

KOGANEI

ELEWAVE SERIES

TEACHING BOX

EW2TB

(FOR EW2C-H-NP、EW2C-H-PN、EW2C-H-CC)

OWNER'S MANUAL Ver. 2.0

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Safety Precautions

For product handling and precautions, refer to "Safety Precautions" and "Handling Instructions and General Precautions" on the website or catalog before using.

1. Overview

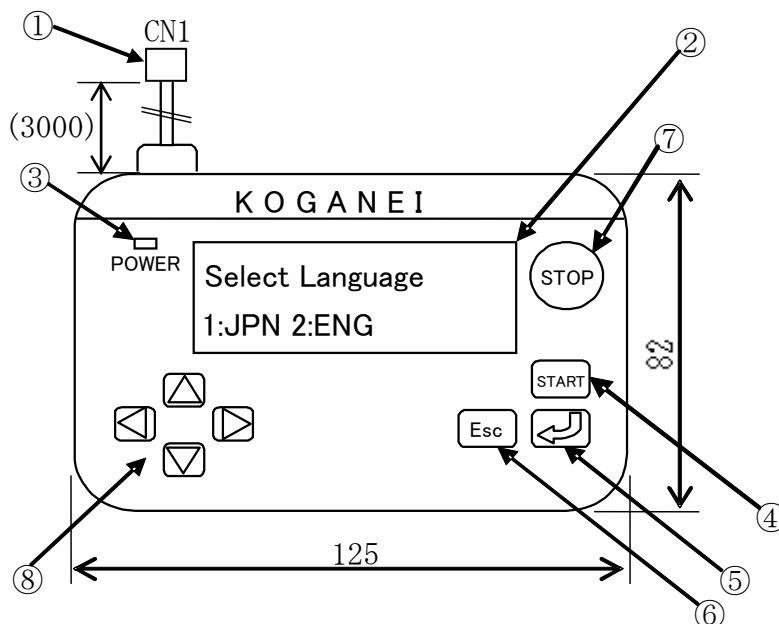
Thank you for purchasing Koganei's Elewave Series Teaching Box.

This manual describes the unit's features and usage. Please read it carefully before using the unit.

This unit is a dedicated operation box for Elewave Series units (for EW2C-H-NP , EW2C-H-PN , EW2C-H-CC).

It enables the setting and initialization of parameters/points as well as point movement/teaching movement.

2. Appearance and Functions



① RS485 cable (CN1)

Connect to the S1 connector of an Elewave Series controller.

② LCD (liquid crystal display): 16 characters × 2 lines

Data is displayed on this screen.

③ LED power indicator

LED lights up when power is on.

④:Start key, ⑤:Enter key, ⑥:Escape key, ⑦:Stop key, ⑧:Up,Down,Left,Right keys

The above-mentioned keys are respectively used for start, confirmation, cursor movement/number change, stop, and return of data displayed on the LCD.

3. System Configuration and Wiring Specifications

3-1. System Configuration

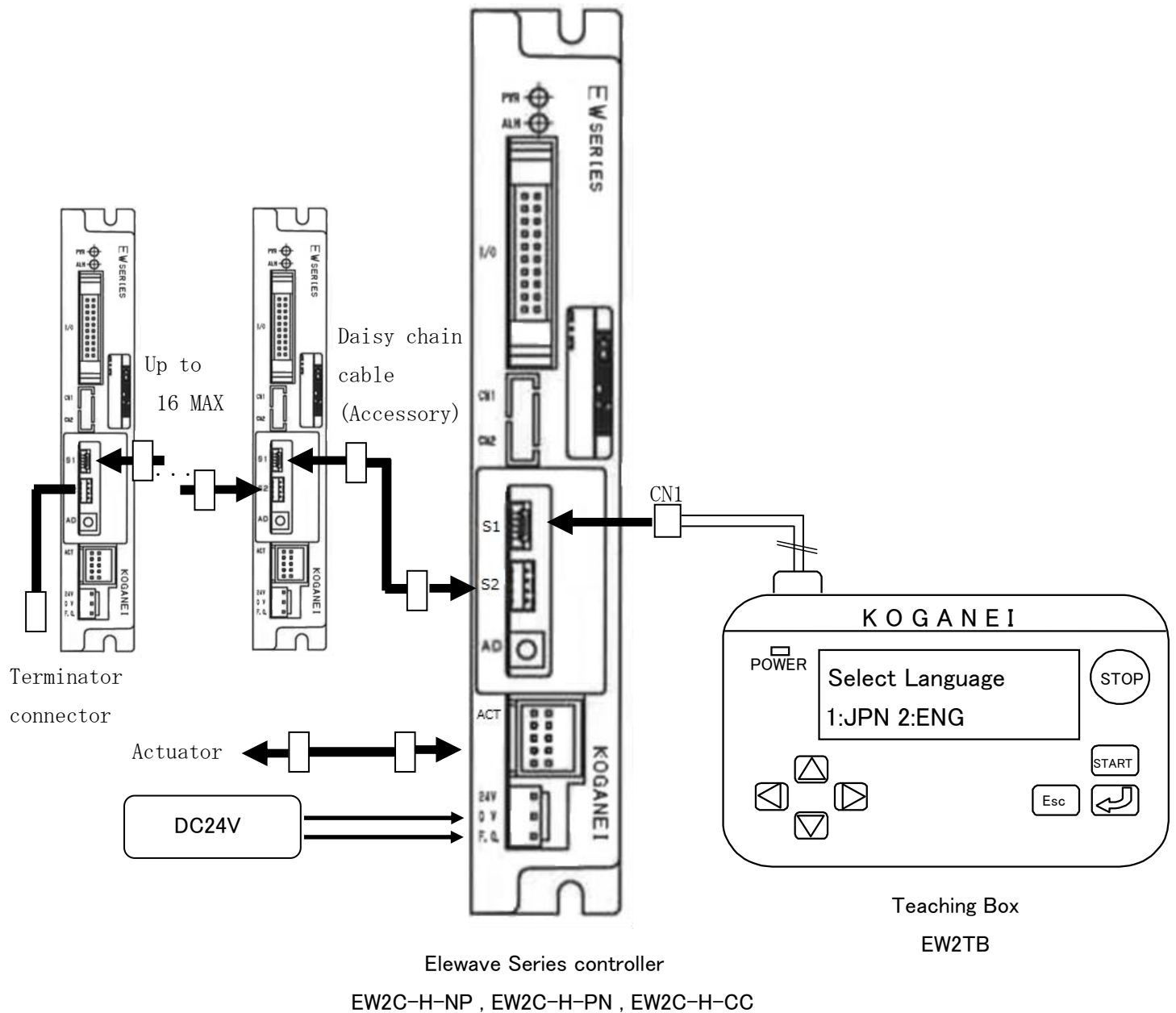
Connect the teaching box CN1 connector to the controller S1 connector.

The connection between the teaching box and the controller is normally one-to-one, but up to 16 controllers can be daisy chained using the daisy chain cable accessory.

When using a daisy chain connection, first connect the teaching box and the controller one-to-one, and then specify a controller number for the controller.

