



**Motor Characteristics**

- ◆ Step Angle: 1.8°
- ◆ Frame Size: 86mm
- ◆ Holding Torque: 4.5-12N.m
- ◆ Built-in 1000-line encoder
- ◆ Low heat, High torque
- ◆ High stability, High consistency

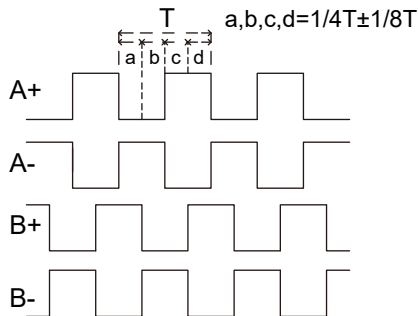
**Motor Specifications**

Model	Phase Current	Phase Resistance	Phase Resistance	Holding Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L)
	A/Ø	Ω/Ø	mH/Ø	N.m	kg.cm <sup>2</sup>	# of Leads	kg	mm
PHSM86S78-456-210EC	5.6	0.3	3.0	4.5	1.4	Bi(4)	2.7	78
PHSM86S78-470-210EC	7.0	0.28	1.8	4.5	1.4	Bi(4)	2.7	78
PHSM86S114-456-210EC	5.6	0.45	5.5	8.5	2.7	Bi(4)	4.2	114
PHSM86S114-470-210EC	7.0	0.38	3.2	8.5	2.7	Bi(4)	4.2	114
PHSM86S150-456-210EC	5.6	0.65	8.4	12.0	4.0	Bi(4)	5.2	150
PHSM86S150-470-210EC	7.0	0.45	5.2	12.0	4.0	Bi(4)	5.2	150

**Encoder Specifications**

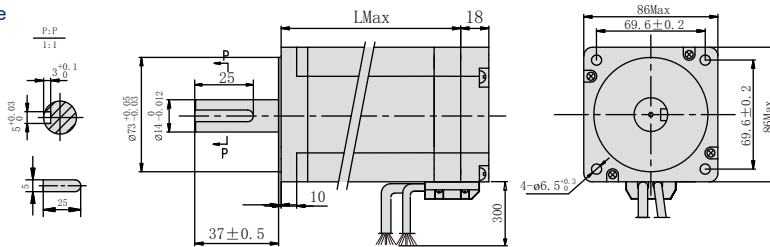
Resolution	1000CPR	
Supply voltage	4.5~5.5V	
Supply current(Max)	100mA	
Signal	A+,A-,B+,B-	
Rise/fall time(Max)	100ns	
Frequency	300kHz	
Output voltage	"H"	2.4V min
	"L"	0.4V Max
Max.output current	20mA	

**Encoder Waveform**



**Outline Drawing**

● Motor Without Brake



● Motor With Brake

