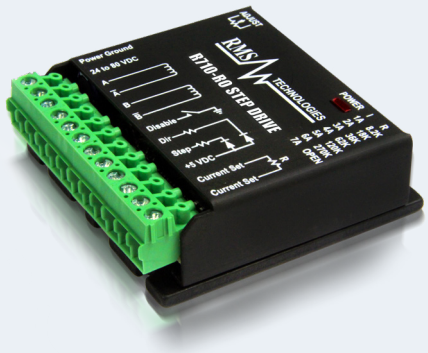
R710

MICROSTEPPING DRIVER



MAIN FEATURES

√ Voltage: +24 to 80 VDC
√ Current: 0.3 to 7.0 Amps Peak, using a resistor for limiting current
√ Hold current: 33% of default (100% can be set via jumpers internally)
√ Step resolution: 10 Microstep
√ Speed: (step frequency: 200 kHz)
√ Inputs: step pulses, direction change, disable/enable driver

ACCESSORIES

- No accessories are needed for this product.
- Other units needed to run this: Power Supply, Function Generator (or other squarewave signal source), Step Motor, Resistors.

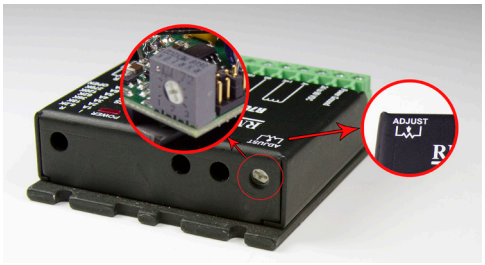
DETAILED FEATURES

- Step frequency: 0 to 200 kHz
- Step pulse time on falling edge (0):
  0.5 microseconds minimum (0.5 x 10-6)
- Step pulse time on rising edge (1):
  4.0 microseconds minimum (4.0 x 10-6)
- Direction setup: 1 msec minimum
  (20 microseconds min hold time after step edge)
- Operating temperature: 0° to 70° C
- Humidity range: 0 to 95% (non-condensing)
- Power dissipation: 1 to 12 Watts (1 to 7 Amps)

CONNECTION SPECIFICATIONS

Current (Amps)	Resistance (Ohms)
1	8.2K
2	18K
3	36K
4	62K
5	120K
6	270K
7	Open

Pin #	Color
1	Power Ground
2	+24 to 80 VDC
3	A Phase
4	A Bar Phase
5	B Phase
6	B Bar Phase
7	Disable Input
8	Direction Input
9	Step Input
10	+5 VDC
11	Current Set
12	Current Set

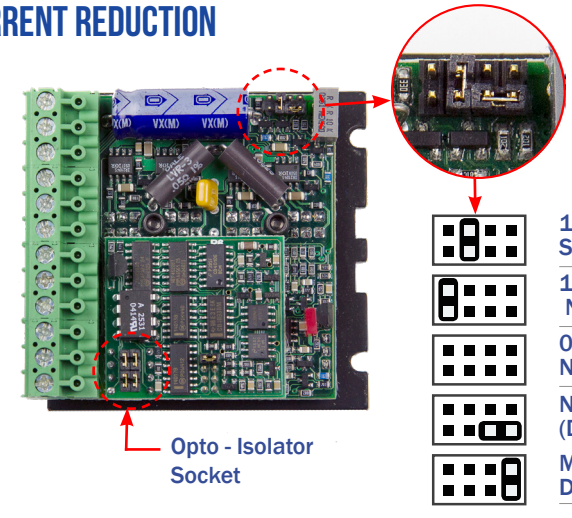


ADJUSTABLE TRIMPOT

The potentiometer shown on the board can be rotated using a screwdriver. It's recommended to rotate the motor at 0.25 RPS. Then to adjust the potentiometer until there is the least amount of vibration and noise coming out of the motor. This will be the position that the driver will perform smoothly with a given motor and power supply voltage.

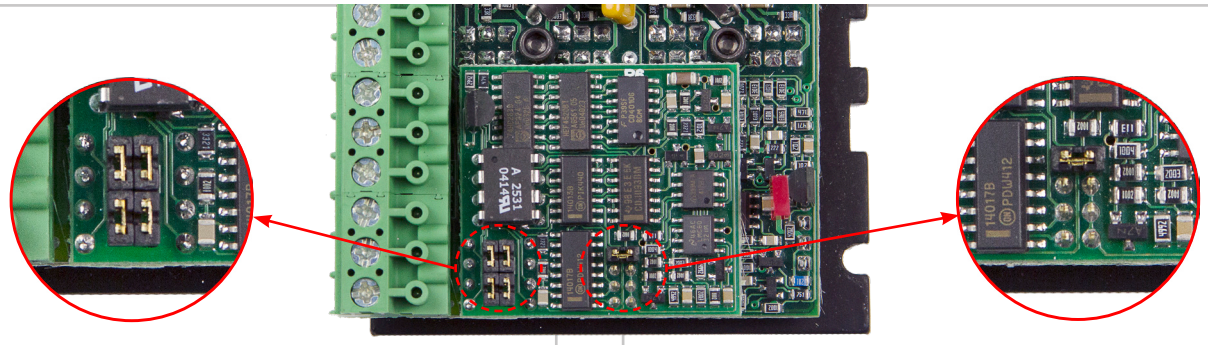
The adjustment will alter the current waveform coming out of the driver and into the motor coils.