Make sure that no two controllers have the same controller number.

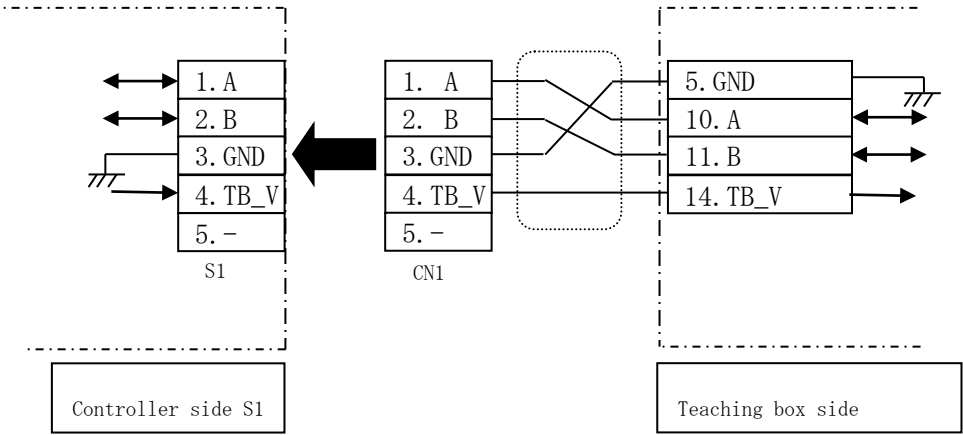
Note : With a daisy chain connection, proper data communication will not be possible if multiple controllers have the same controller number.



3-2. Specifications

Model		EW2TB
Item		
Power	Power supply voltage	Supplied from controller
	Consumption current	50 mA MAX
Indicators	Setting display	LCD 16 characters x 2 lines
	Power indicators	LED lit while power is on
Setting method		Key operations \triangle :UP ∇ :DOWN \triangleleft :LEFT \triangleright :RIGHT $\boxed{\curvearrowright}$:ENTER $\boxed{\text{Esc}}$:ESCAPE $\boxed{\text{START}}$:START $\boxed{\text{STOP}}$:STOP
Communication protocol		RS485 compliant
General	Operating temperature	0 to 40°C
	Operating humidity	35 to 80% RH (Non-condensation)
	Storage temperature	-10 to 65°C
	Noise resistance	IEC61000-4-4 Power line/communication line 1 KV (Level 2)
	Mass	Main unit 200 g
Applicable controller model		EW2C-H-NP , EW2C-H-PN , EW2C-H-CC

3-3. Wiring specifications



3-4. Communication parameters

Item	Specifications
Baud rate	115.2kbps
Stop bit	1
Start bit	1
Parity bit	Odd parity(ODD)
Data bit length	8
Communication protocol	Half-duplex, asynchronous

4. Using the Unit

4-1. Connecting to the Elewave Series Controller

Connect the RS485 cable (CN1) of the teaching box to the RS485 connector (S1) of the Elewave Series controller. In addition to the RS485 cable, the Elewave Series controller also requires connection of a power cable, motor cable, and I/O cable (or CC-Link connector) . Check to make sure these are connected.

4-2. Connecting the Power Supply

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


4-3. Control by the Teaching Box


- The second line of the screen will show the modes you can select at the moment.

In example A [Select mode], the modes you can select are [1:SET], [2:RUN], and [3:HE].


Select a mode using the   keys.



The selected digit will start blinking.

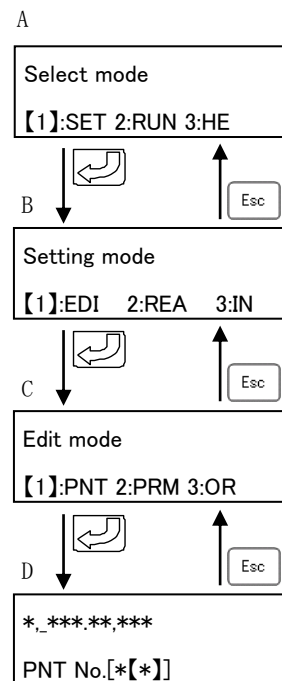
- Pressing the enter key  in the screen A goes deeper into the screen hierarchy.

To return one level higher, press the escape key  .

- Enter a number in screen D.

Select a digit with the   keys. The selected digit will start blinking.

Use the   keys to increase/decrease the number.

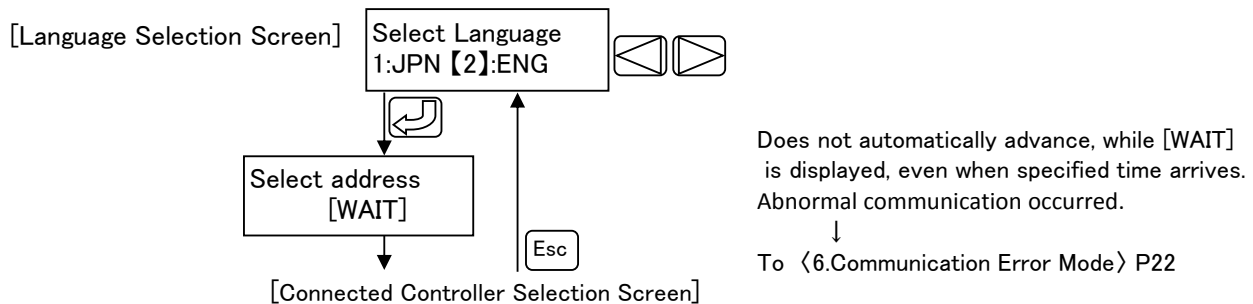


5. Operations

Operations can be performed to modify and initialize point data and parameter data, to operate an electric hand, to check the alarm/error monitor, alarm/error history, and version, etc. For details about point contents, parameter contents, alarm, errors, etc., refer to the Electric Hand Controller Function Specifications and Owner's Manual.

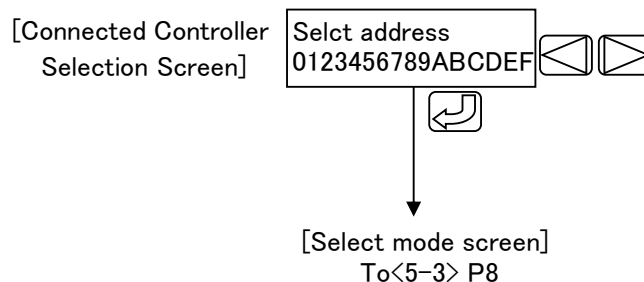
5-1. Language Selection Screen

Turning on power displays the [Language Selection] screen. Use the left and right keys to select 1:JPN (Japanese) or 2:ENG (English) and then press the Enter key to register your selection.



