P601P

Stepping Servo Motor Single Aix Programmable Controller User's Manual

Made by TROY Enterprise Co., Ltd

Environment Responsibility

- TROY is always committed to environment protection. All packaging material is recyclable and reusable
- If disposing of used product, please recycle by type as per waste disposal procedures.

----------Protect the green earth with your care and commitment--------

※The product is subject to design modification for performance improvement without prior notice. For more details please contact your local seller.

Precautions

Precautions for using

1.Thank you for purchasing TROY products. Please read this users manual thoroughly before installing and operating the driver, and always keep the manual where it is readily available.

2. The products described in this manual has been designed and manufactured for use in industrial machinery, and must not be used for any other purpose. We are not responsible for any damage caused through failure to observe this warning.

3.Check that the motor, driver and any accessories are all present. If an accessory is missing or damaged, contact the nearest our branches.

4.Never disassemble the motor and driver. Damage or performance impairment may result. Disassembly voids all warranties.

Precautions for maintenance

Check the ambient environments, clean the system equipment to remove dust and tighten the screws periodically. Also pay attention to the followings.

1. Contact us when repairs become necessary.
2. Since the temperature of the frame of the driver can rise high, be careful when conducting maintenance work or inspection work.

Precautions for warranty period

Within the period of one year after delivery of the system equipment, when failures occurring from design error or fabrication error attributable to the manufacture side occur, we will be repairing the failure free of charge within the reparable range or will replace with substitute.
(We cannot hold ourselves responsible for breakage and accidents occurring from your use beyond the specified range described in this document.)

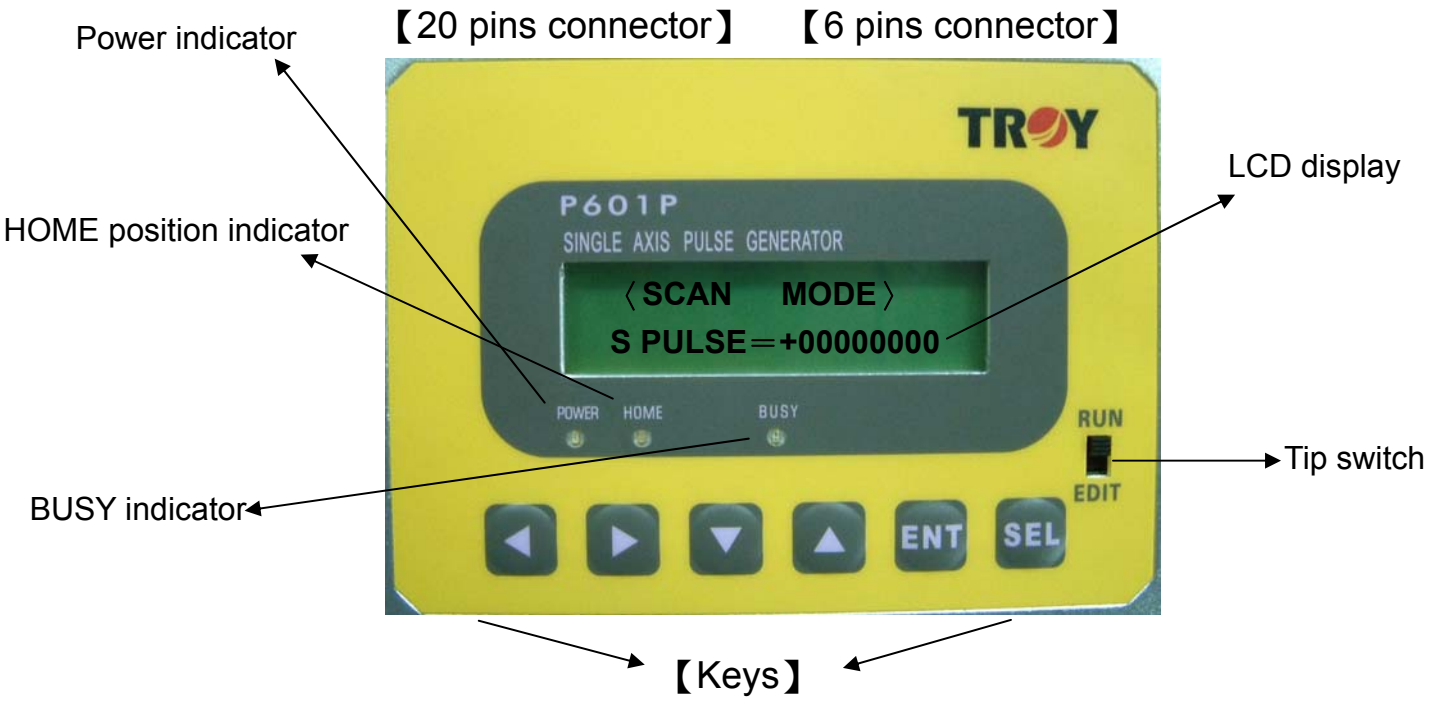
Precautions for disposal

When disposing of the driver and the motor, treat them as ordinary industrial waste.

CONTENTS

※For any operational or technical question with the product, please contact us for professional service「**0800-450-168**」during our business hours.

