KOGANEI

iB-Move
Teaching Box
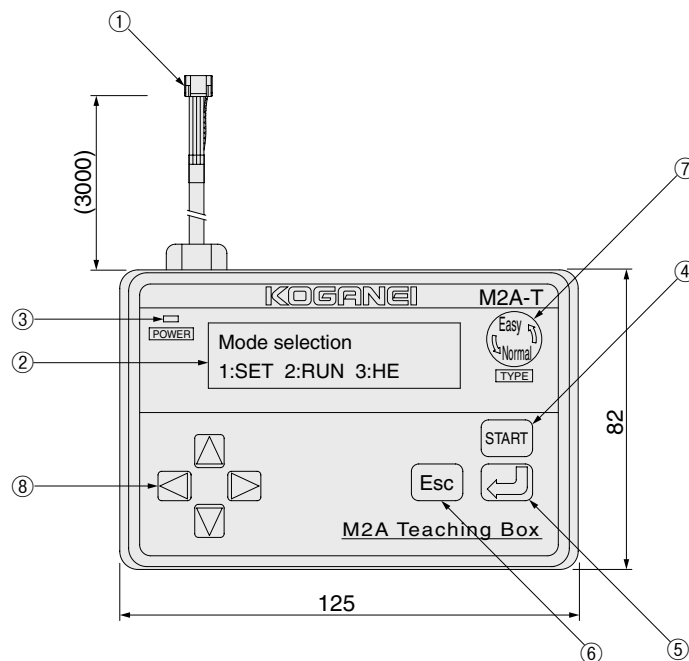## IBM2A-T1

Instruction Manual Ver. 1.0

Contents

1. Outline

Thank you for purchasing the teaching box for Koganei iB-Move. This manual describes the features and how to use the iB-Move teaching box. Be sure to thoroughly read the content of this manual to ensure correct use.

This teaching box is exclusively for the iB-Move controller.

You can also set and initialize parameters and points, and execute point moves and teaching moves using this teaching box.

2. Appearance, names and functions of parts

① RS-485 cable (CN1)

    This cable is connected to the COM connector of the controller M2A-C1-A1.

② LCD display: 16 characters, 2 lines

    Data is displayed in this screen.

③ Power LED indicator

    This LED lights when power is being supplied.

④ Start key

    Press this key to operate the controller M2A-C1-A1.

⑤ Enter key

    Press this key to apply setting data or move to the next screen.

⑥ Escape key

    Press this key to go back to the previous screen.
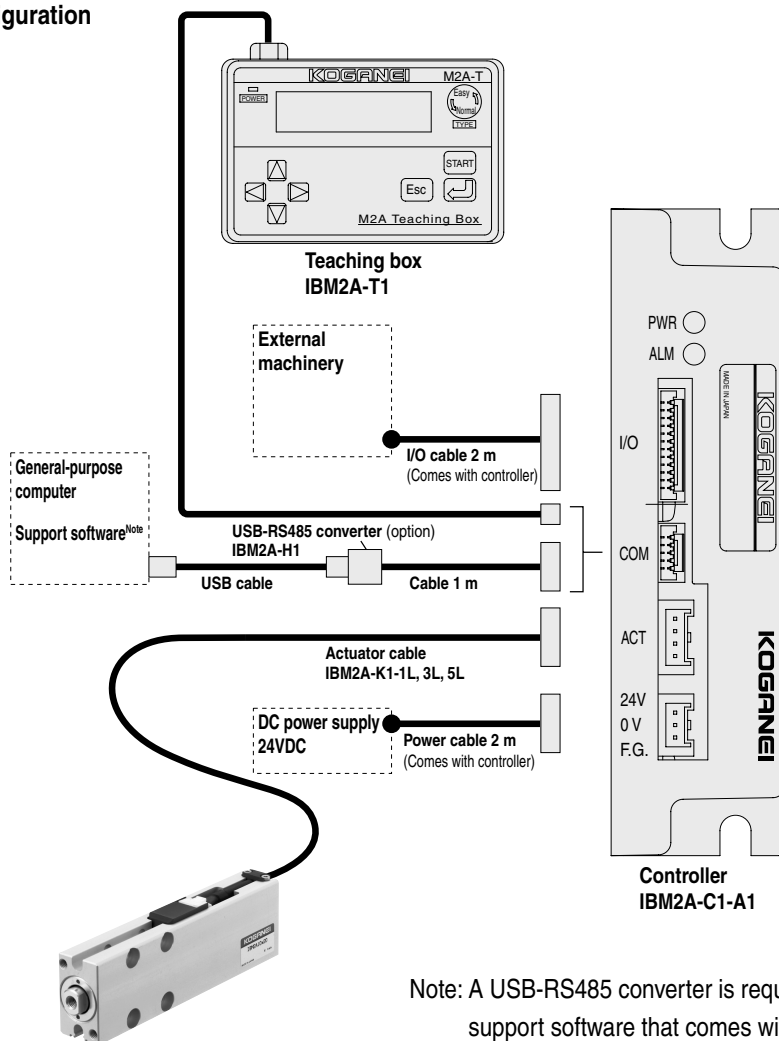
⑦ Type selection key

    This key switches between the Normal and Easy modes.

⑧ Left/right/up/down keys

    Press these keys to move the data cursor displayed on the LCD or change numerical values.
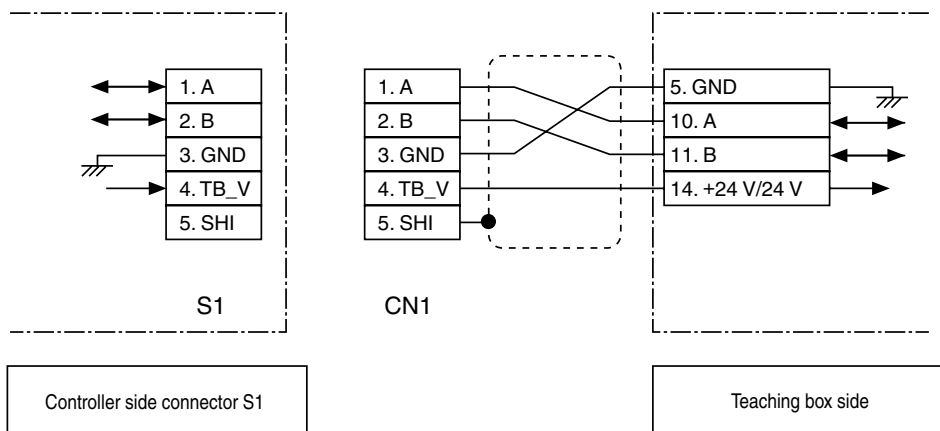
3. Specifications

3-1. System configuration

Teaching box
IBM2A-T1

External machinery

General-purpose computer

Support software[Note]

USB-RS485 converter (option)
IBM2A-H1

USB cable   **Cable 1 m**

I/O cable 2 m
(Comes with controller)

Actuator cable
IBM2A-K1-1L, 3L, 5L

DC power supply
24VDC   **Power cable 2 m**
(Comes with controller)

PWR
ALM
I/O
COM
ACT
24V
0 V
F.G.

Controller
IBM2A-C1-A1

Note: A USB-RS485 converter is required to use the computer support software that comes with the product.