5-2. Connected Controller Selection Screen

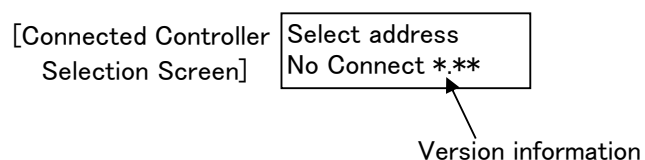
- After you select a language, the [Connected controller selection] screen will appear and connected RS485 address of the controllers will be acquired automatically.
- Only connected RS485 address will be displayed on the [Connected controller selection] screen.
- Use the left and right keys to select the number of the controller whose settings you want to configure, and then press the Enter key.
- After you select a controller, the [Select mode] screen appears.



Note: If the desired RS485 address is not displayed, it could mean that there is a problem with the controller itself. Try turning controller power off and then back on again.

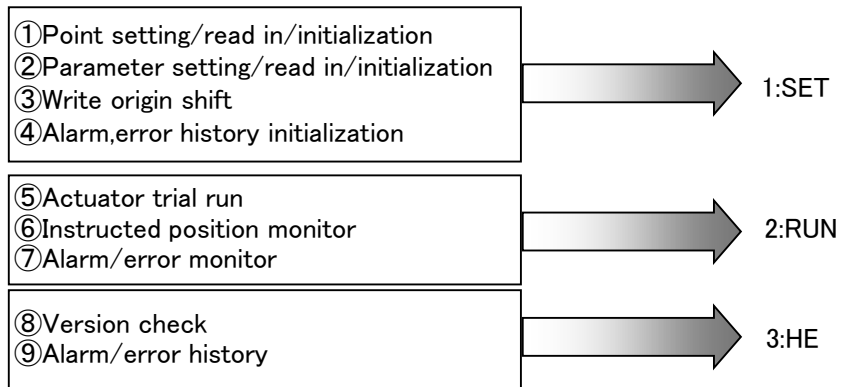
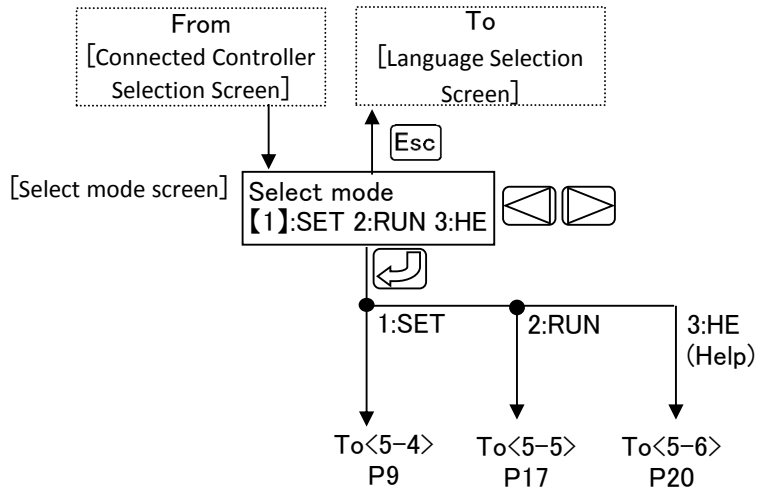
Note: With a daisy chain connection, proper data communication will not be possible if multiple controllers have the same RS485 address.

- When there is not a connected controller, a version of teaching box will be displayed.



5-3.Select Mode

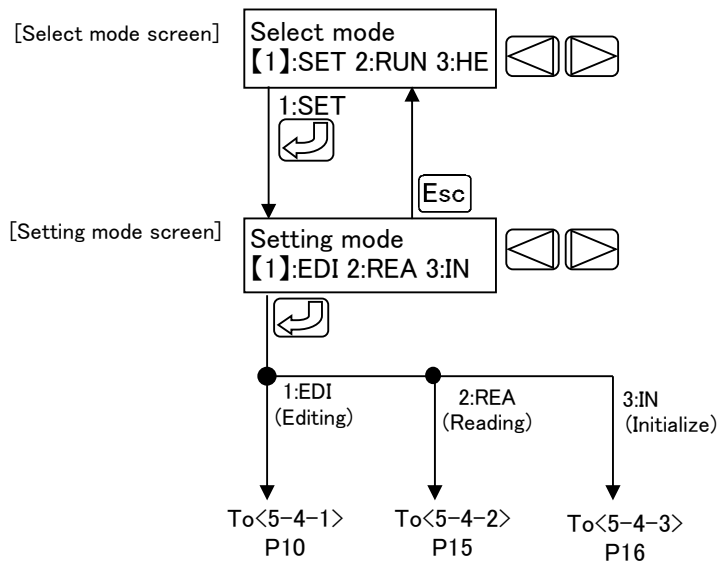
- On the [Select mode] screen, use the left and right keys to select 1:SET (edit/read in/initialization) or 2:RUN (move point/alarm,error monitor), or 3:HE (version check/alarm,error history) and then press the Enter key to register your selection.



5-4. Setting (SET) Mode

This mode is for performing editing (points, parameters, origin shift) and reading (points, parameters) and initialization (points, parameters, alarm/error history).

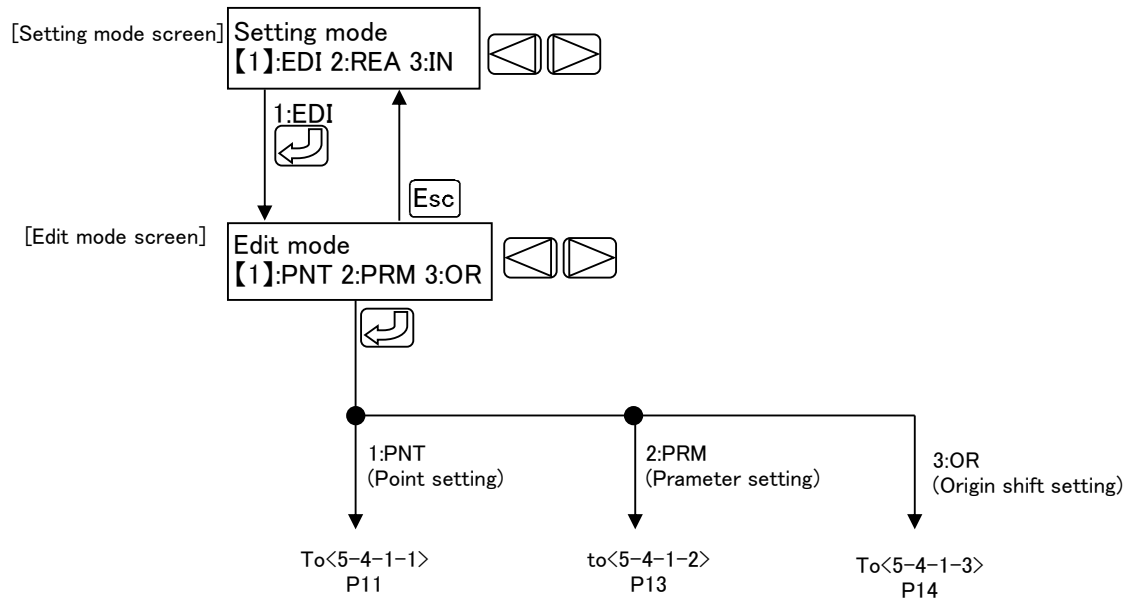
- On the [Select mode] screen, use the left and right keys to select 1:SET. While 1:SET flash is flashing press the Enter key to apply your selection.
- Next, on the [Setting mode] screen, use the left and right keys to select 1:EDI (Edit) , 2:REA (Reading), or 3:IN (Initialize) and then press the Enter key to apply your selection.
- From here on, perform editing, reading, and initialization in accordance with <5-4-1> Edit mode, <5-4-2>reading mode, and <5-4-3> Initialize mode.