1.Name of controller part



2.20 pins connector signal

Pin No.	Input/Output	Name	Functions
1	Input	0V	Power input(0V)
2	Input	+24V	Power input(+24V)
3	Input	START	Start signal
4	Input	R/S	L→SCAN (Continuous operation) H→RUN (Positioning operation)
5	Input	STOP	Stop emergency L→Stop operation H→Operation allowable
6	Output	BUSY	Pulse generated and the output signal will output at the same time(L output)
7	Output	READY	OUT signal (L output) OUT-NOT signal(H output)
8	Input	SEL1	Program selection/motor continue operation:CW
9	Input	SEL2	Program selection/motor continue operation:CCW
10	Input	SEL3	Program selection
11	Input	SEL4	—
12	Input	BL	CCW limited sense signal input
13	Input	BHL	CCW deceleration then stop sense signal input
14	Input	ORG	Mechanical HOME operation sense signal input
15	Input	FHL	CW deceleration then stop sense signal input

16	Input	FL	CW limited sense signal input
17	Output	CW+	CW pulse output:Connect with the driver CW+
18	Output	CW-	CW pulse output:Connect with the driver CW-
19	Output	CCW+	CCW pulse output:Connect with the driver CCW+
20	Output	CCW-	CCW pulse output:Connect with the driver CCW-
Do not turn on the power before installed the 20 pins connector			L:Pin connect with the 0V H:Pin open

3.6 pins tip switch

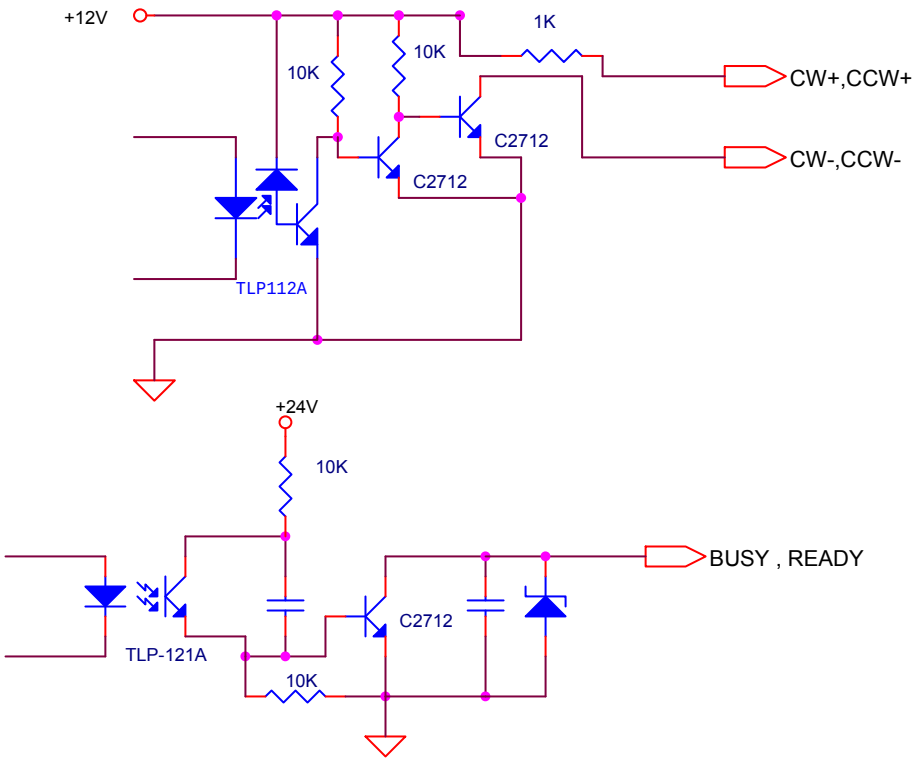
No.	Name	Functions	Description
1	TEST	TEST MODE	OFF:General operation mode ON:Test mode
2	FHL	CW deceleration the stop sense mode selection	1.OFF:Normal close sense type 2.ON:Normal opesn sense type 3.If you are not using the functions 2~6.Please switch the tips switch to the ON
3	FL	CW limited sense mode selection	
4	ORG	Mechanical HOME sense mode selection	
5	BHL	CCW deceleration then stop sense mode selection	
6	BL	CCW limited sense mode selection	

4.Specs

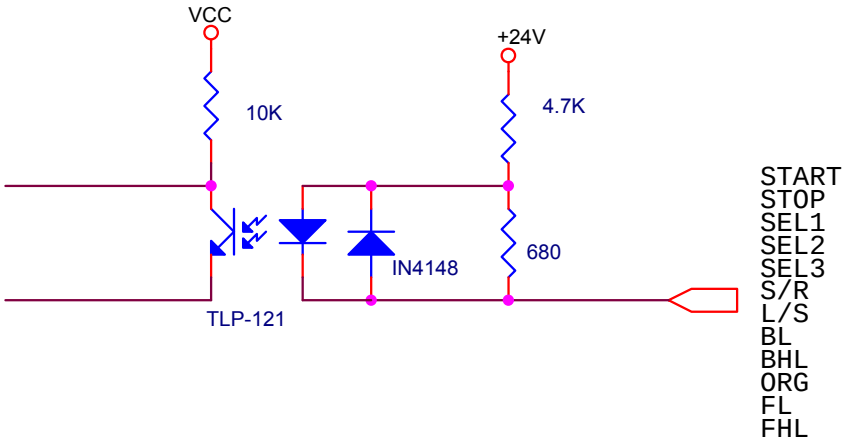
Positioning data	**8 sets/The quantity of each set is 857 Bytes and stored in EEPROM** **Each function occupied the quantity as below:** **POSITIONING 15Bytes** **TIME 3Bytes** **Input 2Bytes** **OUTPUT 2Bytes** **REPEAT 3Bytes** **END REPEAT 1Bytes** **CALL 2Bytes** **RETURN 1Bytes**
Positioning control	**Move distance setting range：9999999 Pulses** **Operating pulse speed：35~59995 PPS** **Starting pulse speed:35~9995 PPS** **Acceleration/deceleration time:1~9999 ms**
Control mode	**External control mode（RUN MODE）** **Data input mode（EDIT MODE）**