3-2. Specifications

Item	Model	**IBM2A-T1**
Power	Power supply voltage	Supplied from controller
	Consumption current	50 mA max.
Indicators	Setting display	LCD 16 characters x 2 lines
	Power indicators	LED lighted (internal 5V) while power is on
Setting method		Key operations △ : UP ▽ : DOWN ◁ : LEFT ▷ : RIGHT ↵ : ENTER Esc : ESCAPE START : START Easy/Normal : Type selection
Communication protocol		RS-485 compliant
General	Operating temperature	0 to 40℃ [32 to 104°F]
	Operating humidity	35 to 80% RH (Non-condensation)
	Storage temperature	–10 to 65℃ [14 to 149°F]
	Noise resistance	IEC61000-4-4 Power line/communication line 1 KV (Level 2)
	Mass	Main unit: 200 g [7.05 oz]
Applicable controller model		**IBM2A-C1-A1**

3-3. Wiring specifications

● When connected to controller **IBM2A-C1-A1**

1. A		1. A	5. GND
2. B		2. B	10. A
3. GND		3. GND	11. B
4. TB_V		4. TB_V	14. +24 V/24 V
5. SHI		5. SHI	

S1　　　　　CN1

Controller side connector S1

Teaching box side

3-4. Communication parameters

Item	Specifications
Baud rate	230.4 kbps
Stop bit	1
Start bit	1
Parity bit	None
Data bit length	8
Communication protocol	Half-duplex, asynchronous

4. Method of use

4-1. Connecting to the iB-Move controller

・Connect the RS-485 cable (CN1) on the teaching box to the RS-485 connector (S1) on the iB-Move controller. (The power cable, motor cable and I/O cable must be connected to the iB-Move controller in addition to the RS-485 cable. Check cable connections thoroughly.)

4-2. Connecting the power supply

・Next, connect the power supply (24VDC) to the iB-Move controller.
(Power is supplied to the teaching box from the iB-Move controller.)
・If the POWER LED on the teaching box is lighted, this means that power is being supplied normally.

4-3. Operation by the teaching box

・Modes that can be selected at a particular time are displayed on the second row of the display screen.
In example A (Select mode), three modes can be selected,
1: SET 2: RUN 3: HE.
Select the desired mode using the ◁▷ keys.
The selected number flashes.

・If you press the Enter key in screen A, you go down to a lower level of the menu hierarchy.
To return to the previous level of the menu hierarchy, press the Escape key.

・In screen D, input the desired number.
Select the digit by the ◁▷ keys. The selected digit flashes.
Increase or decrease numbers by the △▽ keys.

A

```
Select mode
 1:SET  2:RUN  3:HE
```

B

```
Setting mode
 1:EDIT   2:INIT
```

C

```
Edit mode
 1:POINT  2:PARAM
```

D

```
P*=*,**.*,***,**
PNT No. [ *  *]
```

Caution: When operating the teaching box, do not use I/O custom commands on the controller. If an I/O custom command arrives from the controller while you are operating the teaching box, the teaching box might output an erroneous display. I/O custom commands on the controller can be used even while the teaching box is connected.

5. Method of operation

You can use the teaching box to change and initialize parameters and points, operate the actuator, check the error history and version information, and perform other operations.

For details on parameter settings and errors, refer to the instruction manual for the actuator main unit.

The Easy mode and the Normal mode can be switched by pressing the (Easy/Normal) key.

5-1. Select mode

・In the [Select mode] screen, select one of the following by the left/right key,

1: SET (edit/initialize)

2: RUN (operation/instructed position monitor)

3: Select HE (version check, alarm/error history)

and apply the setting by the Enter key.

Select mode screen

```
Select mode
1:SET  2:RUN  3:HE
```

◁▷

↵

| 1:SET (Settings) | 2:RUN (Operation) | 3:HE (Help) |

To 5-2
P.7

To 5-3
P.12

To 5-4
P.15

①Setting/initialization of points
②Setting/initialization of parameters

⟹ 1:SET

③Trial operation of actuator
④Instructed position monitor

⟹ 2:RUN

⑤Version check
⑥Language selection
⑦Alarm/error history

⟹ 3:HE

5-2. Setting (SET) mode

In this mode, you edit and initialize points and parameters.

・In the [Select mode] screen, select 1:SET by the left/right key. Make 1:SET flash, and apply the setting by the Enter key.

・Next, in the [Setting mode] screen,
  Select 1:EDIT (edit) or 2:INIT (initialize) by the left/right key, and apply the setting by the Enter key.

・From here on, edit and initialize points or parameters according to <5-2-1> Edit mode and <5-2-2> Initialize mode.

Select mode screen

```
Select mode
1:SET  2:RUN  3:HE
```
◁▷

1:SET

Esc

Setting mode screen

```
Setting mode
1:EDIT  2:INIT
```
◁▷

1:EDIT
(Editing)

2:INIT
(Initialization)

To 5-2-1
P.8

To 5-2-2
P.11

5-2-1. Edit (EDIT) mode

In this mode, set points and parameters.

・In the [Setting mode] screen, select 1:EDIT by the left/right key. Make 1:EDIT flash, and apply the setting by the Enter key.

・Next, in the [Edit mode] screen,
Select 1:POINT (point setting) or 2:PARAM (parameter setting) by the left/right key, and apply the setting by the Enter key.

・From here on, set points and parameters according to the <5-2-1-1> Point setting mode (P.9) and <5-2-1-2> Parameter setting mode (P.10).
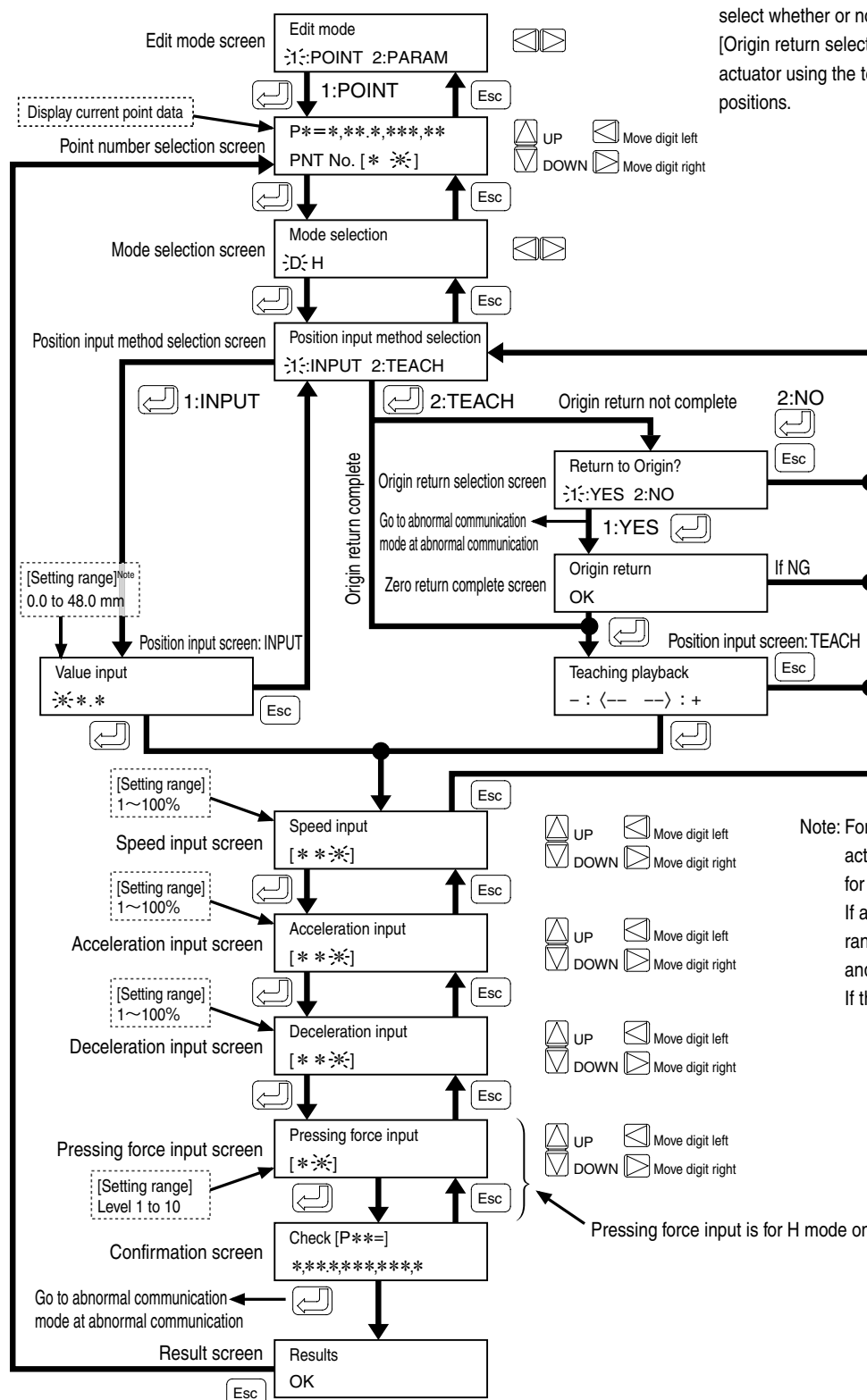
5-2-1-1. Point setting mode

