

User's Manual

Intelligent Positioner GIP-101B

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For Your Safety




Before using this product, read this manual and all warnings or cautions in the documentation provided.

Only Factory Authorized Personnel should be changes and/or adjust the parts of controller.

The Symbols Used in This Manual


 WARNING	 CAUTION
This symbol marks warnings that should be read and used to prevent serious injury or death.	This symbol indicates where caution should be used to avoid possible injury to yourself or others, or damage to property.

The above indications are used together with the following symbols to indicate the exact nature of the warning or caution.

Examples of Symbols Accompanying Warnings and Cautions	
	△Symbols enclosed in a triangle indicate warnings and cautions. The exact nature of the warning or caution is indicated by the symbol inside (the symbol at left indicates risk of electrocution).
	○Symbols enclosed in a circle mark indicate prohibitions(actions that must not be performed).The exact nature of the prohibition is indicates by the symbol inside or next to the circle mark (the symbol at left indicates that the product must not be disassembled).
	●Symbols inside a black circle mark actions that must be performed to ensure safety. The exact nature of the action that must be performed is indicated by the symbol inside (the symbol at left is used in cases in which the AC adapter must be unplugged to ensure safety).

Symbols on the product

The symbol mark on the product calls your attention. Please refer to the manual, in the case that you operate the part of the symbol mark on the product.

	This symbol labeled on the portion calls your attention.
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Disclaimer of Liability

- ① SIGMAKOKI CO., LTD. does not accept liability for damages resulting from the use of this product or the inability to use this product.
- ② SIGMAKOKI CO., LTD. does not accept liability for damages resulting from the use of this product that deviates from that described in the manual.
- ③ SIGMAKOKI CO., LTD. does not accept liability for damages resulting from the use of this product in extraordinary conditions, including fire, earthquakes, and other acts of God, action by any third party, other accidents, and deliberate or accidental misuse.
- ④ If the equipment is used in a manner not specified by the SIGMAKOKI CO., LTD., the protection provided by the equipment may be impaired.



WARNING

- Do not use this product in the presence of flammable gas, explosives, or corrosive substances, in areas exposed to high levels of moisture or humidity, in poorly ventilated areas, or near flammable materials.
- Do not connect or check the product while the power is on.
- Installation and connection should be performed only by a qualified technician.
- Do not bend, pull, damage, or modify the power or connecting cables.
- Do not touch the products internal parts.
- Connect the earth terminal to ground.
- Should the product overheat, or should you notice an unusual smell, heat, or unusual noises coming from the product, turn off the power immediately.
- Do not turn on the power in the event that it has received a strong physical shock as the result of a fall or other accident.
- Do not touch the stage while operation.
- Use dry clothes only for cleaning the equipment.

Chapter 1: Before You Begin

1-1. Package Contents

Purchasers of the Stage Controller should find that the package contains the items listed below. Check the package contents using the following checklist. Contact your retailer as soon as possible in the event that you should find that any item is missing or damaged.

□GIP-101B Stage Controller	:1
□User's Manual (This Manual)	:1
□Dedicated AC adaptor	:1

About the setting of the Memory Switch of this controller, you can set it by sample software.

You can download sample programs from our web page.

For the details of the samples, see the manual of each program.

View our home page http://www.global-optosigma.com/en_jp/software/sample_en.html

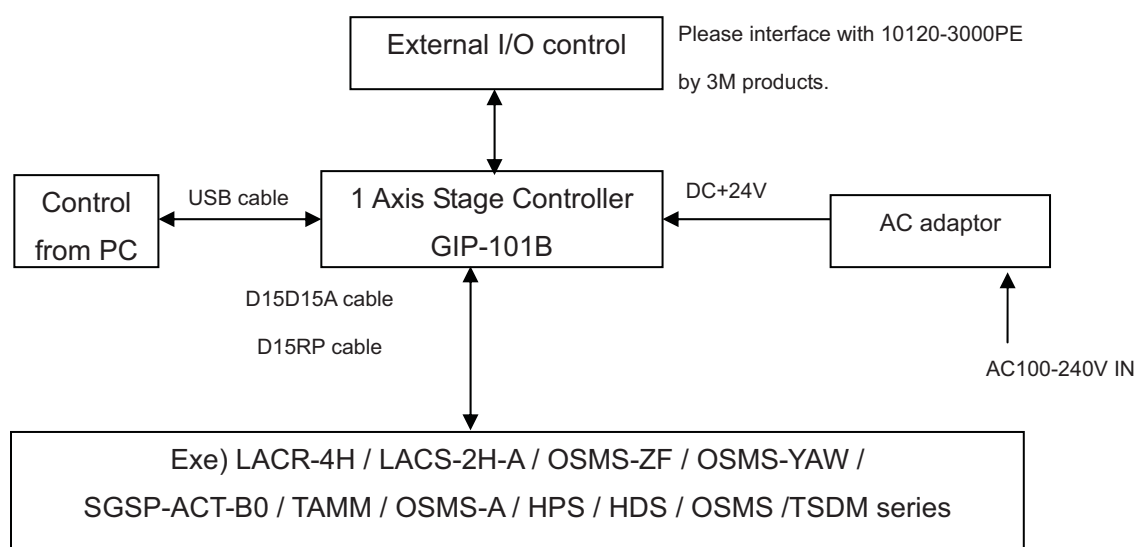
1-2. Overview

This controller is one axes stage controller, which has drivers for five-phase stepping motor.

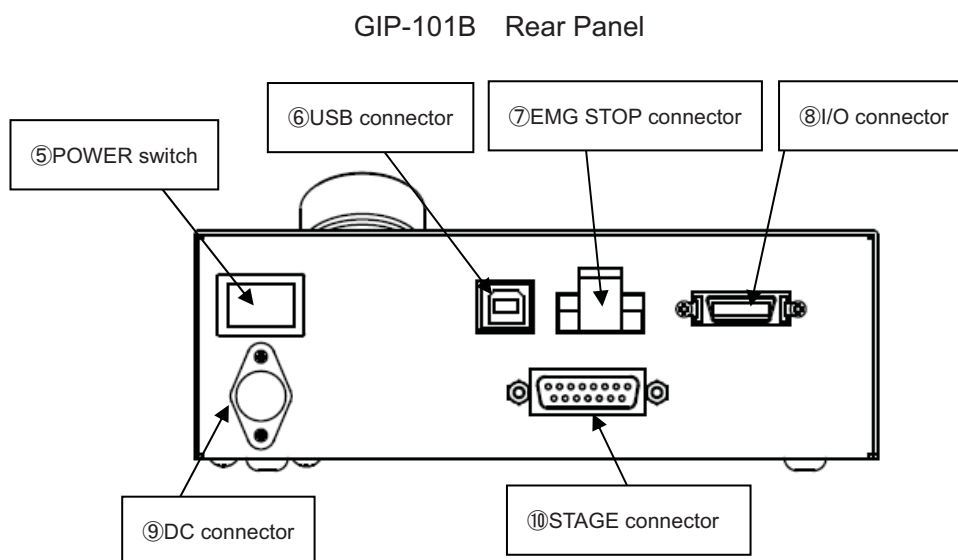
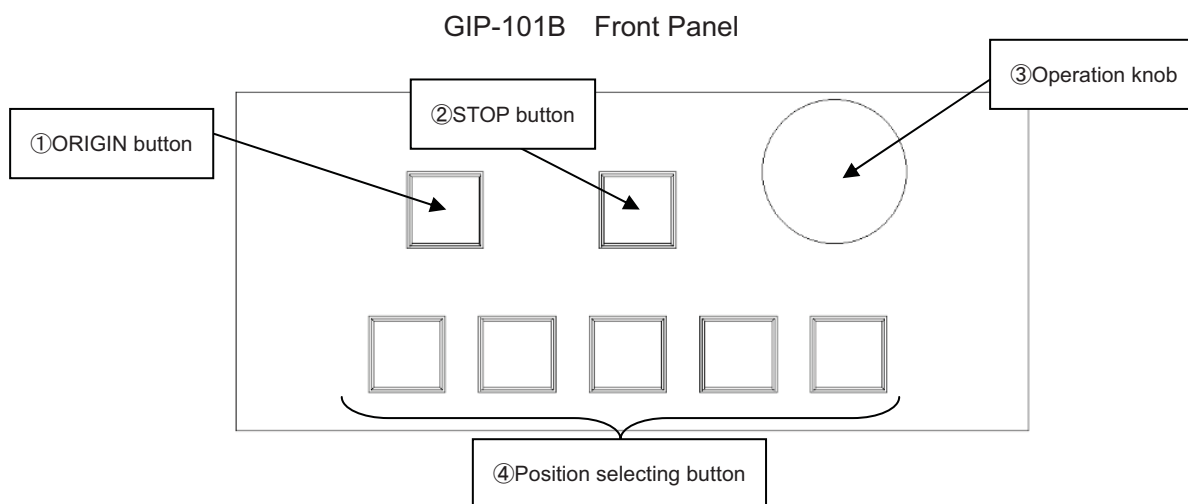
Because this controller has a microstep driver built-in, the smooth movement in high resolving power is possible.

