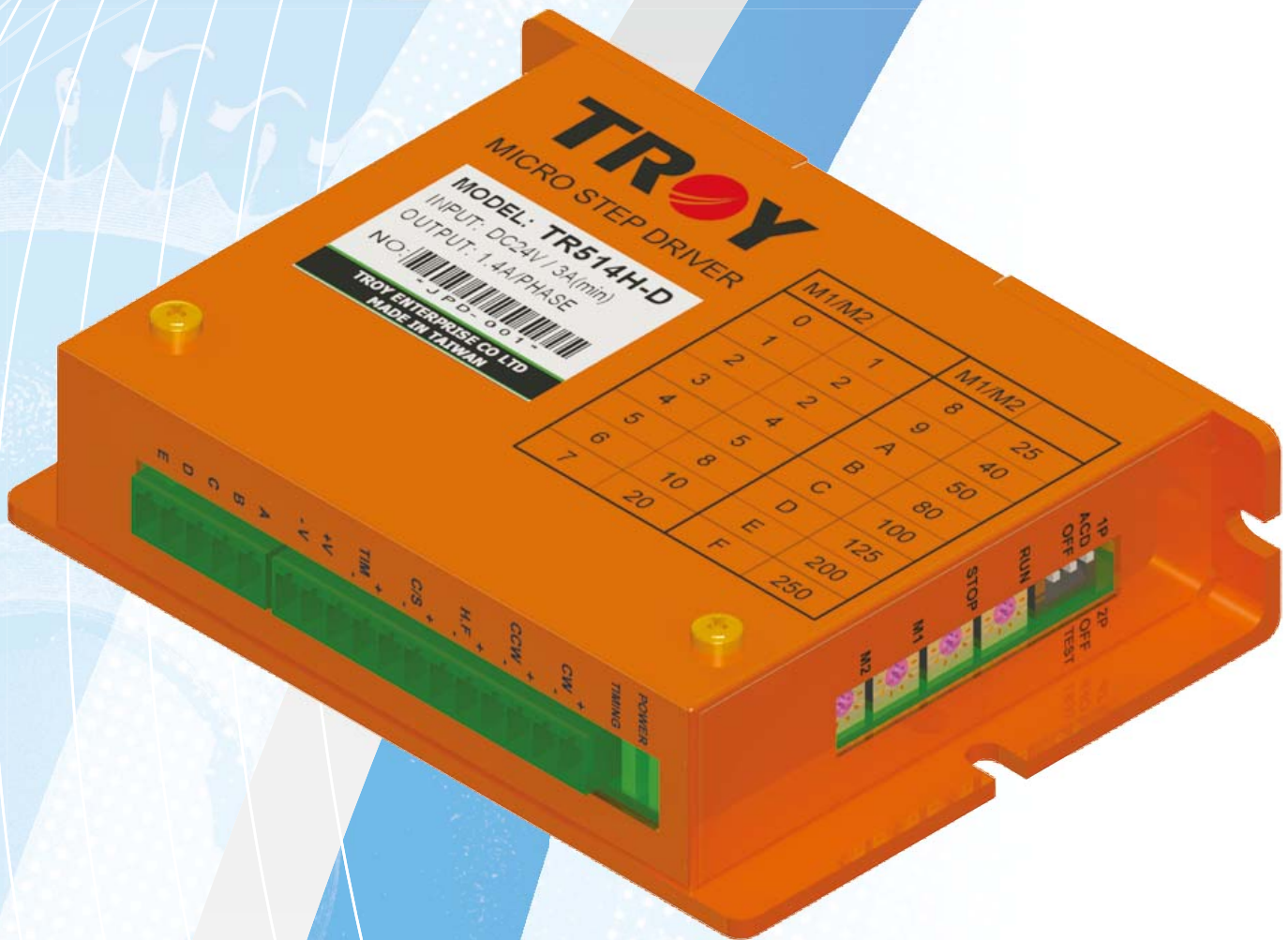


# TR514H-D

DC 5 Phase Micro Stepping Motor Driver

## User's Manual



Selection for 1~250 micro divisions

Switch for two kinds of division externally

