work Positions cannot be set on different group No.

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5-3-2-3 Sequence Step Condition

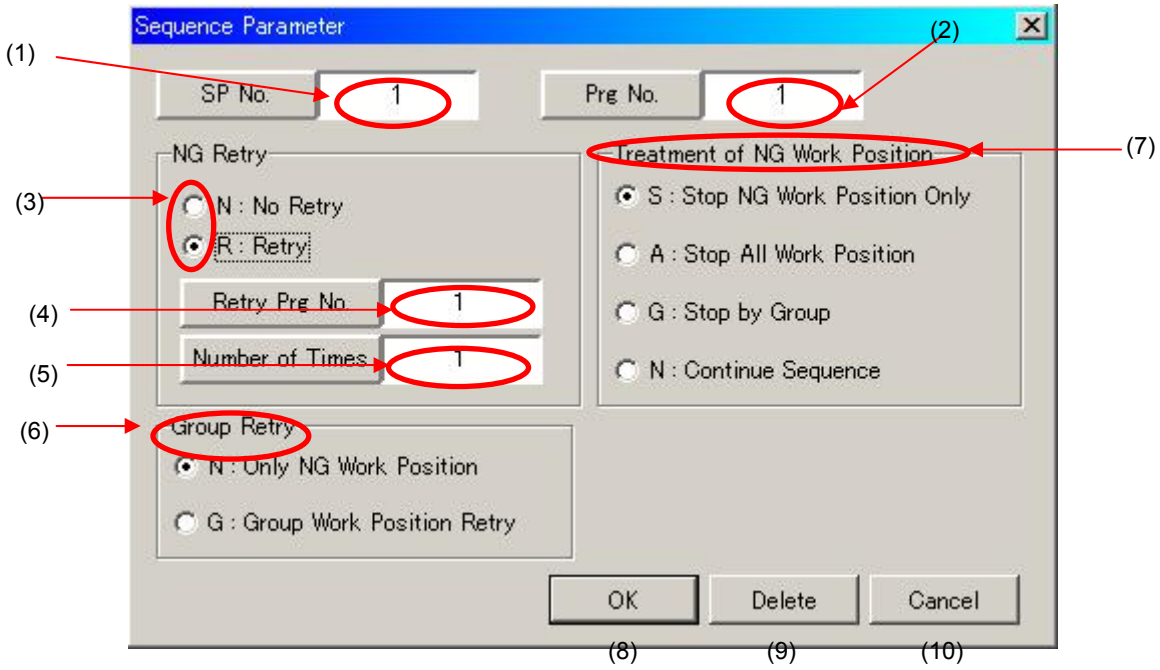


Displaying method: Press (click) “Step Condition” part on Sequence screen (refer to 5-3-2-1).
Function : Various conditions for the step are set.

	Name	Function and Explanation
(1)	Step Proceeding Condition	Sets conditions to proceed to the next step C: No Condition > Automatically proceeds to the next when operations of all Work Positions set for the step are ended. I: Signal Input > MasterIPS outputs “Step complete” signal, and stands by when operations of all Work Positions set for the step are ended. Proceeds to the next step when “NEXT STEP” signal is input.
(2)	Synchro Control	Sets presence or absence of synchronization between spindles in the step. N: No Synchro Control > Does not synchronize between spindles. S: Synchro Control > Synchronizes between spindles by using I/O bit set “Synchro Bit” (refer to 5-3-2-1). When group setting is performed, spindles in the same group are synchronized. **When synchronization control is performed, it is necessary to use “I” and “O” in the IPS program.**
(3)	Data Acquisition	Sets whether to output data (numerical value, graph) on the step to PC or not. N: Not Acquire > Data is not transmitted to PC. S: Numerical Data Only > Transmits only numerical data to PC. H: Graph Data Only > Transmits only graph data to PC. B: Both Data > Transmits both of numerical and graph data to PC.
(4)	OK	Reflects setting.
(5)	Cancel	Cancels setting.

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5-3-2-4 Sequence Parameter



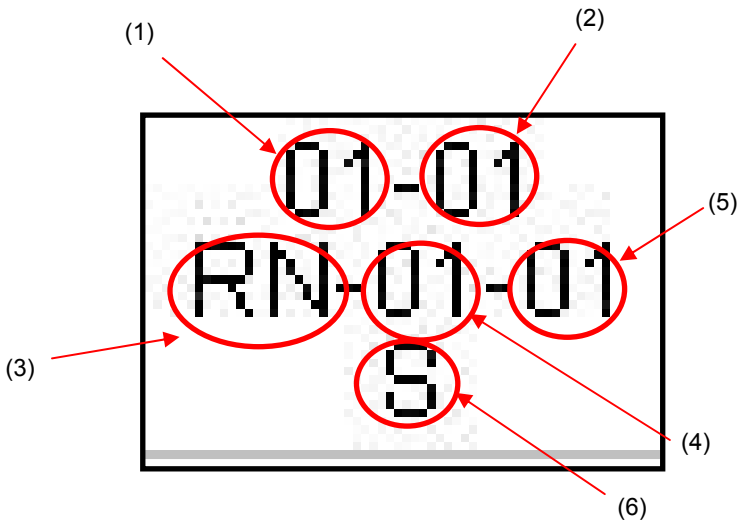
Displaying method: Press (click) “Sequence Parameter” part on Sequence screen (refer to 5-3-2-1).
Function :Operating parameters for each Work Position are set.

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	Name	Function and Explanation
(1)	SP No.	Sets spindle No. of IPS to perform tightening on selected Work Position.
(2)	Prg No.	Sets IPS program No. to be executed on selected tightening Work Position.
(3)	NG Retry	Sets whether to execute retry when NG occurs. N: No Retry → Executes processing of (7) without retry. R: Retry → Executes program No. set in (4) for the number of times set in (5).
(4)	Retry Prg No.	Sets IPS program No. executed at retry when “Retry” is selected in (3). For operation, after unfastening program (set in 5-3-2-1) is executed, set IPS program No. is executed.
(5)	Number of times	Sets number of times to execute IPS program set in (4). From the second time, unfastening is also executed at first, and then program No. set in (4) is executed. Data after retry is re-written, and data after retry is completed becomes tightening data of the Work Position. For settings of five times, when OK is obtained at the second time, the remaining three times are not executed.
(6)	Group Retry	Selects control when “Retry” is selected in (3). N: Only NG Work Position > Performs retry only on Work Position where NG occurs. G: Group Work Position Retry > Performs retry on all spindles on Work Positions with the same group No. When “Group Retry” is selected, if NG occurs on some Work Position in the group, unfastening program is also executed on the other OK Work Positions and tightening is re-performed.
(7)	Treatment of NG Work Position	Sets processing when tightening judgment is ended to be NG. S: Stop NG Work Position Only > Tightening on Work Position where NG occurs is ended, and the Work Position does not proceed to the next step. However, tightening on the other Work Positions is allowed. (When SP01 is used for WP01 and WP05, even if WP01 is ended to be NG, WP05 is allowed to operate.) A: Stop All Work Position > Ends all Work Positions at that step, and does not proceed to the next step. Outputs “Total NG” judgment. G: Stop by Group > Ends Work Positions in the same group, and does not proceed to the next step. Other group proceeds to the next step. N: Continue Sequence > All Work Positions will NOT stop. Operates according to content of step condition setting.
(8)	OK	Reflects setting.
(9)	Delete	Deletes content of selected cell.
(10)	Cancel	Cancels setting.

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♦ About parameter display

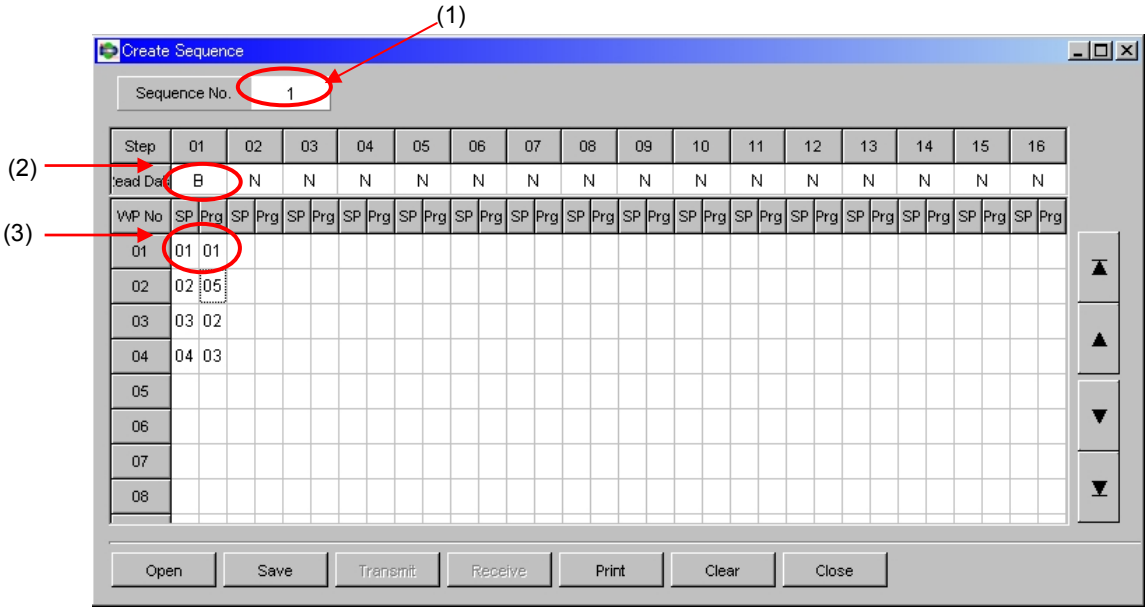


Contents of setting of Sequence Parameter are displayed for each cell as on the diagram.

