Oriental motor

HL-14055

Data Setter **OPX-2A**

DG Ⅱ Series／EAS Series FLEX

Built-in Controller Type

OPERATING MANUAL

Thank you for purchasing an Oriental Motor product.
This operating manual describes product handling procedures and safety precautions.

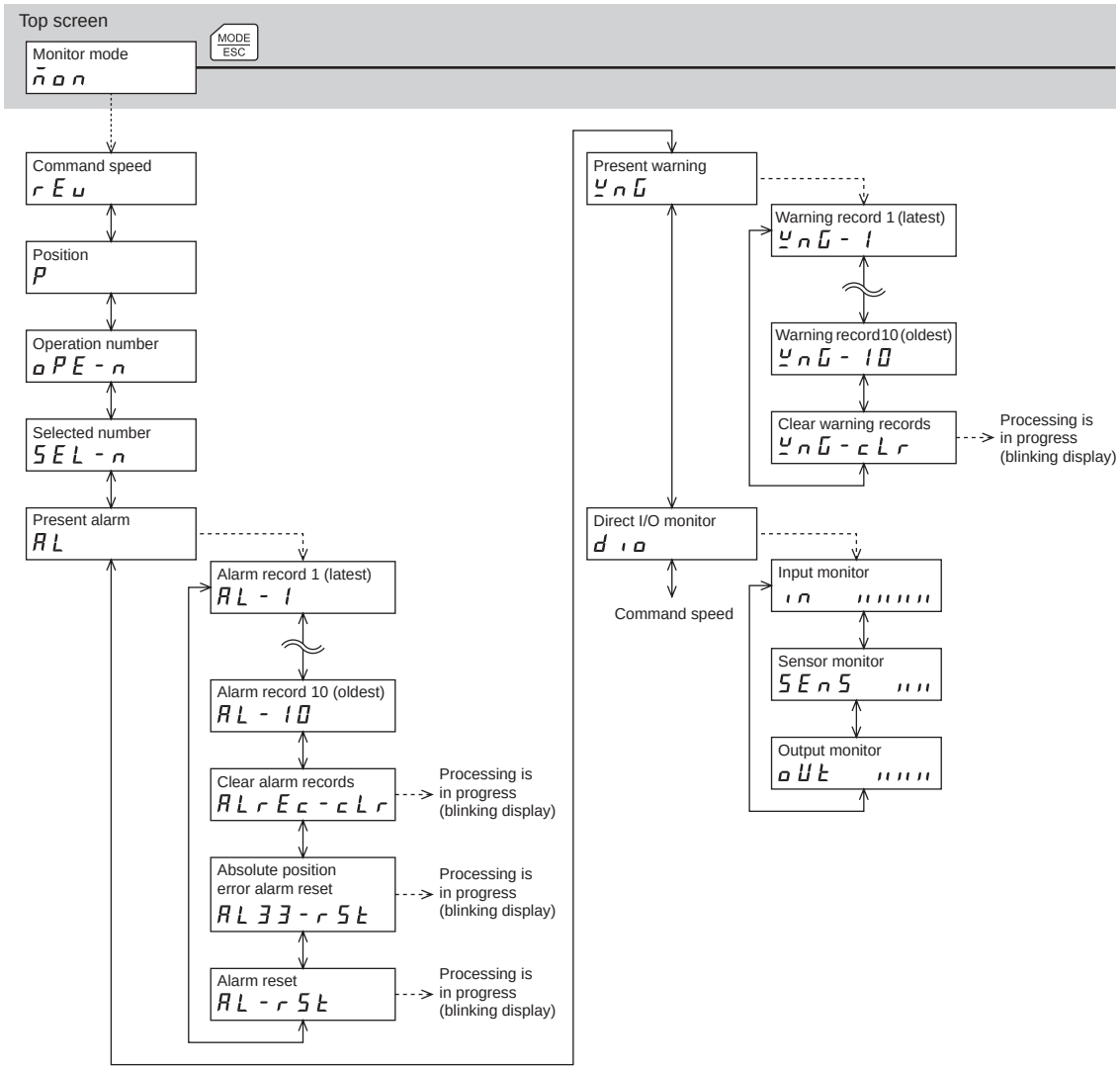
- Please read it thoroughly to ensure safe operation.
- Always keep the manual where it is readily available.

Table of contents

See the separate manual "Data setter **OPX-2A** OPERATING MANUAL Before Use" for the following contents.

- Safety precautions
- Overview of the product
- Names of parts and how to read the display
- Types of modes
- Basic operations and how to input values
- Edit lock function.
- Rewriting the data
- Installation and connection of the **OPX-2A**

1 Screen transitions



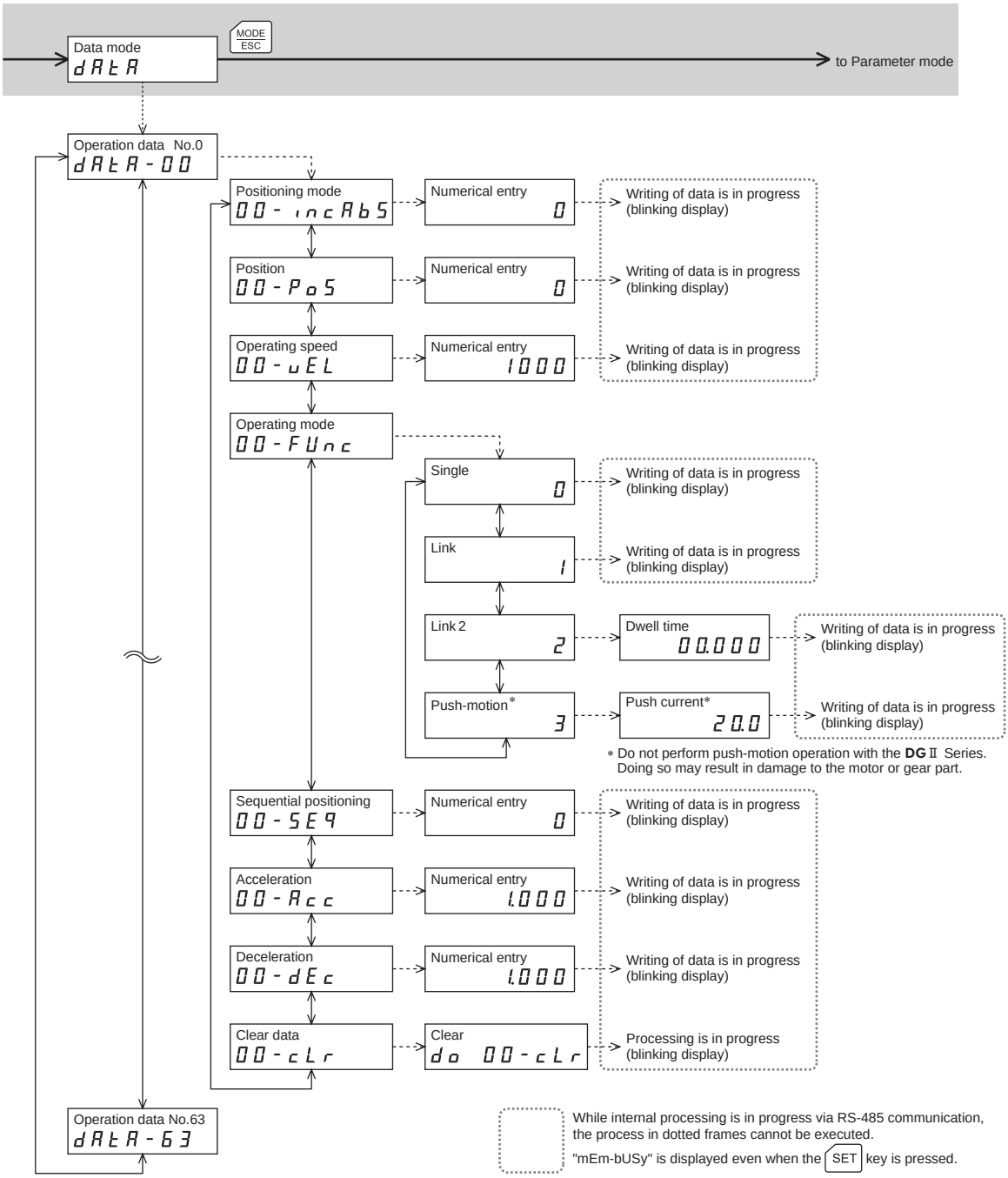
: Use these keys to move.