Small volume, Simple controlling

Reverse power connection Protection

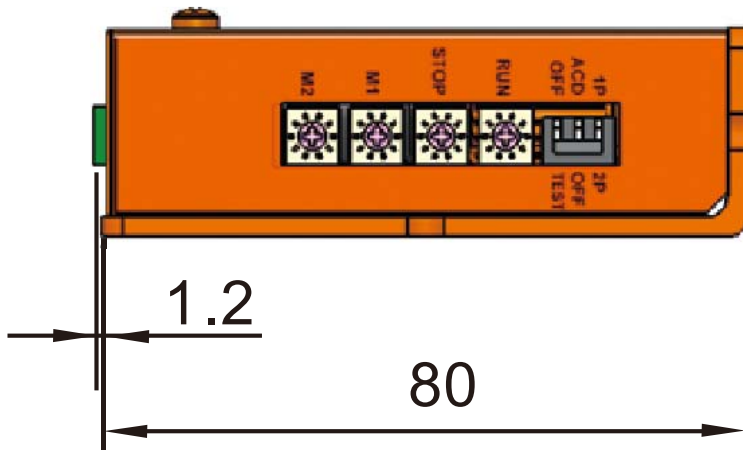
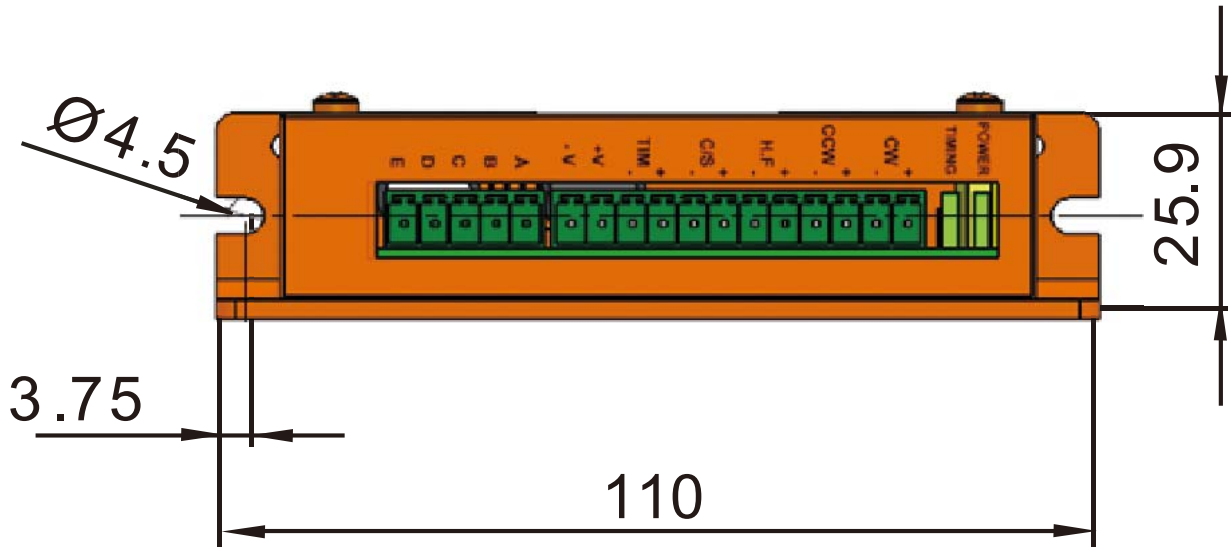
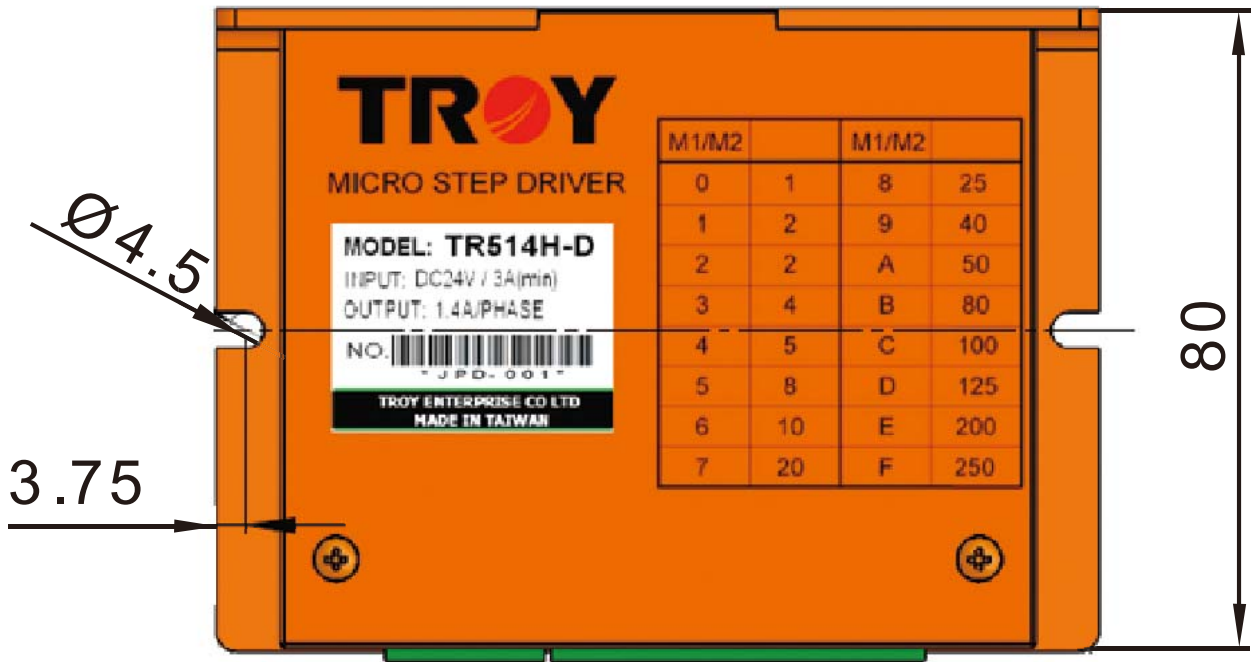
Signal input range: DC5~24V