In this mode, you write points.
- In the [Edit mode] screen, select 1:POINT by the left/right key.
- In the [Point number selection] screen, select the point number to set by the up/down key, and apply the setting by the Enter key.
- In the [Position input method selection] screen, select the method for inputting the point position.
- To input the point data:
  1: INPUT   Input the position as a numerical value.
  2: TEACH   Move the actuator by the buttons on the teaching box and read the position data.

- In the [Position input] screen,
  When 1: INPUT is selected, input a numerical value.
  When 2: TEACH is selected and return-to-origin is not completed, select whether or not to execute origin return in the [Origin return selection] screen, and then move the actuator using the teaching box to determine the point positions.

Edit mode screen

Edit mode
1:POINT 2:PARAM

1:POINT   Esc

Display current point data

Point number selection screen

P*=*,**.*,***.**
PNT No. [* ☀]

UP   Move digit left
DOWN   Move digit right

Mode selection screen

Mode selection
D H

Esc

Position input method selection screen

Position input method selection
1:INPUT 2:TEACH

1:INPUT   2:TEACH   Origin return not complete   2:NO

Origin return complete

Origin return selection screen

Return to Origin?
1:YES 2:NO

Esc

Go to abnormal communication mode at abnormal communication

1:YES

Zero return complete screen

Origin return
OK

If NG

[Setting range]^Note
0.0 to 48.0 mm

Position input screen: INPUT

Value input
☀*.*

Esc

Position input screen: TEACH

Teaching playback
– : 〈-- --〉 : +

Esc

[Setting range]
1~100%

Esc

Speed input screen

Speed input
[* * ☀]

UP   Move digit left
DOWN   Move digit right

[Setting range]
1~100%

Esc

Acceleration input screen

Acceleration input
[* * ☀]

UP   Move digit left
DOWN   Move digit right

[Setting range]
1~100%

Esc

Deceleration input screen

Deceleration input
[* * ☀]

UP   Move digit left
DOWN   Move digit right

Pressing force input screen

Pressing force input
[* ☀]

UP   Move digit left
DOWN   Move digit right

[Setting range]
Level 1 to 10

Esc

Pressing force input is for H mode only

Confirmation screen

Check [P**=]
****

Go to abnormal communication mode at abnormal communication
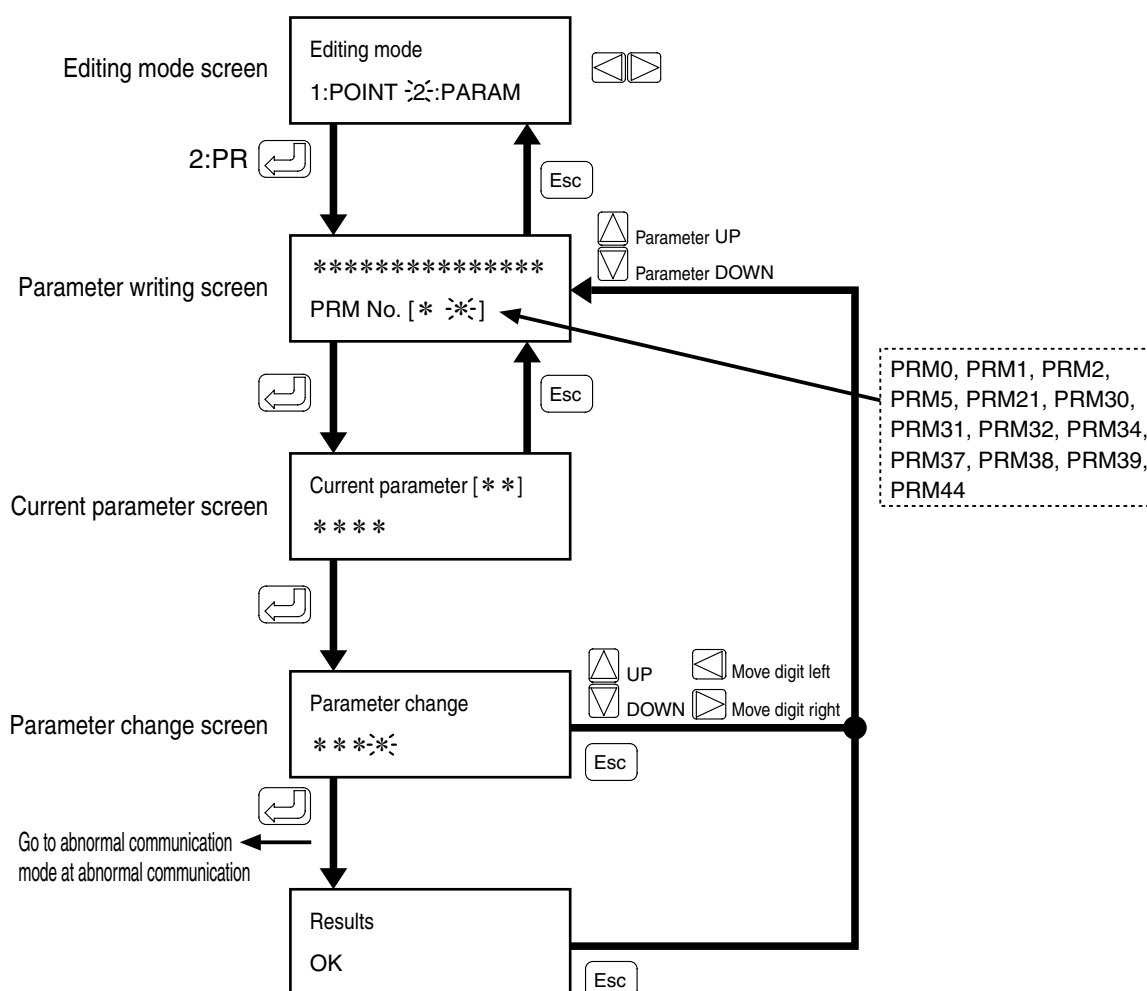
Result screen

Results
OK

Esc

Note: For details on the input ranges of each actuator, refer to the instruction manual for the IBM2A-C1-A1 controller.
If a value that is outside the allowable range is input, the selection is not set and "00.0" is displayed.
If this happens, check the input range.