When the GIP-101B is connected to an ordinary personal computer via an USB interface, the stage can be accurately moved to the desired position by simple commands sent from the PC.

1-3. The GIP-101B System



1-4. Parts and Functions



Functions:

- ① ORIGIN button : Button which returns to the machine origin.
- ② STOP button : Immediately stop the motorized stage.
- ③ Operation knob : Turn the knob to drive the motorized stage.
Motorized stage is driven according to angle of knob fast when turn from side to side while pushing operation knob.
- ④ Position selecting button : Used to drive the motorized stage to memorized position.
- ⑤ POWER switch : Product is on when the switch is set to ON.
Set the switch to OFF to turn the product off.

- ⑥ USB connector : This connector is used when the device is controlled from the computer via an USB interface.
- ⑦ EMG STOP connector : Controller normally operates in "Short circuit" condition.
Motorized stage immediately stops in "Open circuit condition".
- ⑧ I/O connector : Motorized stage is driven to the memorized position according to I / O signals.
- ⑨ DC connector : Connect to the power source (+24V, 1.8A).
Use a dedicated AC adapter.
- ⑩ STAGE connector : Connection for cable to the motorized stage



For your own safety, make sure POWER is OFF before connecting every cable.

Chapter 2: Basic Operations

2-1. GIP-101B Connection procedure

First, connect GIP-101B to the motorized stages.

- ① Please confirm the power switch of the GIP-101B is turning off.
- ② Connect a standard cable (D15RP-CA/D15D15A-CA) to the connector of the motorized stage.
- ③ Connect SK stage to connector to the STAGE connector of the GIP-101B controller.

2-2. Connecting to PC and peripheral device

Connect GIP-101B to PC.

USB interface is used for the connection between the PC and GIP-101B.

The USB interface communication parameter at the time of default Value is described below. Please set the configurations of the PC side according to the following table.

Parameter	Descriptions
Baud rate	9600bps
Delimiters	CR+LF
Parity	None
Data bits	8bit
Stop bit	1bit
Flow control	None

- ① Please confirm the power switch of the GIP-101B is turning off.
- ② Use a genuine USB cable,
- ③ Insert of USB cable to the USB connector on the GIP-101B.

2-3. Connecting Power Cable

Connect the dedicated AC adapter to the DC connector of the GIP-101B and plug the power plug of the dedicated AC adapter into the outlet. (Ensure that it is grounded.)

2-4. USB Driver installation Method

please use after the installation of the USB-driver in the following content.

(In the case of Windows 7/ Windows 8/ Windows 8.1/ Windows 10) While the Internet is connected, when connected to GIP-101B, the installation of an automatic driver will start.

***) If unconnected to the Internet, from FTDI's website on a PC connected to the Internet, please download the driver from (VCP Drivers). The port the downloaded driver on unconnected PC and perform the installation of the driver to connect GIP-101B controller.**

The FTDI website (<http://www.ftdichip.com/index.html>)

Chapter 3: Settings

3-1. Change the Controller Setting

3-1-1 Checking the Controller Setting

Adjust the driver switches located on the bottom of the controller to set the current levels appropriate to the connected motorized stage as specified in the manual included with the motorized stage.

The switches can be accessed as shown in Fig. 3-1-1 by removing the panel's (4) screws at bottom of the controller (marked as ▼).

Please refer to the following explanations when setting the switches.