5-4-1.Edit (EDI) mode

Use the edit mode to configure points settings and parameters and origin shift.

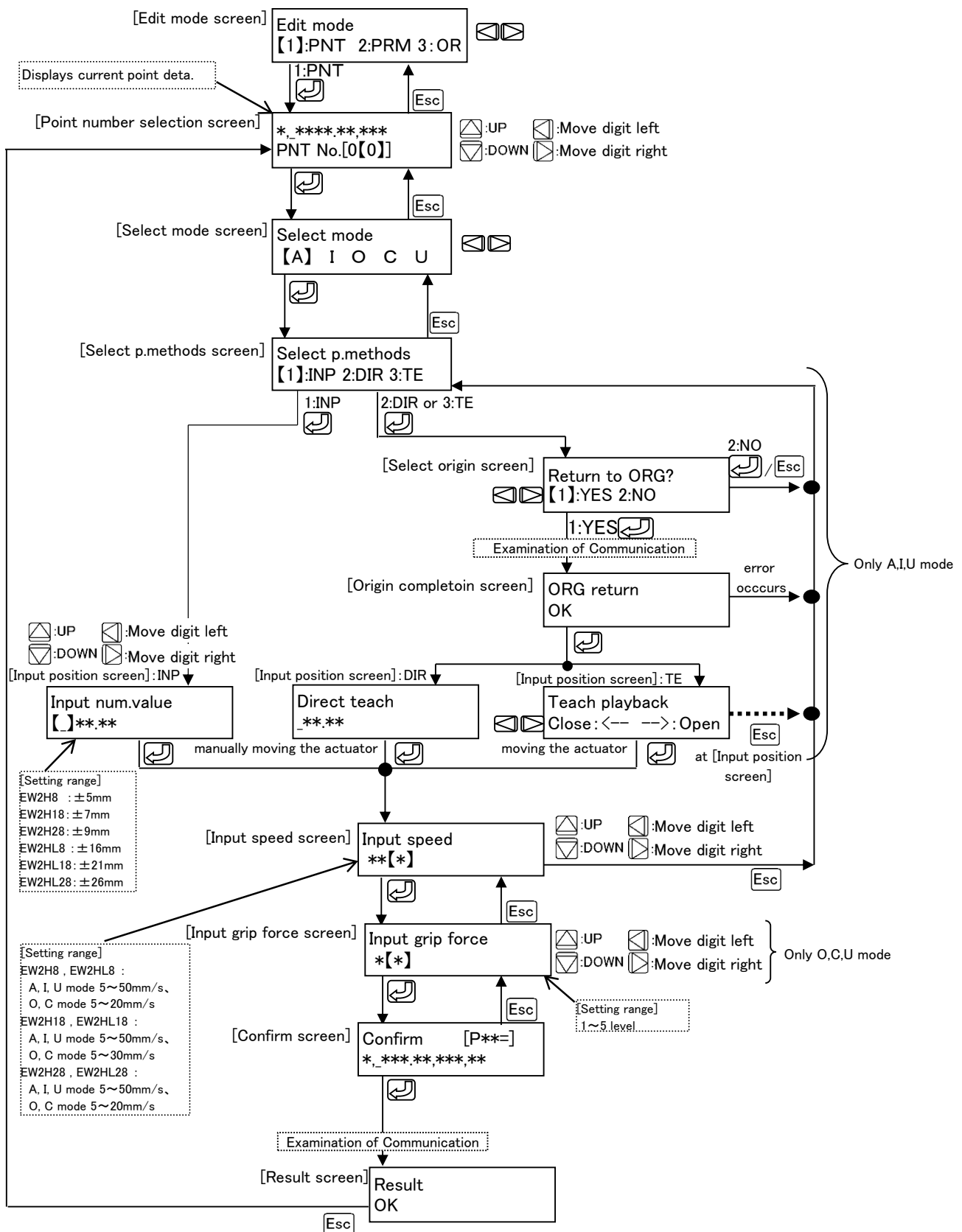
- On the [Setting mode] screen, use the left and right keys to select 1:EDI.
While 1:EDI is flashing press the Enter key to apply your selection.
- Next, on the [Edit mode] screen, use the left and right keys to select 1:PNT (Points settings) or 2:PRM (Parameter settings) or 3:OR (Origin shift settings), and then press the Enter key to apply your selection.
- From here on, configure point, parameter, and origin shift settings in accordance with <5-4-1-1> Point setting mode and <5-4-1-2> Parameter setting mode and <5-4-1-3> origin shift setting mode.



5-4-1-1.Point (PNT) setting mode

Use this mode to write points. As for its details, please refer to Page12.

- On the [Edit mode] screen, use the left and right keys to select 1:PNT.
While 1:PNT is flashing press the Enter key to apply your selection.
- On the [Point number selection] screen, use the up and down keys to select the point number you want to set, and then press the Enter key to apply your selection.
- On the [Select mode] screen, select the mode.
"Electric Hand Flat Type"
 - A: Positioning operation (absolute position)
 - I: Positioning operation (relative position)
 - O:Gripping operation (opening)
 - C: Gripping operation (closing)
 - U: Gripping operation with acceleration/deceleration movement
- On the [Select p.methods] screen, select the piont setting methods.
Point setting methods include [1:INP] for direct input of position, [2:DIR] for input of position data by manually moving the actuator, and [3:TE] for input of position data by moving the actuator using the teaching box button.