5-2-1-2. Parameter setting mode
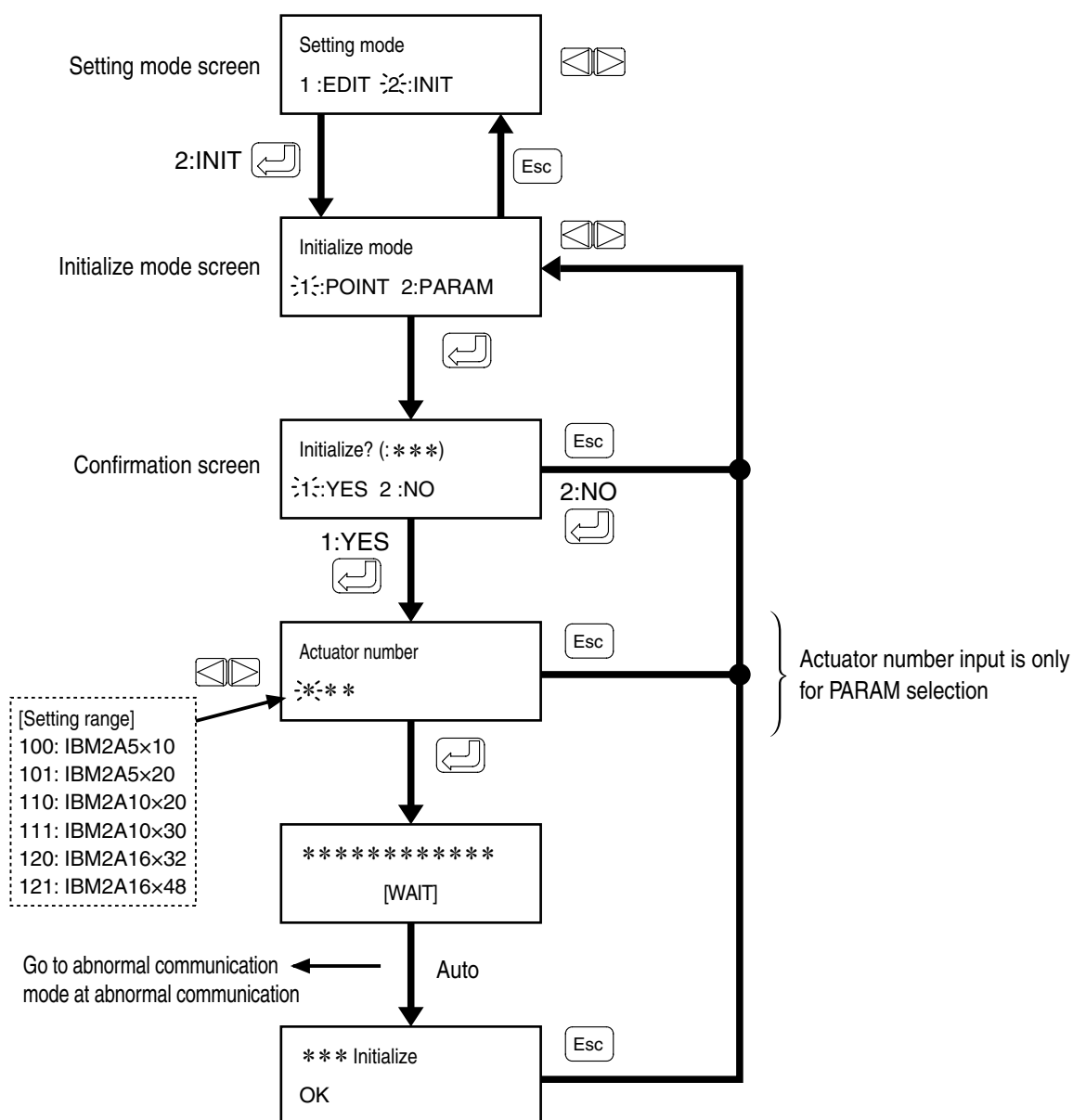
In this mode, you write parameters.

・In the [Editing mode] screen, select 2:PARAM by the left/right key.
・In the [Parameter writing] screen, select the parameter to set by the up/down key, and apply the setting by the Enter key. (Only parameters that can be written are displayed.)
・The current parameters are displayed in the [Current parameter] screen. To continue writing, press the Enter key, and to cancel writing, press the Escape key. The screen returns to the [Parameter writing] screen.
・In the [Change parameter] screen, change the parameters.

    To increment numbers: Up key
    To decrement numbers: Down key
    To move the number digit: Left/right keys

・When you have finished changing the number settings with the up/down key, press the Enter key to write the parameters.
・For details on parameters that can be written, refer to the instruction manual for the controller.

5-2-2. Initialize (INIT) mode

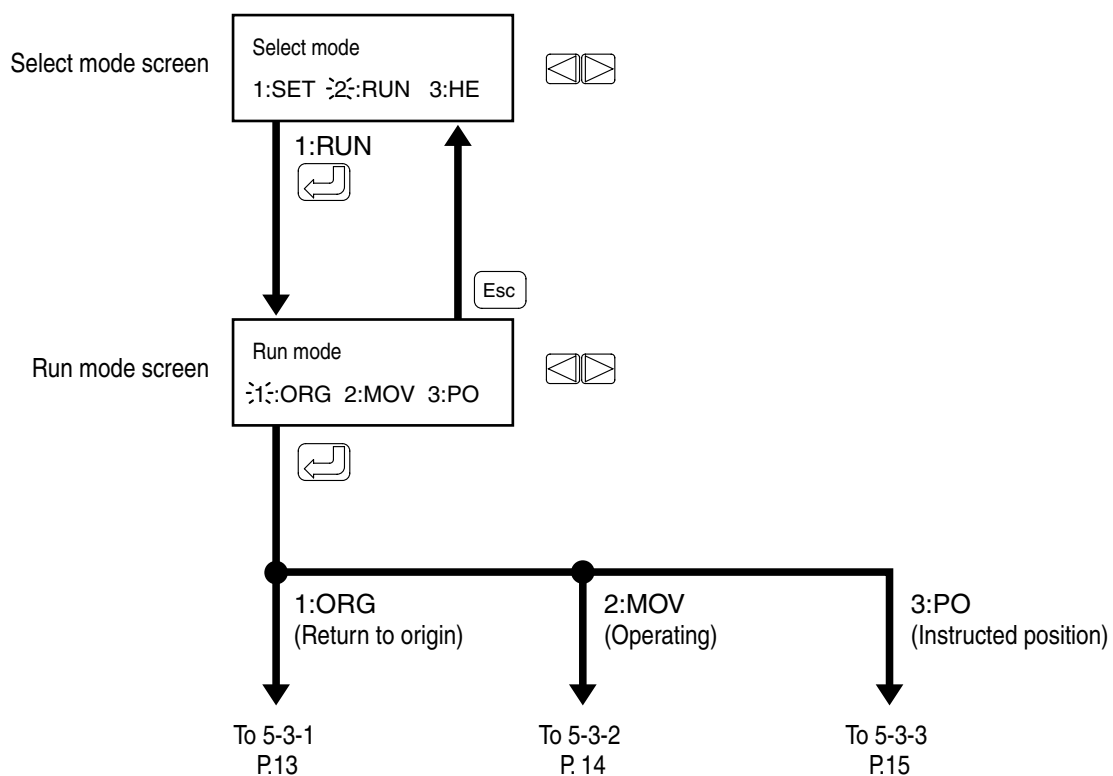In this mode, you initialize the point and parameter data.