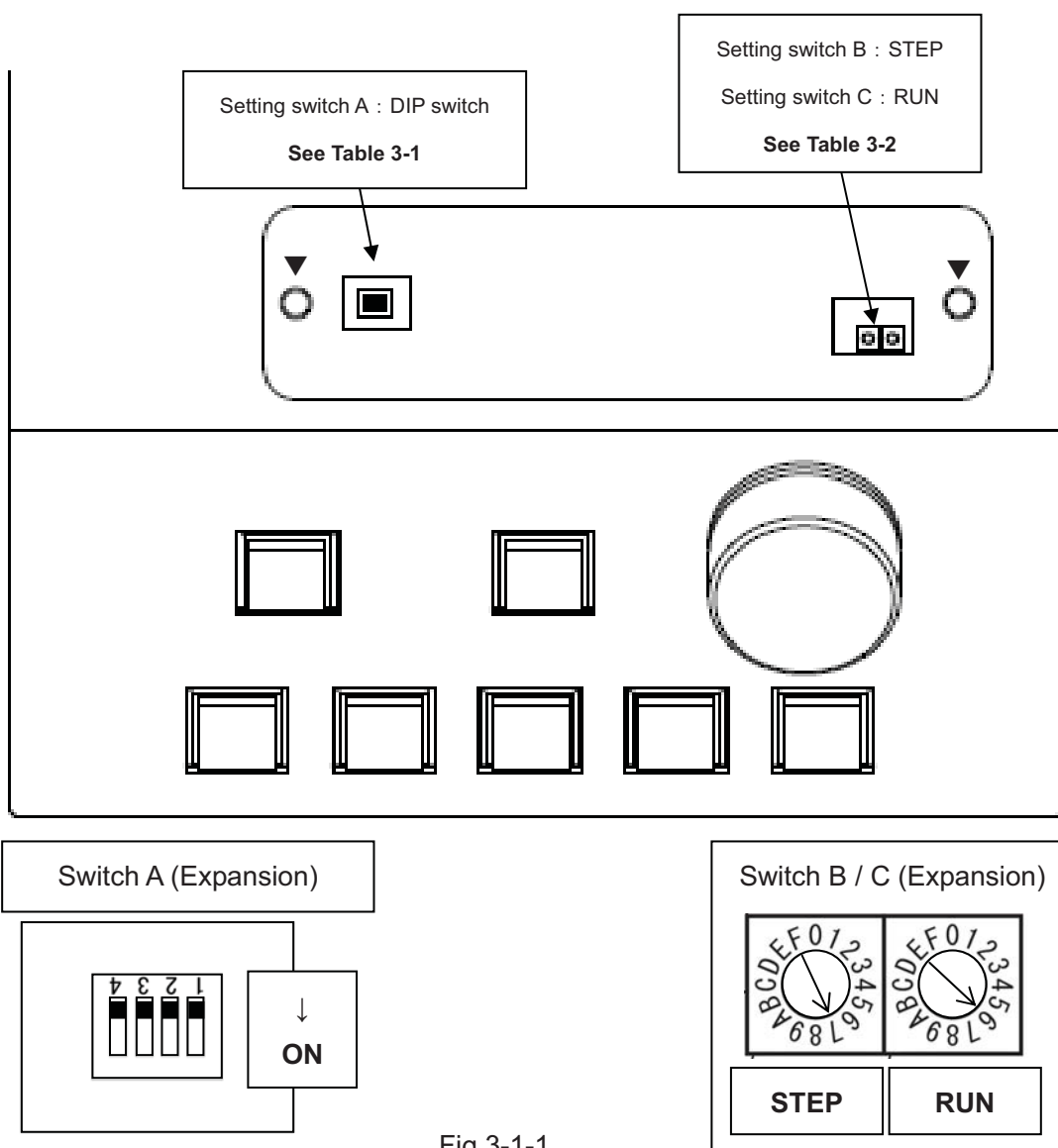


Fig.3-1-1

Table 3-1

SW No,	1	2	3	4
Set vale	linear stages or rotation stages selection		Use it with OFF	FRONT PANEL operation selection

No,	SW1 OFF	SW1 ON
SW2 OFF	Linear stages	30,000 (one rotation / pls)
SW2 ON	36,000 (one rotation / pls)	72,000 (one rotation / pls)

*) For rotation stages, set pulse number for one rotation at full-step operation. The value entered here multiplied by "the number of steps" become "total pulse per rotation" sent out to the built-in driver. For that reason, if the total pulse number is exceeded, the coordinate value is cleared. Also, when moving from the origin position (0 position) in the - direction, the value subtracted from the total number of pulses becomes the coordinate value. For rotation stages, the limit sensor does not stop except when returning to the origin.

For OSMS-YAW series, Choose 72,000.

For LACR-4H, Choose 36,000.

Default value : SW1 : OFF SW2 : OFF

SW4 Front panel operated choice.

ON Front panel operation invalidation was selected.

OFF Front panel operation enabled was selected.

*)Default value : SW4 : OFF

Table 3-2

*)Setting switch B : STEP

SW No,	0	1	2	3	4	5	6	7	8
STEP	1	2	2.5	4	5	8	10	20	25
SW No,	9	A	B	C	D	E	F	*)Default value STEP : 7 (20)	
STEP	40	50	80	100	125	200	250		

*)Setting switch C : RUN

SW No,	0	3	5	6
RUN (A/phase)	0.25	0.35	0.66	0.75

*)Default value RUN : 6 (0.75A/phase)

3-2. Memory Switch settings

The Memory Switches store the controller settings.

When changing Memory Switch settings use the Sample software (SGSample), which can be downloaded from http://www.global-optosigma.com/en_jp/software/sample_en.html

*) After changing Memory Switch, be sure to reboot the power GIP-101B.

3-3. Memory Switch contents list and detailed settings

3-3-1 General

No	Memory Switch contents	Setting Range / Select items	Default Value
1	SPD SEL	1~4	4
2	SPD 1 S	1~500000	10000
3	SPD 1 F	1~500000	100000
4	SPD 1 R	0~1000	200
5	SPD 2 S	1~500000	30000
6	SPD 2 F	1~500000	300000
7	SPD 2 R	0~1000	200
8	SPD 3 S	1~500000	70000
9	SPD 3 F	1~500000	700000
10	SPD 3 R	0~1000	200
11	SPD 4 S	1~500000	100000
12	SPD 4 F	1~500000	1000000
13	SPD 4 R	0~1000	200
14	EB_OUT	ON / OFF	OFF
15	POS_WRITE	ON / OFF	ON
16	CLICK_RATE	1 ~ 60	30
17	BACKLASH_VALUE	0 ~ 1000	50

1) SPD SEL : Speed selection at Power ON

Select the initial setting Speed No. at Power ON.

[Setting Range] 1 ~ 4

2)~13) Speed 1~4(S)(F)(R) : Speed Setting

Set 4 kinds of travel stage Speed (minimum S, maximum F, and acceleration/deceleration time R) at Power ON.

[Setting Range] S : 1~500000 (Unit : PPS)

F : 1~500000 (Unit : PPS)

R : 0~1000 (Unit : mS)

***) Minimum S values should be set smaller than maximum F at Speed Setting.**

14) EB_OUT : Electromagnetic Brake Setting

Select when the brake is attached.

[Select item] ON : Enabled.

OFF : Disabled.

15) POS_WRITE : Memory protect

The memorized locations a prevent reset.

[Select item] ON : Memory write enabled.

OFF : Memory write disabled.

16) CLICK_RATE : Knob sensitivity

This parameter defines adjustment sensitivity of the operation knob at the front panel.

[Setting range] 1~60 (Unit : 1pls)

17) BACKLASH_VALUE : Backlash compensation

0 values correspond to “no backlash compensation”. Make adjustment of this parameter by checking actual movement. The value set here multiplied by “the number of steps” become total compensation value sent out to the built-in driver.

[Select item] 0~1000 (Unit : 1pls)

3-3-2 INTERFACE

No	Memory Switch contents	Setting Range / Select items	Default Value
1	BAUDRATE	9600/38400/57600	9600

1) BAUDRATE : Baudrate setting

Set the data communication speed for the USB (Serial communication) Interface.

[Select item] 9600 : 9600bps
 38400 : 38400bps
 57600 : 57600bps

3-3-3 Axis

No	Memory Switch contents	Setting Range / Select items	Default Value
1	DIVIDE	1/2/2.5/4/5/8/10/20/25/40/50/80/100/125/200/250	20
2	MOVE	POS/NEG	POS
3	ORG SEL	MINI/CENTER/ORGS/NORM/ZPM/ZPP	MINI
4	ORG OFFSET1	0~100000000	0

1) Divide: Divide setting

Use same setting for "switch B : STEP".

[Select range] 1/2/2.5/4/5/8/10/20/25/40/50/80/100/125/200/250

2) MOVE : Travel direction setting

Set + travel direction for axis.

[Select item] POS : Positive rotation
 NEG : Negative rotation

※ In LACR-4H / OSMS-YAW series, "NEG: Negative rotation " can not be used.

3) ORG SEL : Origin reset method setting

Set Origin reset method for axis.

[Select item] MINI: ORG1
 CENTER: ORG2
 ORGS: ORG3
 NORM: ORG4
 ZPM: ORG5
 ZPP: ORG6

*) Regarding each method, please refer to "Origin Reset Method".