No.	Name	Explanation
(1)	SP No.	Spindle No. to fasten the position.
(2)	Prg No.	CPS Program No. to be executed in the position.
(3)	Retry Condition	Retry settings: N: No Retry RN: Only NG Work Position will be retried. RG: All Work Positions under the same Group will be retried. (“RN” or “RG” can be selected in the “Group Retry” area in the Sequence Parameter window.)
(4)	Retry Prg No.	IPS Program No. for Retry. If Retry Condition (#3) is “N” (No Retry), this value should be disregarded.
(5)	Number of Times	Number of execution times for Retry Program. If Retry Condition (#3) is “N” (No Retry), this value should be disregarded.
(6)	Treatment for NG Work Position	How to proceed with the program when fastening result is judged NG.

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5-3-3 Sequence（Data mode)
5-3-3-1 Create Sequence



Displaying method: Master > Setting > Sequence （at Data mode）
Function : Data collecting Sequence (in Data mode, referred to as Data table) is created.
Ordinate represents Work Positions (WP01 to 32), and abscissa represents steps (Step 01 to 16) in matrix.

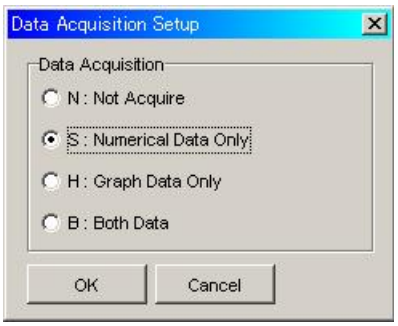
On Data table, IPS spindle No. operating in one cycle and the executing program No. are set.
MasterIPS determines IPS spindle No. and program No. from the received IPS data, and stores as data on the designated Work Position.
When data on all Work Positions for the Sequence is stored, MasterIPS outputs completion signal.

No.	Name	Contents
(1)	Sequence No.	Sets Data table No. to be created. (01 to 31)
(2)	Data Acquisition setup	Sets what data (Numerical, Graph,) is received in the step.
(3)	Spindle and Program No	Sets what IPS spindle No. and program No. are used as data for a certain Work Position.

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5-3-3-2 Data Acquisition setting and IPS spindle No. setting

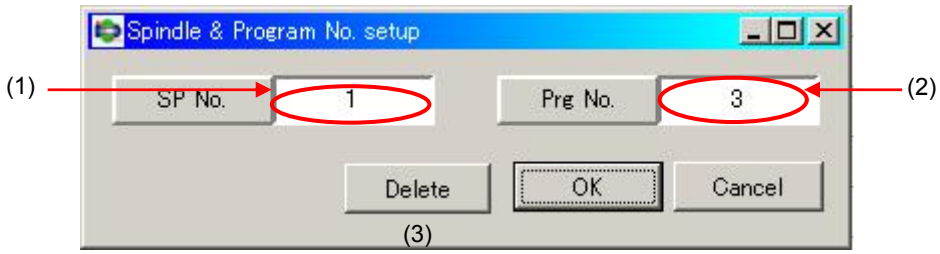
♦ Data Acquisition setting



Displaying method: Press (click) “Data Acquisition setup” on Sequence screen (refer to 5-3-3-1)
Function : Data Acquisition parameter for each step is set.

	Name	Function
	Data Acquisition	Sets whether to output data (numerical value, graph) in that step to PC. N: Not Acquire > Data is not transmitted to PC. S: Numerical Data Only > Transmits only numerical value data to PC. H: Graph Data Only > Transmits only graph data to PC. B: Both Data > Transmits both numerical value and graph data to PC.

♦ IPS spindle No. setting

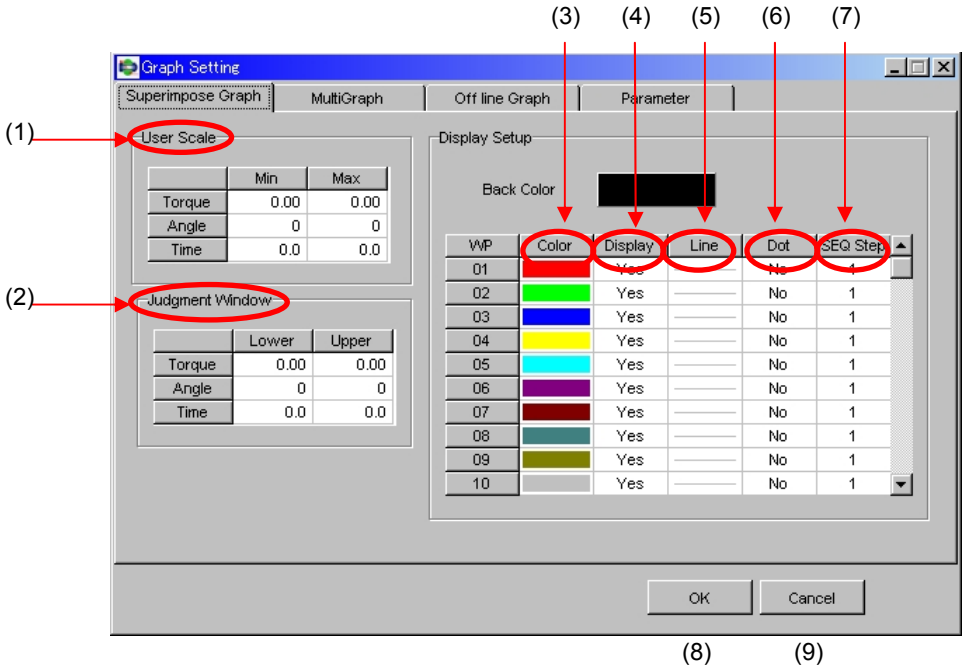


Displaying method: Press (click) “Spindle and Program No” on Sequence screen (refer to 5-3-3-1).
Function : What IPS spindle No. and program No. are used data for a certain Work Position is set.

No.	Name	Function
(1)	SP No.	Sets IPS spindle No.
(2)	Prg No.	Sets IPS program No.
(3)	Delete	Deletes content of designated cell.

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5-3-4 Graph Setting
5-3-4-1 Superimpose Graph

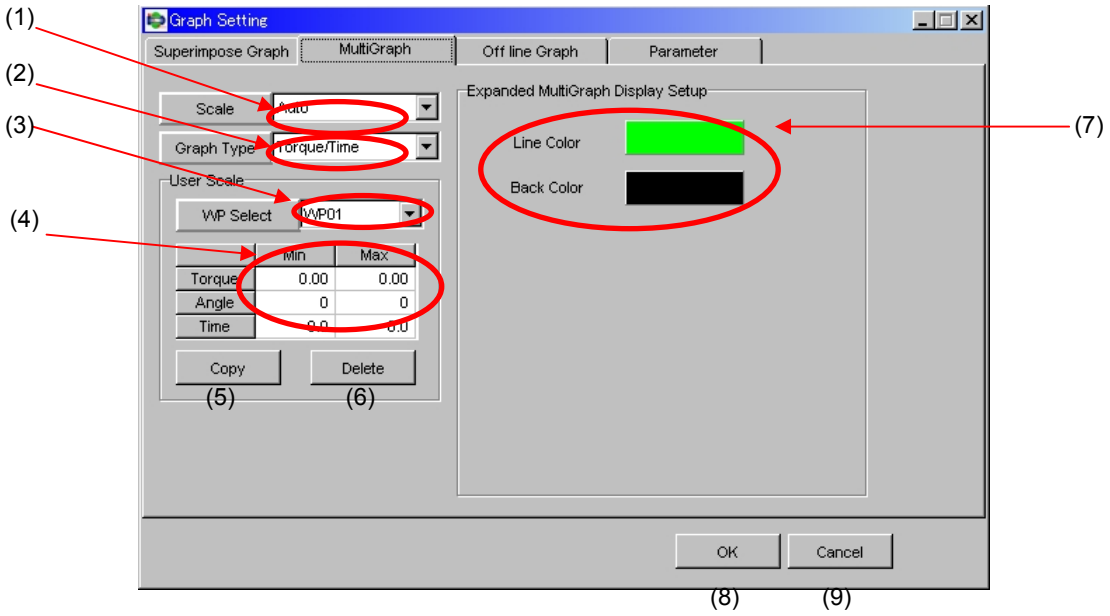


Displaying method : Master > Setting > Graph
Function : Display setting for 5-1-3-3 Superimpose graph is performed.