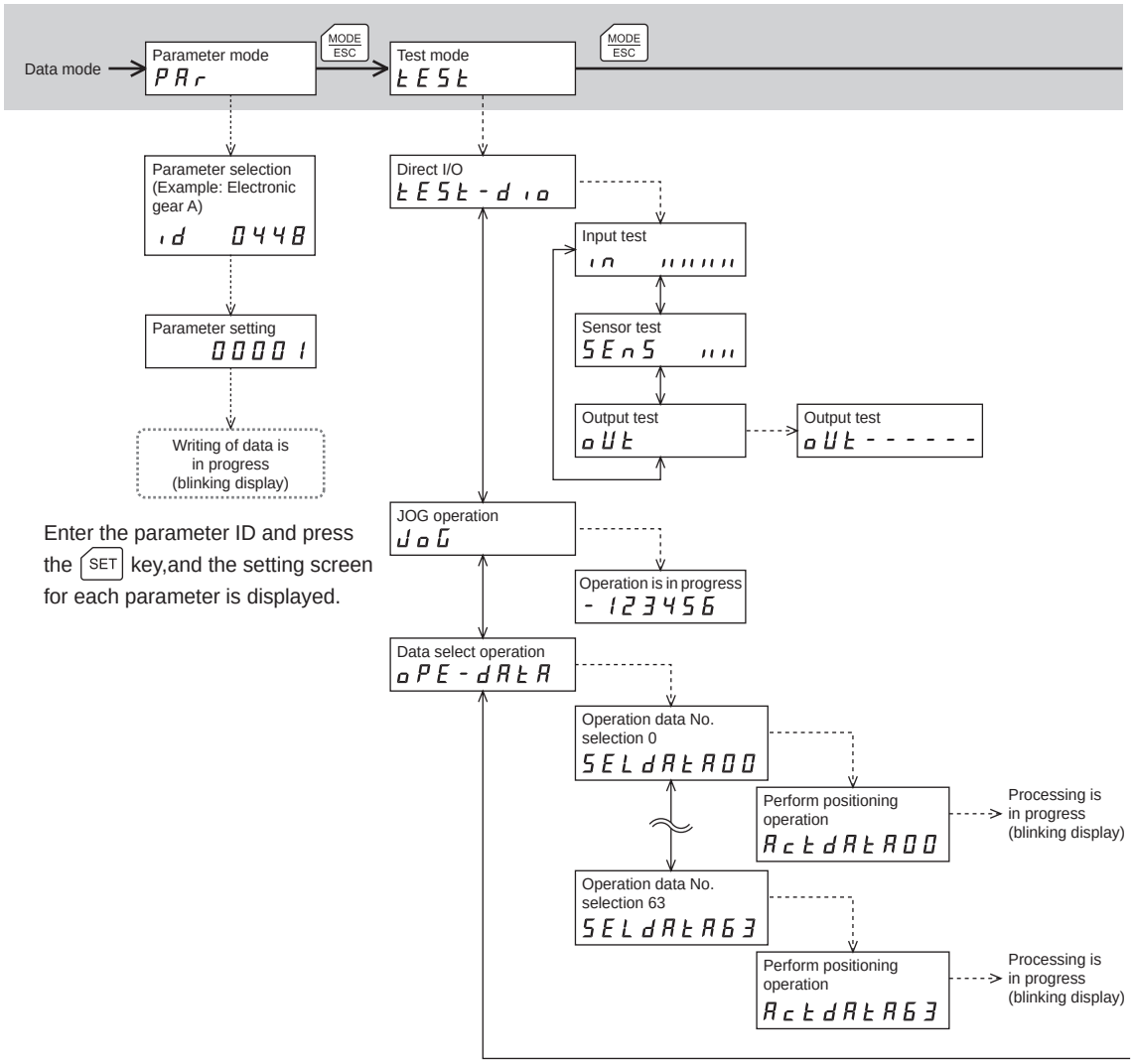
: SET Use this key to move or execute.

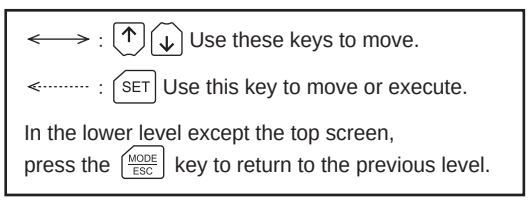
In the lower level except the top screen, press the MODE ESC key to return to the previous level.

Note

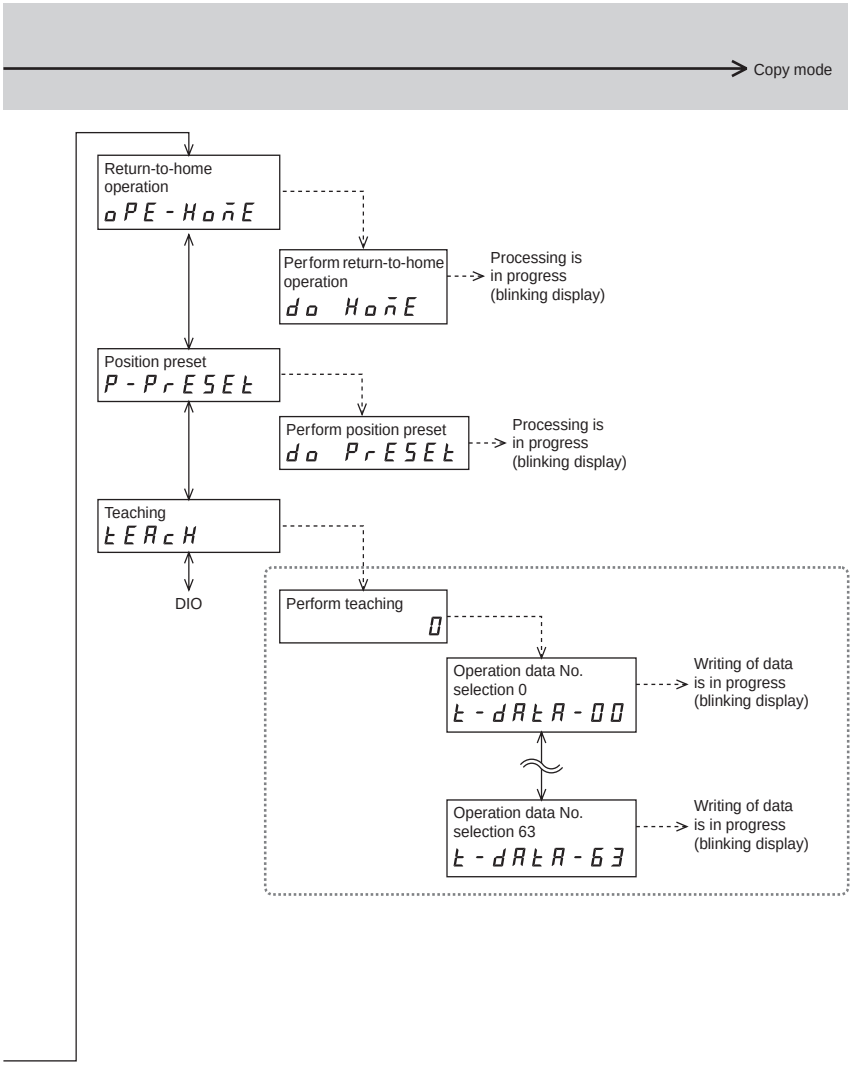
- There are the following restrictions while the edit lock function is effective.
  ・Data mode, parameter mode: Although they are displayed on the screen, they are unable to operate.
  ・Clearing the alarm and warning records, clear data, position preset, teaching, copy mode: They are not displayed on the screen.
- When the HMI input is OFF, you can operate all functions of the monitor mode, uploading and verification of the copy mode, and viewing of the parameter mode.
- Do not perform push-motion operation or sensorless return-to-home operation with the **DG**Ⅱ Series. Doing so may result in damage to the motor or gear part