No need to connect current limiting resistance

※Scan to view online

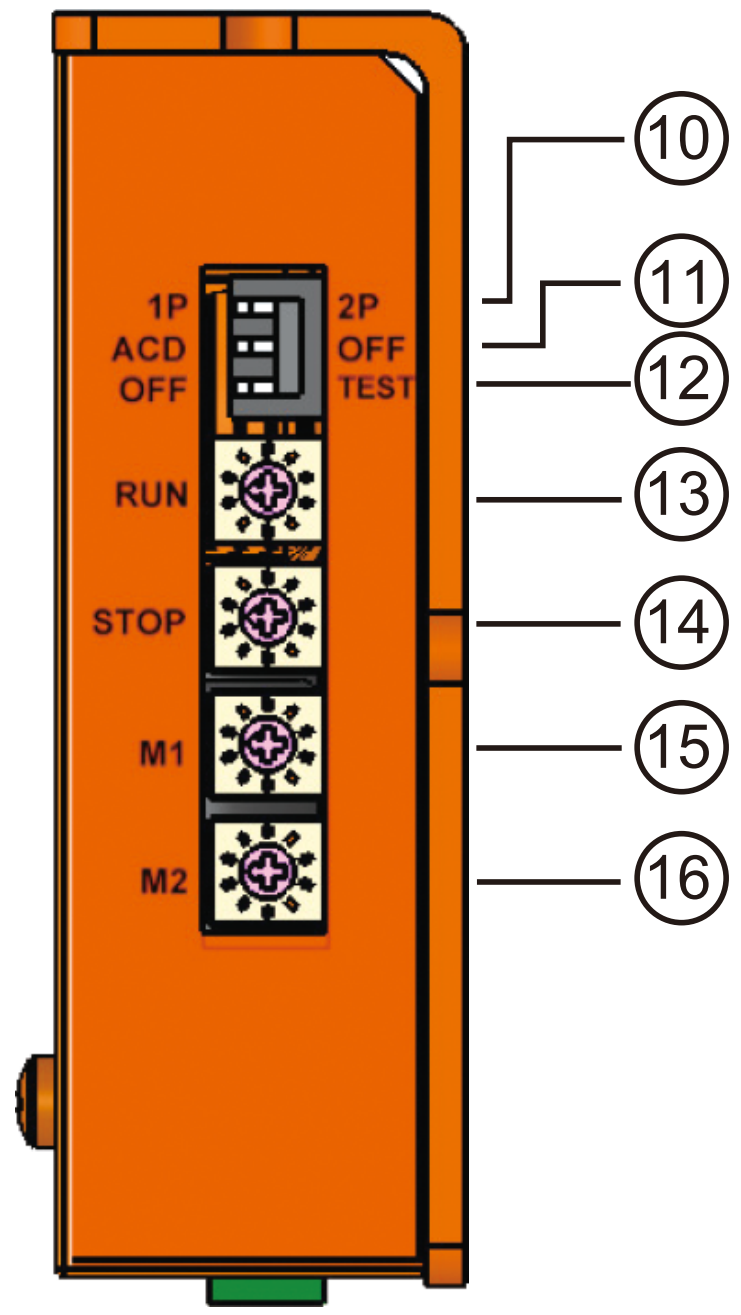
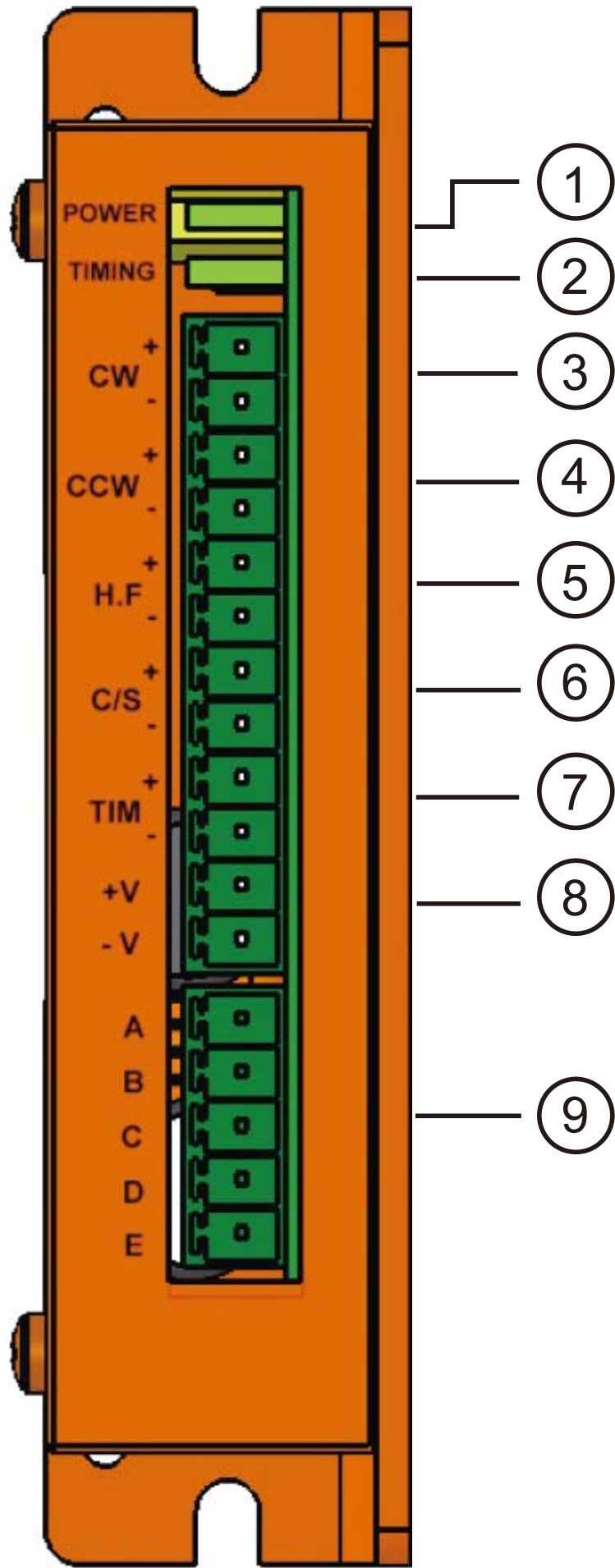