	Name	Function & Explanation
(1)	User Scale	Inputs minimum and maximum values of each spindle when Scale is set as “User” on Superimpose Graph screen.
(2)	Judgment Window	When judging value for each item is input, frame is displayed on the graph. This is only a displaying function, and there is no judging function.
(3)	Color	Sets line colors of graph by clicking.
(4)	Display	Sets presence or absence of graph display of each Work Position by clicking. Yes: Displays. No: Does not display.
(5)	Line	Selects line thickness by clicking.
(6)	Dot	Sets presence or absence of data point display by clicking.
(7)	SEQ Step	Sets Sequence Step No. of graph data you want to display when there is a plurality of Sequence Steps.
(8)	OK	Reflects setting.
(9)	Cancel	Cancels set content and closes this screen.

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5-3-4-2 Multi-Graph Setting

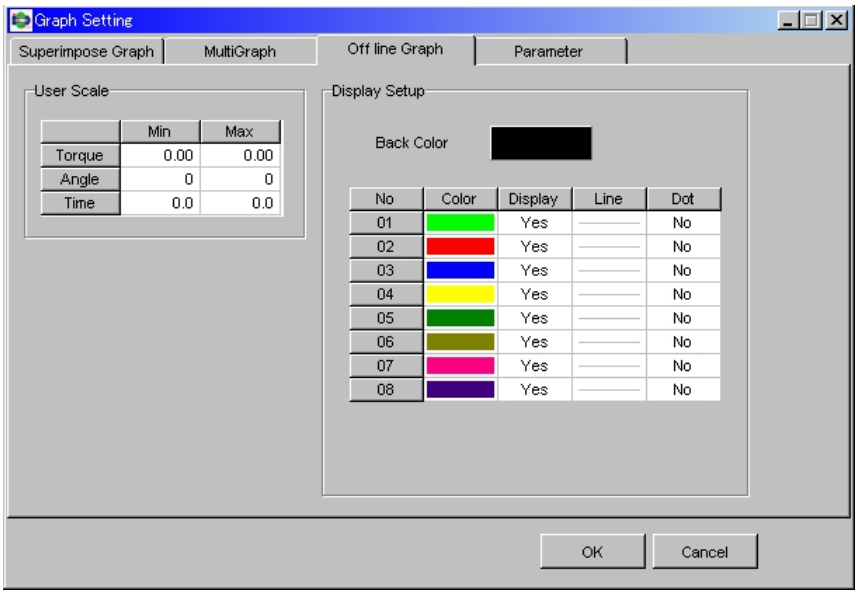


Displaying method: Master > Setting > Graph
Function : Display setting for MultiGraph in 5-1-3-1 and 5-1-3-2 is performed.

	Name	Function & Explanation
(1)	Scale	Sets scale for each graph of MultiGraph. Auto: Automatically adjusts scale. User: Displays in range set in (4).
(2)	Graph Type	Selects graph type of MultiGraph. Torque/Time: Graph on which abscissa represents Time, and ordinate represents Torque. Torque/Angle: Graph on which abscissa represents Angle, and ordinate represents Torque.
(3)	WP Select	Selects Work Position on which user scale is set.
(4)	User Scale	Inputs maximum and minimum values of user scale.
(5)	Copy	Copies user scale setting which is currently displayed in (4) to all Work Positions.
(6)	Delete	Resets user scale set value on all Work Positions.
(7)	Line Color Background Color	Sets line color and background color of Expansion Graph to be expansion-displayed when some Work Position on MultiGraph is clicked.
(8)	OK	Reflects setting.
(9)	Cancel	Cancels set content and closes this screen.

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5-3-4-3 Off line Graph

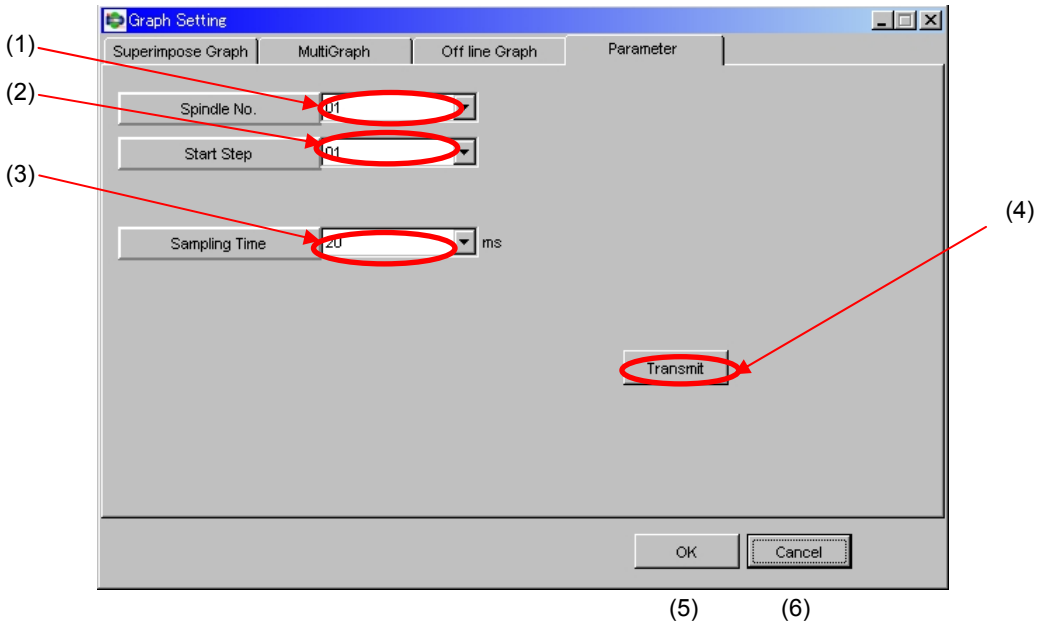


Displaying method: Master > Setting > Graph
Function : Display setting of Off line Graph in 5-1-4 is performed.

* As the set content is same as in 5-3-4-1, refer to 5-3-4-1.

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5-3-4-4 Parameter

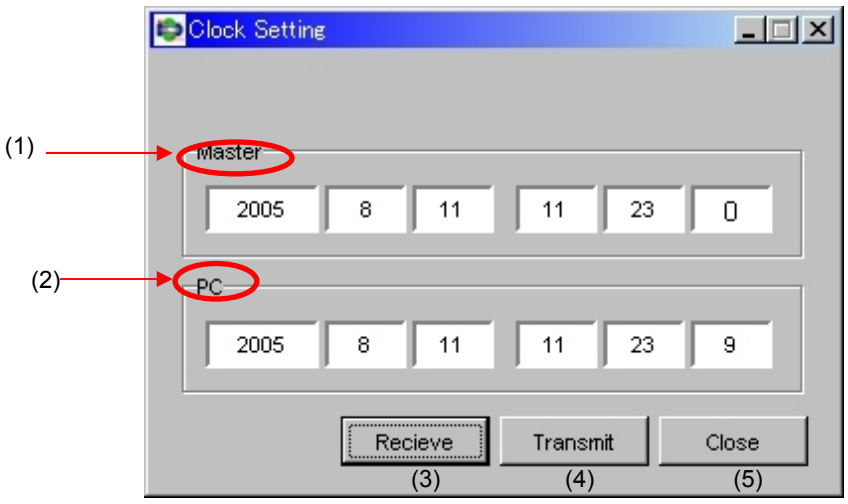


Displaying method: Master > Setting > Graph
Function : Graph data creating parameter for IPS is set.

	Name	Function
(1)	Spindle No.	Selects IPS spindle No. on which parameter is set. When spindle No. is selected, the current setting is automatically received. ALL: Same setting is performed on all spindles. 01 thru 32: Setting is performed on individual spindle.
(2)	Start Step	Sets graph data acquisition start step. Step in here means step No. of IPS program.
(3)	Sampling Time	Sets graph data acquisition interval in unit of milliseconds. Note) Point number of graph data which can be acquired in IPS is up to 500 points. (If Sampling Time is 20ms, 20ms x 500= 10s, then graph for 10 seconds can be acquired.) **The greater the point numbers of graph data, the more time that is required for communication. Therefore, increase the value of the Sampling Time if data cannot be received until the end of the data.**
(4)	Transmit	Transmits set content to spindle designated on (1).
(5)	OK	Reflects setting.
(6)	Cancel	Cancels set content.