	Test mode（TEST MODE）
Operation mode	Positioning operation（INDEX）: Point to point Return to mechanical home operation mode（HOME operation） Continuous operation （SCAN）
Input signal	DC24V Photocoupler input ,Input resistance 4.7KΩ
Output signal	DC24V Photocoupler combined with transistor output,input current 25mA
Power supply input	DC24V/100mA
Ambient temperature	0~40℃

5.P601P internal output circuit



6.P601P internal input circuit



7.Operation data setting

Before setting the data,please switch the tip switch to the EDIT side

a.Initial

Initial setting when shipping out and the setting steps as below:

<1> Turning off the power and switch the tip switch to the EDIT side,press the key 「ENT」 then turn on the power

<2>Press the key「ENT」until the LCD indicates the "*Data-initial and please wait….*" such words then let the key go.The all data will be initialed and enter into the (EDIT) mode

Initial information as below:

Common using data

Vs(Starting speed)＝130pps

tacc/dec(Acceleration/deceleration time)＝30 ms

ORG VR(Final speed of zero point)＝-1030 pps(+CW back to zero point,-CCW back to zero point)

Zero point search setting(ORG motion set)

ORG motion

--- YES ---

*YES:Return to the zero point under SCAN

*NO:Position indicates "0000000" under SCAN and without returning to zero point

b.Steps of entering EDIT

Ⅰ Understanding the meaning of each key

▶ :1.Cursor move to the right【Under EDIT mode】

◀ :2.Cursor move to the left【Under EDIT mode】

SEL :1.Cursor change from the first line to the second line or change from the second line to the first line 【During value editing】

2.Functions switch【Original data setting of editing mode(ORIGINAL DATA) ←→Program editing】