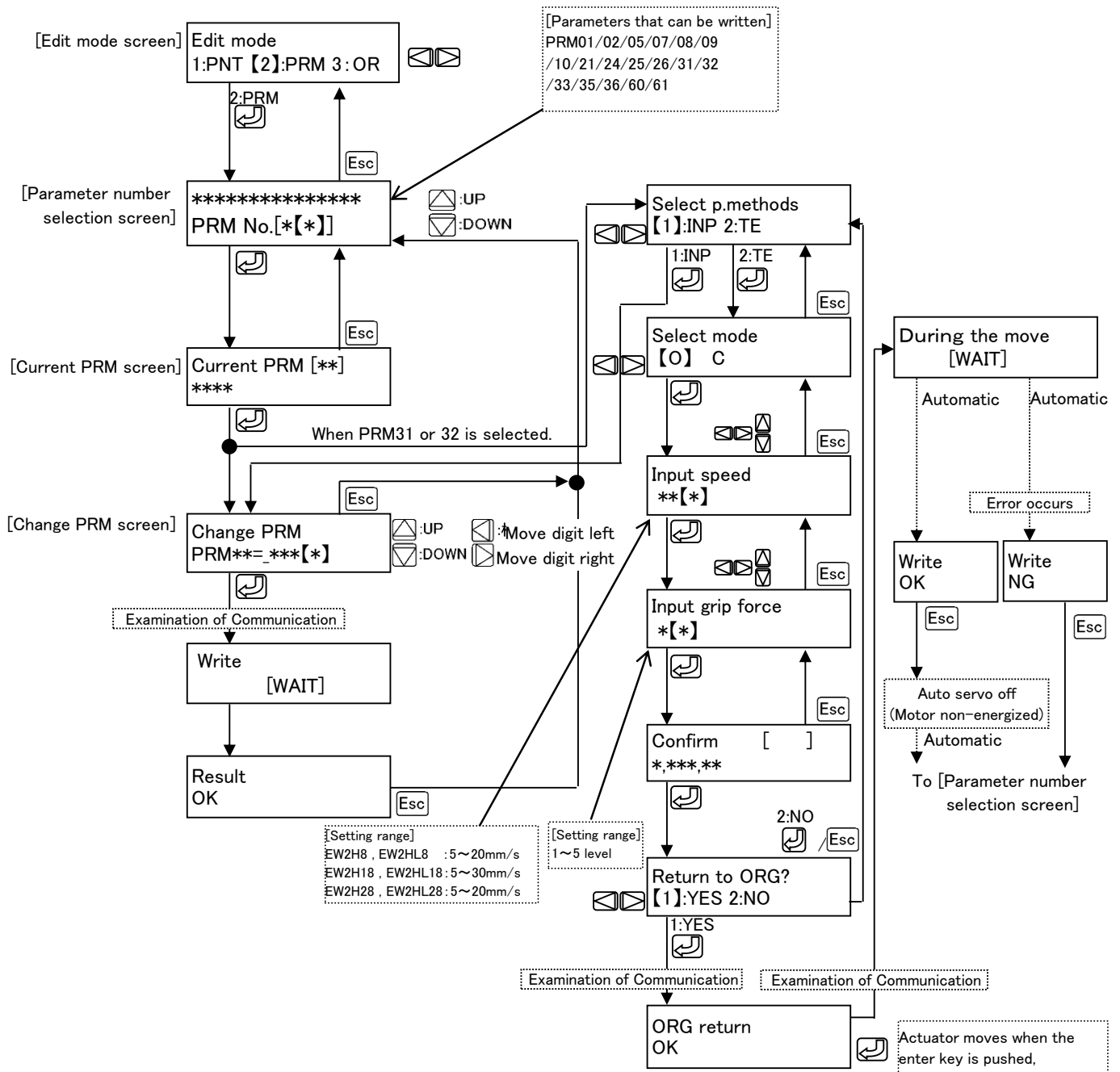


5-4-1-2.Parameter (PRM) setting mode

Use this mode to write parameters.

The input range of each parameter refer the electric hand controller Owner's Manual for details.

- On the [Edit mode] screen, use the left and right keys to select 2:PRM. While 2:PRM is flashing press the Enter key to apply your selection.
- On the [Parameter number selection] screen, use the up and down keys to select the parameter number you want to set, and then press the Enter key to apply your selection. (Only parameters that can be written are displayed.)
- The current parameters are displayed on the [Current PRM] screen. To continue writing, press the Enter key. To cancel writing, press the Escape key. The screen returns to the [Parameter number selection] screen.
- On the [Change PRM] screen, change the parameters.
- After configuring settings, press the Enter key to apply them. In response to the confirmation screen that appears, press the Enter key to write the data.

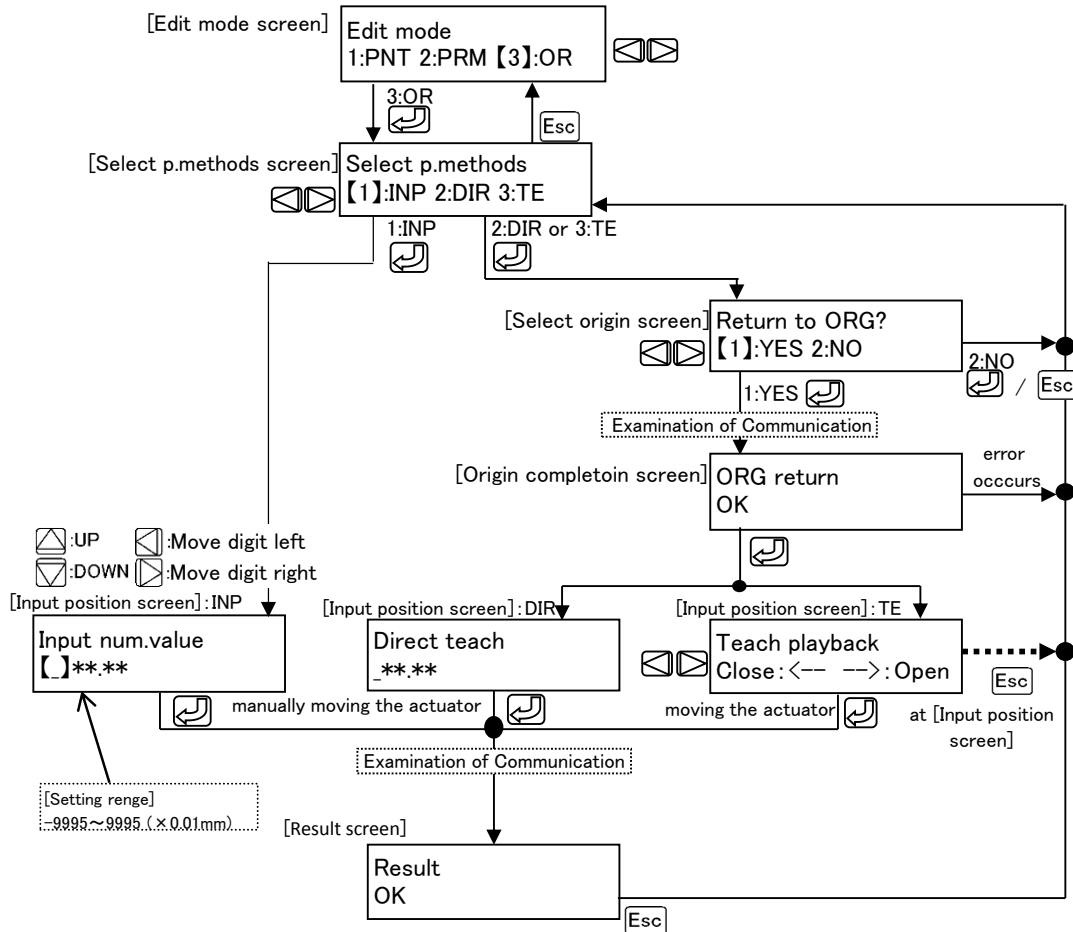


5-4-1-3.Origin shift (OR) setting mode

Use this mode to write origin shift.

The return to origin position is shifted by the value set here.