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5-3-5 Clock Setting

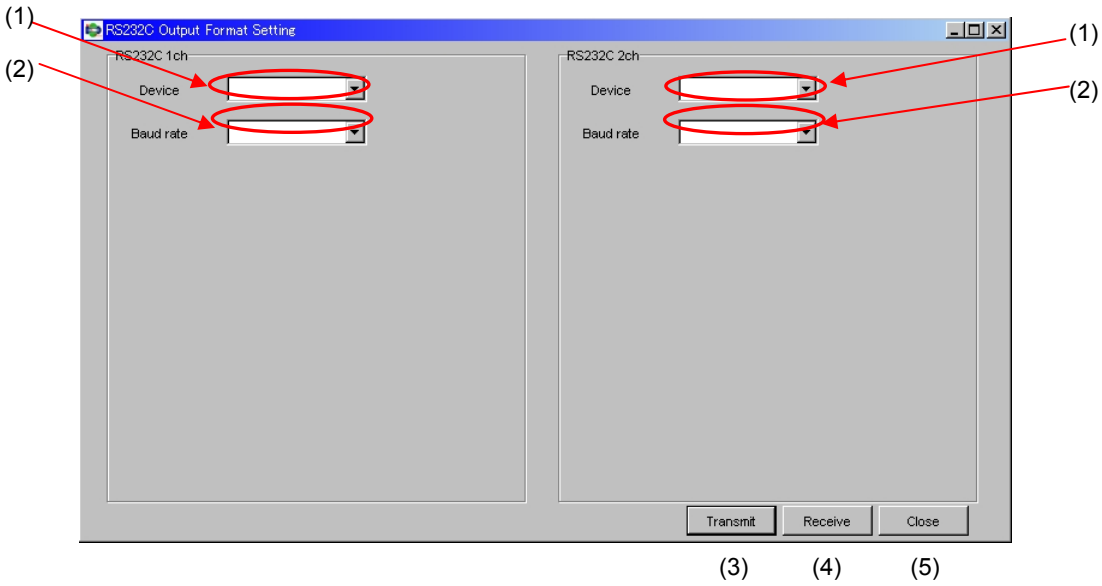


Displaying method: Master > Setting > Clock
Function : Clock in MasterIPS is set. Reference time is time set in PC.

	Name	Function
(1)	MasterIPS time	Displays current MasterIPS time.
(2)	PC time	Displays time of PC which is being used (Reference).
(3)	Receive	Receives time setting of MasterIPS. Automatically receives when this screen is opened during the online state (display is not updated).
(4)	Transmit	Transmits time on (2) to MasterIPS.
(5)	Close	Closes this screen.

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5-3-6 RS-232C Port setting
5-3-6-1 RS-232C Device setting



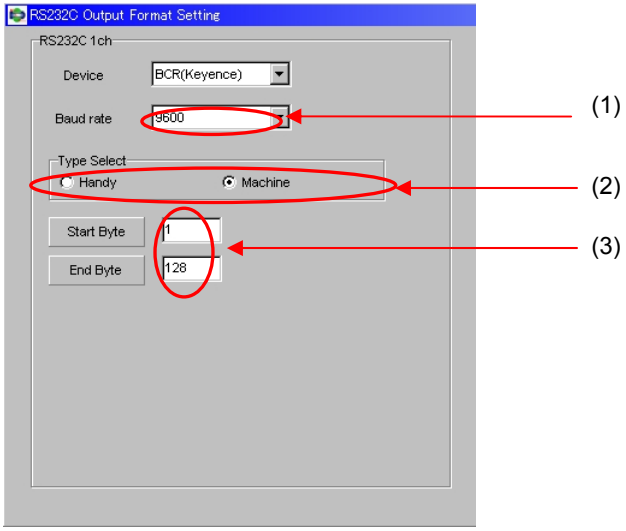
Displaying method: Master > Setting > RS-232C
Function : Device connected to RS-232C port of MasterIPS and the details are set.

When this screen is opened in the online state, the current setting is automatically received.

	Name	Function
(1)	Device	Selects device connected to each port. Data Terminal (Multi mode only): Connects judgment display. BCR: Connects exclusive bar code reader. Serial printer: Connects exclusive thermal printer. Product No. input: Product No. can be input from external equipment. Data Output: Outputs result data to external equipment. Maker Mode: Not used.
(2)	Baud rate	Selects communication baud rate for each device. Some devices have their fixed values.
(3)	Transmit	Transmits set content to MasterIPS. **When MasterIPS is restarted after transmission, the setting becomes effective.**
(4)	Receive	Receives set content from MasterIPS.
(5)	Close	Closes this screen.

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5-3-6-2 RS-232C Device1 (Bar-cord Reader)

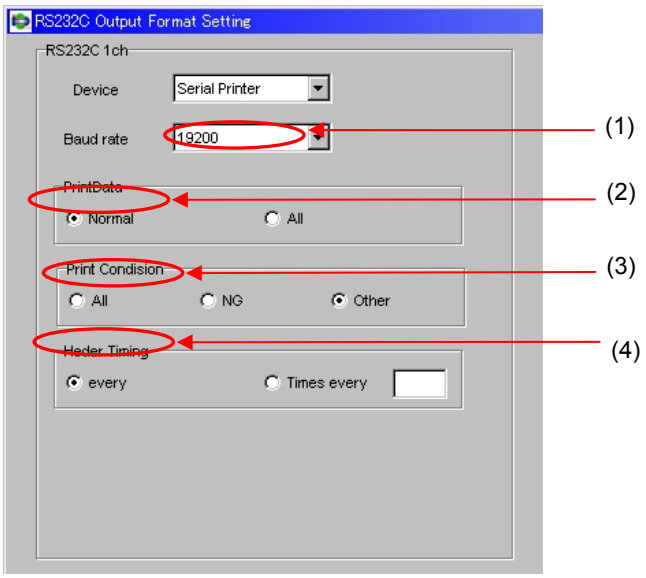


When BCR (bar code reader) is selected as a connecting device for RS-232C of MasterIPS, the following setting is performed.
Bar code reader manufactured by “KEYENCE” is used.

	Name	Function
(1)	Baud rate	Sets communication baud rate. Baud rate of bar code reader is fixed to 9600bps.
(2)	Type Select	Selects type of bar code reader. Handy: Handy type bar code reader Machine: Fixed type bar code reader
(3)	Start Byte End Byte	Designates head letter to end letter No. actually used as product No. among received bar code data. 128 Byte (letter) can be input into MasterIPS as product No.

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5-3-6-3 RS-232C Device2 (Thermal Printer)

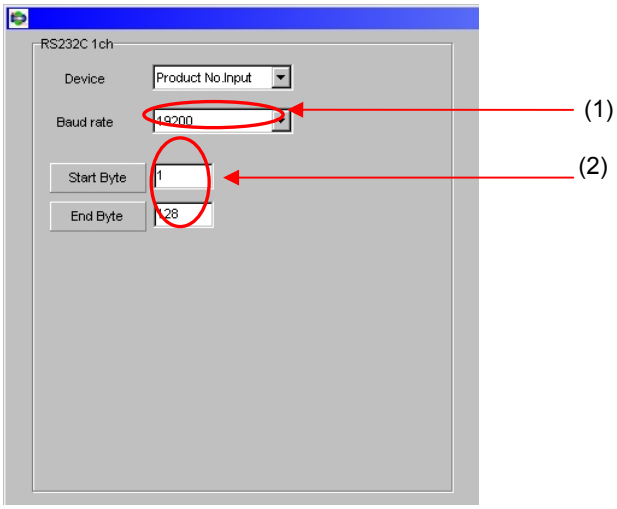


When exclusive printer is selected as connecting device for RS-232C of MasterIPS, the following setting is performed.

	Name	Function
(1)	Baud rate	Sets communication baud rate. Sets according to setting of printer.
(2)	Print Data	Selects type of data to be printed. Normal: Prints “Torque,” “Angle,” “Time,” “In,” “Out” and “Judge.” All: Also prints data of “Tr1,” “Tr2,” “Index” and “Step” in addition to items in Normal.
(3)	Print Condition	Sets timing of printing. All: Prints every time when Sequence is completed. NG: Prints only when NG occurs. Other: Prints at external input timing.
(4)	Header Timing	Sets the interval for printing header. Every time: The header is printed ervery time. Every times: The header is printed every “Settig value” times.

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5-3-6-4 RS-232C Device3 (Product No. Input)

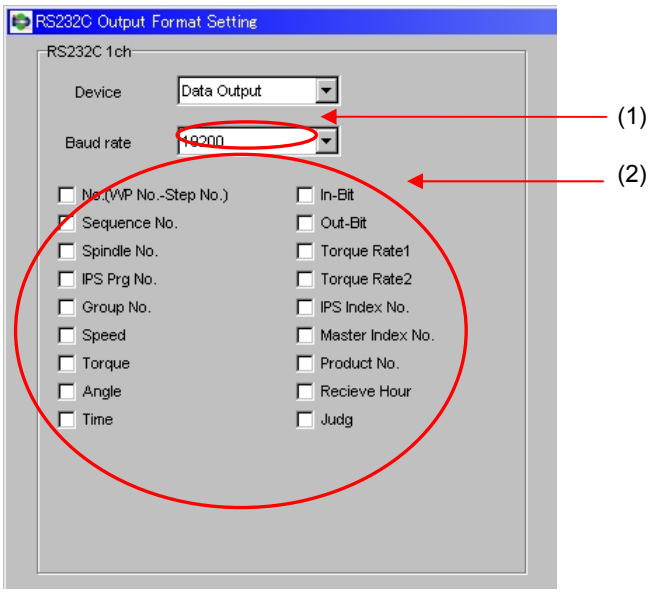


When product No. input is selected as connecting device for RS-232C of MasterIPS, the following setting is performed.
If this device is selected, product No. can be input from external equipment such as PLC.