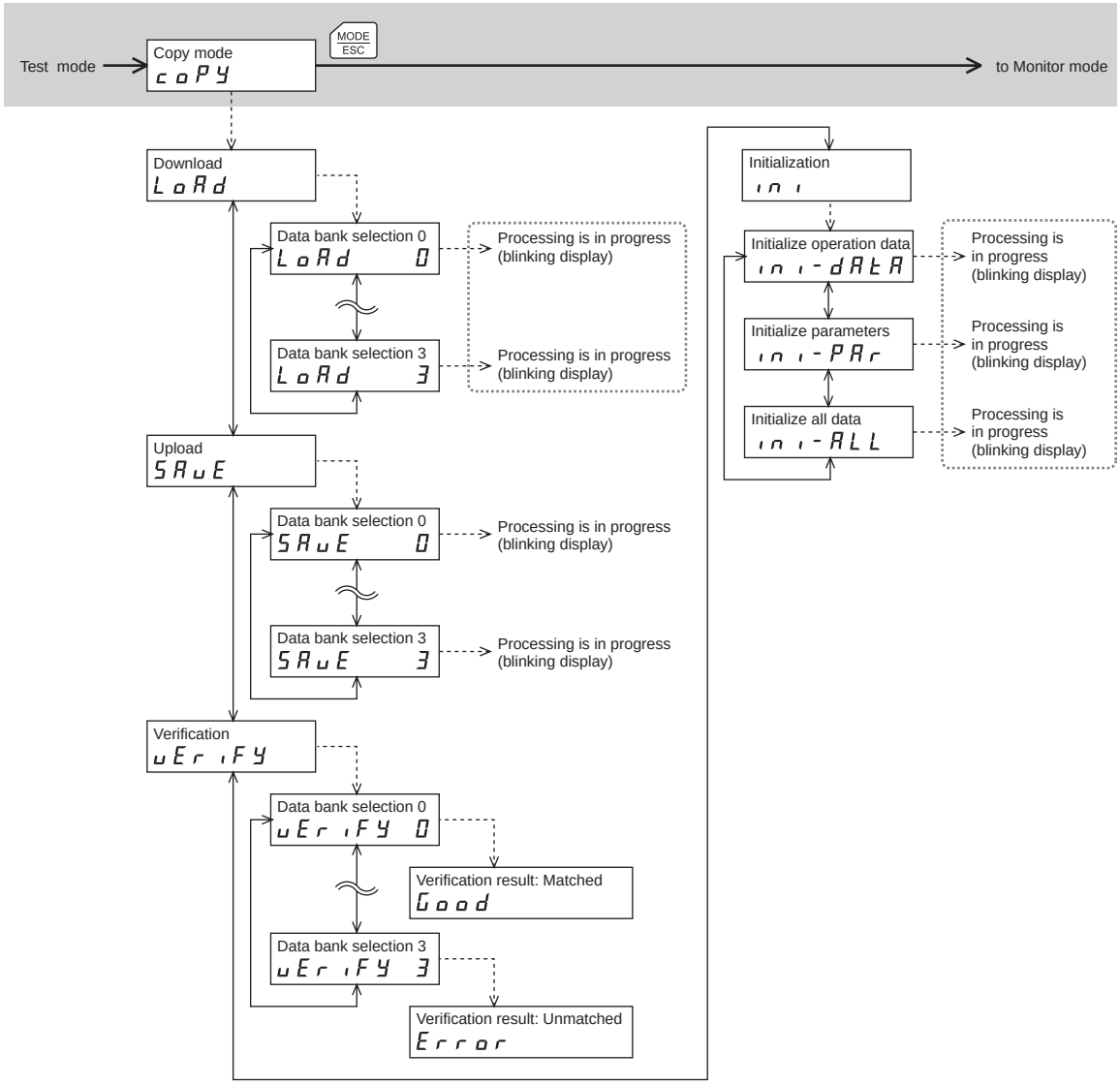

Data mode
Parameter mode
PAr
MODE ESC
Test mode
tESt
MODE ESC
Parameter selection (Example: Electronic gear A)
id 0448
Parameter setting
00001
Writing of data is in progress (blinking display)
Enter the parameter ID and press the SET key,and the setting screen for each parameter is displayed.
Direct I/O
tESt-dio
Input test
in
Sensor test
SEnS
Output test
oUt
Output test
oUt------
JOG operation
doG
Operation is in progress
-123456
Data select operation
oPE-dAtA
Operation data No. selection 0
SELdAtA00
Perform positioning operation
ActdAtA00
Processing is in progress (blinking display)
Operation data No. selection 63
SELdAtA63
Perform positioning operation
ActdAtA63
Processing is in progress (blinking display)


: Use these keys to move.
SET
: Use this key to move or execute.
In the lower level except the top screen,
press the MODE ESC key to return to the previous level.

Note Do not perform push-motion operation or sensorless return-to-home operation with the **DG Ⅱ** Series. Doing so may result in damage to the motor or gear part.



While internal processing is in progress via RS-485 communication, the process in dotted frames cannot be executed.
"mEm-bUSy" is displayed even when the SET key is pressed.



: ↑ ↓ Use these keys to move.

: SET Use this key to move or execute.

In the lower level except the top screen, press the MODE ESC key to return to the previous level.

While internal processing is in progress via RS-485 communication, the process in dotted frames cannot be executed.

"mEm-bUSy" is displayed even when the SET key is pressed.

2 Monitor mode

2.1 Overview of monitor mode

- Monitoring the operating status

  The motor speed, command position, operation data number corresponding to the present operation and operation data number currently selected can be monitored in real time.

- Checking alarms/warnings, clearing alarm/warning records, and resetting alarms
  - If an alarm or warning generates, since a corresponding alarm code or warning code is displayed, the details of the alarm/warning can be checked.
  - Up to ten most recent alarms/warnings can be displayed, starting from the latest one.
  - The present alarm can be reset.
  - Alarm/warning records can be cleared.

- Checking I/O signals
  - The ON/OFF status of each I/O signal for the driver can be checked.

