

Single Axis MicroDriver Controller: Model RC991

The Model RC-991 Single Axis Controller from Phresh Photonics is plug compatible with the Phresh Photonics line of precision linear actuators (using the 23-B0065 adapter cable). The Model RC-991 contains a PID control loop and power amplifier. It requires only +15 volt power and TTL compatible step and direction signals. When combined with the MicroDriver R200 series actuators each step represents 0.059 micrometers. The Model RC-991 controller also compares the MicroDriver encoder output with the step command and outputs an error indication if the absolute value of the difference exceeds preset values as well as error polarity.

The RC-991 Controller has two connectors, connector 1 (input) and connector 2 (output). Connector 1 is a male DB9 and connector 2 is a female DB9. Connector 2 is configured to connect to the RayMax Technology series R200 MicroDriver using RayMax adapter cable 23-B0065. When connecting this adapter cable to the MicroDriver cable, care must be taken to insure that the colored conductor of the adapter ribbon cable is on the same side of the connector as the colored conductor of the MicroDriver ribbon cable.

Connectors 1 and 2 Pinouts			
Connector 1		Connector 2	
Pin	Function	Pin	Function
1	+V	1	Motor +V
2	Ground	2	Encoder A in
3	Ground	3	Ground
4	Step input	4	NC
5	Direction input	5	NC
6	Reset	6	+5V
7	Home indicator	7	Encoder B in
8	Error indicator	8	Motor V-
9	Error polarity indicator	9	NC
Description of Function and Limits			
+V	Voltage supplied to the controller (+V min +12V; max +15V)		
Step input	Pulse TTL signal. When connected to a MicroDriver of the R200 series the tip moves 0.059 micrometers on the rising edge of each pulse.		
Direction input	MicroDriver tip retracts if Direction input is LO and extends if Direction input is HI. When changing MicroDriver direction the Direction input is changed first and then the Step input is changed. The Direction level must be held for at least 10 microseconds at the new voltage level in order to be recognized by the controller.		
Reset	Resets the controller processor when LO.		
Home indicator	LO output indicates that the absolute value of the difference between the encoder count and the step count (error count) is less than 32. HI output indicates an absolute difference of 32 or greater.		
Error indicator	LO output indicates an absolute error count of greater than 1024.		
Error polarity indicator	Hi output indicates error count is lagging the step input. LO output indicates error count is leading the step input.		
Motor V+	Pulse width modulated signal driving the motor V+ and V- leads.		
Encoder A In	Phase A TTL signal. When connected to MicroDriver Series R200 receives approximately 4223 cycles per millimeter of tip travel.		
Encoder B In	Phase B TTL signal. When connected to MicroDriver Series R200 receives approximately 4223 cycles per millimeter of tip travel.		
Power Requirements			
When connected to a series R200 MicroDriver quiescent current < 80 ma. MicroDriver running at constant velocity current < 270 ma.			
Maximum Step Frequency			
11kHz (equivalent to 0.65 mm travel per second).			



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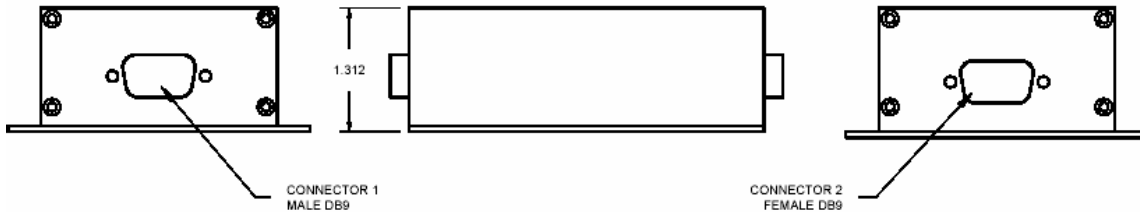
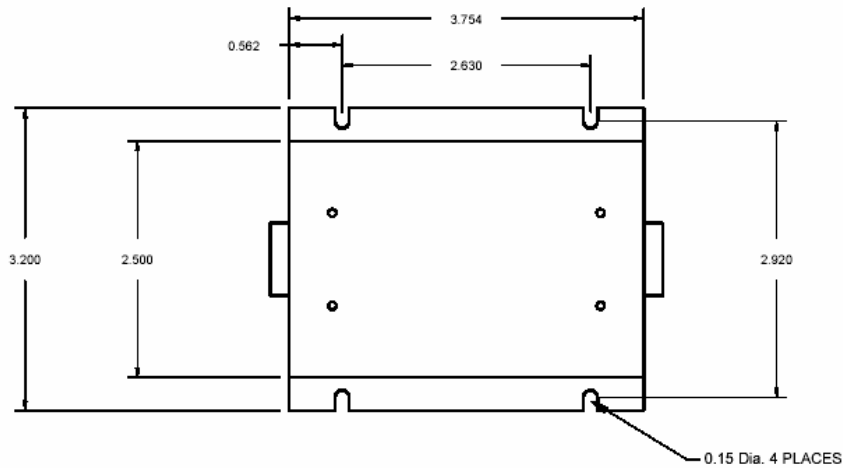
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ALL DIMENSIONS IN INCHES

PIN OUTS

CONNECTOR 1		CONNECTOR 2	
PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	+VIN	1	MOTOR V+
2	GND	2	ENCODER A
3	GND	3	GND
4	STEP IN	4	NC
5	DIRECTION	5	NC
6	RESET ACTIVE LO	6	+5V
7	HOME OUT	7	ENCODER B
8	ERROR OUT	8	MOTOR-
9	ERROR POLARITY	9	NC

ALL DIMENSIONS IN INCHES



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