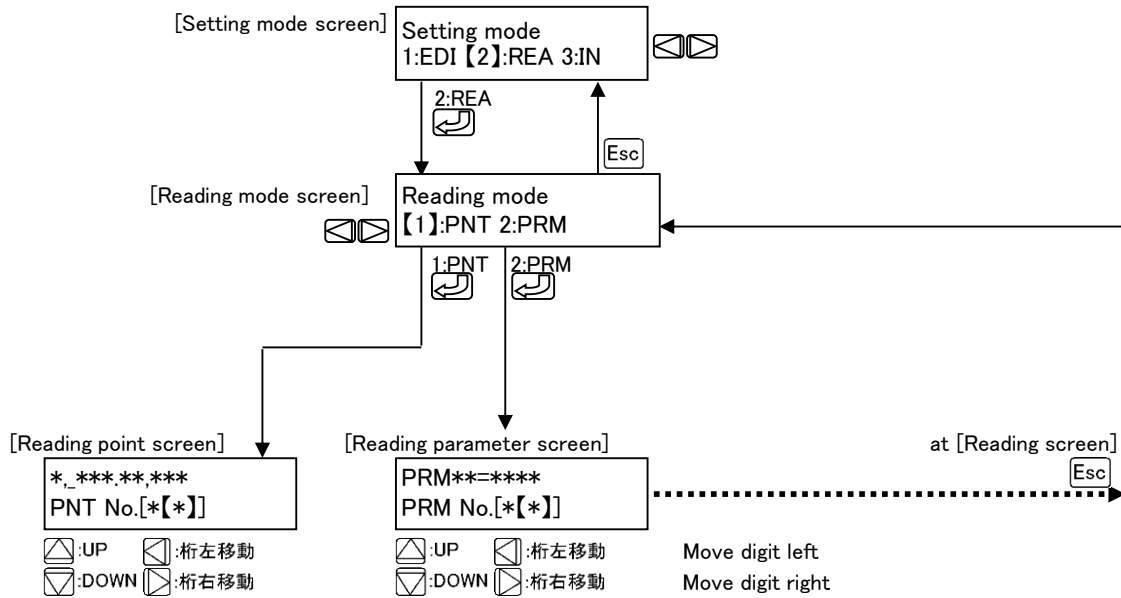
- On the [Edit mode] screen, use the left and right keys to select 3:OR. While 3:OR is flashing press the Enter key to apply your selection.
- On the [Select p.methods] screen, select the origin shift setting methods. Origin shift setting methods include [1:INP] for direct input of position, [2:DIR] for input of position data by manually moving the actuator (by turning the screw for moving table), and [3:TE] for input of position data by moving the actuator using the teaching box button.



5-4-2Reading (REA) Mode

Use this mode to reads the point and parameter currently set in the controller.

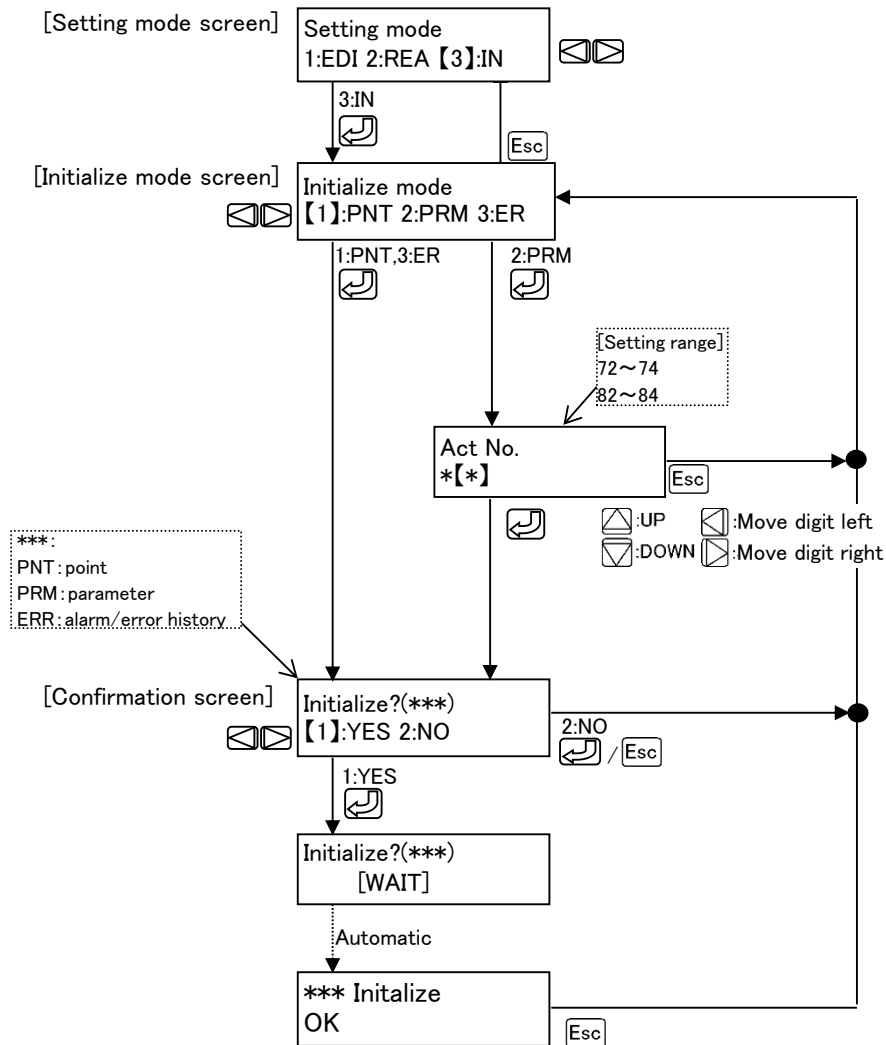
- On the [Setting mode] screen, use the left and right keys to select 2:REA. While 2:REA is flashing press the Enter key to apply your selection.
- On the [Reading mode] screen, use the left and right keys to select 1:PNT (Point readings) or 2:PRM (Parameter readings) , and then press the Enter key to apply your selection.
- Various data are displayed by changing the number.



5-4-3 Initialize mode

Use this mode to initialize the point, parameter, and origin shift data.

