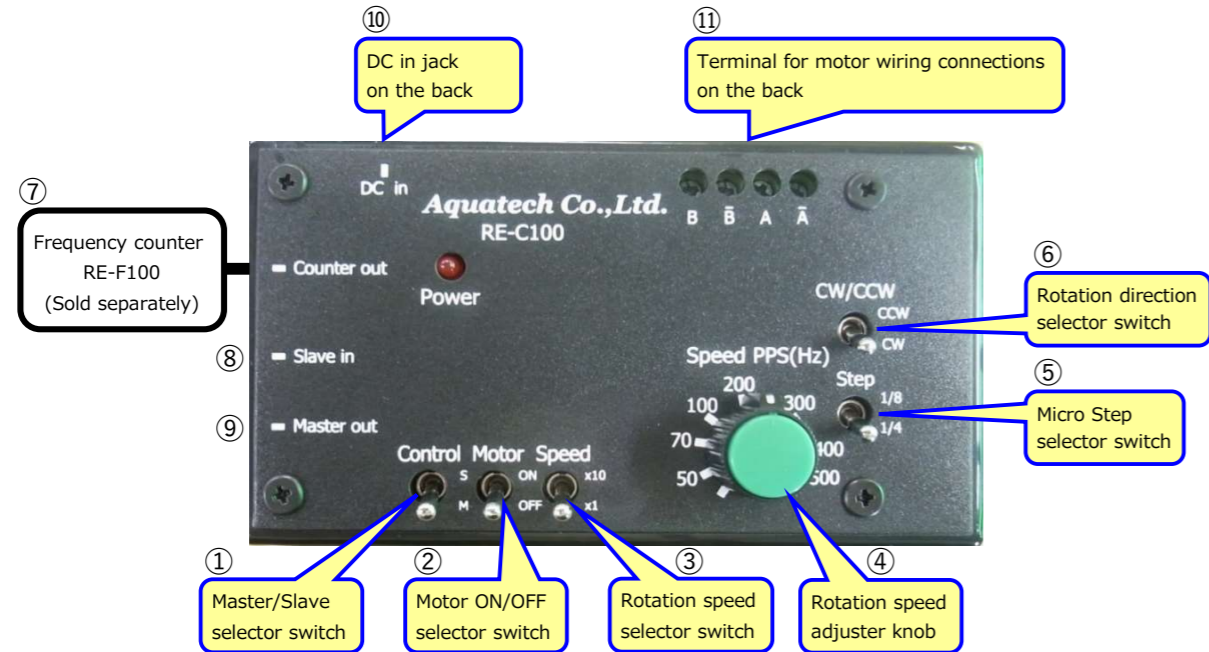


# Instruction Manual of Stepper Motor Controller

## Model RE-C100

Aquatech Co., Ltd.