3.Data switch【IN←→IN-NOT and OUT←→ OUT-NOT of EDIT mode】

4.Editing end

ENT :Enter/Execute/Confirm【The functions displayed in the LCD】

▲ : 1.Motor rotated CCW【TEST-SCAN mode】

2.The value will increase or modify by this up key

3.Pressing the up key which can select the option 【TEST or EDIT mode】

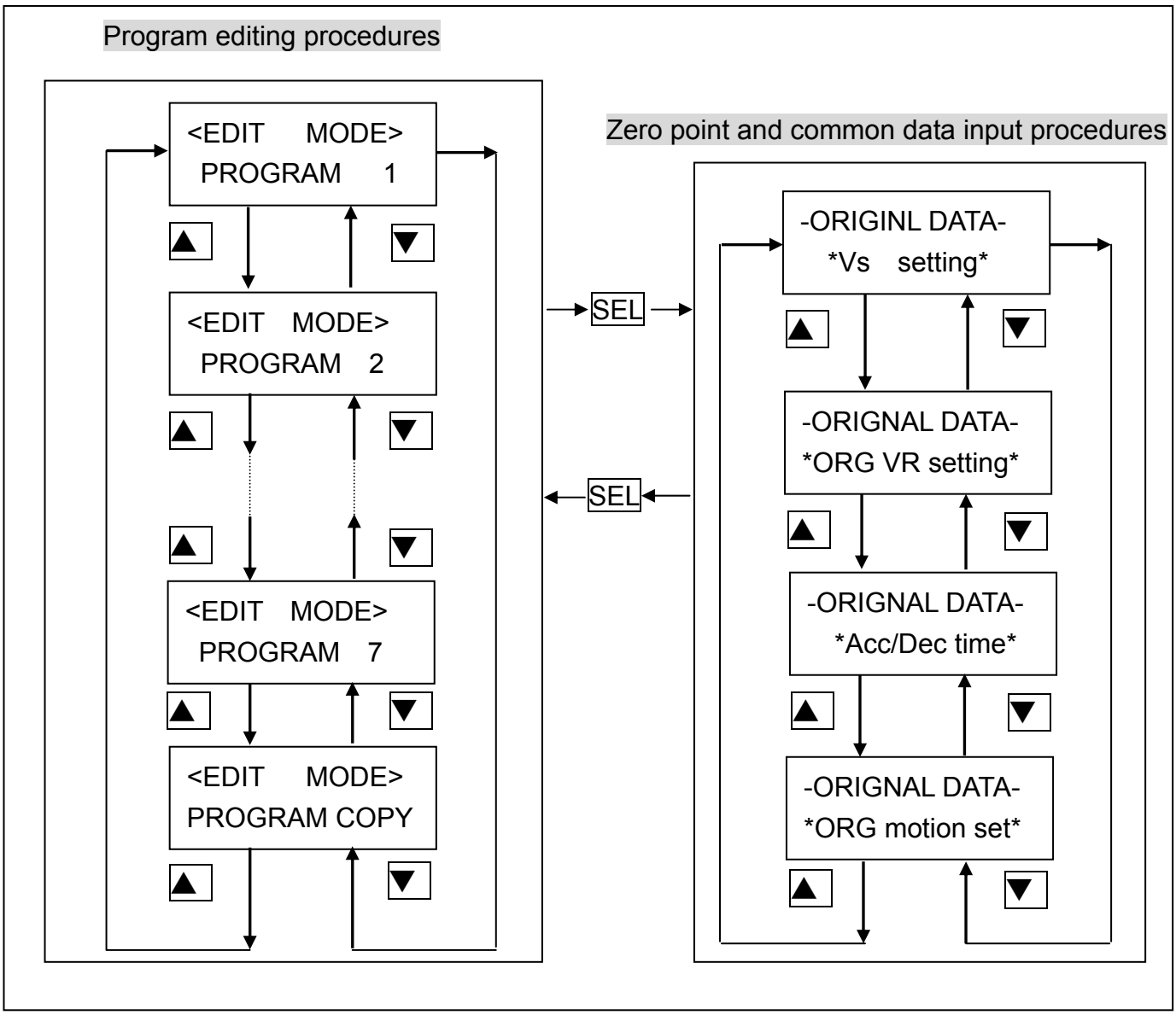
▼ :1.Motor rotated CW【TEST-SCAN mode】

2.The value will increase or modify by this up key

3.Pressing the up key which can select the option 【TEST or EDIT mode】

SEL＋◀ :Switching to the EDIT mode and press these 2 keys to modify the TEACH data

Ⅱ Procedures of enter into program editing



Ⅲ ORIGINAL DATA(Common data)setting

1.<EDIT MODE PROGRAM>/<ORIGINAL DATA>switch to each other by pressed SEL

2.Pressing ▲ / ▼ to select Vs、ORG VR、Acc/Dec、ORG motion

3.Pressing ENT and according to the description " Ⅰ " to edit data

Ⅳ EDIT PROGRAM

1.Pressing ▲ / ▼ to select PROGRAM 1、PROGRAM 2、……..PROGRAM COPY

2.Pressing ENT and it will indicate "Have data! Clear?" 1.KEEP 2.CLEAR

Pressing ▶ / ◀ to select 1.KEEP and 2.CLEAR

3.Pressing ENT enter into the PROGRAM and the LCD will indicate the numbers of input data steps(STEP:xx)

4.Pressing ENT enter into the indicated numbers of steps(STEP:xx) or proceed the following functions by pressed ▲ / ▼ to select edited numbers of steps(STEP:xx)

a.>Entering into the new numbers of steps(STEP:xx)

Display 1.POSITIONING
2.TIME
3.INPUT
4.OUTPUT
5.REPEAT
6.END REPEAT
7.CALL
8.RETURN
PROGRAM CONNECT
---< BACK >---

Pressing ▲ / ▼ select the required option and press ENT then according to the " I "to edit the data

b.>Entering into the edited numbers of steps(STEP:xx)

Display STEP:xx
View _Ins _ Del.

The representative meanings as below:

View:Browse

Ins:Increasing a step

Del:Deleting a step

c.>Functions description

Name of functions	Functions
POSITIONING	Setting motor operation data Vs、VR、Acc/Dec time、PULSE
TIME	TIMER setting(Unite:10ms)
INPUT	Input START/START-NOT then execute next step(STEP)
OUTPUT	Executing OUTPUT, the READY/READY-NOT signal output at the same time
REPEAT	Executing the times of the LOOP
END REPEAT	The end of execute LOOP
CALL	Jumping to the STEP xx and executing
RETURN	The end of CALL(Back to the next step before CALL)
PROGRAM CONNECT	The connection of edit program:The connection of edit the other program (0:End of execute after executed this program
--,BACK>--	Backing to the STEP:xx

5.LCD indicates STEP:xx and press SEL LCD displayed:-PROGRAM END-
1.Yes! 2.Back!

Yes:Finishing the edit program

Back:Backing to the edit program(STEP:xx)

6.Entering PROGRAM COPY and pressing ◀ or ▶ to select
PROGRAM→ PROGRAM

FROM Xs TO Xd

Xs:The origin of copy Xd:The destination of copy

8.Description of functions

Pulse of POSITIONING

After input the motor operation data Vs、VR、Acc/Dec time,the LCD will indicate

3 kinds of PULSE input mode:1.KE 2.TH 3.PS

a.>1.KE 2.TH are absolute coordinate type,3.PS is relative coordinate type

b.>Absolute coordinate type:Position point moved according to the absolute coordinate "0"

c.>Relative coordinate type:Position point moved according to the former relative coordinate

d.>KE:Data input by ▲ / ▼ / ◄ / ►

e.>TH:As SCAN mode,moved the position to the expect position then press ENT to input the present position

※Under modifying mode which has to press SEL until the cursor cursor vanish then modified by SCAN mode

f.>PS:Data input by ▲ / ▼ / ► / ◄

TIME

a.>Data input by ▲ / ▼ / ► / ◄

b.>Executing this function has to wait the TIME count down to the "0" then execute the next step

