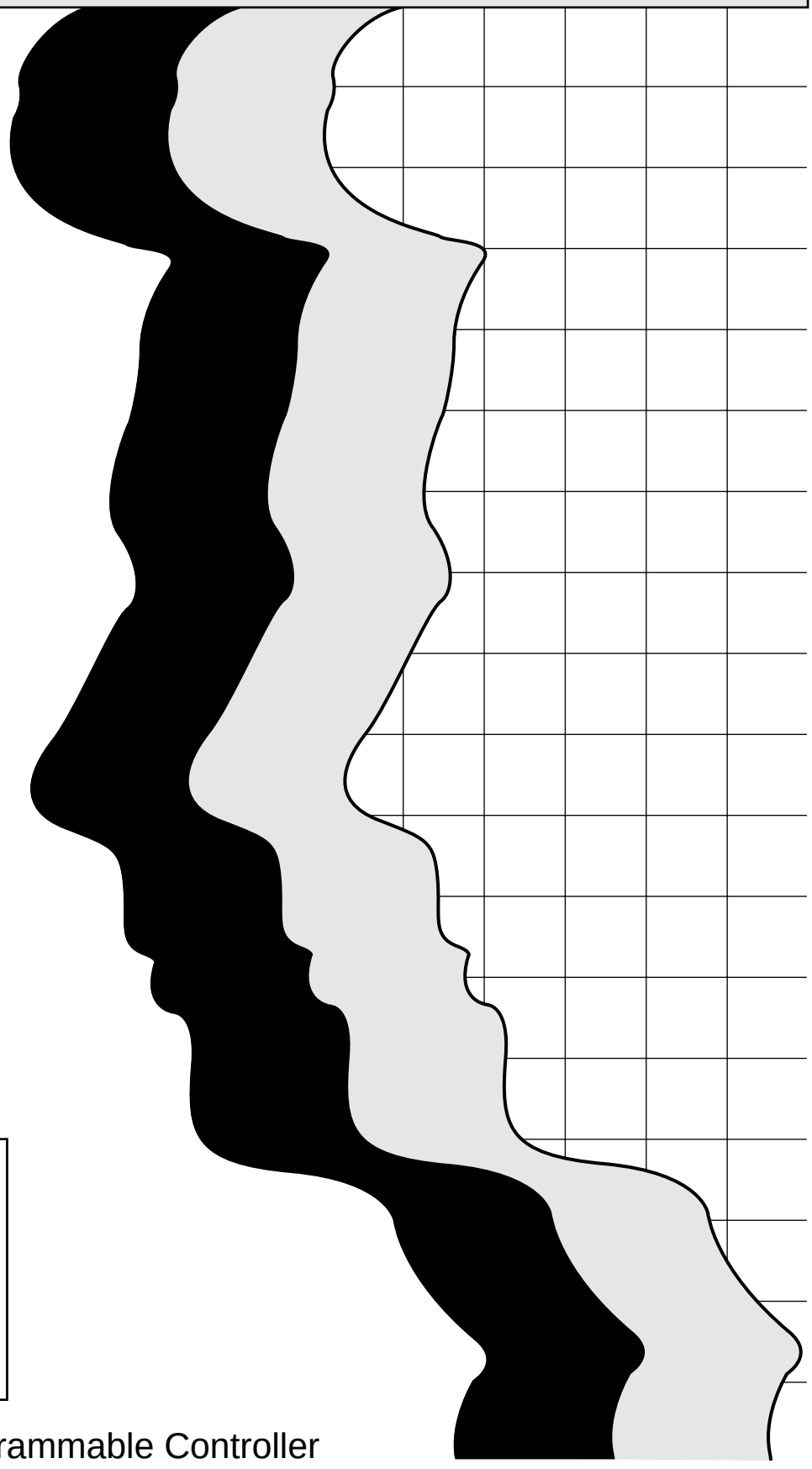
MITSUBISHI

Positioning module software package type SW0IVD-AD75P

Operating Manual



A

MELSEC

Mitsubishi Programmable Controller

● SAFETY PRECAUTIONS ●

(Read these precautions before using.)

When using Mitsubishi equipment, thoroughly read this manual and the associated manuals introduced in this manual. Also pay careful attention to safety and handle the module properly.

These precautions apply only to Mitsubishi equipment. Refer to the CPU module user's manual for a description of the PC system safety precautions.

These ● SAFETY PRECAUTIONS ● classify the safety precautions into two categories: "DANGER" and "CAUTION".

DANGER	Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out properly.
⚠CAUTION	Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out properly.

Depending on circumstances, procedures indicated by ⚠**CAUTION** may also be linked to serious results.

In any case, it is important to follow the directions for usage.

Store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

⚠CAUTION

- Before conducting test modes, such as OPR, JOG operation, or positioning data tests, carefully read this manual and be sufficiently familiar with the safety precautions. An operation mistake could damage the machine or cause trouble.

REVISIONS

*The manual number is given on the bottom left of the back cover.

Print Date	*Manual Number	Revision
Dec., 1995	IB (NA) 66596-A	First edition

INTRODUCTION

Thank you for choosing the Mitsubishi MELSEC-A Series of General Purpose Programmable Controllers. Please read this manual carefully so that the equipment is used to its optimum. A copy of this manual should be forwarded to the end User.

CONTENTS

1. INTRODUCTION

This manual describes the functions and operations of the SW0IVD-AD75P Software Package (hereafter called "SW0IVD-AD75P")

The SW0IVD-AD75P is a software package that can execute test operations and set the following data which are necessary to execute positioning control using the positioning module:

- Parameters
- Positioning data
- Start block

SW0IVD-AD75P is compatible with the following positioning modules.

- AD75P1 positioning module
- A1SD75P1 positioning module
- AD75P2 positioning module
- A1SD75P2 positioning module
- AD75P3 positioning module
- A1SD75P3 positioning module

In this manual, all the modules listed above are generically called "AD75".

The peripheral device must have a screen specification that enables three axes to be handled.
It is possible to set two or three axes even when using a 1-axis module, but the settings cannot be transferred to the AD75.

In order to use the SW0IVD-AD75P, it must be installed in the hard disk of the peripheral device indicated below and started up.

Applicable peripheral device: IBM PC/AT (CPU 80286 or higher) or compatible

1.1 Conventions Used in This Manual

The sections from Section 6 on ward describe each of the available modes. The explanations given are intended to be followed while actually performing the operation described. Operators who are not familiar with functions of the AD75P are encouraged to learn by following actual operations from the start.

Procedure from mode selection key operation to display of applicable setting screen.

Display on setting screen

Numbers displayed on the screen correspond to those in the explanation.

Guide to operations on setting screen

Notes on setting screens and operation

8. TEST MODE — MELSEC-A

8.4 Start Block Test & Monitor

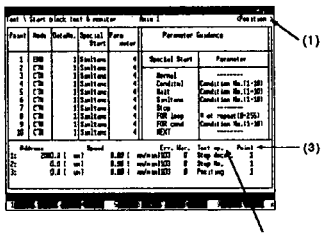
Monitors and edits start block data.

Basic Operation

F3 (Test) → Test Mode Screen → 3 (Start block test & monitor) → Start block Test & Monitor Screen

Start block test & monitor screen and related operations.

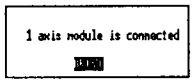
Start block test & monitor screen



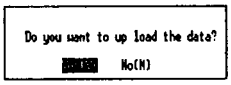
- Start/Stop on axis unit. : [F1] to [F3]
- Start/Stop on all axes : [F4]
- Edit/Stand-by status switch : [F5]
- [Alt] "6/Test" → "2/Test condition" short cut key : [F6]
- All axes error clear : [F7]
- Exit from test mode : [F8]
- Hard Copy : [F9]
- All stop : [F10]

Explanation

■ On entering the test & monitor mode, the dialog box shown below is displayed.



■ Pressing [Y] key opens the dialog box shown below.



■ Key in [N] to initialize the test mode.
■ Key in [Y] to up-load data from the AD75.

■ While a test run is being executed (axis operation in progress), the positioning data No. whose operation is being executed is marked with an asterisk.

(1) Test run status
The present test run status is indicated as shown below.
Operation in axis units → Axis unit
Operation in positioning data No. units → Position
Operation in start block data units →SD block

(2) Axis test run
Displays the test operation conditions for each axis set in "6/Test" → "2/Test condition".

(3) The setting made for "Test condition" is displayed here.
The positioning data No. is displayed when "Ax-unit" or "Posi-unit" is set. The point at which operation is started is displayed when "SDB-unit" is set.

■ For detailed information about start/stop key operations during monitoring, see Section 8.2.

■ Start block editing can be enabled by pressing [F5](Edit) key. For details on the editing method, see Section 6.3.

8 – 10

1.2 Features

This section describes the main features of SW0IVD-AD75P.

(1) User friendly

(a) A user friendly format has been realized with pull-down menus, dialog boxes, etc.
In addition, frequently used functions and modes are allocated to function keys for simple operation.

(b) Each menu window displays all the selectable items and modes, and functions can be selected by one of two methods: selection and designation by cursor, or keying in the required item number or symbol.

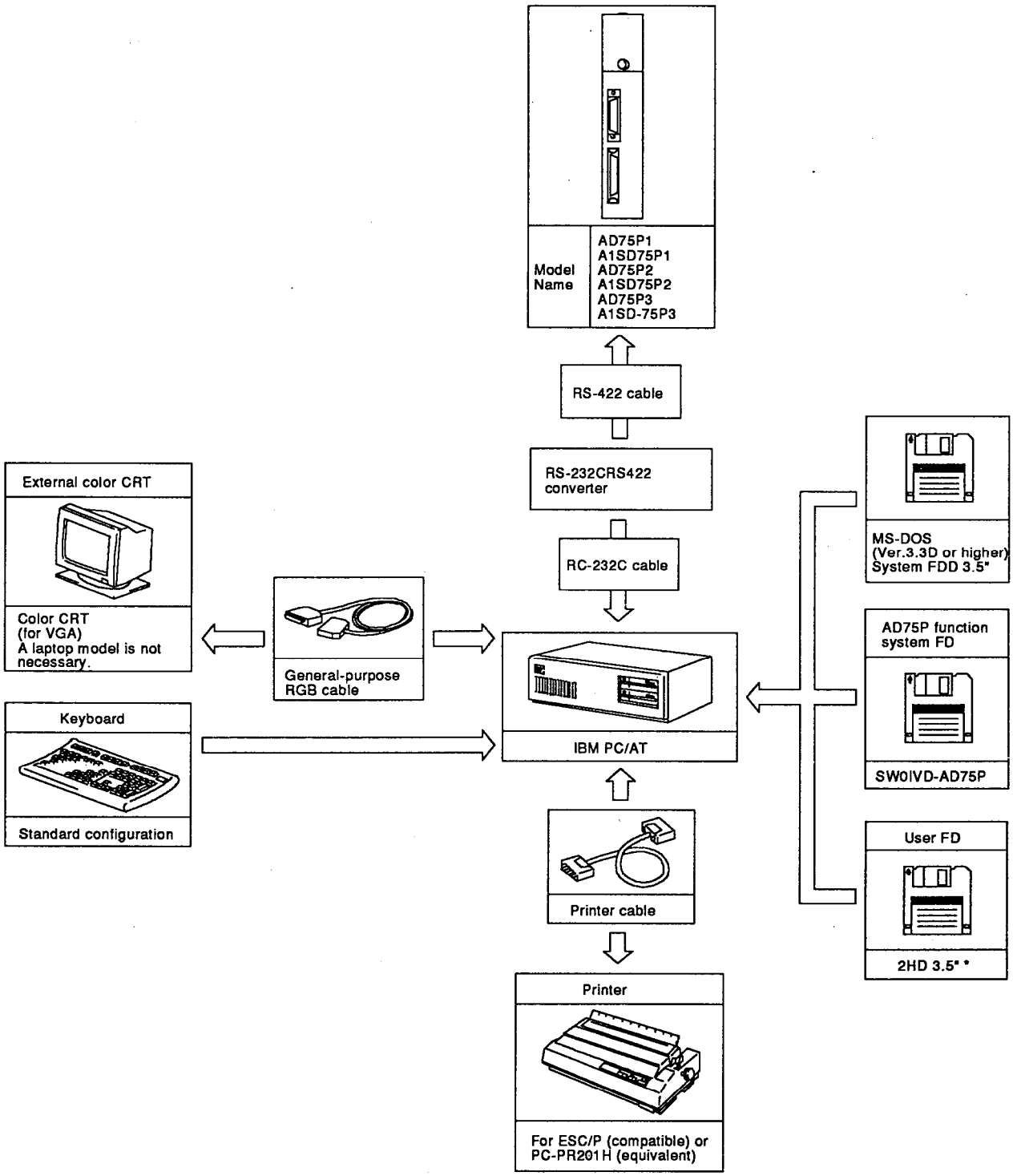
(2) The online mode can be selected when editing positioning data

It is possible to switch to the online mode (monitor mode, test mode), while positioning or data editing is in progress.

(3) Conversion: AD71 to AD75

Positioning data (position/speed data) for the AD71 can be converted for use by the AD75. However, the positioning mode must be re-set after conversion. It is also necessary to create a new sequence program.

2. SYSTEM CONFIGRATION



REMARKS

- Conventional memory must have available memory capacity in excess of 430kbytes in operation.
- HD is necessary. (HD must have available disk capacity in excess of 1 mbytes in operation.)
- OS must be MS-DOS version 3.3D or higher.
- An IBM PC/AT without an EMS memory cannot be used (the EMS memory must have an available capacity in excess of 1MB in operation).
- A mouse cannot be used with this system.

  * Use a disk formatted for MS-DOS.

A converter for communications between an IBM PC/AT and a programmable controller. (commercoal product)

Mitsubishi recommecds the following comverter for connection
between IBM PC/AT and PC CPU
SC-02N converter
Connecting the PC/AT to the SC-02N

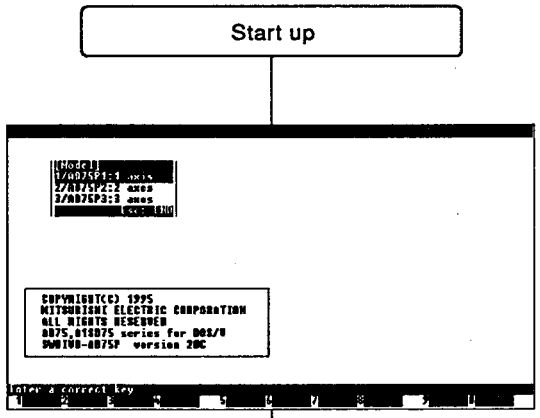
The pin assignments for the cable connecting the 9-pin connector on the PC/AT personal computer to the 25-pin connecter on the SC-02N converter unit are as follows:

PC/AT 9-PIN (RS-232C port)		SC-02N 25-PIN
DCD	1	8
RD	2	3
TD	3	2
DTR	4	20
GND	5	7
DSR	6	6
RTS	7	4
CTS	8	5

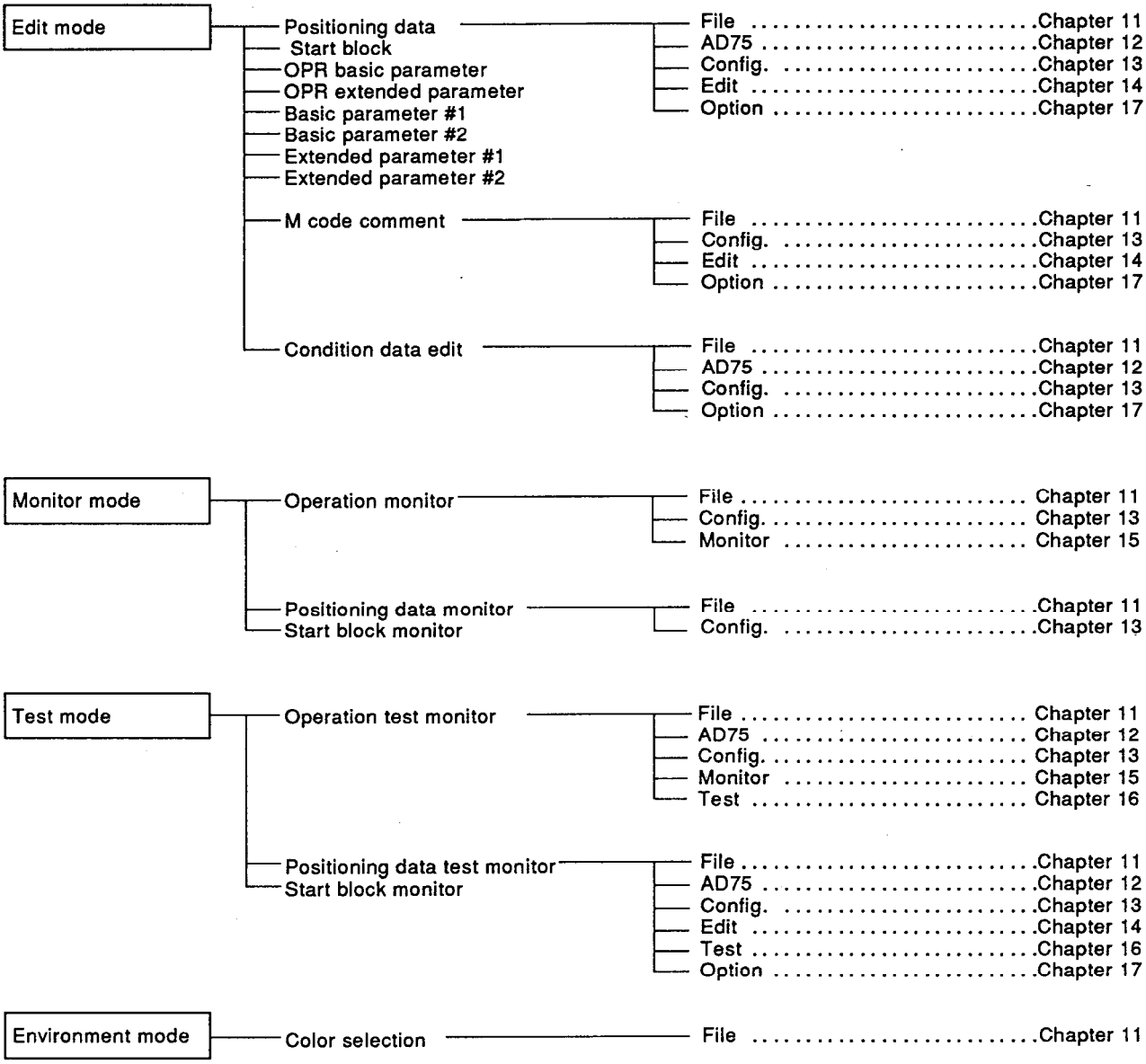
3. FUNCTION LIST

3.1 Function List for each Software System

A list of SW01VD-AD75P functions is presented below.



Mode


Edit mode
Positioning data
Start block
OPR basic parameter
OPR extended parameter
Basic parameter #1
Basic parameter #2
Extended parameter #1
Extended parameter #2
File ..... Chapter 11
AD75 ..... Chapter 12
Config. ..... Chapter 13
Edit ..... Chapter 14
Option ..... Chapter 17
M code comment
File ..... Chapter 11
Config. ..... Chapter 13
Edit ..... Chapter 14
Option ..... Chapter 17
Condition data edit
File ..... Chapter 11
AD75 ..... Chapter 12
Config. ..... Chapter 13
Option ..... Chapter 17
Monitor mode
Operation monitor
File ..... Chapter 11
Config. ..... Chapter 13
Monitor ..... Chapter 15
Positioning data monitor
Start block monitor
File ..... Chapter 11
Config. ..... Chapter 13
Test mode
Operation test monitor
File ..... Chapter 11
AD75 ..... Chapter 12
Config. ..... Chapter 13
Monitor ..... Chapter 15
Test ..... Chapter 16
Positioning data test monitor
Start block monitor
File ..... Chapter 11
AD75 ..... Chapter 12
Config. ..... Chapter 13
Edit ..... Chapter 14
Test ..... Chapter 16
Option ..... Chapter 17
Environment mode
Color selection
File ..... Chapter 11

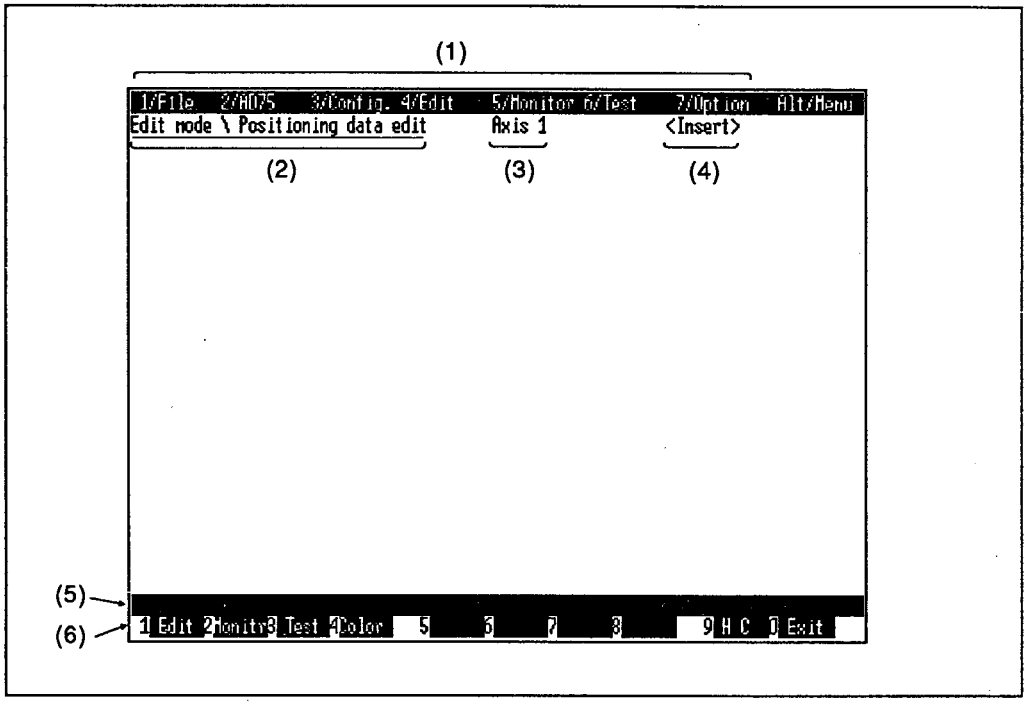
4. COMMON CONSIDERATIONS

4.1 Screen Specification

This section describes the basic screen format, and the windows opened during operation.

4.1.1 Basic screen

This is the basic screen for operations in each mode and the operations related to each function.



(1) The currently selectable menu options are displayed here.
(Select the menu by pressing [Alt] key.)

(2) The selected mode and function are displayed here.

(3) The current axis number is displayed here.

(4) The key input mode, "Insert" or "Overwrite", is displayed here.

(5) Operation guidance is displayed here.

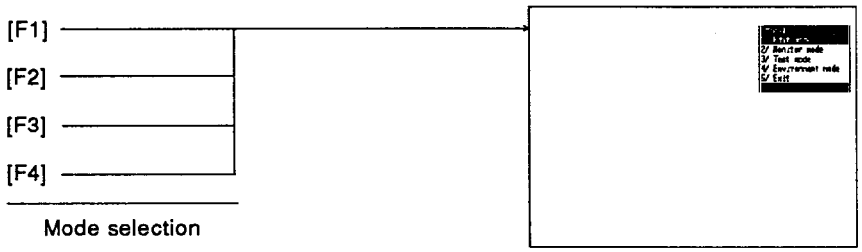
(6) The functions allocated to the function keys are displayed here.

4.1.2 Windows

A window is a screen area used to select operation options.

(1) Mode selection window

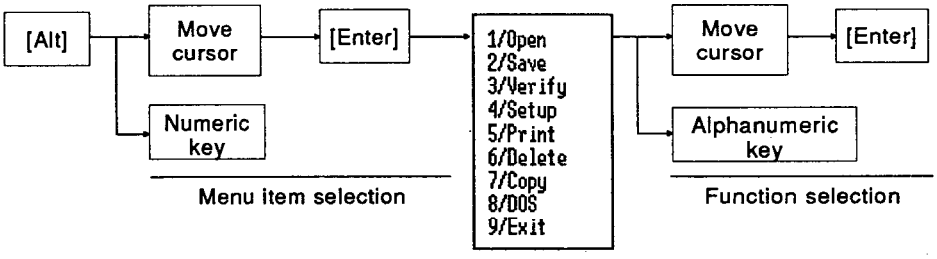
The mode options in the mode selection window can be selected by pressing the function keys [F1], [F2], [F3], and [F4].
(When a mode is selected, the function selection window for the selected mode is displayed.)



- In the function selection mode, move the cursor to the item to be set, then press [Enter] or the appropriate alphanumeric key.

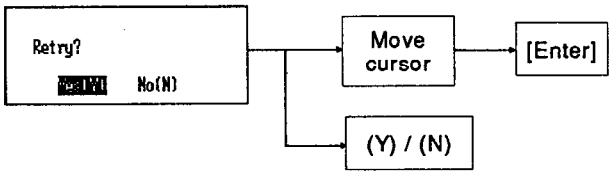
(2) Menu window

In order to open a menu window, press [Alt] key, select the required menu item, then press [Enter].



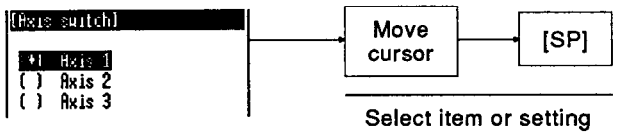
(3) Option window

Designate "Yes(Y)" or "No(N)" in response to the displayed message.

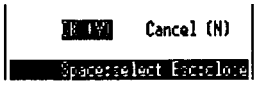


(4) Setting/Execution Window

(a) Select an item or setting.



(b) Designate "OK (Y)" or "Cancel (N)" for the setting made.



POINT

- Selection method

  There are two ways to select an item from a window display: direct selection by pressing an alphanumeric key, and indirect selection by moving the cursor to the item.

4.2 Basic Operation

This section describes the key operations common to all procedures, and the function-related operations that are common to each mode. You are recommended to read through this section before attempting operations in the various modes.

4.2.1 Basic key operation

The applications of the keys used with the AD75P are as follows.

(1) Key applications

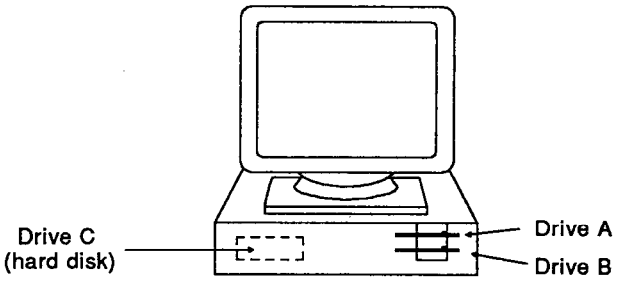
Key	Application	Key	Application
[Esc]	Closing windows, canceling execution, selecting instructions, Opening/closing windows	[Delete]	Deletion of character at the cursor position (Clear all settings)
[Tab]	TAB code input, cursor motion	[F9]	Screen hard copy
[Ctrl]	Used in combination with alphanumeric keys and function keys	[↑] [↓] [←] [→]	Used to move the cursor and scroll the screen line by line (e.g. when positioning data is displayed)([←] [→])
[Shift]	Selecting the characters designated as shift characters	[Backspace]	Deleting the character to the left of the cursor position
[Caps Lock]	Selecting upper/lower case	[Enter]	Executing a carriage return
[Alt]	Menu selection	[Print Screen]	Screen copy
[Page Up]	Scrolling the positioning edit screen Used to display other pages during operation monitor/test.	[Scroll Lock]	Disabling scrolling (up and down)
[Page Down]	Scrolling the positioning edit screen Used to display other pages during operation monitor/test.	[Num lock]	Limiting use of ten-key panel to numeral input
[Insert]	Inserting a space at the cursor position	[F10]	Exiting the system

5. PREPARATION FOR START-UP, AND START-UP PROCEDURE

This section describes the environmental settings for installing and starting up SW0IVD-AD75P, and the procedure for starting up the AD75P functions.