4) ORG OFFSET : ORG offset setting

Set ORG offset value for axis (ORG1, ORG5, ORG6) at the ORG reset.

[Setting range] 0~100000000 (Unit: 1pls)

*)When setting range is set [0], Division × 500 pulse move.

3-3-4 Speed

No	Memory Switch contents	Setting Range / Select items	Default Value
1	ORG SPD S	1~500000	5000
2	ORG SPD F	1~500000	50000
3	ORG SPD R	0~1000	200
4	ORG SPD M	1~500000	25000

1~4) ORG SPD(S)(F)(R)(M): ORG reset speed setting

Set mechanical ORG reset speed (minimum speed S, maximum speed F, acceleration time, ORG-reset speed M) for each axis.

[Setting Range] S: 1~500000(Unit: PPS)

F: 1~500000 (Unit: PPS)

R: 0~1000(Unit: ms)

M: 1~500000 (Unit: PPS)

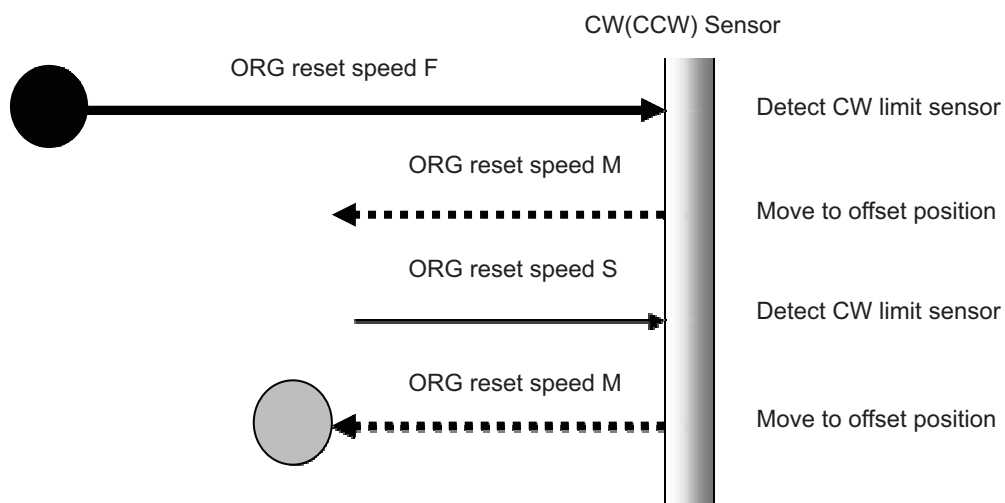
*) Regarding Speed setting, minimum speed S should be set smaller than maximum speed F and ORG-reset speed M.

『Origin Reset Method』

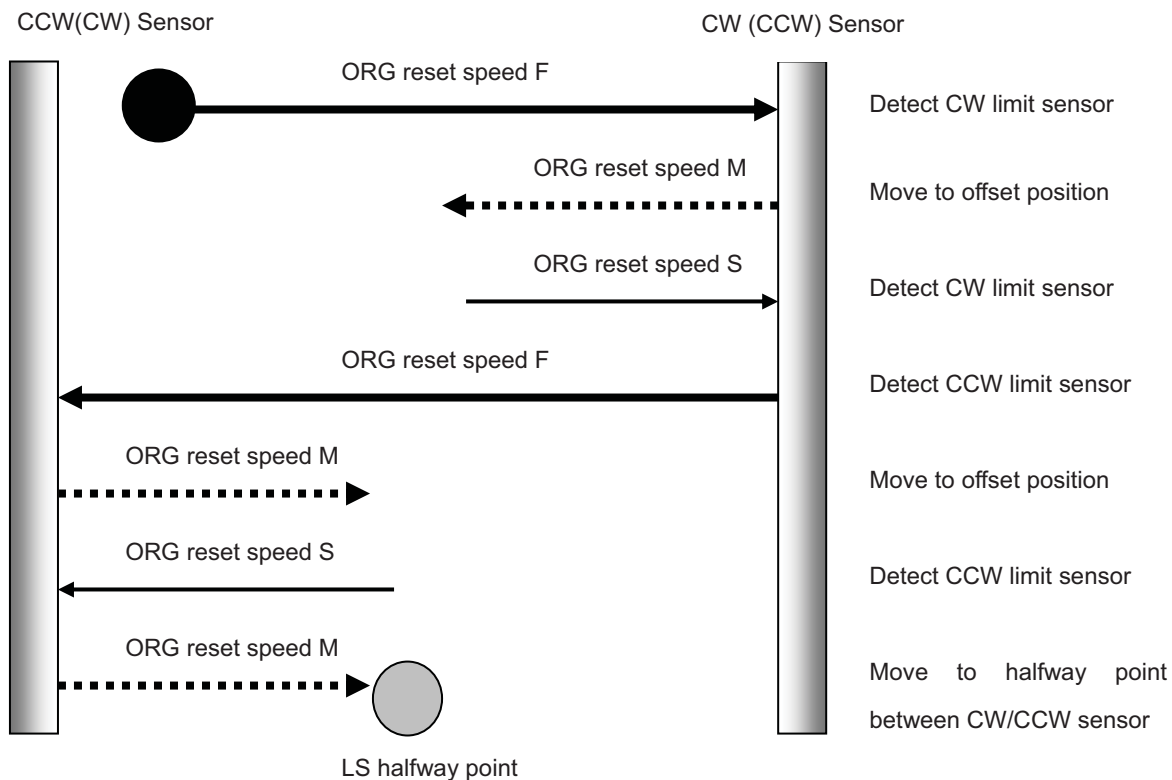
There are six types in Origin Reset setting. Select optimal Origin Reset setting for stage in use depending upon software. There are two parameters to do with Origin Reset, which are Origin Reset Speed (S, F, R, M) and Origin offset (ORG OFFSET). Parameters of each axis can be individually set. Select the optimum value according to the software. In case of when PGO (Z pulse) is used as an Origin sensor, (ORG5 or ORG6), Origin sensor is not in need at stage since Excitation Reset of motor driver is used.

1, ORG1 (MINI method compatible, however stage moves to ORG offset value)

ORG OFFSET default value is 0. Division × 500 pulse move

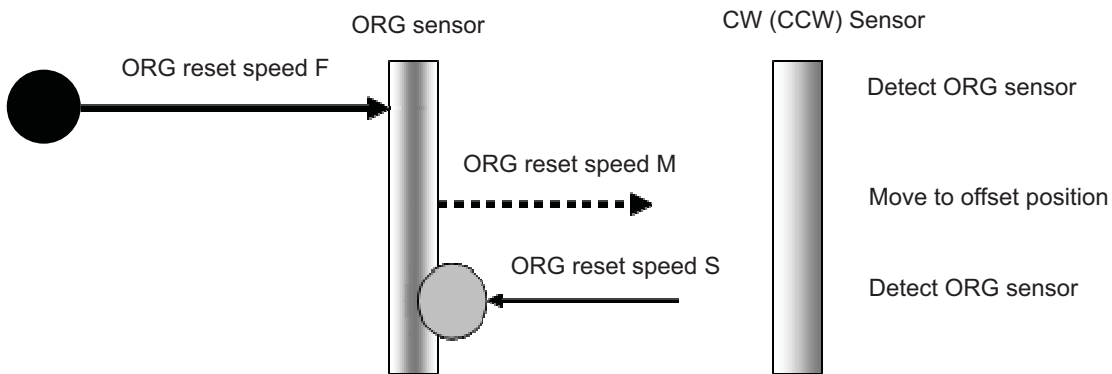


2, ORG2 (CENTER method)