INPUT

a.>IN：Executing this function has to wait the START signal input then execute the next step

b.>IN-NOT:This function is reverse function of IN

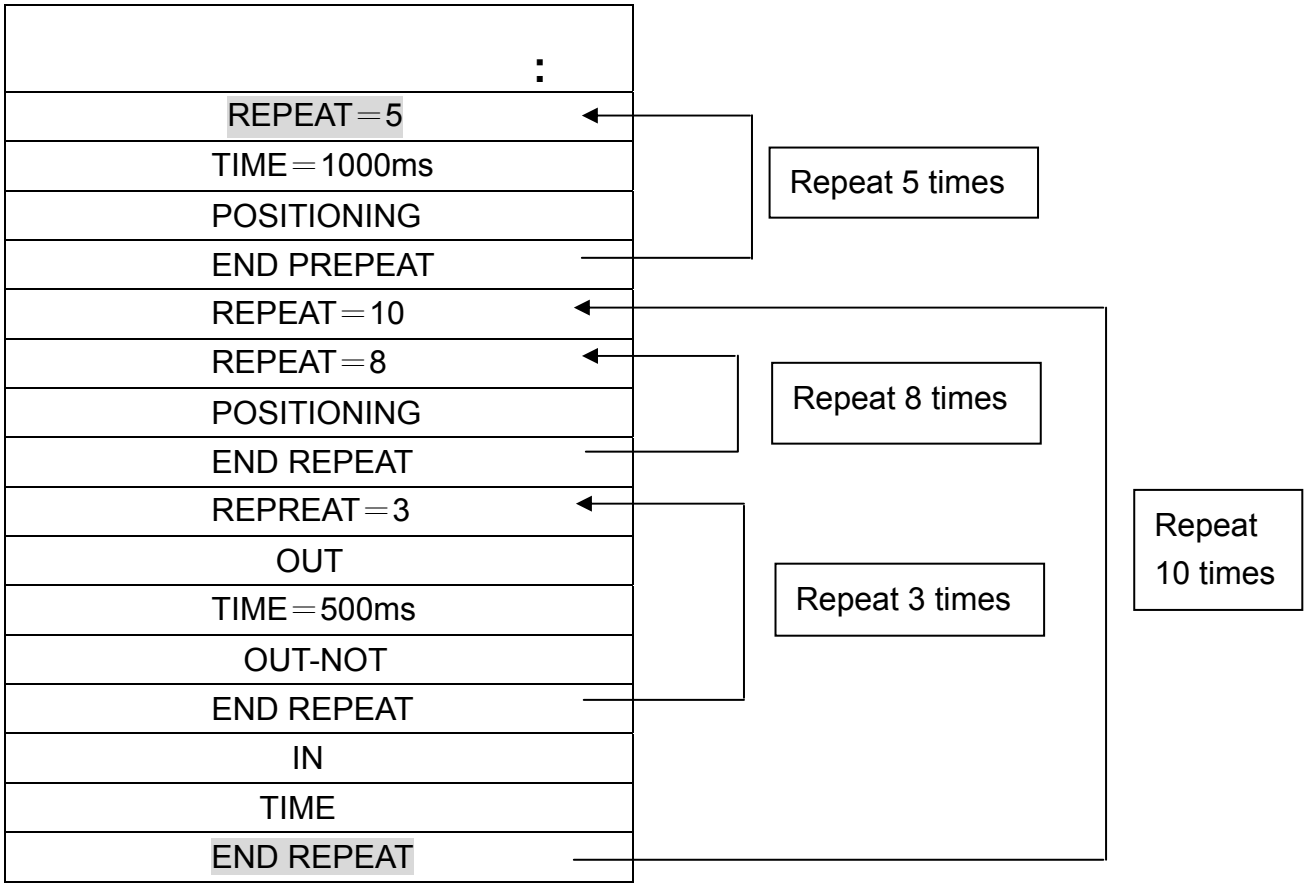
OUTPUT

a.>OUT:Executing this function,the pin 7(READY) output the L signal

b.>OUT-NOT: This function is reverse function of OUT-NOT

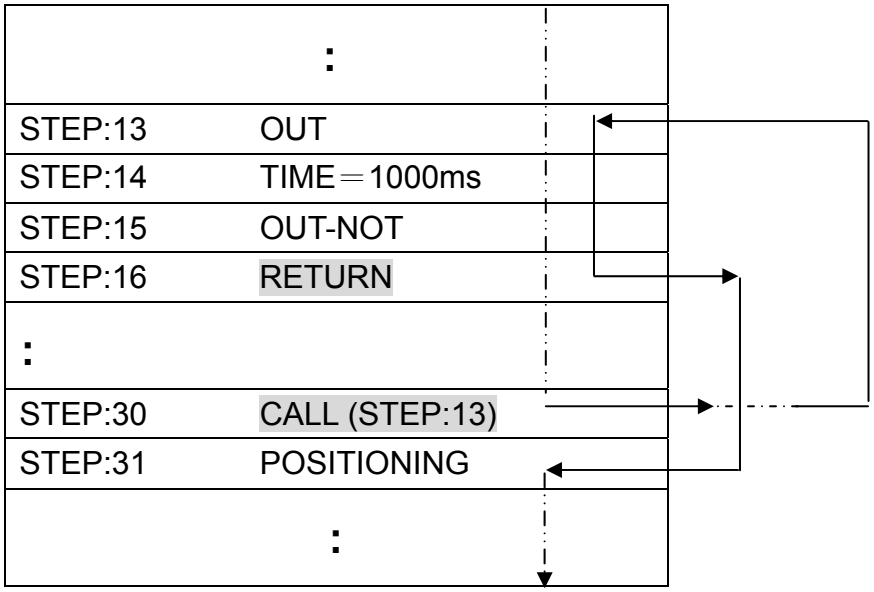
Executing this function,the pin 7(READY) back to the H level