	Name	Function
(1)	Baud rate	Sets communication baud rate. Adjusts it to equipment on the other end.
(2)	Start Byte End Byte	Designates head letter to end letter Nos. actually used as product No. among received data. 128 Byte (letter) can be input into MasterIPS as product No.

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5-3-6-5 RS-232C Device4 (Data Output)

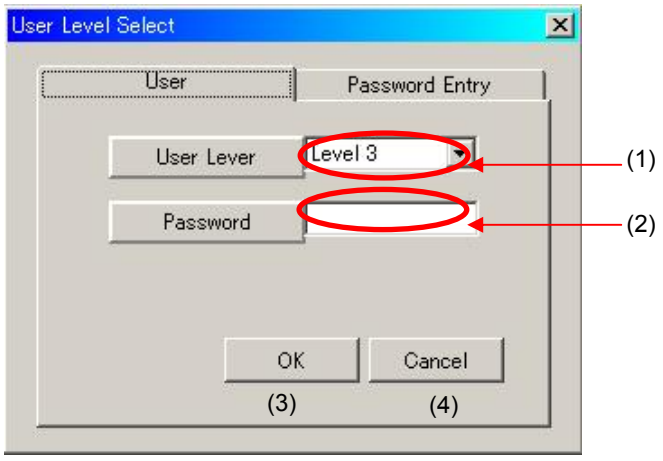


When data output is selected as connecting device for RS-232C port of MasterIPS, the following setting is performed.
If this device is selected, selected result data can be output to external equipment such as PLC.

	Name	Function
(1)	Baud rate	Sets communication baud rate. Adjusts it to equipment on the other end.
(2)	Item	Selects items output to external equipment. Checked items are output.

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5-3-7 User Setting
5-3-7-1 User Level Select



Displaying method: Master > Setting > User
Function : User limit to use MIN-CFG is set.

Three levels are available, and usable functions are limited in low user level.
To raise user level, it is necessary to input password.

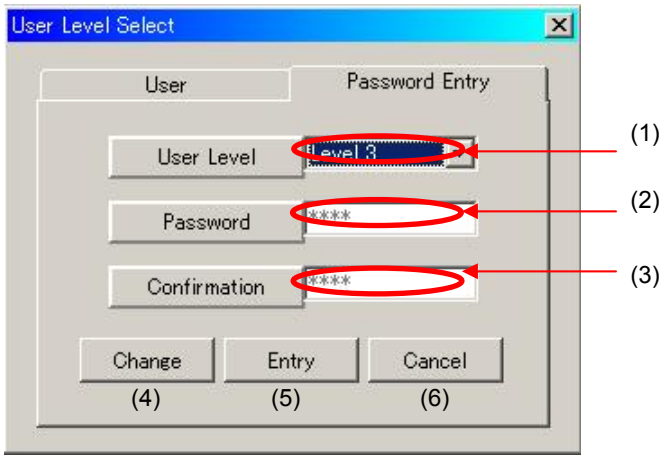
Concept of user level is as follows.

○ Level1 ・・・ Only monitoring function
○ Level2 ・・・ Only monitoring function and I/O operation is allowed (setting change is not allowed)
○ Level3 ・・・ All operations are allowed.

	Name	Function
(1)	User Level	Selects user level. Level displayed when screen is opened is current user level.
(2)	Password	Inputs password registered in 5-3-7-2. (It is necessary to input only when raising user level.)
(3)	OK	If password input in (2) is correct, user level is changed. (When raising user level) If it is incorrect, error screen is displayed.
(4)	Cancel	Closes this screen.

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5-3-7-2 Password Entry



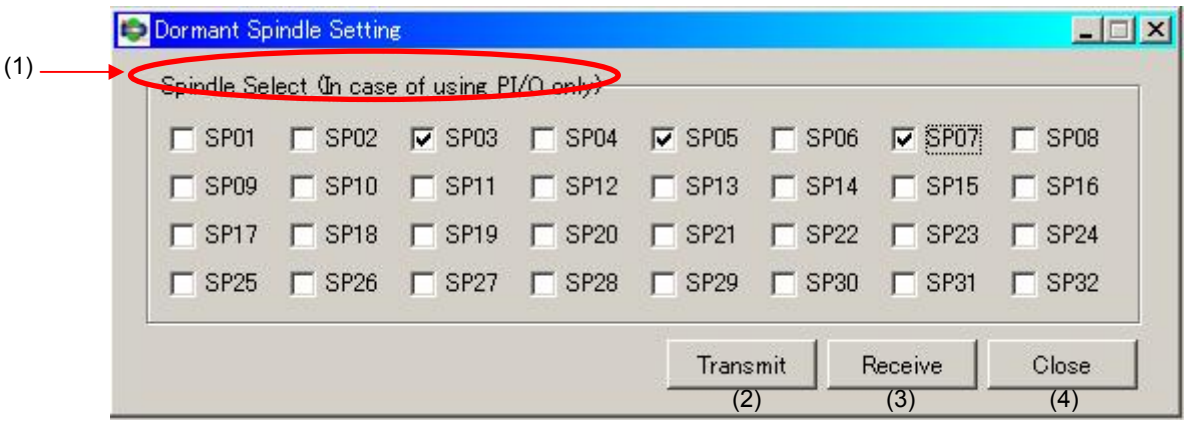
Displaying method: Master > Setting > User
Function : Password for each user level is set. (Password is not set for level 1.)

To set or change password for level 2, user level of level 2 or 3 is required, and to set or change password for level 3, user level of level 3 is required.

	Name	Function
(1)	User Level	Selects user level the password for which is to be registered. Level displayed when screen is opened is current user level.
(2)	Password	If password is set, the password is displayed with an *. When Change on (4) is pressed, the password is deleted, and a new password can be input in 15 letters or less.
(3)	Confirmation	To confirm the password input in (2), input it again. If the password is different from the value input in (2), an error screen is displayed.
(4)	Change	Use this button when you want to change an already set password.
(5)	Entry	If the values in (2) and (3) are the same, it is registered as a password for the level.
(6)	Cancel	Cancels setting and closes this screen. (Even if passwords in (2) and (3) are deleted by pressing (4), the previous password is still effective unless registered.)

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5-3-8 Dormant Spindle



Displaying method: Master > Setting > Dormant SP
Function : Spindle stop setting for Servo Press constituting system is performed.
This is used to ignore a failed spindle in a multi-spindle system and operates only the other spindles.

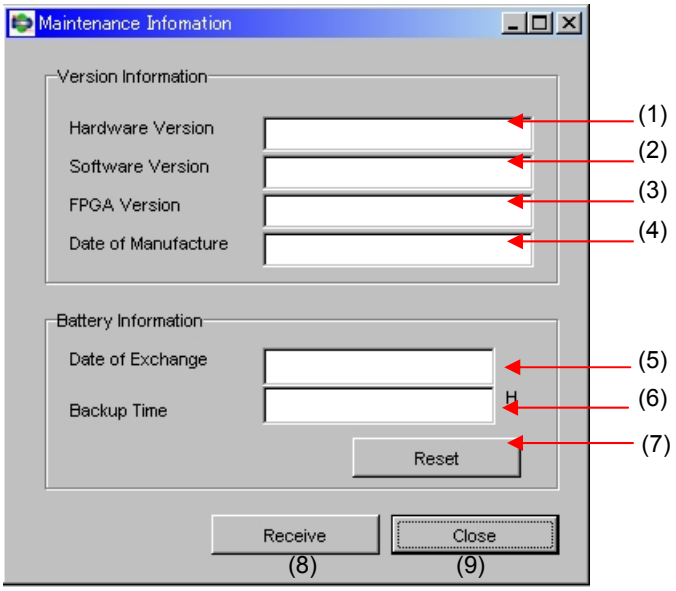
In the case of “Multi” mode, the dormat-set spindle does not operate.
In the case of “Data” mode, the “Data flag” signal is turned ON at the time when data other than dormant-set spindle is received.

Setting of this screen is effective only when “I/O mode” is set to “P-I/O” in System setting (refer to 5-3-1).
(Input and set signal of “Dormant SP Input” when using DeviceNet.)

	Name	Function
(1)	Spindle Select	Click spindle No. of spindle you want to stop.
(2)	Transmit	Transmits set content to MasterIPS.
(3)	Receive	Receives set content of MasterIPS.
(4)	Close	Closes this screen.