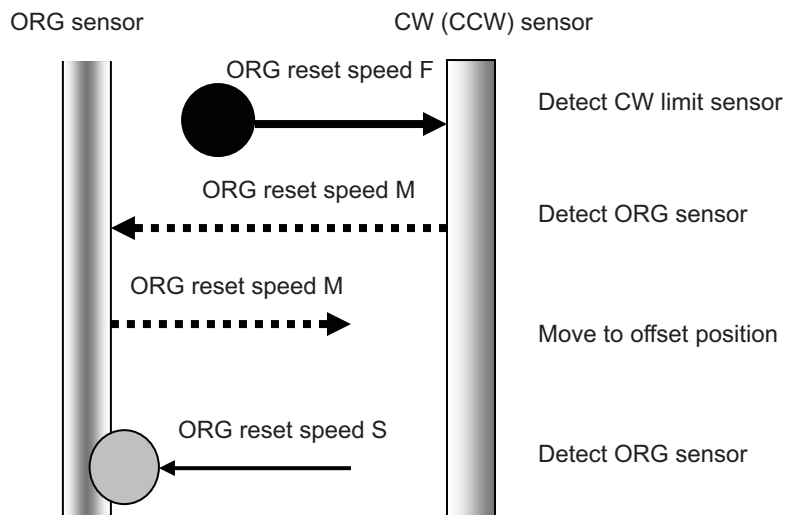


3, ORG3 (for 3 sensor use (LS + ORG))

3-1) In case that ORG sensor is set on the inside of CW(CCW) sensor



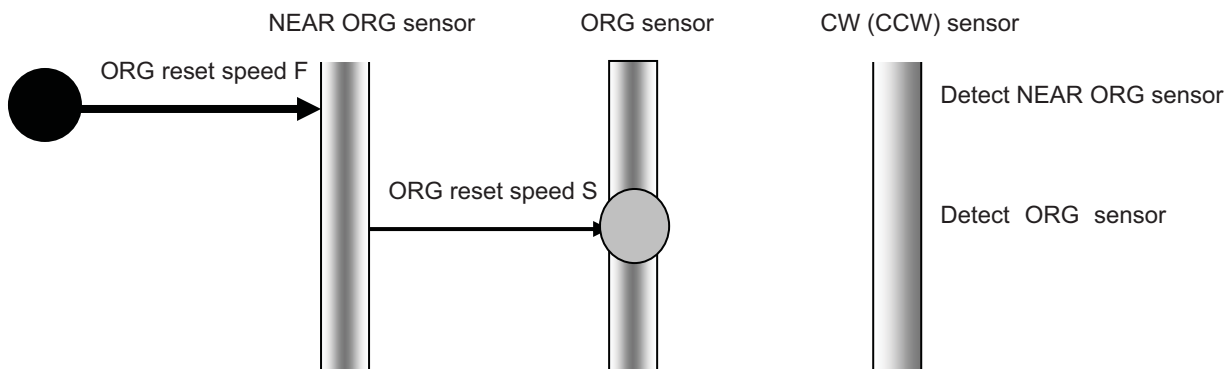
3-2) In case that ORG sensor is set beyond limit SW toward CW direction.



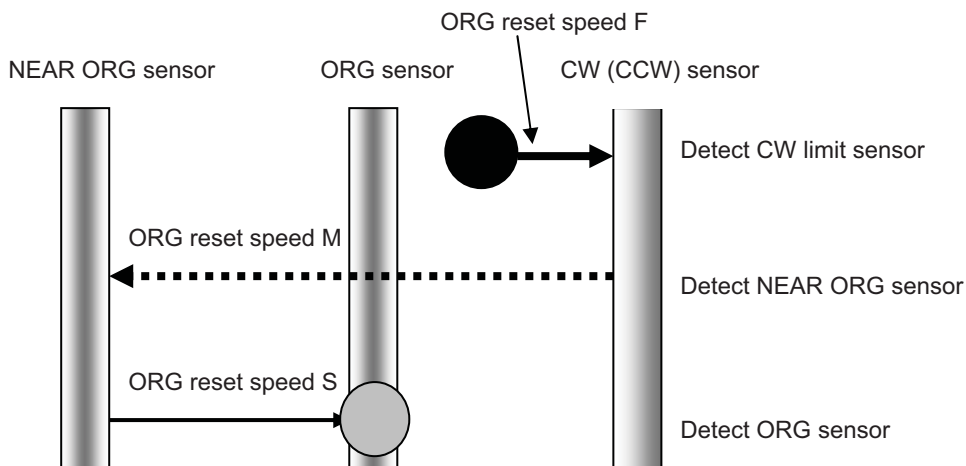
Caution1) In case that after detect CW (CCW) sensor, stage move toward CCW direction and then can not detect ORG sensor (in case of no ORG sensor), stage stop at CCW (CW) sensor position.

4, ORG4 (for 4 sensor (LS+SD+ORG) use.)

4-1) In case that NEAR ORG sensor is on the inside of CW(CCW) sensor.



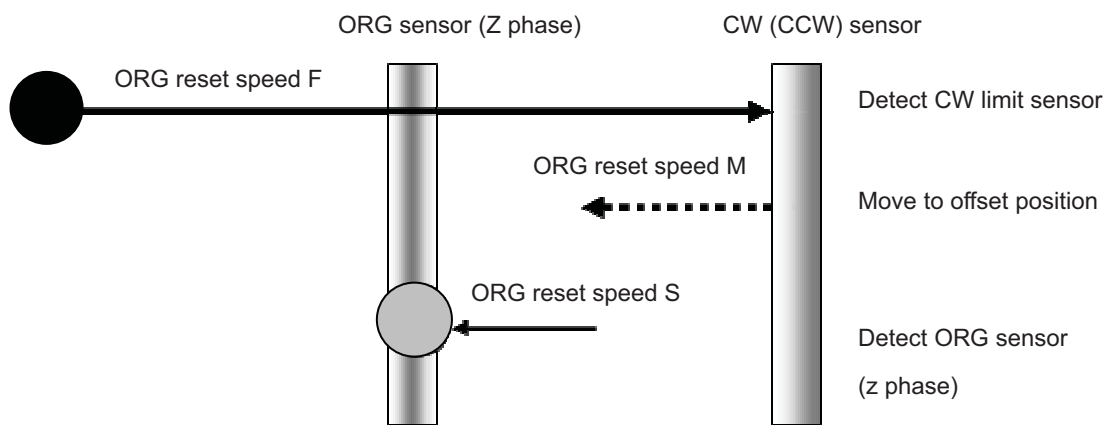
4-2) In case that ORG sensor is beyond NEAR ORG sensor toward CW(CCW) direction.