5.1 Installing the Software Package

This is the procedure for installing SW0IVD-AD75P in the hard disk of an IBM PC/AT. The description of the procedure assumes the system configuration shown below.



Switch on the power to the IBM PC/AT, or reset it . . . MS-DOS is used as the OS (Operating System)

↓

A:\ . . . MS-DOS command prompt

↓

Insert system disk No.1 into the designated drive . . . The drive differs according to the system being used.

↓

A:\INSTHD . . . Input the command shown here.

↓

[Enter]

↓

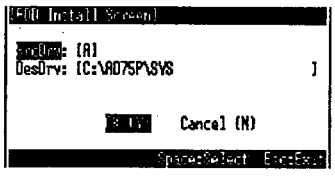
Select the source drive and the destination drive. . . . The screen shown below is displayed.

↓

Y/N selection

↓

Go to next page



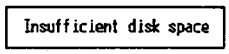
Source : the drive in which to insert system disk No.1.
Destination : the drive to install function of the AD75P

Continued from previous page

Confirm system disk is in drive. . . . The message shown below is displayed.

(Y)

Start installation of system disk. . . . If the hard disk has insufficient capacity, the message shown below is displayed and installation stops.



Installation of system disk completed.

[Esc]

Completed . . . When the CONFIG.SYS is changed, reset the computer and start-up the package again before starting the AD75P functions.

5.2 Start-Up Environment Settings

(1) If there are many drivers or resident commands in the CONFIG.SYS and AUTOEXEC.BAT, and there is insufficient capacity (continuous area) in the main memory, the AD75P cannot be started up. If this problem arises, either eliminate unnecessary drivers and resident commands from CONFIG.SYS and AUTOEXEC.BAT, or reduce the size of FILES if it is too large, in order to secure the memory capacity indicated below, then restart the IBM PC/AT.

- Memory capacity necessary for AD75P functions with each DOS version:

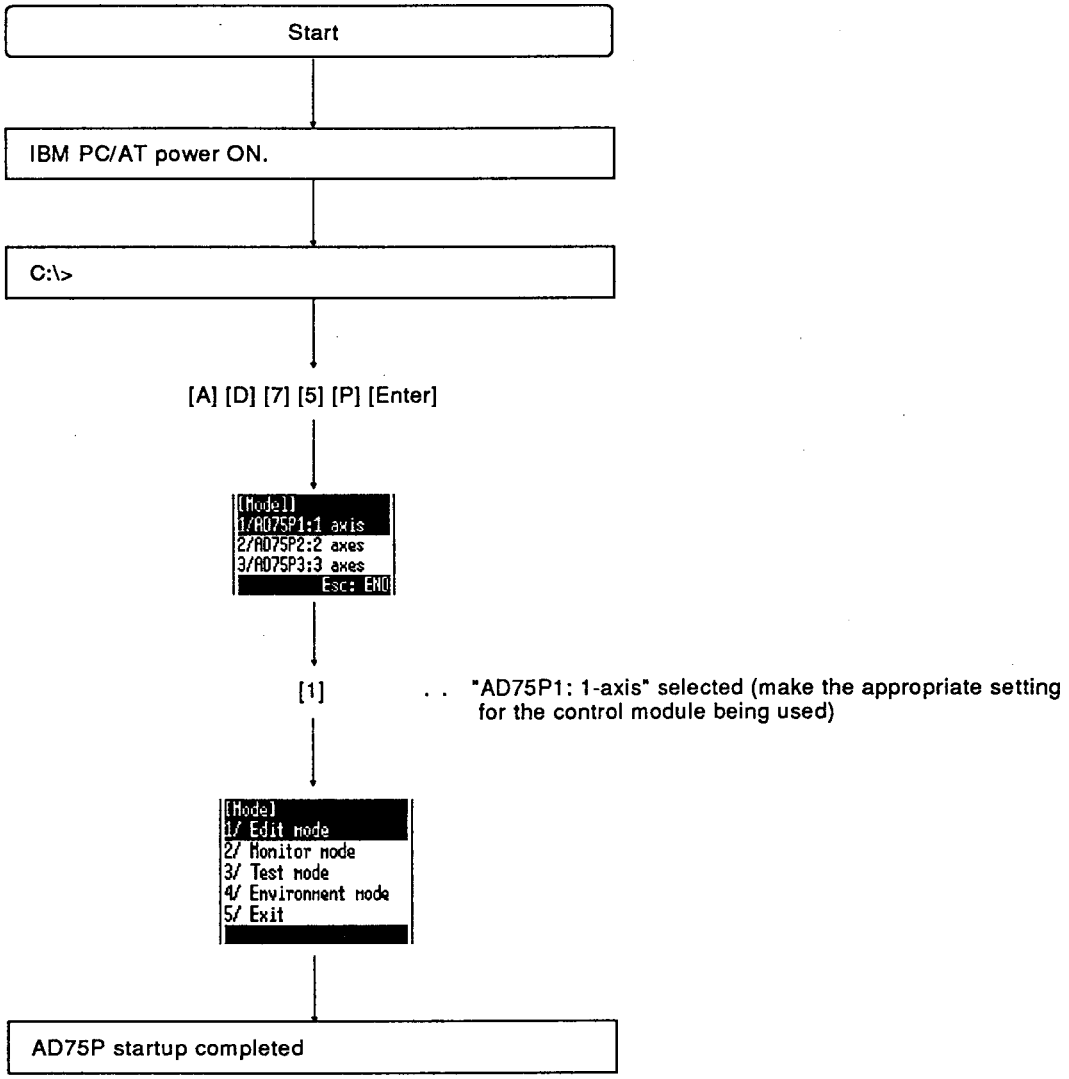
Version	IBM PC/AT
Ver. 3.3D	———
Ver. 5	510 kbytes or more
Ver. 6	546 kybtes or more

IMPORTANT

When using the AD75P functions, turn OFF the resume function of the IBM PC/AT. If the AD75P is operated with the resume function ON, the system may crash.

5.3 Starting Up The AD75P Functions

This section describes the procedure for starting up the functions of the AD75P after the software has been installed in the hard disk of the IBM PC/AT.



6. EDIT MODE

6.1 Available Functions

The following functions are available in the edit mode.

(1) Functions in the edit mode

Edit mode	Positioning data	Sets the pattern control method, acceleration, deceleration, address, arc address, commanded speed, dwell time, M code.
	Start block	Sets the mode, data No., special start, parameters.
	OPR basic parameter	Sets the home position return method/direction/ address/speed, creep speed, home position return retry, etc.
	OPR extended parameter	Sets home position return dwell time/torque limit value, travel value after near-zero point dog home position return acceleration/deceleration time, home position shift amount.
	Basic parameter #1	Sets the unit, number of pulses/travel value per revolution, unit multiplier, pulse output mode, direction of rotation.
	Basic parameter #2	Sets the speed limit value and acceleration/ deceleration time.
	Extended parameter #1	Sets the backlash compensation amount, upper and lower software stroke limit selection, etc.
	Extended parameter #2	Sets the acceleration/deceleration time, JOG speed limit value, JOG operation acceleration/ deceleration time etc.
	M code comment	Sets M code comment.
	Condition data	Sets condition data

(2) Alt menu functions

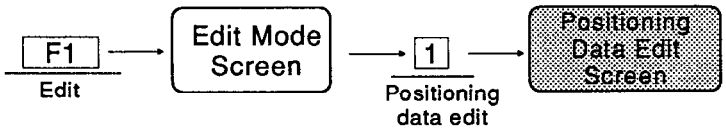
File	Open	Reads the file in the FD/HD
	Write	Writes the designated data to the disk in accordance with the designated drive and file name.
	Verify	Verifies the designated file against the contents of the memory in the peripheral device.
	Setup	Sets the print conditions for printout .
	Print	Prints in accordance with settings made for "setup".
	Delete	Deletes the designated file.
	Copy	Copies the designated file to another designated file.
	DOS	Displays the DOS prompt
	Exit	Exits the selected mode and displays the mode selection menu.

- **AD75**
  - Up load ..... Reads the set data in the AD75 to the internal memory in the peripheral device.
  - Down load ..... Batch writes the contents of the internal memory of the peripheral device to the buffer memory in the AD75.
  - Verify ..... Verifies the set data in the AD75 against the contents of the internal memory of the peripheral device.
  - OS ..... Displays the OS version installed in the IBM PC/AT.
  - F-ROM WR ..... Sets request for reading and writing between the buffer memory and F-ROM in the IBM PC/AT.
- **Config.**
  - Axis switch ..... Switches the axis of symmetry on the automatic writing display screen.
  - Aux.menu disable ..... Clears the selected list (auxiliary menu) displayed in accordance with cursor motions during positioning data edit, start block edit, condition data edit, positioning test, and start test operations.
  - F-ROM ..... Sets whether writing to the F-ROM is executed automatically when peripheral data is written to the AD75.
- **Edit**
  - Copy ..... Copies positioning data, start blocks and M code comments.
  - Jump ..... Jumps the cursor position to the designated No. on positioning data, start block and parameter screens.
- **Option**
  - Initialization ..... Initializes positioning data, start block, parameters and condition data.
  - Data check ..... Checks the data for the set positioning
  - DOS 71 - 75conv. ..... Converts data for the AD71 to AD75 data. (When the data for the AD71 is stored in an FDD in DOS format.)
  - CPM 71 - 75conv. ..... Converts data for the AD71 to AD75 data. (When the data for the AD71 is stored in an FDD of CPM format.)

6.2 Setting Positioning Data

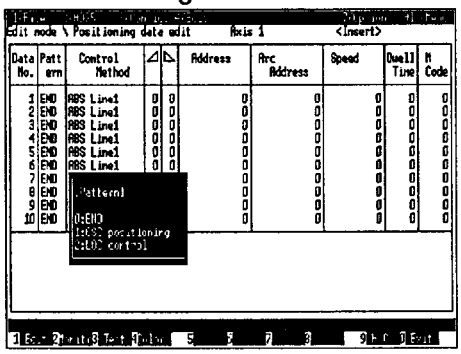
The positioning data setting set the pattern, control method, acceleration, deceleration, address, arc address, commanded speed, dwell time, and M-code.
Make the settings by selecting numbers or setting any required value in the auxiliary menu window.

Basic operation



Positioning data edit screen and related operation

Positioning data edit screen



- Move cursor : [↑], [↓], [←], [→]
- Set address for other axis in interpolation control : [Tab]
- Set value : [Numeric value] → [Enter]

Explanation

■ Edit screen display
When the positioning data screen opens, the edit screen for axis 1 is displayed first. To switch to axis 2 or 3, see the details on the "Axis switch" function under "3/Config." (Section 13.2.)

■ Acceleration/deceleration time
The settings made in basic parameters #2 or extended parameters #2 are indicated.

■ Address
The display changes in accordance with unit (mm, inch, degree, PULS) set in basic parameters #1 as follows.

Positioning address

Control Method		Unit and Setting Range				Initial Value
		mm (μm)	inch	degree	PULS (PLS)	
Positioning address	ABS	-214748364.8 to 214748364.7	-21474.83648 to 21474.83647	0 to 359.99999	-2147483648 to 2147483647	0
	INC	Other than speed/position switching control				0
		-214748364.8 to 214748364.7	-21474.83648 to 21474.83647	-21474.83648 to 21474.83647	-2147483648 to 2147483647	
		Speed/position switching control				0
		0 to 214748364.7	0 to 21474.83647	0 to 21474.83647	0 to 2147483647	

ABS method: Sets positioning address using absolute address.

INC method: Sets positioning address using travel value.

■ Arc address
The display format depends on the unit (mm, inch, degree, PULS) set in basic parameters #1 as follows.

Control Method		Unit and Setting Range				Initial Value
		mm (μm)	inch	degree	PULS (PLS)	
Arc address	ABS	-214748364.8 to 214748364.7	-21474.83648 to 21474.83647	0 to 359.99999	-2147483648 to 2147483647	0
	INC			-21474.83648 to 21474.83647		

Arc addresses are necessary only for circular interpolation control.

- Auxiliary point designation:
  Set the address of the pass point on the arc in circular interpolation from the start point address (present stop address) to the end point address.
- Center point designation:
  Set the center point of the arc in circular interpolation from the start point address (present stop address) to the end point address.

■ Commanded speed
The display format depends on the unit (mm, inch, degree, PULS) set in basic parameters #1 as follows.

Control Method	Unit and Setting Range				Initial Value
	mm (μm)	inch	degree	PULS (PLS)	
Arc address	0.01 to 6000000.00 (mm/min)	0.001 to 600000.000 (inch/min)	0.001 to 600000.000 (degree/min)	1 to 1000000 (PLS/min)	0

To set use of the current speed, input -1.

■ Dwell Time
Set dwell time within the range "1 to 65535". If not required, set 0.

■ M-Code
Set dwell time within the range "1 to 32767". If not required, set 0.

POINTS

- Setting from auxiliary menu

  (1) Items set by designating a number in the auxiliary menu window:

  Pattern, Control method, Acceleration time, Deceleration time

  (2) Items set by inputting values in accordance with guidance in the auxiliary menu window:

  Address, Arc address, Commanded speed, Dwell time, M-Code.

- Setting the address of other axes in interpolation control

  When interpolation is executed, the address and arc address of the other axis or axes can be set.
  The setting procedure is as follows.

  1. Move cursor to the address and arc address setting area.
  2. Press [Tab] key
  3. Input the required numeric value.
     Press [Enter] key to set the interpolation axis address.

- Data check

  A check can be done on the positioning data settings.

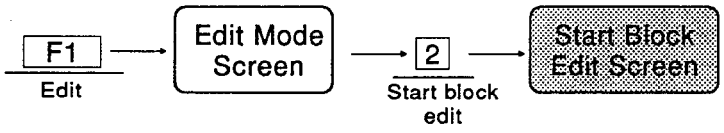
  <Content of data check>

  1. Checks whether control method is set or not.
  2. Checks whether commanded speed is set or not.
     For details on the data check, see Section 17.3.

6.3 Setting Start Block

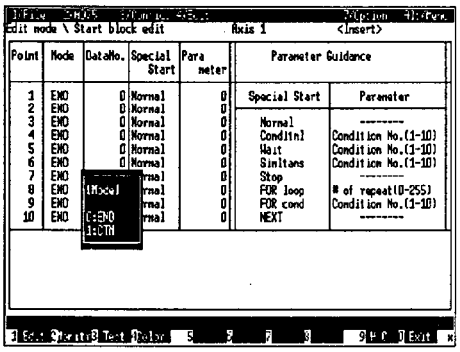
The start block settings set the mode, start data No., special start, and parameters.
To set the mode and special start, select the relevant numbers in the auxiliary menu window which will open to allow the setting.

Basic Operation



Start block edit screen and related operation

Start block edit screen



- Move cursor : [↑], [↓], [←], [→]
- Set value : [Numeric value] → [Enter]

Explanation

■ Setting range of data No.
Set within the range 1 to 600.

■ Special start
Select and input the number displayed in the auxiliary menu window.

■ Parameters
It is not necessary to set parameters for a "Normal", "Stop", or "NEXT" special start.
The relationship between the setting for special start and the parameter settings is as follows.

Special Start	Parameters
Conditional start Wait start Simultaneous start FOR condition	Condition data No.1 to 10
FOR loop	0: endless loop 1 to 255

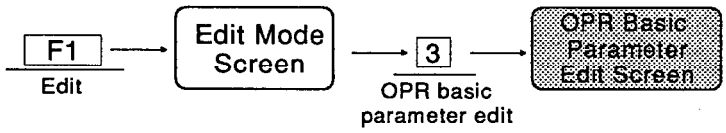
POINT

- The initial value of parameters is "0".
  Be careful when executing FOR loop because this corresponds to an endless loop.

6.4 Setting OPR Basic Parameters

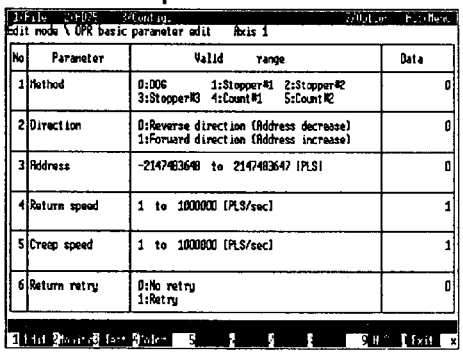
These parameters set the home position return method/direction/speed, creep speed, and home position return retry setting.

Basic Operation



OPR basic parameter edit screen and related operation

OPR basic parameter edit screen



- Move cursor : [↑], [↓]
- Set value : [Numeric value] → [Enter]

Explanation

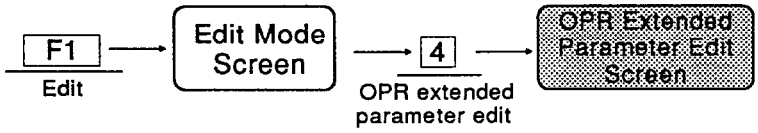
■ The OPR basic parameters and explanations of their settings are tabled below.

No.	Item	Remark/Setting Range	Initial Value
1	Method	• Sets the home position return method. 0: Near-zero point dog method 1: Stopper stop #1 (dwell timer time-out) 2: Stopper stop #2 (by zero point signal on striking the stopper) 3: Stopper stop #3 (no near-zero point dog) 4: Count type 1 (zero-point signal used) 5: Count type 2 (zero-point signal not used)	0
2	Home position return direction	• Set the direction for home position return. • Movement occurs in the designated direction when home position return start is executed. 0: Forward direction (direction in which address increases) 1: Reverse direction (direction in which address decreases)	0
3	Home position address	• Set the present value of the home position on completion of home position return. • On normal completion of home position return, the set value for the home position address is stored as the feed present value and the machine feed value. • It is recommended home position address in upper limit and lower limit of S/W stroke limit be set. -214748364.8 to 214748364.7 (μm) -21474.83648 to 21474.83647 (inch) 0 to 359.99999 (degree) -2147483648 to 2147483647 (PLS)	0
4	Home position return speed	• Set speed at the time of home position return. 0.01 to 600000.00 (mm/min) 0.001 to 60000.000 (inch/min) 0.001 to 60000.000 (degree/min) 1 to 1000000 (PLS/sec)	1
5	Creep speed	• Set creep speed after near-zero point dog ON. 0.01 to 600000.00 (mm/min) 0.001 to 60000.000 (inch/min) 0.001 to 60000.000 (degree/min) 1 to 1000000 (PLS/sec)	1
6	Home position return retry	• Set ON when home position return retry is executed by upper/lower limit switch. 0: No home position return retry executed. 1: Home position return retry executed.	0

6.5 Setting OPR Extended Parameters

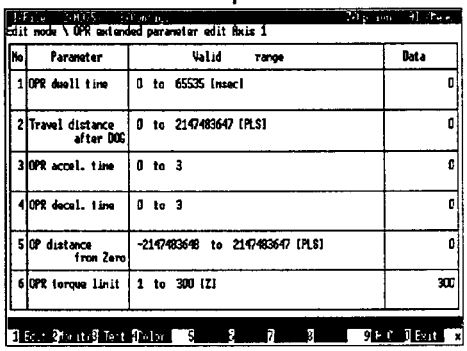
These parameters set the home position return dwell time/torque limit value, travel value after near-zero point dog, home position return acceleration/deceleration time and home position shift amount.

Basic Operation



OPR extended parameter edit screen

OPR extended parameter edit



- Move cursor : [↑], [↓]
- Set value : [Numeric value] → [Enter]

Explanation

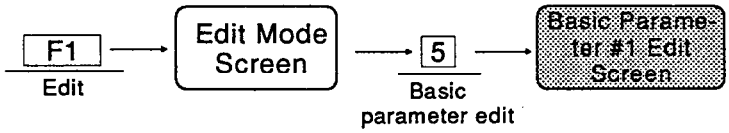
■ The OPR extended parameters and explanations of their settings are tabled below.

No.	Item	Remark/Setting Range	Initial Value
1	OPR dwell time	• Set time from when near-zero point dog comes ON to completion of home position return when home position return is executed by the stopper stop #1 method. 0 to 65535 (ms)	0
2	Travel distance after DOG	• For the count type, set the travel value after the near-zero point dog. • Set a value greater than the deceleration distance from home position return speed. 0 to 214748364.7 (μm) 0 to 21474.83647 (inch) 0 to 21474.83647 (degree) 0 to 2147483647 (PLS)	0
3	OPR accel. time	• Select which of the acceleration times 0, 1, 2 or 3 is to be used when home position return is executed. 0 to 3	0
4	OPR decel. time	• Select which of deceleration times 0, 1, 2 or 3 is to be used when home position return is executed. 0 to 3	0
5	OP distance from zero	• Set the amount of shift from the detected zero-point signal to the home position. -214748364.8 to 214748364.7 (μm) -21474.83648 to 21474.83647 (inch) 0 to 359.99999 (degree) -2147483648 to 2147483647 (PLS)	0
6	OPR torque limit	• Set the value to limit the servomotor torque after reaching the creep speed during home position return. 1 to 300 (%)	300

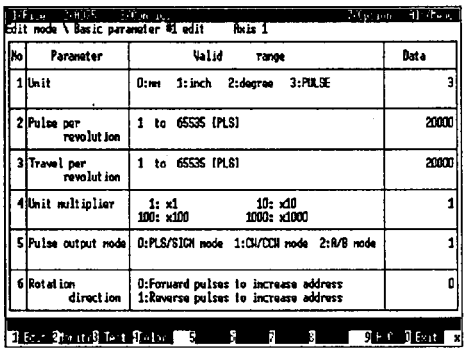
6.6 Setting Basic Parameters #1

These parameters set the unit, number of pulses/travel value per revolution, unit magnification, pulse output mode and direction of rotation.

Basic Operation



Basic parameter #1 edit screen


Edit mode \ Basic parameter #1 edit Axis 1

No	Parameter	Valid range	Data
1	Unit	0:mm 1:inch 2:degree 3:PULSE	3
2	Pulse per revolution	1 to 65535 [PLS]	20000
3	Travel per revolution	1 to 65535 [PLS]	20000
4	Unit multiplier	1: x1 10: x10 100: x100 1000: x1000	1
5	Pulse output mode	0:PLS/SIGN mode 1:CW/CCW mode 2:A/B mode	1
6	Rotation direction	0:Forward pulses to increase address 1:Reverse pulses to increase address	0

- Move cursor : [↑], [↓]
- Set value : [Numeric value] → [Enter]

Explanation

■ The basic parameters #1 and explanations of their settings are tabled below.

No.	Item		Remark/Setting Range	Initial Value
1	Unit		• Set the command unit for each axis when positioning control is executed. 0: mm 1: inch 2: degree 3: PULSE	3
2	Travel value per pulse	Number of pulses per revolution (Ap)	• Set the number of pulses for one motor revolution, which is fixed in accordance with the mechanical system. 1 to 65535 (PLS)	20000
3		Travel value per pulse (Am)	• Set the travel value for one motor revolution, which is fixed in accordance with the mechanical system 0.1 to 6553.5 (μm) 0.00001 to 0.65535 (inch) 0.00001 to 0.65535 (degree) 1 to 65535 (PLS)	20000
4		Unit multiplier (Am)	• Set to change the magnification of the travel value per pulse. 1: x 1 10: x 10 100: x 100 1000: x 1000	1
5	Pulse output mode		• Set the mode for pulse output. 0: PLS/SIGN mode 1: CW/CCW mode 2: Phase A/B mode	1
6	Rotation direction		• Set the direction of rotation when the present value increases. 0: Present value is increased by forward rotation pulse output. 1: Present value is increased by reverse rotation pulse output.	0

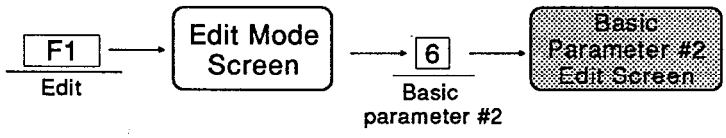
CAUTION

Be aware that changing the "Unit" setting without due care could cause positioning data such as addresses and arc addresses to exceed their setting ranges.

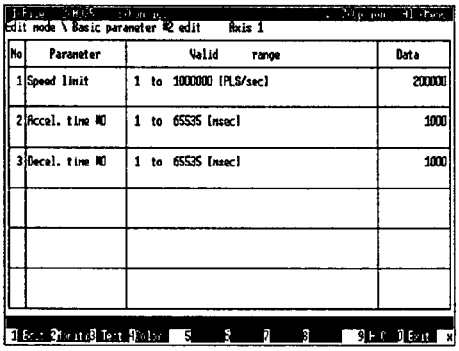
6.7 Setting Basic Parameters #2

These parameters set the speed limit value, acceleration time and deceleration time.

Basic Operation



Basic parameter #2 edit screen



- Move cursor : [↑], [↓]
- Set value : [Numeric value] → [Enter]

Explanation

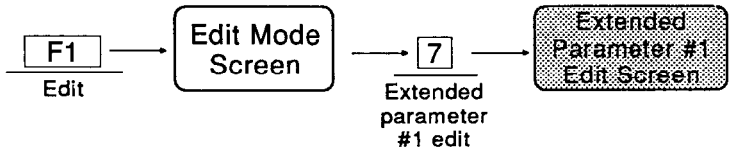
■ The basic parameters #2 and explanations of their settings are tabled below.

No.	Item	Remark/Setting Range	Initial Value
1	Speed limit	• Sets the maximum speed for positioning (including home position return) and manual pulse generator operation. 0.01 to 6000000.00 (μm/min) 0.001 to 600000.000 (inch/min) 0.001 to 600000.000 (degree/min) 1 to 1000000 (PLS/sec)	200000
2	Acceleration time 0	• Sets the time taken to reach the set speed limit value from speed 0. 1 to 65535 (ms)	1000
3	Deceleration time 0	• Sets the time taken to reach speed 0 from the set speed limit value. 1 to 65535 (ms)	1000

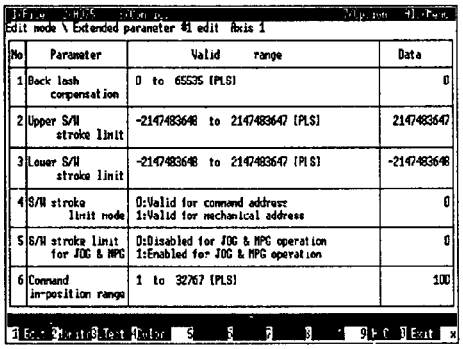
6.8 Setting Extended Parameters #1

These parameters set the backlash compensation amount, upper limit, lower limit, and mode for software stroke limits, etc.