# 1 • Dimension



# 2 • Specs

Driver Model		TR514H-D
Power Input(V)		DC24V/Min : $\geq 3A$
Drive Current(A)		1.4/phase
Excitation Mode		Micro Step
Signal Input/output mode		Photo coupler input interface
		Open Collector output interface
Input Signal	CW pulse Input	2 pulses : Input CW pulse signal ; 1 pulse : Input running pulse signal
	CCW pulse Input	2 pulses : Input CCW pulse signal ; 1 pulse : Input running pulse signal
	H.F Input	Holding Off Input
	C/S Input	Switch of two division mode
Output Signal	TIMING Output	Signal Output as excitation sequence returns to 0 Every 7.2°, TIMING Output
Function		<ul style="list-style-type: none"> <li>•Division adjust(1~250)</li> <li>•Automatic current cut back(ACD)</li> <li>•Self test(TEST)</li> <li>•Pulse input mode switch(1P/2P)</li> </ul>
Protection Function		Reverse Power connection protection · Internal fuse automatically disconnect · Return to normal condition after power OFF.
LED Display		POWER · TIMING
Dimension(MM)		104(L) X 80(W) X 26(H)
Weight(G)		209
Insulation resistance		When using DC500V high impedance meter to test, the impedance values between power input terminal and frame is 100M $\Omega$ .
Insulation permissible voltage		Test inputting high voltage in AC 0.5KV / 60Hz between power input terminal and frame for 1 minute continuously, it have no abnormal conditions.
Environment	Temperature	0°C ~ +40°C
	Humidity	$\leq 85\%$
	Situation	Avoid moisture, dust and causticity, flammable gas



# 3

## Function Instruction

No.	Panel Display	Function Name	Instruction
1	POWER	Power indicator	LED lamp shines upon power input
2	TIMING	Excitation timing output indicator	LED lamp shines one time upon operating 0.72°/step
3	CW	Clockwise	2PULSE :Input CW signal 1PULSE :Input running Pulse
4	CCW	Counterclockwise	2PULSE : Input CCW signal 1PULSE : Input direction pulse
5	H.F	Relieve motor retentivity	When signal inputs, the motor does not excite.
6	C/S	2 kinds of micro division selection input	No signal: M1 Selection Signal inputs:M2 Selection
7	TIM	Excitation release output	When rotating 0.72°/step, a signal output.
8	+V/-V	Power input terminal	DC 24V input
9	A/B/ C/D/E	Motor wiring	Please refer to No. 8 -motor wiring
10	1P/2P	pulse input mode	1P side , 1 pulse input mode 2P side , 2 pulse input mode
11	OFF/ACD	Auto current cutback	After stopping input pulse about 0.2 seconds, Motor current will automatically cutback
12	TEST	Self-inspection switch	The driver will rotates (CW) at the speed of 1pps
13	RUN	Adjust motor running current	Please refer to No.5-Adjust motor running current
14	STOP	Adjust motor stopping current	Please refer to No.5-Adjust motor current cutback rate
15	M1	First micro division selection	Please refer to No. 6-Adjust micro division
16	M2	Second micro division selection	Please refer to No. 6-Adjust micro division

## 4

# Operating Current Adjusting

Scale	「RUN」 Current(A/phase)	「STOP」 Drop Rate of Current(%)
0	0.40	19
1	0.42	25
2	0.49	30
3	0.56	35
4	0.63	41
5	0.70	46
6	0.77	51
7	0.84	57
8	0.91	63
9	0.98	68
A	1.05	73
B	1.12	79
C	1.19	84
D	1.26	89
E	1.33	94
F	1.40	100