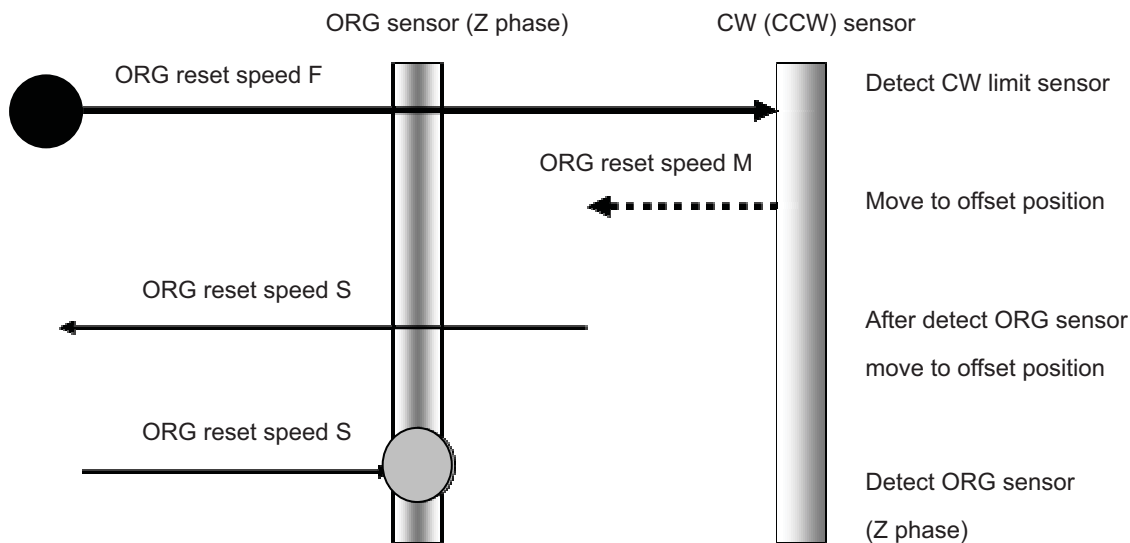
Caution1) In case that after detect CW (CCW) sensor, stage move toward CCW direction and then can not detect NEAR ORG sensor (in case of no NEAR ORG sensor), stage stop at CCW (CW) sensor position.

Caution 2) In case that after detect NEAR ORG sensor, stage move toward CW direction and then can not detect ORG sensor (in case of no ORG sensor), stage stop at CW (CCW) sensor position.

5, ORG5 (for 3 sensor use (LS+ORG(Z phase)))



6, ORG6 (for 3 sensor use (LS+ORG(Z phase)))



Chapter 4: Using GIP-101B to position Motorized Stages

4-1. Operated by buttons placed in front panel.

Operate the connected automatic stage.

For each operation button, it becomes as follows.

4-1-1 ORIGIN button : Move to origin

Press Return to ORIGIN button. ORIGIN button will blinking the stage will move to origin position and stop. (Lamp of origin button will light up.) Coordinate value is cleared by 0.

4-1-2 Operation knob : Using the Operation knob

Turn left or right Operation knob to move the motorized stage Motorized stage will move according to angular degree when you turn left or right while pressing Operation knob at the same time.

When you turn left or right while pressing Operation knob With the memory switch setting speed (F) as the upper limit, depending of angular degree of knob, driving is performed with the speed varying from 1/10 of the setting speed to 10 steps.

Also, when changing the moving speed with the D command, the upper limit of the changed moving speed (F) is set, depending of the angular degree of the knob, while varying from 1/10 of the set speed to 10 steps according to the rotation angle of the knob.

4-1-3 Position select button : Movement using the Position selecting buttons

[Move to a position]

After pressing a position button, Position button will blinking the motorized stage will move to the position that was memorized and stop. (Lamp of position button will light up.)

***) At factory shipment, position selecting buttons 1 to 5 All 0 positions (origin) are memorized.**

[Memorizing a position] .

Move the stage to the location to be memorized using the manual operation knob.

Press a Position selecting button (1-5) and hold it until it stops blinking.

When the light changes from blinking to on, the position is memorized.

*) If the motorized stage is a linear type, do not make memorize a position close to a limit sensor. The motorized stage might reach to limit sensor due to backlash correction function and the motorized stage will not stop at correct position.

If it is necessary to set a position near limit sensor, minimize the backlash correction value in order to avoid the motorized stage reaching to limit sensor.

4-1-4 STOP button : Stop movement

Pressing the STOP button will immediately stop any stage motion. If the stage is moving when the STOP button is pressed, the stored location will no longer be accurate. A move to ORIGIN will need to be performed before normal operation can continue. Note that pressing a Position selecting button after pressing the STOP button will perform the move to ORIGIN, after which the Position selecting button will operate normally.

4-2. Feature

The controller can be connected to a computer using a USB interface. Motorized stages can then be precisely controlled by commands (strings) transmitted from the computer.

And command format of GIP-101B, will be compatible with our controller (GIP-101).

4-3. Command

4-3-1 Format of command

General format is shown below. But, please refer each command details as there may be a little different point in some commands.

code : axis±Pnum

code Use a string to represent a command.

: Command separation(Colon(:))

Axis 1 or W

± Specify the movement direction

P delimiter letter to moving distance

num Specify the moving distance by plus numbers.

This value should not be decimal. If it is decimal, it will be returned NG due to devious command.

Capital or lower case characters can used. Example: h and H are both valid for the Home command.

Backspace is available to delete one character adjacent.

Command string must not have leading or trailing spaces.

Otherwise, the command string will not be accepted and NG will be returned as a command error.

If commands which are Q, ?, ! are issued, correspondent status will be returned.

In case of other commands, it will be returned OK (correct acceptance) or NG (Reject cceptance due to devious commands)

In case of command use like drive commands which are B, M, A and J except H, it needs to be activate command (G).

4-3-2 Command list

Command	Movement	Detail
H	Return to mechanical origin	Detect mechanical origin
B	Position No.	Set movement to position No.
M	Set number of pulses for relative movement	Setting of Axis of movement, direction, number of pulses with relative coordinate
A	Set number of pulses for absolute movement	Setting of Axis of movement, direction, number of pulses with absolute coordinate
J	Jog command	Move by minimum speed (S)
G	Execute command for moving	Start to move
L	Stop	Stop or reduce speed
R	Set electronic (logical) origin	Set the electronic (logical) origin to the current position
D	Speed settings	Set S, F, and R of M and A command
C	Free motor	Excitation ON/OFF
P	Set position memory	Set position memory
Q	Status1	Return current position etc.
!	Status2	Return B(Busy) or R (READY)
?	Internal information	Return by internal information

4-3-5 M command (Relative movement command)

(1) Function

This command is to specify the axis of travel, direction, and the travel (number of pulses).

This command must always be followed by a drive (G) command. Travel is by means of acceleration/deceleration driving.

***) Controller enables to output number of pulse (-134217728 to +134217727).**

In case of the over number, NG will be returned and will is not acceptable during.

The excitation OFF of motor, it will be responded by “NG” as error and command will not acceptable during.

When this command is sent under condition of busy and unconnected of axis, it will be responded by “NG” as error and command will not acceptable during.

(2) Example

M : nmPx

(3) Parameter

n : '1' or 'W'	Name of axis to operate
m : '+' or '-'	+: Moves the axis in the positive direction, -: Moves the axis in the negative direction
x : Moving pulse	Set a number from -134217728 to +134217727

(4) Return

Normal “OK”

Error “NG”

Example) M : 1+P1000 Sets 1000pulse move in the positive direction.

M : W-P5000 Sets 5000pulse move in the negative direction.