### < Configuration of the controller operation section. >

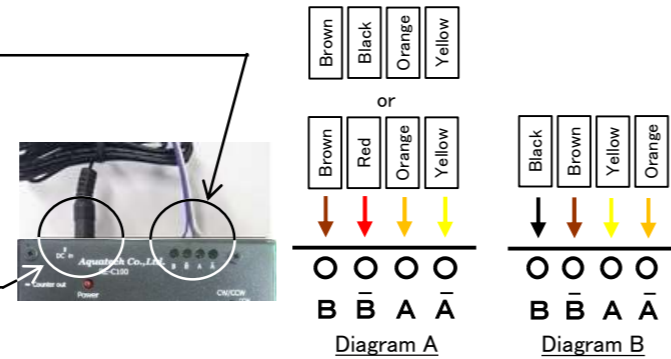


No.	Panel print	Description of the above figure	Explanation of operation/connection
①	Control	Master/Slave selector switch	M : Rotation is controlled by the internal oscillator (adjusted by Speed PPS) which is normal control. S : Rotation is controlled by the external signal input to the Slave in terminal.
②	Motor	Motor ON/OFF selector switch	In the ON position, it rotates. In the OFF position, it stops and no drive current flows to the motor.
③	Speed	Rotation speed selector switch	x1 : The oscillation frequency corresponds to the display on the rotation speed adjuster knob. x10 : The oscillation frequency is ten times the display on the rotation speed adjuster knob.
④	Speed PPS(Hz)	Rotation speed adjuster knob	Adjust the motor speed and number of the motor revolutions.
⑤	Step	Micro Step selector switch	Switch between 1/4 step driving and 1/8 step driving.
⑥	CW/CCW	Rotation direction selector switch	CW = clockwise, CCW = counterclockwise.
⑦	Counter out	Jack for the frequency counter	An optional frequency counter can be connected to verify the oscillation frequency.
⑧	Slave in	Controller connection Jack : Slave in	This is the pulse input jack when using multiple controllers in conjunction. By inputting the signal from the "Master out" of the RE-C100 to be the master, the rotation can be controlled by the master.
⑨	Master out	Controller connection Jack : Master out	This is the pulse output jack when using multiple controllers in conjunction. If you input this output to "Slave in" of RE-C100 to be Slave, you can control the rotation of Slave with this main unit.
⑩	DC in	DC in jack	Connect the DC output plug of the included AC adapter.
⑪	B B̄ A Ā	Terminal for motor wiring connections	Connect the pump's motor wiring.

### < How to Use the Controller >

① Connect the pump's wiring to the terminal on the controller.

Pump series	Order of wiring colors ★From the left	Connection
RP-TX	Brown·Black·Orange·Yellow or Brown·Red·Orange·Yellow	Diagram A
RP-HX	Black·Brown·Yellow·Orange	Diagram B
RP-Q II B/Q III B		
RP-Q II C/Q III C		



② Insert the AC adapter's DC output plug into the DC-IN jack on the controller and plug the AC plug into the outlet.

③ Set the rotation speed of the motor.

Set the Step to 1/4 or 1/8 and the Speed to X1 or X10, and adjust the Speed PPS (Hz) knob.  
- If you are not using a frequency counter, the oscillation frequency (Hz) is obtained by multiplying the Speed PPS (Hz) dial and Speed (X1 or X10).

④ To rotate the motor : Confirm that the Control SW is on the M side, then turn the Motor SW to ON.



### < Revolution conversion table >

$$\text{Motor speed (pps)} = \text{Oscillation frequency (Hz)} \times \text{Step}[1/4 \text{ or } 1/8]$$

$$\text{Motor rotation speed (rpm)} = \text{Motor speed (pps)} \times 60 \div 20 \times \text{Reduction ratio}$$

The relationship between the Speed PPS setting and the motor speed (pps) / motor rotation speed (rpm).

#### For RP-TX

(Reduction ratio=1/135.75)

Set value of Speed PPS(Hz)		50	70	100	200	300	400	500	
Speed = x1	Value of frequency counter [Oscillation frequency] (Hz)	50	70	100	200	300	400	500	
	Step = 1/4	Motor speed (pps)	12.5	17.5	25	50	75	100	125
		Motor rotation speed (rpm)	0.28	0.39	0.55	1.10	1.66	2.21	2.76
	Step = 1/8	Motor speed (pps)	6.3	8.8	12.5	25.0	37.5	50.0	62.5
Motor rotation speed (rpm)		0.14	0.19	0.28	0.55	0.83	1.10	1.38	
Speed = x10	Value of frequency counter [Oscillation frequency] (Hz)	500	700	1,000	2,000	3,000	4,000	5,000	
	Step = 1/4	Motor speed (pps)	125	175	250	500	750	1,000	1,250
		Motor rotation speed (rpm)	2.76	3.87	5.52	11.05	16.57	22.10	27.62
	Step = 1/8	Motor speed (pps)	62.5	87.5	125	250	375	500	625
Motor rotation speed (rpm)		1.38	1.93	2.76	5.52	8.29	11.05	13.81	

#### For RP-HX

(Reduction ratio=1/50)