2.2 Monitor items

■ Speed

The motor rotation speed can be checked (unit: r/min).
Operating direction and display for each series are as follows.

- **DGⅡ** Series:
  When the output table rotates in the CW direction, "-" is displayed. When the output table rotates in the CCW direction, the sign is not displayed.
- **EAS** Series:
  When the linear slide table moves to the motor side, "-" is displayed. When the linear slide table moves to opposite the motor side, the sign is not displayed.

When setting the display method to absolute value, the sign indicating the rotation direction is not displayed. The value display format can be selected using the "displayed speed on **OPX-2A**" parameter (ID: 480).

■ Command position

The command position of the motor with reference to the home position can be checked.
If a resolution is set, an appropriate value based on the resolution is shown as steps.

■ Operation number

The operation data number corresponding to the present positioning operation can be checked.

■ Selected number

The operation data number currently selected can be checked.

■ Present alarm

When an alarm generates, a corresponding alarm code will be displayed.
The present alarm can be reset, and also alarm records can be checked or cleared.

Note

- Do not turn off the driver power while an alarm is being reset or alarm records are being cleared (=while the display is blinking). Doing so may damage the data.
- When operations are limited by the edit lock function, the alarm records cannot be cleared.
- Some alarms cannot be reset on the **OPX-2A**. For details, refer to the “Alarm code list” below. To reset these alarms, you must cycle the power.

Alarm code list

Code	Alarm name	Resetting on the **OPX-2A**	Number of times the driver's ALARM LED blinks
10h	Excessive position deviation	Possible	4
12h	Excessive position deviation during current OFF	Possible	
20h	Overcurrent*1	Not possible	5
21h	Main circuit overheat	Possible	2
22h	Overvoltage	LSD-KD : Possible LSD-AD/LSD-CD : Not possible	3
23h	Main power off*1	Possible	
25h	Undervoltage	Possible	
27h	Backup battery undervoltage	Possible	7
28h	Sensor error	Not possible	8
29h	CPU peripheral circuit error	Not possible	9
2Dh	Main circuit output error*1	Not possible	5
30h	Overload	Possible	2
31h	Overspeed	Possible	
33h	Absolute position error	Possible*2	7
34h	Command pulse error	Possible	2
41h	EEPROM error	Not possible	9
42h	Initial sensor error	Not possible	8
43h	Initial rotor rotation error	Not possible	
45h	Motor combination error	Not possible	
4Ah	Return-to-home incomplete	Possible	7
51h	Regeneration unit overheat*1	Not possible	2
60h	±LS both sides active	Possible	7
61h	Reverse limit sensor connection	Possible	
62h	Home seeking error	Possible	
63h	No HOMES	Possible	
64h	TIM, Z, SLIT input error	Possible	
66h	Hardware overtravel	Possible	
67h	Software overtravel	Possible	
6Ah	Home seeking offset error	Possible	
70h	Invalid operation data	Possible	
71h	Electronic gear setting error	Not possible	
72h	Wrap setting error	Not possible	
81h	Network bus error	Possible	
83h	Communication switch setting error	Not possible	
84h	RS-485 communication error	Possible	

Code	Alarm name	Resetting on the **OPX-2A**	Number of times the driver's ALARM LED blinks
85h	RS-485 communication timeout	Possible	7
8Eh	Network converter error	Possible	
F0h	CPU error	Not possible	Lit

∗1 LSD-AD/LSD-CD only.

∗2 This alarm cannot be released by the "alarm reset (AL-rSt)." Release the alarm by the "absolute position error alarm reset (AL33-rSt)."

■ Present warning

When a warning generates, a corresponding warning code will be displayed.
Warning records can be checked or cleared.

Note

- Do not turn off the driver power while warning records are being cleared (=while the display is blinking). Doing so may damage the data.
- When operations are limited by the edit lock function, the warning records cannot be cleared.
- Warning records can be cleared automatically by turning off the driver power.

Warning code list

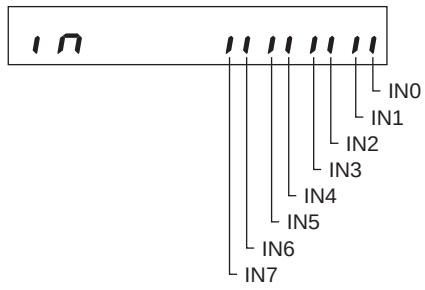
Code	Warning name
10h	Excessive position deviation
12h	Excessive position deviation during current OFF
21h	Main circuit overheat
22h	Overvoltage
25h	Undervoltage
30h	Overload

Code	Warning name
31h	Overspeed
48h	Battery connection error
71h	Electronic gear setting error
72h	Wrap setting error
84h	RS-485 communication error

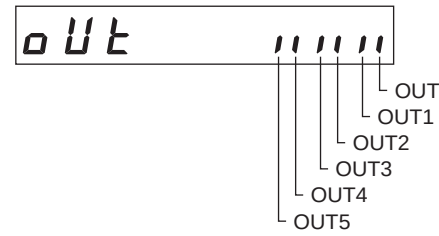
■ I/O monitor

The ON/OFF status of each I/O signal for the driver can be checked.
Each digit on the 7-segment LED display corresponds to a signal. If the signal is ON, the corresponding digit is lit. If the signal is OFF, the digit is unlit.

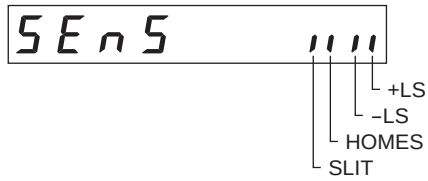
• Input monitor



• Output monitor



• Sensor monitor



3 Data mode

Up to 64 sets of actuator operation data can be set. Once set, the operation data is stored in the driver. The data will not be lost even after the **OPX-2A** is disconnected from the driver. Before setting operation data, read the USER MANUAL carefully to understand the basic operations, functions and other details of the driver.

Note

- Operation data has significant bearing on actuator operation. Before setting any operation data, make sure you fully understand the content of the operation data.
- If operations are limited by the edit lock function or HMI input, operation data cannot be edited.
- Operation data can also be set by selecting the ID with the parameter mode.
- If【SET】key is pressed while executing the internal processing via RS-485 communication, "mEm-bUSy" may be displayed. Check “1 Screen transitions” on p.2 when "mEm-bUSy" is displayed. Be sure to wait until all internal processing is completed, before pressing the【SET】key.
- Do not perform push-motion operation or sensorless return-to-home operation with the **DG**Ⅱ Series. Doing so may result in damage to the motor or gear part.

3.1 Setting items

Setting item	Setting range	Initial value	Description
Positioning mode	0	0 : Incremental mode 1 : Absolute mode	Selects how to specify the position (travel amount) in positioning operation (absolute mode or incremental mode).
Position	0	−8,388,608 to +8,388,607 step	Sets the position (distance) for positioning operation.
Operating speed	1000	1 to 1,000,000 Hz	Sets the operating speed in positioning operation and continuous operation.
Operating mode	0	0 : Single 1 : Link 2 : Link 2 3 : Push-motion	Sets perform positioning operation as single-motion, linked-motion or push-motion operation.
Sequential positioning	0	0 : Disable 1 : Enable	Sets enable or disable sequential positioning operation.
Acceleration	1.000	0.001 to 1000.000 (ms/kHz or s)	Sets the acceleration rate in positioning operation and continuous operation.*
Deceleration			Sets the deceleration rate in positioning operation and continuous operation.*
Push current	20.0	0.0 to 50.0%	Sets the current value of push-motion operation.
Dwell time	0.000	0.000 to 50.000 s	Sets the dwell time to be used in linked-motion operation 2.