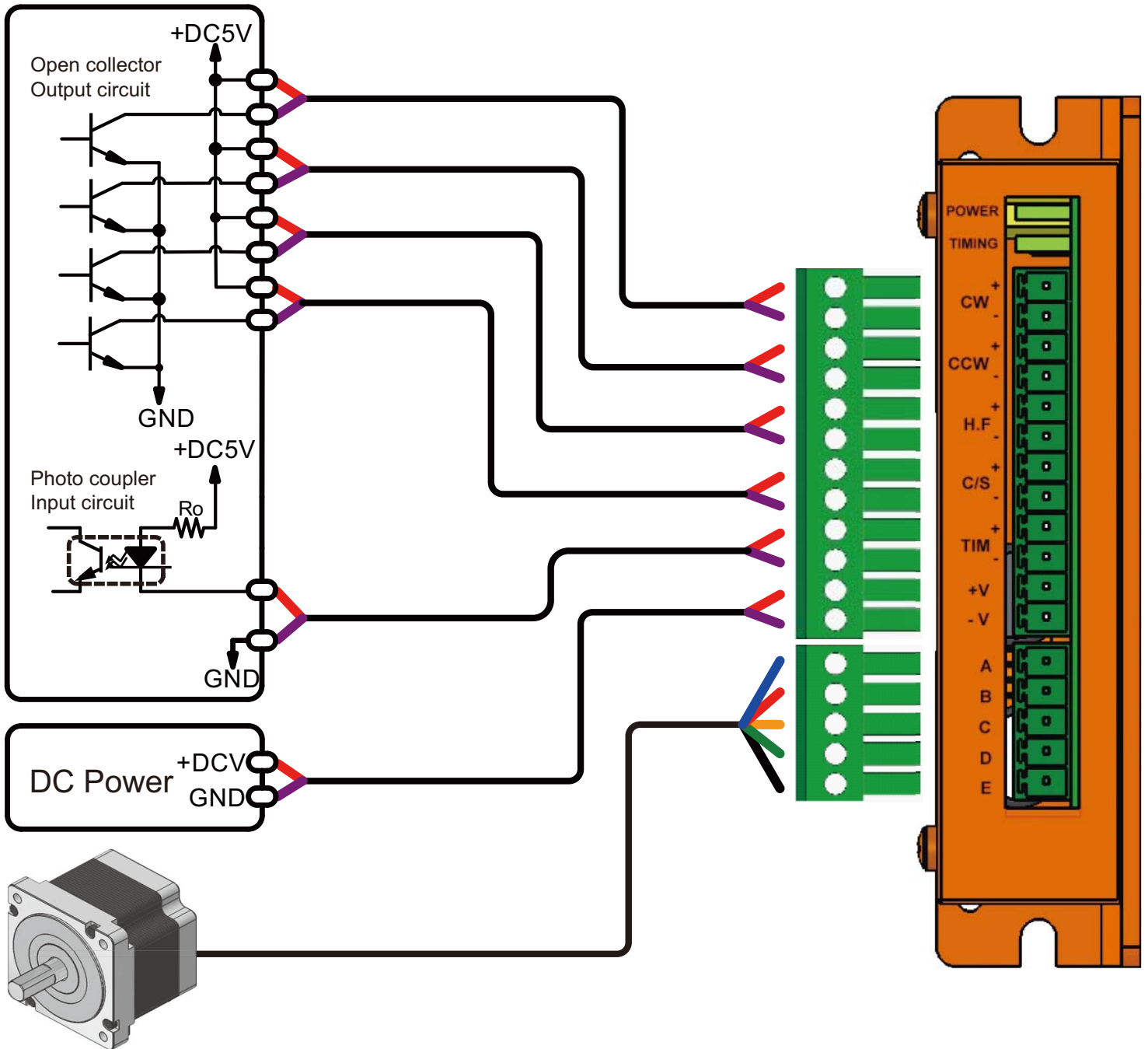
# 5

## • Micro Divisions Adjusting

M1 / M2	Divisions	°/Step
0	1	0.72°
1	2	0.36°
2	2	0.36°
3	4	0.18°
4	5	0.144°
5	8	0.09°
6	10	0.072°
7	20	0.036°
8	25	0.0288°
9	40	0.018°
A	50	0.0144°
B	80	0.009°
C	100	0.0072°
D	125	0.00576°
E	200	0.0036°
F	250	0.00288°