・In the [Setting mode] screen, select 2:INIT by the left/right key. Make 2:INIT flash, and apply the setting by the Enter key.

・In the [Initialize mode] screen,
Select 1:POINT (point setting) or 2:PARAM (parameter setting) by the left/right key, and apply the setting by the Enter key.

・In the [Confirmation] screen, be sure to check the data to be initialized before it is initialized.

Setting mode screen

Setting mode
1 :EDIT 2:INIT

2:INIT

Esc

Initialize mode screen

Initialize mode
1:POINT 2:PARAM

Confirmation screen

Initialize? (:∗∗∗)
1:YES 2 :NO

Esc

2:NO

1:YES

Actuator number

∗∗∗

Esc

Actuator number input is only for PARAM selection

[Setting range]
100: IBM2A5×10
101: IBM2A5×20
110: IBM2A10×20
111: IBM2A10×30
120: IBM2A16×32
121: IBM2A16×48

∗∗∗∗∗∗∗∗∗∗∗∗
[WAIT]

Go to abnormal communication
mode at abnormal communication

Auto

∗∗∗ Initialize
OK

Esc

5-3. Operation (RUN) mode

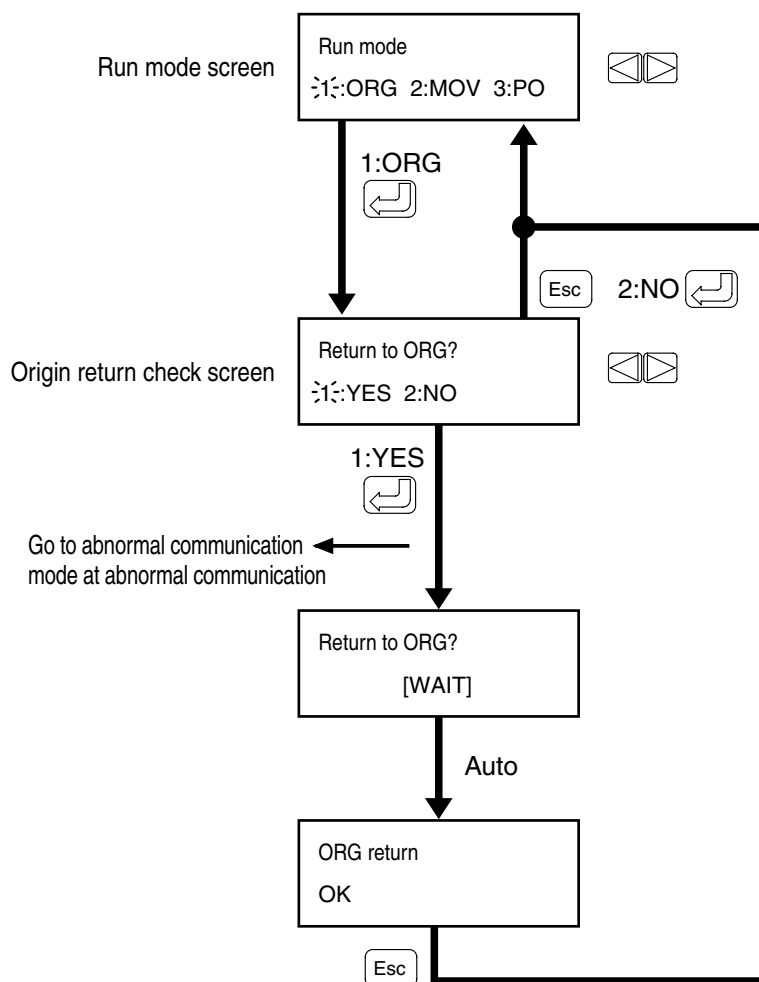In this mode, execute origin return, point operation and checking of current instructed position.

・In the [Select mode] screen, select 2:RUN by the left/right key. Make 2:RUN flash, and apply the setting by the Enter key.

・In the [Run mode] screen, select 1:ORG, 2:MOV or 3:PO by the left/right key.

・From here on, execute origin return, point operation and checking of current instructed position according to <5-3-1>, <5-3-2> and <5-3-3>.

Select mode screen

```
Select mode
1:SET  2:RUN  3:HE
```
◁▷

1:RUN
↵

Esc

Run mode screen

```
Run mode
1:ORG  2:MOV  3:PO
```
◁▷

↵

| 1:ORG | 2:MOV | 3:PO |
| (Return to origin) | (Operating) | (Instructed position) |

To 5-3-1 P.13   To 5-3-2 P. 14   To 5-3-3 P.15

5-3-1. Origin return (ORG) mode

In this mode, you execute origin return.