* This item is effective when the "acceleration/deceleration type" parameter is set to "separate." If this parameter is set to "common," the values of the "common acceleration" and "common deceleration" parameters will be used.

3.2 Clearing operation data

All of the set value for the selected operation data number can be reverted to the initial values.

3.3 Initializing operation data

Operation data saved in the driver can be reverted to the initial values.
For details, refer to “6.5 Initializing driver parameters” on p.26.

4 Parameter mode

Parameters relating to actuator operation and control can be set. These parameters are saved in the driver. Before setting parameters, read the USER MANUAL carefully to understand the basic operations, functions and other details of the driver.

Note

- Parameters have significant bearing on actuator operation. Before setting any parameter, make sure you fully understand the content of the parameter.
- If operations are limited by the edit lock function or HMI input, parameters cannot be edited.
- If【SET】key is pressed while executing the internal processing via RS-485 communication, "mEm-bUSy" may be displayed. Check “1 Screen transitions” on p.2 when "mEm-bUSy" is displayed. Be sure to wait until all internal processing is completed, before pressing the【SET】key.
- Do not perform push-motion operation or sensorless return-to-home operation with the **DG**Ⅱ Series. Doing so may result in damage to the motor or gear part.

4.1 Parameter ID

There is a unique ID in each parameter. With the **OPX-2A**, set the parameter selecting the ID.

■ Timing for the setting value to become effective

When a parameter is changed, the timing for the new value to become effective varies depending on the parameters, which are the following four types.

- Effective immediately
  Executes the recalculation and setup immediately when writing the parameter.
- Effective after stopping the operation
  Executes the recalculation and setup after stopping the operation.
- Effective after executing the configuration
  Executes the recalculation and setup after executing the configuration.
- Effective after turning the power ON again
  Executes the recalculation and setup after turning the power ON again.

■ Parameter list（Operation data）

ID	Parameter name	Setting range	Initial value	Effective*
512 to 575	Position No.0 to Position No.63	−8,388,608 to +8,388,607 step	0	B
576 to 639	Operating speed No.0 to Operating speed No.63	0 to 1,000,000 Hz	1000	
640 to 703	Positioning mode No.0 to Positioning mode No.63	0：Incremental mode 1：Absolute mode	0	
704 to 767	Operating mode No.0 to Operating mode No.63	0：Single 1：Link 2：Link2 3：Push-motion	0	
768 to 831	Acceleration No.0 to Acceleration No.63	0.001 to 1000.000 (ms/kHz or s)	1.000	
832 to 895	Deceleration No.0 to Deceleration No.63			
896 to 959	Push current No.0 to Push current No.63	0.0 to 50.0%	20.0	
960 to 1023	Sequential positioning No.0 to Sequential positioning No.63	0：Disable 1：Enable	0	
1024 to 1087	Dwell time No.0 to Dwell time No.63	0.000 to 50.000 s	0.000	

* Indicates the timing for the data to become effective.（B: Effective after stopping the operation）

■ Parameter list（Parameters）

ID	Parameter name	Setting range	Initial value	Effective *
256	STOP input action	0：Immediate stop 1：Deceleration stop 2：Immediate stop & Current OFF 3：Deceleration stop & Current OFF	1	A
257	Hardware overtravel	0：Disable 1：Enable	1	
258	Overtravel action	0：Immediate stop 1：Deceleration stop	0	
259	Positioning completion signal range	0.0 to 18.0°	1.8	
260	Positioning completion signal offset	−1.8 to 1.8°	0.0	
261	AREA1 positive direction position	−8,388,608 to 8,388,607 step	0	
262	AREA1 negative direction position			
263	AREA2 positive direction position			
264	AREA2 negative direction position			
265	AREA3 positive direction position			
266	AREA3 negative direction position			
267	Minimum ON time for MOVE output	0 to 255 ms	0	
268	LS logic level	0：Normally open 1：Normally closed	0	C
269	HOMES logic level			
270	SLIT logic level			
2048	MS0 operation No.selection	0 to 63	0	B
2049	MS1 operation No.selection		1	
2050	MS2 operation No.selection		2	
2051	MS3 operation No.selection		3	
2052	MS4 operation No.selection		4	
2053	MS5 operation No.selection		5	
2054	HOME-P function selection	0：Home output 1：Return-to-home complete output	0	A
288	RUN current	0.0 to 100.0%	100.0	
289	STOP current	0.0 to 50.0%	50.0	
290	Position loop gain	1 to 50	10	
291	Speed loop gain	10 to 200	180	
292	Speed loop integral time constant	10.0 to 200.0 ms	100.0	
293	Speed filter	0 to 200 ms	1	B
294	Moving average time			
2064	LSD-KD：Moving average	0：Disable 1：Enable	0	C
	LSD-AD/LSD-CD：Filter selection	0：Speed filter 1：Moving average	0	
2065	Speed error gain 1	0 to 500	45	A
2066	Speed error gain 2			
2067	Control mode	0：Normal mode 1：Current control mode	0	C
2068	Smooth drive	0：Disable 1：Enable	1	

* Indicates the timing for the data to become effective. (A: Effective immediately, B: Effective after stopping the operation, C: Effective after executing the configuration)

ID	Parameter name	Setting range	Initial value	Effective*
320	Common acceleration	0.001 to 1000.000 (ms/kHz or s)	1.000	B
321	Common deceleration			
322	Starting speed	0 to 1,000,000 Hz	500	
323	JOG operation speed	1 to 1,000,000 Hz	1000	
324	Acceleration/deceler ation of JOG	0.001 to 1000.000 (ms/kHz or s)	1.000	
325	JOG starting speed	0 to 1,000,000 Hz	500	
326	Acceleration/deceler ation type	0:Common 1:Separate	1	
327	Acceleration/deceler ation unit	0:ms/kHz 1:s	0	C
2080	Automatic return action	0:Disable 1:Enable	0	
2081	Operation speed of automatic return	1 to 1,000,000 Hz	1000	B
2082	Acceleration/deceler ation of automatic return	0.001 to 1000.000(ms/kHz or s)	1.000	
2083	Starting speed of automatic return	0 to 1,000,000 Hz	500	
2084	JOG travel amount	1 to 8,388,607 step	1	
352	Home-seeking mode	0:2-sensor mode 1:3-sensor mode 2:Push mode	1	
353	Operation speed of home-seeking	1 to 1,000,000 Hz	1000	
354	Acceleration/deceler ation of home-seeking	0.001 to 1000.000 (ms/kHz or s)	1.000	
355	Starting speed of home-seeking	1 to 1,000,000 Hz	500	
356	Position offset of home-seeking	−8,388,608 to 8,388,607 step	0	
357	Starting direction of home-seeking	0:Negative direction 1:Positive direction	1	
358	SLIT detection with home-seeking	0:Disable 1:Enable	0	
359	TIM signal detection with home-seeking			
360	Operation current of push-motion home-seeking	0.0 to 100.0%	100.0	
384	Overload alarm	0.1 to 30.0 s	5.0	A
385	Overflow rotation alarm during current ON	0.01 to 300.00 rev	3.00	
388	Return-to-home incomplete alarm	0:Disable 1:Enable	0	C

* Indicates the timing for the data to become effective. (A: Effective immediately, B: Effective after stopping the operation, C: Effective after executing the configuration)

Note If the "auto return" parameter (ID 2080) is set to enable, the motor automatically start return operation to the position where the motor last stopped if the motor is excited by turning the C-ON (current-on) input ON or turning the FREE (free) input OFF.