Illustration of REPEAT-END REAPEAT



※REPEAT-END REPEAT can has multiple loops,but the loops can not intersect

Illustration of CALL-RETURN



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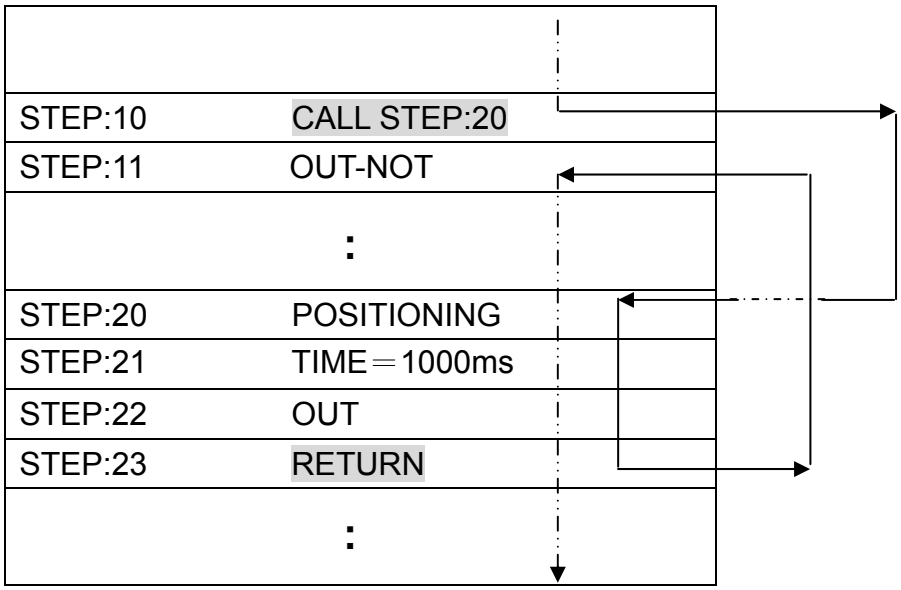


(8)External operation control

a.Switching the tip switch to the RUN and the control signal input/output by 20 pins connector

b.Continuous operation

Step1：Pin 4(R/S) connected with 0V→SCAN MODE

Step2: Pin 8(SEL1) connected with 0V:Motor continuous operation CW

Pin 9(SEL2) connected with 0V:Motor continuous operation CCW

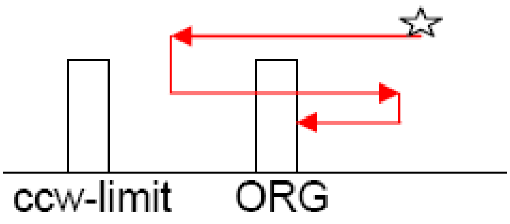
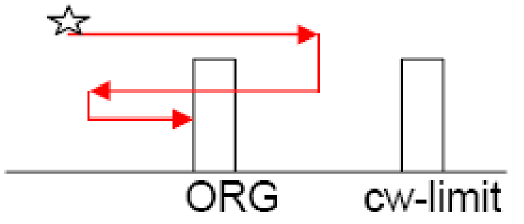
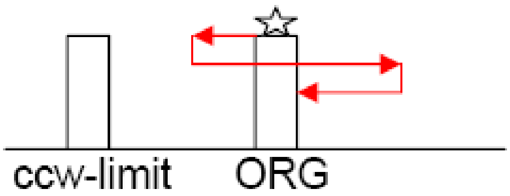
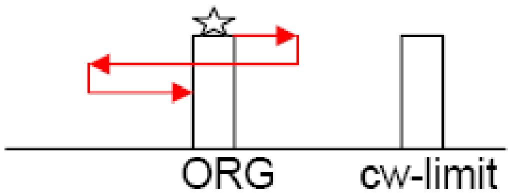
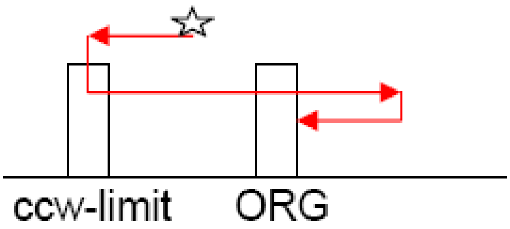
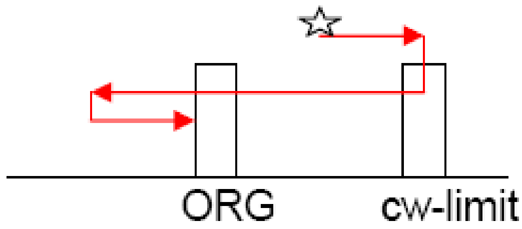
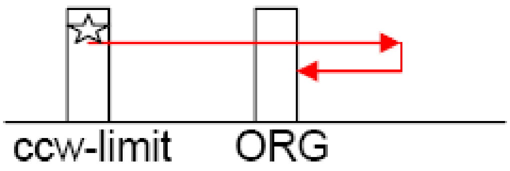
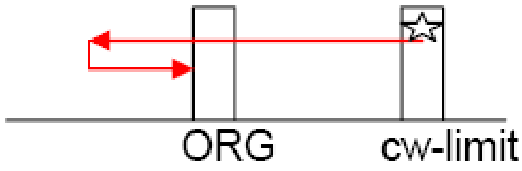
Not used:Stop operation

c.Zero point resetting

Step1:Pin 4(S/R) connected with 0V→SCAN MODE

Step2:Pin 3(START) connected with 0V:Executing the zero point resetting

Pin 5(STOP) connected with 0V:Emergency stop

Returning to the zero point in CCW	Returning to the zero point in CW
	
	
	