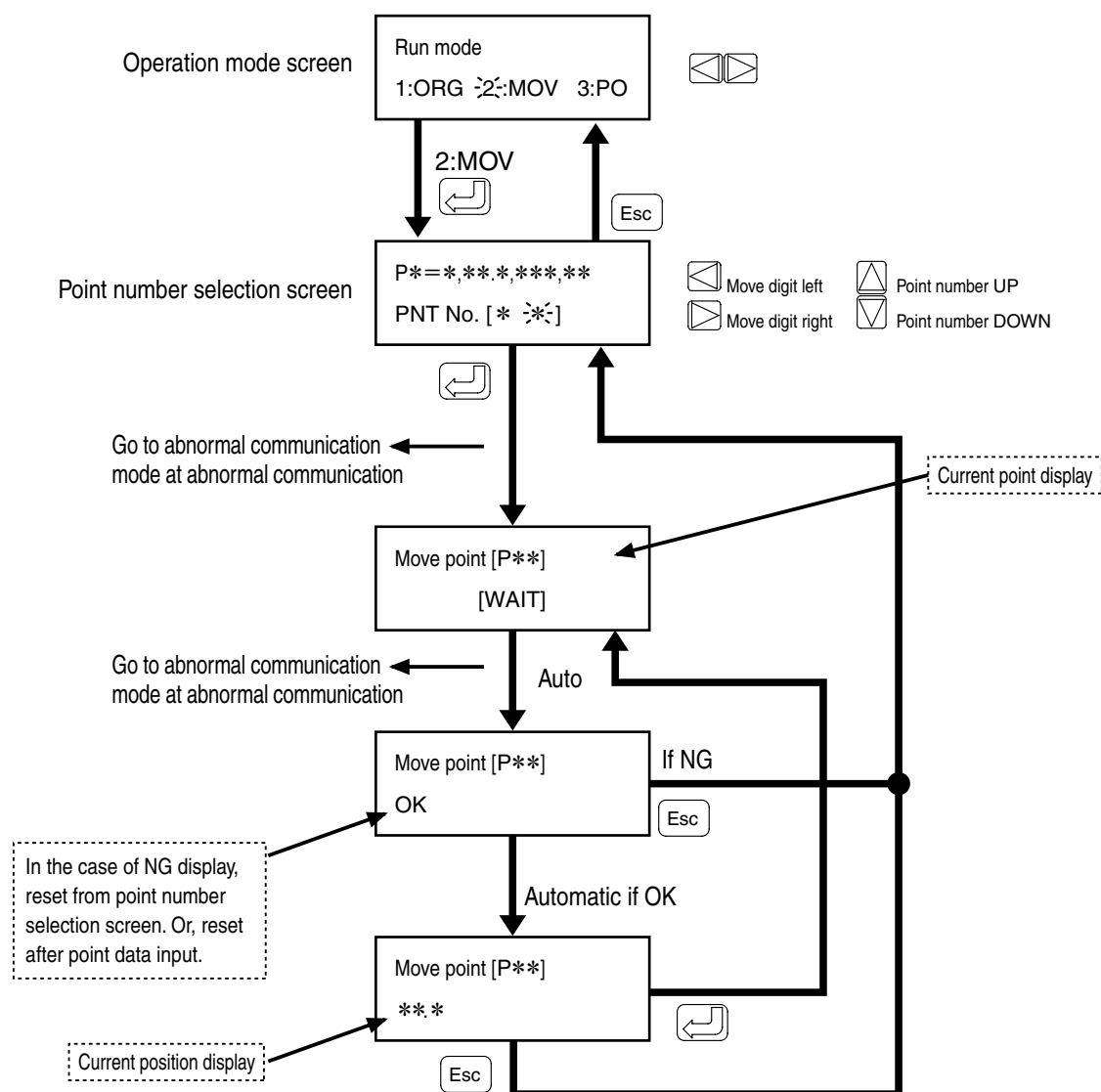・In the [Run mode] screen, select 1:ORG by the left/right key. Make 1:ORG flash, and apply the setting by the Enter key.

・In the Origin return check screen, select whether or not to execute origin return.

- 13 -

5-3-2. Operation (MOV) mode
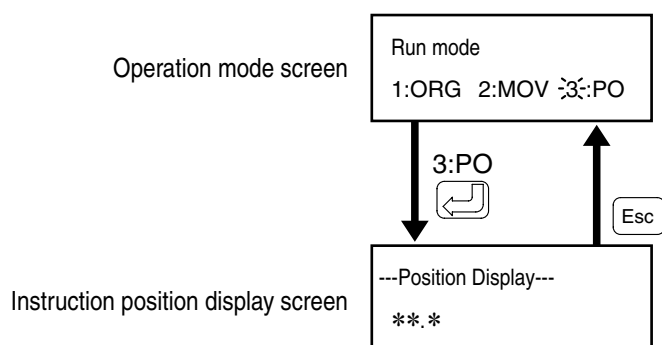
In this mode, you execute point operation.

・In the [Operation mode screen], select 2:MOV by the left/right key. Make 2:MOV flash, and apply the setting by the Enter key.

・In the Point number selection screen, select the move destination point.

5-3-3. Current instructed position check (PO) mode

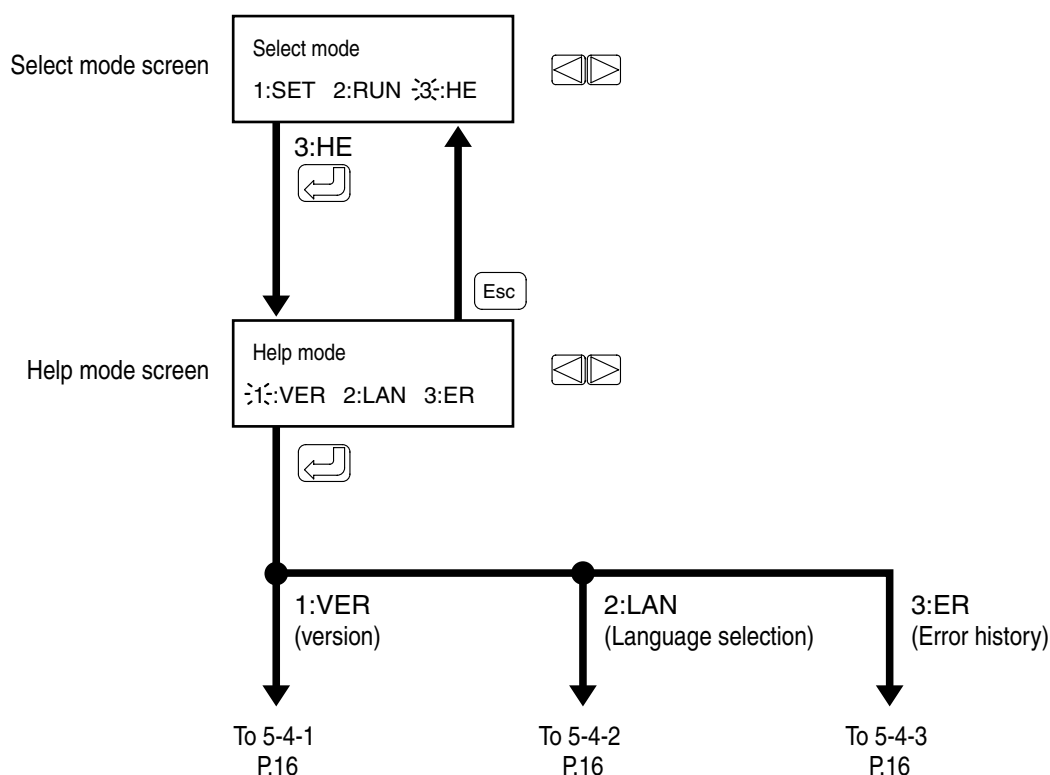In this mode, you display the current instructed position on the screen.

・In the [Operation mode screen], select 3:PO by the left/right key. Make 3:PO flash, and apply the setting by the Enter key. The current instructed position confirmation is displayed.

・Return to the [Operation mode screen] by pressing the Escape key.

Operation mode screen

```
Run mode
1:ORG  2:MOV  3:PO
```

3:PO ⏎

Esc

Instruction position display screen

```
---Position Display---
**.*
```

5-4. Help (HE) mode

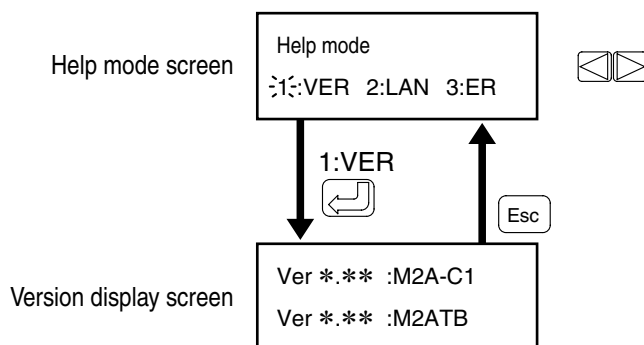In this mode, you can check the version of the currently connected controller and alarms, and do other operations.

・In the [Select mode screen], select 3:HE by the left/right key. Make 3:HE flash, and apply the setting by the Enter key.