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5-3-9 Maintenance

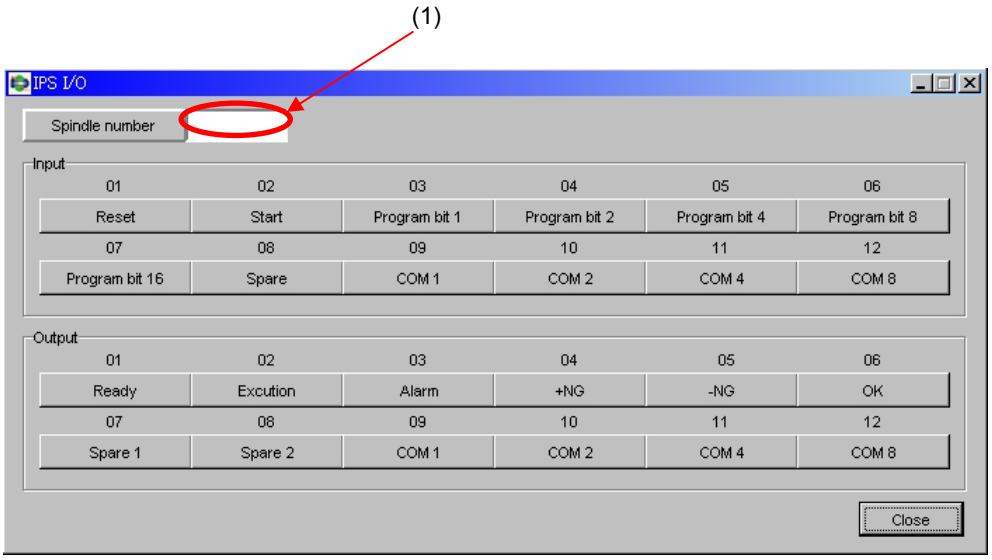


Displaying method: Master > Setting > Maintenance
Function : Version information of MasterIPS which is being used is displayed.
Further, replaced date of backup battery is displayed, and battery alarm, if it occurs, is reset from this screen.

	Name	Function
(1)	Hardware Version	Displays version of MasterIPS board.
(2)	Software Version	Displays firmware version of MasterIPS.
(3)	FPGA Version	Displays firmware version of FPGA.
(4)	Date of Manufacture	Displays manufactured year, month and day.
(5)	Date of Exchange	Replacement date of backup battery is displayed. Date reset on (7) is displayed.
(6)	Backup Time	Operating period of backup battery is displayed in units of hours. (**Battery is not used when power for MasterIPS is ON.**)
(7)	Reset	When battery alarm occurs, alarm flag and date in (5) are reset if this is pressed after the battery is replaced with a new one.
(8)	Receive	Receives the maintenance data from MasterIPS.
(9)	Close	Closes this screen.

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6 IPS Edition
6-1 IPS Monitor
6-1-1 I/O



Displaying method: IPS > Monitor > I/O
Function : Status of input and output signals from PLC to designated IPS is monitored.

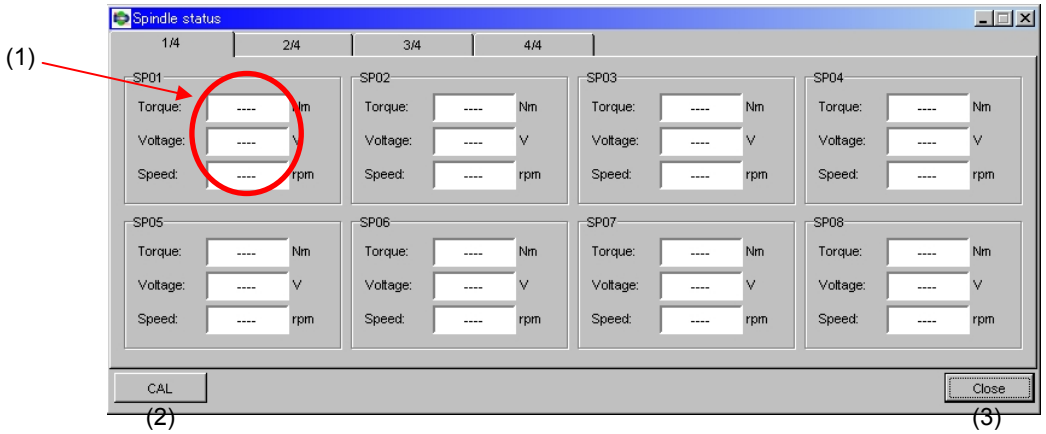
	Name	Function
(1)	Spindle number	Selects IPS spindle No. to be monitored.
(2)	Close	Closes this screen.

⚠ Caution

It cannot be monitored while MasterIPS is operating.

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6-1-2 Status



Displaying method: IPS > Monitor > Status
Function : “Torque”, “Voltage (load cell output voltage)” and “Speed” for each IPS are monitored. Spindle No. to be monitored is spindle No. of IPS set at “Connection Spindle” for System setting (refer to 5-3-1).

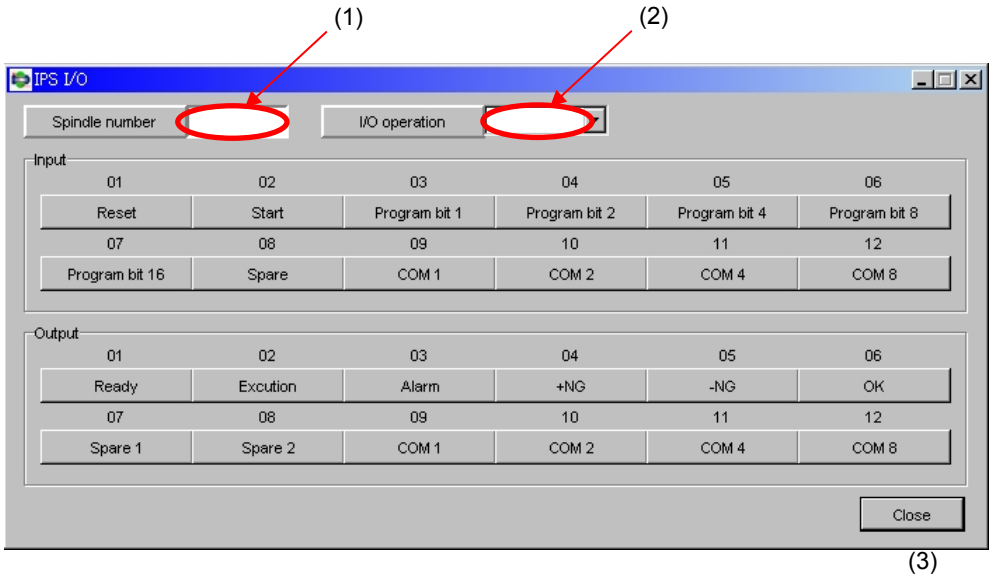
	Name	Function
(1)	Monitor value	Displays each numerical value.
(2)	CAL	Displays CAL voltage of load cell.
(3)	Close	Closes this screen.

⚠ Caution

It cannot be monitored while MasterIPS is operating.

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6-2 IPS Operation
6-2-1 I/O



Displaying method: IPS > Operation > I/O
Function : Input signals of designated IPS are compulsorily operated from PC.
Each button is turned ON when pressed (clicked) once, and turned OFF when pressed once again.

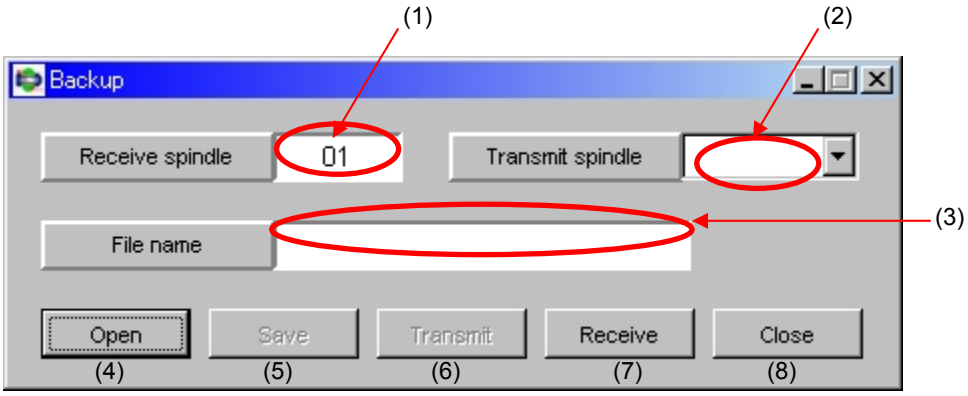
	Name	Function
(1)	Spindle number	Selects IPS spindle No. to be operated.
(2)	I/O Operation	Selects operation of input signal. OFF: Input signal cannot be operated. (only monitored) ON: Input signal can be operated.
(3)	Close	Closes this screen.

⚠ Caution

*** It cannot be monitored while MasterIPS is operating.**
*** Sufficiently check bit No. and peripheral status because Nutrunner operates when inputting into IPS.**

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6-2-2 Backup



Displaying method: IPS > Operation > Backup
Function : All set data (such as program and tool parameter) of designated IPS are received and stored as a single unit..