	

d.Positioning operation

Step1:Pin 4(S/R) not used→ RUN MODE

Step2:Selecting any one of programs from 1~8

	SEL 1	SEL 2	SEL 3
PROGRAM 1	—	—	—
PROGRAM 2	L(0V)	—	—
PROGRAM 3	—	L(0V)	—
PROGRAM 4	L(0V)	L(0V)	—
PROGRAM 5	—	—	L(0V)
PROGRAM 6	L(0V)	—	L(0V)
PROGRAM 7	—	L(0V)	L(0V)
PROGRAM 8	L(0V)	L(0V)	L(0V)

Step 3:Pin 3(START) connected with 0V:Executing the programs which selected

Pin 5(STOP) connected with 0V:Emergency stop

- P601P can edit 80 steps/set
- The execute mode is "Continuous Step By Step"
  STEP 01→STEP 02→STEP 03→……END
- Repeat executed the STEP(Repeat times) between REPEAT and END REPEAT when
  REPEAT……..END REPEAT
- Jumping to the steps(STEP:xx) when CALL(STEP:xx)……..RETURN
  Backing to the next step before CALL(STEP:xx) until the RETURN

e.Emergency stop

Pin 5(STOP) connected with 0V:Stop operation

When continuous operation(SCAN MODE)、zero point resetting or positioning operation(RUN MODE)

f.BUSY

When operation pulse outputs,the pin 6(BUSY) is Low output and the BUSY indicator(Red light) lit up at the same time.Until the operation pulse stop to output and the pin 6(BUSY) turned to Hi,BUSY indicator went out

g.READY

When executed the order OUT of OUTPUT, pin 7(READY) outputs the L signal.If executed the order OUT-NOT of OUTPUT,pin 7(READY) back to the H level

10.TEST MODE

a.Functions

Executing the functions at the panel such as continuous operation、zero point resetting or positioning operation

b.Setting

Switching the tip switch to the RUN (Panel) and switching the FIRST PIN(The side of controller)of 6 PINS to the ON

c.Executing

The LCD displayed

<TEST MODE>
Origin Search?

It means under the condition of zero point resetting

The keys which could selected as below:

・Pressing ▲ :Searching to the other operation functions(Forward) and according to priority is

Search HOME→PROGRAM 1→PROGRAM 2→ ……→PROGRAM 8→SCAN→Search HOME

・Pressing ▼ : Searching to the other operation functions(Backward) and according to priority is

Search HOME→SCAN→PROGRAM 8→PROGRAM 7→……→PROGRAM 1→Search HOME

・Pressing ENT the LCD displayed as below:

-Search HOME-→Executing zero point resetting

PROGRAM 1→Executing first set and operation pulse outputs

SCAN →Entering continuous operation mode (SCAN MODE)

Motor CCW,press ▲

Motor CW,press ▼

Leaving the SCAN MODE,press SEL

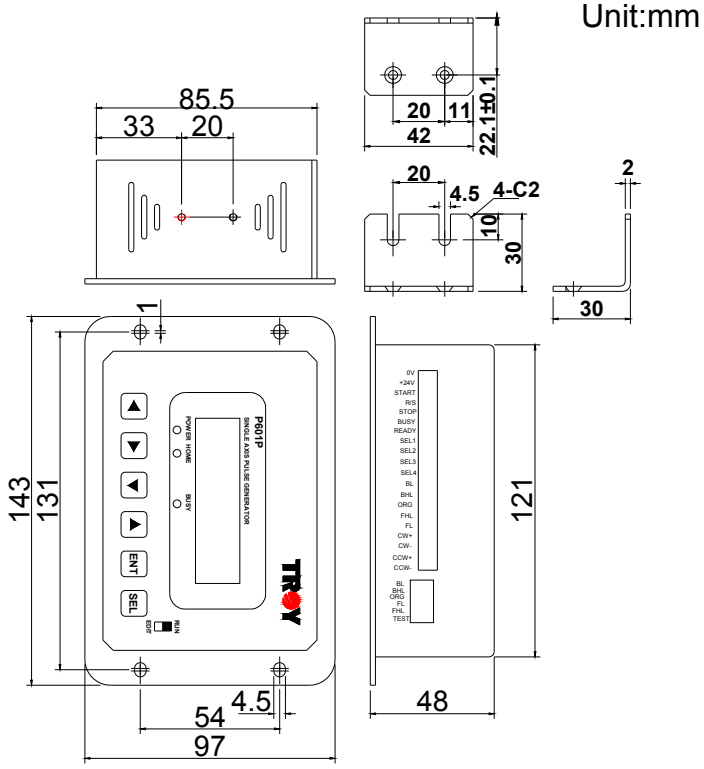
・The pulse output acceleration /deceleration S curve line was set by internal.P601P can not set from external