# 6 • Wiring Diagrams

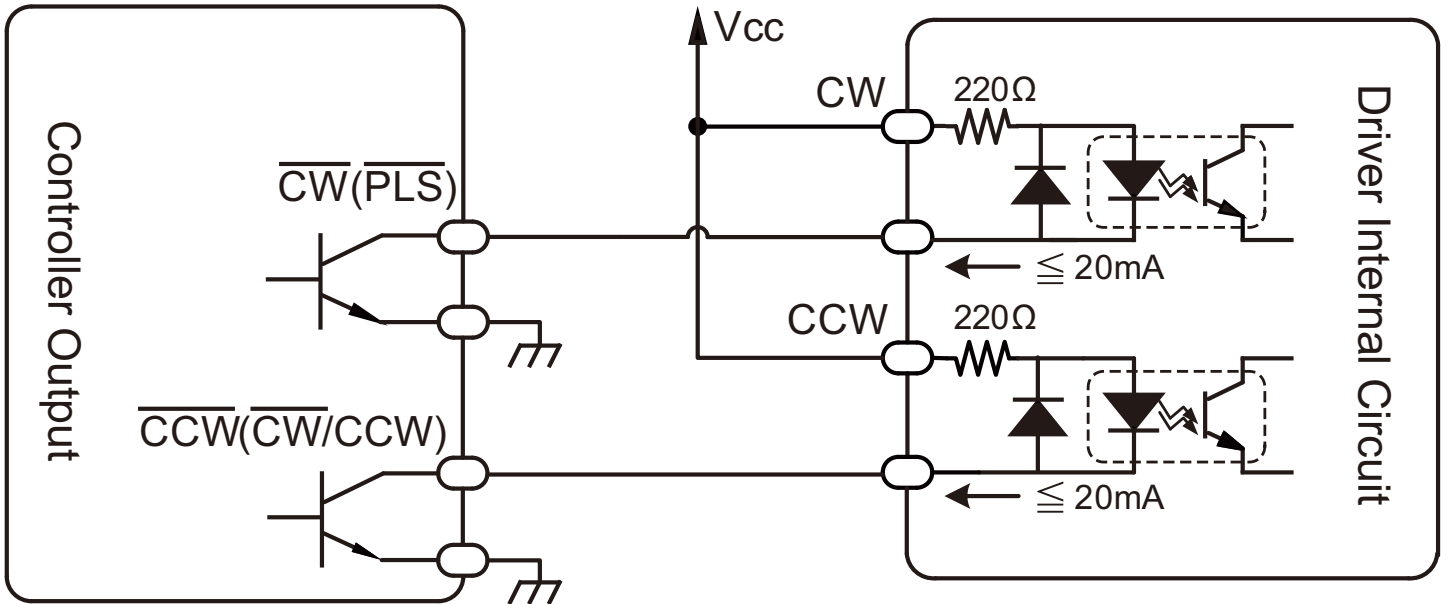
## Pulse signal controller or P.L.C





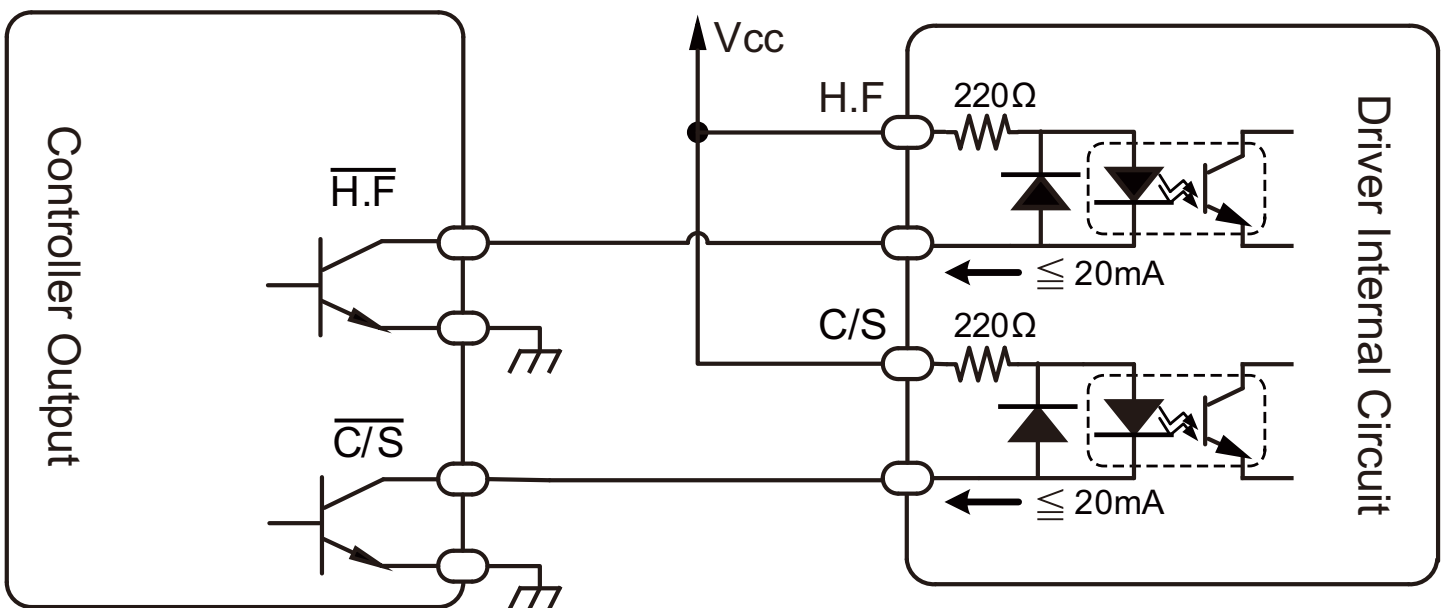
# 7 • Wiring for Signal

## CW/CCW pulse Input



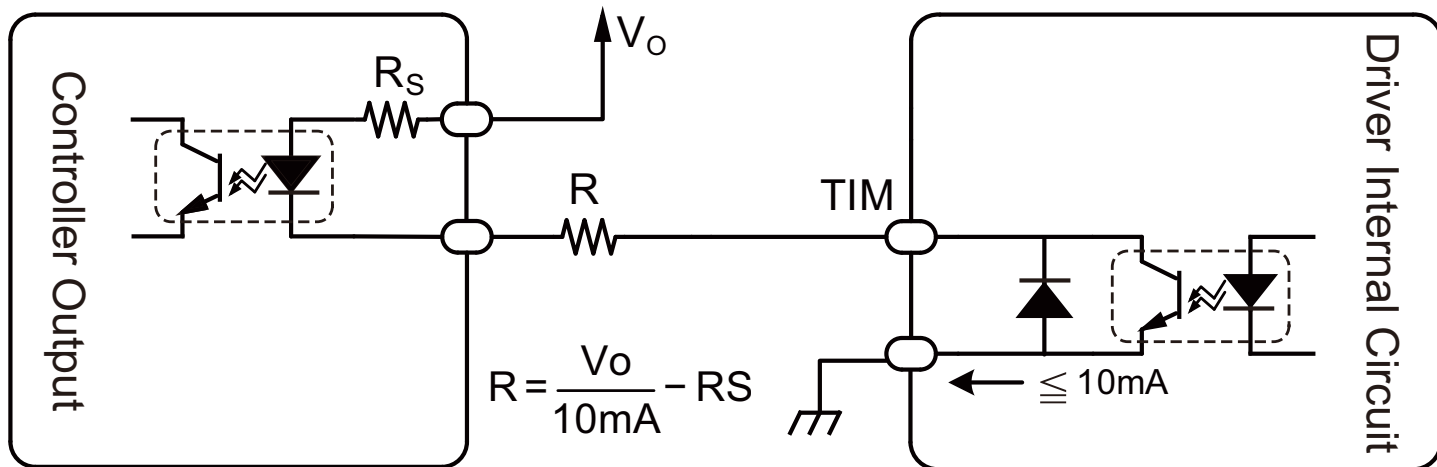