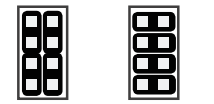
AUTO CURRENT REDUCTION



Standard Current Disable (JP1)

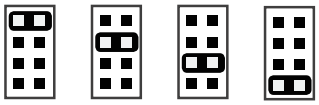
1 to 7 Amps Standby	*"Standby" means holding current. 33% of the set current.*
1 to 7 Amps No Standby	*"No standby" means 100% of the set current is the holding current*
0.3 to 2 Amps No Standby	*Two modes for Amp range: (0.3 to 2A, or 1 to 7A)*
Normal (Default)	*"Midband" Allows max step to step variation of +/- 30%, otherwise the driver runs irratically. Disabling midband allows for any variation (beyond 30%).*
Midband Disable	





Common +5 Volts

Common Ground



Full Step

Half Step

5 uS/ Step

10 uS/ Step

INPUT OPTION HEADER

- To power the Optically isolated inputs, you have the option to use a +5vDC common or a Ground common.
- Most PLC users will like to use the common ground option
- The R710 must be used with the +5VDC to supply the opto

MULTIPLIER HEADER

- The R710 always outputs 10x microstepping
- The step input will be multiplied by 1, 2, 5, or 10 times on-board to receive the same speed but at 10x microstepping
- Users do not need to change their original setup to get microstepping
- They only need to select the desired step multiplier of 1, 2, 5, or 10 to achieve the 10x microstepping output from the driver while maintaining the rotational speed that they had in their original setup
- This is most beneficial for customer who have a PLC and software that is already written for a full step, half step or 5x microstep system. And now, if they choose to change out the driver to use microstepping for better and smoother performance, they won't have to re-program their software to accommodate for the new microstepping. The R710 will do the changes for them.

EXAMPLE

At full stepping, 200 pps on a 1.8° stepper will equal 1 RPS (200 pulses per second / 360° per rev * 1.8° per step).

But 200 pps on a 1.8° stepper at 10x microstepping is now equal to 0.1 RPS (200 pulses per second / 360° per rev * 1.8° per step /10 steps per 1.8°)

The R710 will multiply the 200 pps by 10 times in order to output 2000 pps at 10x microstep. Now, the speed is back to 1 RPS (2000 pulses per second / 360° per rev * 1.8° per step / 10 steps per 1.8°)

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The Step Motor Specialists
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16245 Vineyard Blvd., Morgan Hill, CA 95037
Phone: (408) 919-0200 Fax: (408) 919-0201
www.linengineering.com

KEY SELLING FEATURES

- Powerhouse Driver—up to 7 amps and 80 vDC
- Low Cost
- Easy to Use

COMMON TECH SUPPORT QUESTIONS / RMA ISSUES

Verify power supply is switched OFF prior to checking any wiring connections

BURNED OR BLOWN DRIVER (LOW INDUCTANCE):
Wrong connection (Phases)

MOTORS ARE HOT:
Check wiring. Motor phases could be crossed (A is in B or B Bar, etc)

MOTORS DO NOT ROTATE:
Check connection between motor and drive. If, for example, the "A" and "A Bar" connection is actually connected to an "A" phase wire and a "B" phase wire, then the driver will not run.
(**CAUTION:** Doing this could burn the driver) Be sure they have connected an external +5VDC power supply for the optos.

POWER SUPPLY IS DRAWING EXCESSIVE CURRENT:
Check if the polarity is switched on the main power supply. See connection chart on previous page. Unpluggin a motor from the driver while power is still on will burn the driver chips. The motor has Back EMF voltage and when disconnecting the motor from the driver, it could send voltage back into the driver. Once they are burned, something is short-circuited on the driver board and will draw excessive current from power supply.

MOTOR ROTATES, BUT IRRATICALLY, NOT SMOOTHLY:
Check resistance of motor, ensure that Phase A and Phase B are equal If one of the two drivers are blown, then only half of the driver works. If this is the case, turning on and off the pulses to move and stop the motor might cause the motor to rotate CW and CCW at random times, when it should only rotate in one direction. Half the torque is available too.
Acceleration or speed is too fast for the motor. Lower the speed until it steps smoothly
You could be hitting a resonant spot, microstep the unit to see smoother results
Ensure step pulses are from a source with 5V amplitude pulses, 50% duty cycle, pulse train, and is a square wave.
Check correct wiring.

NOTES

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