Set value of Speed PPS(Hz)		50	70	100	200	300	400	500	
Speed = x1	Value of frequency counter [Oscillation frequency] (Hz)	50	70	100	200	300	400	500	
	Step = 1/4	Motor speed (pps)	12.5	17.5	25	50	75	100	125
		Motor rotation speed (rpm)	0.75	1.05	1.50	3.00	4.50	6.00	7.50
	Step = 1/8	Motor speed (pps)	6.3	8.8	12.5	25.0	37.5	50.0	62.5
Motor rotation speed (rpm)		0.38	0.53	0.75	1.50	2.25	3.00	3.75	
Speed = x10	Value of frequency counter [Oscillation frequency] (Hz)	500	700	1,000	2,000	3,000	4,000	5,000	
	Step = 1/4	Motor speed (pps)	125	175	250	500	750	1,000	1,250
		Motor rotation speed (rpm)	7.50	10.50	15.00	30.00	45.00	60.00	75.00
	Step = 1/8	Motor speed (pps)	62.5	87.5	125	250	375	500	625
Motor rotation speed (rpm)		3.75	5.25	7.50	15.00	22.50	30.00	37.50	

#### For RP-Q II B/Q III B

(Reduction ratio=1/150.9481)

Set value of Speed PPS(Hz)		50	70	100	200	300	400	500	
Speed = x1	Value of frequency counter [Oscillation frequency] (Hz)	50	70	100	200	300	400	500	
	Step = 1/4	Motor speed (pps)	12.5	17.5	25	50	75	100	125
		Motor rotation speed (rpm)	0.25	0.35	0.50	0.99	1.49	1.99	2.48
	Step = 1/8	Motor speed (pps)	6.3	8.8	12.5	25.0	37.5	50.0	62.5
Motor rotation speed (rpm)		0.12	0.17	0.25	0.50	0.75	0.99	1.24	
Speed = x10	Value of frequency counter [Oscillation frequency] (Hz)	500	700	1,000	2,000	3,000	4,000	5,000	
	Step = 1/4	Motor speed (pps)	125	175	250	500	750	1,000	1,250
		Motor rotation speed (rpm)	2.48	3.48	4.97	9.94	14.91	19.87	Cannot use
	Step = 1/8	Motor speed (pps)	62.5	87.5	125	250	375	500	625
Motor rotation speed (rpm)		1.24	1.74	2.48	4.97	7.45	9.94	12.42	

#### For RP-Q II C/Q III C

(Reduction ratio=1/51.4462)

Set value of Speed PPS(Hz)		50	70	100	200	300	400	500	
Speed = x1	Value of frequency counter [Oscillation frequency] (Hz)	50	70	100	200	300	400	500	
	Step = 1/4	Motor speed (pps)	12.5	17.5	25	50	75	100	125
		Motor rotation speed (rpm)	0.73	1.02	1.46	2.92	4.37	5.83	7.29
	Step = 1/8	Motor speed (pps)	6.3	8.8	12.5	25.0	37.5	50.0	62.5
Motor rotation speed (rpm)		0.36	0.51	0.73	1.46	2.19	2.92	3.64	
Speed = x10	Value of frequency counter [Oscillation frequency] (Hz)	500	700	1,000	2,000	3,000	4,000	5,000	
	Step = 1/4	Motor speed (pps)	125	175	250	500	750	1,000	1,250
		Motor rotation speed (rpm)	7.29	10.20	14.58	29.16	43.74	58.32	72.90
	Step = 1/8	Motor speed (pps)	62.5	87.5	125	250	375	500	625
Motor rotation speed (rpm)		3.64	5.10	7.29	14.58	21.87	29.16	36.45	

### < Precautions for use >

1. Refer to the rotation speed-discharge rate curve (included at the time of shipment) for the discharge rate.
2. Use the pump within the range where out of step (motor stoppage or vibration) does not occur.
3. TX/HX may be out of step when the motor speed exceeds 500pps. If the Step is 1/4 and the frequency counter display (oscillation frequency) is 4,400Hz or higher for QIIB/QIIBB or 4,000Hz or higher for QIIC/QIICC, out of step may occur. Out of step is less likely to occur if the speed is gradually increased from a low speed.