※Signal input range: DC5~24V.  
No need to connect with current limiting resistance.

## H.F C/S Input



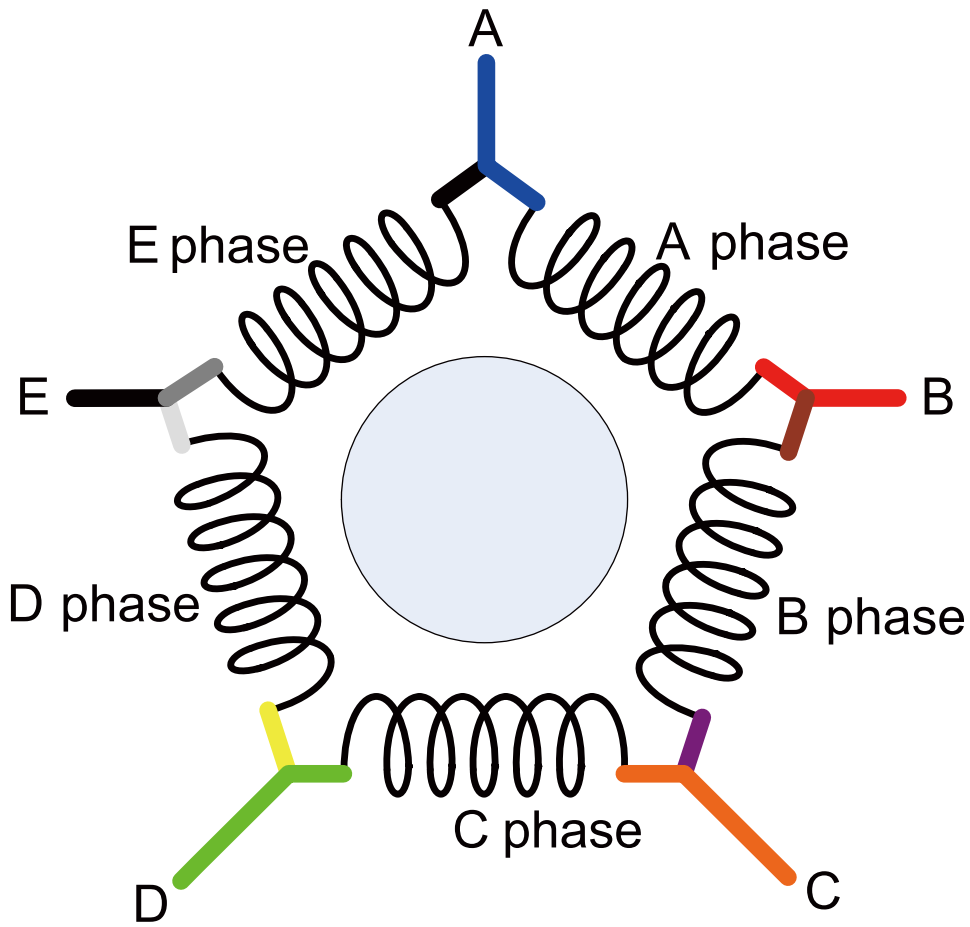
※Signal input range: DC5~24V.  
No need to connect with current limiting resistance.