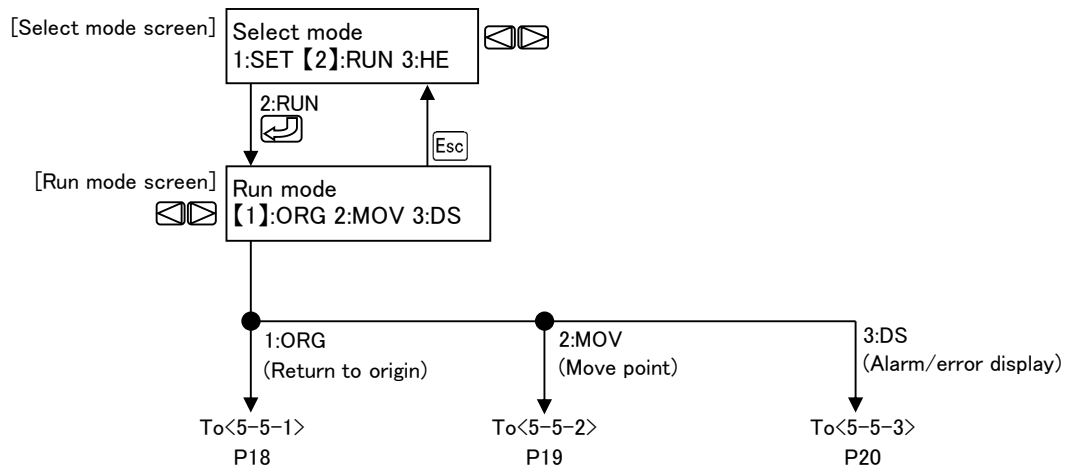
- On the [Setting mode] screen, use the left and right keys to select 3:IN. While 3:IN is flashing press the Enter key to apply your selection.
- On the [Initialize mode] screen, use the left and right keys to select 1:PNT (Point) or 2:PRM (Parameter) or 3:ER (Alarm/error history) , and then press the Enter key to apply your selection.
- On the [Confirmation] screen, be sure to check the data to be initialized before initializing it.



5-5.Run (RUN) Mode

Use this mode to perform return to origin, move point, and alarm/error display.

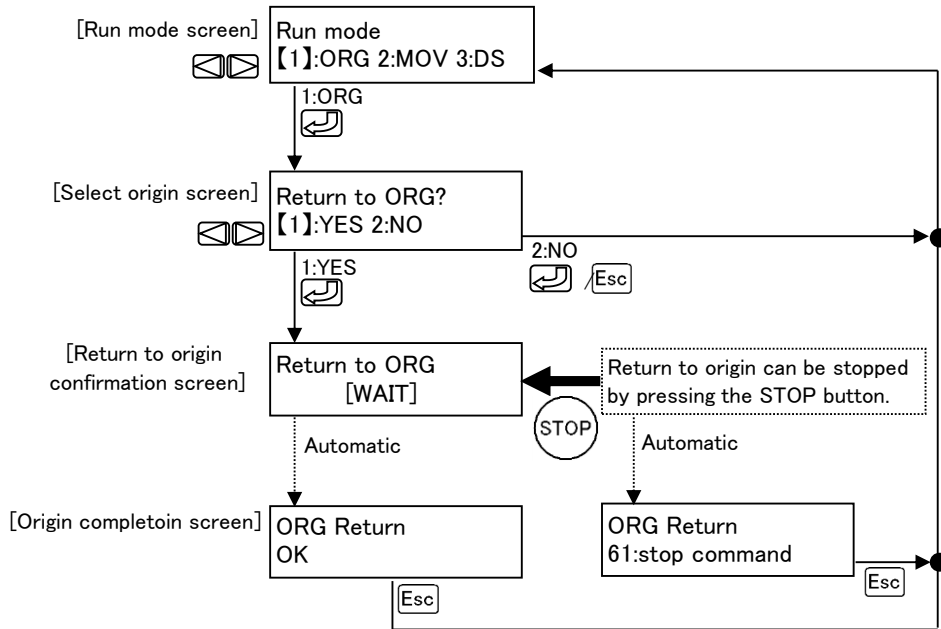
- On the [Select mode] screen, use the left and right keys to select 2:RUN. While 2:RUN is flashing press the Enter key to apply your selection.
- On the [Run mode] screen, use the left and right keys to select 1:ORG (Return to origin), 2:MOV (Move point), or 3:DS (Alarm/error display) and then press the Enter key to apply your selection.
- From here on, return to origin, move point, and alarm/error display in accordance with <5-5-1>, <5-5-2>, and <5-5-3>.



5-5-1.Return to Origin(ORG) Mode

Use this mode to perform return to origin.

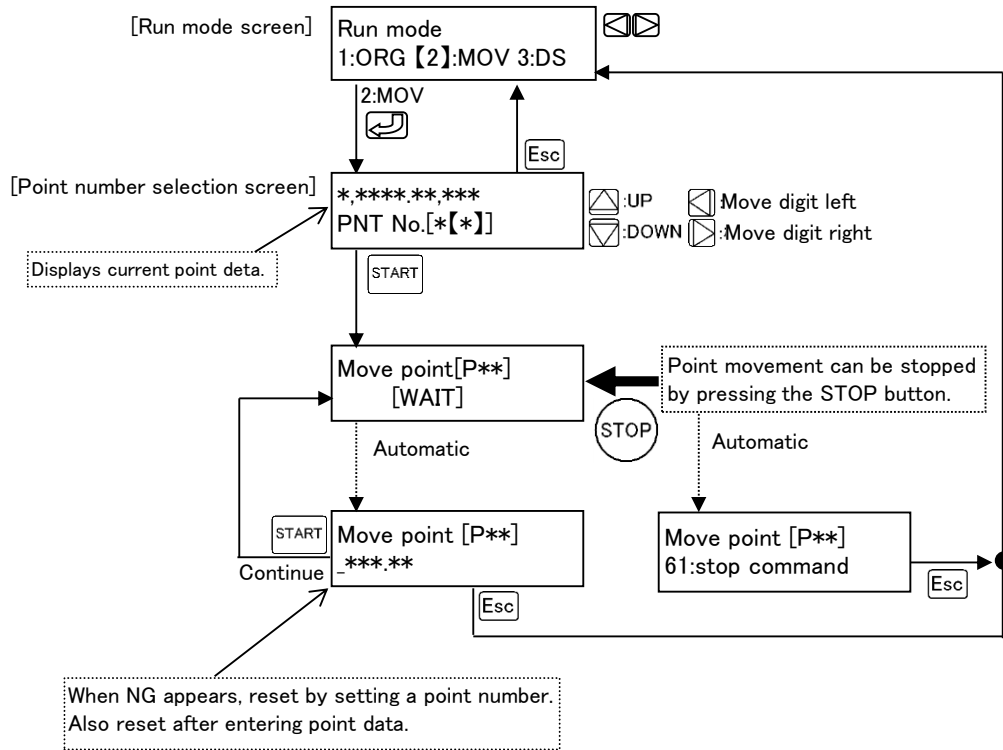
- On the [Run mode] screen, use the left and right keys to select 1:ORG. While 1:ORG is flashing press the Enter key to apply your selection.
- On the [Return to origin confirmation] screen, select whether or not to execute return to origin.
- To stop an ongoing return to origin operation, press the STOP button.



5-5-2.Run (MOV) Mode

Use this mode to perform move point.

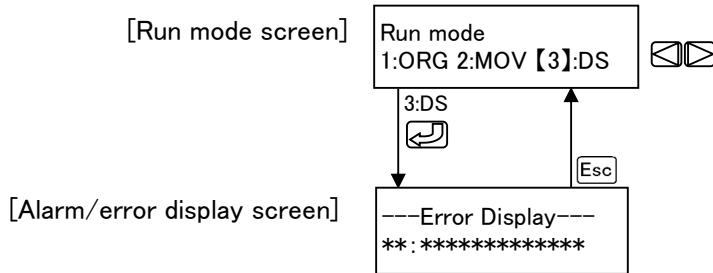
- On the [Run mode] screen, use the left and right keys to select 2:MOV. While 2:MOV is flashing press the Enter key to apply your selection.
- On the [Point number selection] screen, use the up and down keys to select the point number. Press the START button to start point movement. To stop a point movement, press the STOP button.