Basic Operation



Extended parameter #1 edit screen


Edit mode \ Extended parameter #1 edit Axis 1

No	Parameter	Valid range	Data
1	Back lash compensation	0 to 65535 [PLS]	0
2	Upper S/W stroke limit	-2147483648 to 2147483647 [PLS]	2147483647
3	Lower S/W stroke limit	-2147483648 to 2147483647 [PLS]	-2147483648
4	S/W stroke limit mode	0:Valid for command address 1:Valid for mechanical address	0
5	S/W stroke limit for JOG & MPG	0:Disabled for JOG & MPG operation 1:Enabled for JOG & MPG operation	0
6	Command in-position range	1 to 32767 [PLS]	100

- Move cursor : [↑], [↓]
- Set value : [Numeric value] → [Enter]

Explanation

■ The extended parameters #1 and explanations of their settings are tabled below.

No.	Item	Remark/Setting Range	Initial Value
1	Backlash compensation	• Sets the amount of backlash of the machine. • Compensates for the amount of backlash when the direction is changed during positioning. 0 to 6553.5 (μm) 0 to 0.65535 (inch) 0 to 0.65535 (degree) 0 to 65535 (PLS)	0
2	Upper S/W stroke limit	• Sets the upper limit of the machine travel range. -214748364.8 to 214748364.7 (μm) -21474.83648 to 21474.83647 (inch) 0 to 359.9999 (degree) -2147483648 to 2147483647 (PLS)	2147483647
3	Lower S/W stroke limit	• Sets the lower limit of the machine travel range. -214748364.8 to 214748364.7 (μm) -21474.83648 to 21474.83647 (inch) 0 to 359.9999 (degree) -2147483648 to 2147483647 (PLS)	-2147483647
4	S/W stroke limit mode	• Selects whether a feed present value or machine present value is used to set the software stroke. 0: Software stroke limit set as feed present value. 1: Software stroke limit set as machine present value.	0
5	S/W stroke limit for Jog&man-pls	• Sets whether the software stroke limit is valid when executing JOG operation or manual pulse generator operation. 0: Software stroke limit is invalid when executing JOG operation or manual pulse generator operation. 1: Software stroke limit is valid when executing JOG operation or manual pulse generator operation.	0

(Continued)

No.	Item	Remark/Setting Range	Initial Value
6	Command in-position range	• Sets the position where the command in-position signal comes ON. • The actual setting range is between 1 and 32767 but the values are those indicated below after unit magnification. 0.1 to 3276700.0 (μm) 0.00001 to 327.67000 (inch) 0.00001 to 327.67000 (degree) 1 to 32767 (PLS)	100
7	Torque limit	• Sets the torque limit value 1 to 500 (%)	300
8	M code ON signal output timing	WITH mode: The M code is set, and the H-Code ON signal is turned ON, when positioning is started. AFTER mode: The M code is set, and H-code ON signal is turned ON, after positioning has been completed. 0: WITH mode 1: AFTER mode	0
9	Speed change mode change timing	• Select advance type or standard type. The advance type executes the speed change at the end of the present positioning operation and the standard type executes the speed change at the beginning of the next positioning operation. 0: Standard speed change mode 1: Advance speed change mode	0
10	Interpolation speed mode	• This sets the method for designating the speed for interpolation. • When circular interpolation is executed, or the unit group is different, the combinations of data that can be designated are as indicated in Note 1. If an incorrect combination is designated an error will occur and the positioning data will be ignored. 0: Composed speed 1: Longer axis speed	0
11	Address up-data in V-control	• Sets whether the feed present value is updated or not during speed control or the speed control part of speed/position switching control. 0: No address update in veracity control. 1: Address update in veracity control.	0
12	Manual pulse generator selection	• Select which manual pulse generator is used. • When 0 is input, manual pulse generator operation is not permitted. 0: Man-pls disable 1: Man-pls #1 enable 2: Man-pls #2 enable 3: Man-pls #3 enable	1

CAUTION

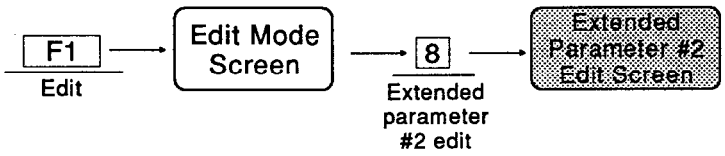
Unit G (group)	Unit
Group 1	mm, inch
Group 2	degree
Group 3	PULSE

		Unit G conformity	Unit G discrepancy
linear interpolation	Composed	OK	NO
	Long axis	OK	OK
Circular Interpolation	Composed	OK	NO
	Long axis	NO	NO

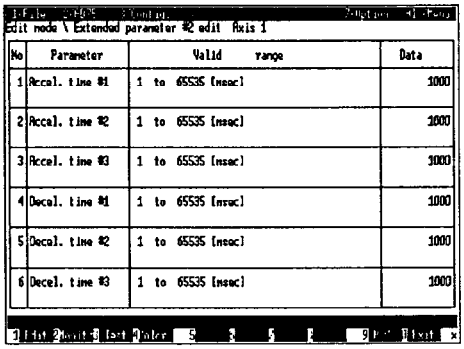
6.9 Setting Extended Parameters #2

These parameters set the acceleration/deceleration time, JOG speed limit value, JOG operation acceleration/deceleration time, etc.

Basic Operation



Extended parameter #2 edit screen



- Move cursor : [↑], [↓]
- Set value : [Numeric value] → [Enter]

Explanation

■ The extended parameters #2 and explanations of their settings are tabled below.

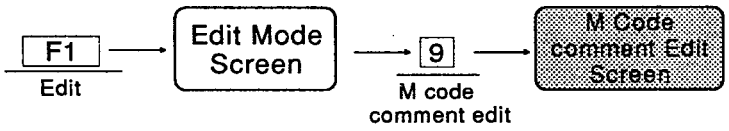
No.	Item	Remark/Setting Range	Initial Value
1	Accel. speed #1	• Sets the time required to accelerate from 0 to the speed control limit in positioning operation.	1000
2	Accel. speed #2		
3	Accel. speed #3	1 to 65535 (ms)	
4	Decel. speed #1	• Sets the time required to decelerate from the speed control limit to 0 in positioning operation.	1000
5	Decel. speed #2		
6	Decel. speed #3	1 to 65535 (ms)	
7	JOG speed limit	• Sets the maximum speed during JOG operation. • It is necessary to set a JOG speed limit value that is lower than the speed control limit.	200000
		0.01 to 6000000.00 (μm/min) 0.001 to 600000.000 (inch/min) 0.001 to 600000.000 (degree/min) 1 to 1000000 (PLS/sec)	
8	JOG acceleration speed selection	• Selects which of acceleration times 0, 1, 2 and 3 is used during JOG operation.	0
		0 to 3	
9	JOG decelerate speed selection	• Selects which of deceleration times 0, 1, 2 and 3 is used during JOG operation.	0
		0 to 3	
10	Accel/Decel mode	• Select trapezoid acceleration deceleration mode or S curve acceleration deceleration mode.	0
		0: Trapezoid acceleration deceleration mode 1: S curve acceleration deceleration mode	
11	S curve ratio	• Sets S curve ratio during S-pattern processing. • The smaller the value is, the more linear the S curve is.	100
		1 to 100 (%)	

No.	Item	Remark/Setting Range	Initial Value
12	Rapid declaration time	• Sets the time required to decelerate from the speed control limit to 0 during rapid stop. • Set rapid stop deceleration time for one word type or for the lower word. 1 to 65535 (ms)	1000
13	Stop group #1 Rapid stop	• Select normal stop or rapid stop for stop operation. <Cause> S/W stroke limit 0: Normal stop 1: Rapid stop	0
14	Stop group #2 Rapid stop	• Select normal stop or rapid stop for stop operation. <Cause> Software stroke limit Peripheral stop PC READY OFF 0: Normal stop 1: Rapid stop	0
15	Stop group #3 Rapid stop	• Select normal stop or rapid stop for stop operation. <Cause> External stop Stop (Y range) Error occurrence (except Stop group 1, 2) 0: Normal stop 1: Rapid stop	0
16	Positioning completed out.time	• Sets the output time for output of positioning completed signal from the AD75. 1 to 65535 (ms)	300
17	Circul. interpolate err. allowance	• Sets the allowable range for error between the arc locus and the end point coordinates in circular interpolation positioning. 1 to 10000.0 (μm) 1 to 1.00000 (inch/min) 1 to 1.00000 (degree) 1 to 100000 (PLS)	100
18	External start function	Sets which of the following functions is used for external start. (1) External start • Starts positioning operation in response to external signal (2) External speed change • Executes speed change in positioning operation in response to external signal. • In case of external speed change, set the speed change value in the "positioning operation speed change value" of the axis control data. (3) Skip request • When a skip request comes ON during positioning operation, deceleration is automatically executed and the next positioning operation is executed. 0: External start 1: External speed change 2: Skip request	0

6.10 Setting M code Comment

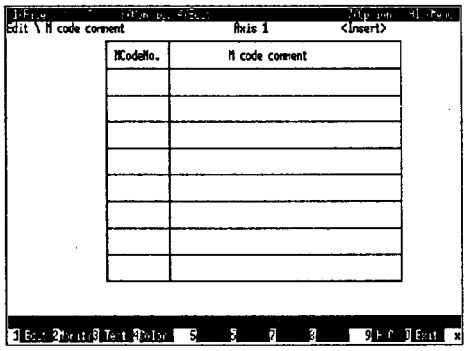
This is the procedure for setting M code comments.

Basic Operation



M code comment edit screen and its operation

M code comment edit screen



- Move cursor : [↑], [↓], [←], [→]
- M code No. : [M code No.] → [Enter]
- M code comment : [M code comment] → [Enter]

Explanation

- M codes can be set between 1 and 32767. A maximum of 50 M code comments can be set for each of axes 1 to 3.
- There is no problem if more than one M code comment is set for the same M code. However it an error will occur in the item check if the same M codes occurs more than once.
- M code comments can be changed automatically in the M code order of M code by switching the screen or pressing the [Alt] key twice because M code is controlled by sorting inside the peripheral device.

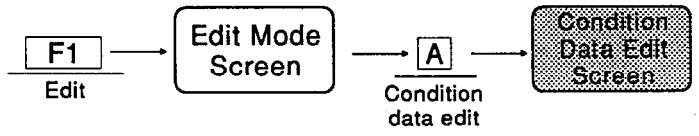
POINT

- M code comments are not transferred to the AD75.

6.11 Setting Condition Data

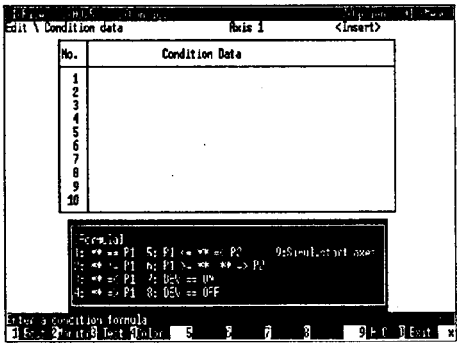
This is the procedure for setting condition data to execute a conditional start.

Basic Operation



Condition data edit screen and related operation

Condition data edit screen



- Move cursor : [↑], [↓]
- Address : [Address] → [Enter]
- Parameter : [Parameter] → [Enter]
- Device : [Device] → [Enter]
- Positioning data No. : [Data No.] → [Enter]

Explanation

(1) The symbols used in the auxiliary menu window are explained below.
** ..... Address
P1, P2 ..... Parameter
DEV ..... X, Y device

■ Selection of condition operator.
Input at the condition operator No. displayed on the auxiliary screen.

■ [Esc] key cancels an operation. After cancellation, the original condition data become valid.

■ Inputting the condition object, parameter

<Example>

$$\frac{[\quad\text{Parameter}\quad]}{} \leq \frac{(\quad\text{Address}\quad)}{} \quad , \quad \frac{(\quad\text{Address}\quad)}{} \geq \frac{[\quad\text{Parameter}\quad]}{}$$

Input the numeric value of the address in the brackets ( ).
If there are 2 places for address input, set the same numeric value twice.

The following auxiliary window is displayed for parameter input.

```
[Type]
1:WORD
 -32768 to 32767
2:DOUBLE WORD
 -2147483648 to 2147483647
```

Input the numeric value after selecting the numeric value type (word, double word). If there are 2 places for parameter input, the same numeric type is to be set.

■ Device input

<Example>

[ ] = ON
Device

The following auxiliary window is displayed for device input.

```
[Device]

X device  X00 - X0F
Y device  Y10 - Y1F
```

When inputting, input "X" or "Y" first, then input a value in the range 00 to 0F for an X device or 10 to 1F for a Y device.

■ Simultaneous start axis designation

<Example>

{ } 1 axis No. ( ) 2 axis No. ( ) 3 axis No. ( )
Corresponding axes — Positioning data No. — Positioning data No. — Positioning data No.

The following auxiliary menu window is displayed for axis designation.

```
[Corresponding axis]
1:1 axis          4:3 axis
2:2 axis          5:1-3 axes
3:1-2 axes        6:2-3 axes
```

Input the designation No. for the corresponding axes and designate the positioning data numbers of axes 1, 2 and 3. Positioning data numbers can be set for all three of axes 1, 2 and 3 regardless of the corresponding axes designation, but irrelevant settings are ignored.

■ If a new condition operator is selected for an item where condition data has already been set, the previous condition data will be deleted and the new condition operator will be dis played.

■ Condition data can be set for each axis. For axis switching, see Section 13.2.

6.12 Alt Menu Operation

6.12.1 File menu

For details on the File menu, see Chapter 11.

6.12.2 AD75 menu

For details on the AD75 menu, see Chapter 12.

6.12.3 Config. menu

For details on the Config. menu, see Chapter 13.

6.12.4 Edit menu

For details on the Edit menu, see Chapter 14.

6.12.5 Option menu

For details on the Option menu, see Chapter 15.

7. MONITOR MODE

7.1 Available Functions

The following functions are available in the monitor mode.

(1) Functions in the monitor mode

- Monitor mode
  - Operation monitor ..... Monitoring operation status
  - Positioning data monitor ... Monitoring positioning data
  - Start block monitor ..... Monitoring the start block

(2) Functions in Alt menu

- File
  - Setup ..... Sets printing conditions for printout.
  - Print ..... Prints in accordance with the settings made in "setup".
  - Delete ..... Deletes the designated file.
  - Copy ..... Copies the designated file to another designated file.
  - DOS ..... Displays DOS prompt.
  - Exit ..... Quits the selected mode and displays the mode selection menu.
- Config.
  - Axis switch ..... Switches the applicable axis on the display.
- Monitor
  - Error history ..... Displays the following data for up to 16 of the latest errors: error occurrence axis, error No., error contents, time of occurrence.
  - Warning history ..... Displays the following data for up to 16 of the latest warnings: warning occurrence axis, warning No., contents, time of occurrence.
  - Start history ..... Displays up to 16 of the latest start history sata, including started axis, start mode, start time, error judgment, etc.
  - Start with error ..... Displays a start history including data for up to 16 starts preceding an error occurrence.
  - X device ..... Displays the signals of X devices.
  - Y device ..... Displays the signals of Y devices.
  - External I/O ..... Displays the ON/OFF status of the external signal
  - Status info. ..... Displays the ON/OFF status of the status information signal.
  - Address monitor ..... Monitors the target value, remaining distance, feed present value, and target machine value on each axis.
  - Speed monitor ..... Monitors the target speed, present speed, and feed speed on each axis.
  - Axis data ..... Monitors present value change value, speed change value, and overwrite value on each axis and four flags in the axis control data.
  - OPR ..... Monitors four signals which are related to the home position, travel value after near-zero point dog ON, torque limit value, and home position return on each axis.

(1)

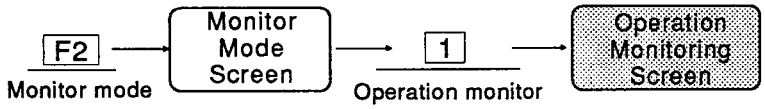
(1)

- Special start ..... Displays special start information and condition data for conditional start.
- JOG&man-pls op. ..... Monitors speed and direction of JOG operation, and enable/disable information and magnification of manual pulse generator operation.
- V/P control ..... Monitors travel value after switching signal comes ON, travel value change register, switch latch flag, switch enable flag, speed-position switching enable flag, travel value change value in speed/position switching control, for each axis.
- M code comment ..... Displays the M code comment appended to the operation No. for each axis.

7.2 Monitoring Operation Status

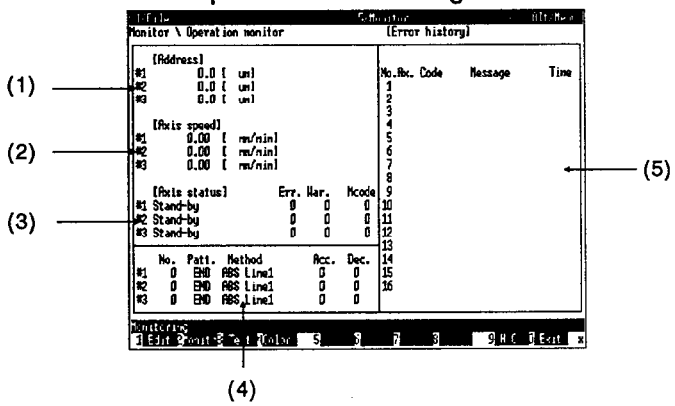
This is the procedure for monitoring the operation status.

Basic Operation



Operation monitoring screen and related operation

Operation Monitoring Screen



Explanation

(1) Feed present value monitor
Displays the present position of each axis at the current time. The feed present value is the coordinate value in cases where the positioning method is absolute. When home position return is completed, the home position return address is displayed. Change the feed present value using the present value change function.

■ The software stroke limit can be actuated at a feed present value by parameter setting.

(2) Axis feed speed monitor
Displays the actual present speed of each axis during operation.
When the axis stops, speed 0 is shown.

(3) The monitoring axis statuses that indicate the status of each axis, error Nos., warning Nos., and M codes, are indicated below.

- Stand-by (when start signal is input, starts from the beginning)
- Stop (when start signal is input, restarts from part way through)
- JOG operation
- Man-pls operation
- Interpolating
- Analyzing
- Waiting for S start
- Returning to OP
- P-controlling
- V-controlling
- V-controlling in V/P
- P-controlling in V/P
- Error occurrence
- Stepping stop
- Step error

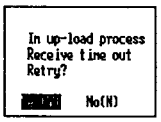
The appropriate code is shown in each status for errors, warnings and M codes, and 0 is shown in other statuses (during normal operation, invalid status).

(4) Monitoring positioning data
When operation is switched to JOG operation or manual pulse generator operation, or when no operation is executed, nothing is displayed here.
While home position return or high-speed home position return is being executed, OPR or Rapid OPR is displayed at "Method".

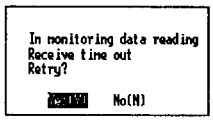
(5) Small screen monitoring display
The window display can be switched another window by selecting "5/Monitor" of [Alt] menu.
On starting, the error history screen is displayed.
The window cannot be switched by using [Page Up] and [Page Down] keys. For details on the Monitor menu option, see Chapter 15.

■ Usually during monitoring, Monitoring is displayed at the bottom of the screen. When this message is not displayed, monitoring is not being executed.

■ If there is a communication error during moni toring, the dialog box shown below is displayed.



Press [Y] to retry.
Pressing [N] displays the dialog box shown below.

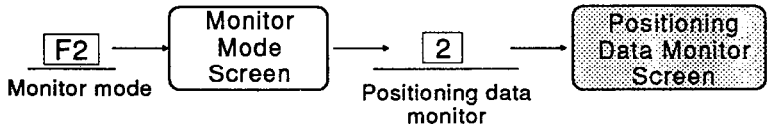


To continue monitoring, enter the monitor mode again.

7.3 Monitoring Positioning Data

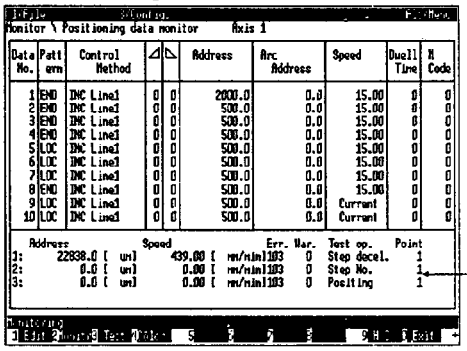
This is the procedure for monitoring positioning data.

Basic Operation



Positioning data monitor screen and related operation.

Positioning Data Monitor Screen

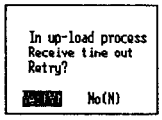


Explanation

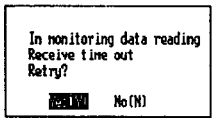
- The screen displays the settings for the data numbers executed.
  The data No. whose data is currently being executed is marked with an asterisk.
- Axis setting
  The first settings are made for one axis, and the second and later settings are the same.
  If the designated axis is not operating, the positioning data is not shown.
  For details on axis switching, see Section 13.2.
- Data numbers are displayed in units of 10 including the currently executed data No.

(1) The feed present value, feed speed, errors, warnings and error messages for axes 1, 2 and 3 are displayed and monitored here.

- If a communication error occurs during monitoring operation, the dialog box shown below is displayed.



Press [Y] to retry.
Pressing [N] displays the dialog box shown below.

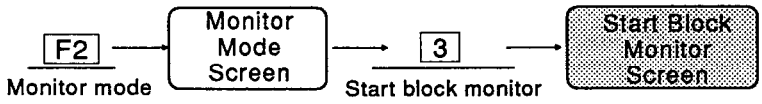


To continue monitoring, enter the monitor mode again.

7.4 Start Block Monitor

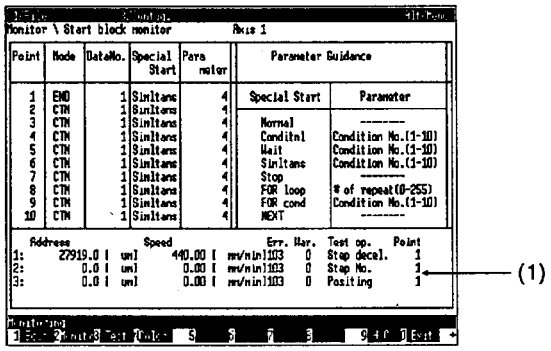
This is the procedure for monitoring start blocks.

Basic Operation



Start block monitor screen and its operation

Start Block Monitor Screen

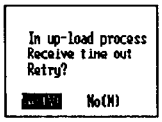


Explanation

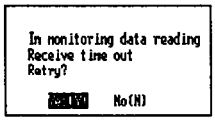
- The screen displays the settings for the points executed.
  The point whose data is currently being executed is marked with an asterisk.
- Axis setting
  The first settings are made for one axis, and the second and later settings are the same.
  For details on axis switching, see Section 13.2.
- Point data are displayed in units of 10 including the currently executed point.

(1) The feed present value, feed speed, errors, warnings and error messages for one to three axes are monitored and displayed here.

- If a communication error occurs during monitoring operation, the dialog box shown below is displayed.



Press [Y] to retry.
Pressing [N] displays the dialog box shown below.



To continue monitoring, enter the monitor mode again.

7.5 Alt Menu Operation

7.5.1 File menu

For details of the File Menu, see Chapter 11.

7.5.2 Config. menu

For details of the Config. Menu, see Chapter 13.

7.5.3 Monitor menu

For details of the Monitor Menu, see Chapter 15.

8. TEST MODE

8.1 Available Functions

The following functions are available in the test mode.

(1) Functions in the test mode

Test mode	Operation test & monitor	Tests and monitors operation status
	Positioning data test & monitor	Tests and monitors positioning
	Start block test & monitor	Tests and monitors start blocks

(2) Alt menu functions

File	Setup	Sets printing conditions for printout.
	Print	Prints in accordance with the settings made in "setup".
	Delete	Deletes the designated file.
	Copy	Copies the designated file to another designated file.
	DOS	Executes DOS commands.
AD75P	OS information	Displays the OS version installed in the AD75.
Config.	Axis switch	Switches the applicable axis for display.
	Aux.menu disable	Clears the selected list (auxiliary menu) displayed in accordance with cursor motions during positioning data edit, start block edit, condition data edit, positioning test, and start test operations.
	Test reconfirm.	When a test on the AD75 is started in the test mode, a confirmation screen will be displayed if "ON" is set for reconfirmation of execution under this function.
Edit	Copy	Copies positioning data, start blocks and M code comments.
	Jump	Jumps the cursor position to the designated No. on positioning data, start block and parameter screens.

Monitor

- Error history ..... Displays the following data for up to 16 of the latest errors: error occurrence axis, error No., error contents, time of occurrence.
- Warning history ..... Displays the following data for up to 16 of the latest warnings: warning occurrence axis, warning No., contents, time of occurrence.
- Start history ..... Displays up to 16 of the latest start history data, including started axis, start mode, start time, error judgment, etc.
- Start with error ..... Displays a start history including data for up to 16 starts preceding an error occurrence.
- X device ..... Displays the signals of X devices.
- Y device ..... Displays the signals of Y devices.
- External I/O ..... Displays the ON/OFF status of the external signal
- Status information ..... Displays the ON/OFF status of the status information signal.
- Address monitor ..... Monitors the target value, remaining distance, feed present value, and target machine value on each axis.
- Speed monitor ..... Monitors the target speed, present speed, and feed speed on each axis.
- Axis data ..... Monitors present value change value, speed change value, and overwrite value on each axis and four flags in the axis control data.
- OPR ..... Monitors four signals which are related to the home position, travel value after near-zero point dog ON, torque limit value, and home position return on each axis.
- Special start ..... Displays special start information and condition data for conditional start.
- JOG&man-pls op. ..... Monitors speed and direction of JOG operation, and enable/disable information and magnification of manual pulse generator operation.
- V/P control ..... Monitors the speed/position switching control travel value, speed-switching enable flag, and travel value change value in speed/position switching control, for each axis.
- M code comment ..... Displays the M code comment appended to the operation No. for each axis.

Test

- Teaching ..... Sets the teaching method.
- Test condition ..... Sets test run conditions.
- Address change ..... Changes the present value.
- OPR ..... Sets the home position return axes.
- Operation test&mon ..... Switches to the operation test and monitor screen.
- Positioning data test&mon ..... Switches to the positioning data test and monitor screen.
- Start block test&mon ..... Switches to the start block test and monitor screen

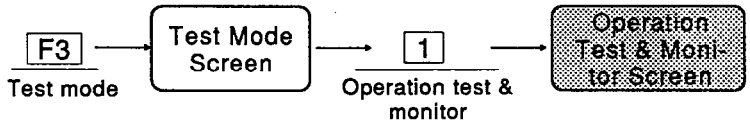
Option

- Data check ..... Checks data for the set positioning.

8.2 Testing and Monitoring Operation Status

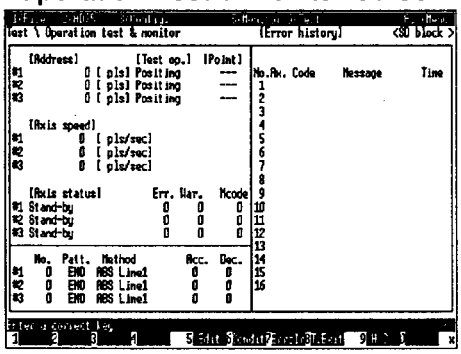
This is the procedure for monitoring and editing operation information.