# TIM Output



# 8 • Wiring for Motor

## ➔ Internal Wiring Diagram



## ➔ Wiring Chart for Motors

	TROY		SANYO DENKI		TAMAGAWA		ORIENTAL	
Leads	5	10	5	10	5	10	5	10
A	Blue	Blue/Black	Blue	Black/Yellow	Blue	Blue/Black	Blue	Blue/Black
B	Red	Red/Brown	Red	Black White /Orange	Red	Red/Brown	Red	Red/Brown
C	Orange	Purple/Orange	Orange	Orange White /Blue	Orange	Purple/Orange	Orange	Purple/Orange
D	Green	Yellow/Green	Green	Red White /White	Green	Yellow/Green	Green	Yellow/Green
E	Black	White/Gray	Black	Yellow White /Red	Black	White/Gray	Black	White/Gray

# Wiring Notice

※Important

- About the input / output signal wires, please use signal wire of separation with metal shield. Regarding the shield wires part, please grounding unilateral common point. When connecting, make power wires and the motor cables away from the signal cables by providing a minimum clearance of 10cm. And do not place the cable and power wire in the same duct in order to avoid malfunction caused by interference.
- When it need long distance wiring between the controller and driver, or a large electrical installation nearby. To increase drive currency as signal sending for long distance and the immunity of against signal interference , please increase the DC power voltage which supplies to the input / output electric circuit. Make sure that Motor operating situation is normal.
- When connecting to the PLC, please confirm the definition of the connector for +COM \ -COM, the way for input /output connection. Please provide the correct power voltage for input/output electric circuit.
- This product uses the instant plug-interminals with safety specifications certificated by CE/VDE. In order to prevent malfunction in bad connection, please make sure to tighten and fix screws when wiring.
- This product has the function of reverse power connect protection. If you encounter reverse power condition as wiring, please turn the power and eliminate wrong wiring, then you could re-operation.

※ Please inquiry with local office or distributor to choose product

**TROY** 泰映科技股份有限公司

TROY ENTERPRISE CO., LTD **Motor manufacturer**

[www.troy.com.tw](http://www.troy.com.tw)

Made in Taiwan



• ISO 9001 : 2008  
• ISO 14001 : 2004



※Responsibility of environment protection

We place important on spreading environment protection. Each package can be recycled. Please using litter dealing process and recycling to replace the old product.

--- By your attending, we protect the earth together. ---

※ We won't inform individually if we promote the product characteristics. Please inquiry with each office. Thank you very much.

# DANGER

※May cause dead or serious injury etc.

Take protective device of over current, instant stop, over temperature, ground fault interrupter.	 Prevent fire, injury, electric shock
Do not use product near explosive, water, corrosive gas, or combustible material.	 It may cause fire
Do not forcibly put stress, or lead a heavy article on or stuff foreign matter into it.	 It may cause electric shock, trouble, and damage
Avoid damage caused by earthquake, fire, artificial accident, please set and fix it for confirmation.	 Prevent electric shock, injury, fire, trouble and damage
Install an external emergency stop circuit to turn the power off in the instant halt of operation.	 Prevent electric shock, injury, fire, trouble and damage
Connect the controller and Motor to ground.	 Prevent electric shock
Neither reach nor touch the Driver terminals while power is on.	 It may cause electric shock
Execute safety examination after earthquake	 Prevent fire, injury, electric shock
Have a professional expert set the wiring construction accurately.	 Prevent electric shock, injury, fire, and trouble
Do not work for moving, wiring or inspection with the power on	 Prevent electric shock, injury, fire, and trouble
Do not touch the internal parts of the Driver.	 It may cause electric shock , scald
Do not stand/sit on product or put heavy article on it.	 It may cause electric shock, trouble, damage
Ensure that wiring has been correctly done.	 Prevent injury trouble, damage

※Please dealing according to industry littering as discarding the product.

# ATTENTION

※May cause injury or product damage.

When conducting trial operation, make Motor fixed. Confirm motion before composing machine system.



Prevent injury

When temperature of Driver or Motor is rising, please do not touch it.



It may cause scald.

Do not reform, assemble or repair the Driver.



It may cause electric shock, injury, fire.

Move the product with a great care so as to prevent from the danger such as tumble or turnover.



It may cause injury, damage.

When power recovers after interruption, don't approach devices since it may restart operation suddenly.



It may cause injury.

Please follow the appointed voltage.



Prevent injury, fire, electric shock

Do not cut-in or off the power frequently.



It may cause trouble.

Do not use damaged Driver or Motor.



It may cause injury, fire.

Do not put obstacle around Driver and Motor or it'll be airless.



It may cause scald, fire.

Please have the cause troubleshooting as tripping, and restart after safety confirming.



Prevent injury

Have an expert execute maintenance and inspection.



Prevent injury and electric shock

Neither block nor stuff the aspiration/exhaust vent with foreign particle.



It may cause electric shock, trouble, fire.

Use Driver and Motor in designed combination.



Prevent fire

Do not put a heavy impact on shaft of Motor and Driver



It may cause trouble.

Please turn power off as stop using for a long period.



It may cause injury from wrong operating.

Mount the product on an incombustible material such as metal.



Prevent fire

Do not set magnetic contactor in main power during Motor rotating or stopping.



It may cause trouble

Do not drive Motor axis from external.



It may cause fire, trouble, electric shock.