ID	Parameter name	Setting range	Initial value	Effective*
2112	Overflow rotation alarm during current OFF	0.01 to 300.00 rev	100.00	A
416	Overheat warning	40 to 85 °C (104 to 185 °F)	85	
417	Overload warning	0.1 to 30.0 s	5.0	
418	Overspeed warning	1 to 5000 r/min	4500	
419	Overvoltage warning	LSD-KD：15.0 to 63.0 V	63.0	
		LSD-AD/LSD-CD：120 to 450 V	435	
420	Undervoltage warning	LSD-KD：15.0 to 63.0 V	18.0	
		LSD-AD/LSD-CD：120 to 280 V	120	
421	Overflow rotation warning during current ON	0.01 to 300.00 rev	3.00	
448	Electronic gear A	1 to 65535	1	C
449	Electronic gear B			
450	Motor rotation direction *2	0：Positive direction =CCW 1：Positive direction =CW	1	
451	Software overtravel	0：Disable 1：Enable	1	A
452	Positive software limit	−8,388,608 to 8,388,607 step	8,388,607	
453	Negative software limit		−8,388,608	
454	Preset position	−8,388,608 to 8,388,607 step	0	
455	Wrap setting	0：Disable 1：Enable	0	C
456	Wrap setting range	1 to 8,388,607 step	1000	
480	Data setter speed display	0：Signed 1：Absolute value	0	A
482	Absolute-position backup system	0：Disable 1：Enable	0	C

∗1 Indicates the timing for the data to become effective. (A: Effective immediately, C: Effective after executing the configuration)

∗2 The moving direction varies as follows by the parameter setting.

DGⅡ Series:

・When setting the "motor rotation direction" parameter to 0 and operating in the positive direction, the output table rotates in the CW direction.

・When setting the "motor rotation direction" parameter to 1 and operating in the positive direction, the output table rotates in the CCW direction.

EAS Series:

・When setting the "motor rotation direction" parameter to 0 and operating in the positive direction, the linear slide table moves to the motor side.

・When setting the "motor rotation direction" parameter to 1 and operating in the positive direction, the linear slide table moves to opposite the motor side.

ID	Parameter name	Setting range			Initial value	Effective *1
2176	IN0 input function selection	0:Not used 1:FWD 2:RVS 3:HOME 4:START 5:SSTART 6:+JOG 7:−JOG 8:MS0 9:MS1 10:MS2 11:MS3 12:MS4 13:MS5 16:FREE	17:C-ON 18:STOP 24:ALM-RST 25:P-PRESET 26:P-CLR 27:HMI 32:R0 33:R1 34:R2 35:R3 36:R4 37:R5 38:R6 39:R7 40:R8	41:R9 42:R10 43:R11 44:R12 45:R13 46:R14 47:R15 48:M0 49:M1 50:M2 51:M3 52:M4 53:M5	3	C
2177	IN1 input function selection				4	
2178	IN2 input function selection				48	
2179	IN3 input function selection				49	
2180	IN4 input function selection				50	
2181	IN5 input function selection				16	
2182	IN6 input function selection				18	
2183	IN7 input function selection				24	
2192	IN0 input logic level setting	0:Normally open 1:Normally closed			0	
2193	IN1 input logic level setting					
2194	IN2 input logic level setting					
2195	IN3 input logic level setting					
2196	IN4 input logic level setting					
2197	IN5 input logic level setting					
2198	IN6 input logic level setting					
2199	IN7 input logic level setting					
2208	OUT0 output function selection	0:Not used 1:FWD_R 2:RVS_R 3:HOME_R 4:START_R 5:SSTART_R 6:+JOG_R 7:−JOG_R 8:MS0_R 9:MS1_R 10:MS2_R 11:MS3_R 12:MS4_R 13:MS5_R 16:FREE_R 17:C-ON_R 18:STOP_R 32:R0 33:R1	34:R2 35:R3 36:R4 37:R5 38:R6 39:R7 40:R8 41:R9 42:R10 43:R11 44:R12 45:R13 46:R14 47:R15 48:M0_R 49:M1_R 50:M2_R 51:M3_R 52:M4_R	53:M5_R 60:+LS_R 61:−LS_R 62:HOMES_R 63:SLIT_R 65:ALM 66:WNG 67:READY 68:MOVE 69:END 70:HOME-P 71:TLC 72:TIM 73:AREA1 74:AREA2 75:AREA3 80:S-BSY 82:MPS*2	70	
2209	OUT1 output function selection				69	
2210	OUT2 output function selection				73	
2211	OUT3 output function selection				67	
2212	OUT4 output function selection				66	
2213	OUT5 output function selection				65	

∗1 Indicates the timing for the data to become effective.（C: Effective after executing the configuration）

∗2 LSD-AD/LSD-CD only.

ID	Parameter name	Setting range	Initial value	Effective*1
2224	NET-IN0 input function selection	0:Not used 1:FWD 2:RVS 3:HOME 4:START 5:SSTART 6:+JOG 7:−JOG 8:MS0 9:MS1 10:MS2 11:MS3 12:MS4 13:MS5 16:FREE 17:C-ON 18:STOP 27:HMI 32:R0 33:R1 34:R2 35:R3 36:R4 37:R5 38:R6 39:R7 40:R8 41:R9 42:R10 43:R11 44:R12 45:R13 46:R14 47:R15 48:M0 49:M1 50:M2 51:M3 52:M4 53:M5	48	C
2225	NET-IN1 input function selection		49	
2226	NET-IN2 input function selection		50	
2227	NET-IN3 input function selection		4	
2228	NET-IN4 input function selection		3	
2229	NET-IN5 input function selection		18	
2230	NET-IN6 input function selection		16	
2231	NET-IN7 input function selection		0	
2232	NET-IN8 input function selection		8	
2233	NET-IN9 input function selection		9	
2234	NET-IN10 input function selection		10	
2235	NET-IN11 input function selection		5	
2236	NET-IN12 input function selection		6	
2237	NET-IN13 input function selection		7	
2238	NET-IN14 input function selection		1	
2239	NET-IN15 input function selection		2	
2240	NET-OUT0 output function selection	0:Not used 1:FWD_R 2:RVS_R 3:HOME_R 4:START_R 5:SSTART_R 6:+JOG_R 7:−JOG_R 8:MS0_R 9:MS1_R 10:MS2_R 11:MS3_R 12:MS4_R 13:MS5_R 16:FREE_R 17:C-ON_R 18:STOP_R 32:R0 33:R1 34:R2 35:R3 36:R4 37:R5 38:R6 39:R7 40:R8 41:R9 42:R10 43:R11 44:R12 45:R13 46:R14 47:R15 48:M0_R 49:M1_R 50:M2_R 51:M3_R 52:M4_R 53:M5_R 60:+LS_R 61:−LS_R 62:HOMES_R 63:SLIT_R 65:ALM 66:WNG 67:READY 68:MOVE 69:END 70:HOME-P 71:TLC 72:TIM 73:AREA1 74:AREA2 75:AREA3 80:S-BSY 82:MPS*2	48	
2241	NET-OUT1 output function selection		49	
2242	NET-OUT2 output function selection		50	
2243	NET-OUT3 output function selection		4	
2244	NET-OUT4 output function selection		70	
2245	NET-OUT5 output function selection		67	
2246	NET-OUT6 output function selection		66	
2247	NET-OUT7 output function selection		65	
2248	NET-OUT8 output function selection		80	
2249	NET-OUT9 output function selection		73	
2250	NET-OUT10 output function selection		74	
2251	NET-OUT11 output function selection		75	
2252	NET-OUT12 output function selection		72	
2253	NET-OUT13 output function selection		68	
2254	NET-OUT14 output function selection		69	
2255	NET-OUT15 output function selection		71	
2304	Communication timeout	0:Not monitored 0 to 10000 ms	0	A
2305	Communication error alarm	1 to 10 times	3	
2563	Communication parity	0:None 1:Even number 2:Odd number	1	D
2564	Communication stop bit	0:1 bit 1:2 bit	0	
2565	Transmission waiting time	0.0 to 1000.0 ms	10.0	

∗1 Indicates the timing for the data to become effective. (A: Effective immediately, C: Effective after executing the configuration, D: Effective after turning the power ON again)

∗2 LSD-AD/LSD-CD only.