Basic Operation



Operation test & monitor screen and related operations

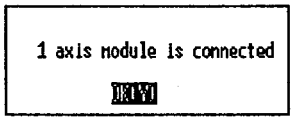
Operation Test & Monitor Screen



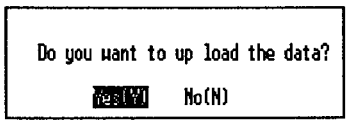
- Axis unit start/stop/error clear : [F1] to [F3]
- All axes start/stop : [F4]
- Edit/Stand-by status switching : [F5]
- Alt "6/Test" → "2/Test condition" short cut key : [F6]
- Turn off M code ON signal : [F6]
- All axes error clear : [F7]
- Exit from test mode : [F8]
- Hard copy : [F9]
- All stop : [F10]

Explanation

■ On entering the test & monitor mode, the dialog box shown below is displayed.

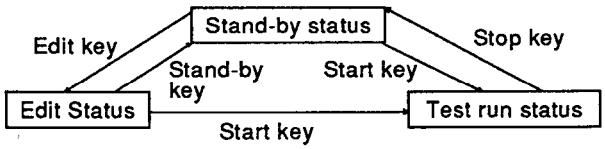


Pressing [Y] key displays the dialog box shown below.



Key in [N] to initialize the test mode.
Key in [Y] to up-load data from the AD75.

■ The test mode has 3 main statuses. Switches among these statuses are executed in accordance with key inputs, as shown below.



(1) Stand-by status
(a) This is the first status when the peripheral device displays the test mode screen.
The stand-by status comes into effect in the following cases:
- When "Stand-by" is pressed in the "edit" status.
- When positioning which has started is all completed.
- When the user stops all axes.
- When a communication error occurs.

(b) Data in the AD75 is monitored on screen.
(c) All axes are stopped at the AD75.

(2) Edit status
(a) In this status, the alterable "positioning data", "start block data", etc., can be edited and changed. With some exceptions, data cannot be edited or changed in other statuses.
(b) Data in the AD75 is not monitored on screen.
(c) All axes are stopped at the AD75.

(3) Test run status
This is the status for executing positioning data in a test run.
In this status, the AD75 axes are started. The test run can be stopped by pressing the Stop key, but if an axis stop is attempted from a peripheral device, error "100: Peripheral device stop during operation occurs.
If an error occurs, reset the error at the AD75 to establish the "standby" status.

During test run at the peripheral device, the AD75 axis status is monitored, and a change from test run to the "standby" status occurs under the following condition only: when all axes are in the "standby", "stopped", "step standby" or "step-stopped" status.
If an error occurs during operation, execute "error clear" to return the status to "standby". Otherwise, the peripheral device cannot be switched from the test run status to standby status.

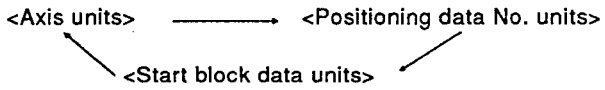
During the test mode, the peripheral device and AD75 communicate with each other to confirm connection at regular intervals (hereafter called "regular communication").
If a cable is disconnected, discontinuing regular communication, error "103: Test mode error during operation occurs at the AD75, after which the AD75 does not accept requests from the peripheral device.
If this happens during test run at a peripheral device, the error cannot be cleared from the peripheral device and switching to the standby status of the peripheral device is disabled.
If this happens, press SHIFT + F5 key (no function display is given).
The internal status of the peripheral device is changed from "test run" to "standby".

[F6] (M code off) is used to turn off the "M code ON signal" which is ON if an M code No. was assigned to the started positioning data No.
When the "M code ON signal" is ON and the operation pattern for the positioning data No. is "end" or "continue", the AD75 enters the "standby" status if "M code ON signal" is not turned OFF.
When the positioning data No. with M code No. is started, press the M code off key to turn off the "M code ON signal".
If error "536: M code signal ON signal ON start occurs on starting, be sure to press the [F6] (M code off) key before clearing the error to turn off the "M code ON status".

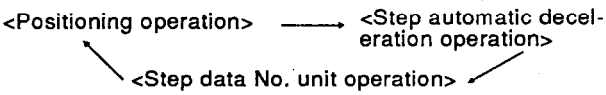
■ The peripheral device has independent settings for "positioning data", "start block data" and "parameter data" in the "test mode" and "edit mode".
Therefore, data edited in edit mode is retained without change even if other setting data is read from the AD75 in the "test mode".

■ Test run conditions ([F6]) can be set in the operation test and monitor mode.
There are 3 types of test run conditions; "axis unit operation", "positioning data No. unit operation" and "start block data unit operation".

■ Test run condition and setting method
• Locate the cursor at operation condition item for axes 1 to 3. Press [SP] key to change the setting as follows:



• For the test run condition, locate the cursor at the test run item, and press [SP] key to change the setting as follows:



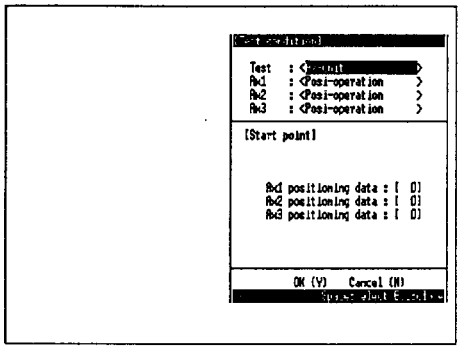
The start point setting changes in accordance with the test run setting.

■ Press [Tab] key to move the cursor between setting items.

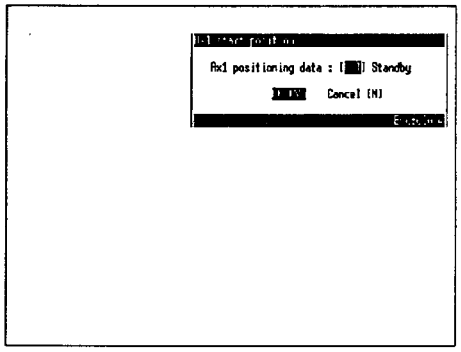
■ When the peripheral device is in the "test run" status, the data cannot be changed.

■ Setting of start position

(1) For axis unit operation
When the "axis position" is selected in test run, the following screen appears.



(a) Set the operation conditions for axes 1, 2 and 3 as required.
(b) Move the cursor to the start position using [Tab] key.
(c) Input the positioning data No.
(d) Move the cursor to OK (Y) using [Tab] key, then key in [Y].
(e) The controllable items for axes for which a data No. has been set are displayed at [F1] to [F3] (if all axes are specified, [F4] is also displayed).
(f) When the function key corresponding to the axis to be tested is pressed, a dialog box requesting confirmation whether a start is to be executed or not is displayed.
(g) Pressing [Y] key displays the window shown below.



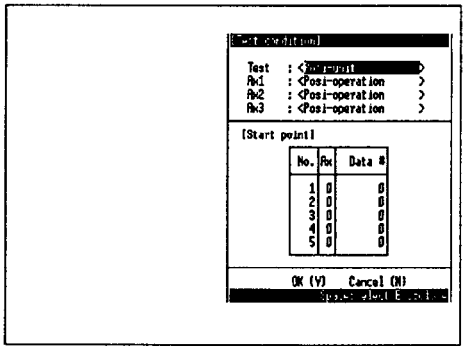
The positioning data No. for which operation is to be started is designated here. Axis statuses such as the stopped status ("Stop"), and standby status ("Stand-by") are also displayed as axis data. In order to restart a stopped axis from the "Stop" status, key in [Y] without changing the "positioning data No.".

The input range for the positioning data No. for each axis is 1 to 600.
Settings made here are reflected in the set values in the axis start position setting menu, which is displayed during axis unit operation in the test & monitor mode.

A number of controllable items are displayed for an axis when the status of that axis is monitored at the AD75.
The items displayed and their meanings are as follows.

Classification	Display	Meaning
Axis unit	Start	Starts from the designated positioning data No.
	Stop	Stops operating axis.
	Rstart	Restarts axis from stop status.
	Error	Clears errors that have occurred.
	SPStar	Starts in step operation.
	SPStop	Stops in step operation
	SPRsta	Restarts in step operation.
All axes	All start	All axes simultaneous start Same as when "start" keys for 1 to 3 axes are pressed. However, the axes start in the following order: axis 1 → axis 2 → axis 3.
	All stop	All axes simultaneous stop Same as when "stop" keys for 1 to 3 axes are pressed. However, the axes stop in the following order: axis 1 → axis 2 → axis 3.

(2) Procedure for operation in positioning data No. units
When "Posi-unit" is selected in test operation, the following screen is displayed.



(a) Set the operation conditions for axes 1, 2, and 3 as required.
(b) Move the cursor back to the start position using [Tab] key.
(c) Input the axis No. and data No.
(d) Move the cursor to the No. area, then press [SP] key at the position where the start is to be made, thus marking it with an asterisk.
(e) Move the cursor to OK (Y) using the [Tab] key, then key in [Y].

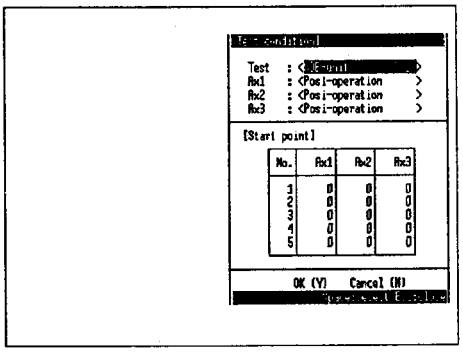
(f) The controllable items for the axis marked with an asterisk are displayed at keys [F1] to [F3]. (Refer to the axis unit operation table.)
(g) When the function key for axis to be tested is pressed, a dialog box requesting confirmation whether to start or not is displayed.
(h) Press [Y] key to start.

■ Designates the axis No. (0 to 3) for the start and the positioning data No. (1 to 600) for the axis.
If the axis No. or positioning data No. is "0", data setting is exited.
A maximum of 20 start positions can be designated.

■ Operation start is executed from positioning data No. 1 at the start position, and that start position No. is marked with an asterisk.
The start position can be also selected: move the cursor to the "No." area and make the selection by pressing [SP] key: the selected start position is marked with an asterisk.
If starting from a positioning data No. in the "Stop" status, press [SP] key at the "No." area marked with an asterisk.

■ If start is executed after positioning for positioning data No.1 has been completed and the AD75 has gone into the "Stand-by" status, operation will be executed from positioning data No.2 at the next start, and when the AD75 is in the "Stop" status, positioning will be restarted from data No.1.

(3) Procedure for operation in start block data units
When "SDB-unit" is selected in test operation, the screen shown below is displayed.



(a) Set the operation conditions for axes 1, 2, and 3 as required.
(b) Move the cursor back to the start position with [Tab] key.
(c) Input the axis No. and data No.
(d) Move the cursor to the No. area, then press [SP] key at the position where the start is to be made, thus marking it with an asterisk.
(e) Move the cursor to OK (Y) using [Tab] key, then key in [Y].
(f) Press [F4] key: a dialog box requesting confirmation whether to start or not is displayed.
(g) Key in [Y]: the controllable items are displayed at the function keys.
(h) If an axis in step operation goes into the "step standby" status after setting step operation as the operation method for the axis, "n:SPStar" is displayed in the axis unit area.
If "n:SPStar" is keyed in, a step restart is executed.
The controllable items for each axis and all axes, for XXXX (axis unit area) and YYYY (all axes area) are indicated below.

Classification	Display	Contents
Axis units	SPStar	Restart in step operation
All axes	A Start	Starts all axes However, start is executed in the order: axis 1, axis 2, axis 3.
	A Stop	Stops all axes However, stop is executed in the order: axis 1, axis 2, axis 3.
	Error	If an error occurs, clear it.

■ Designate the point (0 to 50) for the "SD block".
A setting of "0" means that start is disabled and if an axis is set to 0, no start is executed.
If all axes are set to 0, this indicates the end of the data.
A maximum of 20 start positions can be designated.

■ Normally, positioning is executed from the positioning data No. which is designated in the "SD block". However it is possible to execute positioning from any other designated point.

■ When positioning from start position No. 1 is completed on all axes, the standby status comes into effect.
Positioning is executed from the start position of data No.2 on starting operation again after the standby status has been established.
If positioning is not completed on all axes, the axis in the stop status is restarted.

■ The start position can be selected as follows: move the cursor to the "No." area and make the selection by pressing [SP] key: the selected start position is marked with an asterisk.
To start positioning from a data No. in the "Stop" status, press [SP] key at a "No." marked with an asterisk.

■ Move the cursor to OK (Y) or Cancel (N) using [Tab] key, and key in [Y] to execute a test run from the beginning. Note that a stopped axis is started from the beginning of its operation; it is not possible to restart the operation of a stopped axis from part way through.

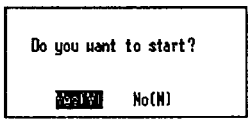
■ Description of operation test and monitor screen

(1) Test run status
The present test run status is indicated as shown below.
Operation in axis units → <Ax-unit>
Operation in positioning data No. units → <Posi- unit>
Operation in start block data units → <SDB-unit>

(2) Axis test run
Displays the test operation conditions for each axis set in "6/Test" → "2/Test condition".

(3) The setting made for "Test condition" is displayed here.
The positioning data No. is displayed when
"Ax-unit" or "Posi-unit" is set. The point at which operation is started is displayed when "SDB-unit" is set.

■ Procedure for using Start/Stop keys
When a "start" key F1 to F4 is pressed while an axis is stopped in the "Stand-by" or "Edit" status, the following dialog box is displayed.



Press [Y] key to start the axis.
It is possible to set whether this dialog box is displayed or not. For details, see Section 13.5.

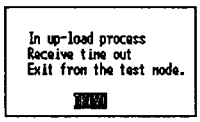
■ Monitor information can displayed in the same way as in the monitor mode by switching windows using option "5/Monitor" of the Alt menu.
Editing of some items displayed in windows is enabled by pressing [F5] (Edit).

The windows and data that can be edited are shown below.

Window	Data which can be edited
Axis data	Present value change value, speed change value, override value, step enable flag, step mode, skip command, external start enable
JOG&man-pls op.	Direction, manual pulse generator selection, magnification

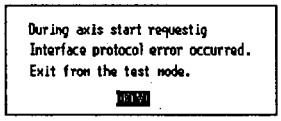
For details on the editing method, see Chapter 15.
It is also possible to switch to other windows in edit status, but no editing is possible on them.

■ If JOG operation or manual pulse generator operation is executed after stopping an axis during operation, the operation will not restart from the stopped point but from the beginning of the selected positioning data No. Note also that if the control method in the positioning data is "interpolation", the interpolation axis is also started on restarting operation. However, the function keys for the interpolation axis are not changed. Therefore, the axis status of only the started axis is checked after the start.
If communication error occurs during test & monitor mode, the following dialog box is displayed.



Press [Y] key.

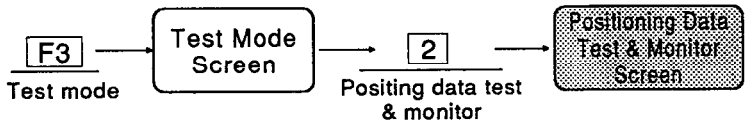
■ If a communication error occurs during the test & monitor mode as a result of incorrect procedure, the following dialog box is displayed.



8.3 Positioning Data Test & Monitor

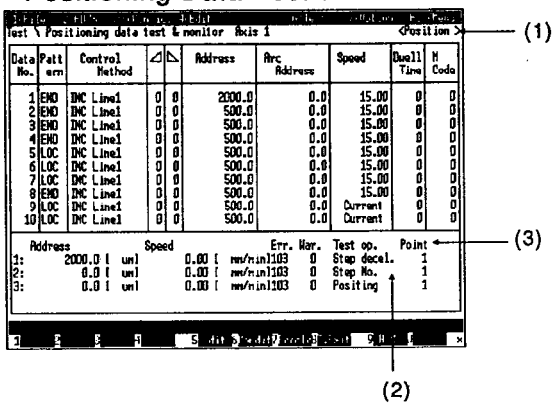
Monitors and edits positioning data.

Basic Operation



Positioning data test & monitor screen and related operations.

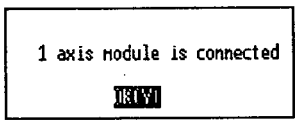
Positioning Data Test & Monitor



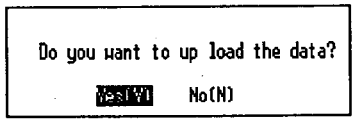
- Start/Stop in axis units : [F1] to [F3]
- Start/Stop on all axes : [F4]
- Edit/Stand-by status switch : [F5]
- Alt "6/Test" → "2/Test condition" short cut key : [F6]
- All axes error clear : [F7]
- Exit from test mode : [F8]
- Hard copy : [F9]
- All stop : [F10]

Explanation

■ On entering the test & monitor mode, the dialog box shown below is displayed.



Pressing [Y] key opens the dialog box shown below.



Key in [N] to initialize the test mode.
Key in [Y] to up-load data from the AD75.

■ While a test run is being executed (axis operation in progress), the positioning data No. whose operation is being executed is marked with an asterisk.

(1) Test run status
The present test run status is indicated as shown below.
Operation in axis units → <Ax-unit>
Operation in positioning data No. units → <Posi- unit>
Operation in start block data units → <SDB-unit>

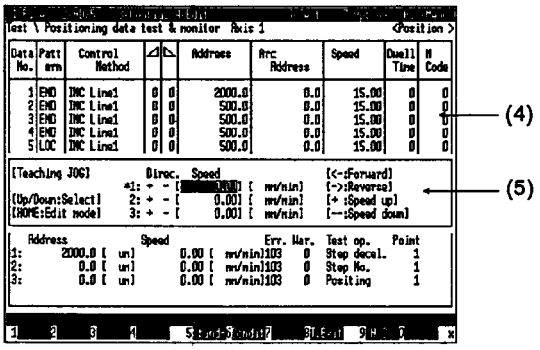
(2) Axis test run
Displays the test operation conditions for each axis set in "6/Test" → "2/Test condition".

(3) The setting made for "Test condition" is displayed here.
The positioning data No. is displayed when "Ax-unit" or "Posi-unit" is set. The point at which operation is started is displayed when "SDB-unit" is set.

■ For detailed information about start/stop key operations during monitoring, see Section 8.2.

■ The screen shown below is displayed by pressing [F5] (Edit), allowing editing of positioning data, and teaching.

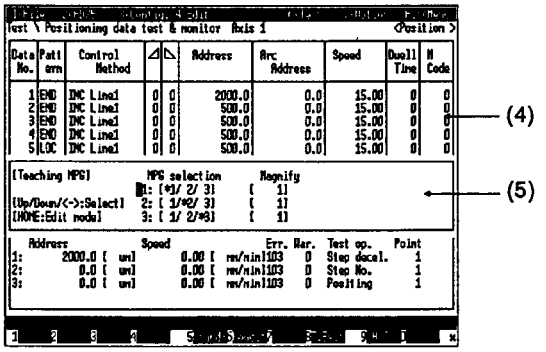
[Screen for JOG operation settings]



(4) Positioning data edit screen.
The editing method here is the same as for setting positioning data: see Section 6.2.
To set an address or arc address by teaching, move the cursor to "Address" or "Arc Address" and then press [Esc] key.
The address traveled to in JOG operation or manual pulse generator operation (the feed present value) is set as the address or arc address.
However, if the control method for the positioning data is an incremental (INC) method, this setting is not possible.
If the control method for the positioning data being set is "linear interpolation" or "circular interpolation", the feed present value is automatically set in the positioning data for the interpolation axis too.

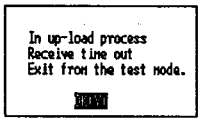
(5) Teaching screen
There are two types of teaching screen, for JOG operation and manual pulse generator operation, and it is possible to switch between them.
For details on switching, see Section 16.2.
For details on each operation method, see Section 15.15.

[Screen at manual pulse generator operation setting]



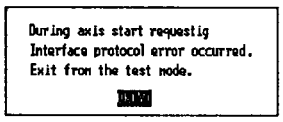
■ It is possible to switch from the editing screen to the positioning data edit screen or the teaching screen by pressing [HOME] key.

■ If a communication error occurs in the test & monitor mode, the following dialog box is displayed.



Press [Y] key.

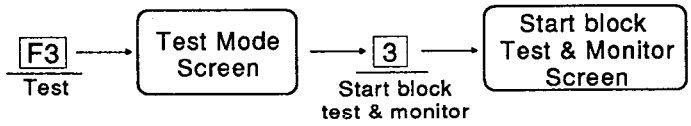
■ If a communication error occurs during the test & monitor mode as a result of incorrect procedure, the following dialog box is displayed.



8.4 Start Block Test & Monitor

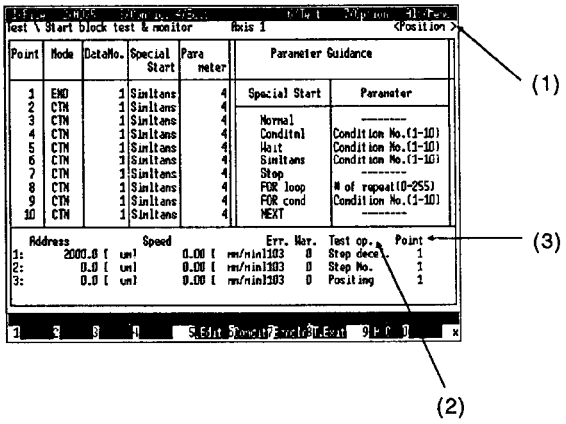
Monitors and edits start block data.

Basic Operation



Start block test & monitor screen and related operations.

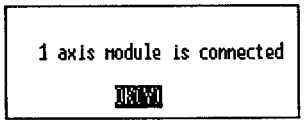
Start block test & monitor screen



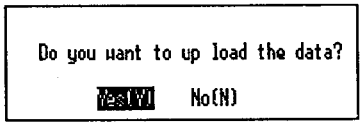
- Start/Stop on axis unit. : [F1] to [F3]
- Start/Stop on all axes : [F4]
- Edit/Stand-by status switch : [F5]
- [Alt] "6/Test" → "2/Test condition" short cut key : [F6]
- All axes error clear : [F7]
- Exit from test mode : [F8]
- Hard Copy : [F9]
- All stop : [F10]

Explanation

■ On entering the test & monitor mode, the dialog box shown below is displayed.



■ Pressing [Y] key opens the dialog box shown below.



■ Key in [N] to initialize the test mode.
■ Key in [Y] to up-load data from the AD75.

■ While a test run is being executed (axis operation in progress), the positioning data No. whose operation is being executed is marked with an asterisk.

(1) Test run status
The present test run status is indicated as shown below.
Operation in axis units → Axis unit
Operation in positioning data No. units → Position
Operation in start block data units →SD block

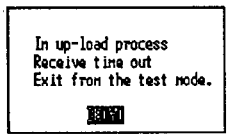
(2) Axis test run
Displays the test operation conditions for each axis set in "6/Test" → "2/Test condition".

(3) The setting made for "Test condition" is displayed here.
The positioning data No. is displayed when "Ax-unit" or "Posi-unit" is set. The point at which operation is started is displayed when "SDB-unit" is set.

■ For detailed information about start/stop key operations during monitoring, see Section 8.2.

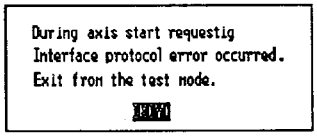
■ Start block editing can be enabled by pressing [F5](Edit) key. For details on the editing method, see Section 6.3.

■ If a communication error occurs during test & monitor mode, the following dialog box is displayed.



Press [Y] key.

■ If a communication error occurs in the test & monitor mode as a result of incorrect procedure, the following dialog box is displayed.



8.5 Alt Menu Operations

8.5.1 File menu

For details on the File menu option, see Chapter 11.

8.5.2 AD75 menu

For details on the AD75 menu option, see Chapter 12.

8.5.3 Config. menu

For details on the Config. menu option, see Chapter 13.

8.5.4 Edit menu

For details on the Edit menu option, see Chapter 14.

8.5.5 Monitor menu

For details on the Monitor menu option, see Chapter 15.

8.5.6 Test menu

For details on the Test menu option, see Chapter 16.

8.5.7 Option menu

For details on the Option menu option, see Chapter 17.

9. ENVIRONMENT MODE

9.1 Available Functions

The following functions are available in the environment mode.

(1) Functions in the environment mode

Environment	Environment mode	Allows text and background colors to be set on the environment screen.

(2) Functions in the Alt menu

File	Setup	Sets printing conditions for printout.
	Print	Prints in accordance with the settings made in "setup".
	Delete	Deletes the designated file.
	Copy	Copies the designated file to another designated file.
	DOS	Displays DOS prompt.
	Exit	Exits the selected mode and displays the mode selection menu.

9.2 Setting Display Colors

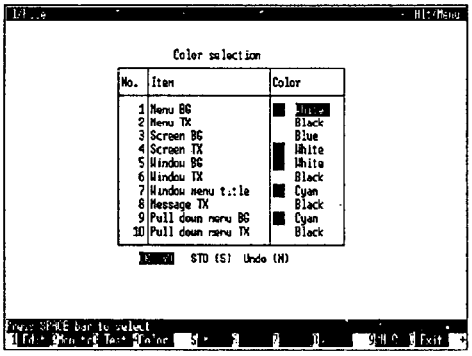
Set the text and background colors for screen displays.

Basic Operation

F4 (Color) → Color Selection Screen

Color selection screen and related operations

Color selection screen



- Move cursor : [↑], [↓]
- Select color : [SP]
- Confirm : [Y]
- Return to standard : [S]
- Return to the beginning : [N]

Explanation

■ The color is changed in the following order by pressing [SP] key : black - blue - green - cyan (light blue) - red - magenta (purple) - yellow - white - black
The designated color is displayed as a display example in a box at the left of the designation area.

■ A list of the display colors that can be set is presented below.

Setting Items and Standard Color Setting

No.	Item Name	Standard Set
1	Menu BG	White
2	Menu TX	Black
3	Screen BG	Blue
4	Screen TX	White
5	Window BG	White
6	Window TX	Black
7	Window menu title	Cyan
8	Message TX	Black
9	Pull down menu BG	Cyan
10	Pull down menu TX	Black
11	Menu select. bar BG	Cyan
12	Menu select. bar TX	Black
13	Entered TX BG	Blue
14	Entered TX	White
15	Auxiliary menu BG	Green
16	Auxiliary menu TX	Black
17	Alert box (error) BG	Red
18	Alert box (error) TX	White
19	Alert box (guide) BG	White
20	Alert box (guide) TX	Red

■ Press [Y] key to confirm a change.
Press [S] key to return to the standard display color.
Press [N] key to return to the original color.

9.3 Alt Menu Operation

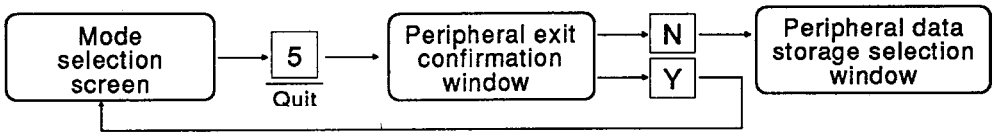
9.3.1 File menu

For details on the File menu option, see Chapter 11.

10. EXIT MODE

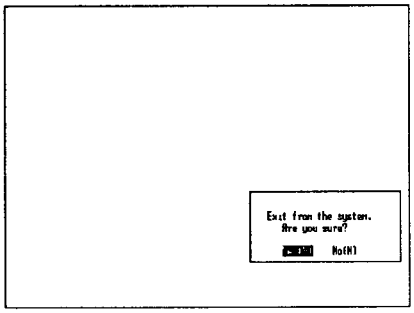
Exits from AD75P function.