d.Leaving TEST MODE

Tip switch of 6 PINS switch the FIRST PIN to the OFF

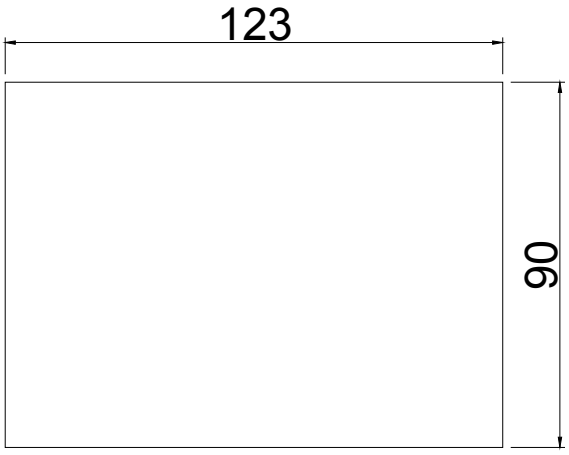
11.Dimension

Unit:mm

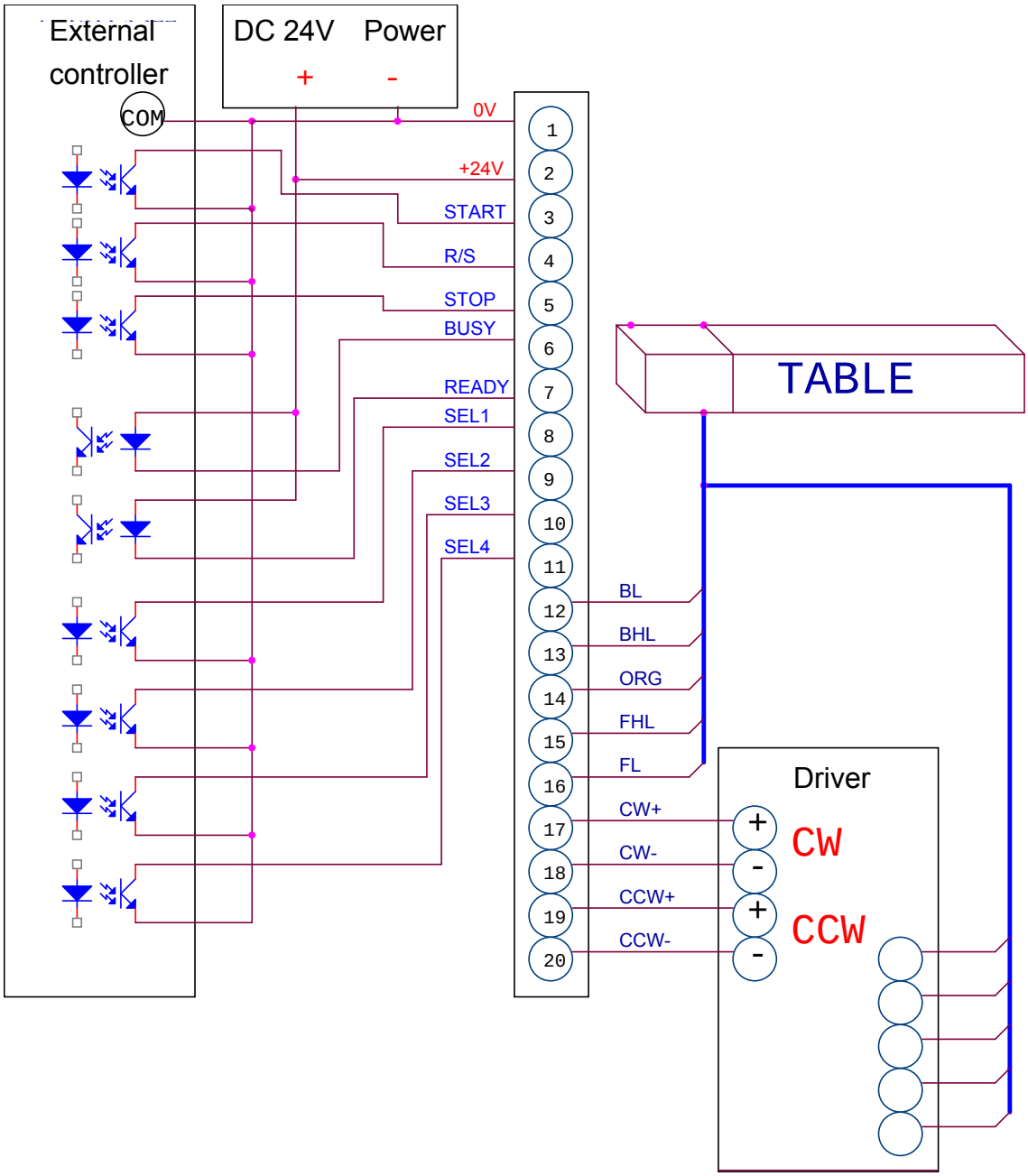


12.P601P mounting dimension

Unit:mm



13.Ilustration of wiring



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Our belief ：Commitment to every detail

Our innovation ：Introduction of cutting-edge equipments

Our pride ： Pursuit of superior products

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Ready for your request！

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