♦ Operating method

(Backup file reception)

1. Select IPS spindle No. to be received in (1).
2. Press “Receive” on (7). (Reception takes some time.)
3. Press “Save” when reception is completed, and name the received file to store.

(Backup file transmission)

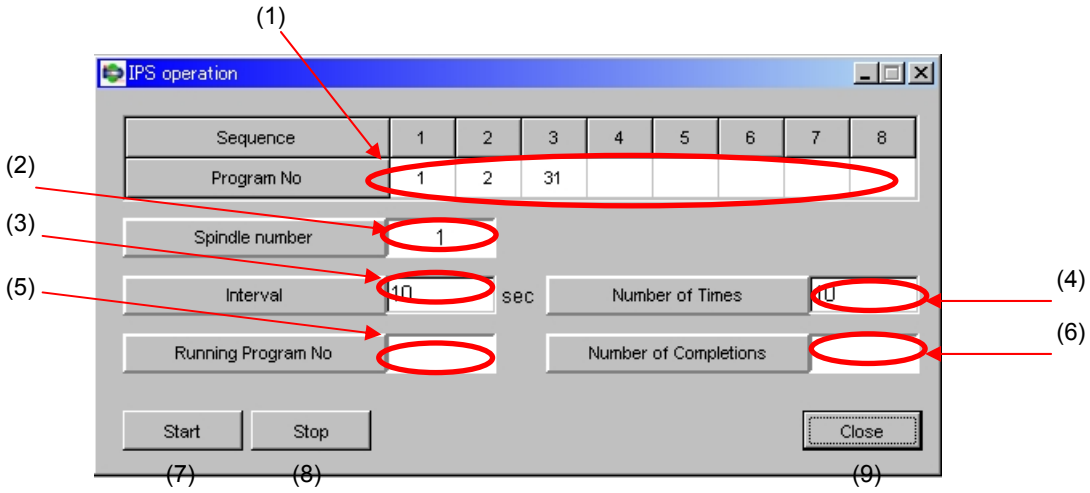
1. Press “Open” on (4) to open the stored backup file (*.aib).
2. Select IPS spindle No. to be transmitted in (2).
3. Check that the same name as the opened file is displayed in (3), and press “Transmit” on (6) to transmit to IPS.

Received backup file (*.aib) cannot be opened.

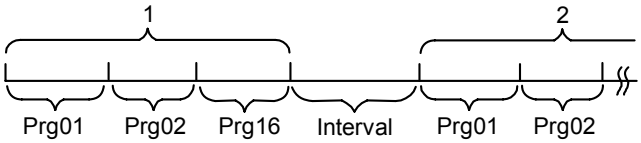
	Name	Function
(1)	Receive Spindle	Selects IPS spindle No. to receive backup data.
(2)	Transmit Spindle	Selects IPS spindle No. to transmit backup data. Select: Can transmit backup file to a plurality of IPSs simultaneously. 01 to 32: Transmits to selected IPS.
(3)	File Name	When backup file stored on (4) is opened, the file name is displayed.
(4)	Open	Opens stored backup file.
(5)	Save	Stores received backup file.
(6)	Transmit	Transmits backup file displayed in (3) to MasterIPS.
(7)	Receive	Receives backup file from designated IPS.
(8)	Close	Closes this screen.

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6-2-3 Action

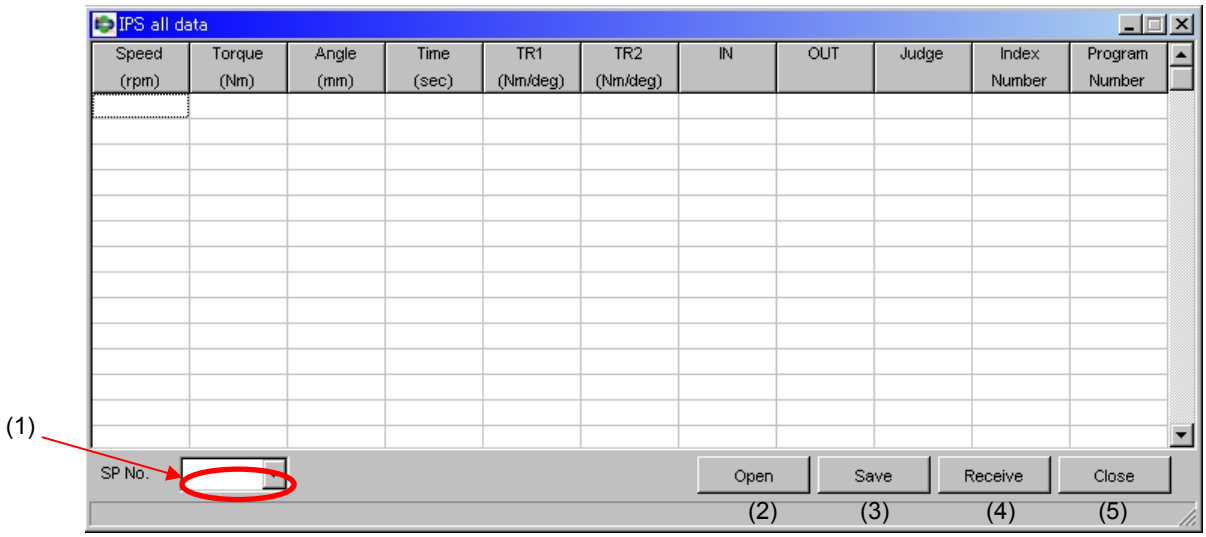


Displaying method: IPS > Operation > Action
Function : Tightening program for designated IPS is executed from PC.
Even if there is no control device such as PLC, IPS program can be executed.

	Name	Function
(1)	Program No.	Sets IPS program No. executed at one operation. The above diagram represents the following operation. 
(2)	Spindle number	Sets spindle No. of IPS to operate program.
(3)	Interval	Inputs stop time in second unit.
(4)	Number of Times	Inputs executing times.
(5)	Running Prg No.	IPS program No. which is currently executing is displayed.
(6)	Number of Completion	How many times of number set in (4) is completed is displayed.
(7)	Start	Starts operation.
(8)	Stop	Stops operation.
(9)	Close	Closes this screen. (Operation is stopped if the program is being executed.)

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6-2-4 IPS data



Displaying method: IPS > Operation > IPS data
Function : The result data of more recent 2000 items is always stored in IPS.
The result data can be received here.

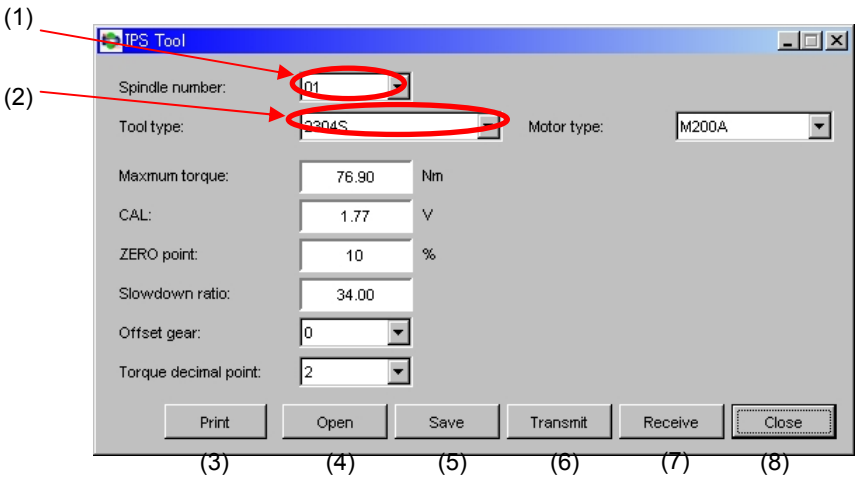
	Name	Function
(1)	SP No.	Selects IPS spindle No. to receive data.
(2)	Open	Opens stored file (*.aia).
(3)	Save	Stores received result data into file.
(4)	Receive	Receives result data from designated IPS. It takes some time to communicate.
(5)	Close	Closes this screen.

⚠ Caution

It cannot be monitored while MasterIPS is operating.

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6-3 IPS Setting
6-3-1 Tool



Displaying method: IPS > Setting > Tool
Function : Tool parameter for Servo Press connected to IPS is set.