Basic Operation



Peripheral data storage selection window and its operation

Peripheral data storage selection window



- Exit after storing data : [Y]
- Exit : [N]

Explanation

■ When [Y] key is pressed, peripheral data is written to a file before exiting the function. When [N] key is pressed, the function is exited without writing the peripheral data to a file.

11. FILE MENU

11.1 Restrictions on the File menu in each mode

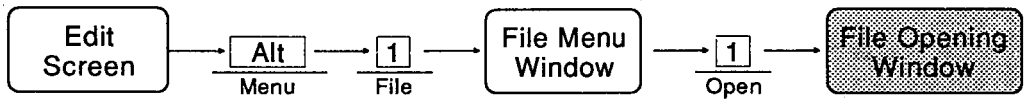
The restrictions on the File menu in each mode are shown below.

File Menu / Mode	Open	Save	Verify	Setup	Print	Delete	Copy	DOS	Exit
Edit	o	o	o	o	o	o	o	o	o
Monitor				o	o	o	o	o	o
Test				o	o	o	o	o	—
Environment				o	o	o	o	o	o

11.2 Open

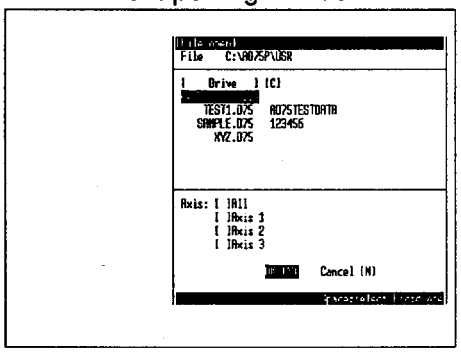
Reads the designated file from the hard disk or floppy disk.

Basic Operation



File opening window and related operations

File Opening Window



- Move cursor : [↑], [↓], [Tab]
- Designate drive : [SP]
- Designate directory : [SP]
- Confirm/ clear axis designation : [SP]
- Open file : [Y]
- Cancel open function : [N] or [Esc]

ExplanationAxis designation

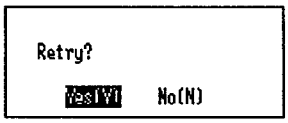
■ Drive designation
The drive can be switched to any designation between A and Z by pressing the space bar. Each time the drive is switched, a list of the existing directory names and file names for the drive is displayed.
It is also possible to designate a drive name by keying in a letter from A to Z or a to z.

■ Directory designation
Pressing the space bar at the directory name section ..... displays the file list under the directory.
If the file path name is too long to fit in the display area, the leading characters are replaced by ">>".

■ Axis designation
After designating the file name, move the cursor and designate the axis by pressing [Tab] key.
Confirm/clear the axis designation by pressing the space bar.
If "All" is selected, all the displayed items are marked with an asterisk.

■ Press [Y] key to open the file.

■ If an error occurs as a result of an incorrect "open" designation to the hard disk or floppy disk, the following dialog box is displayed and the operation is stopped.

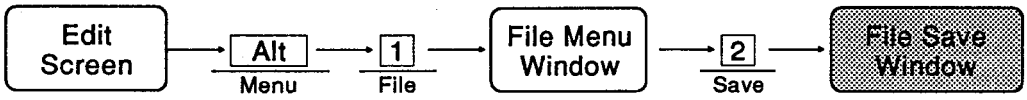


Press [Y] key to retry.

11.3 Save

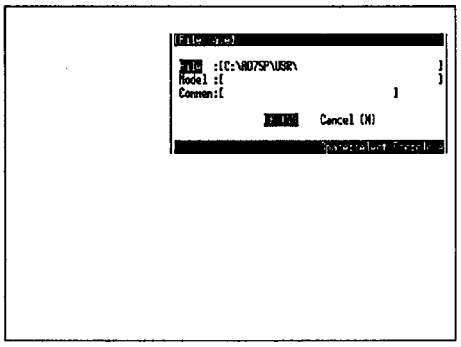
Saves set data to hard disk or floppy disk.

Basic Operation



File save window and related operations

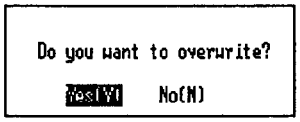
File save window



- Move cursor : [↑], [↓]
- Move cursor to setting area : [SP]
- Set file name, model name : [Drive: file name] → [Enter]
  [Model name] → [Enter]
- Execute save : [Y]
- Cancel (discontinue) save : [N] or [Esc]

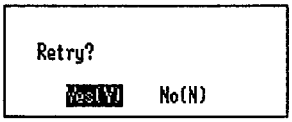
Explanation

■ If the same file already exists in the hard disk/floppy disk, the following dialog box will be displayed on pressing [Y] key.



Press [Y] key to overwrite the existing file.
Press [N] key to abort saving.

■ If an error occurs as a result of an incorrect save command, the following dialog box is displayed and processing is discontinued.

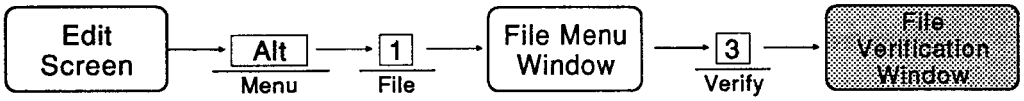


Press [Y] key to retry.

11.4 Verify

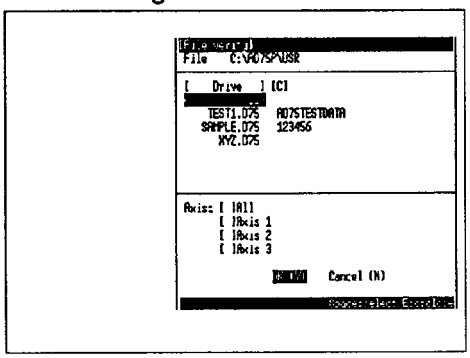
Verifies the designated file against the data currently being edited.

Basic Operation



Positioning data monitor screen and its operation

Positioning Data Monitor Screen



- Move cursor : [↑], [↓], [Tab]
- Designate drive : [SP]
- Designate directory : [SP]
- Confirm/ clear axis designation : [SP]
- Execute verification : [Y]

Explanation

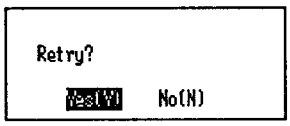
■ Drive designation
The drive can be switched to any designation between A and Z by pressing the space bar. Each time the drive is switched, a list of the existing directory names and file names for the drive is displayed.
It is also possible to designate a drive name by keying in a letter from A to Z or a to z.

■ Directory designation
Pressing the space bar at the directory name section ..... displays the file list under the directory.
If the file path name is too long to fit in the display area, the leading characters are replaced by ">>".

■ Axis designation
After designating the file name, move the cursor and designate the axis by pressing the [Tab] key.
Confirm/clear the axis designation by pressing the space bar.
If "All" is selected, all the displayed items are marked with an asterisk.

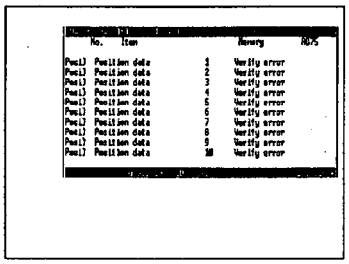
■ Press [Y] key to verify the file.

■ If an error occurs as a result of an incorrect "verify" designation to the hard disk or floppy disk, the following dialog box is displayed and the operation is stopped.



Press [Y] key to retry.

■ If any mismatches are detected during verification, a mismatch list of the type shown below is displayed for each axis:



(1) The order of data verification and the displayed abbreviations for data names are as follows:

Order of Verification		Abbreviation
(1)	Positioning data	Posi
(2)	Start block	Str
(3)	Condition data	Cond
(4)	OPR basic parameter	OPRB
(5)	OPR extended parameter	OPRE
(6)	Basic parameter #1	BA 1
(7)	Basic parameter #2	BA 2
(8)	Extended parameter #1	EX 1
(9)	Extended parameter #2	EX 2
(10)	M code comment	M C

(2) The screen shows a maximum of 10 items. The display can be switched to other items by pressing [Page Up] and [Page Down] keys. Press [Esc] key to close the screen and continue verification for 2nd and 3rd axes.
If numerous verification errors are detected during verification, the following message is displayed and verification is discontinued.

Too many verify error

11.5 Setup

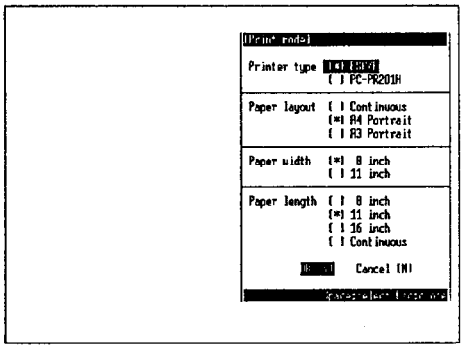
Sets the various settings related to printing.

Basic Operation

Any Mode Screen → Alt (Menu) → 1 (File) → File Menu Window → 4 (Setup) → Setup Window

Setup window and related operations

Setup Window



- Move cursor : [↑], [↓], [Tab]
- Confirm/clear selected item :[SP]
- Exit : [Y]

Explanation

■ The cursor can be shifted between setting items by using [Tab] key.
Selected items are confirmed or cleared by pressing [SP] key.

■ For details on the setting items, see the chart below.

No.	Setting item	Possible settings	Contents
1	Printer type	ESC/P PC-PR201H	Select printer for printing.
2	Paper layout	Continuous A4 Portrait A3 portrait	Set the type of paper used for printing
3	Paper width *	8 inch 11 inch	Set paper width for printing
4	Paper length *	8 inch 11 inch 16 inch Continuous	Set paper length for printing

* Valid only when "continuous" is designated for "paper layout".

POINT

- The only applicable printer type for screen hard copy is ESC/P. Therefore, the printer settings are ignored.

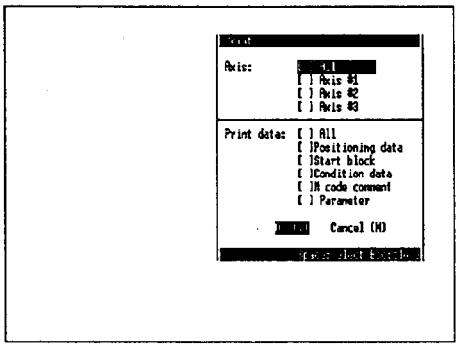
11.6 Printing

Prints the data in the internal memory of the peripheral device.

Basic Operation

Print window and related operations

Print Window



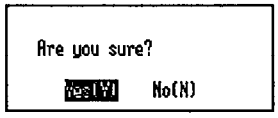
- Move cursor : [↑], [↓], [Tab]
- Confirm/clear selected item :[SP]
- Print : [Y]

Explanation

■ The cursor can be shifted between setting items by using [Tab] key.
Selected items are confirmed or cleared by pressing [SP] key.
If item "All" is selected, all items on the screen are marked with an asterisk.

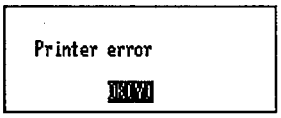
■ In parameter printing, all parameters are printed.

■ If [Y] key is pressed, the following dialog box is displayed.



Press [Y] key to print.
Press [N] key to return to the original screen.

■ Printing can be stopped by pressing the [Esc] key.
If an error occurs, the following dialog box is displayed.



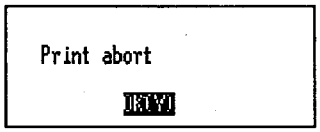
■ Printing form
(1) Positioning data

[AD75] Positioning data Axis 1 Page 1 Thu Oct 26 17:10:23 1995

No.	Patt.	Method	Acc.	Des.	Address	ArcAddress	Speed	Dwell	Mcode
1	END	INC Line1	0	0	2000.0	0.0	15.00	0	0
2	END	INC Line1	0	0	500.0	0.0	15.00	0	0
3	END	INC Line1	0	0	500.0	0.0	15.00	0	0
4	END	INC Line1	0	0	500.0	0.0	15.00	0	0

Parameters are printed as they appear on the screen.

■ If printing is discontinued, the following dialog box is displayed.



POINT

- It takes a very long time to print out all items (approx. one hour)
- If the paper runs out during printing, printing is stopped and an error may occur.

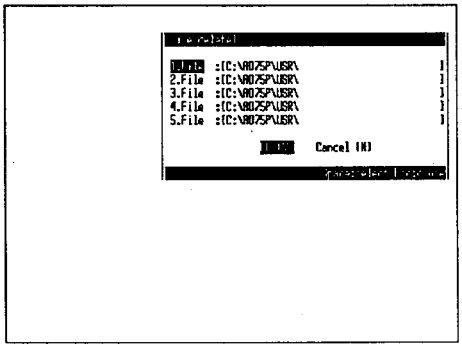
11.7 Delete

Deletes a designated file.

Basic Operation

File deletion window and related operations

File Deletion Window

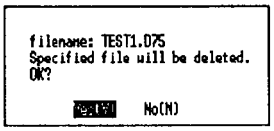


- Move cursor : [↑], [↓], [Tab]
- Move cursor to designated area : [SP]
- Designate file name : [Drive: file name] + [Enter]
- Confirm/ clear axis designation : [SP]
- Delete : [Y]

Explanation

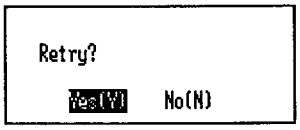
■ When designating the file name, the input format should include an extension, for example: [*(drive):*****. D75 (file name)].

■ When [Y] key is pressed, the following dialog box is displayed.



Press [Y] key to delete the designated file. If [N] key is pressed after more than one file has been designated, you will be asked whether or not the next file is to be deleted.

■ If an error occurs as a result of an incorrect deletion designation to the hard disk or floppy disk, the following dialog box is displayed and processing stops.

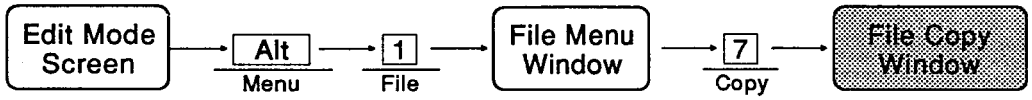


Press the [Y] key to retry.

11.8 Copy

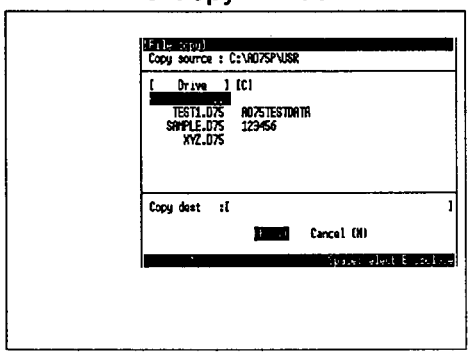
Copies files one filename at a time.

Basic Operation



File copy window and related operations

File Copy Window



- Move cursor : [↑], [↓], [Tab]
- Designate drive : [SP]
- Directory : [SP]
- Move cursor to designated area : [SP]
- Designate file name : [drive : file name] +[Enter]
- Copy : [Y]

Explanation

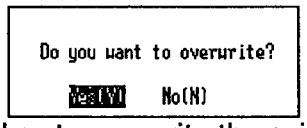
■ Drive designation
The drive can be switched to any designation between A and Z by pressing the space bar. Each time the drive is switched, a list of the existing directory names and file names for the drive is displayed.
It is also possible to designate a drive name by keying in a letter from A to Z or a to z.

■ Directory designation
Pressing the space bar at the directory name section ..... displays the file list under the directory.
If the file path name is too long to fit in the display area, the leading characters are replaced by ">>".

■ Move the cursor to file name designation area for the copy destination by using the [Tab] key.

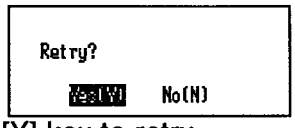
■ When designating the file name for the copy destination, it should be input in the format: [* (drive):*****(file name)].

■ If the same file already exists in the hard disk / floppy disk, the following dialog box is displayed on pressing [Y] key.



Press [Y] key to overwrite the existing file.

■ If an error occurs as a result of an incorrect copy designation to the hard disk or floppy disk, the following dialog box is displayed and processing is stopped.

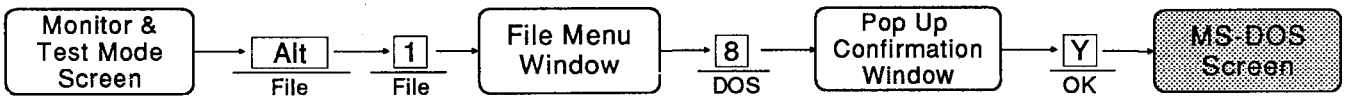


Press the [Y] key to retry.

11.9 DOS mode

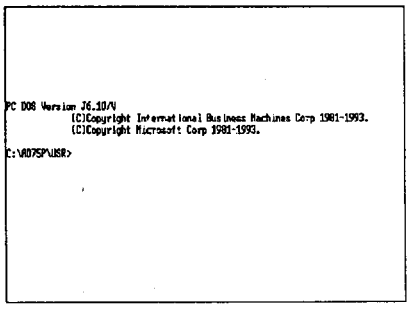
Without exiting from AD75P function, returns to MS-DOS prompt status, and executes DOS command.

Basic Operation



MS-DOS screen and related operations

MS-DOS screen



• OK : [Y]

Explanation

- Press [Y] key to switch to the DOS screen.
- Input [EXIT] to return to the AD75P function mode from the DOS screen.
- DOS AD75P function mode
  When the screen is switched to the DOS screen from the screen currently being edited, the contents of the screen being edited are temporarily stored.
  If [EXIT] is input to return to the edit screen, the screen before the switch is redisplayed.
- DOS commands can be executed.
  Floppy disks can be formatted and directories can be created.
- When another application is started, or system reset is executed, it may be impossible to return to the AD75P functions.

11.10 Exit

Exits each mode, and returns to the mode selection menu.

Basic Operation

Explanation

■ Exits the selected mode, and returns to the mode selection menu.

12. AD75 MENU

12.1 Restrictions on AD75 Menu in Each Mode

The restrictions on the AD75 menu in each mode are shown below:

Mode \ AD75 menu option		Up load	Down load	Verify	OS	F-ROM WR
Edit	Positioning data Start block Parameters	O	O	O	O	O
	M code comment	–	–	–	–	–
	Condition data	O	O	O	O	O
Monitor		–	–	–	–	–
Test		–	–	–	O	–
Environment		–	–	–	–	–

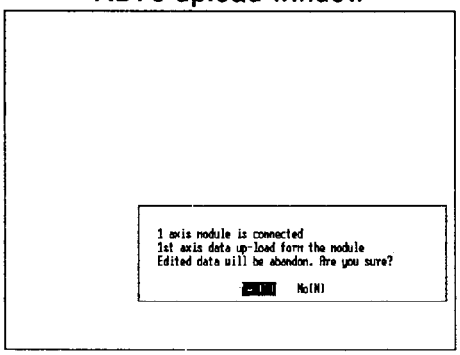
12.2 Upload

Uploads the various data settings from the AD75.

Basic Operation

AD75 upload window and related operations

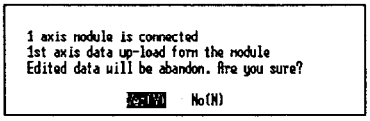
AD75 upload window



Explanation

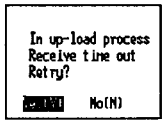
When upload is selected from the AD75 menu window, the following dialog box is displayed:

<Example>For 3-axis module:



Press [Y] key to invalidate the edited data of the peripheral device and upload the data of the AD75.
Press [N] key to cancel upload.

- The AD75 data is uploaded in accordance with the type of module connected.
- If a communication error occurs during uploading from the AD75, the following dialog box is displayed and communication ends:



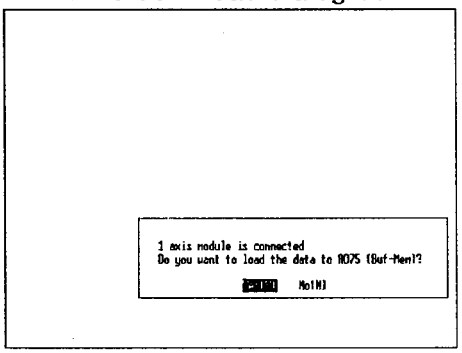
12.3 Download

Downloads the internal memory data of the peripheral device to the buffer memory of the AD75 in a batch.

Basic Operation

AD75 download dialog box and related operations

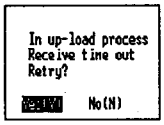
AD75 download dialog box



- Execute download : [Y]

Explanation

- The positioning data, start information and condition data for all axes, and all the parameters, are downloaded to the AD75.
- Press [Y] key to download the data in the internal memory of the peripheral device to the AD75.
  When the F-ROM auto write function is effective, writing to the flash ROM is automatically carried out after downloading the data to the AD75. (The AD75 buffer memory data is copied to the flash ROM.)
  For details on setting automatic flash ROM writing, see Section 13.4.
- If a communication error occurs during downloading to the AD75, the following dialog box is displayed and communication ends.
  If this happens, only part of the data is transferred.



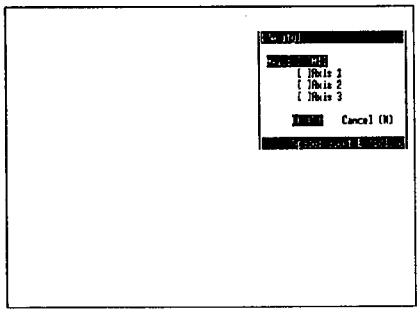
12.4 Verify

Verifies the data set in the AD75 (buffer memory) against the current data in the peripheral device memory.

Basic Operation

AD75 verification window and related operations

AD75 verification window



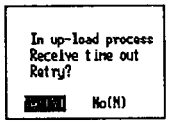
- Move cursor : [↑], [↓]
- Confirm/ clear axis designation : [SP]
- Execute verification : [Y]

Explanation

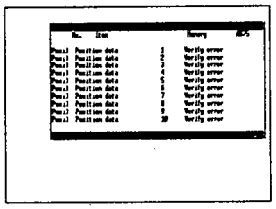
■ Press the space bar to set/clear the axis designation.
When "All" is selected, an asterisk is appended to all displayed items.

■ Press [Y] key to verify the data in the internal memory of the peripheral device against the data set in the AD75.

■ If a communication error occurs during verification with the AD75, the following dialog box is displayed and communication ends.



■ If any mismatches are detected during verification, a mismatch list of the type shown below is displayed for each axis:



(1) The order of data verification and the displayed abbreviations for data names are as follows:

Order of Verification	Abbreviation
(1) Positioning data	Posi
(2) Start block	Str
(3) Condition data	Cond
(4) OPR basic parameter	OPRB
(5) OPR extended parameter	OPRE
(6) Basic parameter #1	BA 1
(7) Basic parameter #2	BA 2
(8) Extended parameter #1	EX 1
(9) Extended parameter #2	EX 2
(10) M code comment	M C

(2) The screen shows a maximum of 10 items. The display can be switched to other items by pressing [Page Up] and [Page Down] keys. Press [Esc] key to close the screen and continue verification for 2nd and 3rd axes. If numerous verification errors are detected during verification, the following message is displayed and verification is discontinued.

Too many verify error

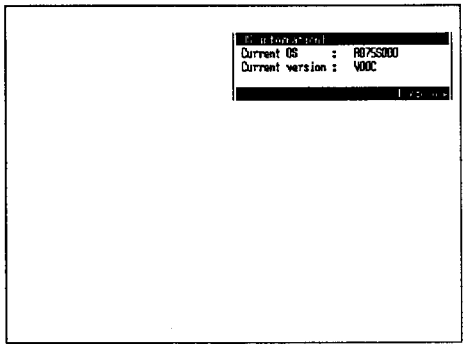
12.5 OS

Displays OS information.

Basic Operation

OS window and related operations

OS window



Explanation

■ The name and version of the OS installed in the AD75 are displayed.

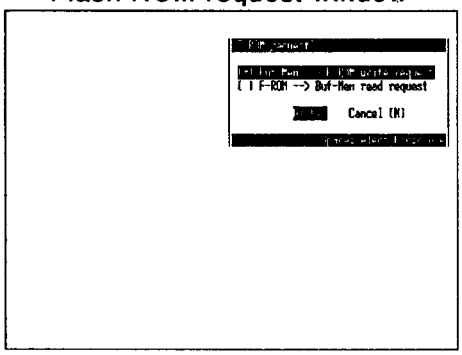
12.6 F-ROM WR

Issues requests for reading and writing between the AD75 buffer memory and flash ROM.

Basic Operation

Flash ROM request window and related operations

Flash ROM request window

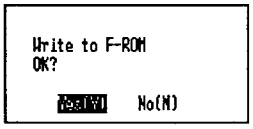


- Move cursor : [↑], [↓]
- Confirm/ clear selected setting : [SP]
- Execute : [Y]

Explanation

■ Move the cursor to the item to be set and set it by pressing [SP] key.

■ Pressing [Y] key displays the following dialog box:



Press the [Y] key to issue the flash ROM write/read request.

13. CONFIG. MENU

13.1 Restrictions on Config. Menu in Each Mode

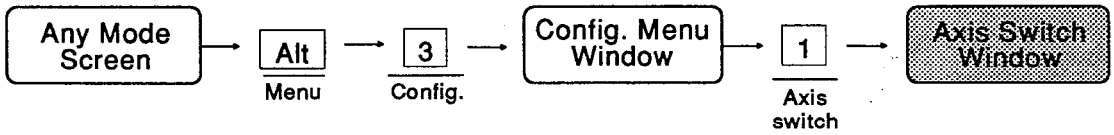
The restrictions on the Config. menu in each mode are shown below:

Mode \ Config. Menu Option		Axis switch	Aux.menu disable (display)	F-ROM auto write	Test reconfirm
Edit mode	Positioning data	o	o	o	—
	Start block	o	o	o	—
	Parameters M code comment	o	—	o	—
	Condition data edit	o	o	o	—
Monitor	Operation monitor	—	—	—	—
	Positioning data monitor	o	—	—	—
	Start block monitor	o	—	—	—
Test mode	Operation test monitor	—	—	—	o
	Positioning data test monitor	o	o	—	o
	Start block test monitor	o	o	—	o
Environment		—	—	—	—

13.2 Axis Switch

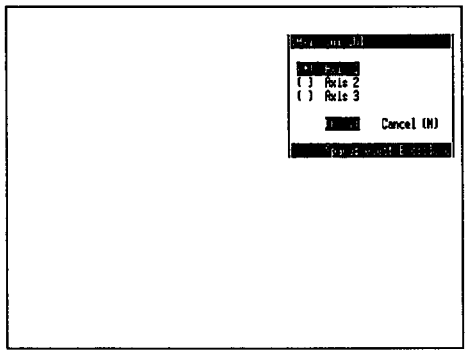
Switches the applicable axis on the screen.