5-5-3.Alarm/Error Display (DS) Mode

If an error in the controller occurs while set to this screen, the alarm/error displayed.

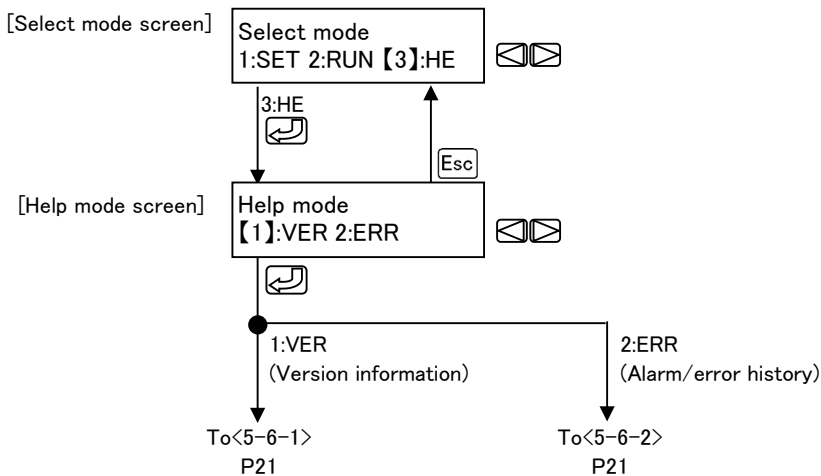
- On the [Run mode] screen, use the left and right keys to select 3:DS.
While 3:DS is flashing press the Enter key to apply your selection.
This mode displays the alarm/error when an alarm/error occurs.
- Return to the [Run mode] screen by pressing the Escape key.



5-6.Help (HE) Mode

Use this mode to check the version and alarm/error history of the connected electric hand controller.

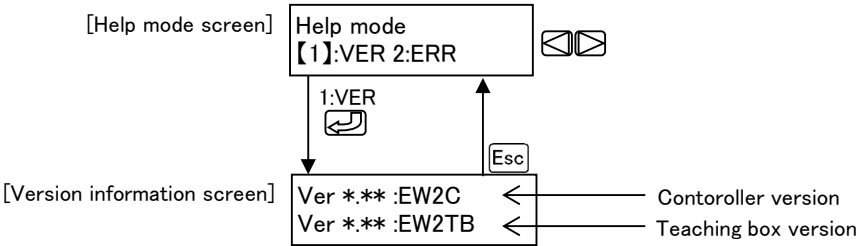
- On the [Select mode] screen, use the left and right keys to select 3:HE.
While 3:HE flash is flashing press the Enter key to apply your selection.
- Next, on the [Help mode] screen, use the left and right keys to select 1:VER (Version information), or 2:ERR (alarm/error history) and then press the Enter key to apply your selection.
- From here on, check the control version and error history in accordance with <5-6-1> and <5-6-2>.



5-6-1.Version information (VER) mode

Use this mode to acquire version information about the connected electric hand controller and teaching box.

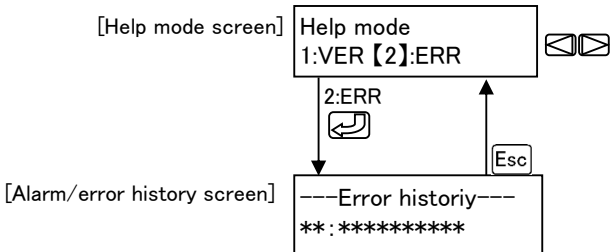
- On the [Help mode] screen, use the left and right keys to select 1:VER. While 1:VER is flashing press the Enter key to apply your selection.
The version information is displayed on the [Version information] screen.



5-6-2.Alarm/error history (ERR) mode

Use this mode to acquire error history information about the connected electric hand controller.

- On the [Help mode] screen, use the left and right keys to select 2:ERR. While 2:ERR is flashing press the Enter key to apply your selection.
The alarm/error history is displayed on the [alarm/error history] screen.

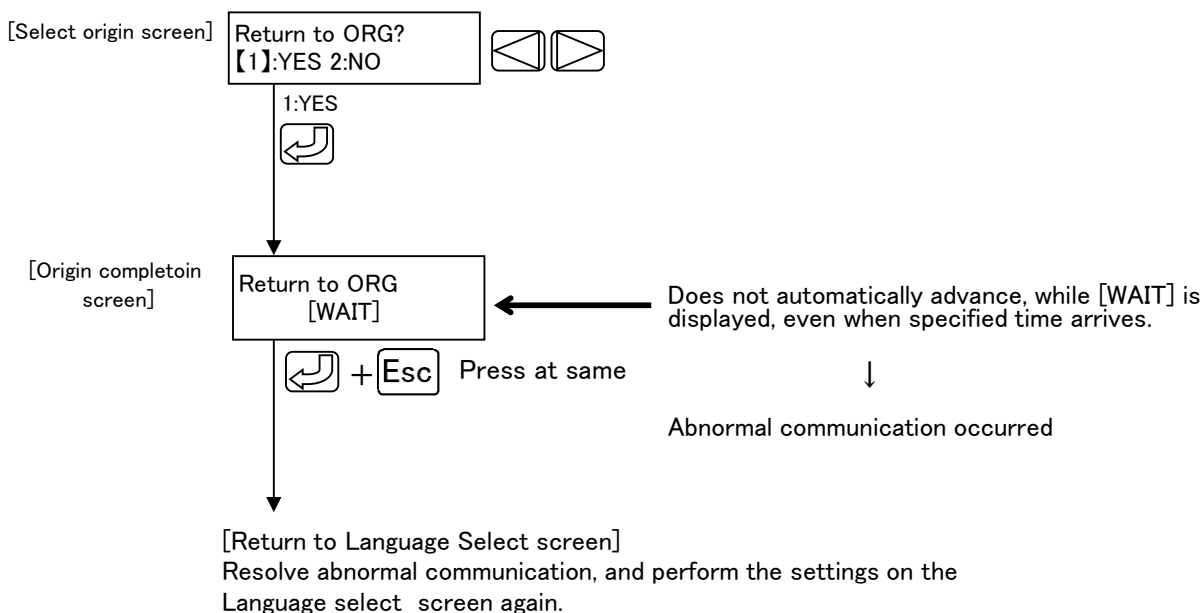


6.Communication error mode

Communication is performed while [WAIT] is displayed in the second row of the display screen. If [WAIT] continues to be displayed for some reason even though the specified time is reached or if the display is not appropriate, it means that a communication error has occurred. (Probable causes include no response returned from the controller due to a severed communication cable, etc.)

As shown in the example below, return to the [Language Select], screen and check the communication cable or electric hand controller.

Example:



Note: [WAIT] is displayed during movement, even during move point 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 [Language Select] screen regardless of whether or not operation is normal.