4-3-6 A command (Absolute movement command)

(1) Function

This command is to specify the axis of travel, direction, and the travel distance (number of pulses). This command must always be followed by a drive (G) command. Travel is by means of acceleration/deceleration driving.

***) Controller enables to output number of pulse (-134217728 to +134217727).**

In case of the over number, NG will be returned and will is not acceptable during.

The excitation OFF of motor, it will be responded by “NG” as error and command will not acceptable during.

When this command is sent under condition of busy and unconnected of axis, it will be responded by “NG” as error and command will not acceptable during.

(2) Example**A : nmPx.****(3) Parameter**

n : '1' or 'W' Name of axis to operate

m : '+' or '-' +: Moves the axis in the positive direction, -: Moves the axis in the negative direction

x : Moving pulse Set a number from -134217728 to +134217727

(4) Return

Normal "OK"

Error "NG"

Example) A : 1+P1000 Set a move to coordinate 1000.

A : W-P5000 Set a move to coordinate -5000.

4-3-7 J command (Jog command)**(1) Function**

This command is to continue the movement with start-up speed (S speed). During command operation, stage will move non-stop until the detection of limit sensor or receipt of Stop command (L command).

Activation command (G:) is necessary after execution of this command.

The excitation OFF of motor, it will be responded by "NG" as error and command will not acceptable during.

When this command is sent under condition of busy and unconnected of axis, it will be responded by "NG" as error and command will not acceptable during.

(2) Example**J : nm****(3) Parameter**

n : '1' or 'W' Name of axis to operate

m : '+' or '-' +: Moves the axis in the positive direction, -: Moves the axis in the negative direction

(4) Return

Normal "OK"

Error "NG"

Example) J : 1+ Set jog operation in the positive direction

4-3-8 G command (Driving command)

(1) Function

The command to perform the driving operation of the stage. The stage is driven according to the B,M,A and J command run immediately before. On detecting a limit, the stage being driven stops immediately without acceleration/ deceleration.

Running this command without running a moving command (B,M,A and J command) generates a command error.

The excitation OFF of motor, it will be responded by “NG” as error and command will not acceptable during.

When this command is sent under condition of busy and unconnected of axis, it will be responded by “NG” as error and command will not acceptable during.

(2) Example

G : Drive

(3)Return

Normal “OK”

Error “NG”

Example) M : 1+P1000

G : Moves 1000pulse in the positive direction

4-3-9 L command (Decelerate and stop command)

(1) Function

It decelerates and terminates stage.

(2) Example

L : 1 Decelerate and stop

L : W Decelerate and stop

(3) Return

Normal “OK”

Error “NG”

4-3-10 L:E command (Emergency stop (Immediate stop) command)

(1) Function

It terminates stage immediately.

(2) Example

L : E means to stop stages of immediately.

4-3-11 R command (Electrical (logical) origin settings command)

(1) Function

Clear the coordinate value by setting current position of the stage to coordinate origin.

The excitation OFF of motor, it will be responded by “NG” as error and command will not acceptable during.

When this command is sent under condition of busy and unconnected of axis, it will be responded by “NG” as error and command will not acceptable during.

(2) Example

R : 1 Set the electronic (logical) origin

R : W Set the electronic (logical) origin

(3) Return

Normal “OK”

Error “NG”

4-3-12 D command (Speed setting command)

(1) Function

When power is on, start-up speed (S), final speed (F) and acceleration and deceleration time (R) of speed number designated by SPEED SEL in memory switch are set within.

The travel speed can be altered according to this command.

Setting range

Start-up speed (S) 1 - 500000pps

Final speed (F) 1 - 500000pps

Acceleration and deceleration time (R) 0 - 1000ms

***)S should be equal to F or smaller**

When this command is sent under condition of busy and unconnected of axis, it will be responded by “NG” as error and command will not acceptable during.

(2) Example

D : nSspd1Fspd2Rspd3

(3)Parameter

n : ‘1’ or ‘W’ Name of axis to operate

spd1 : Minimum Speed S Set a number from 1-500000. [PPS]

spd2 : Maximum Speed F Set a number from 1-500000. [PPS]

spd3 : Acceleration/ Deceleration time Set a number from 0-1000. [mS]

(4) Return

Normal “OK”

Error “NG”

Example) D : 1S500F5000R200

Set the minimum speed to 500[PPS], the maximum speed to 5000[PPS],and the acceleration/ deceleration time to 200[mS].

4-3-13 V command (Setting of returning origin speed command)

(1) Function

This command indicates the setting of returning origin speed to the designated. When this command is sent under condition of busy and unconnected of axis, it will be responded by NG as a command error and all command will stop to operate. When the power is turned on, it will be the setting speed of the memory switch.

(2) Example

V : 1,s,f,r,m

(3)Parameter

s : Start-up speed (Initial speed) range of setting: 1-500000 (unit : PPS)

f : Maximum speed range of setting: 1-500000 (unit : PPS)

r : Acceleration/deceleration time range of setting:0-1000 (unit : ms)

m : ORG reset speed range of setting: 1-500000 (unit : PPS)

***)Note : the condition of $s \leq m \leq f$**

(4) Return

Normal "OK"

Error "NG"

Example) V:1,500,10000,200,5000 Set the minimum speed to 500[PPS], the maximum speed to 10000[PPS],and the acceleration/ deceleration time to 200[mS] and ORG reset speed by 5000[PPS].

4-3-14 C command (Excitation On/OFF command)

(1) Function

This command indicates an Excitation On/OFF of motor. The stage is able to move (rotate) manually when the excitation OFF of motor. When this command is sent under busy condition of motorized stage, it will be responded by NG as error and command will not acceptable during.

***) When this command is sent under condition of busy and unconnected of axis, it will be responded by "NG" as error and command will not acceptable during.**

(2) Example

C : nm

(3) Parameter

n : '1' or 'W' Name of axis to operate

m : '0' or '1' 0: free motor, 1: hold motor

(4) Return

Normal "OK"

Error "NG"

Example) C : 10 Free motor

4-3-15 P command (Position Memory command)

(1) Function

By this command, the position is memorized. All buttons can be set a position memory by absolute coordinate.

*) When "POS_WRITE" of the memory switch is off, it will be responded by "NG" as error and command will not acceptable during.

(2) Example

P : BnmPy

(3)Parameter

n : 1 to 5	Button number
m : '+' or '-'	+: Moves the axis in the positive direction, -: Moves the axis in the negative direction
x : position memory	Set a number from 0 to 100000000

(4) Return

Normal "OK"

Error "NG"

Example) P : B1+P1000 Set coordinate 1000 is memorized to button number 1.

P : B3-P500 Set coordinate -500 is memorized to button number 3.

4-3-16 Q command (Status 1 command)

(1) Function

On receipt of this command, the controller returns the coordinate and the current state.

(2) Example

Q :

(3) Return

- 1000, ACK1, ACK2, ACK3

Coordinate

ACK1 : X	Command error
K	Command accepted normally
ACK2 : L	LS stop
K	Normal stop
ACK3 : B	Busy status
R	Ready status

*) Coordinate value has a fixed length of ten digits, including symbols.

(symbols are left-aligned, coordinates value right-aligned).

4-3-17 ! command (Reading status command)**(1) Function**

On receipt of this command, the controller returns the stage operating status.