Basic Operation



Axis switch window and related operations

Axis switch window



- Move cursor : [↑], [↓]
- Confirm/ clear axis designation : [SP]
- Execute switch : [Y]

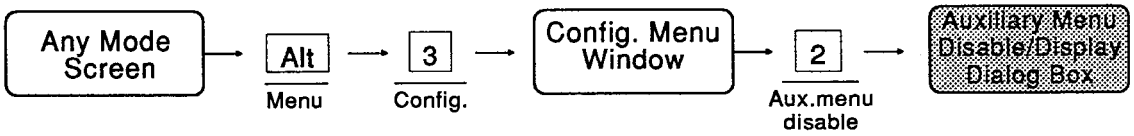
Explanation

- Move the cursor to the item to be set and confirm/clear the designated axis by pressing [SP] key.
- Press [Y] key and the axis is switched to the designated axis.
- The axis can be switched to axis 1, axis 2, or axis 3.

13.3 Aux.Menu Disable (Display)

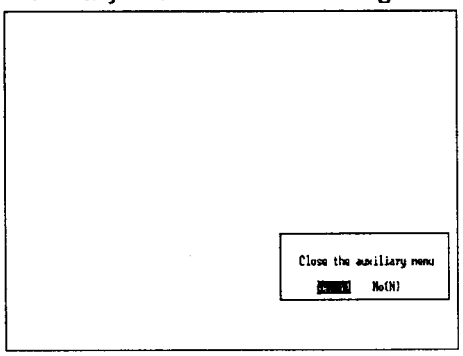
Clears/displays the auxiliary menu.

Basic Operation



Auxiliary menu disable dialog box and related operations

Auxiliary menu disable dialog box



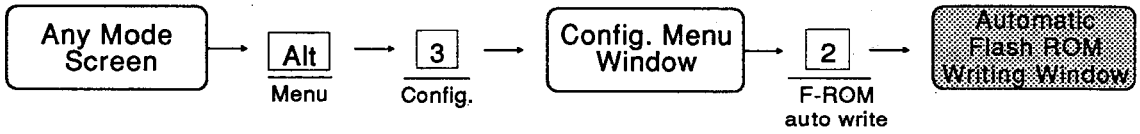
Explanation

- This function determines whether or not the auxiliary menus displayed in accordance with cursor motion for positioning data editing, start block editing, condition data editing, positioning test and start test, are displayed or not.
- Press [Y] key to display the auxiliary menu. Press [N] key to clear the auxiliary menu from the screen.
- If the auxiliary menu is currently displayed, the message for clearing it is displayed.
- If the auxiliary menu is currently not displayed, the message for displaying it is displayed.

13.4 F-ROM Auto Write

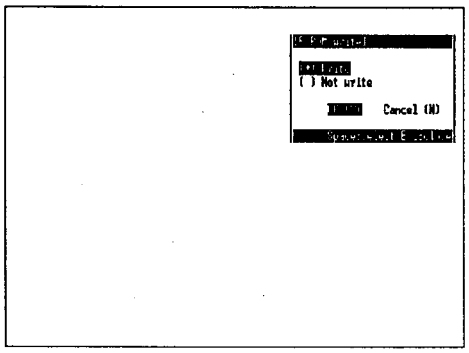
Sets whether automatic flash ROM writing is carried out or not.

Basic Operation



Automatic flash ROM writing window and related operations

Automatic flash ROM writing window



- Move cursor : [↑], [↓]
- Confirm/ clear selected item : [SP]
- Execute : [Y]

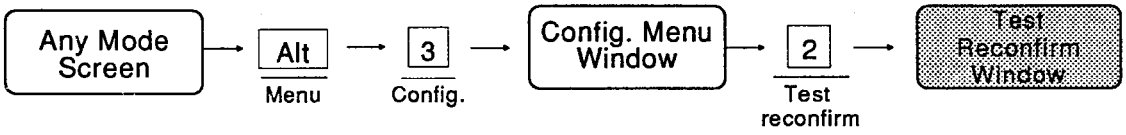
Explanation

- This function sets whether or not the data is automatically written to the flash ROM when "Down load" under 2/AD75 in the Alt menu is executed.
- Move the cursor to the item to be set and confirm/clear the selected item by pressing [SP] key.
- Press [Y] key to execute the setting.

13.5 Test Reconfirm

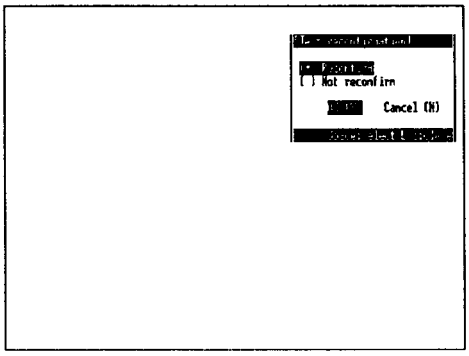
Sets whether a confirmation dialog box is displayed or not when an attempt is made to start the test mode at the AD75.

Basic Operation



Test run execution check window and operation

Test run execution check window



- Move cursor : [↑], [↓]
- Confirm/ clear selected item : [SP]
- Execute : [Y]

Explanation

■ Move the cursor to the item to be set and confirm the selected item by pressing [SP] key.

■ Press [Y] key to execute the setting.

14. EDIT MENU

14.1 Restrictions on Edit Menu in Each Mode

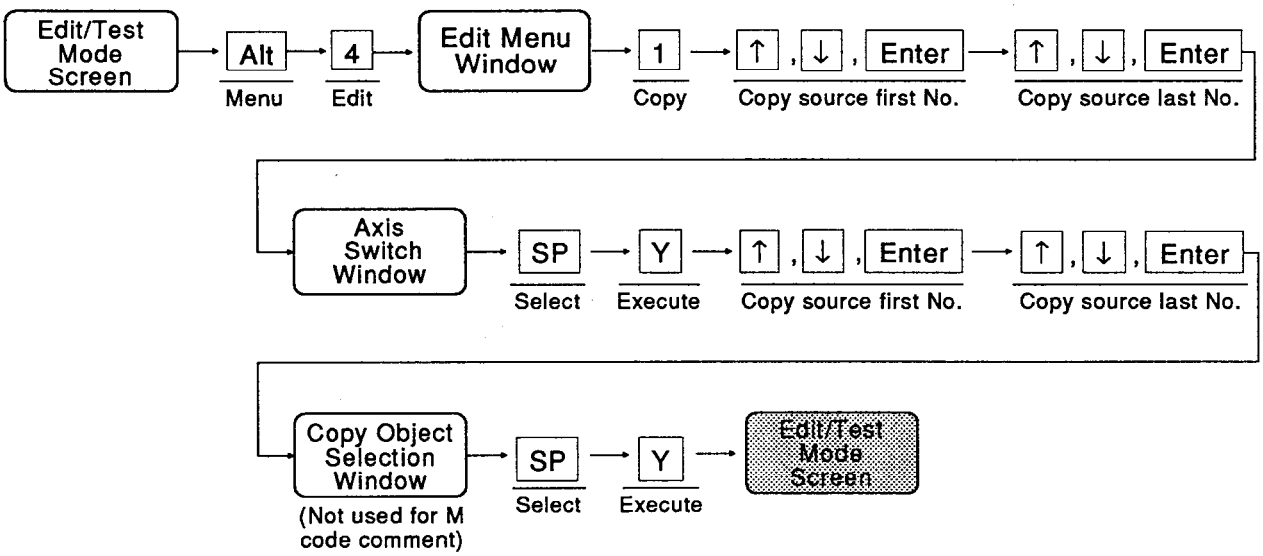
The restrictions on the edit menu in each mode are shown below:

Mode \ Edit Menu Option		Copy	Jump
Edit mode	Positioning data Start block	o	o
	Parameters	—	—
	M code comment	o	—
	Condition data edit	—	—
Monitor		—	—
Test	Operation test monitor	—	—
	Positioning data test monitor Start block test monitor	—	o
Environment		—	—

14.2 Copy

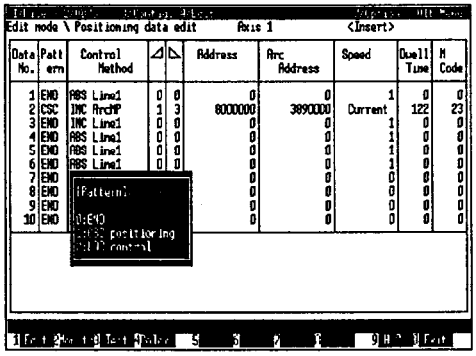
Copies positioning data, start block and M code comments to any required position.

Basic Operation



Edit/test mode screen and related operations

Edit/test screen



- Move cursor : [↑], [↓]
- Confirm/ clear setting item : [SP]
- Designate copy range : [Enter]
- Switch between insert/overwrite : [Ins]
- Execute : [Y]

Explanation

■ Press [Enter] key to confirm the first No. and last No. of the range to be copied. An asterisk is appended at the left of the data, point and M code No. designated.

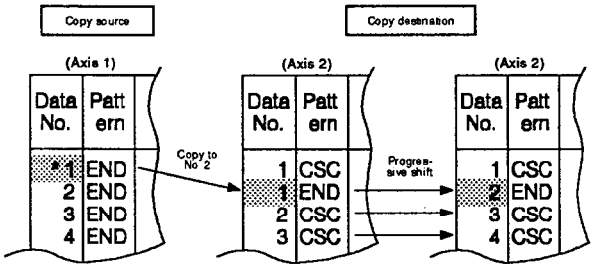
■ Press [SP] key to set the copy destination axis in the axis switch window.

■ When "All" is selected in the copy object selection window, all items displayed are marked with an asterisk.
The copy object selection window is not used when copying M code comments.

■ Copy function of the insert/overwrite status is as follows:

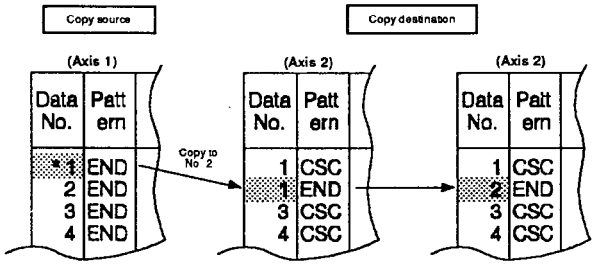
<Insertion>
* When an insertion is made, the number sequence is changed progressively, and the data as a whole may be shifted.
Make sure that the setting will not cause any duplication of data Nos.

<Example>
Insert data No. 1 of axis 1 into data No. 2 of axis 2.



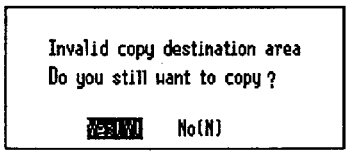
<Overwriting>

<Example>
Overwriting data No.2 of copy destination with data No.1.



When the copy function is executed, [Ins] key is valid. Press [Ins] key to switch the insert/overwrite status.

■ If there is insufficient unused area at the copy destination, the following dialog box appears:



Press [Y] key to copy as much data as possible.

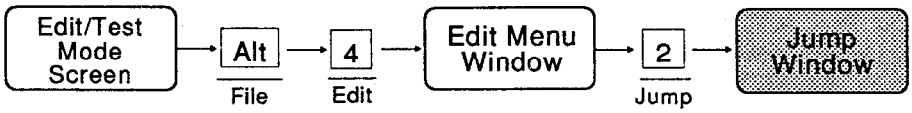
CAUTION

If the copy destination area is 0, no data may be copied when copy is executed.

14.3 Jump

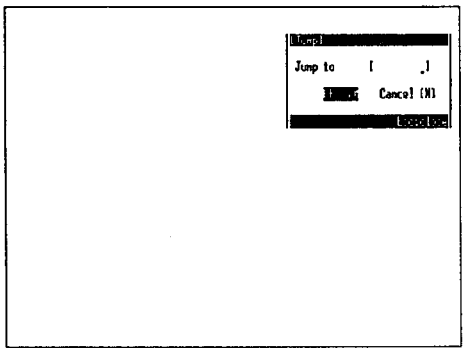
The cursor is moved to the designated No.

Basic Operation



Jump window and related operations

Jump window



• Jump : [Y]

- Press [Y] key to jump to the cursor position.
- The cursor jumps to the designated jump No.
- Jump numbers can be set in the following range.

  Positioning data ..... 1 to 600

  Start block ..... 1 to 50

15. MONITOR MENU

15.1 Restrictions on the Monitor Menu in Each Mode

The restrictions on the monitor menu in each mode are shown below:

Mode \ Monitor menu		Error history	Warning history	Start history	Start with error	X device	Y device	External I/O	Status info.	Address monitor	Speed monitor	Axis data
Edit mode		—	—	—	—	—	—	—	—	—	—	—
Monitor mode	Operation monitor	o	o	o	o	o	o	o	o	o	o	o
Monitor mode	Positioning data monitor Start block monitor	—	—	—	—	—	—	—	—	—	—	—
Test mode	Operation test & monitor	o	o	o	o	o	o	o	o	o	o	o
Test mode	Positioning data test & monitor Start block test & monitor	—	—	—	—	—	—	—	—	—	—	—
Environment monitor		—	—	—	—	—	—	—	—	—	—	—

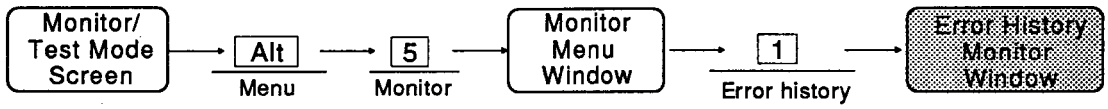
(Continued)

Mode \ Monitor menu		OPR	Special start	JOG& man-pls op.	V/P control	M code comment
Edit mode		—	—	—	—	—
Monitor mode	Operation monitor	o	o	o	o	o
Monitor mode	Positioning data monitor Start block monitor	—	—	—	—	—
Test mode	Operation test & monitor	o	o	o	o	o
Test mode	Positioning data test & monitor Start block test & monitor	—	—	—	—	—
Environment monitor		—	—	—	—	—

15.2 Error History Monitor

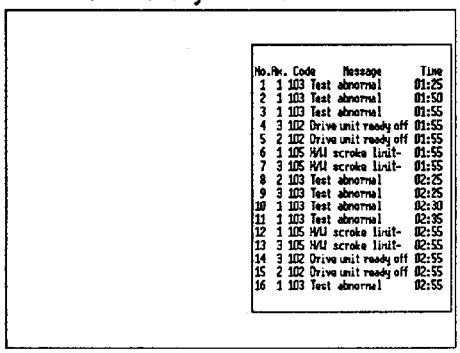
Displays the error occurrence axis, error number, error contents, and time of occurrence for sixteen errors.

Basic Operation



Error history monitor window and related operations

Error history monitor window



No.	Ax.	Code	Message	Time
1	1	103	Test abnormal	01:25
2	1	103	Test abnormal	01:50
3	1	103	Test abnormal	01:55
4	3	102	Drive unit ready off	01:55
5	2	102	Drive unit ready off	01:55
6	1	105	M/U scroke limit-	01:55
7	3	105	M/U scroke limit-	01:55
8	2	103	Test abnormal	02:25
9	3	103	Test abnormal	02:25
10	1	103	Test abnormal	02:30
11	1	103	Test abnormal	02:35
12	1	105	M/U scroke limit-	02:55
13	3	105	M/U scroke limit-	02:55
14	3	102	Drive unit ready off	02:55
15	2	102	Drive unit ready off	02:55
16	1	103	Test abnormal	02:55

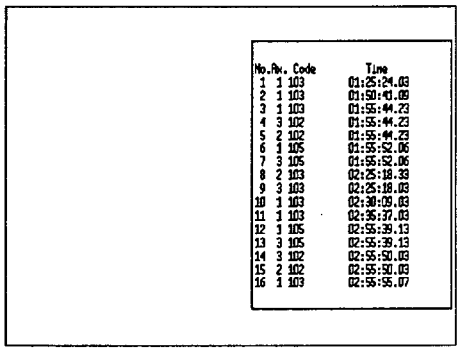
- Switch screen display : [Ctrl] + [F1]
- Stop monitoring (monitor mode only) : [Esc]

Explanation

■ The error occurrence axis, error number, error contents and time of occurrence for up to sixteen of the latest errors that have occurred since the power was turned ON are displayed.
The list is ordered with the most recent data at the bottom.

■ When there are more than sixteen errors, the oldest data are cleared.

■ Special display
The screen changes to the following display when [Ctrl] and [F1] keys are pressed.



No.	Ax.	Code	Time
1	1	103	01:25:24.03
2	1	103	01:50:43.09
3	1	103	01:55:44.23
4	3	102	01:55:44.23
5	2	102	01:55:44.23
6	1	105	01:55:52.06
7	3	105	01:55:52.06
8	2	103	02:25:18.33
9	3	103	02:25:18.03
10	1	103	02:30:09.03
11	1	103	02:35:37.03
12	1	105	02:55:39.13
13	3	105	02:55:39.13
14	3	102	02:55:50.09
15	2	102	02:55:50.09
16	1	103	02:55:55.07

The error occurrence times are displayed to an accuracy of 100 ms in this display.
Error contents are not displayed.
Press [Ctrl] and [F1] keys to return to the original screen.

■ Error countermeasure message display (only in monitor mode)
Press [Esc] key to stop monitoring.
Move the cursor to the location of the error code for which the message is to be displayed by using the [↑] or [↓] key. Press [Enter] to display the message for the error code.

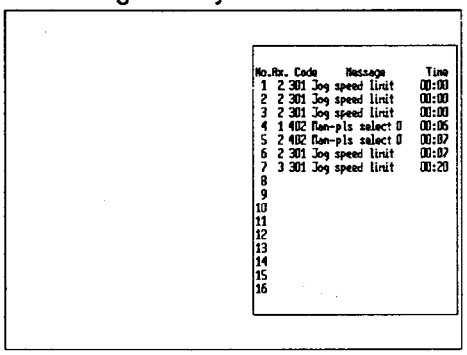
15.3 Warning History Monitor

Displays the warning occurrence axis, warning number, warning contents and time of occurrence for sixteen warnings.

Basic Operation

Warning history monitor window and related operations

Warning history monitor window



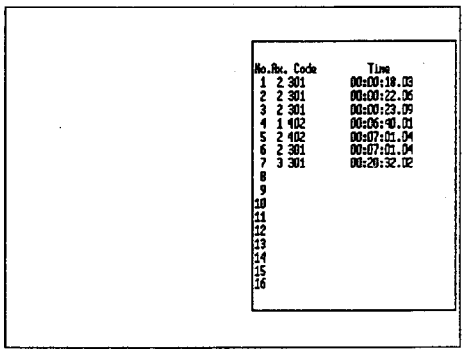
- Screen display switching : [Ctrl] + [F1]
- Stop monitoring (monitor mode only) : [Esc]

Explanation

■ The warning occurrence axis, warning number, warning contents and time of occurrence of up to sixteen of the latest warnings that have occurred since the power was turned ON are displayed.
The list is ordered with the most recent data at the bottom.

■ When there are more than sixteen warnings, the oldest data are cleared.

■ Special display
The screen changes to the following display when [Ctrl] and [F1] keys are pressed.



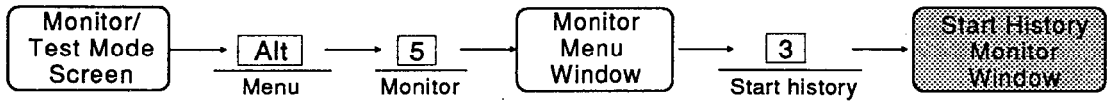
The warning occurrence times are displayed to an accuracy of 100 ms in this display.
Warning contents are not displayed.
Press [Ctrl] and [F1] keys to return to the original screen.

■ Warning countermeasure comment display (only in monitor mode)
Press [Esc] key to stop monitoring.
Move the cursor to the location of the warning code for which the message is to be displayed by using the [↑] or [↓] key. Press [Enter] to display the message for the warning code.

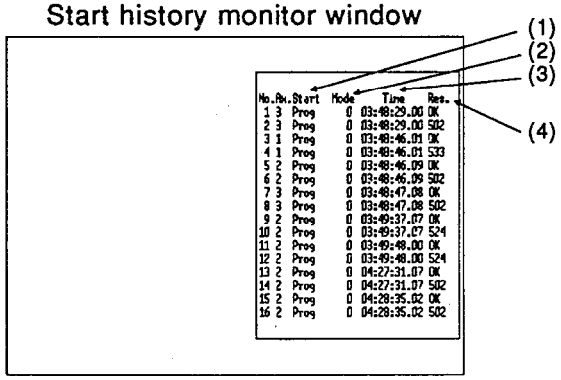
15.4 Start History Monitor

Displays the start axis, start type, start time and error judgment for sixteen starts.

Basic Operation



Start history monitor window and related operations



Explanation

(1) Start
Indicates whether the start was initiated by the PC CPU, by an external start, or by a peripheral device.

(2) Mode
The positioning No. at which the start occurred is displayed for JOG operation, manual pulse generator operation, positioning operation and simultaneous start by operation control commands.
For a restart from the stopped status, "Re" is displayed next to the positioning No.

(3) Time
Hour, minute, second. Times are displayed to an accuracy of 100 ms.

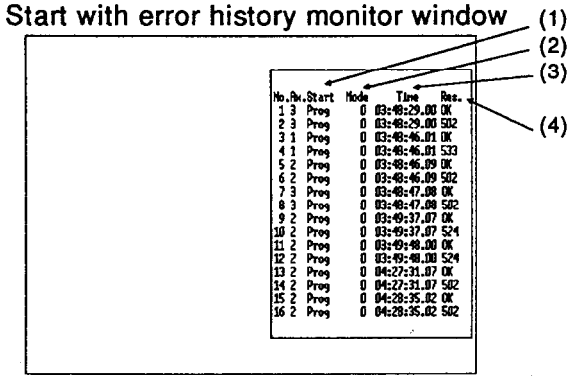
(4) Res.
The error code for the error occurrence is displayed here.
"OK" is displayed for normal completion.

15.5 Start With Error History Monitor

Displays a history of sixteen starts previous to the occurrence of an error.

Basic Operation

Start with error history monitor window and related operations



Explanation

■ When an error occurs in the start history, the entire contents of the start history are copied to the start with error history.
A maximum of sixteen start history entries are displayed, counting backward from the error occurrence.

(1) Start
Indicates whether the start was initiated by the PC CPU, by an external start, or by a peripheral device.

(2) Mode
The positioning No. at which the start occurred is displayed for JOG operation, manual pulse generator operation, positioning operation and simultaneous start by operation control commands.
For a restart from the stopped status, "Re" is displayed next to the positioning No.

(3) Time
Hour, minute, second. Times are displayed to an accuracy of 100 ms.

(4) Res.
The error code for the error occurrence is displayed here.
"OK" is displayed for normal completion.

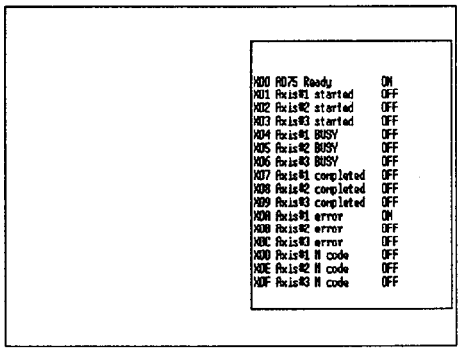
15.6 X Device Monitor

Displays the input signals.

Basic Operation

X device monitor window and related operations

X device monitor window



Explanation

■ The ON/OFF status of each X device signal (input signal) is indicated as follows:
O : OFF ● : ON
The actual meanings of the ON/OFF statuses for each signal are indicated in the table below.

Device	O	●
X00	PC not ready	PC ready
X01 X02	Start completed OFF	Start completed ON
X04 to X06	Not BUSY	BUSY
X07 to X09	Positioning not completed.	Positioning completed.
X0A to X0C	No error occurrence	Error occurrence
X0D to X0F	No M code setting	M code setting

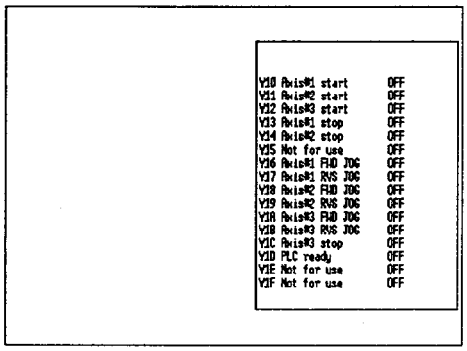
15.7 Y Device Monitor

Displays the output signals.

Basic Operation

Y device monitor window and related operations

Y device window



Explanation

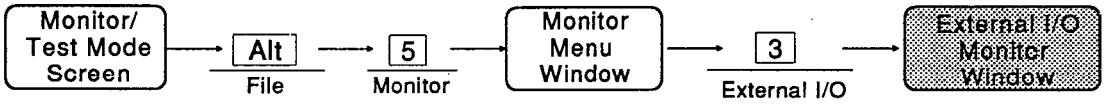
■ The ON/OFF status of each Y device signal (output signal) is indicated as follows:
O : OFF ● : ON
The actual meanings of the ON/OFF statuses for each signal are indicated in the table below.

Device	O	●
Y10 to Y12	No positioning start request	No positioning start request
Y13 to Y15	No axis stop request	Axis stop request
Y16 to Y1B	JOG start OFF	JOG start ON
Y1C	—	—
Y1D	PC ready OFF	PC ready ON

15.8 External I/O Signal Monitor

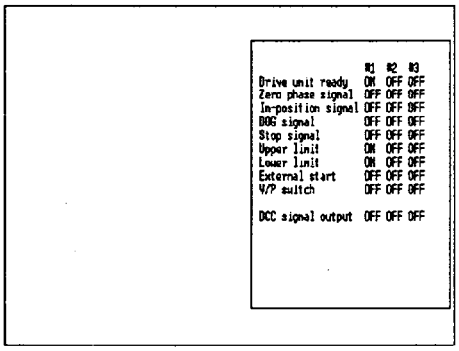
Displays the ON/OFF status of external I/O signals.

Basic Operation



External I/O monitor window and related operations

External I/O monitor window



Explanation

■ The ON\OFF status of the external I\O signal for each axis indicated as follows:
O : OFF ● : ON

Drive unit ready	• Displays the ON/OFF status of the drive unit ready signal.
Zero phase signal	• Displays the ON/OFF status of the zero phase signal.
In-position signal	• Displays the ON/OFF status of the in-position signal.
DOG signal	• Displays the ON/OFF status of the DOG signal.
Stop signal	• Displays the ON/OFF status of stop signal.
Upper limit	• Displays the ON/OFF status of the upper limit signal.
Lower limit	• Displays the ON/OFF status of the lower limit signal.
External start	• Displays the ON/OFF status of the external start signal.
V/P switch signal	• Displays the ON/OFF status of the speed-position switching signal.
Deviat. count.CLR	• Displays the ON/OFF status of the deviation counter clear signal.

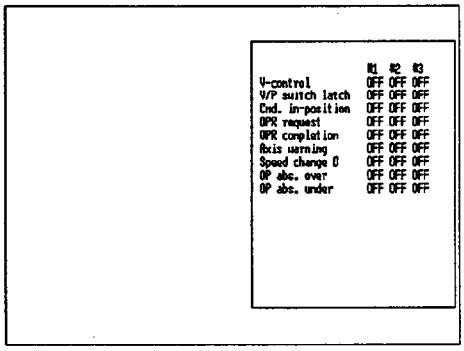
15.9 Status Information Monitor

Displays the ON/OFF statuses of the status signals.