4.2 Setting example

Pressing the【SET】key on the parameter item screen enables parameter setting.
The setting method of the parameter is explained here.

Example: When setting the electronic gear A (ID: 448) to "10"

1. Use the【MODE/ESC】key to select the parameter mode.
   The “PAR” LED is lit.

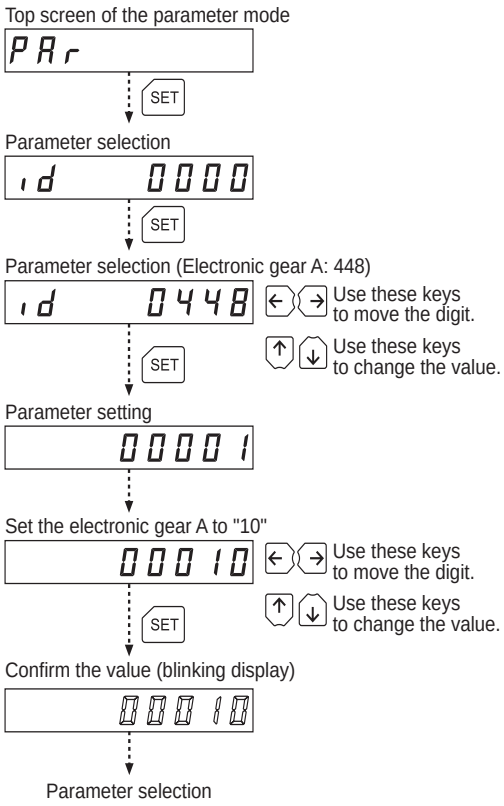
2. Press the【SET】key.
   The display changes to the parameter select screen.

3. Use the【↑】【↓】【←】【→】keys to enter "0448."

4. Press the【SET】key.
   The display changes to the parameter setting screen.

5. Use the【↑】【↓】【←】【→】keys to enter “10”.

6. Press the【SET】key again.
   The selected value is set, and the display returns to the parameter select screen.



Note

- If the value you have input is outside the setting range, "Error" will be displayed for 1 second. If this error display appears, input a different value that falls within the setting range.
- If a nonexistent parameter ID is entered, "id-Error" will be displayed for 1 second. Check the ID and enter the correct one.

5 Test mode

5.1 Overview of test mode

- I/O test

  The ON/OFF status of each input signal for the driver can be checked. Also, the ON/OFF status of each output signal for the driver can be switched using the **OPX-2A**. There is also an I/O test function with which you can check the connection status of the driver.

- JOG operation

  The actuator can be operated using the keys on the **OPX-2A**.

- Data select operation

  Positioning operation can be performed.

- Return-to-home operation

  Return-to-home operation can be performed.

- Position preset

  The preset value can be set as the command position.

- Teaching function

  This is a function to move the actuator using the keys on the **OPX-2A** and set the attained position as the position of the operation data.

- When pressing the【SET】key while operating an actuator

  The test mode cannot be executed while operating. If the【SET】key is pressed on the select screen of each item, the screen will not move to the lower level and "oPE-Err" will be displayed Be sure to stop the actuator operation before pressing the【SET】key.

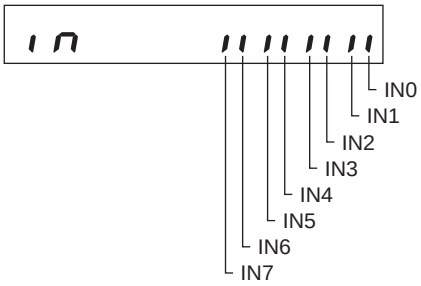
Note

- Stop the actuator operation before changing to the test mode.
- When you move from the top screen of the test mode to a lower level, the following inputs will be disabled.
  START、SSTART、HOME、±JOG、FWD、RVS、MS0 to MS5
- In the I/O test, if the screen moves to the lower level, all of I/O signals and operation will be disabled.
- If the【SET】key is pressed while executing the internal processing via RS-485 communication, "mEm-bUSy" may be displayed. Check “1 Screen transitions” on p.2 when "mEm-bUSy" is displayed. Be sure to wait until all internal processing is completed, before pressing the【SET】key.
- If "Error" is displayed when data select operation, return-to-home operation, position preset or teaching function is performed, check whether an alarm generates.
- When the HMI input is OFF, test mode cannot be executed.
- Do not perform push-motion operation or push-motion return-to-home operation with the **DG**Ⅱ Series. Doing so may result in damage to the motor or gear part.

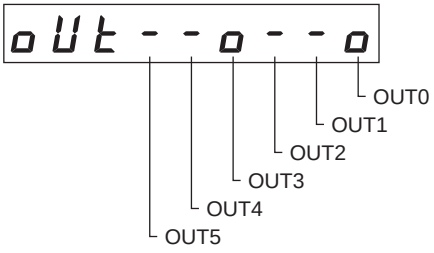
5.2 I/O test

There is also an I/O test function with which you can check the connection status of the driver.
Each digit on the 7-segment LED display corresponds to a signal.
The LED is lit when the input signal is ON, and it is unlit when the input signal is OFF.
Use the【↑】【↓】keys to switch the ON-OFF state of the output signal. "0" is displayed when the signal is ON, while "-" is displayed when the signal is OFF.

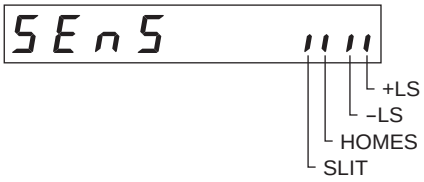
• Input test



• Output test



• Sensor test



5.3 JOG operation

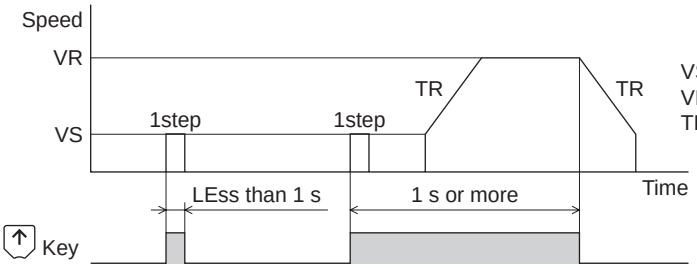
The actuator can be operated using the keys on the **OPX-2A**.
Pressing the 【↑】 key once causes the motor to rotate one step in the positive direction. Pressing and holding the key causes the motor to rotate continuously in the positive direction.
Pressing the 【↓】 key once causes the motor to rotate one step in the negative direction. Pressing and holding the key causes the motor to rotate continuously in the negative direction.