(2) Example

! :

(3)Return

B Busy status
R Ready status

4-3-18 ? command (Reading internal information command)**(1) Feature**

This command indicates to return controller information.

(2) Example

? : Paxis

P above represents by string parameter is shown as table below.

Axis above represents axis number. Note: axis no must be written only when D or H string parameter is applied.

String parameter	Returned data	Example of returned data
1	Memory represent value of Position number 1	+1000
2	Memory represent value of Position number 2	+2000
3	Memory represent value of Position number 3	+3000
4	Memory represent value of Position number 4	+4000
5	Memory represent value of Position number 5	+5000
N	Device name	GIP-101B
V	Version	V1.00
R	Pulse number per one rotation	+72000 *) Returned data with the value that multiplied "DIVIDE" on the number of 1 rotation pulse chose with DIP switch. linear stages : +0
D	Travel speed	S100F1000R200
H	Returning origin speed	S500F5000R200M2500
BT	Position specified value information	1 (= Position 1)
ORG	Checking status of origin	1(= After origin)

4-4. Using I/O signal

GIP-101B has following I/O signal functions.

- Busy signal output-1 point
- Input-6 point (photo-coupler input)

①READY signal output

This is output. It is output when in the "READY" state

②M-ORG input

This is input port. Signal to return to mechanical origin

③POS1 to 5 input

This is input port. It is used to drive the motorized stage to memorized position.

④+24V_EX

I / O power supply DC24 V output.

⑤GND_EX

I / O power supply GND.

***) The controller built-in power supply is not usable other than the I/O signal.**

***) The pulse width of the I / O signal should be 10 ms or more.**

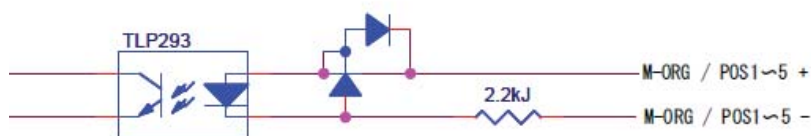


Fig4-1 Input circuits (M-ORG / POS1 to 5)



Fig4-2 Output circuits (READY)

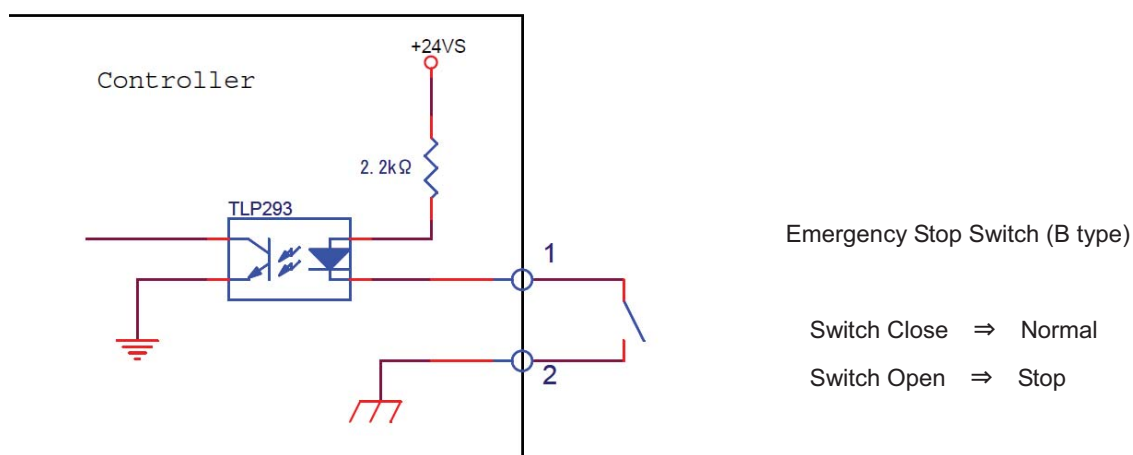
Chapter 5: Emergency STOP

The connector model "MSTB2,5/2-GF-5,08" (PHOENIX CONTACT Inc.) is used.

When in use, connect a plug component "MSTB2,5/2-STF-5,08" (PHOENIX CONTACT Inc.) that attached to the product.

The EMG_STOP signal operates in the logic of "Normal Close". Attach a jumper wire while normal operation.

Please note that "EMG STOP" is triggered at the rising edge from CLOSE to OPEN. It is not triggered by the signal level.



Chapter 6: Specifications

6-1. Specifications

1. General Specifications

Power source	DC24V 1.8A
(Dedicated AC adaptor)	AC100-240V 50/60HZ
Operating temperature	5~40°C
Storage temperature	-20~60°C
Altitude	up to 2000m
Indoor use only	
Installation category	II
Pollution degree	2
Ambient humidity	20 to 80%RH (no condensation)
External dimensions	175W×165D×55H(excluding projections)
Weight	1.2kg

2. Performance

Controlling axis	1 axis
Maximum driving speed (F)	1~500000PPS
Minimum driving speed (S)	1~500000PPS
Maximum No.of travel pulse	-134217728 (Pulse) ~ +134217727 (Pulse)
Acceleration/deceleration time (R)	0~ 1000ms

Sensor Input Origin sensor / Proximity sensor / CW (-) Limit / CCW (+) Limit
(Memory switches can be used to change input logic for sensors.)

Interface USB Interface (Serial communication)

Communication Parameters

- Baud Rate 9600/38400/57600 bps
- Data Bits 8bit
- Parity None
- Stop Bit 1bit
- Flow Control None
- Delimiters CR+LF

I/O Input 6-pin (Photo-coupler Input, Internal Resistance 2.2kΩ)

- Return-to-origin command -1 point
- Position number 1 to 5 -5 point

Output 1-pin (open-collector output, maximum use conditions DC24V 20mA)

- READY signal -1point

3. Driver Specifications

Driver type	Bi-polar pentagon micro-steps system
Driving electric current (output current)	0.75 A/phase (0.35 to 0.75 A/phase)
Current down (stop current)	0.375 A/phase (0.175 to 0.375 A/phase)
Division (micro-step) settings	1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200, 250 divisions

6-2. Connector Pin Assignments

• 6-2-1. I/O Connector

No.	Description	No.	Description
1	M-ORG+	11	POS5+
2	M-ORG-	12	POS5-
3	POS1+	13	READY+
4	POS1-	14	READY-
5	POS2+	15	GND_EX
6	POS2-	16	24V_EX
7	POS3+	17	GND_EX
8	POS3-	18	24V_EX
9	POS4+	19	GND_EX
10	POS4-	20	24V_EX

Connector 10220-52A2PL (by 3Mproducts) used

• 6-2-2. STAGE1,2 Connector

No.	Description	No.	Description
1	Blue: motor wiring	9	GND : Electromagnetic Brake
2	Red: motor wiring	10	+24V : Electromagnetic Brake
3	Orange: motor wiring	11	LS (+): limit detection on +
4	Green: motor wiring	12	LS (-): limit detection on-
5	Black: motor wiring	13	GND: common sensor
6	GND: common sensor	14	NEAR: proximity detection
7	ORG: mechanical origin detection	15	+24V: sensor power supply
8	+24V: sensor power supply		

Female XM3B-1522 connector (OMRON products) used

• 6-2-3. USB Connector

No.	Description	No.	Description
1	-	3	DATA+
2	DATA-	4	GND

Connector XM7B-0442 (By Omron) used

6-3. Outlines