・In the [Help mode screen], select 1:VER, 2:LAN or 3:ER by the left/right key.

・From here on, check the control version and alarms according to <5-4-1>, <5-4-2> and <5-4-3>.

Select mode screen

```
Select mode
1:SET  2:RUN  3:HE
```

◁▷

3:HE ⏎

Esc

Help mode screen

```
Help mode
1:VER  2:LAN  3:ER
```

◁▷

⏎

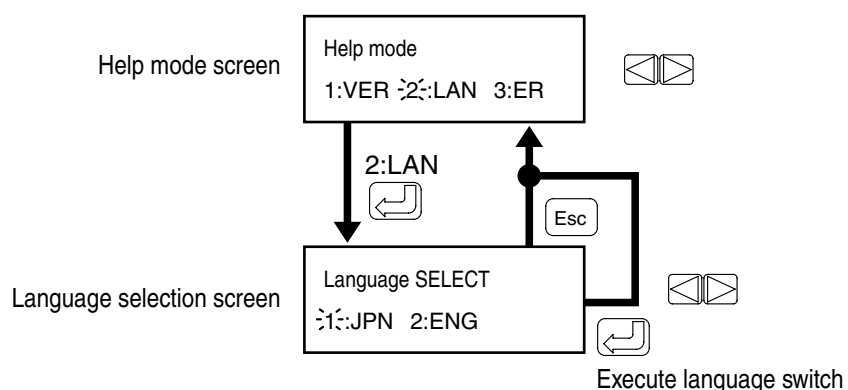| 1:VER (version) | 2:LAN (Language selection) | 3:ER (Error history) |

To 5-4-1 P.16

To 5-4-2 P.16

To 5-4-3 P.16

5-4-1. Version information (VER) mode

・In the [Help mode] screen, select 1:VER by the left/right key. Make 1:VER flash, and apply the setting by the Enter key.
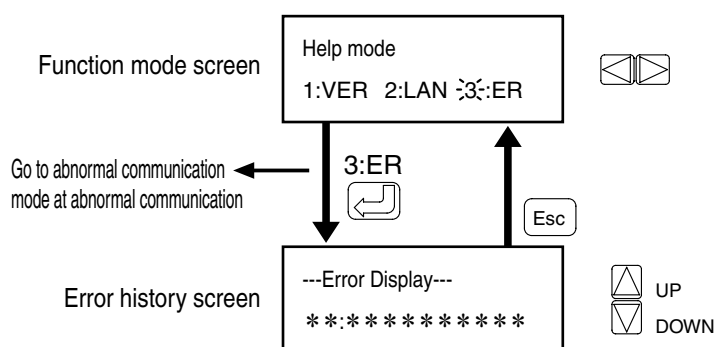The controller version is displayed.

Help mode screen

```
Help mode
:1: VER  2:LAN  3:ER
```
◁▷

1:VER
↵

Esc

Version display screen

```
Ver *.** :M2A-C1
Ver *.** :M2ATB
```

5-4-2. Language selection (LAN) mode

・In the [Help mode] screen, select 2:LAN by the left/right key. Make 2:LAN flash, and apply the setting by the Enter
key.
Select the language with the left/right key, and press the Enter key.
1: JPN (Japanese)   2: ENG (English)

Help mode screen

```
Help mode
1:VER  :2: LAN  3:ER
```
◁▷

2:LAN
↵

Esc

Language selection screen

```
Language SELECT
:1: JPN  2:ENG
```
◁▷

↵

Execute language switch

5-4-3. Alarm/error history (ER) mode

・In the [Help mode] screen, select 3:ER by the left/right key. Make 3:ER flash, and apply the setting by the Enter key.
The error history is displayed in the [Error history] screen.
You can view a history of the past 16 errors using the up/down key.

Function mode screen

```
Help mode
1:VER  2:LAN  :3: ER
```
◁▷

Go to abnormal communication ← 3:ER
mode at abnormal communication ↵

Esc

Error history screen

```
---Error Display---
**:**********
```
△ UP
▽ DOWN

5-5. Easy mode

In this mode, you can easily set the point data and execute operations.

You can also acquire the current instructed position.

・In the [Easy mode] screen, select 1:EDIT by the left/right key. Make 1:EDIT flash, and apply the setting by the Enter key.

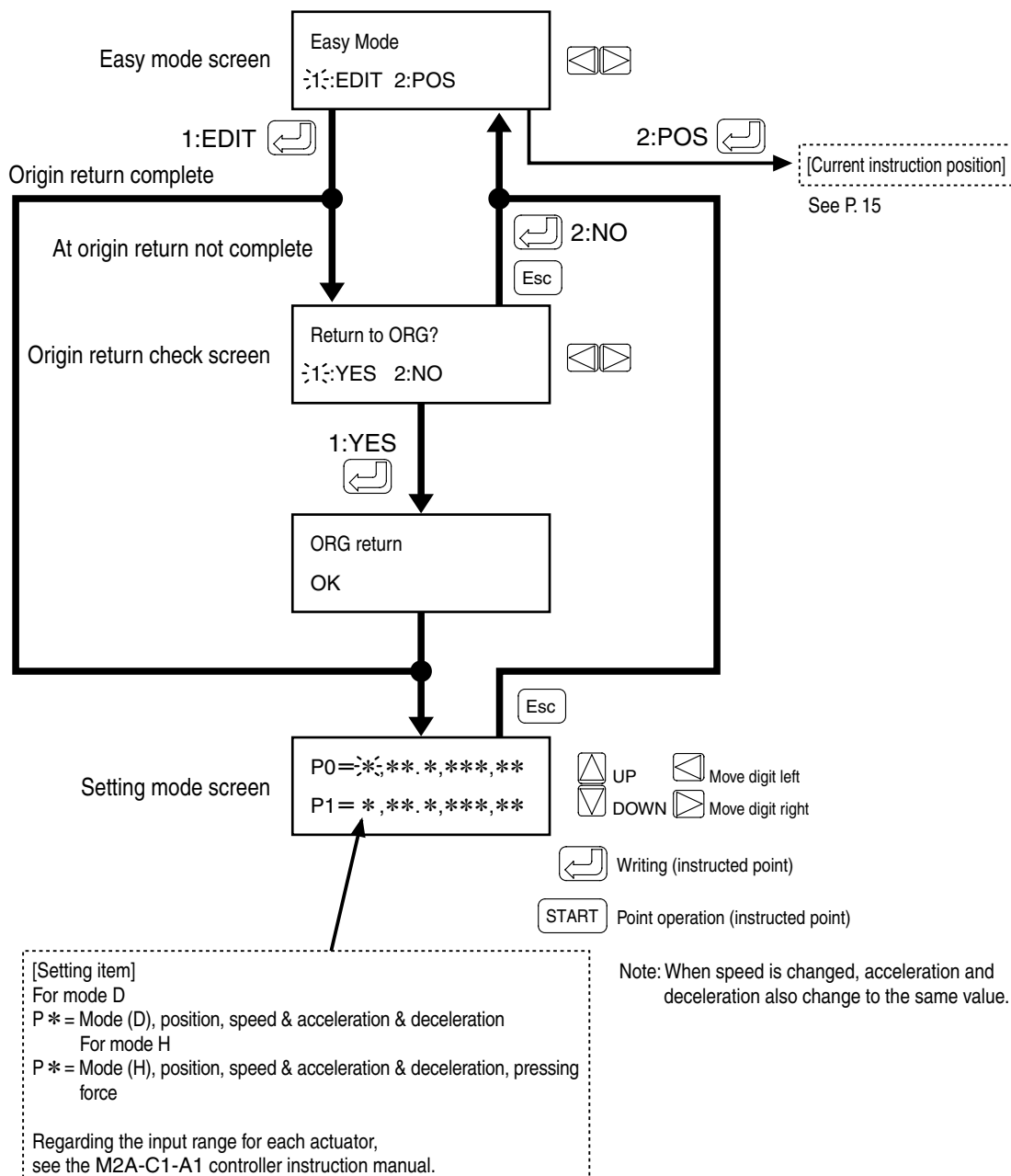When return-to-origin is not completed, execute checking of origin return.

