

TR514H-D

DC 5 Phase Micro Stepping Motor Driver

User's Manual



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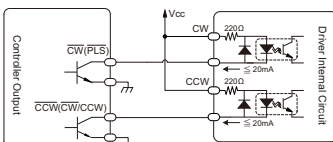
- Selection for 1~250 micro divisions
- Switch for two kinds of division externally
- Small volume, Simple controlling
- Reverse power connection Protection
- Signal input range: DC5~24V
- No need to connect current limiting resistance

2. Specs

Driver Model	TR514H-D
Power Input(V)	DC24VMin :>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	ICW pulse Input 2pulse : Input CW/pulse signal / 1 pulse : Input running pulse signal ICCW pulse Input 2pulse : Input CCW/pulse signal / 1 pulse : Input running pulse signal H.F Input Holding Off Input IC/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	Division adjust(1~250) *Automatic current cut back(ACD) Self test(TEST) *Pulse input mode switch(1P/2P) Reverse Power connection protection Internal fuse automatically disconnect Return to normal condition after power OFF.
Protection Function	POWER - TIMING Dimension(MM) Weight(G) Insulation resistance Insulation permissible voltage
Environment	Temperature Humidity Situation

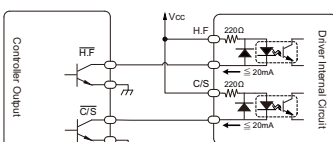
7. Wiring for Signal

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.

3. Function Instruction

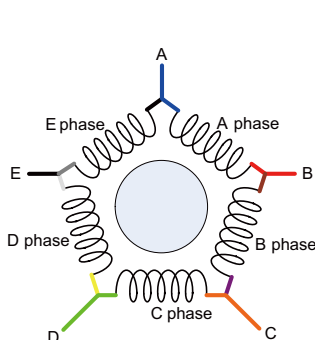
No.	Panel Display	Function Name	Instruction
1	POWER	Power indicator	LED lamp shines upon power input
2	TIMING	Excitation timing output indicator	LED lamp shines one time upon operating 0.72°/step
3	CW	Clockwise	2PULSE : Input CW signal 1PULSE : Input running Pulse
4	CCW	Counterclockwise	2PULSE : Input 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(Alpha)	「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

8. Wiring for Motor

Internal Wiring Diagram



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°

Wiring Chart for Motors

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

Wiring Notice

Important

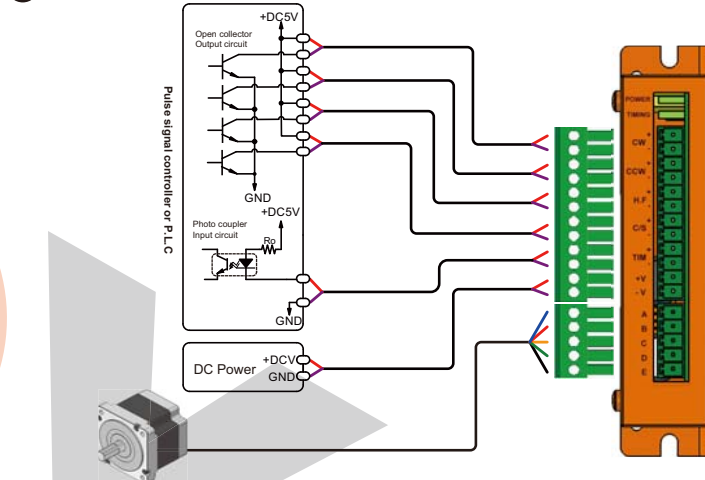
- About the input / output signal wires, please use signal wire of separation with metal shield. Regarding the shield wires part, please grounding unilateral common point. When connecting, make power wires and the motor cables away from the signal cables by providing a minimum clearance of 10cm. And 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



※Responsibility of environment protection
We place important on spreading environment protection. Each package can be recycled. Please using later dealing process and recycling to replace the old product.
— By your attending, we protect the earth together —
※ We want inform individually if we promote the product characteristics. Please inquiry with each office. Thank you very much.

6. Wiring Diagrams



DANGER

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

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

ATTENTION

- When conducting trial operation, make Motor fixed. Confirm motion before commencing machine systems.
- When temperature of Driver or Motor is rising, please do not touch it.
- Do not reform, assemble or repair the Driver.
- Move the product with a great care so as to prevent from the danger such as tumble or turnover.
- When power recovers after interruption, don't approach devices since it may restart operation suddenly.
- Please follow the appointed voltage.
- Do not cut-in or off the power frequently.
- Do not use damaged Driver or Motor.
- Do not put obstacle around Driver and Motor or it'll be affected.
- Please have the cause troubleshooting as tripping, and restart after safety confirming.
- Have an expert execute maintenance and inspection.
- Neither block nor stuff the aspiration/exhaust vent with foreign particle.
- Use Driver and Motor in designed combination.
- Do not put a heavy impact on shaft of Motor and Driver.
- Please turn power off as stop using for a long period.
- Mount the product on an incombustible material such as metal.
- Do not set magnetic contactor in main power during Motor rotating or stopping.
- Do not drive Motor axis from external.