Basic Operation

Status information monitor window and related operations

Status information monitor window



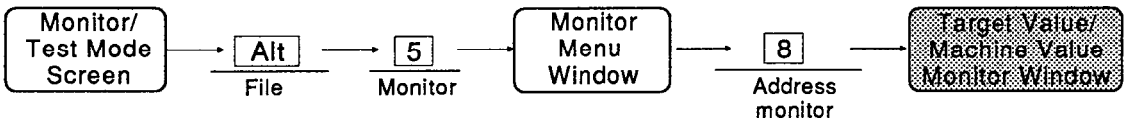
Explanation

- The ON/OFF statuses of the status signals for each axis are displayed.
  O : OFF ● : ON
- V-control flag
  ON during speed control; OFF during position control. OFF when the power is turned on or during JOG operation/manual pulse generator operation.
- V/P switch latch flag
  Comes ON when speed control is switched to position control during the speed/position switching control.
- Command in-position flag
  ON when the absolute value of the difference between the command position and feed present value is below the "command in-position range" set by parameter.
- OPR request flag
  Turned ON when the home position address needs to be checked during positioning control or when the power is turned on.
- OPR completion flag
  ON when home position return is completed normally.
- Axis warning detection
  ON when the axis warning has occurred during operation.
- Speed change 0 flag
  Comes ON when a speed change request with a speed change value of 0 is issued. OFF when the speed change value is not 0.
- OP absolute overflow flag
  ON when an overflow with respect to the absolute original point occurs.
- OP absolute underflow flag
  ON when an underflow with respect to the absolute original point occurs.

15.10 Address Monitor

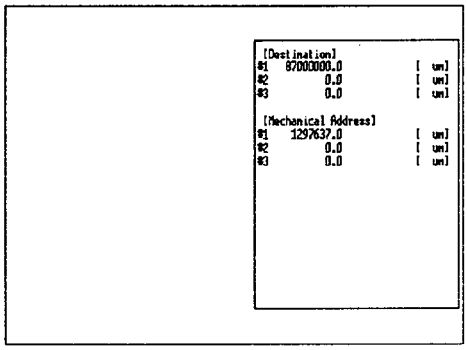
Monitors the target value, remaining distance, feed machine value and target machine value for each axis.

Basic Operation



Target value/machine value monitor window and related operations

Target value/machine value monitor window



Explanation

■ Destination
In positioning control, the target value is displayed based on the designated positioning address/travel value. When the positioning is completed, the value becomes 0.
0 is displayed during speed control or home position return.
0 is displayed at the start of the speed/position switching control. On switching to position control, the travel value is displayed as the target value.
0 is displayed during JOG operation, manual pulse generator operation and home position return operation.

■ Mechanical feed
The present value is displayed using a position determined by the machine configuration and specified in the machine coordinate system as the home position.
The home position return address is displayed when the home position return is completed.

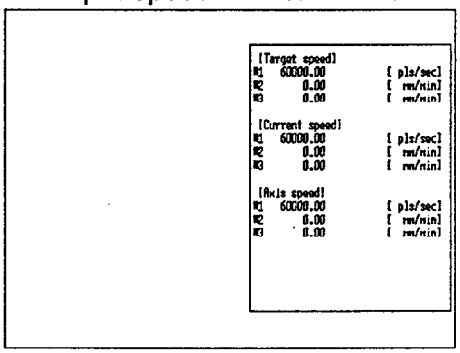
15.11 Speed Monitor

Monitors the target speed, current speed, and feed speed for each axis.

Basic Operation

Output speed monitor window and related operations

Output speed monitor window



Explanation

■ Target speed
During positioning data operation, the actual target speed considering the current speed, override, and speed control limit is displayed.
0 is displayed when the travel is completed.
During interpolation, the target speed for the resultant speed or long axis speed is displayed for the 1st axis.0 is displayed for the other interpolation axis.
During JOG operation, the target speed considering the JOG speed and JOG speed control limit is displayed. 0 is displayed when operation stops.
During manual pulse generator operation, 0 is displayed.

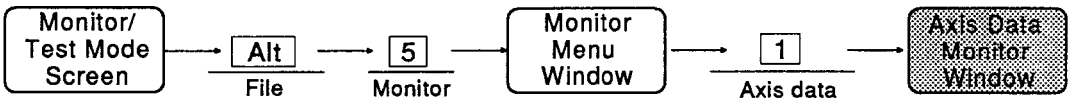
■ Current speed
During positioning operation, the commanded speed designated in the positioning data is displayed. When the speed is changed, the changed speed is displayed.
0 is displayed when the positioning operation is completed.
During interpolation, the resultant speed or long axis speed is displayed for the 1st axis.
0 is displayed for the other interpolation axis.
During JOG operation or manual pulse generator operation, 0 is displayed.

■ Axis speed
The actual speed is displayed in all operations. 0 is displayed when the axis stops.
During interpolation, the resultant speed or long axis speed is displayed for the 1st axis.
0 is displayed for the other interpolation axis.

15.12 Axis Data Monitor

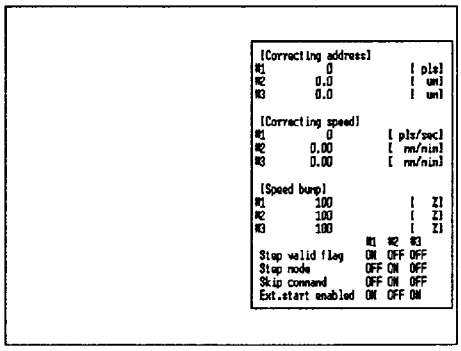
Monitors the present value change value, speed change value, override value and four flags in the axis control data.

Basic Operation



Axis data monitor window and related operations

Axis data monitor window



(In test mode only)

- Move cursor : [↑] [↓] [←] [→]
- Switch setting status : [SP]
- Set value : [Value] → [Enter]

Explanation

■ O means "0" and ● means "1" in the flag data.

■ Correcting address
The present value changed by positioning No. 9003 is displayed here.

■ Correcting speed
The changed value for a speed change during positioning operation or JOG operation is displayed here. The value can be changed during test operation.

■ Speed bump
The speed bump value with respect to the positioning operation speed (current speed) is displayed here.
The value can be changed during test operation.

■ Step valid flag
Information on step operation during positioning operation is displayed here.
O: Step operation is carried out.
●: Step operation is not carried out.

■ Step mode
The positioning units used for step operation are displayed here.
O: Deceleration unit steps
●: Data No. unit steps

■ Skip command
When the skip command comes ON during positioning operation, automatic deceleration occurs and the next positioning is carried out.
O: Skip request accepted (set by OS)
●: Skip request (set by sequence program)

■ Ext. start enabled
Signal that makes the external control signal valid.
O: Signal is invalid.
●: Signal is valid.

■ Edit method in test mode editing
In test mode editing, the axis control data can be edited.
To set "O", press the space bar. The space bar switches the setting alternately between "O" and "●".When the status is switched and data is switched at the AD75, the display does not necessarily change in appearance.
The valid range for the values that can be changed is shown below:

Item	Valid Range	Unit	Valid Range	Unit
Correcting address	-214748364.8 to 214748364.7	μm	-21474.83648 to 21474.83647	inch
	0 to 359.99999	degree	0.001 to 359.99999	PLS
Correcting speed	0.01 to 6000000.00	mm/ min	0.01 to 600000.000	inch/ min
	0.001 to 600000.000	degree / min	1 to 1000000	PLS/ sec
Speed bump value	1 to 300	%		

When the start key is pressed, the selection cursor disappears and the test operation starts.

POINT

- Notes on step valid flag setting in test mode editing
When [Alt] menu 6/Test → 2/Test Condition is selected, when an axis for which "Step auto decel." and "step data operation" is set is started and then stopped, restart is invalid if the "step valid flag" is set to OFF.
When "Posi-operation" is set, restart is invalid if the "step valid flag" is turned ON.

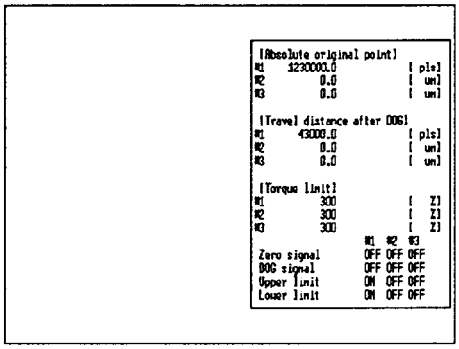
15.13 OPR Monitor

Monitors four signals: for the home position, travel value when the near-zero point dog is turned ON, torque limit value, and home position return.

Basic Operation

OPR monitor window and related operations

OPR monitor window



Explanation

■ Absolute original point
Positioning to the home position can be executed on the basis of the value for the absolute original point.
The home position address is displayed when the home position return is completed.

■ Travel distance after DOG
0 is displayed when the home position return is started.
On completion of home position return, the travel value from the point where the near-zero point dog comes ON to home position return completion is displayed.

■ The ON/OFF status of each signal is displayed as follows:
O: OFF ●: ON

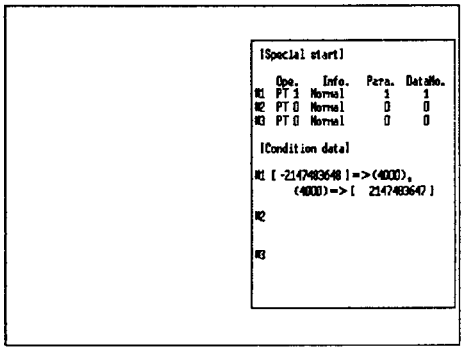
15.14 Special Start Monitor

Displays special start information and the condition data for special start.

Basic Operation

Special start monitor window and related operations

Special start monitor window



Explanation

■ Special start
The details of the special start information displayed are as follows:

Status	Operation (operation mode)	Information (special start data)	Parameter	Data No.
Normal	Operation (operation mode)	—	Condition data No.	Positioning data No. (indirect designation No.)
Conditnl		Conditnl		
Wait		Wait		
Simultans		Simultans		
Stop		Stop		
FOR loop		FOR loop	Cndition data	
FOR cond		FOR cond	Cndition data No.	
NEXT		NEXT		

When "FOR" is set for parameters are counted on the display decrementally.
If the positioning data No. has an indirect designation, the indirect No. is displayed.

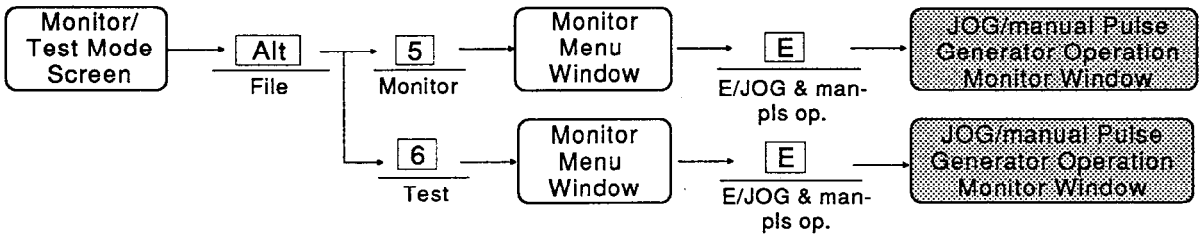
■ Condition data
When the axis is started by condition data, the condition data designated by the parameter is displayed.

(Parameter)
Condition No. : (1 ≤ Condition data No. ≤ 10)
# of repeat : (1 ≤ Number of repetitions ≤ 255)

15.15 JOG Operation/Manual Pulse Generator Operation Monitor

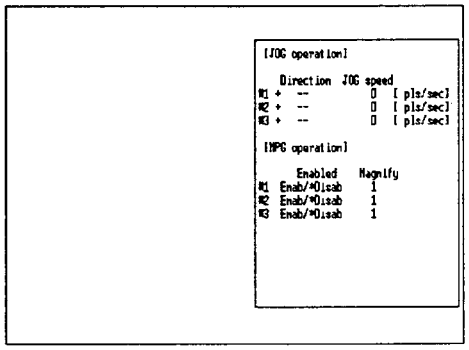
Monitors JOG speed and direction, and manual pulse generator operation enabled/disabled status and magnification.

Basic Operation



JOG/manual pulse generator operation monitor window

JOG/manual pulse generator operation



Explanation

■ Direction
The direction of JOG operation is displayed here. The bit of Y device is as follows:
* + –: Forward JOG start
+*–: Reverse JOG start

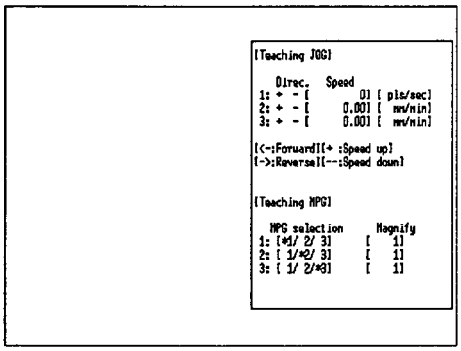
■ JOG speed
The JOG speed is displayed here during JOG operation. If the speed is changed, the changed speed is displayed.

■ Magnify
The magnification per pulse for the number of input pulses from the manual pulse generator is displayed here.

■ Enab
The manual pulse generator enable flag is displayed here.

JOG/manual pulse generator operation test window and related operations

JOG/manual pulse generator operation



- Move cursor :[↑], [↓], [←], [→], [Tab]
- Start JOG operation : [←], [→]
- Fine adjustment of value :[+], [–]
- Set value :[Numeric value] → [Enter]
- Designate axis :[SP]

Explanation

■ In test mode editing, JOG/manual pulse generator operation can be edited.

■ Apart from the direct input of JOG speed values, the JOG speed can be finely adjusted using the + and – keys.
For setting of the adjustment range, see Section 16.2.

■ Select the JOG start direction by pressing [←] (forward rotation) or [→] (reverse rotation) for the axis to be started.
JOG operation is only carried out while [←] or [→] key is pressed. During operation, "+" or "–" is highlighted to indicate the direction of travel, and the selected axis is marked with an asterisk. The operation result is displayed at "Address" for each axis.
When [+] or [–] key for an axis for which a JOG speed of 0 is set is pressed, a setting error occurs and the axis cannot be started.

■ Press [Tab] key to switch between "JOG operation" and "Man-pls operation".

■ Input and set the magnification value for manual pulse generator operation.
To set the manual pulse generator operation enabled status for an axis, press in front of [SP] key the letter for that axis.
If manual pulse generator is enabled, "*" is displayed, and if it is disabled, nothing is displayed.When "Man-pls operation" is selected, and on completion of operation, all axes are set to the "disabled" status. When either the magnification or manual pulse generator selection for manual pulse generator operation is changed, the affected axis is set to the "disabled" status.
The valid range for values that can be edited is as follows:

Item	Valid range	Unit	Valid range	Unit
JOG speed	0.01 to 6000000.00	mm/ mim	0.001 to 600000.000	inch/ mim
	0.01 to 600000.000	degree/ min	0.01 to 600000.000	PLS/ sec
Magnify	—	μm	—	inch
	—	degree	1 to 100000	PLS

The manual pulse generator operation magnification is fixed in pulse units independent of the selected unit system.

Press the start key to clear the selection cursor from the screen and start the test run.

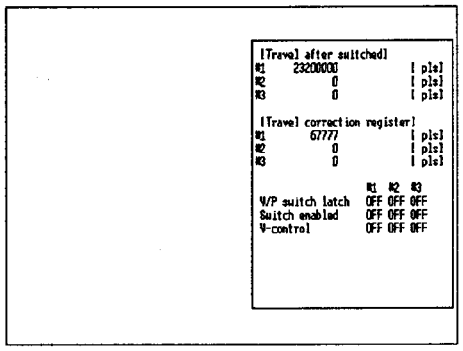
15.16 Speed/Position Switching Control Monitor

The travel value change value/position control travel value and speed/position switching enable flag are monitored for each axis during speed/position switching control.

Basic Operation

Speed/position switching control monitor window and related operations

Speed/position switching control monitor window



Explanation

■ Travel value after switched (speed/position switching control change value)
The changed travel value in the speed control part of speed/position switching control, and travel value changes for position control, are displayed here.
When the speed/position switching control signal is ON, the speed/position switching control travel value is displayed.

■ Travel correction register (speed/position switching control position control travel value)
The travel value from the point where switching from speed to position control is executed when the speed-position switching signal comes ON in speed/position switching control, to the completion of positioning, is displayed here.
When the control is switched to position control, the position control travel value is displayed.

■ V/P switch latch flag
This flag comes ON when the speed control is switched to the position control During speed/position switching control.
O: Speed control in progress
●: Position control in progress

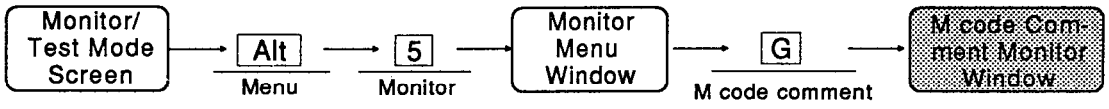
■ Switch enabled flag
This is the flag determine whether switching from speed control to position control is enabled or disabled.
O: Even if the speed/position switching control signal comes ON, speed control does not switch to position control.
●: When the speed/position switching signal comes ON, speed control switches to position control.

■ V-control flag
ON during speed control. OFF during position control.OFF when the power is turned ON, or during JOG operation or manual pulse generator operation.
O: OFF
●: ON

15.17 M Code Comment Monitor

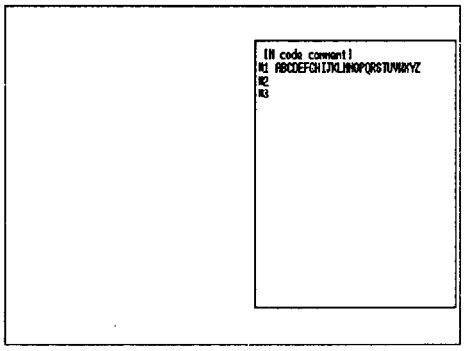
Displays M code comments and indirect comments.

Basic Operation



M code comment monitor window and related operations

M code comment monitor window



Explanation

- The M code comments and indirect comments appended to the operation data Nos. of each axis are displayed.

- A maximum of 32 characters can be displayed for one comment.

16. TEST MENU

16.1 Restrictions on the Test Menu in Each Mode

The restrictions on the test menu in each mode are shown below:

Test Menu / Mode	Teaching	Test condition	Address change	OPR	Operation test&mon	Positioning data test&mon	Start block test&mon
Edit mode	–	–	–	–	–	–	–
Monitor mode	–	–	–	–	–	–	–
Test mode	O	O	O	O	O	O	O
Environment mode	–	–	–	–	–	–	–

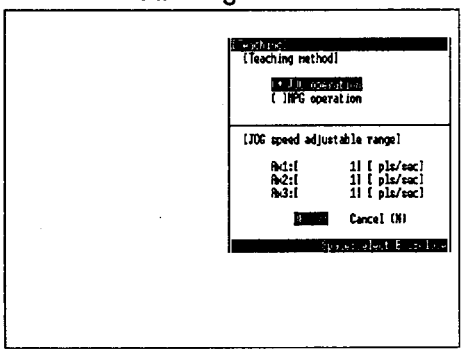
16.2 Teaching

Sets the method used for teaching on the "positioning data test monitor screen".

Basic Operation

Teaching window and related operations

Teaching window



- Move cursor :[↑], [↓],[Tab]
- Set/clear teaching method :[SP]
- Set value :[Numeric value] → [Enter]
- Execute :[Y]

Explanation

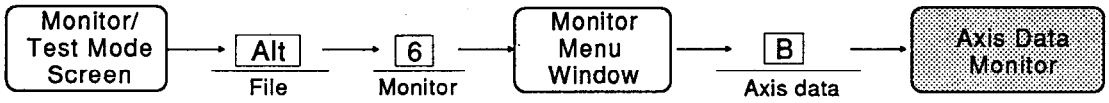
■ Teaching method
Locate the cursor at the desired item and press [SP] key to set the teaching method. When this setting is made, the editing screen of the "positioning data test monitor screen" is switched.

■ JOG speed adjustable range
Increase/decrease range of JOG speed adjustment is set.
If 1000 is set, the JOG speed increases/ decreases by a unit of 1000 every time the UP/DOWN key is pressed.

16.3 Test Condition

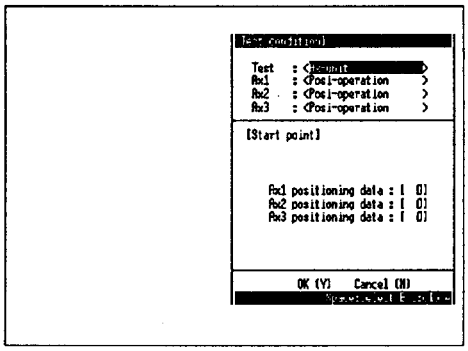
Sets the axes to be operated in the test run and the operation method for each axis.

Basic Operation



Test condition window and related operations

Test condition window



- Move cursor :[↑], [↓], [←], [→], [Tab]
- Select setting item :[SP]
- Set start axis :[SP]
- Set value :[Numeric value] → [Enter]
- Execute :[Y]

Explanation

See Section 8.2.

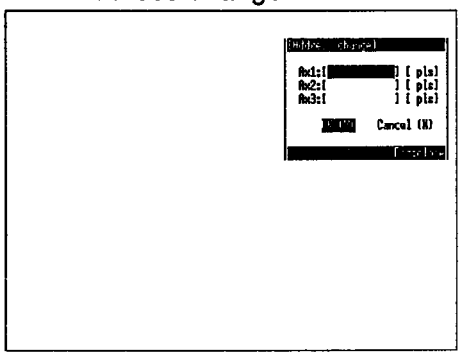
16.4 Address Change

Changes the present value.

Basic Operation

Address change window and related operations

Address change window



- Move cursor :[↑], [↓]
- Set value :[Numeric value] → [Enter]
- Execute :[Y]

Explanation

■ The present value is displayed until the value is input.

■ Set the value and press [Y] key.
The present value of only the axis for which the change was made is changed.
In this case, the test run is started from the beginning even if there is an axis in the stopped status; re-execution is not possible for the stopped axis.

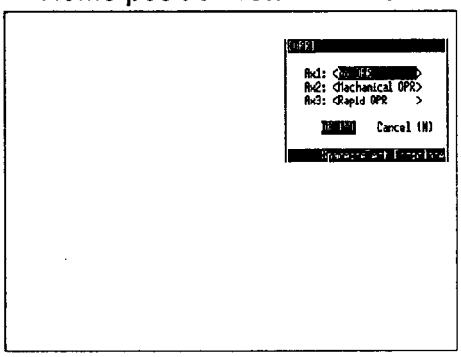
16.5 OPR

Executes home position return.

Basic Operation

Home position return window and related operations

Home position return window



- Move cursor :[↑], [↓]
- Select setting item :[SP]
- Execute :[Y]

Explanation

■ Locate the cursor at the axis on which the home position return is to be executed and press [SP] key to switch the setting as shown below.

<Mechanical OPR> ⟶ <Mechanical OPR>

<Rapid OPR>

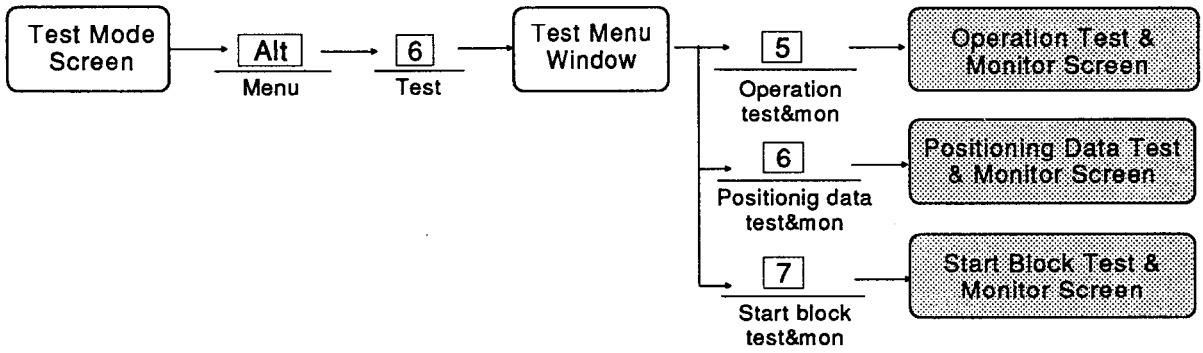
■ Press [Y] key to carry out the home position return in accordance with the set home position return method.
In this case, the test run is started from the beginning even if there is an axis in the stopped status; re-execution is not possible for the stopped axis.

■ Press [F10] (A Stop) key to cancel the home position return.

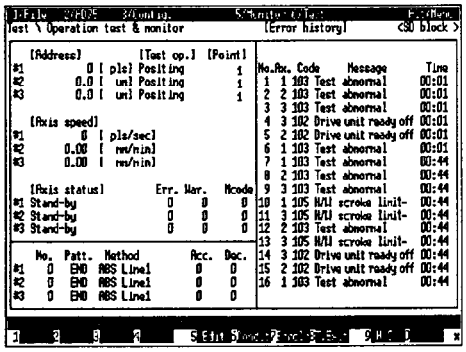
16.6 Operation Test & Monitor, Positioning Data Test & Monitor, and Start Block Test & Monitor

Switch to the operation, positioning data, or start block test & monitor screen without completing the test mode.

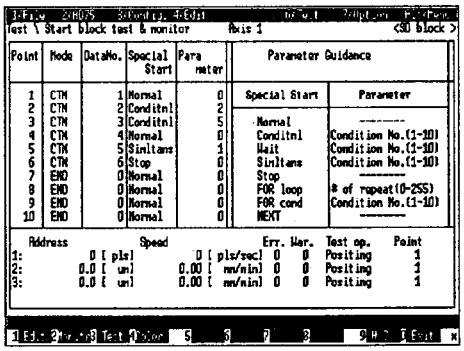
Basic Operation



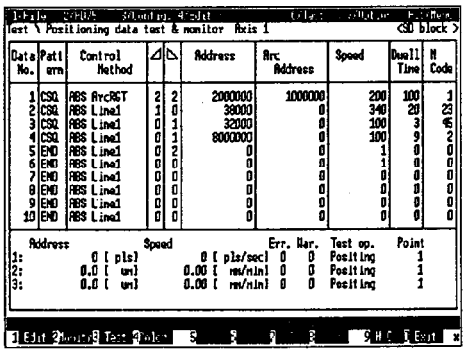
Operation test & monitor screen



Start block test & monitor screen



Positioning data test & monitor screen



Explanation

■ Press keys [5], [6] and [7] to switch to each test & monitor screen.

17. OPTION MENU

17.1 Restrictions on the Option Menu in Each Mode

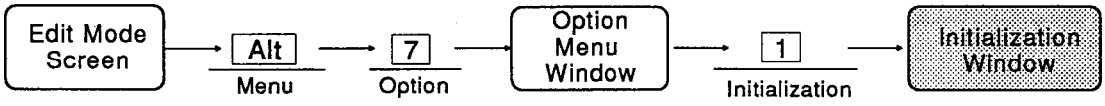
The restrictions on the option menu in each mode are shown below:

Mode \ Option Menu		Initialization	Data check	Dos 71-75 conv.	Cpm 71-75 conv.
Edit mode	Positioning data Start block	O	O	O	O
	Parameters	O	–	O	O
	M code comment	O	O	–	–
	Condition data	O	–	–	–
Monitor mode		–	–	–	–
Test mode	Operation test&mon	–	–	–	–
	Positioning data test&mon Start block test&mon	–	O	–	–
Environment		–	–	–	–

17.2 Initialization

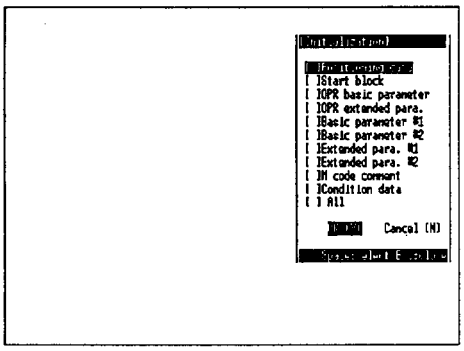
Initializes the positioning data, start block, parameters, comments, and condition data.