After the origin return completes, the screen moves to the [Setting mode] screen.

・In the [Setting mode] screen, set the mode, instructed position and speed (acceleration/deceleration/pressing force). Select these items with the up/down/left/right keys, and apply the settings by the Enter key to write the data.

Execute specified point operation by pressing the START key.

・To acquire the current instructed position, select 2:POS in the [Easy mode] screen with the left/right key. Make 2:POS flash, and apply the setting by the Enter key.
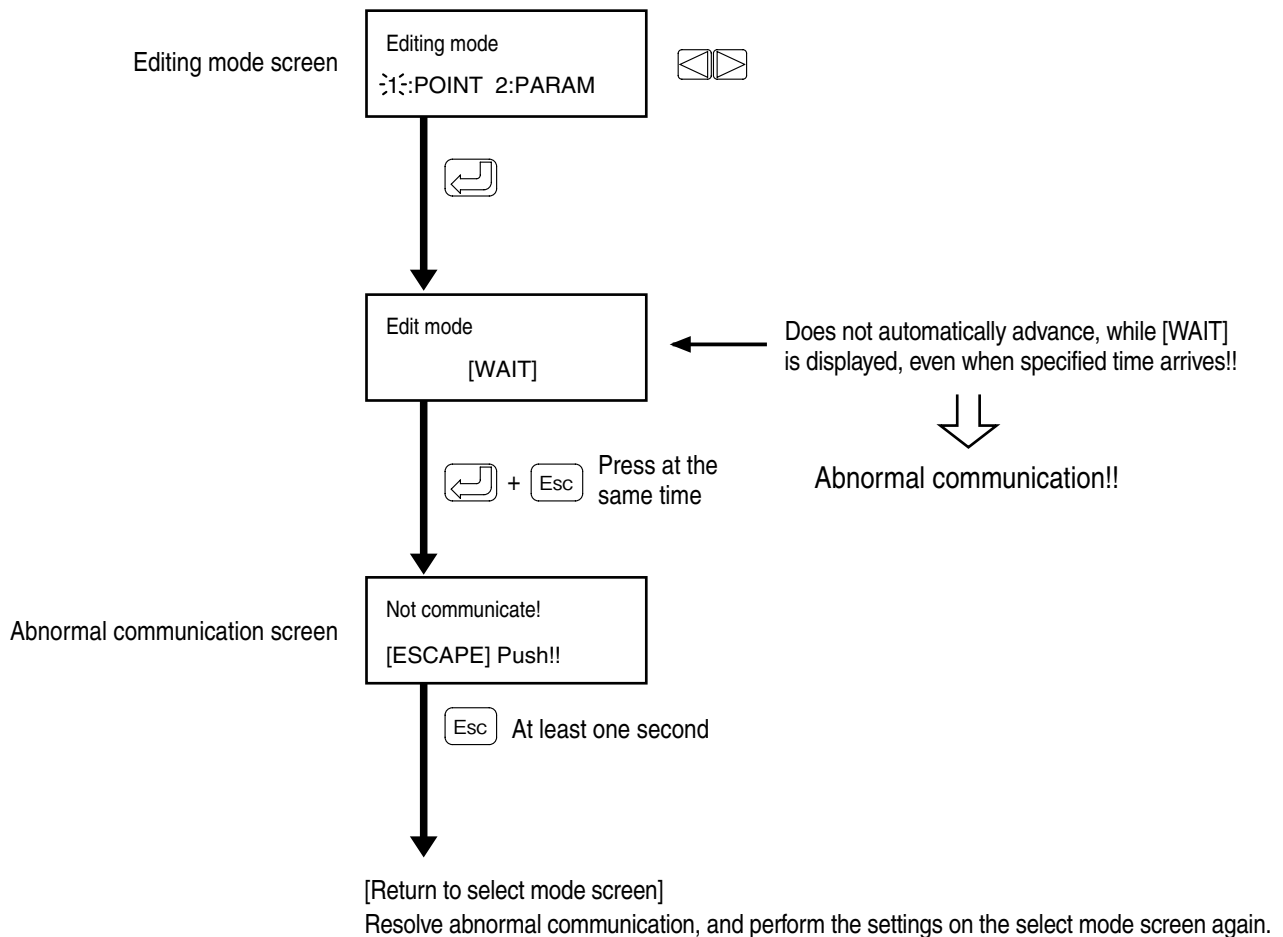
For details on operations from here on, see P. 15.

Easy mode screen

Easy Mode
1:EDIT 2:POS

1:EDIT ⏎

2:POS ⏎ → [Current instruction position]
See P. 15

Origin return complete

At origin return not complete

⏎ 2:NO
Esc

Origin return check screen

Return to ORG?
1:YES 2:NO

1:YES ⏎

ORG return
OK

Esc

Setting mode screen

P0＝ *,**.*,***,**
P1＝ *,**.*,***,**

△ UP   ◁ Move digit left
▽ DOWN ▷ Move digit right

⏎ Writing (instructed point)

START Point operation (instructed point)

[Setting item]
For mode D
P ＊ = Mode (D), position, speed & acceleration & deceleration
        For mode H
P ＊ = Mode (H), position, speed & acceleration & deceleration, pressing
        force

Regarding the input range for each actuator,
see the M2A-C1-A1 controller instruction manual.

Note: When speed is changed, acceleration and
       deceleration also change to the same value.

6. Communication error mode

In this mode, you execute communication while [WAIT] is displayed on the second row of the display screen. If [WAIT] continues to be displayed for some reason or another even though the specified time is reached, or when the display in the display screen is not the appropriate display, a communication error has occurred. (Probable causes include a severed communication cable and no response returned from the controller.)
As shown in the example below, return to the [Select mode screen], and check the communication cable or actuator.

Example

Editing mode screen

```
Editing mode
:1:POINT  2:PARAM
```
◁▷

↵

```
Edit mode
        [WAIT]
```
← Does not automatically advance, while [WAIT] is displayed, even when specified time arrives!!

⇩

Abnormal communication!!

↵ + Esc   Press at the same time

Abnormal communication screen

```
Not communicate!
[ESCAPE] Push!!
```

Esc   At least one second

[Return to select mode screen]
Resolve abnormal communication, and perform the settings on the select mode screen again.

Note: [WAIT] is displayed even during origin return or other movement. If you attempt to press the Enter key and the Escape key simultaneously in this state, the display will change to the [Communication error] screen regardless of whether or not operation is normal.

If parts of this document are unclear or you have technical questions, contact the following:

<<Inquiries>>

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iB-Move
Teaching Box
IBM2A-T1

Instruction Manual

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