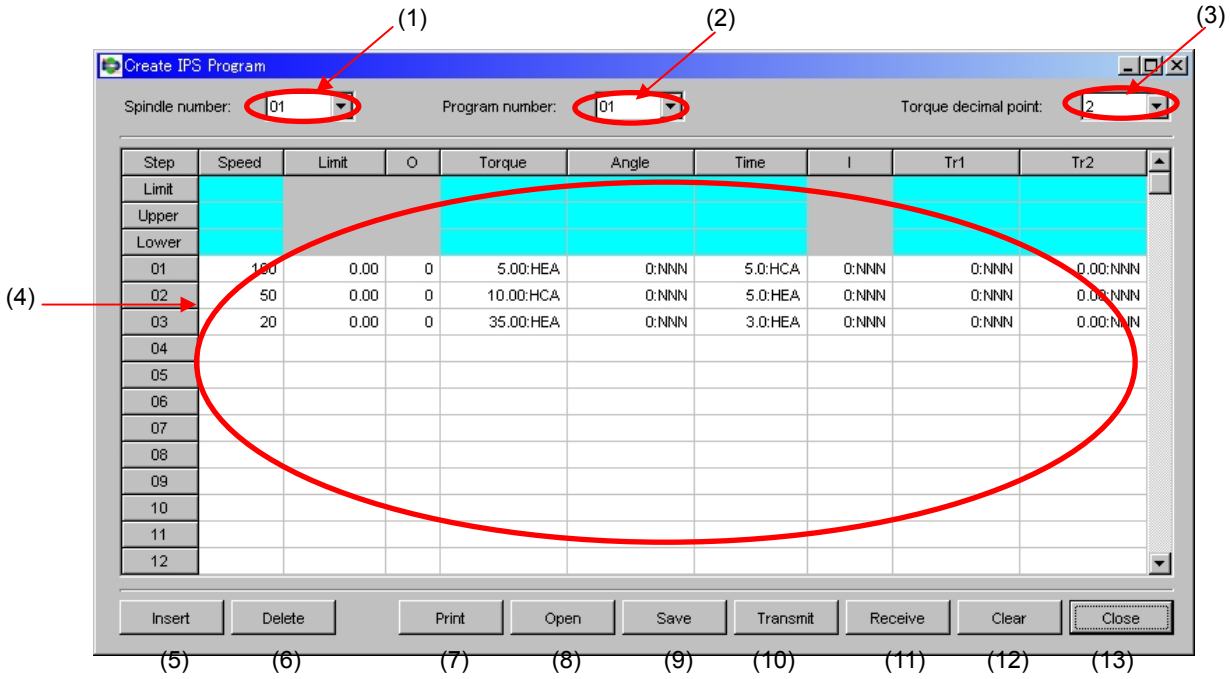
	Name	Function
(1)	SP No.	Selects IPS spindle No. to transmit and receive Tool parameter.
(2)	Tool type	Selects model of Nutrunner connected to IPS. When model is selected, the other parameters are automatically displayed.
(3)	「Print」	Prints Tool parameter which is being displayed.
(4)	「Open」	Opens stored Tool parameter file (*.aie).
(5)	「Save」	Stores Tool parameter into file.
(6)	「Transmit」	Transmits Tool parameter to IPS spindle No. selected in □.
(7)	「Receive」	Receives Tool parameter from IPS selected in □.
(8)	「Close」	Closes this screen.

⚠ Caution

Uses Tool parameter in default. (Do not change it.)

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6-3-2 IPS Program
6-3-2-1 Create IPS Program



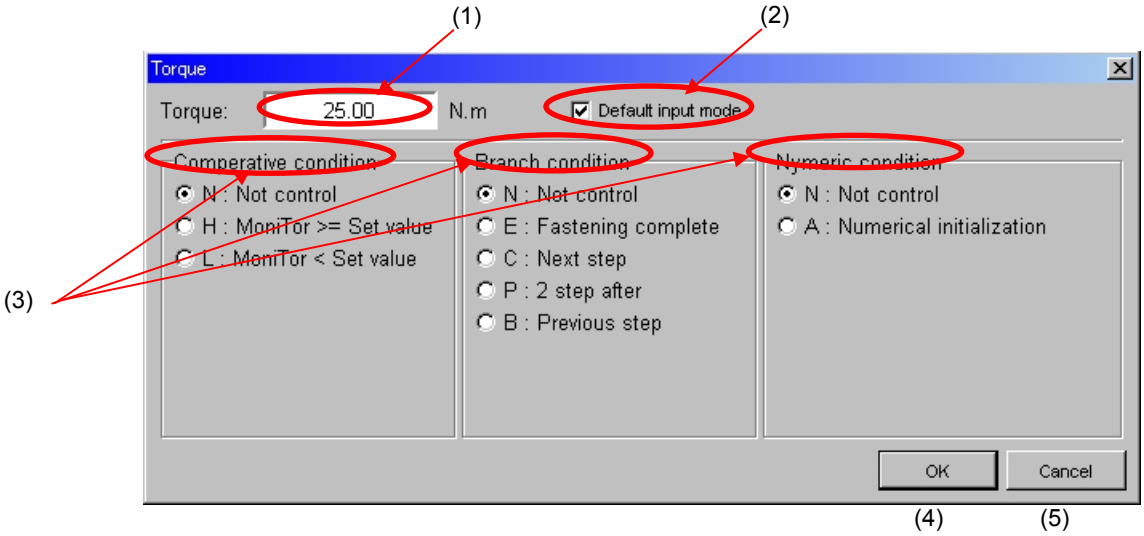
Displaying method: IPS > Setting > Program
Function : Tightening program for IPS is created.

For creating method of tightening program and meaning of parameter, refer to Operation Manual of IPS Nutrunner.

	Name	Function
(1)	Spindle number	Sets IPS spindle No. to transmit and receive created program. Select > Transmits program to a plurality of IPSs at one time. (Only transmission) 01 to 32 > Transmits program to designated IPS.
(2)	Program number	Selects program No. of IPS to transmit and receive.
(3)	Torque decimal point	Sets decimal point digit number of torque value suitable for tool to be used. If nothing is set, program cannot be edited. Automatically set if received.
(4)	Program sheet	Inputs actual program. Click cell to input numerical value and set condition.
(5)	Insert	Shifts selected Step down to one line.
(6)	Delete	Deletes selected Step.
(7)	Print	Prints displayed program.
(8)	Open	Opens stored program file.
(9)	Save	Stores created program file.
(10)	Transmit	Transmits program to IPS designated in (1).
(11)	Receive	Receives program from IPS designated in (1).
(12)	Clear	Clears displayed program.
(13)	Close	Closes this screen.

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6-3-2-2 Condition setting

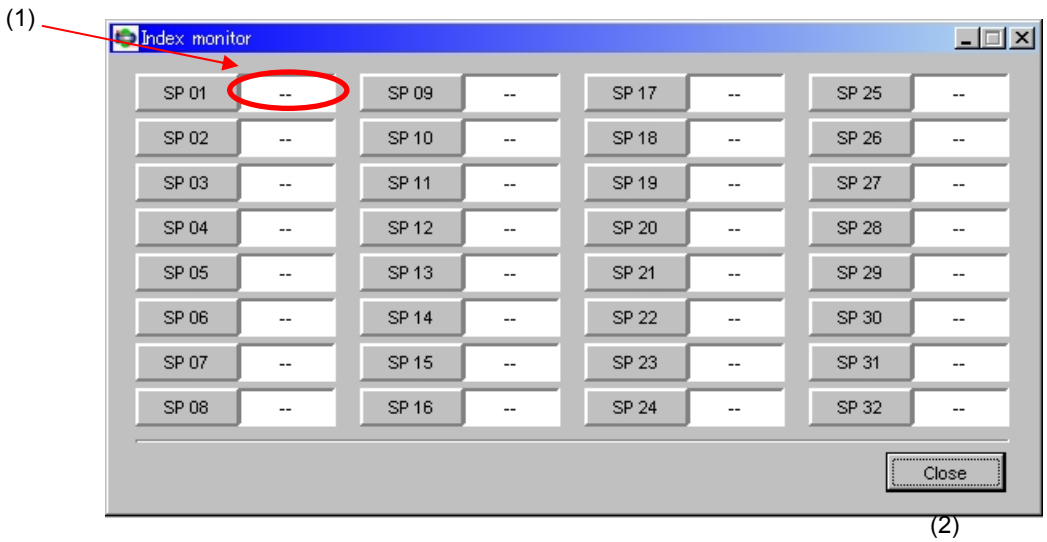


Displaying method: Click cell on the Create IPS Program screen.
Function : Parameters for program are set.

	Name	Function
(1)	Setting value	Inputs numerical value to be set into selected cell. When this is clicked, numeric keypad is displayed.
(2)	Default input mode	If this is checked, numeric keypad for inputting numerical value for (1) is automatically displayed when this screen starts up.
(3)	Condition	Sets conditions. (For meaning of condition, refer to “IPS Nutrunner Manual”.)
(4)	OK	Inputs setting.
(5)	Cancel	Cancels setting.

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6-3-3 Index



Displaying method: IPS > Setting > Index
Function : Index No. of IPS connected to MasterIPS is monitored or changed if necessary.

	Name	Function
(1)	Index nunber	Current Index No. is displayed. Click to change Index No.
(2)	Close	Closes this screen.

◆ What is ” Index No.”?
IPS has a counter to count number of program start times after power is turned on, and this number is referred to as Index No. The counter counts from 1 to 9999, and returns to 1 when 9999 is exceeded.

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If there are any unclear points or if you have further inquiries regarding the MasterIPS Servo Press, please contact us at the address and numbers listed below.

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