- **DG**Ⅱ Series**:**

Positive direction: The output table rotates in the CCW direction.
Negative direction: The output table rotates in the CW direction.

- **EAS** Series**:**

Positive direction: The linear slide table moves to opposite the motor side.
Negative direction: The linear slide table moves to the motor side.
The operating speed corresponds to the value set in the “JOG operating speed” parameter [ID: 323].
Take note that when the value set in the “JOG starting speed” parameter [ID: 325] is greater than the value set in the “JOG operating speed” parameter [ID: 323], the Jog starting speed will become effective.



VS: JOG starting speed (ID: 325)
VR: JOG operating speed (ID: 323)
TR: Acceleration/deceleration of JOG (ID: 324)

Note In JOG operation, the actuator operates at the set operating speed while the applicable key is pressed. Before executing JOG operation, consider the status of the equipment and condition of its surroundings to confirm thoroughly that actuator operation will not cause any dangerous situation.

5.4 Data select operation

Select a desired operation data number and then press the 【SET】 key, and positioning operation will be performed.

Note

- The actuator operates at the set operating speed in positioning operation. Before executing positioning operation, consider the status of the equipment and condition of its surroundings to confirm thoroughly that actuator operation will not cause any dangerous situation.
- Do not perform push-motion operation with the **DG**Ⅱ Series. Doing so may result in damage to the motor or gear part.

5.5 Return-to-home operation

Return-to-home operation can be performed.
The operating speed corresponds to the value set in the “operating speed of home-seeking” parameter [ID: 353].

Note

- The actuator operates at the set operating speed in return-to-home operation. Before executing return-to-home operation, consider the status of the equipment and condition of its surroundings to confirm thoroughly that actuator operation will not cause any dangerous situation.
- Do not perform push-motion return-to-home operation with the **DG**Ⅱ Series. Doing so may result in damage to the motor or gear part.

5.6 Presetting the position

In this operation, the command position is preset by rewriting the value in the “preset position” parameter [ID: 454].

Note

If operations are limited by the edit lock function, the preset function cannot be performed.

5.7 Teaching function

This is a function to move the actuator using the keys on the **OPX-2A** and set the attained position as the position of the operation data.
The absolute mode will be automatically selected as the operation mode of any position data set by teaching function.
The operating speed, acceleration/deceleration speed and starting speed of teaching function are the same as those of JOG operation.

Note

- The actuator operates at the set operating speed in teaching function. Before executing teaching function, consider the status of the equipment and condition of its surroundings to confirm thoroughly that actuator operation will not cause any dangerous situation.
- When operations are limited by the edit lock function, teaching function cannot be performed.
- Do not perform push-motion operation or push-motion return-to-home operation with the **DG**Ⅱ Series.

6 Copy mode

The **OPX-2A** has four data banks, and operation data and parameters can be saved in each of these data banks. Since a non-volatile memory is used as the data memory element, stored data will be retained even after the power is turned off.
In the copy mode, the data saved in the **OPX-2A** can be downloaded to the driver. Meanwhile, the data saved in the driver can be uploaded to the **OPX-2A**.
It is also possible to verify data in the **OPX-2A** against the corresponding data in the driver, or revert driver data to their initial values.

6.1 Overview of copy mode

- Download

  Copy data saved in the **OPX-2A** to the driver.

- Upload

  Copy data saved in the driver to the **OPX-2A**.

- Verification

  Verify data in the **OPX-2A** against the corresponding data in the driver.

- Initializing driver data

  Revert data saved in the driver to their initial values.

- When pressing the【SET】key while operating an actuator

  Downloading and initializing cannot be executed while operating. If the【SET】key is pressed on the data bank select screen of each item, the screen will not move to the lower level and "oPE-Err" will be displayed. Be sure to stop the actuator operation before pressing the【SET】key.

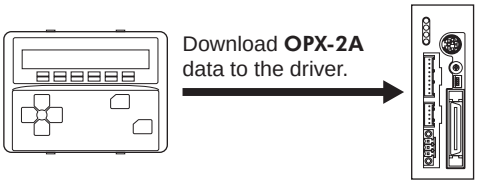
  Uploading and verification can be executed while operating.

Note

- Stop the actuator operation before changing to the copy mode.
- When moving from the top screen of the copy mode to the lower level, the following inputs will be disabled.
  START, SSTART, HOME, ±JOG, FWD, RVS and MS0 to MS5.
- If the【SET】key is pressed while executing the internal processing via RS-485 communication, "mEm-bUSy" may be displayed. Check “1 Screen transitions” on p.2 when "mEm-bUSy" is displayed. Be sure to wait until all internal processing is completed, before pressing the【SET】key.
- When operations are limited by the edit lock function, copy mode cannot be operated.
- When the HMI input is OFF, uploading and verification can only be executed.

6.2 Downloading to the driver

Parameters saved in the specified data bank number are downloaded to the driver.
If a download error occurs, a code indicating the nature of the error will blink on the display.
Download will not be performed and the display will return to the top screen of download.



Blinking display	Description	Action
Prod-Err	The product series of the driver to which data is downloaded is wrong.	• Check the product series of the driver. • Check the data bank number on the **OPX-2A**.
HEAd-Err bcc-Err	An error occurred while data was being downloaded.	Perform download again. If the same error occurs, the data saved in the **OPX-2A** may be damaged. Upload the applicable data to set the **OPX-2A** data again.
no-dAtA	The specified data bank number does not contain parameter.	Check the data bank number.

Note

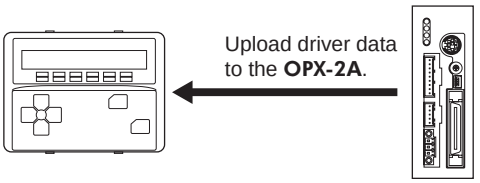
- Some parameters will become effective after cycling the power or executing a configuration. When these parameters were changed by downloading, cycle the driver power or execute a configuration.
- Do not turn off the driver power while the download is still in progress (=while the display is blinking). Doing so may damage the data.

6.3 Uploading to the OPX-2A

Parameters saved in the driver are uploaded to the specified data bank number.

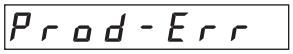
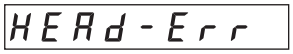
Note

Do not turn off the driver power while the upload is still in progress (=while the display is blinking). Doing so may damage the data.



6.4 Verifying parameters

Parameters saved in the specified data bank number are verified against the corresponding parameters saved in the driver.
If the verification finds that the two sets of parameters have been matched, “Good” will be shown. If the two have not been matched, “Error” will be shown.
If a verification error occurs, a code indicating the nature of the error will blink on the display.
Verification will not be performed and the display will return to the top screen of verification.

Blinking display	Description	Action
	The product series of the driver against which data is verified is wrong.	• Check the product series of the driver. • Check the data bank number on the **OPX-2A**.
 	An error occurred while data was being verified.	Perform verification again. If the same error occurs, the data saved in the、**OPX-2A** may be damaged. Upload the applicable data to set the **OPX-2A** data again.
	The specified data bank number does not contain parameter.	Check the data bank number.

6.5 Initializing driver parameters

Parameters saved in the driver can be reverted to the initial values.

Note

- Some parameters will become effective after cycling the power or executing a configuration. When these parameters were changed by initializing, cycle the driver power or execute a configuration.
- Do not turn off the driver power while the initialization is still in progress (= while the display is blinking). Doing so may damage the data.

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