Basic Operation



Initialization window and related operations

Initialization window



- Move cursor :[↑], [↓]
- Confirm/clear setting :[SP]
- Execute :[Y]

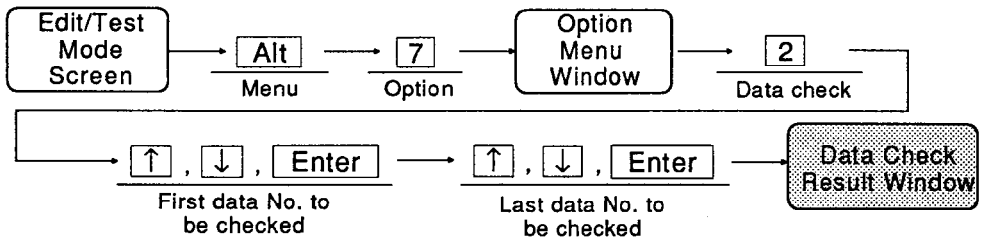
Explanation

- If "All" is selected, all the displayed items are marked with an asterisk.
- Press [Y] key to initialize the designated data.

17.3 Data Check

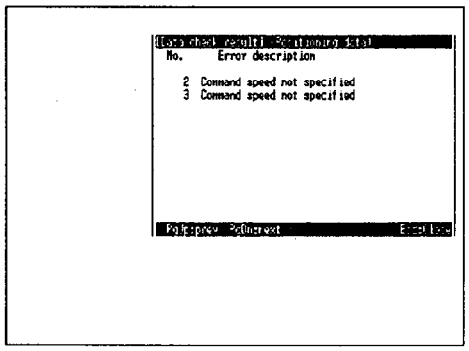
Positioning data item is checked.

Basic Operation



Data check result window and related operations

Data check result window



- Execute :[2]

Explanation

- Press [↑] and [↓] keys to move the cursor. Press [Enter] key to set the first No. and last No. of the item to be checked. "*" is added to the left of the data No./point with the designated range.
- The display of the data check result differs for positioning data, start block, and M code comment.
- This check only checks if the required items have been set, not if the settings are correct or not.
- The message display for the data check result is different for positioning data, start block, and M code comments.

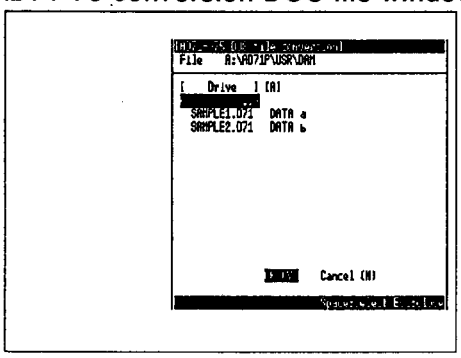
17.4 AD71 to AD75 Conversion (For MS-DOS Format)

Converts AD71 data into data for AD75 use.

Basic Operation

AD71-75 conversion DOS file window and related operations

AD71-75 conversion DOS file window



- Move cursor :[↑], [↓]
- Designate drive :[SP]
- Designate directory :[SP]
- Execute :[Y]

Explanation

■ Conversion is carried out so that the AD71 data is converted to data for AD75 use with the minimum change.
The floppy disk in which the data to be converted by this function is stored must be DOS formatted.

■ Drive designation
The drive can be switched to any designation between A and Z by pressing [SP] key.
Each time the drive is switched, a list of the existing directory names and file names for the drive is displayed.

■ Directory designation
Pressing the space bar at the directory name section ..... displays the file list under the directory.

■ Press [Y] key to execute conversion.

■ The specifications for conversion from AD71 data to AD75 data are shown below.

AD71 Setting Item	Conversion Specification
Positioning pattern	Pattern converted directly.
Positioning type	Absolute type - converted on basis of ABS linear 1 control method. Incremental type - converted on basis of INC linear 1 control method.
Positioning direction	Forward rotation and reverse rotation are converted by using address signs. (Valid only for INC.)
Positioning speed	Converted to commanded speed.
Positioning address	Converted by changing the sign in accordance with the positioning direction setting.
Dwell time	Dwell time converted directly.
M code & comment	Only M code is developed.

Other conversion

- The default value of "0" is allocated for acceleration/deceleration time.
- "0" is displayed for arc address.
- M code comments are not acknowledged.

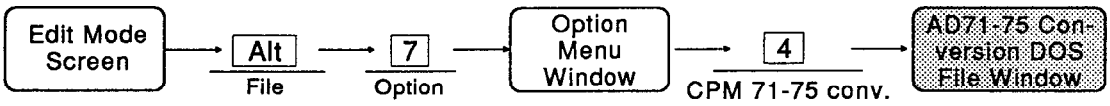
POINT

- When this function is executed, the contents of the peripheral device memory are changed.

17.5 AD71 to AD75 Conversion (For CPM Format)

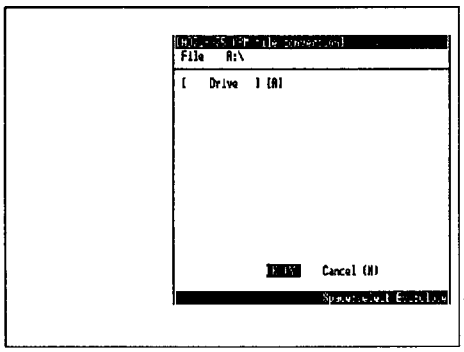
Converts AD71 data for data for AD75 use.

Basic Operation



AD71-75 conversion CPM file window and related operations

AD71-75 conversion CPM file window



- Move cursor :[↑], [↓]
- Designate drive :[SP]
- Designate directory :[SP]
- Execute :[Y]

Explanation

- Conversion is carried out so that the AD71 data is converted to data for AD75 use with the minimum change.
  The floppy disk in which the data to be converted by this function is stored must be CPM formatted.
- Press the [Y] key to carry out conversion.
- The specifications for conversion from AD71 data to AD75 data are shown below.

AD71 Setting Item	Conversion Specification
Positioning pattern	Pattern converted directly.
Positioning type	Absolute type - converted on basis of ABS linear 1 control method. Incremental type - converted on basis of INC linear 1 control method.
Positioning direction	Forward rotation and reverse rotation are converted by using address signs. (Valid only for INC.)
Positioning speed	Converted to commanded speed.
Positioning address	Converted by changing the sign in accordance with the positioning direction setting.
Dwell time	Dwell time converted directly.
M code & comment	Only M code is developed.

Other conversion

- The default value of "0" is allocated for acceleration/deceleration time.
- "0" is displayed for arc address.
- M code comments are not acknowledged.

POINT

- This function assumes that the CPM/DOS conversion command "FTK" is always present.
  Therefore, if execution is attempted with no "FTK", the system may malfunction.
- When this function is executed, the contents of the peripheral device memory are changed.

18. ERROR MESSAGE LIST

This section describes the causes and corrective actions for the error messages displayed when operating the AD75P with a peripheral device.
For communication errors displayed in a dialog box, refer to the monitor mode and test mode sections of this manual.
Errors that occur when accessing a file are displayed in a message area, and communication errors are displayed in a dialog box.
Error messages are listed in alphabetical, then numerical, order.

The various types of error message are described in the following sections.

18.1 Error Messages at Start

Error Message	Cause	Corrective Action
Can't find message_file	Because message file does not exist, the peripheral device cannot start.	Refer to the peripheral device starting information file (D75_MESS.DAT D75EMESS.DAT D75EWESS.DAT).

18.2 Error Message in Edit Mode

Error Message	Cause	Corrective Action
Parameter range error	Out-of-range input when setting parameters.	Reset parameters after confirming valid setting range.

18.3 Error Messages in Monitor Mode

Error Message	Cause	Corrective Action
No error logged	———	———
No warning logged	———	———

18.4 Error Messages for Common Functions

Error Message	Cause	Corrective Action
Print item not specified	Print item setting too short.	Set print item.
Print axis not specified	Print axis not set.	Set print axis.
Invalid file extension	The extension of the storage file is not correct.	Set the extension "D75"
This FD is not CP/M format	The FD in use has not been formatted for CP/M.	Use a CP/M format FD.
Copy destination file not specified	Copy destination file name is not specified.	Specify copy destination file name.
Copy failed	File copy is not possible due to insufficient memory.	Secure memory by removing unnecessary drivers.
Copy source file not specified	Copy source file name is not specified.	Specify the copy source file name.
Too many verification errors	There are too many verification errors.	Verification is not possible.
Objective axis not specified	No axis designation made for function that requires axis designation.	Designate an axis and retry.
Communication error	When reading, writing or verifying, communication with the AD75 is interrupted. (Except for time out)	Check communications circuit.
Invalid directory name	Specified directory name does not exist.	Confirm directory name.
File can't open	Failed to open specified file.	Check the specified file.
Can't create file	Specified file can not be created.	Check file name and directory.
File not found	When reading, writing, verifying, deleting or copying, specified file is not found.	Make sure file is there.
File can't read	Read error when reading or verifying FD file.	Check condition of FD.
File version not correct.	Because file version is not correct, it is impossible to read /verify the file .	Read a current version file.
Failed F-ROM writing	Writing to F-ROM has failed.	Confirm whether the CPU is running.
Out of paper	No paper in the printer.	Supply paper.

18.5 Error Messages Relating to FD Access

Error Message	Cause	Corrective Action
Write forbid	FD is set to write protect.	Cancel write protection of FD.
Disk full	Write error due to insufficient FD storage capacity	Use a new FD.
Drive not ready	Specified drive is not ready.	Confirm the drive name.
File can't read	File reading error has occurred when reading from FD.	Check condition of FD.
Command invalid Seek error Specified sector not found Disk access error Invalid disk change Invalid media Request header length invalid Invalid module number CRC error	Something is wrong with the FD, it is impossible to access it normally.	Change the FD or format the FD once again.

18.6 Error Messages Received from the AD75

The error messages received from the AD75, their detection timing, processing after fetection, and action to be taken by the user, are described below.

18.6.1 Error list *A *F

No.	Error	Detection Timing	Error Processing	Corrective Action
000	Normal status	——	——	——
001	Fault	H/W error	System stop	Check for influence of noise. If noise is not the problem: H/W error.
003	Zero assignment	H/W error	System stop	
004	Overflow	H/W error	System stop	
005	Underflow	H/W error	System stop	
100	Peripheral device stop during operation	When "stop" key of peripheral device is pressed during operation	Deceleration stop or rapid stop	Clear the error by axis error reset.
101	PC READY OFF during operation	When PC READY is OFF during operation	Deceleration stop or rapid stop	Clear the error by axis error reset.
102	Drive unit ready signal OFF	When drive unit ready signal is OFF during operation	Immediate stop	Clear the error by axis error reset.
103	Test mode error during operation	During test mode	Deceleration stop	Investigate the cause, turn off the power to the AD75 its peripheral devices, and turn on the power again.
104	H/W stroke limit +	When operation is started	No operation on starting	Clear the error and start JOG operation or manual pulse generator operation away from the limit switch.
		During operation	Deceleration stop	
105	H/W stroke limit -	When operation is started	No operation on starting	Clear the error and start JOG operation or manual pulse generator operation away from the limit switch.
		During operation	Deceleration stop	
106	Stop signal ON at start	When operation is started	No operation on starting.	Clear the error by axis error reset.
107	PC READY OFF to ON during BUSY	Leading edge of Y1D	X0 ON Next start not executed.	Switch Y1D OFF and ON again.
201	Start on the home position	When home position return is started	Home position return is not carried out.	• Make home position return retry function valid. • Move present position using JOG operation or manual pulse generator operation before home position return.
		When home position return by stopper stop #3 (without near-zero point dog) or external signal home position return completion without near-zero point dog is started	When home position return is not carried out.	• Change the present position using JOG operation or manual pulse generator operation before home position return.

No.	Error	Detection Timing	Error Processing	Corrective Action
203	Dog detection timing error	During deceleration from the home position return speed	Deceleration stop	• Correct home position return speed. • Use longer dog for near-zero point dog type.
204	Zero point detection timing error	During deceleration from home position return speed	Deceleration stop	• Correct home position return speed. • Input external zero point signal during motion at creep speed.
205	Dwell time error	During deceleration from home position return speed	Deceleration stop	• Correct home position return speed. • Set dwell time longer.
206	Count type travel value error	When count type home position return is started	Home position return is not carried out.	• Calculate the travel distance from the speed limit value, home position return speed and deceleration time. Set the travel value after the near-zero point dog so that the distance is greater than the deceleration distance. • Reduce home position return speed. • Adjust the near-zero point dog position so that the travel value after the near-zero point dog is long.
207	Home position return request ON	When high-speed home position return is started	Home position return is not carried out.	Carry out home position return
208	Out of creep speed range	When home position return is started	Home position return is not carried out.	Set the speed within the creep speed or the home position return speed.
209	Home position return restart disabled	When restart is requested after home position return stop	Restart is not carried out.	Start home position return again.
300	Out of JOG speed range	When JOG operation is started	JOG operation does not start when the setting is 0 or out of range.	Set the setting value within the setting range (excluding 0).
500	Condition data No. incorrect	When the special start data is analyzed	Operation is ended.	Correct the special start data.
501	Error before simultaneous start	When the special start data is analyzed	Operation is ended.	Correct the special start data.
502	Positioning data No. incorrect	When the special start data is analyzed	Positioning data is not carried out.	Correct the positioning data.
503	No commanded speed	When the first positioning data is analyzed at the start	No operation on starting.	Correct the positioning data.
504	Linear travel value out of range	When the special start data is analyzed	No operation on starting. Immediate stop during operation.	Review the positioning address.
506	Excessive arc error	When the locus for circular interpolation control is calculated by designation of a center point	Circular interpolation control by designation of a center point is not carried out.	• Correct the center point address and end point address. • Correct the value of circular interpolation error allowable range.

No.	Error	Detection Timing	Error Processing	Corrective Action
507	Start outside stroke limit +	When operation is started	No operation does on starting	Set the feed present value within the software stroke limit using JOG operation or manual pulse generator operation.
508	Start outside stroke limit -	When operation is started	No operation on starting	Set the feed present value within the software stroke limit using JOG operation or manual pulse generator operation.
509	Travel outside stroke limit +	When operation is started	No operation on starting.	• For positioning operation, set the positioning address within the software stroke limit setting range. • For JOG operation and manual pulse generator operation, carry out operation within the software stroke limit.
510	Travel outside stroke limit -	When operation is started	No operation on starting.	• For positioning operation, set the positioning address within the software stroke limit setting range. • For JOG operation and manual pulse generator operation, carry out operation within the software stroke limit.
511	Travel outside stroke limit +	During operation	Immediate stop at the data one previous to the data outside the stroke limit	Correct the positioning data.
512	Travel outside stroke limit -	During operation	Immediate stop at data one previous to the data outside the stroke limit	Correct the positioning data.
514	Out of present value change range	When the present value change is analyzed	Present value is not changed.	Set the present value within the setting range.
515	Present value change disabled	When the present value change is analyzed	Present value is not changed.	Do not designate present value change for the next positioning data in continuous locus control.
516	Continuous locus control disabled	When the positioning data is analyzed	No operation on starting.	Do not designate fixed-pitch feed for the next positioning data in continuous locus control. Do not carry out fixed-pitch feed, speed control, or speed/position switching control in continuous locus control.
518	Out of operation pattern range	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Correct the operation pattern.
519	Other axis BUSY interpolation	When the positioning data is analyzed	No operation on starting. Stop during operation.	Correct the control type.
520	Unit group discrepancy	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Correct the positioning data. Change the parameter.
521	Interpolation writing command incorrect	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Correct the control type.

No.	Error	Detection Timing	Error Processing	Corrective Action
522	Commanded speed setting error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Correct the commanded speed.
524	Control type setting error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Correct the control type or parameter.
525	Auxiliary point setting error	When the positioning data is analyzed	No operation on starting. Immediate stop during operation.	Correct the arc address.
526	End point setting error	When the positioning data is analyzed	No operation on starting. Immediate stop during operation.	Correct the positioning address.
527	Center point setting error	When the positioning data is analyzed	No operation on starting. Immediate stop during operation.	Correct the arc address.
530	Out of address range	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Correct the positioning address.
532	Simultaneous start disabled	When simultaneous start is started	Operation ends.	Correct the special start data and positioning data.
533	Condition data error	When special start data is analyzed	Operation ends.	Correct the special start data.
534	Special start command error	When special start data is analyzed	Operation ends.	Correct the special start data.
536	M code signal ON signal ON start	When operation is started	No operation on starting	After turning OFF the M code ON signal, start operation.
537	PC READY OFF start	When operation is started	No operation on starting	Start after PC READY ON.
538	Ready OFF start	When operation is started	No operation on starting	Start operation after confirming AD75 READY is ON.
543	Out of start No. range	When operation is started	No operation on starting	Correct the positioning start No.
544	Out of radius range	When positioning data is analyzed	No operation on starting. Immediate stop during operation.	Correct the positioning data
900	Out of unit setting range	When the power is turned on or PC READY is switched from OFF to ON	AD75 READY flag is not turned ON.	Set the value within the setting range.
901	1 rotation pulse No. setting error	When the power is turned on or PC READY is switched from OFF to ON	AD75 READY flag is not turned ON.	Set the value within the setting range.
902	Travel value per revolution setting error	When the power is turned on or PC READY is switched from OFF to ON	AD75 READY flag is not turned ON.	Set the value within the setting range.
903	Unit magnification setting error	When the power is turned on or PC READY is switched from OFF to ON	AD75 READY flag is not turned ON.	Set the value within the setting range.
904	Pulse output mode error	When the power is turned on or PC READY is switched from OFF to ON	AD75 READY flag is not turned ON.	Set the value within the setting range.

No.	Error	Detection Timing	Error Processing	Corrective Action
905	Rotation direction setting error	When the power is turned on or PC READY is switched from OFF to ON	AD75 READY flag is not turned ON.	Set the value within the setting range.
910	Out of speed limit value range	When the power is turned on or PC READY is switched from OFF to ON	AD75 READY flag is not turned ON when the power is turned on or PC READY is switched from OFF to ON. No operation on starting.	Set the value within the setting range.
911	Out of acceleration time range	When the power is turned on or PC READY is switched from OFF to ON	AD75 READY flag is not turned ON when the power is turned on or PC READY is switched from OFF to ON. No operation on starting.	Set the value within the setting range.
912	Out of deceleration time range	When the power is turned on or PC READY is switched from OFF to ON	AD75 READY flag is not turned ON when the power is turned on or PC READY is switched from OFF to ON. No operation on starting.	Set the value within the setting range.
913	Out of bias speed range	When the power is turned on or PC READY is switched from OFF to ON	AD75 READY flag is not turned ON when the power is turned on or PC READY is switched from OFF to ON. No operation on starting.	Set the value within the setting range.
921	S/W upper stroke limit	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
922	S/W lower stroke limit	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
923	S/W stroke limit selection	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
924	S/W stroke limit valid	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
925	Torque limit setting value incorrect	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
926	Command in-position range	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
927	M code ON timing error	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
928	Speed switching mode error	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
929	Interpolation speed setting method	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
930	Present value change request error	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
931	Manual pulse generator selection error	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
933	Acceleration/deceleroti on time size error	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.

No.	Error	Detection Timing	Error Processing	Corrective Action
934	Constant partial speed (position)	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
935	Constant partial speed (speed)	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
936	Deviation counter output time	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
937	Deviation counter valid	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
938	Backlash compensation error 2	When PC READY is switched from OFF to ON	AD75 READY is not turned ON.	Set the value within the setting range.
950	Acceleration time 1 setting error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
951	Acceleration time 2 setting error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
952	Acceleration time 3 setting error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
953	Deceleration time 1 setting error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
954	Deceleration time 2 setting error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
955	Deceleration time 3 setting error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
956	JOG speed limit value error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
957	JOG acceleration selection setting error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
958	JOG deceleration selection setting error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
959	Acceleration/deceleroti on setting error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
960	S-curve ratio setting error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
962	Rapid stop deceleration time incorrect	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
963	Stop group #1 selection error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
964	Stop group #2 selection error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.

No.	Error	Detection Timing	Error Processing	Corrective Action
965	Stop group #3 selection error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
966	Out of allowable error range for circular interpolation	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
967	External start selection error	When the positioning data is analyzed	No operation on starting. Deceleration stop during operation.	Set the value within the setting range.
980	Home position return type setting error	PC READY OFF to ON	AD75 READY is not ON.	Set the value within the setting range.
981	Home position return direction error	PC READY OFF to ON	AD75 READY is not ON.	Set the value within the setting range.
982	Home position address setting error	PC READY OFF to ON	AD75 READY is not ON.	Set the value within the setting range.
983	Home position return speed error	PC READY OFF to ON	AD75 READY is not ON.	Set the value within the setting range.
984	Creep speed error	PC READY OFF to ON	AD75 READY is not ON.	Set the value within the setting range.
985	Home position return retry error	PC READY OFF to ON	AD75 READY is not ON.	Set the value within the setting range.
991	Home position return torque control limit	PC READY OFF to ON	AD75 READY is not ON.	Set the value within the setting range.
992	Near-zero point dog travel value error	PC READY OFF to ON	AD75 READY is not ON.	Set the value within the setting range.
993	Home position acceleration selection error	PC READY OFF to ON	AD75 READY is not ON.	Set the value within the setting range.
994	Home position deceleration selection error	PC READY OFF to ON	AD75 READY is not ON.	Set the value within the setting range.
996	Home position signal count error	PC READY OFF to ON	AD75 READY is not ON.	Set the value within the setting range.
999	F. ROM sum check error	PC READY OFF to ON	AD75 READY is not ON.	Retry the F. ROM writing of user data.

18.6.2 Warning list *A *F

No.	Warning	Detection Timing	Warning Processing	Corrective Action
000	Normal status	———	———	———
100	Start during operation	When the start request is ON	Operation continues.	Correct the start request ON timing.
101	BUSY present value change	When present value change is requested (test mode)	Present value change request is not acknowledged.	Do not change the present value while the axis is in operation.
102	Deviation counter clear request	When deviation counter clear is requested	Deviation counter clear request is not acknowledged.	Do not clear the deviation counter while the axis is in operation.
104	Restart disabled	When restart command is requested	Operation continues.	Correct the start request ON timing.
105	Applicable axis incorrect	When writing/reading is requested	Warning for reference axis	Set the correct value and request writing/reading again.
106	Positioning data No. incorrect	When writing/reading is requested	Warning for reference axis	Set the correct value and request writing/reading again.
107	Writing pattern incorrect	When writing/reading is requested	Warning for reference axis	Set the correct value and request writing/reading again.
108	Illegal flash ROM writing	When writing/reading is requested	Warning for axis 1	No process
109	Writing during BUSY	When writing is requested	Warning for applicable axis	Carry out writing request when the axis is not BUSY.
111	PC READY is ON	When writing to F-ROM is written	Warning for axis 1	None (Respond to the request when Y1D is OFF.)
112	Overwrite value incorrect	During analysis	• 100 when the setting value is 0. • Controlled at 300 when the setting value is 301 or more.	Set the value within the setting range.
113	Out of torque change value range	During operation	Torque change is not carried out.	Set the value within the setting value.
114	Less than bias speed	During analysis	Operation with speed = bias speed	Set the target speed to exceed the bias speed.
300	Speed change during deceleration	When JOG operation speed is changed	Speed change is not carried out	Do not carry out JOG speed change during deceleration caused by the JOG start signal going OFF.

No.	Warning	Detection Timing	Warning Processing	Corrective Action
301	JOG speed limit value	When JOG operation speed is changed	• JOG operation is carried out at the JOG speed limit value when the speed exceeds the JOG speed limit value. • The speed limit in progress flag is turned ON when the speed is controlled by JOG speed control.	Set the value within the setting range.
401	Out of manual pulse generator input magnification range	When manual pulse generator input magnification is changed	• Clamped at 100 when the value is 101 or higher. • Clamped at 1 when the value is 0.	Set the manual pulse generator 1 pulse input magnification within the setting range.
402	Manual pulse generator selection setting 0	When operation is started	No operation on starting.	• Manual pulse generator enable flag OFF • Set the setting value to 1 - 3. • PC READY OFF to ON.
500	Deceleration/stop speed change	When speed is changed	Speed change is not carried out.	Do not change the speed during a deceleration stop caused by a stop command or automatic deceleration in positioning control.
501	Speed limit value exceeded	When speed is changed	Clamp at the speed limit value.	Set the changed speed within the range from 0 to the speed limit value.
502	Remaining distribution speed low	During positioning control remaining distribution mode	Warning for applicable axis	No processing
503	M code ON signal ON	When positioning data is executed	When execution of positioning data is carried out	Correct the M code OFF signal ON/OFF timing.
505	Operation end not set	When 50th point is updated	Operation ends.	Set the operation end at the 50th point.
506	FOR-NEXT nesting	During FOR command analysis	Operation continues.	Eliminate FOR-NEXT nesting
508	Speed-position switching signal ON during acceleration	When speed-position switching signal ON	Operation continues.	Do not turn on the speed/position switching signal during acceleration.
509	Insufficient remaining distance	When speed is changed	Nearest value is used for the change. (except P11)	No processing
511	Step start information invalid	When step start information is set	Request is not acknowledged.	Correct the setting timing of step start information.
512	External start function incorrect	When external start signal is ON	Nothing happens when the external start signal comes ON.	Set the parameter within the setting range.

No.	Warning	Detection Timing	Warning Processing	Corrective Action
513	Insufficient travel value	During positioning operation	Immediate stop after reaching the positioning address	Correct the positioning data and parameter.
	Travel value change register out of range during speed/positioning control	When speed/position switching signal is ON	Positioning control is carried out without using the change register.	Set the travel value within the setting range.
514	Out of commanded speed range	During analysis	Commanded speed is clamped at the speed limit value.	Set the commanded speed within the setting range.

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IMPORTANT

(1) Design the configuration of a system to provide an external protective or safety inter locking circuit for the PCs.

(2) The components on the printed circuit boards will be damaged by static electricity, so avoid handling them directly. If it is necessary to handle them take the following precautions.

(a) Ground your body and the work bench.

(b) Do not touch the conductive areas of the printed circuit board and its electrical parts with non-grounded tools, etc.

Under no circumstances will Mitsubishi Electric be liable or responsible for any consequential damage that may arise as a result of the installation or use of this equipment.

All examples and diagrams shown in this manual are intended only as an aid to understanding the text, not to guarantee operation. Mitsubishi Electric will accept no responsibility for actual use of the product based on these illustrative examples.

Owing to the very great variety in possible applications of this equipment, you must satisfy yourself as to its suitability for your specific application.

Positioning module software package type SW0IVD-AD75P

Operating Manual

MODEL	SW0IVD-AD75P-O-E
MODEL CODE	13JF09
IB(NA)66596-A(9512)MEE	

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